

Delaware River Basin Commission



Annual Report 1977



Reproduced on the cover, from which the above is taken, is an engraving made more than a century ago of the Delaware Water Gap area. It was filed with the Library of Congress in 1872 by D. Appleton and Co. of New York.

contents

Introduction	1
Year's Review	2
"The Near Future"	
Executive Director's Report	4
Map of Basin	5
NYC Reservoir Operations	6
"Level B" Study	8
Commission and Staff	9
Scenic River	10
Water Quality	
"208" Studies	12
Sludge Investigation	13
Industrial Residuals	14
Organization	15
Water Control Projects	16
River Conditions	18
Financial Summary	19

introduction

The Delaware River Basin Commission is the mechanism that was created by interstate-federal compact in 1961 to establish coordinated multi-purpose regional planning, management and protection of the four-state valley's abundant, if fickle, water resources.

This 15th annual report on the programs of the Commission and the status of the resources in the basin is presented respectfully to the residents of the region and their

elected representatives in Washington, Harrisburg, Albany, Dover and Trenton.

For its first 15 years, the agency was directed by James F. Wright, who retired in mid-1977. He was succeeded, following a national recruitment search, by Gerald M. Hansler, who for seven years had been regional administrator for the U.S. Environmental Protection Agency for New York, New Jersey, and the American Caribbean Islands.

The report includes a section by Mr. Hansler presenting his views on the problems in the basin

and priorities for dealing with them in the coming years.

Commission programs and services described in other sections include its varied involvement in water pollution control work; its cooperation with Congress and local, state and federal agencies toward having the upper Delaware River incorporated in the National Wild and Scenic River System; the revised operation of New York City's reservoirs in the upper Delaware to protect local stream health; and the midterm progress of the broad water resources study that will help reformulate the comprehensive plan. ■

Dry stream bed at Bowman's Hill, part of Pennsylvania's Washington Crossing State Park.

Cathy A. Staples



year in review

Hansler, ex-official of EPA, succeeds Wright as Director; Heavy focus on future needs and Scenic River

Executive leadership of the Delaware River Basin Commission, the nation's first interstate-federal instrumentality created to resolve regional problems, was passed to Gerald M. Hansler in October 1977.

Mr. Hansler's only predecessor as executive director, James F. Wright, had been appointed in 1962 to begin organizing what was seen as a vanguard experiment in both regional federalism and full-range water resources administration.



Mr. Hansler took the oath as executive director from Associate Justice Lawrence H. Cooke of New York at DRBC's October meeting in Monticello.

Under a five-party board, Mr. Wright built the new DRBC into a water management organization that attracted international professional recognition, and along with it the wrath of the 1970s environmental preservationist and anti-growth movement — essentially over a single big dam controversy.

Mr. Hansler brought to the Commission seven years' background as New York regional administrator of the U.S. Environmental Protection Agency. His directorship of EPA's

biggest and most visible regional office was part of 22 years of experience in the associated fields of public health, environmental control and natural resources management of air, and water-related land uses.

After earning degrees in civil and industrial engineering at the University of Washington in his native Northwest, Mr. Hansler was a U.S. Public Health Service officer who served 14 years in assignments of increasing responsibility throughout the nation prior to the New York EPA administratorship.

For the nearly four months after Mr. Wright retired on July 1, the agency's administration and policies were managed as acting executive director by Herbert A. Howlett, DRBC's veteran chief engineer who, like Mr. Wright, had been a former high-ranking California state water official.

In another important 1977 change in DRBC's senior staff, David J. Goldberg, a former New Jersey Commissioner of Transportation, was appointed general counsel to succeed the highly-respected William Miller, who died early in the year. Mr. Miller was the principal author of the Delaware River Basin Compact creating the Commission and had been with the agency from its inception. Extensive interstate experience came to the Commission with Mr. Goldberg as a long-time member, and also chairman, of the Delaware River Joint Toll Bridge Commission, Delaware River Port Authority, Tri-State Transportation Committee and Delaware Valley Regional Planning Commission.

One of the first persons engaged for the new Commission's staff in 1962 was Arthur E. Peeck, a long-time administrator for the New Jersey Department of Education. In mid-1978, Mr. Peeck retires after serving 16 years as DRBC's chief administrative officer.

Membership Changes

Representation on the Commission from both the United States and

Delaware changed in 1977. Cecil D. Andrus was appointed federal Member by President Carter to succeed his predecessor as Secretary of the Interior, Thomas S. Kleppe. The new Delaware Member was Governor Pierre S. duPont, who replaced former Governor Sherman W. Tribbitt in January.

By late-1977, Mr. Tribbitt, whose long support of DRBC dates to his years as a legislator in Dover, again was a part of the DRBC organization by Presidential appointment as federal Alternate to Secretary Andrus. The previous federal Alternate for four years was Thomas F. Schweigert of Michigan, also a strong backer of DRBC's concept and policies.

Governor duPont designated his former congressional aide, Austin P. Olney, to be his Alternate from the First State. He succeeds John C. Bryson as both Alternate and Delaware's Secretary of Natural Resources and Environmental Control.

Governor Brendan T. Byrne's Alternate, Rocco D. Ricci, served as New Jersey's Environmental Protection Commissioner into early 1978, when he was succeeded in both positions by Daniel J. O'Hern, former mayor of Red Bank.

DRBC chairman for 1977 was Governor Milton J. Shapp, and Secretary Andrus was vice chairman. Under the five-party annual rotation, Pennsylvania Governor Shapp's Alternate, Maurice K. Goddard, was chairman pro tem for the fourth time. He had been the first to serve in that post in 1961-62. For nearly a quarter-century, Dr. Goddard has been the Commonwealth's chief environmental resources officer under five consecutive governors.

Following the change of administration in New York City in 1978, Mayor Edward I. Koch named Environmental Protection Administrator Francis X. McArdle to be Advisor to the New York State Member, Governor Hugh L. Carey.



Mr. Wright



Mr. Goldberg



Mr. Peeck



Mr. O'Hern

Year's Activities Summarized

Immediately on taking over management of the 50-employee Commission, Mr. Hansler was confronted by a pair of critical issues, one a major resources policy matter and the other a serious internal financial threat.

Mr. Hansler arrived at DRBC uncommitted to either of the two antagonistic positions on the basin's biggest water controversy — whether the Tocks Island reservoir should be built across the Delaware River main stem five miles upstream of the Delaware Water Gap to bolster the region's water supply, flood protection, public outdoor recreation and energy.

The new director immediately was drawn into the latest Tocks Island skirmish. This was generated when congressional critics of the project, the purported benefits of which have left Tocks Island opponents unconvinced, proposed making the Tocks middle river area part of the National Wild and Scenic Rivers System, thereby presumably foreclosing forever the option to build the dam.

The Commissioners directed their new executive to tell Congress that DRBC opposed the middle scenic river plan pending the outcome of five current federal and Commission investigations that are to show conclusively by the early 1980s if the project should be abandoned or built. Well into 1978, the issue remained unresolved as the storm over the Tocks and scenic river issues once again whirled around the Commission,

the Congress and the region's state capitals.

The financial crisis centered in one capital, Albany. For the third straight year, DRBC emerged from the budget preparation process there with a prospective deficiency in New York State's allotted share of the agency's funding. Only this time it was worse, since Commission reserves had been depleted and a large staff cutback loomed for fiscal 1979. Mr. Hansler, aided by key regionally concerned officials in the state's executive and legislative branches, succeeded early in 1978 in gaining full restoration of the original amount requested.

Reaction to crises, however, was only a small part of the daily routine of the Commission's scientists, engineers, planners, economists, technicians and supporting staff members. Proceeding concurrently this year was a myriad of systematic planning, operating, management and review work on the four-state basin's general water resources problems. The principal important activities that were pursued included:

- Working toward a modernized valley-wide comprehensive plan through the federally assisted Level B study.
- Updating the information needed to keep the estuary water quality improvement program abreast of technology and national goals.
- Formulating a policy to protect the region's valuable wetlands.
- Working toward national scenic river designation for the uppermost Delaware main stem.

- Improving the health of streams below New York City's three Delaware watershed reservoirs.
- Promoting development of conjunctive use of surface and subsurface water supplies.
- Developing alternatives for administering sludge disposal and industrial waste residuals.
- Promoting and aiding the use of regional water supply distribution systems.
- Collecting water sales income for use to assure adequate water storage in the future.
- Coordinating federally mandated areawide waste treatment studies covering the entire basin.
- Investigating dozens of public and private projects to prevent harm to water resources.
- Participating in fish protection work with federal and state biologists.
- Conducting dozens of local flood history investigations to help communities qualify for federal insurance.
- Making environmental investigations and preparing impact statements.
- Contributing to the Carter Administration's preparation of a new National Water Policy.

The sections that follow give the highlights of the principal events and activities of the report period. ■



executive director's report

"the near future"

By Gerald M. Hansler

The Commission is a partnership among five very individual parties, sharing their sovereign powers in water and related land use management of the Delaware River Basin through one oracle. It will continue to be severely tested in the next few years.

Two of the more general but basic purposes of the Commission — to promote interstate comity and to remove causes of present and future controversy — must be considered commandments by the Members and their Alternates if the Commission is to achieve its more specific goals. Politically "tough" issues where the five parties have differing views must be decided in timely fashion through compromise after full consideration of the basic technical facts, not just assessment of public opinion. Though important, the spectrum of public opinion often can be distorted by one or more types of interest groups because of their higher degree of effectiveness — more articulate, more time to participate, more affluent, and more access to higher levels of government.

The Commission should be — and is — expanding its interest in several functional areas of water and related land use management — not just water supply needs.

Its efforts in recreational use and protection of valuable assets for that purpose are a prime example. Designation of the Upper Delaware as part of the National Wild and Scenic Rivers System epitomizes that effort. No less than three Commission resolutions have urged such designation. And work now under way hopefully will lead to

establishment of riverine recreational areas in the more urban settings of the basin from Trenton south.

Planned Commission adoption of a basic wetlands policy should assure a failsafe system to prevent despoilation of sensitive and highly useful areas in the fish and wildlife food chain. Such a policy properly will avoid the institution of yet another "permitting" agency in the management of wetlands but still would provide an overview and empower the Commission to intercede where an action by a signatory party would significantly and adversely impact on the vitality of ever-dwindling wetlands resources.

Major policy assumptions upon which the Comprehensive Plan has been based, such as population projections, water supply needs and minimum flows needed at Trenton to protect downstream water users, should logically be revisited as new and better data become available. That process is now under way via the Commission's review of the Comprehensive Plan ("Level B" Study), state water supply plans, and the Corps of Engineers' salinity control study. Results of those efforts are expected within two years.

Priority attention shall be given to groundwater supply problems in the near term. Over-utilization of aquifers in Pennsylvania and New Jersey highlight the necessity of improved management of our total water resources — both surface and ground. Conjunctive use of our raw supplies — such as by flow skimming when stream levels are high and utilization of regenerated aquifers during low streamflow periods — has real potential.

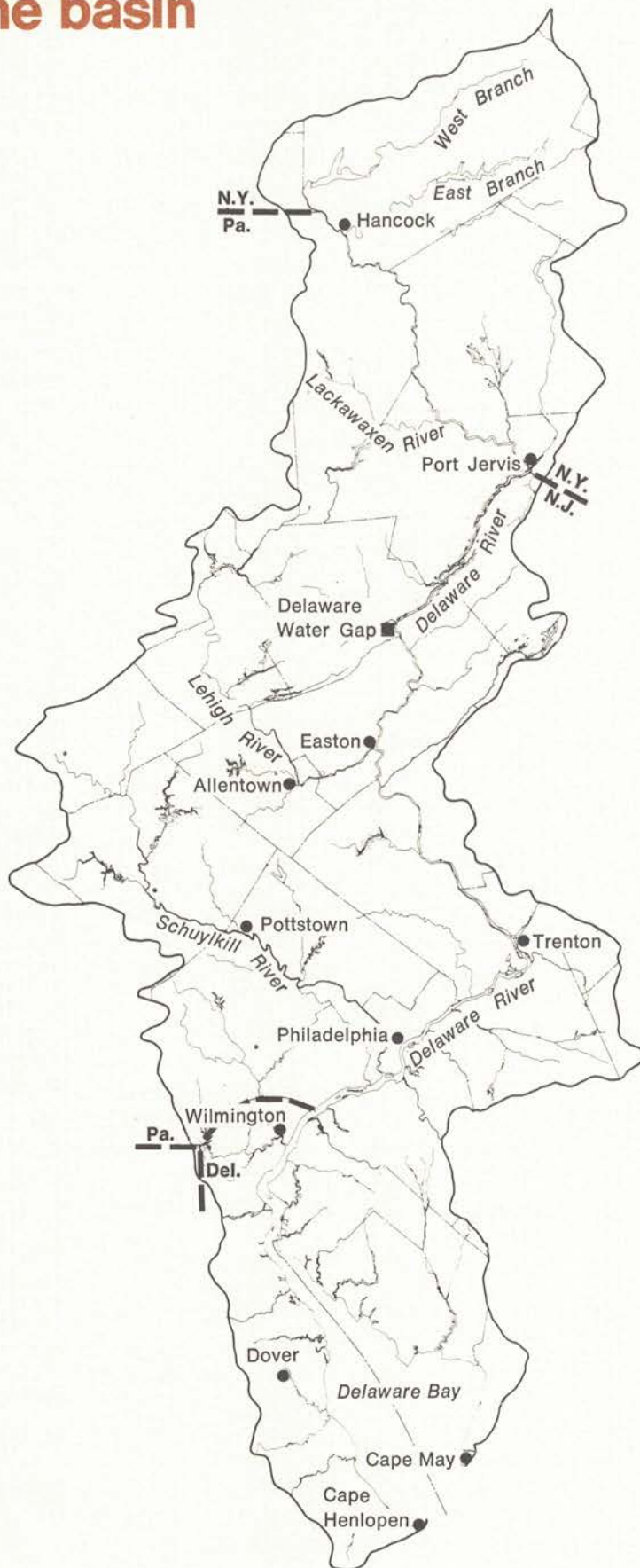
Residues from municipal and industrial treatment processes continue to be a significant problem in the basin — especially in the large urban areas. Serious consideration by the Commission should be given to assisting major municipalities in their solution of sludge disposal problems. Composting of sludge renders a final product similar to

good top soil with odor and pathogen characteristics absent. The practicality of restoring abandoned strip mines to useful purposes, such as new forests, by utilizing composted sludge should be vigorously pursued.

Ultimate disposal of toxic and other "exotic" waste residues is a growing problem. As regulatory agencies demand higher degrees of contaminant removal from effluents and stack emissions, the volumes of residual contaminants naturally mount. When federal regulations dealing with pretreatment of liquid industrial wastes become effective, the present toxic residuals problem will really mushroom. The Commission received from the U.S. Environmental Protection Agency in 1977 a grant to define the exotic residuals problem within the basin. A second phase in dealing with the problem, if funds are available, will develop alternative methods for the environmentally sound ultimate disposal of these hazardous and toxic residuals. Criteria for siting of ultimate treatment and/or disposal facilities will be a key element in such second-phase planning.

Finally, as Congress, the State Legislatures and environmental control agencies, and the Commission itself, impose more laws, rules and regulations dealing with water resources management, the necessity for DRBC as a mediating agency becomes more apparent. The Commission will not fulfill its purpose unless the voting members insist that each signatory party exercises its powers consistent with the Commission's Comprehensive Plan, rules and regulations. A real challenge exists to ferret out inconsistencies between signatory party-proposed rules, regulations and programs and the Commission's baseline requirements — *before* conflicting actions are taken. This applies also to DRBC-proposed Comprehensive Plan revisions, rules and regulations. New Commission proposals should not be made until existing and similar signatory party programs are thoroughly analyzed and reconciled. ■

the basin



nyc reservoir operations

Upper Delaware streams improved; Accord mediated by DRBC between states and city

The Upper Delaware and three of its tributaries just downstream of New York City's reservoirs in the Catskills are being improved to a healthy state not experienced in previous years, thanks to new trial reservoir operating procedures that won interstate acceptance around DRBC's conference table.

Since World War II, three giant reservoirs that send the city nearly half of its daily water provisions of 1.6 billion gallons have been built on Delaware tributaries in the Catskill Mountains. They are Pepacton on the Delaware's East Branch and Cannonsville on the West Branch, both in Delaware County, and Neversink on the Neversink River in Sullivan County.

Nearly a half-century ago, with New York State's concurrence, the city decided to go to the upper Delaware for top quality mountain water rather than increase its inadequate supplies from more local sources. The downstream states of New Jersey, Pennsylvania and Delaware went to the U.S. Supreme Court to challenge the plan, protesting that this water belonged to them, not to a city far outside the Delaware Basin's boundaries. But the tribunal decreed that the city was entitled to a share of the Delaware's water crop provided it protected downstream states' interests by making releases through the dams to assure minimum flows in the lower Delaware.

The minimum flow requirement, measured at Montague, N.J., a few miles below the Tri-State Rock where the river leaves New York State, effectively has guarded downstream interests to the extent that summer dry season flows for the lower states routinely exceed what they would be with no New York City reservoirs.

Further, it is not uncommon for more than half the flows in the Delaware to be from the New York City reservoirs.

However, there are more than 280 stream miles between the city's three reservoirs and Montague. These are the portions of the three tributaries below the dams and the uppermost 75 miles of the main stem that is the New York-Pennsylvania border from Hancock, N.Y., to the Tri-State Rock at Port Jervis, N.Y. Prior to 1977 there was little in the way of systematic sustained streamflows to keep them healthy.

The result was a barrage of complaints, increasing in recent years, from sportsmen, fishermen, recreationists, environmentalists and local officials about deteriorated quality for recreation, fisheries, aquatic life and general esthetics.

The local protests fell on sympathetic ears in Albany, both in the Department of Environmental Conservation and the legislature, which in 1976 imposed state controls over operations of many reservoirs in the state, including the city's three Delaware facilities. However, the city balked, contending that the state lacked power to impose controls without violating the Supreme Court mandate, which cannot be altered, even temporarily, without the consent of all four affected states and the city as parties to the decree. Because of the impasse, the Commission was drawn into the negotiations by its signatories. In six months of intensive mediations, DRBC helped produce a plan acceptable to all parties. It was adopted in May 1977.

The parties accepted a new formula redistributing the "bank" of water stored in the three reservoirs in excess of the volumes needed both to feed the city and meet the Montague flow minimum. This meant that flows in the local streams could be increased substantially year-round to improve recreation, including trout fishing and canoeing, enhance the natural environment, and benefit the local economy.

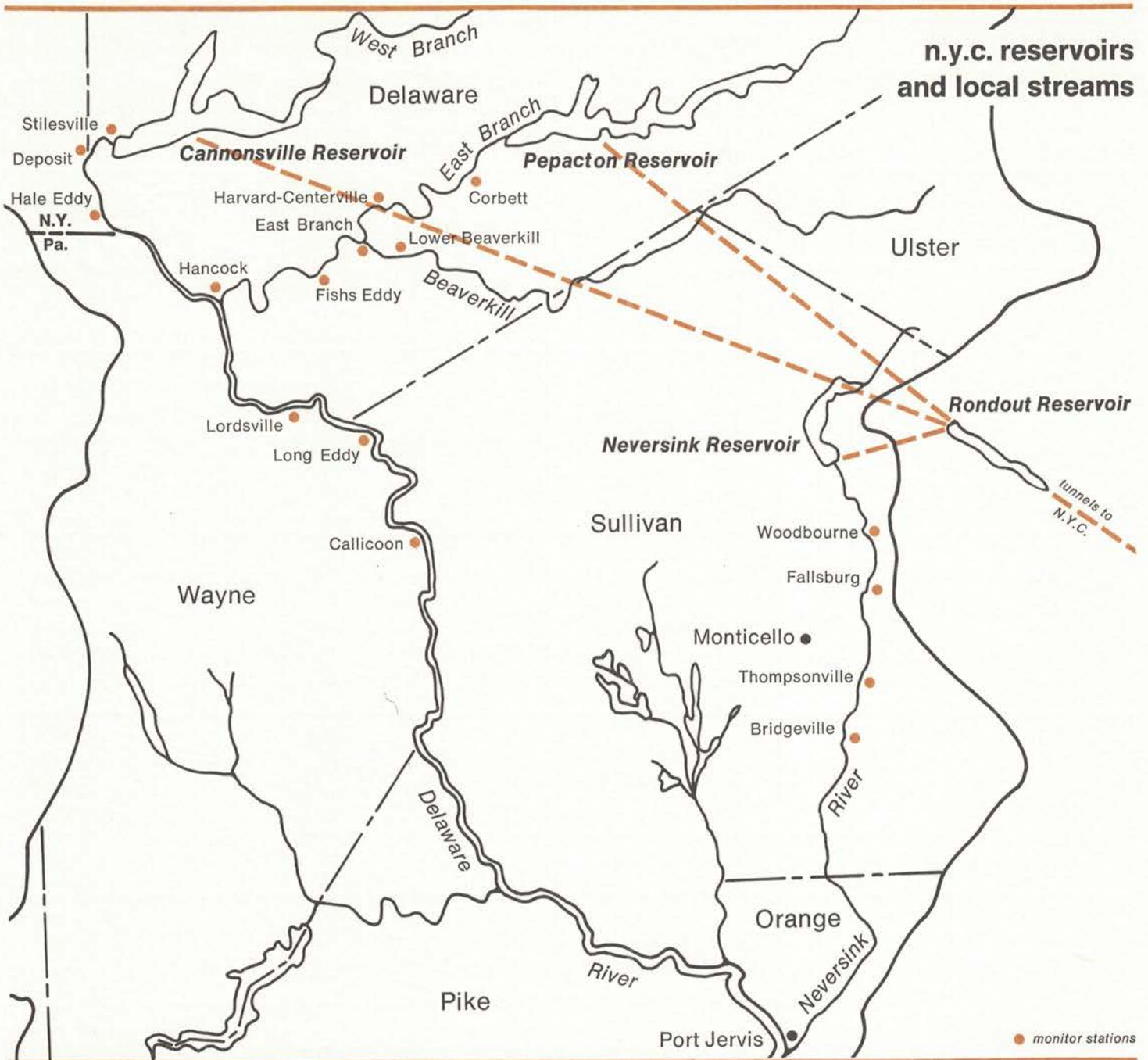
The precise changes in the reservoir operations are the result of sophisticated computer studies of the reservoirs' water capabilities by hydraulic engineers and water resources systems analysts working closely with aquatic biologists, canoeists, and others.

The studies covered 50 years of runoff records, and led to changes in reservoir operations that promise to accommodate many interests. For the local areas, the quality of the nearby streams will be enhanced through increased and more equal distribution of releases, more gradual stream fluctuations, and special extra releases to protect aquatic life from thermal stress. And still New York City and the three downstream states will be assured their legal share of the waters.

During the two-year trial period that will end in mid-1979, information is being collected from a monitoring system on streamflows, temperatures, aquatic life and other factors for analysis as the basis for possible extension and refinement of the program, perhaps permanently.

Monitoring showed that local benefits since the two-year experimental — and renewable — program began in mid-1977 have exceeded expectations. As hoped for, lower water temperatures were maintained for cold water fish species for extended stream reaches below the three dams, improving stream habitats and fishing successes and probably averting fish kills from undesirably warm water.

The releases through the three dams to local streams have been increased an average of many times, both summer and winter. In fact, releases from Cannonsville reservoir for eight weeks in the summer have been boosted 1400 percent. And the decrease in thermal stress conditions — where stream temperatures of 75-plus degrees persist through the day or fail to drop below 72 degrees — has been dramatic in both frequency and duration at most monitored locations. ■



relief of summer thermal stress in streams from releases*

Delaware East Branch	1976	1977	Upper Delaware Main Stem	1976	1977
Corbett	0%	0%	Lordsville	75%	8%
Harvard-Centerville	67	3	Long Eddy	90	15
East Branch	83	15	Callicoon	95	69
Lower Beaverkill	75	81	Neversink River		
Fishs Eddy	42	45	Woodbourne	6	0
Delaware West Branch			Fallsburg	0	0
Stilesville	9	0	Thompsonville	100	30
Deposit	45	0	Bridgeville	100	80
Hale Eddy	82	0	* percentage of frequency of thermal stress days at several locations.		
Hancock	100	0			

increased downstream releases from NYC's reservoirs

(in cubic feet per second)

Reservoir	Pre-1977		New	
	Apr-Oct	Nov-Mar	Apr-Oct	Nov-Mar
Cannonsville	23	8	45*	33
Pepacton	19	6	70	50
Neversink	16	5	45	25

* increased to 325 cfs two months from June 15 to August 15.

basinwide study advances

*Major water issues analyzed
as "Level B" effort toward new
plan approaches midpoint*

As it approached the 1978 midway point, the special study leading to modernizing the Commission's Comprehensive Plan was organized into sections that began analyzing each of the region's major water resources issues.

The investigation is the Delaware River Basin Comprehensive Study, and is called a "Level B" study after a category of investigations authorized by the federal Water Resources Planning Act. The study was launched late in 1976 and is scheduled for completion with publication of its final report in 1979.

Its special eight-member staff, with the assistance of DRBC's permanent personnel, is taking a new look at the valley's water and related land problems and is to produce alternative recommendations covering the next quarter-century to help the Commission update its long-range control plan.

In reassessing the Commission's existing planning assumptions and programs, the study staff is zeroing in particularly on five major issues — conserving water and energy; jointly developing surface and ground water supplies on a regional scale; meeting federal water quality goals more effectively and economically; reducing flood damages consistent with good land use; and strengthening environmental analysis of proposals through added social and economic emphasis.

Cost of the study is \$1.5 million, financed by a \$1.1 million grant from the U.S. Water Resources Council and \$400,000 in matching work contributions by many participating state and local agencies and the Commission. Separate phases of the study are being worked on by the four basin states and by eight federal agencies — the Army Corps of Engineers, the Energy Regulatory Commission, the Environmental Protection Agency, and the Departments of Agriculture,

Transportation, Interior, Commerce, and Housing and Urban Development.

A steering committee representing the governmental participants advises on broad policy, and a large study advisory committee with open membership assures full public participation in all aspects of the special project. All study meetings are open to the public.

Scheduled for release in mid-1978 is an interim report on "first cut" management options to be used in developing alternative plans for each of the five major phases of the study, such as water supply and water pollution control. The recommendations will give heavy consideration to both environmental protection and national economic development, in accordance with federal guidelines.

The interim report's management options will be opened to extensive examination at public workshops to be held in several sections of the basin similar to those conducted in the fall of 1977 on the study's initial planning analysis, work assignments and the plan of study.

The final report and executive summary to be completed in 1979 also will be exposed to intensive public scrutiny.

As 1977 began, the study, then only a few months old, was working on identifying the major water problems to be analyzed, assigning priorities to subtopics for investigation under each problem area and dividing the whole job into "work elements." This phase produced the plan of study, the program's first major product, which was issued publicly then approved by the Commissioners in May.

The 1977 workshops, the deliberations of steering and advisory committees and the other avenues of public participation produced numerous corrections and refinements in the plan of study that were accepted by the Commissioners. ■

the commission 1977



Governor Shapp



Dr. Goddard

pennsylvania

Governor
Milton J. Shapp
Chairman

Maurice K. Goddard
Alternate

Carmen F. Guarino
Advisor

united states

Secretary of the Interior
Cecil D. Andrus
Vice Chairman

Sherman W. Tribbitt
Alternate

Colonel
Harry V. Dutchyshyn, ACE
Advisor

new york

Governor
Hugh L. Carey
Member

Theodore L. Hullar
Alternate

Robert A. Low
Advisor

new jersey

Governor
Brendan T. Byrne
Member

Rocco D. Ricci
Alternate

delaware

Governor
Pierre S. duPont
Member

Austin P. Olney
Alternate



Secretary Andrus



Mr. Tribbitt



Governor Carey



Dr. Hullar



Governor Byrne



Mr. Ricci



Governor duPont



Mr. Olney

staff

Gerald M. Hansler
Executive Director

David J. Goldberg
General Counsel

W. Brinton Whitall
Secretary

Dawes Thompson
Public Information Officer

J. W. Thursby
Head, Environmental Unit

Arthur E. Peeck
Chief Administrative Officer

engineering division

Herbert A. Howlett
Chief Engineer

C. H. J. Hull
Staff Engineer

branch heads

Seymour D. Selzer
Program Planning

Robert L. Goodell
Operations



scenic river

Plan for Upper Delaware moves ahead; Middle river plan pushed by Tocks foes

The decade-long effort to assure natural preservation of the upper Delaware as a national scenic river got its biggest boost yet this year. And for the first time, scenic river designation was proposed for the adjoining middle river area.

When Congress established the wild and scenic rivers system in 1968, it included the uppermost 75 miles of the Delaware main stem from Matamoras, Pa., to Hancock, N.Y., among the streams to be studied. The U.S. Interior Department immediately initiated the study in which DRBC and other agencies participated and in late-1976 completed the report recommending the Upper Delaware's designation.

In April 1977, the White House's Office of Management and Budget cleared the plan and the following month President Carter, in his first environmental message, asked for congressional concurrence. In September, New York and Pennsylvania agreed upon policies that they wished to be followed in implementing the project and these policies were endorsed by the Commission. As the year ended, legislation was being drafted by DRBC and others to blend the bi-state policies and the plan recommended by the Interior Department.

About the same time there came a congressional maneuver fashioned by foes of the long-authorized but now-stymied Tocks Island reservoir, which would back up a 35-mile lake from the Delaware Water Gap area to Matamoras, immediately downstream of the proposed upper scenic river.

A House scenic river bill was introduced incorporating the Tocks Island section, but also covering the upper river. Its intended principal effect would be to prevent any development in the middle river section, in effect, deauthorizing the Tocks Island project.

A packed-house congressional hearing in November on the middle river plan renewed the old confrontations between Tocks Island antagonists, injecting the prolonged reservoir controversy into the scenic river issue for the first time.

The Basin Commission currently is awaiting the results of five important state, federal and DRBC studies which will provide a clear picture by the early 1980s of future water resource needs and what additional reservoir storage, if any, should be built. Pending these findings, DRBC opposed the middle scenic river proposal, urging instead that it and Tocks deauthorization be decided on their own merits two years hence. The Commission also urged that the middle and upper scenic river schemes be kept separate so that the latter could proceed immediately, especially considering that initial local and regional planning, land use and other work already had been completed on it, in contrast to the newer scenic river proposal.

In the interim, the Basin Commission urged that top priority be assigned by Congress to immediate federal acquisition of the remaining land along the 35-mile reach that will be needed irrespective of which project ultimately proceeds.

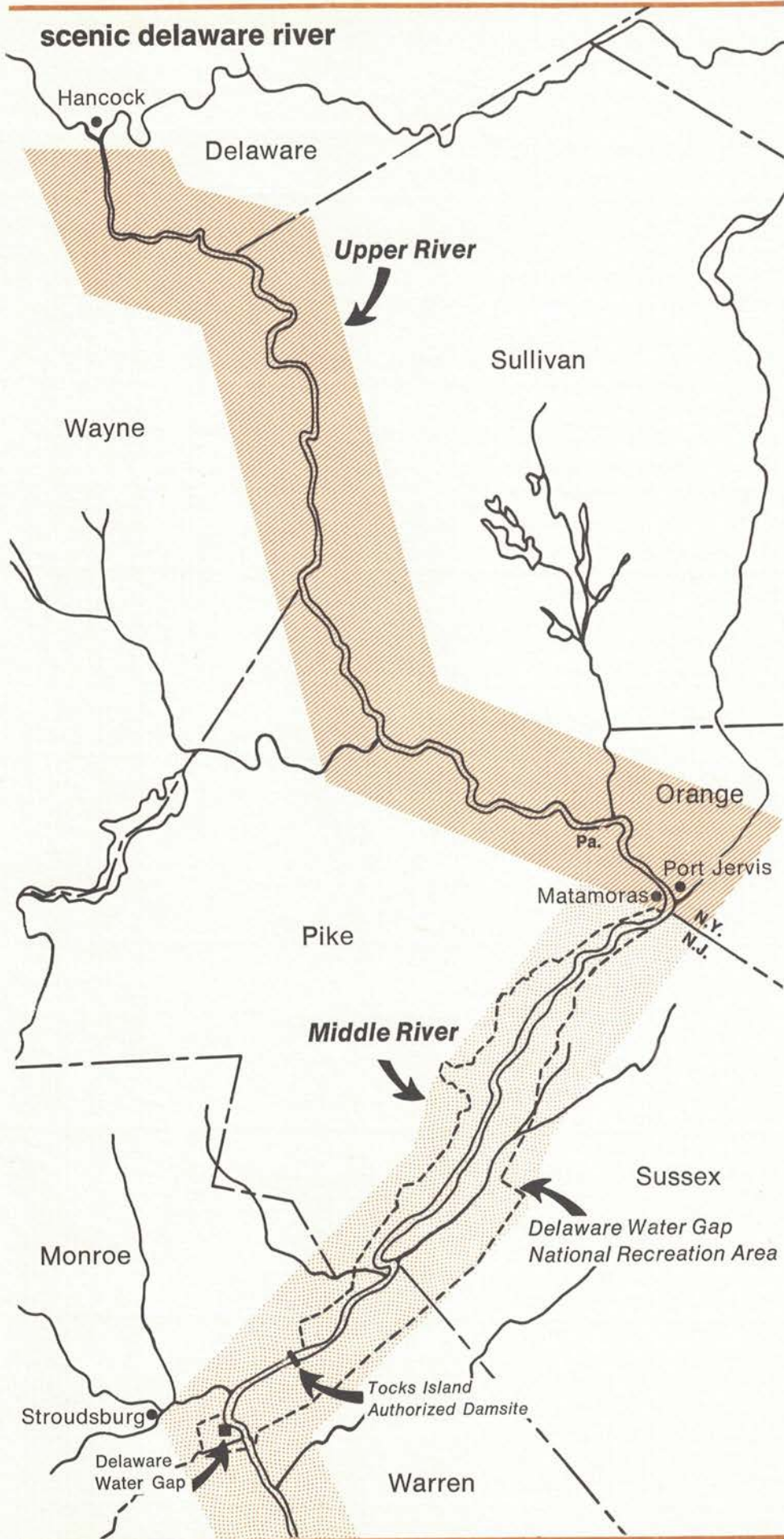
The land problem dates to when the Tocks Island controversy reached the boiling point in Congress several years ago. The Army Corps of Engineers was ordered to stop buying up the 12,000 acres of land that would be inundated, except for landowner hardship cases. These unbought lands totaling 8,000 acres now are vulnerable to open market purchase by developers who could complicate the area's future and further escalate public costs.

Land acquisition continued, however, in the larger 60,000-acre National Recreation Area that surrounds the reservoir boundary so that it is now nearly all in public ownership, protecting it from private development.

DRBC feels completion of the middle river land bank now would assure most economical retention of the area for whatever future use is decided upon — a national park, scenic river or reservoir. Although a majority of DRBC members voted in 1975 to recommend against funding the start of Tocks Island's construction, they favor awaiting the outcome of pending studies before making a final Tocks Island decision.

Confidence has been expressed by the Commission that enough facts will be in hand within two to three years from the five current studies to make a definitive decision on Tocks Island. Two of these are the investigations by New Jersey and Pennsylvania on future water supply needs. A DRBC-Corps of Engineers effort is analyzing salinity intrusion problems of the tidal estuary and the need for fresh water flows from upstream to offset them. The feasibility of non-reservoir means of cutting flood damages on New Jersey and Pennsylvania lands along the main stem, such as flood-proofing or removing existing buildings, is being examined by the Corps of Engineers. Finally, the Commission's \$1.5 million Delaware Basin Comprehensive Study is reexamining all multi-purpose water resources needs for the four-state region. ■

scenic delaware river



water quality

"208" programs

13 areawide studies progress in basin; DRBC making new model of tidal estuary

Federal law requires that "areawide waste treatment management plans" be prepared for the entire nation to identify specific local water quality problems and develop practical solutions.

Thirteen such studies covering virtually all 13,000 square miles of the Delaware River Basin are in varying stages of progress. Called "208" studies after the section of the 1972 Federal Water Pollution Control Act that mandates them, the 13 investigations are being conducted by numerous state, county and regional planning agencies.

DRBC is participating in the individual studies as the central water management agency for the four-state region to assure consistency with its long-range Comprehensive Plan. Commission experts are engaged in the 208 agency studies' policy, technical and other advisory committee activities.

DRBC's contribution to the 13 studies will include technical assistance and guidance on interstate water policy; allocation of the wasteload capacity

on the estuary's interstate waters; advice on the basinwide adequacy of each plan to the respective state governors prior to certification; analysis of each plan to assure compliance with DRBC's Comprehensive Plan and compatibility with adjoining area programs; and monitoring of streams and effluents to evaluate the actual results of the wastewater programs projected by the studies.

In addition to carrying out its regional water management responsibilities in the areawide studies, DRBC did extensive work as a sub-contractor on two special phases of 208 programs of the Delaware Valley Regional Planning Commission.

One of DRBC's pair of special projects was to recommend effective institutional arrangements to deal with sludge administration in the Philadelphia metropolitan region.

in its other special 208 assignment DRBC is developing a new mathematical model of the 85-mile Delaware River estuary from Trenton to below Wilmington. A previous model developed by federal water pollution control experts in the early 1960s was a major aid in setting water quality standards and wasteload allocations in the Delaware estuary cleanup program launched by the Commission in 1967.

The new model is employing the latest state-of-the-art techniques and information that will permit more detailed evaluation of the impacts of waste sources on water quality, including those from non-point origins. The Commission is coordinating the model's development and use with the U.S. Environmental Protection Agency for DVRPC.

From the new model project, DRBC will come up with gross allotments for categories of waste sources and preliminary maximum permissible daily loads for the nearly 100 dischargers that were assigned allocations along the estuary by DRBC more than a decade ago.

Following are the areawide 208 studies in the Delaware Basin and progress on them:

- *Delaware County, N.Y.—The New York Department of Environmental Conservation's draft final plan is to be completed in 1979.*
- *Sullivan, Ulster and Orange Counties, N.Y.— Here again, the state will complete the final draft in 1979, consolidating it and the Delaware County work into a single plan for New York's part of the upper basin.*
- *Northeastern Pennsylvania (Wayne, Pike, Monroe, Northampton, Lehigh and Carbon Counties)— The Pennsylvania Department of Environmental Resources hopes to complete a draft final plan in 1978.*
- *Southeastern Pennsylvania (Philadelphia, Bucks, Montgomery, Delaware, Chester, Berks and Schuylkill Counties) — Final plan approval by Delaware Valley Regional Planning Commission is slated for 1978.*
- *Sussex County, N.J.— Freeholders will finish draft plan in 1978.*
- *Warren and Hunterdon Counties, N.J.— Final draft plan due in 1978 from New Jersey Department of Environmental Protection.*
- *Mercer County, N.J.— Final plan approval slated for 1978 by Delaware Valley Regional Planning Commission.*
- *Salem and Cumberland Counties, N.J.— State will complete draft plan in 1978.*
- *Cape May County, N.J.— Freeholders' draft final plan due in 1978.*
- *New Castle County, Del.— Plan was completed by the county in 1977 and certified by the state early in 1978. First annual update slated for mid-1978.*
- *Kent County, Del.— Final plan due in 1979 from Delaware's Department of Natural Resources and Environmental Control.*
- *Sussex County, Del.— County's draft final plan due in 1978. ■*

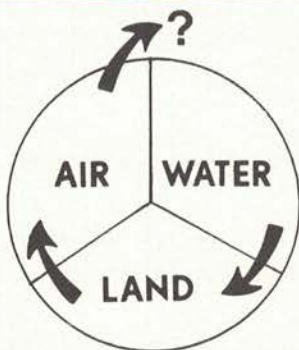
water quality

sludge study completed

Management suggestions for disposal in Philadelphia region submitted by Commission

At the end of 1977, the Basin Commission completed a special project to help the Philadelphia metropolitan region decide what sort of administration and management to establish to treat and dispose of the massive volumes of sludge that accumulate daily.

The Basin Commission project was part of a larger parent program by the Delaware Valley Regional Planning Commission to produce areawide waste treatment management plans for 11 New Jersey and Pennsylvania counties comprising the Philadelphia metropolitan region.



Sludge program logo illustrates the problem.

DVRPC itself conducted the technical investigation on the treatment and disposal of sludge, which is the solid material, or residual, left over from wastewater treatment operations, particularly public facilities dealing with human household wastes. DVRPC subcontracted with the Basin Commission to study and

report on the administrative aspects of the problem—those of financing, environmental acceptance, hauling, facilities needed, finding disposal locations, regionalism, and management.

Specific DRBC comments and recommendations were made for Philadelphia, with its special sludge difficulties, and two demonstration areas in the Lower Schuylkill valley and the East Branch Perkiomen watershed, representing urban and rural problems. This DRBC work built upon a DVRPC technical report.

Investigated for sludge administration problems generally were Mercer, Burlington, Camden, Gloucester and Salem Counties in New Jersey and Berks, Bucks, Chester, Delaware, Montgomery and Philadelphia Counties in Pennsylvania.

The DRBC study team, headed by John T. Carson, who retired early in 1978, took each of the subregions and analyzed them for best applicable institutional arrangements, such as whether existing or new regional agencies and facilities should tackle sludge treatment and disposal. In so doing, it also assessed the ongoing planning for water disposal in each territory, as well as improvements needed in legislation and regulations and the operation and procedures of federal and state agencies charged with enforcement. In addition, it weighed the various available means of treatment and disposal and reuse,

such as incineration, composting, landfilling and land application.

The DRBC report called for incorporating residuals planning and management into overall wastewater and water supply plans and operations by existing agencies, or groups of agencies, and that this be done on a regional rather than local scale. It said big sewerage systems should treat and dispose of sludge from their own plants and that from smaller nearby plants, but that more remotely located small operations arrange directly for local land application. These suggestions could go into effect without changing present organizational structure, the report declared.

The report also made a set of recommendations that would require substantial reordering of responsibilities. One would have a single regional or interstate authority or non-profit corporation assume overall long-term responsibility for solving sewage sludge treatment and disposal problems. The other calls for a counterpart regional program for industrial residuals which would necessitate determining their source, quantity and composition. A plan would be developed to provide for regional processing and disposal sites established by a city, regional agency or private company, or by a combination of them.

The sludge problem has become progressively worse in the quarter-century or more since early advances in the field of sewage treatment resulted in the removal and storage of the solid residuals. The better the treatment technology and practice got, both municipal and industrial, the more the residuals were accumulated. The City of Philadelphia, for example, has many years of amassed sludge to get rid of in addition to its current day-to-day production. Philadelphia presents the Delaware Basin's most critical sludge problem, especially since the established practice of ocean dumping is no longer available as a long-term option due to environmental constraints. ■

water quality

industrial residuals

DRBC begins special waste administration study; Emphasis is on business-government cooperation

As the DRBC sludge investigation progressed, it soon became apparent that there was a big shortage of information on the nature and quantity of residuals from industrial wastewater operations as opposed to municipal sewerage plants. Because of the lack of industrial data, the DRBC's sludge project proceeded to its conclusion on the municipal sludge phase alone.

To deal similarly with the problem of industrial residuals, a special additional study by DRBC was designed and commenced at the beginning of 1978. This study deals not only with industrial wastewater treatment residues, but also with all solid, semi-solid and concentrated liquid wastes.

Some 2400 industries in the Delaware Basin have at least a potential for producing wastes which cannot effectively be disposed of by available techniques and facilities within the basin. These may include waste oils, sludges, spent foundry sand, slag, dust from air pollution control equipment, scrap plastics and other materials, dirty solvents, spent filter cakes, spent catalysts, waste pickling acids and other industrial by-products and residues.

Industry is becoming increasingly burdened by the shortage of adequate facilities for disposal of their wastes, and the problem is being compounded by increasingly restrictive environmental laws and regulations. Companies that discharge into municipal systems are being forced by pre-treatment requirements to separate and dispose of larger volumes and greater varieties of residuals. The Federal Resource Conservation and Recovery Act of 1976 requires the phase-out of all "open dumps" and provides for additional regulation of the handling and disposal of hazardous wastes.

DRBC is seeking a joint industrial and governmental resolution to the

problem — namely, a cooperative management plan and the additional facilities needed on a regional scale.

The first phase of the project will consume approximately all of 1978 and comprise a comprehensive inventory and collection of data on the quantity and nature of industrial residues produced in the valley, and of present methods of handling and disposal. This information is being collected from files of federal and state agencies and from industries through interviews and plant visits.

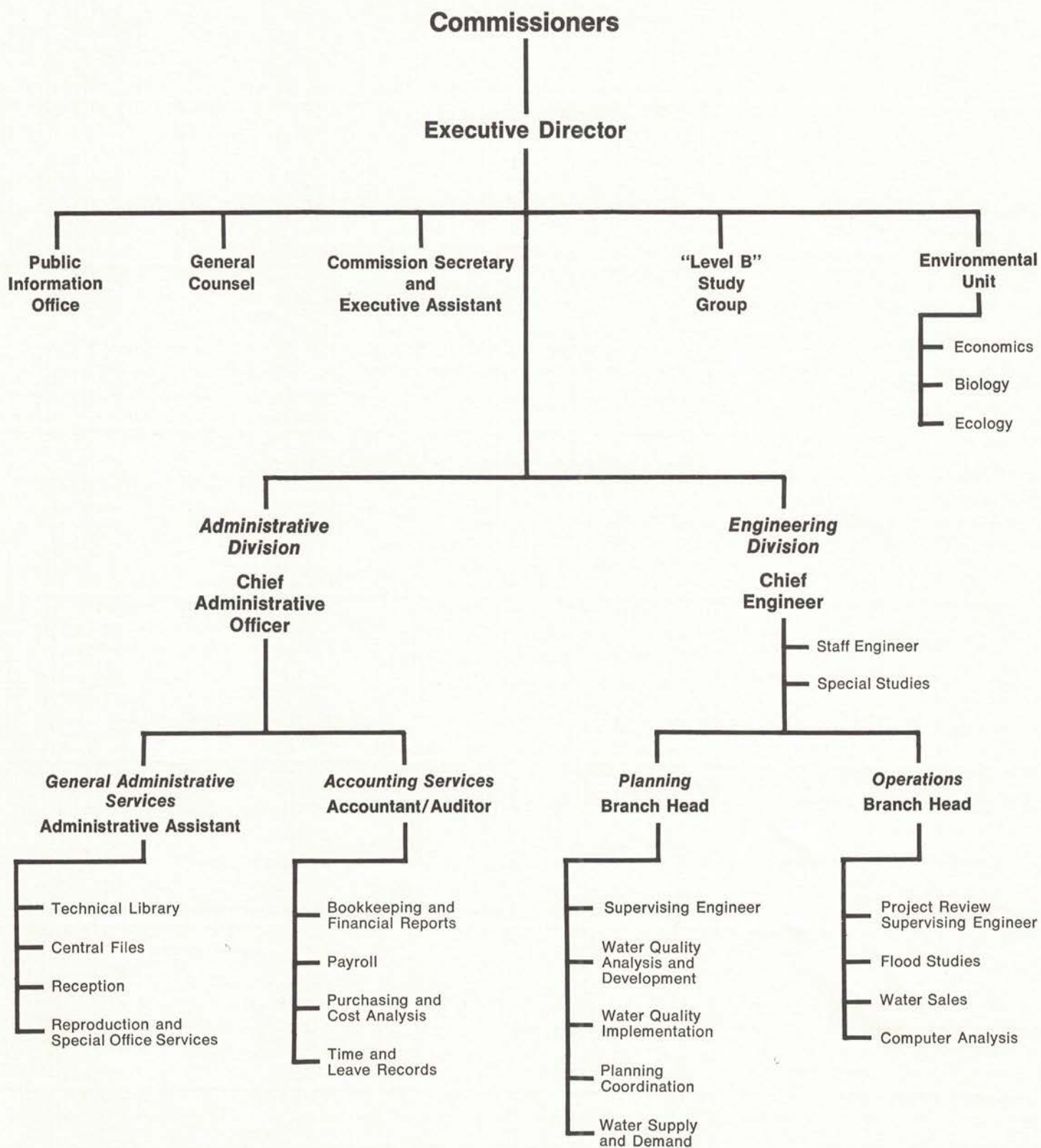
Phase one will cost about \$150,000, with one-third raised from contributions from industries and the remaining two-thirds on a two-for-one match from the U.S. Environmental Protection Agency. Roughly \$40,000 of industry's share has been realized through contributions ranging from \$25 to \$5000 each from some 100 companies. Additional industrial support is being sought.

Phase two, to be built upon the earlier inventory, is still unfunded. DRBC hopes to receive federal assistance, directly or through the states. This phase is to determine what additional treatment and disposal facilities are needed and the approximate cost as opposed to present outlays. Major emphasis is being placed on identifying opportunities for resource recovery.

The end product is to be an industrial wastes management plan for the basin. The program will evaluate available technology and analyze and develop alternative programs for managing and disposing of wastes identified in the inventory. The management plan will include a program for collection, treatment, hauling, and ultimate disposal of industrial wastes in the basin on either a regional or subregional scale.

The program's joint industry-government concept is demonstrated by the recent merger of the study's agency and industrial advisory committees. ■

the organization



water control projects

Power companies propose dam in NJ after Trexler is shelved; Blue Marsh completed near Reading

The recent pattern of effective public resistance to the development of reservoir projects went unbroken for another year in 1977.

In Pennsylvania's Lehigh County, a multiple-purpose federal reservoir plan that had been sailing along smoothly, if slowly, was the apparent latest victim of a local uprising — culminating in its defeat by a 3-to-1 margin in an advisory referendum in November's election.

Long-standing and widespread local support for the control project, called Trexler, gradually was turned around. The growing attrition resulted in loss of congressional backing and deletion of funds to commence construction from the federal budget.

Trexler, part of the Commission's master plan for the valley for 15 years, was being pressed for development as a partial water supply, flood control and recreation alternative to the controversial and larger Tocks Island lake on the Delaware main stem, which had been shelved by Congress at DRBC's recommendation in 1975.

Local and regional water agencies urged that the Trexler project be built on Jordan Creek, a Lehigh River

tributary, to meet growing water supply needs in the Allentown-Bethlehem area and to reduce the threat of local flooding. But at year-end, Trexler was stalled amid the same type of opposition over impact, though more localized, that had catapulted Tocks Island into a national environmental issue.

In addition to meeting the expected growing local water supply demands after 1990, a block of the water at Trexler was tentatively earmarked for sale to an electric utility group, primarily Philadelphia Electric Co. This water was to have been used to help protect the lower Delaware from salinity intrusion during droughts in compensation for water evaporated during generator cooling operations. The utilities would have had interim rights to the water until Lehigh County decided to turn to Trexler for its supplies, in about 1990. Meanwhile, the county planned to augment its supplies by tapping more wells.

Merrill Creek

In 1976, in the wake of the decision to at least defer construction of Tocks Island, DRBC directed the power companies that operate in the basin to start planning for their own reservoir storage. The companies, acting as the Delaware River Basin Electric Utilities Group, were well into their study when Trexler support started sliding.

By mid-1977, the power companies disclosed that they were looking at four prospective sites, boiled down from a dozen. September 30 was their deadline for selecting a site and submitting an application for its approval to DRBC accompanied by engineering and environmental reports. On the chance that Trexler might survive the referendum, averting at least in the immediate future the need for a utility-owned reservoir, the deadline was extended to December 30.

After Trexler was voted down overwhelmingly, the utilities met the extended deadline by announcing

their plan to build a large reservoir on Merrill Creek in Northwest Jersey.

The final four reservoir site alternatives considered by the power companies had been Mill Creek and Red Creek, both on tributaries of Schuylkill River headwaters in Schuylkill and Berks Counties of Pennsylvania; Little Martins Creek, a small Delaware River branch northeast of Easton in Northampton County, also Pennsylvania; and Merrill Creek, a small tributary to Pohatcong Creek in Warren County's Harmony Township.

Reports on consideration being given the three sites in Pennsylvania produced immediate protests in the respective local areas, all of which wanted the project chased elsewhere. The early response to the New Jersey location was not generally unfavorable, but protests soon erupted among citizens and local, county and state office holders alike once it was known that Merrill Creek was the choice.

DRBC reported that it would take until sometime in 1979 to complete the engineering and environmental reviews necessary to get the Merrill Creek plan ready for a decision by the Commissioners. Full public disclosure and participation was pledged by DRBC, including a public information meeting in the project area, in addition to an environmental impact statement and public hearing.

Merrill Creek would be a large single-purpose — water supply — project costing about \$80 million and involving no public funds. The full development would include a pumping station on the Delaware, from which high-flow waters would be piped nearly two miles to keep the reservoir full to its 13.8 billion gallon capacity. The same underground tunnel and pipeline would be used to return water to the river to enable the utilities to meet their consumptive use requirements during droughts, thus averting the necessity of curtailing or shutting down power generating operations.

The dam would rise 235 feet and stretch more than a half-mile across Scotts Mountain Gap to back up a 670-acre lake in the Merrill Creek Valley about five miles northeast of Phillipsburg. It would be needed by 1983.

Bucks-Montgomery Supplies

Another water control proposal that received renewed attention — pro and con — is the on-again, off-again pumping station and pipeline project at Pt. Pleasant, Pa., in Upper Bucks County. This facility would furnish additional household water in the growing northern Philadelphia

suburbs of Bucks and Montgomery Counties plus cooling water to the Limerick nuclear generating station being built near Pottstown on the Schuylkill River. This would be accomplished by piping water to nearby headwaters of the Neshaminy and Perkiomen East Branch watersheds. Limerick is one of the power plants for which Merrill Creek would provide backup water.

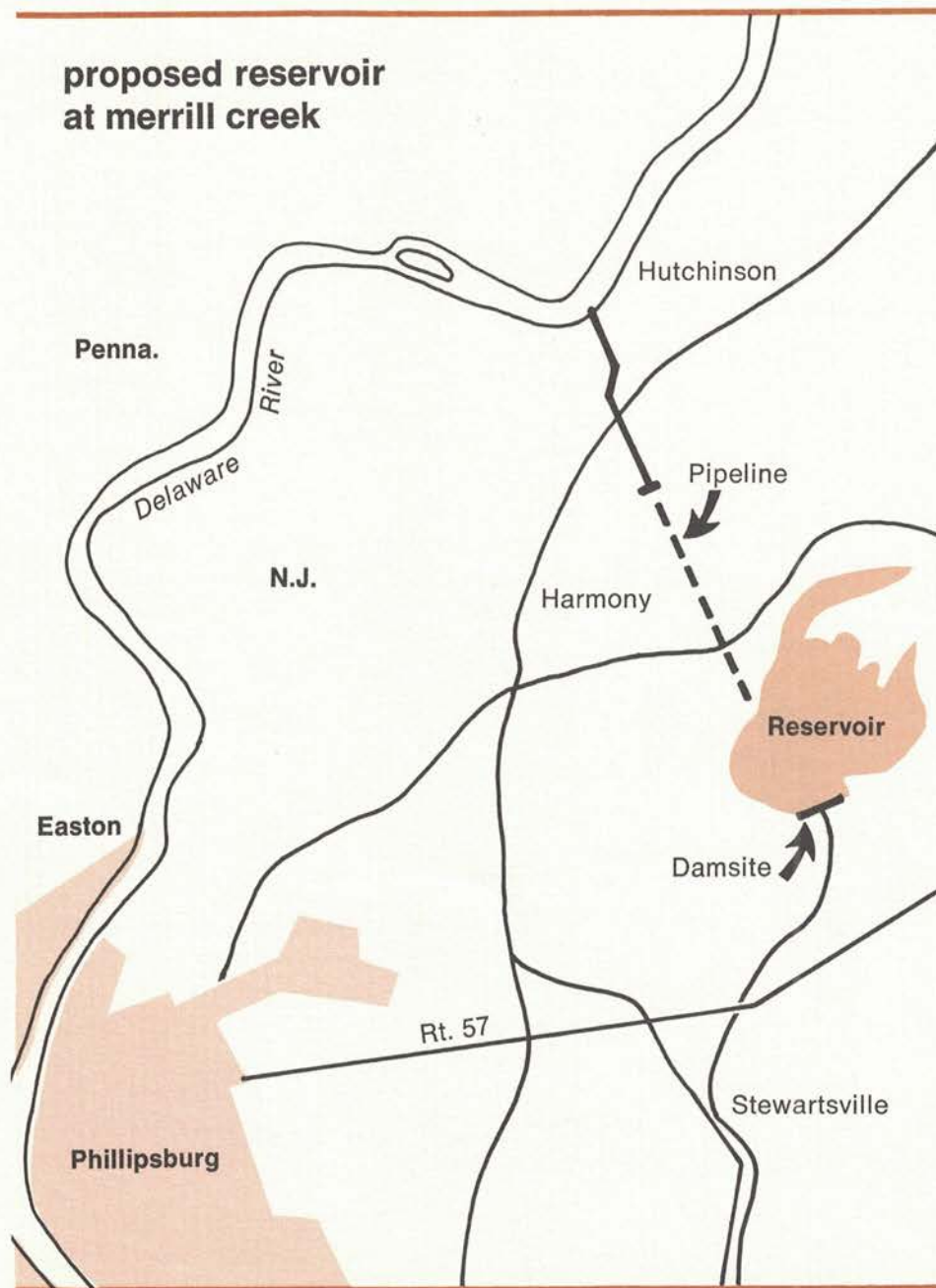
The Pt. Pleasant plan is in the eye of a new storm in the Bucks area over whether projected demands should be met or future growth inhibited. Originally planned by Bucks County in the early 1960s to help fill reservoirs

in the Neshaminy Creek domestic water supply system, the pumping station idea was later expanded to provide a backup cooling water source for the Limerick power plant.

The project had shifted between high and low priorities as one scheme after another was discussed on who would finance, build and operate it — the County, and authority, the Commission or perhaps the power company. Bucks officials, reflecting increasing anti-growth sentiment, gradually backed off the project. However, as 1977 ended, it was being pushed again for development by the Neshaminy Water Resources Authority. The project is regarded as likely to be built for power purposes even if abandoned for public water supply. The multi-purpose project has long been part of DRBC's Comprehensive Plan, although final Commission clearance on engineering and environmental details is still to come.

One major reservoir, Blue Marsh lake located on a Schuylkill River tributary west of Reading, Pa., in Berks County, progressed toward completion in 1978. Blue Marsh is an Army Corps of Engineers project that also is part of the Comprehensive Plan of DRBC, which will administer the water supply feature and already has contracted to sell some of it to the Western Berks Water Authority. The multi-purpose impoundment also is designed to reduce flood threats at Reading and downstream locations, and succeeded in doing this early in 1978 for the first time. The lake will be used for recreation also.

Another federal multi-purpose reservoir, Beltzville, situated on a Lehigh River tributary in Carbon County, Pa., has been completed for several years and already has benefitted that valley in terms of flood control. During 1977 downstream releases were made from Beltzville for the first time to augment low Lehigh River flows during a summer drought period. Coincidentally, the releases in turn benefitted the flow picture at Trenton. ■



river conditions

Even though 1977 averaged out as a normal year in terms of the Delaware River's volume of flow, it experienced both a near-flood and depressed summer runoff that sent the salt front farther up the estuary than usual.

The year started off in the midst of the coldest winter in a century of records. Icejams and freezeovers occurred where they had not been seen in years, and an alert was issued by the Delaware River Basin Commission at one point on the damage potential in event of a sudden icebreak, which luckily did not occur. However, in March a temperature rise and three and one-half inches of rain brought the river its first big flood scare in three years. The swelling of the main stem did not stop until it had risen to a foot short of flood stage at Trenton, as it also had done in 1974.

The previous year had closed with a 20 per cent deficiency in the normal annual precipitation of about 44 inches, and for 1977 it went about 20 per cent over the norm. Upper basin reservoirs were in good shape.

Nonetheless, rainfall was short in the summer months in the southern half of the Delaware Basin, bringing depressed conditions to the tidal river in the Philadelphia area. This permitted the ocean to push salinity concentrations three miles farther upstream than normal, but still a safe 14 miles below the record incursion to the Benjamin Franklin Bridge area during the region's worst drought ever in 1964.

Increased rainfall in 1977 relieved the poor ground water tables of 1976, but the state of subsurface supplies remains a matter of concern even in better water years due to what DRBC regards as excessive reliance on these sources. Increasingly, the Commission receives complaints from alarmed and angry homeowners and farmers that their wells are going dry, usually because of withdrawals from nearby deeper wells employed by heavier users such as water companies and industries. DRBC hopes soon to conduct a major investigation aimed at producing a long-range ground water management program.

In terms of water quality, there was continued improvement of the river's

already good condition in the non-tidal reaches above Trenton, a trend that began in 1973. The quality of the 85-mile long estuary continued to show serious pollution effects of waste discharges from the Trenton, Philadelphia, Camden and Wilmington metropolitan areas. But the estuary's oxygen content was better than in recent years and included a 35-mile reach where oxygen standards were met. Major quality improvements here, however, still await sharp upgrading of estuary area sewage treatment plants. Also, the stretch where oxygen levels sag annually was shortened in 1977. Some quality improvements were observed also in the bay.

The popular Delaware fish, the American shad, again in 1977 made its way through the polluted Delaware estuary as it has regularly in recent years. The shad runs from the ocean are only a fraction of what they were at the turn of the century before the region's population explosion and industrial growth. But the migrations have improved greatly in the past decade since widespread water quality improvement programs have been instituted. ■

View is of Delaware River from Camden, with Philadelphia in background, showing shipping activities proceeding as usual despite ice congestion in January 1977 during the coldest winter on record.

Philadelphia Inquirer



financial summary

budgetary

1977 REVENUES		
	Budgeted	Received
Delaware	\$ 120,080	\$ 120,080
New Jersey	297,190	297,190
New York	101,435	101,435
Pennsylvania	390,830	390,830
United States	181,000	181,250
EPA Grant	190,267	190,267
Miscellaneous	3,033	12,466
Project Review fees	—	61,251
Interest income	—	3,106
Budgetary revenue transfer	150,265	150,265
Water sales	22,308	22,308
Contractual services	12,365	12,365
	<u>\$1,468,773</u>	<u>\$1,542,813</u>
Revenues received as compared to budgeted funds	—	— 74,040
Total	\$1,468,773	\$1,468,773

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

1977 EXPENDITURES		
	Appropriations	Expended
By Organization		
Directorate	\$ 344,929	\$ 351,935
Administrative Division	152,000	195,871
Engineering Division	971,844	898,026
Total	<u>\$1,468,773</u>	<u>\$1,445,832</u>
By Program		
Water Supply	39,000	61,418
Water Demand	58,000	46,399
Recreation	23,000	18,061
Power	—	6,382
Project Review	142,000	124,771
Water Quality	657,465	661,926
Comprehensive Plan	138,000	201,173
Flood Loss	61,000	83,743
Basin Operation	166,308*	134,501*
Small Watersheds	—	2,168
Environmental Analysis	184,000	105,290
	<u>\$1,468,773</u>	<u>\$1,445,832</u>
Excess of appropriations over expenditures	—	22,941
Total	\$1,468,773	\$1,468,773

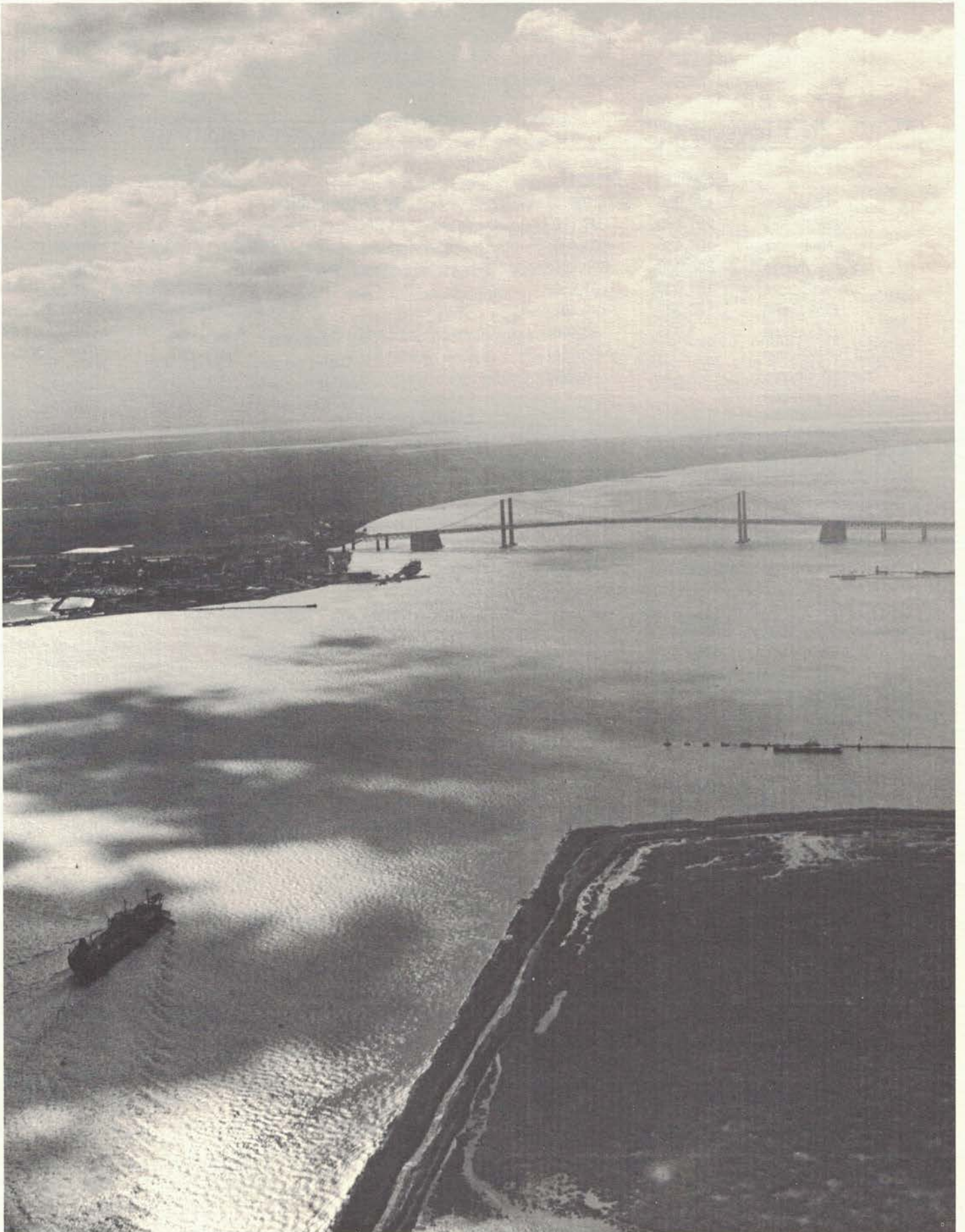
* \$25,000 Capital Included.

non-budgetary**

	Funds Available	Expenditure	Unexpended Dedicated Allotment
Tocks Island Region Environmental Study	\$ 3,146	\$ —	\$ 3,146
Tocks Island Fish Research	5,698	4,308	1,390
Thermal Study	5,891	—	5,891
Flood Plain Contract	193,871	168,917	24,954
Flood Plain Contract (Delaware Counties)	45,507	40,419	5,088
Salinity Study (Estuary)	77,900	14,029	63,871
New Jersey Water Quality Management	58,393	58,393	—
Calibration and Intergovernmental Coordination Studies	49,720	38,087	11,633
Raccoon Creek	12,339	12,339	—
Stormwater Survey/Estuary Model Verification	166,664	159,982	6,682
Study of Institutional Plans for Sludge Disposal	78,000	59,908	18,092
Level B Study	115,000	105,342	9,658
New Jersey Personnel Contract	85,000	25,379	59,621
Groundwater Contract	5,000	5,000	—
Water Supply Storage	491,097	22,308	468,789
Total	<u>\$1,393,226</u>	<u>\$714,411</u>	<u>\$678,815</u>

** Revenues from sources outside current expense budget.

Aerial photo shows cargo vessel passing by Wilmington and approaching twin-span Delaware Memorial Bridge on the lower Delaware River.







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