

**drbc**

**annual report 1976**

**delaware river basin commission**

On the cover are scenes photographed from several locations along the Delaware's nontidal main stem, each containing a picturesque old truss-type bridge.

# contents

<b>Introduction</b> .....	<b>1</b>
<b>Review for 1976</b> .....	<b>2</b>
<b>Evolution of DRBC Programs</b> .....	<b>4</b>
<b>15-year Accomplishments</b> .....	<b>6</b>
<b>Commission Membership and Staff</b> .....	<b>7</b>
<b>New Comprehensive Study</b> .....	<b>8</b>
<b>Upper Delaware Basin Protection</b> .....	<b>9</b>
<b>Sustaining Water Supplies</b> .....	<b>12</b>
<b>Project and Environmental Reviews</b> .....	<b>14</b>
<b>Water Conditions: Another Drought?</b> .....	<b>15</b>
<b>Water Quality</b> .....	<b>16</b>
<b>Minimizing Flood Losses</b> .....	<b>18</b>
<b>Reservoirs</b> .....	<b>19</b>
<b>Financial Summary</b> .....	<b>20</b>



# introduction

W. B. Whitall

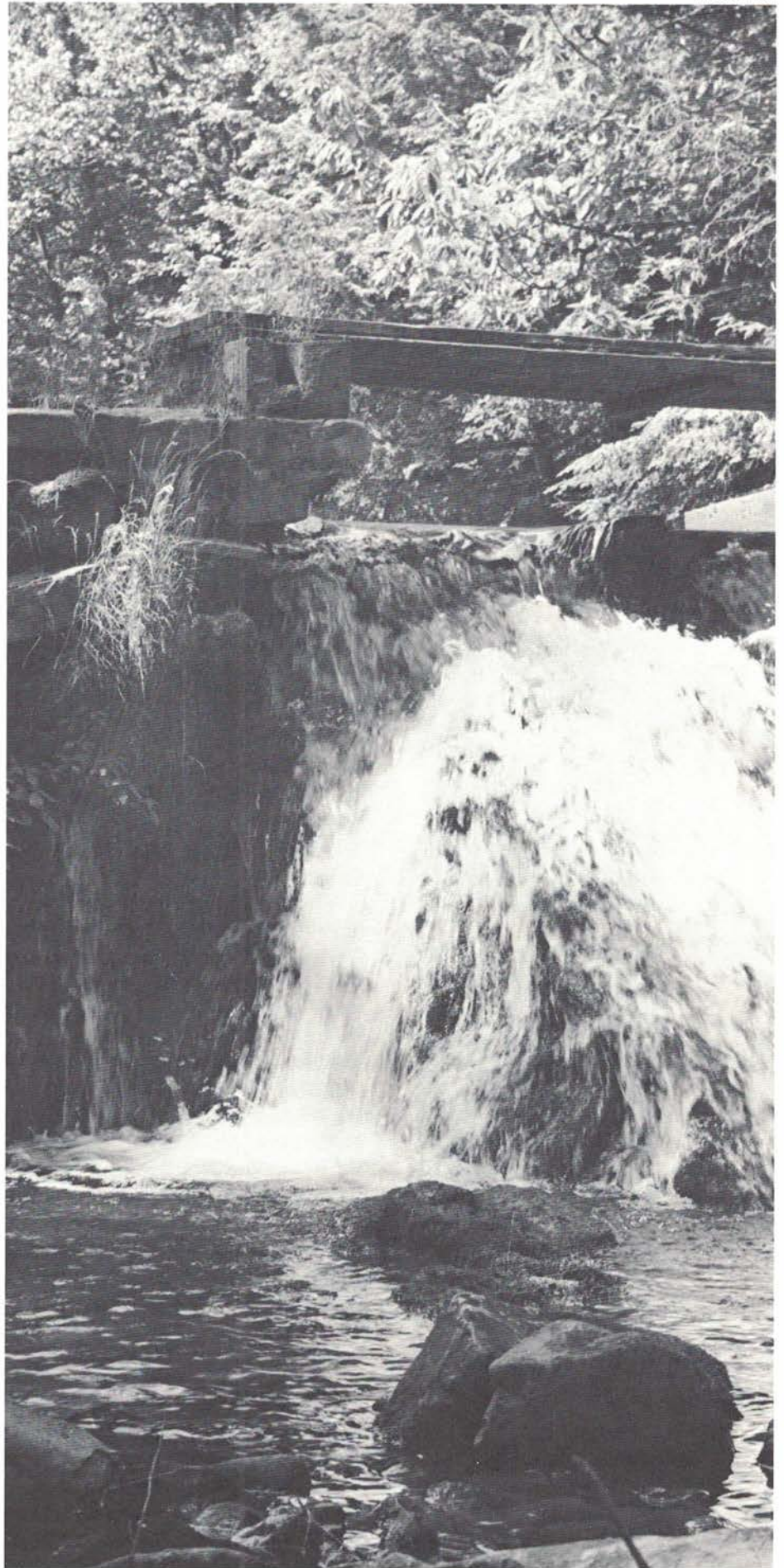
This is the 14th annual report of the Delaware River Basin Commission covering 1976. The Commission and the interstate-federal Delaware River Basin Compact that created it actually turned 15 years of age late in 1976, but the substantive water resources operations of the agency were not in full swing for a year after the Compact's enactment in October 1961.

The report contains a broad account by the retiring Executive Director, James F. Wright, of how the Commission's programs and activities have evolved over the years due to new trends nationally and regionally in resource law, fiscal policies and environmental attitudes.

A major undertaking in 1976 was the launching of a comprehensive study that is to lead to reformulation of DRBC's 15-year-old Comprehensive Plan to reflect not only those new trends but also the Commission's 1975 decision opposing funding to start construction of the big Tocks Island reservoir project on the river's main stem.

Much of the Commission's 1976 staff work was concentrated on individual problems related to the new trends cited by Mr. Wright and also offsetting the loss of Tocks Island. These include planning for non-structural flood loss reduction, controlling intrusion by sea salts up the estuary, protecting diminishing ground water supplies, compensating for inadequate water supply storage and preparing for another inevitable drought.

This report on the Commission's efforts to bring effective water resources management to the four-state river basin is presented to the citizens of the region and their elected representatives in Washington, Albany, Harrisburg, Dover and Trenton. ■





# 1976 review

range of schemes for meeting all the region's water resource needs — with full consideration of prevalent current viewpoints through broad public participation. The investigation was well under way at year-end.

Public distaste grows for building reservoirs to protect against dry spells. But so does the depletion of surface and underground waters and consequently so does the inability to guarantee against intrusion of contaminating sea salts into the fresh waters of the upper reaches of the tidal Delaware and adjacent aquifers.

To help resolve this anomaly, DRBC petitioned Congress for approval of a scientific exploration of estuary chlorides vs. river flow and sought from the U.S. Water Resources Council money to mount a massive ground water management program. Congress authorized — but has not yet funded — the salinity probe, and it provided strong basin delegation endorsement of the ground water program. Initial phases, at least, of these efforts were expected to get aloft in 1977.

These and other new activities relate directly to the restraints and controls the Commission would impose when the next drought hits. With shortfalls of up to 25 percent in 1976 precipitation in some parts of the basin, there were ominous indicators that a drought already could be upon the region.

Anticipating that water storage facilities on hand will be unable to cope with a deep drought like that of the 1960s, the Commission adopted a policy — to be followed up by regulations — establishing priorities of use during a shortage. Top emergency allocations would go for human consumption and uses associated with health and safety, with activities that would sustain maximum employment coming next. The priorities were adopted jointly with a conservation policy mandating a program to effect reduced future consumption for both domestic and industrial purposes, hopefully restraining excessive withdrawals.

The other side of the hydrologic coin is flooding, and here again the

This was the year that the interstate-federal Delaware River Basin Commission embarked on a series of new explorations to ascertain how to deal with escalating pressures in an era that tends to resist tangible solutions.

Reflecting the era's apprehensions, the Commission in 1975 had decided that the biggest multi-benefit water project ever envisioned in the region, the Tocks Island Lake, should not go forward. Instead, it said it wishes to focus on alternative schemes to achieve the same purposes—assuring adequate water supplies, holding down flood losses, providing more public outdoor recreation, sustaining energy generation and more. Implicit was that the goals should be attained with a minimum of structural solutions that are now environmentally unpopular and that the public should be induced to make do with less in resource-consuming services.

So after nearly 15 years on the job, the Commission was pointed on a new course to build on its long record of water conservation and protection accomplishments. In response, program after program was initiated during 1976.

Principally, a timely federal grant was received to launch the new Comprehensive Study that will help the Commission modernize and redesign its existing comprehensive plan in about two years. This special DRBC program is reanalyzing a full

Commission moved ahead — with programs in keeping with current preference for non-structural means of holding damages down. Extensive regulations giving the Commission tools to restrict future uses of flood plains, and incorporating aids for local government to do the same, were adopted in 1976.

And Congress responded partially to Commission urging for a federal feasibility study of removing or flood-proofing endangered structures along the main stem above Trenton. The study was authorized but has not been funded.

Also, DRBC concluded local studies in 1976 that will help entitle homeowners in 119 communities to federal flood insurance coverage, and it initiated several more.

### Reorganization

As the result of changes of administration in the State of Delaware and in Washington after the 1976 elections, DRBC got two new members early in the new year.

Governor Pierre S. duPont, a fighter for environmental causes while a congressman, took over both as Delaware Member and Chairman from ex-Governor Sherman W. Tribbitt, and former Idaho Governor Cecil D. Andrus was named DRBC's United States Member by President Carter, succeeding Thomas S. Kleppe, his predecessor as Secretary of the Interior.

Governor duPont's former top congressional aide, Austin P. Olney, became his Alternate Member after being named state Director of Natural Resources. Formerly the Alternate was John C. Bryson, veteran water resources administrator, and DRBC supporter, who left his post as Delaware's Secretary of Natural Resources and Environmental Control to become project director for the newly formed Middle Atlantic Fisheries Management Council.

Rocco D. Ricci, Acting Commissioner of New Jersey's Environmental

Protection Department, was named DRBC Alternate to Governor Brendan T. Byrne in August, succeeding Commissioner David J. Bardin, who later shifted to a high post in the Federal Energy Administration. Mr. Ricci had been Mr. Bardin's first deputy.

### William Miller dies

*The premature death of William Miller early in 1977 deprived the Delaware River Basin Commission of the continued extraordinary services of its general counsel of more than 15 years — and of a close and good friend.*

*A public affairs specialist and law professor who attained national recognition for his brilliant, crisply written reports and effective recommendations in tax policy, public administration, government charters and other fields, Mr. Miller was nonetheless probably most widely associated with his professional first love — the Delaware River Basin Compact and Commission.*

*No one had a longer or closer association with the Commission and the vigorous effort, beginning in the mid-1950s, that went into its creation.*

*He was author of the Delaware River Basin Compact for the advisory committee that the four basin governors and mayors of New York and Philadelphia set up in 1955 to effect regional water management. It was the nation's first interstate-federal compact for any purpose, and it won unprecedented one-session approval in Albany, Trenton, Harrisburg, Dover and Washington.*

*On December 13, 1961, at DRBC's original meeting, he became counsel, and from that day on he participated in its every consequential decision until illness incapacitated him late in 1976.*

*A major newspaper paid perceptive tribute to William Miller when it tabulated the many reforms he had influenced in the public interest, earning him the designation of "New Jersey's peaceful revolutionary." ■*



Governor duPont



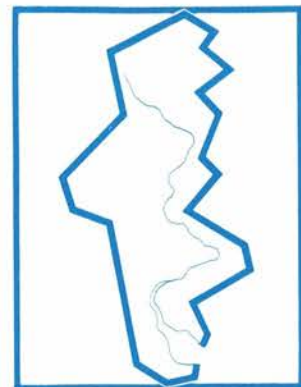
Secretary Andrus



Mr. Olney



Mr. Miller





# evolution of DRBC programs



Mr. Wright

*(Mr. Wright will retire in 1977 after serving 15 years as DRBC's first executive director. A career federal and state administrator, he was selected following a national talent search while first deputy director of California's Water Resources Department. Following is an informative assessment he has made of the Commission's policy and program trends since 1962.)*

## **By James F. Wright**

The Commission was organized soon after the Corps of Engineers had developed comprehensive recommendations for the basin emphasizing water supply, flood control and recreation, but not water quality. State water resource responsibilities were then fragmented among separate departments, boards and commissions. There was no systematic federal water pollution control program and pretty much the same could be said of the states.

Early Commission policies and programs fostered the development of structural projects for water supply, flood control and recreation; established early policy for guidance in

the comprehensive planning process; called for and reviewed all water resource-type projects under the Compact; and brought into being a water quality program for pollution control within the basin.

With the passage of years, the federal role and involvement in water quality management and pollution control has increased tremendously. Each of the basin states consolidated its water resource management into a single agency, with much more money and staff. Similarly, state water supply and water resource general planning has received increased emphasis. The Commission's role has gradually shifted from preoccupation with reservoir projects and pollution abatement toward a more coordinative and service role while still requiring that the end products of signatory efforts be brought together and incorporated within a broader envelope of comprehensive planning. The Commission is now beginning a reformulation of the Comprehensive Plan for the basin that will reflect changed public attitudes, stronger environmental emphasis and the recent decision not to proceed with construction of the Tocks Island Lake on the Delaware main stem at this time.

## **Water supply**

In water supply, the Commission, while not discarding the development of structural projects, now places increased emphasis on restudy of demands and is currently developing policy which, instead of trying to meet all supply needs under all conditions, emphasizes conservation by users and establishment of priorities for water use in times of shortage. Also in water supply, the Commission has analyzed through the years the need for a coherent plan for the development, conservation and use of underground water, along with surface water, and is now proposing a comprehensive study of ground water resources and future demands that, hopefully, will lead to a plan for conjunctive use of ground and surface waters in contrast to the ad hoc



consideration of specific projects that characterized earlier efforts.

### **Water quality**

In the field of pollution control, the Commission developed water quality standards, an innovative allocation system and an abatement program. With growth of other federal and state activities, particularly since enactment of the Federal Water Pollution Control Act and the establishment of the program of National Pollutant Discharge Elimination System, the Commission has de-emphasized analysis of individual permits and spent more time coordinating and reformulating water quality standards, reworking assimilative capacity allocations, developing better monitoring programs with the signatory parties, and, on occasion, sitting as a board of arbitration when interstate concerns are involved in specific pollution programs.

### **Project review**

Initially, the Commission's project review activities encompassed a total range of projects in order to insure surveillance over water resource activities within the basin. Increased signatory capabilities, among the states in particular, in this area has resulted in a redefinition of DRBC's role. While retaining general review authority over major projects, DRBC reduces its technical investigations to all but the most important projects and moves into a role of auditing and coordinating the expanded signatory efforts.

### **Flood control**

In flood control, the Commission's early emphasis was on structural measures, with some companion joint effort with the U.S. Geological Survey and the Corps of Engineers in flood plain mapping. This has evolved into a more active Commission role in working with the Department of Housing and Urban Development's flood insurance program, promulgating flood plain regulations to forestall undesirable flood plains development in the future, and exploring non-structural flood loss reduction measures such as flood proofing.

### **Energy**

In the field of power generation, the Commission required the region's utility companies to develop a master siting study, regularly updated, that provides vital information on future electric generating facilities and their water supply requirements. The information is valuable to federal and state agencies also. Growing out of this, the Commission has worked with the signatory parties on other energy siting matters, such as liquified natural gas, and will continue to work with the federal and state agencies to insure that full impacts on water supply and water quality are recognized. Additionally, potential onshore developments arising out of offshore drilling activities are being monitored for impact on related water resources.

### **Environmental protection**

Responsive to the National Environmental Policy Act of 1969 (NEPA), the Commission has assumed an intensely active role of environmental analysis, including continuous cooperation with the Council on Environmental Quality and the Environmental Protection Agency, and other federal sponsoring and regulatory agencies, such as the Corps of Engineers and the Federal Power Commission, and also with the states. DRBC has produced both detailed critiques of draft environmental impact statements of other lead agencies and, in a number of instances, its own environmental impact statements in compliance with NEPA. This role will continually evolve as new regulations and changes in the law require.

### **New broad study duties**

Along with all this, the Commission has been asked by all the signatory parties to play a more active role in various programs, such as the Delaware River Basin Comprehensive Study now in progress toward reformulating DRBC's Comprehensive Plan, institutional arrangements for sludge administration under areawide waste management planning programs, and other planning, all part of the increased activity at all levels of government stemming from the federal water pollution control law.

### **Program development**

In coordinating signatory water resource activities, the Commission has moved somewhat away from its early role of developing its programs basically in-house after limited consultation with and review by the signatories. The new pattern is for early planning conferences that produce state and federal recommendations and matrix of program elements that are then reviewed by the Commissioners as a basis for program formulation. This reflects the staff's determination that programs fully respond to the Commission's status as an agency of each of these signatory parties.

---

In summary, the Commission continues an active direct planning role along with much more recent emphasis on coordination and reconciliation of the work of the other signatory parties. DRBC also continues its early project review role but with heavier reliance on technical review by the signatory parties, resolution of differences, spot checking performance by the signatory parties, monitoring results and development of new mathematical models necessitated as the pollution control program moves ahead. Changes in emphasis that have moved the staff effort away from some of its more detailed planning, review and regulatory activities have been more than offset by the coordinative and cooperative planning responsibilities from changing signatory activities.

In the course of all this, Commission manpower has suffered a reduction of approximately 10 percent, in a reflection of signatory fiscal pressures, and now manages to meet the changing needs of the basin only with a maximum staff effort and a high level of efficiency. ■





# DRBC attainments since 1962

Following is a list of Commission accomplishments and important programs during James F. Wright's 15-year directorship of the Delaware River Basin Commission:

- Assumed responsibility over—and agreed to reimburse United States for—water supply in federal reservoir network, thus assuring provision of low-cost future supplies of water for region.
  - Effected cooperative policies at differing levels, bringing common groundrules to waste dischargers and other water users on opposite sides of the river in different states.
  - Took the results of massive federal pollution study of tidal estuary and transformed them into the far-reaching water quality reclamation program for the intensely developed lower Delaware River.
  - Imposed rigid spill-prevention requirements during construction of nation's largest cross-country petroleum pipeline, on which work was halted pending compliance.
  - Invoked emergency authority to control and limit large-scale public and private water use and out-of-basin diversions to protect the Philadelphia metropolitan area's water supplies from salt contamination during the record drought of the 1960s.
  - Organized and supervised a four-state reevaluation of the basin's water yield capability in wake of the worst drought to improve future planning.
  - Conducted flood history studies with U.S. Geological Survey and others in several hazard areas, better equipping local government to regulate land uses.
  - Produced data needed to standardize flood area delineation in the four-state region.
  - Established controls over rich subsurface water supplies, extending them into some parts of the basin for the first time.
  - Produced formula averting an interstate dispute on sharing the waters of Brandywine Creek.
  - Protected a historic small watershed in Pennsylvania from being bisected by a high-voltage overhead transmission line.
  - Preserved an important reservoir site for New Jersey by requiring the elevated construction of an interstate highway.
  - Mandated the preparation and publication of a series of comprehensive reports on power plant siting, a national first, to enhance future water planning and management.
  - Conducted extensive water quality investigation of a tri-state, six-county, 1,000-square-mile region in the upper basin.
  - Established the feasibility of regional collection and treatment of difficult-to-handle wastes from a large segment of South Jersey.
- (Unsuccessful funding negotiations forced abandonment of plan.)
- Played central role in producing a major regional waste control program in Pennsylvania's Delaware County.
  - Adopted and implemented far-reaching and comprehensive water quality standards for entire basin, augmenting tidal river program.
  - Tightened water quality standards by addition of controls over non-organic pollutants.
  - Adopted "interpretive guidelines" to assist waste dischargers in complying with standards.
  - Developed a comprehensive 10-year fishery research program and conducted a variety of other shell and fin fish projects.
  - Acting for New Jersey and Pennsylvania, restored the wing dams that impound a popular recreation lake on the Delaware at Lambertville-New Hope.
  - Conducted inventories of nutrient sources of upper Delaware and studied their water quality consequences.
  - Held technical seminars for operators of water quality installations.
  - Supported and worked toward the designation of the upper Delaware as a National Scenic River.
  - Established an environmental unit in keeping with the National Environmental Policy Act. Reviewed scores of projects for their environmental integrity and prepared impact statements in many instances where DRBC was the principal federal agency involved.
  - Mandated water metering of large new commercial, industrial and housing developments.
  - Assisted in technical research projects aimed at environmental protection and preservation of Delaware Bay.
  - Enacted—and defended successfully in federal court—a program covering the sale of water supply to finance storage in federal reservoirs.
  - Promoted coordinated stream pollution control on a basinwide scale through DRBC's Water Quality Advisory Committee.
  - Required electric utility companies to study cumulative environmental effects of planned generating facilities.
  - Conducted studies for Upper Delaware River Regional Water Resources Planning Board in New York State on water quality management, municipal and industrial water supply, and water-related recreation.
  - Published popular recreation maps of 200 miles of the non-tidal Delaware, principally for canoeists. More than 25,000 sets sold.
  - Promoted and assisted local watershed organizations, and supervised publication of a 24-page guide for the Middle Atlantic Council of Watershed Associations.
  - Prepared and published maps giving detailed locations of all known petroleum pipelines as a special spill prevention measure.
  - Concluded Housing and Urban Development Department-financed flood studies in 119 municipalities and initiated more.
  - Adopted own Freedom of Information policy and regulations.
  - Published recent document, Water Management of the Delaware River Basin, compiling 14 years of water resources data, planning studies, assumptions, standards and history of the basin.
  - Coordinated interstate negotiations to produce mutually acceptable program of releases from New York City reservoirs to improve local streams.
  - Provided impetus and key membership for Study Management Team that established procedures and policies for the conduct of the Congressionally ordered restudy of the Tocks Island reservoir controversy.
  - Designed and managed extensive one-year public information phase of Congress' Tocks Island restudy.
  - Promoted use of non-structural means to cut down on flood damages.
  - Secured Congressional authorization for a study, still unfunded, to more fully explore the prospective effects of salinity intrusion in the estuary so that the volume of fresh water inflows needed to repel salts can be determined with greater precision.
  - Successfully petitioned U.S. Water Resources Council for funds to conduct a two-year Delaware River Basin Comprehensive Study that will help DRBC modernize and reform its Comprehensive Plan.
  - Initiated a special program under which DRBC is to recommend an institutional arrangement for handling of the region's sludge disposal problem.
  - Established water conservation and priorities-of-use policies to be followed in future drought emergencies.
  - Engaged with states and other regional agencies in programs to carry out areawide wastewater management planning studies.
  - Established regional advisory committee to improve quality and exchange of hydrologic information.
  - Prepared a basinwide comprehensive ground water supply proposal pending before U.S. Water Resources Council.
  - Required electric utilities to develop their own water supply storage to accommodate future nuclear and other generating operations.
  - Oversaw safe environmental construction of a modern oil pipeline to supply in-basin electric generating operations.
  - Conducted mathematical model study of the upper river to give a good scientific basis for future water quality programs.
  - Initiated study to forecast cumulative effects of heat pollution of the upper river.
  - Started work on a plan to allocate thermal wasteloads discharged to the tidal river.
  - Undertook special water quality studies for New Jersey.
  - Assured compatibility of more than 1,000 water-related projects since 1962 with good resource protection policies through project review function.
  - Streamlined project review procedures.
  - Initiated reappraisal of many policy issues for guidance in compensating for the deferral or loss of the Tocks Island project.
  - Imposed streamflow protection requirements on new nuclear generating facilities that are heavy water users.
  - Enacted flood plain regulation program for all lands adjoining non-tidal streams. ■



# the commission • 1976



Governor Tribbitt



John C. Bryson

## delaware

Governor  
Sherman W. Tribbitt  
Chairman

John C. Bryson  
Alternate



Governor Shapp



Maurice K. Goddard

## pennsylvania

Governor  
Milton J. Shapp  
Vice Chairman

Maurice K. Goddard  
Alternate

Carmen F. Guarino  
Advisor



Secretary Kleppe



Thomas F. Schweigert

## united states

Secretary of the Interior  
Thomas S. Kleppe

Thomas F. Schweigert  
Alternate

Colonel  
Harry V. Dutchyshyn, ACE  
Advisor



Governor Carey



Theodore L. Hullar

## new york

Governor  
Hugh L. Carey

Theodore L. Hullar  
Alternate

Robert A. Low  
Advisor



Governor Byrne



Rocco D. Ricci

## new jersey

Governor  
Brendan T. Byrne

Rocco D. Ricci  
Alternate

## staff

James F. Wright  
Executive Director

William Miller\*  
General Counsel

W. Brinton Whitall  
Secretary

Dawes Thompson  
Public Information Officer

J. W. Thursby  
Head, Environmental Unit

Arthur E. Peeck  
Chief Administrative Officer

\* Mr. Miller died March 4, 1977.

## planning division

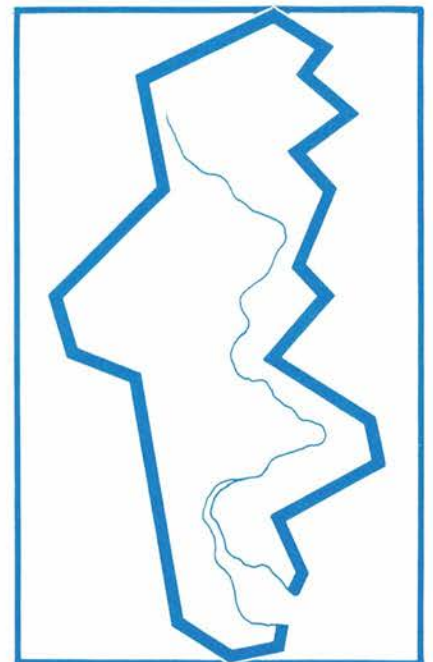
Herbert A. Howlett  
Chief Engineer

C. H. J. Hull  
Staff Engineer

## branch heads

Seymour D. Selzer  
Program Planning

Robert L. Goodell  
Operations





# new comprehensive study

A major new planning effort that is expected to be the basis for updating and reformulating the Commission's Comprehensive Plan commenced on its two-and-a-half-year course in October 1976.

The new program, called the Delaware River Basin Comprehensive Study, was approved by the U.S. Water Resources Council and is supported mostly by a federal grant of \$1.1 million, to which DRBC and state and local agencies will add \$400,000 in matching contributions.



*Mr. Longmaid*

The study manager is David D. Longmaid, a community planner in water programs on loan from the Philadelphia regional office of the U.S. Environmental Protection Agency and former executive director of the Penn-Jersey Transportation Study and its successor group, the Delaware Valley Regional Planning Commission.

The existing Comprehensive Plan dates to early 1962 when the then member Governors enacted the first phase of the document, borrowed from recommended facilities in the Corps of Engineers' Delaware Basin report and comprising a series of federal and state reservoir projects and local watershed development programs. To it were added later that year a large number of existing sewerage and water supply systems, reservoirs and recreational facilities. In the nearly 15 ensuing years the plan has been enlarged almost monthly by new and

proposed public and private projects of public significance and by new policies, most of them implemented by companion rules and regulations or guidelines. The policies relate to pollution control, ground water protection, water supply pricing, flood plain regulations, water priorities and conservation, metering and more.

As DRBC's Comprehensive Plan has grown, as its components have become less systematically related, as institutional attitudes and policies have changed, and as other economic, physical and social conditions have shifted, need for reformulating the policies underlying the plan has escalated. But staff and financial limitations have prevented this. Fortuitous timing and availability of funds through the Federal Water Resources Planning and the Water Pollution Control Acts have provided the opportunity to undertake the job as a single major program.

The project is expected to help assess basic policy issues to be resolved in the wake of DRBC's 1975 recommendation against Congressional funding to start building the controversial multi-purpose Tocks Island Lake. Such issues include controlling salinity intrusion from the ocean, conserving water, establishing priorities of uses during future drought emergencies, limiting water for energy and other uses that deplete supplies, use of non-structural measures to hold down flood losses, scheduling of future reservoir projects, and providing storage facilities to compensate for water exports from the basin.

The program's first phase is a plan of study to determine project goals, division of efforts among participating federal, state and local agencies, scheduling of the study phases, and procedures for public participation and public information.

A high level of public participation and public information is scheduled throughout the study entailing citizen committees, task forces, public forums and hearings and other community involvement relating to specific water resource problems, geographic sub-regions and other factors. ■



# upper basin protection

## *Local planning, Scenic River and reservoir control efforts advanced*

The Upper Delaware River Basin is the sprawling mountainous region lying on both the New York and Pennsylvania sides of the beautiful northernmost 75 miles of the river from Port Jervis upstream. Essentially, it comprises four of the basin's most unspoiled counties — Pike and Wayne in Pennsylvania's Pocono Mountains and Sullivan and Delaware in New York's Catskills.

The upper basin is a bucolic region that most people there would like to keep that way as its popularity escalates among sportsmen, canoeists, vacationers, urban escapees and developers. It is consequently the object of growing efforts by government officials, from local to federal levels, for future guidance and protection.

The water-related assets of the region are among its most attractive, and much of the current protection work is aimed at preserving and even enhancing them. The Basin Commission is very much a part of the effort — both to conserve the good local water resources and to protect the interests of downstream areas so reliant upon them.

The Upper Delaware River Regional Water Resources Planning Board study, a state and local effort in New York to which the Basin Commission has given extensive assistance, completed its Comprehensive Water Resources Plan and submitted it to the state in 1976.

Meanwhile, the Basin Commission continued in 1976 to conduct annual stream limnological studies that it initiated in the upper third of the basin in 1969 to gather important baseline data on that region. The parameters sampled at 10 main stem and 23 tributary stations in three states include water chemistry and living organisms. These have been in addition to DRBC fishery studies in that area.

Two additional areas in which 1976 produced concentrated activity and

progress were the plan to add the upper Delaware bordering Pennsylvania and New York to the National Wild and Scenic Rivers System and a drive to improve the quality of some important local streams by revising the operation of New York City's three Catskill area reservoirs.

### **Scenic River plan advanced**

After seven years' study, a task force of federal, state and regional agencies, including DRBC, sent to the Interior Department in Washington its recommendation that the 75-mile reach of the Delaware from Port Jervis to the end of the main stem at Hancock be designated a scenic and recreational river to preserve its natural state. If the White House and Congress accept the plan, the upper Delaware would be the first northeastern river added to the system.

Congressional action on the scenic river plan would mandate imposition of strict land use control measures to prevent intrusion by incompatible development, and anticipating this, the planning agencies from all five counties in two states along the river, including part of Orange in New York, are already ahead of the game.

The planning agencies, organized last year especially for this plan under the name of Upper Delaware Regional Clearinghouse Zoning Guidelines Committee, have prepared a common set of criteria for land use regulations and zoning guidelines that would have to be implemented by the 15 riverside municipalities with land in the scenic river fringe that totals 75,000 acres.

Once the fringe is zoned to federal satisfaction, the National Park Service would purchase up to 20 sites along the river as access centers for river-related recreational activities involving primarily canoeing, row-boating and fishing. It is urged also that the Park Service buy up to 1,000 acres as future needs develop.

The next steps are up to the White House and Congress.

### **NYC reservoir operations**

The movement to improve local stream conditions in New York State through effecting changes in reservoir operations was organized by local fishermen and sportsmen who complained that irregular and inadequate

releases have degraded water quality, fish and wildlife, and recreation value of the streams below the impoundments. The cause was picked up by the New York State Environmental Conservation Department and state legislators who guided a bill to passage in 1976 to impose state controls over many reservoirs in the state, including the city's three impoundments on upper Delaware tributaries. The bill was signed into law by Governor Carey and proposed regulations were drawn.

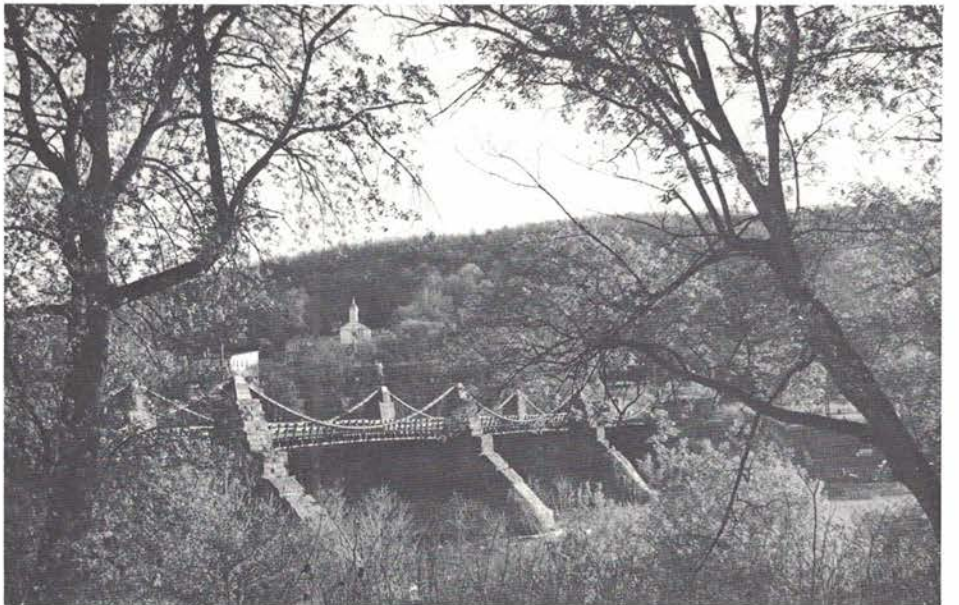
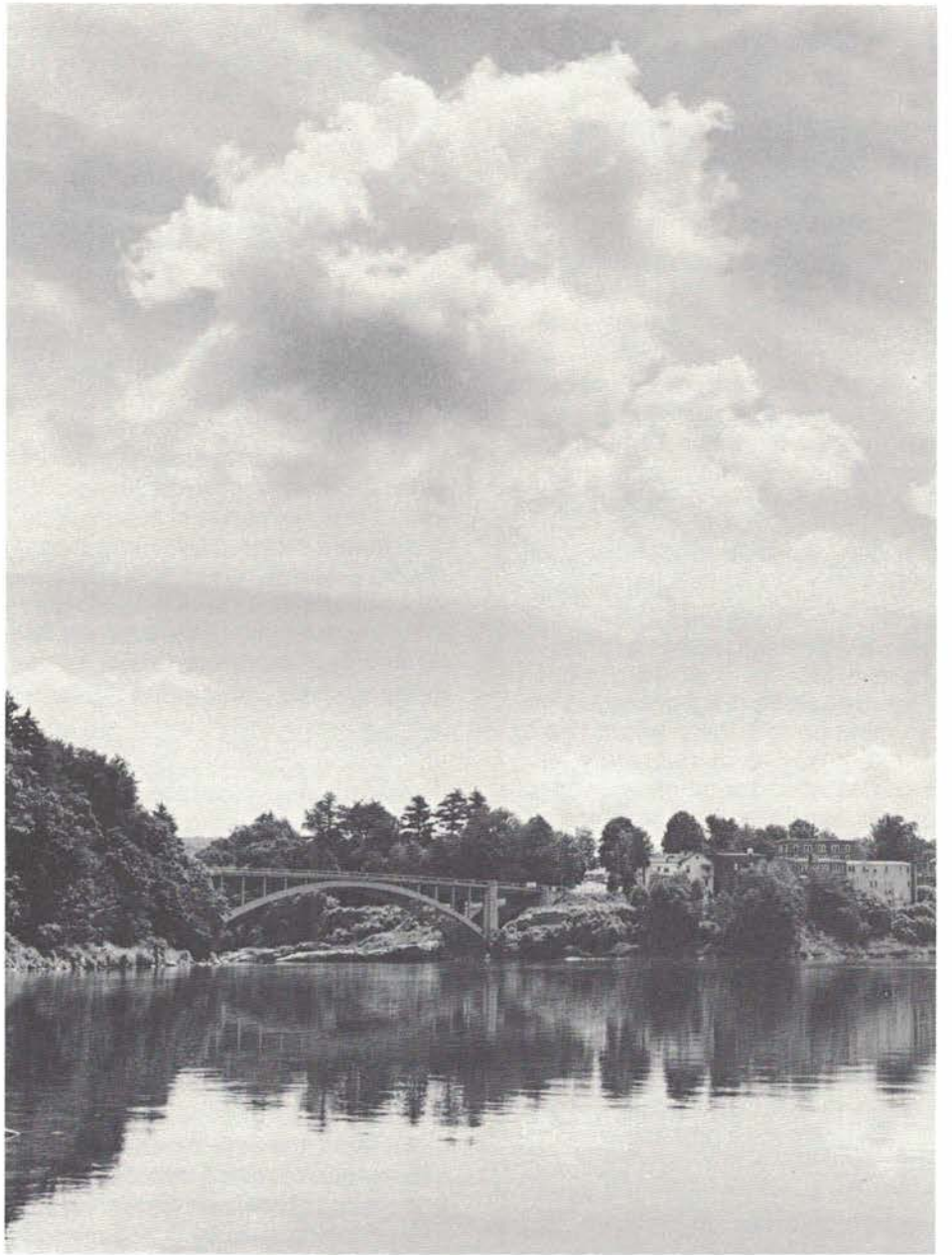
But operation of the city's reservoir system has regional implications that drew the downstream states of Pennsylvania, New Jersey and Delaware into the picture through the Basin Commission, on which they are New York State's fellow members. New York City's entitlement to divert Delaware River water was first established in 1931 — over the other states' objections — by the U. S. Supreme Court. But in exchange for the diversions, the court ruled in a 1954 modification of its decree, the city must guarantee minimum flows in the Delaware River at Montague, N.J., and Milford, Pa., to protect the river interests downstream.

New York City contended it could not conform to the state's proposed requirements that called for increased and year-round distribution of downstream releases and at the same time meet its court-ordered obligations. The downstream states expressed concern that excessive drawdown of the reservoir would leave them unprotected in event of drought.

Further, under the Delaware River Basin Compact that is the Basin Commission's enabling law, no modification of the court's decree is allowed without unanimous consent of the parties to the decree — namely, New York City and the four states.

Negotiations toward arriving at a mutually agreeable schedule for operating the reservoirs, at least during an experimental period, were in progress into 1977 under DRBC auspices with the consent of its state members. Technical assistance on working out a new reservoir release program was contributed by DRBC's Hydrology Coordinating Committee, comprising representatives of agencies of the Commission's five signatory parties. ■









*UPPER BASIN — This is an assortment of views of the Delaware in the portion of the main stem between Matamoras, Pa., and Hancock, N.Y., that is proposed for inclusion in the National Scenic Rivers system. Photographs by W. B. Whitall and J. M. Staples.*



# sustaining water supplies

*Programs deal with salinity,  
diminishing resources,  
overuse, priorities and energy*

Water supply is a far more complex and comprehensive matter than the withdrawal, treatment and distribution system that the words suggest. To DRBC and other water managers in the Delaware Valley, water supply is a subject that involves incursion up the river of ocean salts, operation of reservoirs 300 miles upstream in New York State's Catskill Mountains, protection of thousands of subsurface aquifers in between, mediation of competing water demands, and many other factors.

Probably the biggest and most complex water supply consideration of all is maintaining a readiness to deal with the next drought. An inevitable natural phenomenon, drought is an ever-present threat for the water planner despite being far from the minds of water users in times of abundance.

No subject received more attention from DRBC in 1976 than preparing the region for drought so that negative consequences to the lives of its seven million inhabitants can be held to a minimum. The concern is not only shortage and deterioration of water for public supplies, but also such water-supported necessities as energy and industrial and commercial productivity.

## **Salinity**

The heavily populated and developed lower basin region that relies so strongly on the tidal estuary probably faces no more critical water threat than that of salinity intrusion from the

ocean. With the prospect of developing large reservoirs constantly declining, the salt water danger threat increases as the flows of fresh water into the estuary diminish during dry periods due to rising depletive water use.

Salt water impairs water use for industries and households; it is harmful to water-using industrial installations; it is a health hazard; and it threatens to contaminate the surface water supplies of Philadelphia and the wells that serve Camden and other sections along the estuary. Until remedies are found, estuary salt concentrations will rise gradually as Delaware fresh waters are depleted due to water exports from the basin, evaporation from industrial cooling and to other consumptive use by municipal systems, farm irrigation and lawn watering.

In terms of fresh water inflows to the estuary, DRBC's long-time goal of 3,000 cubic feet per second at Trenton is unattainable during severe droughts without the assistance of substantial volumes of storage based on 1976 levels of depletive use.

At DRBC's urging, Congress has authorized — but not yet funded — a study to determine the level of fresh water flows needed to repel salinity and, at the same time, assimilate wastes treated in compliance with pollution control standards. The Commission continues to press for this work so it will have a better basis than now available for establishing a more precise fresh water flow objective.

As DRBC awaited congressional action, it proceeded to poll the basin's industrial community to determine what would be the economic effect of salt intrusion on factory operations. Also, with funds made available by New Jersey, it prepared to engage a distinguished consultant from Massachusetts Institute of Technology to conduct a mathematical modeling phase of the salinity intrusion work. The congressional funds would be used to conduct counterpart tests at a football field-sized physical model of the Delaware Estuary located at the Corps of Engineers' Waterways Experiment Station in Mississippi. ■



## **Ground water management**

The Commission submitted to the U.S. Water Resources Council an application for funding of a basinwide planning study to help it develop a regional ground water management plan and implementation program for the basin.

The Delaware Valley has a population of more than seven million persons which, when added to its larger service area of northeastern New Jersey and metropolitan New York City, comprises an eighth of the nation's population. Studies show that surface flows in many areas are inadequate to meet dry-period demands and that ground water levels in the areas of major use are in a downward trend despite, or perhaps because of, increased dependence on them.

DRBC has identified specific concerns with the ground water resources, both with quality and quantity, and the study would include quantitative yield investigations such as monitoring aquifers and examining ground water pollution. It also would tabulate natural and background quality, identify areas of potential and existing contamination, and pinpoint subsurface supplies in danger of salinity intrusion.

The Commission wants a clear policy to determine the best use of the resources without unnecessarily hindering development and to be better equipped to balance the rights of competing well owners. DRBC is being called upon increasingly to settle disputes over competing well supplies. The study would be managed by DRBC with considerable assistance from and coordination with federal, state, regional and local governments.

## **Priorities and conservation of use**

Determined that those in the basin community who need it most shall have first call on water supplies in event of drought and recognizing that the days of cheap and unlimited quantities of water are numbered, the Commission adopted in 1976 two important new policies.

One of the new policies incorporated in the Comprehensive Plan, on priorities of use, provides ground rules to be followed in drought emergencies. The highest rank was assigned to water needed for human consumption and uses associated with public health and safety. After meeting those essential human needs, DRBC would allocate remaining supplies among users according to a system of priorities designed to maintain highest possible levels of employment. Followup planning studies are to be made to develop the general policy into tangible regulations for implementation should the need arise. Any proposed regulations would be subject to hearing.

The companion policy commits the Commission to develop a long-term program for reduced use of water by Delaware Basin communities and industries, since easing up on water demands would benefit both the region's economy and its natural environment. It is thus DRBC's formal view that new planning outlooks must combine storage reservoirs and other water supply structures with regulatory and incentive measures to increase efficiency and economy in using and reusing available supplies.

Population, economic growth, new technology and increased scientific understanding of environmental impacts of water are disrupting the long-enjoyed pattern of boundless volumes of cheap water. It is the experience in some other areas that highly urbanized and industrialized regions like the Delaware can make do successfully with less. DRBC looks to apply techniques here that have worked elsewhere.

## **Water for energy**

Because of the limited prospect for enlarging the Delaware Basin's inadequate water storage network, DRBC sees a potential threat to uninterrupted operation of electric generating indispensable to the region's people, institutions and industries. DRBC directed two leading electric utility companies to develop

their own water storage to make up for water to be evaporated in drought periods by two nuclear power plants now under construction. The Commission viewed this as only the beginning of similar requirements as other electric generating installations are built to sustain energy demands, probably necessitating a more formalized and systematic policy.

Anticipating that they would have to develop their own water supplies, the basin's electric utility companies had arranged for a reservoir site search that produced an interim report in 1976. Their consultants identified four suitable locations to be further narrowed down soon to a single location. The four sites are Red Creek in Schuylkill County and Mill Creek in Berks County, both on Schuylkill River tributaries, and Little Martins Creek in Northampton County, all in Pennsylvania; and Merrill Creek in Warren County, New Jersey. Prospects for development of the Red Creek and Martins Creek locations triggered vigorous protests from local residents.

As the year ended, a possibility evolved that a portion of the water supply storage at Trexler, a federal multi-purpose reservoir plan in Pennsylvania's Lehigh Valley that Congress funded for a construction start, could be sold to the utilities for interim use pending local community demands. The power companies indicated this could avert the need for construction of a reservoir of their own, but probably only temporarily.

## **Water sales upheld**

The drought and water supply-related activities of the Commission during the year came in the wake of a federal appellate court ruling upholding the legality of all phases of DRBC's water supply pricing program that had been challenged by a group of county and local officials in Pennsylvania. The Commission had enacted in 1974 its basinwide system of charging for new or increased withdrawals to finance construction of new water supply facilities. Through 1976, income from sales to water authorities and industrial users totaled \$325,000. ■



# project and environmental reviews

The project review process, one of DRBC's principal tools for protecting the region's water resources from contamination, over-depletion, encroachment and other abuses, was streamlined in 1976. Effects of the changes will be felt as state procedures are adapted accordingly following a series of briefings by DRBC's staff.

Under the changes, fewer routine projects reach the Commissioners for disposition, allowing them more time to deal with reviews presenting substantive issues and with other important matters.

Over the years, the project review staff has been reviewing about 200 applications annually, sending about half to the Commission for approval, many after modification, to meet environmental requirements. Applications for approval of water-related projects come from industries and other commercial concerns, government agencies and other non-DRBC entities.

The changes build more flexibility into the procedures, disposing of inconsequential projects and

transferring much of the technical review work formerly handled by DRBC's staff to larger state agencies.

Only projects assessed by the Executive Director as having substantial effect on water resources are taken before the Commissioners for disposition at a formal meeting. Those evaluated as having no such effect are subject to no further review. Formerly, the Commissioners made this formal determination in each case.

In deciding if a project has a substantial effect, the director is guided by these criteria:

Impact on land area or plant or animal life; potential for inducing changes in population or economic activities; magnitude of water withdrawals or waste discharges in relation to stream quality or quantity; project size and duration of environmental impact; effect on public health, safety, welfare and historic and cultural properties; impact on surface or ground waters in a neighboring state; effect on inter-watershed or inter-basin water transfers; project cost and magnitude of resources required for implementation; and impact on flood flows and storm runoff.

Two new categories of projects were made subject to Commission review. They are regional wastewater treatment plans and state and local flood plain regulations.

## Environmental activities

In 1976, the environmental unit, DRBC's other principal review operation, analyzed dozens of environmental reports, assessments and impact statements prepared by other agencies.

It also concluded about half the work on DRBC's own impact statement on a big marine terminal and bulk storage and transfer center that a major chemical corporation plans to build in Burlington County, N.J. The principal concerns with the project are potential impacts on air and water quality and fish food chain.

Actions proposed by some other agencies were modified due to issues raised by the unit's staff, such as DRBC's views that contributed to a restudy by the Federal Power Commission of the proposed location of two liquified natural gas receiving and storage facilities on the New Jersey side of the Delaware estuary.

Concerns raised by the environmental unit over prospective harmful results from sewage treatment plants proposed along small streams alerted policy makers at other government levels to the problem with the result that application modifications were required in many instances.

The environmental group contributed also during the year to DRBC's final policy products on many issues, including those on establishing priorities of water use during droughts, influencing more water conservation and keeping encroachments off flood plains. ■





# a new drought?

25% rain shortfall threatens ground waters;  
surface supplies ample

Delaware River's largest icejam in decades occurred in winter of 1976-77, as shown in this scene near the Tacony-Palmyra Bridge.

Trenton Times



Incongruous as it seems, the four-state river valley was stricken by what resources authorities feared might become a serious drought while enjoying abundant water supplies.

The water bounty came in the form of ample up-basin reservoir storage and healthy valleywide streamflows and was due to a good year of precipitation in the northern mountain region. Consequently, freshwater flows into the tidal estuary at Trenton were a desirable 28 percent above normal.

But in the down-basin lowland areas the normal 12-month precipitation of about 40 inches dropped off by nearly 25 percent for a full three-month deficiency and the driest year in two decades. Even the mid-1960s drought years produced more rain and snow, and the area had experienced only two more arid years in 110 years of record keeping.

It was the lowlands' rich subsurface resource that was threatened with drought. Groundwater tables in many key locations fell to alarmingly low levels, especially in the southeastern Pennsylvania Counties of Bucks, Montgomery and Chester and in northern Delaware. And conditions had not improved well into 1977. North-eastern New Jersey was experiencing drought conditions, too, but with surface rather than underground supplies.

The drought effects came at an inopportune time when ground waters already appeared to be over-tapped — and becoming polluted — by more and more users turning to wells due to dropoffs in quality and quantity of surface waters. As more and larger subsurface withdrawals were made, an increasing number of disputes developed between well owners competing for water from the same aquifers.

The lowland precipitation decline did not interfere with the good Delaware main stem streamflows, since those are mainly controlled by upper basin conditions, but neither did the good flows enhance the low water tables.

Early in 1976, and again in the extremely cold 1976-77 winter, unusually heavy icejams developed, affecting streams much farther to the south in the latter. Both produced ice flooding scares, but the thaws came and went with no serious results. ■



# water quality

## *New effort focuses on disposal of 1,000-plus tons of sludge daily*

The inevitable and ironic result of progress in solving one problem seems to be the creation of another. Unhappily, improved treatment of wastewaters from Delaware Valley communities and industries is no exception.

The more that water is purified before being put back in the streams, the more unwanted material there is left behind. This material is called residuals and comprises semi-solid sludge from municipal sewage treatment plants and solid and liquid leftovers from treated industrial wastewaters.

The magnitude of the residual problem is staggering. In the City of Philadelphia alone, 350 tons of sludge is removed every day during treatment of wastewater, representing the combined residuals from the city's human population and industries discharging to the city's system. And the city's two million inhabitants are less than half of those in the lower Delaware Valley. In addition, the region's other industries generate a comparable volume of residuals.

Besides organic materials removed from the wastewaters to prevent subsequent loss of dissolved oxygen in the stream, the residuals comprise the full spectrum of wastes including seriously toxic heavy metals and health problem substances such as PCBs.

Residuals continue to amass as increasingly stringent environmental protection and pollution control laws rule out ocean dumping and incineration. This leaves the still-to-be-developed alternative techniques of land disposal or recycling, reutilization or reprocessing of some sort. These alternatives are often controversial and always costly and difficult. Some of the residual material can safely be applied

to land, but the volumes involved are so great that suitable sites are hard to find. Sludge from a well-run municipal treatment plant that processes a minimum of industrial waste is a good and safe soil conditioner, but public acceptance is another thing. Other residuals not desirable for land treatment would require expensive processing to a high technological degree to provide for safe ultimate disposal.



Mr. Carson

In September, DRBC engaged John T. Carson Jr., the former natural resources director for Bucks County, Pa., on a short-term arrangement to put together a program for residuals processing and disposal. The sludge-residuals work is being done by DRBC under a contract with the Environmental Protection Agency as part of the area-wide wastewater management studies being conducted by the Delaware Valley Regional Planning Commission (DVRPC) for Southeastern Pennsylvania and for Gloucester, Camden, Burlington and Mercer Counties in New Jersey.

DRBC's responsibility is to provide alternative methods of processing and disposing of the residuals and guide the region in selecting the most effective type agency to carry out the process. Mr. Carson's work entails evaluation of regulatory processes of inspection, control and oversight to insure against environmental degradation.

Early phases of the work showed that treatment and disposal of residuals, both from industry and communities, is perhaps the most serious and vexing water quality problem facing the region. For example, as waste treatment efficiency is improved due to

upgrading of Philadelphia's sewage treatment plants to secondary levels, the sludge they produce daily will nearly double. And as industries are required to pretreat wastes before discharging them to municipal sewer systems they will encounter technological problems in disposing of residuals that many of them now have no knowledge how to solve. DRBC thus looks to produce a practical and workable residual program that will enhance the region's environment and economy at the least possible cost burden on its people.

## **Water quality planning**

A section of the Federal Water Pollution Control Act requires that areawide wastewater management plans be prepared throughout the nation for a 20-year period to establish priorities for water quality programs. There are 15 such studies under way covering all 13,000 square miles of the Delaware River Basin, each by an agency designated by the respective state governor or by the state itself.

The areawide plans are to identify sources of and set a regulatory program for control over wasteloads from municipal sewerage operations, industries, storm runoff, agriculture, leachate from landfills, and seepage from lagoons and septic tanks — all for use by new or existing agencies that will administer the implementation phases of the plans. In addition, they are to determine what should be done with local sludge problems and recommend water quality standards. DRBC participates in advisory committee sessions on all 15 studies, each focusing on its own local problems, such as ground water in Burlington, Gloucester and Camden, ground water and toxics in the Cumberland-Salem area, bacteria in the Cape May section, all in New Jersey, and non-point pollution in Delaware. The first of these studies to be completed in the basin is New Castle County's in Delaware. Studies also are in progress in the upper basin, including New York.

DRBC is participating in the DVRPC work also by developing and operating a new empirical mathematical model



of the estuary. It will build on the model work that was the basis of the standards and waste allocations programs instituted by DRBC for the lower river a decade ago. The newer model will be based on current technology and, when completed, will be the basis for assessing existing programs or developing new ones. During the summer, an extensive sampling program of the Delaware's major municipal and industrial dischargers and tributaries was conducted. These results will be used to verify the model. As part of the modeling work, a stormwater sampling program was undertaken and will be completed in 1977. This is to provide a more sophisticated accounting of the wasteloads from storm runoff, which is widely viewed as a major pollution source.

The Commission published a detailed water quality status report for the river's main stem as it has done for each year beginning in 1974.

### The river's quality

DRBC has judged through its monitoring data and other indicators over the past several years that the quality of the river in the depressed estuary region has been improving. Oxygen levels, while far from satisfactory, are now slightly above former warm-weather readings and for more sustained duration. Also, good runs of the river's migrating American shad continue to occur annually, compared with the more spasmodic record of a few years earlier.

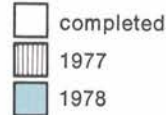
In a 1976 report tending to confirm DRBC's own observations, the Delaware Valley Regional Planning Commission stated that the river's quality has improved to levels of the turn of the century. DVRPC cited deterioration that began nearly 100 years ago and reached its worst from 1930 to 1950 and noted that quality subsequently improved sharply as dumping of raw sewage was largely eliminated. The report concurred with DRBC's conclusion that recent industrial progress has been commendable and that the scheduled improvements by Philadelphia in coming years will be the next major factor.

Also, the Water Quality Management Bureau of Pennsylvania's Department of Environmental Resources reported in November that the level of compliance with state water quality standards had reached 72 percent in

the Delaware River Basin, a substantial improvement over earlier years. This referred essentially, however, to tributary streams of the Delaware rather than the main stem. ■

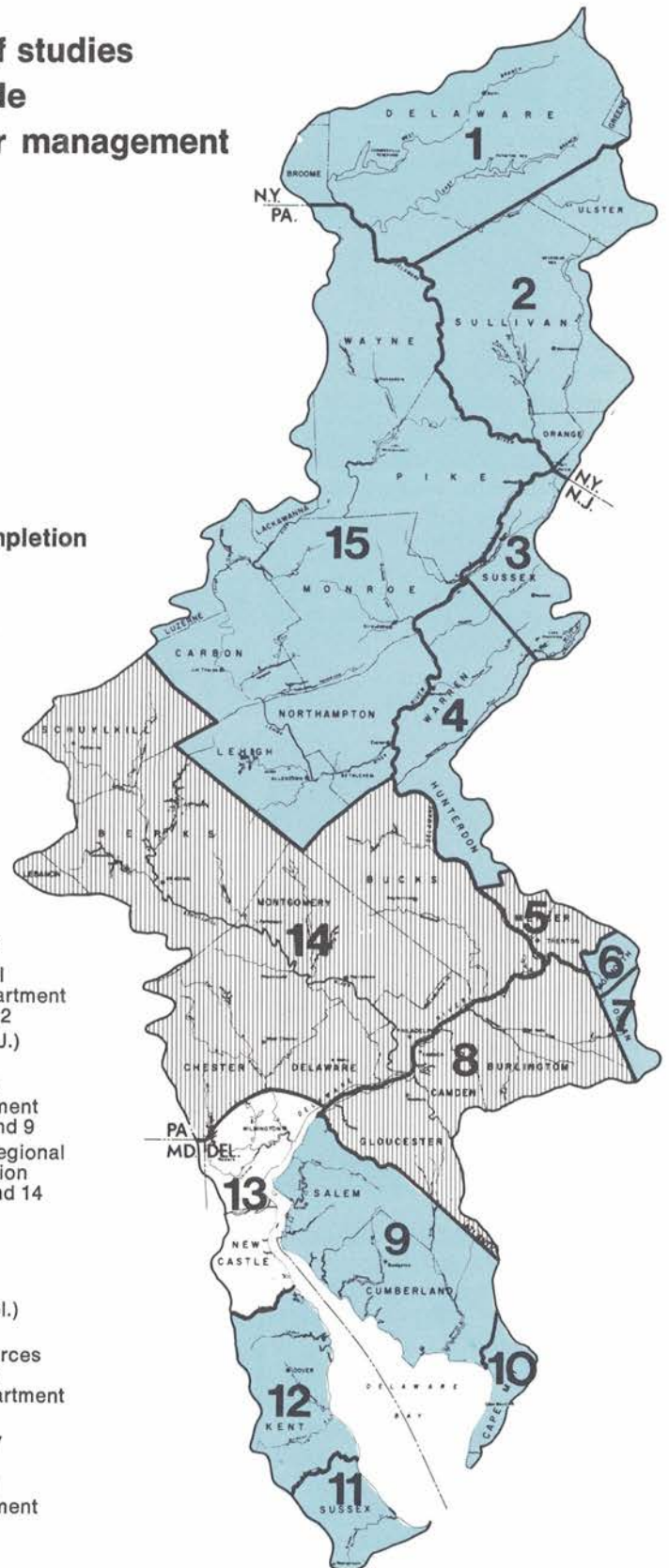
## progress of studies for areawide wastewater management

### scheduled completion



### study agencies

- N.Y. Environmental Conservation Department
  - Studies 1 and 2
- Sussex County (N.J.)
  - Study 3
- N.J. Environmental Protection Department
  - Studies 4, 6 and 9
- Delaware Valley Regional Planning Commission
  - Studies 5, 8 and 14
- Ocean County
  - Study 7
- Cape May County
  - Study 10
- Sussex County (Del.)
  - Study 11
- Del. Natural Resources and Environmental Conservation Department
  - Study 12
- New Castle County
  - Study 13
- Pa. Environmental Resources Department
  - Study 15





# floodland rules enacted

The Commission enacted in 1976 regulations laying down minimum standards that must be followed by those engaged in developing flood plains along non-tidal streams throughout the four-state river valley.

The program took effect January 1, 1977, culminating years of work that included a major consulting study, a review and report by an advisory committee of DRBC's five signatory parties, and public hearings that produced some significant changes.

Affected are lands inundated by floods of up to once-a-century severity. The basin's tidal lands that are excluded are those adjacent to Delaware Bay and to the river's main stem as far upstream as Trenton and also to the tidal portions of their tributaries.

The program established standards for the non-tidal flood plains and guidelines for state and local governments to regulate streamside development through compatible zoning to control residential, industrial, business and public works uses. The restrictions are minimums, so state and local governments are free to impose more stringent requirements.

Lands comprising flood plains are divided into categories according to flood severity, each with allowable and prohibited uses. Some examples follow:

*Floodway* — Defined as the area required to carry off a flood of once-a-century intensity (known as a regulatory flood). Expressly prohibited there are virtually all structures for habitation and excavations of toxic materials. Specifically allowed are farm operations, commercial loading and parking areas, air landing strips, and

various recreation facilities. All other uses are subject to regulation, such as transient entertainment operations, drive-in movies, excavation of non-toxic materials, boating installations, fish hatcheries, and public facilities including railroads, streets, bridges and pipelines. Pre-existing structures may be kept and repaired within limitations, but not expanded.

*Flood fringe* — A less hazardous flood plain area outside the floodway set aside for more liberal usage, such as residences built so neither the basement nor first floor would be below the "flood protection elevation" (the 100-year flood elevation plus one foot). Regulated uses on the fringe are elevated or flood-proofed non-residential and commercial structures, industrial buildings flood-proofed to the potential high-water mark, streets and railroads designed to avoid obstructing high waters, and water supply and waste treatment facilities built with anti-contamination allowances in event of flooding.

In the case of investigations DRBC already makes of project review applications from industries, public agencies and others, the standards took effect immediately. DRBC's principal handle on streamside developments is its wide-ranging project review operation.

Commission jurisdiction to review final local flood plain ordinances to assure compliance with the minimum requirements also was immediate. Agreement with the U.S. Department of Housing and Urban Development was anticipated under which that agency will conduct the local ordinance reviews in behalf of DRBC.

Beginning January 1, 1978, DRBC will review some additional projects on flood hazard lands along the main stem and major tributaries provided state or local reviews are not being made instead. These include developments of large-acreage single structures or of 25 or more residences. The additional reviews will also cover mining, manufacturing, processing, storage or disposal developments that would pose a pollution threat if flooded.

## Other non-structural efforts

In the face of current public lack of acceptance of many major flood control dams, DRBC is more vigorously

pursuing a program of non-structural measures to hold down flood losses as an adjunct to the new regulations. This would encompass all phases of non-dam measures including forecasting flows and issuing evacuation warnings.

Congress has authorized a feasibility study on the use of non-structural means to cut down on flood losses along the Delaware, particularly in the absence of a major flood protection reservoir on the Delaware main stem. No funding has been provided, but there is considerable support for the program among the basin's Congressional delegation.

The study would be conducted by the Corps in coordination with DRBC at a cost of about \$2 million. It would inventory the structures threatened because of their flood plain location and estimate the cost of flood proofing, moving or acquiring them.

## Local flood studies

The Commission concluded in 1976 studies of local flood plains of 119 municipalities, mostly in Pennsylvania but including some in Delaware and New York. The studies, on which DRBC supervised the work of consulting groups under contracts with the Federal Insurance Administration in the Housing and Urban Development Department, help the towns' property owners qualify to enter the regular federal flood insurance program with its additional layers of coverage.

Work started on four more studies for communities in Delaware and preparations were made to investigate eight additional Pennsylvania municipalities. These are being handled by DRBC's own staff.

## Hydrologic committee

The Commission established a Hydrology Coordinating Committee comprising streamflow experts from its five signatory parties to work out a uniform basinwide flood frequency methodology to be used in conducting the HUD flood insurance studies.

The committee, with a life of five years, also is engaged in the negotiations to produce basinwide agreement on a program governing releases from the upper basin reservoirs of New York City. ■



# reservoirs

## *Trexler construction resisted; Blue Marsh nearly completed; Tocks debate prolonged*

Congress appropriated initial construction funds late in 1976 for the Trexler Lake project, a multi-purpose facility long planned for development on a Lehigh River tributary named Jordan Creek in Lehigh County, a few miles west of Bethlehem and Allentown, Pa.

However, Trexler's future still was uncertain well into 1977 as stiff opposition arose to counter the continued strong support for the project's water supply, flood control and recreation benefits by the Commonwealth of Pennsylvania and local governmental and business groups.

Immediate prospects, at least, for building the construction-ready reservoir appear to hinge on how Congress would react to the 1977 debate in acting on continued construction funding as recommended by the White House. In any case, construction by the Corps of Engineers cannot commence at least until the mid-1977 conclusion of an analysis of a final pre-construction public hearing required of the Corps.

Shortly after Congress appropriated initial construction funds in 1976, the Basin Commission contracted with the Corps of Engineers to repay the federal government the \$29.5 million investment cost of including 40,000

acre-feet of water supply storage in the \$42 million project.

Funds for the long-term, low-interest repayments by DRBC would come from sale of water after 1990 to the Lehigh County Authority to meet growing local community needs and meanwhile from the interim sale of a portion of the storage to an electric utility group. The power companies' storage would be a standby supply for downstream generating stations in event of a drought severe enough to threaten salinity intrusion into normally fresh waters in the Delaware River's upper tidal estuary below Trenton.

Trexler would be the third project built of a network of eight multi-purpose federal reservoirs authorized in 1962 by the then-new Basin Commission and by Congress. Beltzville, a similar project located on another tributary farther up the Lehigh in Carbon County, was completed in 1971, and Blue Marsh, situated west of Reading, Pa., on a stream feeding the Schuylkill River, is nearing completion. Two others already have been built in Pennsylvania for flood control and are to be enlarged for water supply and recreation. They are the Francis Walter and Prompton Reservoirs.

### **Tocks Island**

The several-year delay in moving Trexler ahead resulted from its being next in line after the more controversial and larger Tocks Island Lake that was long-planned for development on the Delaware upstream of the Water Gap. The Tocks Island fight was resolved — at least partially — in 1975 when three

of the four Governors on the DRBC voted against recommending that Congress start appropriating funds to build it.

That DRBC action was followed by a 1976 move by Congressional opponents to Tocks to deauthorize the reservoir but keep the companion Delaware Water Gap National Recreation Area, which continues to develop. Two-thirds of the 72,000 acres originally sought for the lake now has been acquired as park land.

The Tocks deauthorization effort failed. Only one of the four Delaware Basin Governors had wanted construction to start, but three of them urged Congress to keep Tocks on the books. One of the three, however, was replaced in 1977 by a long-standing Tocks Island opponent, Governor Pierre S. duPont of Delaware, who said he would continue to flatly oppose the project as another kill-Tocks attempt developed in Washington. Meanwhile, Tocks remained an undisturbed component of DRBC's Comprehensive Plan.

New Jersey told Congress it wants the authorization frozen until progress is achieved on alternatives to Tocks. It noted considerable work had been accomplished or was under way in controlling flood plain developments, improving North Jersey water supply distribution, developing a New Jersey water master plan and evaluating North Jersey use of Hudson River for water supply.

A side dispute between the two sides of the Delaware River arose in the wake of DRBC's 1975 Tocks Island decision that fascinated resource watchers and portended litigation. The City of Philadelphia and other pro-Tocks forces in Pennsylvania contended that New Jersey, in opposing the reservoir, had legally forfeited its entitlement to continued daily diversions of Delaware water to out-of-basin Northeast Jersey.

The Pennsylvanians argued that the U.S. Supreme Court's permission for New Jersey to divert Delaware water is conditioned on the latter's support of a Delaware main stem reservoir. New Jersey responded that the condition applies not to New Jersey's support for Tocks Island but to another nearby main stem dam location. The second location is in the middle of what would be the Tocks Lake. ■

*Corps of Engineers photograph shows Blue Marsh reservoir, on a Schuylkill River tributary west of Reading, Pa., in advanced construction.*





# financial summary

## budgetary

1976 REVENUES		
	Budgeted	Received
Delaware	\$ 112,600	\$ 112,600
New Jersey	297,190	297,190
New York	252,800	252,800
Pennsylvania	407,800	407,800
United States	177,000	177,000
EPA Grant	194,700	194,700
Miscellaneous	3,000	8,410
Project Review Fees	—	16,449
Interest Income	—	16,687
Budgetary Revenue Transfer	195,210	51,788
Water Sales	—	130,770
Contractual Services	12,851	12,851
	<u>\$1,653,151</u>	<u>\$1,679,045</u>
Revenues received as compared to budgeted funds	—	<u>— 25,894</u>
TOTAL	\$1,653,151	\$1,653,151

1976 EXPENDITURES		
	Appropriations	Expended
<b>By Organization</b>		
Directorate	\$ 215,034	\$ 215,612
Administrative Division	180,568	228,140
Planning Division	1,257,544*	1,177,933*
TOTAL	<u>\$1,653,151</u>	<u>\$1,621,685</u>
<b>By Program</b>		
Water Supply	33,000	37,974
Water Demand	32,000	21,847
Recreation	48,000	54,566
Power	51,000	25,748
Project Review	185,851	162,103
Water Quality	649,300	716,143
Comprehensive Plan	182,000	231,398
Flood Loss	54,000	86,581
Basin Operation	153,000*	116,673*
Small Watersheds	34,000	8,733
Environmental Analysis	231,000	159,919
	<u>\$1,653,151</u>	<u>\$1,621,685</u>
Excess of appropriations over expenditures	—	<u>31,466</u>
TOTAL	\$1,653,151	\$1,653,151

The records of the Commission are independently audited each year as required by the Compact.

\*\$25,000 Capital included.

## non-budgetary

	Funds Available	Expenditures	Unexpended Dedicated Allotment
Tocks Island Region Environmental Study	\$ 3,146	\$ —	\$ 3,146
Tocks Island Fish Research	10,548	4,850	5,698
Thermal Study	5,891	—	5,891
Flood Plain Contract	1,439,310	1,335,439	103,871
Tocks Island Army Corps of Engineers Study	23,494	23,494	—
Flood Plain Contract (Delaware Counties)	52,356	6,849	45,507
Salinity Study (Estuary)	77,900	—	77,900
New Jersey Water Quality Management	184,140	125,747	58,393
Calibration and Intergovernmental Coordination Studies	103,075	64,301	38,774
Raccoon Creek	15,000	2,661	12,339
TOTAL	<u>\$1,914,860</u>	<u>\$1,563,341</u>	<u>\$351,519</u>









delaware river basin commission  
p.o. box 7360 • w. trenton, n.j. 08628

BULK RATE  
U.S. POSTAGE  
**PAID**  
TRENTON, N.J.  
Permit No. 1522