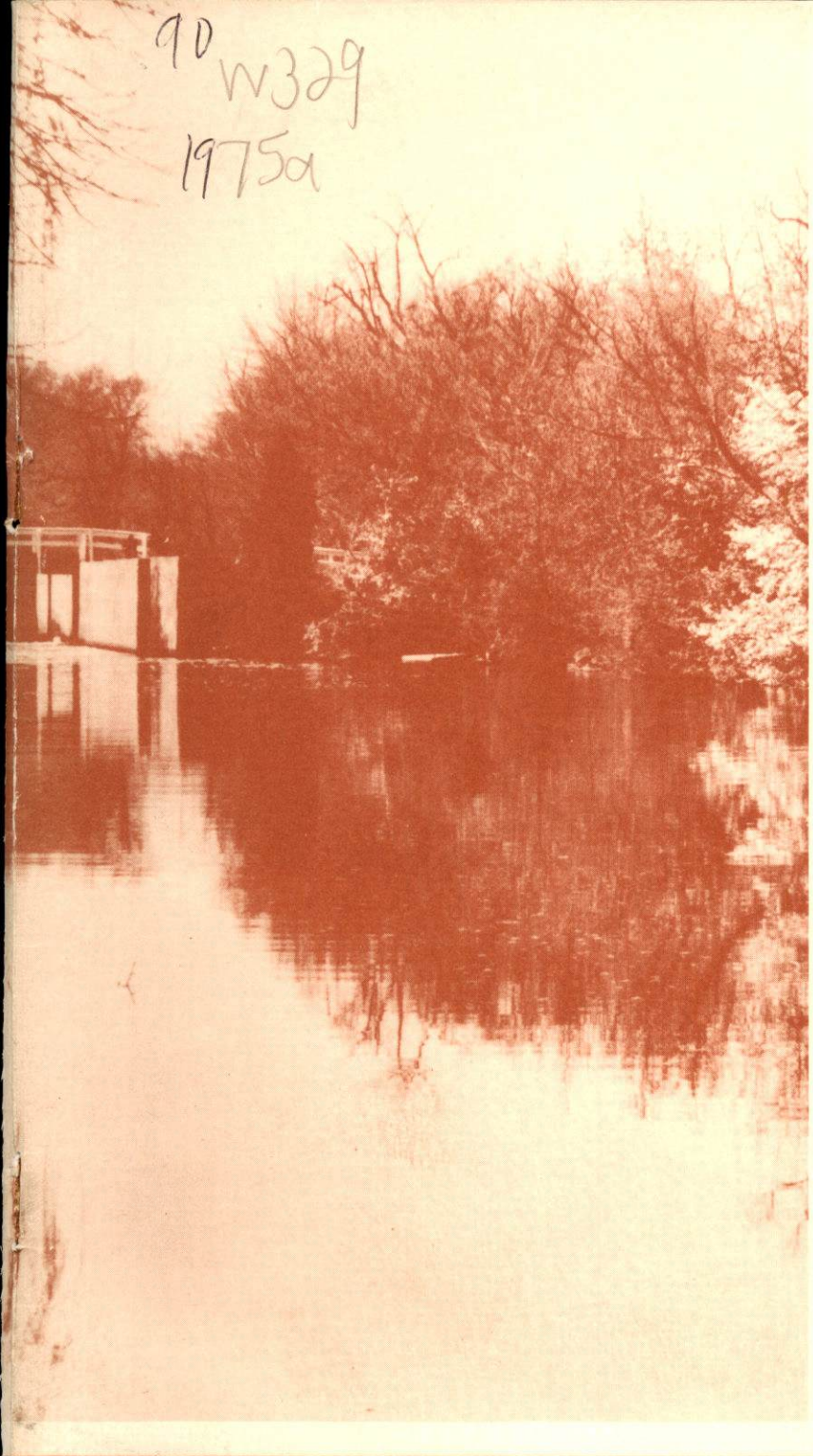
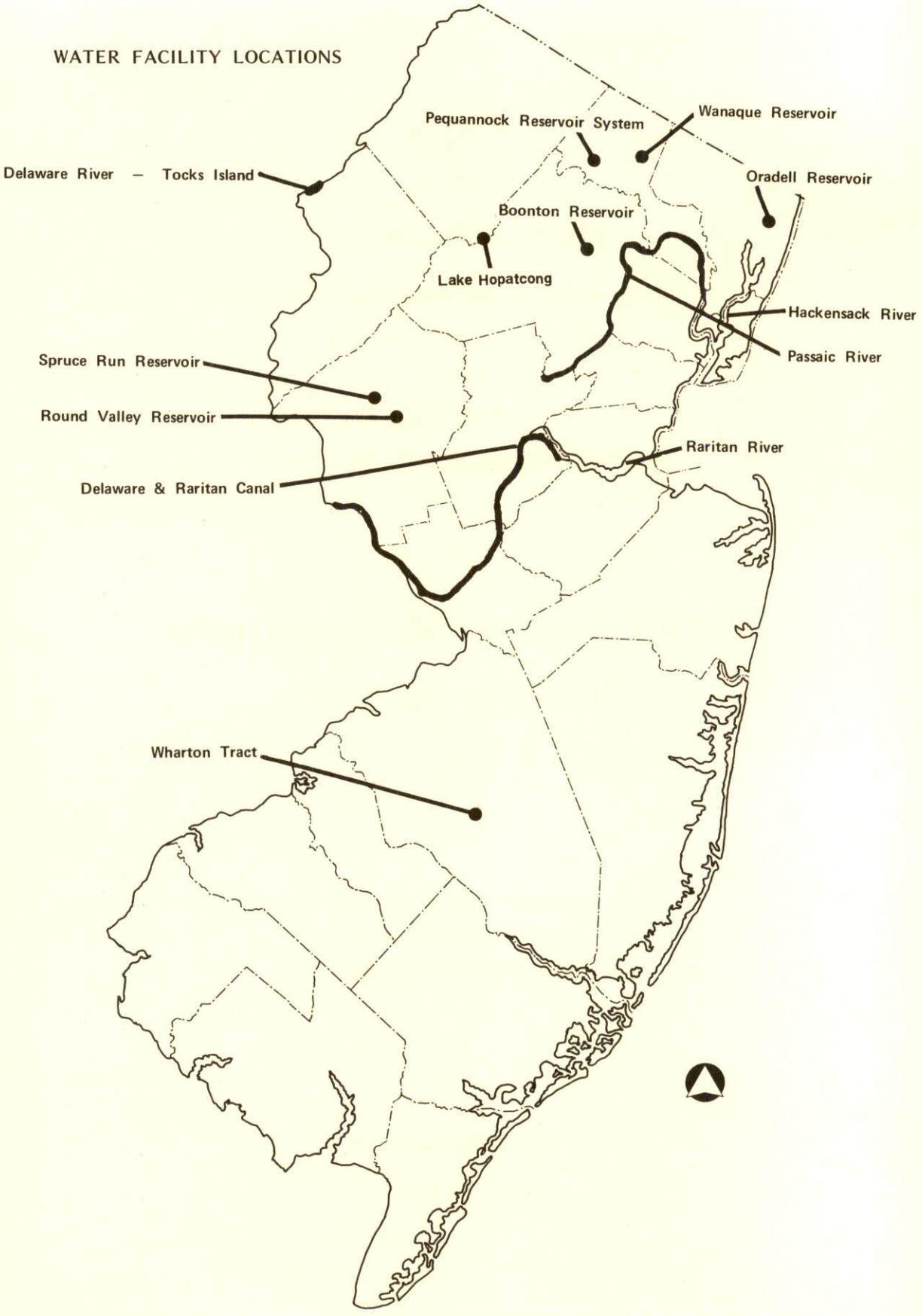


Water Supply Management in New Jersey

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

STATE OF NEW JERSEY
COUNTY AND MUNICIPAL GOVERNMENT STUDY COMMISSION
DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER FACILITY LOCATIONS



State of New Jersey

COUNTY AND MUNICIPAL GOVERNMENT
STUDY COMMISSION
AND
DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Water Supply Management In New Jersey

SUMMARY OF FINDINGS
CONCLUSIONS AND
RECOMMENDATIONS

Eleventh Report

April, 1975

County & Municipal Government Study Commission

William V. Musto, *Chairman*

Garret W. Hagedorn
Joseph A. Maressa
Joseph W. Chinnici
William H. Hicks
Christopher J. Jackman
Alan Augenblick
Richard J. Coffee

Samuel A. Alito, *Secretary*
Doris Dealaman
Robert Cawley
Robert H. Fust
Fred G. Stickel, III
George Botcheos
Myles J. Gilsenan
Andrew S. Polito

Department of Environmental Protection

David J. Bardin, Commissioner

Rocco Ricci, Assistant Commissioner
Division of Water Resources

Commission Staff

Eugene J. Schneider
Executive Director

James D. Westwater
John K. Dunka
John W. Gaston
Project Consultants

Mark W. Kirby
Clifford L. Lamar
Wayne Sternberger
Research Assistants

Athena K. Kirby
Secretarial Staff

Illustrator

Beatrice Smith

State of New Jersey

COUNTY AND MUNICIPAL GOVERNMENT STUDY COMMISSION

115 West State Street Trenton. New Jersey 08625

TO HIS EXCELLENCY GOVERNOR BRENDAN T. BYRNE, AND HONORABLE MEMBERS OF THE SENATE AND GENERAL ASSEMBLY:

The County and Municipal Government Study Commission is pleased to submit its report *WATER SUPPLY MANAGEMENT IN NEW JERSEY.* This report, jointly sponsored by the Commission and the Department of Environmental Protection, represents a major effort to analyze the multiple problems attendant to water supply management in the State, and to propose an appropriate and reformed State role in dealing with these general health, safety, and welfare responsibilities.

Water supply is a resource New Jersey cannot do without. It is the single most important natural resource governing the State's economic and social stability. Problems with water supply management are not new; only ten years ago New Jersey was staggered by a drought of unprecedented length and severity. If a similar drought were to occur today, it would find the State far less prepared than in 1965. It was this fact that prompted the former Commissioner of the Department of Environmental Protection and the former Director of the Division of Water Resources to call upon the County and Municipal Government Study Commission to conduct an extensive analysis of water supply management in New Jersey and to suggest directions and methods for its reform.

Only two months into the current administration, the Interdepartmental Committee on State Water Supply Needs was created to address this same set of issues. Since March 22, 1974, the Commission and the Interdepartmental Committee have worked together to develop a strategy for meeting the State's water supply needs. In addition, complete cooperation and encouragement have come from the Commissioner and Assistant Commissioner of the Department of Environmental Protection. This report is the result of join efforts to address some of the most fundamental and long standing duties of the State government.

The Commission's research program uncovered a series of problems with today's mode of water supply management. Reduced to a single sentence, it can be said that there is simply not enough water for New Jersey in the event of another drought that is comparable to the one experienced in the 1960s. In that drought, the principal reservoirs were only four to six weeks away from pumping mud instead of water. Another concern is the occurrence of a short, intensive drought. This could quickly cripple the Passaic River Basin, where the amount of water consumed significantly exceeds the amount of water that can be supplied safely. Continued growth in demand at a time when water development has stagnated exacerbates this problem every year. Strong, prompt actions are required.

Over the course of this eighteen month study, a number of overriding problems having to do with the State's management of water supply responsibilities came to light. The following is designed to identify those problems and to propose remedial measure for reforming and strengthening the State's water supply management system.

- First, there is the critical problem of not having enough water for northeastern New Jersey. At the same time the State owned Round Valley Reservoir sits idle without an outlet pipe, thereby landlocking a daily supply of at least 80 million gallons. To overcome this, the Commission recommends the prompt utilization of some $16 million from the 1969 Water Conservation Bond to construct the much needed outlet pipeline.

- Second, because of the State's limited planning efforts, even if the Round Valley Reservoir water were to be made available, it would be difficult to determine the best manner for transporting it to the Passaic River Basin, where it is needed. To address this issue, the Commission recommends the conduct of a State Water Plan that will view the entire State's water needs and how they can best be met. The State plan should also propose a wide range of water conservation measures and practices that can be implemented in the immediate future.

- Third, the State owned water facilities are now being operated in a manner that has fostered a $25 million deficit for the Spruce Run-Round Valley Reservoir project alone, while failing to meet statutory capital cost recovery requirements. In order to remedy this situation, the Commission recommends that water sold from Spruce Run-Round Valley Reservoir project be priced at a level adequate to produce revenues that would meet the annual costs of principal, interest, operations, and maintenance, as required by statute.

- Fourth, the regulatory arm of the State responsible for water supply, the Water Policy and Supply Council, has been overwhelmed by the immensity of its responsibilities. Furthermore, several Council mem-

bers ignore their duties and do not attend hearings, thus forcing lengthy delays and undermining the efforts of other Council members. Finally, the breadth of the Council's responsibilities have expanded to a point where technical issues demand more time and consideration than important State policy matters. Therefore, the Commission recommends that the Water Policy and Supply Council be reduced in size from 11 to 5, its responsibilities be limited to adjudication, that a hearing process utilizing trained hearing officers and taking a maximum of 120 days be initiated, and that the staff of the Division of Water Resources be expanded to perform technical and support duties required for rational decision-making.

- Fifth, license fees for the use of the State's waters and economic penalties designed to deter the abuse of the State's waters have not been fundamentally altered since 1907, and they are not effective, reasonable, or applicable to many water users. To overcome this problem, the Commission recommends the implementation of a comprehensive system of State water fees that would impose a license fee on all water users while acting to end existing and future abuses of the State's water resources.

- Sixth, the State has managed its entire water supply program as a unitary function, vesting regulatory and utility functions within a single agency and giving rise to valid concern on the part of the water industry. Additionally, this organizational arrangement makes it difficult for the State's water utility mission to be adequately defined and carried out. To end this situation the Commission recommends the creation of a State Water Authority to be responsible for utility operations in the future, under joint executive and legislative oversight.

- Seventh, a classic water supply development problem faces New Jersey, that being the gap between revenues and expenditures in the early years of a reservoir project. The Commission proposes the creation of a revolving fund for debt service on future water utility projects. Capital would be generated by charging a small water surcharge to areas that will need State developed water in the future with the revenues being placed into a Beneficiary Insurance Fund to be used by the State Water Authority. By paying an extremely modest fee today, areas of the State will be assured an adequate supply of water in the future.

These represent the major findings and recommendations of the Commission's water supply management study. It will not be a simple task to implement the solutions proposed by the Commission, but it will be far easier than facing the next drought unprepared. This executive summary will be followed by the publication of the full report, which will detail all the aspects of water supply management that are discussed in this summary.

Respectfully submitted, by the members of the County and Municipal Government Study Commission;

/s/ William V. Musto, Chairman
/s/ Garrett W. Hagedorn
/s/ Joseph A. Maressa
/s/ Joseph W. Chinnici
/s/ William H. Hicks
/s/ Christopher J. Jackman
/s/ Alan Augenblick
/s/ Richard J. Coffee
/s/ Doris Dealaman
/s/ Robert H. Fust
/s/ Fred G. Stickel, III
/s/ Robert Cawley
/s/ George Botcheos
/s/ Myles J. Gilsenan
/s/ Andrew S. Polito
/s/ Samuel A. Alito
Secretary

At the request of the Department of Environmental Protection, the Commission initiated late in 1973, a study of water supply management in New Jersey. This study was continued and expanded as part of Governor Byrne's Executive Order establishing an Interdepartmental Task Force charged with an evaluation of the immediate and long-range needs related to the State's water supply facilities. In the course of its study, we cooperated with the Commission, its staff and consultants, to insure a thorough-going and comprehensive evaluation of the subject. The analysis and recommendations of this report offer a vital agenda for policy decisions by the Executive and Legislative Branches in the months ahead. We look forward to working with you in rising to the challenge of the Commission's report.

/s/ David J. Bardin, Commissioner
/s/ Rocco D. Ricci, Assistant Commissioner

Department of Environmental Protection

ACKNOWLEDGMENTS

Without the assistance of many State, county, and municipal officials, this report would not have been possible. The efforts of private water company officials are also acknowledged, for their provision of resources, ideas, and expertise.

For their interest, cooperation, advice and support, the project team extends its gratitude to the following individuals in the New Jersey State Department of Environmental Protection: David J. Bardin, Commissioner; Rocco Ricci, Assistant Commissioner; Richard J. Sullivan, past Commissioner; Charles M. Pike, former Director of the Division of Water Resources; George Shanklin, the late Director of the Division of Water Policy and Supply; Robert Cyphers and Donald Kroeck of the Bureau of Water Resources Planning and Management; both of whom spent timeless hours assisting the Commission staff; Dirk Hofman and Raymond Webster, Bureau of Water Control; John Wilford and Raymond Barg, Bureau of Potable Water; Michael Galley and Mel Meyers, Bureau of Water Facilities Operations, and Margaret Miller and Virginia Dombroski of the Division Director's staff.

The project team wishes to thank the Water Policy and Supply Council for their candid observations. In particular, Lillian P. Schwartz, Duncan Pitney, and Hermia Lochner deserve our sincere gratitude.

At the State Public Utilities Commission, Anthony Zarillo, Chief of the Bureau of Rates, former Executive Director Arthur Schoenwald, Deputy Director Charles Garrity, and Joseph O'Hara, Rates Bureau, were of great assistance in this effort.

The project team wishes to thank David Beale, Executive Director of the Department of the Treasury for his assistance and insights.

In the Department of Law and Public Safety, Morton Goldfine and Stuart Meislik offered insights to the role and responsibilities of various parties in carrying out the State's laws.

A significant contribution to this report was made by Kyle Schilling and Robert Callegari of the United States Army Corps of Engineers. Their responsibilities in studying water supply issues for the entire New York City metropolitan area led to a continuing dialogue that proved invaluable.

Appreciation is also extended to the following personnel at the Delaware River Basin Commission: James F. Wright, Seymour Seltzer, William Miller and William Thursby.

The project team also wishes to thank Everett L. MacLeman of the Environmental Protection Agency.

Many individuals in the water supply industry provided guidance and assistance that could not be found elsewhere. While the entire group of individuals is too expansive to list here, we would like to extend gratitude to the following people: Dean Noll, North Jersey District Water Supply Commission; Wendell Inhoffer, Passaic Valley Water Commission; George Buck, Walter Lucking, George Haskew, and Robert Gerber of the Hackensack Water Company; Edward Bastian, Middlesex Water Company; Henry Patterson, Chester Ring, Thomas Cawley and Robert Palasits of the Elizabethtown Water Company; and George Johnstone of the New Jersey Water Company.

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THE SIGNIFICANCE OF WATER SUPPLY

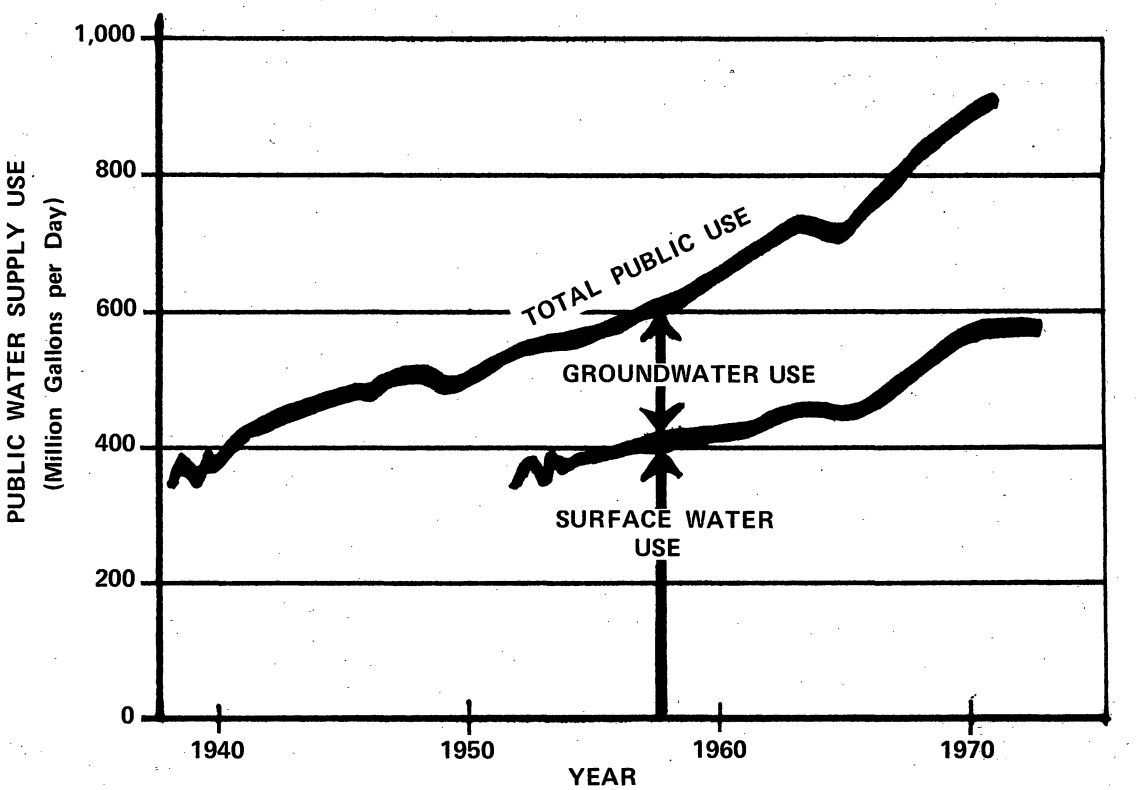
Water is a resource so basic to the support of life and economic activity that its value is virtually impossible to assess fully. While valued in many ways, water's highest value is certainly associated with supporting human life, which cannot be sustained without an adequate supply of potable water. Individuals and society are willing to pay a very high price for the water required for human consumption, but a relatively lesser price for water that is put to other uses. This was proved in the severe 1960's drought when recreation, water pollution control, and economic activities were all forced to assume secondary roles to that of getting water to people.

In New Jersey, over 1 billion gallons of water are delivered every day by some 450 public and private water purveyors. Aside from human consumption, water is primarily used for the support of agriculture, for cooling purposes, in manufacturing and power generating, and for processing food products, pulp and paper, chemicals, petroleum, and other industrial products. Every one of these functions is absolutely vital to the economic health of New Jersey and it is simply not possible to sustain the State's economy without an adequate supply of water. Moreover, its economic importance is tied not only to its function, but to the fact that it is such a readily available, inexpensive, basic resource, integral to every important industry in the State.

New Jersey is in a humid region of the country with plentiful rainfall, enough to consider the State water rich. But it is also the most densely populated State, with overall population density exceeding 1,000 persons per square mile. That density is far exceeded in the Passaic and Hackensack River Basins where approximately one-half of the total population resides. In this setting there are many competing uses for water. The heavily urbanized areas require the same streams for potable purposes that industry requires for cooling and processing purposes and municipalities need to dispose of their inadequately treated wastes. Moreover, as Figure 1 indicates, with the constant increase of total public demand, groundwater sources have become increasingly used and in some cases overworked and contaminated by pollutants and salt water intrusion; pollution has become more critical, more difficult to detect, and nearly impossible to cleanse. For these reasons increased government regulation of water over the years has become essential.

Two major water supply issues have confronted New Jersey for nearly 100 years and are the principal reasons for strong government intervention in the water supply field. **First, in a socio-economic setting as complex and interrelated as New Jersey's, it is imperative that there be an adequate quantity of water assured at all times. Second, because of the competing demands for the use of the State's water resources, it is equally important to assure that the water be of high quality and not degraded by the 1 billion gallons of human and industrial wastes dumped into New Jersey's waterways every day.** New Jersey State government has gradually and surely become the regulator and allocator of water for these reasons.

Figure 1. PUBLIC WATER SUPPLY USE IN NEW JERSEY SINCE 1940



The first issue, how much water is available for use, is important both absolutely and relatively. As the population and economy continue to grow, so does the demand for water. In the expanding New York-New Jersey metropolitan area comprising a part of the second largest urban-industrial complex in the world, this demand has increased most rapidly over the past thirty years, and could not have been met without a plentiful supply of water. Even the more conservative projections indicate the same trends in the foreseeable future (see Figure 2). Thus, it is easy to understand why water is of such particular importance to New Jersey.

FIGURE 2

NEW YORK METROPOLITAN WATER DEMAND PROJECTIONS [1]

State	YEARS			
	1971	**1980**	**2000**	**2020**
New Jersey [2]	634	848	1,219	1,666
New York [3]	1,483	2,019	2,445	2,996
Connecticut [4]	212	286	417	546
Totals	2,329	3,153	4,081	5,208

All figures in million gallons per day (MGD).

FOOTNOTES:

(1) Projections prepared for the Army Corps of Engineers, Northeast Water Supply Study.
(2) Only the ten northeastern counties of Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Union.
(3) New York City and eight surrounding suburban counties of Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk, Ulster, and Westchester.
(4) Only a portion of Southwest Connecticut is included.

Only ten years ago the New York-New Jersey metropolitan area experienced its most severe drought, one that lasted for five years and severely tested the State's health conditions for four months. While there are any number of ways to characterize the severity of that drought, perhaps it can be summarized best in a single quote from the late George Shanklin, then in charge of New Jersey's water supply program. Mr. Shanklin stated that in the fall of 1965, "We were four to six weeks away from pumping mud out of the reservoirs . . . instead of water".[1] He added that the critical nature of that drought was withheld from the public for fear of a large scale panic. Additional interviews and newspaper accounts indicate that the crisis was so acute that the State quietly made plans to evacuate hospital patients from the stricken areas. Furthermore, State officials estimated the number of railroad tank cars and truck tanks needed to deliver water for domestic and fire-fighting purposes to parched cities and towns.[2]

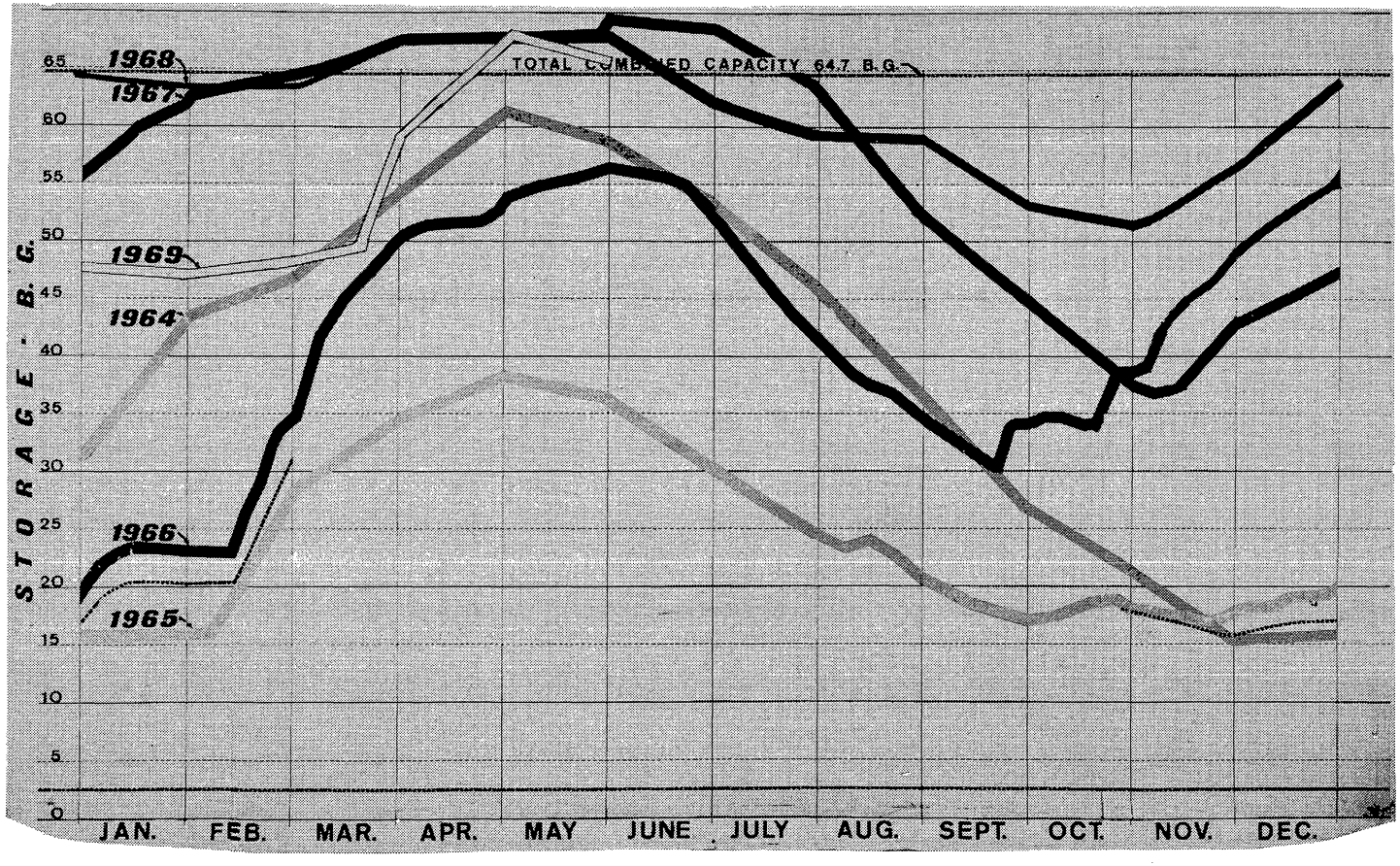
[1] Interview with the late Mr. George Shanklin, former Director and Chief Engineer, Division of Water Policy & Supply, Sept. 21, 1974.

[2] See figure 2A for a summary of Water Storage conditions during the period Jan. 1964 — May 1969.

FIGURE 2A

STORAGE – COMBINED MAJOR SYSTEMS

Wanaque – Newark – Jersey City – Passaic Valley – Hackensack



Source: N. J. Dept. of Environmental Protection, Div. of Water Resources

New Jersey's water supply system was in better shape going into the 1960's drought than the present system would be in the event of a similar drought. In 1973 the water purveyors in the Passaic River Basin supplies an average of 399 million gallons per day (MGD) from their surface water reservoirs while they had a safe sustained yield[3] of only 366 MGD, a daily gap of 33 million gallons or an amount equivalent to the supply required by 330,000 people. The daily gap has widened from 29 million gallons to 33 million gallons in one year (1973 to 1974) and, as Figure 3 indicates, from a virtually balanced system to a minus 33 million gallons per day over the last six years. The deficit in system safe yield for Newark, Jersey City and Hackensack presently exceeds 60 million gallons, an enormous shortfall that is greater than the safe sustained yield of Newark's entire Pequannock Reservoir System.

Deficits result because water demand is presently met by drying up streams and overdrafting reservoirs every summer, and then relying on the late autumn and winter rains to refill them once again. While this has worked recently and may work generally, there surely will be the year or years when the winter rains will not be as heavy as anticipated; the summer will be drier than expected; the reservoirs will not fill; water demand will not be met; and the State's population and economy will be threatened. In May 1964 the Wanaque System was spilling over; in December of that same year it contained only 4.5 billion gallons of usable water, an all time low for December and far below the critical level.

The second issue, assuring that the water is of high quality, is to a great extent the more significant question. For some 75 years, the State has regulated water quality through means as diverse as the factory location permit and the monitoring of potable supplies. However, the factory location permit requirements have been largely ignored recently, both by the State regulatory agencies and by industry. This means that many industries have located on waterways used primarily for potable purposes and are discharging their pollutants into those streams. At the same time, the Bureau of Potable Water, the responsible State agency, is understaffed, and unable to sample New Jersey's 450 potable supplies with sufficient frequency.

Only recently there has been increased concern over the quality of drinking water in the United States, notably in the Mississippi River. New Orleans, for example, derives its drinking water from the lower Mississippi after thousands of towns and industries have discharged all types of wastes into it. The reason for concern is that some of these wastes, a number of which are not even used as parameters in testing, have been identified as carcinogens. Elsewhere, a national debate has developed over the heavy use of chlorine in drinking water for similar reasons.

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[3] Safe sustained yield is defined as the amount of water that can be developed and delivered on a continuing basis over a specific drought period. In this case, the 1960's drought is the drought period, as well as being the severest drought on record.

FIGURE 3
WITHDRAWALS VS. SAFE YIELD
FOR MAJOR SURFACE WATER SUPPLY SYSTEMS
DRAWING UPON THE PASSAIC AND HACKENSACK RIVER BASINS

Water Supply System	Withdrawals by year in MGD[1]													System Safe Yield[2]	1974 Deficit (−) or Surplus (+)
	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974		
Wanaque-Ramapo Basins (North Jersey District Water Supply Comm.)	107	109	110	94	93	93	103	109	110	109	112	99	96	94	−2
Pequannock Basin (Newark Water Dept.)	54	54	54	42	33	54	59	61	66	65	61	71	74	50	−24
Rockaway Basin (Jersey City Water Dept.)	56	55	57	55	56	53	59	58	75[3]	73[3]	73[3]	79[3]	79[3]	65	−14
Hackensack Basin (Hackensack Water Co.)	66	68	70	64	75	76	81	83	84	88	88	89	90	82	−8
Passaic River at Little Falls (Passaic Valley Water Supply Commission)	39	40	40	41	43	45	47	46	54	52	49	52	49	75	+26
Imports from Raritan Basin (Elizabethtown Water Co. to Newark)	0	0	1	11	19	13	12	10	9	10	8	12	11	0[4]	−11
Totals	322	326	331	296	300	321	349	357	389	380	381	395	399	366	−33

FOOTNOTES:

(1) Withdrawals in million gallons per day (MGD) based on quarterly reports of monthly diversions filed by water purveyors in accordance with NJSA 58:1-16.

(2) System Safe Yield defined in terms of the 1960's drought — the severest drought of record.

(3) Includes releases to the Rockaway River for water pollution control purposes of 13 MGD in 1970, and 7 MGD in 1971 through 1974.

(4) Imports from the Raritan Basin are a response to existing deficits in the Passaic and Hackensack Basins. The safe yield is zero with respect to the Passaic and Hackensack Basins.

These concerns are not unique to the Mississippi; along the Delaware River, every drop of water is used twice before it enters the Atlantic Ocean.* Along the Passaic River, more than 100 wastewater treatment facilities spew their discharges into the stream **above** the intake point of the Passaic Valley Water Commission (PVWC), thus requiring the PVWC to provide intensive treatment to remove ammonia and other compounds from the water it provides. This is not to say that it is harmful, but the uncertainties will linger until the outcome of research studies examining the possibility of chlorine being associated with chronic diseases are completed. The implications are profound, and the possibility of a public panic over potential health hazards cannot be discounted.

Connecticut and other states have avoided this problem, prohibiting the use for potable purposes of any water derived from a body of water with waste discharges above the intake point of the purveyors. **If New Jersey were forced to follow this approach, at least 25% of the State's surface water supplies would have to be phased out, with the replacement supplies costing hundreds of millions of dollars.** These high economic costs would have to be borne by the public, either for artificial cleansing of polluted water or for developing new supplies in those instances where pollution drastically and unnecessarily diminishes the amount of potable water. And it is essential to factor into the cost equation the pollution and long term contamination of groundwater which accounts for 40% of New Jersey's potable water supply; groundwater is simply not regulated as stringently as surface water even though it provides such a large portion of the State's total water supply, especially in the most rapidly developing areas along the Atlantic Coastal Plain.

Water supply management is one of the State's most critical responsibilities. A continuation of present trends endangers the health, safety, and welfare of all New Jerseyans. It could easily result in a wave of building bans similar to those recently imposed upon municipalities without adequate wastewater treatment facilities, and it continues to degrade the quality of our surface and groundwater sources.

Moreover, it is well to remember the experiences of our sister States in the western part of the country. Since water is their most precious commodity (even more so than the oil which is the current central attraction), they have understood that their demand for water would one day equal or outstrip available supply. Western states have striven to establish a rational system of development, distribution, and allocation. Unfortunately, in New Jersey and other eastern States, public interest typically wanes with the next rainfall. Even more unfortunately, our water supply system reflects this indifference, and if a serious crisis were to occur, there is no reason or basis to believe that the system will be able to respond!

These are the implications that must be kept in mind while addressing New Jersey's water supply issues.

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* Technically, the reuse factor is two.

THE COMMISSION'S INVOLVEMENT WITH WATER SUPPLY

Due largely to the concern that existing institutions were not capable of performing their water supply management duties, mandated and otherwise, the New Jersey State Department of Environmental Protection requested the New Jersey State County and Municipal Government Study Commission to undertake a comprehensive study to determine if and how water supply management in New Jersey should be improved. The ensuing study led to this joint report. The importance of these efforts was further underscored when Governor Brendan T. Byrne created the Interdepartmental Committee on State Water Supply Needs, comprised of the State Treasurer, the President of the Commissioners from the Public Utilities Commission, and the State Commissioners of Labor and Industry, Community Affairs, and Environmental Protection, to explore the means for meeting the State's considerable water supply responsibilities.

Throughout this study, the interests of the State's residents, its municipalities, the industrial sector, the environment, and the water industry itself were taken into account. This approach was deemed essential for correcting fundamental flaws in today's water supply management system. While the most dramatic actions will be required of the State, it is most likely that the purveyors, private and public, local and regional, will still be the backbone of a future integrated water supply management system.

Major water supply issues must be resolved within the very near future. Over the next year major decisions will most likely be made regarding the Tocks Island Dam project, the Round Valley Outlet Pipeline, the eventual role of the United States Army Corps of Engineers in water supply, and a major proposal to further develop the water resources of the Passaic River. All of these decisions will be of great import to water supply in New Jersey. It is not the purpose of this report to answer those questions directly. The goal is to provide a rational framework for decision-making by outlining the actions required to address these issues and resolve them in a systematic, impartial, and effective manner.

GOVERNMENT INVOLVEMENT IN NEW JERSEY'S WATER SUPPLY MANAGEMENT SYSTEM

THE EVOLUTION OF WATER SUPPLY MANAGEMENT IN NEW JERSEY

New Jersey's water supply management system has evolved over nearly one hundred years. Like so many public functions, water supply responsibilities originally rested with municipal government. Later they were shared with public and private water purveyors, with jurisdictions that reached across many municipalities, and now are shared with the State government. It is the State government that bears the responsibility of assuring enough water for all New Jerseyans. Combined with its considerable water quality responsibilities, the State is clearly both the guardian and the allocator of New Jersey's water resources.

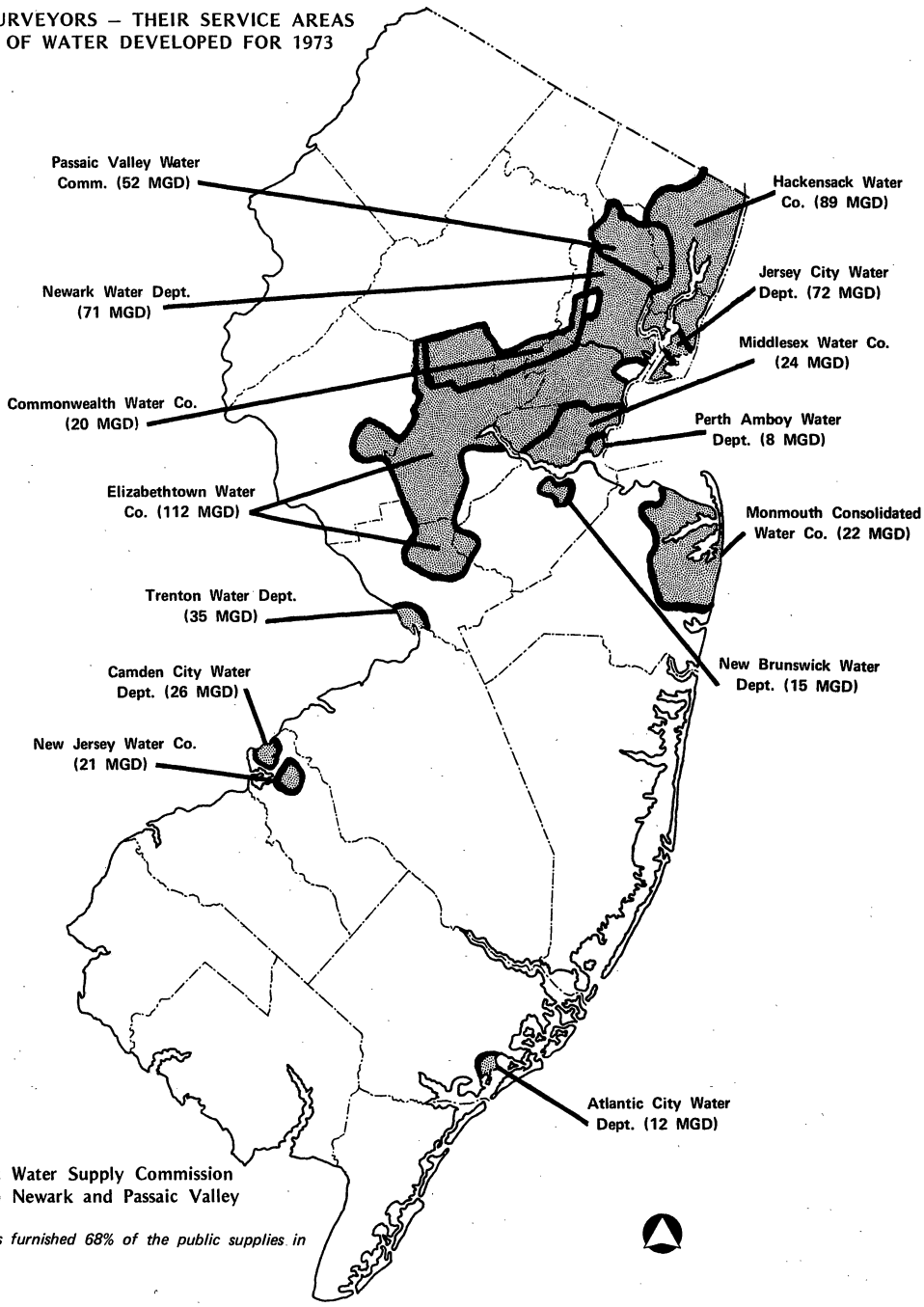
Municipalities are, in general, responsible for securing potable water for residents by contract, by arranging for a private water company to obtain a franchise to deliver water, or by owning a water supply utility, the choice depending largely upon the area of the State and the developmental patterns in the municipality. Newark and Jersey City own large reservoirs far from their municipal boundaries. Woodbridge and Hackensack purchase their water from water purveyors. Passaic, Paterson, and Clifton formed the Passaic Valley Water Commission to perform their water supply function.

The southern part of the State is totally dependent on groundwater reserve. Atlantic City, which owns the largest municipal system on the New Jersey coast, meets all of its municipal water demands from local groundwater sources and this is the case, as well, in Camden, which owns and operates the largest water department on the Delaware River. In South Jersey, local involvement can be expected to continue at a higher level than in the heavily urbanized northeast.

New Jersey's municipalities, once exclusively responsible for water supply, have become too numerous and are also generally too small to cope with many water supply matters. As pollution increased in the densely populated northeastern counties, it became necessary for water to be developed many miles away from population centers and only a few municipalities were able to muster the resources to finance, construct, and operate large regional water systems. Private water companies were therefore expanded and several area-wide public agencies were created to function as regional water purveyors. Together they are the backbone of New Jersey's water supply system. Today, the 15 major water purveyors provide some 68% of the public supplies in New Jersey (see Fig. 4). Most of the regional purveyors are interconnected with other water purveyors, thus affording the ability to interchange water between and among purveyors. This evolution to regional water systems gradually reduced the role of municipal government to contracting for water or providing localized service.

Figure 4.

MAJOR WATER PURVEYORS – THEIR SERVICE AREAS AND QUANTITIES OF WATER DEVELOPED FOR 1973



North Jersey District Water Supply Commission supplied 99 MGD to Newark and Passaic Valley

The 15 major purveyors furnished 68% of the public supplies in New Jersey for 1973.

As urbanization occurred in northeastern New Jersey, the regional water purveyors grew to a point where they became area-wide monopolies regulated by the State. This allowed for economies of scale to be achieved within individual franchise areas. What is unique in northeastern New Jersey is the mix of large public and private purveyors that exist side-by-side. Such an arrangement causes regulatory difficulties because the public purveyors are not regulated by the Public Utilities Commission and usually their goal is to provide water at the lowest possible cost. Thus, each time a new water development scheme is proposed, it is bitterly contested and politicized. An attempt was made to address this problem as far back as 1916, when the North Jersey District Water Supply Commission (NJDWSC) was created by the Legislature to develop water for municipalities and to regulate public water supply in the twelve northern counties. The objective was to achieve water development goals without requiring State financial assistance, but for a number of reasons the District Commission gradually started stressing its role as a regional purveyor to the detriment of its regulatory functions and thus lost the backing of the water industry with which it was competing in the former capacity.

THE EMERGENCE OF A STATE ROLE IN WATER SUPPLY

Initially the State of New Jersey played the role of regulating water supply by allocating diversion rights to individual users and purveyors of water. Much of this regulatory role was defined by the State Legislature in 1907. As the Passaic and Hackensack River Basins became more developed and the water purveyors required a more comprehensive framework for their activities, the State was faced with a decision on the development of new potable supplies. It was clear that the purveyors could not successfully carry out the water development function on their own; it was equally clear that the problem was regional and did not warrant direct intervention by the State government. To address this issue, the Legislature created the North Jersey District Water Supply Commission in 1916 to serve as the agent of municipal governments and develop those water supplies that were beyond their capabilities. The North Jersey District Water Supply Commission was able to achieve the goal of developing new potable sources without using State monies, thus it met both local needs and State objectives. Furthermore, it allowed the State to retain an impartial and objective State regulatory posture.

New Jersey's water supply management system weathered the Depression and World War II, but was not prepared for the economic and population growth that followed the war. As industry expanded throughout New Jersey and increased demand for water occurred, it became evident that further steps would have to be taken to assure that adequate potable supplies were available. Recognition that a State role in water supply development was imperative led to rehabilitation in 1948 of the Delaware and Raritan Canal for potable purposes. While that was a significant step, it did not address the pressing water needs of the Passaic and Hackensack River Basins. The Legislature therefore retained a consulting firm in 1955 to examine further

water supply status. It resulted in a $100 million water supply bond issue that was ultimately rejected by the voters. However, the need for additional supplies persisted and in 1958 a referendum on a less controversial project was placed on the ballot. The 1958 Water Supply Law and the 1958 Water Bond Act provided for the construction of two reservoirs, Spruce Run and Round Valley, in Hunterdon County. Voter approval was obtained for this $39.5 million construction effort that was to provide water for the Raritan River Basin from the on-stream Spruce Run Reservoir and water for the Passaic River Basin from the off-stream Round Valley Reservoir. **The operation of these reservoirs commenced in 1965, thus clearly making the State a large scale water utility operator as well as the principal water regulator.**

Over a period of fifty years the emphasis of the State's water supply management role changed from that of a regulator to one of a regulator-utility operator. This distinction is essential for understanding the water supply issues faced by New Jersey today and is also the reason for this report's primary focus on the role and responsibilities of the New Jersey *State* government and on its foremost problem—how the State as a water purveyor can still be an impartial and objective regulator.

New Jersey's Water Supply Management System

Numerous State, Federal, and local agencies, as well as private businesses are intimately involved in water supply management. Obviously, some are more important than others. This section provides a basis for understanding which parties are responsible for respective activities or functions in New Jersey's water supply management system. Figure 5 provides a tabular summary of the major actors.

Today there are three particularly relevant Federal agencies with water supply responsibilities. The U. S. Army Corps of Engineers has broad water planning responsibilities and is sometimes affiliated with reservoir construction projects. It is expected that a more specific role will be defined for the Corps of Engineers within the near future, upon completion and delivery to Congress of its major research effort—the Northeast Water Supply Study. With the passage of the Federal Safe Drinking Water Act, the United States Environmental Protection Agency will increase its water supply duties by setting treatment standards for water purveyors to meet. Finally, the U. S. Geological Survey conducts hydrological gauging efforts to provide much needed inputs to the State's water information data base.

At the State level, all the specific water supply functions are carried out by the Department of Environmental Protection (DEP). Within the Department is the Division of Water Resources which is comprised of discrete units or Bureaus dealing with water supply, notably the Bureau of Water Resources Planning and Management, the Bureau of Potable Water, the Bureau of Water Facility Operations, and the Bureau of Geology. Another agency attached to the DEP is the State Water Policy and Supply Council, a unique regulatory body having quasi-judicial, quasi-legislative and quasi-executive powers. The New Jersey Public Utilities Commission (PUC) regulates rates of water sold

by a private water company and of water sold by a public water agency to retail customers outside of its municipal boundaries.

Other major participants in the water supply management system include: the Delaware River Basin Commission, responsible for managing the river basin for the mutual benefit of New Jersey, Pennsylvania, Delaware and New York; the North Jersey District Water Supply Commission dealing with water development and distribution; and numerous private water companies, municipal water departments, and county utility authorities, playing diverse water supply roles. There are approximately 500 actors or parties involved in water supply activities in New Jersey, but it is the State that heads the hierarchy of water supply actors and, for that reason, is the focus of this Commission study.

Today's Concern is Tomorrow's Crisis

Two tasks must be performed successfully for the State's water supply management system to be effective. First, the natural resource—water—must be heavily regulated to protect it from abuses and to allow all people to benefit from it. Second, enough water must be made available for potable purposes to support a large population and vital State economy. There is reason for concern about how both of these State assigned duties are now being performed. Today the natural resource is being abused because the regulatory arm of the State is not strong, and difficulties exist concerning the development of adequate supplies of potable water.

On the surface, the water industry would not appear to have too many difficulties. If measured by the ability to deliver water, New Jersey's water supply management system would appear to be an effective and efficient one. As Figure 6 indicates, prices for water do vary considerably, but it has generally been delivered to final users at minimum costs. However, this represents a picture of the past, and in water supply management it is not the past, but the future that is of concern.

New Jersey was struck down in the 1960's drought and some attempts have been made to improve the water supply system. But only last year, Newark delivered an average of 74 MGD when its safe sustained yield in a drought such as that of the 1960's is only 50 MGD. The North Jersey District Water Supply Commission also overdrafted its system, as did the Hackensack Water Company, and Jersey City. While overdrafting was possible last year, it is not clear that such action will be possible next year, or in the following years.

Water purveyors claim that the Passaic Valley Water Commission has 25 MGD excess that can be purchased and that more water could be sent through the Elizabethtown Water Company system in the event of a severe drought. However, many of the same water purveyors have been successful thus far in their opposition to the transportation of Round Valley water, developed at public expense, into the Passaic River Basin where it is needed. Were a drought to materialize, however, the purveyors will undoubtedly expect the State to bail everyone out.

FIGURE 5
MAJOR AGENCIES AND INSTITUTIONS
IN NEW JERSEY'S WATER SUPPLY MANAGEMENT SYSTEM

Category of Agency	Agency	Major Functions
Federal	Environmental Protection Agency	Implement provisions of the Federal Safe Drinking Water Act and the Federal Water Pollution Control Act Amendments of 1972.
	Corps of Engineers	Complete the Northeast Water Supply Study; sponsor water supply development projects which are interstate in scope.
	Geological Survey	Operate the hydrological gauging network in New Jersey; perform selected technical studies; publish reports and water resources circulars.
Interstate	Delaware River Basin Commission	Overall management of the water resources of the Delaware River Basin.
State	Dept. of Environmental Protection Division of Water Resources	
	Bureau of Water Resources Planning and Management	Technical advice to the Water Policy and Supply Council; planning and project development of future state supplies; overall reconnaissance of water supply management in the state.
	Bureau of Potable Water	Regulation of the quality of water delivered by water purveyors to individual customers.
	Bureau of Water Facility Operation	Operation of state owned water facilities, i.e. the Delaware & Raritan Canal, and Spruce Run and Round Valley Reservoirs.
	Water Policy and Supply Council	Allocation of diversion rights for all significant surface and groundwater withdrawals.
	Public Utilities Commission	Regulation of water rates and quality of service for all private water companies, the City of Trenton and Morristown.
	North Jersey District Water Supply Commission	An independent state agency; operation—but not ownership of Wanaque Reservoir; approval of new or additional water supply development by municipalities in the 12 northern counties.

Regional Purveyors (examples)	Elizabethtown and Hackensack Water Companies	Largest private water companies in the northern half of the State; largest and second largest contiguous services areas in the State.
	American Water Works Services	A water conglomerate and the largest single water company in the State; its three largest operations are Commonwealth Water Company, Monmouth Consolidated Water Company, and the Haddon District of New Jersey Water Company.
	Middlesex Water Company	A representative medium size private water company; supplies approximately 25 MGD in Northern Middlesex County.
	Passaic Valley Water Commission	A multimunicipal public water supply utility; member municipalities are Clifton, Passaic, and Paterson; the agency has grandfather diversion rights to 75 MGD of Passaic River water, originally granted to Alexander Hamilton in about 1790.
	Newark and Jersey City	These cities purchased and developed large reservoirs in rural areas far from their municipal boundaries; Newark developed the Pequannock Reservoir System and Jersey City developed Boonton Reservoir on the Rockaway River.
	Morris County Municipal Utilities Authority	The first county municipal utilities authority to undertake a water supply development program; expected to grow into a major water utility in the future.
Municipal Purveyors (examples)	Trenton and Morristown	Major municipal systems whose water rates are regulated by the Public Utilities Commission; they sell water to retail customers outside their municipal boundaries.
	East Orange	A representative municipality that meets its water needs from local groundwater sources.
	Atlantic City and Camden City	These cities are served by large municipality owned water departments which draw upon groundwater reserves.
	New Brunswick and Perth Amboy	Representative medium size public water departments, developing approximately 15 MGD and 8 MGD, respectively.

FIGURE 6

COMPARISON OF RESIDENTIAL WATER SERVICE CHARGES FOR MAJOR MUNICIPAL PURVEYORS AND PUBLIC UTILITIES

Municipal Purveyors	Residential Charge ($ per year)[1]	
Passaic Valley Water Commission	$32	
Newark Water Department	44	
Jersey City Water Department	32	
Trenton Water Works	57	Average $46.50
New Brunswick Water Department	44	
Perth Amboy Water Department	60	
Morristown Water Department	56	
Public Utilities		
Hackensack Water Company	$89	
Elizabethtown Water Company	76	
Commonwealth Water Company	79	Average $87.33
Monmouth Consolidated Water Company	89	
New Jersey Water Company (Haddon Dist.)	90	
Middlesex Water Company	101	

[1] Residential charge is based on water use of 100,000 gallons per year per home.

New Jersey's water supply management system has been the focus of concern for a decade. If a drought should occur over the next several years, concern would not be enough, for New Jersey would face a severe crisis. *The general health, safety, and welfare duties associated with water supply have simply not been met. There is not enough water available today and this problem continues to worsen, thus making the future ever more uncertain. Continuing to hedge bets against the occurrence of a drought is not a responsible answer. It is necessary to take positive steps to alter today's conditions and avoid tomorrow's crisis.*

THE COMMISSION'S FINDINGS: ISSUES TO BE ADDRESSED

INTRODUCTION

Fundamental social requirements have been translated into the statutes that outline the State role in water supply management. The first social need is that water is regulated for the benefit of all New Jerseyans. The second is that enough water is developed for potable purposes to meet the vital needs of the State's population and economy. New Jersey's water supply management program is made up of a regulatory element and a water utility operations element and they are presently managed, in large part, as one. However, water supply regulation and the operation of a water utility are distinctly separable missions, and given the fact that the State's regulatory efforts must pertain to the State's water utility operations as much as those of the water purveyors, it is fundamentally unsound for them to be managed as one.

A number of deficiencies are readily apparent in the State's regulatory effort. First, the State Water Policy and Supply Council, the regulatory arm, has been unable to set standards, and it does not have sufficient enforcement powers to guarantee compliance with standards it *might* set. Second, it has not been possible to regulate the collective behavior of the water industry or the activities of individual purveyors. The reasons for these deficiencies are that the primary decision-making and standard-setting body, the Water Policy and Supply Council, does not have at its disposal the resources or manpower to conduct detailed technical reviews of proposals, perform areawide or local planning efforts that would place proposals into some kind of overall perspective, or generate the constant flow of information required for sound understanding of related issues. Coupled with the lack of economic and statutory enforcement tools, the regulatory responsibilities of the State cannot be performed at a level equal to the task. Because the water purveyors are totally aware of this, it means that individual purveyor needs, whether they be deferring the construction of a water treatment facility or overdrafting a reservoir and drying up streams, can easily supersede public interests.

Similar problems characterize the State's water utility function. First, as it is presently organized, it is not feasible for the State water utility efforts to be self-supporting from the sale of water, or even generate and keep the capital necessary to rehabilitate the Delaware and Raritan Canal or construct the Round Valley Outlet Pipeline. Second, new supplies of water cannot be developed in a timely manner because there is really no identifiable institution specifically responsible for this function.[1] Third, there is no financial vehicle

[1] The Water Policy and Supply Council is charged with formulating plans for water facilities, but has neither the capacity to formulate them nor the ability to implement them.

for this purpose, with the exception of the lengthy and uncertain referendum process that requires legislative, executive, and popular approval. Last, as already stated, the regional purveyors can no longer guarantee the development of significant new sources of potable supplies. Thus, New Jersey's residents cannot be assured that adequate water supplies are being developed as required.

As long as State regulatory and water utility efforts are so intimately linked, it will be difficult for New Jersey to meet its great water supply responsibilities. Three fundamental difficulties exist. First, having strong regulatory powers and water utility responsibilities in the same agency has caused the water industry to view the State Department of Environmental Protection suspiciously. Second, having the water utility function within the Department of Environmental Protection has compounded the difficulties associated with the financing and development of new potable supplies. Finally, the Department of Environmental Protection traditionally has been perceived as conservation oriented, while water supply management is inherently a public works or developmental function that provides physical infrastructure for economic and physical growth. Further complicating this situation is the status of programs required to support sound and impartial water regulation and timely water development. In an effort to highlight major concerns, the following pages provide a summary of the Commission's findings in the areas of regulation, planning, the management of water utility operations, and water fees and revenues.

REGULATION

Regulation is perhaps the most important of the programs in water supply management. Without effective regulation of the natural resource, the quality of the water delivered to the final user, and of the rates charged by private purveyors, it is not possible for the public interest to be protected, or for certain statutorily mandated functions to be carried out. Regulation of the natural resource, water, is the most seriously neglected of the four program areas. The result is that the State's streams have their natural or required flow impaired as flows are captured in reservoirs. Also, reservoirs are overdrafted annually, thus lessening the amount of water available in the event of a drought. This occurs every summer and forces a dependence on the fall and winter rains to refill the reservoirs. If this refilling does not occur, all of northeastern New Jersey faces periodic repeats of drought conditions. Groundwater is also underregulated, both quantitatively and qualitatively, because of the absence of an information system and technical predictive methods.

Regulating Water Resources

Regulation of the water resource is essential because New Jersey has a significant diversion rights problem—too many people are making demands for the same water. With surface water, this results in the overdrafting of reservoirs beyond their safe limits. Similar demands are made upon ground-

water, but the gradual receding of groundwater when demand exceeds supply is not a visible process and its regulation requires considerable sophistication.

To address these problems, a diversion rights management program is required, entailing a comprehensive diversion rights law, a strong regulatory agency, and a planning and technical support program. The law gives the policy guidance, the agency is a forum for reviewing diversion proposals and reaching decisions, the planning and technical support program provide the tools for implementation. New Jersey's statutes pertaining to diversion rights must be updated in such important areas as grandfather rights, groundwater pollution, and realistic economic sanctions for overdrafting. It is not feasible for the Water Policy and Supply Council to deal with these issues on its own because it is part time, it is overloaded with stream encroachment applications that it must review, it has difficulty in getting quorums, and its duties are too diverse. For instance, while five Council members attended 172 of 219 scehduled meetings and hearings, the other five members* attended only 38 of 214 sessions. Additionally, while 104 of 125 Council hearings in 1971 dealt with water supply issues, only 71 of 136 hearings in 1973 were water supply related, thus marking a distinct shift of emphasis in the matters before the Council. And as a quasi-executive (planning), quasi-judicial (reviewing applications through a formal hearing process), and quasi-legislative (rule-making) agency, it is heavily dependent upon technical information and services that are often not available. For example, without predictive models to determine the impacts of a groundwater diversion, it is simply not feasible to come to a sound judgment regarding any proposal.

Regulation of Water Quality for Potable Purposes

Regulating the quality of drinking water is a major responsibility of the Bureau of Potable Water in the Department of Environmental Protection. New Jersey's 450 water purveyors must have their water and facilities tested by the Bureau of Potable Water's 13 member staff, taxing the agency's ability to perform its function. While the Bureau of Potable Water is performing its duties systematically and responsibly, the recent enactment of the Federal Safe Drinking Water Act will cause increased stress in this essential program area. This function is especially important in the numerous water systems that draw their water from streams and rivers which are also used for the discharge of wastewater.

Two related operating problems have faced the Bureau of Potable Water. One is that water purveyors are slow in upgrading their water treatment systems and using reservoir covers when ordered to do so, while the Bureau lacks adequate enforcement tools. The other problem is that some private purveyors lack the capital to make necessary improvements and they frequently find an unsympathetic ear at the Public Utilities Commission when they request rate adjustments to provide the financial base for such improvements. Given the increased and spreading concern over the quality of drink-

* There is currently one vacancy on the Water Policy and Supply Council.

ing water throughout the nation and the fact that numerous administrative orders requiring major and lesser purveyors to improve their water treatment facilities and the protection of their reservoirs from air and other pollution have gone unheeded, it will be necessary to provide the Bureau of Potable Water with stronger enforcement tools and incentive programs in the future.

Regulation of Rates

Private water purveyors, and several public ones, are regulated by the New Jersey State Public Utilities Commission. Both the rate of return and the quality of service by the purveyor are subject to PUC oversight, but there is a heavy bias toward regulation of rates. Quality of service becomes a factor only on a complaint basis. The major problem regarding regulation of rates is that water companies are often forced to invest in facilities with excess capacity for future populations, such as reservoirs or treatment plants. It is a Public Utilities Commission policy to allow a return only the capital investment in current use plus some modest future amount. This poses a problem, as a portion of a large reservoir or treatment facility may not be used for twenty years or more. A continuation of this policy in today's economy will surely drive investment away from private water companies, with the ultimate result being the complete assumption of water supply management by public agencies at public cost. Improved communication and the development of uniform policies for investment and regulation will have to be worked out between the Public Utilities Commission and the Department of Environmental Protection.

In Summary, some of the major deficiencies that must be addressed in order to manage the regulations of water resources in an effective manner are: an incomplete diversion rights law, a part time regulatory and decision-making body, and a insufficient planning and technical support effort. Lax regulation of the natural resource and the available quantity of water, the inability of the Public Utilities Commission and the Bureau of Potable Water to completely address quality concerns and force compliance with orders to upgrade water systems, and the difficulty in fostering private capital investment in new water facilities all force a basic rethinking of the State's role and capabilities in regulation. It is here that effectiveness is most essential, yet least stressed. The result is a water supply management system that has exceeded its safe limits, an unknown situation regarding quality considerations in at least several major water systems, and a rate regulation policy that potentially limits new capital investment in water supply facilities.

PLANNING

Planning is a statutorily mandated function of the New Jersey State Water Policy and Supply Council. For the long run the Council is required to formulate comprehensive policies for the preservation and prudent development of New Jersey's water resources. For the short run the Council is charged with surveying the need for additional water supply facilities and formulating plans for the development of such facilities. A third duty of the Council is to consult with and advise both the Commissioner of the Department of Environmental

Protection and the Director of the Division of Water Resources with respect to the support services required of and the work performed by the Division. These are very closely related duties, for the first two responsibilities depend upon the efforts of the Division of Water Resources; it is not feasible for an eleven member, part time, lay body to actually perform these activities on its own.

Both regulatory and utility operations efforts depend upon the planning program to reach sound decisions. The responsibility for these planning tasks rests with the Bureau of Water Resources Planning and Management. While the Bureau's personnel have performed their duties commendably, organizational difficulties, outdated legislation and the scarcity of resources have combined to frustrate their efforts.

To manage the diversion rights problem it is necessary to have: a set of goals and policies defining the nature of the regulatory effort; tools for analyzing specific proposals including a State Water Plan, watershed plans, and predictive models; personnel to perform these tasks; and a continuing flow of current information to serve as inputs for analysis. To manage the State's water utility operations successfully it is necessary to have schedules for investment that associate action with water needs, rate structures that serve to cover the current costs of providing water as well as anticipate future water development, and plans that identify the parties responsible for implementing water development schemes. At this time these elements of a planning support program do not exist and the general situation is the following:

- **Overriding policies and goals for water supply management are not regularly enunciated, thereby forcing planning to be performed without any discernible mission;**
- **An established and understood State water supply management planning process does not exist, thereby forcing all purveyor planning to be conducted for narrow and often self-serving purposes;**
- **The personnel, technical, and financial resources available for water supply planning are grossly inadequate, severely weakening the State's water regulation posture and constraining the State's water development activities, and;**
- **The outputs of the State's planning efforts are inadequate and do not facilitate the sharing of findings and policies throughout the water industry.**

Because the basic criteria for a successful water supply planning program have not been met, both regulatory and utility operations responsibilities have also gone largely unfulfilled, enabling some water purveyors to circumvent State water standards. Also, purveyor planning does not have a statewide frame of reference for evaluation of water supply issues, nor of the more comprehensive issues related to water resources, in general. Furthermore, public participation in water supply planning is virtually non-existent. These

deficiencies foster a *politicized* atmosphere for consideration of *technical* water supply proposals when they are reviewed for action by the Water Policy and Supply Council. Perhaps the foremost example of this is the controversial Tocks Island Reservoir proposal. Lacking a strong water supply planning process, New Jersey wholeheartedly accepted the proposal without intensive scrutiny and then, over a decade later, dropped its enthusiastic support for the project. In neither instance was there a range of potential alternatives placed before decision-makers to make them aware of the true impact of the respective decisions. Thus, rather than rationalizing water supply management, present planning makes it more chaotic because of the program's limitations.

Many significant water supply decisions will have to be made over the next year or two. Past and existing problems have taught us how not to proceed. With the Tocks Island project, the Round Valley outlet pipeline, the joint proposal of North Jersey District Water Supply Commission and Hackensack Water Company to further develop the Passaic River Basin, the selection of a design drought, and other major water supply issues awaiting decision, it is in the interest of the State of New Jersey to have the capabilities for making prudent choices. The complexity of the legal, technical, economic, and environmental issues has far exceeded the resources necessary for effective policy formulation. Because these decisions have implications for both regulation and utility operations, the Commission strongly urges the upgrading of the entire water supply planning support program.

THE MANAGEMENT OF WATER UTILITY OPERATIONS

New Jersey is deeply involved in the development and sale of new potable water sources, because of the State's dependence on water and the inability of any other party to meet the pressing water demands. In both 1958 and 1969, the Legislature cited the need for a State leadership in developing new water sources and the public concurred in referenda. Nearly $60 million in State monies have been invested in water supply facilities and future reservoir sites over the past fifteen years.

There are five fundamental requirements that must be met for the management of the State's water utility operations to be successful:

- a planning program that identifies the water needs to be met and the investment schedule for meeting them, as explained in the preceding section on planning;
- water revenues that cover the costs of operating, maintaining, and managing the State's water facilities, meet the annual costs of principal and interest, and provide a pool of capital for the initiation of new water supply projects;
- effectively operated State water facilities;
- a well defined and visible entity responsible for the overall management and operations of the State owned facilities; and

- a financial management vehicle to facilitate the development of new water projects.

A brief survey of operations, institutional management, and the vehicle for financing projects follows.

Operations

The Bureau of Water Facility Operations is responsible for physically operating and maintaining the Spruce Run-Round Valley Reservoir complex and the Delaware and Raritan Canal. This is the strongest portion of the State's program; only the Bureau's inability to secure necessary funds for capital improvements and technical consultants (accountants, legal assistance) detract from its overall superior posture. With the exception of the problem of securing funds, we find little need for alterations in the present mode of operations.

Management Structure

Management of the State's water utility responsibilities is performed in a very fragmented fashion. As previously indicated, physical operations are well managed by the Bureau of Water Facility Operations. Planning for the construction of new water facilities is conducted by the Bureau of Water Resources Planning and Management, but these are sketch plans that have no official standing or associated financial commitments. Overseeing the rates to be charged for State developed water is a responsibility of the Commissioner of the Department of Environmental Protection, as is the responsibility to meet statutory capital recovery requirements. Finally, the State Water Policy and Supply Council is statutorily mandated to assess water needs throughout the State and to formulate plans for their implementation. All of these represent the types of activities that are crucial to the successful fulfillment of water utility operations and should be centrally managed.

Today, the management of the State's water utility responsibilities is largely uncoordinated and organized around activities that are too narrowly conceived. The Department of Environmental Protection is vested with vast responsibilities that draw on the energies of the Commissioner. The Director of the Division of Water Resources controls a mammoth water quality management program that is constantly evolving, requiring considerably more time and energy than the water supply activities. As this report has documented, the Water Policy and Supply Council is unable to meet its statutory mandate to formulate water facility plans because it is part time and lacks adequate staff support. This means that water utility duties fall to two bureaus that are too low in the governmental hierarchy to be responsible for securing financial commitments, adjusting rate schedules, or obtaining legislative support for plans. In the end, today's fragmentation dramatically underscores the need to consolidate and centralize State water utility activities in the future.

A number of options are available to achieve this consolidation. The alternative of doing nothing at all does exist, but the Commission rejects it

as untenable. A second option is to reorganize administratively so as to tighten and improve the coordination of future State water utility activities. While this is appealing because it is the most simple to achieve, it does not address the single most crucial issue of financing future water supply projects. Another option is to strengthen the North Jersey District Water Supply Commission and create a similar one for southern New Jersey. The Commission weighed this alternative and could not support it because of the past opposition by water purveyors to the North Jersey District Water Supply Commission's attempts to achieve this posture on its own and the primary focus and concentration of NJDSWC activities on three counties. It is unlikely that additional political support could be generated for the expansion of the North Jersey District's role. The final option is to create a statewide authority. It could be an independent one such as the New Jersey Turnpike Authority or more controlled entity such as the New Jersey Housing Finance Agency. Because of the longstanding controversy over highly autonomous authorities and the desire to keep strong legislative and executive control over the agency responsible for State water utility activities, the Commission believes the most desirable institutional form is a state-wide authority that is modelled along the lines of the Housing Finance Agency. This will be discussed in detail in the Commission's full report.

Financial Management

New Jersey's Constitution forbids the dedication of revenues for specific purposes, thus forcing the State water utility operations to be supported through annual appropriations. As indicated earlier, this means that **State water fees and revenues fall short of matching the *costs of providing the service, although this is statutorily required for the Spruce Run-Round Valley Reservoir projects.*** It also means that it is the Legislature that decides when maintenance is carried out, when improvements to the physical system can be made, and when new projects are to be initiated. While legislative oversight is necessary and desirable, it can easily be achieved without constraining the entire operations of the State's water facilities.

The Commission endorses the objective of placing the operation of the State's water facilities on a self-supporting or utility footing. This goal cannot be accomplished presently, nor will it be achieved by simply creating a traditional state authority with revenue bonding powers, for revenues cannot meet costs in the initial stages of reservoir development and operations. A proposal to meet these problems and challenges is presented in the recommendations section of this report.

In summary, fragmentation and financial management difficulties now characterize the State's water utility operations. As such, it is not possible to meet statutory capital recovery requirements on outstanding bonds or address the need to develop new potable supplies to support New Jersey's population and economy. This will continue until water supply development and sales are viewed and organized as a consolidated and centralized utility operation responsible for supporting itself and armed with the financial tools to do so.

STATE WATER FEES AND REVENUES

In a water supply management system, an adequate flow of water revenues is required to drive the rest of the system. New Jersey's water supply programs are presently supported by general appropriations, although the Spruce Run-Round Valley reservoirs were intended to be self supporting. There are four sources of water revenues, those being the Surface Water Diversion Fee, the Private Surface Water Diversion Fee, the fees charged for the use of water delivered from the Delaware and Raritan Canal, and similar fees associated with the Spruce Run-Round Valley Reservoir Complex. *Figure 7 summarizes the State's total water revenue pitcture and indicates that a total of $2,182,775 in revenues were received in 1973. In that same year, the costs of principal, interest, operations, and maintenance were $3,685,759 for Spruce Run-Round Valley Reservoir alone.*

Management of State water revenues represents the most serious deficiency in the entire water supply management system. In 1907 the Legislature enacted the Surface Water Diversion Fee to impose a license fee for the use of the State's water resources and to provide an economic deterrent against overdrawing of water from streams. With a maximum rate of $10 per million gallons, such intent is far out of line with current economic realities. It does not generate a sufficient sum even for sustaining the quality of the current water resource, let alone for improvement and development of future supplies. *Nor does the addition of $10 per million gallons, the maximum rate, stop a purveyor from taking water that will be sold for some 20 times that amount.*

An even more outdated fee is the Private Surface Water Diversion Fee. It was designed to exact a license fee, generate revenues for the State Treasury, and cover administrative costs of the program. Revenues obtained from these fees in 1973 amounted to $375, this paltry amount being attributable to the manner in which the statute has been interpreted and the fact that it only applies to private surface water in delineated basins. The statutory interpretation resulted in fees being charged for only one day annually. The law reads, "All such diverters for nonconsumptive use shall pay an annual charge at the rate of $10.00 per million gallons, based on the average daily amount of water diverted over and above 100,000 gallons . . ." *Thus, one company which diverts 17.2 million gallons of water daily was charged $172 for an entire year.* Regarding the latter cause, as of today only 25% of the State's river basins are delineated (a requirement for basins developed to the point where regulation is required). These, however, do not include the Passaic and Hackensack basins where water resources are most intensely developed. Thus, only private diverters in the Raritan, Navesink, Metedeconk, Manasquan and Toms River Basins are required to pay this fee. It is inequitable to continue to charge only some of the private diverters while exempting most diverters in the State. Clearly, it is not practical to run a revenue program that costs far more to administer than is recaptured in fees.

Only the Delaware and Raritan Canal has been managed in a realistic fashion with a slight net surplus being transferred into the State Treasury over

FIGURE 7

SUMMARY OF STATE WATER FEE RATES AND REVENUES FOR 1973

Classes of Water Fees	Estimated Percentage of Total Diversions	Water Fee Rate ($ per million gals.)	Water Fee Revenue ($ per year)
Public Surface Water Diversion Fee	36	$1.50[1]	$249,400
Private Surface Water Diversion Fee			
—covering consumptive use	2	0.50	40
—covering non-consumptive use	5	0.03	335
Delaware and Raritan Canal	4	35.00[2]	556,000
Spruce Run and Round Valley Reservoirs	5[3]	47.50[1]	1,377,000
All others	53	0	0
Totals	100%		$2,182,775

FOOTNOTES:

[1] Average rate

[2] Maximum rate permitted by current regulations. Some older contracts provide for a lesser rate.

[3] Included in the public surface water diversion figure.

the past 10 years. Even here, the water has been priced at an extremely low rate, $35 per million gallons, and much needed capital expenditures have been deferred. Recently a major positive step was taken when new fees for Canal water were proposed. These are necessary, if for no other reason than to cover the cost of major capital improvements on the Canal anticipated in the near future.

Of the four revenue producing programs, by far the most disturbing is the revenue picture tied to water sales from the Spruce Run and Round Valley Complex. The two foremost revenue goals, specifically stated in the enabling legislation, are to cover the annual costs of principal and interest on outstanding bonded indebtedness and to cover the annual costs of operating, maintaining, and managing the facilities. Figure 8 portrays the revenue picture over the life of the project, **the net result being a high deficit operation. In every year the Treasury has been forced to pay out substantial sums to make up the shortfall between annual costs and the inadequate revenues. The Department of Environmental Protection and its predecessor agencies are over $25 million in arrears to the State Treasury and statutorily mandated capital recovery requirements have not been met once.**

The reasons for these financial difficulties are too complex and lengthy to provide in this summary. They are presented in detail in the Commission's full report, **Water Supply Management in New Jersey.** This section does,

FIGURE 8

REVENUES AND EXPENSES FOR SPRUCE RUN AND ROUND VALLEY RESERVOIRS

1960 TO 1973

Fiscal Year	Revenue From Sale of Water (1)	Operations Expenditures (2)	Net Revenue Returned To General Fund (3) = (1) − (2)	Repayment of Bonded Indebtedness (4)	Annual Shortfall of User Repayments As Compared To Bond Repayments (5) = (4) − (3)
1960	—	—	—	$ 708,583	$ 708,583
1961	—	—	—	708,583	708,583
1962	—	—	—	1,278,681	1,278,681
1963	—	—	—	1,278,681	1,278,681
1964	—	—	—	1,537,131	1,537,131
1965	$ 68,714	$ 68,714	—	1,957,543	1,957,543
1966	349,045	349,045	—	1,929,975	1,929,975
1967	556,362	556,362	—	1,902,407	1,902,407
1968	844,311	619,311	$ 225,000	2,602,114	2,377,114
1969	844,246	600,049	244,197	2,855,441	2,611,244
1970	843,596	750,000	93,596	2,799,444	2,705,848
1971	972,177	800,954	171,223	2,743,446	2,572,223
1972	1,070,323	710,074	360,249	2,687,449	2,327,200
1973	1,370,510	750,000	620,510	2,635,759	2,015,249
TOTALS	$6,919,284	$5,204,509	$1,714,775	$27,625,237	$25,910,462

Source: Files and records of Departments of Environmental Protection and Treasury.

however, provide a capsule view of the fiscal management aspects of the State's water supply management system. Without dramatic reform of existing fee structures and attendant increase in water revenues, New Jersey's water supply goals will continue to go unmet.

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

The foregoing summary of the Commission's findings suggests an urgent need to alter the manner in which water supply is managed in New Jersey. In this section, the Commission provides its conclusions regarding what presently constrains the water supply management system from fully realizing its potential and achieving statutory goals and how, in a general sense, these goals can be accomplished and recommendations for improving New Jersey's water supply management system.

In New Jersey's water supply management system, the water purveyors have proved themselves very effective at transmitting water from storage facilities into the distribution networks and then moving the water on to the final users. Treatment of the water to be supplied for potable purposes is another function performed by the purveyors, and in this area there is cause for concern. Some purveyors have deferred investing in treatment facilities, although officially ordered to do so by the Department of Environmental Protection. In recent years, the water purveyors have not been successful in developing any significant new blocks of surface water, and, as a result, have overtaxed their existing reservoirs, in some cases severely. As more capital is required for improved treatment facilities to meet new Federal drinking water standards, likelihood of new potable supplies being developed by the water purveyors will diminish.

Two major concerns emerge from this scenario. First, regulatory efforts of the New Jersey State Water Policy and Supply Council and the Division of Water Resources have proved inadequate for keeping the water purveyors operating within the safe limits of their water systems. Second, the goals and requirements of the 1958 Water Supply Law and the 1958 and 1969 water bond issues pointed accurately to the State rather than private purveyors for future development of potable supplies. However, the existing institutional and financial vehicle for developing new sources of water supply, that being the Department of Environmental Protection, utilizing voter approved general obligation bonds that have stringent capital recovery schedules, has proved inherently unsuitable for the task. For these reasons it is imperative that:

- **The State's regulatory capabilities be substantially upgraded to the level where they can effectively control the behavior and activities of the water industry, and;**
- **The institutional and financial vehicles used by the State for water development be transformed from their general government role into one more suitable for water utility operations.**

In 1907 the State Legislature recognized the need for State dominance in the regulation of water. Recent events have underscored the reasons for

a strong regulatory posture on the part of the State, but that strong posture is simply not attainable without fundamental improvements in the performance of the Division of Water Resources. In both 1958 and 1969 the State role in developing future water supplies was defined by the Legislature and voters, but without additional fundamental alterations in this area it will not be possible for the State to fulfill its critical leadership duties.

- **The general health, safety, and welfare duties associated with water supply matters have not been successfully fulfilled by the State's water supply management program, and;**
- **By virtue of being both a regulator and a water utility operator, the State Department of Environmental Protection is beset with an inherent conflict that frustrates the timely implementation of legislative capital investment policies on one hand, and the orderly regulation of water purveyors on the other.**

To allow New Jersey's water supply management system to deteriorate further would be unthinkable. Both the Governor and the Commissioner of the Department of Environmental Protection have expressed grave concern over the present state of water supply affairs and have pledged to take the steps required to reform the water supply management system. The task will not be an easy one and will require several years to fully realize the benefits of strengthening the State's regulatory program, initiate a modern planning program, reform the existing intolerable situation with State water revenues, and to develop investment and institutional management policies and programs. However, the benefits of taking these fundamental steps will be reaped for decades to come, strengthen local confidence in the ability of the State government to perform, and protect New Jersey's valuable and threatened water resources.

TOWARD A REFORMED SYSTEM FOR WATER SUPPLY MANAGEMENT

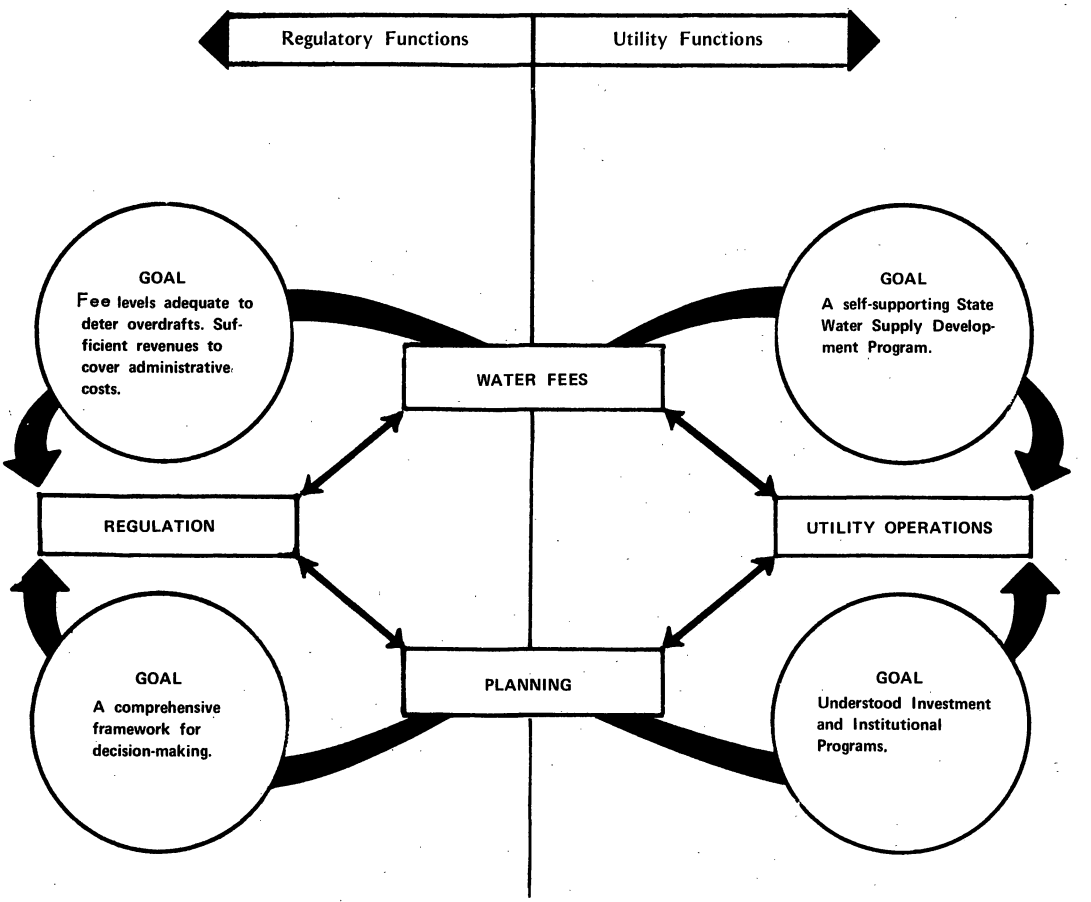
Today there exists an interconnected network of water systems in New Jersey. Although they are physically interconnected, they are not operated and managed in an integrated fashion except in emergency situations. As previously explained, some water regulations have gone unaltered since 1907 and do not represent effective control mechanisms any longer. New Jersey's water supply planning program is virtually non-existent and what is done is not directed toward any overriding missions. Furthermore, the fiscal management of the State's water utility operations has ignored basic statutory requirements and has led to a severe deficit situation. For these major reasons and any number of lesser ones, it is essential for the State's water supply management programs to be reassessed.

The initial alteration must be in the perception of the State's duties — — regulation and utility operations should not be managed by the same people as one program. Regulation is one pillar of the State's water supply management program; utility operations is another. They are separate duties, although they suffer from the same ills, those being a lack of support from the water supply planning program and assorted problems associated with

fees for the use of water. Planning assists in the achivement of rational regulatory decisions, but it also assists in developing an investment schedule for public infrastructure. Water fees are needed to deter water purveyors from overdrafting reservoirs, drying up streams, and preventing the pollution of groundwater as much as they are needed to recapture capital expenditures required for the construction of reservoirs. Therefore, while it is possible to view planning and water fees as distinct and complete programs for analytical purposes, it is necessary to appreciate the interrelation of their respective and multiple regulatory and utility missions in the context of any reorganization plans.

Thus, the load carried by the regulation and utility operations pillars must be supported by the same two arches, planning and water fees. However, the regulatory and utility operations programs must remain separate. As Figure 9 portrays, the regulatory and utility operations goals are met by associating them with inputs from support activities, specifically:

Figure 9.
AN INTEGRATED SYSTEM FOR WATER SUPPLY MANAGEMENT: REGULATORY AND UTILITY OPERATIONS GOALS



- **A comprehensive framework for decision-making is best met through a planning program that generates necessary information to provide for a comparison of alternative courses of action and their respective impacts and implications.**
- **Having sufficient economic deterrents to prevent overdrafts and revenues to cover the costs of operating the regulatory program are best met by bringing State license fees, penalty fees, and administrative fees into line with current economic conditions.**
- **A rational and understandable capital investment and management program is best met by conducting a State Water Plan that would identify the need for future projects, the cost of the facilities required, who should bear those costs, and the proper parties to implement required actions.**
- **A self-supporting State water supply development program is best met through expanded and improved water fee schedules and the creation of a revolving fund to pool capital that is required to service the debt on State water supply projects when they have only few subscribers.**

GENERAL RECOMMENDATIONS

While there are many water supply goals to be met, two remain paramount. One is for the State to be an effective and impartial regulator of the natural resource and the water purveyors; the second is for the State owned water facilities to be operated on a utility footing which permits timely water development while requiring all facilities to be self-supporting. To achieve these goals, there are two essential concommitant actions. First, to raise the capabilities of the regulatory arm of the Water Policy and Supply Council, to a level commensurate with their varied and extremely difficult decision-making responsibilities that are statutorily mandated, it is necessary to implement a full scale planning effort that would be initiated by preparing a State Water Plan. Second, to move the State's water utility operations from its present, deep deficit position, it will be necessary to completely and dramatically overhaul the fee structure for State developed water. If these actions are not implemented, other attempts to improve water supply management may not be successful.

While impossible to gauge precisely what an improved planning program and an expanded and updated system of water fees contribute towards the improvement of water quality management in general, they are without doubt significant. Even were other related objectives cited in this report to be implemented (e.g. to alter the size and scope of the Water Policy and Supply Council; to utilize full-time hearing officers for all Council hearings) they would depend in large measure on a base and flow of information derived from a full-scale planning program as a basis for decisions. Similarly, the creation of a new institution charged with managing the State's water facilities could prove ineffective and deficit producing without an adequate return

on past investments and a pool of capital to develop future projects. The effective regulation of water and its users and the development of water for public use are the overriding State duties set out by statute. The Commission strongly urges prompt action to meet these requirements.

RECOMMENDATIONS TO IMPROVE THE REGULATORY ASPECTS OF WATER SUPPLY MANAGEMENT

As mandated by statute, the New Jersey State Water Policy and Supply Council is responsible for regulating the State's water resources and those who use them. In addition, the Water Policy and Supply Council is charged with the duties of developing policies to meet these ends, assessing the need for additional water supply facilities, and formulating the required plans for such facilities. These duties require the lay Council to make many complex decisions that necessitate technical staff services for support. In order to assure that the Council is able to meet its duties and that the Division of Water Resources is successful in providing required assistance, the following recommendations are made to improve the structure for formulating policies, evaluating State and purveyor proposals, and providing the planning, enforcement, resources and manpower support services on which the other two elements depend.

A. The Regulatory Structure

Earlier in this summary, we cited the difficulties of the Water Policy and Supply Council in meeting its responsibilities. These include the Council's part time character and its frequent inability to attain a quorum. Furthermore, the Council's duties often overlap with those of the Division of Water Resources, and in some cases the North Jersey District Water Supply Commission. The following recommendations respond to these problems. The Commission urges that:

- **The New Jersey State Water Policy and Supply Council be reduced in size from 11 to 5 members.**
- **The Council's function be limited to regulation and adjudication, with its quasi-executive and quasi-legislative duties being absorbed by the Division of Water Resources.**
- **All Council hearings be conducted by trained, full time hearing officers in the future.**
- **The regulatory or review powers of the North Jersey District Water Supply Commission be eliminated in the future, allowing it to assume its proper role as a regional purveyor and developer of water supply for municipalities.**

B. The Regulatory Process

While structural problems have presented difficulties in regulating water supply management in New Jersey, procedural problems have made for even more difficulties. Presently, every application for a water diversion, regard-

less of degree, scope or issue, requires deliberation by the Water Policy and Supply Council. On any one day, the Council may have a hearing on a proposal to divert 90 million gallons per day of surface water, which would be of interest to every major water interest group in the State, or another one regarding the diversion of 100,000 gallons per day in a rural, groundwater-rich region of the State. One event is a major policy matter, the other is purely of local and technical concern. This lack of distinction in policy matters has hampered timely decision-making, with some major decisions requiring over two years. An additional procedural problem is the failure of the Water Policy and Supply Council to keep the Legislature abreast of water supply issues and the activities of the Division of Water Resources as is statutorily mandated. Therefore, the Commission recommends that:

- **The Water Policy and Supply Council adopt a 120 day hearing process complete with published procedures, outlining the basis and requirements for all applicants and participants. Such process might be modelled after the Federal Government's National Pollutant Discharge Elimination System which permits rapid administrative action on simple applications, while providing ample opportunity for public and adjudicatory hearings for important or complex applications.**
- **The Water Policy and Supply Council's statutorily-mandated duty, of submitting an annual report to the State Legislature concerning the state of water supply management in New Jersey, be transferred to the Division of Water Resources.**

The annual report to the Legislature would be a logical by-product of a Division of Water Resources program planning effort, covered next.

C. Support of the Regulatory Effort

The problems associated with the structure and process employed in regulating water supply in New Jersey are considerable, and are compounded by difficulty in obtaining the support services required for effective administration and policy formulation. Regardless of the improvements made in the structural and procedural areas, decision-making simply will not be improved unless there are: 1) a planning program that can provide for the orderly comparison of alternatives and generate an independent information base; 2) an enforcement mechanism to counter overdrafts of reservoirs and groundwater; 3) the staff resources and manpower to perform a substantially higher level of public services; and 4) a flow of water fee revenues sufficient at least to cover the cost of the program. To meet these requirements the Commission makes the following recommendations:

Planning

- **The Commission recommends that the Division of Water Resources undertake immediately a State water plan to include:**

  (a) **An assessment of future water needs.**

(b) **A technical, economic and environmental analysis and comparison of alternative water supply development projects.**

(c) **The establishment of continuing a program of water conservation measures.**

(d) **The selection of a set of alternative water supply development programs.**

(e) **The preparation of financial and institutional plans and programs for future State projects.**

(f) **The selection of a design drought, the establishment of reservoir safe yields, and the establishment of minimum stream flows based on economic, technical and environmental concerns.**

(g) **The development of a drought contingency plan and an emergency interconnection plan to guard against both general and selective disasters.**

(h) **The development of resource tools which would assist the staff in future work and decision-making. Examples: a computerized information system, groundwater yield predictive models, and the form and content of watershed plans.**

- **The Commission recommends that the State Water Plan be the initial step in developing a continuing planning program, the functions of which would be contributed to an orderly process of short-range water management decisions. The major features of the continuing planning program would be:**

(a) **An effective computer-based information system.**

(b) **A series of watershed plans which would organize water resources data on a basin basis.**

(c) **A continuing flow of water resources circulars and technical reports.**

(d) **A thorough integration of water quality issues, concerns and activities with their water supply counterparts.**

Enforcement Through Statutory and Economic Deterrents

- **The Commission recommends the enactment of specific legislation which would prohibit pollution of groundwaters from both externally introduced wastes and poor groundwater management practices.**

- **The Commission recommends the establishment through legislation of economic deterrents or penalties which would: 1) limit overdrafts of groundwater beyond levels of authorized diversion rights; 2) prevent the overdrafting of surface reservoirs beyond safe yields established for the selected design drought; and 3) preclude the**

common practice of drying up streams on an annual basis to expand the yield of a reservoir system. Adoption of such State water fee program will upgrade existing surface water fees, expand them to the point where grandfather clauses are eliminated, and establish new fees for public and private groundwater diversions. As an interim step, the Commission recommends that the above provisions be incorporated into the conditions of approval of all new and renewed water diversion permits.

Resources and Manpower

- **The Commission recommends the appropriation of sufficient funds to conduct a State Water Plan from the proceeds of the 1969 Water Conservation Bond Act.**
- **The Commission recommends increases in the technical and management staffs of the water supply quality functions (Bureau of Potable Water), and the water supply quantity functions (Bureau of Water Resources Planning and Management).**
- **The Commission recommends that a joint water quality/water supply staff be established to oversee the development of water supply watershed plans and water quality management basin plans as a combined effort resulting in a single product. Such a step would represent the most concrete action which could be taken to integrate water supply and water quality interests among the largely separated technical staffs.**

Revenues to Offset Costs of Services

- **The Commission recommends that the increases in staff and monies necessary to implement the other recommendations for an improved regulatory system be financed by: 1) a new comprehensive set of application fees modelled after the program established by the Delaware River Basin Commission; 2) a revised set of hearing fees reflecting the cost of such hearings; and 3) a comprehensive set of general diversion fees covering all classes of water (public, private, surface and ground) and representing payments for the license to withdraw the State's most valuable natural resource.**

RECOMMENDATIONS TO IMPROVE THE MANAGEMENT OF THE STATE'S WATER UTILITY OPERATIONS

New Jersey is in the unique position among eastern States of operating its own water utilities, while regulating all water resources within its boundaries. Over the past 15 years New Jersey has made important strides towards achieving its mandated duty of developing adequate water supplies for all New Jerseyans, but it has also been frustrated in realizing its full potential because the Round Valley water is not available for use. This, along with other pressures, has resulted in $25 million deficit attributable to the Spruce Run-Round Valley Reservoir complex. At this time the State's role in develop-

ing new water supplies is unsure and needs to be reassessed.

Throughout the course of this research effort, the Commission has found that no other party is capable of addressing State water supply needs and that the Legislature displayed foresight in providing bond monies for the development of reservoirs and the acquisition of future reservoir sites. However, there has been little continuity in monitoring the implementation of these policies and, consequently, the State water utility operations have run into financial and administrative difficulties.

The Commission's recommendations in this area generally proceed from the following broad premise:

- Removal of the inherent conflict in the Department of Environmental Protection's dual roles as allocator and regulator of the public's water and as purveyor and utility operator of some of the public's waters.
- The adoption of a utility-like approach for the State's activities related to water supply.
- The incorporation of necessary support elements in a new fee and revenue structure.

A. The Institutional Structure for Managing the State's Utility Operations

Responsibility for the operation of the State's water facilities is in the Department of Environmental Protection and, given its limited resources, it is generally discharged in an effective and efficient manner. Fiscal management of these facilities, also in the same Department, has not been carried out equally well. Ambiguity exists as to specific responsibility for setting rates and for meeting the statutory requirements for recapturing capital expenditures. The Department of Environmental Protection has fallen behind in repaying its debt to the Treasury, with the Legislature having to provide $25 million to meet the costs of principal and interest. To prevent further growth in a deficit of this magnitude requires a more visible agency with a narrower mission. Therefore the Commission recommends:

- **Creation of a State Water Authority comprised of the Commissioner of the Department of Environmental Protection; the President of the Public Utilities Commission; the State Treasurer; the Commissioner of the Department of Labor and Industry; and public members. The State Water Authority should be empowered to issue revenue bonds to construct water facilities, but must obtain the consent of the Water Policy and Supply Council, just as any other water utility.**

B. An Investment and Financial Policy for Water Development

State leadership and continued State support for the development of new water supplies are essential requirements. The Legislature and the public votes on the bond issues of 1958 and 1969 confirmed that water development is a State duty and the best direction for meeting the statutory goals of an assured supply of water for all New Jerseyans. The Commission believes that

the State must reassert its responsibilities and leadership in the field of water supply. Just as the Federal Water Pollution Control Act Amendments of 1972 completely altered State approaches to water quality, it is expected that the Federal Safe Drinking Water Act, signed into Law on December 17, 1974 will serve to revitalize State policies and programs in water supply. The Safe Drinking Water Act emphasizes the importance of the States' having the primary responsibility. To meet the most immediate needs for additional water supply (taking into account the time required to implement capital construction projects) the Commission recommends that:

- **The Department of Environmental Protection utilize monies from the 1969 Water Conservation Bond to finance the outlet pipeline from Round Valley at a cost of some $16 million in order to free for use an additional 80 million gallons of water per day. The pipeline represents one of the most economical and expeditious projects that could be undertaken and it would provide a vital, additional 80 M.G.D. to be utilized as protection in the eventuality of a drought in the next several years.**

C. Supporting State Water Utilities Operations

State involvement in the development of water supply necessitates formulation and adoption of strong supporting programs for operating the public facilities. A classic problem exists with water supply projects which are not fully subscribed at the initiation of operations. Spruce Run and Round Valley provide an example of this problem, selling only 80 M.G.D. out of a total potential supply of 160 M.G.D. This difficulty is not insurmountable; there are means of overcoming these usual revenue lags. Four major steps are suggested to address this situation. The Commission recommends that:

- **The State's water utility operations, when viewed in their totality, be required to be self-supporting and that the costs of principal, interest, operations, maintenance, and administration be met annually from the proceeds of water sales.**

- **The present 'State Water Development Fee' be altered to cover the existing expenditure levels of the Delaware and Raritan Canal and Spruce Run-Round Valley expenditures. The basic principle of their recommendation is that the capital expenditures and annual operation, maintenance, and management expenses should be paid by the direct users of the State water sources and facilities.**

- **The creation of a Beneficiary Insurance Fee to be charged to areas that will require future State developed water supplies. Water users in the Passaic River Basin would be required to pay a small surcharge on their water to insure that more will be developed as needed. Users in areas of the State where there is a plentiful supply would not be required to pay the surcharge. Revenue collected would be assigned to a revolving fund for use by the State Water Authority in building future State water projects. Similar funds exist presently, for example,**

the Workman's Compensation Fund and the State Unemployment Disability Insurance Fund. By paying a very modest fee over a period of years water users would create a capital fund to insure the timely development of important State water supply projects.

- **Within the context of the State Water Plan a review and prompt report should be made and submitted to the Governor and the Legislature of significant aspects associated with the water development fees and the Beneficiary Insurance Fee: the exact relationship of the two fees for future projects; the concept of a uniform price for all State developed water; the design of a single pricing system for future projects; and a standard transfer fee for bulk water sales among purveyors.**

Water supply management has been a major State responsibility for years and remains a pressing problem that has not been successfully resolved despite strong legislative authorizations and mandates. Fewer than ten years ago, New Jerseyans experienced a drought of unprecendented severity. Since that time, too little has been done to avoid the far more serious consequences that could result from a similar drought, especially in the critical area of need, the Passaic River Basin. And with at least one major water system now 50% over the safe sustained yield of its reservoirs, a shorter, intensive drought could cause significant social and economic dislocation.

Although New Jersey has a State water supply management program, its overriding missions of regulating water resources and the water industry in the public interest and of developing adequate supplies of potable water are not performed adequately. The Commission urges adoption of its proposals by the Legislature, the Executive, and the water industry. While these recommendations will require major changes in the State's approaches to this function and some alterations in water industry operations, the fundamental roles and responsibilities of respective water interests will be retained. The proposals contained in this report constitute the first steps towards the improvement of water supply management, indicating the direction for resolution of existing problems. It will fall to those directly involved in the programs to provide the substance and continuity required to insure the success of water supply management in New Jersey in the future.

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—A Practical Guide to Reaching Joint Services Agreements, 1971
(In cooperation with the N.J. Department of Community Affairs)

Beyond Local Resources: Federal/State Aid & the Local Fiscal Crisis, 1971
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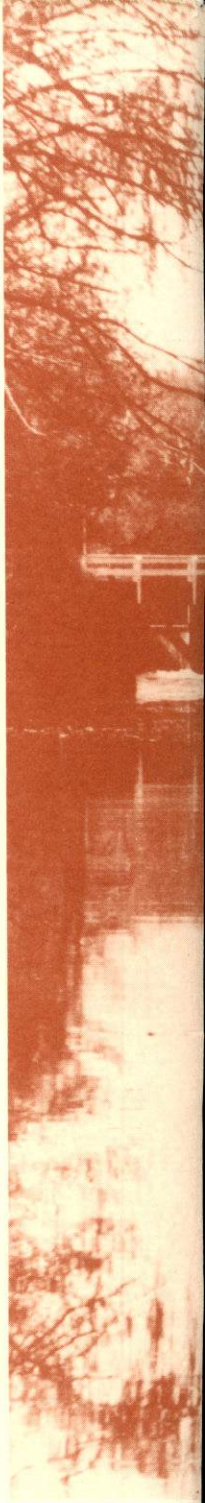

Photo Credits:

Top: Wanaque Reservoir, during drought of 1965,
North Jersey District Water Supply Commission

Center: Canastear Reservoir, during drought of 1965,
N.J. Dept. of Environmental Protection

Bottom: Round Valley Reservoir, 1972,
N.J. Department of Environmental Protection

Front Cover: The Delaware and Raritan Canal