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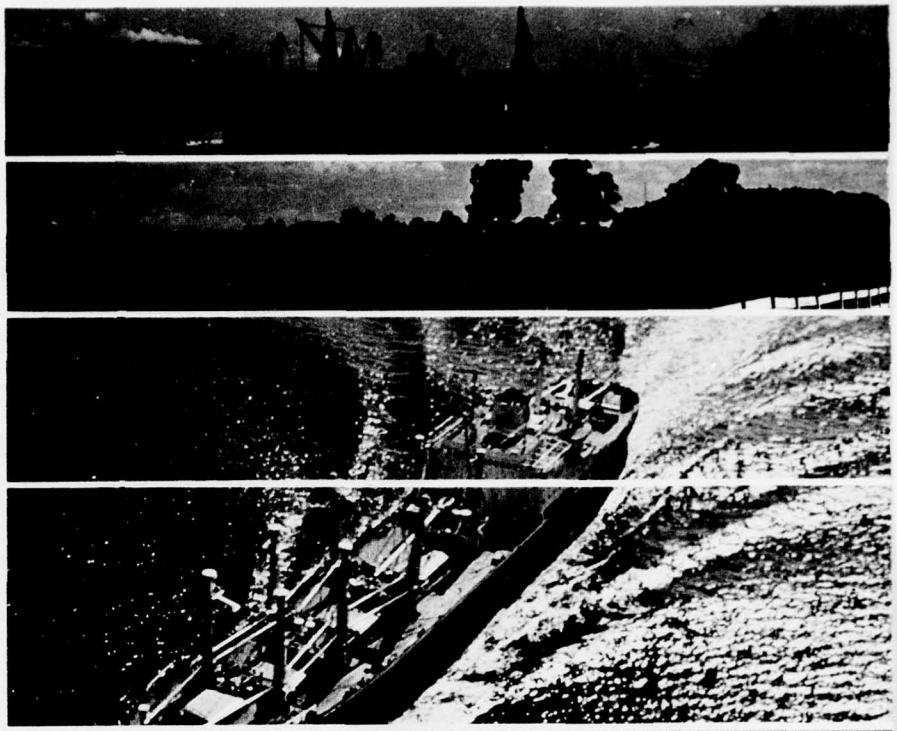

Chesapeake Bay

FUTURE CONDITIONS REPORT

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See Preface

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PREFACE

The Corps of Engineers' comprehensive study of Chesapeake Bay is being accomplished in three distinct developmental stages or phases. Each of these phases is responsive to one of the following stated objectives of the study program.

1. To assess the existing physical, chemical, biological, economic and environmental conditions of Chesapeake Bay and its related land resources.

2. To project the future water resources needs of Chesapeake Bay to the year 2020.

3. To formulate and recommend solutions to priority problems using the Chesapeake Bay Hydraulic Model.

In response to the first objective of the study, the initial or inventory phase of the program was completed in 1973 and the findings were published in a document titled *Chesapeake Bay Existing Conditions Report.* Included in this seven-volume report is a description of the existing physical, economic, social, biological and environmental conditions of Chesapeake Bay. This was the first published report that presented a comprehensive survey of the entire Bay Region and treated the Chesapeake Bay as a single entity. Most importantly, the report contains the historical records and basic data required to project the future demands on the Bay and to assess the ability of the resource to meet those demands.

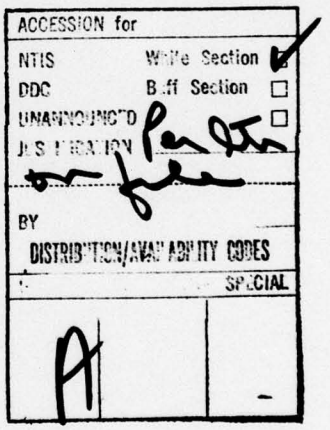
In response to the second objective of the study, the findings of the second or future projections phase of the program are provided in this the *Chesapeake Bay Future Conditions Report.* The primary focus of this report is the projection of water resources needs to the year 2020 and the identification of the problems and conflicts which would result from the unrestrained growth and use of the Bay's resources. This report, therefore, provides the basic information necessary to proceed into the next or plan formulation phase of the program. It should be emphasized that, by design, this report addresses only the water resources related needs and problems. No attempt has been made to identify or analyze solutions to specific problems. Solutions to priority problems will be evaluated in the third phase of the program and the findings will be published in subsequent reports.

The *Chesapeake Bay Future Conditions Report* consists of a summary document and 16 supporting appendices. Appendices 1 and 2 are general background documents containing information describing the history and conduct of the study and the manner in which the study was coordinated with the various Federal and State agencies, scientific institutions and the public. Appendices 3 through 15 each contain information on specific water and related land resource uses to include an inventory of the present status and expected future needs and problems. Appendix 16 focuses on the formulation of the initial testing program for the Chesapeake Bay Hydraulic Model. Included in this appendix is a description of the hydraulic model, a list of problems considered for inclusion in the initial testing program and a detailed description of the selected first year model studies program.

The published volumes of the *Chesapeake Bay Future Conditions Report* include:

Volume Number	*Appendix Number and Title*
1	Summary Report
2	1 — Study Organization, Coordination and History 2 — Public Participation and Information
3	3 — Economic and Social Profile
4	4 — Water-Related Land Resources
5	5 — Municipal and Industrial Water Supply 6 — Agricultural Water Supply
6	7 — Water Quality
7	8 — Recreation
8	9 — Navigation 10 — Flood Control 11 — Shoreline Erosion
9	12 — Fish and Wildlife

Volume Number	*Appendix Number and Title*
10	13 — Power 14 — Noxious Weeds
11	15 — Biota
12	16 — Hydraulic Model Testing



CHESAPEAKE BAY FUTURE CONDITIONS REPORT APPENDIX 1 STUDY ORGANIZATION, COORDINATION, AND HISTORY

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I

THE STUDY AND THE REPORT

The Chesapeake Bay Study evolved through the need for a complete and comprehensive investigation of the use and control of the water resources of the Bay Area. In the first phase of the Study, the existing physical, biological, economic, social, and environmental conditions and problem areas were identified and presented in the *Existing Conditions Report.* The *Future Conditions Report,* of which this appendix is a part, presents the findings of the second or projections phase of the Study. Included as part of the second phase are the projections of future water resource needs and problem areas, identification of general means that might best be used to satisfy those needs, and recommendations for future studies and hydraulic model testing. The results of this phase of the Study and this report constitute the next step toward the goal of developing a comprehensive water resource management program for Chesapeake Bay.

Abstract

The subject of this particular volume is the Chesapeake Bay Study process and as such will focus on the history of the study, the study organization, and the manner in which the study was coordinated among the many Federal, State, and local agencies that are interested in water resources development in the Bay Region. Also included is a discussion of the activities that remain to be completed on the present study and an assessment of the future studies that are required toward the goal of developing a comprehensive management plan.

(go to Appendix 2 p. 1)

AUTHORITY

The authority for the Chesapeake Bay Study and the construction of the hydraulic model is contained in Section 312 of the River and Harbor Act of 1965, adopted 27 October 1965, which reads as follows:

(a) The Secretary of the Army, acting through the Chief of Engineers, is authorized and directed to make a complete investigation and study of water utilization and control of the Chesapeake Bay Basin, including the waters of the Baltimore Harbor and including, but not limited to, the following: navigation, fisheries, flood control, control of noxious weeds,

water pollution, water quality control, beach erosion, and recreation. In order to carry out the purposes of this section, the Secretary, acting through the Chief of Engineers, shall construct, operate, and maintain in the State of Maryland a hydraulic model of the Chesapeake Bay Basin and associated technical center. Such model and center may be utilized, subject to such terms and conditions as the Secretary deems necessary, by any department, agency, or instrumentality of the Federal Government or of the States of Maryland, Virginia, and Pennsylvania, in connection with any research, investigation, or study being carried on by them of any aspects of the Chesapeake Bay Basin. The study authorized by this section shall be given priority.

(b) There is authorized to be appropriated not to exceed $6,000,000 to carry out this section.

An additional appropriation for the study was provided in Section 3 of the River Basin Monetary Authorization Act of 1970, adopted 19 June 1970, which reads as follows:

In addition to the previous authorization, the completion of the Chesapeake Bay Basin Comprehensive Study, Maryland, Virginia, and Pennsylvania, authorized by the River and Harbor Act of 1965 is hereby authorized at an estimated cost of $9,000,000.

As a result of Tropical Storm Agnes, which caused extensive damage in Chesapeake Bay, Public Law 92-607, the Supplemental Appropriation Act of 1973, signed by the President on 31 October 1972, included $275,000 for additional studies of the impact of the storm on Chesapeake Bay.

PURPOSE

Previously, measures taken to utilize and control the water and land resources of the Chesapeake Bay Basin have generally been oriented toward solving individual problems. The Chesapeake Bay Study provides a comprehensive study of the entire Bay Area in order that the most beneficial use be made of the water-related resources. The major objectives of the Study are to:

a. Assess the existing physical, chemical, biological, economic, and environmental conditions of Chesapeake Bay and its water resources.

b. Project the future water resources needs of Chesapeake Bay to the year 2020.

c. Formulate and recommend solutions to priority problems using the Chesapeake Bay Hydraulic Model.

The *Chesapeake Bay Existing Conditions Report,* published in 1973, met the first objective of the Study by presenting a detailed inventory of the Chesapeake Bay and its water resources. Divided into a summary and four appendixes, the report presented an overview of the Bay Area and the economy; a survey of the Bay's land resources and its use; and a description of the Bay's life forms and hydrodynamics.

The purpose of the *Future Conditions Report* is to provide a format for presenting the findings of the 2nd phase of the Chesapeake Bay Study. Satisfying the second objective of the Study, the report describes the present use of the resource, presents the demands to be placed on the resource to the year 2020, assesses the ability of the resource to meet future demands, and identifies additional studies required to develop a management plan for Chesapeake Bay.

SCOPE

The scope of the Chesapeake Bay Study and *Future Conditions Report* includes the multi-disciplinary fields of engineering and the social, physical, and biological sciences. The Study, as will be discussed in the following chapters, is being coordinated with all Federal, State, and local agencies having an interest in Chesapeake Bay. For each resource category presented in the *Future Conditions Report,* demands are projected and potential problem areas are identified to the year 2020. All conclusions are based on historical information supplied by the preparing agencies having expertise in that field. In addition, the basic assumptions and methodologies are quantified for accuracy in the sensitivity section. Only general means to satisfy the projected resource needs are presented, as specific recommendations are beyond the scope of this report.

As shown on Figure 1-1, the geographical area considered in the overall study encompasses those counties, cities, and Standard Metropolitan Statistical Areas (SMSA) which touch or have a major influence on the Estuary. For

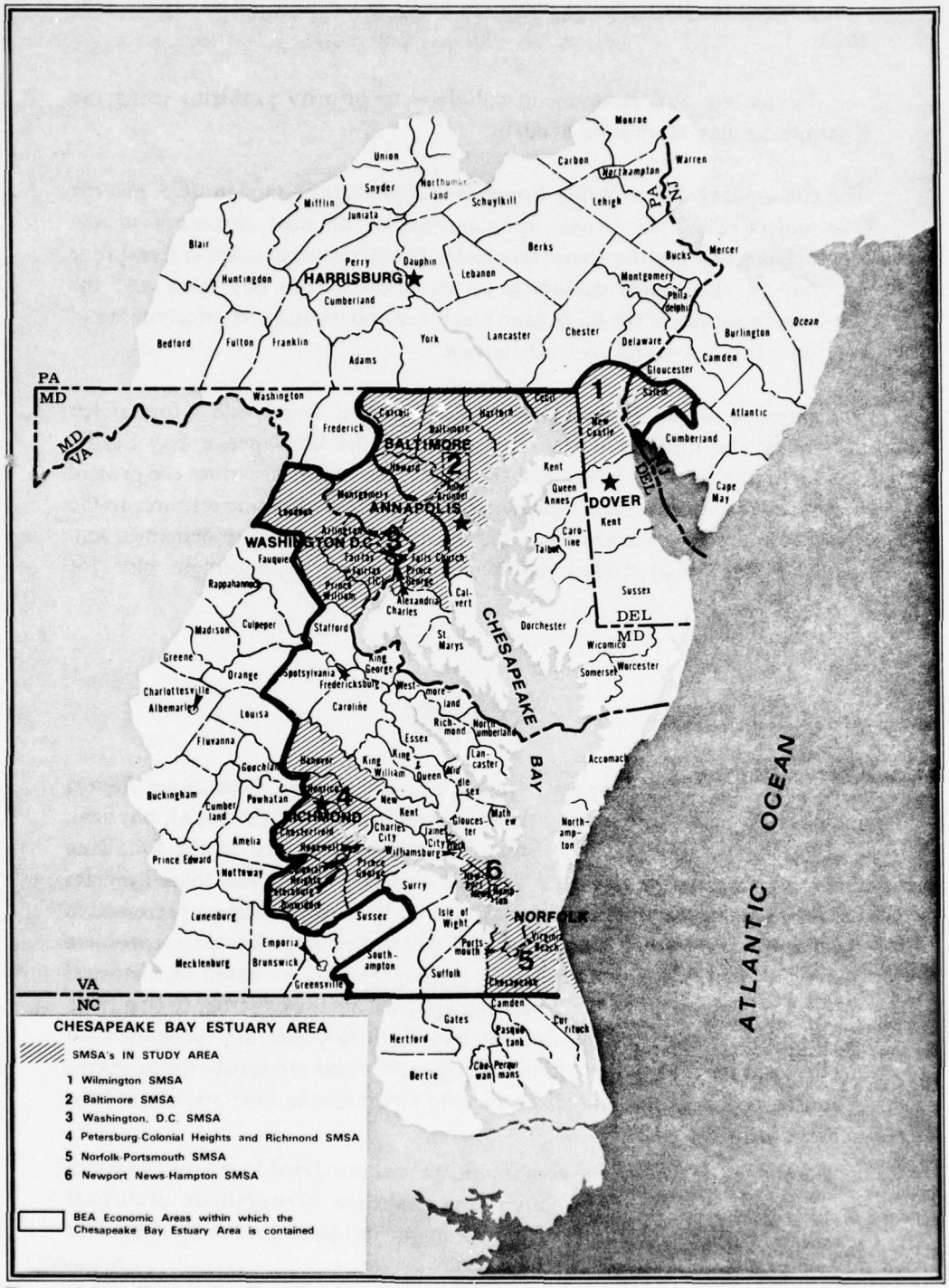


Figure 1-1: Chesapeake Bay Estuary Area

purposes of projecting the future demands on the resources of the Bay, economic and demographic projections were made for all subregions and SMSA's within the Study Area.

SUPPORTING STUDIES

Much of the information included in this report was taken from other sources. The initial data base for the resource projections included in the other appendices of this report was presented in the *Chesapeake Bay Existing Conditions Report.* Other studies that provided a major input to the report include the *North Atlantic Regional Water Resources Study,* and the *Northeastern United States Water Supply Study,* which were prepared by the North Atlantic Division of the Corps of Engineers, and the *Atlantic Coast Deep Water Port Facilities Study,* prepared by the Philadelphia District, Corps of Engineers. Numerous other studies conducted by Federal, State, and local agencies as well as Bay Area scientific institutions may also be considered as supporting studies. Those specific studies used are discussed in more detail in the appropriate appendix. As will be explained in subsequent chapters the supporting information for this appendix includes the *Chesapeake Bay Plan of Study,* the *Site Selection Study for the Hydraulic Model,* the Congressional Record and numerous Corps of Engineers' reports and memoranda.

STUDY PARTICIPATION AND COORDINATION

Due to the wide scope, large geographical area, and many resources covered by the Chesapeake Bay Study, data input was required from many sources. Various Federal, State, and local agencies throughout the Bay Region have customarily developed expertise in certain areas of water resource development. Although overall coordination of the Study effort was provided by the Corps of Engineers, input from these various sources was required in order to obtain the best Study coordination and problem identification. The coordination of the overall study is one of primary topics of this appendix and will be discussed in detail in Chapter II. This appendix was prepared by the Baltimore District, Corps of Engineers, under the guidance and review of the Chesapeake Bay Study Advisory Group.

CHAPTER II

STUDY ORGANIZATION AND COORDINATION

As noted in Chapter I, the magnitude and multi-disciplinary nature of the Chesapeake Bay Study requires intensive coordination among those agencies and institutions concerned with water resources planning in the Bay Region. This study was conceived as a coordinated partnership between Federal, State, and local agencies and interested scientific institutions. Each involved agency is charged with exercising leadership and providing input in those disciplines in which it has special competence. To realize these ends, an Advisory Group, a Steering Committee, and five Task Groups, as shown on Figure 1-2, were established. The overall management of the Chesapeake Bay Study is the responsibility of the District Engineer of the Baltimore District, Corps of Engineers.

This chapter provides additional information as to the composition and responsibilities of the various study groups and also includes a discussion of the coordination and review process used in the study.

ADVISORY GROUP

The Advisory Group was established in 1967 as the principal coordinating mechanism for the study. As shown on Figure 1-2, the Advisory Group is composed of representatives from 11 Federal agencies, the Commonwealths of Pennsylvania and Virginia, the States of Delaware and Maryland, and the District of Columbia. The individuals serving on the Advisory Group were designated by the heads of their respective Federal agencies or the Governors of the involved states. Table A-1 in Attachment A to this appendix lists both the past and present Federal and State representatives on the Advisory Group and their period of service as a member.

Since its establishment, the Advisory Group has advised the District Engineer regarding study policy and has provided general direction under which all study participants have operated. More specifically, the duties of the Advisory Group have been established as follows:

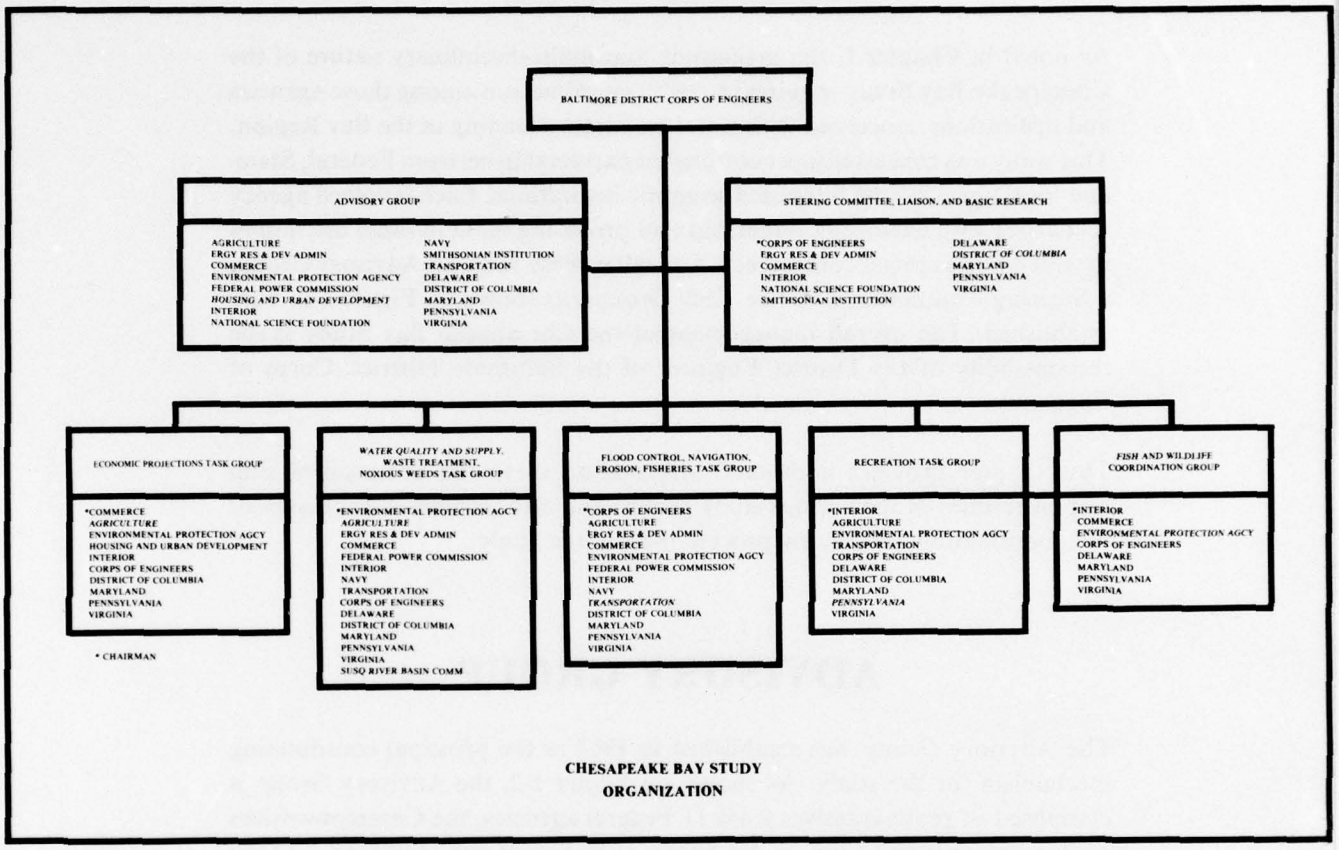


Figure 1-2: Chesapeake Bay Study Organization

a. To advise the District Engineer in the coordination of study efforts.

b. To consider the views of all participants as reported to the Group and make recommendations to the District Engineer.

c. To review reports from all participants.

d. To assist the District Engineer in providing information to the public and encourage participation by the public at hearings and other meetings.

Generally speaking, the Advisory Group has convened whenever it has been necessary to coordinate study efforts, to review and comment on study results, and to determine future study direction and activities. To date, ten meetings of the Group have been held. In addition to these official meetings, continuous coordination between the members is maintained on an individual and informed basis. The District Engineer, Baltimore, and members of his staff also meet with one or more agency representatives on an as-needed basis to accomplish the objective of full coordination.

STEERING COMMITTEE

The Steering Committee for Liaison and Basic Research is charged with reviewing the work of the other study task groups in order to bring to their attention and to the attention of the District Engineer any pertinent technological advances in water resource development or the environmental sciences that may not be explicit in the tasks assigned to these groups. In addition, the Steering Committee formulates plans for scientific activities that may become a necessary adjunct to the study. The Federal agencies and the states represented on the Steering Committee are shown on Figure 1-2. Table A-2 in Attachment A lists past and present Steering Committee representatives and their period of service as a member.

TASK GROUPS

Five task groups were established for the Chesapeake Bay Study to include:

a. Economic Projections Task Group

b. Water Quality and Supply, Waste Treatment, and Noxious Weeds Task Group

c. Flood Control, Navigation, Erosion, and Fisheries Task Group

d. Recreation Task Group

e. Fish and Wildlife Coordination Group

Each task group is concerned with related study categories and functions as a basic work group. The chairman designated for each task group is from the Federal agency most closely associated with that particular field of study. For example, the Recreation Task Group is chaired by the Bureau of Outdoor Recreation of the Department of the Interior. A brief description of each task group and its major functions is provided below. The agencies serving on each group are shown on Figure 1-2.

ECONOMIC PROJECTIONS TASK GROUP

The Economic Projections Task Group was responsible for establishing the Chesapeake Bay Economic Study Area which consists of those Standard Metropolitan Statistical Areas (SMSA's) and non-SMSA's adjacent to the Bay and its tidal tributaries or which exert a major influence on Chesapeake Bay. The task group is also responsible for determining the scope and type of projections of income, population, and employment to be prepared for the study. In addition, the group has been assigned the task of making economic evaluations of various proposed solutions to priority problems. This will consist of studying the effects of the various alternative actions on the economic activity within the Study Area. This task group is chaired by a representative from the Bureau of Economic Analysis, U.S. Department of Commerce.

WATER QUALITY AND SUPPLY, WASTE TREATMENT, AND NOXIOUS WEEDS TASK GROUP

As outlined in the *Plan of Study,* prepared in 1970, the duties of the Water Quality and Supply, Waste Treatment, and Noxious Weeds Task Group included the development of a water quality plan for the maintenance or enhancement of the water quality of Chesapeake Bay. Subsequent to this, the 92nd Congress, 2nd Session, enacted the Federal Water Pollution Control Act Amendments of 1972. This legislation provided that the Environmental

Protection Agency assist the State and other local governmental entities in the development and implementation of area-wide wastewater treatment management plans and practices which would achieve the goals of the act. The passage of this act had a marked influence upon the Chesapeake Bay Study as it provided for the accomplishment of much of the water quality and waste treatment work originally envisioned for the Water Quality and Supply, Waste Treatment, and Noxious Weeds Task Group. It was apparent that to continue with this type of work in the Chesapeake Bay Study would not be in the national interest; rather this interest would be better served by integrating the State plans into the ongoing work of the Chesapeake Bay Study Program.

The area-wide wastewater management studies directed by the Federal Water Pollution Control Act Amendments of 1972 are presently being conducted by the involved states. The Environmental Protection Agency has consequently established a comprehensive system of communication, coordination, and review. Because of this ongoing program and the already established coordination and review procedures, the water quality and waste treatment related duties of the Water Quality and Supply, Waste Treatment, and Noxious Weeds Task Group was revised and the work was divided into two phases.

Phase I of the Task Group's work related to water quality and waste treatment was concerned with the integration of the State wastewater mangement plans into the Chesapeake Bay Study's *Future Conditions Report.* In this phase the state wastewater management reports were summarized in accordance with a format established by the Task group. This summary assessment of the Region's water quality is included as Appendix 7 of this report. This completed summary of the water quality serves to identify those areas which have high priority problems deserving further study.

The second phase of the Task Group's water quality work will consist of determining those high priority problem areas which should be the subject of additional study and hydraulic model testing.

The work involved in the other components of the Task Group mission will be conducted as previously agreed upon by the Task Group with the primary responsibility for performing the studies related to water supply and noxious weeds resting with the Corps of Engineers under the direction of the Task Group. The Task Group is chaired by a representative from the Annapolis Field Office of the Environmental Protection Agency.

FLOOD CONTROL, NAVIGATION, EROSION, AND FISHERIES TASK GROUP

As denoted by the name, this Task Group is responsible for study matters relative to tidal flooding, shoreline erosion, foreign and domestic waterborne commerce and commercial and sport fisheries. In the course of the study, this group has established the purpose and scope of all studies regarding the existing and expected future conditions relative to the aforementioned resource categories. All portions of both the *Existing Conditions Report* and the *Future Conditions Report* dealing with these categories were prepared and reviewed by this group. Regarding future activities, this Task Group will identify high priority problems relative to flooding, navigation, erosion and fisheries, that should be addressed under the Chesapeake Bay Study and will conduct those studies necessary to develop solutions for the selected problems. The group is chaired by a representative from the Baltimore District, Corps of Engineers.

RECREATION TASK GROUP

This Task Group was responsible for defining, conducting, and reviewing study efforts relative to the existing and future use of the recreation resources within the study area. This group, which is chaired by a representative from the Northeast Regional Office of the Bureau of Outdoor Recreation, will continue to conduct recreational studies as required and advise the study organization on matters pertaining to recreation.

FISH AND WILDLIFE COORDINATION GROUP

This Task Group provides the mechanism for coordination between all Federal and State fish and wildlife agencies. Its primary task or responsibility is to collect, develop, refine, and disseminate data and views related to the fish and wildlife resources of the study area. The Group is chaired by a representative from the Northeast Regional Office of the U.S. Fish and Wildlife Service.

STUDY COORDINATION

The specific tasks or responsibilities of the Advisory Group, Steering Committee, and Task Groups, as outlined in the preceding section, are all part of the overall study coordination and review process. As characterized in

Figure 1-3, coordination and review is an iterative process that flows between the District Engineer, Baltimore, and the various elements of the study organization.

The District Engineer, who is responsible for the management of the study, establishes overall study goals and objectives based on the study authority, budgetary limitations, and advice from the Advisory Group and Steering Committee. The Advisory Group and Steering Committee also suggest the overall studies that should be conducted by the Task Groups in order to meet the objectives that have been established for the study. The Task Groups are charged with formulating the specific study work plans for those resource categories that fall within their area of responsibility. The specific work plans are then assigned to the appropriate Task Group members for accomplishment of the required work.

Following the completion of an assigned work package by a Task Group member, the review process begins with all members of the Task Group reviewing the completed work. If the work is considered satisfactory, the report is forwarded to the Advisory Group and Steering Committee for review. It should be noted that if in the course of the review process the report or work is found to be unsatisfactory, the necessary actions are taken to resolve problems. Following the review within the study organization, the final product is forwarded to the District Engineer for final review and further action. Further action may consist of proceeding to the next phase of the study and/or submitting a final report on the findings of the study to the Congress.

It has been through the above coordination and review process that all reports to include the *Plan of Study,* the *Existing Conditions Report,* the *Impact of Tropical Storm Agnes on Chesapeake Bay,* and this the *Future Conditions Report* have been prepared and reviewed.

It should be noted that public input is also an integral part of the aforementioned coordination and review process. Through public meetings, citizen group reviews, and other measures, the viewpoints and concerns of the public have been identified and the findings have been incorporated into the reports completed to date. A more detailed discussion of the public involvement program used for this study may be found in Appendix 2: Public Participation and Information.

CHESAPEAKE BAY STUDY

COORDINATION AND REVIEW PROCESS

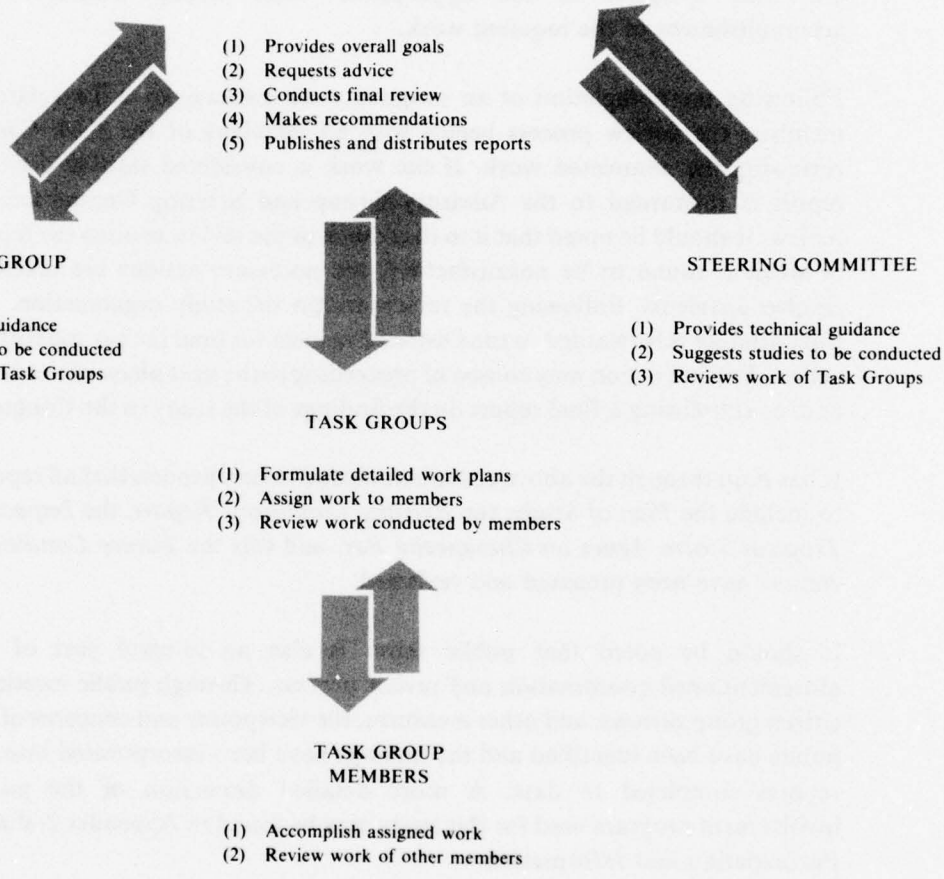


Figure 1-3: Chesapeake Bay Study Coordination and Review Process

CHAPTER III

HISTORY OF THE CHESAPEAKE BAY STUDY PROGRAM

As indicated in Chapter I, the need for a complete and comprehensive investigation of the Chesapeake Bay Area has long been recognized. The concept of developing the Nation's water resources through single-purposed programs and projects was on the wane by the conclusion of the Korean conflict. At that time, funds were made available for prosecution of a large backlog of investigations. These studies were authorized but had not been started because of curtailment of the Civil Works Program by Executive Order. Some of the requests for improvement appeared to be duplications and, in some cases, in direct conflict with one another. The evolution of regional concepts for the development of water resources was a logical result. In terms of Chesapeake Bay, a first step toward what might be considered a system analysis was the *Chesapeake Bay Fishing Harbor Economics Study, Maryland and Virginia.* This study provided, for the first time, a broad overview of the commercial fishing industry and a firm and consistent basis for the comparison of primary fishing benefits among harbors throughout the Bay Area.

In 1961, in response to the recommendation of the Senate Select Committee on National Water Resources (as contained in Senate Report No. 29, Eighty-Seventh Congress, First Session, made pursuant to Senate Resolution 48, 86th Congress) that a program be formulated to meet the Nation's water resources needs, the District Engineer, Baltimore District, prepared a pamphlet concerning the Chesapeake Bay Area entitled *An Appraisal of Water Resource Needs Projected to the Year 2060.* In the spirit of the Senate Committee's recommendation, this pamphlet recommended that a cooperative study of Chesapeake Bay be made by the Federal and state agencies concerned with the Bay resource.

In the same year, a basin plan for Chesapeake Bay *(Basin Plan, Chesapeake Bay)* was prepared by the Baltimore District in cooperation with the Norfolk District in compliance with instructions from the Office of the Chief of Engineers. The plan was based on readily available information and consisted of a brief description of the current status of water development and planning in the Chesapeake Bay Area. It included comments on the adequacy of the

plan and future demands on the region's water resources. In addition, it presented a program for bringing the basin plan up to date. Although it was the first attempt at bringing together comprehensive information on the Bay's resources, it represented only a very superficial analysis.

Based on the two Corps reports mentioned above and similar studies and analyses conducted by other agencies it was recognized that with rapidly increasing population and its attendant demands, the resources of the area, including water supply, waterborne commerce, seafood, recreation, and fish and wildlife resources, were receiving pressures which could only be expected to increase in the years ahead. Thus, water resources managers and scientists in the Bay Region felt that a comprehensive study of the Bay and its resources was required in order to develop a Bay-wide management plan.

During this same period, certain Congressional representatives with districts within the Bay Region were expressing interest in a comprehensive Bay study and the construction of a hydraulic model of the Chesapeake Bay similar to the San Francisco Bay and the Mississippi River basin models. It was envisioned that such a model would be used as part of the study decision-making process.

On 23 February 1965, a bill was introduced by Congressman Hervey G. Machen of Maryland to authorize the Secretary of the Army to conduct a complete investigation and study of water utilization and control of the Chesapeake Bay Basin. To carry out this investigation, a hydraulic model of the Chesapeake Bay Basin and associated technical center were to be constructed. Shortly after introduction of this bill, three other nearly identical bills were introduced by Congressmen Thomas N. Downing of Virginia and Rogers C. B. Morton and George H. Fallon of Maryland.

In July 1965, the Senate version of the River and Harbors Bill of 1965 was introduced and it also included a section authorizing a comprehensive Bay study that was very similar to that proposed in the aforementioned House bills. Following some changes, the authority for the study was provided in Section 312 of the River and Harbor Act of 1965 signed by the President on 27 October 1965. The authority was previously quoted in Chapter I of this appendix.

Prior to passage of the Act and in testimony before the House Committee on Public Works, the sponsors and supporters of the legislation presented certain statements in favor of the study. The statements by these Congressional Representatives expressed their objectives for the Bay Study and its associated hydraulic model.

Generally, it was believed that the growing population and development of the Region demonstrated the need for creation of a fully integrated basin plan for optimum development. Increasing pressures on the Region's water and related land resources also indicated the need to alleviate the major water resource problems of the Bay such as siltation, beach erosion, noxious aquatic growths, flood control, water pollution, disposal of dredged material, and protection of the shellfish industry. It was pointed out that the Bay Study and its associated hydraulic model were necessary "to create a tool and facility to assist the existing agencies in carrying out their missions." (1) The model, by providing insight into the hydraulic and hydrographic mechanisms operating in the Bay, was believed necessary to serve and preserve the Bay and would, in addition, benefit "every water resource problem in every state in the Nation." (2)

Although the Chesapeake Bay Region lies within three Engineer Districts, the Baltimore, Norfolk, and Philadelphia Districts, the study was formally assigned to the Baltimore District Engineer on 3 December 1965. In November 1966, the Baltimore District received the initial funding for the Chesapeake Bay Study. It was at this time that broad study concepts were first developed, advanced planning to define the scope of the authorized model and technical center was initiated, and model site investigation was begun.

In February 1967, the Division Engineer of the North Atlantic Division, in the interest of setting up the Chesapeake Bay Study Advisory Group, invited appropriate Secretaries at the Federal Cabinet level along with the District of Columbia and the governors of Maryland, Virginia, Delaware, and Pennsylvania to designate representatives to work closely with the District Engineer, Baltimore District, on the overall Study goals and objectives. By September of 1967, the 13 original members of the Advisory Group had been appointed and the first meeting of that group was held to discuss Study objectives and how related tasks might best be assigned and accomplished. Since the Advisory Group was first established in 1967 there have been numerous changes in both the Agencies represented on the Group and the representatives themselves. The present membership is shown on Figure 1-2.

In March 1968, the Steering Committee and the five task groups were established and initial meetings were held to discuss the scope of the study and identify the initial work to be accomplished in each of the groups.

In addition to establishing the above groups as a mechanism for obtaining input from other Federal and state agencies and the scientific community, a series of public meetings were held in November and December 1967 to obtain

public input. The meetings were held in Baltimore and Salisbury, Maryland; and Newport News, Virginia, to inform the public of the initiation of the study and to obtain their views on problems in the Bay Region. For additional information on the public involvement program for this study the reader is referred to Appendix 2 — Public Participation and Information.

In regard to the hydraulic model during this early stage of the study, staff from the Baltimore District Office first visited the U.S. Army Engineer Waterways Experiment Station (WES) in February 1967 to determine the support which WES could provide in the design, construction, and adjustment or verification of the model. The Waterways Experiment Station is recognized as one of the foremost hydraulics laboratories in the world. Since the 1930's, personnel from the station have served as hydraulic consultants for the entire Corps of Engineers and have constructed and operated numerous estuarine and riverine hydraulic models. As a result of the February 1967 meeting, it was agreed that WES would provide design, construction, and operation support for the Bay model.

At approximately the same time, a meeting was held in the Baltimore District with representatives from various elements of the Corps including the Office of the Chief of Engineers (OCE), WES, the Coastal Engineering Research Center (CERC), and the North Atlantic Division and the Norfolk District of the Corps of Engineers. Also in attendance were those Federal and state agencies involved in research, regulation, and/or management of the Bay's water and related land resources. The purpose of the meeting was to discuss the problems facing the Estuary Area which might be solved by the hydraulic model. In April 1967, design of the hydraulic model was initiated along with the collection and review of all available, pertinent prototype data which might be useful in model adjustment and verification.

One of the important decisions to be made at this time was model site selection. As indicated earlier, the authorizing legislation for the Chesapeake Bay Study directed that the hydraulic model be constructed within the State of Maryland. Following study authorization, many interested individuals and organizations in Maryland suggested sites for the model. A site selection subcommittee of the Maryland State Planning Department was formed to assist in selecting a suitable location for the model. Following preliminary investigations by the subcommittee, it was agreed that the Baltimore District would hire a consultant to conduct more specific siting studies and to recommend three sites for final consideration. Booz-Allen and Hamilton, Incorporated, was awarded the contract for the model site selection study. Criteria used in

evaluating proposed sites were determined early in the study. The primary factors considered were:

1. size — 50 acres, minimum

2. elevation — above highest tide of record

3. topography — relatively flat, stable land

4. water supply — a fresh water supply with a sustained flow of 100 gallons per minute

5. water disposal — adequate at site or nearby facilities for saltwater disposal

6. good road network — accessible to Washington, Baltimore, and major airfields

7. price of land — preferably offered free; however, favorable sites at reasonable costs were not to be overlooked

8. compatible setting and environment — a site which would tend to enhance scientific experiment and study of the Bay Area and which is or would be zoned to safeguard the integrity of the area.

In addition to the above primary factors, there were several secondary factors considered. These included:

1. Bay location — with harbor and docking features

2. major estuary or tidal tributary — on or near site to facilitate water disposal from the model

3. expansion possibilities — in immediate area of site

In addition to the criteria factors relevant to the model, there were certain civic facility requirements to be met. These dealt primarily with the availability of community services and good living conditions for those persons working on the hydraulic model.

As a result of the site evaluation, three sites were recommended in the report submitted in October 1967 by Booz-Allen and Hamilton, Inc. These consisted of a site in Beltsville, which was an attractive parcel of land with good travel convenience from both Baltimore and Washington; Sandy Point which had water frontage, outstanding aesthetic values, and a location in the desirable travel zone; and Matapeake, an attractive site which had been proposed by both State and county officials, and was reasonably located to both Baltimore and Washington, and included State-owned waterfront property. In November 1967, the Governor of the State of Maryland formally offered 65 acres of land at the Matapeake site for the model. The offer was accepted by the Baltimore District in December 1967 and title transfer occurred in January 1971.

In the spring of 1968, during its hearings on the Appropriations Bill for Fiscal Year 1967, the Committee on Appropriations of the U.S. House of Representatives requested that the Corps of Engineers review the scope and cost of the Chesapeake Bay Study Program and provide a report on the findings to the Committee. The report, which was formally submitted to the Committee in April 1969, found that the total cost of a study program responsive to the enabling legislation would be approximately $15 million. Subsequently, the River Basin Monetary Authorization Act of 1970, which was passed on 19 June 1970, increased the study authorization from $6 million to $15 million.

The first major public document of the Bay study program was the *Chesapeake Bay Plan of Study* which was published in June 1970. The *Plan of Study,* which was reviewed and coordinated with the study organizations, outlined the scope of the study, the study area and objectives, and how the study was to be conducted and coordinated.

With the *Plan of Study* serving as the planning guide, work proceeded on the program in two primary areas — the comprehensive resource study and the hydraulic model. For the remainder of this discussion, the resource study and the hydraulic model will be addressed individually rather than in a strict chronological sequence of events.

Based on the *Plan of Study* and the advice of the study organization, it was decided that the resource study portion of the Chesapeake Bay Program would be conducted in several phases as shown on Figure 1-4. Each phase of the study would culminate with the publication of a milestone report that would present the findings of the study to that point. These milestone reports

Figure 1-4: Chesapeake Bay Study Sequence Diagram

would provide all who are concerned with the management of the Bay a better understanding of the problems outside their own activities and also provide baseline data and a starting point for the next phase of the study.

Based on a series of Advisory Group and Task Group meetings held in 1971, the program of studies to be conducted in the first phase of the study was formulated. It was further decided that this phase would result in an *Existing Conditions Report* that described the existing physical, biological, economic, and social conditions of the Bay and its resources. The report would also identify existing resource problems and conflicts and the various resource management programs and responsibilities.

Through the coordination and review process explained in Chapter II, detailed work plans for the inventory phase were developed and the work to be accomplished by each agency was defined. The work was conducted by those agencies having the greatest amount of expertise/capability in the particular area of study. The studies by other agencies were funded by the Corps of Engineers through a series of interagency agreements that were consummated in 1971. The work under these agreements was completed in 1973 and the *Chesapeake Bay Existing Conditions Report* was published in December 1973. This seven volume report presented in one document a comprehensive and detailed picture of Chesapeake Bay and its resources and marked the conclusion of the first or inventory phase of the study.

Following completion of the *Existing Conditions Report* work was started on the second or future projections phase of the study. Studies conducted in this phase were to project the future demands to be placed on the Bay and its resources and to identify future resource problems and conflicts. As before, the scope of the specific studies was decided by the Task Groups and the work was conducted by the Task Group members. The work was initiated in 1974 and the results are presented in this report – the *Chesapeake Bay Future Conditions Report*

It should be noted that prior to the completion of the *Future Conditions Report,* a series of public meetings was held in June 1976 in Williamsburg, Virginia, and Annapolis and Cambridge, Maryland. The purpose of the meetings was to inform the public regarding the progress to date on the overall study program; to present the findings of the *Future Conditions Report;* and to solicit the public's comments, views, and perceptions of the Bay's problems and needs. A more detailed discussion of the public participation activities that were conducted as part of this program may be found in Appendix 2 — Public Participation and Information.

In June 1972, while work was underway on the *Existing Conditions Report,* the Chesapeake Bay Basin was subjected to one of the most devastating storms the Region has ever witnessed—Tropical Storm Agnes. The massive amounts of freshwater, sediment, and other pollutants that entered the Bay as a result of this storm caused considerable environmental and economic damage to the Bay.

As a result of the damage and concern as to the long-term effects of the storm on the Bay, the Supplemental Appropriations Act of 1973 included $275,000 for a special study of the effects of the storm on the Bay. The Act was signed by the President in October 1972 and the study was subsequently assigned to the Baltimore District, Corps of Engineers, where it was to be conducted concurrently with the Chesapeake Bay Study. The following objectives were established for the special Agnes Study:

a. Determine and document the effects of the storm on the Chesapeake Bay estuarine system.

b. Locate any changes in the bottom geometry of the Bay and its tributary arms and determine if these changes are of sufficient magnitude to warrant a change in the design of the Hydraulic Model.

In pursuit of the first objective, a contract was let in June 1973 with the Chesapeake Research Consortium, Inc., to determine the physical, biological, economic, and public health impacts of the storm on the Bay system. In order to determine if bottom geometry changes warranted a change in the hydraulic model design, hydrographic surveys were made in several areas to determine the extent of the changes. These surveys were accomplished under contract and interservice agreements by the Maryland Surveying and Engineering Company and the Norfolk and Philadelphia Districts of the Corps of Engineers, respectively.

Based on the results of the above contractual work, a report titled *Impact of Tropical Storm Agnes on Chesapeake Bay* was prepared, reviewed by the study organization, and published in October 1975. The principal findings of the study were:

a. While the Bay suffered considerable immediate economic and environmental damage as a result of the massive freshwater inflows, the Bay demonstrated its resiliency by returning to pre-storm conditions shortly after Agnes subsided.

b. While there were some changes in bottom geometry, the changes did not warrant a redesign of the hydraulic model at this time.

Concurrent with the conduct of the resource study, work also proceeded on the hydraulic model. Based on a series of meetings held in 1967 and 1968 with representatives from the Waterways Experiment Station and a number of prominent scientists from Bay area institutions, a prototype data collection program for the model was formulated. In order to verify the model's operating similarity to the Bay (prototype) system, tidal elevations, tidal current velocities, and salinities had to be measured at many locations in the prototype. These prototype data have been used as a basis for both model adjustment and final verification that model hydraulic and salinity phenomena are in acceptable agreement with those of the prototype.

It was determined that a total of 72 recording tide gages should be operated throughout the Bay for a period of at least one year. It was also determined that a total of 105 current velocity ranges were required. The observation points varied from one to eleven on the various ranges, making a total of 192 locations for velocity measurements. The number of vertical positions recommended for velocity measurements ranged from one to twelve; thus, there were a total of 743 observation points at which velocity measurements were required. Salinities were also to be measured concurrent with velocity measurements at all observation points.

In June 1970, contracts were awarded to the Virginia Institute of Marine Science, the Chesapeake Biological Laboratory of the University of Maryland, and the Chesapeake Bay Institute of the Johns Hopkins University for the collection of the current and velocity data discussed in the preceding paragraph. In the same month an interagency agreement was signed with the National Ocean Survey for collection of the required tidal data. An interagency agreement for a first order level net which established the precise datum for all the tidal gaging stations was also signed with the National Ocean Survey. By the summer of 1974, all of the aforementioned prototype data required for the adjustment and verification of the model had been collected.

Because of the hydraulic model's small scale and the resultant precision required in collecting data, the model must be protected from wind, rain, and windborne debris. The detailed design and the preparation of the plans and specifications for a shelter that houses the model were completed by Whitman, Requardt and Associates in 1972. Subsequently, a contract for the construction of the shelter was awarded to Charles E. Brohawn Brothers,

Incorporated, in February 1973 and a formal groundbreaking ceremony was held in June 1973. Construction of the 14 acre shelter was completed in January 1975.

Concurrent with the design and construction of the model shelter, the Waterways Experiment Station (WES) was designing the model and the required hydraulic appurtenances. The model design which included the design and in some cases fabrication of the various elements of the model's hydraulic system and the plotting of approximately 26 miles of templates, was completed in the summer of 1974. WES conducted the design under a memorandum of Understanding between the Director, Waterways Experiment Station, and the District Engineer, Baltimore District. The Memorandum also stipulated that WES would construct, adjust, and verify, and operate and maintain the model through the initial testing period.

Construction of the model was started in October 1974 and the approximately 9 acre model was completed in April 1976. A formal dedication ceremony sponsored by the Commissioners of Queen Anne's County was held on 7 May 1976. This dedication ceremony marked the beginning of the adjustment and verification period which is scheduled to be completed in the summer of 1977.

When adjustment and verification is completed, the model will be available for use in scientific studies. As noted earlier, a meeting was held in 1967 to discuss the anticipated capabilities of the Hydraulic Model of Chesapeake Bay and the role of a hydraulic model in these studies. It was found that the model is one of the most versatile instruments available and that through its use the hydraulic engineer, water resources planner and scientist will be better able to understand this complex estuarine system and consequently will be able to more intelligently cope with both natural and man-made problems and conflicts. It was also found that effective, well prioritized use of the model is contingent on a full identification and realization of those problems and conflicts peculiar to Chesapeake Bay and that this was not possible until significant progress had been made on the comprehensive water resources study. The completion of the *Existing Conditions Report* in 1973 represented the first step in accomplishing this, but it was not until 1975 that sufficient work had been accomplished on the projection of future conditions to allow formulation of an initial program of studies on the Hydraulic model of Chesapeake Bay. This formulation was a joint effort between the Corps of Engineers and the Advisory Group and Steering Committee and is more fully described in Appendix 16—Hydraulic Model Testing.

FOOTNOTES

1. Statement of Representative Rogers C. B. Morton before the U.S. House Committee on Public Works Hearings, 89th Congress, 1st Session (26-29 July 1965 and 23-27 August 1965).

2. Statement of Representative Thomas N. Downing before the U.S. House Committee on Public Works Hearings, 89th Congress, 1st Session (26-29 July 1965 and 23-27 August 1965).

CHAPTER IV

FUTURE ACTIVITIES

The objectives of the Chesapeake Bay Study Program, as presented in Chapter I, included assessing the existing condition of the Bay and its water resources; projecting future water resources needs; and formulating and recommending solutions to priority problems using the Hydraulic Model. The completion of the *Chesapeake Bay Existing Conditions Report* and this the *Chesapeake Bay Future Conditions Report* satisfies the first two objectives of the study. The principal remaining task of the study then is to select the priority problems to be considered in more detail and to formulate and recommend solutions to these priority problems.

As in the past, the study organization described in Chapter II will have an active role in future study activities. The study's review and coordination process will be used to select those priority problems to be studied in the next phase of the program. The problems to be considered for additional study are those identified in both the *Existing Conditions Report* and the *Future Conditions Report.* The problems will be screened and prioritized based on a number of factors to include problem severity and Bay-wide significance, desirability and applicability of hydraulic model testing and to avoid any duplication with any other on-going study or research effort.

Following the selection of the problems to be investigated further, the Task Groups will again identify the specific tasks to be accomplished and assign the work within their respective groups. Since the remaining work will involve the formulation and recommendation of specific solutions to problems, it is expected that the interaction among the Task Groups and the Advisory Group and the public will be more intensive than in the first two phases of the study.

With specific regard to the hydraulic model, the initial year of testing will commence following completion of the verification and adjustment period. As noted in the preceding chapter, this testing program was selected in concert with the study organization and includes the following tests. More detailed information on these tests may be found in Appendix 16: Hydraulic Model Testing.

1. The Low Freshwater Inflow Study. This investigation is designed to study the effects on the salinity regime of the Chesapeake Bay System that will

result from significantly decreased freshwater inflows due to drought conditions or due to upstream construction such as reservoirs or to increased consumptive losses.

2. The Baltimore Harbor Study. This work will be undertaken to define the effects on the estuarine system due to increasing the depth of the Baltimore Harbor and approach channels.

3. The Potomac River Estuary Water Supply and Wastewater Dispersion Study. This study will explore the ramifications of using the Potomac River Estuary as a supplemental source of water supply for Washington, D.C. One of the concerns generated by using the estuary as a source of water supply is the possibility of recycling wastewater into the public water supply during periods of low freshwater inflow and the possibility of changing the salinity levels and current patterns in the estuary.

The information gained from the above tests will be used in the next phase of the Chesapeake Bay Study and in specific studies being conducted by the Corps of Engineers to include the preconstruction planning for the deepening of Baltimore Harbor and channels and the Metropolitan Washington, D.C., Water Supply Study. Future tests to be conducted on the model will be selected through the study coordination process and will be developed based on the needs of next phase of the Chesapeake Bay Study Program.

APPENDIX 1

ATTACHMENT A

TABLE A-1
ADVISORY GROUP REPRESENTATIVES

DEPARTMENT OF AGRICULTURE

Edward R. Keil, 1967-70
C. Douglas Hole, 1970-72
Graham T. Munkittrick, 1972-76
Gerald R. Calhoun, 1977

DEPARTMENT OF COMMERCE

Phillip K. Reiss, 1967-68
Howard J. Marsden, 1968-70
Henry L. DeGraff, 1970-77

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE[1]

Gerald W. Ferguson, 1967-70

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Mark Keane, 1967-67
Jerome E. Parker, 1967-68
Thomas M. Croke, 1968-76
Lawrence Levine, 1976-77

DEPARTMENT OF THE INTERIOR

Eugene T. Jensen, 1967-68
Lloyd W. Gebhard, 1968-68
Mark Abelson, 1968-73
Ellen Jensen, 1973-73
J. David Breslin, 1973-75
Roger S. Babb, 1975-77

TABLE A-1 (cont'd)
ADVISORY GROUP REPRESENTATIVES

DEPARTMENT OF TRANSPORTATION

Philip E. Franklin, 1967-70
ADM E. C. Allen, Jr., 1971-71
Capt. Winford W. Barrow, 1971-72
Capt. G. H. Patrick Bursley, 1972-74
Capt. Keith B. Schumacher, 1974-77

ATOMIC ENERGY COMMISSION[2]

Dr. Jeff Swinebroad, 1968-73
Dr. Ford A. Cross, 1973-75

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Dr. W. Roland Taylor, 1975-75
Dr. Jackson O. Blanton, 1975-76
Dr. D. Heyward Hamilton, 1976-77

ENVIRONMENTAL PROTECTION AGENCY

Lloyd W. Gebhard, 1971-71
William M. Blankenship, 1971-73
Larry S. Miller, 1973-74
Green Jones, 1974-76
Leonard Mangiaracina, 1976-77

FEDERAL POWER COMMISSION

Paul H. Shore, 1967-72
John H. Spellman, 1972-74
Angelo Monaco, 1974-76
James D. Hebson, 1976-77

TABLE A-1 (cont'd)
ADVISORY GROUP REPRESENTATIVES

NATIONAL SCIENCE FOUNDATION

Dr. William A. Niering, 1968-68
Dr. Edward Chin, 1968-70
Dr. Richard C. Kolf, 1970-74
Dr. Edward H. Bryan, 1974-77

SMITHSONIAN INSTITUTION

Dr. I. Eugene Wallen, 1968-71
Dr. Francis S. L. Williamson, 1971-75
Dr. J. Kevin Sullivan, 1975-77

U.S. NAVY

CDR J. A. D'Emido, 1967-70
LCDR P. J. Parisius, 1970-71
Edward W. Johnson, 1971-77

DELAWARE

BG Norman M. Lack, 1967-68
Austin N. Heller, 1970-73
John C. Bryson, 1973-77

TABLE A-1 (cont'd)
ADVISORY GROUP REPRESENTATIVES

DISTRICT OF COLUMBIA

LTC Tom H. Reynolds, 1967-67
LTC Louis W. Prentiss, Jr., 1967-68
Roy L. Orndorff, 1968-68
Norman E. Jackson, 1968-72
Paul V. Freese, 1972-73
Robert R. Perry, 1973-75
William C. McKinney, 1975-76
Herbert L. Tucker, 1976-77

MARYLAND

Joseph H. Manning, 1967-71
John R. Capper, 1971-73
James B. Coulter, 1973-77

PENNSYLVANIA

Clifford H. McConnell, 1967-77

VIRGINIA

Dr. William J. Hargis, Jr., 1967-77

[1]The Department of Health, Education, and Welfare is no longer a member of the Advisory Group.

[2]The Atomic Energy Commission was reorganized into the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NCR). ERDA is currently represented on the Advisory Group.

TABLE A-2
STEERING COMMITTEE FOR LIAISON AND BASIC RESEARCH

U.S. ARMY CORPS OF ENGINEERS — CHAIR AGENCY

Michael A. Kolessar, 1968-73 (Chairman 1968-70)
William E. Trieschman, Jr., 1970-72 (Chairman 1970-72)
Alfred E. Robinson, Jr., 1972-77 (Chairman 1972-77)

DEPARTMENT OF COMMERCE

Russell T. Norris, 1968-76
William Gordon, 1976-77

DEPARTMENT OF THE INTERIOR

Albert H. Swartz, 1968-71
John T. Gharrett, 1968-70
Dr. Oliver B. Cope, 1971-74
Dr. Daniel L. Leedy, 1974-76
Dr. W. Sherman Gillam, 1976-77

ATOMIC ENERGY COMMISSION[1]

Dr. Jeff Swinebroad, 1971-73
Dr. Ford A. Cross, 1973-75

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Dr. W. Roland Taylor, 1975-75
Dr. Jackson O. Blanton, 1975-76
Dr. D. Heyward Hamilton, 1976-77

TABLE A-2 (cont'd)
STEERING COMMITTEE REPRESENTATIVES

NATIONAL SCIENCE FOUNDATION

Dr. William A. Niering, 1968-68
Dr. Edward Chin, 1968-70
Dr. Richard C. Kolf, 1970-74
Dr. Edward H. Bryan, 1974-77

SMITHSONIAN INSTITUTION

Dr. I. Eugene Wallen, 1968-71
Dr. Francis S. L. Williamson, 1971-75
Dr. J. Kevin Sullivan, 1975-77

DELAWARE

BG Norman M. Lack, 1968-68
Norman G. Wilder, 1971-73
John C. Bryson, 1973-77

DISTRICT OF COLUMBIA

Norman E. Jackson, 1968-72
Paul V. Freese, 1972-73
Robert R. Perry, 1973-75
William C. McKinney, 1975-76
Herbert L. Tucker, 1976-77

MARYLAND

Frederick W. Sieling, 1968-75
Dr. L. Eugene Cronin, 1968-77
Dr. Donald W. Pritchard, 1968-77
Albert E. Sanderson, 1968-77
L. E. Zeni, 1975-77

TABLE A-2 (cont'd)
STEERING COMMITTEE REPRESENTATIVES

PENNSYLVANIA

Marshal S. Goulding, Jr., 1968-70
William N. Frazier, 1970-77

VIRGINIA

Dr. William J. Hargis, Jr., 1968-77

[1]The Atomic Energy Commission was reorganized into the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NCR). ERDA is currently represented on the SteeringCommittee for Liaison and Basic Research.

CHESAPEAKE BAY
FUTURE CONDITIONS REPORT
APPENDIX 2
PUBLIC PARTICIPATION AND INFORMATION

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
THE STUDY AND THE REPORT

One of the most important elements of any water resources planning effort is a carefully thought-out, well executed public participation and information program. Citizen interest in resource planning and the demand to take part in the planning process has been increasing during the last decade. Growing interest and concern for the environment has been one of the principal factors responsible for this movement.

In addition, it This appendix includes a discussion of the role that public participation and information has played in the Chesapeake Bay Study. The various elements of the "public" are defined and a description of the many users of the Bay is provided. Also included is a discussion of those public participation and information activities which have been conducted thus far in the Chesapeake Bay Study Program. Finally, those public involvement activities required to achieve an effective water-land management program for the Bay are analyzed in the last chapter of this appendix.

AUTHORITY

The authority for the Chesapeake Bay Study is contained in Section 312 of the River and Harbor Act of 1965. Section 312 authorizes and directs the Corps of Engineers to conduct a complete investigation and study of water utilization and control of the Chesapeake Bay Basin and to construct, operate, and maintain a hydraulic model of the Bay. Specifically, Section 312 reads as follows:

> a. The Secretary of the Army, acting through the Chief of Engineers, is authorized and directed to make a complete investigation and study of water utilization and control of the Chesapeake Bay Basin, including the waters to the Baltimore Harbor and including, but not limited to, the following: navigation, fisheries, flood control, control of noxious weeds, water pollution, water quality control, beach erosion, and recreation. In order to carry out the purposes of this section, the Secretary, acting through the Chief of Engineers, shall construct, operate, and maintain in the State of Maryland a hydraulic model of the Chesapeake Bay Basin and associated technical center. Such model and center may be utilized, subject to such terms and conditions as the Secretary deems necessary, by any department, agency, or instrumentality of the Federal Government or of the States of Maryland, Virginia, and Pennsylvania, in

connection with any research, investigation, or study being carried on by them of any aspect of the Chesapeake Bay Basin. This study authorized by this section shall be given priority.

b. There is authorized to be appropriated not to exceed $6,000,000 to carry out this section.

At the request of the House Appropriations Committee, a complete reanalysis of cost was submitted to Congress in April 1969 recommending that the Study cost be increased to $15,000,000. The River Basin Monetary Authorization Act of 1970, which was adopted on 19 June 1970, increased the authorized appropriation level from $6,000,000 to $15,000,000. The Appropriate Section reads:

> "In addition to the previous authorizations, the completion of the Chesapeake Bay Basin Comprehensive Study, Maryland, Virginia, and Pennsylvania, authorized by the River and Harbor Act of 1965 is hereby authorized at an estimated cost of $9,000,000.

In June 1972, the Chesapeake Bay Basin was subjected to one of the most destructive storms the Region has ever witnessed–Tropical Storm Agnes. As a consequence, $275,000 was appropriated for a special study of the effects of Tropical Storm Agnes on Chesapeake Bay. The study was included as part of the Chesapeake Bay Study Program. The authority for the Agnes Study was the Supplemental Appropriations Act of 1973, which was signed by the President on 31 October 1972. The Agnes Study resulted in a separate report completed in March 1975 and entitled *Impact of Tropical Storm Agnes on Chesapeake Bay*.

PURPOSE

There are three objectives for the Chesapeake Bay Study:

a. to assess the existing physical, chemical, biological, economic and environmental conditions of the Bay and its water resources;

b. to project future water resource needs of Chesapeake Bay to the year 2020;

c. to formulate and recommend solutions to priority problems using the Chesapeake Bay Hydraulic Model.

As indicated by the authorizing legislation, there are two parts of the Chesapeake Bay Study: the comprehensive water resources study and the hydraulic model. The water resources study is a comprehensive investigation of water and related land resource use in the Bay Region and encompasses the physical, biological, and social sciences. One of the first milestones achieved in the resource study was the *Chesapeake Bay Existing Conditions Report* which represented the completion of the inventory phase of the Study. The purpose of this report was to provide water resources planners, scientists, and other interested readers with an assessment of the present status of the Bay, its resources, and its problems. The *Existing Conditions Report* has also been used as a working document for the second, or future projections phase of the Study. The results of the future projections phase are presented in this the *Future Conditions Report.* This second phase includes the projection of demands to be placed on the resource to the year 2020. The ability of the resource to meet future demands was also assessed and resource deficiencies, or needs, were identified and quantified.

In addition to quantifying future water resource needs, the broad range alternatives to fulfilling the needs are identified. Also identified are the additional studies that would have to be conducted to obtain the necessary information to implement the best practicable solution. It is not the purpose of the second phase or of the *Future Conditions Report*, however, to recommend any specific project or program.

The physical factors affecting Chesapeake Bay are so complex and intertwined that it is difficult to predict the full ramifications of water resources development projects. The Chesapeake Bay Hydraulic Model will be a tool that will help to demonstrate the relationship of the physical parameters within the estuary's hydraulic regimen. Bay Model tests have two general objectives. First, to gain a better understanding of how the Bay's hydraulic system operates, and second to predict the impacts of proposed projects or management programs. The Bay Model will greatly enhance man's ability to make the most beneficial use of the Bay's resources.

If the Chesapeake Bay Study program is going to be successful in achieving these goals, it is essential to coordinate the conduct of it with other Federal, State, and local governmental agencies that have water resources management responsibilities. It is also necessary to incorporate the public's desires into water resources planning since it is the public that ultimately pays for and benefits from the use of the Bay's resources. Public participation and information, with the "public" defined as any non-Corps entity, plays an integral role in the overall Bay Program. By establishing functional two-way communication between the planner and the publics, the public desires can be effectively identified. The specific objectives of the public participation program are to:

a. identify the agencies, institutions, organizations, and individuals that are affected by and interested in the Bay's resources;

b. inform the public about the Chesapeake Bay Study Program;

c. obtain the public's comments, views, and perceptions of problems, needs, desires, and related impacts with regard to the Bay's resources and use priorities and to incorporate their opinions where appropriate;

d. identify future public participation and information activities.

SCOPE

The scope of the Chesapeake Bay Study and the *Future Conditions Report* includes the multi-disciplinary fields of engineering and the social, physical, and biological sciences. The Study is limited by three elements: the geographic study area, the water and related land resource categories studied, and the depth of investigations.

In general terms, the Chesapeake Bay Study Area is defined as the Bay proper, and its tributaries and the adjacent land areas.

More specifically, the Study Area is defined as the cities, counties, and Standard Metropolitan Statistical Areas (SMSA's) which touch or have a major influence on the Chesapeake Bay. As shown in Figure 2-1, the Study Area includes parts of the States of Maryland, Virginia, and New Jersey, the State of Delaware, and the District of Columbia and encompasses seven SMSA's, 36 non-SMSA counties, and five independent cities. The Study Area, however, is not the same for all the water resource categories examined in this study. For example, in examining recreation demands the study area shown in Figure 2-1 had to be expanded in order to develop the projected visitation from outside the immediate Bay area. Conversely, in considering shoreline erosion only that area along the Bay and its tributaries that is subject to tidal action was evaluated. Specific study areas are fully defined in the individual appendices of both the *Existing Conditions Report* and the *Future Conditions Report.*

The Public Participation and Information Study Area conforms to the Study Area shown in Figure 2-1. Interest in the Bay and the study program, though, exists outside of the immediate Bay Region. Examples are research institutions and environmental groups that are based in other areas. These entities, when appropriate, were included as relevant publics.

The depth of public participation during the Study program varied with the type of public. The general public was kept informed of study progress. Their comments concerning the Study were requested and positive action was taken wherever appropriate. Direct and functional two-way communication was established with interested conservation groups, industry, and political action groups. Appropriate Federal and State agencies actively participated in the Study through such mechanisms as the Chesapeake Bay

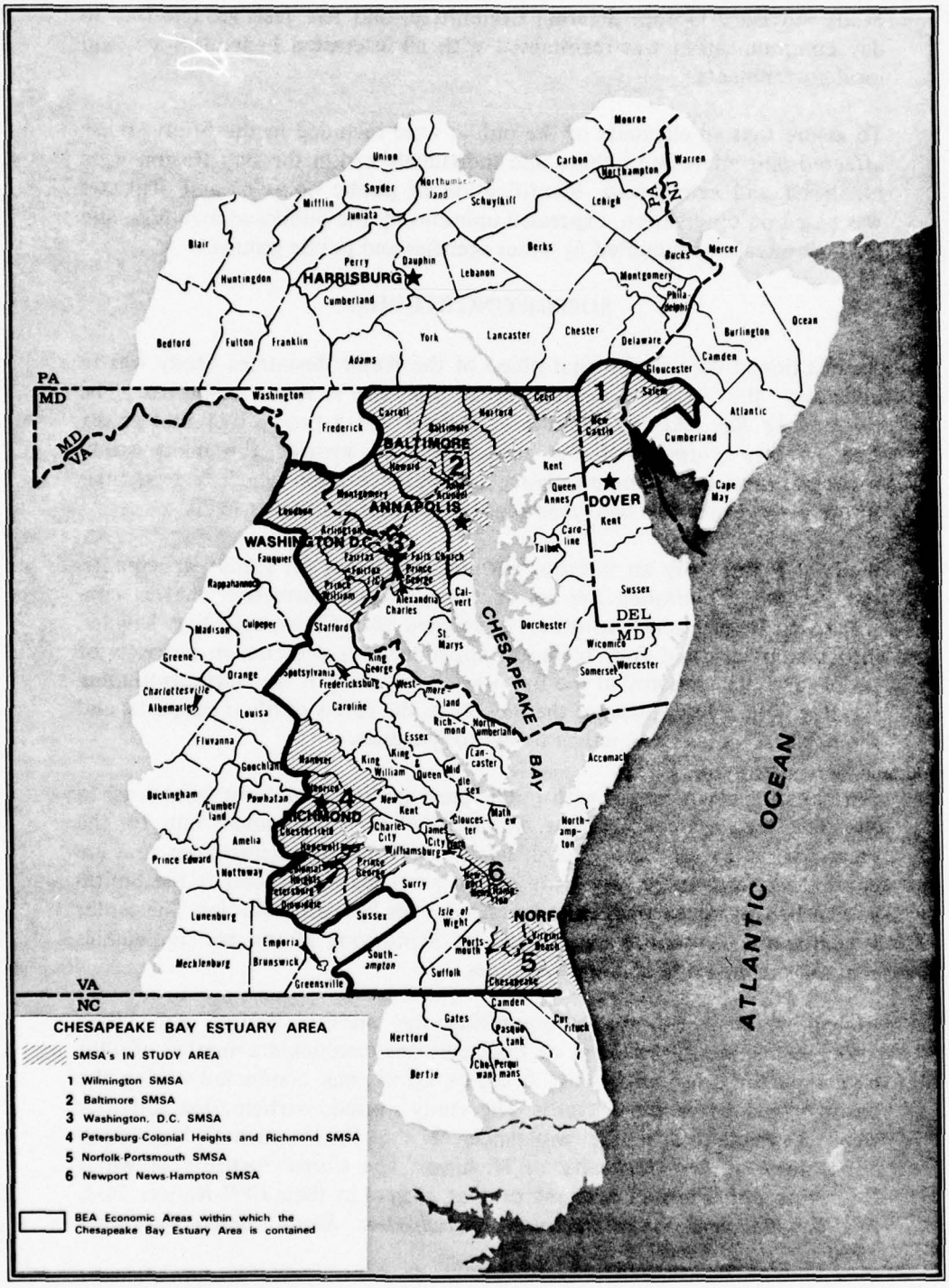


Figure 2-1: Chesapeake Bay Study Area

Study Advisory Group, Steering Committee, and five task groups. Day to day communication was maintained with all interested Federal, State, and local governments.

To assure that all elements of the public were included in the Study, those affected and interested publics and individuals within the Bay Region were identified and categorized. Identification of public opinions and attitudes was based on observation, expressed opinions by the publics at meetings, and through research conducted by other agencies and public groups.

SUPPORTING STUDIES

As mentioned earlier, the first phase of the Water Resources Study was to inventory the existing conditions of the Bay's water resources. The *Chesapeake Bay Existing Conditions Report* was a product of that phase. The primary purpose of the report was to provide the many study participants with a common source of reference upon which to base their future projections. The base year adopted for that study was 1970.

While it is primarily an interim, working document for study participants, the *Existing Conditions Report* contains much information that is considered to be of interest to others concerned with Chesapeake Bay. Divided into a summary and four technical appendixes, it presents an overview of people and the economy of the Bay Region, a survey of the land surrounding the Bay, and a description of the Bay itself, the forms of life it supports, and the physical forces that control its hydrodynamics.

Formal studies concerned with public participation in water resources use in the Bay Region are few. Some studies have been conducted, but, for the most part, they are mainly local. In the forefront of organizations that are conducting systematic, Bay-wide public participation studies is the Smithsonian Institution's Chesapeake Bay Center for Estuarine Studies. The center is conducting a continuing program of identifying groups and individuals that are instrumental in water resources.

Reflecting the need for incorporating the public's desires into water resources planning, the Corps of Engineers has conducted a number of pilot public participation programs. A major effort was conducted during the Susquehanna River Basin Study. The study's public participation activities were conducted with the assistance of the Environmental Simulation Laboratory of the University of Michigan. The Corps' Institute of Water Resources published an account of that project in their *IWR Report 70-6, The Susquehanna Communication–Participation Study*, dated December 1970.

Because each study and the public within each study area are unique, the public participation program from other studies and areas, despite their

degree of success, could not be automatically adopted for the Chesapeake Bay Study. However, some techniques tried and proven in other areas were found to be suitable for inclusion in the program developed for this study.

STUDY PARTICIPATION AND COORDINATION

The responsibilities for the management of the Bay's water resources are shared among a number of Federal agencies, the Bay area states, and the many local governments within the Study Area. In conducting this study program, the Baltimore District has coordinated both management and technical aspects with the involved Federal and State agencies and other knowledgeable institutions. This section briefly describes the formal coordination mechanism that was established.

The magnitude of the Chesapeake Bay Study, the large number of participants, and the complexity of problems to be considered required an elaborate study organization. Playing key roles in the Study have been the Chesapeake Bay Study Advisory Group, the Steering Committee, and five task groups, which include the Economic Projections Task Group; Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group; Flood Control, Navigation, Erosion, Fisheries Task Group; Recreation Task Group; and Fish and Wildlife Coordination Group. The Advisory Group is composed of representatives from 11 Federal agencies and the four Bay Area states of Delaware, Maryland, Pennsylvania, and Virginia, and the District of Columbia. The Advisory Group continually reviews and comments on work of others in an attempt to keep the efforts of study participants in harmony and phase. In addition, the Advisory Group counsels the Baltimore District Engineer on study policy and management.

The Steering Committee is a technically-oriented group composed of water resource experts from various Federal and State agencies and research institutions. This committee reviews study progress to insure compatibility and advises the District Engineer on technical and scientific matters.

Each task group performs and reviews studies in related resource categories. The task groups are composed of representatives from those Federal and State agencies with responsibility and competence in fields related to the task group. This mechanism allows the assignment of resource studies to the institutions with the most expertise while maintaining review through the Advisory Group and Steering Committee–by all interested parties. A more detailed discussion of the study organization may be found in Appendix 1–Study Organization, Coordination, and History.

Coordination was also maintained with the governmental agencies not represented on the Advisory Group, Steering Committee, or task groups through the public participation and information activities, which are discussed in Chapter III of this appendix. Like the other appendixes of the

Future Conditions Report, this appendix has been reviewed by and incorporates the comments of the Advisory Group and Steering Committee members.

CHAPTER II
DEFINING THE PUBLIC

Chesapeake Bay is more than just 4,400 square miles of water surface. It is a major component in a highly intricate structure of water, land, and human resources. In 1970, there were almost 8 million people living in the Chesapeake Bay Region. This represented 3.9 percent of the Nation's people. As might be expected, this large number of inhabitants is extremely diverse in terms of their life styles, economic status, views, and perceptions. It is this human diversity combined with the Region's geographic complexity and large size which makes an understanding of the Bay's land and water resources, its people, and its problems most difficult.

In this chapter, the Bay Region will be briefly discussed in terms of its diverse physical characteristics, its multitude of resources, and the socio-economic characterisitics of its people. In addition, and most importantly, the Region's many people, who constitute the users of the Bay, will be carefully analyzed with respect to who they are and what they do. This process of "defining the public" serves as a first step in involving the public in the planning process.

THE CHESAPEAKE BAY REGION

Chesapeake Bay, the largest estuary in the United States, stretches approximately 200 miles from an area near the mouth of the Susquehanna River to the Atlantic Ocean. In the northern end, the Bay is connected to the Delaware Bay by the Chesapeake and Delaware Canal. The Bay's width varies from about 35 miles near the mouth of the Potomac River to approximately 4 miles near the Chesapeake Bay Bridge. While its deepest part is 175 feet, the Bay is primarily a shallow water body with over two-thirds of it less than 18 feet deep.

The Bay's drainage basin totals 64,170 square miles and reaches from New York State in the north, West Virginia in the west, and North Carolina in the south. Freshwater flows into the Bay from five major tributaries and numerous minor ones. The Susquehanna River, the Bay's largest tributary, contributes approximately half of the Bay's freshwater inflow. The four other major tributaries are the Potomac, the James, the Rappahannock, and the York Rivers.

Mixing in the Bay occurs between the freshwater from the tributaries and the saltwater from the ocean. Generally, the Bay is fresh in the northern section, a transition zone of brackish water in the middle, and saline in the lower Bay. The mixing of the freshwater with the saltwater results in wide variations in salinity which provide an extremely rich biological environ-

ment. Species that require different salinity conditions can live within the same estuarine system. Some species, in fact, can exist only in an estuary since they spend part of their life in an area of high salinity and another part in an area of low salinity or freshwater.

RESOURCES AND PROBLEMS

Many water and related land resources are associated with Chesapeake Bay. Man makes use of these resources, which frequently result in conflicts. Some problems, however, occur naturally, such as hurricane flooding. This section briefly describes some of the major resources and problems of Chesapeake Bay. The other appendices of this *Future Conditions Report* describe them in depth.

The Chesapeake Bay Study Area is a region made up of diverse land use activities. The large urban centers located along the Fall Line of the Bay Region's western shore and in the Hampton Roads area have developed into dense nucleations of residential, commercial, industrial, and institutional activities. While large segments of the Study Area are intensively developed, the overwhelming portion is devoted to rural uses. Presently, there are millions of acres of land within the Region in productive agricultural use or in commerical forest. The Estuary Area also contains some of the most valuable archeological and historic resources and natural environmental areas in the Nation. These latter areas, which provide a home for many species of wildlife, include wetlands, saltwater and freshwater marshes, swamp forests, bogs, and scenic rivers.

Adequate supplies of good quality water are a prerequisite to sustain life, the economy, and the social well-being of the people. Primary sources of water in the Bay Region are surface water and ground water. Over 900 million gallons per day (mgd) are provided by public (municipal) water supply systems, of which 80 percent comes from streams, lakes, and reservoirs and 20 percent from ground water. Industry uses approximately 1,500 mgd, in addition to that supplied by public supply systems. Most of this is drawn from the Bay and its tributaries and ground water. The third major use of water (approximately 100 mgd) is for agricultural purposes, to include domestic use, livestock, and irrigation.

Associated with water supply is water quality—the water must be suitable for the use it is intended. Water for human consumption, for example, has to be of a better quality than water for irrigation purposes. Water quality is relative; it depends on the type and concentration of pollutants. Some of the major water quality parameters are bacteria, dissolved oxygen, nutrients, heavy metals, acidity, and chemicals. The U.S. Environmental Protection Agency (EPA) has established guidelines that set limits for accepted concentrations of water quality parameters. The states, following EPA's

guidelines, set forth their own standards. At present, the quality of the Bay's water is generally good. There are serious localized problems, however, in some of the Bay's tributaries near urbanized and industrialized areas.

Chesapeake Bay also provides much water-oriented and water-enhanced recreational opportunities. Each year, millions flock to the Bay to sail, boat, picnic, and camp. In addition to providing leisure time activities, recreation is a major industry. The Region as a whole has adequate supplies for swimming and camping, but there is a lack of adequate numbers of picnic tables and boat launching facilities. The supplies and demands vary widely within the Region, though, with the urban areas generally showing the most significant shortages of facilities.

The Bay as a navigational artery plays a significant role in the Bay Region's economy. Ocean-spanning ships from the Bay's ports carry commerce to all points of the world. The two major seaports in the Bay Region are Baltimore and the Hampton Roads Complex, which includes Newport News, Hampton, Norfolk, and Portsmouth. In 1970, the Hampton Roads Complex was ranked fourth largest port in the Nation and Baltimore was ranked sixth, based on total tonnage passing through the ports. In order to sustain the Bay's navigational capacity, maintenance dredging of navigation channels must be performed and port facilities must be built. However, this presents a classic conflict. Dredging, the relocation of the dredged material, and port construction activities can have complex ecological and hydrologic implications. Careful planning is required, therefore, to insure that the benefits of navigational activities are not offset by costs to the ecosystem.

One of the natural phenomena that can cause devastating property damage and even loss of life is hurricane flooding. Hurricanes and other types of storms are a recurring threat to the Bay Region; over 100 storms have been recorded that have caused serious damage. The latest major storm was Tropical Storm Agnes. Over $43 million in damages or recovery costs in the Bay Region alone were attributed to the 1972 storm. With the technology currently available, hurricanes cannot be prevented, but there are measures that can be taken to mitigate their effects, such as flood walls, flood plain regulations, flood proofing, and early warning systems.

Another problem facing the Bay is erosion. While it is a natural process, the rate of erosion is often accelerated by man's activities. Erosion is a twofold problem. First, many acres of valuable shore areas are lost through erosion. Second, the suspended sediment, a product of erosion, can pollute water supply sources, hinder waterborne recreation, and injure aquatic life. The deposition of the sediments can fill in navigation channels and wetlands. On the average, 450 acres of shoreline areas are eroded away each year. In many local areas erosion is a severe problem. In Maryland, the Eastern Shore counties of Dorchester, Somerset, and Talbot suffer the greatest losses. In Virginia, the Eastern Shore's Accomack County has the most severe erosion

loss, followed by Northumberland County at the mouth of the Potomac River.

Because of the variations in salinity levels, the Chesapeake Estuary supports an abundant and wide variety of fish life. Bay finfish, for the most part, reproduce in the freshwater and low saline waters of the Upper Bay and the Tributaries. On the other hand, the famous Chesapeake Bay blue crab reproduces in the saltier waters of the Lower Bay. Besides being a favored recreational activity, fishing is a major industry. In recent years, the commercial harvests of shellfish and finfish have totaled approximately 388 million pounds valued at nearly $33 million.

Chesapeake Bay also plays a vital role in the generation of electricity. Water is drawn from the Bay and its tributaries for use as a coolant in both fossil-fueled and nuclear power plants. The effects of discharging this heated water back into the Bay are not fully understood.

Another problem deals with noxious weeds, aquatic plants that interfere by crowding out desirable plant life or interfere with man's use of the Bay. While not a current Bay-wide problem, noxious weeds do cause problems in some localized areas.

THE PEOPLE

This section gives a gross demographic profile of the Bay Region. The social characterisitcs are described first, followed by the economic characteristics. Additional information is presented in "Appendix A: The People and the Economy," *Chesapeake Bay Existing Conditions Report*, and "Appendix 3: Economic and Social Profile" of this *Future Conditions Report*.

SOCIAL CHARACTERISTICS

In 1970, there were 7,872,000 persons living in the Bay Region. Population growth in the Bay Region for the past few decades has been rapid. Between 1940 and 1970, the population increased almost 112 percent, compared to a national growth rate of almost 54 percent. Much of the growth was due to in-migration from other parts of the country. Based on figures provided by the Bureau of Economic Analysis, U.S. Department of Commerce, the population of the Bay Region is projected to increase from 7.9 million to 16.3 million by the year 2020, a gain of about 106 percent. (This projection is based on the 1972 Series C OBERS projections prepared for the Water Resources Council by the U.S. Department of Commerce and U.S. Department of Agriculture for use in all water resource planning documents.)

Distribution of the Bay's population varies from high-density, urban areas to low-density, rural areas, as shown in Figure 2-2. Urbanized areas with over 1,000 people per square mile include the Baltimore Metropolitan Area, the

Washington Metropolitan Area, the Richmond Metropolitan Area, and the Norfolk-Hampton Roads Complex. These densely populated centers are contrasted with many counties that have less than 50 people per square mile. In regards to age, the Bay Region's population is younger than the Nation's. Comparative figures are given in Table 2-1.

The Bay Region has a higher proportion of high school graduates than the Nation. For males 25 years old and over, 53.8 percent in the Bay Region possess at least a high school eduction, compared to a national percentage of 53.0 percent. However, within the Bay Region there is considerable variation. Median school years completed, on a county basis, range from 7.5 years in Southampton County, Virginia, to 15.0 years in Montgomery County, Maryland.

ECONOMIC CHARACTERISTICS

The families of the Bay Region enjoy a higher income than the national average. A comparison of the counties within the Region shows significant income differences between subdivisions. Median family income in 1969 in Montgomery County, Maryland, was $16,710 while in Northampton County, Virginia, it was $4,778. Generally, the high incomes are earned mainly in and near the urban centers. The high economic viability of the Bay Region is also shown in the percentage of unemployed workers. In 1970, the Bay Region had an unemployment rate of 3.2 percent, compared to the national percentage of 4.3.

The percentage of Bay Region workers that are employed in various economic activities is shown in Figure 2-3. Bay Region figures are also compared with national figures. The major Bay Region employers are the Service Sector, Wholesale and Retail Trade Sector, the Manufacturing Sector and the Public Administration Sector. Compared with the national percentage, the Bay Region has a significantly smaller proportion of workers in the manufacturing and significantly larger proportions in public administration and the armed forces.

TABLE 2-1
AGE DISTRIBUTION

	% Younger than 18	% 18-64	% Older than 64
Chesapeake Bay Region	35.1	57.6	7.3
United States	34.3	55.8	9.9

Source: U.S. Census of Population: 1970, *General Population Characteristics*

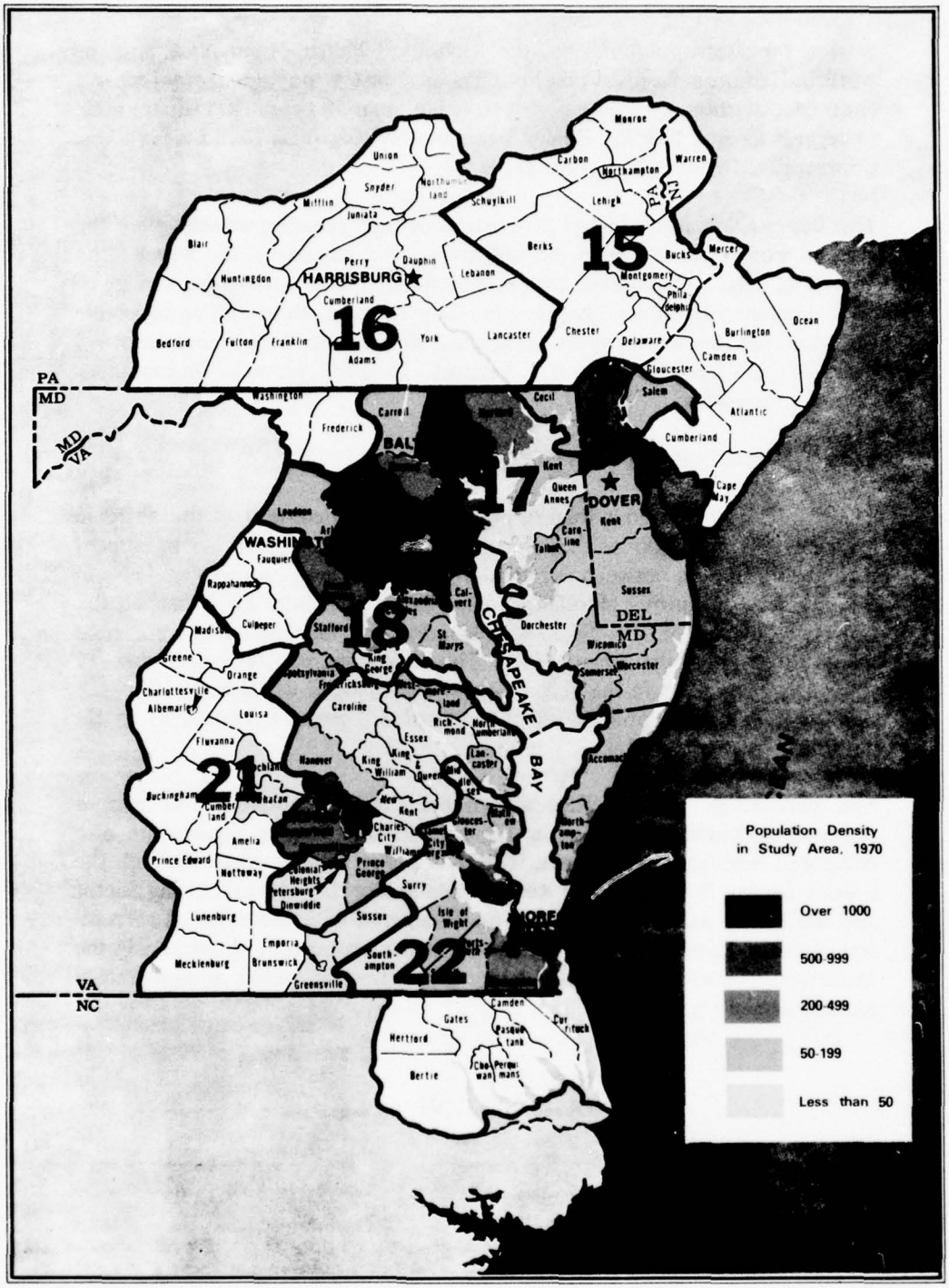


Figure 2-2: Population Density in Study Area, 1970

EMPLOYMENT BY ECONOMIC SECTORS, STUDY AREA AND UNITED STATES, 1970 (PERCENT)

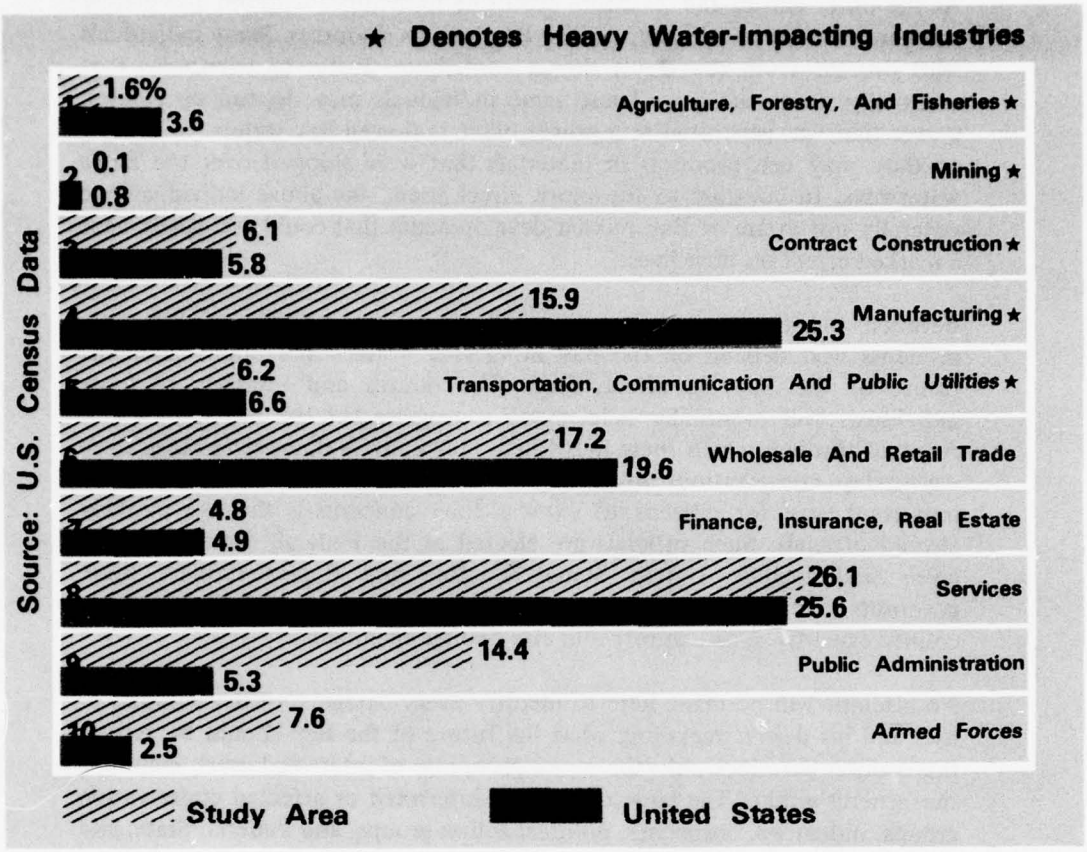


Figure 2-3: Employment by Economic Sectors, Study Area, and United States, 1970

THE STUDY PUBLICS – THE USERS

In effect, everyone living in the Bay Region is a user of the Bay's water and related land resources. Some of the inhabitants are direct users and may be very sensitive to or aware of any change in the resource, while others are not cognizant of the sometimes subtle role that Chesapeake Bay plays in their lives.

An Eastern Shore waterman who depends on his catch of finfish and shellfish to support his family; a doctor who enjoys sailing on the Bay during summer weekends; a tugboat operator in the busy Port of Baltimore; a marine biologist at one of the several Bay research institutions; and a shorefront property owner who has observed the erosion of his property may all be classified as Bay users who have a more direct relationship to the Bay. These so called direct users, who often depend directly on the Bay for their livelihood, are generally more aware of Bay related developments and are quick to question those actions that may appear to threaten their interests.

At the other end of the spectrum are those individuals who are completely unaware of their relationship to the Bay and its resources. Many individuals who live far from the Bay's shores contribute wastes to tributaries that eventually enter the Bay. These same individuals may depend on electric power that was generated at a power plant that used Bay waters for cooling or they may use products or materials that were shipped over the Bay's waterways. In contrast to the more direct users, the above individuals are generally not aware of Bay related developments that could eventually have a marked effect on their lives.

Between the two extremes mentioned above are millions of Bay area residents who depend on the Bay in varying degrees and upon whom the future of the Bay, in effect, rests. The desires and interests of these individuals will eventually help shape a program for the Bay's resources. Avenues through which these individuals may express themselves range from day-to-day conversations to testimony before legislative bodies. Another important way for citizens to express their concerns is through publicly elected officials. Such officials are elected at the Federal, State, and local levels and include United States Senators and Representatives, State governors, senators and delegates, and local individuals including mayors, county executives, and county and city council members.

No attempt will be made here to identify every category of Bay resident or user and his desires regarding what the future of the Bay should be; rather, this section describes only the major groupings of interested users, including the general public. The large number of interested or affected conservation groups, industries, businesses, political action groups, and Federal, State, and local governments precludes a complete listing and discussion of all of them; wherever possible, however, information is provided on the more important groups so that, if the reader desires, he may find out more about them.

THE GENERAL PUBLIC

The Chesapeake Bay Region's population is almost as diverse in terms of lifestyles and backgrounds as the variety of fish and wildlife that inhabit the Bay's water and land areas. One of the most distinct and colorful lifestyles present in this Region is that of the waterman. All along the Bay's shores are found time weathered skipjacks and trawlers owned and used by the thousands of watermen of the Region. These people, who make their living primarily from the fruitful waters of both the Bay and its tributaries, frequently harvest crabs in the summer, oysters in the winter. Throughout the year, they may also dredge for clams or fish for some of the commercially valuable species found in the Bay's waters. Most of these sea harvests are shipped to the Region's population centers where they are enjoyed by many as the "bounty of the Chesapeake." During the off season, these watermen may also choose to freight odd cargoes or guide hunters who flock to the Bay's shores in search of ducks, geese, and other game.

The waterman's life is a difficult existence but one which offers certain rewards to those who, in many instances, have known no other life. It provides a certain independence which few would give up. Wives of watermen keep house, raise children, and frequently work in one of the many seafood processing houses or canneries found in Maryland and Virginia. Sons of watermen often follow in their fathers' footsteps while daughters become watermen's wives. And so the cycle continues as it has done since the first English settlers reached the shores of Chesapeake Bay.

The rural way of life appeals to many others within the Bay Region besides the waterman. For example, during the post World War II years, waves of urban immigrants have been advancing upon the Eastern Shore, southern Maryland, and certain areas of tidewater Virginia seeking quiet havens and solitude away from the bustle of city life. Many of these people have retired to such tranquil areas to spend the autumn of their lives boating, fishing, and enjoying life. Others have chosen to move to the "Shore" and commute sometimes great distances to their place of employment, thereby allowing their families to enjoy a life in the country.

Aware of the migration of the urban dweller to rural areas are the hundreds of thousands of farmers within the Region. Much farmland has been converted to residential or commerical uses, although farmland still predominates in substantially large areas of the Bay Region. Farming, which provides a significant contribution to the Region's economy, has been an important activity in the Chesapeake Bay Region for as long as oystering or fishing. And the farmer is as dedicated to his land as the waterman is to the Bay. Often, his love of the good earth is first and foremost even though financial rewards may be modest and the work long and hard.

Of the Estuary Area's diverse regions, southern Maryland and Virginia cling most closely to the conservative traditions and soft accents of the South. The people in this part of the Bay Region take great pride in these traditions and in their history, too. Here, English colonists established Maryland's first capitol at St. Mary's City in 1634. Today, not far from that city, at Piney Point, one finds a maze of boat masts symbolizing the Region's traditionally close ties to the Bay. Southern Maryland and much of tidewater Virginia remain peaceful, slow-paced areas where elegance can still be found in many of the fine old manor houses built centuries ago and still maintained. Here is an area where tobacco, once considered gold, still constitutes one of the Region's most valuable cash crops. Small cites, established during the Colonial Era, such as Williamsburg and Annapolis, still provide evidence of the lifestyles which existed centuries ago along the shores of the Bay. Many of the old houses and shops have been bought and restored by individuals possessing a historic awareness. Others have been maintained by descendants of the original builders. Today, these people are proud of the rich heritage which has been passed down and, through much effort and work, have succeeded in restoring the colonial charm to these historic districts.

In tidewater Virginia, the few small Indian reservations found along the Pamunkey and Mattaponi Rivers remind one of the early inhabitants of the Region. Although the Indian culture which existed when the white man arrived has largely vanished, a few traditions survive. Today, these people along with those who are descended from the white settlers speak proudly of their ancestors. All around them is evidence of the Region's past glory and the hope of a bright future. It is the present descendants of those early Virginians and Marylanders who are working to guarantee this bright future.

In Maryland and Virginia, the urban dweller plays a vital role in the economy of both the Region and the Nation. Accounting for over 80 percent of the Region's population in 1970, most of the urban population is found in the Estuary Area's nine largest cities which include Baltimore, Washington, D.C., Wilmington, Richmond, Petersburg, Norfolk, Portsmouth, Hampton, and Newport News. Each of these cities is made up of a great diversity of peoples. Here is found the vast majority of the Region's blue collar workers—longshoremen, ship and tugboat crewmen and others who work in the busy ports at Hampton Roads and Baltimore; steelworkers like those at Bethlehem Steel's Sparrows Point plant in Baltimore; iron and metal refinery employees; tobacco processing workers such as those in Richmond and Petersburg; and a variety of other manufacturing workers and tradesmen.

It is in many of the blue collar neighborhoods of the large, older cities that ethnic character has remained in tact. Thus, in the long established sections of cities like Baltimore, the dialects, customs, skills, and traditions of Italy, Ireland, Africa, Germany, Poland, Greece, Lithuania, Czechoslovakia, and many others are celebrated with lasting enthusiasm. Weekend festivals are held in the summer to celebrate with proud distinction the customs and foods of over two dozen ethnic groups. Other cities of the Estuary Area display ethnic diversity as well—helping to add to the cultural richness of the Region.

Also adding to the variety in make-up of the Bay Region's cities are the many other elements of the population: white collar (office) workers; doctors, lawyers, and other professionals; shopkeepers and restaurateurs; college students; politicians; old people and young people; families and singles.

Some cities, such as Washington, D.C., and those in the Hampton Roads area have a large military establishment stationed at bases within or adjacent to their borders. The Chesapeake Bay Region, in fact, has a substantially higher percentage of armed forces than the United States as a whole due to two factors. First, the presence of the Capitol in Washington, D.C. has traditionally required a large number of forces for defense. Secondly, the Bay and its tributaries provide well-protected, deep-water harbors suitable for naval bases and related naval operations.

Beyond the densely populated centers of the Chesapeake Bay Region lie the

suburbs–areas immediately adjacent to the city proper where populations become more and more sparse toward the periphery. Here is where an increasing number of urban dwellers are moving to take advantage of more open space and generally less congestion. Mostly of middle income, these "suburbanites" have a culture all of their own. Many share a love for gardening and maintaining well manicured lawns and shrubs. Others consider the suburbs as a place where they can play football in a nearby field or coach the neighborhood little league baseball team. Many suburbanites enjoy being accessible to tennis courts and golf courses where they can join friends each week for a couple of sets of tennis or rounds of golf. Still others within the Bay Region consider spring and summer in the suburbs as a perfect setting to have neighbors over for a crab feast or cookout on the back lawn.

Aside from a place to live, the suburbs provide employment for increasingly large percentages of suburbanites. At this time, however, the city remains the primary employment center. Thus, living, shopping, and recreating in the fringe areas, while commuting into the city to work, the "typical" suburbanite has established a lifestyle which indeed sets him apart from the city dweller.

Lifestyles differ dramatically within the suburbs, too. The suburbs are not only bedroom communities made up of white collar workers who commute to their offices in the city, blue collar workers to their factories, and merchants to their shops. Other smaller, diverse groups exist as well. One of the most colorful and unique groups is that of the upper middle and upper income. Frequently, members of this small, elite group own large horse farms or estates in valleys adjacent to the cities. Here, fence-jumping equestrians compete with fellow riders from neighboring valleys in "timber races" held each spring. This is the "hunt set" that rides their geldings several times each week across field and woodland–together with their hounds in pursuit of the elusive fox. Such traditions as these have endured for centuries and indications are that they will continue.

All of these people and many more too numerous to mention belong to the Chesapeake Bay Region. Together, these eight million people comprise the "general public." Each, in some way, is affected by the Bay and its tributaries. It is their views and their needs which must be recognized and defined in order to provide for the proper management of the Chesapeake Bay's water and related land resources.

ORGANIZATIONS

Americans are organization-minded. They are quick to form groups in order to accomplish their goals. Some groups are temporary–formed in response to a specific issue and then disbanded when that issue is in some way resolved. Others are more lasting–formed as a fraternal organization such as

the Masons and Elks, or to provide a service to the community such as the Kiwanis or Rotary. Due to the sheer size of the Estaury Area, there are a great number and variety of organizations in existence in the Chesapeake Bay Region. They include labor organizations such as the Teamsters; associations like the Jaycees or the Veterans of Foreign Wars; youth groups such as the Boy Scouts of America and the Camp Fire Girls; Community improvement associations and related civic groups; professional organizations like engineering societies; political groups such as democratic clubs; business and trade associations such as chambers of commerce; environmental and conservation oriented groups like the Chesapeake Bay Foundation or the Sierra Club. Each organization has a membership which is bound together with a particular purpose or goal in mind. This may be to have fun and share common interests, improve commerce and trade in the Region, or save an endangered river or wildlife species.

The number of groups which are specifically interested in water resources planning is also quite large. Approximately 300 citizens groups or organizations have been identified as having an interest in or are affected by Chesapeake Bay. Like other associations, these groups vary in a number of ways to include geographical location, number of members, and specific interest. Some of these organizations are primarily interested in specific issues such as keeping the Potomac River clean. Others are interested in the full range of water resource issues affecting the Chesapeake Bay.

Due to the proliferation of citizens groups, many of which experience duplication of effort or have overlapping goals, coordinating bodies or umbrella groups such as the Citizen's Program for the Chesapeake Bay, Incorporated (CPCB) have been established. The CPCB is a non-profit organization incorporated in 1973 and composed of representatives from Bay-related groups, business, and industry. Its primary interest is in Bay-wide planning for Chesapeake Bay.

Members of the business community and those from industry belong to many of the associations and organizations found in the Bay Region. A number of these organizations, such as business and trade associations and labor groups, have as one of their chief goals the economic growth and development of the Region. In this respect, business and industry are well represented since their interests are generally of an economic nature also. It is this mutual "economic interest" together with the fact that many businesses and industries are users of the Bay's water resources which provide a common bond and make them a type of "organization" in their own right. As such, it is an important "group" to be considered in defining the public when planning for management of the Chesapeake Bay's water and land resources.

Within this "organization" of businesses and industries are many subgroups; that is, business firms which have specific interests in common with certain other firms of similar nature or in the same geographic locality. For example,

port-related industries are naturally concerned with both increasing economic development in the Region and in improving port facilities. Utility companies, on the other hand, may be interested in using the Bay's waters for cooling purposes, but they are also concerned with economic development as well. Thus, while a common interest prevails among all industries and businesses, certain sub-groups or "sub-organizations" have their own specific goals and interests.

THE RESEARCH COMMUNITY

A large number of people within the Chesapeake Bay Region have chosen to devote their full time and energy to studying Chesapeake Bay and its water-related land resources. These people are members of the Region's research community, which includes academic institutions, non-profit foundations and private companies. A list of the universities involved in research on the Bay is included in Table 2-2.

This section identifies sources of information that can be used to compile a complete list of research organizations studying Chesapeake Bay.

SOURCES OF INFORMATION TO BE USED IN COMPILING LISTS OF ORGANIZATIONS INVOLVED IN RESEARCH ON THE BAY

As part of the *Existing Conditions Report*, the Chesapeake Research Consortium, Inc., which is composed of the Smithsonian Institution, the University of Maryland, the Johns Hopkins University, and the Virginia Institute of Marine Science, compiled lists of on-going research projects and universities and scientists conducting Bay research or otherwise interested in Chesapeake Bay. Several of these studies were partially reprinted in the *Existing Conditions Report* and are described briefly below.

a. *A Cross-Referenced Index to Current (1971-1972) Biological and Biology Related Research on Chesapeake Bay*, by Sonya M. Cohen and Andrew J. McErlean (NRI Reference No. 72-73, VIMS Contribution No. 448, SI-CBCES Reference No. 2).

This index summarizes, identifies, and cross-references biological and biology related research. The sources were limited to RANN-supported research at the University of Maryland, the Virginia Institute of Marine Science, and the Smithsonian Institution. (RANN stands for Research Applied to National Needs.) An addendum of the same title and by the same authors was written to expand this report. The addendum includes the research programs of more institutions and a description of each research effort.

TABLE 2-2
UNIVERSITIES INVOLVED IN RESEARCH ON CHESAPEAKE BAY

DELAWARE

University of Delaware (Newark and Lewes)

DISTRICT OF COLUMBIA

American University
Catholic University
George Washington University School of Medicine
Georgetown University
Georgetown University School of Medicine

MARYLAND

Anne Arundel Community College (Arnold)
Charles County Community College (La Plata)
Chesapeake College (Wye Mills)
Chesapeake Research Consortium (Baltimore)
Goucher College (Towson)
Hood College (Frederick)
The Johns Hopkins University (Baltimore, Silver Spring)
Kirkland Hall College (Easton)
Naval Academy (Annapolis)
St. Mary's College (St. Mary's City)
University of Maryland (College Park)
University of Maryland, Baltimore County (Catonsville)
University of Maryland, Eastern Shore (Princess Anne)
University of Maryland, Baltimore Campus (Baltimore)

VIRGINIA

Christopher Newport College (Newport News)
College of William and Mary (Williamsburg)
Longwood College (Farmville)
Old Dominion University (Norfolk)
Richard Bland College (Petersburg)
Roanoke College (Salem)
Thomas Nelson Community College (Hampton Roads)
University of Richmond (Richmond)
University of Virginia (Charlottesville)
Virginia Institute of Marine Science (Gloucester Point)
Virginia Polytechnic Institute and State University (Blacksburg)
Virginia State College (Petersburg)

Source: U.S. Army Corps of Engineers, *Chesapeake Bay Existing Conditions Report*. Appendix C, Chapter VII: Biota.

b. *Scientific Personnel Resource Inventory: List and Index to Research Scientists Involved with the Estuarine Environment, Especially Chesapeake Bay*, by Dr. Cathy Kerby and Andy McErlean (NRI Reference No. 72-83, VIMS Contribution).

This index has not been published and had a limited distribution because it was dated within a short time after it was completed. It lists over 600 individuals that were actively involved in Bay-related research and provides a cross-reference index as to each individual's field of interest. The list was compiled from questionnaires sent to 1,200 members of associates of the Chesapeake Research Consortium, the Atlantic Research Society, the New England Research Society, and the National Shellfish Association.

Other sources which can be used in compiling lists of organizations involved in research on the Bay are described below.

a. *List of Agencies and Institutions Involved in Biological or Biology Related Research on the Chesapeake Bay*, by Dr. Cathy Kerby.

This listing includes Federal agencies, State agencies, universities, and private and industrial groups. Addresses are provided. As with the other lists, this one may be somewhat outdated but is, nevertheless, a guide to those research institutions working on the Bay.

b. *Directory of Science Resources for Maryland*, Maryland Department of Economic and Community Development.

This is an excellent source of information on research institutions in Maryland which is updated periodically. Included are Maryland agencies, Federal agencies, universities, 4-year and 2-year colleges, other educational programs, public vocational-technical programs, public libraries, professional organizations, and information sources.

c. *Science, Engineering, Research, and Development Directory, Region III*, Small Business Administration.

This directory lists private firms in Pennsylvania, Virginia, West Virginia, Maryland, and the District of Columbia that are concerned with research. The directory is updated periodically.

d. *Chesapeake Bay Institutions*, Interagency Committee on Marine Sciences and Engineering (ICMSE) of the Federal Council for Science and Technology.

This is a recently published (July, 1976) survey of all institutions concerned with the water and related resources in the Chesapeake Bay Basin. A listing and description is provided for Federal agencies and

committees, interstate agencies and commissions, state agencies (Maryland and Virginia), and universities.

e. *A Chesapeake Bay Review: Research and Responsibilities* (Volume I and II), Mitre Corporation.

This report was prepared in September, 1976 for the Environmental Protection Agency's Chesapeake Bay Program. It is comprehensive in the sense that Volume I includes a listing and description of Federal, State, and regional agencies, academic institutions, and interstate and river basin commissions involved in research on the Bay. Also included is a description of major research activities, studies, monitoring activities, and cooperative relationships which pertain to the water quality of Chesapeake Bay. Volume II is a directory of academic researchers, administrators, institutions, agencies, and other organizations that play an active role in regulating, monitoring, or studying the water quality of the Bay or which exhibit an interest in the quality of the Bay.

f. *Chesapeake Bay Existing Conditions Report* and *Future Conditions Report*, Baltimore District Corps of Engineers.

The research community has played an active and meaningful role in the Chesapeake Bay Study Program. Their activities and their study findings are incorporated into both the *Existing Conditions Report* and the *Future Conditions Report*.

THE STUDY PUBLICS – STATE AND LOCAL GOVERNMENTS

Water resources management is not the exclusive domain of the Federal Government. State and local governments also play a vital role. Such governments have their own management authorities, review and comment on Federal projects, and are an invaluable source of information due to their detailed knowledge of the areas within their jurisdiction.

This section identifies those state agencies within Maryland, Virginia, Pennsylvania, and Delaware and the District of Columbia with primary or direct interest in water resources management. The States usually have one executive level department which is responsible for natural resources. There are, however, additional state agencies and commissions in charge of certain aspects of water resources management. For example, each State plus the District of Columbia has set up State and Areawide Clearinghouses to serve two purposes. First, to identify the relationship of any Federal project to statewide or areawide comprehensive plans and, second, to identify the relationship of any Federal project to the plans or programs of particular State agencies or individual local governments. State clearinghouses are designated by the

governor. Areawide clearinghouses are generally substate in scale. Both are comprehensive planning agencies. The clearinghouse concept was established by the Federal Office of Management and Budget to serve as an early warning system to facilitate coordination of State, regional, and local planning and development activities that are assisted under various Federal programs. Coordination is sought through review of applications for Federal assistance by or through these State and areawide clearinghouses. Since their establishment in the late sixties, clearinghouses have had a significant role in matters affecting both water resources and water-related land resources. Table 2-3 lists each State agency which administrates the State Clearinghouse.

General information will be provided here on all those state agencies involved in water resource planning. A more detailed analysis of the Maryland and Virginia State agencies is provided in Attachment B of this appendix. (Only Maryland and Virginia will be considered in Attachment B since the Bay proper lies within the borders of those States. Hence, activities involving the Bay more directly affect Maryland and Virginia.) For additional information on any State organization, it is suggested that the individual agency be contacted.

DELAWARE

While Delaware itself does not border Chesapeake Bay, it does have direct links to the Bay. Over one-half of Delaware's Sussex County and parts of New Castle and Kent Counties drain into Chesapeake Bay. The C & D Canal transects the northern part of the State, creating an important economic link between the Bay and Delaware.

TABLE 2-3
STATE CLEARINGHOUSES WITHIN THE CHESAPEAKE BAY REGION

STATE	STATE CLEARINGHOUSE OFFICE
Delaware	State Planning Office
District of Columbia	Office of Budget and Management Systems, Executive Office of the Mayor
Maryland	Department of State Planning
Pennsylvania	Budget Office
Virginia	Department of Intergovernmental Affairs

The primary state unit with responsibilities for water resources is the Department of Natural Resources and Environmental Control. The Department's subdivisions include the Division of Fish and Wildlife, Division of Parks and Recreation, Division of Soil and Water Conservation, and Division of Environmental Control. The Water Resources Section of the Environmental Control Division focuses on three mission areas: water supply, planning, and water pollution control. The Fish and Wildlife Division is responsible for the protection of all fish and wildlife resources within the State, including the protection of wetlands and other wildlife habitat areas. The main concerns of the Soil and Water Conservation Division are land erosion, agricultural irrigation drainage, and beach erosion.

Other water resource-related State units include certain subdivisions of the Department of Agriculture and the Department of Community Affairs and Economic Development. Directly under the Governor is the Office of State Planning. This office provides leadership, assistance, and coordination of planning efforts between functional agencies, geographic areas, and levels of government. Several State councils are also involved in water resource planning or some related activity and include the Environmental Appeals Board, the Environmental Control Advisory Council, the Fish and Wildlife Advisory Council, the Forestry Advisory Council, the Governor's Council on Natural Resources and Environmental Control, and the Soil and Water Advisory Council.

Direct coordination with Delaware on the Bay Study was through the Department of Natural Resources and Environmental Control's participation on the Study's Advisory Group, Steering Committee, and several of the Study's task groups.

DISTRICT OF COLUMBIA

The District of Columbia is located on the Potomac River—one of the major tributaries of the Bay. The District, which has municipal status, is the ninth largest city of the Nation. Under the U.S. Constitution, Congress has legislative jurisdiction over the District and the city's municipal government. Thus, the city operates under authority delegated by Congress. The city is headed by an elected mayor and a 13-member council. An elected, but non-voting delegate represents the District in the U.S. House of Representatives.

Within the city government, the Department of Environmental Services has the centralized water resources responsibilities. Its subordinate units concerned with water resources are the Office of Environmental Planning and Management, the Engineering and Construction Administration, the Solid Waste Management Administration, the Water Resources Management Administration, and the Bureau of Air and Water Pollution Control.

The city's Department of Economic Development is also concerned with water resource management as it relates to the development of the District. The Department of Human Resources, through its health services responsibilities is also concerned with water resources activities.

The National Capital Planning Commission is the central planning agency for the Federal Government in the Nation's Capital. It is an independent agency of the Federal Government, and it shares responsibility with the District government for joint publication of the Comprehensive Plan for the National Capital.

Table 2-4 shows which of the District's departments and commissions are represented on the Bay Study's Advisory Group, Steering Committee, and five Task Groups.

MARYLAND

In Maryland, the Department of Natural Resources (DNR), formed in 1969, is the main State agency for coordinating and directing comprehensive planning in the area of natural resources. The overall authority and responsibility for research, monitoring, and regulation of most matters related to water quality and ecology also lies with DNR. The major

TABLE 2-4
PARTICIPATION BY THE DISTRICT OF COLUMBIA
ON THE CHESAPEAKE BAY STUDY

CHESAPEAKE BAY STUDY PROGRAM COORDINATION GROUP	D.C. AGENCY REPRESENTED
Advisory Group	Department of Environmental Services
Steering Committee	Department of Environmental Services
Economic Projections Task Group	National Capital Planning Commission
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Department of Environmental Services
Flood Control, Navigation, Erosion, Fisheries Task Group	Department of Environmental Services
Recreation Task Group	National Capital Planning Commission

water-resource related agencies of the Department are listed in Table 2-5. In addition, DNR is in close liaison with a number of State boards and commissions; the water related ones are listed in Table 2-6.

Other Maryland executive departments, agencies, and commissions that are involved in or affected by water resources management are the Department of Economic and Community Development, Department of Agriculture, Department of Transportation, Water Quality Control Commission, Department of State Planning, Department of Health and Mental Hygiene, Public Service Commission, Chesapeake Bay Interagency Committee, Maryland Council on the Environment, and the State Soil Conservation Committee. Table 2-7 lists those Maryland departments, agencies, and subdivisions which are represented on the various coordination groups of the Chesapeake Bay Study Program. Some of these plus the Department of Natural Resources will be discussed in more detail in Attachment B of this appendix.

Aside from the State agencies discussed above, there are also regional planning organizations which are concerned with coordinating with the appropriate agencies in order to solve some of the pressing problems.

TABLE 2-5
WATER RESOURCE-RELATED AGENCIES OF THE
MARYLAND DEPARTMENT OF NATURAL RESOURCES

Capital Programs Administration

Fisheries Administration

Wildlife Administration

Park Service

Forest Service

Natural Resources Police Force

Water Resources Administration

Maryland Environmental Service

Energy and Coastal Zone Administration

Maryland Geological Survey

Maryland Environmental Trust

TABLE 2-6
WATER RESOURCES-RELATED BOARDS AND COMMISSIONS AFFILIATED WITH THE MARYLAND DEPARTMENT OF NATURAL RESOURCES

Coastal Zone Advisory Commission

Commercial Fisheries Advisory Commission

Forest Advisory Commission

Parks Advisory Commission

Sports Fisheries Advisory Commission

Water Resources Advisory Commission

Wildlife Advisory Commission

Program Open Space Apportionment Committee

Scenic Rivers Review Board

*Susquehanna River Basin Commission

*Interstate Commission on the Potomac River Basin

*Potomac River Basin Advisory Committee

*Atlantic States Marine Fisheries Commission

*Coastal States Organization

*Interstate Conference on Water Pollution

*Interstate organizations.

Source: *Annual Activities Report of the Department of Natural Resources, 1975.*

At the local level, Maryland is geographically divided into 23 counties plus the City of Baltimore. Some municipalities within the counties have been incorporated into towns or cities. Each has local jurisdiction over the management of their water resources. The Maryland counties and incorporated cities and towns are listed in Table 2-9.

PENNSYLVANIA

While the Commonwealth of Pennsylvania does not border Chesapeake Bay, it is nevertheless intimately tied to the Bay. The Susquehanna River Basin (most of which is in Pennsylvania) provides approximately 50 percent of the freshwater inflow for Chesapeake Bay. The Susquehanna's influence was dramatically demonstrated during the June 1972 Tropical Storm Agnes. Due to the heavy rainfall in the Susquehanna River Basin, the flow from the river into the Bay was 15 times the

TABLE 2-7
PARTICIPATION BY STATE OF MARYLAND
ON BAY STUDY PROGRAM

CHESAPEAKE BAY STUDY PROGRAM COORDINATION GROUP	MARYLAND AGENCY OF PARTICIPATION
Advisory Group	Department of Natural Resources
Steering Committee	Department of Natural Resources Chesapeake Bay Institute Center for Environmental and Estuarine Studies
Economic Projections Task Group	Department of Economic and Community Development
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Department of Natural Resources Department of Health and Mental Hygiene Chesapeake Biological Laboratory
Flood Control, Navigation, Erosion, Fisheries Task Group	Department of Natural Resources Chesapeake Biological Laboratory
Recreation Task Group	Department of Natural Resources
Fish and Wildlife Coordination Group	Department of Natural Resources

normal June flows. The results of such a hydrologic development are too lengthy to describe here other than to say that the effects were in many respects devastating.

The Commonwealth's primary natural resources management agency is the Department of Environmental Resources (DER). Within this Department is the Susquehanna River Basin Engineer of the Division of Water Quality who has overall responsibility and authority for the Susquehanna. The DER, in cooperation with the U.S. Geological Survey and the Susquehanna River Basin Commission, monitors the Susquehanna for such water quality parameters as metals, PCB's, and pesticides. In addition, DER establishes and regulates water quality standards, issues permits for construction and operation of water supply and sewerage systems, provides grants for sewage facilities planning, and conducts water quality studies. The Pennsylvania Fish Commission and the Insti-

TABLE 2-8
REGIONAL PLANNING ORGANIZATIONS IN MARYLAND

ORGANIZATION	MEMBER
Regional Planning Council	Baltimore City Anne Arundel County Baltimore County Carroll County Harford County Howard County
Delmarva Advisory Council	Delmarva Peninsula (including Delaware, Maryland, and Virginia portions)
Tri-County Council for Southern Maryland	Calvert County Charles County St. Mary's County
Metropolitan Washington Council of Governments	Montgomery County Prince Georges County (also includes District of Columbia and portions of Virginia)
Wilmington Metropolitan Area Planning and Coordinating Council	Cecil County (also includes New Castle County, Delaware; and Salem County, New Jersey)

TABLE 2-9
MARYLAND COUNTIES AND INCORPORATED TOWNS AND CITIES
IN THE CHESAPEAKE BAY STUDY AREA

COUNTIES AND INDEPENDENT CITIES	INCORPORATED CITIES AND TOWNS*
Anne Arundel	Annapolis (c) Highland Beach
City of Baltimore	
Baltimore	No incorporated cities or towns.
Calvert	Chesapeake Beach North Beach
Caroline	Denton Federalsburg Goldsboro Greensboro Henderson Hillsboro Marydel Preston Ridgely
Carroll	Hampstead Manchester Mount Airy New Windsor Sykesville Taneytown (c) Union Bridge Westminster (c)
Cecil	Cecilton Charlestown Chesapeake City Elkton North East Perryville Port Deposit Rising Sun
Charles	Indian Head La Plata

*Cities are designated with (c); otherwise, area is town.

TABLE 2-9 (cont'd)
MARYLAND COUNTIES AND INCORPORATED TOWNS AND CITIES
IN THE CHESAPEAKE BAY STUDY AREA

COUNTIES AND INDEPENDENT CITIES	INCORPORATED CITIES AND TOWNS
Dorchester	Brookview
	Cambridge (c)
	Church Creek
	East New Market
	Galestown
	Hurlock
	Secretary
	Vienna
Harford	Aberdeen
	Belair
	Havre de Grace (c)
Howard	No incorporated cities or towns.
Kent	Betterton
	Chestertown
	Galena
	Millington
	Rock Hall
Montgomery	Barnesville
	Brookeville
	Chevy Chase Section 4
	Chevy Chase Village
	Gaithersburg (c)
	Garrett Park
	Glen Echo
	Kensington
	Laytonsville
	North Chevy Chase
	Oakmont
	Poolesville
	Rockville (c)
	Somerset
	Takoma Park (c)
	Washington Grove

TABLE 2-9 (cont'd)
MARYLAND COUNTIES AND INCORPORATED TOWNS AND CITIES
IN THE CHESAPEAKE BAY STUDY AREA

COUNTIES AND INDEPENDENT CITIES	INCORPORATED CITIES AND TOWNS
Prince George's	Berwyn Heights
	Bladensburg
	Bowie (c)
	Brentwood
	Capitol Heights
	Cheverly
	College Park (c)
	Colmar Manor
	Cottage City
	District Heights (c)
	Eagle Harbor
	Edmondston
	Fairmount Heights
	Forest Heights
	Glenarden
	Greenbelt (c)
	Hyattsville (c)
	Landover Hills
	Laurel
	Morningside
	Mount Rainier (c)
	New Carrollton (c)
	North Brentwood
	Riverdale
	Seat Pleasant
	University Park
	Upper Marlboro
Queen Anne's	Barclay
	Centreville
	Church Hill
	Queen Anne
	Queenstown
	Sudlersville
	Templeville
St. Mary's	Leonardtown
Somerset	Crisfield (c)
	Princess Anne

TABLE 2-9 (cont'd)
MARYLAND COUNTIES AND INCORPORATED TOWNS AND CITIES
IN THE CHESAPEAKE BAY STUDY AREA

COUNTIES AND INDEPENDENT CITIES	INCORPORATED CITIES AND TOWNS
Talbot	Easton
	Oxford
	St. Michaels
	Trappe
Wicomico	Delmar
	Fruitland
	Hebron
	Mardela Springs
	Pittsville
	Salisbury (c)
	Sharptown
	Willards
Worcester	Berlin
	Ocean City
	Pocomoke City
	Snow Hill

Sources: *Maryland Manual, 1971-1972*, Hall of Records, State of Maryland.

Director of Maryland Municipal Officials, 1972-1973, Maryland Municipal League.

tute for Research on Land and Water Resources have provided input to DER in matters involving water quality and resource management. Table 2-10 shows the Pennsylvania agencies represented on the various coordination groups of the Chesapeake Bay Study Program.

VIRGINIA

Almost 3,000 miles of the Commonwealth of Virginia's shoreline borders the Bay or the tidal portion of its tributaries. Naturally, many State agencies and departments are directly or indirectly involved in affairs dealing with the Bay. The Commonwealth agencies with responsibilities for water resources are listed in Table 2-11. An annotated inventory of these agencies is presented in *Virginia State Agencies Concerned with*

Coastal Zone Planning, Management or Scientific Activities, published by the Virginia Institute of Marine Science in 1974. A more detailed description of the role the State agencies and departments play in water resources planning is provided in Attachment B. Participation by the various State departments and agencies of the Commonwealth in the Chesapeake Bay Study Program is shown in Table 2-12.

Regional coordination in Virginia is achieved through multi-county or multi-city commissions. For water resources management, two groups of commissions are involved: the regional planning district commissions and the soil and water conservation district commissions. The planning district commissions have two primary purposes under the Virginia Area Development Act of 1968. They are to promote the orderly and efficient development of the physical, social, and economic elements of the district by planning and by encouraging and assisting governmental subdivisions to plan for the future; and secondly, to prepare a comprehensive plan for the guidance of the development of the district. These planning commissions usually serve as the areawide clearinghouse for Federal-State coordination. Because of their regional scope, many of the

TABLE 2-10
PARTICIPATION BY COMMONWEALTH OF PENNSYLVANIA
ON BAY STUDY PROGRAM

CHESAPEAKE BAY STUDY PROGRAM COORDINATION GROUP	PENNSYLVANIA AGENCY OF PARTICIPATION
Advisory Group	Department of Environmental Resources
Steering Committee	Department of Environmental Resources
Economic Projections Task Group	Office of State Planning & Development
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Department of Environmental Resources
Flood Control, Navigation, Erosion, Fisheries Task Group	Department of Environmental Resources
Recreation Task Group	Department of Environmental Resources
Fish and Wildlife Coordination Group	Pennsylvania Fish Commission

commissions are responsible for river basin water management studies. The boundaries of the Virginia planning district commissions in the Bay Area are shown in Figure 2-4 and are listed in Table 2-13.

Soil and water conservation district commissions offer financial and technical assistance to the directors of conservation districts for the planning and initiation of certain conservation practices. In addition, they help secure Federal and State cooperation and disseminate information concerning the programs of the soil and water conservation districts.

At the local level, Virginia is geographically subdivided into counties and independent cities. These counties and independent cities, which are listed in Table 2-14, have certain management responsibilities of their water resources. Within the counties, some urban areas have an incor-

TABLE 2-11
VIRGINIA AGENCIES CONCERNED
WITH WATER RESOURCES PLANNING

Office of the Secretary of Commerce and Resources
- Department of Agriculture and Commerce
- Commission of Outdoor Recreation
- State Water Control Board
- Soil and Water Conservation Committee
- Commission of Game and Inland Fisheries
- Department of Conservation and Economic Development –
  - Division of Parks
  - Division of Salt Water Sport Fishing Promotion
- Virginia Port Authority
- Virginia Institute of Marine Science
- Marine Resources Commission
- Governor's Council on the Environment
- Division of Industrial Development

Office of the Secretary of Human Resources
- Department of Health –
  - Division of Engineering
    - – Bureau of Sanitary Engineering
    - – Bureau of Solid Waste and Vector Control
    - – Bureau of Industrial Hygiene and Radiological Health
  - Division of Local Health Services –
    - – Bureau of Shellfish Sanitation

Department of Intergovernmental Affairs
- Local and Regional Planning Section

porated town government. The towns in the Study Area portion of Virginia are listed, by county, in Table 2-15.

INTERSTATE ORGANIZATIONS

There are two interstate organizations which are directly involved in water resources management in the Chesapeake Bay Region: the Susquehanna River Basin Commission and the Interstate Commission on the Potomac River Basin.

SUSQUEHANNA RIVER BASIN COMMISSION

The Susquehanna River Basin Commission (SRBC) is a Federal-Interstate Compact organization consisting of the U.S. Government and the States of Maryland, New York, and Pennsylvania. The Federal member on the

TABLE 2-12
VIRGINIA PARTICIPATION
ON THE CHESAPEAKE BAY STUDY PROGRAM

CHESAPEAKE BAY STUDY PROGRAM COORDINATION GROUP	COMMONWEALTH AGENCIES PARTICIPATING
Advisory Group	Virginia Institute of Marine Science
Steering Committee	Virginia Institute of Marine Science
Economic Projections Task Group	Economic Research Section, Department of Planning and Budget
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Virginia State Water Control Board Virginia Institute of Marine Science
Flood Control, Navigation, Erosion, Fisheries Task Group	Virginia Institute of Marine Science
Recreation Task Group	Commission of Outdoor Recreation Commission of Game and Inland Fisheries
Fish and Wildlife Coordinating Group	Virginia Institute of Marine Science Commission of Game and Inland Fisheries Virginia Marine Resources Commission

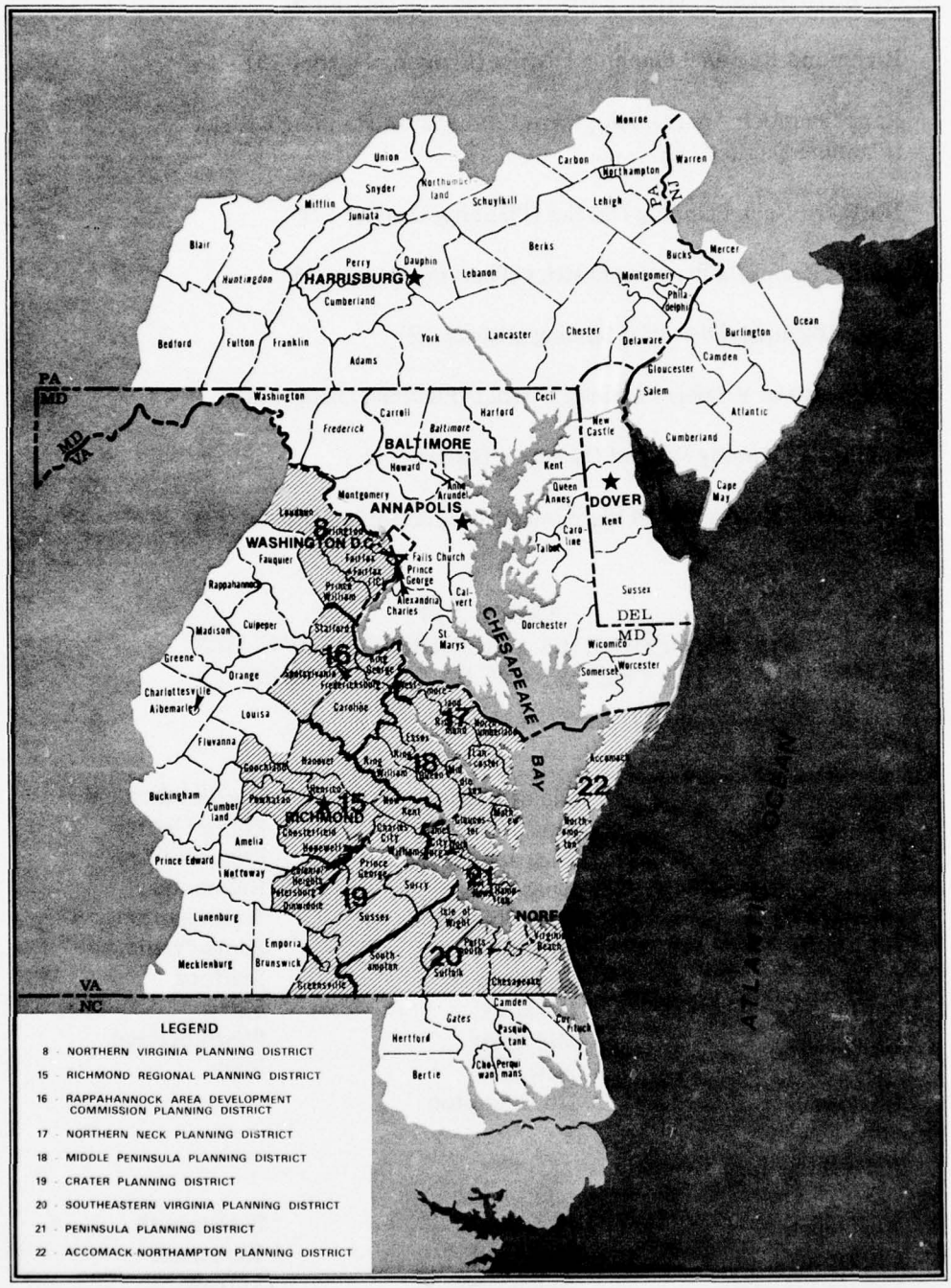


Figure 2-4: Virginia Planning District Commissions in the Study Area

TABLE 2-13
VIRGINIA PLANNING DISTRICT COMMISSIONS

Northern Virginia Planning District (Planning District 8)

Richmond Regional Planning District (Planning District 15)

Rappahannock Area Development Commission Planning District (Planning District 16)

Northern Neck Planning District (Planning District 17)

Middle Peninsula Planning District (Planning District 18)

Crater Planning District (Planning District 19)

Southeastern Virginia Planning District (Planning District 20)

Peninsula Planning District (Planning District 21)

Accomack-Northampton Planning District (Planning District 22)

TABLE 2-14
VIRGINIA COUNTIES AND INDEPENDENT CITIES
IN THE CHESAPEAKE BAY STUDY AREA

COUNTIES

Accomack	Isle of Wight	Northumberland
Arlington	James City	Prince George
Caroline	King and Queen	Prince William
Charles City	King George	Richmond
Chesterfield	King William	Southampton
Dinwiddie	Lancaster	Spotsylvania
Essex	Loudoun	Stafford
Fairfax	Mathews	Surry
Gloucester	Middlesex	Westmoreland
Hanover	New Kent	York
Henrico	Northampton	

INDEPENDENT CITIES

Alexandria	Hampton	Portsmouth
Chesapeake	Hopewell	Richmond
Colonial Heights	Newport News	Suffolk
Fairfax	Norfolk	Virginia Beach
Falls Church	Petersburg	Williamsburg
Fredericksburg		

TABLE 2-15
VIRGINIA TOWNS IN THE CHESAPEAKE BAY STUDY AREA

COUNTY	
Accomack	Accomac, Belle Haven, Bloxom, Chincoteague, Hallwood, Keller, Melfa, Onancock, Painter, Parksley, Saxis, Tangier, Wachapreague
Dinwiddie	McKenney
Essex	Tappahannock
Fairfax	Clifton, Herndon, Vienna
Hanover	Ashland
Isle of Wight	Smithfield, Windsor
King William	West Point
Loudoun	Hamilton, Hillsboro, Leesburg, Lovettsville, Middleburg, Purcellville, Round Hill
Middlesex	Urbanna
Northampton	Cape Charles, Cheriton, Eastville, Exmore, Nassawadox
Northumberland	Kilmarnock
Prince George	(No incorporated towns or cities)
Prince William	Dumfries, Haymarket, Manassas, Manassas Park, Occoquan, Quantico
Richmond	Warsaw
Southampton	Boykins, Branchville, Capron, Courtland, Ivor, Newsoms
Surry	Claremont, Dendron, Surry
Westmoreland	Colonial Beach, Montross
York	Yorktown

Commission is the Secretary of the Interior and the State members are the Governors of the three involved states. The staff office is located in Mechanicsburg, Pennsylvania. Under the terms of the compact, SRBC is responsible for developing and maintaining a comprehensive plan for programming, scheduling, and controlling projects and activities within the Susquehanna River Basin. As such, SRBC's activities have a direct influence on Chesapeake Bay since approximately half of the freshwater inflow for the Bay originates in the Susquehanna River Basin. The SRBC is represented on the Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group of the Bay Study.

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

The Interstate Commission on the Potomac River Basin (ICPRB) was established in 1940 by the States of Maryland, Pennsylvania, Virginia, and West Virginia, and the District of Columbia. Unlike the SRBC, the Federal Government is not a participant on ICPRB; however, there is a Federal observer to the Commission. ICPRB compiles water resources data concerning the Potomac River Basin; conducts water resources studies; and reviews plans and programs relating to stream pollution or the utilization, conservation, or development of water and associated land resources.

THE STUDY PUBLICS – FEDERAL AGENCIES AND COMMITTEES

The Federal concern with natural resources is founded on the fact that these resources are the basis of our national wealth and future well-being. This concern regarding water resources is shown by many legislative enactments by the Congress. A developing body of law has established varying degrees of National concern in such areas as navigation, flood control, drainage, irrigation, recreation, fish and wildlife conservation, water supply, and water quality. Since water and adjacent lands are primary natural resources, the Federal Government has a major role in their management.

The actual planning and implementation of Federal water resources management programs is accomplished by the Federal agencies in the Executive Branch. Due to the comprehensive nature of the Chesapeake Bay Study Program, many Federal agencies have been involved. This section presents in Table 2-16 the major Federal departments, agencies, and commissions which are involved in or affected by water resources management of the Bay.

Due to both the large number of Federal agencies involved in water resource planning and the importance of these organizations to the Chesapeake Bay Study Program, a separate attachment is included with this appendix (Attachment A) which describes, in some detail, the activities of those Federal departments and agencies involved in work on Chesapeake Bay.

TABLE 2-16
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

WATER

Water Quality

Department of Agriculture –
- Soil Conservation Service
- Forest Service

Energy Research and Development Administration
Department of the Interior –
- Bureau of Reclamation
- Bureau of Land Management (public lands)
- Bureau of Indian Affairs (Indian lands)
- Fish and Wildlife Service
- Bureau of Outdoor Recreation
- Geological Survey
- Office of Saline Water

Environmental Protection Agency
Department of Health, Education and Welfare
Department of Defense –
- Army Corps of Engineers
- Department of the Navy (ship pollution control)

National Aeronautics and Space Administration (remote sensing)
Department of Transportation –
- Coast Guard (oil and hazardous substance spills)

Department of Commerce –
- National Oceanic and Atmospheric Administration

Water Resources Council
River Basin Commissions (as geographically appropriate)

Marine Pollution, Commercial Fishery Conservation, and Shellfish Sanitation

Department of Commerce –
- National Oceanic and Atmospheric Administration

Department of Defense –
- Army Corps of Engineers
- Office of the Oceanographer of the Navy

Department of Health, Education, and Welfare
Department of the Interior –
- Fish and Wildlife Service
- Bureau of Outdoor Recreation
- Bureau of Land Management (outer continental shelf)
- Geological Survey (outer continental shelf)

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

WATER (cont'd)

Department of Transportation –
  Coast Guard
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
Water Resources Council
River Basin Commissions (as geographically appropriate)

Waterway Regulation and Stream Modification

Department of Agriculture –
  Soil Conservation Service
Department of Defense –
  Army Corps of Engineers
Department of the Interior –
  Bureau of Reclamation
  Bureau of Outdoor Recreation
  Fish and Wildlife Service
  Geological Survey
Department of Transportation –
  Coast Guard
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
Water Resources Council
River Basin Commissions (as geographically appropriate)

FISH AND WILDLIFE

Department of Agriculture –
  Forest Service
  Soil Conservation Service
Department of Commerce –
  National Oceanic and Atmospheric Administration (marine species)
Department of the Interior –
  Bureau of Land Management
  Bureau of Outdoor Recreation
  Fish and Wildlife Service
Environmental Protection Agency

SOLID WASTE

Energy Research & Development Administration

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

SOLID WASTE (cont'd)

Department of Defense –
  Army Corps of Engineers
Department of Health, Education, and Welfare
Department of the Interior –
  Bureau of Mines (mineral waste, mine acid waste, municipal solid waste, recycling)
  Bureau of Land Management (public lands)
  Bureau of Indian Affairs (Indian lands)
  Geological Survey (geologic and hydrologic effects)
  Office of Saline Water (demineralization)

Department of Transportation –
  Coast Guard (ship sanitation)
  Assistant Secretary for Systems Development and Technology
  Federal Aviation Administration, Office of Noise Abatement
Environmental Protection Agency
River Basin Commissions (as geographically appropriate)
Water Resources Council
National Aeronautics and Space Administration

HAZARDOUS SUBSTANCES

Toxic Materials

Energy Research and Development Administration
Department of Agriculture –
  Agricultural Research Service
  Consumer and Marketing Service
Department of Commerce –
  National Oceanic and Atmospheric Administration
Department of Defense
Department of Health, Education, and Welfare
Environmental Protection Agency

Pesticides

Department of Agriculture –
  Agricultural Research Service (biological controls, food and fiber production)
  Consumer and Marketing Service
  Forest Service
Department of Commerce –
  National Oceanic and Atmospheric Administration

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

HAZARDOUS SUBSTANCES (cont'd)

Pesticides (cont'd)

Department of Health, Education, and Welfare
Department of the Interior –
- Bureau of Land Management (public lands)
- Bureau of Indian Affairs (Indian lands)
- Bureau of Reclamation (irrigated lands)
- Fish and Wildlife Service (fish and wildlife effects)

Environmental Protection Agency

Transportation and Handling of Hazardous Materials

Energy Research and Development Administration
Department of Commerce –
- Maritime Administration
- National Oceanic and Atmospheric Administration (effects on marine life and the coastal zone)

Department of Defense –
- Armed Services Explosive Safety Board
- Army Corps of Engineers (navigable waterways)

Department of Transportation –
- Federal Highway Administration, Bureau of Motor Carrier Safety
- Coast Guard
- Federal Railroad Administration
- Federal Aviation Administration
- Assistant Secretary for Systems Development and Technology
- Office of Hazardous Materials
- Office of Pipeline Safety

Environmental Protection Agency

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT

Electric Energy Development, Generation, Transmission, and Use

Energy Research and Development Administration
Department of Agriculture –
- Rural Electrification Administration (rural areas)

Department of Defense –
- Army Corps of Engineers (hydro)

Department of Health, Education, and Welfare (radiation effects)
Department of Housing and Urban Development (urban areas)

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT (cont'd)

Electric Energy Development, Generation, Transmission and Use (cont'd)

Department of the Interior –
- Bureau of Indian Affairs (Indian lands)
- Bureau of Land Management (public lands)
- Bureau of Reclamation
- Power Marketing Administration
- Geological Survey
- Bureau of Outdoor Recreation
- Fish and Wildlife Service
- National Park Service

Environmental Protection Agency
Federal Power Commission (hydro, transmission, and supply)
River Basin Commissions (as geographically appropriate)
Tennessee Valley Authority
Water Resources Council

Petroleum Development, Extraction, Refining, Transport, and Use

Department of the Interior –
- Office of Oil and Gas
- Bureau of Mines
- Geological Survey
- Bureau of Land Management (public lands and outer continental shelf)
- Bureau of Indian Affairs (Indian lands)
- Fish and Wildlife Service (effects on fish and wildlife)
- Bureau of Outdoor Recreation
- National Park Service

Department of Transportation (Transport and Pipeline Safety)
Environmental Protection Agency
Interstate Commerce Commission

Natural Gas Development, Production, Transmission, and Use

Department of Housing and Urban Development (urban areas)
Department of the Interior –
- Office of Oil and Gas
- Geological Survey
- Bureau of Mines
- Bureau of Land Management (public lands)
- Bureau of Indian Affairs (Indian lands)

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT (cont'd)

Natural Gas Development, Production, Transmission, and Use (cont'd)

Bureau of Outdoor Recreation
Fish and Wildlife Service
National Park Service
Department of Transportation (transport and safety)
Environmental Protection Agency
Federal Power Commission (production, transmission, and supply)
Interstate Commerce Commission

Energy and Natural Resources Conservation

Department of Agriculture –
Forest Service
Soil Conservation Service
Department of Commerce –
National Bureau of Standards (energy efficiency)
Department of Housing and Urban Development –
Federal Housing Administration (housing standards)
Department of the Interior –
Office of Energy Conservation
Bureau of Mines
Bureau of Reclamation
Geological Survey
Power Marketing Administration
Department of Transportation
Environmental Protection Agency
Federal Power Commission
General Services Administration (design and operation of buildings)
Tennessee Valley Authority

LAND USE AND MANAGEMENT

Land Use Changes, Planning and Regulation of Land Development

Department of Agriculture –
Forest Service (forest lands)
Agricultural Research Service (agricultural lands)
Department of Housing and Urban Development

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT (cont'd)

LAND USE AND MANAGEMENT (cont'd)

Land Use Changes, Planning and Regulation of Land Development (cont'd)

Department of the Interior –
- Office of Land Use and Water Planning
- Bureau of Land Management (public lands)
- Bureau of Indian Affairs (Indian lands)
- Bureau of Outdoor Recreation (recreation lands)
- Fish and Wildlife Service
- National Park Service (NPS units)

Department of Transportation
Environmental Protection Agency (pollution effects)
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)

Public Land Management

Department of Agriculture –
- Forest Service (forests)

Department of Defense
Department of the Interior –
- Bureau of Land Management
- Bureau of Indian Affairs (Indian lands)
- Bureau of Outdoor Recreation (recreation lands)
- Fish and Wildlife Service (wildlife refuges)
- National Park Service (NPS units)

Federal Power Commission (project lands)
General Services Administration
National Aeronautics and Space Administration (remote sensing)
Tennessee Valley Authority (project lands)

Protection of Environmentally Critical Areas – Floodplains, Wetlands, Beaches and Dunes, Unstable Soils, Steep Slopes, Aquifer Recharge Areas, etc.

Department of Agriculture –
- Agricultural Stabilization and Conservation Service
- Soil Conservation Service
- Forest Service

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT (cont'd)

Protection of Environmentally Critical Areas – Floodplains, Wetlands, Beaches and Dunes, Unstable Soils, Steep Slopes, Aquifer Recharge Areas, etc.

Department of Commerce –
  National Oceanic and Atmospheric Administration (coastal areas)
Department of Defense –
  Army Corps of Engineers
Department of Housing and Urban Development (urban and floodplain areas)
Department of the Interior –
  Office of Land Use and Water Planning
  Bureau of Outdoor Recreation
  Bureau of Reclamation
  Bureau of Land Management
  Fish and Wildlife Service
  Geological Survey
Environmental Protection Agency (pollution effects)
National Aeronautics and Space Administration (remote sensing)
River Basins Commissions (as geographically appropriate)
Water Resources Council

Land Use in Coastal Areas

Department of Agriculture –
  Forest Service
  Soil Conservation Service (soil stability, hydrology)
Department of Commerce –
  National Oceanic and Atmospheric Administration (impact on marine life and coastal zone management)
Department of Defense –
  Army Corps of Engineers (beaches, dredge and fill permits, Refuse Act permits)
Department of Housing and Urban Development (urban areas)
Department of the Interior –
  Office of Land Use and Water Planning
  Fish and Wildlife Service
  National Park Service
  Geological Survey
  Bureau of Outdoor Recreation
  Bureau of Land Management (public lands)

TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT (cont'd)

Land Use in Coastal Areas (cont'd)

Department of Transportation –
  Coast Guard (bridges, navigation)
Environmental Protection Agency (pollution effects)
National Aeronautics and Space Administration (remote sensing)

Redevelopment and Construction in Built-Up Areas

Department of Commerce –
  Economic Development Administration (designated areas)
Department of Housing and Urban Development
Department of the Interior –
  Office of Land Use and Water Planning
Department of Transportation
Environmental Protection Agency
General Services Administration
Office of Economic Opportunity

Density and Congestion Mitigation

Department of Health, Education, and Welfare
Department of Housing and Urban Development
Department of the Interior –
  Office of Land Use and Water Planning
  Bureau of Outdoor Recreation
Department of Transportation
Environmental Protection Agency

Historic, Architectural, and Archeological Preservation

Advisory Council on Historic Preservation
Department of Housing and Urban Development
Department of the Interior –
  National Park Service
  Bureau of Land Management (public lands)
  Bureau of Indian Affairs (Indian lands)
General Services Administration
National Endowment for the Arts

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CHESAPEAKE BAY FUTURE CONDITIONS REPORT. VOLUME II. STUDY COORD--ETC(U)
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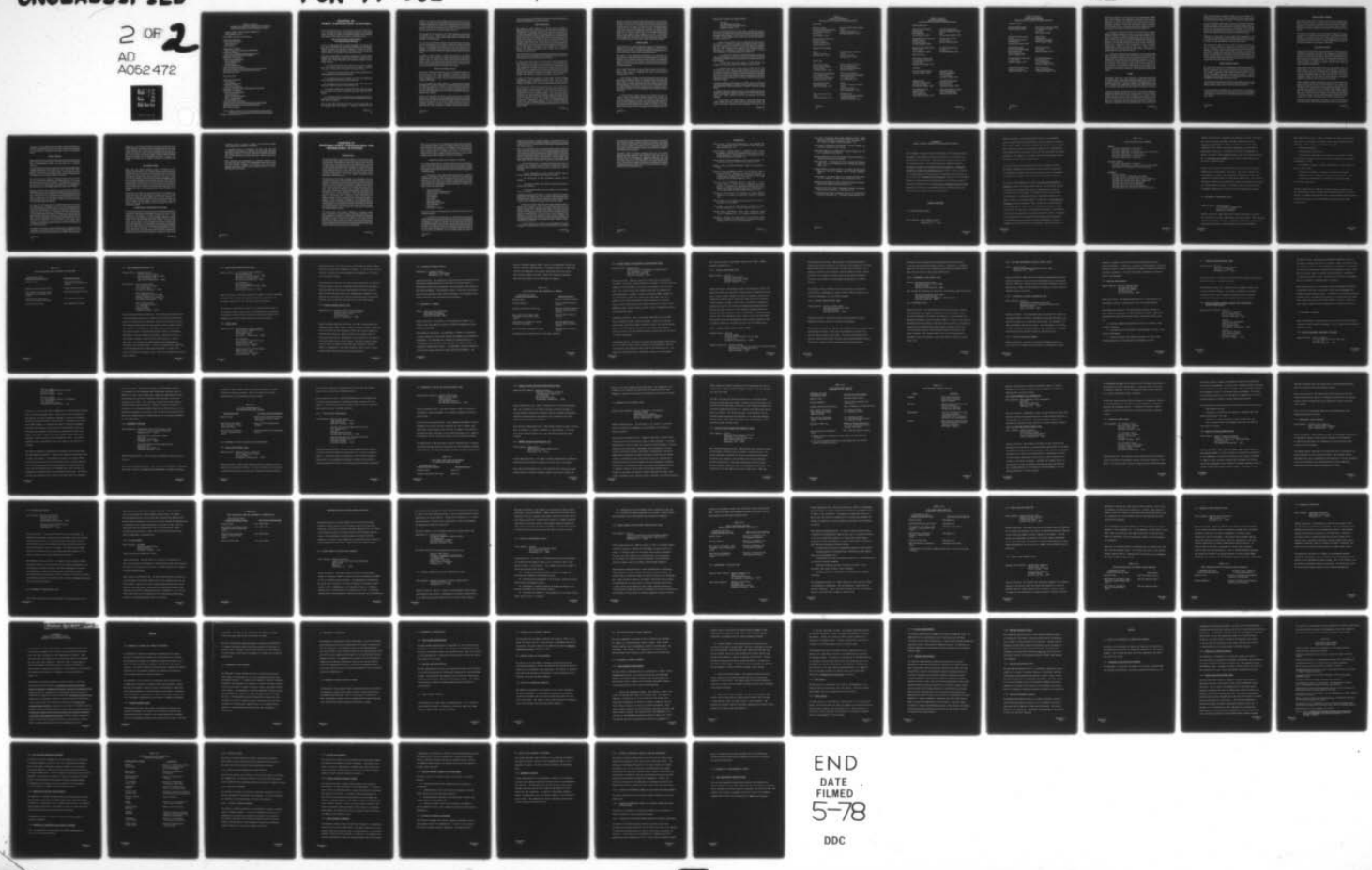

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TABLE 2-16 (cont'd)
FEDERAL AGENCIES WITH JURISDICTION OR SPECIAL EXPERTISE IN AREAS OF ENVIRONMENTAL IMPACT

ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT (cont'd)

Soil and Plant Conservation and Hydrology

Department of Agriculture
- Soil Conservation Service
- Agricultural Service
- Forest Service

Department of Commerce –
- National Oceanic and Atmospheric Administration

Department of Defense –
- Army Corps of Engineers (dredging, aquatic plants)

Department of Health, Education, and Welfare
Department of the Interior –
- Bureau of Land Management
- Fish and Wildlife Service
- Geological Survey
- Bureau of Reclamation

Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)
Water Resources Council

Outdoor Recreation

Department of Agriculture –
- Forest Service
- Soil Conservation Service

Department of Defense –
- Army Corps of Engineers

Department of Housing and Urban Development (urban areas)
Department of the Interior –
- Bureau of Land Management
- National Park Service
- Bureau of Outdoor Recreation
- Bureau of Indian Affairs
- Fish and Wildlife Service

Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)
Water Resources Council

Source: Abridged From Appendix II, "Areas of Environmental Impact and Federal Agencies and Federal-State Agencies with Jurisdiction by Law or Special Expertise to Comment Thereon," in Appendix E of the Sixth Annual Report of the Council on Environmental Quality, December 1975, pp. 709-717.

CHAPTER III
PUBLIC PARTICIPATION ACTIVITIES

Corps of Engineers policy is to fully inform the public about Corps studies and to encourage the public to meaningfully participate in the planning process. This chapter describes the Chesapeake Bay Study's public participation program and the activities that have been accomplished to date.

THE PLANNED "PUBLIC PARTICIPATION AND INFORMATION PROGRAM"

In 1972, a comprehensive plan for public participation was prepared. The plan, entitled "Chesapeake Bay Study Public Participation and Information Program" discussed the management strategies by which the public's opinions could be incorporated into the Bay Study and the methods that could be employed to communicate information to the public.

The purpose of this program is to provide an organized set of activities which establish functional two-way communication between the planner and the "publics." The "Public Participation and Information Program" has six specific objectives.

1. To present information which would assist the public in defining their water resource needs and to provide to the public a structural opportunity for influencing the formulation of planning alternatives.

2. To provide water resource planners with channels through which to obtain information on public goals and priorities.

3. To coordinate the study's planning with water and related land resources planning of all Federal, State, and local agencies.

4. To legitimize the water resource planner's role in the study and to build public confidence and trust in the planning process.

5. To resolve conflicts and to produce plans which satisfy the needs and preferences of the various communities and groups within the public interest.

6. To determine support for authorization and implementation of the components of the water-land management plan by the appropriate Federal, State, and/or local agencies.

There are many degrees of public involvement in a water resource study. For the Chesapeake Bay Study Program, a "strategy of information with

feedback" was selected as the strategy that best suited the needs of the Corps and the public. Under this strategy, the public would be continually informed of study progress. Channels of communication would be developed to obtain information from the public, including input concerning the setting of goals and the formulation of the Study. This information would then be incorporated into the study program by the Corps.

The elements that were selected for the "Public Participation and Information Program" were: a citizen's advisory group, planner workshops, public meetings, publications, documentary films, radio and television panel discussions, and opinionnaires.

To date, most of the elements selected for this public involvement program have been implemented in the existing conditions and future projections phases of the Chesapeake Bay Study. Use of all of the elements of the program is contemplated for the final phase of the Study which will be to formulate and recommend solutions to priority problems using the hydraulic model.

In addition to those elements or activities recommended in the original program, some new channels for public involvement have been opened during the first two study phases. These include public presentations to groups, exhibits, mass media liaison, hydraulic model tours, and special events. Those public participation activities which have been implemented to date are discussed in detail in the remainder of this chapter.

CITIZENS ADVISORY GROUP

The citizen's advisory group has been viewed as a valuable link between the general public and the study participants. The group, composed of concerned citizens from a broad spectrum of interests, would advise the Corps of Engineers on the public's views of water resources planning in the Chesapeake Bay Region.

For the Chesapeake Bay Study Program, an informal liaison has been maintained with the Citizens' Program for the Chesapeake Bay, Inc. (CPCB). The CPCB was organized in 1971 and is a Bay-wide umbrella organization for other organizations that have some interest in Chesapeake Bay or its water resources. Membership is open to non-profit organizations, businesses, industries, and individuals.

Serving as the Chesapeake Bay Study's citizens advisory group, the CPCB reviewed and commented on study program draft reports of the *Existing Conditions Report*. During the second study phase, this group reviewed the drafts of each appendix of the *Future Conditions Report* as they were completed. Insofar as is practicable, the draft reports have been revised to incorporate the CPCB's comments. In addition, Corps' planners have met

with and corresponded with CPCB representatives in order to keep the two organizations appraised of each other's activities.

PUBLIC MEETINGS

The purpose of public meetings is to provide for the exchange of information between the public and the Corps. The public meeting serves a useful purpose in providing an opportunity for citizens to be informed and to express their needs and desires. As the name implies, the public meeting is geared for attendance by the general public. Public notices are distributed to Federal, State, and county officials; representatives of quasi-public agencies; special interests groups; news media as well as interested individuals. The meetings are generally held by the Corps in the evening hours in a public building centrally located in the area of public interest. The usual format is for the Corps to open the meeting with a brief description of the Study and then to allow anyone who desires to ask questions and to voice their opinion. The pertinent information that is derived at the meeting is incorporated into the study.

Two series of public meetings concerning the Bay Study have been held. One series took place at the initiation of the Study and the other toward the end of the second or future projections phase of the Study.

In 1967, during the first full year of actual work on the Chesapeake Bay Study Program, a series of three public meetings was held. The purpose of these initial public meetings was to inform the public of the initiation of the study program and to solicit their views as to what direction the study should take. As a convenience to the public, meetings were held at three different locations within the Region. The locations and dates of the initial meetings were: Baltimore, Maryland, 29 November 1967; Newport News, Virginia, 7 December 1967; and Salisbury, Maryland, 8 December 1967.

A total of 110 persons attended the initial public meetings, including representatives from Congressional, Federal, State, local, and private interests. All speakers voiced support for the study, citing the need for comprehensive planning of the use of the Chesapeake Bay's water resources.

The recent series of public meetings was held in June 1976. The purpose of these meetings was to inform the public regarding progress to date on the overall program; to present findings in terms of needs and problem areas as identified in the *Future Conditions Report*; and to solicit the public's comments, views, and perceptions of problems, needs, and related impacts. As was the case with the first series of public meetings, centrally located cities were selected as sites. The locations and specific dates of the meetings were: Williamsburg, Virginia, 1 June 1976; Annapolis, Maryland, 8 June 1976; and Cambridge, Maryland, 9 June 1976. Over 200 people attended this latest series of meetings, representing Federal, State, local, and private interests.

Speakers at this latest series of meetings asked questions concerning specific findings of the *Future Conditions Report*, the direction of the next phase of the Study, and the types of tests which can and will be performed on the hydraulic model. Great concern was voiced over the continuing degradation of the Bay's land and water resources. The absence of publicly elected officials from some of the meetings raised questions concerning how public support can be obtained in solving many of the problems facing the Bay. There was also general concern expressed on the lack of coordination between Federal and State agencies and private groups conducting research on Chesapeake Bay. As with the first series of meetings, many speakers voiced continued support for the Corps' Chesapeake Bay Study Program.

PUBLICATIONS

A major element of a public participation program is the dissemination of information to the public concerning study objectives and outputs, history, current status of the study, and other meaningful data. Publications are one of the most effective means of achieving this dissemination.

The purpose of those publications disseminated by the Chesapeake Bay Study has been to educate the public about Chesapeake Bay's resources and problems and to inform them about the study's progress. The publications employed are divided into two categories: planning reports that are normal outputs of a study and special publications that were prepared specifically for public distribution.

To date, the Chesapeake Bay Study's planning reports include the *Plan of Study* (1970), the *Existing Conditions Report* (1973), the *Impact of Tropical Storm Agnes on Chesapeake Bay* (1975), aand this *Future Conditions Report* (1977).

a. *Plan of Study*. The *Plan of Study* was published in June 1970. It was prepared by the Baltimore District in consultation with the Chesapeake Bay Study Program's Advisory Group. The document outlines how the study program was to be managed and conducted. So that other interested Federal and State agencies could be informed of the plans of the Bay Study, copies were widely distributed. In addition, a limited number of copies were sent to individuals and groups who were working closely with the Baltimore District on the study.

b. *Chesapeake Bay Existing Conditions Report* (ECR). The ECR is an inventory of the existing chemical, physical, environmental, biological, and economic conditions of the Bay region. It is primarily a working document for the study participants but it does contain information that would be of interest to other individuals and groups. The report is available for inspection at the Baltimore District Office and is available for purchase by the public through the National Technical Information Service (NTIS) of the U.S.

Department of Commerce. The address of NTIS is:

Sales Desk
U.S. Department of Commerce
National Technical Information Service
Springfield, Virginia 22151

Due to the high public interest in the Bay Study, complimentary copies of the ECR were also distributed to major public libraries and college libraries throughout the Bay Region. A list of libraries that received copies is shown in Table 2-17. Local libraries that do not have the ECR may obtain it through interlibrary loan.

c. *Impact of Tropical Storm Agnes on Chesapeake Bay*. This report is the product of a special study assigned to the Baltimore District, Corps of Engineers to determine the effects of Tropical Storm Agnes on Chesapeake Bay. The report, prepared under contract by the Chesapeake Research Consortium, Inc., is available at the Baltimore District Office, U.S. Army Corps of Engineers. The principal findings of the Study were:

(1) while the Bay suffered considerable immediate economic and environmental damage as a result of the massive fresh water inflows, the Bay demonstrated its resiliency by returning to pre-storm conditions shortly after Agnes subsided;

(2) while there were some changes in bottom geometry, the changes did not warrant a redesign of the hydraulic model at this time.

d. *Chesapeake Bay Future Conditions Report* (FCR). Like the ECR, the FCR serves a dual role as a study working tool and as a public information document. As described in Chapter I, the purpose of the FCR is to project the future water resources needs and problem areas of Chesapeake Bay to the year 2020. The report also includes recommendations for future studies and model testing required to develop a comprehensive management program for the Bay.

The public distribution will be similar to the ECR: copies to all interested Federal and State agencies, to interested research institutions, and to public and college libraries. This report will also be available for purchase through NTIS.

In addition to the study reports, a number of other printed materials were prepared specifically for informing the public about the Study. The primary items were a leaflet, reprints of articles, and transcripts from public meetings.

a. *Leaflet*. Early in the Study Program, a leaflet was prepared that briefly described the water resource study and the hydraulic model. The format of the leaflet remained the same throughout the study, but the

TABLE 2-17
LIBRARY DISTRIBUTION
CHESAPEAKE BAY EXISTING CONDITIONS REPORT

DELAWARE

Division of Libraries
Department of Community Affairs
and Economic Development
P. O. Box 635
Dover, Delaware 19901

Delaware Technical and Community
College
Southern Campus Library
Georgetown, Delaware 19947

Serials/Acquisitions Department
University Library
University of Delaware
Newark, Delaware 19711

DISTRICT OF COLUMBIA

Library
American University
Washington, D.C. 20016

George Washington University
Library
2130 H. Street, N.W.
Washington, D.C. 20052

MARYLAND

Maryland State Library
Court of Appeals Building
361 Rowe Avenue
Annapolis, Maryland 21401

Milton S. Eisenhower Library
Documents Department
The Johns Hopkins University
Baltimore, Maryland

Public Library of Annapolis and
Anne Arundel County
Church Circle & Franklin Street
Annapolis, Maryland 21401

Andrew G. Truxal Library
Anne Arundel Community College
101 College Parkway
Arnold, Maryland 21012

Enoch Pratt Free Library
400 Cathedral Street
Baltimore, Maryland 21201

Library
University of Maryland, Baltimore
County
5401 Wilkens Avenue
Baltimore, Maryland 21228

Queen Anne's County Free
Library
Centreville, Maryland 21617

McKeldin Library
Technology & Science Department
University of Maryland
College Park, Maryland 20742

TABLE 2-17 (cont'd)
LIBRARY DISTRIBUTION
CHESAPEAKE BAY EXISTING CONDITIONS REPORT

MARYLAND (cont'd)

Talbot County Free Library
Maryland Room
County Building
Easton, Maryland 21601

Montgomery County Department
of Public Libraries
99 Maryland Avenue
Rockville, Maryland 20850

Baltimore County Public Library
320 York Road
Towson, Maryland 21204

Frederick Douglas Library
University of Maryland, Eastern
Shore
Princess Anne, Maryland 21853

Wicomico County Library
P. O. Box 951
Salisbury, Maryland 21801

Chesapeake College Library
P. O. Box 23
Wye Mills, Maryland 21699

PENNSYLVANIA

State Library of Pennsylvania
Technical Services, Room 46
P. O. Box 1601
Harrisburg, Pennsylvania 17126

VIRGINIA

Eastern Shore Public Library
Accomac, Virginia 23301

Alderman Library
Public Documents Section
University of Virginia
Charlottesville, Virginia 22901

Central Rappahannock
Regional Library
1201 Caroline Street
Fredericksburg, Virginia 22401

Alexandria Library
Reference Department
717 Queen Street
Alexandria, Virginia 22314

Chesapeake Public Library
Documents Section
300 Cedar Road
Chesapeake, Virginia 23320

Charles Taylor Memorial Library
4205 Virginia Boulevard
Hampton, Virginia 23669

TABLE 2-17 (cont'd)
LIBRARY DISTRIBUTION
CHESAPEAKE BAY EXISTING CONDITIONS REPORT

VIRGINIA (cont'd)

Pamunkey Regional Library
Hanover, Virginia 23069

Newport News Public Library
System
Main Street Branch Library
110 Main Street
Newport News, Virginia 23601

Norfolk Public Library
Business, Technology & Social
Science Department
301 E. City Hall Avenue
Norfolk, Virginia 23510

County of Henrico Public Library
P. O. Box 27032
Richmond, Virginia 23273

Fairfax County Public Library
5502 Port Royal Road
Springfield, Virginia 22151

Eastern Shore Community College
Learning Resources Center
P. O. Box C
Melfa, Virginia 23410

Hughes Library
Science Section
Old Dominion University
Norfolk, Virginia 23508

Virginia State Library
Serials Section
Richmond, Virginia 23219

Richmond Public Library
Documents Section
101 E. Franklin Street
Richmond, Virginia 23219

Earl G. Swem Library
College of William & Mary
Williamsburg, Virginia 23185

information contained in it was updated as needed. Approximately 20,000 copies of the leaflet have been distributed as handouts at Corps' meetings with groups, at exhibits, and at special events. Copies were also sent as inclosures to letters. A new leaflet has recently been prepared for future distribution. In addition to much of the same material which was contained in the old leaflet, the new one includes information on model construction and operation, the collection of model data, and model adjustment.

b. *Reprints of Articles.* In the fall of 1973, *Water Spectrum*, a Corps of Engineers magazine, published an article on the study program entitled, "Model for a Study." The article was written by Mr. Alfred E. Robinson, Jr., Chief of the Baltimore District's Chesapeake Bay Study Branch, and Dr. James H. McKay, Jr., Chief of the Technical Studies and Data Development Section of the Study Branch. Reprints of the article were obtained and distributed to persons who inquired about the study. In May 1975, *Mariners Weather Log*, a publication of the National Oceanic and Atmospheric Administration, updated and adopted "Model for a Study" for their magazine. Reprints of this updated article were obtained and distributed in similar fashion to the *Water Spectrum* reprint.

c. *Transcripts.* An official record was prepared for each public meeting which was held to stimulate public involvement in the Chesapeake Bay Study. Transcripts from the series of public meetings held in June 1976 were compiled into one document and made available to the public, at cost. This document also contains all written statements submitted for the record prior and subsequent to the meetings, as well as lists of those present and an announcement of the meetings. The official record may be purchased at cost of reproduction or examined at the Corps' Baltimore District Office. Local libraries may also obtain an examination copy through the interlibrary loan system.

FILMS

Documentary films can be used effectively to disseminate information concerning a study as well as gather interest and support for that study. Two educational films have been used in the public participation program for the Chesapeake Bay Study: "Speaking of Models" and "Planning for a Better Bay." In addition, the construction of both the model shelter and the model have been filmed and another film will probably be produced at a later date.

"Speaking of Models" was produced by the U.S. Army Corps of Engineers' Waterways Experiment Station. The 28-minute film shows how hydraulic models have been used to obtain information for a number of water resources studies, such as flood control, navigation, and hydroelectric power. Many of the tests shown in this film can be effectively accomplished on the fixed bed, geometrically distorted Chesapeake Bay Model. "Speaking of Models" was originally used by the Baltimore District to educate interested

groups about hydraulic modeling techniques in general. Because it is technically oriented, however, "Speaking of Models" has been used primarily for engineering groups following the release of "Planning for a Better Bay."

In 1973, "Planning for a Better Bay," a film on the Chesapeake Bay Study Program, was released. This 25-minute film was produced under contract for the Baltimore District. The first half of the movie describes the Bay's geologic history, water and related land resources, and problems. The second half describes the Chesapeake Bay Study Program with emphasis on how the Bay Model will be employed in studying the Bay's water-related problems.

"Planning for a Better Bay" has been widely shown. Distribution of the movie has been accomplished by several different methods; presented as part of a speech by Corps' officials; as part of a display at exhibitions; and mailed to groups who requested permission to show it at their meetings.

The movie was first shown publicly in April 1973, and by the end of the year, it had been viewed by 39 groups with an audience of over 4,000 persons. In addition, a Baltimore, Maryland, television station broadcasted "Planning for a Better Bay," thereby greatly increasing its exposure. By March 1977, "Planning for a Better Bay" had been viewed by over 13,000 persons (not including the 1973 television audience) at approximately 140 separate showings. The film is also shown at the hydraulic model during tours at that site, however, the number of viewers above does not reflect the number which has seen the film at the model.

PUBLIC PRESENTATIONS

Due to the public interest in the Chesapeake Bay Study and especially the Bay Model, many requests have been received for Corps' officials to speak to various organizations. The requesting organizations were generally one of five categories: engineering or other technical societies; local civic or service groups; environmental organizations; Bay-related businesses; or schools. Geographically, most requests have come from Maryland's Eastern Shore and the Baltimore and Washington Metropolitan Areas.

The format for the presentations varied, but usually included a speech by the District Engineer, Chief of the Chesapeake Bay Study Branch, or other District official with either slides or one of the movies as a visual aid.

To date, hundreds of presentations have been made with a total audience numbering in the tens of thousands. These figures do not include briefings to other Federal and State agencies, Congressional interests, and local government officials.

THE BAY STUDY EXHIBIT

Many persons became aware of the Bay Study Program through the Bay Study Exhibit. The exhibit was displayed at many places around the Bay Region, including libraries, engineering centers, and special exhibitions. (Examples of special exhibitions were the Federated Garden Clubs of Maryland Flower Show, Maryland's Scout-O-Rama, and the Baltimore Boat Show.)

The exhibit format changed as the study progressed. Originally, the exhibit consisted of a scale table-top model of the shelter with the leaflet previously described as a handout. Later, posters were added. For some of the exhibitions, "Planning for a Better Bay" or "Speaking of Models" was shown in an adjoining room. In mid-1975, a 5-minute slide-tape show was prepared and used as an alternative or supplement to the movies.

MASS MEDIA LIAISON

Liaison with the Bay Region's mass media played an important role in developing an awareness of the Bay Study Program and in disseminating information concerning the Bay. Liaison was established and maintained by issuing news releases and responding to requests for study information to be used in stories and articles for newspapers and technical and literary journals. News releases were distributed to Bay area newspapers and radio and television stations. In addition, the releases were also sent to bay and environmentally related magazines.

Media interest in the Study Program has been quite high primarily because of public interest in the environment. The Chesapeake Bay constitutes a valuable resource and, as such, generates interest, particularly with reference to the problems which beset it. The Bay Study's hydraulic model has also produced considerable public and media interest. Since the model's completion in May 1976, the number of stories initiated by newspapers, magazines, and television stations has increased substantially.

Several newspapers within the Bay Region have run feature articles about various aspects of the Bay and the problems plaguing it. For example, the *Baltimore Evening Sun* featured a series of articles in 1969 entitled "The Chesapeake at Bay" which reported on water pollution in the Bay. The same newspaper ran a similar series in 1977 entitled, "The Chesapeake: Still at Bay." *The Washington Post* in its feature article entitled, "The Chesapeake Bay Region: The Way We Use It" (January 1975) discussed the Bay Region in terms of its resources, its history, and its problems. In addition, the article examined the content of the *Chesapeake Bay Existing Conditions Report*.

Frequently, certain catastrophic events such as an oil spill or devastating storm will result in a flurry of articles dealing with the Bay. At other times, a

conference or seminar dealing with some aspect of the Bay will generate a number of newspaper stories. In each case, District personnel have responded to media requests for information and assisted writers in preparing their stories.

SPECIAL EVENTS

Special events were used to promote public awareness of the Chesapeake Bay Study Program. Three special events, all linked to the Bay model, have been held: a groundbreaking ceremony, an open house, and a dedication ceremony.

The groundbreaking ceremony was sponsored by the County Commissioners of Queen Annes County and was held on 11 June 1973. Over 200 persons attended the ceremony. The presiding officer, Julius Grollman, was the President of the County Commissioners and the ceremony included speeches by J. Millard Tawes and Secretary Rogers C. B. Morton.

Mr. Tawes had been a governor of Maryland and had served as the first secretary of the State's Department of Natural Resources. At that time, Secretary Morton was the U.S. Secretary of the Interior. Prior to that, he had been the U.S. Representative from Maryland's First Congressional District and was one of the original supporters of the Bay Study Program.

While the model was under construction, an open house was sponsored in conjunction with the 1975 Chesapeake Appreciation Weekend, which was held at Sandy Point State Park. Shuttle busses and boats took people from the park to the model and over 1,800 people viewed the Bay Model during that weekend. During the 1976 Chesapeake Appreciation Weekend, the completed hydraulic model was again open to visitors. A total of 650 persons toured the model during that weekend.

On 7 May 1976, the Chesaspeake Bay model dedication ceremony was held to publicly announce completion of the model's construction and initiation of the adjustment and verification phase. As with the groundbreaking, the dedication was sponsored by the County Commissioners of Queen Anne's County. Mr. John M. Ashley, Jr., President of the County Commissioners, was the presiding officer and Rogers C. B. Morton was the keynote speaker. Approximately 1,000 persons attended the dedication, which included the filling of the Bay model with water. Following the formal ceremony, visitors were given the opportunity to tour the model at their leisure. Corps personnel were stationed at key locations to answer questions. Media coverage of the dedication included staff from a number of newspapers and several television stations.

In addition to the three special events discussed above, the Baltimore District participated in the Bi-State Conference on the Chesapeake Bay held 27-29 April 1977 at the Patuxent Naval Air Station, St. Mary's County, Maryland.

Organized by the Chesapeake Research Consortium, Incorporated for the States of Maryland and Virginia and other participating agencies, the purpose of this conference was to update public understanding of the Bay and to reaffirm the direction of future study and management efforts regarding the Bay. At the conference, the District Engineer, Baltimore District, presented information dealing with the Chesapeake Bay Study to include major findings of the Study and the program formulated for hydraulic model testing.

BAY MODEL TOURS

Public tours have allowed interested people to personally view the Chesapeake Bay hydraulic model. During the shelter and model construction phases, model tours were limited to scheduled groups. Since the dedication ceremony, the model has been open to the public. Three tours are given daily, Monday through Friday (except holidays) at 10 a.m. and at 1 and 3 p.m. The tour consists of a 20 minute slide presentation highlighting the Bay and the problems besetting it and the purpose and scope of the model. The slide presentation is followed by a 40 minute walk around the model during which the guide answers questions and directs attention to key points of interest. Special tours for various civic and professional organizations can be scheduled and if the size of the group warrants, several tour guides can be available.

Attendance at the public tours has averaged as much as 125 people per day. During certain days, when large groups are scheduled as many as 350 to 400 visitors have toured the model. Between June 1976 and February 1977. approximately 12,000 people visited the model including almost 200 people from 36 foreign countries. England, France, West Germany, Japan, and Canada have sent the most number of visitors although a few have even represented the USSR.

OTHER PUBLIC PARTICIPATION ACTIVITIES

This chapter has described those activities that were specifically undertaken for the public information and participation portion of the study. Not to be neglected are the number of program activities that serve a public information and participation role but are primarily supportive of another portion of the total Chesapeake Bay Study Program. The Corps defines "public" as any affected or interested non-Corps entity, to include other Federal, regional, State, and local government entities and officials; public and private organizations; and individuals. The continuous coordination between the Corps and the Federal and State agencies through the Advisory Group, the Steering Committee, and the five task groups has kept those publics informed of study progress and offered them the opportunity to participate in study affairs. More information concerning the roles of these

coordination groups is provided in Appendix 1 of this Report, entitled "Study Organization, Coordination, and History."

A considerable amount of coordination has taken place with local governments, research institutions, and other non-Corps groups and individuals during the collection of raw data for the first two phases of the Study and with the dissemination of Study information whenever requests have been made.

Public information and participation is a continuous function in the Chesapeake Bay Study Program. The activities listed in this chapter are ones that were completed or planned as of December 1976. As the study progresses and comes to a climax, public involvement will play an even more important role in the program.

CHAPTER IV
PROPOSED PUBLIC PARTICIPATION AND INFORMATION ACTIVITIES

INTRODUCTION

The preceding chapters of this Appendix included a brief description of the Chesapeake Bay Study Program, the Bay Region, the various study publics, and those public participation and information activities which have been conducted as part of the first two phases of the Study Program. The desire by certain groups and individuals for a continued and more immediate role in water resources planning for the Chesapeake Bay Region has become evident during the Study. As a result, there exists a need for a continuation of effective liaison between the Corps and other Federal, State, and local government institutions, as well as the scientific community, private organizations, and other Bay users.

The final phase of the Study, consisting of the formulation and recommendation of solutions to priority problems using the hydraulic model will involve an even more intensive public involvement program. Those activities employed in earlier study phases (as described in Chapter III) will likely be used in this last study phase. In addition, two elements which have not been used to date will also be employed. First, the planner workshop/seminar which offers an opportunity to include various elements of the public in the planning process at a "policy making level." While such workshop/seminars are usually open to the general public, it is most important that certain people be represented such as community leaders, representatives of organized interests, and key individuals who are influential in shaping the decisions in their community. Leadership for the workshop/seminar is normally provided by local interests with water resources planners providing technical support and monitoring the discussion. As a result of an effectively run workshop/seminar, the Corps will obtain a degree of public consensus on planning decisions as well as feedback from local interests in developing and assessing planning alternatives.

The second element is the newsletter. Published on a biannual or annual basis, the newsletter is an effective means of informing a large portion of the area's population of activities and developments affecting the Chesapeake Bay Region. Content will likely include features on key water resource problems such as water quality, water supply, recreation, tidal flooding, and erosion. Possible alternative solutions for these will be outlined. Information will also be included on the status of the Chesapeake Bay Study Program and hydraulic model construction, verification, and operation.

Besides those elements of the Chesapeake Bay Study Public Participation and Information Program, there are additional studies and activities that would enhance public involvement in managing the Bay's water resources. Some of these are beyond the intent or resources of the Chesapeake Bay Study Program. They are identified below more as an aid to other institutions that share an interest in public involvement in water resources planning and who might be willing to undertake such activities.

ADDITIONAL PUBLIC INVOLVEMENT ACTIVITIES

As in other planning processes, research must precede any actual activity. Like the Bay itself, there is much that is still unknown about the Bay's publics. Some of the proposed studies, therefore, are designed to increase knowledge of both the Bay's publics and of ways to enhance communication among these publics.

a. *Indepth Study of Bay-related Organizations*. There are a number of excellent, comprehensive directories that list organizations concerned with Chesapeake Bay. However, these directories are local in scope. Since large areas exist for which there are no directories, many groups are not listed. This proposed study would survey interested organizations throughout the entire Estuary Area and publish the results in the form of a directory. The desired information might include:

- Name of Organization
- Mailing address and telephone number
- Person to contact for information
- Special interests
- Year established
- Size of staff
- Size of membership
- Membership qualifications
- Source of funding
- Publications
- Description of activities

In order to be used as a continuing reference, the directory would have to be updated periodically.

b. *Communication Network Study*. A communication network study would determine how interested people find out about current developments regarding the Chesapeake Bay. The wide range of interests, the specialization of disciplines, the variety of life styles, and the large physical area of the Chesapeake Bay Region make effective communication among the publics a necessity. The number and varieties of communication media are extensive. At the personal interchange level, there are small meetings and conferences between groups and individuals. At the specialized media level, there are

organizational newsletters, professional journals, and publications that cater to special interests such as boating and wildlife conservation. At the general media level, there are a myriad number of newspapers and magazines, radio, and television networks.

There are two practical reasons for determining which media have the most impact on the Bay-related publics. First, it would demonstrate which media is most effective in reaching a specific public thereby allowing an institution to select the appropriate medium to reach the targeted audience. Second, the network communication study would facilitate a content analysis study which would evaluate media to determine the type of information being disseminated. This type of analysis will be described in further detail below.

c. *Current Analysis Study*. A content analysis study would consist of monitoring and evaluating selected media to determine the type of information being provided to the public. Such a project has a variety of advantages.

– Current developments in water resources planning could be identified as well as any related activities which are occurring.

– The effectiveness of public participation activities could be evaluated.

– The number of articles would indicate the degree and direction of interest in water resources.

– The information gathered could be evaluated on a local, regional, State, or topical basis.

A significant administrative advantage to a content analysis study is that the information can be gathered at a low cost. Based on the information that is obtained from the research activities, decisions can then be made as to how to achieve better communication among the Chesapeake Bay publics.

d. *Radio and Television Panel Discussions*. Such discussions, held live over radio and/or television, could be used to disseminate information to a relatively large audience concerning the purpose and direction of water resource planning in the Chesapeake Bay Region. Live panel discussion activities of the question and answer variety have the important feature of directly involving the public. The major output of such a program is the stimulation of interest and support for water resources planning. The moderator and panel members for such radio/television discussions should be knowledgeable representatives from organized interests, community leaders, and water resource planners.

e. *Annual Conference*. An effective step in providing for the proper management of Chesapeake Bay's water and related land resources is through

the sponsoring of annual conferences wherein representatives from Federal, State, and local agencies, research institutions, conservation and political action groups, private industry, and other elements of the public would attend. At such conferences, information could be disseminated concerning such things as problems affecting the Bay, and organizations managing or conducting research on the Bay.

Information could be gathered concerning public goals and priorities regarding planning alternatives. The conferences could also serve as an effective focus for coordinating and organizing related land, water, and community plans and for resolving conflicts, and producing plans which more closely satisfy needs and preferences of the various elements of the public. Such conferences might be sponsored by an organization composed of representatives from a wide spectrum of the public such as the Citizen's Program for the Chesapeake Bay, Inc.

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ATTACHMENT A
FEDERAL AGENCIES INVOLVED IN WATER RESOURCES PLANNING

This Attachment includes a detailed discussion of those Federal agencies, departments, and commissions which are involved in or affected by the Chesapeake Bay Study Program. Information was obtained primarily from the following sources: the United States Water Resources Council's Coordination Directory for Planning Studies and Reports; A Chesapeake Bay Review: Research and Responsibilities (Volumes I and II), prepared for the Environmental Protection Agency's Chesapeake Bay Program by the Mitre Corporation; Chesapeake Bay Institutions, prepared by the Interagency Committee on Marine Sciences and Engineering of the Federal Council for Science and Technology; and the United States Government Manual 1976/1977 prepared by the Office of the Federal Register, National Archives and Records Service, General Services Administration.

FEDERAL DEPARTMENTS

1.0 WATER RESOURCES COUNCIL

Office Address: Water Resources Council
2120 L Street, N.W.
Washington, D.C. 20037

General Activities: The Water Resources Council is an independent executive agency which was established by the Water Resources Planning Act of 1965. Council activities encourage the conservation, development, and utilization of water and related land resources on a comprehensive and coordinated basis by Federal, State, and local government and private enterprise. The members of the Council are from various Cabinet-level departments and are listed in Table 2-A-1.

The Council advises the President with respect to Federal policies, principles, standards, and procedures for participants in preparation of comprehensive regional and river basin plans as well as formulation and evaluation of Federal water and related land resources projects.

The Council also establishes the Federal Principles and Standards for Planning for water and related land resources. The Principles provide the broad policy framework for planning activities and include the conceptual basis for planning. The Standards provide for uniformity and consistency in comparing, measuring, and judging beneficial and adverse effects of alternative plans. In addition, the Principles and Standards includes "procedures," which provide more detailed methods for carrying out the various levels of planning activities, including the selection of objectives, the measurement of beneficial and adverse effects, and the comparison of alternative plans for action. Procedures are developed within the framework of Principles and the uniformity of Standards but will vary with the level of planning, the type of program, and the state-of-the-art of planning. The Council does not

TABLE 2-A-1

WATER RESOURCES COUNCIL MEMBERS

MEMBERS:

Secretary, Department of Agriculture
Secretary, Department of the Army
Secretary, Department of Health, Education, and Welfare
Secretary, Department of the Interior
Secretary, Department of Transportation
Chairman, Federal Power Commission

ASSOCIATE MEMBERS:

Secretary, Department of Commerce
Secretary, Department of Housing and Urban Development
Administrator, Environmental Protection Agency

OBSERVERS:

Attorney General
Director, Office of Management and Budget
Chairman, Council on Environmental Quality
Chairman, Pacific Northwest River Basins Commission
Chairman, New England River Basins Commission
Chairman, Great Lakes Basin Commission
Chairman, Ohio River Basin Commission
Chairman, Missouri River Basin Commission
Chairman, Upper Mississippi River Basin Commission

consider the principles, standards, and procedures as static, and expects that they will evolve and change. The Water Resources Council's Principles and Standards are applied to studies by the river basin commissions, other Federal and state organizations, and the Federal departments and agencies. In addition, the Office of Management and Budget, the Council on Environmental Quality, and other executive offices use the Principles and Standards in their review of proposed projects and basin or regional plans.

Another major function of the Water Resources Council is to coordinate Federal-State and interagency cooperation. The Council assists in the establishment, operation, and termination of Federal-State river basin commissions (currently there are seven basin commissions). Also, Federal interagency committees for coordination of water and related land resources are chartered under the aegis of the Council (there are three existing interagency committees, but none exist for the Chesapeake Bay Region).

2.0 DEPARTMENT OF AGRICULTURE (USDA)

Regional Office: Northeast Region
U.S. Department of Agriculture
Federal Center Building
Hyattsville, Maryland

General Activities: USDA acquires and diffuses information on agricultural subjects in the most comprehensive and general sense. USDA functions in areas of research, education, conservation, marketing, regulatory work, agricultural adjustment, surplus disposal, and rural development.

Water Resources Activities: USDA is concerned with water resources when they affect, in any manner, cultivated, range, forest, and bush-covered wildlands. USDA's specific water interests include:

* Watershed protection

* Flood prevention and control

* Conservation, development, use, pollution, or disposal of waters as they affect farming or forestry in either the production, processing, or marketing of crops.

* Development, storage, treatment, purification, or distribution of water in rural areas

* Collection, treatment, or disposal of waste in rural areas

* Administration of components of national wild and scenic rivers

* Production, distribution, and marketing of electrical energy as it affects rural areas.

The major subdivisions of USDA that are water resource related are the Soil Conservation Service, the Agricultural Research Service, the Forest Service, the Farmers Home Administration, and the Economic Research Service. The Study participants from the Department of Agriculture are shown in Table 2-A-2.

TABLE 2-A-2

STUDY PARTICIPANTS FROM DEPARTMENT OF AGRICULTURE

Chesapeake Bay Study Program Coordination Group	USDA Representative
Advisory Group	State Conservationist--Maryland, Soil Conservation Service
Economic Projections Task Group	Economic Research Service
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Agricultural Research Service
Flood Control, Navigation, Erosion, Fisheries Task Group	Soil Conservation Service
Recreation Task Group	Soil Conservation Service

2.01 SOIL CONSERVATION SERVICE (SCS)

Regional Office: Regional Director
Technical Service Center
Soil Conservation Service, USDA
7600 West Chester Pike
Upper Darby, Pennsylvania 19082

State Offices: State Conservationist
Soil Conservation Service
522 Hartwick Road
College Park, Maryland 20740

State Conservationist
Soil Conservation Service, USDA
Federal Building & U.S. Courthouse
Box 985, Federal Square Station
Harrisburg, Pennsylvania 17108

State Conservationist
Soil Conservation Service
P.O. Box 10026
Federal Building
Richmond, Virginia 23240

General and Water Resource Activities: The SCS has the responsibilities for developing and carrying out a national soil and water conservation program in cooperation with landowners, operators, and other land users; with community planning agencies and regional resource groups; and with other agencies of government at the Federal, State, and local levels. The SCS also assists in agricultural pollution control, environmental improvement, and rural community development. Another SCS activity is the "National Program of Land Inventory and Monitoring" to provide soil, water, and resource use trends essential for programming and planning at all government levels. The SCS is geographically subdivided by State boundaries with the State Conservationist in charge of SCS activities within his respective state. There are also Regional Technical Service Centers.

2.02 AGRICULTURAL RESEARCH SERVICE (ARS)

Regional Office: (for Bay Region except Virginia)
Deputy Administrator
Agricultural Research Service, USDA
Agricultural Research Center
West Beltsville, Maryland 20705

(for Virginia)
Deputy Administrator
Agricultural Research Service, USDA
P.O. Box 53326
New Orleans, Louisiana 70153

General Activities: The basic mission of the ARS is to provide knowledge and technology so farmers can produce efficiently, conserve the environment, and meet the food and fiber needs of the Nation.

Water Resources Activities: As part of its mission, ARS scientists and engineers conduct research that is concerned first with improving the productive capacity of soil and water resources and second, with keeping the soil and the water relatively free from pollution.

2.03 FOREST SERVICE

Regional Office: (for Bay Region except Virginia)
Area Director, Northeastern Area
Forest Service, USDA
6816 Market Street
Upper Darby, Pennsylvania 19082

(for Virginia)
Area Director, Southeastern Area
Forest Service, USDA
1720 Peachtree Street, N.W.
Atlanta, Georgia 30309

Regional Director, Southern Region
Forest Service, USDA
1720 Peachtree Street, N.W.
Atlanta, Georgia 30309

General Activities: The Forest Service of the USDA has Federal responsibilities for National leadership in forestry. It has as one of its objectives, the protection and improvement of the quality of air, water, soil, and natural beauty.

Water Resources Activities: The Forest Service administers the National Forests, however, there are no National Forests within the Bay Region. The Forest Service also has lead responsibility for USDA activities under the Wild and Scenic Rivers Act, administering components of the National Wild and Scenic Rivers system, directing studies on potential additions, and coordinating considerations of other USDA agencies.

2.04 ECONOMIC RESEARCH SERVICE (ERS)

Regional Office: Regional Director, Northeast Region
Economic Research Service, USDA
Executive Office Center
1974 Sproul Road
Broomal, Pennsylvania 19008

General and Water Resources Activities: The ERS, in keeping with its assignments within USDA, conducts studies to provide economic information about both short-term and long-range economic agricultural demands for land and water resources. ERS also assesses the economic effect of alternative potentials for development of such resources on the agricultural and related sectors of the economy. The ERS has general responsibility within the USDA for basin-wide and interregional economic aspects of comprehensive river basin planning. Much of this is accomplished by ERS' National Resources Economics Division.

2.05 COOPERATIVE EXTENSION SERVICE

Headquarters: Extension Service
Department of Agriculture
Washington, D.C. 20250

General Activities: The Cooperative Extension Service provides grants for educational programs based upon local needs in the broad fields of agricultural production and marketing, rural development, home economics, and youth development. These grants are made to land-grant institutions which provide educational and technical assistance to the general public through State and county extension service personnel.

3.0 DEPARTMENT OF COMMERCE

Office: Water Resources Coordinator
Department of Commerce
6010 Executive Boulevard
Rockville, Maryland 20852

General Activities: The mission of the Department of Commerce is to foster, serve, and promote the Nation's economic development and technological advancement.

Water Resources Activities: The Department of Commerce is interested in water resources as they affect economic development and technological advancement. The Department has centered its responsibilities for coordinating water resources activities under the National Oceanic and Atmospheric Administration (NOAA). The Department's Maritime Administration also has a major interest in water resources development. The

Bureau of Economic Analysis (BEA), a part of the Department's Social and Economic Statistics Administration, is important because it is BEA which provides the demographic and economic projections upon which future water resource demands are based. Table 2-A-3 shows the Chesapeake Bay Study Participants from the Department of Commerce.

TABLE 2-A-3

STUDY PARTICIPANTS FROM DEPARTMENT OF COMMERCE

Chesapeake Bay Study Program Coordinating Group	Agency Represented
Advisory Group	Bureau of Economic Analysis
Steering Committee	National Marine Fisheries Service
Economics Projections Task Group	Bureau of Economic Analysis* National Marine Fisheries Service
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	National Marine Fisheries Service
Flood Control, Navigation, Erosion, Fisheries Task Group	Maritime Administration National Marine Fisheries Service
Fish and Wildlife Coordination Group	National Marine Fisheries Service

* Representative from BEA serves as task group chairman.

3.01 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

National Office: Administrator
National Oceanic and Atmospheric Administration
U.S. Department of Commerce
6010 Executive Boulevard
Rockville, Maryland 20852

General Activities: NOAA was organized in 1970 within the Department of Commerce to provide a unified approach to problems of the three physical elements of the environment--the oceans, the atmosphere, and the solid earth. All current studies and research activities in Chesapeake Bay by the Department of Commerce are being conducted by NOAA. Besides the activities being carried on by subdivisions under NOAA, there are a number of other services provided including preparation of nautical charts, nautical publications (tide tables, bench marks, current charts) bathymetric maps, coastal mapping, geodetic surveys, hydrographic surveys, and aeronautical charts.

Subordinate Divisions: There are numerous subordinate units of NOAA that are related to water resources planning. These are the National Ocean Survey, the National Marine Fisheries Service, the National Weather Service, the Environmental Data Service, the National Environmental Satellite Service, the Environmental Research Laboratories, and the Office of Coastal Environment.

Coordinating Office: The Office of Ecology and Environmental Conservation acts as a central point to which ecological and environmental conservation interests can communicate their views on all NOAA activities. This Office also represents NOAA on interagency councils of the government

that involve ecology or environmental quality with regard to NOAA's assigned responsibilities.

3.01.1 NATIONAL OCEAN SURVEY (NOS)

Regional Office: Director
Atlantic Marine Center
National Ocean Survey, NOAA
439 West York Street
Norfolk, Virginia 23510

General Activities: NOS prepares nautical and aeronautical charts that promote the safety and efficiency of marine and air navigation; collects data on tidal currents, heights, and time of occurrence, salinity and temperature; conducts source surveys and field activities to develop a basic network of geodetic control that is essential to mapping and engineering projects; and carries out geophysical mapping operations. NOS also provides a service to water resources planning agencies by insuring that proper geodetic control is maintained. The Survey played a major role in the gathering of basic data for use in the development and construction of the Chesapeake Bay Study Program's hydraulic model. In addition, NOS retains extensive archival data on Chesapeake Bay.

3.01.2 NATIONAL MARINE FISHERIES SERVICE (NMFS)

Regional Office: Director
Northeast Region
National Marine Fisheries Service, NOAA
14 Elm Street
Gloucester, Massachusetts 01930

Regional Laboratory: Officer-in-Charge
Laboratory for Ecology and Pathology of Marine Organisms
National Marine Fisheries Service
Oxford, Maryland 21654

Water Resources Activities: NMFS conducts an integrated program of research and services related to the protection and rational use of living marine resources for their aesthetic, economic, and recreational value. Among its activities are biological surveys designed to monitor, assess, and predict the abundance of marine resources and research programs. The Service also promotes the development and marketing of fisheries products.

The regional offices of NMFS work with State agencies, universities, and the public in managing the region's fishery resource research, conservation, management, and utilization programs.

3.01.3 NATIONAL WEATHER SERVICE (NWS)

Regional Office: Director, Eastern Region
National Weather Service, NOAA
585 Stewart Avenue
New York, New York 11530

General Activities: The National Weather Service observes weather phenomena and issues reports concerning this phenomena.

Water Resources Activities: NWS has the responsibility for issuing forecasts and warnings of weather, flood, and ocean conditions that affect the Nation's safety, welfare, and economy. The Office of Hydrology under NWS also provides water supply forecasts and analyzes hydrometeorological data for use in water resource planning and operational problems.

The Weather Service maintains two meterological monitoring stations in the Bay Area and three automated stations. Predictions of freshwater inflow into the Bay are also available from the National Weather Service River Forecast Center at Harrisburg, Pennsylvania.

3.01.4 ENVIRONMENTAL DATA SERVICE (EDS)

Offices: National Climatic Center
Environmental Data Service, NOAA
Federal Building
Asheville, North Carolina 28801

(for information pertaining to evaporation, precipitation, and related data)

National Oceanographic Data Center
Environmental Data Service
National Oceanic and Atmospheric Administration
Rockville, Maryland 20852

(for oceanographic data)

General Activities: The Environmental Data Service acquires, analyzes, and disseminates environmental information for use by Federal, State, and local governments, by commerce and industry, by the scientific and engineering community, and by the general public. As part of this service, EDS maintains the Environmental Data Base Directory which is a computerized inventory of environmental data bases located at Federal, State, and local government agencies, educational and research institutions, and private industry. This system enables users to have ready access to information about the existence, scope, and content of files of environmental data.

3.01.5 NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS)

Office: Deputy Director
National Environmental Satellite Service, NOAA
Washington, D.C. 20233

General Activities: NESS operates the National Environmental Satellite System and promotes the use of satellite-gathered data in environmental services. NESS also coordinates with the National Aeronautics and Space Administration (NASA) and the Department of Defense on certain research-oriented satellite activities.

3.01.6 ENVIRONMENTAL RESEARCH LABORATORIES (ERL)

Office Address: Director
Environmental Research Laboratories
National Oceanic and Atmospheric Administration
3100 Marine Avenue
Denver, Colorado 80302

General Activities: The Environmental Research Laboratories conduct an integrated program of research, fundamental technology development, and services relating to the oceans and inland waters, the atmosphere, the space environment, and the solid earth. Such information is collected in order to increase the understanding of man's geophysical environment and thus provide the scientific basis for improved services.

3.01.7 OFFICE OF COASTAL ENVIRONMENT

General Activities: The Office of Coastal Environment serves as a focal point for coordination with and advice to governmental, public,

industrial, academic, and other institutions concerned with coastal resource management. In addition, it supports the development of scientific information needed to assess and predict the impact of man-made alterations and natural phenomena on the marine environment (required for effective coastal zone management).

3.02 MARITIME ADMINISTRATION

Regional Address: Director, Eastern Region
Maritime Administration
Department of Commerce
26 Federal Plaza
New York, New York 10007

General Activities: The Maritime Administration is concerned with the development, promotion, and operation of the U.S. Merchant Marine.

Water Resources Activities: The Administration becomes involved in water resources planning as it affects waterborne commerce. Among those responsibilities and activities which affect foreign and coastal trade are:

a. Advising communities regarding the location of wharves, piers, and water terminals.

b. Investigating the practicability and advantages of harbor, river, and port improvements.

c. Conducting surveys and rendering assistance to local, State, and Federal agencies concerning physical development of ports.

3.03 BUREAU OF ECONOMIC ANALYSIS (BEA)

Office Address: Director
Bureau of Economic Analysis
Department of Commerce
Washington, D.C. 20230

General Activities: The Bureau of Economic Analysis gathers and analyzes data on the Nation's economic activities.

Water Resources Activities: BEA plays a key information service role in water resources planning. It provides, by regions, an economic statistical base, a set of economic projections, and an analytical evaluation system upon which water demand projections are based.

3.04 BUREAU OF DOMESTIC COMMERCE, DOMESTIC AND INTERNATIONAL BUSINESS ADMINISTRATION

Regional Office Address: Director
Field Office, Baltimore
305 U.S. Customhouse
Gay and Lombard Streets
Baltimore, Maryland 21202

Director
Field Office, Philadelphia
Jefferson Building
1015 Chestnut Street
Philadelphia, Pennsylvania 19107

Director
Field Office, Richmond
2105 Federal Building
400 N. 8th Street
Richmond, Virginia 23240

General Activities: The Bureau has authorities and duties related to the domestic industry and trade of the Nation. Major activities include the collection, analysis, and dissemination of information on industrial activities and requirements, technological developments, economic trends and the potential impact on business and the economy of contemplated or effected Government actions. The Bureau also analyzes and recommends policy to stimulate a balanced growth of industry.

Water Related Activities: The Bureau collects and analyzes information on industrial water use, and provides liaison between government and industry on water resource matters. In addition, the Bureau also prepares industrial water assessments and forecasts on a national and river basin basis and reviews various river basin studies in regard to industrial water supply, industrial water requirements, and industrial pollution.

4.0 DEPARTMENT OF DEFENSE

Under the Department of Defense, there are two services that have direct interests in water resources management: the U.S. Army Corps of Engineers and the U.S. Navy.

4.01 CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY

Regional Offices: District Engineer
U.S. Army Engineer District, Baltimore
P.O. Box 1715
Baltimore, Maryland 21203

District Engineer
U.S. Army Engineer District, Norfolk
803 Front Street
Norfolk, Virginia 23510

District Engineer
U.S. Army Engineer District, Philadelphia
U.S. Customhouse
2nd and Chestnut Streets
Philadelphia, Pennsylvania 19106

Activities: The U.S. Army Corps of Engineers is the Nation's major Federal water resources development agency. Under specific and continuing authorizations, the Corps investigates, develops, conserves, and improves the Nation's water and related land resources. Encompassed in the Corps' civil works program is a comprehensive range of resources development activities for navigation, flood control, shore and beach restoration and protection, hurricane flood protection, hydroelectric power, water supply, water quality control, fish and wildlife conservation and enhancement, outdoor recreation, and environmental quality. The Corps of Engineers is also responsible for the water supply of the District of Columbia.

The Corps of Engineers is geographically organized into divisions which are subdivided into districts. Districts are based on the drainage basins of major river systems. The Chesapeake Bay Region falls wholly within the North Atlantic Division, with the divison office located in New York City. The Baltimore District has responsibility for those rivers that drain into the Maryland portion of Chesapeake Bay, which includes the Susquehanna and Potomac Rivers and the Eastern Shore rivers. The Norfolk District has responsibility for those rivers which drain into Virginia's

portion of the Bay. Within the Bay Region, the Philadelphia District is responsible for the Chesapeake and Delaware Canal and those areas in Delaware that drain into Delaware Bay. Regulatory responsibilities have been exercised by the Corps of Engineers since enactment of the River and Harbor Act of 1899. Since that time, legislation has been passed to expand the Corps' permit authority. Permits are presently issued for structures in or affecting navigable waters of the United States, for the discharge of dredged or fill material into all waters of the United States, and for the transportation of dredged material for the purpose of dumping it into ocean waters.

4.02 DEPARTMENT OF THE NAVY

Office Addresses: Environmental Protection Division, OP-45
Office of the Chief of Naval Operations
Washington, D.C. 20350

Naval Facilities Engineering Command
Code 1045
Department of the Navy
Washington, D.C. 20390

Naval Ship Research and Development Center
Building A 823
Department of the Navy
Annapolis, Maryland 21402

General Responsibilities: The U.S. Navy is the Nation's armed service on the seas.

Water Resources Responsibilities: The U.S. Navy's relationship to Chesapeake Bay's water resources is in regard to the maintenance of navigable waterways,

the impact of shore support bases, and the Navy's expertise in ship-related water pollution control. Table 2-A-4 shows the U.S. Navy representation on the Chesapeake Bay Study Program

TABLE 2-A-4

U.S. NAVY REPRESENTATION ON
THE CHESAPEAKE BAY STUDY PROGRAM

Coordination Group	U.S. Navy Activity Represented
Advisory Group	Environmental Protection Division, Office of the Chief of Naval Operations
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Naval Facilities Engineering Command
Flood Control, Navigation, Erosion, Fisheries Task Group	Naval Ship Research and Development Center

5.0 DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (DHEW)

5.01 PUBLIC HEALTH SERVICE (PHS)

Regional Office: Regional Director, Region III
Public Health Service, DHEW
P.O. Box 12990
Philadelphia, Pennsylvania 19108

General Activities: HEW's Public Health Service is responsible for the protection of the Nation's health. As such, the Service is concerned with the health-related aspects of water and related land resources projects.

Of particular concern are recreational use of water and land, disease vector control, and marine food-growing waters.

Water Resources Activities: The Public Health Service investigates the incidences and distribution of waterborne diseases and means for their control. The Service also advises on public health questions concerning water quality control in Federal reservoirs.

5.01.1 FOOD AND DRUG ADMINISTRATION

Office Address: Public Health Service
Food and Drug Administration
5600 Fishers Lane
Rockville, Maryland 20852

Regional Food and Drug Administration Office
U.S. Customs House
Room 1204
2nd and Chestnut Streets
Philadelphia, Pennsylvania 19406

Regional Specialist for Shellfish Sanitation
Food and Drug Administration
900 Madison Avenue
Baltimore, Maryland 21201

Water Resources Activities: The Food and Drug Administration conducts a National Shellfish Sanitation Program which is a voluntary cooperative project to advise the States with respect to their shellfish programs. Evaluations of such programs are prepared to assess the sanitation of shellfish growing areas and of the harvesting and processing of shellfish.

6.0 DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

Regional Office Address: Regional Administrator
Region III, U.S. DHUD
Curtis Building
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

General Responsibilities: The overall purpose of HUD is to assist in providing for sound development of the Nation's communities and metropolitan areas.

Water Resources Responsibilities: Sound community development is highly dependent on the status of water resources, not only to support basic human needs and the economic base, but also in regard to the aesthetics and amenities which contribute to the social well-being of the community. Consequently, HUD has an overall interest in water resources planning.

Two subdivisions of HUD have water resources responsibilities, including the Federal Disaster Assistance Administration, and the Federal Insurance Administration. The study participants from HUD are shown in Table 2-A-5.

TABLE 2-A-5

STUDY PARTICIPANTS FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Chesapeake Bay Study Program Coordination Group	HUD Representative
Advisory Group	Region III
Economic Projections Task Group	Region III

6.01 FEDERAL DISASTER ASSISTANCE ADMINISTRATION (FDAA)

Regional Office Address: Regional Director
DHUD Federal Disaster Assistance
Administration, Region III
Curtis Building
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

General Responsibilities: FDAA is responsible for the direction, management, and coordination of the Federal disaster assistance program, to include programs concerned with disaster research, emergency preparedness, readiness evaluation,relief and recovery, and coordination with other agency disaster assistance activities.

Water Resources Responisibilities: FDAA becomes involved in water resources when the disaster, or threat of disaster, is water-related. In the Bay area, water-related disasters can occur from both hurricane and tidal flooding.

6.02 FEDERAL INSURANCE ADMINISTRATION (FIA)

Office Address: Administrator
DHUD Federal Insurance Administration
451 7th Street, S.W.
Washington, D.C. 20410

General Responsibilities: The Federal Insurance Administration administers Federally-assisted insurance programs for floods, riots, and crimes.

Water Resources Responsibilities: FIA's National Flood Insurance Program enables persons to purchase insurance against losses due to floods, mud

slides, or for flood-related erosion-prone areas. For communities to be eligible for the program, they must adopt and administer flood plain management regulations that protect new construction from future flooding.

7.0 DEPARTMENT OF THE INTERIOR (USDI)

Regional Office Address: Special Assistant to the Secretary
Northeast Region
Department of the Interior
John F. Kennedy Federal Building
Boston, Massachusetts 02203

General Responsibilities: The Department of the Interior is concerned with the conservation, management, and development of the Nation's natural resources.

Water Resources Responsibilities: Among the Department's myriad responsibilities are those that directly relate to water resources - to include administration of Federal land; the conservation and development of mineral resources; the conservation, development, and utilization of fish and wildlife resources; hydrologic and geologic investigations; topographic mapping and coordination of Federal water data acquisition; the administration of the Nation's scenic and historic areas; the coordination of Federal and State recreation programs; and the investigation, planning, construction, and operation of water and related land resources projects to regulate, conserve, and use water for multiple purposes such as irrigation, municipal and industrial supply, hydroelectric power, flood control, navigation, water quality control, recreation, and fish and wildlife.

Public lands under Federal jurisdiction in the Chesapeake Bay area include wildlife refuges, National Monuments, historic sites and parkways, and other park lands.

The USDI is divided into bureaus and offices on a functional basis. Bureaus are subdivided into regions. Regional special assistants to the Secretary monitor Department activities in their respective regions and coordinate programs and policies on a regional basis where more than one bureau is involved. The Special Assistant to the Secretary for the Northeast Region represents the Department on the Bay Study Program's Advisory Group. Other study participants from the Department of the Interior are shown on Table 2-A-6.

7.01 OFFICE OF WATER RESEARCH AND TECHNOLOGY (OWRT)

Office Address: Director
Office of Water Research Technology
Department of the Interior
Main Interior Building, Room 4412
18th and C Streets, N.W.
Washington, D.C. 20240

Water Resources Responsibilities: OWRT performs water resources research and development activities with the purpose of developing new or improved technology and methods for solving or mitigating existing and projected state, regional, and nationwide water resource problems. The Office administers a cooperative program with university Water Resources Research Institutes, which are designated by the States. The Institutes for the Bay Region are listed in Table 2-A-7. OWRT also

TABLE 2-A-6

STUDY PARTICIPANTS FROM THE
DEPARTMENT OF THE INTERIOR

Chesapeake Bay Study Coordination Group	USDI Activity Participation
Advisory Group	Northeast Region Office
Steering Committee	Office of Water Research and Technology
Economic Projections Task Group	Dept. of Interior, Pittsburgh Office
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	U.S. Bureau of Mines U.S. Geological Survey
Flood Control, Navigation, Erosion, Fisheries Task Group	U.S. Geological Survey U.S. Fish and Wildlife Service U.S. Bureau of Mines
Recreation Task Group	*Bureau of Outdoor Recreation U.S. Fish and Wildlife Service National Park Service
Fish and Wildlife Coordination Group	**U.S. Fish and Wildlife Service

* Bureau of Outdoor Recreation is chair agency for the Recreation Task Group.

** U.S. Fish and Wildlife Service is chair agency for the Fish and Wildlife Coordination Group.

TABLE 2-A-7

WATER RESOURCES RESEARCH INSTITUTE

State	Institute
Delaware	Water Resources Center University of Delaware Newark, Delaware
Maryland	Water Resources Research Center Shriver Laboratory University of Maryland College Park, Maryland
Pennsylvania	Institute for Research on Land and Water Resources Pennsylvania State University University Park, Pennsylvania
Virginia	Water Resources Research Center Virginia Polytechnic Institute and State University Blacksburg, Virginia

manages a Water Resources Scientific Information Center to furnish information to the Nation's water resources community on ongoing and completed water resources studies.

7.02 WATER RESOURCES POLICY COORDINATION

Office Address: Water Resources Policy Coordination
Room 6543
Main Interior Building
18th & C Streets, N.W.
Washington, D.C. 20240

General Activities: Established in 1976, the Water Resources Policy Coordination is under the Assistant Secretary of Land and Water Resources of the Department of the Interior. The group's primary purpose is to represent the Secretary of the Interior on the Water Resources Council.

7.03 U.S. FISH AND WILDLIFE SERVICE (FWS)

Office Address: Regional Director
Boston Regional Office
U.S. Fish and Wildlife Service
Post Office and Courthouse
Boston, Massachusetts 02109

General Activities: FWS (formerly the Bureau of Sport Fisheries and Wildlife) has the objective of assuring maximum opportunity for the public to benefit from fish and wildlife resources. Under the Fish and Wildlife Coordination Act, FWS has the responsibility to investigate and report on water resource development projects prior to their construction or license by the Federal Government, determine the probable effects of such projects on fish and wildlife resources and associated habitats, and recommend measures for preventing or reducing damages to and improving conditions for these resources.

The Chesapeake Bay Region falls within the FWS' northeast region which is headquartered in Boston, Massachusetts. A FWS area office is located in Annapolis, Maryland. One of the Annapolis office's main functions is to review environmental impact statements.

The Service operates several wildlife refuges on or immediately adjacent to the Chesapeake Bay for the protection and management of migratory waterfowl and endangered species. In addition, the Service conducts research in the Bay on the effects of pollutants and water conditions on fish.

7.05 GEOLOGICAL SURVEY (USGS)

Office Address: U.S. Geological Survey
District Office, Maryland
8809 Satyr Hill Road
Parkville, Maryland 21234

U.S. Geological Survey
District Office, Virginia
200 West Grace Street
Room 304
Richmond, Virginia 23220

U.S. Geological Survey
District Office, Pennsylvania
4th Floor, Federal Building
228 Walnut Street
Harrisburg, Pennsylvania 17108

General Activities: The Geological Survey performs surveys and investigations concerning the topography, geology, and mineral resources of the Nation. The survey's water resources responsibilities include determining

the source, quantity, quality, distribution, movement, and availability of surface and groundwater. The survey also coordinates Federal activities in the acquisition of water data for streams, lakes, reservoirs, estuaries, and groundwater as part of its National Water Data Network. The network is an organized system for collecting specific information at a series of stations selected to satisfy a specific monitoring objective.

Other programs of the Geological Survey with relation to the Bay include:

- maps showing land use,
- information on properties and relations of sediments and rocks beneath and adjacent to the Bay,
- appraisals of energy and mineral resource potentials, and
- data on surface water and groundwater that enter and interact with waters of the Bay.

7.06 BUREAU OF OUTDOOR RECREATION (BOR)

Office Address: Regional Director, Northeast
Bureau of Outdoor Recreation
1 William J. Green, Jr., Federal Building
600 Arch Street
Philadelphia, Pennsylvania 19106

General Activities: BOR is the lead Federal agency in the effort to meet growing demands for outdoor recreation, including the conservation of and enhancement of recreation resources and the related environment. In regard to water resources planning, BOR investigates and reviews those water development project proposals of Federal agencies as well as private concerns which require Federal permits. The Bureau is also

involved in regional water and related water resources planning studies which are directed by the Water Resources Council.

Under the provisions of the Federal Water Project Recreation Act, BOR reviews Federal project reports to determine the extent that the proposed projects conform to appropriate state comprehensive outdoor recreation plans (SCORPS).

Due to its role as lead agency, BOR chairs the Chesapeake Bay Study Program's Recreation Task Group.

7.07 DEPARTMENTAL FIELD COMMITTEES

Office Address: Northeast Field Committee
John F. Kennedy Federal Building
Boston, Massachusetts 02203

General Activities: Field Committees promote the development and execution of coordinated regional natural resource programs for the Department of Interior and facilitate the coordination of field activities which involve two or more bureaus.

The regional Special Assistants to the Secretary serve as chairmen of the field committees in their respective regions. These regional special assistants also serve as departmental representatives on various interagency river basin committees and on Federal-State-river basin commissions authorized by the Water Resources Planning Act of 1965.

7.08 NATIONAL PARK SERVICE

Office Address: Director, Mid-Atlantic
National Park Service
143 South 3rd Street
Philadelphia, Pennsylvania 19106

Director, National Capital Parks
1100 Ohio Drive, S.W.
Washington, D.C. 20242

General Activities: The National Park Service plans, developes, and administers the natural, historical, and recreational areas which compose the National Park System. The System includes scenic parks, natural areas, historic sites, and buildings, and large recreational areas such as national seashores and scenic riverways. The National Park System reflects the national policy of preserving outstanding examples of the natural, aesthetic, and cultural heritage of the Nation.

Water Resources Responsibilities: In regard to water resources studies by Federal agencies, the National Park Service assumes responsibility for archeological, historical, natural, and visual environmental resources. Pre-authorization studies may include general development planning. Post authorization assistance may involve a variety of activities including site planning, operation of recreation areas, reservoir management planning, and other related activities.

8.0 DEPARTMENT OF TRANSPORTATION (DOT)

Of the many activities within the Department of Transportation, the U.S.

Coast Guard has the most direct bearing on the Bay. Other activities such as those within the Federal Highway Administration, the Federal Railroad Administration, and the Urban Mass Transportation Administration have an indirect bearing on the quality of the Bay through the transportation of materials and the related development in and near the Bay. Only the Coast Guard will be considered here since it has more direct contact with Bay related operations. Table 2-A-8 shows the study participants from the Department of Transportation.

8.01 U.S. COAST GUARD

Office Address: Commander
5th Coast Guard District
Federal Building
Portsmouth, Virginia 23705

(local offices are in major port cities)

General Activities: The Coast Guard is a branch of the Armed Forces and a service within the Department of Transportation except when operating as part of the U.S. Navy in time of war. Its basic function is to enforce the Federal maritime laws.

Water Resources Responsibilities: The Coast Guard enforces and assists in the enforcement of applicable Federal laws on the navigable waters of the United States. Specific activities include conducting search and rescue missions, enforcing safety, conservation, and marine environmental laws; providing port safety; and maintaining aids to navigation. It is the U.S. Coast Guard which has the responsibility for investigating ship-related pollution in navigable waterways such as oil spills.

TABLE 2-A-8

STUDY PARTICIPANTS FROM THE DEPARTMENT OF TRANSPORTATION

Chesapeake Bay Study Program Coordination Group	DOT Activity Participating
Advisory Group	U.S. Coast Guard
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	U.S. Coast Guard
Flood Control, Navigation, Erosion, Fisheries Task Group	U.S. Coast Guard
Recreation Task Group	U.S. Coast Guard

INDEPENDENT AGENCIES AND OTHER FEDERAL ACTIVITIES

Independent agencies and other Federal activities that have primary interests in water resources are the Federal Council for Science and Technology, the National Aeronautics and Space Administration, the Council on Environmental Quality, the Energy Research and Development Administration, the Environmental Protection Agency, the Federal Maritime Commission, the Federal Power Commission, the National Science Foundation, and the Smithsonian Institution. These will all be considered below.

9.0 FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Office Address: Executive Secretary
Federal Council for Science and Technology
1800 G Street
Room 1237
Washington, D.C. 20550

General Activities: The Federal Council for Science and Technology formed an interagency committee on Marine Science and Engineering (ICMSE) in 1971 to coordinate marine programs. The Chesapeake Bay Subcommittee was formed and is chaired by the Corps of Engineers, following an ICMSE request in 1971. Membership on this committee is open to all Federal agencies with a strong interest or involvement in the Bay. In addition, representatives from Maryland and Virginia are observers on the Subcommittee.

The Chesapeake Bay Subcommittee works toward the planning and coordination of Federal and State programs relating to the Bay including marine science, engineering, and related matters. Through such coordination, it is hoped that duplication of efforts can be avoided while research, development, and demonstration needs are identified.

The office address of the Interagency Committee on Marine Science and Engineering is:

Executive Secretary
Interagency Committee on Marine Science
and Engineering
U.S. Department of Commerce
6010 Executive Boulevard
Rockville, Maryland 20852

The office address of the Chesapeake Bay Subcommittee is:

Director, Civil Works
Chairman, Chesapeake Bay Subcommittee
Interagency Committee on Marine Science
and Engineering
Department of the Army
Office, Chief of Engineers
Washington, D.C. 20314

10.0 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

Office Address: National Aeronautics and Space Administration
400 Maryland Avenue, S.W.
Washington, D.C. 20546

General Activities: NASA is a research and development oriented agency which maintains and operates a Chesapeake Bay Ecological Program Office at the NASA Wallops Island Flight Center on Wallops Island, Virginia.

The major objectives of this Program is the transfer of remote sensing technology to the user community. Remote sensing data have been used by regulatory officials, planners, and academic researchers in detection of such things as pollutant concentrations, analysis of sediment transport, surveying of circulation patterns, and wetlands vegetation mapping and other concerns involving the marine environment of the Bay from the point of view of both natural processes and the impact of man's activities.

11.0 COUNCIL ON ENVIRONMENTAL QUALITY

Office Address: Chairman
Council on Environmental Quality
722 Jackson Place, N.W.
Washington, D.C. 20006

Responsibilities: The Council on Environmental Quality was established by the National Environmental Quality Act of 1969 and is part of the Executive Office of the President. The 3-member council has a number of duties and functions which include:

(1) reviewing and appraising Federal Government Programs and activities that influence environmental quality;

(2) developing and recommending to the President, national policies which promote environmental quality;

(3) performing a continuing analysis forchanges or trends in the National environment and environmental quality;

(4) assisting the President in the preparation of the annual environmental quality report to Congress;

(5) administering the environmental impact statement process; and

(6) providing an ongoing assessment of the Nation's energy research and development from an environmental and conservation standpoint.

12.0 ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA)

Office Address: Director
Division of Biomedical and Environmental Research
Energy Research and Development Administration
Washington, D.C. 20545

General Responsibilities: ERDA was formed in 1974 to consolidate Federal activities relating to research and development of various sources of energy. It brought together in one agency various energy development functions that were formerly the responsibilities of the Department of the Interior, the National Science Foundation, the Environmental Protection Agency, and the now defunct Atomic Energy Commission.

Water Resources Responsibilities: Major considerations in developing energy resources is their reliance and impact on water resources. At present, ERDA is conducting several research activities in the Chesapeake Bay. These include the study of the growth, dissipation, and succession of phytoplankton; the field study of nutrients recycling rates; photosynthetic rates and the effects of man's energy related activities on these processes; uptake and release of phosphorus in the Bay; concentrations and movements of trace metals in estuarine sediments; and pre- and post-

operational environmental studies near the Calvert Cliffs nuclear power plant. Table 2-A-9 shows the Chesapeake Bay Study participants from the Energy Research and Development Administration.

TABLE 2-A-9

STUDY PARTICIPANTS FROM THE
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Chesapeake Bay Study Program Coordination Group	ERDA Activity Participating
Advisory Group	Division of Biomedical and Environmental Research
Steering Committee	Division of Biomedical and Environmental Research
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	Divison of Biomedical and Environmental Research
Flood Control, Navigation, Erosion, Fisheries Task Group	Division of Biomedical and Environmental Research

13.0 ENVIRONMENTAL PROTECTION AGENCY

Regional Office Address: Regional Administrator
Region III, EPA
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Field Office Address: Annapolis Field Office
EPA Region III
Annapolis Science Center
Annapolis, Maryland 21401

General Responsibilities: EPA was established in 1970 as an independent executive agency to provide coordinated and effective governmental action on behalf of the environment. EPA endeavors to abate and control air, water, and noise pollution systematically by establishing standards and through an integration of various research, monitoring, and enforcement activities.

Water Resources Responsibilities: In regard to water resources, EPA is concerned with providing water supplies which are of a sufficient quality to use for all beneficial purposes, to include public water supply, propagation of fish and wildlife, recreation, agriculture, and industry. Major EPA water resources activities include:

* Establishing criteria and recommending standards of water quality.

* Awarding grants for developing basin, metropolitan, and regional water quality management plans.

* Coordinating with State enforcement authorities in the administration of state water quality standards.

* Extending financial and other assistance to States to help strengthen their water pollution control programs.

* Awarding grants for construction of municipal waste treatment facilities.

The Chesapeake Bay Region is in EPA's Region III, which has its offices in Philadelphia, Pennsylvania. EPA also maintains a field office in Annapolis, Maryland. Formal coordination between EPA and the Baltimore District on the Bay Study is shown in Table 2-A-10.

TABLE 2-A-10

STUDY PARTICIPANTS FROM THE
ENVIRONMENTAL PROTECTION AGENCY

Chesapeake Bay Study Program Coordination Group	EPA Activity Participating
Advisory Group	EPA Region III
Economic Projections Task Group	EPA Region III
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	*Annapolis Field Office
Flood Control, Navigation, Erosion, Fisheries Task Group	EPA Region III
Recreation Task Group	EPA Region III
Fish and Wildlife Coordination Group	Annapolis Field Office

* Representative from EPA's Annapolis Field Office serves as task group Chairman.

14.0 FEDERAL MARITIME COMMISSION

Office Address: Atlantic District Office
Federal Maritime Commission
6 World Trade Center
New York, New York 10048

General Activities: The primary function of the Federal Maritime Commission is to protect the interests of the public by regulating waterborne shipping in the foreign and domestic offshore commerce of the Nation. The Commission also administers the sections of the Water Quality Improvement Act of 1970 with respect to evidence of financial responsibility by vessel owners and operators for the cost of oil removal from the Nation's waters and shores.

15.0 FEDERAL POWER COMMISSION (FPC)

Regional Office Address: Federal Power Commission
730 Peachtree Street
Atlanta, Georgia 30308

Federal Power Commission
26 Federal Plaza
New York, New York 10007

General Activities: The Federal Power Commission regulates the interstate aspects of the electric power and natural gas industries to assure an abundant supply of energy together with the greatest economy in regard to proper use and conservation of natural resources. Certain electrical

generation facilities are prime users of water resources. First, water is necessary for hydroelectric generation. Secondly, large amounts of water are used as a coolant in both fossil-fuel and nuclear power plants. It is important that any detrimental effects resulting from the above activities be minimized.

For the Chesapeake Bay Study Program, the FPC has prepared this report's Appendix on Power (Appendix 13). In that Appendix, the Bay Region's future power needs are projected, broad range alternatives for meeting those needs are identified, and the environmental impacts of the alternatives are discussed.

Except for the Virginia portion of Chesapeake Bay, the region falls under FPC's New York regional office. The Virginia portion is in the Altanta, Georgia, Regional Office. Representation from the FPC to the Chesapeake Bay Study is shown in Table 2-A-11.

TABLE 2-A-11

STUDY PARTICIPATION BY THE FEDERAL POWER COMMISSION

Chesapeake Bay Study Program Coordination Group	FPC Activity
Advisory Group	New York Regional Office
Water Quality and Supply, Waste Treatment, Noxious Weeds Task Group	New York Regional Office
Flood Control, Navigation, Erosion, Fisheries Task Group	New York Regional Office

16.0 NATIONAL SCIENCE FOUNDATION (NSF)

Office Address: National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20550

General Activities: Among the purposes of the National Science Foundation are to increase the Nation's base of scientific knowledge and to encourage research in areas that can lead to improvements in economic growth, productivity, and the environment. NSF operates mainly through awarding grants and contracts to universities, non-profit organizations, and other research organizations to support fundamental and applied research. As shown in Table 2-A-12, NSF is represented on the Bay Study Program's Advisory Group and Steering Committee. Most of the NSF sponsored Chesapeake Bay projects are funded by the Research Applied to National Needs (RANN) Program and are carried out by the Chesapeake Research Consortium, Incorporated.

TABLE 2-A-11

STUDY COORDINATION WITH THE NATIONAL SCIENCE FOUNDATION

Chesapeake Bay Study Program Coordination Group	National Science Foundation Activity Represented
Advisory Group	Division of Advanced Environmental Research and Technology
Steering Committee	Division of Advanced Environmental Research and Technology

17.0 SMITHSONIAN INSTITUTION

Office Address: Smithsonian Institution
1000 Jefferson Drive, S.W.
Washington, D.C. 20560

General Activities: The Smithsonian Institution was created in 1846 for the increase and diffusion of knowledge. One of the Bureaus of the Smithsonian Institution is the Chesapeake Bay Center for Environmental Studies, located south of Annapolis on the Rhode River. Research at the Center focuses on upland watershed and estuarine systems in the subject areas of nutrients, herbicides, bacteria, general water quality parameters, hydrology, land use, plankton, and benthic organisms. The Center has also initiated bioassay analyses of higher aquatic plants.

The Smithsonian Institution is a member of the Chesapeake Research Consortium, Incorporated, thus the Institution has participated in Biota studies for the Chesapeake Bay Study Program. Most of the studies of the Bay Center are published through the Consortium. The Center also serves on the Bay Study Program's Advisory Group and Steering Committee.

ATTACHMENT B
MARYLAND AND VIRGINIA AGENCIES
INVOLVED IN WATER RESOURCES PLANNING

This attachment includes a discussion of the responsibilities and roles of each major government office involved in water resources development within the State of Maryland and the Commonwealth of Virginia. These two states have been singled out because the major portion of Chesapeake Bay lies within their boundaries. Naturally, then, a large number of their state agencies are either directly or indirectly involved in water resources planning and development. (State agencies from Pennsylvania and Delaware and the District of Columbia are discussed briefly in Chapter II).

Information was obtained primarily from several sources: The United States Water Resources Council's Coordination Directory for Planning Studies and Reports; A Chesapeake Bay Review: Research and Responsibilities (Volumes I and II), prepared for the Environmental Protection Agency's Chesapeake Bay Program by the Mitre Corporation; Chesapeake Bay Institutions, prepared by the Interagency Committee on Marine Sciences and Engineering of the Federal Council for Science and Technology; the United States Government Manual 1976/1977, prepared by the Office of the Federal Register, National Archives and Records Service, General Services Administration; and Virginia State Agencies Concerned with Coastal Zone Planning, Management, or Scientific and Engineering Activities, 1974-1975 Edition, compiled by Beverly L. Laird for the Virginia Institute of Marine Science (Special Report in Applied Marine Science and Ocean Engineering No. 67).

MARYLAND

1.0 DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

The Department of Economic and Community Development has the responsibility for advancing the economic and cultural welfare of the State. The Department investigates and assembles information pertinent to the State's economic development, industrial opportunities, and economic resources. In order to develop the State's natural resources and economic opportunities, the Department promotes new industries and businesses and encourages expansion of existing industries.

The Department is also involved in coordinating those activities and programs which contribute to community growth and development. Grants and loans are awarded to reduce the costs of developing in communities, land is made available for such development, and assistance is provided private enterprise, municipalities, counties, local public agencies, and local development corporations for the benefit of community development.

1.01 MARYLAND HISTORICAL TRUST

The Maryland Historical Trust, under the Department of Economic and Community Development, was created for the purpose of preserving and maintaining historical, aesthetic, and cultural properties, buildings, fixtures, furnishings and appurtenances pertaining in any way to the State

of Maryland. The Trust is also responsible for promoting interest in and the study of matter from the earliest of times.

The Trust provides both funds and impetus for historical preservation. It sponsors restoration projects and the acquisition of interests in historic sites. A primary focus of Trust activities is the surveying of State historic sites and the development of a State Plan for Historic Preservation.

2.0 DEPARTMENT OF STATE PLANNING

The Department of State Planning functions as the Maryland Governor's staff agency in developing plans for, and coordinating planning among governmental agencies. It prepares and recommends a balanced, integrated program for the development and employment of natural and other resources of the State in order to promote the health, safety, and general welfare of the people. The Department is currently preparing the State Development Plan which will consist of a "Human Resources Plan" and a "Land Use Plan." The Department was given responsibility through the State Land Use Act of 1974 to identify critical areas within the State and to intervene as an interested or aggrieved party in any administrative, judicial, or other proceeding concerning land use, development, or construction.

3.0 DEPARTMENT OF AGRICULTURE

The Department of Agriculture's prime responsibility lies with providing broad representation in policy determination with regard to agricultural matters in the State. An important activity of the Department which has a major effect on water resources deals with its administration of the pesticide control program and the promotion of the agricultural drainage program activities. The Department also contains the Soil Conservation Committee which promotes agricultural interests and provides guidance to the Soil Conservation Districts. The Districts themselves require that proper cultivation and soil conservation methods be used to minimize erosion and sedimentation.

4.0 *DEPARTMENT OF HEALTH AND MENTAL HYGIENE*

The Department's Environmental Health Administration directs the efforts to safeguard the public health against potential threats arising from environmental deterioration. One of its divisions, the Division of Water and Sewerage, conducts control programs directed towards assuring safe, potable water supply and adequate treatment of sewage.

5.0 DEPARTMENT OF TRANSPORTATION

5.01 STATE HIGHWAY ADMINISTRATION

The State Highway Administration is responsible for the construction and maintenance of all State roads. The construction and upgrading of roads has direct environmental impacts on surrounding areas. Thus, the activities of this Department have a substantial influence upon the water and related land resources of the State.

5.02 MARYLAND PORT ADMINISTRATION

The Port Administration constructs and operates the public port facilities of the State and maintains an international marketing and trade development program. The maintenance and expansion of port facilities necessitates activities that may have significant environmental impacts. For example, the maintenance dredging of shipping channels requires disposal of spoil material.

6.0 PUBLIC SERVICE COMMISSION

The Commission has a wide range of responsibilities. It is involved in water resources through its jurisdiction over water supply and sewage disposal companies that operate in the State.

7.0 CHESAPEAKE BAY INTERAGENCY COMMITTEE

The Chesapeake Bay Interagency Committee was created in 1969 to coordinate the State's efforts to curb pollution of Chesapeake Bay and its tributaries. The major output of the Committee has been the Maryland Chesapeake Bay Study, published in 1972.

8.0 MARYLAND COUNCIL ON THE ENVIRONMENT

The Council on the Environment coordinates policies and practices concerning environmental matters and develops new programs and policies related to the environment, when appropriate. The Council is chaired by the Governor and includes the Secretaries of Natural Resources, State Planning, and Health and Mental Hygiene.

9.0 STATE SOIL CONSERVATION COMMITTEE

The Committee coordinates the activities of the 24 Soil Conservation Districts in Maryland. It encourages the application of practical conservation measures that will retard erosion and promote soil and water conservation. The Committee also assists Districts in obtaining advice and assistance from State and Federal agencies.

10.0 MARYLAND WATER QUALITY CONTROL COMMISSION

The Control Commission was formed in 1947 to formulate and implement the elements of a State-wide water quality program. These elements include planning, capital programming, operation and maintenance, and enforcement. Each element of the program must be compatible with existing Federal water pollution control legislation and regulations.

11.0 DEPARTMENT OF NATURAL RESOURCES

11.01 WATER RESOURCES ADMINISTRATION

The Water Resources Administration is responsible for a number of State programs and activities. This includes the Coastal Zone Management Program, the Wetlands Program, the Power Plant Siting Program, the Shore Erosion Control Program, and the Waterway Improvement Program. A brief explanation of each of these is provided below.

a. Coastal Zone Management Program. This program is aimed at the control of land and water areas in the coastal zone. The program is expected to achieve wise use of all resources in the coastal zone, giving full consideration to historic, cultural, ecological, and aesthetic values, as well as to needs for economic development. These various coastal resources are to be preserved, protected, developed, and where possible, restored. The Federal Coastal Zone Management Act of 1972 and its 1976 amendments encourage cooperation among local, State, and regional agencies in developing and carrying out management of

coastal resources and directs all Federal agencies engaged in work affecting coastal areas to consult closely with the State agencies responsible for administering the coastal management programs.

b. Wetlands Program. This program involves the regulation of activities occurring in wetland areas. The State's wetlands are divided into two categories: State wetlands (areas below mean high tide) and private wetlands (areas not State wetlands which support aquatic vegetation and are subject to regular or periodic tidal action). On State wetlands, dredging and filling are prohibited without a license from the Board of Public Works. Activities on private wetlands are regulated by the Department of Natural Resources through a permit system.

c. Power Plant Siting Program. This program involves land acquisition, research and certification associated with the siting and operation of power plants. The program requires long-range planning by utilities, a 10-year plan of possible construction sites, and streamlined certification procedure.

d. Shore Erosion Control Program. As part of this program, shore erosion control loans which are long-term and interest free, are made to shore property owners for shore erosion control projects. The program also provides technical assistance regarding shore erosion control measures to any shore owner who requests it.

e. Waterway Improvement Program. This program undertakes projects in three main categories. First, the marking and dredging of channels and harbors. Second, the cleaning of debris, aquatic vegetation, or obstruction in navigable waters. Finally, construction of facilities of benefit to the boating public such as launching ramps.

The Enforcement Division of the Water Resources Administration is in charge of all enforcement activities of the Administration including the Wetlands Program. The Capital Programs Section of the Administration is responsible for developing master plans and supervising facilities development for the State Park System. For additional information on the activities of the Water Resources Administration, it is suggested that the Interagency Committee on Marine Science and Engineering's publication, Chesapeake Bay Institutions be consulted.

11.02 PARK SERVICE

The Park Service is responsible for protection and management of the lands and facilities within the State park system. The State's Natural Environmental Areas are included within the park system.

11.03 FOREST SERVICE

The Forest Service is responsible for administration of the State Forest System. The forests within the State are managed for watershed protection, timber and wood products, and recreational uses. Other activities of the Service include promoting tree planting, fire prevention, community services, and management of the woodlands.

11.04 WILDLIFE ADMINISTRATION

The Wildlife Administration manages State Wildlife Management Areas. The Administration also undertakes projects involving surveys and data collection in the State's coastal areas. These include wildlife populations, vegetation surveys, and surveys of banding activities. In addition, the Wildlife Administration establishes harvesting regulations and determines habitat ranges.

11.05 FISHERIES ADMINISTRATION

The Fisheries Administration conducts such projects as the Oyster Propagation Program which assesses the condition of the State's oyster bars, plant oyster seed, and cultivates natural oyster bars; Soft Clam Program which conducts clam population studies involving such factors as growth, reproduction, and physical condition; Estuarine Resident Finfish Program which involves such studies as population structures, commercial harvest trends, and factors affecting hatching success; Marine Finfish Program involving such activities as surveys of marine finfish population and where fishing pressures are; Finfish Mortality Program which involves investigations as to the causes of fish mortalities; Anadromous Fish Survey Project which involves the investigation of stream capability to support spawning of anadromous fish; Blue Crabs Project which involves the determination of the catches of crabs with regard to methods of capture and marketing structure of the harvest; and Finfish Statistics/Shellfish Studies which deal with the collection of records of shellfish and finfish harvest.

11.06 MARYLAND GEOLOGICAL SURVEY

The Coastal and Estuarine Section of the Maryland Geological Survey is involved with the study of coastal processes and the investigation of the effect of these processes on the shoreline. Erosion rates are measured, offshore depth changes are determined, and an inventory is taken of existing protective erosion structures. The Survey also regulates oil and gas well drilling and supervises the activities of the State's Division of Archeology and Bureau of Mines' Land Reclamation Committee.

11.07 MARYLAND ENVIRONMENTAL TRUST

The Maryland Environmental Trust is a quasi-public organization whose purpose is to promote a continuing interest in conserving, improving, stimulating, and perpetuating the aesthetic, natural, health, scenic, and cultural qualities of the Maryland environment. The Trust carries out its duties through scenic and conservation easement acquisition, education of the public of the value of the environment, and dissemination of information concerning proposed and current state legislation.

11.08 MARYLAND ENVIRONMENTAL SERVICE

The Maryland Environmental Service is a public corporation created to assist local government and industry in the elimination of pollution resulting from the disposal of liquid and solid wastes. The Service assists in the preservation, improvement, and management of the quality of land, air, and water resources.

VIRGINIA

1.0 OFFICE OF THE SECRETARY OF COMMERCE AND RESOURCES

The Office of the Secretary of Commerce and Resources has received new responsibilities as a result of legislation adopted by the 1976 General Assembly. The following describes the various commissions and departments under this Office.

1.01 DEPARTMENT OF AGRICULTURE AND COMMERCE

The Department of Agriculture and Commerce is involved in administering laws dealing with production, processing, marketing, distribution, and

consumption of agricultural products. As such, one of its primary water resources-related activities involves the control of pesticide and fertilizer application. The Department also deals with the land disposal of municipal wastes which can also have significant impact on the region's water resources. Two other areas of concern of the Department with respect to the Bay deal with the future of the fishery industry and the effect of industrialization on the agriculture and fishing industry.

1.02 COMMISSION OF OUTDOOR RECREATION

The Commission is responsible for creating and putting into effect a long range plan for acquisition, maintenance, improvement, and conservation of outdoor recreation facilities for public use. The Commission reviews environmental impact statements relating to various impacts on recreation and coordinates all local, State, and Federal recreational activities.

1.03 VIRGINIA STATE WATER CONTROL BOARD

The State Water Control Board is Virginia's primary water resources agency and exercises a wide range of water resource management responsibilities. One of these is the administration of the water quality program in compliance with both the Federal Water Pollution Control Act Amendments of 1972 and existing State laws. The Board is authorized to establish water quality standards and to deal with certificates for sewage and water discharges into state waters. The Board also administers construction grants for publicly owned waste treatment facilities. In addition, it is responsible for water resources policy formulation, comprehensive river basin planning, designation of critical ground water areas, and State coordination of the National Flood Insurance Program.

The State Water Control Board has also maintained an extensive water quality monitoring network throughout the Commonwealth. Table 2-B-1 summarizes the various activities of the Virginia State Water Control Board.

TABLE 2-B-1

ACTIVITIES OF THE VIRGINIA
STATE WATER CONTROL BOARD

Monitoring water quality for management and enforcement purposes.

Conducting water assimilation studies.

Conducting comprehensive water quality studies by stream sections or basins.

Conducting fish kill, oil and hazardous chemical spills investigations.

Reviewing municipal and industrial waste treatment proposals.

Making efficiency surveys of waste treatment facilities.

Recommending Federal and State grants to municipalities for construction of sewage treatment facilities.

Developing interim and final metro/regional or basin water quality management plans.

Training of staff and sewage treatment plant operators.

Investigating occurrence, availability, and distribution of surface water and groundwater, quality of water, and planning.

Maintaining and operating stream gaging stations for the collection of quantitative data on surface waters of the State.

Analyzing the waters of the State for the determination of their chemical and physical character.

Making a variety of geologic and geohydrologic investigations necessary to the overall program of the Board.

Preparing the state's comprehensive water resources development plans and maintaining cooperation with other water resources planning agencies.

Administration of the Groundwater Act of 1973.

Source: Laird, Virginia State Agencies Concerned with Coastal Zone Planning, Management, or Scientific Activities, 1974-1975 edition, p. 69-70.

1.04 SOIL AND WATER CONSERVATION COMMITTEE

The Commission has been assigned the task of developing and coordinating a long-range program to provide for the total conservation and development of land, water, and related resources through the Soil and Water Conservation Districts. The local soil and water conservation districts are listed in Table 2-B-2. One of the agency's functions in water resources management is exercising its authority to approve or disapprove proposed projects involving Federal funding under the small watershed program. The Commission also prepares erosion and sediment control guidelines for local programs to regulate land disturbing activities.

1.05 COMMISSION OF GAME AND INLAND FISHERIES

The Commission is charged with administering and enforcing state boating laws and safety regulations for vessels within State territorial waters. To enhance the recreational value of Virginia public waters, the Commission acquires public access ways to the shores of waters at places where boat launching facilities can be constructed and maintained.

The Commission is also responsible for protection and management of Virginia's waterfowl.

1.06 DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

Within the Department of Conservation and Economic Development are several Divisions described below.

TABLE 2-B-2

VIRGINIA SOIL AND WATER CONSERVATION
DISTRICTS IN BAY REGION

District/Office Location	Jurisdiction
Colonial Williamsburg	Counties of Charles City, York, New Kent, and James City, City of Williamsburg
Eastern Shore Davis Wharf	Counties of Accomack and Northampton
Hanover-Caroline Mechanicsville	Counties of Hanover and Caroline
J. R. Horsley Stoney Creek	Counties of Greensville, Southampton, and Sussex
James River Richmond	Counties of Chesterfield, Henrico, and Prince George
Northern Neck Colonial Beach	Counties of Lancaster, Richmond, Northumberland, and Westmoreland
Northern Virginia Fairfax	County of Fairfax
Peanut Windsor	Counties of Isle of Wight and Surry, City of Suffolk
Prince William Nokesville	County of Prince William
Tidewater Richmond	Counties of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex
Tri-County Fredericksburg	Counties of King George, Spotslvania, and Stafford
Virginia Dare Virginia Beach	Cities of Chesapeake and Virginia Beach

1.06.1 DIVISION OF PARKS

The Division of Parks acquires, developes, and operates recreation parks, natural areas, and historic sites consistent with the needs of the people of the State and with sound conservation practices.

1.06.2 DIVISION OF SALT WATER SPORT FISHING PROMOTION

This Division promotes sport fishing in the salt water within or bordering the Commonwealth. The Division performs its duties by publishing appropriate literature and by answering questions pertaining to saltwater fishing.

1.06.3 DIVISION OF FORESTRY

The Division of Forestry is involved in supervision and direction of all matters pertaining to forests and other woodlands. It is also responsible for enforcing all laws pertaining to forestry and woodlands.

1.06.4 DIVISION OF MINERAL RESOURCES

The Division of Mineral Resources is an economically oriented, scientific research information agency. As such, it investigates the use of the Commonwealth's geochemical and geophysical resources for industrial development, keeps up-to-date records on Virginia's mineral industry, prepares maps and reports, and disseminates information pertaining to mineral resources for use by the citizens of the State.

1.07 VIRGINIA PORT AUTHORITY

The Virginia Port Authority is a government corporation which promotes and developes the harbors and ports of Virginia. The Authority also seeks to secure the improvement of navigable tidal waters within the State and performs certain functions to increase foreign and domestic commerce through Virginia's harbors and seaports.

1.08 VIRGINIA INSTITUTE OF MARINE SCIENCE

The Virginia Institute of Marine Science (VIMS) is the principal oceanographic and engineering agent of the Commonwealth. It conducts basic as well as applied research on oceanic and estuarine environments and resources of the State. In addition, VIMS develops means for more effective utilization and preservation of the environment and resources, provides education in the marine sciences, and advisory and other technical services. As part of these technical services, VIMS issues environmental impact statements, offers resource conservation, replenishment, and preservation advice, and gives resource-use advice to commercial and industrial users.

1.09 MARINE RESOURCES COMMISSION

The Commission enforces laws and regulations relating to the commercial fisheries of the State's tidal waters. The agency controls use of the publicly owned oyster and clam beds, including operation of an extensive program of leasing shellfish grounds. In addition, the Commission has certain responsibilities under the wetlands program such as development

of guidelines for wetlands use, review of local wetlands boards decisions, and administration of permit programs where local governing bodies have not adopted an ordinance dealing with wetlands zoning. Finally, the Commission grants permits for dredging and for the construction of marinas, piers, and docks.

1.10 VIRGINIA GOVERNOR'S COUNCIL ON THE ENVIRONMENT

The Council serves as an advisory body to the Governor. Its duties include:

a. coordinating Federal-State communications concerning the environment;

b. coordinating the review of policies and programs of environmental concern by all involved State agencies;

c. conducting public hearings to determine public interests and concerns about the environment; and

d. producing an annual report which provides an assessment of the environmental choices, their trends and implications affecting the Commonwealth.

1.11 DIVISION OF INDUSTRIAL DEVELOPMENT

This Division encourages and supports industrial development and economic expansion within the Commonwealth. In pursuit of its purpose, the Division compiles economic, demographic, and industrial data.

2.0 OFFICE OF THE SECRETARY OF RESOURCES

The primary department under the Office of the Secretary of Resources concerned with water resources in the Chesapeake Bay Basin is the Department of Health. It and its relevant divisions are described below.

2.01 DEPARTMENT OF HEALTH

A prime responsibility of the Department of Health is the regulation of public water supplies within the Virginia portion of the Chesapeake Bay watershed. The Department also has control over certain waste disposal operations such as septic tank use and disposal of solid wastes and toxic substances. In regard to large sewage treatment plants, the Department acts in an advisory capacity to the State Water Control Board. The Department has several important water-resource related subdivisions described below.

2.01.1 DIVISON OF ENGINEERING (BUREAU OF SANITARY ENGINEERING)

The Bureau of Sanitary Engineering exercises control over public water supplies and waterworks as they affect public health and comfort. The Bureau also investigates the quality of any water supply for drinking and domestic use. In the coastal zone, the Bureau has joint responsibility with the State Water Control Board in regard to supervision and surveillance of wastewater collection and treatment facilities and maintaining stream standards throughout the Commonwealth. Finally, the Bureau has jurisdiction over enforcement of standards for sanitary and sewerage facilities for marinas and other places where boats are moored.

2.01.2 DIVISION OF ENGINEERING (BUREAU OF SOLID WASTE AND VECTOR CONTROL)

The Bureau reviews plans for solid waste disposal submitted by political subdivisions.

2.01.3 DIVISION OF ENGINEERING (BUREAU OF INDUSTRIAL HYGIENE AND RADIOLOGICAL HEALTH)

The Bureau is responsible for developing programs for the assessment of radiation hazards to include waterborne hazards.

2.01.4 DIVISION OF LOCAL HEALTH SERVICES (BUREAU OF SHELLFISH SANITATION)

The Bureau of Shellfish Sanitation maintains sanitary control over shellfish and crab meat industries for the health protection of the consumer. It regulates processing plants in terms of construction, equipment, and operations. The Bureau is also responsible for condemning shellfish growing areas when standards are not met. Water quality sampling programs

which are conducted by the Bureau included shell stock monitoring, Kepone monitoring, bacteriological sampling, heavy metal monitoring, and pesticide monitoring.

3.0 DEPARTMENT OF INTERGOVERNMENTAL AFFAIRS

3.01 LOCAL AND REGIONAL PLANNING SECTION

The Local and Regional Planning Section provides local-regional and special planning services, makes cooperative and joint efforts in planning, and is involved in activities related to planning. The Section is also responsible for helping to coordinate the State's coastal zone management program with the Office of the Secretary of Commerce and Resources.