STATE OF NEW JERSEY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES

DRAFT

PROGRAM DESIGN

FOR THE

STATE WATER SUPPLY MASTER PLAN

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PROGRAM DESIGN

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PREFACE

The New Jersey State Department of Environmental Protection is statutorily responsible for overseeing water supply management in the State. Its duties include the regulation and allocation of the State's water resources, as well as assuring that adequate potable supplies are available to meet water demand. Another responsibility of the Department of Environmental Protection is to monitor the quality of public potable supplies. The Department of Environmental Protection seeks to play a strong leadership role in the fulfillment of these responsibilities.

A number of significant water supply decisions must be reached in the near future. Some of these decisions relate directly to the improved protection of the State's precious water resources, while others are associated with investment in new water facilities and the operation of existing water facilities. These decisions require a resource base that is not to be found today in the Department of Environmental Protection. To address this situation, Governor Byrne and the Department of Environmental Protection have secured funds from the New Jersey State Legislature to conduct a State Water Supply Master Plan, and the Department of Environmental Protection is now prepared to undertake this important effort.

Over a twenty-four month period an extensive study will be carried out to achieve a number of objectives. Long standing

issues such as the drought standards to be used for designing and operating reservoirs will be recommended. A set of desirable short and long range water supply development projects will be identified and ranked by relative priority as well. Improved management and planning will be established to keep the State Water Supply Master Plan current and implementable. This effort will basically provide for a thorough analysis of the State's water supply programs and New Jersey's water supply needs and how those needs can be met by the State and the water industry.

In order to assure as thorough and open a planning process as possible, this Program Design For The State Water Supply Master Plan has been prepared. Its function is to explain the reasons for a State Water Supply Master Plan, its goals, the benefits to be derived from the planning effort, how it will actually be carried out, and what the work tasks will be. The Program Design For The State Water Supply Master Plan will be the focus of a public hearing, where any interested party may comment on any and all portions of this document.

The Program Design For The State Water Supply Master Plan consists of two substantive parts. The first is the Plan of Study, which focuses upon the goals, organization, and management of the State Water Supply Master Plan in a general fashion. The second substantive part is the Scope of Work, which details the work tasks to be completed over the course of the Study. It

is this part, in conjunction with the Department's Request For Proposal, that will be used as the basis for technical proposal responses from consultants.

Public hearings will be held on the Program Design For The State Water Supply Master Plan. Again, the public is encouraged to comment, as this effort represents another major step in the Department of Environmental Protection efforts to protect and prudently utilize the State's water resources.

PART I.

PLAN OF STUDY

PART I. - PLAN OF STUDY

A. INTRODUCTION

This Plan of Study is a general statement describing the basis for conducting a State Water Supply Master Plan, the goals of this study, and how it will be organized. Its purpose is to explain in an explicit and thorough manner why the State Water Supply Master Plan is being developed and how it will be accomplished. Furthermore, the Plan of Study explains the policy thrust of the effort and the areas of concentration. The core of the Plan of Study is composed of in the eight sections, lettered B. through I.: the first five describe the reasons for this planning effort, and the remaining three outline how the planning effort will be managed.

Section B., Authority, describes the Department of Environmental Protection's responsibilities and its authority to conduct the State Water Supply Master Plan as the agency responsible for water resources planning in New Jersey. In the Statement of Background, Section C., New Jersey's water resources are placed into a perspective of how they are used and where some water supply problems and opportunities arise. Section D., the Purpose of the Study, details why a State Water Supply Master Plan is needed for public officials to reach

decisions on some very complex and long-standing issues. In Section E., the Goals of the Study, as well as specific, tangible objectives are identified. Section F., the Planning Program, completes the discussion of the reasons for the planning effort by explaining how the State Water Supply Master Plan will fit into a thoroughly upgraded State water supply planning and management program.

The next three sections of the Plan of Study relate to the management of this undertaking. Section G., Study Management, provides a description of how a Project Management Team will be developed within the Division of Water Resources to oversee consultants who will be selected to carry out work tasks, insure public participation, and integrate this planning effort with parallel water resources planning activities being pursued throughout New Jersey and the adjoining States of New York and Pennsylvania. The methods to be employed in developing effective liaison with interest groups and the general public are identified in Section H., on Public Participation. Finally, in Section I., on Consultants, the role, responsibilities, and selection of consultants are concisely explained.

These eight sections provide a basis for understanding what the study is about and how it is to be accomplished. They are complemented by Part II of this Program Design, the

Scope of Work which follows them and explains what the specific work activities for the State Water Supply Master Plan will be.

B. AUTHORITY

The New Jersey Department of Environmental Protection (DEP) has been assigned the duty to conduct a State Water Supply Master Plan. Moreover, DEP has the responsibility for the protection and development of the water resources of the State, under laws conferring authority to control and regulate the use, development, and diversion of all surface and subsurface waters.[1] The principle of State responsibility for planning, supervision, and allocation is deeply rooted in law and is supported by judicial decisions which have repeatedly held that the control of water resources within New Jersey resides with the State, in its sovereign capacity as representative of New Jersey's citizens for the benefit of the people in common.

Such responsibility has been vested in a series of State executive agencies, endowed with quasi-judicial powers, since 1907, when Chapter 252 was enacted, requiring State approval of plans for the diversion of surface waters in the interest of equitable allocation founded upon public necessity. The provisions of this law were extended to subsurface waters in 1910 by Chapter 304.

[1] See Exhibit 5 for statutory citations.

The name of the agency has been changed from time to time under reorganizations of State departments and the duties have been expanded, but the essential principles have remained the same. Today, as set forth in the Revised Statutes as Titles 13 and 58, The Department of Environmental Protection is responsible for formulating plans to insure the prudent allocation, development, and preservation of water supply facilities with the Water Policy and Supply Council and the Division of Water Resources being specifically responsible for the formulation of such plans.

C. STATEMENT OF BACKGROUND

New Jersey is a unique State blessed with abundant water resources. While only forty-sixth in size, it has a population of some 7.4 million people residing on 7,509 square miles of land. New Jersey is the most densely populated of the fifty states and is highly dependent upon water to support its industry, agriculture, recreation, and other fundamental services necessary to sustain life itself. While the State is in a humid region of the country and has a relatively plentiful supply of water resources, the demands that accompany urbanization and suburbanization have intensified to the point where in several regions New Jersey is presently outstripping its developed supplies of potable water.

New Jersey is practically an island. But for its forty-eight mile northern border, it is entirely surrounded by water. New Jersey has the longest coast line relative to total area of any continental State in the Union with the exception of Rhode Island. From the New York State line on the north to Paulsboro on the Delaware River in the south, the State is surrounded by salt water.

In the northern part of the State, New Jersey depends primarily on surface water supplies which are contained in rivers, streams and reservoirs. There are some five million residents in the northeastern metropolitan area of the State, residing on 2,200 square miles in the watersheds of the Hackensack, Passaic and Raritan River Basins and some minor coastal streams. In this northern third of the State, ground water development has approached an optimum level in a number of aquifers. Surface water is totally developed in the Hackensack Basin and fast approaching that level in the Passaic Basin; in contrast, the Raritan Basin is only partially developed.

There are some one hundred separate water purveyors supplying the residential, commercial and industrial needs of the Raritan, Passaic and Hackensack River Basins, the State's primary northern basins. However, some eighty percent of the water used is delivered by only eight purveyors who depend

primarily on developed surface water supplies. Four of these are private water companies, two are municipally owned, and two are commission operated.

Five of the most complex water supply problems confronting the State, particularly in the northern half of the State are: surface water development, prudent allocation and conservation, out-of-basin diversions, implementing a coordinated water transfer network system capable of responding rapidly to stresses, and maintenance of quality of treated supplies.

In the southern part of the State, New Jersey's population and industry rely primarily on ground water supplies which are drawn from the major aquifers of the area. Approximately one-third to two-fifths of the recorded water use in the State comes from underground sources.

Industry uses the greatest amount of water in the State, and actually requires more water during the drier summer months. Although agriculture requires only about 5% of the total depletive water used during a year in the Delaware River Basin, it accounts for nearly one-third of all water depletion during the summer months when surface water is least available. Moreover, for both industry and agriculture, the quality of the water, and the source location, are most important considerations.

As long as natural recharge equalled or exceeded the diversions of water all went well, but the ever increasing areas covered by hard surface continues to reduce the lands where rainfall can penetrate to recharge ground water supplies upon which all stream flow ultimately depends. Moreover, the ground water supplies in some areas are threatened or encroached by salt water intrusion or surface contaminants.

In summary, New Jersey's vast water resources have been heavily developed, and in some case abused. For the entire State, there is an urgent need to develop a water supply plan and management system where water resource use is optimized; unnecessary competition, conflict and duplication are ended; and a clear process for water supply decision-making is defined. This Plan and system would assign such responsibilities as water development, transmission, treatment, distribution, regulation, and financing to those entities most capable of responding to these respective activities.

D. PURPOSE OF THE STUDY

In addition to the reasons that have been noted, the State Water Supply Master Plan will afford decision-makers far greater understanding than is now available to address major water supply issues that are of importance to all New Jerseyites. Some of the issues to

be addressed include:

- the determination of needed water supply development projects;
- how to cease the overdrafting of major reservoir systems;
- the role of the major Federal water supply proposals affecting the Delaware or Hudson Rivers;
- the formulation of a drought emergency plans;
- the adoption of design drought standards for the determination of dependable yields from construction of future water facilities and operation of existing facilities;
- the methods of financing that should be employed for new potable supplies.

These items give but a flavor of the issues faced by the State decision-makers and the public over the next several years. And they primarily focus on either regulatory issues or water utility investment issues.

Although the responsibility for comprehensive water supply planning and development rests with the State, there is no real power to order new supplies to be developed on a timely basis nor to see that such projects are implemented. The approval power in regulating diversions is insufficient power to insure that the waters of the State are used effectively, efficiently, equitably, and with regard to needs and resource capabilities. In terms of its jurisdiction, the State cannot insure that a municipality unable to develop its own supply and without the

propsect of being supplied by other water agencies, can obtain needed water. Even were the State empowered to order purveyors to develop new supplies as needed, there does not exist today a full comparison of alternative projects that would explain to the decision-maker the social, environmental, and economic benefits and costs of each respective project.

The purpose of the State Water Supply Master Plan, then, is to identify and compare alternative options available for meeting statutorily mandated State water supply responsibilities, to develop sets of plans for meeting said responsibilities, to investigate and identify the means necessary to implement such plans, and to recommend the optimal plan(s) to insure that New Jerseyites have water in sufficient quantity and of high quality to meet their needs.

E. THE GOALS AND OBJECTIVES

The goals of the State Water Supply Master Plan can be succinctly stated as the following:

- The strengthening of the State's water resources regulation capability to protect the vital natural resource, to allocate diversion rights in an equitable and resource conscious manner, to assure that potable water supplies are of high quality, and to carry out these activities with a minimum of delay.

- The strengthening of the State's water resources development and utility operations capabilities to assure that adequate quantitites of water are made available to New Jersey residents, to place

the State's water utility operations on a self-sustaining footing, to overcome financial deficits associated with the existing State water supply facilities, and to consolidate the institutional and financial management of State water utility operations.

. The strengthening of the State's program for water supply planning to enable State policy makers to have a thorough understanding when making regulatory and investment decisions, to annually guide the State's water supply management program, and to conduct the water supply planning and management programs in a manner that incorporates public participation.

Translated into specific terms, some of the typical objectives would include:

- The formulation of conservation programs and the identification of areas within New Jersey where water resources must be protected and the means whereby this protection can be accomplished;

- The establishment of a State priority rating system for water supply development that utilizes a common and objective set of criteria to view all proposed projects;

- The development of a rationalized investment schedule based upon a priority ranking system to identify the nature, cost, and responsibility for future water supply projects;

- The recommendation of a comprehensive system for the setting and review of water fees to cover the annual costs of operating and maintaining the State's water supply facilities, service the debt associated with the facilities,

and provide a pool of capital for the development of new projects;

- The development of a computerized information system to serve as a repository for data required in the decision-making process that would be integrated with water quality and flood control information systems (e.g., the review and evaluation of applications for diversion rights);

- The formulation of a drought contingency plan and watershed resource management plans that will identify practical approaches to improving the management of surface and ground water;

These objectives are directly related to the goals of the study, although they do not represent all of the study's objectives. Rather, they identity the anticipated outputs that would assist State officials in achieving goals. These objectives will be further refined in the scope of work for the study, where they will be translated into specific work activities.

F. THE PLANNING PROGRAM

Undertaking a State Water Supply Master Plan is the most important step that can be taken to improve the decision-making capabilities of public officials. At the same time, it must be integrated in a water supply management planning system. Thus a full-fledged State planning program for water supply is required, to aid decision-makers, the water industry, and the public at large.

It is envisioned that the State Water Supply Master Plan will become an official document of the State of New Jersey, and that it will be updated from time to time. The Plan will serve as a benchmark against which major applications for diversion rights can be evaluated by the Water Policy and Supply Council. It will also serve as the clearest articulation of State policy on water supply matters to the water industry as respective parties of the water industry prepare their own plans. Finally, it will be a significant opportunity for the public to play a role in water supply management.

A State Continuing Planning Program also is required to provide an orderly mechanism for reviewing applications before the Water Policy and Supply Council and in making short-range water management decisions. Through the conduct of watershed management plans (which are presently authorized by the statutes), the implementation of an efficient information retrieval system, and the on-going preparation of water resources circulars and technical reports, the Continuing Planning Program will offer an organized body of facts which will substantially improve the ability of the regulatory parties and utility operations' units to make decisions. Moreover, the comprehensive data base will allow for the early identification of problems, especially those involving over-allocation of the limited ground water resource

and over-utilization of surface water systems.

A State Program Planning Process also will be initiated to articulate and review annual program goals, objectives, and activities in a public fashion. Through the formulation of an annual Program Plan for Water Supply Manágement, much like the one now prepared for water pollution control, it will be possible to identify the policies, programs, and resources required to achieve annual goals. Additionally, this document will act to organize human and other resources to achieve specific objectives in a timely manner. Each year a New Jersey State Program Plan for Water Supply Management would be prepared and discussed at public hearings. In this manner, an open and official planning process will be created in which all parties can debate the merits of the annual Program Plan.

These three primary elements or components of the overall State water supply planning program - a State Water Supply Master Plan, a Continuing Planning Program and a Program Planning Process for water supply management - are further compared in Exhibit 1. This planning system will substantially upgrade in-house capabilities, while also fully incorporating other levels of planning. Specifically, planning conducted by the water industry and political subdivisions of the State of New Jersey will take place within a rationalized framework. Additionally, plans of the

EXHIBIT 1

A COMPARISON OF THE THREE LEVELS OF STATE WATER SUPPLY PLANNING

	State Water Plan	Continuing Planning Program	Program Planning Process
What	A series of plans, evaluations and resource documents	Watershed plans, technical reports and water resources circulars	A strategy and policy document with criteria to guide managers and to measure progress
Who	DWR by a project manager and small staff	DWR by a program manager and staff	Division Director and key management staff
When	A major one-time effort to be undertaken immediately	An ongoing function	On an annual basis; reviewed for progress quarterly
Why	To overcome existing deficiencies and gaps in long and short planning	To provide an organized basis for day-to-day decision-making	To organize staff; to provide goals to strive against; to establish a means to measure progress
How	Using limited funds derived from the 1969 Water Conservation Bond Act	By utilizing the format developed in the State Water Plan; with the continued assistance of other agencies; in combination with a similar program required for water quality	By using key personnel and a great deal of effort, thought, enthusiasm, understanding and commitment to clearly articulate program direction for a specified time period

U. S. Army Corps of Engineers, other Federal agencies, New Jersey's sister states, and the Delaware River Basin Commission will all be in clearer focus with these improvements.

G. STUDY MANAGEMENT

The conduct of a State Water Supply Master Plan is a major understaking that requires a great degree of control, coordination, and integration on the part of the Division of Water Resources. It is the Division of Water Resources that will be responsible for expanding its staff and managing funds appropriated to support the study, hiring consultants to conduct large portions of the work, retaining professional advisors to oversee the conduct of the work, and providing a forum for public participation and review. Additionally, the Division of Water Resources will be responsible for integrating this effort with parallel efforts in the water quality management area, as well as with the water resources planning activities.

An initial step, and in many respects the foremost, will be to select a Project Manager and in-house staff to manage all facets of the study. The selected staff should be comprised of at least two professionals of recognized and diverse abilities. It is anticipated that this Project Management Team will have to evaluate and utilize the most productive conceptual and practical planning techniques available. To maximize the

returns on what will be a considerable State investment, this in-house team approach will be required.

The funds necessary to support the study will be utilized in several ways: to support the small, in-house Project Management Team; to retain consultants to conduct major portions of the study that are beyond the capabilities of the present or anticipated State staff; to assure that recommended courses of action can be translated into working tools (information systems) and legislation; and to retain noted independent, professionals to serve as advisors to the Commissioner, Department of Environmental Protection, and the Director, Division of Water Resources.

Many tasks over the course of the study will require highly specialized expertise. It is virtually impossible to attract this expertise into the State government on a full-time basis, for the short period of time required for the study. To correct this problem, it is necessary to retain consultants to conduct many phases of such planning efforts. For this particular study, a diverse array of consultants will be assembled to perform contract activities under the direction of the Project Manager.

To assist the Project Management Team in overseeing the development of the State Water Supply Master Plan, it is advisable to retain independent professionals to serve in an oversight capacity. At this time, the Division of Water Resources is in the

- The collection and exchange of information;
- The determination of public preferences and priorities;
- The development and formulation of a basis for support;
- The opportunity to anticipate conflicts and produce plans which closely resemble the public's needs, and;
- The obtaining of necessary responses and reactions to water supply planning and program activities.

It is extremely important to formulate and maintain channels of communication and to develop a keen appreciation for the complex institutional and political context within which water supply planning must be accomplished. Several alternatives can be employed to provide all segments of the body public with an opportunity to be heard and express their opinions:

- conducting periodic public meetings and conferences;
- using functional advisory groups, drawn from the public and private sectors and designed to review proposals;
- creating citizen's committees to provide advice, assistance and commentary;
- selecting liaison personnel from the governmental branches and agencies to coordinate the process, and;
- designating regional bodies to serve as points of information, distribution, and communication for the body public.

Prior to the selection of consultants, the Project Management Team will be responsible for assuring that all events associated with the study are conducted in an open and public fashion. Initially, the Water Policy and Supply Council will be used as a forum to comment on the draft Program Design for the State Water Supply Master Plan. Once consultants are selected, they will be required to identify the means whereby the public will be kept involved, in conjunction with the Project Management Team and the Water Policy and Supply Council.

I. CONSULTANTS

Consultants also will play an important role in the conduct of the State Water Supply Master Plan. While the Project Management Team will oversee the study, it will be consultants who will actually carry out the information gathering, identification of problems and opportunities, analysis of issues, and formulation of programs and plans to upgrade the management of water supply activities in New Jersey.

A detailed consultant selection methodology will be used to evaluate the study proposals submitted to the Division of Water Resources. In general, the successful consultant will be able to indicate:

- a working knowledge of New Jersey's system for water supply management and issues to be addressed over the course of the study;

- a study proposal that reflects a thorough understanding of the State's goals and approaches, as well as the organization, operational, and budgetary plans to allow for the achievement of State goals;
- substantial experience in the water supply management field emphasizing objective and innovative thinking;
- that necessary resources and experienced personnel will be assigned to the project;
- an ability to meet study objectives according to schedule, and;
- insights as to how the study will be conducted, the manner in which the public will be involved, and how this study will be integrated with parallel planning efforts and activities.

It will be the responsibility of the Project Manager from the Division of Water Resources to monitor the activities of consultants. He will be the contact point for all consultant inquiries and will be responsible for providing ongoing guidance. Any alterations to the agreed upon schedule for study completion must be made in writing by the Project Manager to the consultants. Any schedule alterations requested by consultants will also be made in writing directly to the Project Manager. Accordingly, payment to consultants will be associated with the delivery of outputs and these outputs are to be defined in writing through consultant contracts.

It is anticipated that the consultant selection process will require each consultant to submit a technical proposal and a separate sealed budget proposal. A selection committee within

the Department of Environmental Protection will review the technical proposals against a specified set of criteria, and select one or more of the most qualified firms without touching the sealed budget proposals. Those firms selected will be required to make an oral presentation to the selection committee. After the oral presentations, the budget proposals of the remaining qualified firms will be opened. Final selection will be based upon technical proposal, oral presentation and budget considerations. The budget proposals of firms not selected for interviews will be returned with the seals unbroken.

P A R T II.

S C O P E O F W O R K

PART II. - SCOPE OF WORK

A. INTRODUCTION

Part II of the Program Design for the State Water Supply Master Plan consists of the Scope of Work, which is a detailed portrayal of how this plan will be carried out. In addition to this introduction, there are four important sections which comprise the Scope of Work: an Overview, the Contract Tasks, a Schedule of Performance and Outputs, and the Responsibilities of the Department of Environmental Protection and Consultants.

In the Overview, Section B., the conceptual approach to the work effort is described. This section provides a framework for associating the actual contract activities with policy goals and a perspective regarding the Division of Water Resources' view on how the study process is to be focused.

The Overview is followed by the most crucial section of the Scope of Work, the Contract Tasks which appears as Section C. In the Contract Tasks section, the detailed work activities are enumerated and grouped. It is this section that explains precisely what is to be done over the twenty-four month study period. Additionally, it provides a basis for consultants to prepare proposals that will describe their methodological approaches and anticipated resource allocations. It is anticipated that this section will also be used as one of the bases in determining contracts with consultants.

Following the Contract Tasks section comes a section on Schedule of Performance and Outputs. This provides overall time perspective and tentative time periods for the performance of each major contract activity. The Schedule of Performance and Outputs element also describes the responsibilities of the consultants regarding the preparation of draft and final reports.

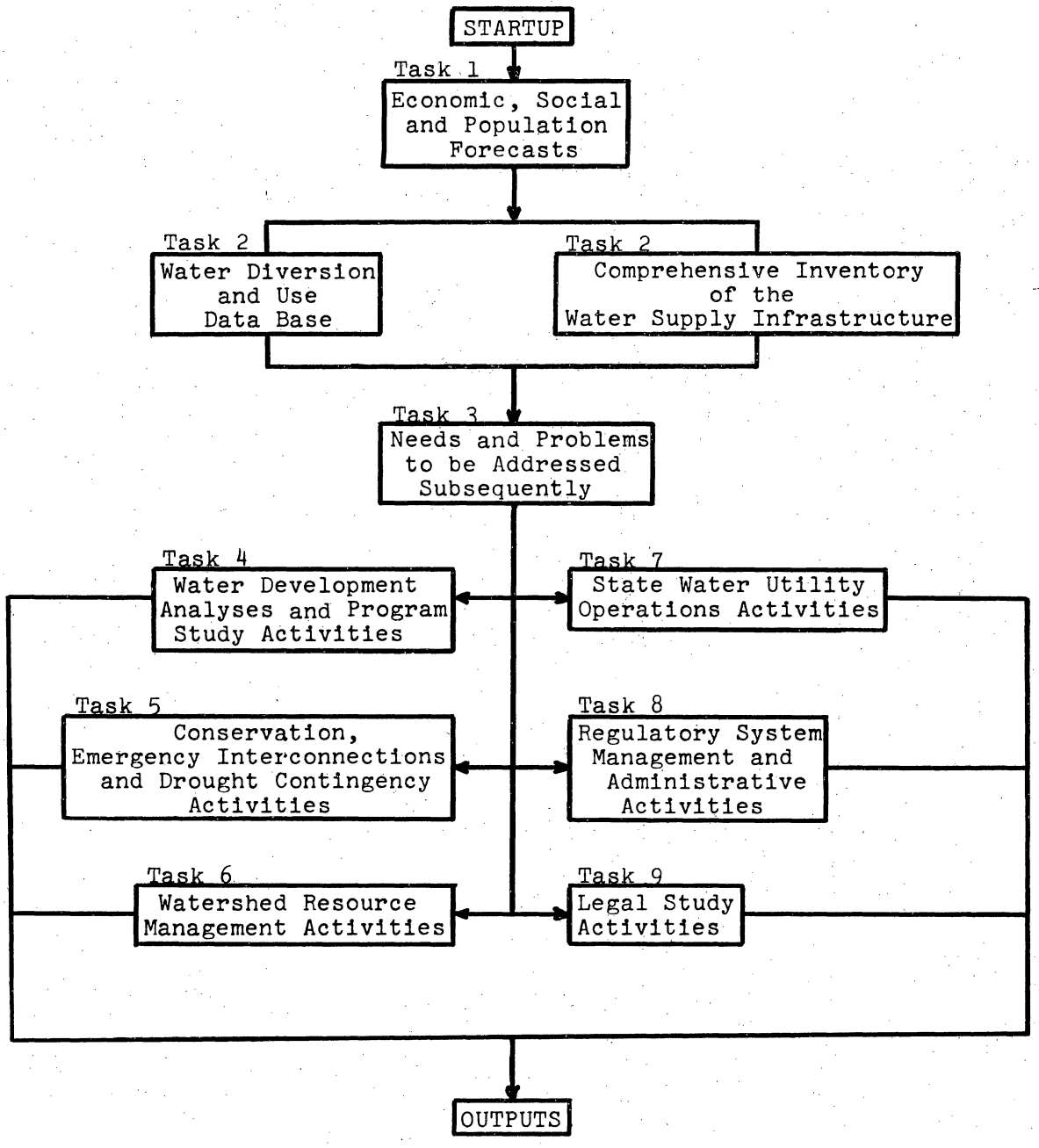
The final section of this Scope of Work is the Responsibilities of the Department of Environmental Protection and the Consultants. It describes the duties of the Department to the consultants over the course of the study. Also, it explains how the consultants are to organize and relate their efforts with those of the Department and other interests.

B. OVERVIEW

The Scope of Work is organized in a manner that constantly assists public officials, interested parties, and potential contractors to focus upon how the contract tasks fit into the State's water supply management program and precisely how the intended outputs are to be used. Two important functions are to be accomplished by this study through the performance of a total of nine major tasks which appear in the Flow Diagram of the Contract Tasks, Exhibit 2. First, an information base is to be created that will upgrade the resources which contribute to decision-making. A series of policy determinations, resource

EXHIBIT 2

FLOW DIAGRAM OF THE CONTRACT TASKS FOR THE SCOPE OF WORK



Note: Tasks 1 through 9 are discussed in detail in Part II, Section C, Contract Tasks.

tools, and areas for detailed investigation will emanate from this effort (See Tasks 1, 2, and 3). Second, a series of detailed studies are to be conducted which will result in specific plans that will become the foundation upon which water supply management programs will be conducted in the future. Typical outgrowths of these study efforts include: a Water Supply Development Plan; Conservation, Emergency Interconnections and Drought Contingency Plans; Watershed Resource Management Plans; and a State Water Utility Operations Program Plan (See Tasks 4, 5, 6, 7, 8, and 9).

Referring again to Exhibit 2, it is instructive to gain a general appreciation for the contents of nine contract tasks. In Task 1, population forecasts will be developed and their implications with regard to water supply will be discussed. In Task 2, a detailed inventory will be performed of water supply systems, water diversions and water use which will result in the assembly of a Water Diversions and Use Data Base, the preparation of a Comprehensive Inventory of Water Supply Infrastructure, and the analysis of the pressing policy issues concerning selection of a design drought standard (Task 2). With this information at hand, it will be possible to identify what water needs will be for the future. Additionally, it will be

possible to identify any alterations in the subsequent studies based upon previously unforeseen opportunities or problems (Task 3).

In the remaining tasks of this study effort (4 through 9), the focus shifts to the conduct of six distinctly separate plans which individually aim at improving the operational aspects of the particular functional area it analyzes and which jointly will form the basis for the future conduct of the State's water supply management program. Collectively, these six study tasks represent the primary components of the State Water Supply Master Plan.

In Task 4, all possible water supply development alternatives will be assessed to indicate the yields, costs, environmental consequences, conservation opportunities, social impacts, and legal issues associated with respective projects. The final outputs will be a water supply development plan that will rank projects on a priority basis and compare alternative water supply development programs to meet New Jersey's future needs.

To improve the manner in which physical systems or infrastructure are operated during emergency periods, Task 5 contains work elements which provide for the updating of the interconnections between major water purveyors' systems, the establishment of backup plans in the eventuality of a major system failing, the development of a drought contingency plan, and the delineation of a plan for

water resource conservation. This task will be conducted because the State needs the capability to respond to a number of situations. One is the occurrence of a sudden or severe drought, where sets of alternative plans or courses of action would be identified to minimize adverse consequences. Another situation is where one or more major supply(ies) would fail with the need for back-up capabilities being essential. Fundamentally, this study would foster improved management and flexibility of the physical water supply system in New Jersey. It will also focus on how water can be conserved through improved management of the physical system, as well as non-structural programs such as pricing.

The complexity of issues inherent to most important applications for diversion rights, which have exceeded the resource base available to assist in decision-making, will be the focus of Task 6. There is an urgent need to upgrade and organize the data base for analyzing particular issues, developing analytical tools such as ground water predictive models to assist in clarifying cause-effect relationships, and organizing a framework within which individual applications can be viewed. For these reasons, watershed resource management plans will be developed to identify water budgets for principal streams in New Jersey, create the analytical tools to assist in decision-making, and

formulate specific conservation measures and programs.

Task 7, a management study, will be conducted to improve the posture of State water utility operations. This study will propose the proper institutional form for the management of State water supply facilities, develop the method whereby new projects will be financed, and identify the steps necessary to place the operation of existing and new facilities on a self-sustaining basis. The State water utility operations plan will be one of the most crucial outputs of this entire effort.

New Jersey State statutes mandate the Department of Environmental Protection to assume the leadership position in water supply management. An upgrading of the current regulatory program will be required to review and implement many portions of the State Water Supply Master Plan. Joint policies and procedures between the Department of Environmental Protection and the Public Utilities Commission will need to be advanced, as will a more timely review process by the Water Policy and Supply Council. Similarly, the Division of Water Resources will be required to upgrade its ability to support policy determinations and enforce regulations. These administrative activities and others will be conducted in the regulatory system management and

administrative plan which is Task 8.

A number of outstanding legal issues will be addressed in Task 9. A typical item for analysis would include New Jersey's rights to freshwater from the Hudson River and how rights might be obtained. Some legal issues are incorporated directly into the particular study area where they have an impact. However, a few do stand out as general legal issues, and they will be addressed in the Legal Study component of the Plan.

Out of these final six study tasks will emerge a series of outputs or plans. They will present the options available to decision-makers, complete with an identification of necessary legal, technical, administrative, and fiscal alterations. From the alternative options, decision-makers will have an ability to choose the proper course of action for New Jersey to follow, have the documentation to support their selected course, and implement the needed alterations to New Jersey's water supply management system at an operational level.

C. CONTRACT TASKS

To assist the public in understanding this study and to aid consultants in formulating their proposals, the nine contract tasks comprising the State Water Supply Master Plan are described in detail in the paragraphs below. Each unit of work or task is intended to include all studies, research, computations and

conferences required to complete the assigned work and preparation of draft and final reports as provided in the Schedule of Performance and Outputs, Exhibit 4. The contractor is encouraged to use his judgment, expertise and initiative in accomplishing the prescribed work for this planning effort. In each of the nine tasks, particular attention will be given to reporting clearly any assumptions made, the basis of the assumptions, the basis for any projections used and any methodology utilized. Data and tabulations will be presented so as to indicate clearly and explicitly the Contractor's approach to the analysis and to allow other interested parties to recover all basic inputs for application in independent analyses. A list of reference materials and sources used will also be prepared in standard citation format for each contract task.

TASK 1. Economic, Social and Population Forecasts

Utilizing State planning agencies and the State Office of Business Economics as basic sources, the Department will develop projections of future populations and economic growth for counties, major water supply service regions and the total State. These Department forecasts will be compared with those of county, regional, and Federal agencies, as well as those of individual water purveyors, to refine projections and indicate areal trends. Careful attention will be given to explaining the assumptions and methods utilized in formulating projections.

Projections for 1980, 1985, 1990, 2000, 2010, and 2020 will be furnished to the consultant for three levels of growth including probable high, probable low and most probable trends series. Parameters to be used should include, but not be limited

to: population and households, personal income, employment (total and water-using industries), gross national product and energy consumption.

The consultant will be responsible for analyzing the implications of this data with regard to water supply planning issues and problems.

TASK 2. Inventory of Water Supply Systems, Water Diversions and Water Use

An accurate, comprehensive, understandable data base represents a fundamental element of the State Water Supply Master Plan since most of the subsequent study tasks will draw upon this body of information as a starting point and the substanative basis for analysis.

a. Survey existing water supply systems and service areas to establish a comprehensive inventory of water supply systems in New Jersey. For each water system the inventory is to include but not be limited to the following specific items: diversion rights or grants, pumping stations, reservoirs, treatment facilities, quantities of water wholesaled, quantities of water retailed, individual wholesale and retail customers, retail and wholesale price schedules, safe yield limitations and stream flow requirements. Data should be assembled on a priority basis beginning with the largest purveyors where the effort should be highly individualized, and descending in level of detail to the smaller purveyors where forms or questionnaires would be used. Internal mechanisms should be developed to validate the accuracy and consistency of the data. A by-product of the water systems inventory should be a capital needs survey for water supply facilities throughout New Jersey. By category, the survey should include reservoirs, treatment facilities, interconnections, transmission mains, and distribution systems. Distinguish between existing needs and future needs, with specific attention being given to determining the rehabilitation costs for the major urban water systems.

b. Using available data from the Division of Water Resources (including the Northeast Metropolitan WQM Study) and the National Pollutant Discharge Elimination System, and supplemented by generated data when necessary, assemble a comprehensive body of water use data. Differentiate the following use classifications by purveyor, system or user:

- Source of water - either surface or ground
- Nature of use - public, private (regulated) or private (non-regulated)
- Treated from non-treated supplies
- First use from reuse situations
- Type of use - residential, commercial, industrial and agricultural

c. Compile and present information gained from these inventories into cogent, and understandable maps; figures; charts; tables; and narrative descriptions, analyses and interpretations. In particular, perform the following work items:

1) Analyze the economic, legal, environmental, and engineering issues related to the selection of a design drought, imposing withdrawal limits on reservoir yields, and establishing minimum stream flows. In particular, evaluate the effectiveness and impacts of requiring minimum freshwater flow requirements for the major river systems in New Jersey, and the statutory minimum flow requirements for Round Valley-Spruce Run. Prepare these findings into a series of options for public officials responsible for making a decision.

2) Develop detailed maps which depict interconnections and transmission facilities, utilizing the 1943 Interconnections Map and the Northeastern Water Supply Study as a point of departure.

3) Evaluate the adequacy of the existing state information system for water supply data. Through the process of conducting the inventories test out the effectiveness of any proposed revisions to the information system. When or if a revised information system is produced, evaluate the necessity, benefits and costs of computerization. If recommended, develop a set of specifications which would provide for the development of a computerized information system for water supply which would be compatible with New Jersey's water quality information system.

4) Document deficits and deficiencies among individual purveyor systems or areas of need in the immediate future (through 1990).

TASK 3. Needs and Problems to be Addressed Subsequently

a. Water needs forecasts shall be developed based upon population projections prepared in Task 1 above and other considerations. Projections shall emphasize needs in the next 10 to 20 year period; incorporate the concept of load center analysis; and envelop of probable maximum, probable minimum and expected demand needs for 1980, 1985, 1990, 2000, 2010 and 2020.

b. Identify, explain and summarize issues and problems resulting from the work performed in Tasks 1 and 2.

TASK 4. Water Development Analyses and Program Studies

An essential ingredient of the plan is the analysis of all available alternatives to meet the State's Water Supply needs. The contract activities in this area, which will result in establishing realistic programs and schedules for development are discussed in the following items:

a. A primary component of the State Water Supply Master Plan is a comprehensive and detailed analysis of all major water supply development projects. Each potential project is to be evaluated against a common set of criteria which may reflect differences in objectives for different project situations. General approaches to be considered will include:

. programs to conserve water;

. programs for the improved and coordinated management of existing (or future) projects;

. flexibility of projects to meet a variety of future conditions;

. evaluation of the phase development potential for individual projects or programs of projects;

EXHIBIT 3. PARTIAL LIST OF ALTERNATIVE WATER DEVELOPMENT PROJECTS

Specific Projects

- Round Valley Outlet Pipe
- Confluence Reservoir, Pump Station and Force Main
- Six Mile Run Reservoir
- Raise dams and dikes at Round Valley
- Upper and Lower Manasquan Reservoirs
- Raritan-Passaic Pipeline
- Delaware-Raritan Pipeline
- Raritan-Delaware Pipeline
- Delaware River Development Projects
  - Tocks Island
  - Direct diversion with storage in the Delaware at Flat Brook, Honey Run and Musconetcong
  - Direct diversion with storage in the Raritan and Passaic Basins
- Two Bridges Reservoir
- Crab Island Reservoir
- Hudson River Development Project
  - Pipeline to Little Falls for continuous skimming
  - High flow skimming with storage in New York State and in-channel flow to Little Falls
  - High flow skimming with storage in the Passaic Basin via pipeline to Little Falls
- South Jersey Ground Water:Wharton Tract Dev. & saltwater intrusion
- Little Falls - Oradell Pipeline or Wanaque-Oradell Pipeline
- Washington Valley Reservoir
- Longwood Valley Reservoir
- Two Bridges-Wanaque Pump Storage
- Raise Delaware & Raritan Canal to 100 MGD Capacity
- Wallkill diversion to the Passaic

Generalized Projects

- Making maximum use of existing reservoirs and transmission facilities through importation and pump storage projects which would expand safe yield.
- Groundwater recharge schemes for treated wastewater effluents by deep well injection, recharge basins and spray irrigation.
- Industrial reuse of second class water recovered from wastewater treatment plants.
- The advisability of continuing or revising the current State policy of transmitting raw water supplies inchannel, with particular focus on the impact to the quality of the water, emergency situations and conservation needs, and long term treatment costs.
- Evaluate the opportunities available to encourage the use of the Delaware and Raritan Canal for base load purposes in order to raise annual average use of this facility. Examine how pricing policies, substitution of supply, or conjunctive management opportunities of the various users could facilitate the achievement of this objective.

distinct programs which would meet future water needs through 2020, with emphasis on the next 10 to 15 years. Programs should be rigorously compared and evaluated with regard to their specific characteristics, their adaptability to changing conditions and other criteria. Again, presentations shall be made in a manner which will facilitate understanding on the part of policy makers and the lay public.

f. Formulate schedules for the implementation of the most promising water development programs. Also discuss necessary implementation arrangements.

TASK 5. Conservation, Emergency Interconnections and Drought Contingency Activities

a. Formulate and evaluate the impact and significance of programs which foster conservation of the State's most precious natural resource. Specific areas to be examined, but not limited to, are:

- water saving devices, their application and their forced utilization through modifications to building code;
- location of industries to maximize use of salt and brackish waters;
- industrial water savings through recirculation of process or cooling water;
- reuse of wastewater effluents for potable purposes in freshwater areas;
- reuse of wastewater for agricultural purposes;
- reuse of wastewaters as a second class of supply in industrial or brackish-water areas;
- reuse of discharged ground waters;
- effectiveness of metering programs;
- land use and development controls;

- rehabilitation of distribution systems to reduce leakage;

- institution of inverted bulk pricing policies, and;

- forced rationing through selective load shedding, reduction in pressure, or other means during periods of great stress.

b. Evaluate transfer capabilities of major interconnections and develop emergency interconnection plans and drought contingency programs to guard against the selective and general disasters.

1) Analyze the safety and stability of water supplies of major purveyors. Evaluation criteria might include but not be limited to: growth of demand, alternative sources available to be developed, interconnections, and susceptibility of existing sources to contamination or pollution.

2) Analyze the ability of individual systems to back up other water supply systems on both an emergency and a long-term basis.

3) Identify situations where interconnections and transmission facilities should be rehabilitated, upgraded or newly constructed. Determine the cost and relative priority for each situation.

4) In the case of a drought, a phased program of measures should be developed which should respond to prearranged indicators of the severity of the drought. Among the measures to be considered are: the orderly institution of conservation measures through load shedding and reductions in water pressure; emergency pricing schemes; and the planned utilization of resources which are normally dedicated to other uses (i.e. Lake Hopatcong, Greenwood Lake and legislatively mandated minimum stream flows).

5) Incorporate recommended infrastructural alterations into a series of management programs for contingency situations. Individual programs should include combinations of conservation, structural alterations and non-structural approaches.

TASK 6. Watershed Resource Management Activities

a. Develop the contents, methodology and procedures for the conduct of watershed resource management plans in a manner to insure compatibility with federally mandated water quality management basin plans. The principal outputs of such plans shall be hydrologic water budgets for surface streams and ground water aquifers, respectively. These plans shall upgrade and organize the data base for review of particular water resources diversion issues, producing an orderly framework within which individual applications can be viewed. Also, the impact of water reuse potential caused by wastewater releases to freshwater streams is to be carefully evaluated.

b. Prepare watershed resource management plans for the surface waters within a minimum of five basins to be selected by the Department of Environmental Protection.

c. Identify practical approaches to improving the efficient utilization of surface water resources available to be diverted. Particular items for consideration include the feasibility of withdrawing water at higher rates during high water periods, the conjunctive management of surface and ground waters, and specific conservation measures and programs.

d. Prepare a program for the investigation and management of ground water in New Jersey, taking full advantage of investigations conducted by the Division of Water Resources and its predecessor agencies; the United States Geological Survey, and the Delaware River Basin Commission. Among the topics to be covered are:

- formulation and development of guidelines for ground water management;
- inventory of the degree and extent of ground water pollution problems and contamination;
- documentation of regions where ground water tables are stressed by existing levels of withdrawals;
- evaluation of the existing ground water monitoring programs and the relationship of ground water withdrawals to stream flow;

- establishment of priorities for subsequent detailed ground water investigations with an emphasis on activities that will lead to improved regulatory diversion decisions;

- in specific problem areas, development of solution oriented strategies which might include time related studies, hydrologic models, or scopes of work for subsequent investigations.

TASK 7. State Water Utility Operations Activities

The contract activities, relating to the institutional and financial management of State Water Utility Operations, that need to be addressed are:

a. Using the framework provided by the County and Municipal Government Study Commission's report, Water Supply Management in New Jersey, analyze the alternative forms of institutional management that might be utilized in the future to establish an independent, self-supporting State water utility. Carefully outline the political, legal, and economic consequences of each option, as well as the constraints that should be placed upon each option were it to be implemented. The objective in carrying out this work activity is to establish the optimum organizational arrangement for implementing water development plans, thus necessary legislative alterations shall be identified.

b. Recommend the means whereby the State water utility operations can be managed on a self-supporting basis.

1) For existing State owned water facilities, establish the means whereby:

- a standard utility accounting system can be implemented;

- water fees generate revenues sufficient to meet statutory requirements, and;

- reserves can be established and sustained for deferred maintenance and minor capital improvement.

2) After detailed analysis of alternatives, recommend an approach for generating a front end source of capital to finance future State water development projects in the early years when expenses generally exceed revenues. Give particular attention to the Beneficiary Insurance Fee concept.

3) Analyze in detail the alternative approaches for financing future State water development. Specifically, examine these options:

   . continued utilization of general obligation bonds with capital cost recovery requirements;

   . the use of revenue bonds with user fees being the means whereby capital costs would be recovered;

   . the use of revenue bonds with a revolving fund that would provide a pool of capital for the front-end costs of water development projects.

4) Conduct a full and thorough analysis of the alternative approaches available for pricing water developed from future State projects. Specifically, examine the following alternatives:

   . a uniform price for all newly developed State water;

   . project-by-project pricing of water, and;

   . the feasibility of including existing water sold by the State into a uniform or rolled in pricing system.

TASK 8. Regulatory System Management and Administration Activities

The administrative process and the regulatory programs and procedures represent two of the most important elements in the water supply planning and management process. The quality of the water delivered to the final user, and the rates charged by private purveyors cannot be realized without effective regulation of the natural resource.

The contract activities designed to enhance the water supply administration structure and regulatory program are:

a. Perform a detailed accounting of the Water Policy and Supply Council's legally mandated functions, as well as those of the Division of Water Resources. From this analysis, segregate the quasi-judicial functions from those that are of an administrative nature (such as planning). Provide a realistic projection of the time that will be required for the Water Policy and Supply Council to carry out its quasi-judicial responsibilities in processing applications for water supply diversions.

b. Develop a detailed set of regulations to govern the operations and procedures of the Water Policy and Supply Council. This would specify the requirements for all applicants, as well as the procedures that must be followed by the Water Policy and Supply Council in reviewing and evaluating applicant's proposals.

c. Analyze the existing statutory and program relationships between the Public Utilities Commission and the Division of Water Resources. Develop regulations to require a common set of reporting requirements for use by both agencies. Also, develop a proposed set of principles that could be used by the Division of Water Resources in the event that the Division wished to take a public stance on purveyors' applications for rate increases.

d. Establish the procedures for the review and adoption of water supply plans developed by regional and other water purveyors. Additionally, develop the process whereby the State Water Supply Master Plan could be amended from time to time.

e. Conduct an analysis of the North Jersey District Water Supply Commission - Hackensack Water Company proposal to develop a high-flow skimming project at Two Bridges.[1] This analysis should emphasize the ingredients necessary for an objective and comprehensive review of the proposal by the Division of Water Resources and the Water Policy

[1]This application for diversion rights may be submitted before the State Water Supply Master Plan is initiated, thus making this investigation a task for early completion.

and Supply Council, and is to be used as a model for the review and evaluation of future proposals placed before the Water Policy and Supply Council.

f. Develop a regulatory and administrative program for dealing with the water quality, service, and financial problems of small water companies. This program is to consider factors including interconnections, backup supplies, institution of a cooperative program for regulation of these small water companies by the Division of Water Resources, the Department of Community Affairs and the Public Utilities Commission, and the means whereby their proliferation can be controlled.

g. Analyze the State's potable water monitoring, surveillance and enforcement program and identify the alterations which must be made to meet the requirements of the Federal Safe Drinking Water Act.

h. Identify the procedures that the State will emply to cause necessary water treatment facilities to be constructed as required. Include in this analysis the consideration of expanded legislation to reinforce existing regulatory powers, the advisability of a construction grants-in-aid and loan program, and the use of State funds to accomplish these ends.

i. Analyze the principles upon which the fifteen (15) major purveyors have developed their pricing systems. Attempt to associate the price of water with various cost ingredients such as raw water costs, cost of treatment, and costs of distribution. Also, examine the feasibility and practicality of establishing a bulk rate transfer fee or standard charge for wholesale water transferred through interconnections. Consider a fixed uniform fee, specified ratchet schedules, sliding schedules and others.

j. Recommend a revised set of water-related fees to generate revenues sufficient to cover the costs of water supply administration and regulation.[1] Specifically:

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[1]This fee analysis may be developed before the State Water Supply Master Plan commences.

1) Develop a simplified set of application fees that cover the costs of the hearings and administrative efforts required to support the Water Policy and Supply Council in its review of applications;

2) Expand existing surface water diversion fees into a comprehensive set of general diversion fees that would be required for the use of both surface and ground water.

3) Describe the impacts of various water fee alternatives on individual and wholesale water users, as well as the steps that would have to be taken with the Public Utilities Commission to allow these general diversion fees (but not penalty fees) to be passed through to users;

4) Propose the nature of economic deterrents for overdrafting surface or ground water supplies, as well as depletion of statutory minimum flows.

TASK 9. Legal Study Activities

The State of New Jersey has gradually and surely become the guardian and allocator of the State's water. Water supply management has been a major State function for years and remains a pressing problem because serious legal questions need to be resolved.

Although additional legal issues are incorporated directly in other study areas where they have an impact, the following legal contract activities are to be addressed:

a. Examine the prospects for New Jersey gaining access to water rights on the Hudson River, with emphasis on the feasibility and practicality of a U. S. Army Corps of Engineers sponsored demonstration project to achieve this end. Additionally, analyze other means whereby New Jersey might gain a significant yield of water and provide recommended approaches.

b. Evaluate New Jersey's legal rights to Delaware River water, focusing upon how those rights might result in a large Delaware River diversion into Northeastern New Jersey. Determine the specific means whereby a large diversion could come about if the Tocks Island Lake Project is not implemented. Particular attention should be given to the Comprehensive Review Study of the Tocks Island Lake Project and Alternatives presently

being conducted by the U. S. Army Corps of Engineers where this question is being addressed from a slightly different position at the instruction of the U. S. Congress.

c. Identify the constituent elements of a comprehensive diversion rights law for surface and ground water.

d. Analyze the feasibility of allowing political subdivisions of the State of New Jersey to reserve diversion rights into the future.

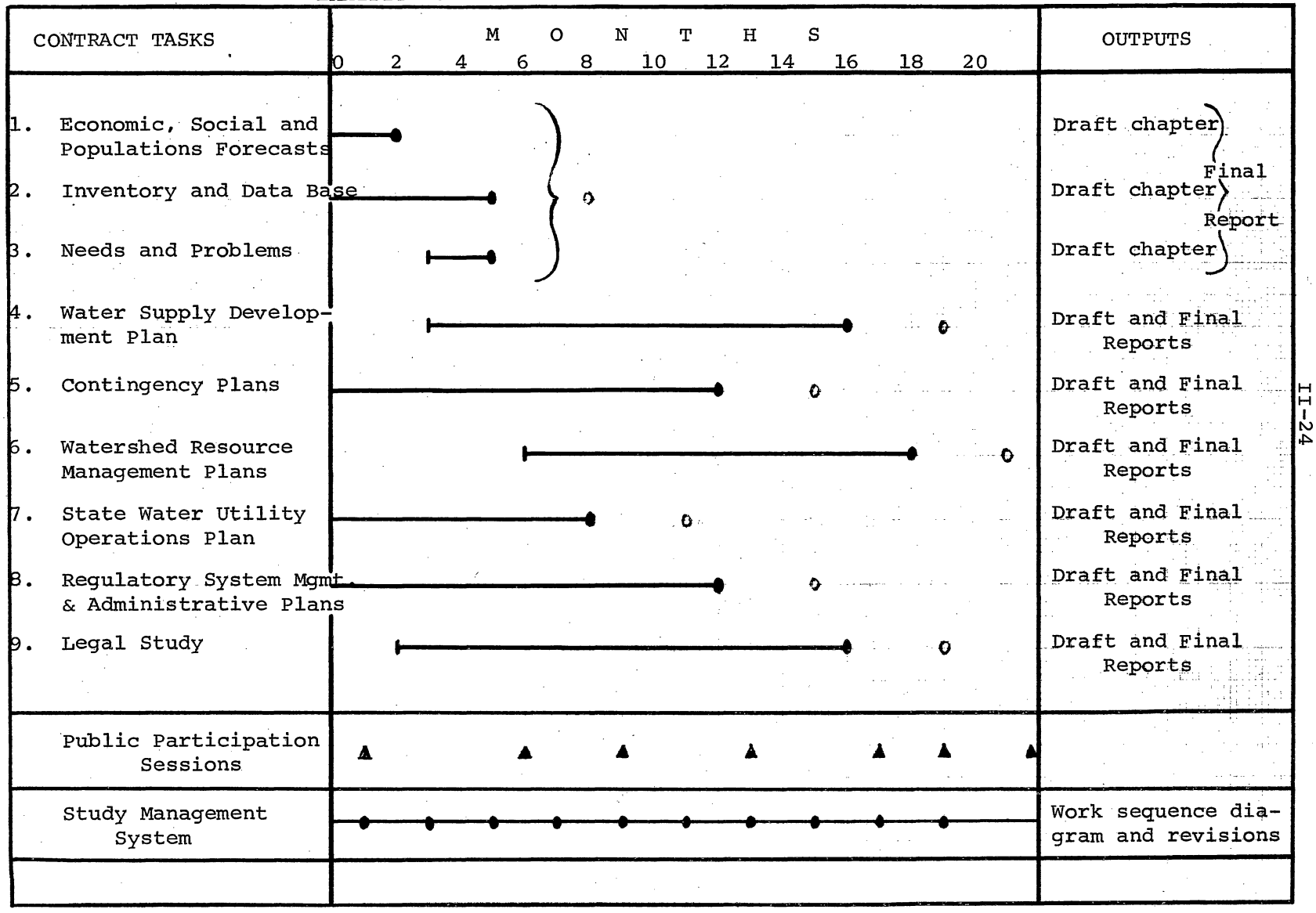
e. Analyze the significance, extent and impact of ground water "grandfather" diversion rights, as well as direct Legislative grants. Describe and discuss the legal, economic, technical and environmental impacts of maintaining or eliminating "grandfather" rights.

D. SCHEDULE OF PERFORMANCE AND OUTPUTS

As explained in the Overview, portions of this study will be completed earlier than others. Further, it is the Division of Water Resources' goal to complete the entire draft study within eighteen months, with the final report being completed three months later, and subject to a three month review period. This total time period for the study from the date consultants are retained is twenty-four months.

The schedule of performance and output as a function of the major study work tasks is depicted in Exhibit 4. The initial output will be a comprehensive information base to be utilized in other areas of the study. It will be completed in draft form after five months. Out of this effort should come an early output, that being the selection of a design drought standard for the construction of future reservoirs and operation of existing reservoirs.

EXHIBIT 4. SCHEDULE OF PERFORMANCE AND OUTPUTS



KEYS: ● Draft Output; 0 Final Output

Also, inventories of water supply systems, water diversions and use, and a refined definition of particular issues and problems for subsequent study will be available at that time.

A thirteen month study of alternatives to meet water supply demand will result in a Water Supply Development Plan. It will be initiated at the end of the third month and continue through the end of the sixteenth month, thus allowing some time for general data gathering and organization prior to the starting day. A final report will be prepared by the end of the nineteenth month.

From the beginning of the study through the end of month twelve, the Conservation, Emergency Interconnections, and Drought Contingency Plan will be conducted. A final report will be ready at the end of the month fifteen.

Watershed Resources Management Plans will be developed between months six and eighteen. The final report will be completed at the end of the twenty-first month.

The State Water Utility Operations Plan represents an early output because of the pressing need to reform the existing situation. This effort will be launched at the outset of the planning effort and is to be completed at the end of month eight. A final report will be presented at the end of month ten.

Regulatory System Management and Administrative Plans are also to be initiated at the outset of the study. They will be completed in draft form at the end of month twelve. It will be a final report at the end of month fifteen.

The Legal Studies will be conducted between the beginning of month two and the end of month sixteen. It will be finalized at the end of month nineteen.

Throughout the course of the study, the Study Management Control System (work sequence diagram and associated cost accounting system) will be updated at least bi-monthly. Also, numerous public participation sessions are scheduled over the study period with each one except the first introductory session focusing on a draft report output of the study. All outputs are to be prepared as draft reports for the particular study tasks. These will be for review purposes. In three months, final reports will be prepared to stand as final outputs. Finally, a three month period has been allowed at the end of the study, months twenty-two through twenty-four, for review of the entire study by policy officials, interested parties and the public.

E. RESPONSIBILITIES OF THE STATE AND THE CONSULTANTS

Both the Division of Water Resources in the Department of Environmental Protection and the selected consultants have a number of responsibilities that are closely related. After the

consultants for the State Water Supply Master Plan are selected, the metes and bounds of responsibilities are to be firmly established. This section provides a general framework upon which final responsibilities are to be based.

It will be the responsibility of the consultant to utilize all applicable data and studies from Federal and State agencies, county and municipal governments, and water purveyors. All of these agencies and studies stand as resources to be drawn upon throughout the performance of the New Jersey State Water Supply Master Plan. Some of the more important references are listed in Exhibit 5.

Once consultants are selected, they will be responsible under supervision of the Project Management Team, for developing a work sequence diagram (or CPM) that details the active work effort by sub-activity, thus providing a tool for monitoring progress. This activity, which is designed to refine the scope of work and provide a basis for cost accounting, should include a detailed format for the public participation requirements associated with the study. Finally, the CPM diagram should allow for compatibility if multiple consultants are selected and should be computerized by the Department, to facilitate any alterations that must occur.

EXHIBIT 5. BIBLIOGRAPHY

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N.J.S.A. 13:1D - 1 et seq. General Department of Environmental Powers.
N.J.S.A. 13:13 - 1 et seq. Delaware and Raritan Canal.
N.J.S.A. 58:1 - 1 et seq. State Water Policy Commission
N.J.S.A. 58:2 - 1 et seq. Payment to State for Waters Diverted.
N.J.S.A. 58:4A - 1 et seq. Subsurface and Percolating Waters.
N.J.S.A. 58:5 - 1 et seq. North and South Jersey Water Supply Districts.
N.J.S.A. 58:20 - 1 et seq. Round Valley Reservation.
N.J.S.A. 58:21 - 1 et seq. Spruce Run Reservation.
N.J.S.A. 58:21A - 1 et seq. Manasquan and South River Reservations.
N.J.S.A. 58:21B - 1 et seq. Additional Water Supply Site Reservations.
N.J.S.A. 58:22 - 1 et seq. State Water Supply

Monthly meetings will be held between the Project Management Team and consultants, as a minimum requirement. Monthly progress reports will be submitted by the consultants to identify areas of progress and opportunities, as well as unanticipated problems that may force a refocusing of a portion of the study.

Prior to the initiation of this master plan study, the Project Management Team and consultants will define a series of outputs, each one of which will become a draft chapter. Upon acceptance and approval of a draft chapter (or other identifiable and agreed upon outputs) payments will be made to consultants. Draft chapters also represent a basis for formal presentations and are to be utilized for this purpose.

It will be the responsibility of the Project Management Team to secure time of the Commissioner, Department of Environmental Protection, and Director, Division of Water Resources, for exchanges with the consultants. Additionally, the Project Management Team will make every effort to assist the consultants in arranging meetings with public and private officials.

The Division of Water Resources Project Management Team will consist of a Project Manager, who will serve as the official contact point in the Division of Water Resources, and a small staff. The consultants will designate an Officer-in-Charge, a Project Manager, and Project Leaders. It will

fall to the Officer-in-Charge to be responsible agent of the study consultant to the Department of Environmental Protection in satisfying contract requirements and the quality of work. It is expected that the consultant's Project Manager will handle the day-to-day supervision of the study for the consultants and will be responsible for reporting to the Division of Water Resources and keeping the study on course. Project Leaders will be responsible for performing contract activities, preparing reports, and coordinating the study team. The Division of Water Resources Project Management Team and the consultants are to establish their formal working relationship at the outset of the study.

It will be the duty of the Project Management Team to review the format for draft and final reports, as well as the number to be produced and the manner in which they will be reviewed, approved, or disapproved, and circulated. In conjunction with the Project Management Team, the consultants will prepare a tentative outline and table of contents for the study.