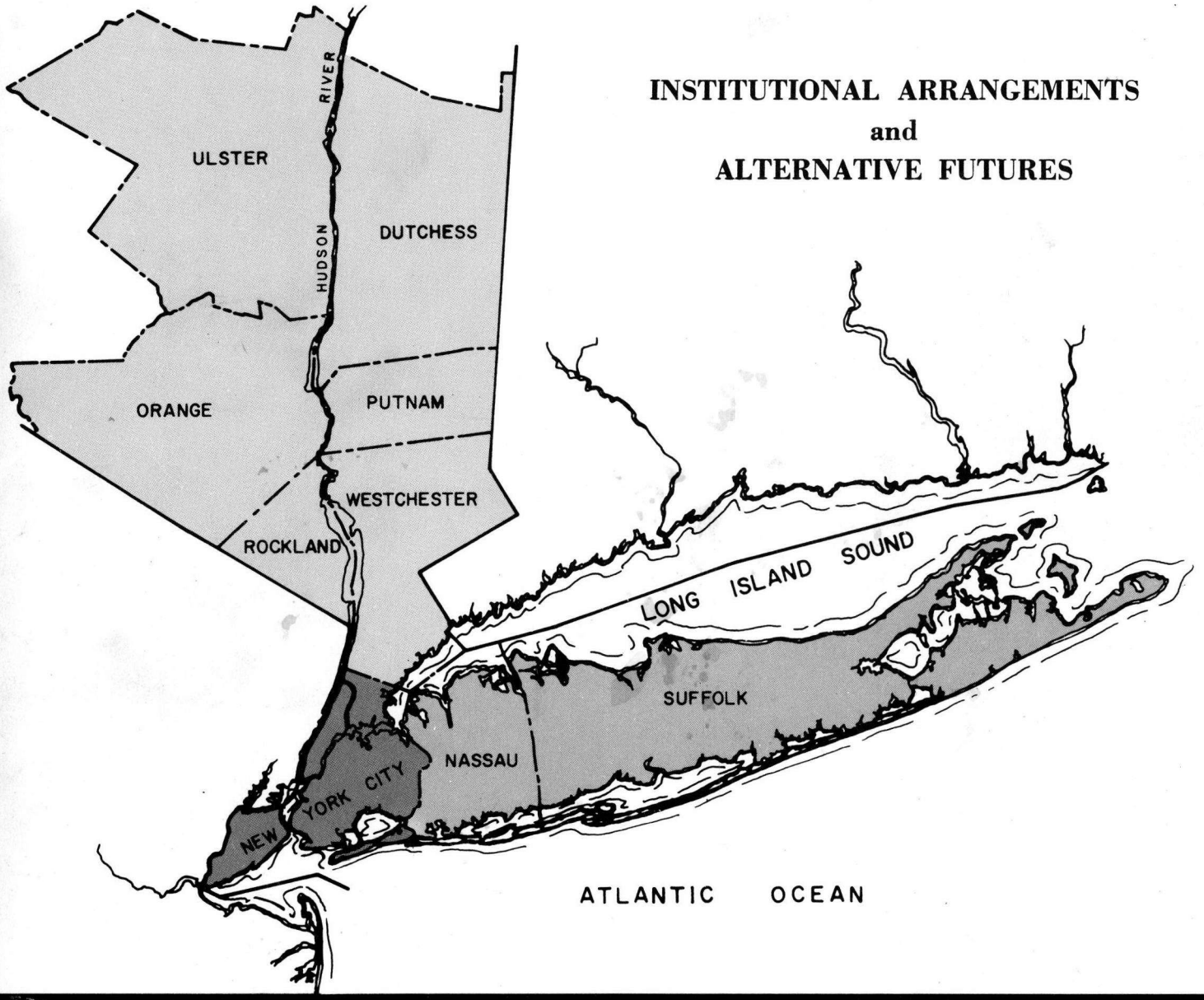
TEMPORARY STATE COMMISSION ON THE WATER SUPPLY NEEDS OF SOUTHEASTERN NEW YORK

INSTITUTIONAL ARRANGEMENTS and ALTERNATIVE FUTURES



December 15, 1973

Albany, New York

NEW YORK STATE DEPARTMENT OF HEALTH
Hollis S. Ingraham, M.D., Commissioner
●
DIVISION OF SANITARY ENGINEERING
Bureau of Public Water Supply

TEMPORARY STATE COMMISSION
ON THE
WATER SUPPLY NEEDS
OF
SOUTHEASTERN NEW YORK

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DECEMBER 15, 1973
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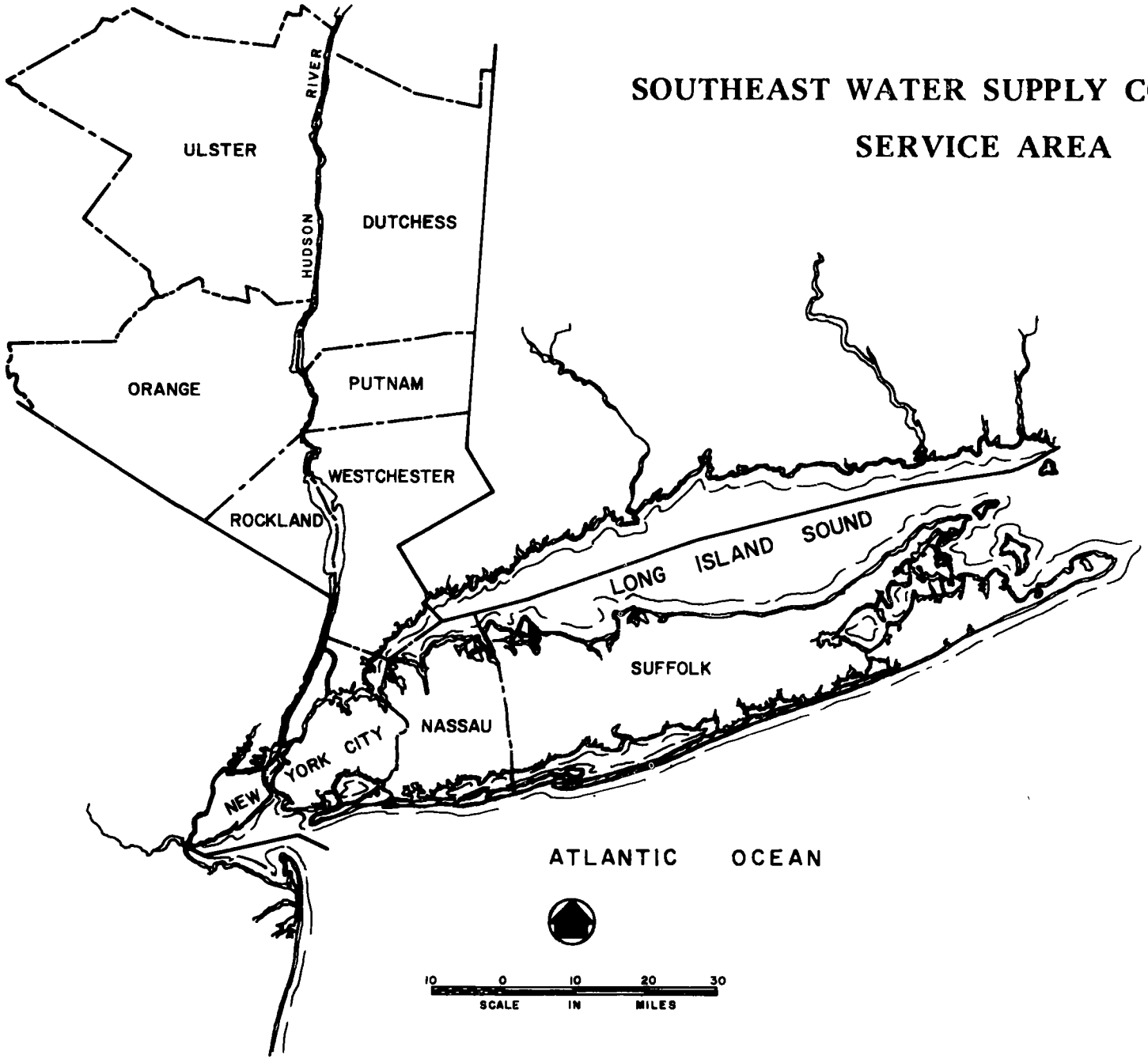
SOUTHEAST WATER SUPPLY COMMISSION SERVICE AREA



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DECEMBER 15, 1973

NELSON A. ROCKEFELLER
GOVERNOR

WARREN M. ANDERSON
TEMPORARY PRESIDENT OF THE SENATE

PERRY B. DURYEA, JR.
SPEAKER OF THE ASSEMBLY

DECEMBER 15, 1973
ALBANY, NEW YORK

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FOREWORD

This report reviews and analyzes present institutional arrangements at all levels of government relative to the provision of community water supply services. Community water supply services are provided throughout the Region by local governments, cities, towns and villages and by investor-owned companies.

The role of the Federal and State governments has been limited substantially to planning and regulatory activities, although this is in the process of change. The roles of the various governmental and private institutions are reviewed and analyzed. An evaluation is made of the existing arrangements in light of the need to develop additional sources of water and to conserve existing sources of water. A set of alternative futures is developed in response to meeting these water supply needs. A recommendation is made for a new regional institution which will have the capability to develop and operate the existing and the needed facilities to insure that water supply needs are met in a economical and timely manner.

E. Virgil Conway, Chairman

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SUMMARY

AND

RECOMMENDATIONS

SUMMARY

The institutions governing water supply in the Southeast New York Region (New York City and eight surrounding counties) reflect a jig-saw puzzle pattern that may have sufficed until now, but will be unable to meet the Region's future water supply needs.

This mix of institutions is the product of ad hoc responses to individual group water needs. The result has been diversity: diversity in the degree of involvement and functions performed by various levels of government, in the types of institutions responsible for the area's water systems, in methods of financing water systems, and perhaps most importantly, in levels of service and consumer costs.

This diversity, in turn, has generally precluded a unified effort to meet what has become a regional need.

FEDERAL

In the past, neither the Federal nor State government has effectively discouraged fragmentation of the Region's water supply services. Their activities have been concerned primarily with planning and regulation of the water resource rather than provision of water supply services.

The role of the Federal government now is becoming stronger, in part due to its own initiative and in part due to a vacuum created by a lack of State initiative.

This trend is having a direct impact on the Southeast New York Region via the current Northeast Water Supply (NEWS) Study by the U.S. Army Corps of Engineers. The results of this study, which could thrust the Federal government into the financing, construction and operation of water supply facilities, are at this point speculative.

The Federal regulatory role may also soon grow through the proposed "Safe Drinking Water Act of 1973."

INTERSTATE

At the interstate level, there is no mechanism or agency specifically concerned with planning and regulation of water supply services for the New York metropolitan area. The major interstate element in the Region's water supply picture is the Delaware River Basin Commission. The Commission has institutionalized a U.S. Supreme Court decision of the 1930's allocating Delaware River waters to New York City and downstream states.

A requirement that New York City release a percentage of "excess" waters downstream is now outdated and discourages water conservation measures in the Southeast Region.

The Commission's proposed Tocks Island reservoir project to serve northern New Jersey would produce indirect benefits to New York by forestalling New Jersey's need for Hudson River water.

STATE

The State, like the Federal government, has been concerned primarily with planning and regulation of the water resource, rather than with financing, construction and operation of water supply facilities. However, State planning so far has largely eluded the Southeast New York Region. There is at present no water resource management plan for the Hudson River Basin and Long Island. Such a plan is essential, particularly given the interrelation of different water uses, including water supply and wastewater disposal services.

The State has played a limited leadership role in water supply through sponsorship of comprehensive public water supply studies in the Region's counties. It has been more active, although not always effective, in its regulatory role, which is divided among the Departments of Health and Environmental Conservation and to a lesser extent, the Public Service Commission.

In general, the major roles of federal, state and interstate agencies in water supply matters in the Southeastern Region thus have been limited to research,

planning and regulation. These roles are appropriate to these levels of government, but they have not always been effectively applied to the Region.

LOCAL

The financing, construction and operation of water supply service facilities have been the province of local governments and institutions and in the absence of meaningful regional planning have lead to the jig-saw puzzle pattern of services. City, town, village and investor owned systems -- a total of 481 community water systems -- are the responsible entities. These include a proliferation of development systems, many of which are clearly inadequate, that are characteristic of urbanizing areas and serve small populations. At the other extreme -- the county level -- water supply services are with few exceptions insignificant.

Only in the case of New York City does water supply begin to take on a regional perspective, and this is the result of a statutory mandate rather than a recognized need to cooperate. In return for permission to develop upstate water sources, New York City was required early in the century to supply water to upstate municipalities and water districts. This relationship has been marked by constant friction over water rates, per capita limitations, the City's non-recognition of counties as municipalities as well as environmental concerns which stem from the limited use of and release procedures from its reservoirs. New York City also has been steadfast in its refusal to meter its own customers. New York City serves its own customers competently, but plans primarily for itself and offers little voice to upstate water users.

At the same time these and the Region's other upstate areas as well as the Long Island area outside New York City are accounting for an increasing percentage of the Region's population and water demands.

In nearly all of the Region's eight other counties, local water supply is characterized by fractionalization and, consequently, by limited efficiency and non-uniformity. With the exceptions of the Suffolk County Water Authority and the private Spring Valley Water Company in Rockland County, involvement on a county scale is nonexistent, despite recommendations for strong county roles by virtually every comprehensive county public water supply study.

This non-uniformity extends both to finances and services. In general, municipal systems are subject to no state regulation of service or rates. Cities and villages can and do subsidize their water supply systems out of other income or use monies generated by water supply for other purposes. Because of the require-

ment that water supply revenues must be used for water supply purposes in the same districts, county and town systems have neither surpluses or deficits over a two or three year time span. Rates charged by investor owner systems are regulated by the Public Service Commission. The services offered by many of the small private systems, however, are difficult to regulate and have been the source of much complaint.

When the variables of age and size are added, the result has been considerable variation in consumer costs and services from system to system. Moreover, in most cases neither the resources nor the opportunity to significantly expand individual systems are available.

Consequently, strong county water supply agencies (desirably integrated with sewerage and drainage functions) are recommended. They are needed to foster intermunicipal cooperation to develop sources outside the area of jurisdiction of the smaller systems, to take advantage of economies of scale, to improve service levels, to represent the county in water supply matters particularly outside the county, to provide a broad economic and resource base, and to unify, coordinate, and, when necessary, to consolidate water supply services at the county level.

REGIONALIZATION

However, strengthened county roles will not alone assure a future water supply of adequate quantity and quality for the Region. Water supply needs have been forced into a regional perspective precisely because few of the area's counties have sufficient sources within their boundaries. At the same time, it is projected that the need for water in the Region will require an additional 395 MGD by 2000 and 720 MGD by 2020. Nassau County in particular needs additional water in the immediate future.

A regional approach to the planning, development, construction and operation of the Region's water supply services facilities is justified both on engineering and administrative grounds. Such an approach is demanded when a function can be carried out more efficiently and equitably and when the function's jurisdiction has outgrown individual political jurisdictions. Environmentally, a regional approach, because it could encompass source as well as service areas, would be more sensitive to the views of those in the source areas.

Southeastern New York has open to it several paths to regionalization. Among them is the broadening of the New York City system into a bona fide regional system. New York City, however, at a time when it is faced with the need for metering, for capital reconstruction of certain facilities and for improved transmission capability, as well as for additional sources of supply and facilities, also is faced

with increasing hostility from outside source and service areas. It is difficult to envision the City system planning fairly for other than itself, or for outside areas to give it the authority to try to do so.

It is recommended instead that a regional self supporting corporation be established by the State Legislature to plan, develop, construct and operate new water supply facilities for the Region and to take over New York City's existing upstate facilities. New sources would include flood skimming the Hudson River at Hyde Park and regulation of flows in the Hudson through Hinckley Reservoir expansion or possibly reregulation of Sacandaga Reservoir, if either proves necessary.

The corporation arrangement would call for the counties and New York City to be the sole buyers of water from the regional supplier, and would permit them to re-sell to local systems. Thus, the counties would act as a liaison between the regional authority and all systems within the counties needing water.

An implementing agency with State funding is recommended to implement this recommendation.

Detailed listings of recommendations are included in later chapters and the regional corporation proposal is set forth in the final section of the report.

RECOMMENDATIONS

THE WATER RESOURCE AND WATER SUPPLY SERVICES

1. *PUBLIC POLICY AND PROGRAMMING IN WATER SUPPLY SERVICES SHOULD BE DEVELOPED AND ADMINISTERED RECOGNIZING THAT: A) WATER SUPPLY IS PART OF THE ENTIRE WATER RESOURCE SPECTRUM, B) WATER SUPPLY IS THE PRIORITY USE OF THE WATER RESOURCE, AND C) WATER SUPPLY SERVICES AND WASTE WATER SERVICES ARE INTERRELATED AND INTERDEPENDENT.*

FEDERAL, INTERSTATE AND STATE

2. *ALL FEDERAL WATER RESOURCE PROGRAMMING IN NEW YORK STATE SHOULD BE CARRIED OUT IN CLOSE COOPERATION AND AS JOINT ENDEAVORS WITH THE APPROPRIATE AGENCIES OF THE STATE OF NEW YORK.*

3. *THE COOPERATIVE U.S.G.S. STATE DATA COLLECTION AND ANALYSIS PROGRAMS SHOULD BE CONTINUED AND EXPANDED WHERE NECESSARY. AN EXPANSION OF THE PROGRAM IS INDICATED FOR THE HUDSON RIVER BASIN AND LONG ISLAND.*

4. *THE FINAL RECOMMENDATIONS OF THE FEDERAL NORTHEASTERN WATER SUPPLY STUDY (NEWS) SHOULD BE CLOSELY COORDINATED AND INTEGRATED WITH ANY STATE OR REGIONAL PLANNING PROPOSALS SO AS TO MAKE BEST USE OF THE FINANCIAL CAPABILITIES AND WATER RESOURCES AVAILABLE TO MEET THE WATER SUPPLY NEEDS IN THE SOUTHEASTERN REGION.*

5. *IN ORDER TO ENCOURAGE CONSERVATION MEASURES AND UNIVERSAL METERING IN THE SOUTHEAST NEW YORK REGION, NEW YORK STATE SHOULD IMMEDIATELY COMMENCE ACTION IN COOPERATION WITH THE DELAWARE RIVER BASIN COMMISSION TO ELIMINATE "EXCESS RELEASE" REQUIREMENTS IMPOSED ON THE CITY OF NEW YORK.*

6. *THE CURRENT APPLICATION OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION TO THE WATER RESOURCES COUNCIL FOR FINANCIAL ASSISTANCE TO DEVELOP A WATER RESOURCES MANAGEMENT PLAN FOR THE HUDSON RIVER BASIN AND LONG ISLAND IS ENDORSED AND SUPPORTED.*

7. *THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SHOULD BE GIVEN THE AUTHORITY AND RESPONSIBILITY BY THE STATE LEGISLATURE TO ESTABLISH THE QUALITY, TIMING AND VOLUME OF RELEASES BELOW ALL WATER SUPPLY IMPOUNDMENTS IN THE SOURCE AND SERVICE AREAS OF SOUTHEASTERN NEW YORK. THIS WILL MAKE IT POSSIBLE TO PROTECT THE PUBLIC INTEREST IN MAINTAINING VIABLE STREAMS BELOW IMPOUNDMENTS AND PRESERVE AESTHETIC, FISH AND WILDLIFE AND OTHER VALUES.*

8. *FEDERAL, INTERSTATE AND STATE GOVERNMENT ROLES SHOULD BE RESTRICTED TO RESEARCH, DATA COLLECTION, PLANNING, REGULATORY AND FINANCIAL ASSISTANCE FUNCTIONS. ALL WATER SUPPLY SERVICES FACILITIES DESIGN, CONSTRUCTION, AND OPERATION SHOULD REMAIN AT THE REGIONAL AND LOCAL LEVEL.*

LOCAL INSTITUTIONS

General

9. *MEETING THE WATER SUPPLY NEEDS OF SOUTHEASTERN NEW YORK CALLS FOR SOME CONSOLIDATION OF SERVICE AND FACILITIES ON THE CITY, TOWN AND VILLAGE LEVELS, PARTICULARLY ON THE TOWN LEVEL; PROVIDING FOR THE MEETING OF DEVELOPMENT NEEDS; PHASING OUT OF UNSATISFACTORY DEVELOPER TYPE SYSTEMS; INTEGRATED PLANNING AND OPERATING OF ALL URBAN WATER SERVICES; GREATLY STRENGTHENING THE COUNTY ROLE IN WATER*

SUPPLY AND URBAN WATER SERVICE; AND ESTABLISHING A NEW REGIONAL CONFIGURATION AND FORMAT TO MEET FUTURE DEMANDS.

Cities, Towns and Villages

10. *IN ORDER TO TAKE ADVANTAGE OF ECONOMIES OF SCALE, TO IMPROVE SERVICE AND EQUALIZE WATER COST TO CONSUMERS, ALL LOCAL GOVERNMENTS SHOULD CONSIDER THE CONSOLIDATION OF WATER SUPPLY AND RELATED SERVICES. EACH TOWN SHOULD CONSIDER THE CONSOLIDATION OF EXISTING AND FUTURE DISTRICTS INTO A SINGLE DISTRICT OR ABOLISHING ALL DISTRICTS AND MAKING WATER SUPPLY SERVICES A GENERAL TOWN FUNCTION.*

11. *SINCE WATER SUPPLY AND WASTEWATER DISPOSAL SERVICES ARE OPPOSITE SIDES OF THE SAME COIN, THE INTEGRATED DEVELOPMENT AND OPERATION OF SUCH SERVICES SHOULD BE INVESTIGATED BY ALL LOCAL GOVERNMENTS AND IMPLEMENTED WHERE FEASIBLE.*

Investor-Owned

12. *LOCAL GOVERNMENTS SHOULD REQUIRE THE FORMAL ESTABLISHMENT OF WATER, SEWER AND DRAINAGE DISTRICTS OR ASSESSMENTS AREAS FOR ALL NEW DEVELOPMENTS.*

13. *DEVELOPERS SHOULD BE REQUIRED TO CONSTRUCT WATER SUPPLY, SEWAGE, AND DRAINAGE SYSTEMS AT THEIR EXPENSE BUT THE APPROPRIATE MUNICIPALITY SHOULD ASSUME OWNERSHIP AND OPERATIONAL CONTROL OF SUCH FACILITIES. ALL SUCH SYSTEMS SHOULD BE IN CONFORMANCE WITH A TOWN-WIDE AND COUNTY-WIDE PLAN.*

14. *THE STATE SHOULD REQUIRE THAT ALL WATER SUPPLY SYSTEMS BE SIZED TO PROVIDE A FIRE PROTECTION CAPABILITY.*

15. *REGULATORY EFFORTS SHOULD BE INTENSIFIED TO INSURE ADEQUATE SERVICE FROM SMALL DEVELOPER TYPE WATER AND SEWER SYSTEMS.*

16. *THE FURTHER FORMATION OF PRIVATE INVESTOR-OWNED WATER SUPPLY UTILITIES OR WASTEWATER UTILITIES SHOULD BE PROHIBITED AFTER JUNE 1, 1975, IN SOUTHEASTERN NEW YORK.*

17. *UNSATISFACTORY AND INADEQUATE DEVELOPMENT WATER AND SEWER SYSTEMS SHOULD BE TAKEN OVER BY THE APPROPRIATE MUNICIPALITY.*

New York City

18. *IT IS RECOMMENDED THAT NEW YORK CITY BECOME PART OF A NEW REGIONAL CONFIGURATION SO THAT ITS WATER SUPPLY NEEDS CAN BE MET IN A TIMELY AND EQUITABLE MANNER.*

19. *THE CITY SHOULD IMMEDIATELY REEXAMINE THE PRESENT POLICY AND OPERATING PROCEDURES RELATING TO TIMING AND VOLUME OF RELEASES FROM ITS RESERVOIRS IN ORDER TO MAINTAIN ENVIRONMENTAL CONDITIONS CONSISTENT WITH WATER SUPPLY NEEDS AND LOCAL CONCERNS (SEE RECOMMENDATION NUMBER 7 WHICH ALSO APPLIES).*

Counties

20. *ESTABLISH AND MAINTAIN A STRONG COUNTY WATER SEWER AND DRAINAGE AGENCY IN EACH COUNTY. THIS AGENCY SHOULD:*
    - *A) DEVELOP A COUNTY WATER SUPPLY PLAN AND UPDATE BIENNUALLY*
    - *B) RECOMMEND CREATION OF COUNTY WIDE OR PART COUNTY WATER DISTRICTS AS NEEDED*
    - *C) MANAGE AND OPERATE ANY WATER SUPPLY FACILITIES CONSTRUCTED BY THE COUNTY*
    - *D) INSURE THAT FUTURE WATER SUPPLY DEVELOPMENTS CONFORM WITH THE COUNTY PLAN*
    - *E) PROVIDE TECHNICAL SERVICES TO LOCAL TOWN, VILLAGE, AND CITY SYSTEMS*
    - *F) MANAGE AND OPERATE WATER SUPPLY FACILITIES AT THE REQUEST OF LOCAL GOVERNMENT UNITS*
    - *G) ACT AS THE LIAISON AND CONTRACTOR BETWEEN A REGIONAL SUPPLIER AND ALL SYSTEMS WITHIN THE COUNTY. THE COUNTY SHOULD BE THE SOLE BUYER OF WATER FROM THE REGIONAL SUPPLIER AND RESALE TO LOCAL SYSTEMS*
    - *H) ACT AS LIAISON TO ANY REGIONAL WATER RESOURCES BOARD OR AGENCY ESTABLISHED*
    - *I) DEVELOP A PLAN FOR THE TRANSFER OF UNSATISFACTORY INVESTOR-OWNED SYSTEMS TO PUBLIC OWNERSHIP AND OPERATION; BE PREPARED TO TAKE THE OPERATING RESPONSIBILITY*
    - *J) INTEGRATE WATER SUPPLY FACILITIES, SEWAGE COLLECTION FACILITIES AND URBAN DRAINAGE FACILITIES INTO A COMPLEMENTARY AND MUTUALLY SUPPORTIVE SYSTEM ON A COUNTY WIDE BASIS*

21. *EACH COUNTY SHOULD HAVE A COUNTY WIDE FUNCTIONAL RESPONSIBILITY FOR URBAN WATER UTILITIES INCLUDING, AS A MINIMUM, PLANNING, OVERSIGHT AND INTERCOUNTY OR REGIONAL RELATIONS. OTHER RESPONSIBILITIES SHOULD BE DEVELOPED AS TIME AND LOCAL CONDITIONS DICTATE.*

REGIONAL PERSPECTIVE AND APPROACH

22. *THE SOUTHEAST REGION IS FACED WITH THE NEED FOR A NEW REGIONAL PERSPECTIVE AND APPROACH. THE DOMINANT REGIONAL ROLE OF NEW YORK CITY IS SHIFTING SUCH THAT THE POLITICAL CAPABILITY OF THE CITY TO BE AN EFFECTIVE REGIONAL WATER SUPPLIER IS QUESTIONABLE. MOST OF THE COUNTIES AND THE CITY HAVE WATER SUPPLY PROBLEMS THAT CAN ONLY BE APPROACHED IN A REGIONAL CONTEXT. MOST OF THE COUNTIES AND THE CITY INDIVIDUALLY LACK THE CAPABILITY TO COPE WITH THE INCREASING WATER SUPPLY NEEDS, COUPLED WITH ENVIRONMENTAL COMPLEXITIES, ON ITS OWN. NEW SOURCES OF SUPPLY, IMPROVED TRANSMISSION CAPABILITY, EFFECTIVE USE OF THE WATER RESOURCES, URBAN WATER RESOURCE INTEGRATION, ENVIRONMENTAL RESPONSIVENESS AND REGIONAL DEVELOPMENT ARE SOME OF THE MAJOR ELEMENTS THAT REQUIRE A NEW REGIONAL OUTLOOK AND APPROACH. A NEW REGIONAL APPROACH IS REQUIRED.*

RECOMMENDED REGIONAL APPROACH

23. *IT IS RECOMMENDED THAT A REGIONAL SOUTHEAST WATER FACILITIES CORPORATION BE ESTABLISHED BY SPECIAL ACT OF THE LEGISLATURE WITH AN EFFECTIVE DATE OF APRIL 1, 1975, THE CORPORATION WOULD BE A SELF SUPPORTING INSTRUMENTALITY OF THE STATE AND WOULD PLAN, DEVELOP, CONSTRUCT AND OPERATE THE RECOMMENDED WATER SUPPLY FACILITIES FOR THE REGION. THE CORPORATION WOULD TAKE OVER NEW YORK CITY UPSTATE FACILITIES AND OPERATE THESE FACILITIES IN AN INTEGRATED MANNER WITH THE RECOMMENDED PROJECT.*

THIS RECOMMENDED APPROACH WOULD MAKE MOST EFFECTIVE USE OF THE AVAILABLE WATER RESOURCES AND EXISTING WATER FACILITIES, MAXIMIZE ECONOMIES OF SCALE AND OPERATIONAL EFFICIENCY, BEST SERVE THE NEEDS OF SOURCE AND SERVICE AREAS, AND INTRODUCE A HIGH LEVEL OF ENVIRONMENTAL RESPONSIVENESS.

24. *IT IS RECOMMENDED THAT AN IMPLEMENTING AGENCY BE CREATED BY THE LEGISLATURE EFFECTIVE APRIL 1, 1974. THIS AGENCY WILL PROVIDE A TRANSITION PERIOD OF ONE YEAR FROM THE PRESENT ARRANGEMENTS TO THE NEW SOUTHEAST WATER FACILITIES CORPORATION. THE AGENCY WILL BE CHARGED WITH THE RESPONSIBILITY FOR EFFECTING A SMOOTH AND ORDERLY TRANSITION TO ENABLE THE CORPORATION TO BECOME OPERATIONAL IN A SHORT PERIOD OF TIME.*

INTRODUCTION

The "Temporary State Commission on the Water Supply Needs of Southeastern New York" was created in 1969 (C593 - L1969) in response to the recognized need for an in-depth study of the water supply needs of the Southeast Region of New York State, consisting of New York City and the eight suburban counties of Nassau, Suffolk, Westchester, Putnam, Dutchess, Rockland, Orange and Ulster.

The mission of the Commission as stated in the enabling legislation is:

1. *Make a study of the future water supply needs of the southeastern portion of the state of New York, including the city of New York and the counties of Nassau, Suffolk, Westchester, Rockland, Putnam, Orange, Ulster, and Dutchess and the relationship of these needs to the water resources available both within and without such portion of the state to fulfill such needs;*
2. *MAKE A STUDY OF ALTERNATIVE METHODS FOR CONSTRUCTING, FINANCING AND ADMINISTERING THE NEEDED WATER SUPPLY FACILITIES;*
3. *Make specific recommendations directed toward meeting the water supply needs of such southeastern portion of the state, including, but not limited to, recommendations as to:*
    a. *alternatives for the development of additional water supply facilities, and*
    b. *ALTERNATIVES FOR FINANCING AND ADMINISTERING*

THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THE FACILITIES, INCLUDING GOVERNMENTAL STRUCTURES AND A DELINEATION OF THE AREAS OF PROPER STATE AND LOCAL RESPONSIBILITIES.

The technical side of the Commission's studies, items 1 and 3a, is covered in other reports. This report addresses itself to the questions of governmental structures, proper state and local responsibilities, and financing and administering the required water supply facilities, items 2 and 3b.

For purposes of convenience and commonality, the Region has been subdivided into three subregions, 1) New York City, 2) Long Island, comprising Nassau and Suffolk Counties, and 3) Mid-Hudson, comprising Westchester, Putnam, Dutchess, Ulster, Orange and Rockland Counties. Much of the discussion and data presented is organized by the subregional areas.

Although the Federal Government and adjacent states are not specifically mentioned in the legislation, they must, of necessity, be considered because of shared resources and programs relating to water supply needs and services.

When discussing water resources and water supply it is easy to become enmeshed in confusion because of the multiplicity of water related programs at all levels of government, or wander into a semantic swamp because of loose definitions and interchangeability of like terms; such as water supply and water resources.

In order to avoid such traps, the report will briefly discuss the entire field of water resources management and the place of water supply services in this matrix. This will be followed by an explanation and discussion on the existing policies, programs and responsibilities for water supply services in Southeastern New York on the federal, state and local levels. Related water resource programs and policies are also given some attention, particularly as they relate to the mission of this Commission.

Finally the various options available for future water supply development and administration are explored, and a final recommendation is made.

SECTION I

THE WATER RESOURCE

CHAPTER I

THE WATER RESOURCE AND WATER SUPPLY SERVICES

WATER RESOURCE MANAGEMENT

Water resource management policies and programs developed from an ad hoc response to particular problems. This is true at all levels of government--national, state and local. There was, and is, no grand plan. This approach resulted in a number of single purpose programs, policies and statutes.

Water resource management is an umbrella term which includes all water related needs and demands, as well as their technical, cultural and institutional ramifications. It is the attempt to control the timing, the quantity, the quality, and the availability of water in order that societal needs can be met in a timely and efficient manner. It includes not only the water itself but also the geographical, cultural and governmental setting, and related land resources.

The water resource itself is not limited but includes surface water such as lakes, streams, rivers, ponds, wetlands, estuaries, the ocean, groundwater from springs, and wells, atmospheric water available as dew, rain and snow.

Water values or uses can be subdivided into three categories: 1) in place surface water use, such as recreation, fishing, stock watering, navigation, hydropower, wastewater disposal and aesthetic enjoyment; 2) out of place surface water use, where the water is removed from the lake or stream to another location such as public water supply, industrial water supply and irrigation; 3) protective measures such as flood and drought control through stream regulation.

Out of place use can be consumptive or non-consumptive of water. Consumptive use is the removal of water with partial or no return; non-consumptive use is the removal of water but with substantially complete return. An example of consumptive surface water use is the inter-basin transfer of water such as the use of Delaware River water for New York City water supply; such water is lost to the downstream riparians. An example of non-consumptive surface water use would be the city of Poughkeepsie Hudson River water supply which is returned three miles downstream as wastewater. Groundwater use is out of place use for municipal, industrial or agricultural use, and in place use for wastewater disposal.

In the case of groundwater, consumptive use results from non-returnable losses because of evapotranspiration, discharge of wastewater to surface water or transport to a distant location similar to inter-basin transfer. Non-consumptive use would be the recharge of the aquifer with used or wastewater.

Water needs and demands are often conflicting or at cross purposes, such as municipal water supply vs. recreation, and call for comprehensive planning and reasonable allocation between competing uses.

Modern water resource management techniques call for multiple use and an integrated approach in an attempt to optimize the value and usability of the water resource.

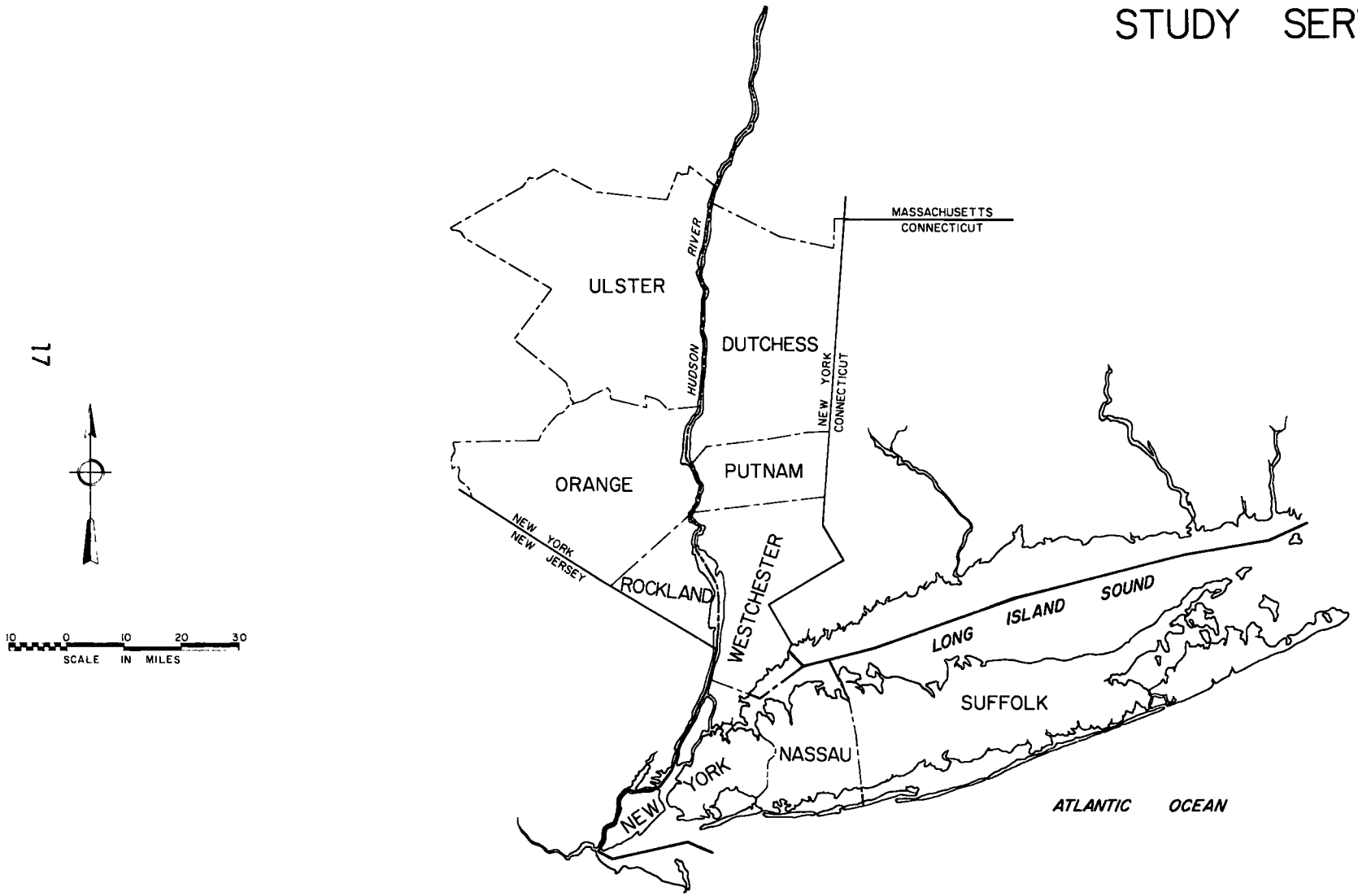
The Southeast Water Supply Commission is charged with meeting the water supply service needs of a service area including New York City and the adjacent eight suburban counties; see Figure 1. In order to develop the needed water supply, water source areas must be investigated and, if necessary, developed. There is no restriction on the possible source areas; they can be inside or outside the service area. These are shown in Figures 2 and 3.

At the present time source areas for water supply systems in the service area include all the service area, except for parts of New York City, and in addition the counties of Delaware, Sullivan, Schoharie, and a small portion of Greene County outside the designated service area. Watershed source areas include the Delaware

SOUTHEAST WATER SUPPLY COMMISSION

FIGURE I

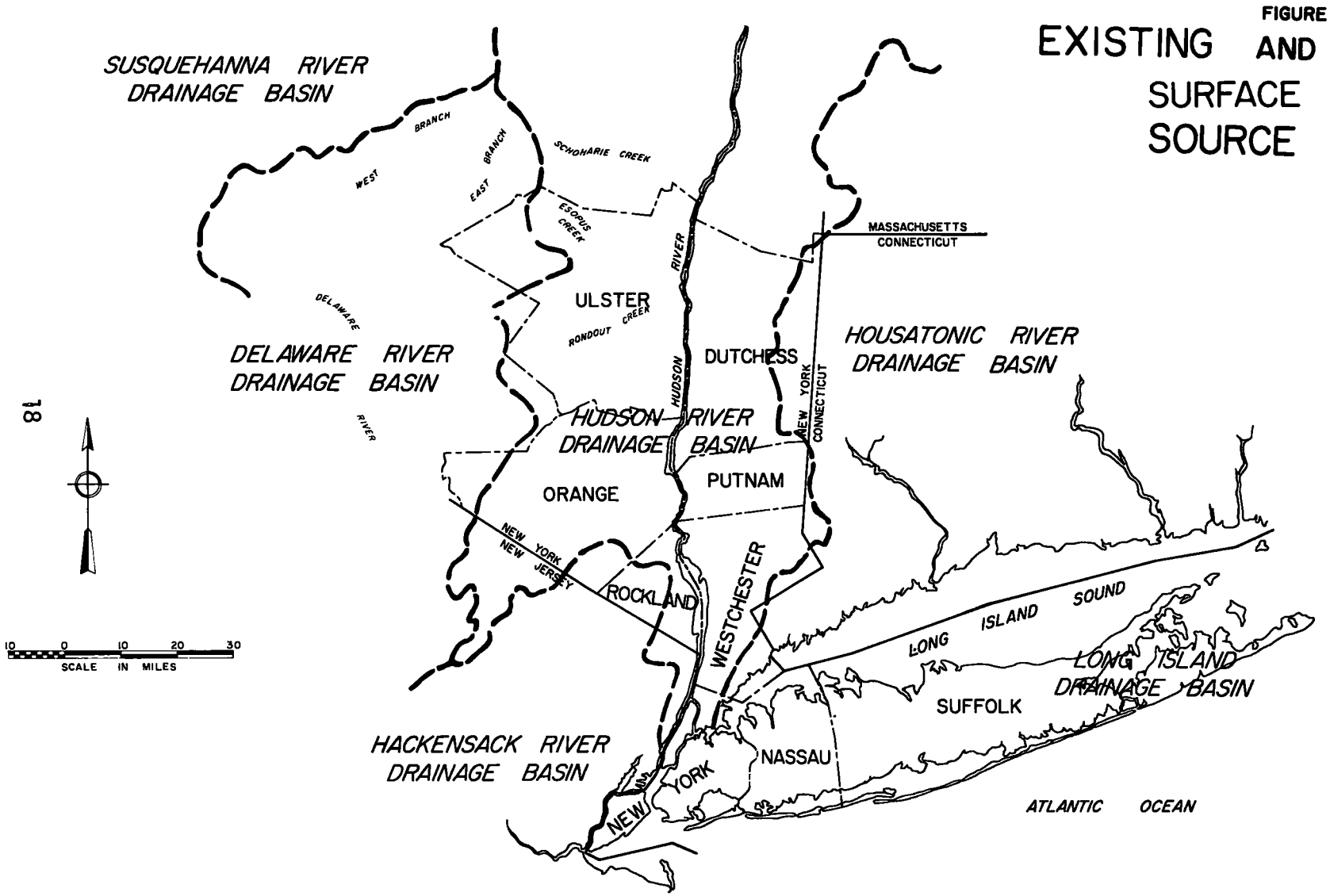
STUDY SERVICE AREA



SOUTHEAST WATER SUPPLY COMMISSION

FIGURE 2

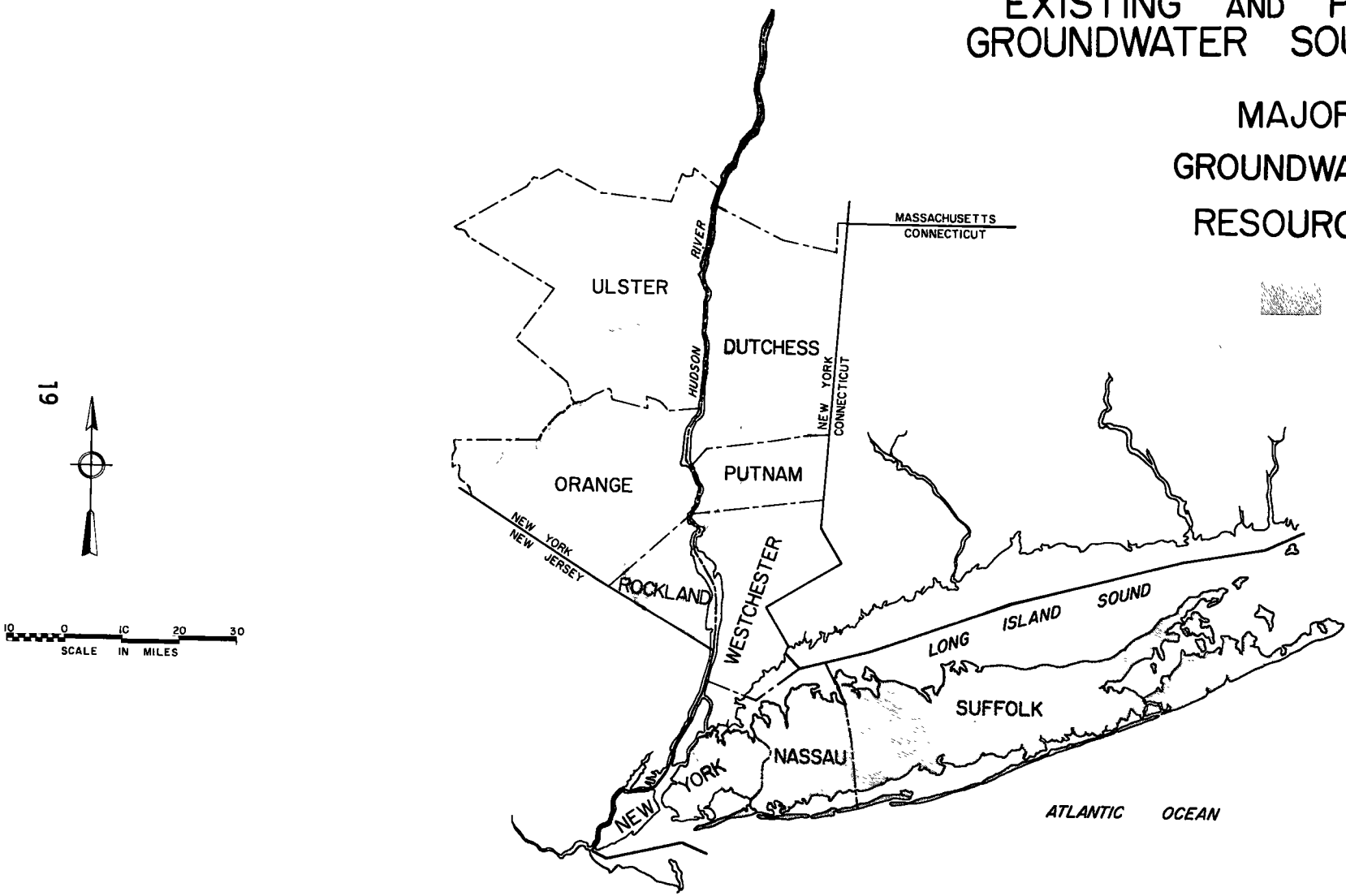
EXISTING AND POTENTIAL SURFACE WATER SOURCE AREAS



SOUTHEAST WATER SUPPLY COMMISSION

FIGURE 3

EXISTING AND POTENTIAL GROUNDWATER SOURCE AREAS



River Basin, the Hackensack River Basin, the Lower Hudson River Basin, the Mohawk River Basin and the Housatonic River Basin. Possible additional expanded source areas under consideration include the Hudson River Basin, Susquehanna River Basin and the Lake Ontario Basin.

In the Southeast Region the major water resources of interest as water supply sources are the Delaware River Basin, the Hudson River Basin and Long Island groundwater. Also of interest because of shared watersheds are the Housatonic River and the Hackensack River Basins. Some proposals for future development would also consider the Susquehanna River Basin and the Lake Ontario Basin.

The multiple uses of these waters are a fact, to cite a few examples:

a) use of the Long Island groundwater for water supply and wastewater disposal,

b) consumptive use of Long Island groundwater by discharge of wastewater to the ocean,

c) use of the Hudson River for water supply, recreation, fishery, hydropower, navigation, wastewater disposal, industrial water supply, aesthetic enjoyment,

d) use of Delaware River Basin water for water supply, recreation, fishing, wastewater disposal, aesthetic enjoyment,

e) consumptive use of the Delaware River Basin water by inter-basin transfer for water supply purposes.

Another factor to be considered is the interstate-federal interest in the Delaware River Basin, Susquehanna River Basin, Hudson River Basin, Lake Ontario Basin, Hackensack River and Housatonic River Basins.

The characteristic of the surface water resource in the Northeast is its seasonal variation of high flows in the spring and low flows in the fall. This means that for most water uses control structures such as storage and release works to regulate stream flows are usually necessary. Navigation, hydropower generation and flood control always require control facilities. All other uses may or may not require storage and release works depending on demand and low river flows. In many instances natural storage is provided by lakes and river channels.

In the source and service area of the Southeast Region many storage and control facilities have been built. These facilities range from flood control impoundments on the Susquehanna, to the major water supply reservoirs on the upper Delaware, Croton and Catskills and many smaller reservoirs scattered throughout the source and service areas, to the canalization of the Mohawk and Upper Hudson, to the

flood control and power impoundment at Sacandaga, north of Albany, to the St. Lawrence Seaway navigation and power development, to the literally hundreds of water supply intakes and wastewater outlets scattered along the shorelines, and penetrating the groundwater particularly of Long Island.

The major point to be made is that there has been considerable water resource development in both the actual and possible source areas and the service area of the Commission. This development has taken place in a unilateral, unrelated fashion in most instances.

As long as there were copious amounts of water with relatively small demand, this approach worked reasonably well. Whether or not we can continue to allow development in this fashion is open to serious question.

It has been noted that public water supply is but one of many demands on the water resource. Reiterating, these other demands include recreation, fishery, navigation, hydropower, flood control, agriculture, wildlife, industry, wastewater disposal, drainage and aesthetic enjoyment. Although optimization requires a balancing of interests and uses, it must be realized that the highest and primary water use is for public water supply purposes. This is recognized in law and in practice. This, of course, does not mean that public water supply interests can run roughshod over other interests. <u>What it does mean is that high standards of planning, development and operation must be laid on water supply interests to conserve water and to minimize adverse impacts, while at the same time recognizing and accepting the fact that the legitimate requirements of public water supply must be met and take precedence over all other uses and purposes.</u>

WATER SUPPLY SERVICES

Water supply services require an adequate quantity of water of acceptable quality at the point of taking, be it a stream, a river, a lake or groundwater to meet public water supply demands on a continuous basis.

Water supply services facilities include: 1) a source of water with necessary facilities for development such as wells, intake works, onstream or offstream impoundment and release works; 2) treatment works; 3) system storage; 4) major transmission facilities; 5) local distribution network.

Water supply services functions are: 1) planning for future needs; 2) constructing needed supply works; 3) maintaining, updating and repairing obsolete or inadequate facilities; 4) operating the water supply services system; 5) regulating

water uses and losses; 6) expanding system and service area to meet needs; 7) financing capital and operating and maintenance costs.

The quantity demands may be met by surface water by run of stream flow, supplemented by storage and release works if necessary to overcome natural flow variations. This depends on the size of the stream and the relative volume of water required. Major water supply developments in the Northeast almost always require some type of storage and release works. Demands on groundwater are limited by storage and delivery capability of subsurface deposits, overdrafts can be a limiting factor and recharge may be needed.

It may be possible to use underground storage capability, such as exists in Long Island, in time of plenty by surface water recharge from upstate sources. Major withdrawals then may be made from this storage water during time of drought to meet regional needs. This type of integrated and conjunctive use of the ground and surface water resources may be the key to future optimization of water resource use and development in the Region.

Quality demands can be met by an effective water pollution regulatory program, stream flow augmentation, careful selection of the point of taking, all supplemented by treatment of the water to insure high quality drinking water at the tap.

The overall water resource management considerations in water supply services, since water supply is but a single use among competing uses, are: 1) competing demands for the same water; 2) impact of operation of storage and release works on other values; 3) single or multiple use of source storage facilities; 4) impact of taking at point of taking; 5) management of water supply services facilities to insure proper use of the water resource; 6) effect of water loss on downstream values and system; 7) effect of withdrawal in case of groundwater sources; 8) impact of return of used or wastewater and effect on water quality of both surface and groundwaters.

There are hundreds of water supply services systems in the southeastern New York area. Much of the ground and surface water is extensively developed for this use. The existing New York City system, by far the largest and most pervasive, is shown in Figure 4.

WATER SUPPLY - WASTEWATER RELATIONSHIPS

As water supply services are part of the water resource management spectrum, they are a major element in the urban water utility system. Water supply utility services are one element of the system, wastewater utility services are the other. These two elements of the urban water utility system are inseparable. Water de-

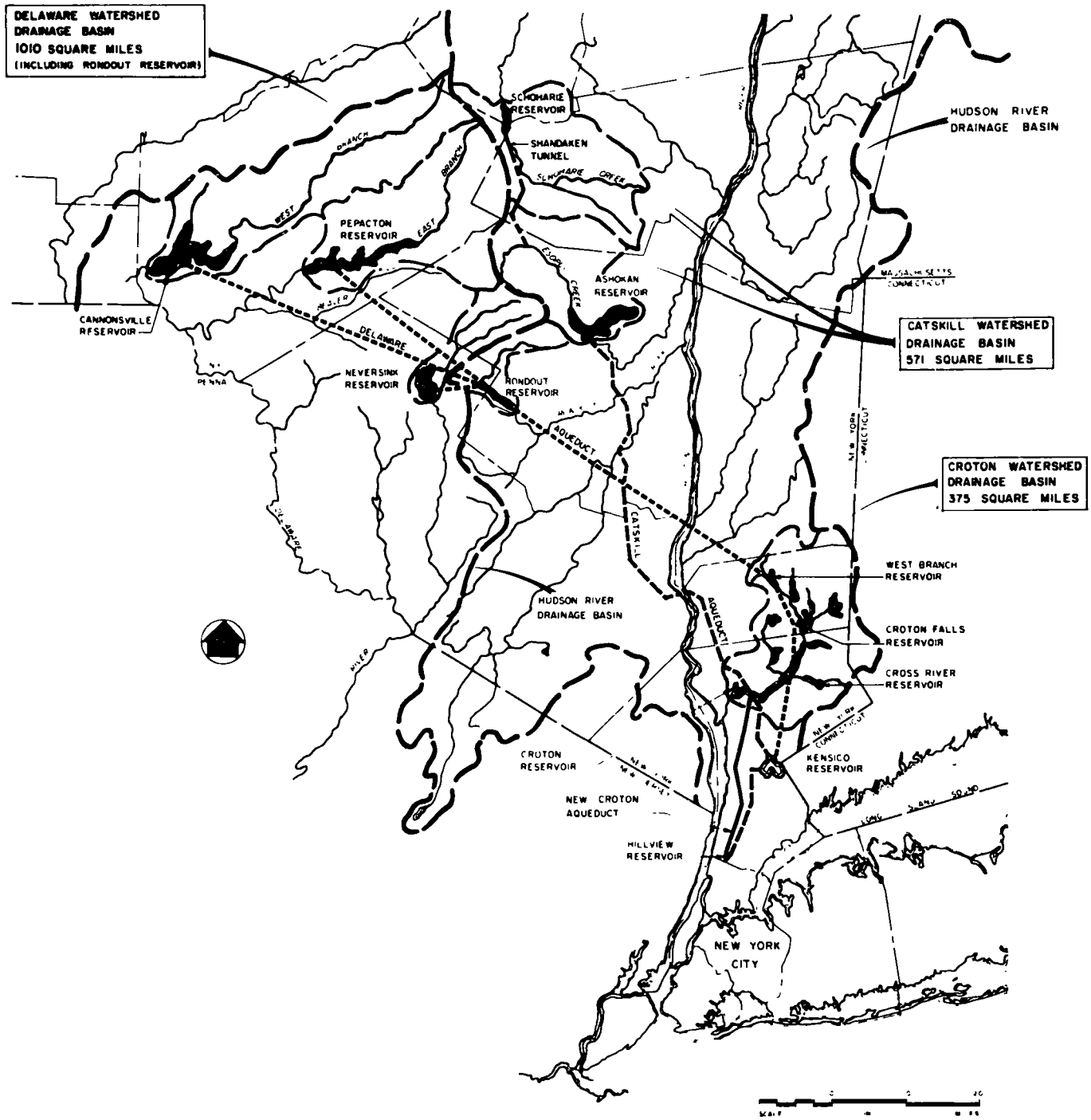


FIGURE 4

EXISTING SURFACE WATER SUPPLIES OF NEW YORK CITY

livered for water supply use becomes wastewater to be disposed of. Policy and program in water supply services immediately impacts on wastewater disposal services. In fact they are one, separated only by the small air gap between water tap and drain. This relationship is exemplified to the highest degree by the Long Island situation where water supply and wastewater disposal are simultaneous uses of the groundwater reservoir. In addition, collection and discharge of wastewater to the ocean represents a positive loss of the available resource similar to an interbasin transfer of surface water.

INSTITUTIONAL ASPECTS

When considering institutional aspects we must deal with the water resource and demands made on it, the institutional structures for water supply services and related services, and the populations affected or to be serviced.

Elements then include the surface water resource and configuration represented by the Susquehanna, Delaware, Hackensack, Hudson and Housatonic Rivers Drainage Basins, the groundwater resource represented mainly by the Long Island Basin with a limited groundwater resource elsewhere.

The institutional structure is mainly governmental but not totally. There is a Federal interest implemented by a number of agencies. There is an interstate interest represented by other states and interstate agencies. There is a state interest involving a number of state agencies and programs. There is a strong local interest represented by the counties, villages, towns and cities. There is the water supply utility interest represented by a number of governmental and investor-owned water utilities. There is the citizen interest represented by a number of specialized citizen organizations.

The populations affected include some 12 million plus people in the service area plus an additional number in the existing or possible source areas. It is a complicated and complex mix as would be expected in the largest metropolitan area in the world when dealing with such a vital matter as public water supply.

FINDINGS AND CONCLUSIONS

Water use for municipal water supply service is one demand among several on the available surface and groundwater resource. Nevertheless, municipal water supply use is the priority water demand on the available water resources. However, it must be developed in recognition of other legitimate uses and interests. Munici-

pal water supply utility service is but one side of the urban water utility picture, the other side is the waste water utility service.

RECOMMENDATIONS

1. *PUBLIC POLICY AND PROGRAMMING IN WATER SUPPLY SERVICES SHOULD BE DEVELOPED AND ADMINISTERED RECOGNIZING THAT: A) WATER SUPPLY IS PART OF THE ENTIRE WATER RESOURCE SPECTRUM, B) WATER SUPPLY IS THE PRIORITY USE OF THE WATER RESOURCE, AND C) WATER SUPPLY SERVICES AND WASTE WATER SERVICES ARE INTERRELATED AND INTERDEPENDENT.*

SECTION II

INSTITUTIONAL ARRANGEMENTS

PART A

FEDERAL, INTERSTATE AND STATE ASPECTS

CHAPTER II

FEDERAL POLICIES AND PROGRAMS

INTRODUCTION

The Federal Government has been involved in elements of water resource development and management from the early days of the republic. Originally, interest centered about interstate commerce and transportation. Later, this interest and involvement expanded incrementally to include all aspects of water resource development and management.

The extent of current Federal involvement is illustrated by the fact that the National Water Commission, in its final report issued in 1973, identified approximately 160 water programs located in 44 different agencies. No attempt will be made here to go into any great detail on these programs but a brief review of major programs and policy development is of value in placing Federal water resources activity in perspective.

Table 1 shows the major Federal programs and activity in approximate chronological order of development. Many of these programs have a strong regional flavor. The drive has been for increasing Federal activity, and for a more comprehensive approach although there remain strong single purpose programs.

Federal water resource and water supply programming has been rather limited in Southeast New York. This is understandable since the water resource and water supply services problems in this Region are relatively insignificant when compared with the rest of the nation. Furthermore, much of the activity predated Federal programs, and the area is water rich and economically strong. Major Federal activity has been related to regulatory programs in drinking water quality and water pollution, hydrologic data gathering, grants for water pollution activity, harbor and shoreline management, and a comprehensive water resource management study by the U.S. Corps of Engineers for the Delaware River Basin.

Federal programming in water supply services has historically been of a very low order. It originally consisted only of the regulatory program concerning interstate watering points. Even this program is administered by the State for the Federal agency. However, Federal water supply services program activity is expanding, triggered by the Northeast drought of the sixties which prompted the NEWS Study, and intensified environmental concerns which has prompted an expanded regulatory effort.

The latest development in Federal water supply services programming is the Northeast Water Supply Study now underway by the Corps of Engineers pursuant to the Water Resources Planning Act of 1965. This is covered in some detail later on in the report. There is also a move underway to greatly strengthen the Federal regulatory control over water supply service systems in the "Safe Drinking Water Act of 1973" which is now before the Congress.

The present Federal water programs of significance to the mission of this Commission are covered in some detail in the remainder of the chapter.

LEGAL BASIS

Federal participation in water resources programming is based on Supreme Court interpretations of three clauses in the Constitution: 1) the "commerce clause"; 2) the "property clause"; 3) the "general welfare clause".

The "commerce clause" and the "property clause" of the Constitution are not directly related to water resources, and certainly, therefore, are not related to water supply per se. However, Supreme Court decisions have related the first to commercial navigation and the second to hydropower production and irrigation.

The "general welfare clause", through another Supreme Court decision, was interpreted such that it can act as a precept allowing Federal participation in

Table 1

FEDERAL WATER RESOURCES ACTIVITY

APPROXIMATE CHRONOLOGICAL ORDER OF DEVELOPMENT

INTEREST	AGENCY	PROGRAM ELEMENTS	COMMENTS
Navigation	U.S. Corps of Engineers	Study, analysis, project development, project financing and operation	Almost exclusively a Federal activity except for New York State Barge Canal
Hydrologic Data Collection	U.S.G.S.	Data gathering and analysis	Provides data base for all water resource activities
Public Health-Water Supply	Public Health Service - Environmental Protection Agency	Regulatory program concerning drinking water quality at interstate watering points	Regulation only
Flood Control	U.S. Corps of Engineers	Study, analysis, project development, project financing	Exclusive Federal activity
Irrigation	U.S. Bureau of Reclamation	Study, analysis, project development, project financing and operation	Usually multi-purpose projects limited to arid western states
Hydrowpower	Federal Power Commission Rural Elect. Adm.	Provide for incorporation of general facilities into multi-purpose projects. Regulation, siting and licensing of private hydropower projects.	
River Basin Development	T.V.A.	Comprehensive multi-purpose river basin development in Tenessee Valley	Only such agency in country
Soil and Water Conservation	U.S. Soil Conservation Service	Educational - small watersheds project development and financing	Multi-purpose -- aimed at rural areas
Water Pollution Control	U.S.P.H.S., F.W.P.C.A. E.P.A.	Research, grants for planning, project development and grants for construction of facilities	Massive Federal grants for treatment facilities coupled with strong regulatory program
Comprehensive Water Resources Planning	U.S. Corps of Engineers Basin Agencies	Multi-purpose development studies and plans, cost borne by Federal Government, project financing by single purpose programs	Began in fifties and sixties
Water Supply Planning	U.S. Corps of Engineers	Water supply services planning and management plans	Limited to Northeast -- authorized in 1965
Water Supply Project Development	U.S. Corps of Engineers	Project development, operation and financing, authorized in 1965	Past water supply development existed as part of multi-purpose project -- expense borne locally -- none undertaken as yet

the field of water and related land resources. This is so because Congress, when exercising its powers to levy taxes and to appropriate funds, is supposed to do so for the purpose of promoting the general welfare as distinguished from conferring some local benefit. The implication is that if a water resource project can be considered to promote the general welfare the Federal Government can become involved, even though it may do nothing more than finance the project.

FIRST ORDER PROGRAMS

Presently, only three Federal programs exist which have had, or may soon have, a significant impact on the water supply situation in Southeastern New York. These are the Northeast Water Supply (NEWS) Study being conducted by the U.S. Army Corps of Engineers (COE), the regulatory responsibilities of the Bureau of Water Hygiene of the Environmental Protection Agency (EPA) and the data collection and research program of the U.S. Geological Survey (USGS).

NORTHEAST UNITED STATES WATER SUPPLY STUDY

The Northeast United States Water Supply (NEWS) Study is a major effort under the auspices of the U.S. Army Corps of Engineers, in cooperation with representatives of state and local governments, to analyze present and long-range water supply needs and according to the Corps "to develop coordinated regional solutions for essential water supply development and management for the major metropolitan areas of the northeast to satisfy projected demands for the target years of 1980, 2000 and 2020." The Northern New Jersey-New York City-Western Connecticut Metropolitan Area, which includes the area under study by the Southeast Water Supply Commission (SEWSC), is one of the principal foci of the NEWS Study. Several reports have already been published and several more studies are in progress.

In a document published in November 1971 entitled Engineering Feasibility Report on Alternative Regional Water Supply Plans for Northern New Jersey-New York City-Western Connecticut Metropolitan Area there are seven alternative regional programs identified which it is noted could meet the projected water supply needs of the defined area. Except for the possible movement of Housatonic River water from Connecticut into New York State, all of the programs foresee New York State as being the supplier of water in varying degrees to both or either of the states of New Jersey and Connecticut.

A second report, entitled Regional Water Supply; Institutional Aspects (Organizational, Legal and Public Finance Aspects of Regional Water Supply) includes an

analysis of the organizational, legal and economic problems related to water supply for the metropolitan area of New York City, Northern New Jersey, Western Connecticut on the one hand and Southeastern New England on the other hand.

A third report entitled Regional Water Supply; Preliminary Environmental Aspects (Effect on the Environment of Regional Water Supply Development Alternatives for the Northern New Jersey/New York City/Western Connecticut Metropolitan Area) has also been published -- in November 1972. This study assessed the probable impact on the environment -- the aquatic biological and ecological features, the visual and cultural features, and general conservation features -- should any of the 14 projects (including development of one or more of 20 sites) described in the Engineering Feasibility Report... be implemented. A fourth report Regional Water Supply; Institutional and Cost Sharing Options was published in June 1973. This study develops a series of alternative institutional options for the implementation of regional water supply programs for the New York study area.

The four NEWS studies just referred to have all been oriented toward providing the criteria necessary for the selection of specific projects and organizational alternatives. Therefore, they are not the end result of the Corps' efforts. At present further studies of a more detailed nature are continuing.

The U.S. Army Corps of Engineers is pursuing these additional studies in cooperation with appropriate agencies from Connecticut and New Jersey, the New York State Department of Environmental Conservation and the Southeast Water Supply Commission. It is emphasized by representatives of the Corps of Engineers working on the NEWS Study that studies and projects will only be carried out with the consent, guidance and participation of all of the local government units.

As a result of the NEWS Study the role of the Federal Government in water supply in Southeastern New York, heretofore nonexistent, could become significant. The Federal Government, through the Corps of Engineers, could finance and construct any recommended facilities. Legislation now gives the Secretary of the Army that authority. It is also possible for the Federal Government to operate and maintain new water supply sources, treatment plants and transmission lines, however, this is considered highly unlikely in the climate of the day.

ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) as successor to the Public Health Service in this area has as one of its principal missions the regulation of drinking water quality supplied to interstate carriers.

However, a bill -- the Safe Water Drinking Act of 1973 -- which is presently before Congress would require that the EPA greatly expand its activities both technically and jurisdictionally. Water supply systems under the jurisdiction of the Federal agency would expand from those servicing interstate carriers, to all public supplies servicing over 40 people. This expands jurisdiction from 650 water supply systems to some 30,000± public water supply systems. Specifically, it would require EPA to: 1) develop water quality standards to protect health; 2) recommend standards to assure aesthetically pleasing drinking water; 3) develop standards for bottled drinking water. Furthermore, it would require EPA to develop standards for the: 1) operation and maintenance of community water supply systems; 2) surveillance, monitoring, site selection, and construction of public water supplies. Finally, the bill would provide for a grant program to develop adequate state programs to carry out the program as surrogates for the EPA.

Sections of the bill call for: 1) the Environmental Protection Agency to conduct a study of the contamination of groundwater resources that are being used for drinking water; 2) each state to receive at least one per cent of the annually appropriated amount for drinking water supply program grants.

The bill does not call for direct participation of the Federal Government in the planning, construction or operation of water supply systems.

The bill passed the Senate and is awaiting action in the House.

UNITED STATES GEOLOGICAL SURVEY

The United States Geological Survey (USGS) is responsible for collecting hydrological data. Part of its hydrological research is oriented to the quantification of the available waters in both surface and underground sources. Additionally, it is involved in determining the physical and chemical quality of such water resources. Results of the organization's data collection, analysis and research efforts are disseminated through professional papers, bulletins, monographs and maps.

The USGS is particularly active in groundwater research on Long Island. Most Federal, State and local agencies concerned with resources on Long Island rely on the work of that agency. Matters of concern to this Commission (SEWSC) such as the magnitude of Long Island's underground water resource, salt water intrusion and pollution of the aquifers have been studied in depth by the USGS unit on Long Island.

The USGS program is carried out in cooperation with the State. Since this agency is the only one of its kind all water programming depends to a great extent on the data and analysis provided by the Survey. It is a highly respected pro-

fessional operation. Continued expansion of the work of the agency is highly desirable.

SECOND ORDER PROGRAMS

Programs of secondary significance to the Southeastern New York water supply situation include: 1) water resources planning programs associated with the Water Resources Council and the Army Corps of Engineers; 2) water research and related programs of the Atomic Energy Commission, the Office of Saline Water, the National Oceanic and Atmospheric Agency and the Office of Water Resources Research; 3) regulatory programs of the Council on Environmental Quality and the Environmental Protection Agency (water pollution); 4) the special study of the temporary National Water Commission.

WATER RESOURCES PROGRAMS

The Water Resources Council has the responsibility of biennially assessing the adequacy of water resources in each water resource region of the United States. It also carries on a continuing study of regional and/or river basin plans and programs in relation to larger segments of the nation. It also reviews and appraises the adequacy of administrative and statutory means for the coordination and implementation of Federal water resource policies and programs, and makes recommendations to the President concerning them.

The Council performs a management function, which involves the direction and coordination of Federal water resource programs. Standards and procedures governing Federal participation in the preparation of comprehensive, regional and river basin plans are set by the Council. The Council coordinates the activities of Federal agencies working on such matters. Furthermore, the Council administers grants in aid to the states for water resources planning. The Water Resources Council also has responsibilities concerning the creation, operation and termination of Federal-Interstate river basin commissions. The Council receives plans from them and also has responsibilities for coordinating the activities of interstate river basin commissions, established under the Water Resources Planning Act of 1965.

The U.S. Army Corps of Engineers has major responsibilities in almost every facet of water resources in all states, New York being no exception. Ongoing projects include navigation, flood control, beach erosion, basin management and special studies and investigations. The Corps provides research and planning assistance as well as technical assistance -- in regard to the management and operation

of facilities -- to regional, state and local agencies. The Corps is a major center of technical expertise which may be and often is drawn upon by units of government at the regional, state and local levels. Major responsibilities of the Corps are included in the Rivers and Harbors Act of 1965 and the Water Resources Planning Act of 1965. In fiscal 1972 actual aid granted by the Corps to the state of New York for water resources planning amounted to $290,000. Not included in this figure are staff services and technical assistance provided for many Federal projects which were worked on in New York State.

WATER RESEARCH

In terms of water research and related programs the Atomic Energy Commission and the Office of Saline Water are involved in research programs aimed at desalinization. The National Oceanic and Atmospheric Agency is associated with weather modification programs. Finally, the Office of Water Resources Research has the responsibility of stimulating, sponsoring and providing for research in water resources.

WATER QUALITY REGULATIONS

The responsibility for the maintenance of water quality and the regulation of water pollution in the nation's waterways has been consolidated almost exclusively within the Environmental Protection Agency by the 1972 amendments to the Water Pollution Control Act, Act 92-500. Although states remain as the program administrators control of policy and program direction now rests with the Federal EPA. EPA has responsibility for seeing to it that water quality standards are maintained in the nation's waters. Its powers include the setting and enforcing of standards as regards the discharge of sewage effluents, thermal discharges and toxic substances into the country's water bodies. One part of the Act directs the Federal administrator to make a study of means to reduce the volume of waste flow to treatment facilities and specifically includes metering of public water supply systems as part of the study.

To aid states in improving water quality EPA has been empowered to make grants up to 50 per cent of the administrative costs of producing water pollution control plans and up to 75 per cent of the cost of constructing municipal waste treatment plants. In New York State some of the monies anticipated from the Federal Government for these purposes have not been received, thereby slowing up the program.

The Council on Environmental Quality (CEQ) advises the President on the condition of the nation's aquatic environment. It is also empowered to examine exist-

ing programs and new legislation to remedy any deficiencies. This power has been interpreted to extend to water supply.

NATIONAL WATER COMMISSION STUDIES

The National Water Commission is a temporary commission which investigated ways to meet future water requirements. Numerous reports have been issued and material in many of these reports was of considerable value to the SEWSC.

INTERNATIONAL CONSIDERATIONS

Use of the water bordered by the United States and Canada is controlled by provisions of a 1909 treaty. That treaty led to the creation of the International Joint Commission. The IJC is empowered to resolve problems in regard to any conflict of interests over the water shared by both members. The IJC is of interest to the activities of the SEWSC only if a proposal for the inter-basin transfer of water from the Great Lakes system to the Hudson River system were to be given serious consideration. There is no plan to do this at this time.

SUMMARY

Federal involvement in water resource management springs from various Supreme Court interpretations of three clauses -- the "commerce", "property", and "general welfare" clauses -- of the Constitution.

Federal involvement in water resources programming has been extensive. Various Federal departments have successively been involved in policies and programs related to navigation, flood control, irrigation, hydropower, river basin development, water pollution control, water resource management and recently water supply.

The Federal government involvement in water supply was formerly limited to regulation of water supplies used by interstate carriers. However, the Water Supply Planning Act of 1965 put the U.S. Corps of Engineers directly into water supply planning and provides for possible further involvement in financing, constructing and operating water supply facilities. This was done by authorization of the NEWS Study. The NEWS Study being conducted by the Corps of Engineers, presently in the investigatory state, promises to make public a plan for water supply in metropolitan New York. The plan could call for the Corps to build and operate new water supply facilities, although the funding of such a program is speculative and appears unlikely. Most likely any such facilities would have to service more than one state.

Other Federal programs of prime importance to the SEWSC are the hydrological data collection and dissemination program of the U.S. Geological Survey and the impending program -- if a bill now in Congress passes -- of regulation of water quality at the tap by the Environmental Protection Agency.

Other programs of less direct significance to the work of the SEWSC are: 1) the water research programs of the Atomic Energy Commission, the Office of Saline Water, the National Oceanic and Atmospheric Agency and the Office of Water Resources Research, 2) the water pollution regulatory program of the Environmental Protection Agency, 3) the special study of the National Water Commission.

No international agencies are of direct interest to this Commission (SEWSC) since no plan for moving Great Lakes water to Southeastern New York is envisioned.

CHAPTER III

INTERSTATE CONSIDERATIONS

INTRODUCTION

Water supply has traditionally been a local community responsibility in Southeastern New York. Sources of water are often located within the boundaries of the political unit in which distribution takes place. Put another way, source areas and service areas are frequently coterminous or sources are nearby. There is, however, one major exception to the rule.

New York City's source areas are well beyond its own service area boundaries. To meet growing needs in the past New York City successively developed the Croton, Catskill and Delaware water systems. The latter system resulted in impoundments, from which water is diverted to New York City for water supply purposes, on the upper reaches of the Delaware River, an interstate river which rises in New York State and flows south through the States of New Jersey, Pennsylvania and Delaware. These impoundments and diversions changed the volume and timing of flow down river and in order to protect the rights of both upstream (New York City water supply sources) and downstream users, the matter was adjudicated by the United States Supreme Court and some conditions for use of the Delaware River waters were set forth by the Court in a decree.

PRIMARY CONCERNS

1931 SUPREME COURT DECREE

Of major importance to the water supply situation in Southeastern New York are the Delaware River Supreme Court Decrees of 1931 and 1954, and the Delaware River Basin Commission (DRBC). The decrees established rules for New York City's diversion for water supply purposes of waters of the Delaware River watershed. Because of the importance of these decrees and the DRBC important elements of each will be reviewed in some detail.

There has been a long history of interstate concern over use of the waters of the Delaware River. Disagreements over each riparian state's rights to the River, particularly in regard to the water supply plan developed by New York City, led to litigation in 1931. As a result of that litigation the United States Supreme Court delineated the rights of New York State and New York City to divert water from several tributaries of the Delaware River and from the watershed of that river to the watershed of the Hudson River in order to supplement the water supply of New York City. New Jersey had attempted to enjoin this planned diversion on the grounds that it would infringe her rights as a downstream riparian owner. Pennsylvania intervened in the case to insure that her rights would not be jeopardized by any decree subsequently handed down by the Court.

Upon reaching the Supreme Court, a master (technical expert) was appointed by the court to make findings and recommendations. The master submitted a report to the Court. Based on that report and its own examination of the situation the Supreme Court rendered a decision granting New York the right to withdraw 440 million gallons of water daily from the Delaware Basin. In arriving at that decision, the Court applied the principle of equitable apportionment, observing that both states have substantial interests in the River and that removal of water to a different watershed (in this case that of the Hudson River) must sometimes be allowed in cases where necessity for such diversion is established. The Court held that New Jersey was not entitled to the undiminished flow of the Delaware River merely because of her position as a downstream riparian owner.

In confirming the master's report, the Court conditioned the right of New York to withdraw waters from the Delaware on the construction of a sewage treatment plant at Port Jervis, New York. As a further condition, New York was required to make periodic releases from the impounding reservoirs of New York City in order

to maintain a flow of 1,535 cubic feet per second (cfs) in the Delaware at Port Jervis and a flow of 3,400 cfs at Trenton, New Jersey. The conditions of the Court'd decree remained in effect until 1954.

INCODEL

Efforts on the part of the states to cooperate on using the waters of the Delaware River led to creation in the late 1930's of the "Interstate Commission on the Delaware" (INCODEL). It was created by the passage of reciprocal legislation in New Jersey, New York, Pennsylvania and Delaware. The major concern of that commission was water quality in the Basin. An agreement on water quality and treatment standards was reached. Pollution control and abatement was a major goal of INCODEL. INCODEL also developed a formula for interstate allocation of the waters of the Basin based on the 1931 Supreme Court Decree, which was not acceptable to the member states.

1954 SUPREME COURT DECREE

Continued development of the upper Delaware River watershed by New York City for water supply purposes prompted further litigation and on June 7, 1954 an order was entered by the Supreme Court modifying the 1931 decree so as to permit New York City to withdraw an additional amount of water from the Delaware watershed. It was provided that, upon completion of a reservoir on the east branch of the Delaware River (Pepacton), New York City could withdraw up to 490 million gallons per day (MGD). This amount would increase to 800 MGD upon completion of the Cannonsville reservoir on the west branch of the river.

As a condition of the foregoing, New York City would be required to release from its storage reservoirs in the upper Delaware watershed enough water to maintain a minimum basic rate of flow in the Delaware River at Montague, New Jersey. Once the east and west branch reservoirs were completed, this minimum basic rate of flow would be 1,750 cfs. In addition, the modified decree required New York City to release from its storage reservoirs a quantity of water equal to 83 per cent of the amount by which the safe yield of all New York City's gravity supplies exceeds the estimated consumption during the calendar year. Safe yield is the amount of water a system can deliver based on the worst drought year of record. These latter releases must be made at rates designed to release the entire quantity in 120 days, commencing with the fifteenth day of June each year. The modified decree also provided that the diversions and releases by New York City from

the Delaware River would be made under the supervision and direction of a River Master who was appointed by the Court to endorce the decree.

It should be noted that the release requirements incorporated in that decree were predicated upon engineering data which had been compiled during the most extreme drought then on record, the drought of the 1930's. On the basis of that engineering data, the safe yield of the New York City water supply system derived from all sources obtainable without pumping was fixed at 1,665 MGD upon completion of the Cannonsville reservoir. The 1954 decree further specified that New York City's estimate of anticipated consumption may not exceed the actual consumption in any previous calendar year by more than 7.25 billion gallons (20 MGD).

The excess releases are computed as follows: In 1971 New York City's consumption combined with the consumption of the New York City System's water by upstate communities totaled 1,511 MGD. Similar consumption in 1972 was 1,435 MGD. The consumption rate for 1971 must be used to calculate the anticipated 1973 consumption because the 1971 consumption was the highest on record. The 1973 consumption is estimated to be 1,531 MGD (1,511 MGD + 20 MGD). This results in an excess of 134 MGD (1,665 MGD - 1,531 MGD) or 48,910 MG annually. Under the provisions of the Supreme Court decree, New York City must release 83 per cent of this excess (maximum to be released was set at 70 billion gallons). Thus daily excess releases during the 120 day "seasonal period" may be computed as follows:

a) 0.83 x Annual Excess = Annual Excess Release
   example: 0.83 x 48,910 MG = 40,595 MG

b) Annual Excess Release ÷ release period = Daily Excess Release
   example: 40,595 MG ÷ 120 days = 338 MGD

The excess release requirements tend to be counter-productive to any water conservation program implemented in New York City, since 83 per cent of this "saved" water must be released to downstream states.

Excess releases will no longer be required when the City's annual consumption equals or exceeds the 1,665 MGD safe yield figure which is based on the worst drought prior to the mid-1960's. However, engineering data compiled during the drought of the mid-1960's indicates that the safe yield figure is actually 1,297 MGD. The change in the safe yield figure, based on the experience of the mid-1960's, might be used as a basis for a petition for adjustment of the excess release requirements. The recurrence interval of such drought conditions as occurred in

the mid-1960's has been estimated to be several hundred years. The city of New York has not found it necessary to date to formally request a modification in the excess release requirement so as to incorporate the more recent engineering determination of the safe yield of the New York City water supply system. The consent of all parties to the Court's Decree would have to be unanimously obtained. This is required by the provisions of the Delaware River Basin Compact.

DELAWARE RIVER BASIN COMMISSION

The Delaware River Basin Compact resulted from dissatisfaction of New Jersey and Pennsylvania with prevailing water resource management practices. This dissatisfaction was due to a great extent to the 1955 floods. Those states initiated another attempt at basin planning. This effort included the cities of New York and Philadelphia as well as the four states in which the Basin is located. The floods of 1955 demonstrated both the desirability and necessity of such a plan. A comprehensive study of the Delaware Basin was undertaken by the Corps of Engineers. Additional studies were instituted in order to develop an agency to implement the Corps study and to adopt and update periodically a management plan and to exercise regulatory authority over water resource development and management. Complex negotiations, relating to the role of the Federal Government among many other things, led finally to promulgation of a proposed compact creating the Delaware River Basin Commission. Signatory parties to the compact, which became effective on October 27, 1961, include the states of New York, New Jersey, Delaware, the Commonwealth of Pennsylvania and the United States Government. The pact has a duration of 100 years. The adoption of this Compact abolished INCODEL.

This compact created the Delaware River Basin Commission (DRBC). The powers and responsibilities of the DRBC are broad and all encompassing. In general, functions of the Commission include planning, research, advisement, regulation, supervision, management, construction, operation and maintenance of water and related land resource projects in the Basin. Responsibilities extend to various aspects of water resource management.

Of particular importance to the mission of the SEWSC is the Delaware River Basin Commission's authority to regulate and control the withdrawal of surface and groundwater within the Delaware River Basin. The agency has the right to allocate the use of the waters in the Basin among the signatory states. The DRBC, however, does not have any power to alter the provisions of the 1954 Supreme Court decree, provisions which have been agreed to as inviolate for 100 years by the

participants.

The DRBC may in emergency situations act to modify the requirements of the decree. Such a modification is only for the duration of the emergency. For instance, during the drought in 1965 New York City, out of necessity, stopped making downstream releases, and this threatened downstream water supplies such as in the city of Philadelphia. The DRBC, using its emergency powers, declared a state of emergency and New York City's diversions were curtailed. Through co-operative Federal, state, local and private efforts ways were found to alleviate the situation. The emergency was ended 20 months after its inception.

THE TOCKS ISLAND PROJECT

The proposed Tocks Island Project, a key part of the water resources management plan developed by the DRBC, is a mainstream multi-purpose reservoir located 30 miles south of Port Jervis and forming a pool reaching New York State, was authorized by Congress in 1962. Once completed, the total Tocks Island water supply yield would be nearly 640 MGD; 300 MGD of that total is to be allotted to the state of New Jersey. The construction of the proposed Tocks Island Reservoir would thus enable New Jersey to meet its water supply needs, at least through the foreseeable future. The Tocks Island Reservoir proposal, it should be noted, is now tied in to a proposal to create a major recreational area around the proposed reservoir.

No direct benefit would accrue to New York since construction of Tocks Island as now planned would not alter New York City's obligation to maintain a minimum flow of 1,750 cfs at Montague. Indirectly, New York City and State residents would benefit through the opportunity for recreation, and more flexibility might be possible in making releases. In addition, New Jersey would be under less pressure to turn to New York State water sources (Hudson River) to meet its water supply needs if the Tocks Island Project were to be built.

Progress on the construction of the Tocks Island Reservoir Project has been impeded for three principal reasons. The first is a general concern over the quality of water to be supplied by the proposed Tocks Island Reservoir because of the risk of increased pollution resulting from rapid suburbanization of the area. The second is the contention that the highway network is not well enough developed to move users of the proposed recreational project in and out of the area. It has been suggested that the Federal government should first provide additional trans-

portation facilities to solve the anticipated problem. Finally, concern has also been expressed over the probable overall environmental impact of the project.

So far, implementation of the Tocks Island proposal has been limited to acquisition of land for the reservoir and the adjacent national recreation area.

Despite postponement of construction, many believe that the development of the Tocks Island Reservoir is essential to supply future water needs for the State of New Jersey.

NEW JERSEY AND THE HUDSON RIVER

New Jersey will soon need large amounts of additional water. Alternative sources are: 1) New Jersey groundwater, 2) Tocks Island, 3) Hudson River. Groundwater sources are unlikely to fill all of the needs.

However, New Jersey is a riparian state as regards the saline section of the Hudson River. Even though the Hudson River's salt front is normally well north of New Jersey's northern border, that state conceivably could press for some rights to Hudson River water for water supply purposes. Such a stance could be stimulated if withdrawals from the Hudson River were to be made by a federal agency in New York State for the purpose of supplying Metropolitan New York, even though the withdrawal site (or sites) was wholly within New York State territory. New Jersey's legal right to any of the water of the upper Hudson has never been determined.

OUT-OF-STATE RELATIONSHIPS

There are interstate relationships over water supply with Connecticut and New Jersey. These are not of the magnitude of the Delaware River situation.

CONNECTICUT

There is only one public water supply system operating in Southeastern New York which obtains its water from an out-of-state source in Connecticut. That system is the Port Chester Water Works, Inc., which purchases water from the Greenwich Water Company in Connecticut. Port Chester Water Works supplies three municipalities in Southeastern New York with a total population of 50,000.

Members of the Connecticut Interagency Water Resources Planning Board, who met with staff members of the SEWSC, indicated that there are no present interstate problems with New York State nor are there likely to be any in the future, a conclusion shared by this Commission.

NEW JERSEY

One investor-owned water system, the Spring Valley Water Company serves more than three-quarters of the population of Rockland County (182,500) is a wholly owned subsidiary of a New Jersey firm. Its sources of supply, however, are in New York State. Any transactions between such a subsidiary and its out-of-state parent are subject to the scrutiny of the state Public Service Commission.

New Jersey residents depend on the waters of the Hackensack River for water supply purposes through the Hackensack Water Company. Impoundments are maintained in New York State-Rockland County for this purpose.

Informal agreement has been reached between New York and New Jersey relative to the release schedules to be followed to protect the interests of both states. A meeting held with the representatives of the New Jersey Department of Environmental Protection confirmed that there are no interstate disagreements over the present arrangements.

Both of these situations could require more formal agreements sometime in the future.

SECONDARY CONCERNS

WATER POLLUTION CONTROL

The two agencies with interests which relate to the identification and abatement of water pollution in some of the interstate waters which New York shares with other states in the southeast area are the New England Water Pollution Control Commission and the Interstate Sanitation Commission. The principal tasks of the New England Water Pollution Control Commission (of which New York State is a full member) are to: 1) identify interstate waters within its jurisdiction as to present and primary proposed water use; 2) establish standards of purity for certain classifications of use, including drinking water. It is basically an advisory and coordinating agency.

The Interstate Sanitation Commission has full regulatory authority over the harbor, coastal, and tidal waters of the states of New York, New Jersey and Connecticut relative to water pollution abatement. The agency's jurisdiction extends northward in the Hudson River as far as the northern boundaries of Rockland and Westchester Counties. The agency is empowered to investigate charges of pollution and to enforce compliance in the courts.

Since all water imported for water supply use causes a like increase in used or wastewater to be disposed of, increase in water usage is a direct concern

to these agencies.

POTENTIAL CONCERNS

No other interstate agencies have jurisdiction over waters at least part of which are used for water supply in Southeastern New York.

The Susquehanna River Basin Commission has responsibilities generally analogous to those devolving on the DRBC. However, no water from the Susquehanna River Basin is presently transferred to Southeastern New York. Only if a proposal to divert Susquehanna River water for water supply purposes to Southeastern New York would that Commission and its activities be relevant to the work of the SEWSC.

A similar situation applies to the Great Lakes Commission and the Interstate Commission on the Lake Champlain Basin. Only if water diversions from Lake Ontario or Lake Champlain were envisioned would the work of those commissions be pertinent to the deliberations of the SEWSC.

METROPOLITAN RELATIONSHIPS

Although there are a number of interstate agencies and agreements, there are many gaps both from a water resource perspective, and from a metropolitan area service perspective.

There is no inter or intra state agency specifically responsible for management of the waters of the Hudson River Basin and Long Island. There is no integrated comprehensive plan for the use of Hudson River waters and Long Island groundwaters.

Except for the Regional Plan Association which is a business oriented private agency there is no device or institution to provide a metropolitan perspective on water supply services matters. A formal interstate agency with appropriate authority for planning and regulation for water supply services and other like matters would appear to be desirable. Perhaps the present Interstate Sanitation Commission's mandate and jurisdiction could be expanded to provide the needed integrating force.

The lack of such an institution results in a lot of talk about integrated metropolitan area water supply services based on a commitment to regionalism but not backed up by any facts.

SUMMARY

By far the most important interstate situation which impinges on the work of the SEWSC is that of use of the waters of the Delaware River by New York City on the one hand and downstream municipalities and individuals on the other hand. According to a 1954 Supreme Court decree, New York City is allowed to use up to 800 MGD for water supply services. The City is further required to release 83 per cent of the difference between its consumption from all sources and the safe yield (1,665 MGD) of its total gravity supplies down the Delaware for use by downstream riparians. Furthermore, it must release enough water so that a stream flow of 1,750 cfs is maintained at Montague at all times.

The Delaware River Basin Commission (DRBC), comprising the states of New York, New Jersey, Delaware, the Commonwealth of Pennsylvania, and the Federal Government, grew out of a compact developed after the 1954 Supreme Court decree. The DRBC has authority to allocate the waters of the Delaware River Basin. Generally, it has no authority to alter the provisions of the 1954 Supreme Court decree except after declaration of an emergency by the members. This was done during the mid-1960's because of the drought when there was a relaxing of the release requirements.

At the present time no other interbasin transfer of water takes place in Southeastern New York. If water transfer from the Susquehanna River, Lake Ontario or Lake Champlain were to materialize, then the respective commissions would be important to the work of the Southeast Water Supply Commission.

A proposal to develop the Tocks Island reservoir on the Delaware River between New Jersey and Pennsylvania is important to Southeastern New York not so much because nearby recreational land would be made available. Rather, its importance derives from the fact that New Jersey would get a significant amount of water from the project, thereby obviating the need for that state to turn to the upper Hudson River for water, at least for the foreseeable future.

Other interstate agencies of minor interest to the mission of the SEWSC are the New England Water Pollution Control Commission and the Interstate Sanitation Commission, two agencies with interest in establishing purity standards for interstate waters and in ensuring that water pollution is minimized.

Local water suppliers in Southeastern New York, with only one exception, obtain water from within the State. The Port Chester Water Works, Inc. obtains its water from a company in Connecticut.

There is no agency charged with the responsibility to develop a comprehensive water resource plan for the Hudson River and Long Island waters with appropriate regulatory authority. Likewise, there is no interstate metropolitan agency concerned with needed water supply services and related matters from a metropolitan perspective.

CHAPTER IV

STATE POLICIES AND PROGRAMS

INTRODUCTION

The waters of New York State are the property of the State held in trust for the benefit of the people of the State. The authority of the State to manage and regulate the use of water resources is derived from the State constitution. The authority has been implemented by a number of statutes which reaffirm the State's authority and establish a large number of programs and policies.

However, the State programs and policies have developed in a sporadic and ad hoc fashion in response to practical needs. As a result, there has been no state comprehensive water supply facilities program for the Southeastern New York region.

Initial State activity was concerned with the development and operation of the Barge Canal. This activity was successively followed by programs which dealt with: regulation of the allocation of water among municipal subdivisions; regulation of public water supply services; licensing of hydropower facilities; regulation of groundwater withdrawal on Long Island, water pollution control regulation; water resources planning; stream protection regulation; sewer studies; water supply studies; designation of wild and scenic rivers.

The Water Resource Law (Environmental Conservation Law, Article 15) was enacted in 1960. The State recognized its "sovereign duty to conserve and control

its water resources for the benefit of all inhabitants of the state." Accordingly, it has become the declared public policy of New York State that regulation and control of the State's water resources may be exercised only pursuant to state law and that comprehensive planning shall be undertaken to conserve those resources. In deciding how the water resources of the State shall be utilized, priority shall be given to the acquisition, storage, diversion and use of water for domestic and municipal purposes.

Today, the State's role in the field of water supply services is essentially a regulatory one--regulation of water quality, of water supply withdrawals, of the services offered by and water charges levied by investor owned water supply systems.

Beyond regulation, the State has been involved in some planning to meet water supply services needs. Of most significance have been the Comprehensive Public Water Supply (CPWS) studies carried out in Southeastern New York.

The pertinent state programs are treated briefly in this chapter; more detailed treatment can be found in a report of this Commission entitled, State Agency Conference - Proceedings, November 1, 1972.

MAJOR PROGRAMS

There are many water supply management policies and a number of programs to carry out those policies in the State. Some have considerable impact on this Commission's objectives. Those water supply programs of prime importance are the: 1) regulatory programs administered by the Department of Health; 2) water supply facilities and services studies administered by the Department of Health; 3) water supply allocation program administered by the Department of Environmental Conservation; 4) regulatory permit program for Long Island well construction and use administered by the Department of Environmental Conservation; 5) supervision exercised over rates and service levels of investor owned water utilities by the Public Service Commission. Therefore, the State agencies which are most directly related to the mission of the SEWSC are the Departments of Health and Environmental Conservation and the Public Service Commission.

DEPARTMENT OF HEALTH'S REGULATORY PROGRAMS

The Department of Health has a number of water supply regulatory programs. The thrust of these programs is to insure a water that is safe, palatable and adequate at the tap.

In order to meet these objectives the Department:

a) established standards for water supply sources.

b) established standards for drinking water at the tap,

c) enacted watershed rules and regulations for waste disposal on water supply watersheds,

d) enacted a sanitary code chapter to insure safe water supplies,

e) enacted a sanitary code chapter on qualifications of water supply operations.

These rules and regulations require sampling and analysis, operation reports, approval of plans for new systems and works, and approval of completed works, among other procedures.

COMPREHENSIVE WATER SUPPLY FACILITIES AND SERVICES STUDIES

These studies were carried out under the auspices of the State Commissioner of Health in cooperation with the Department of Environmental Conservation. The purpose of these studies, generally known as the Comprehensive Public Water Supply (CPWS) Studies, was to assure an adequate water supply for all of the municipalities in the State through the foreseeable future by recommending technical and administrative means to ensure that goals will be met. These studies were to be coordinated with regional water resources planning board studies in areas of the State where such boards exist. In Southeastern New York, there are no such boards. All counties (including New York City), in Southeastern New York, except Dutchess County, have had such studies completed. The studies were for the most part county, not regionally, oriented. One exception was the joint Westchester County - New York City study which by its very nature had a strong regional connotation.

Dutchess County completed a comprehensive county water supply study in 1962 prior to the State program. Therefore, there was no need for a study under the State program.

WATER SUPPLY ALLOCATION

The Department of Environmental Conservation has extensive regulatory powers relating to water supply. This agency, through its Bureau of Water Resources Development, is responsible for equitably apportioning available water resources in the State among the municipalities of the State.

All water resources, both surface and ground, are allocated by the Department when they are used for public water supply. All agencies or individuals must obtain permission from the Department in order to develop or expand a water source for municipal water supply purposes. This is true throughout the State.

The Department of Environmental Conservation also is authorized to adjudicate certain cases of water service rate disputes for water sold by one public water supply system to another.

Well Use Regulation

The Department of Environmental Conservation has a regulatory permit program for the development of well supplies with a capacity of 43 gallons per minute or larger on Long Island.

Regulation of Invester-owned Water Supply Systems

The Public Service Commission (PSC) has broad regulatory authority over all private water supply systems. Its authority includes: 1) determining reasonable rates to be charged; 2) supervising their operation so as to ensure safe, adequate and reliable service; 3) supervising their financing. In addition, the PSC must approve any dividends that are declared by the investor owned companies and will hear complaints of customers. Neither PSC nor any other State agency exercises any such authority in relation to municipal water supply systems.

RELATED PROGRAMS

There are other state policies and programs which may have an impact on the SEWSC depending on particular circumstances. Many of these programs are under the jurisdiction of the Department of Environmental Conservation and all involve various aspects of water resource management.

WATER RESOURCES PLANNING

The State role in water and related land resources planning is pervasive. There are several State agencies which play active roles in water and related land resources planning. Overall coordination of planning for water and related land resources is vested in the State Department of Environmental Conservation.

Regional water resources planning boards have been established throughout much of the State based on a statute that emphasizes the development of multiple use impoundments. There are eleven boards in existence and three are in the process of being formed. One multiple use water resource study is complete (Erie-Niagara) and the others are in various stages of completion. None have been implemented and as a matter of fact there is no vehicle for implementation.

There are no regional water resources planning boards in the southeast region except for a small portion of the Delaware Basin. There is no state water resources planning program in the Southeast Region.

Water Pollution Control Program

The Department of Environmental Conservation, in response to meeting its goal of abating existing and preventing new water pollution, has the power to classify the waters of New York State in consideration of their best usage and to adopt standards of purity for each use.

The Department has extensive powers which it can use in the fight to abate and prevent pollution. These powers include the right to issue or deny permits for the discharge of waste water, conduct investigations, hold hearings and enforce decisions by instituting proceedings in the proper court to compel compliance.

In its program to abate and prevent pollution the Department has set up a statewide water quality surveillance network, in which water quality, including salinity, changes are monitored.

Under the 1972 Amendments to the Federal Water Pollution Control Act (PL 92-500) policy and most programming authority has passed the Environmental Protection Agency and the role of the Department of Environmental Conservation is one of implementation of the federal program.

Wild River and Scenic River Program

In 1972 the Wild & Scenic Rivers Bill was enacted, (CH 869, Laws of 1972), and is now Article 15-9091 of the Environmental Conservation Law. This act provided for the classification and designation of rivers in order to protect their natural condition and prohibit development in whole or in part. Certain rivers or portions of rivers in the Adirondack Park were specifically designated in the statute, thus prohibiting their use as future water supplies. The law provides for the designation of other rivers in the state under the program by administrative procedures in the Department of Environmental Conservation.

Water Supply Facilities Financing and Construction by the Environmental Facilities Corporation

The Environmental Facilities Corporation (EFC) is authorized to enter into contracts with municipalities to provide advisory services, and to undertake planning, designing and construction of water supply facilities in the name of the municipality. The Environmental Facilities Corporation is also empowered to finance such operations.

The Environmental Facilities Corporation cannot own or operate water supply facilities, nor can it build any impoundments or reservoirs.

Barge Canal Operation

The Commissioner of Transportation has the responsibility for all facets of the operation and maintenance of all parts of the State canal system. The Department also may construct, operate and maintain reservoirs in the State Forest Preserve under the direction and supervision of the Department of Environmental Conservation.

Hudson River - Black River Regulating District

The Hudson River - Black River Regulating District is responsible for regulating streamflow in the Black River and Upper Hudson River basins. The Agency has considerable latitude in regard to its responsibilities and powers. The District is financially supported by the municipalities and private interests which benefit from the river regulation in terms of flood control and hydro power production. The District is required to maintain a flow of at least 3,000 cfs at the lock at Troy by releases from the Great Sacandaga Lake and Indian Lake reservoirs operated by the District.

Department of Audit and Contorl

The State Department of Audit and Control has authority over the finances of the various units of local government and, therefore, the Department is able to exercise a measure of control over municipal water systems.

If town water and water supply districts, town water storage and distribution districts, and town improvement districts are to be created or expanded, the permission of the State Comptroller must often be secured. The Comptroller's consent is needed for creation of a district only if issuances of indebtedness are required for formation. If improvement districts in a town are dissolved and water is made a townwide function, the Comptroller must be notified within ten days after the resolution doing this becomes effective.

The Department has no authority to regulate municipal water rates. It may indirectly regulate the rates charged by county and town districts by assuring that those districts comply with the law which provides that the revenues of county and town districts be equal to the costs incurred, a provision which does not hold true for villages and cities.

The Department has the responsibility for receiving, auditing and maintaining a copy of the annual report of each municipality in the State. Included in each report are sections devoted to any water, sewer drainage management facilities operated by the municipality.

OTHER PROGRAMS

Other programs such as the Commerce Department's economic development interest in water, the general planning interest of the Office of Planning Services, the local government administration interest of the Office for Local Government, and the Atomic and Space Development Authority's interest in atomic energy-desalinization plants are of some interest to the Commission.

SUMMARY

The State derives authority over water resource management through the State Constitution. Consequently, the State has many policies and programs which presently have a direct impact on the work of the Southeast Water Supply Commission. Other policies and programs may have an impact on the mission of the Commission in the future.

The Department of Health and the Department of Environmental Conservation are the two State departments which have the greatest authority over water supply services. It is in the areas of regulation and planning that the Health Department is most important to the mission of the Southeast Water Supply Commission. The Department of Environmental Conservation is most influential in regulation and water supply allocation adjudication.

The Environmental Conservation Department has other policies and programs which are of interest. These include water pollution control, stream protection, and wild and scenic rivers programs. Other State agencies which are involved in water related activities of interest to the Southeast Water Supply Commission are the Public Service Commission, the Environmental Facilities Corporation, the Hudson River - Black River Regulating District, the Department of Transporation and the Department of Audit and Control.

The State's water resource planning program has had no impact in the service or source area of the Southeast Water Supply Commission. In fact, there is no state water resource planning program in the Southeast region, although the Department of Environmental Conservation is applying for federal funds to develop a water resources management plan for the Hudson River basin.

The water supply and facilities programs have been mainly adjudicatory and regulatory. The comprehensive water supply studies programs have helped to define the needs and have posed some alternatives but lack real drive for implementation. Consequently, there is no State comprehensive water supply facilities program for the Southeastern New York Region except for the work of this Commission.

CHAPTER V

OVERVIEW -- FEDERAL, INTERSTATE AND STATE ROLES

There are a number of federal, interstate and state water supply programs operable in the Southeastern New York Region.

It is sometimes difficult to separate functions into neat federal, interstate, and state packages. There is considerable interaction, duplication, and role changing.

Currently the major Federal effort of direct impact is the Northeast Water Supply Study. This is directly aimed at defining the water supply needs of metropolitan New York and making recommendations, technical and administrative, to meet those needs. This is a new Federal role, the end results are speculative. The Federal regulatory role in water supply is weak, but indications are that it will soon be greatly strengthened through the "Safe Drinking Water Act of 1973."

Interstate programs are limited. The major element is the "Delaware River Basin Commission" an interstate agency with broad powers to plan, regulate and provide facilities. This Commission incorporates the Supreme Court decision of allocation of Delaware River waters to New York City and downstream states. It also possesses strong allocation powers upon the declaration of an emergency.

State programming is somewhat diffuse. The Departments of Health and Environmental Conservation share regulatory powers, the former concerned with drinking

water quality and the latter with water development and use. The State has played a limited leadership role in water supply through the sponsorship of comprehensive water supply studies in the Region. The State also has a major impact on provision of water supply services due to statutes and rules and regulations on local government financing and organization.

Overall, the federal, interstate and state activities have been concerned with planning both general water resource and single purpose water supply and with regulation both in water resource development and allocation, and in drinking water quality.

These agencies have not been involved in the direct provision of water supply services, although the NEWS Study is moving in this direction. Financing, constructing and operating water supply services facilities have been and remain a local government responsibility.

It is evident that the role of the federal government is becoming stronger. The role of the state must perforce weaken somewhat. However, it is not solely because the federal government is pushing the state out, although this is happening; rather the federal agencies frequently move into a vacuum when little state initiative or leadership has been exercised.

This type of evolvement has resulted in a situation where priorities are questionable, gaps in programming exist, areas of overlap and duplication are evident, and the proper roles for federal, interstate and state levels of government are becoming blurred and ill-defined.

FINDINGS AND CONCLUSIONS

The fole of the Federal Government in water resource and water supply programming has been continually expanding. This is illustrated by the proposed "Safe Drinking Water Act of 1973", the transfer of water pollution control policy and programming to the EPA, the provision for and creation of river basin agencies, the expanded water resource research programs and the broadened program responsibilities of the U.S. Corps of Engineers.

The U.S. Geological Survey, in cooperation with the State, undertakes hydrologic data gathering and analysis including both water quality and water quantity. As a result of the long term efforts of its staff, this agency is the premier and almost the sole agency in doing this type of work. The data and information provided is absolutely essential to existing and future water resource and water supply programs.

The major new element in federal programming and of great import to this Commission is the NEWS Study. The Study holds forth the promise of increased federal activity and the planning, financing, construction and possible operation of water supply facilities for metropolitan New York. There has been no federal commitment to actually implement the recommended program. The precondition would be that any project would be interstate in nature. The future development of this program is speculative but it is highly unlikely in the climate of the times that any massive federal financial assistance for this type of program would be forthcoming.

Governmental jurisdictions do not in many cases provide a suitable organizational format for water resource and water supply planning and administration. Examples include such things as major river basins and metropolitan areas, both of which have common core interests but are not well defined by existing governmental boundaries.

There is no formal interstate mechanism or agency concerned with planning and regulation of water supply services for the New York metropolitan area. Serious consideration should be given to the need for and value of such a mechanism.

The "excess release" requirements of the Supreme Court decrees on diversion of Delaware water to New York City, now institutionalized in the Compact, is based on the historical record of the thirties, and did not contemplate or provide accommodation for the more servere experience of the sixties. The "excess release" requirement as it now stands discourages water conservation measures in the Southeast Region served by the New York City water system.

The Delaware River Basin Commission's Tocks Island project would produce some indirect benefits to New York State and forestall attempts to develop the Hudson River for water supply to serve Northern New Jersey.

Present state water resource and water supply programming is limited in scope, is carried out by a number of agencies and serverely restricts both leadership and initiative. A complete review of state water programming is indicated.

There is no water resource planning program, no water resource management plan for the Hudson River Basin and Long Island under either federal or state auspices, although the DEC has applied for federal funds to undertake such a plan. Such a plan is essential to make the most effective and responsible use of the water resource.

The major roles of federal, state and interstate agencies in water supply matters in the Southeastern Region has been limited to research, hydrologic data col-

lection, planning and regulation. They have not been directly involved in any substantive way in the design and operation of water supply facilities.

RECOMMENDATIONS

2. *ALL FEDERAL WATER RESOURCE PROGRAMMING IN NEW YORK STATE SHOULD BE CARRIED OUT IN CLOSE COOPERATION AND AS JOINT ENDEAVORS WITH THE APPROPRIATE AGENCIES OF THE STATE OF NEW YORK.*

3. *THE COOPERATIVE U.S.G.S. STATE DATA COLLECTION AND ANALYSIS PROGRAMS SHOULD BE CONTINUED AND EXPANDED WHERE NECESSARY. AN EXPANSION OF THE PROGRAM IS INDICATED FOR THE HUDSON RIVER BASIN AND LONG ISLAND.*

4. *THE FINAL RECOMMENDATIONS OF THE FEDERAL NORTHEASTERN WATER SUPPLY (NEWS) SHOULD BE CLOSELY COORDINATED AND INTEGRATED WITH ANY STATE OR REGIONAL PLANNING PROPOSALS SO AS TO MAKE BEST USE OF THE FINANCIAL CAPABILITIES AND WATER RESOURCES AVAILABLE TO MEET THE WATER SUPPLY NEEDS IN THE SOUTHEASTERN REGION.*

5. *IN ORDER TO ENCOURAGE CONSERVATION MEASURES AND UNIVERSAL METERING IN THE SOUTHEAST NEW YORK REGION, NEW YORK STATE SHOULD IMMEDIATELY COMMENCE ACTION IN COOPERATION WITH THE DELAWARE RIVER BASIN COMMISSION TO ELIMINATE THE "EXCESS RELEASE" REQUIREMENTS IMPOSED ON THE CITY OF NEW YORK.*

6. *THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SHOULD BE GIVEN THE AUTHORITY AND RESPONSIBILITY TO ESTABLISH THE QUALITY, TIMING AND VOLUME OF RELEASES BELOW ALL WATER SUPPLY IMPOUNDMENTS IN THE SOURCE AND SERVICE AREAS OF SOUTHEASTERN NEW YORK. THIS WILL MAKE IT POSSIBLE TO PROTECT THE PUBLIC INTEREST IN MAINTAINING VIABLE STREAMS BELOW IMPOUNDMENTS AND PRESERVE AESTHETIC, FISH AND WILDLIFE AND OTHER VALUES.*

7. *THE CURRENT APPLICATION OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION TO THE WATER RESOURCES COUNCIL FOR FINANCIAL ASSISTANCE TO DEVELOP A WATER RESOURCES MANAGEMENT PLAN FOR THE HUDSON RIVER BASIN AND LONG ISLAND IS ENDORSED AND SUPPORTED.*

8. *FEDERAL, INTERSTATE AND STATE GOVERNMENT ROLES IN WATER SUPPLY SHOULD BE RESTRICTED TO RESEARCH, DATA COLLECTION, PLANNING, REGULATORY AND FINANCIAL ASSISTANCE FUNCTIONS. ALL WATER SUPPLY SERVICES FACILITIES DESIGN, CONSTRUCTION, AND OPERATION SHOULD REMAIN AT THE REGIONAL AND LOCAL LEVEL.*

SECTION II

INSTITUTIONAL ARRANGEMENTS

PART B

LOCAL INSTITUTIONS

CHAPTER VI

LOCAL INSTITUTIONS

Local institutions providing water supply services include: 1) local governments, 2) special governmental agencies, and 3) investor-owned companies. The major institutions are the local governments, the counties, cities, towns and villages.

The historical development of local governments is presented in this chapter in order to put the situation into some perspective. The specific water supply services roles of each institution are covered in detail in the succeeding chapters.

Local government in New York State is provided at two levels. The first level is cities, towns and villages. The second level is counties since cities, towns and villages are constituent subdivisions of counties. There is an anomaly, however, in that villages are included in and part of the town where located. In practice they usually operate quite independently.

The development of local government organization proceeded on the basis that local governments are creatures of the state and that any power they possess is by virtue of a grant from the state. The framework for local government was initially dictated by the state which created counties and towns by first dividing the state

into counties and then subdividing the counties into towns. There are some 62 counties and 932 towns in the state. These involuntary units of government operated under severe constraints with limited local discretion.

As the state developed from a rural to an urban society, provisions were made for broader governmental services by allowing the formation of cities and villages by petition from the local people. Over the years some 62 cities and 556 villages were formed with fairly broad grants of power under home rule or legislative charter and general legislation. These are the so-called voluntary units of local government.

The next development was the single purpose district provisions which allowed towns to provide certain services without necessitating the formation of villages or cities. Originally these districts were formed as Commissioner districts. These districts were governed by elected Commissioners who prepared budgets and submitted them to the town for tax collection. They were in essence independent of town control. When the town law was codified in 1932 Commissioner districts were supplanted by special town districts under the control and supervision of the town board. Rather than independent units of local government such as villages, districts became special service and assessment areas of town government under town control. Because of grandfather clauses and special exemptions some Commissioner districts (water) still exist, almost exclusively in Nassau County.

After a considerable passage of time, authority to create special single purpose districts for water supply, sewer services and drainage was given to county government in the fifties. The major constraint was the requirement that portions of more than one unit of government must be included. In other words, the county district must be intermunicipal in scope.

The latest development is the reorganization of counties and towns providing for executive form of government with broader authority and greater discretion under local charters in the former instance, and the suburban town law in the latter case. The suburban town form of government is limited to towns meeting certain criteria of population, proximity to a city and population growth rates. This has recently been relaxed by allowing <u>all</u> towns to provide certain services, including water supply services on a town wide basis similar to cities and villages.

This evolution of local government has more or less eliminated the old distinctions between county, city, town and village governments, particularly as far as the urban water utility services of water supply, sewage disposal and drainage

are concerned. However, the law seems to be far ahead of local initiative and action which is constrained by tradition and the status quo.

Furthermore, there is a tendency which is very confusing to the uninitiated and that is to treat and talk of county government as if it were on a par and equal to cities, towns and villages. Except for New York City, counties are the first level region and are interposed between cities, towns and villages, and the state. It is the second level in the hierarchy of local governments and can be a unifying force and service element for constituent local governments. Counties are now assuming this role. It is interesting to note that special legislative charters were enacted for Nassau, Westchester and Suffolk Counties in recognition of this capability, many years prior to the general authorizations granted to all counties.

There is no governmental level between counties and the state. Existing possibilities for regional approaches are inter-county cooperation or special legislative acts. History indicates that regional governmental development will probably emerge initially by the enactment of special single function legislation and then gradually evolve to some type of general regional government.

It is well to keep in mind that the thrust of local government, including any regional form, is the provision for and delivery of services, particularly hard services such as water supply, sewage disposal and drainage and high contact soft services such as police and schools. State and federal governments are ill-suited and ill-equipped to undertake such a role.

All forms of local government are authorized to provide water supply services to their residents. Most water supply services are provided by municipalities. Nevertheless, there are a number of private water utility companies still operating in the Region.

The Federal and State roles in water resource management have been generally associated with research, planning, and regulation. Local government is basically responsible for the provision of water supply services to local residents. This involves planning, financing, constructing and operating water supply systems.

In addition to county, town, city and village systems there are other special institutions involved in water supply services in the SEWSC Study Area. These include the special case of New York City, a water authority, a joint waterworks, and investor-owned systems.

Since there are a variety of local institutions and special cases, each type of institution will be examined separately. Each type will be presented so that

the number of units in each county, population served, existing institutional arrangements and financial aspects will be shown. To allow for a more equitable comparison of the financial data, costs and revenues accrued from rendering water supply services at the local level were computed for the major systems in the Region. Also, the cost of water to the consumers in each of the systems was computed.

The costs of water produced were computed for each system by adding the following costs: a) operation and maintenance; b) debt service; c) property taxes; d) other costs. The resultant figure was divided by the yearly consumption (average consumption in MGD x 365 days) to arrive at the cost per million gallons.

Similarly, revenues accrued by each system were calculated by adding the following revenues: a) real property taxes; b) assessments; c) water sales; d) service charges; e) other revenues. The resultant figure was divided by the yearly consumption (average consumption in MGD x 365 days) to arrive at the revenues per million gallons.

Cost to the consumer was computed for each system as follows. Water rates for the various systems were determined by a number of means, among them the listings in the publication Municipal Water Rates in New York State, July 1971. Rates are normally stated as dollars per number of gallons or dollars per number of cubic feet. Rates are usually assigned on a quarterly, semiannual or annual basis. To allow comparability among systems the total rates for a yearly consumption of 100,000 gallons were computed. Yearly charges include taxes levied for water supply purposes in some town water districts.

CHAPTER VII

COUNTIES

INTRODUCTION

Originally, counties were involuntary corporations established by the State to provide a few particular functions which were mainly tax collection and criminal justice. Originally, county government had little discretion and limited program responsibility. Over time program functions gradually increased to include a variety of activities in order to meet the needs of urban societies.

Counties are now authorized to provide the full spectrum of local government services. Actually the services provided range from only those mandated to the complete array. In all areas, but particularly in contiguous urban areas, counties are the first level region which function as coordinators, unifiers, and providers of needed urban services. This is the case in southeastern New York.

The State is divided into 62 counties. Five counties are entirely contained in New York City. These counties within New York City are part of city government and have only criminal and judicial functions.

The remaining 57 counties may be organized under the general County Law or charters. Charter counties may have been formed by special legislative act or, more recently, by home rule. Charter counties have opted for a more flexible and powerful form of county government than counties operating under the

general County Law.

Counties now have broad powers to draft and adopt their own governing charters within guidelines set in the enabling statute. One of the major constraints relates to the transfer of functions from cities, towns and villages to the county. Except for Nassau and Westchester this requires a multiple and separate referendum; all cities taken together, all towns taken together, and all villages taken together, must vote in the affirmative to allow a transfer of function.

There are eight counties in the SEWSC Study Area, excluding those in New York City. Putnam, Rockland and Ulster Counties are organized under the County Law, Nassau, Westchester and Suffolk Counties are special enactment charter counties, and Dutchess and Orange Counties are home rule charter counties.

Normally a non-charter county has the legislative and executive functions of county government performed by a single body such as a Board of Supervisors. This is in contrast to the charter county which normally has a separate county legislature and county executive.

POWERS AND RESPONSIBILITIES

The following material on county powers and responsibilities relative to water supply services applies in general to all counties; however, there are exceptions. The special act counties may have different authority and procedures, which each charter would spell out. Exceptions will be noted. The other counties in the region, both charter and non-charter, follow the general procedures outlined. The appointing authority may be the Board of Supervisors, or in the case of charter counties, the County Legislature or the County Executive, subject to approval of the County Legislature.

WATER AGENCIES

The Board of Supervisors or other appropriate body may designate any county officer, official or agency as the county water agency. A county water agency is authorized:

1) to assemble data relating to water resources available to the county for water supply purposes, both within and without the county,
2) to sponsor and carry out comprehensive water supply studies, and
3) to render engineering and related technical services to municipalities located within the county, and

4) to act as coordinator of water supply services within the county. County water agencies have been established in all counties in the region. The board of supervisors may also appoint this agency as administrative head of any county water districts created in a county except in the case of a public authority.

COUNTY DISTRICTS

County government can establish a county-wide water district or part county water district or extend an existing district. The board of supervisors or legislature determines that there is a need for a county water district. This decision is subject to a permissive referendum either by action of the board or by petition of the people benefiting from the proposed district. If no referendum is called for within thirty days, the proposed county water district will come into being.

A county district has the power to develop or acquire a water supply for wholesale and/or retail distribution. A district may consist of two or more non-contiguous areas of a county in which the system will be interrelated. Except in Suffolk County, no district may be created which consists wholly of territory located within one city, within one village or within that portion of one town outside of a village. The service area of a district may include cities, villages, town districts and/or other areas. A county-wide district can be created but it is subject to a county-wide permissive referendum.

The county district is operated by an administrative head or body appointed by the board of supervisors. Some of the functions of district head relate to the adoption of rules governing the terms and conditions of service to customers, to the establishment of retail and wholesale water rates, to the purchase of water for resale within the district and the sale of excess water outside the county. Approval from the board of supervisors is required prior to the implementation of these functions.

OTHER COUNTY DEPARTMENTS

The county health department enforces state established drinking water standards as an agent for the State Health Department. The department also may adopt regulations which include but are not limited to the establishment of water supply systems for housing subdivisions.

The county planning board has some authority over planning and development, especially to ensure that projects comply with established comprehensive plans.

FINANCIAL ASPECTS

The general financial aspects of water supply services are covered in more detail in a later chapter. The following brief treatment applies only to the special characteristics of county finances.

REVENUES

Revenues are derived from water rates charged based on water usage, and from ad valorem taxes levied on all property in the district. Some ad valorem levy must be made on all property within the district to demonstrate the requirement that all property within the district is benefited.

Operation and Maintenance

Revenues for the operation and maintenance of a county water district are derived from the various rentals and charges collected by the district. If these rentals and charges do not cover operation and maintenance expenses, revenues derived from the ad valorem tax within the district may be used.

Capital Expenditures

To finance the construction of water district facilities, the Board is authorized to issue the full faith and credit obligations of the county in an amount sufficient to meet the entire cost thereof. Revenues to pay for capital debt service are derived from the annual revenues of the district. There may be a general levy apportioning the costs of district-wide improvements among all the taxpayers of the district and there may be "special benefit" assessments which are charges to persons within a portion of the district for improvements benefiting only that portion of the district.

The law also provides for zones of assessment which recognize the varying level of benefit to the properties within the district.

STATE FISCAL CONTROLS

No expenditure may be made, nor contractual liability incurred, in excess of appropriated amounts. County districts are like all special districts in the State in that revenues collected within a district may only be used for the specific purpose for which they were collected and only in the same district; thus the necessity for revenues to meet but not exceed expenditures. County water districts cannot over a period of two to three years produce excess funds for diversion to other use, or run deficits which must be covered by general revenues. There may

be excess funds or deficits in any one year due to inaccurate estimates of anticipated revenue or expenditures; however, this must be adjusted in the following year by adjusting revenues and expenditures.

EXISTING COUNTY WATER SUPPLY ACTIVITIES

The following is a brief description of the county level water supply programs in the SEWSC Study Area.

Nassau County

The Commissioner of Public Works has the authority to construct and maintain county water systems under the county charter and is the de facto water agency. At present, the County has not exercised this authority in the water supply area mainly due to intense local pressures not to exercise it. However, the first steps have been taken. A comprehensive county-wide plan for public water supply has been completed. This plan can be adopted by ordinance, but only after a public hearing.

The county has long played a leadership role in attempting to coordinate and consolidate local water systems. The county sponsored a comprehensive study in 1960 and an update of that study in 1971.

This Study recommended an increased role for the County in reclamation and recharge facilities, the transfer of water from areas of plenty to areas of shortage and in the development and management of supplemental sources.

It was further recommended that the County create a County Water Department to be administered by a representative Water Resources Board. This can be done under the existing charter. A Nassau-Suffolk water resource management plan was also proposed.

Even with all this drive for an expanded county role county activity is still limited to research and pilot projects and planning studies.

Suffolk County

Suffolk County has a different situation from any of the other counties in the Region. It is served by municipal systems, small private systems, and by the Suffolk County Water Authority. The Authority serves some 75 per cent of the population and eventually will probably serve the entire county. The Suffolk County Water Authority was created by special act of the Legislature and in the context of this discussion is a special case, which is provided in detail in Chapter XII, "Special Systems".

The County Water Agency (Department of Environmental Protection) sponsored a

Comprehensive Water Supply Study in 1968. The major institutional recommendation was to create a County Department of Water Resources and consolidate all urban water utility systems, both water and sewer, where possible under the new department.

Dutchess County

In Dutchess County the Commissioner of Public Works is responsible for the construction of water supply facilities and for managing county improvement districts established for such purposes. A county water agency was established and it was the sponsor of a 1962 comprehensive study of water supply in the county. This study was the precursor of the state aid program for such studies. Implementation of the recommendation of the study led to a classic battle between the city of Poughkeepsie, the town of Poughkeepsie and the county. A county water district including the city, the towns and other areas was defeated. The issues were beclouded at the time by political partisanship. The city of Poughkeepsie and town of Poughkeepsie has since worked out an intermunicipal arrangement. The water agency has since been merged with other agencies into a County Environmental Committee.

This Committee so far has had as its major task the assembling of data on water resources in the County. It has recommended that the U.S. Army Corps of Engineers do flood plain studies for all basins in the County. There is still county concern for area wide water supply service and major county involvement is a future possibility.

The County Department of Planning has recommended that the County take a strong regulatory stance on private (developer) systems, that at least a two part county district be established, and that the County participate in any regional scheme for water supply development.

Orange County

The Department of Public Works is the County Water Agency. As such it sponsored a Comprehensive Water Study. This Study recommended expanding the role of the agency and creating a number of county water districts.

The Commissioner of Public Works is responsible for implementation of the Study. He is responsible for the purchase of land for the development of a County reservoir system based on recommendations made in the Comprehensive Public Water Supply Study for Orange County. The purchase of land, authorized by the Board of Supervisors, resulted in a court suit. The suit caused a halt to the purchase of

land for the system until such time as the County receives the approval of the State Environmental Conservation Department which is the agency responsible for apportioning the waters of the State used for public water supply.

There are no county water districts at present but there is a plan for part of the County to be served by this proposed county system in the future.

Putnam County

The County sponsored a Comprehensive Water Supply Study completed in 1970. The report recommended the establishment of a functioning County Water Agency and the creation of three County Water Districts. The difficulty of dealing with New York City on a county basis was cited.

Rockland County

The County sponsored a Comprehensive Water Supply Study completed in 1970. Rockland County is particularly unique insofar as it is served in most part by a private investor owned water utility, the Spring Valley Water Company.

No recommendations were made for institutional changes.

Ulster County

The County Water Agency (Department of Health) sponsored a Comprehensive Water Supply Study completed in 1970.

The Study recommended that a County Water District be formed to develop and administer some six intermunicipal service areas. No action has been taken on implementation.

Westchester County

The County Water Agency in Westchester County has the authority to research, study and plan for the creation of water districts which are submitted to the County Legislature for consideration. The Agency has the authority to act as the administrative head of any county water district.

The County Water Agency consists of the Commissioners of Environmental Facilities, Health and Planning. It is located within the Department of Environmental Facilities for administrative purposes. The Agency has been the sponsor of the Comprehensive Water Supply Studies carried out in the County and in cooperation with New York City.

The refusal of New York City to deal with the County concerning taps from the City system has led to the ridiculous situation where municipal subdivisions of the county had to act as surrogates for the county in setting up County Districts #1 and #2.

The Agency recommended the establishment of County Water District No. 1 in 1964. It was established to serve as an auxiliary source of water for the cities of Mount Vernon, White Plains and Yonkers, as well as the village of Scarsdale. Water is delivered from Kensico Reservoir through a 48" pipe bought from New York City. The District is basically a treatment and transmission facility and is a cooperative effort of the municipalities served. The County Water Agency supervises the operation of the district and does the billing while maintenance work is done by the municipalities. At present, the district is operating at less than half capacity so there seems to be room for expansion.

County Water District No. 2 has been established as a result of a recommendation in the Comprehensive Public Water Supply Study for northern Westchester County (CPWS-10). This district will use water from the Amawalk Reservoir (a part of the Croton System no longer used by New York City). A treatment plant is presently under construction. When completed the plant will initially supply several water districts in Yorktown and will eventually serve parts of Bedford, Lewisboro, North Salem and Somers. Operations will be supervised by the County Water Agency and will be carried out by the Yorktown Water Storage and Distribution District.

SUMMARY

The counties in Southeastern New York are organized under three different methods of government. Putnam, Rockland, and Ulster are organized under the county law which does not provide for executive government. Dutchess and Orange Counties operate under home rule charters adopted locally and Nassau, Westchester, and Suffolk operate under special charters enacted by the State Legislature. Although the special act counties have more water supply authority than the other counties, this has not been apparent in the actual operations of the county in the water supply field in the Southeast Region. Even though the form of county government varies, the approach to the water supply situation has not varied significantly from county to county except for the further enactment of the Suffolk County Water Authority which operates in that county.

Under the county law and the various charters, counties are authorized to establish water agencies and to carry out certain water supply functions. Provision of water supply services by the counties under the county law is limited to intermunicipal situations, that is, areas which include more than a single municipality. The transfer of the water supply function directly to the county from the cities,

towns and villages would require a county charter provision containing this authority. This provision is already contained in the Nassau County charter, although it has not been exercised. There is no provision for transfer of function in the charter and in the non-charter counties. In order to be operable, such a provision would require all the cities, taken together, all the towns taken together, and all the villages taken together, to vote affirmatively for the transfer of function. This has not happened in any county in the Southeastern Region. The only county in the Region which actually has carried out water supply service functions is Westchester County. This has been done by the mechanism of a county water district. The major function of these districts is to provide transmission capability and system interconnections. The activity of all of the counties has been restricted mainly to sponsorship of comprehensive water supply studies and to attempts to provide leadership and initiative in meeting county wide water supply problems. The CPWS Studies all recommend an increased role for the county in providing a water supply service, particularly in the development of new sources, but also include in many instances, complete county water systems. Rockland County occupies a somewhat unique position since it is served in the main by a private investor-owned company and this is not likely to change in the future. Therefore, any future water supply role of the county in this instance is limited. Orange County has undertaken an implementation scheme and is in the process of acquiring possible reservoir sites for future use. The other counties are more or less in a state of suspended animation pending the outcome of the work of this Commission.

CHAPTER VIII

TOWN WATER SYSTEMS

INTRODUCTION

Towns, like counties, are involuntary forms of local government established by the State for state purposes. Each county was divided into towns in order to provide essential services. Originally, the functions were tax collection and criminal justice; highways were soon added. As time passed, town authority and discretion were broadened to meet urban needs.

As population grew and urban areas developed and expanded, town government underwent some significant changes. Many towns were subsumed by newly formed or expanding cities and were abolished. Villages were formed to provide needed services, mainly water supply services. This was the biggest single factor in village formation. Villages did not subsume towns as they remained part of the towns in which they were located.

These experiences prompted the first efforts to expand town authority through the establishment of single purpose town districts. As to be expected, these districts were mainly for the provision of hard services, particularly water supply services and drainage services. The special district originated as so called commissioner districts in 1895. The commissioner districts were governed by elected commissioners. The districts were semi-autonomous and independent of the town

government. The commissioner districts are analogous to single purpose villages. The only town function was to collect taxes to meet the budgets established by the Commissioners.

The next development in the twenties was cessation of annexation by cities as a procedure to meet urban needs of fringe areas. This was coupled with a sudden proliferation of village formations.

The response of towns was the codification of the town law in 1932 which provided for special town districts formed by the town and under the direct control of the town board. Village formation and annexations then ceased for all practical purposes.

In 1960 the suburban town law was passed allowing certain towns to adopt (city and village like) executive government. This option was limited to towns meeting certain criteria of population, location and growth rates. The suburban town law completed the transformation of town government from a limited function state purpose unit to a general purpose government similar to cities and villages.

Certain privileges of suburban towns, including provision of water supply services as a town wide function thereby eliminating special districts, were extended as an option to all towns in the state.

There are 103 towns in Southeastern New York. Of these, 19 have elected the suburban form of government.

Some 59 of the 103 towns in Southeastern New York have municipal water supply services which are operated at the town level. The remaining towns are served totally or in part by investor owned systems or village systems or by no public water supply at all. In total there are 123 town operated municipal water supply units in the 59 towns.

INSTITUTIONAL ARRANGEMENTS

Water supply services are provided by towns under three organizational systems. These are 1) town special districts, 2) town Commissioner districts, and 3) town wide general function.

SPECIAL DISTRICTS

The usual method of organization is as a town special district. Of the 123 water supply systems some 102 are special town districts. The responsibility for formation, operation and maintenance rests with the town board. However, each district is fiscally separate and independent. This results in a great difference in water cost from one district to another. The initiative for creating or extending

water supply service develops from the people applying to the town board for a district or from the submission of a proposal by the town board to the people. In both cases, a public hearing is required. And in both cases the town board must determine that all those in the proposed district will be benefited and that all those who will be benefited will actually be included in the proposed district. If the proposal originates from the town board, the proposal must then be submitted to a public referendum. Districts may be part town or town wide in area. Villages may be included in a town district with approval of the village board.

COMMISSIONER DISTRICTS

Commissioner districts are a holdover from the days when town government was weak and unorganized. Over the years attempts have been made on the state level to abolish commissioner districts and reorganize them as special districts under town control. These efforts have been generally successful; the only commissioner districts remaining are in Nassau and Suffolk Counties. These have been preserved through grandfather clauses or special exemptions. There are 21 commissioner districts in Southeastern New York located in Nassau (19) and Suffolk (2) Counties.

TOWN WATER SYSTEMS

In the southeast region two towns, Haverstraw in Rockland County and Poughkeepsie in Dutchess County, have opted to provide water service as a town wide function. The operating procedures are the same as for city and village systems. Any town can opt to abolish all existing districts and consolidate the organization and operation as a town wide function with or without special assessment areas. Villages may be included with approval of the village governing body.

The total number of town water systems and their distribution throughout the Southeast Region are shown in Table 2. This tabulation indicates that 59 towns have 123 districts. Of the 123 districts 71 include both source and distribution, while 52 are distribution districts only. In addition to the 123 special districts there are some 122 special assessment areas. The population served by the town districts varies considerably. This is shown in Table 3. This tabulation shows that 31 districts serve approximately 85 per cent of the total town population served and the remaining 92 districts serve 15 per cent of the total town population served.

Table 2

TOWN WATER SYSTEMS
IN SOUTHEASTERN NEW YORK

County	Total No. of Towns	Towns with Town Water System	Special Districts: Total	Special Districts: Source and Distribution	Special Districts: Distribution Only	Additional Assessment Areas Within District	Population Served
Nassau	3	3	25[2]	21	4	0	624,400
Suffolk	10	7	16[2]	10	6	62	148,859
Dutchess	20	7	10[1]	4	6	33	40,530
Orange	20	14	20	12	8	7	32,340
Putnam	6	4	11	7	4	0	11,445
Rockland	5	4	8[1]	0	8	0	9,000
Ulster	20	8	12	9	3	0	25,456
Westchester	19	12	21	8	13	20	131,130
Total	103	59	123	71	52	122	1,023,170

[1]one town wide district in each county

[2]Nassau has 19 and Suffolk two commissioner districts

Table 3

POPULATIONS SERVED
TOWN DISTRICTS

POPULATION RANGES	NUMBER OF SYSTEMS*	POPULATION SERVED
>10,000	31	858,440
5,000 to 10,000	11	66,779
1,000 to 4,999	32	79,370
<1,000	21	8,012
	95	1,012,601

*Information for 28 towns not separable from parent system, probably most serve under 1,000 people.

FINANCIAL ASPECTS

This section deals with the methods of financing water supply services in towns. An overview on water service financing is contained in Chapter XIV. Further, it notes the financial constraints under which towns operate. Particularly important are the financial constraints on town water districts. Finally, actual water costs and revenues as well as costs to the consumer are discussed briefly.

FINANCIAL CONSTRAINTS

The principal constraints placed on town water system financing apply to town water districts and stipulate that monies collected for water services can only be used to pay for water services in the same town water district. Therefore, revenues and expenditures over time must be equal and ordinarily should be equal each year. Therefore, water supply services cannot be used as a revenue raising device in town water districts. This legal constraint on the raising of monies is not imposed on city or village systems or in towns where water distribution is a town (town-wide) function. In these latter local units, revenues may exceed expenditures resulting in the transfer of surplus into the general fund. Conversely, general fund monies may be used to meet deficits when necessary, thereby subsidizing the water systems.

METHODS OF RAISING MONEY

The costs of operation and maintenance of water supply systems at the town level may be paid from water and other user charges and, if necessary, from property taxes. Capital improvements are financed by full faith and credit town issued bonds. An ad valorem levy must be imposed in the district on the premise that all property included is benefited.

COSTS AND REVENUES

The cost of supplying water varies considerably from one town district to another, ranging from $178 per million gallons to $3,685 per million gallons. The lowest mean cost occurs in the town water districts of Nassau County whereas the highest mean cost is in those of Orange County. Correspondingly, the revenues which must be accumulated to offset these costs (keeping in mind that no surpluses can be developed) also vary considerably -- from $143 per million gallons to $4,081 per million gallons. Tables 4 and 5 detail these findings.

COSTS TO CONSUMERS

Water costs to the consumer in town water districts vary significantly from one county to another. As shown in Table 6, consumer costs in town water districts in Putnam County in general were highest whereas Nassau and Suffolk Counties had the lowest average consumer costs.

The general range of cost to the consumer of an average family based on the purchase of 100,000 gallons annually and billed quarterly generally falls between $40 and $120 with a median figure of approximately $80. Within this so called normal distribution we have a three to one variance in cost. Extreme values vary from $22 on the low side to $345 on the high side. This extreme variation in cost for water is due to: 1) the size of the system, 2) age of the system, 3) location of the system, and 4) population density. The size of the system gives economies of scale which means that the larger the systems, usually the lower the unit cost. The age of the system impacts in the original cost, since we have had an inflationary economy for the past 30 years, and reflects the debt service being carried by the system. Many of the older systems have extinguished most of the debt. Location cost is reflected by the availability of the water and the cost to transfer it. For example, in Nassau and Suffolk Counties the water is readily available, the only requirement being a well area. In other locations water must be brought a considerable distance and the subsurface conditions result in much higher con-

Table 4

WATER COSTS PER MILLION GALLONS[1]

Town Water Districts in Southeastern New York
By County
(IN DOLLARS)

1972

County	Low	High	Median[2]	Mean[3]
Nassau	282	2,554	559	574
Suffolk	328	3,036	942	926
Dutchess	441	1,478	730	584
Orange	362	2,738	846	1,272
Putnam	791	3,464	1,206	1,192
Rockland	---	---	---	---
Ulster	178	3,685	667	720
Westchester	328	2,264	648	576
Study Area	178	3,685	724	667

[1]Cost data not available for 29 town water districts

[2]Median - Middle Value

[3]Mean - Average Value

Table 5

WATER REVENUES PER MILLION GALLONS[1]

Town Water Districts in Southeastern New York
By County
(IN DOLLARS)

1972

County	Low	High	Median[2]	Mean[3]
Nassau	323	3,393	449	595
Suffolk	421	3,350	804	819
Dutchess	285	1,310	718	536
Orange	332	4,081	962	1,284
Putnam	812	3,614	1,545	1,292
Rockland	n.a.	n.a.	n.a.	n.a.
Ulster	143	3,547	516	767
Westchester	496	1,994	703	544
Study Area	143	4,081	703	656

[1]Revenue data not available for 27 town water districts

[2]Median - Middle Value

[3]Mean - Average Value

Table 6

COST TO THE CONSUMER[1]

Town Water Districts in Southeastern New York
By County
(IN DOLLARS)

1972

County	Low	High	Median[2]	Mean[3]
Nassau	30	103	44	50
Suffolk	40	129	58	54
Dutchess	42	237	93	189
Orange	30	345	102	105
Putnam	61	244	137	143
Rockland	-	-	-	-
Ulster	22	134	95	87
Westchester	42	132	72	52
Study Area	22	345	80	54

[1]Costs based on water usage of 100,000 gallons

[2]Median - Middle Value

[3]Mean - Average Value

struction costs. High population densities, of course, reduce the unit distribution costs. Each one of these elements are more or less independent in their impact. Each situation would call for individual analysis. However, the impact of these becomes evident generally in the Region.

As would be expected, the costs in Long Island are the lowest. Systems generally are larger and older; they have the advantage of location, and the intensity of population is higher. Costs increase in Westchester and Ulster due in all probability to the costs of producing the water, whereas, the highest costs are experienced in Dutchess, Orange, Putnam and Rockland where the systems are newer, sizes smaller, the water more difficult to develop and the density of population rather sparse.

One thing that increases the unit cost in the town districts is the fact that they have been developed on an incremental basis, frequently to serve small populations. In addition to the 123 special districts in the Region there are an additional 122 special assessment areas within these districts. This means that of the people served by town water districts, there are 245 different costs and charges. In some cases differences are minor, in other cases they are of considerable magnitude. This is illustrated in Table 6 which shows the ranges. It is important to note that the use of special benefit assessments for capital costs in town water districts was a common method for financing capital cost at one time. This method was used by cities for years and was determined to be cumbersome and inequitable. Hopefully, this method will eventually be discarded by towns as it was with cities.

SUMMARY

There are 103 towns in the Southeast Region. Fifty-nine of these towns provide some type of town water service through 123 systems. One hundred are regular special town districts, 21 are commissioner type districts, and two are townwide water systems. The size of the systems varies from serving a few hundred people to serving thousands. Some 31 of the districts serve 85 per cent of the total population served by water districts. In other words there are a few large systems and many small systems. The largest district systems are located in Nassau, Suffolk and Westchester Counties while the small ones are scattered throughout the rest of the Region. The costs of water, revenues received and the cost to the consumer vary considerably throughout the Region. Cost differentials for most of

the systems are in the order of three to one. The extreme cost differential can be as much as 10 to 15 to one. Major characteristics of the town systems are the proliferation of separate entities, the use of districts for satellite distribution systems, and the extreme variability of costs for the same amount of water and the same service.

CHAPTER IX

CITY WATER SYSTEMS

INTRODUCTION

Cities are municipal corporations which came into being in order to meet service needs of urban areas. They are specially authorized by the Legislature to provide governmental services to their people. Unlike counties and towns, cities are voluntary forms of local government. Most cities operate under home rule or legislative charters with broad grants of power and much discretion.

All cities have elective legislative bodies and all (except those using the commission form) also have either a mayor or city manager. All cities also have in common the activity of water supply services.

There are fourteen cities in the Commission's jurisdictional area excluding New York City. New York City is discussed in a separate chapter because of its special character. All serve considerable numbers of people, the largest (Yonkers) serves 230,000, the smallest (Port Jervis) serves 9,200. Six of the fourteen cities are located in Westchester County (Mount Vernon, New Rochelle, Peekskill, Rye, White Plains and Yonkers), three are in Orange County (Middletown, Newburgh and Port Jervis), two in Dutchess County (Beacon and Poughkeepsie), two in Nassau County (Glen Cove and Long Beach) and one in Ulster County (Kingston). The cities in total serve 556,244 people.

Cities have the power to acquire property within or beyond city limits for the purpose of operating a city water supply system. Additionally, a city may

maintain and operate the system, as well as sell or give up its water supply system to a water authority, a county water district or a joint water works system created under General Municipal Law. These actions may be taken by the City without the electroate voting on them.

Among the fourteen cities in the SEWSC study area, two, New Rochelle and Rye, are served by investor-owned water supply systems. The operation of investor-owned is regulated by the State Public Service Commission, which has no regulatory power over municipal water works.

INSTITUTIONAL ARRANGEMENTS

Supervisory control over municipal city water systems may rest with a variety of organizations and officials. One must determine which particular department and administrator is in control of a particular aspect of a given city's water supply system. For example, the Commissioners of Public Works have general supervisory responsibility over the city water works in Beacon and White Plains whereas the Commissioner in Glen Cove is responsible only for construction of water improvements while the Mayor has the supervisory responsibility.

FINANCIAL ASPECTS

An important point in relation to the financing of city water supply systems is that there are no legal constraints on, or control over, the rates that cities charge for water. They can charge what the consumer in effect is willing to pay. In addition, when surpluses are accrued they may be used for other purposes not related to water service. Conversely, when deficits exist, other monies can be used to make up the difference. While the financial techniques vary from city to city there normally is a limit on expenditures based on appropriated amounts or estimated income.

METHODS OF RAISING MONEY

Operating and maintenance expenses are usually covered by water user charges. Water user charges usually go into the general fund. Capital improvements of municipal water works may be financed by current revenues, reserves or through the sale of municipal bonds. A capital reserve fund may be used to defray construction costs.

COSTS

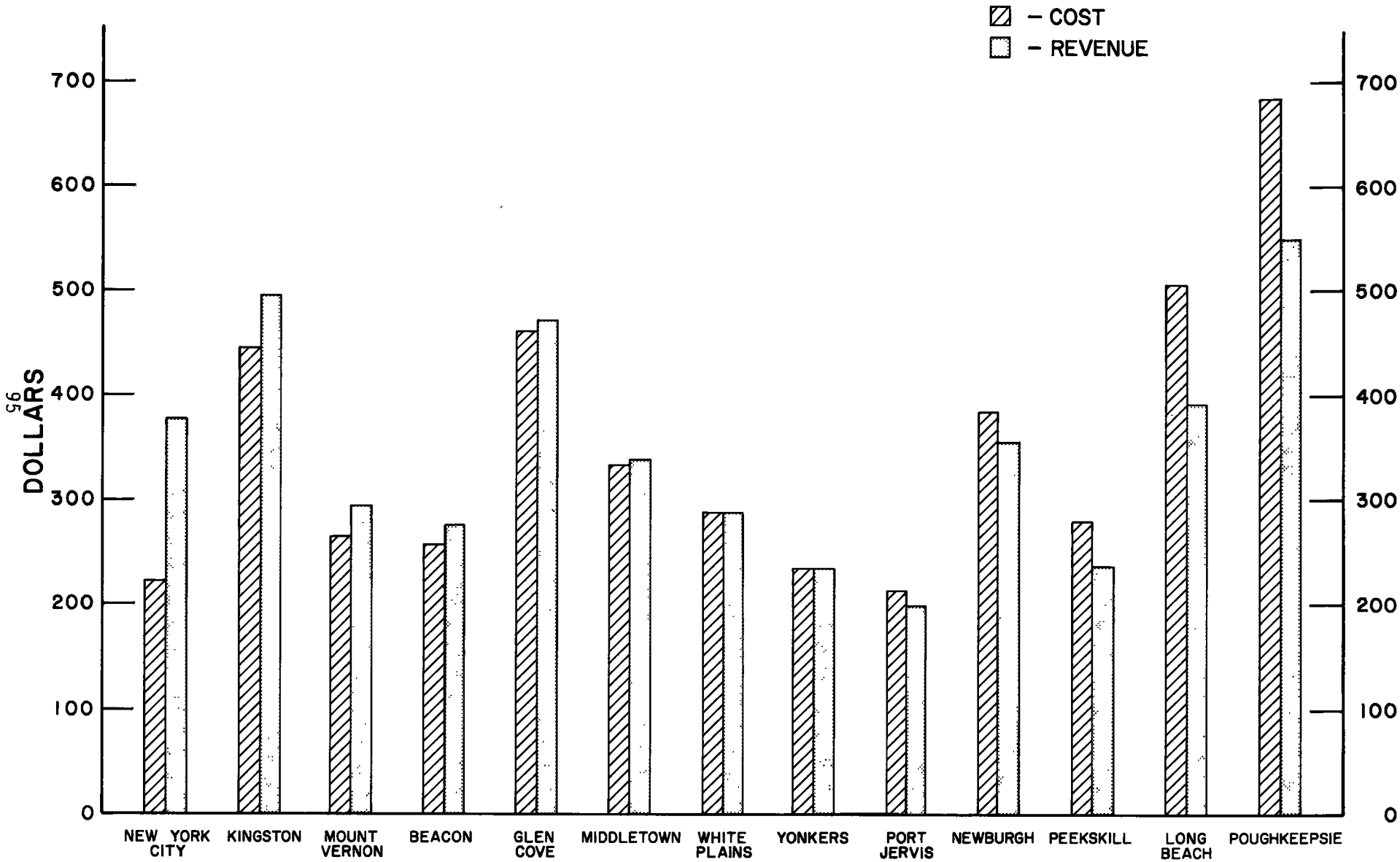
The cost of water for municipal city water systems, shown in Figure 5, is somewhat more uniform from one city system to another than is the case with other

FIGURE 5

COMPARISON OF AVERAGE COSTS AND REVENUES PER MILLION GALLONS

CITY SYSTEMS IN SOUTHEASTERN NEW YORK

1972



types of water systems. The cost per million gallons of water for the twelve city systems ranges from $213 to $686. The upper limit and the mean are reduced if the city of Poughkeepsie's water system is excluded. Poughkeepsie recently built a new treatment facility.

Six of the cities have to pay taxes on their water supply properties outside their city limits. These taxes amount to as much as 22 per cent of the total water costs for a city.

REVENUES

Revenues also vary from city to city as shown in Table 7. The revenues in Port Jervis are lowest at $199 per million gallons whereas revenues in Poughkeepsie are highest at $550 per million gallons. Revenues are depicted in Figure 5.

It should be noted that the annual reports of cities as well as villages only display revenues collected from water charges. They do not include monies from special assessments. However, since special assessments are falling into disuse, and in most instances, particularly in cities, have been extinguished, they can be ignored in computing surpluses and deficits in the system.

SURPLUSES OR DEFICITS

Five of the cities show a loss, five show a small profit, and two have equal revenues and costs. Some municipal city water systems are subsidized by general revenues, others yield a surplus to the general fund which is used for other purposes.

COST TO CONSUMERS

As shown in Table 8 annual costs to the consumer, based on using 100,000 gallons, range from a low of $33 in Middletown to a high of $88 in the city of Kingston. These low costs to the consumers are primarily attributable to the age of the systems, the large size of the systems and the high density of population which minimizes unit distribution costs.

SUMMARY

There are 14 cities in Southeastern New York excluding New York City. All but two of these provide water supply services. The other two are served by private companies. Most of the cities are medium sized. The largest is Yonkers with 230,000 people. The smallest is Port Jervis with 9200. Seven range in population from 24,000 to 35,000. Populations are shown in Table 8. The costs

Table 7

CITY WATER WORKS FINANCING
REVENUES AND DISBURSEMENTS
(IN DOLLARS)

	Water Revenues				Disbursements			
	Sales	Ad Valorem	Other Revenues	Total	Operation & Maintenance	Debt Service	Other Costs	Total
New York City	157,777,566	48,745,819	3,242,316	209,765,691	31,117,885	50,745,819	40,828,319	122,692,023
Nassau County								
Glen Cove	598,656	n.a.	508	598,164	277,322	310,385	---	587,707
Long Beach	920,655	n.a.	94,222	1,014,877	608,411	701,241	---	1,309,651
Suffolk County								
None								
Dutchess County								
Beacon	194,687	n.a.	6,257	200,938	156,798	---	30,932	187,730
Poughkeepsie	872,250	n.a.	59,247	931,498	702,489	193,118	265,000	1,160,607
Orange County								
Middletown	360,017	n.a.	8,771	368,788	244,229	25,395	94,143	363,767
Newburgh	540,968	n.a.	28,479	569,447	429,125	41,882	143,842	614,869
Port Jervis	118,246	n.a.	4,958	123,204	95,754	7,600	28,633	131,987
Putnam County								
None								
Richland County								
None								
Ulster County								
Kingston	604,070	31,244	85,273	720,587	427,578	98,308	124,866	650,752
Westchester County								
Mount Vernon	983,411	n.a.	30,268	1,013,679	464,901	31,715	414,852	911,468
Peekskill	437,695	n.a.	37,699	475,394	488,458	---	70,401	558,859
White Plains	800,624	n.a.	30,094	830,728	381,251	11,195	438,282	830,728
Yonkers	1,928,848	435,000	47,022	2,411,190	792,144	466,781	1,152,265	2,411,190

Table 8

COST TO THE CONSUMER

City Water Systems in Southeastern New York

	Population Served	Costs Per Million Gallons In Dollars	Revenues Per Million Gallons In Dollars	Consumer Costs
Nassau County				
Glen Cove	28,500	461	470	50.40
Long Beach	28,800	505	392	49.80
Suffolk County				
None				
Dutchess County				
Beacon	13,255	257	275	51.48
Poughkeepsie	32,029	686	550	46.80
Orange County				
Middletown	24,600	332	337	32.92
Newburgh	34,400	383	355	40.80
Port Jervis	9, 200	213	199	35.02
Putnam County				
None				
Richland County				
None				
Ulster County				
Kingston	25,600	446	494	88.00
Westchester County				
Mount Vernon	72,773	263	292	37.44
Peekskill	27,810	279	238	52.12
White Plains	50,220	287	287	51.39
Yonkers	230,000	235	235	62.84

of water, revenues received and costs to the consumers do not vary to a great degree. However, half of the cities realize a profit on their water supply systems while the other half experience a loss. Highest costs and revenues are found in Poughkeepsie, a city which recently built a new treatment facility. It should be remembered that cities can and do subsidize their water supply systems out of revenues derived elsewhere. Similarly, excess water supply revenues may be diverted for other purposes.

CHAPTER X

NEW YORK CITY

INTRODUCTION

Over 90 per cent of the eight million residents of New York City use water purchased from the municipal city water system. In 1971 this system supplied 1,424 million gallons per day to City consumers and 87 million gallons per day to upstate users. The New York City municipal water supply system is the largest in the world in terms of people served and water used. It is central to the mission of this Commission.

The remaining nine per cent of the City's residents receive water from two private companies. Both of the private companies are having water quality problems and the City is currently negotiating with one company in order to purchase and operate the system. Discussions are underway with the second company concerning city assistance in providing water.

HISTORICAL DEVELOPMENT

Early in the 19th century New York City's water sources were being depleted and it became apparent that there was a need to locate water supplies outside the City. A series of acts by the State Legislature allowed New York City to successively develop the Croton, Catskill and Delaware Water Systems in order to meet an ever increasing water demand.

Chapter 256 of the Laws of 1834 led to the acquisition of land on which was built in 1842 the first Croton Reservoir and Aqueduct. These facilities preempted most water sources in Westchester and Putnam Counties. Chapter 490 of the laws of 1883 led to the New Croton Reservoir which was put into service in 1891.

The Catskill Water Act--Chapter 724 of the Laws of 1905--permitted the City to acquire more land for an additional supply of water. This law was later amended and reenacted as the Water Supply Act of 1905. This State Law is included as Title K, Chapter 51 of the Administrative Code of the City of New York.

The Water Supply Act of 1905 first led to the development of the Catskill System which includes Ashokan and Schoharie Reservoirs and the Catskill Aqueduct. Waters impounded by the Catskill reservoirs are in Schoharie, Greene and Ulster Counties.

New York City again relied on the Water Supply Act of 1905 to meet growing water needs. This time it turned to the Delaware River. The Delaware System is a complex system of reservoirs and tunnels which transfers the water to the Hudson River watershed then to Kensico Reservoir in Westchester County. The watershed of the Delaware System includes parts of Delaware, Sullivan and Ulster Counties.

Any of the municipalities in Orange, Putnam, Ulster, Westchester, Delaware, Schoharie, Sullivan and Greene Counties, in which are located facilities of the New York City System, have the right to take water from the System.

The Water Supply Act authorizes the development of sources sufficient to meet the City's needs, confers powers of condemnation and a procedure to adjudicate claims due to land aquisition and water facilities construction and operation, requires the payment of local property taxes except for the acqueducts, requires that the city make water available from their facilities to local municipalities where system facilities are located in the amount equal to the city per capita usage at city cost.

INSTITUTIONAL ARRANGEMENTS

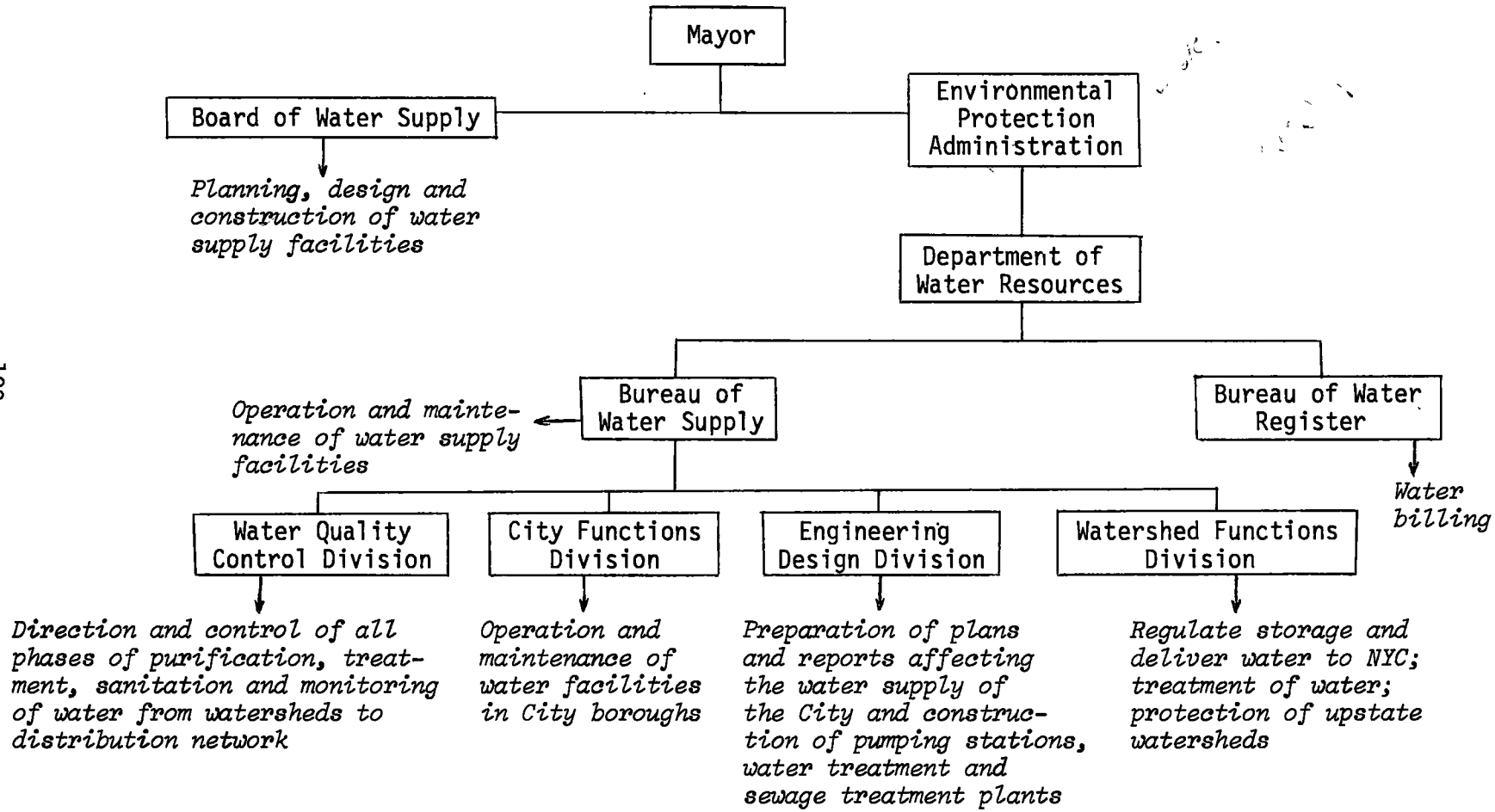
City water supply matters are the responsibility of two agencies--the Board of Water Supply and the Department of Water Resources (part of the City's Environmental Protection Administration). Figure 6 depicts their organization.

BOARD OF WATER SUPPLY

The Water Supply Act of 1905 also authorized the creation of the City's Board of Water Supply. The Board of Water Supply is an instrumentality of City government. It is a semi-autonomous body headed by tow life tenured commissioners appointed to the mayor, and an ex-officio member, the Director of the Environmental Protection Administration of the City. This agency is responsible for the planning, design

Figure 6

ORGANIZATION OF WATER SUPPLY IN NEW YORK CITY



Notes: 1) The Department of Water Resources sells water at retail rate to the consumers.
2) The Board of Water Supply is composed of four commissioners, one of whom is the Administrator of the Environmental Protection Administration serving ex-officio.

and construction of all City water supply facilities. The major responsibility of the Board is to plan for and develop sufficient water sources and facilities to meet the forecasted water needs of the City, and other municipalities that they are required to serve by virtue of the location of facilities. The City Board of Estimate must give approval to any plans of the Board of Water Supply prior to actual construction. The Board can acquire property and in addition supervises the construction of all facilities.

DEPARTMENT OF WATER RESOURCES

Once facilities are constructed the Department of Water Resources assumes responsibility for their operation and maintenance. The Department exercises its responsibilities through two bureaus.

The Bureau of Water Register regulates the metering of water and enforces the rules and regulations pertaining to water uses. It also is responsible for the billing of water charges to the consumers.

The Bureau of Water Supply is responsible for the operation and maintenance of all aspects of the City's municipal water supply facilities, both the upstate sources and the distribution system within the City. This responsibility is discharged through four divisions, those of Watershed Functions, City Functions, Water Quality Control and Engineering Design.

The City water supply is only partially metered. All outside customers are metered and the commercial and industrial accounts within the City are metered. Most of the residential customers within the City are not metered and are on a flat rate basis. Approximately 75 per cent of the water consumed in the City system is not metered. It has been demonstrated in other reports of this Commission that a substantial water savings would result from a complete metering program in the City.

FINANCIAL ASPECTS

METHODS OF RAISING MONEY

All water revenues collected through user charges and obtained within and beyond the City limits (from upstate municipalities) are deposited in the general fund. Monies expended from the general fund may be used for any City purpose. In additon to user charges, which are normally used to pay for operation and maintenance costs, the City levies real estate taxes for water supply purposes.

The State Constitution authorizes New York City to finance the construction of water supply facilities and land acquisition through the issuance of bonds. The bonds may be either serial bonds or sinking fund bonds (corporate stocks). The

maximum period for these bonds is 50 years compared to 40 years for other municipalities. The amount necessary to meet annual obligations of the City in respect to its outstanding bonds must be appropriated each year.

Serial bonds have been placed to cover all water related debts since 1957 when the last water related corporated stock was issued.

COSTS

For the most recent year in which complete data was available, New York City incurred costs of $221 per million gallons. Taxes paid to other municipalities where portions of the New York City System are located accounted to 10.5 per cent ($12,869,208) of the total operating costs in 1970. Accompanying Tables 9, 10 and 11 depict the importance of New York City taxable property to the upstate communities. It should be noted that school taxes are included in the tables.

REVENUES

New York City generates revenues of $377 per million gallons. The costs/revenues differential is such that the City was able to make a profit of $87 million from its water system in 1970-71 despite the fact that only 89 per cent of the water charges billed were collected.

TABLE 9

TAXES PAID BY NEW YORK CITY TO OTHER MUNICIPALITIES
(INCLUDES SCHOOL DISTRICTS)

By County
(IN DOLLARS)

1970

County	Taxes
Delaware County	1,742,466
Dutchess County	85,708
Greene County	2,135
Nassau County	416,262
Orange County	6,552
Putnam County	1,291,779
Schoharie County	557,284
Sullivan County	1,279,692
Ulster County	3,412,675
Westchester County	4,074,655
Total	12,869,208

Table 10

MUNICIPALITIES WHICH TAX
THE NEW YORK CITY SYSTEM
BY COUNTY
1971

County	Assessed Valuation (All Property In The County) (IN DOLLARS)	Assessed Valuation (New York City Property) (IN DOLLARS)	New York City Property As A Percentage Of The Total
Delaware	95,052,714	25,370,766	27.1
Dutchess	406,339,407	913,330	0.2
Greene	112,514,306	34,000	0.03
Nassau	3,255,049,421	2,396,495	0.1
Orange	597,566,922	65,000	0.01
Putnam	252,613,925	15,775,050	6.2
Schoharie	28,300,175	3,637,875	12.9
Sullivan	137,934,876	21,399,250	15.5
Ulster	156,759,919	14,435,321	9.2
Westchester	3,713,316,989	31,510,335	0.8

Table 11

TOWNS IN WHICH NEW YORK CITY PROPERTY COMPRISES MORE THAN 10 PER CENT OF THE ASSESSED VALUATION OF THE TOWN

1971

Town	County	Assessed Valuation (All Town Property) (IN DOLLARS)	Assessed Valuation (New York City Property) (IN DOLLARS)	New York City Property As A Percentage Of The Total
Colchester	Delaware	19,829,878	17,282,275	87.2
Neversink	Sullivan	25,390,595	21,384,300	84.2
Gilboa	Schoharie	4,437,806	3,623,700	81.7
Olive	Ulster	6,245,504	5,085,000	81.4
Deposit	Delaware	7,953,646	5,541,650	69.7
Tompkins	Delaware	2,302,074	1,281,800	55.7
Wawarsing	Ulster	15,933,038	7,021,322	44.1
Marbletown	Ulster	5,210,313	983,410	18.9
Hurley	Ulster	7,489,394	1,249,900	16.7
Andes	Delaware	2,498,228	410,421	16.4
North Castle	Westchester	55,693,090	8,440,000	15.2
Southeast	Putnam	46,144,371	6,454,170	14.0
Middletown	Delaware	5,772,052	662,000	11.5
North Salem	Westchester	20,272,424	2,213,250	10.9

SURPLUSES OR DEFICITS

The New York City System has a profit of $87 million in 1907-71. This represents a turn around since for many years the city system operated at a deficit. Two rate increases in the past years accomplished this result.

COST TO CONSUMERS

New York City charges most of its customers between $70 and $99 per year. The $70 per year is the metered rate based on 100,000 gallons of use. The metered rate is applicable primarily to commercial and industrial customers since very few individual customers are metered. Most individuals pay frontage and fixture charges which average $99 per year.

EXTERNAL RELATIONS

A number of provisions of the Water Supply Act of 1905, as interpreted by New York City, have caused considerable friction between New York City and the upstate counties. These provisions relate to the sale of water by the City to certain designated upstate communities. Those communities in counties through which the aqueducts of New York City run or in which the City has constructed other water supply facilities are empowered to take and receive water from the City System. Included within the coverage of this provision are municipal corporations and water districts in the counties of Ulster, Orange, Westchester and Putnam. The cost of connections with the City System must be borne by the municipal corporations or water districts wishing to withdraw water therefrom. Fair and reasonable water charges or rates agreed upon by the Administrator of Environmental Protection and the authorities of such municipal corporations or water districts must be paid the city of New York for the use of its water. These rates cannot exceed rates paid by New York City consumers. In the event that an agreement as to cost cannot be reached, either party can apply to the State Department of Environmental Conservation for a hearing on the matter.

COST OF WATER TO UPSTATE COMMUNITIES

In 1967 New York City increased charges to upstate communities buying its water to $80 per million gallons for Croton water and $120 per million gallons for Catskill-Delaware water. Many upstate communities refused to pay those rates so the City, in 1969, commissioned a study which was to determine the cost of getting its water to its border. As a result of the study, New York City petitioned

the State Department of Environmental Conservation to reevaluate the rates it could charge upstate communities. A final decision was reached in January 1973 whereby New York City was allowed to charge upstate municipalities $76.87 per million gallons for Croton water (up from the 35 year old rate of $70.19 per million gallons) and $103.72 per million gallons for Catskill-Delaware water (down from the 35 year old rate of $105.28 per million gallons).

RESTRICTIONS ON TAKINGS

Several important restrictions exist related to the non-City use of the New York City water supply system.

As to Type of System

New York City has interpreted the term municipalities to refer to cities, villages and towns but not counties. Consequently, no county or county district may take water from the City system.

Although hard to document this attitude probably has had an adverse effect on the assumption of water supply service functions by counties. This compels each individual city, village, town or institution to do business individually with the City, and automatically applies the per capita limitation, as noted below, to small communities. In one case the City has refused to provide water to a county medical complex since it is a county facility, the City's refusal is also predicated on the Fact tht per capita limitations would be exceeded.

As to Amount

The daily amount of water which any municipal corporation or water district may take is limited to a quantity calculated by multiplying the number of its inhabitants in the last census by the daily per capita consumption in New York City; present daily per capita consumption in the City is 178 gallons.

For this requirement to be equitable it would have to be applied to all outside users in total, or at least applied by county.

Applying a per capita use figure based on millions of people with a mixed economic base, to a small village or district with a small population and an unbalanced economic base is inequitable. For example, a small community with a single large water using industry would automatically exceed the per capita limitation. This is exemplified by the village of North Tarrytown, which has a per capita daily consumption of 225 gallons (1967) because a large manufacturing plant is located in the Village. This per capita consumption exceeds the per capita limitation as set by the City, even though the per capita consumption of Westchester County taken as

a whole is less the City's per capita consumption. It is interesting to note that it has been asserted tht approximately 50 per cent of the employees of this particular concern live in the City of New York.

The City also has a policy of charging the retail rate, which is 10 times the wholesale rate, for all water used above the per capita allowance. The municpalities affected have simply refused to pay the additional charge.

As to Connections

Two or more municipal corporations or water districts wishing to connect to the City System may not combine their supply lines so as to decrease costs or increase dependability. Each water system that wishes to obtain water from the New York City System must run a supply line to the nearest aqueduct or shaft. Furthermore, it has been alleged that permits are held up for intolerable lengths of time and that unnecessary air breaks are required between systems.

RESERVOIR OPERATION AND STREAMFLOW

One major area of conflict between New York City and the upstate source areas is the volume, timing and quality of releases from the major reservoirs. In testimony before the Commission practically all the upstate reservoirs have been cited; these include Cannonsville, Pepacton, Neversink, Ashokan and Schoharie.

Delaware In the operation of the Delaware reservoirs there are three existing requirements over and above the water supply diversions; 1) meeting the Montague minimum flow, upon call of the River Master, 2) making "excess releases" starting June 15 each year for 120 days, 3) maintaining so called "conservation releases" below Cannonsville, Pepacton and Neversink reservoirs to assure the one-day low flow of record, as stipulated by the New York State Department of Conservation, the predecessor agency of the Department of Environmental Conservation.

The adverse environmental impacts downstream include:

1. the almost total loss of water uses and values below Neversink when releases are limited to conservation releases. The stipulated conservation releases are alleged to be so low that the river downstream is almost totally eliminated except for stormflows and overflows.
2. the loss of water uses and values below Pepacton when releases are limited to conservation releases. The comments made under item one above apply equally in this case.
3. the loss of water use and values below Cannonsville due to excess releases during the summer months. The usual operating policy is to use Cannonsville to meet the Montague requirements and the "excess release" requirements. This results in releases of large volumes

of cold water on a non-uniform basis. The results are depressed temperatures, adverse effect on the fishery and rapid changes in stage for a distance downstream. Fishery, recreation use and aesthetic values are impaired.

Catskill In the operation of the Catskill reservoirs there are no requirements on downstream releases or diversions. This has resulted in practically eliminating the streams below the dams for a considerable distance. In addition, it has been reported that diversions from Schoharie Reservoir to Esopus Creek are episodic going from no flow to high flow in short periods of time, thereby adversely affecting the native fishery and causing erosion and scouring of the creek bed with resultant large sediment loads in the stream.

RECREATIONAL USE OF RESERVOIRS

Another bone of contention between New York City and the source areas is recreational use of the city reservoirs and watersheds.

At the present time New York City pursues a policy of limited use which allows fishing from the shoreline or from rowboats by permit only. Permits are issued by the City. In the case of the boats the permit requires that once the boat is put in the water it stays at that location for the season. If it is moved, for instance to another body of water, it cannot be returned for the remainder of the season.

Hunting and any other activity is prohibited on the watershed land area.

Pressure has built up for expanded recreational use due to the paucity of water based recreational opportunities in the source areas.

Considerable testimony has come before this Commission calling for opening up the City reservoirs to additional recreational use. In particular, demands have been made for a policy which would allow contact activities such as swimming and recreational boating, and hunting on reservoir property.

Objections raised to increased recreational use are two-fold: 1) administrative, and 2) public health.

If a new policy of increased recreation use were adopted, it would immediately create the need for facilities such as picnic areas, beaches, docks, comfort stations, and waste disposal systems; furthermore, it would require personnel to administer and police the system, and limit access to a reasonable carrying load. Strict land use controls would be needed since land adjacent to reservoir areas would immediately be in demand for second homes.

Greatly expanded recreational use would create another interest group in

reservoir operation, an interest not particularly compatible with water supply diversion and use. Recreational interests would like a full pool in the summer time, while at the same time maximum releases must be made for water supply diversions and stream flow requirements, requiring significant drawdowns. For instance, recreational interests have played an important role in affecting the operation of the Sacandaga Reservoir, a reservoir whose purposes are flood control and hydropower development. Even though the flood control and hydropower interests have financed the construction and operational cost of the reservoir, recreational use and interest now dictates to a great extent the summer operating regimen of the reservoir.

Public Health concerns are related to the type and intensity of recreational use. In no instance would terminal reservoirs be considered for recreational use. In this case this would immediately rule out Kensico Reservoir and much of the Croton system. As a matter of fact serious water quality problems have arisen on the Croton system due to increasing urbanization of the watershed area, even without expanded recreational use.

Expanded use of the source reservoirs on the Catskill and Delaware Systems is another story. Moderate, controlled usage could probably be allowed without adversely effecting water quality. The administrative issues would remain.

The Temporary State Commission on the Catskills has specifically been given the assignment to review current policy and the possibilities for increased recreational use of the source water supply reservoirs and adjacent watershed areas.

TAX ASSESSMENTS

At times there has been conflict between the City and upstate municipalities over tax assessments. This sometimes has led to litigation. However, it would appear that it is of no great magnitude and not much different than similar contentions between property owners and local assessing authorities elsewhere.

SUMMARY

The New York City water system is the largest system in the service area and is the key to any future water supply programming. The City system serves some 66 per cent of the total population in Southeastern New York. Some 700,000 residents in New York City are served by two private water companies in Queens. The administration of the City water supply system is divided functionally between the Board of Water Supply which is a semi-autonomous City agency charged with the

the responsibility for the planning and construction of new water source facilities and Department of Water Resources which has operational responsibilities for the entire system, both source and distribution.

The City has regional responsibilities since it must serve upon demand those municipalities in counties where City facilities are located. At the present time the City serves areas in Ulster, Putnam and Westchester Counties. Some 77 per cent of the water demand in Westchester County is met by the City system. The potentialities for further demands in the City system are great both in terms of increased per capita consumption and demands for service from the other counties where City facilities are located.

Over the past five years the City has increased water rates twice. This has changed the financial picture of the City system from one of deficit to one of profit. In 1970 the City realized $87 million profit in the operation of the water supply system. The City pays some $12.5 million annually in taxes to municipalities where City facilities are located. Although the City has regional responsibilities and functions somewhat as a regional water supply system, its attitude is one of reluctant regional supplier and its relationships with communities that it serves outside the City have been characterized by conflict and hostility, particularly relating to recognition of counties as municipalities, application of the per capita use rule and rate setting.

Two major areas of conflict have arisen between the City and the source areas. These include the environmental impact of reservoir operation, particularly the effect on downstream water usage and values, and the refusal of the City to consider any substantial recreational use of the reservoirs and City owned watershed areas.

The City water system is the keystone of any future regional development for Southeast New York.

CHAPTER XI

VILLAGE WATER SYSTEMS

INTRODUCTION

Villages, like cities, are voluntary municipal corporations created at the behest of local people to meet local needs. Most villages were created to provide services, particularly water services, in town areas prior to the time when town improvement districts were authorized. Villages, unlike cities, remain parts of towns. A village may include parts of one or more towns.

INSTITUTIONAL ARRANGEMENTS

Each village is governed by an elected board of trustees headed by a major. The board of trustees can create a board of water commissioners and establish a system of waterworks for supplying the village and its inhabitants with water, or acquire an existing private system. A referendum may be required depending on the method used to finance.

The board of water commissioners, or the board of trustees in the absence of a board of water commissioners, has responsibility for acquiring or constructing a new system and keeping an established system in repair. Finally, the board may establish a scale of rents for use of village water and adopt ordinances enforcing water rent collection and water use.

There are 159 incorporated villages in the eight counties in Southeastern New York outside the city of New York but only 61 villages have municipal water systems. All of the 159 villages are governed according to the provisions of the Village Law. The provisions allow much discretion and afford flexibility, unlike

provisions under which town governments act.

Of the 61 village water systems, 53 are source and distribution systems, eight are distribution systems only. Although villages were originally formed in most places in the State to provide water services, this is not the case in all counties in Southeast New York. In Nassau County only 12 of 64 villages provide water service, in Suffolk four villages out of 28 provide water service, in Rockland four villages out of 12, Westchester 12 villages out of 22. In each of these counties water service was provided by a different entity prior to the formation of the villages such as in Nassau and Westchester Counties or the water service was taken over by larger non-village operations such as the Authority in Suffolk and the private company in Rockland. In the remaining counties in the Region most of the villages provide water services. This is illustrated in Table 12.

Table 12

VILLAGE WATER SYSTEMS IN SOUTHEASTERN NEW YORK

	Total No. Villages	Villages With Water Systems	Source and Distribution	Distribution Only	Population Served
Nassau	64	12	11	1	182,200
Suffolk	28	4	4	-	10,595
Dutchess	8	8	8	-	20,191
Orange	17	15	14	1	48,716
Putnam	3	2	2	-	4,800
Rockland	12	4	3	1	24,385
Ulster	5	4	3	1	23,200
Westchester	22	12	8	4	112,717
Total	159	61	53	8	426,777

The size of the village water systems varies considerably. The ten largest village systems serve an average of 23,000 people. The nest major grouping serves an average population of approximately 6,000 and then there is a rapid tailoff to smaller systems. Some 85 per cent of the total village population served by village water systems is served by one half of the systems. The remaining 15 per cent is served by the remaining 50 per cent of the systems. This is shown in Table 13.

Table 13

VILLAGE WATER SYSTEM - POPULATION SERVED

POPULATION RANGES	NUMBER OF SYSTEMS*	POPULATION SERVED
>10,000	10	234,900
5,000 to 10,000	20	129,889
1,000 to 4,999	25	59,533
<1,000	4	2,455
	61	426,877

*Discrepancy in number of systems is due to the fact that populations for two village systems are included elsewhere.

FINANCIAL ASPECTS

Of primary importance in regard to the financing of village water systems is the lack of legal restraints related to the use of water monies. Revenues collected from the sale of water may be used for any legal purpose and tax funds may be used to cover water expenditures.

Village financing is such that within a particular year monies which are appropriated for a specific purpose can be used for other purposes. These transactions are called transfers and water funds often may be transferred. In some counties village transfers of water funds occur quite frequently.

Of the 61 village systems 36 had a record of transfers in or out of the water account in 1972. Eighteen transferred out, 11 transferred in, seven had transfers both in and out and 25 had no record of transfers. This would indicate that 25 per cent of the villages realized a profit on their water systems while some 15-20 per cent probably subsidized their water systems and the remainder probably operated more or less on a balanced system where income equalled cost or had a slight variance.

METHODS OF RAISING MONEY

Operation and maintenance costs are usually estimated in advance and that amount of money is appropriated. Water rates and any taxes to be used for construction go into the general fund or capital fund. The construction of a village water works system may be financed by a general tax or local assessment, or through the sale of municipal bonds.

Table 14

WATER COSTS PER MILLION GALLONS

Village Systems in Southeastern New York
By County
(IN DOLLARS)
1972

County	Low	High	Median[1]	Mean[2]
Nassau	199	895	344	311
Suffolk*	694	721	708	563
Dutchess	132	1,085	493	576
Orange	132	1,184	429	534
Putnam	329	628	509	468
Rockland	311	1,119	471	497
Ulster	99	710	282	279
Westchester	317	720	519	483
Study Area	99	1,184	431	405

[1]Median - Middle Value

[2]Mean - Average Value

*Information for two systems unavailable

Table 15

WATER REVENUES PER MILLION GALLONS

Village Systems in Southeastern New York

By County

(IN DOLLARS)

1972

County	Low	High	Median[1]	Mean[2]
Nassau	219	792	394	355
Suffolk*	713	781	747	649
Dutchess	178	892	484	557
Orange	129	1,061	420	505
Putnam	351	751	551	504
Rockland	354	1,012	512	504
Ulster	140	658	372	347
Westchester	311	735	578	480
Study Area	129	1,061	459	427

[1]Median - Middle Value

[2]Mean - Average Value

*Information for two system unavailable

Table 16

COST TO THE CONSUMER[1]

Village Systems in Southeastern New York

By County

(IN DOLLARS)

1972

County	Low	High	Median[2]	Mean[3]
Nassau*	25	67	40	43
Suffolk*	64	80	75	66
Dutchess	40	200	61	82
Orange	28	92	55	59
Putnam*	35	35	35	35
Rockland	35	103	64	66
Ulster	22	55	46	36
Westchester	33	128	65	60
Study Area	22	200	56	53

[1]Costs based on water usage of 100,000 gallons

[2]Median - Middle Value

[3]Mean - Average Value

*Information for one system in each County not available

COSTS

The costs of water vary considerably from village system to village system. As noted in Table 14 the cost per million gallons ranges from $99 to $1,184, with a mean of $405. There are considerable differences in costs when comparing village systems from one county to another.

One-third of the 61 villages operating water supply systems pay taxes on their systems. The taxes paid on their systems do not account for much of the overall costs.

REVENUES

Revenues collected by these systems in the SEWSC Study Area range from $129 per million gallons to $1,061 per million gallons with a mean of $427, as indicated in Table 15. Again, as with city systems, it is important to note that monies used to support village water supply systems may come out of general taxes.

SURPLUSES AND DEFICITS

Surpluses as large as 49.5 per cent and deficits as large as 44.6 per cent were experienced by village water systems. Taken in total, all the village water systems showed a slight surplus, between three and four per cent of costs.

COSTS TO CONSUMERS

Village consumer costs by county have a considerable range. As seen in Table 16 the lowest village rate is $22 per 100,000 gallons in Ulster County whereas the highest village rate is $200 per 100,000 gallons in Dutchess County. The average rate is $53 per year. Most of the villages fell within the range of $30 to $80 per year. The $200 a year figure is a very extreme situation and is not indicative of any kind of a range.

SUMMARY

Of the 159 villages in the Region, some 61 provide water supply services. Fifty-three provide complete source and distribution service, eight are distribution service only. They serve a total of 426,777 people. The largest number of village systems is in Orange County. The financing of village systems is similar to city systems in that total discretion is given to the village board as to setting of rates. The data would indicate that some 25 to 30% of the villages realized a profit and some 15 to 20% probably subsidized the systems to make up deficits. The highest cost and the highest cost per consumer appear in those

areas where the systems are the youngest, indicating the increasing costs over the years. Villages are located in contiguous urban areas which means that they are bounded by other water systems with no practical opportunity for expansion.

CHAPTER XII

SPECIAL SYSTEMS

INTRODUCTION

The State Constitution provides for the formation of other types of local water systems and the Legislature has enacted laws to implement these provisions.

Two types of systems so authorized are water authorities and joint water works. Presently, the Suffolk County Water Authority and the Westchester County Joint Water Works are the only operational systems of each type in the SEWSC Study Area. A state wide authority with limited power to construct water supply facilities was also created.

These two types of water supply systems will be discussed separately in the chapter.

AUTHORITIES

Authorities are corporate instrumentalities of the state created by the Legislature for the purpose of providing self-liquidating public improvements

There is no general authority law in the state. Each authority is created by a special act of the Legislature which is then included in Article 5 of the Public Authorities Law. Existing authorities cover a wide range of activity including water supply services.

WATER AUTHORITIES

There are five water authorities in the state:

Erie County Water Authority
Great Neck Water Authority
Monroe County Water Authority
Onondaga County Water Authority
Suffolk County Water Authority

The water authorities are authorized to carry out all functions necessary to provide water supply services, including planning, constructing, financing, operating and maintaining, dams, reservoirs, intake structures, treatment works, pumping stations, storage works, transmission and distribution facilities.

Two of these authorities are in the Southeast Region, Suffolk County and Great Neck Water Authorities. The Great Neck Water Authority has not been activated. It is a paper organization and exists only as a potentiality in Nassau County.

The active, operating authorities Erie, Monroe, Onondaga and Suffolk, all came into being initially through the acquisition of a private water company, and since have expanded by capital construction and further acquisitions.

The financial aspects are similar for all the authorities. They are authorized: a) to issue bonds and notes, b) to establish charges and rates to provide for debt service, operation and maintenance, proper capital and operating reserves, c) to enter into agreements with bondholders relative to a and b. The bonds and obligations of authorities are secured by revenues only. There is no state or local obligation. The bonds are revenue bonds.

The activities of the authorities are for a public purpose and are considered a governmental function. Consequently, a) bonds and notes of the authority and income therefrom are tax exempt, and b) the real property of the authority is exempt from real estate taxes and assessments. In a single case the Monroe County Water Authority is authorized to make payments in lieu of property taxes in those instances where a private company was acquired, such payments to be as determined by the Monroe County Water Authority but in no instance are to exceed the taxes paid if the facility remained in private ownership.

The major need in the formation of an authority is an immediate source of revenue; without revenue the authority cannot function. This requires as a practical matter the immediate acquisition or construction of a revenue producing facility. Authorities are not municipalities or units of local government. They do not have the power of taxation to raise revenues.

ENVIRONMENTAL FACILITIES CORPORATION

There is another authority statewide in scope with some limited water supply functions. The "Environmental Facilities Corporation" is authorized to become involved in providing water supply, waste water, solid waste and air pollution control facilities.

Specifically, for water supply services, the EFC is authorized, in agreement and by contract with a municipality which has water supply functions, to construct certain water supply facilities. Excluded from such authority is the construction of a dam, reservoir or any impoundment. The EFC is not authorized to maintain or operate any water supply facilities. The EFC is generally allowed to provide financial, technical and management services and to make loans to participating municipalities. Charges for such services cover direct cost to the EFC and administrative overhead. Its main value seems to be to small municipalities with limited expertise in such matters. It offers little, if any, advantage to larger governmental units. The value of the EFC in meeting water supply needs in the Southeast Region is open to question.

SUFFOLK COUNTY WATER AUTHORITY

The Suffolk County Water Authority was established in 1934 and became operable in 1951 with amended legislation. In 1970 it provided water supply services for 696,540 people out of a total county population of 929,164.

POWERS AND RESPONSIBILITIES

The Suffolk County Water Authority is empowered to purchase, condemn land and facilities and construct and operate facilities for the purpose of water supply and distribution in Suffolk County. In addition, it may purchase water in bulk. Its condemnation powers are restricted in that it cannot condemn a municipal water system without the consent of that municipality.

FINANCIAL ASPECTS

Methods of Raising Money

Reasonable rates, determined by the Authority in accordance with the bondholders agreement, may be charged to meet construction, operation and maintenance expenses, and for the payment of principal and interest on obligations of the Authority. The Authority has no power to levy real property taxes.

The Authority is authorized to issue negotiable bonds for which neither the State nor any of its municipal subdivisions are liable. Bonds issued by the

Authority, together with income derived therefrom, are exempt from taxation.

Costs

The Suffolk County Water Authority incurred water costs of $403 per million gallons in 1971. This is one of the lowest water costs in the Study Area. The only group of systems with lower water costs is the cities. The costs include depreciation but not propery taxes since the Authority is tax exempt.

Revenues

The Authority collected revenues of $521 per million gallons in 1971. Excess revenues are placed in reserve for system expansion by acquisition or construction.

Surpluses or Deficits

The profit revenues over costs, were $2.8 million in 1971. All of the return was invested in new facilities. The Authority is one of the fastest growing water systems in the Study Area.

State Fiscal Controls

The Authority must submit an annual report of its financial standing to the Governor, the State Legislature and the Suffolk County Legislature. It must conform with the regulations included in Article 9 of the Public Authorities Law. Its books and accounts are subject to examination by the State Comptroller.

Costs to the Consumer

The Authority charges its customers $56 per year for 100,000 gallons of metered water, which may soon be increased.

SUFFOLK COUNTY'S POSITION ON WATER SALES OUTSIDE THE COUNTY

The Authority, acting with the consent of the County Legislature, may develop an excess supply of water for sale outside the County.

The sale of excess water outside Suffolk County, however, has been impeded by the operation of the Burr Act which delegates to certain defined counties in the State the authority to designate particular ponds or streams which are considered necessary for the supply of pure and wholesome water to county residents. Once designated, no person, corporation or municipality may withdraw water from that pond or stream for use outside the county, except upon the written consent of a majority of the Board of Supervisors (in the case of Suffolk County, a majority of the County Legislature). Pursuant to this statute, Suffolk County passed one general omnibus resolution authorizing an omnibus certificate covering all water within the county.

The legality of this action has been questioned in an informal opinion. That opinion holds that a county may designate certain ponds or streams which it considers necessary for county water supply purposes, but that the authority of the Burr Act does not extend to underground water supplies or, apparently, to lakes. To date, however, Suffolk County has managed to avoid any successful legal challenge to its actions.

A consequence of the Burr Act and the Suffolk County resolution is that Suffolk County does not share its water resources with other counties.

JOINT WATER WORKS SYSTEMS

The State Constitution provides that the Legislature may authorize joint undertakings between two or more counties, towns, cities and villages. Such joint undertakings are allowed for any function that the municipalities may carry out individually. This legislative authority applies, therefore, to water supply functions.

Westchester County has the only joint water works in the Commission's Study Area. The towns of Harrision and Mamaroneck and the village of Manaroneck share the same water supply system, the Westchester Joint Water Works.

BASIC LEGISLATION

Article 8 of the State Constitution has two references to the joint undertaking of local governments. These constitutional provisions have been implemented by the Legislature. Title 16, Chapter 19 of the Unconsolidated Laws provides that two or more municipalities "may jointly acquire, construct, provide, maintain and operate a water works system." The General Municipal Law provides an alternative method for the establishment of a system of common water supply for two or more municipalities. In the latter statute a municipality is a city, village, county acting on behalf of a county district and a town acting on behalf of a water district or a water storage and distribution system. In the former statute a municipality refers only to a town, village or water district.

The Westchester Joint Water Works was created under Title 16, Chapter 19 of the Unconsolidated Laws. This was originally enacted as a general statute. However, its only use was the formation of the Westchester Joint Water Works. The statute was superseded by the provisions of the General Municipal Law; consequently, the joint water works law became in effect a special statute applying only to the Westchester Joint Water Works and unavailable for use by any other municipality.

PROCEDURES FOR IMPLEMENTATION

Alternative methods for the establishment of a joint system are also provided by these laws. The chief executive officers of interested municipalities can meet and adopt a proposition establishing a joint water works system. The board of trustees must then be organized to plan the system and obtain approval from the governing bodies of each interested municipality. Upon adoption by the board of trustees, a joint water works system would be established which has the power of construction, operation and maintenance.

The General Municipal Law provides a more flexible alternative. All matters involving the acquisition, construction, operation and maintenance of the joint system can be contractually determined. Municipal corporations and districts may make their own agreements related to their respective functions, powers and duties in relation to the joint water works.

FINANCIAL ASPECTS

Methods of Raising Money

The costs of constructing and operating a joint water works are apportioned by the board of trustees among the cooperating municipalities on the basis of estimated annual water use. Operating costs are normally paid by water user charges. Money for capital expenditures may be raised through the issuance of bonds of joint obligation for the contracting municipalities or by the issuance of bonds to finance the proportionate share of each municipality. Debt service can be paid through taxation or through water rates by the participating municpallities.

Costs and Revenues

In 1971 the Westchester Joint Water Works produced water at a cost of $484 per million gallons. Its revenues amounted to $469 per million gallons, resulting in a deficit for that year.

Costs to Consumers

The consumer paid between $73 and $81 per 100,000 gallons per year, depending on the particular service area.

EVALUATION

The present administrator of the Westchester Joint Water Works has testified to the effect that the arrangement is unsatisfactory and he is recommending reorganization.

SUMMARY

There are two special governmental agencies providing water service in the Southeast Region. One is the Suffolk County Water Authority which serves some 696,540 people in Suffolk County. The Authority is a self-supporting and self-liquidating public improvement. Its sole revenues are from the sale of water and its borrowing obligations are revenue bonds. The Authority is not a unit of local government and does not have power of taxation. It is one of the fastest growing water systems in the Region as well as one of the largest. It will probably eventually become the sole water utility in Suffolk County.

The other special system is the Westchester County Joint Water Works. This was established under general state legislation but has become a special statute because no other group of municipalities took advantage of it and the general statute has now been changed. This system was developed under the constitutional authorization which allows any municipal subdivision of the state to undertake jointly with other municipalities any activity that they are authorized to undertake individually. Joint water works are permitted under this authorization. The system serves three municipalities, the towns of Harrison and Mamaroneck and the village of Mamaroneck. Operating and capital costs are allotted among the participating municipalities on the basis of estimated water used. Actual water charges and ad valorem taxes are levied and collected by the participating municipalities. The present administrator of the agency has indicated that he is not satisfied with the present arrangement and is recommending some type of reorganization.

CHAPTER XIII

INVESTOR-OWNED WATER SYSTEMS

INTRODUCTION

Most investor-owned waterworks companies are incorporated under the Transportation Corporations Law. The Business Corporation Law exists as an alternative authority for the incorporation of private waterworks companies. Should a company form under the Business Corporation Law it is still subject to all the duties, liabilities and limitations imposed by the Transportation Corporations Law.

The investor-owned systems can be organized as individual proprietorships, partnerships or corporations, the only difference being in the legal organization and the source of capital. In the southeast area most of the investor-owned water supply systems consist of small developer owned systems. The developer may be an individual or corporation. Such systems are usually adjuncts to another enterprise, usually housing construction. There are also a few small privately owned companies that grew out of some local need and are not development systems. The large private systems are investor owned stock companies which are operated as water supply utilities.

There are 280 investor-owned water companies selling water to the public in the Study Area. Of these, only 37 serve 1,000 people or more. These are the so-called major private companies. Note that there are 39 major investor-owned systems listed in the Region since both Jamaica Water Supply and Utilities and Industries Corporation, both New York City and Nassau County. Most of the investor-owned operate financially independent systems.

are residential development systems though a small number of the systems are large companies such as the Jamaica Water Supply Company which serves 550,000 people in New York City.

POWERS AND RESPONSIBILITIES

As provided in the Transportation Corporations Law, an investor-owned water works corporation cannot file its certificate of incorporation with the Secretary of State until it has first secured the consent of the municipality which it proposes to serve. Once formed, the corporation is under a duty to supply each city, town or village through which its conduits or mains may pass with pure and wholesome water at reasonable rates, if a request for such service is made by the municipalities.

Every waterworks corporation has the right to acquire real estate or any interest therein necessary for its corporate purposes after complying with appropriate filing procedures, if purchase terms are met. The corporation may exercise its power of condemnation to acquire property when terms cannot be reached. Thereafter, the corporation may lay, repair and maintain all necessary conduits and water pipes.

FINANCIAL ASPECTS

Capital for the investor-owned companies comes from the private entrepreneur or the stockholder. Operating revenue is realized from the rates charged for water and related services. For a number of years the small companies valued at under $30,000 were not subject to regulation as to rates and service levels by the Public Service Commission. This situation led to a lot of difficulty and complaints over rates and service. Consequently, all companies were put under PSC supervision regardless of value in 1972 and 1973.

The financial matters of private water companies are dictated and regulated by the Public Service Commission. Rates are approved by the Commission upon application by the company; requests for changes in rates are subject to Commission review and approval. According to law, the companies are entitled to a fair return on investment after providing for operation and maintenance, debt service, depreciation, adequate reserves and real property taxes. All revenue is realized from rates charged. Bonds, notes and income derived therefrom are subject to taxes. Real property and improvements made thereon are subject to real estate taxes and assessments.

Table 17

POPULATION SERVED BY LARGE INVESTOR-OWNED SYSTEMS

Company	Location	Population Served
Jamaica Water Supply Company	New York City	550,000
	Nassau County	102,800
Utilities & Industries Corp.		
Woodhaven Division	New York City	150,000
Merrick Division	Nassau County	160,000
Long Island Water Corporation	Nassau County	258,000
Spring Valley Water Company	Rockland County	182,500
New Rochelle Water Company	Westchester County	160,900
Port Chester Water Company	Westchester County	50,000
Citizens Water Supply Company	Nassau County	30,800
Sea Cliff Water Company	Nassau County	11,400

The major systems are considered bona fide water utilities, particularly the larger systems. Indications are that some of these large companies are moving toward transfer to public ownership and operation. The companies serving parts of New York City are having some difficulties. The Utilities and Industries Corporation - Woodhaven Division, after experiencing both water quantity and quality problems has entered into a memorandum of agreement with New York City which provides for acquisition by the City. New York City is now furnishing water to this service area.

Jamaica Water Supply Company serves areas in both Queens and Nassau. The population served in New York City is approximately 550,000±. This Company is also experiencing difficulty with water quantity and quality problems. Discussions are now underway between the Company and the City over how the problems can be met.

The Great Neck Water Authority was formed in Nassau County with the expectation that it would become operational by acquiring the Citizens Water Supply Company. This has not been done and the situation is now dormant.

Some other difficulties faced by the major systems are: 1) most have neither the resources or opportunity to expand or develop additional sources of water, 2) on Long Island the water supply - wastewater situation is completely interdependent. The private companies are only concerned with water supply; consequently, they are dependent on government to meet the area wide issue of recharge and wastewater treatment and disposal. Their continued viability depends to a great extent on governmental investment and action.

Minor Community Water Systems

Minor community water systems are defined as those serving less than 1,000 people. The small companies are mostly developer systems. Proactically the only new private water companies formed in the last thirty years in the Southeast Region have been developer systems with an average service population of 300±. This would be a subdivision of 80 to 100 dwellings. Some 243± such systems exist in the Region. These systems have developed to meet water supply needs in growth areas where local government is unwilling or incapable of providing the needed service.

Local officials in practically all of the counties in the service area voiced great concern over the inadequacies of many of the small private water systems; complaints related to excessive cost, poor and undependable service and poor water quality. Condemnation and public takeover was frequently suggested. Cost data and information was practically impossible to obtain for the minor systems; consequently the following information is restricted to the major systems.

Non-Community Water Systems

In addition to the minor community water systems, there are some 138 non-community water systems. Non-community water systems are systems which provide water on private property for a specific use or purpose. These systems are not in the water business per se; however, under the New York State Sanitary Code they would be included under the definition of public water supply systems. These systems represent a water demand and water use. However, they are not municipalities or community water supply systems. They include 57 institutions, 22 trailer parks, 24 apartment complexes, and 35 other miscellaneous systems.

MAJOR SYSTEMS COSTS

COSTS

Actual Costs

The costs of water per million gallons in major private water companies vary considerably, as depicted in Table 18, ranging from $207 per million gallons to $2,441 per million gallons, with a mean of $507 per million gallons. Costs for the larger major investor-owned companies are generally lower than those for the smaller major companies.

Special Cost Aspects of Private Systems

Additional costs in the form of property taxes paid to various levels of government, income taxes and various other taxes applicable to investor-owned

corporations are costs that municipal systems experience slightly, if at all.

Taxes usually comprise a significant share of the costs of producing water in large investor-owned companies. The eight large investor-owned companies referred to earlier pay taxes which when totaled amount to from 23 per cent to 48 per cent of their total costs, with a mean of 35 per cent.

Taxes paid by the smaller investor-owned systems comprise a considerably smaller but still significant percentage of the overall costs to these systems, with a mean of 15 per cent. In the smaller companies these costs range from four per cent to 31 per cent of the total costs.

REVENUES

The rate of return that investor-owned companies range from $220 per million gallons, a company which only sells water wholesale; to $2,554 per million gallons with a mean of $581 per million gallons. Table 19 shows revenue data for the major private water systems in the Commission Study Area. A comparison of costs and revenues is illustrated in Figure 7.

COSTS TO CONSUMERS

As indicated in Table 20, consumer charges in private systems range from $23 to $128 per year for 100,000 gallons, with a mean of $83 per year. Customers buying water from investor-owned companies in Rockland and Westchester Counties pay, on the average, about $100 per year, a figure which is considerably higher than the average amount paid to private companies in the Study Area as a whole.

The highest charge, $200 per year per 100,000 gallons, paid by customers of private companies in the Study Area is in a system located in Suffolk County which buys water from a town water district.

Rates are not always the same in areas served by a single private company. Private companies sometimes charge both a metered and fixture rate. In some cases, rates charged by a company vary based on differences in water costs from one part to another of the service area.

STATE FISCAL CONTROLS

The Public Service Commission has a broad range of fiscal control over private corporations in order to ensure reasonable service at reasonable rates. These controls are related to various aspects of water supply and delivery, recordkeeping, rates, equipment, property and filing of annual reports. Should the PSC discover that a waterworks corporation is failing to do something required by law or by order of the Commission, or is in violation of law or of any order of the Com-

Table 18

WATER COSTS PER MILLION GALLONS

Major Investor-owned Companies in Southeastern New York
By County
(IN DOLLARS)
1972

County	Low	High	Median[2]	Mean[3]
New York City	231	341	286	400
Nassau	488	858	745	473
Suffolk	557	2,441	788	723
Dutchess	759	1,291	1,034	905
Orange	781	1,440	1,012	973
Putnam	---	---	---	---
Rockland	207	851	529	860
Ulster	781	1,187	984	922
Westchester	585	1,231	606	583
Study Area	207	2,441	815	507

[1]Cost data not available for major investor-owned companies

[2]Median - Middle Value

[3]Mean - Average Value

Table 19

WATER REVENUES PER MILLION GALLONS[1]

Major Investor-owned Companies in Southeastern New York
By County
(IN DOLLARS)

1972

County	Low	High	Median[2]	Mean[3]
New York City	241	422	332	435
Nassau	350	960	850	583
Suffolk	473	2,554	812	712
Dutchess	731	1,085	906	838
Orange	763	1,824	1,111	1,158
Putnam	---	---	---	---
Rockland	220	979	600	989
Ulster	378	1,197	1,288	657
Westchester	660	1,543	795	650
Study Area	220	2,554	847	581

[1]Revenue data not available for eight major investor-owned companies.

[2]Median - Middle Value

[3]Mean - Average Value

FIGURE 7

COMPARISON OF AVERAGE COSTS AND REVENUES PER MILLION GALLONS

MAJOR INVESTOR-OWNED SYSTEMS IN SOUTHEASTERN NEW YORK

BY COUNTY

1972

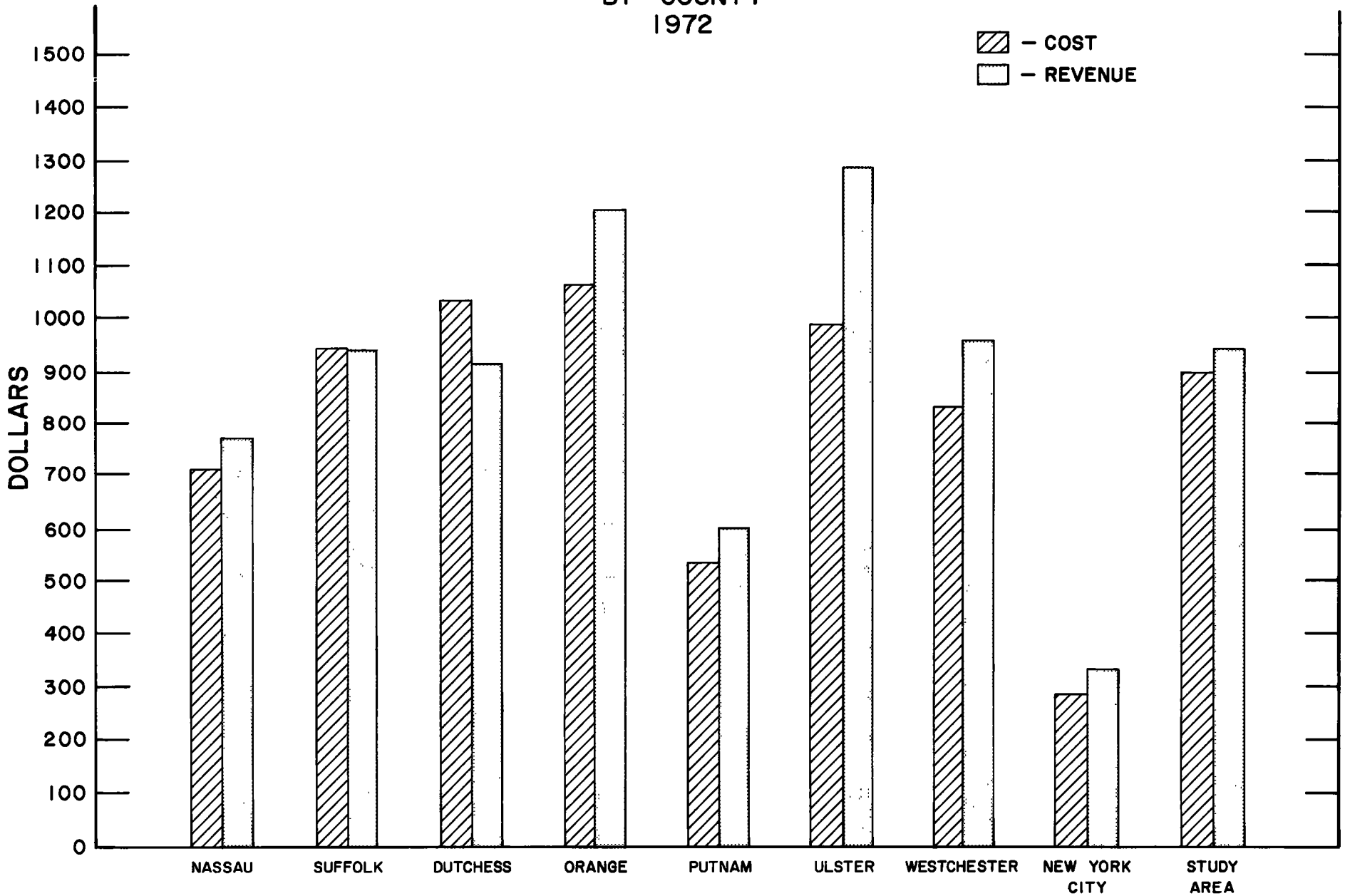


Table 20

COST TO THE CONSUMER[1]
Major Investor-owned Companies in Southeastern New York
By County
(IN DOLLARS)

1972

County	Low	High	Median[2]	Mean[3]
New York City	23	79[4]	56	67
Nassau	56	99	88	92
Suffolk	42	101	77	68
Dutchess	50	118	79	78
Orange	25	100	61	46
Putnam	---	---	---	---
Rockland	90[5]	112[6]	101	112
Ulster	63	103	83	93
Westchester	67	128	102	93
Study Area	23	128	82	83

[1]Costs based on water usage of 100,000 gallons

[2]Median - Middle Value

[3]Mean is weighted according to population served

[4]Jamaica Water Supply has metered and unmetered rates

[5]Spring Valley Water Company District 4

[6]Spring Valley Water Company Districts 1-3

mission, it may petition the State Supreme Court for appropriate relief by way of mandamus or injunction.

The Public Service Commission contr ls the rates charged by investor companies through a rather complicated formula based on net operating income divided by the rate base. The rate base is arrived at by adding the working capital to capital investment and subtracting the accrued depreciation. The Public Service Commission at present is limiting the rate of return, which is used to pay off debt service and equity, to about 7.8 per cent. Of this, three per cent goes toward paying debt service and 4.8 per cent for equity. Equity as herein used corresponds to a reasonable return on investment. This equity is generally paid as dividends on stock. If there is any money left, it is carried over into the next year. Therefore, the Public Service Commission limits the amount of money that a company can pay out in dividends during the year as well as how much of its debt it can retire.

The considerable degree of control in financial matters that the Public Service Commission is able to exert over investor-owned water companies is in marked contrast to the lack of regulation of municipal water systems.

SUMMARY

There are three categories of investor owned systems in the Southeast Region. Major community systems are those serving over 1,000, minor community systems are those serving under 1,000, and non-community systems are those systems serving private property, including such enterprises as trailer parks, recreational areas, and apartments with no general sale to the public. There are 39 major community systems serving 94 per cent of the total population served by private systems. There are 243 minor systems serving 4 per cent of the population served by private systems. The average population served by the minor systems is 204 people. In addition, there are 138 non-community type water systems. The complete population distribution by county and types of systems is shown in Table 21. The majro investor-owned systems comprise some of the largest systems in the Southeast Region. These are located in Nassau, Rockland and Westchester Counties. As to be expected, the minor systems representing the developing urban fringe areas are located mainly in Suffolk, Dutchess, Putnam and Orange Counties.

The largest investor systems are hemmed in on all sides and located in contiguous urban areas. Many are in difficulty since they have neither the resources nor the opportunity to expand or, in fact, to meet some of their needs for ad-

Table 21

INVESTOR OWNED PUBLIC WATER SUPPLIES

County	Community Systems				Summation		Non-Community System**		Totals	
	Major	Pop.	Minor	Pop.	Major & Minor	Pop.	No.	Pop.	No.	Pop.
New York City	2	700,000	0	0	2	700,000	0	0	2	700,000
Nassau	5	563,000	2	150	7	563,150	7	*	7	563,150
Suffolk	15	34,429	50	11,917	65	46,346	13	25,947	78	72,293
Dutchess	4	6,251	38	12,422	42	18,673	22	6,687	64	25,360
Orange	2	2,800	50	7,039	52	9,839	29	16,189	81	26,028
Putnam	1	1,256	50	8,707	51	9,963	15	1,227	66	11,190
Rockland	2	185,900	19	1,590	21	187,490	22	6,921	43	194,411
Ulster	2	3,000	19	3,525	21	6,525	22	1,583	43	8,108
Westchester	4	200,350	15	3,865	19	204,215	8	2,785	27	207,000
	37	1,696,986	243	49,215	280	1,746,201	138	61,339	418	1,807,540

*Institutional Population Not Included

**Includes Some Public Systems

ditional water or to cope with a deteriorating water qualtiy. With few exceptions the majro systems will become increasingly dependent upon some type of governmental action and we can expect in the future that most of them will come under public ownership.

The minor systems are generally developer or recreational systems developed to accommodate expansionist pressures where there are no public water facilities. Within the past year or two these systems have been brought under the regulatory authority of the Public Service Commission. Previous to that most of them were not subject to this authority. These systems have been a source of great difficulty; customer costs, service levels, and effective operation have been unsatisfactory and there is great pressure for these systems to be taken over by public agencies. The customer charge for the water in the major investor owned systems shows a wide range with a mean $83. The days of the investor-owned water system in Southeastern New York are numbered. Both large and small systems face increasing difficulty, indicating the gradual phasing out of investor-owned systems in favor of publicly owned systems.

CHAPTER XIV

WATER SUPPLY FACILITIES FINANCING

INTRODUCTION

Water supply facilities are financed in a number of ways dependent on the organizational format used to upply services. Water supply services are provided by 1) investor-owned system, 2) Authority systems and 3) municipal systems.

Reasonably complete information is presented in the appropriate chapters on investor-owned systems and Authority systems. The chapters on municipal systems treat each type of municipality separately and do not present the general information applicable to all municipal systems. This type of information is provided here as well as a comparision of the major differences in financing between the three systems, investor-owned, authority and municipal.

MUNICIPALITIES

Counties, cities, towns and villages have the authority to provide water supply services, and to carry out the functions of planning, constructing, financing, operating and maintaining all needed water supply facilities.

CAPITAL IMPROVEMENTS

Only capital improvements can be financed by issuing bonds and capital notes. A capital improvement is a physical improvement or studies and surveys relative thereto, or lands or rights of way, or furnishings, machinery, and apparatus when improvement is first constructed or acquired.

Constitution

General Requirements

The general requirements applicable to all capital expenditures are:

1. No locality may give or loan money or credit to private individuals or corporations.
2. Any indebtedness incurred must be for municipal purposes only.
3. The debt cannot be carried any longer than the period of probable usefulness as set by law, in no event longer than 40 years, except for New York City which is 50 years for certain types of public works.
4. Full faith and credit must be pledged for principal and interest repayment.
5. Repayment must be made in annual installments commencing within two years after contracting debt.
6. No installment shall be more than 50 per cent larger than the smallest prior payment.
7. Annual appropriation must be made to pay indebtedness. Such payment represents first claim on municipal revenues and may be demanded by any bond holder.

Joint Works

The Legislature may provide that a municipality may contract indebtedness to develop a supply of water in excess of its own needs for sale to other public corporations and may provide for common supply of water and contract for joint indebtedness.

Debt Limitations

Based on average full valuation, the debt limitations for counties, towns, villages and cities under 125,000 is 7 per cent, cities over 125,000, 9 per cent, except Nassau County and New York City which are 10 per cent.

Debt Exclusions

All indebtedness to provide for the supply of water is excluded from the constitutional debt limits.

Local Finance Law

General Requirements

The Local Finance Law implements the Constitutional provisions and develops procedures to be followed in great detail. It is intended to be the sole and exclusive law applicable to local financing.

The Local Finance Law covers the following matters:

1. Authorizes indebtedness
2. Establishes periods of probable usefulness.
3. Outlines the procedures and regulations on municipal cooperative activities for contracting joint or several indebtedness.
4. Lists the allowable types of obligations.
5. Method of payment.
6. Procedural requirements relating to bond resolutions and referenda.
7. The terms, form, content, sale and issuance of local obligations.
8. The technical details of conversion, reconversion and refunding of bonds.
9. Limitations on powers to contract debt.
10. Debt exclusions.
11. Self-liquidating projects.
12. Miscellaneous provisions.

Probable Usefulness

The law sets the periods of probable usefulness; for waterworks they are:

1. Acquisition, construction or reconstruction of or addition to a water supply or distribution system, 40 years; City of New York, 50 years; replacement of furnishings, 15 years.
2. Water connections, service main in street to property line, 10 years, when not part of the construction, reconstruction or addition to the system.
3. Water meters, purchase and installation, 20 years, when not part of the construction, reconstruction or addition to the system; replacement, 20 years.
4. Tax and revenue anticipation -- water rents or charges, 3 years.
5. Planning for capital improvements -- 3 years.

Intermunicipal Cooperation

As provided for in the law, cooperative or joint ventures can be an actual joint service, jointly operated and financed. This is rather rare. More common is a facility provided by one municipality and made available to another municipality on a contractual basis. Municipalities can issue joint debt or several debt, which is individual debt contracted for a joint facility. Joint indebtedness may be apportioned on the ratio of full valuation or service rendered or benefits re-

ceived or any other equitable basis. If no agreement is made, apportionment is on a ratio of full valuation. Apportionment is conclusive if made and approved by comptroller.

OPERATION AND MAINTENANCE

Constitution

Operation, maintenance and repairs must be paid from current revenue and taxes, subject to the following constraints.

Tax Limits: Based on average full valuation for cities and villages -- 2 per cent; counties -- 1 1/2 per cent -- legislation provides for increasing to 2 per cent by local action -- some have done this; New York City -- 2 1/2 per cent. This is over and above taxes needed for debt service.

Disposition of Local Revenues: For the purpose of determining taxes to be raised subject to tax limit, revenues shall be applied first to operation and maintenance, then to debt service. This does not prohibit the use of excess revenues. However, this provision is not applicable to supply of water.

REVENUES

Local Government Article

Section 1 of Article IX State Constitution contains the following:

> "No local government shall be prohibited by the legislature (1) from making a fair return on the value of the property used and useful in its operation of a gas, electric or water public utility service, over and above costs of operation and maintenance and necessary and proper reserves, in addition to an amount equivalent to taxes which such service, if privately owned, would pay to such local government, or (2) from using such profits for payment of refunds to consumers or for any other lawful purpose."

Sources of Revenue

Municipal water supply system revenues come from ad valorem taxes (general property tax), water rates, and in some cases special assessments based on front footage or some other equitable method. Special assessments are generally falling into disuse. Rates and the general property tax (ad valorem) are the major sources of income.

Water Rates

There is no control over the rates charged by municipalities for water service, either internally or to outside municipalities. Some control is imposed indirectly on counties and towns since revenue and disbursements must balance and revenues are made up of rates and taxes.

Rates charged by one municipality for service to another municipality are likewise subject to no control. New York City rates to outside customers for wholesale water service is an exception since the Board of Water Supply Act provides a basis for rate setting to outside municipalities, and is limited to the direct cost to the City for providing the water at the point of taking. This ensures that New York City makes no profit from the sale of water to these outside municipalities.

REAL PROPERTY TAXES

The water facilities and property owned by one municipality are subject to taxes and assessments if located in another municipality. Exemptions may be given to municipalities under 100,000 population but usually are not.

The law provides in the case of New York City that the aqueducts are exempted. Another special case is the City of Poughkeepsie. The city charter, which is a state legislative enactment, exempts its water supply facilities in the town of Poughkeepsie from taxes.

MUNICIPAL SUBDIVISIONS

COUNTIES

Counties are the first level region since cities, towns, and villages are constituent subdivisions. Counties can, through the device of special single purpose districts provide partial or complete water supply services providing the service area is more than a single municipality. Under this arrangement revenues and disbursements are segregated from general funds, and charges and services are restricted to the special water district. This means that revenues and disbursements must balance. Deficits cannot be made up out of the general fund, nor can excess revenue over cost be directed into the general fund to be used for other purposes. County districts can be county wide or smaller. Varying zones of assessment are also provided for in law. Some "ad valorem" levy must be made over the entire district. County activity in water supply services varies throughout the Southeast region.

TOWNS

Towns also provide water supply service under the special district approach with the same basic constraints. Revenue and disbur ements must balance with no deficits or excess income to be charged to the general fund. There are 62 towns providing water supply services through 122 special districts.

Town Options

The special district approach used in towns has been modified progressively over the past few years. Initially a new form of executive town government was developed as a local option under the suburban town law. This organizational option permitted the abolition of special districts and the provision of water supply services as a general town function the same as villages and cities. Later this privilege for a general town function for furnishing of water supply services was extended as an option for all towns. In the southeast region two towns have opted for this approach. In those instances and in any future similar arrangement, the comments made in the text and tables relative to cities and villages apply.

CITIES

Cities provide water service as part of a multi-service institution. Revenues from water supply services, from water rents, special assessments, or ad valorem taxes go into the general fund. Expenses are budgeted as any other item and come from the general fund. In practice this means that the water supply service may operate at a deficit which is met from the general revenues of the city, or it may provide an excess of revenues over cost, such excess monies going into the general fund and being used for any lawful municipal purpose. As a matter of accounting water funds are recorded in special accounts with annual adjustments and reconciliation. Twelve of the fourteen cities in the region provide water supply services. The exceptions are the cities of New Rochelle and Rye which are served by private water companies.

VILLAGES

Villages provide water supply service in a manner similar to cities. Deficits can be met by general funds, and excess monies can be used for other purposes. Out of 159 villages in the region, some 61 provide water supply services. Fiscally, 35 have excess revenues for 1972, four broke even and the rest have deficits.

NEW YORK CITY

New York City is a special case in that the period of probable usefulness for water supply facilities is 50 years instead of 40 years as with other municipalities. Furthermore, the water function in the city is shared by two institutions, the Board of Water Supply and the Department of Water Resources. The former plans and constructs facilities under a special statute, the latter operates and maintains the water supply system.

The fiscal situation with the exceptions noted is similar to other cities. The City of New York in fiscal 1971 had an excess of revenues over costs of $87 million.

INTERMUNICIPAL COOPERATION

There are a number of intermunicipal cooperative arrangements.

The major multi-municipal system is the New York City system serving some 50± institutional and municipal systems outside the City. The rates charged by New York City are fixed by law, no excess revenues are allowed.

ALTERNATIVE ORGANIZATION FORMATS

The fiscal aspects of various organizational formats are shown in Table 22.

SUMMARY

Fiscal controls and constraints on water supply services vary according to the organizational format. Major organizational forms are municipal facilities with individual or joint systems, authorities and investor-owned companies. Investor-owned and authority systems are utility type organizations supported entirely by water user rates and charges. The investor-owned systems come under the regulatory control of the Public Service Commission relative to their entire fiscal set up including controls under capitalization, borrowing and rate setting. Investor-owned companies are subject to taxes, including real property taxes. Authorities are quasi-independent agencies created by state statute for a specific purpose whose activities are supported by revenues. The only control of the fiscal affairs of authorities, including rates, are the bondholder's agreements. Authorities cannot levy taxes. Revenues only are pledged to liquidate authority bonds and usually authority property is not subject to local taxes.

Municipal water systems financing occupies a special place in municipal finances, including exclusion from municipal debt limitation, exclusion of the down

Table 22

FISCAL ASPECTS OF MUNICIPAL WATER SUPPLY

ALTERNATIVE ORGANIZATIONAL FORMATS

Organizational Format	*Source of Capital*	*Revenue*	*Service Area*	*Taxation of Facilities*	*Fiscal Regulation General*	*Profits - Deficits Distribution*	*Restrictions on Borrowing*	*Regulation of Rates*
INVESTOR OWNED COMPANIES	Stocks and bonds	Water rates	Franchise area as set by P.S.C.	Taxed in all jurisdictions	Public Service Commission	Yes Dividends - Reserves	Stockholder and P.S.C.	Public Service Commission
AUTHORITIES	Revenue bonds	Water rates	Service area as set by legislation	Tax exempt as set by legislation	Bondholders agreement and enabling act	None	Bondholders	Bondholders agreement
COUNTIES	Full faith & credit municipal bonds	1) Water rates 2) Assessments 3) Real property taxes	Districts as formed under County Law	Tax exempt in county. Taxed outside county	Local Finance Law	None	None	District requirements in law.
CITIES	Full faith & credit municipal bonds	1) water rates 2) Assessments 3) Real property taxes	City area	Tax exempt in city. Taxed outside city	Local Finance Law	Yes General fund	None	None
TOWNS - DISTRICTS (town option - general town function - same as cities & vill	Full faith & credit municipal bonds	1) Water rates 2) Assessments 3) Real property taxes	Districts as formed under Town Law	Tax exempt in town. Taxed outside of town	Local Finance Law	None	None	District requirements in law.
VILLAGES	Full faith & credit municipal bonds	1) Water rates 2) Assessments 3) Real property taxes	Village area	Tax exempt in village. Taxed outside village	Local Finance Law	Yes General fund	None	None

payment required for capital projects and an absence of regulatory control over rates charged. The municipal water systems are supported both by user charges and property taxes. Property taxes are usually used for debt service and user charges for operation and maintenance. As debt is retired more and more of the systems are carried by user charges. For city and village systems there is no control over rates charged. County and towns rates are indirectly controlled because of the use of self-supported single purpose districts where revenues and costs must balance. Although cities and villages must have complete freedom as to rates levied, only a portion operate the water systems to provide a surplus or profit. Of 13 cities operating water systems, six have an annual surplus while five operate at a deficit. New York City produces the greatest income both relatively and absolutely from its system. In 1970 it was 87± million dollars. Village water systems number 61, of which 35 operate at a profit, four break even, and the remainder operate at a deficit.

CHAPTER XV

OVERVIEW -- LOCAL WATER SUPPLY SERVICES

Local water supply services are provided by counties, cities, towns, villages, authorities, joint works and investor-owned systems in the Southeastern Region.

The Region includes New York City and eight suburban counties. For purposes of convenience and commonality the Region has been subdivided into three sub-regions, 1) New York City, 2) Long Island comprising Nassau and Suffolk Counties, and 3) Mid-Hudson comprising Westchester, Putnam, Dutchess, Ulster, Orange and Rockland Counties.

Public water supply systems serve 96 per cent of the population in the Region, some 11,756,771 people out of a total population of 12,217,500 people.

WATER SUPPLY SYSTEMS IN SOUTHEASTERN NEW YORK CENTER

Number of Systems and Population Served

At the present time there are 619 public water supply systems in the Region; 481 are community water systems and 138 are single property systems serving institutions, apartments, temporary residences, trailer parks and like installations. Although all systems represent water needs and demands, the focus and interest of this study and report are the community water systems.

Table 23 is a composite table showing the population served by each institutional form in each county. Each of the three major subregions are shown as well as the regional total.

The number and type of systems are related to historical development, degree of urbanization and local option. The more densely populated urban areas have the fewest number but the largest systems. In the counties undergoing development the small private systems have proliferated to meet growth in advance of major system expansion.

Most of the public water supply systems in the study area perform the four principal water supply functions -- supply, treatment, transmission and distribution. Only nine of the 280 investor-owned companies act simply as a distribution system. The remaining investor-owned systems carry out all or part of the four principal functions. Approximately 50 of the municipal systems in the area act only as distribution systems or perform minimal supply functions.

There are a number of intermunicipal arrangements, the largest being the New York City system which serves communities in Westchester, Putnam and Ulster Counties. The size of the systems varies considerably irrespective of institutional format. The largest is New York City serving 8,000,000±, followed by Suffolk Water Authority with 696,000 and Jamaica Water Company with 598,000. It is of interest to note the great spread in the private companies with 10 systems serving over 10,000 people, 27 systems serving from 1,000 to 5,000 and 243 systems serving less than 1,000 people.

The cities all operate water systems except for two served by investor-owned systems. It would be expected that most villages would operate water systems; this is not the case in Southeastern New York. Many have been subsumed by town districts, are served by investor-owned companies, or have been subsumed by an authority. This has happened most extensively in Nassau and Suffolk Counties where there are 92 villages and only 16 village water systems.

The two county systems are distribution or transmission districts, and are intermunicipal devices only; they are not independent systems.

Fifty-nine of the 103 towns operate 122 water districts.

Cost of Water

The cost to produce water, revenue received and the cost to the average residential customer vary throughout the Region. This variation in cost is due to size,

Table 23

Water Supply Systems and Population Served

	New York City		Nassau		Suffolk		Long Island Subregion		Dutches		Orange		Putnam		Rockland		Ulster		Westchester[1]		Mid-Hudson Subregion		TOTAL	
	No.	Pop.	No.	Pop.	No.	Pop.	No.	Pop.	No.	pp.	No.	Pop	No.	Pop.	No.	Pop.	No.	Pop.	No.	Pop.	No.	Pop.	No.	Pop.
County Districts	–	–	–	–	–	–	–	–	–	-	–	–	–	–	–	–	–	–	2	–	2	–	2	–
Authorities	–	–	–	–	1	696,540	1	696,540	–	-	–	–	–	–	–	–	–	–	–	–	–	–	1	696,540
Joint Works	–	–	–	–	–	–	–	–	–	-	–	–	–	–					1	60,000	1	60,000	1	60,000
City Systems	1	7,195,500	2	57,300	–	–	2	57,300	2	4,284	3	68,200	–	–	–	–	1	25,600	4	359,860	10	498,944	13	7,751,744
Towns	–	–	25	624,400	16	148,859	41	773,259	10	4,530	20	32,340	11	11,445	8	–	12	25,466	21	131,130	82	240,911	123	1,014,170
+1000			1	–	2	95	3	95	4	,051	2	1,340	5	1,640			2	1,570	5	1,316	18	7,917	21	8,012
1001-4999			2	5,000	7	9,050	9	19,550	2	,179	6	15,600	5	9,805			7	17,896	3	11,340	23	59,820	32	79,370
5000-9999			2	15,200	2	17,215	4	22,415			2	15,400	–	–			1	6,000	4	22,964	7	44,364	11	66,779
10,000+			20	604,200	5	132,499	25	729,630	–	-	–	–	–	–					4	95,510	4	95,510	29	825,140
Town Wide Districts			–	–	–	–	–	–	1	3,300	–	–	–	–	1		–	–	–	–	2	33,300	2	33,300
Village	–	–	12	182,200	4	10,595	16	192,795	8	2,191	15	48,716	2	4,800	4	24,358	4	23,200	12	112,717	45	233,982	61	426,777
+ 1,000			–	–	1	150	1	150	1	805	2	1,500	–	–	–	–	–	–	–	–	3	2,305	4	2,455
1,001-4,999			4	10,000	2	4,745	6	14,745	6	1,084	8	17,416	2	4,800	1	1,058	1	1,800	1	5,630	19	44,788	25	59,533
5,000-9,999			3	19,000	1	5,700	4	24,700	1	,302	5	29,800	–	–	1	8,300	2	11,400	7	50,387	16	105,189	20	129,889
10,000+			5	153,200	–	–	5	153,200	–	-	–	–	–	–	1	15,000	1	10,000	3	56,700	5	81,700	10	234,900
Investor-owned Companies Community Systems	2	700,000	7	563,150	65	46,346	72	609,496	42	1,673	52	9,839	51	9,963	21	187,490	21	6,525	19	204,215	206	436,705	280	1,746,201
+100			2	150	21	794	23	944	4	249	24	1,232	17	651	16	680	8	245	2	105	71	3,162	94	4,106
101-999					29	11,123	29	11,123	34	1,173	26	5,807	33	8,056	3	910	11	3,280	13	3,760	120	33,986	149	45,109
1,000-4,999					15	34,429	15	34,429	4	,251	2	2,800	1	1,256	1	3,400	2	3,000	2	1,500	12	18,207	27	52,636
5,000-9,999					–				–	-	–	–	–	–	–	–			–	–	–	–	–	–
10,000+	2	700,000	5	563,000	–	–	5	563,000	–	-	–	–	–	–	1	182,500			2	198,850	3	381,350	10	1,644,350
Non-Community Systems	2		7	–	13	25,947	20	25,947	22	,687	29	16,189	15	1,227	22	6,931	22	1,583	8	2,785	118	35,392	138	61,339
Institutions			7	–	7	25,502	14	25,502	3	-	9	11,350	10	1,090	8	6,368	7	1,583	6	2,285	43	22,676	57	48,178
Trailer Parks			–	–	1	445	1	445	–	-	8	1,480	2	137	4	408	7	–	–	–	21	2,025	22	2,470
Apartments			–	–	1	–	1	–	18	,687	2	40	–	–	2	65	1	–	–	–	23	6,792	24	6,792
Other			–	–	4	–	4	–	1		10	3,319	3	–	8	90	7	–	2	500	31	3,899	35	3,899
TOTAL	3	7,895,500	53	1,427,050	99	928,287	152	2,355,337	84	13,365	119	175,284	79	27,435	55	218,769	60	82,374	67	870,707	464	1,505,934	619	11,756,771

[1]Westchester Population served by city, town village, and major private systems adjusted so that double counting is redued.
[2]May be publicly or investor owned.

age, location and institutional form. Table 24 shows the comparison of cost by type of system and by location. The item which determines the customer cost is the water cost for the utility. This cost includes operation and maintenance, debt service, and taxes. Additional costs which must be met by revenue include fair return on investment for private systems and fiscal reserves for all systems.

New York City produces water at less cost per million gallons than any other type system in the Region. This is followed by the other 13 cities, Suffolk County Water Authority, the villages, and Westchester Joint Water Works and then by the investor owned systems and town districts. The costs for the latter two are substantially higher than the costs for any other type water works. The revenue picture parallels the cost picture. See Table 25. Consumer costs also more or less parallel the production costs with one exception, the City of New York. Consumer cost for City water is relatively high considering the cost of production. This is due to the fact that the City realizes a profit of some $87 million a year (the latest year available) from their water supply system. Although the cities and villages have no constraints on rates to be charged the number of cities and the number of villages which realize a profit just about equal the number which realize a deficit. In some instances water revenues go into the general fund and in other instances the general fund is used to subsidize the water system.

The greatest extremes in customer costs occur in systems serving less than 5,000 people. Cost for an average customer of 100,000 gallons of water per annum ranges from $22 to $345. There was no pattern for the systems serving under 1,000 people; the costs fell between $40 and $140 a year. The centering value for systems between 1,000 and 5,000 population is about $75 to $80. The value for systems serving 5,000 - 10,000 is in the $80 range due in great part to the relatively high cost of the investor-owned systems. The variables are hard to separate since size, age, location, and institutional form tend to go together. For example, the City systems are among the largest and they are the oldest. The newest and smallest systems where the highest cost would be expected are either town districts or small investor-owned systems, and they are located in areas where the population is less dense.

LOCAL INSTITUTIONS

In this section the various local water supply institutions will be reviewed. This will be followed by discussion of how these institutions fit together on a county and regional basis.

Table 24

AVERAGE CONSUMER COST[1]

(100,000 Gallons - 1 Year)

(IN DOLLARS)

	Private	Towns	Cities	NYC	Villages	Authority	Joint Works	Average
	Consumer Cost	Consumer Cost	Consumer Cost	Consumer Cost	Consumer Cost	Consumer Cost	Consumer Cost	
NYC	67	--	--	99	--	--	--	96
Nassau	92	50	50	--	43	--	--	66
Suffolk	68	54	--	--	66	56	--	55
Dutchess	78	89	48	--	82	--	--	70
Orange	46	105	37	--	59	--	--	58
Putnam	--	143	--	--	35	--	--	104
Rockland	112	--	--	--	66	--	--	104
Ulster	93	87	88	--	36	--	--	70
Westchester	93	52	55	--	60	--	81	64
Average	83	54	54	99	53	56	81	86

[1]This is the cost based on metered rates adjusted for special assessments.

Table 25

COMPARISON OF FINANCIAL DATA
BY TYPE OF SYSTEM

Mean Values

Type of System	1972 Water Cost Per Million Gallons	Revenue Per Million Gallons	Consumer Costs Per 100,000 Gallons
Investor-owned[1]	$507	$581	$83
Town Districts	$666	$656	$54
Cities (Excluding New York City)	$331	$316	$54
Villages	$405	$427	$53
New York City	$221	$377	$70[2]--$99[3]
Suffolk County Water Authority	$413	$534	$56
Westchester Joint Water Works	$483	$469	$73--$90

[1]major investor-owned companies

[2]metered rates

[3]frontage -- fixture charges

COUNTIES

Seven of the eight counties in the Commission study area have county level activity on water supply programs. Rockland County is served primarily by an investor-owned utility. All of the counties have sponsored and carried out Comprehensive Water Supply Studies. Seven of these were financed by the state; the other predated the state program. Program implementation is going slow with some activity underway in Westchester and Orange Counties. The only major county water supply services operation is in Suffolk County and is being carried out by the Suffolk County Water Authority, an autonomous quasi-independent agency.

It is recognized in practically every county in the Region that the county should assume a greater role in water supply services. The inertia and strength of the status quo and the refusal of New York City to contract with counties in the Mid-Hudson Subregion has greatly impeded the strengthening of the county role in water supply services throughout the Region.

Every comprehensive study, except Rockland County, has recommended the creation of a strong water supply agency or department at the County level. In most instances the creation of county or part county water districts was recommended. The lack of strong county leadership and particularly of a strong county role in water supply services, operation, and administration has been a major contributing factor to the weaknesses in the present regional management.

Strong county water supply agencies are needed to foster intermunicipal service, to develop sources outside the area or capability of smaller units, to take advantage of economies of scale, to improve service levels, to represent the county in water supply matters particularly outside the county, to provide a broad economic and resource base, and to unify, coordinate and to consolidate when indicated water supply services at the county level.

TOWNS

Fifty-nine of the 103 towns in Southeastern New York operate water supply service systems. Water supply services are provided through 121 special improvement districts and two town wide systems.

The legal requirement that water revenues in town water districts can only be used for water supply purposes in that same town district results in revenues matching costs. This, in effect, is a regulatory mechanism, prohibiting the accumulation of surplus and preventing, therefore, the diversion of any water supply

related funds for other town purposes. Water supply as administered by towns, therefore, is essentially a public service whereas in cities and villages (which are not constrained by the same laws) water supply can be and often is looked on as a revenue raising device.

Costs to the consumer vary considerably from one town water district to another. So, too, there is a wide range in the costs of producing water (and a concomitant wide range in the revenues) among the various town water supply districts. There are a total of 245 separate cost units consisting of 123 special districts and 122 additional special assessment areas within the districts.

Since town water districts are created incrementally with a separate fiscal base, costs are highest in new areas. Characteristically these new districts are also small so economies of scale are not present.

CITIES

There are fourteen cities in the SEWSC Study Area, excluding New York City. Twelve of the fourteen cities have municipal water supply systems. Cities may use water revenues for other purposes or vice versa. A characteristic of the water cost is the relative uniformity of costs from one city to another. Some cities pay taxes on their properties located outside their own boundaries. Those taxes are often a significant part of the cost of supplying water.

Generally, there is no pattern of surpluses or deficits. About half the cities have surpluses and half have deficits. In general, consumer costs, at least as reflected in user charges, are lower in city systems than in any other type of system.

No agency at the Federal, State or county level has any authority to regulate rates charged to consumers in city systems or any power to ensure adequate service.

The relatively low cost of city water is due to the fact that most major capital expenditures were made years ago and are paid off, and to the large fiscal base available to pay extension and replacement costs. The cities' rates and levies are uniform throughout the community.

VILLAGES

Sixty-one of the 159 villages in the Commission study area have municipal water supply systems. Normally, a board of water commissioners is the organization which has responsibility for water supply services.

Village water systems are financed in a manner similar to cities in that water

monies may be used for other non-water related purposes. Water costs in villages vary considerably but the average cost is less than the average of town water costs. Most villages make money on their water supply systems. As with cities, villages can and do subsidize their water supply systems out of other income or use monies generated by water supply for other purposes.

Like city systems, there is no state regulation of service provided or rates charged.

MUNICIPAL FINANCING

The financial controls and constraints on water supply services vary according to the organizational format. Investor owned and authority systems are utility type organizations supported entirely by water user rates and charges. Municipal systems include both the utility and the municipal service orientation. The municipal systems are supported both by user charges and property taxes. The proportion varies depending on the individual system.

Other major differences include regulation or control over rates. Investor-owned system rates are regulated by Public Service Commission, authority rates are controlled by the bondholders agreement, city and village rates are controlled, and county and town rates are indirectly controlled by the use of self-supporting single purpose districts.

The assessment of real property for taxes is another difference. Investor-owned companies are subject to taxes, authorities may be but in practice are not, and municipal subdivisions are subject to taxes outside their own jurisdiction.

Although cities and villages have complete freedom as to rates to be levied, only a portion operate the systems to provide a surplus or profit. Out of thirteen cities, six have an annual surplus, while five operate at a deficit. New York City produces the greatest income with a 1970 surplus of $87± million. Of the sixty-one village systems, thirty-five systems operate at a profit, the remainder operate at a deficit or break even.

Municipal water system financing occupies a special place in municipal finance through exclusion from debt limitation, exclusion from down payment requirement, and absence of control over water rates.

INTERMUNICIPAL SYSTEMS

Excluding New York City, there are twenty-seven formal multi-system utilities in Southeastern New York. These systems comprise two or more municipalities or special districts. Twenty-two systems serve only one other community, two serve

two others, one serves three others, one serves four others and one serves five others. In addition, twenty-four other municipalities, mostly villages, serve outside areas informally.

INVESTOR-OWNED

There are 280 investor-owned water supply systems in the Commission study area. The vast majority of these are small systems associated with housing developments. Only 37 of these investor-owned water systems serve 1,000 or more persons and only ten serve more than 10,000 people.

Some of the larger companies appear to be viable enterprises and are likely to continue; however, in the main we can expect that private companies will become of less and less import and concern. They are limited in capital and capability. Historically, investor-owned water companies have not been a major factor in municipal water supply services in New York State; they are becoming less so all the time. They are a dying enterprise in the Southeast Region. In the next decade or so most of the investor-owned water utilities will be subsumed by public agencies.

The small developer type system is the source of much complaint over inadequacies of service. The Public Service Commission regulatory authority over small systems has not been in effect long enough to assess the effect. Increasing regulatory efforts will probably accelerate the trend toward public ownership.

ARRANGEMENT OF LOCAL INSTITUTIONS

In each county, these different institutions combine to produce diverse arrangements. Following is a discussion of how these institutions fit together at the county and regional levels.

NEW YORK CITY

New York is served by three major water systems, the City system and two investor-owned systems. The information is shown in Table 26. The total City population of 7,895,500 is served totally by community water systems. The fiscal aspects vary from system to system as shown in Table 27.

Since most of the residential users in the City are unmetered, the cost is the unmetered rate in practically all instances. The City consumer cost is relatively high due to the fact that the City realizes a considerable profit in the operation of the system. This was some $87 million in 1970.

Table 26

COMMUNITY WATER SYSTEMS

NEW YORK CITY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
City	1	7,195,500	91.0
Investor-Owned	2	700,00	9.0
Total	3	7,895,500	100.0

Table 27

COMMUNITY WATER SYSTEMS - FISCAL DATA

NEW YORK CITY - 1970

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
City	252	431	70[2] - 99[3]
Investor-Owned			
Jamaica	385	417	79
U & I	400	528	23

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Metered Rate

[3]Flat Rate for Frontage Formula

[4]Average cost in 1971 was actually $60

City water supply system matters are the responsibility of two agencies - The Board of Water Supply and the Department of Water Resources of the New York City Environmental Protection Administration.

The activities of the Board of Water Supply are predicated on the needs of the City, although it is mandated to serve certain areas outside the City. This parochial attitude is evidenced in other areas. The Board has been accused of looking only at high-cost, capital-intensive water supply projects, which limits possible planning options. The Board also has consistently opposed universal metering in New York City.

Within the Department of Water Resources are the Bureau of Water Supply, the Bureau of Water Register and the Bureau of Water Pollution Control. All these operating divisions have experienced difficulties. A state audit in June 1972 indicated the Bureau of Water Register did not efficiently collect all the possible water revenues in the City. Moreover, revenues from sales of water were placed into a general fund rather than a closed fund earmarked for water supply.

The Bureau of Water Supply does not have a vigorous leakage detection program. It has encouraged universal metering, but unsuccessfully. In fact, one of the major complaints against the City water supply system is its failure to institute universal metering. This measure has been recommended for over a century, and its value in reducing water consumption is widely accepted. Nevertheless, the City has been unable to implement universal metering. Proposals have been repeatedly beat back. Apparently, the only way the City will meter is to develop an institutional arrangement which will impose and compel a metering program.

The Bureau of Water Pollution Control plans, constructs, and operates the City's wastewater treatment facilities. Compliance with Federally approved effluent standards has been difficult, however, as the standards have frequently changed and sufficient funding has been lacking.

The Woodhaven Division of the Utilities and Industries Corporation, which serves 150,000 people in Queens, has been mining groundwater and supplying water of questionable quality for the last decade. In 1972 the State Public Service Commission responded to frequent complaints about service from the utility. On May 8, 1973, after long negotiations, the City of New York announced it would purchase the Woodhaven System and supply it with upstate water. This places an additional demand of about 10 MGD on the City supply and transmission system.

Negotiations are now underway between the City and Jamaica Water Company

relative to future arrangements. The City will probably have to start supplying the Jamaica Water Company with City water to some extent in order to improve the present quality of water and allow some groundwater recovery. This will place an additional burden of 30 to 40 MGD on the City supply as well as stressing the transmission facilities to Queens.

The need for universal metering is facing the City. Per capita water consumption continues to rise. After the '60's drought the City's per capita water consumption rebounded to levels much higher than previously experienced. It is now (1970) 178 gallons per capita daily (gpcd). By contrast it is 127 gpcd in Westchester County and 101 gpcd in the Jamaica Service area of the City.

Major situations requiring City response are:

1) *a new source of supply to meet increasing demands,*
2) *a universal metering program to reduce consumption,*
3) *water treatment facilities to combat water quality deterioration of the Croton supply,*
4) *reconstruction and rehabilitation of the Croton Aqueduct,*
5) *major transmission construction to insure delivery capability to Queens, and making Kensico Reservoir the major control facility in place of Hillview Reservoir,*
6) *action to meet the threat to water quality as City watershed areas come under urban growth pressure, particularly in the Croton watershed,*
7) *maintenance and repair of the City distribution system to minimize leakage,*
8) *the possibility of greatly increased demands by outside areas.*

The City's role and position as a regional supplier is rather tenuous. As required by the Water Supply Act of 1905, the City serves as a regional supplier of water to a number of municipalities and institutions in Ulster, Putnam, and Westchester Counties. These three counties are all totally dependent on the City for water supply.

The potential for increasing demand is great. The City plays the role of regional supplier somewhat reluctantly. The issues of per capita use, county role, water rates and general policy and procedures are sources of much discontent. The environmental impact of operation of the existing City facilities is a source of bitter complaint by the people in the source areas. The issue has also been raised as to recreational use of City reservoir lands and reservoirs which are now under a very restricted recreational use policy. In cooperation with Westchester

County the City attempted to develop additional supplies to meet the increasing demands. Recommendations resulting from this study were defeated by a coalition of interests who took the position that the City did not exercise proper management of the existing resources. In addition there was a question of the possible adverse environmental impact of any future development, reflecting the experience with existing City facilities.

The City system lies at the center of the regional service area and is the keystone to meeting the needs of the Region. The City needs additional water which it has not been able to develop on its own. The impact of the City policy on county recognition and per capita usage has discouraged county participation and area wide or regional approaches. In addition, the per capita requirement as now applied may retard economic growth and development in some areas. The adverse environmental impact of current reservoir operations raises the questions of sensitivity to source area residents concern and environmental responsiveness.

At the present time the City has a need to develop additional sources of water outside the City in the face of increasing hostility from the people in the source areas. It has become evident that some type of new regional arrangement is necessary to meet the needs of the City in the future.

NASSAU COUNTY

Nassau County is served by some 46 community water supply systems. The breakdown as to numbers of systems, population served, and percentage served by each type of system is shown in Table 28. The total population of the county is 1,436,000 people, 99.2 per cent of whom are served by community water supply systems.

The county does not operate any water supply systems, although its Department of Public Works is authorized to construct and maintain county water systems. County activity has been limited to sponsorship of two county-wide water supply system studies, and to some research activity on waste water recharge. Recommendations of studies calling for a greater county role have not been implemented.

Eighty-three per cent of the people are served by town systems and investor-owned systems on almost a 50-50 basis. Nineteen of the town systems are commissioner districts with elected governing bodies, which makes them somewhat independent of town government and tends to inhibit the consolidation of water districts in the county. The commissioner districts could almost be considered single purpose villages.

Table 28

COMMUNITY WATER SUPPLY SYSTEMS
NASSAU COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
City	2	57,300	4.0
Village	12	182,200	12.8
Towns	25	624,400	42.7
Investor-Owned			39.4
Major	5	563,000	
Minor	2	150	
Total	46	1,427,050	100.0

The 46 community systems in the county exist in a contiguous, urbanized area with no room for expansion esternally or internally within the County. Moreover, all of these supply systems use local groundwater developed within the service area. Source and service areas are coterminous. There is no integrated transmission capability from system to system.

The fiscal data for the different types of systems is shown in Table 29.

The cost revenue and consumer cost picture varies from system to system. However, cities and villages have some of the lowest cost with town districts slightly higher and investor-owned companies highest. This reflects the age of the systems more than the institution. Cost to the consumer is approximately $50 per year for the three municipal type systems and is $92 a year for the investor-owned systems. The increased cost for people served by investor-owned systems is mainly due to local property taxes which constitute 1/3 to 1/2 of the total annual costs of the investor-owned systems. Stated in another way, part of the additional cost that people pay for the investor-owned systems is tax paid to the local municipality.

There are a number of difficult water supply situations in the county.

A capability is needed to transmit water from service areas of surplus to service areas of need, and also to blend waters from different areas for water

quality control purposes. Maintaining high service levels and making the most effective and efficient use of the water resource require this capability.

Table 29

COMMUNITY WATER SYSTEMS - FISCAL DATA
NASSAU COUNTY

Type of System	Cost/MG (dollars)	Revenues/MG (dollars)	Average Consumer Cost[1] (dollars)
Town District	574	595	50
Cities	490	417	50
Villages	311	355	43
Investor Owned			
Major	911	1,060	92
Average[2]	650	713	66

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

The quality of the water in Nassau County has been generally deteriorating. This is due to the discharge of sewage from investor-owned systems into the groundwater reservoir. This, in turn, has raised the issues of wastewater disposal. Waste water can be collected, treated, and discharged to the ocean or some can be recharged back into the groundwater aquifer. These are difficult options. If the wastewater is discharged to the ocean the problem of overdraft and lowering of the groundwater levels is a problem, and the high cost and limited technology of recharge of treated wastewater makes this option difficult.

This situation illustrates the inseparable nature of water supply and waste water disposal, particularly on Long Island, and the need for these two services to be planned and carried out on a coordinated basis.

Solutions to these difficulties are beyond the capability of the individual systems in the county. They have neither the perspective nor resources to meet these needs on an individual basis. A strong county program and involvement is indicated.

Equally pressing is the projected need for additional water. The local resource is approaching its limit within acceptable environmental conditions. Additional supplies must come from outside the county, either from upstate sources via the New York City system, or provisional use of water imported from Suffolk County.

It is apparent that a strong county role for Nassau County is absolutely essential to insure effective use of the water resource in meeting local needs, and furthermore, that Nassau County itself must become part of a larger regional configuration to make possible needed additional water from outside areas.

SUFFOLK COUNTY

Suffolk County is served by 86 community water supply systems. The information on systems and populations served are shown in Table 30. The total population of the county is 1,004,000 (1970) and 89.6% are served by community water supply systems.

Table 30

COMMUNITY WATER SUPPLY SYSTEMS
SUFFOLK COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
Village	4	10,595	1.2
Town	16	147,290	16.4
Authority	1	696,540	77.6
Investor-Owned			
Major	15	31,737	3.5
Minor	50	11,917	1.3
Total	86	898,079	100.0

Suffolk County is the only county in the Region that provides water supply services. This is done through the Suffolk County Water Authority, which has pursued an active policy of taking over and consolidating small utilities to improve water service in Suffolk County. In addition, the county has sponsored a county-wide water supply study which recommends further strengthening of the county role through the creation of a special agency, and fully integrating water

supply and waste water disposal programs. This has not yet been implemented.

Unlike Nassau, Suffolk County still has a frontier for development on its eastern end. The four western towns are practically totally urbanized with the fifth western town becoming similarly urbanized. This represents a continuation of the contiguous urban area extending from the western end of the island in New York City.

The main water supply services are provided by the Suffolk County Water Authority which serves about 78 per cent of the population. It is expected that eventually the county will be the sole supplier. Town, village and investor-owned systems serve the remainder. Of note are the 50 minor investor-owned systems serving a small percentage of the people, indicating the proliferation of developer systems in advance of major water system extension.

The fiscal data for the systems is shown in Table 31.

Table 31

COMMUNITY WATER SUPPLY SYSTEM - FISCAL DATA
SUFFOLK COUNTY

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
Authority	413	534	56
Town	926	819	54
Village	563	649	66
Investor-Owned			
Major	723	712	68
Average[2]	524	596	55

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

Cost to consumer is highest for investor-owned companies and villages, although the spread is not great. The tax exempt status of the authority is evident. Overall, the costs are comparable to costs in Nassau County.

There are a number of situations in the county calling for a response. The small investor-owned systems are a problem. These 50 systems serve a total population of 12,000±, with an average population served of 240. Many of these systems have been the source of much complaint and the need for assumption of public ownership is evident for many of the systems. Because of the size of the systems and resources available, they practically defy effective regulatory control.

The possible environmental impact of major groundwater withdrawals for water supply purposes is another major issue. Concern is due to the change in groundwater regimen and its effect on surface streams, lakes and the bays around the county. If the water withdrawn is discharged to the ocean and represents a net loss, this raises the specter of low streamflows, reduced lake levels, and unknown effects on salt water bays and marshes due to the reduction of fresh water inflow. If the practice of subsurface sewage disposal is continued, increasing pollution of the groundwater resource will result. As with Nassau County, this again emphasizes the inseparable relationship between water supply and sewage disposal on Long Island, and the need to develop policies and programs in both of these areas which are complementary and closely integrated. These situations indicate the need for an increasingly stronger county role.

Suffolk's role in any type of regional development is open to debate, although it is evident that Suffolk County is part of the Long Island Subregion. The authority device seems to have worked out very well for water supply in the county and has avoided some of the worst aspects of fractionalization of service areas. In addition, Suffolk County needs to be part of and to play a major role in any type of regional approach in order to safeguard the interests of the county and to play a responsible role in meeting regional water supply needs.

DUTCHESS COUNTY

Dutchess County is served by 62 community water supply systems. The breakdown by type of system and population served is shown in Table 32.

The total population of the County is 215,000 (1970) and about 58 per cent is served by community water supply systems.

There are two major urban centers in the county, one around the City of Poughkeepsie and the other in the Beacon-Fishkill area. Urban development is underway and expanding up the Fishkill valley, in a strip along the Hudson between Beacon and Poughkeepsie and north of Poughkeepsie. There are scattered small urban areas throughout the rest of the County.

Table 32

COMMUNITY WATER SUPPLY SYSTEMS
DUTCHESS COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
City	2	45,284	36.3
Villages	8	20,191	16.2
Towns	10	40,530	32.5
Investor-Owned			15.0
Major	4	6,251	
Minor	38	12,422	
Total	62	124,678	100.0

The fact that only 58 per cent of the population is served by community water systems indicates the rural nature of a large part of the County. The large number of small investor-owned systems indicates the developing nature of the County.

During the drought of the mid-sixties many of these systems were unable to supply their customers. Despite these demonstrated inadequacies and despite a County Water Agency and a Department of Public Works, the county has done very little in the water supply field. However, a County Planning Department Study has recommended the establishment of central water service areas.

The City of Poughkeepsie has been established as a nucleus for a county water supply system and provides water to the City and the Town of Poughkeepsie. However, the county has not yet moved to expand the system to surrounding towns where frequent water shortages are experienced. The City of Beacon, which also supplies other areas, is short of water and has not initiated a program to augment its supplies.

The fiscal data for the water systems is shown in Table 33.

Except for the cities, the cost to a consumer for water in Dutchess County is fairly high. It should be pointed out that the City of Poughkeepsie subsidizes its system from general revenues so that the consumer cost for water is relatively low. The cost of water in the county is probably due to the small size of the system and their relatively young age.

Table 33

COMMUNITY WATER SUPPLY SYSTEMS - FISCAL DATA
DUTCHESS COUNTY

Type of System	Cost/MG (dollars)	Revenues/MG (dollars)	Average Consumer Cost[1] (dollars)
Cities	671	563	48
Towns	585	536	89
Villages	516	557	82
Investor-Owned			
Major	905	838	78
Average[2]	621	561	70

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

Dutchess County is faced with the need for additional water to serve an increasing population. The developing nature of the county is indicated bv the proliferation of small investor-owned systems, most of which were created to serve realty developments. The average population served by this type of system is 340 people. These systems are generally not satisfactory and the need for better regulation and management, and eventual public ownership is needed.

These same development systems have had great difficulty with satisfactory sewage disposal, which exacerbates the water supply situation. This again demonstrates the inseparability of water supply and waste disposal.

A strong county role to foster intermunicipal cooperation, to provide water service to areas of need, and to bring existing small water systems and possible future systems to effective control is needed.

Dutchess County is also part of a regional configuration and most proposals for additional water supply suggest sites in Dutchess County. This automatically puts Dutchess in a key position, and the county should be part of any regional configuration to insure that it can maximize the benefits of any further water supply development.

ORANGE COUNTY

Orange County is served by 91 community water systems and details are shown in Table 34.

Table 34

COMMUNITY WATER SUPPLY SYSTEMS
ORANGE COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
City	3	68,200	42.1
Town	20	32,340	20.0
Village	15	48,816	30.1
Investor-Owned			
Major	3	5,699	3.5
Minor	50	7,039	4.3
Total	91	162,094	100.0

Orange County is characterized by scattered urban groupings throughout a large land area, with major urban groupings around the Newburgh-Cornwall area along the Hudson River and around the Middletown area. Some 76 per cent of the total population in the county is served by community water systems.

The county has sponsored a county-wide water supply study, and has undertaken an implementation program. This has taken the form of reservoir site acquisition for future impoundments needed to meet projected needs. The process, however, has been delayed by a court battle over the county's right to purchase the land with general purpose bonds without first stipulating the intended use for the bond monies. Presently the county is preparing an environmental impact statement required by the State Department of Environmental Conservation.

City systems serve the largest segment of the population, followed by villages and towns. As with the other developing counties, small developer systems are numerous, numbering 50 with an average population served of 150±.

The fiscal data for these systems is shown in Table 35.

High cost is apparent in the town water systems, probably due to the fact that

they are relatively small, fairly new and water development costs are high.

Table 35

COMMUNITY WATER SUPPLY SYSTEMS - FISCAL DATA
ORANGE COUNTY - 1972

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
Cities	334	319	37
Towns	1,272	1,284	105
Villages	534	505	59
Investor-owned	973	1,158	46
Average[2]	546	536	58

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

Situations of concern are: 1) the great number of small private systems with attendant problems of service levels and management, 2) the difficulties experienced by the county in undertaking the water supply source development program to meet projected needs.

The need for a strong county role is evident and recognized locally. It should be pursued with vigor because of the areawide and intermunicipal nature of the water supply need.

The place of Orange County in a regional configuration indicates that the potential for furnishing additional water to a county set up already exists. A New York City aqueduct passes through the county and offers an opportunity to provide water from a regional system. .In order to meet its needs in a most economic and effective manner the county should be part of a regional configuration for the development of additional water.

PUTNAM COUNTY

Putnam is the smallest county in the service area in both area and in total population. The total number of community water supply systems is 64. Details are shown in Table 36.

Table 36

COMMUNITY WATER SUPPLY SYSTEMS

PUTNAM COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
Town	11	11,445	43.5
Village	2	4,800	18.3
Investor-owned			
Major	1	1,256	5.0
Minor	50	8,707	33.2
Total	64	26,208	100.0

Some 57 per cent of the population of 46,000± (1970) are served by community water systems. Approximately 1/3 of the population so served is served by small developer type systems, 50 in number, with an average population of 180±.

The role of the county has been limited to sponsorship of a county wide study. No agency has any responsibility for the construction, management, operation or maintenance of county water systems. Putnam has a scattered urban-rural population and is in the developing stage, as demonstrated by the many small systems and the lack of fairly large municipal systems. Eight of the community water systems in the county serve more than 1,000 people, with the remainder serving less than 1,000. The largest is a 70 year old system which is shut down in the winter, when year-round residents rely on individual wells.

The town of Southeast has a policy of requiring developers to petition the town board for a town water district before any construction is allowed. This requirement, which might well be instituted elsewhere, should stop the proliferation of small investor-owned water systems.

Fiscal data for the county's community water supply systems is shown in Table 37.

Town water costs are extremely high in the county due to the low density population, small size of the systems and development costs. Information was not available for the investor-owned systems.

Table 37

COMMUNITY WATER SUPPLY SYSTEMS - FISCAL DATA
PUTNAM COUNTY - 1972

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
Towns	1,192	1,292	143
Villages	468	504	35
Investor-owned	n.a.[2]	n.a.[2]	n.a.[2]
Average[3]	883	956	104

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Not Available

[3]Average weighted by size of system.

Current issues in the county are the need to meet current and projected water supply needs, and to have small developer systems brought under effective control.

Putnam County is a New York City dependent county since most of the surface water resources have been preempted by the City as part of the Croton system. The groundwater resources are extremely limited. There are also problems with sewage disposal on the watershed.

It is recognized in the county that a strong county role is needed to bring the presently scattered systems under some type of effective management to extend service to those areas needing service and to deal with New York City. A stronger county role has been proposed along with some county water districts. New York City's refusal to do business with counties has been a deterrent to a stronger county role in Putnam County. As a New York City dependent, Putnam County has a great interest in a new regional configuration which will make it possible for Putnam to meet its water supply needs.

ROCKLAND COUNTY

Rockland County is served by 33 community water systems. Details are shown in Table 38. Some 95+ per cent of the population of Rockland County is served by

community water systems.

Table 38

COMMUNITY WATER SUPPLY SYSTEMS
ROCKLAND COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
Towns	8	-	-
Villages	4	24,358	11.5
Spring Valley Water Company	1	182,500	86.1
Investor-Owned			
Major	1	3,400	1.6
Minor	19	1,590	0.8
Total	33	211,848	100.0

When the Thruway bridge was constructed, Rockland County underwent transformation from an isolated rural area to a booming urban area and commuter county. It continues to develop fairly rapidly, although local opposition has developed to further urbanization.

The county role in water supply services has been limited to sponsorship of a county wide water study by the Rockland County Planning Board. A Comprehensive Public Water Supply Study (CPWS-67) also was done for the County.

The water supply situation in Rockland County is pretty much the story of two water systems, Nyack Village system and the Spring Valley Water Company. The Spring Valley Water Company dominates the situation in Rockland County, serving approximately 86 per cent of the people served. Presently there are 19 developer systems with an average population of 84.

Fiscal data for the systems is shown in Table 39. These costs indicate that water in Rockland County is relatively expensive compared to the rest of the service area. In the case of the private company, property taxes and the need for a fair return probably account for the cost.

Two issues of some significance are the need for public ownership of small inadequate systems and the issue of interbasin transfer of water via sewage col-

lection and treatment to the Hudson Basin from the Hackensack Basin. Strong county initiative and leadership are needed on these questions.

Table 39

COMMUNITY WATER SUPPLY SYSTEMS - FISCAL DATA
ROCKLAND COUNTY - 1972

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
Cities	-	-	-
Town	-	-	-
Villages	497	504	66
Investor-owned	860	984	112
Average[2]	808	949	104

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

Although Rockland tends to be separate from other regional interests, there is a strong feeling in the county that if any new regional type arrangement eventuates, Rockland County should be included.

ULSTER COUNTY

Ulster County is served by 38 community water systems. Details are shown in Table 40.

Fifty-eight per cent of the total population (139,000 in 1970) of the county is served by community water systems. Somewhat like Orange County, Ulster is a large semi-rural county with scattered urban groupings. The major urban areas are along the Hudson River, the largest being the City of Kingston. Other developments are common along the Thruway.

County participation has been limited to sponsorship of county wide water study. The County has not attempted to implement the recommendations contained in the County's Comprehensive Public Water Supply Study (CPWS-15). There is no County agency responsible for the construction, management, operation or mainten-

ance of water supply facilities. Water supply planning and water quality are responsibilities of the County Departments of Planning and Health.

Table 40

COMMUNITY WATER SUPPLY SYSTEMS
ULSTER COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
City	1	25,600	31.7
Town	12	25,466	31.6
Village	4	23,200	28.7
Investor-owned			8.0
Major	2	3,000	
Minor	19	3,525	
Total	38	80,791	100.0

The population served by community water supply systems is almost equally divided between the City of Kingston, and the towns and villages. In a situation similar to other counties under some development pressure there are 19 small developer type systems with an average population served of 185. Most of these systems rely on groundwater, which in some parts of the county is highly mineralized and generally of poor quality.

Fiscal data for the systems is shown in Table 41.

Except for the villages, the relative consumer cost for water is high in Ulster County. This again is due to the number of small systems, relative newness and the cost of development. Kingston City also realizes a profit from its system and this is reflected in the cost.

The water supply issues in the county include: a) the small system syndrome and the need for effective regulation of service and cost, b) the fact that New York City has preempted much of the local water resources through the development of Ashokan Reservoir.

The county wide water study recognized that the county would be increasingly dependent on the New York City system because of limited water in the county and

the cost of development. The operation of Ashokan Reservoir by the City has resulted in local feeling that the recreational use of the reservoir should be liberalized. In addition, the release regimen to Esopus Creek both above and below the dam have resulted in complaints that no consideration is given to local interests. The usual conflict with New York City over per capita, taxes and system operation procedures has been experienced in the County.

Table 41

COMMUNITY WATER SUPPLY SYSTEMS - FISCAL DATA
ULSTER COUNTY

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
Cities	445	493	88
Towns	720	767	87
Villages	279	347	36
Investor-owned	922	657	93
Average[2]	493	539	70

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

The need for area-wide approaches and the development of County water districts mandate a stronger County role in providing water supply services. This would affect economies of scale and make most effective use of the water resources. This could be stalemated by New York City's refusal to deal with counties. Furthermore, a strong county agency is needed to participate in any new regional approach.

Some new type of regional configuration must be developed so that Ulster County needs will be viewed in a positive light, and commitments can be made to insure that the County will have sufficient water for future growth and development.

WESTCHESTER COUNTY

Westchester County is served by 57 community water supply systems, which cover most of the range of institutional formats. Details are shown in Table 42. About

99 per cent of the total county population is served by community water supply systems.

Table 42

COMMUNITY WATER SUPPLY SYSTEMS
WESTCHESTER COUNTY

Type of System	Number of Systems	Population Served	Per Cent of Population Served
Joint Works	1	60,000	6.9
Cities	4	359,860	41.5
Towns	21	131,130	15.1
Villages	12	112,717	13.0
Investor-Owned			
Major	4	198,850	22.9
Minor	15	3,805	0.5
Total	57	867,922	100.0

The lower southern half of Westchester County is a contiguous urban area extending from the New York City line north along the Hudson River. However, in northern and northeastern Westchester County there is a developing suburban frontier and scattered urban population groupings.

Community water supply systems and services are unique in Westchester County because of the New York City dependency and the fact that many of the systems are mainly distribution systems.

The county role in water supply services has been limited. The county, which is in the process of completing a comprehensive plan for supplying water to all systems in the county, has been actively pursuing plans to improve the county's water supply, but these plans are tied directly to the New York City Water Supply System as there are no remaining water supply sources in the county.

The county has a County Department of Environmental Facilities which has water supply responsibilities. Within the Department is a county water agency which established two county water districts to strengthen transmission capability in the county. These districts have been established despite New York City's

nonrecognition of counties for water supply purposes, although the City's policies have greatly impeded an expanded county role. The only county water supply facilities are transmission facilities, and the county can construct and administrate, but not operate.

Some community water supply systems in Westchester purchase water from more than one supplier. For instance, although the Scarsdale Village System uses only New York City water, it sometimes buys water from three different suppliers, the New York City System itself, the Westchester County Water District Number 1 and the New Rochelle Water Company.

There are a number of situations in which the same water is sold a number of times before it reaches the consumer. Such situations lead to higher water charges because of the need to sustain the administrative structure of each system. An example of such reselling is the New York City System-New Rochelle Water Company-Scarsdale Village System situation in which some of the village of Scarsdale's water is purchased from the New Rochelle Water Company (an investor-owned system) which in turn is purchased from the New York City System. Another example is the situation in which the New Castle Water Company (an investor-owned system) purchases water from the New York City System for resale to both the New Castle Water District Number 1 and the Old Farm Hill Water District.

Because New York City can only sell water to municipalities or water districts, private water companies such as the New Rochelle Water Company must operate under somewhat bizarre agreements. The New Rochelle Water Company (which serves one city, nine villages and parts of three towns) acts as the agent for the City of New Rochelle, with authorization from the New Rochelle City Council, in purchasing water from the New York City System.

There is also a joint works in the county, known as the Westchester Joint Works, which gives formal structure to an intermunicipal arrangement between two towns and a village. The Joint Works, one of the largest systems in the county, has an archaic and, according to its general manager, an unworkable organizational structure which was dictated by a State law essentially unchanged since 1927. There are a number of other intermunicipal arrangements within the county.

Westchester is a New York City dependent county and New York City furnishes some 77 per cent of the water used in the county. Since the City has preempted all of the water resources, future growth in the county will also be dependent on the New York City system.

The fiscal data on the systems is shown in Table 43.

Table 43

COMMUNITY WATER SUPPLY SYSTEMS FISCAL DATA - 1972
WESTCHESTER COUNTY

Type of System	Cost/MG (dollars)	Revenue/MG (dollars)	Average Consumer Cost[1] (dollars)
Westchester Joint Works	483	469	81
Cities	252	254	55
Town Districts	576	544	52
Villages	483	480	60
Investor-owned	583	650	93
Average[2]	415	426	64

[1]This is the cost of 100,000 gallons of water in one year based on meter or unit charge schedules. It is an average family unit. There is no direct relationship to the cost and revenue figures.

[2]Average weighted by size of system.

The Westchester cost situation somewhat parallels the Nassau situation. There is a large investor-owned water company segment and in terms of water cost, private water companies have the highest charges, again reflecting the profit and tax picture peculiar to private water companies.

The county is faced with additional needs for water as projected by a number of studies. Since the City has preempted much of the surface water resources in the county, the options open to municipalities in Westchester are limited. The municipalities in the southeastern half of the county, a contiguous urban area, are surrounded or bounded on all sides by other service units. They have neither the capability nor the resources to develop additional sources of water.

The major issue in the county is relations with New York City. The per capita use requirement, rate setting, procedures for connecting to the City system and general operating policies and procedures, in which there is little or no local input or participation, have been and are a source of much discontent. Furthermore, county attempts to strengthen the county role have been frustrated by the

City's refusal to do business with counties. The per capita water use requirement has been used by the City to harrass the Westchester municipalities. As a matter of fact, the per capita use in Westchester County is considerably below the per capita use in the City.

The county is also faced with the need to phase out small systems, although this need is relatively minor compared to other counties.

There is a need for a stronger county role in order to meet intermunicipal situations, to provide for extension of service to northern Westchester, to phase out minor systems, to deal with the City from a position of strength, and to be a strong voice in regional considerations.

Since the county has a need for increased water supply but does not have the resources fiscal or natural to proceed independently, the need for a new regional configuration is essential to meeting Westchester County needs.

FINDINGS

I. General

1. THE EXISTING WATER SUPPLY SERVICE NEEDS OF THE PEOPLE OF SOUTHEASTERN NEW YORK ARE BEING MET BY A VARIETY OF SYSTEMS, BOTH PUBLIC AND INVESTOR-OWNED. THE WATER SUPPLY INDUSTRY HAS PERFORMED PROFESSIONALLY AND COMPETENTLY IN PROVIDING WATER TO MORE THAN 12 MILLION PEOPLE IN THIS AREA.

2. A SEPARATE UNILATERAL APPROACH TO MEETING URBAN WATER RESOURCE NEEDS IS NEITHER ADMINISTRATIVELY NOR TECHNICALLY DESIRABLE. THIS STUDY DEMONSTRATES THE INSEPARABILITY OF WATER AND SEWER SERVICE, AND OF URBAN SURFACE DRAINAGE. THIS IS PARTICULARLY EVIDENT IN THE LONG ISLAND SITUATION, BUT IS ALSO TRUE TO A GREATER OR LESSER EXTENT THROUGHOUT THE SOUTHEAST REGION.

II. Cities, Towns and Villages

3. THE COST OF WATER AS MEASURED BY THE AVERAGE ANNUAL COST TO A TYPICAL FAMILY DOES NOT VARY TO A GREAT DEGREE FROM ONE LOCAL GOVERNMENT INSTITUTIONAL FORM TO ANOTHER. INVESTOR OWNED SYSTEMS ARE IN EXCEPTION, WITH COSTS SOMEWHAT HIGHER THAN MUNICIPAL SYSTEMS DUE TO THE COST OF RETURN ON INVESTMENT, AND LOCAL TAXES. COSTS DO VARY DRASTICALLY AMONG INDIVIDUAL SYSTEMS; THIS IS DUE TO THE SIZE OF THE SYSTEM, THE AGE OF THE SYSTEM, AND THE COST FOR LOCAL DEVELOPMENT. CONSEQUENTLY, SMALLER, NEWER SYSTEMS IN THE MID-HUDSON SUBREGION GENERALLY HAVE THE HIGHEST COSTS. THESE INVARIABLE ARE TOWN WATER DISTRICTS. CONVERSELY, THE CITY AND VILLAGE SYSTEMS USUALLY HAVE THE LOWEST COSTS.

III. Investor-Owned

4. THROUGHOUT THE SOUTHEAST REGION THERE IS A SERIOUS PROBLEM WITH SMALL INVESTOR-OWNED DEVELOPER TYPE WATER SUPPLY SERVICE SYSTEMS. THESE SYSTEMS HAVE NOT BEEN BROUGHT UNDER EFFECTIVE REGULATORY CONTROL ALTHOUGH AN ATTEMPT IS UNDERWAY. THESE SYSTEMS ABOUND IN THE SUBURBAN FRONTIER AREAS OF ALL THE COUNTIES, PARTICULARLY IN DUTCHESS, PUTNAM, ULSTER AND ORANGE, AND TO A LESSER EXTENT IN WESTCHESTER, SUFFOLK AND ROCKLAND. THEY ARE NOT A PROBLEM IN NASSAU COUNTY WHOSE FRONTIER HAS DISAPPEARED.

COMPLAINTS AS TO QUALITY, SERVICE LEVELS AND COSTS ARE COMMON. THESE SYSTEMS HAVE BEEN DEVELOPED IN ADVANCE OR MUNICIPAL SYSTEM DEVELOPMENT OR EXTENSIONS. HOUSING DEVELOPMENT HAS NOT FOLLOWED THE MUNICIPAL WATER SYSTEMS; RATHER, THESE WATER SYSTEMS HAVE FOLLOWED DEVELOPMENT.

5. LARGE MAJOR INVESTOR OWNED SYSTEMS EXIST IN ROCKLAND, WESTCHESTER AND NASSAU COUNTIES AND IN NEW YORK CITY. WITH THE EXCEPTION OF THE SPRING VALLEY WATER COMPANY IN ROCKLAND COUNTY, THE EXISTING SYSTEMS ARE LIMITED IN FUTURE GROWTH POTENTIAL, SINCE THEY ARE TOTALLY BOUNDED BY OTHER SYSTEMS, AND IN A NUMBER OF INSTANCES ARE FACED WITH EXTREME DIFFICULTIES. THE FUTURE OF MOST OF THESE SYSTEMS IS PRECARIOUS. A MOVE TO PUBLIC OWNERSHIP IS TO BE EXPECTED.

IV. New York City

6. THE DOMINANT ELEMENT AND THE KEYSTONE TO MEETING FUTURE NEEDS IS THE NEW YORK CITY WATER SYSTEM, AN OUTSTANDING PUBLIC ACCOMPLISHMENT CHARACTERIZED BY RELIABILITY AND THE DEDICATION OF ITS PROFESSIONAL STAFF. THE DEVELOPMENT AND DELIVERY OF 1400 MILLION GALLONS A DAY OF PURE WATER TO SOME EIGHT MILLION PEOPLE ON A REGULAR AND RELIABLE BASIS IS A SUBSTANTIAL ACHIEVEMENT.

7. NEW YORK CITY IS FACED WITH THE NEED FOR METERING, FOR CAPITAL RECONSTRUCTION OF CERTAIN FACILITIES, FOR IMPROVED TRANSMISSION CAPABILITY, FOR PROVIDING WATER TO PRIVATE WATER SERVICE AREAS IN QUEENS, AND FOR ADDITIONAL SOURCES OF SUPPLY AND FACILITIES, AND AT THE SAME TIME IS FACED WITH INCREASING HOSTILITY FROM EXISTING AND POSSIBLE SOURCE AREAS AND FROM AREAS NOW SERVED OUTSIDE THE CITY. FURTHERMORE, THERE IS A GREAT POTENTIAL FOR ADDITIONAL INCREASES IN OUTSIDE WATER SUPPLY DEMANDS, COUPLED WITH CONSTRAINTS ON THE PRICES THAT MAY BE CHARGED.

V. Counties

8. THE INDIVIDUAL WATER SUPPLY SERVICE SYSTEMS ARE GREATLY CONSTRAINED AND LIMITED. MOST ARE WITHIN CONTIGUOUS URBAN AREAS WITH NO OPPORTUNITY TO EXPAND. THEIR FISCAL RESOURCES ARE LIMITED. ADDITIONAL SUPPLIES MUST

BE BROUGHT IN FROM OUTSIDE. THEY HAVE NO POWER AND AUTHORITY OVER POLICY AND PROGRAMMING CONCERNING OTHER RELATED URBAN WATER PROBLEMS. SOME TYPE OF INTEGRATION ON THE COUNTY LEVEL IS ESSENTIAL.

9. COUNTIES HAVE SIGNIFICANT POTENTIAL FOR EXERCISING LEADERSHIP, INITIATIVE AND PROVIDING FOR AREA-WIDE NEEDS. THEY ARE JUST STARTING TO ASSUME A LEADERSHIP ROLE. A GREATLY STRENGTHENED COUNTY ROLE IS NEEDED TO DEAL WITH EXTERNAL RELATIONS, AND INTERNALLY TO MAXIMIZE USE OF LOCAL NATURAL AND FISCAL RESOURCES AND TO PROVIDE POLICY AND PROGRAM DIRECTION OVER THE WHOLE GAMUT OF URBAN WATER RESOURCE NEEDS.

VI. Regionalization

10. FROM A REGIONAL PERSPECTIVE WATER SUPPLY SERVICES ARE CHARACTERIZED BY A UNILATERAL, FRAGMENTED APPROACH THAT HAS MET LOCAL NEEDS REASONABLY WELL IN MOST INSTANCES. HOWEVER, AS NEEDS HAVE GROWN AND ENVIRONMENTAL ISSUES HAVE BECOME MORE COMPLEX, THE PRESENT ARRANGEMENT HAS BEEN STRAINED BEYOND ITS CAPABILITY.

11. THERE IS A LIMITED NUMBER OF INTERMUNICIPAL ARRANGEMENTS. THEY ARE NOT A MAJOR FACTOR IN THE REGION, AND THERE APPEARS TO BE LITTLE REASON FOR ANY SUBSTANTIAL INCREASE IN THE NUMBER OF IMPORTANCE OF SUCH ARRANGEMENTS.

12. REGIONAL AND SUBREGIONAL APPROACHES IN WATER SUPPLY, INCLUDING THOSE OF COUNTIES, INTERMUNICIPAL ARRANGEMENTS AND THE NEW YORK CITY SYSTEM, ARE WEAK. THE MULTIPLICITY OF LOCAL WATER SUPPLY UNITS HINDERS A REGIONAL PERSPECTIVE. THE INTERMUNICIPAL ARRANGEMENTS THAT DO EXIST ARE BY MUTUAL CONSENT, ARE VERY LIMITED IN NUMBER AND APPEAR TO BE WORKING REASONABLY WELL. THE RELATIONSHIPS IN THE LARGEST MULTI-SYSTEM UTILITY, THE NEW YORK CITY SYSTEM, ARE DICTATED BY THE WATER SUPPLY ACT. THIS IS, IN FACT, THE ONLY SIGNIFICANT INTER-COUNTY ARRANGEMENT IN THE REGION.

MAJOR CONFLICTS EXIST BETWEEN NEW YORK CITY AND ITS CUSTOMERS AND SOURCE AREAS. ISSUES INCLUDE PER CAPITA USE, RATE SETTING, COUNTY ROLE, CONNECTION REQUIREMENTS, RECREATIONAL DEVELOPMENT, AND DOWNSTREAM RELEASES FROM RESERVOIRS.

RECOMMENDATIONS

I. General

9. MEETING THE WATER SUPPLY NEEDS OF SOUTHEASTERN NEW YORK CALLS FOR SOME CONSOLIDATION OF SERVICE AND FACILITIES ON THE CITY, TOWN AND VILLAGE LEVELS, PARTICULARLY ON THE TOWN LEVEL; PROVIDING FOR THE MEETING OF DEVELOPMENT NEEDS; PHASING OUT OF UNSATISFACTORY DEVELOPER TYPE SYSTEMS; INTEGRATED PLANNING AND OPERATING OF ALL URBAN WATER SERVICES; GREATLY STRENGTHENING THE COUNTY ROLE IN WATER SUPPLY AND URBAN WATER SERVICE; AND ESTABLISHING A NEW REGIONAL CONFIGURATION AND FORMAT TO MEET FUTURE DEMANDS.

II. Cities, Towns and Villages

10. IN ORDER TO TAKE ADVANTAGE OF ECONOMIES OF SCALE, TO IMPROVE SERVICE AND EQUALIZE WATER COST TO CONSUMERS, ALL LOCAL GOVERNMENTS SHOULD CONSIDER THE CONSOLIDATION OF WATER SUPPLY AND RELATED SERVICES. EACH TOWN SHOULD CONSIDER THE CONSOLIDATION OF EXISTING AND FUTURE DISTRICTS INTO A SINGLE DISTRICT OR ABOLISHING ALL DISTRICTS AND MAKING WATER SUPPLY SERVICES A GENERAL TOWN FUNCTION.

11. SINCE WATER SUPPLY AND WASTEWATER DISPOSAL SERVICES ARE OPPOSITE SIDES OF THE SAME COIN, THE INTEGRATED DEVELOPMENT AND OPERATION OF SUCH SERVICES SHOULD BE INVESTIGATED BY ALL LOCAL GOVERNMENTS AND IMPLEMENTED WHERE FEASIBLE.

III. Investor-Owned

12. LOCAL GOVERNMENTS SHOULD REQUIRE THE FORMAL ESTABLISHMENT OF WATER, SEWER AND DRAINAGE DISTRICTS OR ASSESSMENTS AREAS FOR ALL NEW DEVELOPMENTS.

13. DEVELOPERS SHOULD BE REQUIRED TO CONSTRUCT WATER SUPPLY, SEWAGE, AND DRAINAGE SYSTEMS AT THEIR EXPENSE BUT THE APPROPRIATE MUNICIPALITY SHOULD ASSUME OWNERSHIP AND OPERATIONAL CONTROL OF SUCH FACILITIES. ALL SUCH SYSTEMS SHOULD BE IN CONFORMANCE WITH A TOWN-WIDE AND COUNTY-WIDE PLAN.

14. THE STATE SHOULD REQUIRE THAT ALL WATER SUPPLY SYSTEMS BE SIZED TO PROVIDE A FIRE PROTECTION CAPABILITY.

15. REGULATORY EFFORTS SHOULD BE INTENSIFIED TO INSURE ADEQUATE SERVICE FROM SMALL DEVELOPER TYPE WATER AND SEWER SYSTEMS.

16. THE FURTHER FORMATION OF PRIVATE INVESTOR OWNER WATER SUPPLY UTILITIES OR WASTEWATER UTILITIES SHOULD BE PROHIBITED AFTER JUNE 1, 1975, IN SOUTH-EASTERN NEW YORK.

17. UNSATISFACTORY AND INADEQUATE DEVELOPMENT WATER AND SEWER SYSTEMS SHOULD BE TAKEN OVER BY THE APPROPRIATE MUNICIPALITY.

IV. New York City

18. IT IS RECOMMENDED THAT NEW YORK CITY BECOME PART OF A NEW REGIONAL CONFIGURATION SO THAT ITS WATER SUPPLY NEEDS CAN BE MET IN A TIMELY AND EQUITABLE MANNER.

19. THE CITY SHOULD IMMEDIATELY REEXAMINE THE PRESENT POLICY AND OPERATING PROCEDURES RELATING TO THE TIMING AND VOLUME OF RELEASES FROM ITS RESERVOIRS IN ORDER TO MAINTAIN REASONABLE ENVIRONMENTAL CONDITIONS CONSISTENT WITH WATER SUPPLY NEEDS AND LOCAL CONCERNS (SEE RECOMMENDATION NUMBER 28 WHICH ALSO APPLIES).

V. Counties

20. ESTABLISH AND MAINTAIN A STRONG COUNTY WATER SEWER AND DRAINAGE AGENCY IN EACH COUNTY. THIS AGENCY SHOULD:

A) DEVELOP A COUNTY WATER SUPPLY PLAN AND UPDATE BIENNUALLY

B) RECOMMEND CREATION OF COUNTY WIDE OR PART COUNTY WATER DISTRICTS AS NEEDED

C) MANAGE AND OPERATE ANY WATER SUPPLY FACILITIES CONSTRUCTED BY THE COUNTY

D) INSURE THAT FUTURE WATER SUPPLY DEVELOPMENTS CONFORM WITH THE COUNTY PLAN

E) PROVIDE TECHNICAL SERVICES TO LOCAL TOWN, VILLAGE, AND CITY SYSTEMS

F) MANAGE AND OPERATE WATER SUPPLY FACILITIES AT THE REQUEST OF LOCAL GOVERNMENT UNITS

G) ACT AS THE LIAISON AND CONTRACTOR BETWEEN A REGIONAL SUPPLIER AND ALL SYSTEMS WITHIN THE COUNTY. THE COUNTY SHOULD BE THE SOLE BUYER OF WATER FROM THE REGIONAL SUPPLIER AND RESALE TO LOCAL SYSTEMS

H) ACT AS LIAISON TO ANY REGIONAL WATER RESOURCES BOARD OR AGENCY ESTABLISHED

I) DEVELOP A PLAN FOR THE TRANSFER OF UNSATISFACTORY INVESTOR-OWNED SYSTEMS TO PUBLIC OWNERSHIP AND OPERATION; BE PREPARED TO TAKE THE OPERATING RESPONSIBILITY

J) INTEGRATE WATER SUPPLY FACILITIES, SEWAGE COLLECTION FACILITIES AND URBAN DRAINAGE FACILITIES INTO A COMPLEMENTARY AND MUTUALLY SUPPORTIVE SYSTEM ON A COUNTY WIDE BASIS

21. EACH COUNTY SHOULD HAVE A COUNTY WIDE FUNCTIONAL RESPONSIBILITY FOR URBAN WATER UTILITIES INCLUDING, AS A MINIMUM, PLANNING, OVERSIGHT AND INTERCOUNTY OR REGIONAL RELATIONS. OTHER RESPONSIBILITIES SHOULD BE DEVELOPED AS TIME AND LOCAL CONDITIONS DICTATE.

VI. Regional Perspective and Approach

22. THE SOUTHEAST REGION IS FACED WITH THE NEED FOR A NEW REGIONAL PERSPECTIVE AND APPROACH. THE DOMINANT REGIONAL ROLE OF NEW YORK CITY IS SHIFTING SUCH THAT THE POLITICAL CAPABILITY OF THE CITY TO BE AN EFFECTIVE REGIONAL WATER AGENCY IS QUESTIONABLE. MOST OF THE COUNTIES AND THE CITY HAVE WATER SUPPLY PROBLEMS THAT CAN ONLY BE APPROACHED IN A REGIONAL CONTEXT. MOST OF THE COUNTIES AND THE CITY INDIVIDUALLY LACK THE CAPABILITY TO COPE WITH THE INCREASING WATER SUPPLY NEEDS, COUPLED WITH THE ENVIRONMENTAL COMPLEXITIES. NEW SOURCES OF SUPPLY, IMPROVED TRANSMISSION CAPABILITY, EFFECTIVE USE OF THE WATER RESOURCES, URBAN WATER RESOURCE INTEGRATION, ENVIRONMENTAL RESPONSIVENESS AND REGIONAL DEVELOPMENT ARE SOME OF THE MAJOR ELEMENTS THAT REQUIRE A NEW REGIONAL OUTLOOK AND APPROACH. A NEW REGIONAL APPROACH IS REQUIRED.

SECTION II

INSTITUTIONAL ARRANGEMENTS

PART C

FUNCTIONAL RELATIONSHIPS

CHAPTER XVI

FUNCTIONAL RELATIONSHIPS

INTRODUCTION

This chapter is written to briefly present a picture of the functional role being played in the water supply field by agencies at different levels of government. The principal functions performed are those of regulation, comprehensive planning, construction and operation. Construction as used here also includes the design, project planning and financing of facilities. Operation also includes the maintenance of facilities.

REGULATION

Regulation means the supervision and control over the development, design and operation of public water supply systems.

Regulation is a state function carried out by the Department of Health and Environmental Conservation over both public and private systems, and by the Public Service Commission over investor-owned systems. The Department of Audit and Control can also be considered to exercise a regulatory role, although an indirect one.

DEPARTMENT OF HEALTH

This Department monitors the quality of the water produced by all public water systems, both private and municipal, to ensure that the quality meets certain minimum standards. The Department also has jurisdiction over the construction of new public water supply systems or any modifications of an in place system as such

plans or modifications might affect quality water from the systems. Among the other water quality responsibilities of the Department are those which relate to the operation of water supply treatment facilities and the adequacy of distribution systems.

The State Health Department has another major function which relates to the matter of approving or disapproving realty subdivisions on the basis of adequacy of planned water and sewer service.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

All public water systems must obtain permission to develop water sources from the Department of Environmental Conservation. Applications for water supply are considered in light of the environmental impact the proposed project would have on the area, the sanitary aspects, the effective utilization of existing developed sources and the necessity for the new source, as well as the principle of fair apportionment of the total resources available among the municipal subdivisions.

PUBLIC SERVICE COMMISSION

The principal water related functions of the Public Service Commission are to assure that reasonable rates are charged for water supplied by investor-owned companies and that service by the utilities is adequate. To this end the Public Service Commission must approve all rates, other fiscal matters and monitor service levels.

The Public Service Commission is supposed to receive a copy of the annual report of each municipal water system in the State. This law is not enforced and most municipalities do not comply. The Public Service Commission has no authority over municipal systems, consequently there is no regulation of rates or service levels.

DEPARTMENT OF AUDIT AND CONTROL

The Department of Audit and Control exercises indirect control over municipal water systems because it has authority over the finances of various units of local government.

This includes such matters as accounting procedures and compliance with the local finance law concerning revenues and debt. The approval of the Comptroller is also required for the approval of a county and town water district where indebtedness will be incurred.

Annual fiscal reports are required and the Department makes periodic field audits.

FEDERAL ROLE

The only federal regulatory authority is the enforcement of the "Drinking Water Standards" for water systems serving interstate watering points. This is carried out by the State Department of Health as part of their program for the Federal agency.

At this time there is a bill before Congress titled the "Safe Water Drinking Act of 1973" which would greatly expand the regulatory role of the Federal Environmental Protection Agency over all public water systems. The bill has passed the Senate.

COUNTY ROLE

Most county health departments exercise some regulatory control over local water systems. This regulatory authority is exercised usually as a representative of the State Department of Health. Some county departments of health have adopted sanitary codes or rules and regulations concerning water supply systems. The regulatory authority is invariably exercised in an educative and persuasive manner.

CITIES, TOWNS AND VILLAGES

Cities, towns and villages exercise no regulatory authority since they are usually the operators of water supply systems. They do exercise internal system regulation and management.

COMPREHENSIVE PLANNING

FEDERAL ROLE

The Federal Government had no comprehensive water supply planning role until the passage of the NEWS program. The Corps of Engineers is now carrying out a comprehensive water supply planning study for the New York Metropolitan Area, including the Southeast Region.

STATE ROLE

The State through the "Comprehensive Water Supply Studies Program sparked county level studies throughout the region. The studies were 100 per cent funded by the State, carried out under local auspices and subject to final review and approval by the state.

Dutchess County was not included under the State program since it had completed such a study partially funded by HUD prior to the State program.

The New York City - Westchester Study under this program was of necessity more

regional in scope. These studies have developed alternatives for supplying the needs of the affected communities through the year 2020. All water supply projects proposed by local units of government are supposed to be examined in relation to the appropriate Comprehensive Public Water Supply Studies.

COUNTY

The County was the sponsoring agency for the Comprehensive Public Water Supply Studies.

PROJECT PLANNING, CONSTRUCTION AND FINANCING

It has been the practice in the past for cities, counties, villages, towns, authorities and various special districts to plan, finance and construct their own water supply facilities. Investor-owned companies also play a role, with most of the investor-owned systems constructed today being either development systems or expansions of existing systems.

County activity has been somewhat limited in the Southeast Region. Westchester County has created two water districts and Suffolk County, through the Authority carries out all project activities.

In the past the major role of the State has been in the regulation of such facilities being constructed by local government. However, the Environmental Facilities Corporation, a State agency, may construct water supply service facilities for appropriate units of State and local government at their request. It may not build any reservoirs. Since this agency has done little or no actual water system work, the future activity is speculative.

The Federal Government has not so far constructed any water supply facilities in Southeastern New York. However, the NEWS Study holds the possibility of some federally constructed projects in the future.

OPERATION

The operation of public water systems in Southeastern New York is the responsibility of various units of local government and investor-owned companies.

SUMMARY

The State of New York has laid the groundwork for comprehensive water supply planning at the county level by providing an overall framework in the form of CPWS Studies. Due to the impetus of those studies, project planning, constructing and financing for area-wide water supply projects seems to be moving, albeit slowly,

to the county level. However, many people at the county and local levels have suggested that implementation of the recommendations of those studies will only result from the coordinative efforts of an outside agency.

Operation and maintenance of water supply facilities has also been a local responsibility, with funds derived through user charges and local taxes.

Regulation of water supply facilities has been mainly at the State level. There is no regulation over the rates charged by municipal water systems.

SECTION III

ALTERNATIVE FUTURES

PART A

REGIONAL PERSPECTIVE

CHAPTER XVII

A REGIONAL PERSPECTIVE

INTRODUCTION

The Southeastern New York region will require additional water supply facilities to avoid severe water shortages. In the Scope of Public Water Supply Needs (Southeast Water Supply Commission, November 1, 1972) it is projected that by 2000 needs will exceed the present capabilities of supply by 495 MGD. By 2020 the deficit will increase to 850 MGD.

In the Commission report entitled Proposed Water Supply Projects for Southeastern New York (December 15, 1973) it was shown that part of this total deficit can be supplied by local projects. Suffolk and Rockland Counties will be able to supply all their needs and Orange county some of its needs.

This still leaves deficits of 395 MGD in 2000 and 720 MGD in 2020 which must be supplied from a regional source. The projected regional deficits are shown by decade in Table 44.

TABLE 44

ESTIMATES OF PUBLICLY SUPPLIED WATER DEFICITS
SOUTHEAST NEW YORK REGION
LOCAL PROJECT POSSIBILITIES ACCOUNTED FOR[1]

	1970 (MGD)	1980 (MGD)	1990 (MGD)	2000 (MGD)	2010 (MGD)	2020 (MGD)
Assumes Low Population Projection	40	125	205	320	445	585
Assumes Middle Population Projection	40	140	250	395	545	720
Assumes High Population Projection	40	160	300	465	650	860

[1]Annual increase in per capita consumption of 0.5 gpcd annually and no effects of universal metering

EXISTING AND PROPOSED PROJECTS

The major construction activity for public water supply in the region is presently limited to improvements in the transmission system. The largest project is the third city tunnel being built by the New York City Board of Water Supply. Several counties have started local projects through either actual construction or land acquisition, but the total impact will be small.

Nassau County, more than any other county in Southeastern New York, is faced with an imminent water crisis. A recharge program of the groundwater resource is recommended as an immediate response to that crisis. A long-range solution hinges on a decision to move water from upstate through New York City's transmission facilities to a proposed pipeline which would connect the City System with Nassau County. Connection of this pipeline from the third city tunnel (to be completed about 1985) in Queens to Nassau County is critical for Nassau.

The other counties and New York City face less immediate but still serious water supply deficits. These can only be met by large regional water supply projects.

Engineering plans, incremental in nature, have been proposed to respond to the projected deficits. This Commission's report entitled Proposed Water Supply Projects For Southeastern New York describes a number of different projects and plans. The most favorable plan includes three essential elements: 1) Universal metering for New York City to be implemented from 1975 to 1985; 2) Flood skimming the Hudson River at Hyde Park with an aqueduct to West Branch Reservoir by 1985; 3) regulation of flows in the Hudson through Hinckley Reservoir expansion and the extension of the Hudson Aqueduct from West Branch Reservoir to Kensico Reservoir by 2005.

A number of issues are raised by this plan. The major issues include: Metering New York City; developing the new sources of supply; operating the new facilities in an integrated fashion with existing facilities; financing of the new facilities and providing adequate transmission capabilities throughout the region.

Currently, regional water supply is met with a jig-saw puzzle of institutional arrangements that operate, at best, inefficiently. The remainder of this report is concerned with the institutional alternatives to the present situation. Directly related to engineering plans to provide water is an institutional arrangement which clearly assigns the powers and responsibilities for ensuring the implementation of the plan. Given the engineering plans, this report will examine and recommend the

institutional arrangements to assure the timely construction and efficient operation of facilities in water supply.

DEFICIENCIES IN EXISTING INSTITUTIONAL ARRANGEMENTS

STATE INSTITUTIONAL ARRANGEMENTS

The state of New York has a relatively comprehensive water resources program. But its implementation for water supply, particularly in the Southeastern New York Region, is weak.

Planning and Research

Despite the fact that the drought of the mid-1960's and a subsequent water resources inventory showed that the Region *in toto* did not have a sufficient water supply, there was no State sponsored regional planning effort for water supply in Southeastern New York until the formation of the Southeast Water Supply Commission An attempt by the Department of Environmental Conservation to establish a regional water resources planning board in the Nassau-Suffolk subregion failed. There has been limited coordination of the comprehensive water and the comprehensive sewer studies which have been done for most of the counties in the Study Area. In effect, State planning for New York City has amounted to legislative permission for the City to expand its system beyond its own boundaries. This expansion has left several upstate counties with few usable water resources of their own.

Regulation

Water supply regulatory activities by the Department of Environmental Conservation, the Department of Health, and the Public Service Commission are of limited value in meeting regional water supply problems.

The Department of Health, which is responsible for ensuring the quality of drinking water from all public water supplies in the State, has recognized that although it vigorously attempts to fulfill its responsibility, it doesn't always succeed. The State Sanitary Code is difficult to enforce, especially against smaller water systems.

The authority of the Public Service Commission, recently expanded, includes the regulation of finances, rates and adequacy of all investor-owned systems regardless of size. This includes many small systems which in the past have been criticized as inadequate by county and local officials. No State agency regulates the water rates or the quality of service from municipal water systems in the State.

Management and Operation

The State has very limited authority to construct, manage, operate and maintain water supply facilities. Only the State Department of Transportation has authority for water supply reservoirs and its jurisdiction is limited to the Adirondack Park and requires approval by the Department of Environmental Conservation. The Environmental Facilities Corporation has authority to build water treatment plants (little has been done in this regard), but cannot operate water supply facilities or construct reservoirs.

Financial Assistance

The State offers no financial aid to local governments for the construction, management, operation or maintenance of public water supply facilities. Its only assistance program for water supply provides aid for county comprehensive public water supply studies. The Environmental Facilities Corporation does offer loan assistance to municipalities, but no outright grants.

The only potential for substantial outside financial assistance lies with the United States Corp of Engineers, Northeastern United States Water Supply Study (NEWS). If its projects were eventually implemented, massive federal assistance perhaps in the order of 80-90 per cent of capital cost would be forthcoming. However, this is extremely speculative and in the climate of the times appears to be highly unlikely.

REGIONAL INSTITUTIONAL ARRANGEMENTS

The New York City system is the region's largest multi-system utility, serving 37 municipalities in the upstate counties. It also provides water to Utilities and Industries Corporation in Queens and probably will begin furnishing water to Jamaica Water Company in Queens in the near future. The breakdown of types of water supply systems served by the City in the upstate area is shown in Table 45.

However, the New York City System does not operate as a true regional water supply system. Its regional role was mandated by the Water Supply Act of 1905, which permitted the City to meet its water needs by expanding its system into other counties, but required in return that it provide water to municipalities (and, by amendment, water districts) in counties where the City's facilities are located. Counties whose municipalities have a de facto right to take water from the City system are Westchester, Putnam and Ulster. City facilities also are located in Orange, Delaware, Sullivan and Greene Counties, but are not used for local water supply. Nassau, Suffolk, Dutchess and Rockland Counties are outside the City's supply system.

Table 45

WATER SUPPLY SYSTEMS SERVED BY

NEW YORK CITY IN THE UPSTATE AREA

	Direct	Indirect	Total
County Water Districts	2	0	2
Cities	3	0	3
Town Water Districts	14	6	20
Villages	9	1	10
Joint Water Works	1	0	1
Investor-owned Companies	1	0	1
			37

Out of this mandated trade-off have arisen major areas of conflict between New York City, which plans primarily for its own needs, and upstate areas, which are accounting for an increasing proportion of the region's growth and water needs. While counties in the Commission Study Area outside of New York City accounted for only 21 per cent of the region's population in 1950, this has grown to 35 per cent in 1970 and is projected to rise by the year 2000 to 47 per cent -- 26 per cent in the Nassau-Suffolk subregion and 21 per cent in the Mid-Hudson subregion. These counties thus are faced with a difficult task of providing their residents with enough water. The present inflexible institutional arrangements with the City tend to compound the problem.

The planning and construction of water supply facilities, as required by the Water Supply Act of 1905, is carried out by the New York City Board of Water Supply. However, the planning is fundamentally designed to meet the needs of New York City. The attitude of the City has been to treat the upstate customers as interlopers and an undesirable burden, while the upstate areas feel that the city should be required to meet their water needs. The Board of Water Supply is composed solely of members representing New York City. Lack of involvement in the City's water supply planning efforts has become of considerable concern to several upstate counties, including Putnam, Ulster and Westchester, where the Board of Water Supply has preempted all potential water supply sources.

Major areas of conflict between the City and upstate customers are water rates, per capita limitations, and county agencies. In addition, the issue of environmental responsiveness has often been raised.

Water Rates

Under the Water Supply Act the City is required to furnish water at the aqueducts or reservoirs for the cost to the City at the point of delivery. Two cost figures have been developed and used, one for the Croton System and one for the Catskill-Delaware System. The City recently tried to raise the rates, the upstate communities resisted and refused to pay, and the issue went to the Department of Environmental Conservation for adjudication. The decision of the Department of Environmental Conservation on January 31, 1973, upheld the position of the upstate communities. This decision is now being challenged by the City in court. The various rates are tabulated as follows:

Table 46
NEW YORK CITY WHOLESALE WATER RATES
TO UPSTATE COMMUNITIES

Dollars Per Million Gallons

	1938 Rates	1967 Proposed Rates	City Consultants Recommendations	County Consultants Recommendations	Env. Cons. Decision Current Rates
Croton	70.19	80.00	124.00	70.00	76.87
Catskill-Delaware	105.28	120.00	148.00	101.00	103.72

Per Capita Limit

The requirement to supply water to certain upstate municipalities is limited to an amount equal to the per capita usage by the City of New York. The City interprets this to mean for each customer and subsequently has attempted to apply the per capita limit on the 37 municipalities separately. Simply, this means that the City is applying a per capita usage with an 8 million population base to communities and institutions with low populations and high water use. A specific case in point is the Village of North Tarrytown where a large General Motors Plant is located which is a heavy water user. As a result, the per capita usage is over the City per capita consumption. The same situation prevails in communities with large central schools drawing from areas outside the community but charged against the community population base. The City of New York has attempted to impose the retail

rate on those communities using water in excess of the per capita allowance as a penalty. This rate is ten times the wholesale rate ($700/mg). The upstate communities have refused to pay the higher rate.

It should be noted that the per capita consumption of the outside service areas taken as a whole is well below the City per capita usage. If the separate counties, Westchester, Putnam and Ulster, were used as the base, the per capita consumption would be below the City per capita usage, see Table 47.

Table 47

AVERAGE DAILY PER CAPITA WATER CONSUMPTION
SOUTHEAST REGION

Unit	Daily Per Capita Usage
New York City	177[1]
New York City System	185
Nassau County	121
Suffolk County	92
Dutchess County	121
Orange County	115
Putnam County	72
Rockland County	99
Ulster County	113
Westchester County	127

[1]Includes the two investor-owned companies.

Counties

The third major areas of conflict is the policy of the City to interpret the language of the Water Supply Act requiring it to serve municipalities and districts as excluding counties and county districts. Although offering a reliable source of water, New York City's interpretation tends to restrict county water supply operations. Assumption of a county role in water supply services or in serving county facilities and institutions is unduly complicated, requiring a city, town or village to serve as an intermediary or broker for the county. This discourages the consolidation of smaller public utilities to gain operational efficiencies.

Other areas of conflict between New York City and upstate areas have involved assessment on City property and facilities, consideration of water and land rights, and environmental impact of the operation of City facilities.

It is apparent that the New York City system's perspective is less than regional. It responds to regional needs only insofar as it is mandated by the Water Supply Act, which seems as inflexible and dated piece of legislation, particularly in light of the accelerated growth of the Mid-Hudson and Nassau-Suffolk subregions. New York City's policies limit its role as a regional supplier despite its size and the sharing of some of its water with some municipalities.

Environmental Responsiveness

The City has also been criticized for not being environmentally responsive in its planning and operating its water supply facilities. Criticism has been directed at the source areas upstate and at operations in the City. The three following criticisms are examples.

(Construction of facilities) In the mid-sixties a water supply study done for New York City presented a proposal to construct a reservoir on the upper Hudson, in the Adirondack Park. This project, Gooley Number 1, caused widespread public furor. While it would have provided enough water, the resulting impoundment would have flooded a wild river valley in the park. The proposal was defeated by a unanimous vote in the State Legislature.

(Operation of facilities) The operation of the New York City reservoirs has been a constant sore point for those downstream. There have been many charges of mismanagement causing erratic stream flows, unacceptably low flows, lack of flood control, and temperature fluctuations that have damaged fish populations, and discouraged water recreation.

(Conservation of use) Universal metering has not been implemented in New York City. This wasteful inaction has been criticized by conservation groups, water professionals, state, federal and interstate agencies.

INSTITUTIONAL ARRANGEMENTS IN THE NASSAU-SUFFOLK SUBREGION

The primary attempt at regionalism within the Nassau-Suffolk Subregion was made by the Nassau-Suffolk Regional Planning Board, a bi-county planning which so far has not been too successful in water supply matters. The Board recommended a single, regional water authority for the two counties. This recommendation is unlikely to be implemented. The two counties completely disagree on the suggestion that water from Suffolk County be exported to Nassau County.

INSTITUTIONAL ARRANGEMENTS IN THE MID-HUDSON SUBREGION

There has been no effort at regional water supply planning in the Mid-Hudson Subregion. A regional planning agency called Mid-Hudson Patterns for Progress has not yet addressed itself to water supply problems in the area. This is in spite of the fact that serveral of the counties in the area have similar problems.

Within the six counties of the Mid-Hudson subregion there is a range of county involvement in water supply, from fairly extensive involvement to almost no involvement.

Within this six-county subregion there are a total of 464 public water supply systems. Only about one-third of these serve more than 1,000 people. Many investor-owned development systems offer little or no fire protection, have part-time operators, and operate with inadequate financial resources. It is difficult for such systems to respond to change, to maintain active leak detection and repari programs, or to undertake significant expansion programs. In Community Water Supply: New York Standard Metropolitan Statistical Area (United States Public Health Service, 1970) it is pointed out that the small systems frequently violate State regulations on water quality and water quality surveillance.

Small investor-owned water supply systems, particularly those built for realty developments, are often unprofitable and inadequate. Thus, after selling all lots, the developers often abandon the water supply systems. Certain small investor-owned water supply companies in financial difficulty file for bankruptcy and then reorganize under a new name but with no change in service. The State law which regulates these problems is weak. Many county officials in Southeastern New York have recommended the replacement of these small development systems with town water districts.

In general, despite a number of common difficulties, there have been no regional ventures in this subregion.

INTERMUNICIPAL SYSTEMS

Both the Constitution and appropriate law have been amended over the years to permit and encourage intermunicipal cooperation in developing and providing needed services.

Municipalities may develop excess supplies of water for sale to other municipalities, and may contract debt to do this. There are no barriers in law to intermunicipal cooperative arrangements concerning the supply of water.

A number of intermunicipal arrangements have developed over the years. Initially, such arrangements started informally, with cities and villages simply extending water mains and service to fringe areas. Normally a rate differential was charged, with one and a half to two times the regular rate a common practice.

There are at this writing some twenty-seven formal multi-system utilities, excluding the New York City system. These systems comprise two or more municipalities or special districts. Table 48 lists multi-municipal systems serving more than 10,000 people. In addition, there are some twenty-four other municipalities, mostly villages, which serve outside areas informally. Most of the parent systems impose a surcharge on outside customers, averaging 40 per cent, but varying from 12 per cent to 100 per cent.

Table 48

MULTI-MUNICIPAL SYSTEMS

SERVING MORE THAN 10,000 PEOPLE[1]

PARENT SYSTEM	COUNTY	AREAS SERVED	POPULATION SERVED
Westbury Water District	Nassau	Westbury Bowling Green	22,600
West Hempstead Water Dist.	Nassau	West Hempstead Garden City South	27,200
Roslyn Water District	Nassau	Roslyn Water District Glenwood Water District	22,500
City of Beacon	Dutchess	Beacon Beacon Hills Water Dist.	13,255
Poughkeepsie	Dutchess	Poughkeepsie Poughkeepsie Water Dist.	
Nyack	Rockland	Central Nyack Water Dist. Consolidated Water Dist. #1 Nyack Water District #1 Nyack Water District #2 Nyack Water District #3	15,000
New Paltz	Ulster	New Paltz Water Dist. #1 New Paltz Water Dist. #2	10,000
Ossining	Westchester	Ossining Water Districts	27,000

[1]Excludes investor-owned water companies and special institutional arrangements. Includes only contractual arrangements between two or more municipalities.

Relationships appear to be reasonably good, although conflict over rates sometimes develops. A classic battle over water supply services took place in Dutchess County about ten years ago. The participants were the County, the City of Poughkeepsie and the Town of Poughkeepsie. The issues were service to the suburbs in the town, rates charged for water in the town, a takeover of water supply services by the county, and sale of the city water works. A detente apparently has been worked out between the city and the town on a contractual basis, with the county playing little or no role.

CONCLUSIONS

The water demands of Southeastern New York have taken on a regional perspective. The need for such a perspective has been increasingly recognized in the State. The State Department of Environmental Conservation's preliminary statewide environmental plan has recommended the promotion of regional water systems and system interconnections. The Temporary State Commission on the Powers of Local Government, in its study, Strengthening the Local Government in New York, has also recognized "the need for increased State involvement and a stronger regional role, as well as the need to overcome the presently highly fragmented governmental framework in which the supply of water service is carried out."

This perspective suggests the need for a water supply system that involves the inter-county transmission of water, a fair distribution of costs among all users, operation of the system based on the needs of all users, and representation of user and source areas in the decision-making processes of the system. In light of these characteristics, there is no water supply system with a genuinely regional perspective in Southeastern New York.

CHAPTER XVIII

THE REGIONAL NEED

From both engineering and administrative vantage points and recognizing the present difficulty with existing institutional arrangements, it appears that the water supply needs of Southeastern New York require a regional response. Given the crazy quilt setting described elsewhere, a regional approach is needed to streamline operations and to fulfill the Commission's mandate of "laying a proper foundation for meeting the water supply needs of New York City and the entire southeastern portion of the State for the remainder of the twentieth century."

A regional response is compelling because most of the existing local jurisdictions will be unable to supply their own future water needs. Those jurisdictions with large needs but limited resources, lack the authority to enter other jurisdictions to tap additional sources. Many of the Southeastern New York Counties find themselves in the position of beggars and have limited options for additional water. The most reasonable and perhaps the only way these counties can affect their future water supply is through the creation of a regional administration with an equitable decision making structure.

This chapter cites the engineering and administrative justifications for a regional approach. As outlined in a later chapter, this regional response might be done through a number of possible arrangements. Each alternative will be examined, and one alternative ultimately recommended as the appropriate regional response.

ENGINEERING JUSTIFICATIONS FOR A REGIONAL APPROACH

The regional water supply plan developed in Proposed Water Supply Plans for Southeastern New York recommends a set of projects which can be integrated into the existing regional facilities. That is, the existing New York City reservoir system will be used as the regional base and large projects of regional significance will be added to it.

This approach precludes 1) any large regional project which would operate independently of the existing regional system or 2) having any county in the region import water on its own. All water supply needs over and above the capabilities of local in county supply and over and above the capabilities of the existing regional system will be supplied by projects to be integrated with the existing regional system.

This limitation of project possibilities is consistent with previous studies. The NEWS study and the CPWS studies for each of the counties assume that future water deficits will be supplied from the existing regional system, expanded as needed.

Most counties in the region must go outside their borders, at least to some degree to supply their water supply needs. It would be most inefficient for each of the counties to act independently and develop their own outside sources. There would be a duplication of effort, competition for the same resources, and problems of regulation and the allocation of water. It would not be possible to realize the economies of scale inherent in a large regional system.

New York City will by itself require additional projects to meet its needs. The additional project would of course be integrated into the city's existing facilities. If the additional projects are made large enough to include the upstate needs, the existing storage and transmission facilities could be used to distribute water through the Mid-Hudson subregion. The integrated approach will avoid redundancy in facilities and will allow the most efficient timing of projects to meet the total needs.

The geography of the Mid-Hudson subregion suggests that the area could best be supplied by an integrated regional system. Four of the six upstate counties, Ulster, Orange, Putnam, and Westchester are already transversed by the Catskill,

Delaware, or Croton aqueducts. A new project with an additional aqueduct will give further transmission and distribution capacity. However, it would be unable to distribute water to all the areas of future need. It will be necessary to utilize the existing aqueducts to distribute water to the subregion.

The existing system already has some regional management experience, albeit limited, as New York City presently sells water to municipalities in Ulster, Orange, Putnam, and Westchester Counties. This existing regionalization could easily be expanded to supply more of the region.

By integrating new projects with the existing regional system it will be possible to take advantage of, and build upon, the personnel of the New York City system. The present system consists of nineteen reservoirs controlling runoff from 1,969 square miles of watershed in eight counties, with three major transmission aqueducts. The New York City Bureau of Water Supply has developed considerable managerial and engineering expertise in operating this far flung and complex system. This expertise could be applied to operate future projects if they are integrated with the present system.

As discussed, the long range solution of water supply problems in Nassau County will be water from upstate. In fact, it is not possible to deliver water from upstate to Nassau County without using New York City facilities. An integrated water system will make upstate water available to Nassau County by making the City transmission capabilities available to the county.

By pooling the available water an integrated supply system would give the best drought protection to the region. An integrated system will bring all the water together under one management, giving a larger total availability of water. This will prevent situations where some consumers have a shortage while others have plenty. The effects of a shortage can be spread among more consumers so that each suffers a small shortage rather than having a few suffer a servere shortage.

ADMINISTRATIVE JUSTIFICATION FOR A REGIONAL ADMINISTRATION

The administrative justifications for a regional approach to public water supply are related to the engineering justifications and are highlighted by the awkward administrative situation described elsewhere. A regional approach is required to efficiently implement the regional plan and to avoid the inefficiencies of the existing institutional arrangements. The following justifications summarize the

administrative advantages of a regional approach.

1) Jurisdiction. Water supply needs have outgrown the boundaries of local governments and suppliers. A regional jurisdiction would have an expanded boundary to include water supply capabilities and water supply deficits within the same jurisdiction. For example, if New York City and Nassau County were both associated with a single regional agency, the matching of New York City's capabilities with Nassau's needs would be expedited.

Indeed, a regional approach is particularly suited to large-scale water supply. A water supply system's administrative jurisdiction should be sufficiently large to encompass both source and service areas to provide an adequate forum for resolving differing source-service area interests.

2) Program Scope. The scope of a regionally administered water supply program would be sufficient to command the technical competence and equipment to discharge its public responsibility. The engineering sophistication required for large water supply facilities demands a regional agency.

3) Compatibility. A regional approach to water supply would contribute to the total effectiveness of government. Conversely, competition among smaller units for scarce resources can depreciate the efforts of these units taken as a whole. A regional administration can harmonize the many water-related efforts. The extent to which this is accomplished depends, of course, on the allocation of authority, skills in negotiation, and relations with existing units.

4) Flexibility and Long-Range Responsibility. A regional approach provides a means for overall reappraisals and revisions according to changing needs and conditions, for example, changing growth rates and patterns. Consequently, a regional administration is strategically capable of advancing the area's program according to composite needs and of providing long-range responsibility for planning.

5) Forum for Consensus. An effective regional administration can provide a means for reaching consensus on important matters. The conflicts between New York City and the counties which already depend on this regional system could be avoided in a regional organization. The per capita limit on withdrawals, the proper level of local government which may buy water, and the wholesale price for water are all existing points of disagreement. In the properly structured regional organization these points of disagreement would vanish.

Generally, this and other studies have suggested that a metropolitan or regional

approach should concern itself primarily with area-wide problems, leaving local problems to local jurisdictions. While this indicates that local distribution of water should remain a local activity, it also demands that the large-scale supply of water to these local distributors be recognized as an area-wide need, a function that holds the region together as a unit of interrelated activities.

CHAPTER XIX

INSTITUTIONAL ARRANGEMENTS IN REGIONAL WATER SUPPLY SYSTEMS IN OTHER METROPOLITAN AREAS

INTRODUCTION

Other metropolitan areas have opted for regional water supply systems and demonstrated a variety of possible regional responses. Institutional arrangements for water supply in a number of metropolitan areas were examined to determine the advantages of the different arrangements. An effort was also made to determine what characteristics were common in the metropolitan areas thought to have successful systems.

The search for successful systems involved an acquaintance with the institutional arrangements in a number of metropolitan areas and an in-depth examination of the water supply situation in Boston, Denver, Detroit, Toronto, Washington, D.C. and the Commonwealth of Puerto Rico. The successful institutional arrangements Toronto, Detroit, and the Commonwealth of Puerto Rico, each of which is different, were given the greatest consideration. In addition, the Boston case is presented as an example of regionalization which has experienced difficulties. The experiences studied will demonstrate the range of possible regional responses.

METROPOLITAN TORONTO

Metropolitan Toronto has a regional government approach which provides water and sewage services for approximately 2.1 million people. The Province of Ontario

legalized the development of the Toronto Metropolitan Corporation to provide these and other essential services to the city of Toronto and a number of suburban communities. The structure of the Toronto Metropolitan Corporation enables participation of all members and assures representation to all communities in the Region. The city of Toronto does not dominate the Corporation. The Corporation is a partnership or association of municipalities in the Toronto metropolitan area.

The financing of capital expansions comes from a levy placed on all member municipalities. The municipalities raise their levy through property taxes at a rate set by the Corporation. The tax rate is the same for all municipalities.

Operation of the Corporation's water and sewer facilities is the responsibility of the Works Department, which is in charge of the collection, treatment and transmission of water. The municipalities are responsible for local distribution.

The water and sewer systems are financially independent and the water supply system operates on a self-sustaining basis. The Works Department relies on revenues from metered water sales. The revenues collected are deposited in a separate water fund. These monies are used solely for water supply purposes; for operation and maintenance, improvements, and debt service.

A master plan for water supply was conceived in 1953. This development guide serves to provide for the future needs of the metropolitan area. In addition, provision is made for the replacement of older facilities.

METROPOLITAN DETROIT

The Water Department of the City of Detroit provides water service to nearly 4 million people in Southeastern Michigan through an inter-municipal agreement. This regional arrangement is directed by the Detroit Board of Water Commissioners. Most of the Board Members are City residents although there is now provision for Board representation from the surrounding communities. Board policies, therefore, are not dictated solely by the City of Detroit. Board Members from the suburbs have decision making powers, not just an advisory role. Communities which desire water service from the City enter into a contractual agreement with the Water Department.

Both water supply and water pollution control functions are handled by the Water Department, which operates on a self-sustaining basis. Water supply revenues are deposited into a separate water fund and used solely for water supply functions. The Department retails water to residents in the City and wholesales water to

municipalities beyond the City limits. All services are metered. The water rates are the same throughout the City but higher in the outside municipalities. The outside rates vary according to the distance from the source.

The Detroit Water Department's master plan, originally conceived in 1959 and later revised, is a programmed guide for future expansion. The Department's strong financial base and high bond rating makes the capital expansion program possible.

A 1970 report of the Office of Water Resources Research in the United States Department of the Interior concluded that the Detroit system "has come to represent a regional point of view that is reasonably first in its distribution of public costs, well managed, and providing service that is of a quality that satisfied most customers most of the time."

PUERTO RICO

The Puerto Rico Aqueduct and Sewer Authority (PRASA), is an example of a state water supply program and provides water and sewer service to the Island's entire 2.7 million people. The Governing Board of the System is the policy making body for PRASA. This Board is a department of the Commonwealth Government. No single, strong central city dictates policies. For operational purposes the Island is divided into six water and sewer districts with a central city as the focus of each district.

The Puerto Rico Aqueduct and Sewer Authority is a self-sustaining operation and relies on water and sewer revenues. All revenues go into a separate commonwealth water-sewer fund, and are used solely for water and sewer functions. The PRASA retails water directly to all consumers at a uniform rate throughout the Island.

As a department of the Commonwealth, PRASA has a reliable and strong financial base on which to issue bonds. Master plans have been developed to guide future water supply and sewage treatment needs. A number of new water supply and sewage treatment facilities are being constructed and older, inadequate facilities are being improved.

METROPOLITAN BOSTON

At the turn of the century the City of Boston initiated a water supply system then considered a model for regional water programs. The agency, the Metropolitan District Commission (MDC), has been described by the National Water Commission as

the "nation's oldest multi-purpose metropolitan water resource management agency." The system serves the City of Boston as well as most of the surrounding metropolitan area. Although metropolitanization is a continuing process, it is believed by many that the water supply system has been much less successful than it could have been.

The Massachusetts District Commission is a fiscally independent agency of the State Office of Environmental Affairs, which includes the State Water Resource Commission and Divisions of Water Resources and Water Pollution Control. The MDC consists of a commissioner and four associate commissioners appointed by the governor, and three executive assistants, each responsible for different divisions. State law provides that any town "within ten miles of the (Boston) Statehouse" with inadequate water supply, must become a member of the MDC water district. Any town within a 15 mile radius of the statehouse has the option to join if MDC is able to serve them. Prospective members outside the ten-mile radius must prove that membership in the water district would be financially advantageous to the Commission.

The MDC has extensive authority, including powers of eminent domain, condemnation, deficit financing with State backing, inspection, and determination of local needs. Even with this authority the Commission has not provided most efficient service.

All revenue collected from water sales, bonds, and entrance fees are deposited into a general water fund. The State Legislature appropriates money from this fund to cover annual expenditures and is required to issue bonds to cover any deficit. The wholesale water rate charged by MDC is rather low resulting in operational deficits. Consequently, bonded indebtedness has soared into the millions of dollars.

According to the University of Massachusetts Water Resources Research Center, the MDC system is a poor model for future regional water supply systems. Of the 37 cities and towns within the 10 mile radius, many have resisted joining MDC and 11 are still not included. Of the 61 communities within the 15 mile radius eligible for MDC membership, only 32 belong.

In the past two decades MDC has been unable to keep pace with growing, regional needs and has denied membership applications. The water district's difficulties include inadequate distribution facilities, little coordination between the water and sewerage operations, and no formalized planning program.

COMMON CHARACTERISTICS

Three of the four regional programs, each with different organizational formats, are relatively successful in meeting their water supply functions. By contrast the Boston MDC is inefficient and inadequate. There are many characteristics common to the three successful operations not included in the MDC operation. Because of their high correlation with successful regional systems these common characteristics are highlighted.

Active representation from non-central cities is provided for in the regional approaches of Toronto, Detroit and Puerto Rico. Each of the three agencies have viable planning programs. The planning, construction, management, operation and maintenance operations are coordinated. All three regional agencies operate on a self-sustaining basis. The operational costs are met with revenues collected through the sale of water and the treatment of sewage. Separate water-sewer funds have been established, allowing collected revenues to be used only for water supply and/or sewering functions. Finally, universal metering is a general practice in all three regional programs.

Perhaps the most important observation of these three systems is the fact that they seem to be working. This is so despite essentially different regional approaches. Toronto is an example of a regional government approach. The Detroit system is an inter-municipal agreement approach. The Puerto Rico case represents a state approach. All three kinds of institutional arrangements are proving workable solutions and elements of each might usefully be employed in other metropolitan areas.

SECTION III

ALTERNATIVE FUTURES

PART B

ALTERNATIVE FUTURES

CHAPTER XX

CRITERIA

The formulation of the appropriate regional response to the water supply needs of Southeastern New York must be predicated on the activities that a regional administration will undertake. A set of criteria is presented to measure the ability of alternative regional approaches to carry out the activities.

ACTIVITIES

The regional approach that is ultimately implemented will have to carry out at least eight separate but related activities.

First, it must construct new sources of water supply in order to meet anticipated deficits. Second, it must operate these new sources, and third, operate existing sources of water supply, including the facilities of the New York City system.

Fourth, the regional response must establish a wholesale rate schedule that is both financially sound and agreed upon. It must, fifth, establish an operating policy and conditions of service in the service area, and sixth, transmit water to all parts of the service area.

It must develop capital to build and renovate water supply facilities, and eighth, it must plan and provide for the future growth of the system.

ATTRIBUTES AND CRITERIA

In order to effectively carry out these activities, the regional approach chosen for Southeastern New York must exhibit a number of attributes. These attributes are the criteria by which a regional arrangement will be selected.

The criteria to be considered in recommending a regional organization are listed and explained below. Some of the criteria are at least to some extent in conflict with others. Nevertheless, no attempt is made to rank the criteria into an order of inviolability. Rather, in choosing the final regional arrangement, some of the criteria will be taken as constraints which can be relaxed at least to some degree.

Minimize Required Changes

As explained previously, the present institutional arrangements for water supply in Southeastern New York are at best confusing and in need of change. While the present arrangments are inadequate to meet the anticipated needs, they have worked, albeit inefficiently up to this time. As such they represent organizations and interest groups which will be effected by any new institutional arrangement. The greater the institutional changes and the greater the number of organizations and groups effected, the greater will be the resistance to change. Therefore, the recommended institutional organization should require a minimum amount of institutional changes while still meeting the other necessary criteria.

Capable of Early Implementation

By the year 1980, New York City, Nassau County, and Westchester County will have a combined deficit of 170 MGD. Therefore, very little time is available in which to formulate a regional response. The recommended institutional agency must be able to gain acceptance, develop a staff, and organize the required activities as soon as possible.

Capable of Flexible Response

Besides gearing up to avert a potential crisis in the near future, any agency charged with the water supply needs of the Region should be able to respond to changing needs over the long run. This is particularly true if the needs are significantly different from those projected or change in terms of a real distribution. The agency should be able to continuously update its proposed plans of action.

Compatibility With Proposed Engineering Projects

As already noted, in order to meet the projected water supply needs of Southeastern New York for the next 50 years a three-phased program of construction has been recommended. This includes universal metering in New York City; flood skimming the Hudson River at Hyde Park with an aqueduct to West Branch Reservoir; and expansion of Hinckley Reservoir for flow augmentation on the Hudson with completion of the aqueduct to Kensico Reservoir.

The institutional arrangement finally recommended must be capable of implementing all three elements of the plan. The organization must have the financial capabilities for a substantial capital program, legal authority, and political viability in order to construct the proposed projects. More important, the regional organization must be able to operate the new facilities in an integrated manner with the existing regional base of the New York City Water Supply system.

This criteria precludes an institutional arrangment which centers on local and county agencies.

Capable of Settling Disagreements

As illustrated previously, there are several areas of conflict between New York City, its wholesale water customers, and people in the source areas of the city system. The conflicts have delayed necessary actions, and certainly contribute to an inefficient utilization of the resource.

A regional water supply agency should be designed to minimize the possible conflicts. If conflicts arise, the agency should be able to quickly resolve them and move forward.

Promote County Initiative

Most of the counties in the region will be unable to supply their own water needs and will need water from a regional source. Any regional response must, therefore, make water available to the counties. However, in most counties the water supply arrangements are confused and disorganized. Many changes will be necessary in order for the counties to take best advantage of the regional supply and in order for the regional system to operate efficiently.

The necessary actions which must be undertaken by county initiative include, at the least, the consolidation of small and inadequate systems; the construction and operation of facilities to distribute water in the county; the allocation of water from the regional supply; are the replacement of inadequate facilities in order to take advantage of the supply. In short, a much greater county role is prescribed. In New York City, metering must be initiated.

A regional water supply organization able to promote the necessary county and city initiative is preferred over an arrangement which would be forced to operate with the status quo.

Distribution of the Needs

New York City alone will have a projected deficit of 160 MGD by the year 2000 and 300 MGD by the year 2020. The other counties of the region with local potential accounted for will have a total deficit of 235 MGD by 2000 and 420 MGD by 2020. That is the greatest share of the anticipated regional deficit will occur outside of New York City. Any institutional arrangement must recognize the change in the location of needs and be able to supply these counties in an orderly fashion. Nassau County in particular will soon be dependent on the capabilities of some agency outside its own boundaries.

Legal Feasibility

Any arrangement of institutions, particularly any agency charged with new source development, should already be in existence with the requisite powers, or be in existence and be conveyed the requisite powers, or not be in existance, but be such that the necessary powers could be created and conveyed.

Political Acceptability

The effectiveness, or even feasibility of any particular regional set-up depends on its political viability. It must be accepted by the water supply constituencies. The constituency includes any group that has an interest in water supply in Southeastern New York. The most important constituents are 1) local suppliers, both municipal and private; 2) the New York City System, both the Board of Water Supply and the Department of Water Resources; 3) county governments; 4) State agencies; 5) Federal agencies; 6) the consumers. Two other groups with interest in water supply functions are conservation groups and the public at large.

Their preferences for future instiutuional arrangements for water supply in Southeastern New York are likely to be as follows:

1) Local suppliers--would prefer maintenance of the status quo though there would be little opposition to an agency which would develop new sources and wholesale water; likely to be most opposed to expansion of county role.

2) The New York City System--would prefer to develop its own new sources but realizes its limitations in regard to the laws relating to development of water supply sources in Dutchess County and the Adirondack Park; would probably prefer State to Federal involvement, either on a statewide or regional level.

3) Counties--would prefer to be able to purchase water from the New York City System and/or from a regional or statewide supplier for wholesaling to local suppliers.

4) State agencies--includes the Departments of Environmental Conservation, Health, and Audit and Control as well as the Public Service Commission, each of which have primarily regulatory functions; none seem particularly interested in nor are presently staffed to enter the water supply field with planning, construction or operating responsibilities.

5) Federal agencies--the principal agency is the United States Army Corps of Engineers, presently conducting the NEWS Study, an agency which is likely to favor Federal involvement primarily in a financial and constructional capacity.

6) The consumers--probably have no strong feelings about institutional arrangements except perhaps a general wariness about institutions at a government level far removed from themselves; primarily interested in maintaining continuity of service and low water charges.

7) Conservation groups--most interested in preventing or restricting use of upstate water sources and in prohibiting impoundments; when faced with fait accompli some will push for multi-use; unlikely to have strong institutional preferences though likely to oppose any arrangement which they perceive as having too much authority in regard to source development.

8) The public at large--reflect the feelings of many of the other groups discussed; unlikely to possess any strong feelings about particular institutional arrangements except for a general wariness of Federal involvement.

Financial Capability and Equity

The capital requirements of the recommended projects for the region will be great. In some regional organizations the capital requirements would place a heavy financial burden on a rather small base. This would cause an inequitable distribution of responsibility and might result in a poor credit rating if bonding were necessary. The preferred institutional arrangement should offer an adequately broad financial base from which to gain capital and equitably distribute the debt obligation.

Environmental Responsiveness

A fundamental criterion for any institutional arrangement dealing with water supply, and one that warrants separate mention, is environmental responsiveness. The environmental impact of a set of institutional arrangements and the projects it pursues is not entirely quantifiable and may be subject to debate. But at a minimum, a regional water supply organization should be capable of constant review. It should be congnizant of, and able to respond to, possible environmental disruption from its developments and changes in technology which can reduce impacts.

CHAPTER XXI

ALTERNATIVE FUTURES

A variety of regional organizations, each centered on a different level of government, are proposed in this chapter. There is a wide range of possible organizations but the discussion will concentrate on six alternative futures. The first program proposed is a continuation of the status quo with no change in the existing institutional arrangements. This possibility serves as a bench mark of comparison for the other possibilities. The succeeding programs deal with a number of possible changes that might be made to avoid the inadequacies of the present situation.

The six alternative futures proposed are: A) continuation of the present institutional arrangements, "muddling through"; B) modification of the Water Supply Act of 1905, including provisions for representation of outside counties, to expand New York City's capabilities as a regional supplier; C-1) having a New York State agency construct and operate the new facilities, or; C-2) having a federal agency operate new facilities; D) creating a regional authority which would construct new facilities, operate all sources, and wholesale water to existing systems through county water agencies; E) a state agency that would construct new facilities, operate all sources, and wholesale the water to existing systems through county water agencies.

PROGRAM A--MAINTENANCE OF THE STATUS QUO ("MUDDLING THROUGH")

With this program New York City would continue as the regional supplier with no changes in the laws or policy making activities of the existing arrangements. Other reports as well as chapters in this report have explained the existing institutional arrangements for water supply in Southeastern New York. Deficiencies

in the present arrangements have been identified. Despite those deficiencies and the disadvantages of the present system, there are a few advantages to the continuation of the existing institutional situation.

The necessary institutions are in existance and there would be no need to change any laws. New York City would proceed as far as the law permits to develop its own new water supply sources. The capital necessary for expansion of the system could be raised by New York City bonds.

However, the following disadvantages appear overwhelming:

1) Under the water supply act of 1905, New York City is not required to sell water to some counties. So, no solution would be provided for the water supply problems of some of the southeastern counties. This is particularly bad for Nassau, which will soon need additional water.

2) Disputes between New York City and upstate users would continue unabated with upstaters claiming that they are being refused a fair share of the water and New York City claiming that it is being denied a fair price for the water sold.

3) If the Water Supply Act of 1905 is not amended, particularly in defining counties as municipalities, many systems will find it difficult to use the New York City System as a source of supply even though it is the only viable alternative.

4) Unless the Water Supply Act of 1905 is changed, New York City cannot build facilities in Dutchess County or in other counties in which it has not previously been given permission to build. Thus, it would be difficult for New York City to build the recommended facilities in Dutchess County.

5) New York City which has so far not been able to, and would probably not initiate universal metering.

6) Water resources and water supply planning in Southeastern New York would continue with New York City as the focus of attention.

PROGRAM B--NEW YORK CITY TO ACT AS A REGIONAL SUPPLIER

This program is a derivative of Program A but would require significant changes in the Water Supply Act of 1905. It would lead to an institution arrangement similar to that of the Detroit Metropolitan area described in Chapter 19.

To effect this program, the Water Supply Act of 1905 and subsequent amendments must be amended by the State Legislature. The proposed amendments are:

1) Require New York City to recognize counties as municipalities and to sell water to county agencies.

2) Eliminate the per capita restrictions on water takings from the New

York City System.

3) Require that the New York City System be allowed to sell water to all counties in the region.

4) Authorize the New York City Board of Water Supply to construct water supply facilities in Dutchess County and any other counties deemed necessary.

5) Require New York City to sell water to any county containing city water facilities.

6) Establish a new formula for determining the price of wholesale water from the city system.

7) Provide for representation from counties which either buy water from the regional system or counties which contain regional facilities in the policy-making activities of the New York City Water Supply System.

PRINCIPAL RESPONSIBILITIES

The New York City Board of Water Supply would be given the authority to construct withdrawal, pumping and treatment facilities on the Hudson River at Hyde Park in Dutchess County. It also would construct the aqueduct from Hyde Park to West Branch reservoir and later to Kensico Reservoir.

Additional reservoir facilities at Hinckley would be constructed and operated as needed for the New York City System by the State Department of Transportation with the concurrence of the State Department of Environmental Conservation, in accordance with Sections 15-1507 to 15-1521 of the Environmental Conservation Law.

The New York City Department of Water Resources, Bureau of Water Supply would continue to operate its present facilities and would operate the new projects in an integrated manner with the present system. The Bureau of Water Supply would wholesale water to any county in the Southeastern New York Region.

The allocation of water, the wholesale price for water, and the conditions of service would all be decided on in a forum which included representatives from the consumer counties.

Each of the individual counties getting water from the New York City System would be taken as one service account. That is, there would not be one account for each of the municipalities supplied with New York City water. The counties would be responsible for setting up their own mechanism to buy water from the regional system, and for allocating the water and the costs of water within the county. The counties would construct their own internal transmission facilities

and determine their own needs from the regional supply.

The necessary capital for expansion of the regional system would be raised by New York City bonds. The New York City Board of Water Supply would continue water supply planning but would be required to account for the needs defined by the outside counties.

PROGRAM C--CONSTRUCTION OF NEW SOURCES TO BE WHOLESALED TO EXISTING SYSTEMS BY (1) NEW YORK STATE OR: (2) FEDERAL GOVERNMENT

Program C-1 provides that a State agency, existing or new, be given the responsibility for constructing and operating new water supply projects and wholesaling the water from these projects to the counties. New York City would continue to operate its existing facilities essentially as it does now, perhaps with some modification in responsibilities toward counties. Alternatively, in Program C-2 the Federal government would construct and operate new projects and wholesale water from these projects. If the Federal involvement followed the recommendations of the Northeastern United States Water Supply Study (NEWS), the Federal projects would probably also be used to supply water to areas outside New York State.

PRINCIPAL TASKS

In Plan C-1, the State agency would be authorized to construct withdrawal, pumping and treatment facilities at Hyde Park in Dutchess County and the aqueduct from Hyde Park to West Branch Reservoir and eventually to Kensico Reservoir. Alternatively, in Plan C-2, the Federal government would construct withdrawal, pumping and treatment facilities on the Hudson River, possibly at Hyde Park but more likely at West Park in Ulster County. The Federal agency would also construct the necessary aqueducts. Additional reservoir facilities at Hinckley would be constructed and operated for the State (or Federal) agency by the State Department of Transportation with the concurrence of the State Department of Environmental Conservation. This would be done in accordance with Sections 15-1507 to 15-1521 of the State Environmental Conservation Law.

The capital necessary for the construction of the new projects would come from the State or Federal government. The allocation of water, wholesale price of water, and conditions of service would be determined by the State or Federal agency operating the new projects.

The New York City Water Supply System would continue its present mode of operation and would sell water to the counties it now does.

Under this plan, the counties would have essentially the same responsibilities they would have under Plan B. However, some counties would conceivably be buying water from both the State or Federal system and the New York City System.

PROGRAM D--A SOUTHEASTERN NEW YORK WATER FACILITIES CORPORATION

This Program would require the State to authorize the creation of a Southeastern New York Water Facilities Corporation. This authority would be responsible for the production and distribution of water in the region. The Corporation would take over the existing upstate water supply facilities of New York City and would plan, construct and operate the new projects in conjunction with the existing system.

In this program, the Water Supply Act of 1905 and subsequent amendments would no longer be operative, and the Corporation would not be bound by any of that law's restrictions.

PRINCIPAL TASKS

The Southeastern New York Water Facilities Corporation would take over the existing upstate facilities of the New York City Reservoir System up to Kensico Reservoir. It would construct the withdrawal, treatment and pumping facilities on the Hudson River at Hyde Park and the aqueduct from Hyde Park to West Branch Reservoir. These new facilities and the existing system will be operated by the Corporation in an integrated manner. It would contract with the New York City Board of Water Supply in the construction of the fourth stage of the third city tunnel in order to include the needs of Nassau County in the tunnel capacity. Additional reservoir facilities at Hinckley would be constructed and operated for the regional authority by the State Department of Transportation with the concurrence of the State Department of Environmental Conservation, in accordance with Sections 15-1507 to 15-1521 of the Environmental Conservation Law.

The Southeastern New York Water Facilities Corporation would wholesale water to any county in the Southeastern New York region. The allocation of water, the wholesale price of water, and the conditions of service would be decided by the regional authority. The Corporation could, if desired, include representation from the counties in both the source areas and service areas.

Each of the individual counties getting water from the regional system would be taken as one service account. That is, there would not be one account for each of the municipalities supplied with authority water. The counties would be responsible for setting up their own mechanism to buy water from the Corporation and for allocating the water and costs of water within the county. The Counties would construct

their own internal transmission facilities and determien their own needs from the regional supply.

The necessary capital for expansion of the existing system would be raised by Corporation bonds. The Southeastern New York Water Facilities Corporation would continuously update the water supply plans for the region.

PROGRAM E--A STATE AGENCY TO ACT AS A REGIONAL SUPPLIER

This program provides that a State agency, existing or new, be given the responsibility for constructing and operating additional water supply sources. This program differs from Plan C-1 in that the State agency would take over the existing New York City water supply facilities up to Kensico Reservoir. The agency would wholesale water to all counties which opt to buy. The counties would be responsible for internal transmission and the allocation of water and costs.

As under Program D (Corporation), the Water Supply Act of 1905 and subsequent amendments would no longer be operative, and the state agency, whether new or existing, would not be bound to any of that law's restrictions.

PRINCIPAL RESPONSIBILITIES

The new or existing State agency would be given the authority to construct withdrawal, treatment and pumping facilites at Hyde Park and the necessary aqueducts. Additional reservoir facilities at Hinckley would be constructed and operated for the State agency by the State Department of Transportation with the concurrence of State Department of Environmental Conservation, in accordance with Sections 15-1507 and 15-1521 of the Environmental Conservation Law. The State agency would also take over the New York City Water Supply Facility up to Kensico Reservoir. The agency would operate the existing and new projects in an integrated manner. It would wholesale water to the counties under conditions and at price determined by the agency.

The counties would have the same responsibilities as in Program D. The agency would contract with New York City to include the needs of Nassau County in the capacity of the third city tunnel.

Capital for the expansion of the system would come from the State agency. The agency would be responsible for continuous planning to meet the water supply needs in the region.

SECTION IV

RECOMMENDED REGIONAL APPROACH

CHAPTER XXII

EVALUATION AND RECOMMENDATION

As emphasized in Chapter four of this report, the appropriate regional organization for water supply in Southeastern New York must meet certain criteria. The alternative that meets most of these criteria without violating the other criteria to an unacceptable degree will be the preferred program.

The degree to which the six alternative futures satisfies each of the criterion is shown in Table 49. Each of the alternative futures satisfies each of the criterion mine if it satisfies a criterion (+), violates the criterion (-) or has a neutral or acceptable effect on the criterion (0). While each of the evaluations is open to discussion, Table 49 gives an overall indication of preference.

PROGRAM A--CONTINUATION OF STATUS QUO

It is rather obvious that Program A, a continuation of the present institutional arrangements, is not really a viable alternative. It would not solve the regional water supply problems and violates most of the criteria. This program is therefore dropped from further consideration.

PROGRAM B--NEW YORK CITY SYSTEM TO ACT AS A REGIONAL SUPPLIER

Transformation of the existing New York City system, partly through modifications of the Water Supply Act of 1905, into a responsive regional supplier advances this program into an almost viable alternative. The changes in the Water Supply Act of 1905 would avoid many of the deficiencies of Program A. There would be a forum for settling disputes between the City and the counties, the City would be allowed to sell water to any county in the region, and the system would be allowed to expand as necessary.

However, New York City would continue to be the focal center of the regional system. Many of the weaknesses of the present institutional arrangement would,

Table 49

EVALUATION OF ALTERNATIVE FUTURES ACCORDING TO CRITERIA

CODE

+ Program satisfies criterion

- Program violates criterion

0 Program has neutral or acceptable effect on criterion

	Program A	Program B	Program C-1	Program C-2	Program D	Program E
Minimize Required Changes	+	+	+	-	0	0
Capable of Easrly Implementation	0	+	+	-	0	0
Capable of Flexible Response	-	+	+	+	+	+
Engineering Compatibility	-	+	--	—	+	+
Capable of Settling Disagreements	-	0	-	-	+	0
Promote County Initiative	-	-	0	0	+	+
Distribution of Needs	-	+	0	0	+	+
Legal Feasibility	+	+	+	+	+	+
Political Acceptability	-	-	-	—	0	-
Financial Capability and Equity	-	-	+	+	+	+
Environmental Responsiveness	-	0	-	-	+	+

therefore, remain. Leaving New York City in its prominent position would be viewed with suspicion by the counties and their existing biases would do little to encourage cooperation or the necessary county initiative. There would probably continue to be disagreement over the proper wholesale price for water.

At the same time this program would not be overly popular with New York City. It is questionable whether New York City would accept a greater regional burden while at the same time relinquishing its policy-making discretion to the counties. The capital requirements for the necessary projects would put a heavy debt obligation on the City taxpayers. This would be inequitable when related to the City's share of anticipated deficits. Under such circumstances it is doubtful whether New York City would take on the additional burden of initiating universal metering.

PROGRAM C (1 and 2)--CONSTRUCTION OF NEW SOURCES TO BE WHOLESALED TO EXISTING SYSTEMS BY (1) NEW YORK STATE OR (2) FEDERAL GOVERNMENT

A principal advantage of either Program C-1 or C-2 is that they would bring the financial resources of either the state or federal government to bear on regional water supply problems. Moreover, to the extent the state or federally developed water projects could serve others beyond the Southeast New York region, the lesser would be the need for spending on local levels and the greater the economies of scale. The scope of technical expertise at either level would promote continued planning and an ability to respond to changing and long-run needs. Moreover, either program would presumably serve all water users equally and dampen suspicions of provinciality.

However, both of these programs violate too many other criteria. A state or federal agency would be too far removed to local accountability. This would make the programs politically unacceptable. This is especially true of the Federal option which would bring a Federal involvement to an historically local operation. Further, an agency with potential responsibilities beyond the Southeastern New York region might dilute its efforts toward the region.

By having the State or Federal government construct and operate a new regional system while allowing New York City to continue the operation of its existing system, these programs would have many of the disadvantages of the existing situation. The areas of disagreement between the City and its existing wholesale customers would remain. Some counties would be in a position to take water from either the City system or the new system which would confuse the county planning efforts.

Most significantly, allowing two separate systems to operate independently would seriously violate the criterion of engineering compatability. The engineering recommendations of this Commission assume that new projects will be integrated with the existing system. This would give the most efficient utilization of facilities. In fact, not integrating the two systems would overlook many of the engineering justifications for a regional response.

The federal option, Program C-2, further violates the criteria of minimizing the original changes and the capability of early implementation. A federal involvement in water supply would bring the Federal government into an activity which has generally been handled on a local level and, on balance, quite satisfactorily. This new Federal involvement would require significant changes in water supply thinking and in some institutional arrangements. Because this program would have to be approved by the United States Congress, it would be subjected to the delays of national politics and regional interests.

PROGRAM D--A SOUTHEASTERN NEW YORK WATER FACILITIES CORPORATION

Program D is a balanced compromise, creating an agency large enough to have a truly regional view but not so far removed as to weaken local control. It avoids the City-centered focus of Program B or the loss of local initiative of Programs C or E.

A regional agency designed around the needs and characteristics of the Southeastern New York Region would be capable of a flexible response to changing needs. By including the existing regional system into the authority, the new projects could be integrated into the existing system to maximize efficiency. If the regional Corporation includes representation from the counties and the City, there would be a forum for cooperation. This would promote the required county and city initiative. The Corporation would have a larger and equitable financial base.

It is recognized that a Corporation would require considerable compromise by the City of New York. This required compromise many cause some delay in the implementation of the Corporation and affects its political acceptability. However, in comparision to the other options, this program least violates the criteria and has the greatest chance of success.

PROGRAM E--A STATE AGENCY AS REGIONAL SUPPLIER

This alternative future is a variation of Program D but would have a State agency act as a regional water supplier rather than a regional authority. Because the State is farther removed from the region, there would be a loss of local accountability, weakening the political viability of this option.

Many of the advantages of Program D (Corporation) or Program C-1 (construction of new sources by the state) accure to this alternative. It could have a regional focus, a broad financial base, and since it would operate both new and existing sources, it could also have engineering and administrative efficiency.

However, a state agency is far removed from its customers, even in the operation of a regional function. Moreover, as in Program C-1, an agency with statewide responsibilities might dilute its efforts in Southeastern New York.

If an existing state agency such as the Department of Environmental Conservation were designated to develop and operate new water supplies, this activity would likely conflict with the Department of Environmental Conservation's regulatory responsibilities.

22. *IT IS RECOMMENDED THAT A REGIONAL SOUTHEAST WATER FACILITIES CORPORATION BE ESTABLISHED BY SPECIAL ACT OF THE LEGISLATURE WITH AN EFFECTIVE DATE OF APRIL 1, 1975. THE CORPORATION WOULD BE A SELF SUPPORTING INSTRUMENTALITY OF THE STATE AND WOULD PLAN, DEVELOP, CONSTRUCT AND OPERATE THE RECOMMENDED WATER SUPPLY FACILITIES FOR THE REGION. THE CORPORATION WOULD TAKE OVER NEW YORK CITY UPSTATE FACILITIES AND OPERATE THESE FACILITIES IN AN INTEGRATED MANNER WITH THE RECOMMENDED PROJECT.*

    THIS RECOMMENDED APPROACH WOULD MAKE MOST EFFECTIVE USE OF THE AVAILABLE WATER RESOURCES AND EXISTING WATER FACILITIES, MAXIMIZE ECONOMIES OF SCALE AND OPERATIONAL EFFICIENCY, BEST SERVE THE NEEDS OF SOURCE AND SERVICE AREAS, AND INTRODUCE A HIGH LEVEL OF ENVIRONMENTAL RESPONSIVENESS.

23. *IT IS RECOMMENDED THAT AN IMPLEMENTING AGENCY BE CREATED BY THE LEGISLATURE EFFECTIVE APRIL 1, 1974. THIS AGENCY WILL PRIVIDE A TRANSITION PERIOD OF ONE YEAR FROM THE PRESENT ARRANGEMENTS TO THE NEW SOUTHEAST WATER FACILITIES CORPORATION. THE AGENCY WILL BE CHARGED WITH THE RESPONSIBILITY FOR EFFECTING A SMOOTH AND ORDERLY TRANSITION TO ENABLE THE CORPORATION TO BECOME OPERATIONAL IN A SHORT PERIOD OF TIME.*

CHAPTER XXIII

IMPLEMENTATION

A Southeastern New York Water Facilities Corporation, as recommended, will undertake a broad range of responsibilities to provide for the water supply needs of Southeastern New York. This chapter is a rough outline of the needed developments for this regional response.

The Corporation will take over, manage, and operate, and maintain the existing reservoir and aqueduct system of New York City up to Kensico Reservoir or up to the City line in the Croton system. The operating personnel for this reservoir system could be transferred from the City to the Corporation. The Corporation will assure the City that Kensico Reservoir will be kept to its most efficient operating level.

The Corporation will wholesale water to the counties in the Mid-Hudson subregion through one service account for each county. The Corporation will encourage and promote county water agencies to act as intermediaries between the Corporation and the local water utilities. The Corporation will promote, through any possible means, universal metering in New York City. The Counties will be responsible for allocating water and costs within the counties and for the construction of internal transmission capabilities. The Corporation will contract with New York City to insure transmission capabilities to Nassau County.

The Southeastern New York Water Facilities Corporation will design and supervise the construction of new water supply facilities. This includes by 1985.

1) Withdrawal, pumping, and treatment facilities on the Hudson River at Hyde Park
2) An aqueduct from Hyde Park to West Branch Reservoir and eventually to Kensico Reservoir

The Corporation will reach agreement with the State Department of Transportation in concurrence with the State Department of Environmental Conservation for the construction of additional capacity at Hinckley Reservoir.

The Corporation will manage, operate, and maintain the new water supply facilities in an integrated manner with the existing regional system.

The Corporation will be charged with continued planning in cooperation with the counties and New York City to meet the changing water supply needs of the Southeastern New York Region.

CALL FOR AN IMPLEMENTING AGENCY

The Southeastern New York Water Facilities Corporation must organize and begin operations very soon. To expedite its formation, it is recommended that an implementing agency with representation from services and sources areas be established. This implementing agency, to come into being on April 1, 1974, will conduct the negotiations so that the Corporation will be operational by April 1, 1975.

This implementing agency shall:

1) Provide a decision-making forum for the effected agencies
2) Carry forward the plans made by the Commission
3) Continue to develop and pursue at the state level appropriate legislation needed
4) Continue discussions with present water supply agencies, including representatives of the New York City Board of Water Supply and the Department of Water Resources, which might lead to transfers of personnel to staff the new regional authority

PHASED DEVELOPMENT

The recommended engineering projects are to be built in stages. Similarly, the regional authority can be developed, to some extent, in stages.

Key personnel, initially for the implementing agency and subsequently for the permanent agency, should be hired as soon as possible to implement the recommendations of the Southeast Water Supply Commission and to insure that action is taken immediately. The 1985 completion date for the first phase of the engineering plan is near, so land acquisition and design should begin at the earliest possible date.

It is possible that some staff of the New York City Board of Water Supply and those personnel in the New York City Department of Water Resources assigned to the City's upstate reservoir and aqueduct system might be transferred to the Corporation. Many of the personnel of the Board of Water Supply, who are experienced in the

design and construction of large-scale water supply projects, are currently involved in the design and construction of the third City tunnel in New York City. Those not involved in that project might be transferred to the regional authority to assist in the design and construction of the required facilities on the Hudson River. Neither the City's internal distribution system nor the personnel of the Department of Water Resources involved in distribution in New York City would be absorbed by the new authority.

PHASED DEVELOPMENT OF THE CORPORATION THROUGH 1985

Following is a brief outline of the necessary activities in the region through 1985.

1974 - Implementing Agency created with representation from New York City and the counties of the Southeastern New York Region and source areas. This Agency should be funded by the State. The Southeastern New York Facilities Corporation created with an effective date of April 1, 1975.

1975 - The Southeastern New York Water Facilities Corporation established and key personnel hired. The Authority should begin to update and revise the recommended plans of the Southeast Water Supply Commission. Land acquisition for the Hudson River Facilities at Hyde Park to begin. Begin design of the Hudson River withdrawal, pumping and treatment facilities and the aqueduct from Hyde Park to West Branch Reservoir. Enter into a contract with New York City to insure adequate transmission capabilities to Nassau County. Inititate universal metering in New York City.

1975 - The initiation of programs relative to conservation measures, public information and education, local projects, recharge facilities, and research.

1975 - The upstate reservoir and aqueduct facilities of New York City up to Kensico Reservoir or up to the City line in the Croton System to be transferred to the Corporation to assume operations and water sales.

1980 - Begin construction of Hudson River withdrawal, pumping, and treatment facilities on Hudson River at Hyde Park and aqueduct from Hyde Park to West Branch Reservoir. Reassess regional water needs and programs.

1985 - Complete universal metering program in New York City. Complete construction of Hudson River facilities at Hyde Park and and aqueduct from Hyde Park to West Branch Reservoir. Begin operation of new facilities in a flood skimming pattern in conjunction with existing regional system.

FINANCES

Initial Operating Funds

Funding from the State budget to staff and operate the implementing agency will be necessary.

The Southeast New York Water Facilities Corporation will require state assistance for funding in order to initiate its operations. Once the Corporation has acquired the New York City facilities and has begun to wholesale water it will discharge its State obligations. The wholesale price for water from the Corporation will be adequate to cover operating costs, payment in lieu of taxes, debt service, and the initial planning and design operations. These operating costs are shown in Table 50. Table 50 does not include salary and fringe benefit figures for an executive director or any other staff personnel, except for those persons to be transferred from the existing New York City agencies. Cost figures shown in Table 50 which relate to taking over personnel of the Board of Water Supply and those employees of the Department of Water Resources involved with operation and maintenance of New York City's upstate facilities agree in substance with those contained in a November 17, 1970, publication of the firm of Metcalf and Eddy. That report, entitled Report of City of New York on Water Rate Study, includes 1972 projected operating and maintenance costs for the City's upstate facilities of about $10 million.

New York City's existing upstate reservoir and aqueduct facilities, properties that already belong to the public, will be transferred from City administration to the Corporation. This transfer will not involve sale and purchase, but merely a change in administration. The Corporation will assume obligation for the outstanding bonded indebtedness for these facilities.

Under the regional administration, the counties and localities, including New York City, will still have control over retail sales and should not experience any loss of revenue. Those jurisdictions which received revenue from taxes on the New York City facilities will receive equal payment in lieu of taxes from the regional Corporation.

Capital Expansions

Once the Corporation moves to expand the acquired system with the projects recommended by this Commission, it will incur costs of design, land acquisitions and construction. Because design and construction efforts will have to commence very soon, these costs are rather imminent. The costs for the first phase of the recommended engineering plan would be met through the issuance of revenue bonds. The revenues to the Corporation will come from the wholesaling of water. The total coapital costs for the full development of the engineering plan is shown in Table 51.

Table 50

ANNUAL COSTS OF SOUTHEASTERN NEW YORK WATER FACILITIES CORPORATION
(IN MILLION DOLLARS)

ON EXISTING FACILITIES		
Taxes Paid (By New York City) to Upstate Municipal Governments[1],[2]	12.5	
To Acquire Staff of the New York City Board of Water Supply[3]		
Personnel Service	8.8	
Fringe Benefits	2.1	
Supplies and Equipment	1.1	
To Acquire Upstate Operating and Maintenance Staff of the New York City Department of Water Resources[4]		
Upstate Water Administration	0.1	
Eastern District	1.8	
Western District	2.9	
Debt Service[3]		
SUBTOTAL EXISTING FACILITIES		66.2
ON PROPOSED FACILITIES		
Universal Metering in New York City	8.9	
Hyde Park Floodskimming to West Branch	44.9	
Expansion of Hinckley Reservoir Sustanined Withdrawal at Hyde Park to Kensico Reservoir	27.2	
SUBTOTAL PROPOSED FACILITIES		81.0
TOTAL		147.2

[1]In Delaware, Dutchess, Greene, Orange, Putnam, Schoharie, Sullivan, Ulster and Westchester Counties.

[2]Annual Report of Bureau of Water Supply, City of New York, Environmental Protection Administration, Department of Water Resources, 1970, Table 13 Appendix.

[3]Executive Budget, City of New York, 1972-73, pp. 229-231.

[4]Executive Budget, Supporting Schedules, City of New York, 1972-73, pp. 681-688.

[5]Includes operation and maintenance expenses, taxes and debt service.

Table 51

TOTAL CAPITAL COSTS FOR NEW CONSTRUCTION[1]
(IN MILLION DOLLARS)

	Floodskimming the Hudson River to West Branch Reservoir	Hyde Park Diversion With Expansion of Hinckley Reservoir
Construction Costs		
Reservoirs	---	45.7
Intakes	7.5	---
Treatment Plants	98.7	---
Transmission Lines	254.0	182.4
Pumping Plants	31.3	4.3
Engineering and Contingencies	97.9	58.1
Land	2.7	22.0
Legal and Administrative	49.2	31.3
	541.3	343.8
TOTAL CAPITAL COSTS	541.3	885.1

[1]Proposed Water Supply Projects for Southeastern New York, Southeast Water Supply Commission, June 1,1973. Costs based on an ENR of 200.

SUMMARY OF THE PROPOSAL

A Southeastern New York Water Facilities Corporation is recommended for the region. An implementing agency should be organized by April 1, 1974. The Corporation should be created by April 1, 1974 with a deferred effective date of April 1, 1975, inoorder to provide for a period of adjustment and transition.

The Corporation would take over and operate the existing New York City upstate facilities. It would be responsible for expanding this system to meet future needs.

Operation of the distribution system in New York City would remain the responsibility of the New York City Department of Water Resources. Water suppliers on the local level would continue to construct, operate and maintain their distribution systems. They would continue to use their local sources but would turn to the Corporation through the county to meet the needs greater than the local potential. The counties will be responsible for the delivery of water to local suppliers.

The Corporation's capital costs for the design and construction of the proposed Hudson River facilities will be met through the issuance of revenue bonds. Operating costs will be met by water sales.