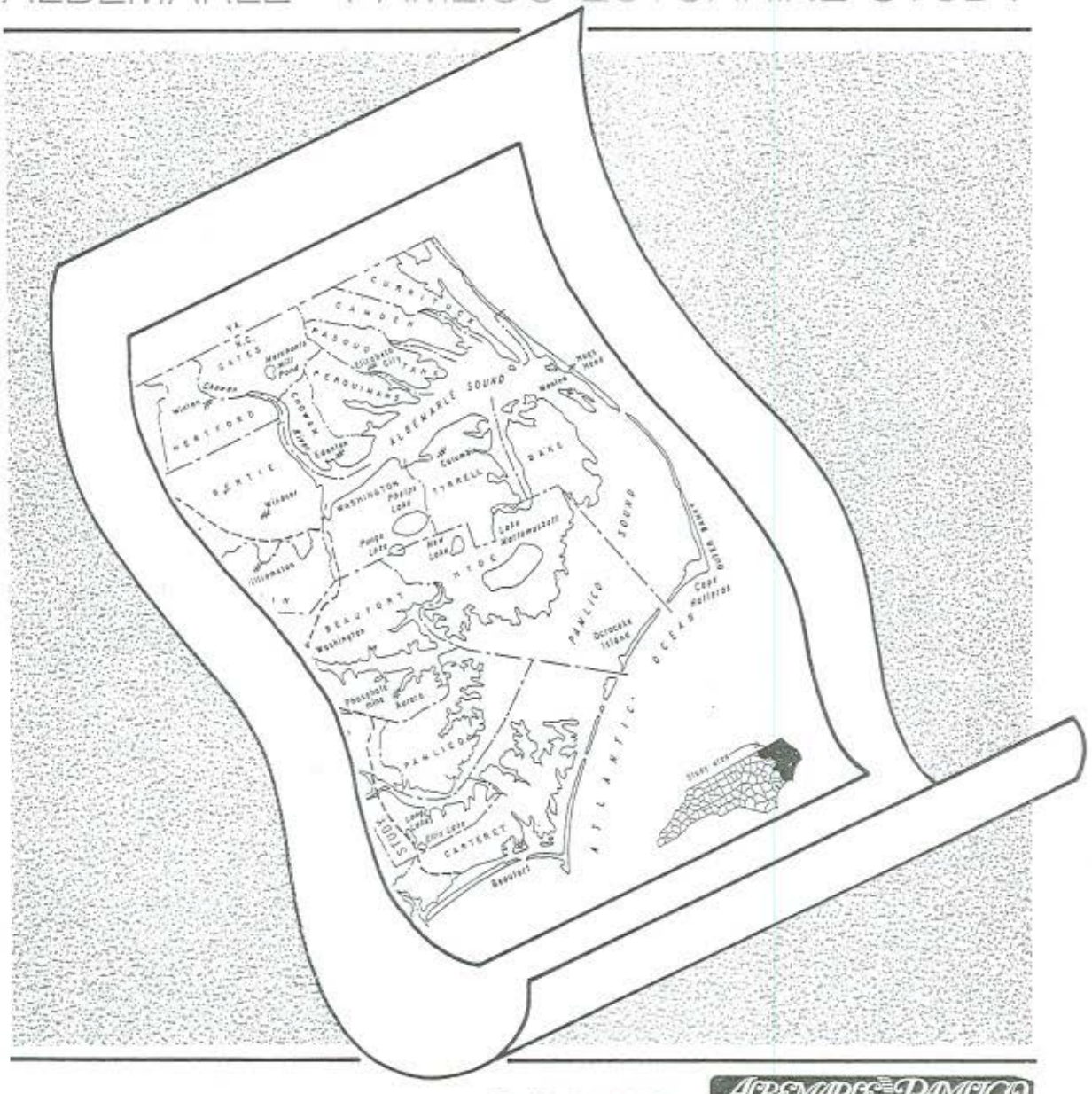
December 1990 Project No. 90-26

BLUEPRINT FOR ACTION:

The Albemarle and Pamlico Citizens Advisory Committees' Resource Management Recommendations For The Albemarle-Pamlico Estuarine Study

ALBEMARLE - PAMLICO ESTUARINE STUDY



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ALBEMARLE-PAMLICO

December 1990 Project No. C-1836

A BLUEPRINT FOR ACTION

Resource Management Recommendations for the Albemarle-Pamlico Estuarine Study

Developed by members of the:

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Pamlico Citizens Advisory Committee

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INTRODUCTION

The Albemarle-Pamlico Estuarine Study encompasses the second largest estuarine system on the East Coast of the United States. This estuarine system, covering approximately 2,900 square miles, includes the Albemarle Sound and its tributaries, the Currituck Sound and its tributaries, the Pamlico Sound and its tributaries, Bogue Sound and its tributaries, and Core Sound and its tributaries. The boundaries of these watersheds encompass approximately 30,000 mi^2 in eastern North Carolina and southeastern Virginia.

These watersheds provide the foundation of much of the coastal region's inherent wealth and serves as home to unique fish, plant, and wildlife species, and their ecological, economic, and cultural importance extends far beyond their boundaries. The benefits provided by the abundant natural resources fall to industry, shipping, commercial and recreational fishermen, and the public at large. Simply put, the Albemarle-Pamlico System is a national treasure.

Historically, the natural resilience of the Albemarle-Pamlico System has allowed the contrasting uses to coexist with relatively small losses in the productivity of its living resources. In recent decades, however, the productivity and quality of the estuaries has declined as human uses and activities in the estuary have increased and changed. Major uses now include waste disposal, agriculture, forestry, residential and commercial development, mining, national defense, commercial and recreational fishing, wildlife habitat, tourism, and recreation. As the use of the sounds has increased, the conflict among the competing parties escalates. Human's use and abuse of the sounds and estuaries, together with the continued growth and development in their watersheds, have taken a toll on the system.

Finfish fisheries have declined over the past 10 years, with particular dramatic declines in catches of striped bass, shad, and river herring, all of which spawn in freshwater tributaries. Fish diseases such as red sore disease and ulcerative mycosis have occurred, as have large-scale fish kills due to low dissolved oxygen levels. Massive blue-green algal blooms take place annually in some of the area tributaries, and rooted aquatic plants have disappeared from the middle reaches of the Pamlico River, the upper reaches of the Albemarle Sound, and much of Currituck Sound and Back Bay. Since 1970, some 50,000 acres of shellfish waters have been closed to shellfishing. Clearly, the sounds and estuaries cannot sustain further population growth, industrial uses, and commercial and recreational harvests without an integrative management effort to effectively target and get the jump on emerging problems. Without a coordinated effort among users, regulators, and the public, the value of these estuaries as a natural resource will continue to decline.

We, the members of the Albemarle-Pamlico Citizens Advisory Committees, representing the citizens of North Carolina and Virginia, acknowledge our stake in the resources of the Albemarle-Pamlico Estuarine System and accept our share of the responsibility for its current condition. We are determined that this decline will be reversed. To that end, we submit this document to serve as a precursor for the development of the Comprehensive Conservation and Management Plan.

THE PURPOSE OF THE DOCUMENT

The purpose of this document, funded by the Albemarle-Pamlico Estuarine Study, is to provide the Management Conference with recommendations to be considered for inclusion in the Comprehensive Conservation and Management Plan (CCMP). These recommendations were developed by the Albemarle-Pamlico Citizens Advisory Committees (CACs) with technical and editorial assistance provided by the North Carolina Coastal Federation.

Although the committee's charge was to develop recommendations, the CAC's believe that our responsibilities extended beyond the compilation of a simple list of suggestions. Therefore, in addition to the recommendations, this document also addresses the CCMP development procedures and the environmental goals that are the cornerstone of our recommendations.

ORGANIZATION OF THE DOCUMENT

This document contains three major components. The first is a brief discussion of the Comprehensive Conservation and Management Plan (CCMP) and a proposed framework for the development of the CCMP that was adopted by the CACs. This framework, based upon EPA guidelines and the efforts of other national estuarine programs, serves as a "roadmap" to determine what tasks the Albemarle-Pamlico Study (A/P Study) has accomplished and what tasks remain to be completed before the CCMP can be drafted by the Management Conference.

The second element of the document is a listing of the goals and objectives the CAC's developed for the A/P Study. The goals and objectives, the product of educational workshops and subsequent discussions, address the issues designated by the A/P Study's Management Conference as areas of concern. **These include: fisheries dynamics, critical areas or habitats, water quality, and human environment.**

The goals, long term and broad in scope, refer to the desired condition for the estuaries and their segments. According to EPA guidelines, goals may range from maintaining current conditions to restoring the estuary to a past condition, or to restoring

or maintaining pristine quality.

Environmental quality objectives are more specific and shorter term. These objectives focus on the preferred uses, the elimination of use impairments (fish kills, shell disease in blue crabs, etc.), or environmental criteria that the CAC's considered important or desirable for the estuaries. The objectives were established on the basis of preferred uses, standards, and current permit activities designed to improve water quality.

During the development of this document there was a great deal of debate regarding the goals and objectives, more specifically their relationship. Our purpose was to follow the EPA guidelines as closely as possible. In that scheme, the objectives are steps aimed at achieving, broader long term goals.

It is important to note that in many cases the objective statements could have easily been described as recommendations or action steps, or for that matter, goals. It is really a question of semantics. The Policy Committee has recently developed a draft list of goals that closely parallels our objectives. We believe that this is a positive sign and that all the parties that are involved in the development of the management plan hold similar ideals. Therefore, constructive debates will spring from common ground.

The third, and final section, includes specific recommendations to achieve the previously described goals and objectives. The recommendations, also developed through the workshops and ensuing CAC discussions, will be submitted to the Technical and Policy Committees as part of the CCMP development process. Some of the recommendations are broad based and long-term suggestions while others are suggestions for the forthcoming proposal cycle(s).

One final note regarding the conclusions and recommendations contained in this document. They represent policy statements developed by the members of the Albemarle and Pamlico Citizens Advisory Committees. This is a consensus document. As such, it contains statements that do not necessarily reflect the current policies of the Policy or Technical Committees.

One of the major purposes of this report is to encourage communication and exchange of ideas between the diverse groups involved with the A/P Study. Therefore, the CACs welcome comments and discussion.

As part of the review process, the "Blueprint" was distributed to the A/P Publications Review Subcommittee. We thank those who took the time to share their comments with us. All comments were considered and many were included in this document where appropriate. However, some comments did not reflect the consensus of

the CACs and were therefore not incorporated into the final version.

In the interest of public education, **all** the review comments that were furnished to the editor are included in **APPENDIX I.**

THE DEVELOPMENT OF THE MANAGEMENT PLAN

In 1987, North Carolina and the U.S. EPA entered into a cooperative agreement, and the Albemarle-Pamlico Estuarine System was added to the National Estuary Program (NEP). The goal of this agreement was the development of a CCMP in 1992.

The NEP's approach is to convene a Management Conference, characterize the estuary, define the estuary's problems, and finally develop the CCMP. The Conference, counseled by an EPA Project Officer and a conference appointed Project Director, is composed of the Policy Committee, the Technical Committee, and the Citizens Advisory Committees. Conflicting needs and uses must be balanced without compromising the environmental goal of restoration and maintenance of the estuary. This difficult balancing act falls to the Management Conference, and it is, by design, a forum for open discussion, cooperation, and compromise, resulting in consensus.

The CCMP, the end-product of the Management Conference, is a blueprint for restoring and maintaining the Sounds. It identifies the most significant problems in the study area and establishes goals and objectives for resolving them. In addition, the CCMP prescribes specific actions to protect and enhance the estuaries and their water and sediment quality, living resources, and surrounding land and water resources.

The members of CACs recognize that the development of the CCMP is an important component in the process of restoring and maintaining the Albemarle and Pamlico Estuarine Systems. Since other estuarine studies have completed this phase, we believe that their experiences could help guide our state's efforts. Using the lessons learned and precedents set by the Chesapeake Bay program and the steps listed in the EPA's Document entitled, "*Saving Bays and Estuaries*", we drafted a framework, entitled Steps to a CCMP.

In our opinion, the CCMP should be based upon this or a parallel framework. Although these steps may be very similar to the framework or steps that have may been developed by the Policy or Technical Committees, we believe that it is important to enumerate the steps the CACs consider significant in order that all parties who are responsible for drafting the CCMP will have a clear understanding of the processes that lead to the completion of the CCMP document.

In addition to listing the steps, we indicate which of the steps that have been completed as well as those steps, in our opinion, that remain to be fulfilled by the Study before the completion of the CCMP. If the CCMP is to be drafted by 1992, it is imperative that the remaining tasks be completed during the upcoming Fiscal Year (1991). We believe that the unfinished steps should be given the highest priority during the scheduling of next year's workplan and should receive the significant consideration during the forthcoming call for proposals.

STEPS TO A CCMP

1. Define then "State of the Sounds"

According to the EPA Document "*Saving Bays and Estuaries*" (EPA/503/8-89-001), defining environmental problems and exploring probable causes is the initial step in the CCMP process. The document notes, "...[C]haracterization is the basis for defining and selecting the problems to be addressed in the CCMP". More importantly, "characterization" is the description of the quality of the estuary, defining its problems, and linking problems to causes.

To encourage public support, it is critical that the problems now being experienced in the Albemarle and Pamlico Sounds be listed, in non-technical terms, so that the public can be made aware of them. In addition to the definition of the problems, a discussion of the probable causes must be included in an easily understood document designed for public consumption. That process has begun.

The *Status and Trends Report* (A/P Project No. 89-13A) is the A/P Study's "characterization document". An executive summary entitled, "Findings on the Environmental Status and Trends of the Estuary", summarizing the main points of that document will be the focus of a series of public meetings to be held in early 1991. These meetings are designed to solicit public comments regarding this document. For the reader's information, the "findings report" is found in **APPENDIX II**.

Once these findings have undergone public review, comments will be fully considered by the Policy Committee in developing the statement of final status and trends.

To reiterate, the completion of the "Status and Trends" document is one of our highest priorities. Until this task is accomplished, it will be very difficult to build the necessary public support for the implementation of the CCMP.

2. Set goals that are concise and easy to understand.

The goals that the Management Conference sets should be long term and broad in scope. We believe that the goals of the study have been clearly set forth, however, we cannot overemphasize the importance of informing and educating the public about these goals. The public meetings for the "Status and Trends" document would be a good opportunity to share the program's goals with the public.

3. Map resources which need protection.

All of the state's primary and secondary nursery areas, anadromous fish spawning areas, and shellfish planting sites have been mapped by the Center for Geographic Information Analysis (CGIA), a unit within the Department of Environment, Health, and Natural Resources (DEHNR).

The shellfish mapping is being conducted through the combined efforts of the Division of Marine Fisheries (DMF) and the CGIA. However, because of staffing shortages, the shellfish mapping will not be completed before the CCMP drafting process begins.

We believe that it is imperative to complete the critical areas mapping before the CCMP Conference. We recommend that additional funding be directed to the DMF in order to expedite the mapping of all marine resources. Accomplishment of the resource mapping will be critical to preparation and implementation of the CCMP

4. Assess management options; what tools are available to manage the area?

An inventory of state and federal regulatory programs is listed in "*State and Federal Interrelated Programs To The A/P Study*" (A/P Project No. 89/07). This document, however, made no attempt to evaluate the individual program's effectiveness.

Regulatory programs that affect water quality in the A/P Study area were evaluated in the document, "*Evaluation of State Environmental Management and Resource Programs In The A/P region*" (A/P Project No. 90-02). That study, conducted by Robert Nichols formerly of the Research Triangle Institute, evaluated the: NPDES permit program, on-site sewage treatment programs, non-discharge permit programs, stormwater regulations, agricultural cost-share programs, sedimentation and erosion control programs, CAMA permit program, Marine

Fisheries regulations, Section 404 permit program, and the 401(b) certification program.

This study was instrumental in providing the CAC's with program evaluation information used in the workshops that led to the development of this document. We believe that this report can serve as a strong foundation for future discussions concerning what additional management tools should be included in the CCMP.

There are other regulatory programs, such as the Fish and Wildlife Coordination Act, that must be evaluated as to their effectiveness before the final CCMP is completed. An evaluation of all current resource management programs' effectiveness must be completed before the development of the CCMP.

5. Construct an action strategy.

To help achieve environmental goals and objectives, and to begin to develop political and public support for the CCMP, the Management Conference develops action plans directed toward specific priority problems. An action plan for a known problem may be implemented before the full CCMP is developed and adopted, and is still considered part of the CCMP.

We urge the Technical and Policy Committees to consider implementing an "action now agenda" to address some of the problems that will be defined in the completed "Status and Trends" document. (**NOTE: The A/P Study's action plan demonstration projects are an example of this type of action.**)

6. Prioritize actions in order of long-term improvement potential.

Given the ongoing federal and state budget constraints, and the reality that the study cannot do everything at once, we believe that it is important to rank possible management options according to their potential long term improvement to the system. That is, the actions that will yield the greatest amount of improvement to the systems will be given the highest value or priority when the CCMP is drafted.

Long term costs to improve water quality will be quite high, and will be paid for by all in terms of higher taxes, user fees, and increased production costs. It is important that management plans consider these costs and as well as their improved benefits to all users

We suggest that the PC and TC, including representatives from the CACs, begin to discuss ways in which proposed actions can be equated with long term

improvement to the systems.

7. Build political support.

Although there are two years remaining before the CCMP is completed, we believe that it is important to begin to build an expanded base of political support now. This base should include state legislators as well as county commissioners and municipal officials.

We advise the Policy Committee to appoint a subcommittee to begin this process. It is important that elected officials become educated about the A/P Study before the CCMP is completed. The importance of building the foundation of political support cannot be overemphasized, and this process must begin immediately. **(NOTE: A legislative liaison subcommittee was appointed at the December Policy Committee meeting).**

8. Develop a monitoring plan.

Monitoring needs are identified as part of each action plan and begins as action plans are implemented. As an essential part of the review and evaluation process, monitoring continues throughout the implementation phase to measure the effectiveness of the actions and indicate new trends.

Although the U.S. Geological Survey, the Division of Environmental Management (DEM), the DMF, and the A/P sponsored Citizen Water Quality Monitoring Program, are conducting monitoring programs, we believe that these plans should be evaluated as to their effectiveness. More importantly, we suggest that additional site-specific monitoring plans and basin-wide monitoring plans be developed as part of next years proposals.

9. Build accountability into the CCMP.

It is important to consider accountability questions before the CCMP is developed. Questions such as: "what agencies will be responsible for implementing the plan?, and, "how will the agencies and their programs be evaluated?, are a consequential component of the CCMP process. Numerous agencies, both state and federal, will be responsible for the implementation of the CCMP. These include the U.S. Corps of Engineers (USCOE) and the DEM at one extreme to the local zoning board or sanitarian on the other. The entire regulatory system, including the General Assembly, must be involved in implementation of the CCMP, and the whole system must be examined and

evaluated. It is not too early to begin to discuss the accountability/responsibility issue.

The Citizens Advisory Committees have begun to address this topic at their recent meetings. Based upon those discussions, a resolution was passed by both groups that endorsed the formation of a "Citizens Oversight Committee". This committee would be charged with reviewing and monitoring the actions of state resource management agencies, regulatory commissions, and the General Assembly. During upcoming CAC meetings, state resource managers will be invited to discuss their agencies' specific responsibilities as well as the creation of standards on which to judge their agencies' activities. Although currently in the organizational stage, it is envisioned that this committee will function after the completion of the CCMP.

It is important for the accountability/responsibility question to be discussed among all the committees, and the results should be shared with the public. If this topic has not has not been addressed, we urge the TC and the PC to include this topic in upcoming committee meetings.

10. Invest in education and public participation

The Water Quality Act of 1987 specifically mandates that public participation must be provided for, encouraged, and assisted by the EPA and the states. Public acceptance, or informed consent, is necessary for the CCMP implementation.

We believe that the A/P Study has made a genuine, though limited, effort to involve the public in the program; nonetheless, the public must be made aware of the importance and scheduling of the CCMP. To that end, we suggest that a series of workshops should be held immediately after the completion of the draft management plan to inform the public about the drafting process and also to solicit their input.

In regards to the "Status and Trends findings report" public meetings, we urge the TC to present the findings of the study in a way that is clear and concise. To reiterate, one of our highest priorities is to disseminate these findings, including problems and probable causes, to the citizen's of North Carolina. We believe that public support for implementation is more likely if the public has been involved throughout program development.

The drafting of the CCMP is only one component of the effort that will be required to restore the natural resources of the Albemarle-Pamlico region. Our purpose in

presenting the preceding discussion is to publicly voice our support of the CCMP process and express our willingness to assist the TC and PC in this important task.

The Albemarle and Pamlico Citizens' Advisory Committees' commitment to improve the environmental quality of the Albemarle-Pamlico Sounds and Estuaries is deeply rooted. It is in that spirit that we present the following list of goals and objectives that we believe should be considered for inclusion in the CCMP.

GOALS AND OBJECTIVES

When the Congress established the National Estuary Program under the Water Quality Act, it mandated the restoration and maintenance of the nation's estuaries. The law requires that the estuarine productivity is to be assured while at the same time the needs of the array of users are to be accommodated. Although simply spoken, this mandate is difficult to accomplish. As mentioned earlier, the Management Conference, which includes the CACs, is given the responsibility of reaching this intricate balance. To achieve this difficult task, the Management Conference sets broad environmental quality goals that comply with the mandate of the Act and comply with the will of the people.

The establishment of overall goals is the most important step in the CCMP process. For without goals, there can be no objectives or action plans and therefore, no improvement in the sounds. Realizing the importance of this step, we have set clear goals for the Albemarle and Pamlico Sounds and their adjoining systems. Our goals are based on the topics the Policy and Technical Committees identified as key areas of concern. These include: fisheries dynamics, water quality, critical areas or habitat, and human environment. Although long term and broad in scope, we believe that these goals are attainable and will result in the restoration of the Albemarle-Pamlico systems. In addition to these goals, we have listed objectives, specific shorter-term targets, for attaining these goals.

FISHERIES DYNAMICS

GOAL I: **Provide for the restoration and conservation of the fisheries resources in the Albemarle-Pamlico Estuarine Systems.**

The productivity, diversity, and abundance of fish species are the best indicator of the Albemarle and Pamlico Estuarine Systems' condition and should be the main focus of the restoration and protection. Some species of fish and shellfish are of immense commercial and recreational value to humans, while others are necessary and valuable components of the Albemarle-Pamlico food webs on which all species depend. We must

determine the essential habitat and environmental elements necessary to support our fisheries and strive to see that these conditions are attained and maintained.

OBJECTIVES:

1. Ensure adequate quantity and quality of primary and secondary nursery and spawning areas to support existing optimum fisheries' harvests.

2. Provide for restoration of shellfish and finfish stocks in the Sounds.

3. Develop compatible estuarine-wide fish stock assessment programs.

4. Determine causes of ulcerative mycosis in finfish and shell disease in blue crabs.

5. Reduce prevalence and occurrence of ulcerative mycosis and shell disease in finfish and blue crabs.

6. Restore the striped bass stocks to levels capable of sustaining reproductive success and juvenile abundance levels.

7. Restore the herring stocks to levels capable of sustaining reproductive success and juvenile abundance levels.

8. Achieve substantial reductions in the incidence and severity of fish kills.

9. Maintain water quality necessary for productive shellfishing uses in currently active areas and in areas identified as suitable for potential shellfish development.

10. Restore water quality levels necessary to restore and maintain Currituck Sound's brackish/freshwater fisheries and waterfowl habitat.

WATER QUALITY

GOAL II: **Reduce and control point and non-point sources of pollution to attain the water quality conditions necessary to maintain the fish and wildlife resources of the Albemarle and Pamlico Estuarine Systems.**

The improvement and maintenance of water quality are the two most critical elements in the overall restoration and protection of the Albemarle and Pamlico Systems. Water is the medium in which all living resources of the sounds live, and their ability to survive, reproduce, and flourish is directly dependent upon it. We must strive to

determine the water quality conditions that living resources require and establish and maintain these levels.

OBJECTIVES:

1. Develop and implement watershed management plans for each distinct basin within the Study area.

2. Adhere to anti-degradation requirements of the Clean Water Act within all tributary drainage basins.

3. Develop nutrient sensitive water management strategies for all tributary drainage basins which reduce nutrient inputs from current levels and/or maintain high water quality.

4. Target nonpoint sources for further reductions on a basin by basin basis.

5. Reduce elevated levels of freshwater drainage in all tributaries of the drainage basin through intensive water management.

6. Maintain optimal water quality conditions within areas functioning as estuarine nursery areas.

7. Inventory all intensive livestock growing operations within the study region and develop nutrient abatement plans for facilities needing attention.

8. Maintain water quality conditions necessary for survival and growth of submerged aquatic vegetation where it currently exists and in areas where established growth could reoccur.

9. Develop long-range water quality monitoring plans that address baseline and monitoring data needs.

10. Reduce the discharge of untreated or inadequately treated sewage into sound waters from such sources as leaking or poorly operated sewage systems, and failing septic systems.

11. Reduce pollution from recreational boats.

12. Establish and enforce pollutant limitations to ensure compliance with state and federal water quality regulations.

13. Manage sewage sludge, dredge spoils, and hazardous wastes to protect the sounds and their estuaries.

14. Monitor, regulate, and where necessary for protection of water quality standards and flow regimes, prevent inter-basin transfer and diversion of surface waters.

15. Develop water management methodologies for bottomland hardwood systems affected by stream channelization projects.

16. Support and develop programs that utilize constructed wetlands for the treatment of wastewater from confined animal operations.

CRITICAL AREAS OR HABITAT

GOAL III: **Halt the destruction and degradation of all critical areas and/or critical habitat and restore important habitat where possible.**

One of the most valuable uses of the Albemarle and Pamlico Systems is their role in supporting the vast array of living resources that depends on the aquatic ecosystems for their survival and reproduction. We define these areas as: submerged aquatic vegetation (SAVs), emergent aquatic vegetation, freshwater and saltwater wetlands, special fisheries habitat, primary nursery areas (PNAs), and secondary nursery areas (SNAs). Taken together, these areas represents the sounds' richest resources. Many of the important human uses of the Albemarle-Pamlico Sounds are dependent on these living resources. We believe that if the destruction of critical areas does not cease, the entire economic well-being of the study area will continue to decline. The attainment of this goal is our highest priority.

OBJECTIVES:

1. Maintain water quality and flow regimes necessary for survival and maintenance of all submerged aquatic habitat.

2. Prevent losses of fisheries habitat areas.

3. Design resource management plans for the regeneration of degraded critical habitat as well as the conservation of existing areas.

4. Identify, designate, and protect the special and unique habitats as Outstanding Resource Waters (ORWs), primary nursery areas, high quality waters, etc.

5. Complete the inventory of important natural areas (plant communities, habitat types, occurrence of endangered species, etc.) contained within the entire A/P Study area and prioritize the areas for public acquisition.

6. Enforce Section 404 of the Clean Water Act.

7. Enforce the Section 401(b) Certification Program of the Clean Water Act as it applies to critical areas.

8. Develop a functional statewide "no net wetlands loss" policy and build the regulatory framework necessary to enforce the policy.

9. Maintain structural integrity of fringe wetlands for optimum function in the estuarine food web.

10. Maintain optimal water quality conditions within areas functioning as primary nursery areas.

11. Identify, purchase or manage, specific critical habitats for endangered plant and animal protection.

12. Monitor, evaluate, and monitor the impacts of natural flow alterations and divergence on the water quality, salinity, and fisheries production of Currituck Sound.

13. Develop management plans for all critical habitat areas.

14. Map all critical and habitat areas for use in restoration and management efforts.

HUMAN ENVIRONMENT

GOAL IV: **Plan for and manage the adverse environmental effects of human population growth and land uses within the Albemarle and Pamlico watersheds.**

There is a clear correlation between population growth and associated development and environmental degradation in the Albemarle and Pamlico Sounds. The successful management of the A/P System depends upon the understanding of how human activities affect the natural resources of the system. Indeed, one of the stated purposes of the A/P Study is to expand the relevant knowledge about the impact of human uses on the physical, biological, and social systems of the Albemarle-Pamlico ecosystems. If the

restoration of the regions' natural environment is to succeed, the state and federal governments must assert the full measure of their authority to mitigate the potential adverse effects of continued growth.

OBJECTIVES:

1. Direct CAMA land use planning efforts towards water quality and recharge and critical areas protection and extend their boundaries to a comprehensive regional approach.

2. Develop and implement conservative nutrient loading targets for all watershed basins in the study area.

3. Adopt a basin-wide permitting system that realistically evaluates estuarine flows and dilution capacities.

4. Maintain and regulate surface/groundwater use according to a comprehensive regional land planning effort.

5. Map all land uses having significant impacts on water quality within the A/P area.

6. Develop and implement a watershed-based approach for nonpoint source management.

7. Develop, implement, and enforce comprehensive marina siting criteria.

8. Reevaluate the siting criteria for all on-site sewage treatment installations.

9. Develop and implement environmentally acceptable site plans for major industrial and electrical co-generation plants.

10. Undertake research programs to evaluate the effects of abandoned hazardous and solid waste facilities within the study area.

11. Provide local governments with financial and technical assistance to continue and expand their environmental managements efforts.

12. Evaluate future public access needs and design management efforts to meet these needs.

13. Improve and maintain access to the sounds including public beaches, parks, and

forested lands.

14. Enhance A/P Study-oriented education opportunities to increase public awareness and understanding of the systems.

15. Promote opportunities to involve citizens directly in restoration and management efforts.

16. Coordinate the production and distribution of A/P study information and education materials.

RECOMMENDATIONS FOR ACHIEVING GOALS

The action plans for attaining the defined goals and objectives set by the Management Conference are the centerpiece of the CCMP. We agree with the EPA's evaluation of this process and endorse the "*Action Plan Steps*" include in the management primer (see **APPENDIX III**). To assist the Policy and Technical Committees in establishing the action plans for the A/P Study Area, we developed the following recommendations as components of these plans.

The recommendations are the end-product of a process that began with a workshop held in Washington, North Carolina, in early May. The workshop included representatives from state and federal regulatory agencies as well as speakers from other states. The out-of-state participants shared resource management plans their respective agencies had adopted in order to address environmental problems similar to those now experienced in the A/P Study Area. For the readers information, a copy of the workshop agenda is presented in **APPENDIX IV**. Further discussions about the recommendations were held in Washington, Williamston, Elizabeth City, and Manteo in May, June, and August. The final version, presented here, underwent three reiterations prior to its completion in December.

The first group of recommendations, shown in **APPENDIX V**, was based upon the comments voiced during the workshop by the speakers and audience. The recommendations were loosely grouped under the topics addressed during the panel discussions. This list was edited by the North Carolina Coastal Federation and sent to all the CAC members for their comments.

In an attempt to gather a sense of which recommendations had broad based support amongst the CAC members, the citizens were asked to numerically rank those suggestions they personally supported for inclusion in the CCMP. They assigned a numerical value to each suggestion, i.e., five representing a recommendation they strongly supported

while one representing a idea they did not endorse. The numerical totals were computed for each recommendations, and the recommendations receiving the highest values were grouped under specific headings. The recommendations, found in **APPENDIX VI**, were discussed at a meeting in Williamston. These suggestions were the foundation for the recommendations contained in this document.

The final inventory of recommendations is divided into two groups, the first labeled "action now" recommendations. These short term suggestions are intended to influence actions and proposals realized prior to the completion of the CCMP in 1992. We firmly believe that to prevent further declines in the study area's natural resources, these activities must take place before 1992. Accordingly, we give these recommendations our highest support and believe that many of them should be considered subject matter for the forthcoming call for proposals.

The second group of recommendations are to be considered when the action plans are developed for the CCMP. This is not to say that these recommendations are not as important as the suggestions offered for immediate action. However, we believe that there are additional data that must be collected before a true evaluation of the impacts of these actions can be measured; therefore, it is difficult to prioritize them as to their effectiveness or necessity.

One final point regarding these recommendations. This document was developed before the completion of the final "Characterization" document. It has been pointed out throughout this document that, to date, there is no clear and concise statement of the sound's problems and identification of the probable causes of these difficulties. Until this step has been completed these recommendations are subject to change. These recommendations, as presented, are based on what we believe to be the most important issues that should be addressed in the CCMP.

FISHERIES DYNAMICS

"Action Now" Recommendations

1. **Evaluate the individual and cumulative impacts of shrimp and crab trawls, oyster dredges, clam-kicking, long haul seines, and scallop dredges on fisheries stocks and critical habitat in the Albemarle and Pamlico Estuarine Systems.**

   We believe that this project should be conducted as soon as possible, and to that end, we give this study our highest priority for the forthcoming proposal period. We suggest that a research party outside of the regulatory system conduct this study.

2. **Locate the presence of fisheries' spawning, nursery, and feeding areas and enter these areas into the CGIA database.**

The Division of Marine Fisheries and the Wildlife Resource Commission (WRC) should identify the presence of critical fishery areas. If this information is currently unavailable, then this data gap should be recognized and funded during the next proposal cycle. Once organized, these data should be entered unto the CGIA system. It is imperative that these areas be mapped before the CCMP is developed. **(NOTE: During the review process the DMF indicated that the majority of this work has been completed).**

3. **Develop and implement a protection program for inland Primary Nursery Areas.**

The Coastal Resources Commission (CRC) and the WRC should develop a joint management program for inland PNAs which are located on our freshwater coastal rivers. These areas are susceptible to degradation and destruction from activities that fall outside the jurisdiction of current Coastal Area Management Act regulations. This recommendation falls under the regular duties of these two organizations, and as such, should not be funded from the A/P budget.

4. **Investigate the impacts of urbanization on shellfish resources.**

Recent closures of all shellfishing waters adjacent to the Town of Pine Knoll Shores added to the confusion regarding the effects of urbanization of coastal water quality and fishery resources. A site specific study should be initiated to determine just what effects development has on shellfishing areas. It is imperative that base data be collected and preliminary findings be completed before the drafting of the CCMP. Since the land uses and known shellfishing areas of Carteret County land have been entered into the CGIA system, we recommend that these data be used for such a study and it be funded during the next budget cycle. These findings would be invaluable for the development of management recommendations.

Recommendations for the CCMP

1. Develop commercial fishing gear which captures target species/sizes while releasing unharmed non-target species/sizes. **(NOTE: DMF has now begun this project. DMF staff indicates that there is a need for long-term state funding commitment. We support continued funding of this project.)**

2. Conduct additional research to evaluate site-specific impacts of urbanization on closure of waters to shellfish harvests.

3. Prepare and distribute management plans for important species to recreational and commercial fisherman.

4. Initiate a coherent long-term aquatic resource educational program in the coastal area that emphasizes clear descriptions of fishing practices' restrictions and agency phone numbers that can be called to report violations.

5. Initiate a long-term investigation that considers the impacts of hydrologic withdrawals and the presence of Virginia Beach's Canal No. 2 on the fisheries biology of Currituck Sound.

WATER QUALITY

"Action Now Recommendations"

1. **Develop watershed management plans for each distinct watershed within the A/P study area.**

There is great diversity within the watersheds of the A/P Study region, and not all water quality protection measures will be prove successful in each watershed. Therefore, management plans for each individual watershed must be completed. These watershed management plans will form the foundation for the CCMP and should be funded in the next round of research projects. Basins to be examined include: Albemarle, Pamlico, Bogue, Currituck, Core, and Back Sounds; and the Alligator, Bay, Chowan, Little, Neuse, Newport, North, Pamlico, Pasquotank, Perquimans, Pungo, Roanoke, Scupernong, White Oak, and Yeopim Rivers. The development of a management plan for Currituck Sound is currently underway, and this project could serve as the framework for the additional plans.

2. **Enforce all NPDES permit violations and prosecute violators to the full extent of the law.**

As of 1987, there were over 600 permitted point source dischargers in the A/P Basin, however, these figures do not include upstream dischargers in Virginia. Recent Division of Environmental Management studies indicated that a large percentage of the estuarine impairment in the Pamlico, Chowan, and Neuse basins stem from these discharges. It is urgent that DEM, and the Virginia State Water Control Board, enforce and prosecute NPDES Permit violations. Under the

current systems, there is little incentive for violators to achieve compliance.

As the recent violations at Rocky Mount Publically Owned Treatment Works (POTW) indicate, the current NPDES program is still not completely protecting the watersheds within the study area. We believe that DEM should supply the Management Conference with a biennial report on NPDES permits, compliance status and enforcement actions within the A/P Basin. We support the report format presented on page 33 of A/P Report No. 90-02, "*Evaluation Of State Environmental Management And Resource Protection In The A/P Region*".

3. **Develop a numerical nutrient reduction target for the A/P Study Area.**

Nutrient accumulations are increasing in the study area. Annual algal blooms, such as those occurring in the Pamlico, Chowan, and Neuse Rivers, support this statement. Nutrient loading must be addressed before 1992. During the 1990 triennial review, DEM should develop numerical standards for nitrogen and phosphorus for different water body types. Using these data, DEM should publicly announce a long-term numerical nutrient load reduction program. The Chesapeake Bay nutrient reduction program could serve as a model for North Carolina's efforts. Development of nutrient reduction targets are one of our highest priorities.

4. **Conduct a study to determine: 1) funding levels, and 2) revenue sources, for increased monitoring and compliance inspection programs.**

It is obvious that the increased inspections will require additional staffing and funding. Given the current budget crisis, what are the sources for these additional monies? A project should be funded during the next proposal cycle that will begin to address these needs. This study should include and evaluate: user fees, impact fees, monies reallocated from one program to another, and others. We believe that this study be should be funded during the next round of proposals.

5. **Initiate a study that evaluates the effectiveness of current water quality regulatory programs.**

Currently, there are many programs that oversee water quality in the A/P study area. Because funds are limited, monies should be appropriated according to a program's effectiveness at improving water quality. We believe that an in-depth evaluation of large budget programs, such as the Division of Soil and Water Conservation (DSWC) cost-share program, should be conducted based upon the program's proficiency at improving an area's water quality. At the CAC's recent

workshops, several Division Heads suggested and supported such an evaluation. We add our support to this project and believe that it should be undertaken in the upcoming fiscal year.

Recommendations for the CCMP

1. Adopt and implement individual water quality protection plans for each distinct watershed within the Study area.

2. Consider the cumulative basin-wide effects for each National Pollution Discharge Elimination System (NPDES) permit by developing realistic estuarine loading models for evaluating permit applications.

3. Develop consistent monitoring and reporting requirements, including the hiring enforcement inspectors, to facilitate local enforcement of on-site waste treatment systems.

4. Incorporate impact fees into the stormwater management program to offset its cost.

5. Develop stronger incentives and educational materials to promote proper operation and maintenance of all on-site treatment systems.

6. Grant cost-share monies based on an inventory and priority ranking of critical needs of the entire watershed.

7. Move immediately to require NPDES permits for all animal growing operations which constitute a point source thereby encouraging their compliance with current non-discharge requirements.

8. Determine the effectiveness of current set-back and density regulations on water quality.

9. Determine the extent of the marine sanitation problem.

10. Provide local sanitarians adequate training, funding and ample time to effectively oversee septic systems.

11. Institute stormwater project inspections during both construction, to determine proper design, and after project completion, to determine if the systems are maintained properly.

12. Evaluate cost-effective alternatives to septic systems.

CRITICAL AREAS OR HABITAT

"Action Now Recommendations"

1. **The States of North Carolina and Virginia should establish a policy framework for achieving no illegal loss of wetlands in the state.**

We believe that North Carolina and Virginia should play a greater role in wetlands protection. To this end, we recommend that the state place much greater emphasis on protecting wetlands using its existing regulatory authority under the Section 401(b) Certification process. The state should develop a statewide wetlands conservation plan which consists of two elements, a summary of data defining the state's wetland resources and a statement of policies that will achieve the recommended goals. At a minimum, this section would embrace the goal of no net loss in the short-term and the increase in wetlands quantity and quality in the long-term. The A/P Study is an ideal chance to develop such a plan. "*The National Wetlands Policy Forum*" developed by The Conservation Foundation (October, 1989) provides an excellent framework for the development of such a program, and we heartily endorse this publication's recommendations.

2. **The Divisions of Coastal Management and Environmental Management should develop scientifically sound criteria for marina siting.**

During the CAC workshops, it was apparent that there are weaknesses in current regulatory programs overseeing marina siting. For example, the cumulative impacts of numerous small facilities (docks or piers that have 10 or fewer slips) are not adequately considered under the existing programs. Although this monitoring falls under these agencies' regular duties, we believe that they are currently understaffed and therefore unable to accomplish this task. Initial phases of this project could be handled by an outside evaluator who could then meet with the state agencies to develop the actual siting criteria. Due to the numerous water quality impacts associated with marinas, we give the development of marina siting criteria our highest priority and urge that such a study be included in next year's proposals.

3. **The Division of Marine Fisheries, Wildlife Resources Commission, and Natural Heritage Program should complete the mapping of critical habitat and/or critical areas.**

Before any management plan protecting resources can be drafted, the quantity, quality, and location of these resources must be identified and mapped. This map should include SAVs, PNAs, spawning areas, waterfowl habitat, and locations of endangered plant and animal species, etc. Based on comments we heard at the workshop, this task has not yet been completed. The completion of the study area's resource mapping is one of our highest priorities. Although this task falls under both these agencies' regular duties, we urge them to utilize the substantial funding that has gone to CGIA to complete the inventory and mapping before development of the CCMP.

4. **All regulatory agencies should strengthen and enforce existing protection plans for all critical areas.**

Despite ongoing protection efforts, critical habitat, including wetlands and groundwater recharge areas, continue to disappear. In most cases, the current regulations address these issues, however, there is an apparent lack of enforcement by the regulatory agencies. The recent debacle involving the Rocky Mount Wastewater Treatment Plant is a good case in point. The protection of critical aquatic habitats and areas will require the involvement of the numerous state and federal agencies managing the various activities that take place around these areas. If this effort is to succeed, interagency coordination must be strengthened. The A/P program should take the lead in coordinating habitat protection efforts to ensure that A/P goals and objectives are met. We recommend that an interagency workgroup be established to discuss the cumulative impacts of development on critical areas as mandated by the 1989 Legislature. As a first step, the group must evaluate the effectiveness of current regulations and develop criteria to be employed for addressing cumulative impacts in the CAMA review process. At a minimum, this workgroup should include representatives from the public, DCM, DEM, DMF, WRC, U.S. Fish and Wildlife Service (USFWS), and the USCOE. We suggest that North Carolina develop a "Critical Areas Matrix" similar to the one created in Maryland to direct future development and protection efforts in critical areas.

5. **Determine an accurate estimate of wetland acreage present as well as an estimate of wetland loss in the A/P study area.**

An accurate estimate of wetland loss, and the causes of the losses, must be completed before the drafting of the CCMP. Since the USFWS wetland delineation maps are now complete, this would be an ideal time to undertake such a study. The workshop discussions pointed out that there is no accurate estimate of wetland loss nor an accurate assessment of what activities have (are) caused

(causing) these losses. We give our support to completing such a study during the next proposal cycle. It is imperative that the correlation between wetland loss and the cause be completed before the CCMP is drafted. Particular emphasis should be placed on quantifying losses due to the various 404-exempted activities, e.g., forestry.

Recommendations for the CCMP

1. Educate the public regarding the importance of critical areas/habitat.

2. Reevaluate the efficacy of the CAMA in protecting wetlands.

3. Determine what is the proper development setback distance to adequately protect estuarine habitats from water quality degradation.

4. Develop a "critical areas matrix" to allow the general public to assess the critical areas requirements for a given parcel of land.

5. Strengthen stormwater controls around High Quality Waters.

6. Lower density limits around Outstanding Resource Waters.

7. Develop protection plans for SAV beds, shellfish resource waters, and anadromous spawning areas.

8. Initiate "selective enforcement" of Marine Sanitation Devices (MSD) to improve compliance and boater awareness.

9. Develop MSD educational programs for marina owners and the general public.

10. Revise CAMA land use planning guidelines to designate wetlands as conservation areas.

11. Evaluate whether significant wetland losses are occurring because of forestry operations Section 404 exemptions.

12. Expand state acquisition of critical habitat and wetlands.

13. Evaluate enforcement efforts under Section 404.

HUMAN ENVIRONMENT

"Action now Recommendations"

1. **Conduct a study to determine the optimal design and setback distances for vegetative buffers zones.**

Currently, there are a variety of vegetative buffer zones and setback distances being utilized in the A/P study area. These include the setbacks recommended by the recently published forestry Best Management Practices (BMPs) and suggested agricultural BMP setbacks. The majority of these practices, however, are voluntary, and there has been few attempts to determine the effectiveness of them on actual water quality. It is important to evaluate these practices before the CCMP is completed. Rob Nichol's A/P Report (A/P 90-02) indicated that the current 75 foot Area of Environmental Concern (AEC) buffer under CAMA (which is not a setback) may be inadequate to protect estuarine critical areas. In Maryland, the minimum setback distance for development in critical areas is 300 feet. Why is there such a discrepancy between the two states? We recommend funding a project to address the buffer and setback issues in a single basin. The study would evaluate these practices in regards to water quality in hopes of developing new standards that could then be applied to the entire A/P area.

2. **Conduct a study to develop the framework for individual basin-wide resource management plans that include: problem assessment, baseline data for monitoring purposes, carrying capacity, and objectives.**

The A/P Study area contains a diverse group of watersheds within its boundaries. Although it will be important to develop a management plan for the entire area, we believe that in most cases each watershed will have its own special concerns and management needs. It is not too early to begin to develop the framework for these specific plans. As a starting point, the Currituck Sound plan should be evaluated as to its completeness and usefulness by an outside evaluator. Then, taking the study one step further, a framework for a generic plan should be developed that could then be applied to the remaining basins. We believe that it is important to develop a framework that is both vertical, i.e, consistent with the overall CCMP, and horizontal, i.e., consistent with adjacent basins. A series of plans designed in this manner would significantly reduce the complexity of the CCMP. In addition, these smaller management plans would increase the public's interest regarding their local area's management plan as well as expand support for the state-wide management efforts. The development and design of individual basin-wide management plans must be included in the forthcoming call for

proposals.

3. **Conduct a study to evaluate land uses and their subsequent effects on water quality .**

At the May CAC workshop, there was a great deal of controversy and misunderstanding regarding various land uses and their impacts on water quality. It will be difficult to design a CCMP until some of these questions and misconceptions are more clearly understood by the scientific community and the general public. We believe that the CGIA system can be of some use in resolving this complicated issue. As we mentioned earlier, a recently completed A/P study mapped all land uses in Carteret County and they are now included in the CGIA system. That study also included water uses such as shellfishing areas, wastewater treatment outflows, stormwater runoff, adjacent development, etc. The next logical step would be to take that study one step forward and overlay the land uses with areas of known or potential water quality problems to determine if there is a correlation. Although this study is site-specific, it could form the foundation for additional work. The link between land use and water quality is already established in the literature. We believe this presents a cost-effective method for demonstrating to the public the need to manage land uses to protect water quality.

4. **Map all land areas within the A/P study that have a significant impacts on water quality.**

The 1989 North Carolina Nonpoint Source Assessment Report evaluates the nonpoint sources of pollution for surface waters in the state. In some of the basins within the A/P study area, agricultural practices account for as much as 80 percent of the water quality degradation now being experienced. In other areas, urbanization is the major cause of water quality problems. Sediments, nutrients, pathogens, and chemicals from land use activities have the potential to cause considerable damage to the overall water quality in the coastal region.

The mapping of polluting land uses will enable clean-up funds to be targeted at problems. For example, the Agriculture Cost-share Program was created to provide funding to enable landowners to install or implement BMP's that will improve water quality in the impacted areas. Although completely voluntary, the program distributed approximately $6.5 million in 1989. We believe that this program has tremendous potential to improve the water quality in the region; however, to realize this goal the funding must be directed to areas that contain land areas or agricultural practices having significant impacts on water quality and are most in need of technical and administrative assistance to improve program

implementation. To that end, we feel that it is of highest priority to complete the mapping of the high impact areas. Since this program is appropriated such a large budget, it is imperative that the areas being considered for funding be prioritized according to their location on the impact map as well as the site's potential for improving water quality.

5. **Initiate a program to actively involve the Department of Defense in the A/P Study.**

The Department of Defense (DoD) is one of the largest single landowners in the A/P region. Although the exact acreage is unknown, it is estimated that DoD activities encompass almost 100,000 acres. The DoD has a substantial economic and environmental impact in the 36 county study area; however, the effects of the DoD's activities on the estuarine system are not yet clearly understood. Clearly, the DoD is one of the major players in the A/P region and should be actively involved with the development of the management efforts. As an example, on April 20 of this year Defense Secretary Cheney signed an agreement with EPA that strengthens the 1984 cooperative agreement to restore the Chesapeake Bay (See *National Wetlands Newsletter* July/August 1990). The agreement includes the DoD's commitment to improve pollution prevention practices, better training for DoD wastewater treatment operators, and regular inspection of DoD treatment plants. We urge that a working group be organized at once to begin discussions regarding a similar accord between the DoD and the State of North Carolina. Outwardly, there appears to be no active dialogue between the A/P Study and the DoD other than the Army Corps of Engineers. We cannot wait until 1992 to begin to these discussions.

Recommendations for the CCMP

1. Modify drainage ditches in commercial forestry and agricultural sites to control sediment and runoff.

2. Develop a realistic permit fee system, rather than the current nominal fee system, to cover the actual operating costs of the sediment/erosion control program.

4. Require CAMA land use plans to include water use planning.

5. Design a mandatory planning similar to CAMA land use plans for all the counties in the A/P study area.

6. Provide funding for rural counties to begin voluntary comprehensive land use planning.

7. Continue to demonstrate the state's commitment to restoring and maintaining the resources of the sounds by convening an annual meeting to monitor progress in implementing the CCMP.

8. Track and evaluate activities which may affect the estuaries' water quality and produce an annual report that focuses on these issues.

CONCLUSION

There are four main constituent groups involved in the Albemarle-Pamlico Study: elected officials, environmental managers, the academic community, and the public. By design, these four groups equally share the responsibility for restoring and maintaining the resources of the sounds. Although there must be sound scientific data on which to base management decision, because public funds are used for this effort, the success of the estuary program will ultimately depend on citizen support. To generate that support, the citizenry must be persuaded that it has a vested interest in the program's outcome and must participate in the entire effort. If the public is to be convinced of the importance of the A/P program, it must be provided accurate, timely information, and most importantly, access to that information. The flow of information is the foundation of public participation.

Public participation in the context of the National Estuary Program means involving citizens in the decision making process that the Management Conference oversees, and the importance of public participation in the development of the CCMP cannot be overemphasized. According to the A/P Public Involvement Plan (A/P Project No. 89-04), "Public involvement is essential to the development and implementation of the CCMP...". We concur with this assessment and emphasize its message to our fellow Management Conference members.

The Citizen Advisory Committees are charged with representing the public's voice during all program phases and we take this responsibility seriously. By the creation of this document, we reaffirm our commitment to restore and protect the ecological integrity, productivity, and beneficial uses of the Albemarle and Pamlico Sounds for future generations.

For the Albemarle Citizen Advisory Committee

Brewster W. Brown

Brewster Brown, Chairman

For the Pamlico Citizens Advisory Committee

Derb S. Carter Jr.

Derb S. Carter, Chairman

APPENDIXES (Available upon request from the A/P Study office 919-733-0314)

APPENDIX I: Reviewers Comments

-a copy of all comments received on the final draft. (anonymity maintained)

APPENDIX II: Findings on the Environmental Status and Trends of the Estuary

-draft Executive Summary from the Technical Status and Trends Report (to be finalized Spring 1991).

APPENDIX III: Action Plan Steps

-listing of steps to develop a management plan, excerpted from an EPA document, "Saving Bays and Estuaries."

APPENDIX IV: Agenda for CAC Workshop

-the agenda from the citizens' workshop held to develop the Blueprint.

APPENDIX V: First Draft of CAC Recommendations

-initial product of the citizens' workshop.

APPENDIX VI: CAC Recommendations Ranked in Order of Importance

-priority ranking of the workshop recommendations.

GLOSSARY of ABBREVIATIONS

AEC.....Area of Environmental Concern
A/P Study.....Albemarle-Pamlico Estuarine Study
BMP.....Best Management Practices
CAC.....Citizens Advisory Committee
CAMA.....Coastal Area Management Act
CCMP. .....Comprehensive Conservation Mgmt Plan
CGIA.....Center for Geographic Information Analysis
CRC.....Coastal Resources Commission
DCM.....Division of Coastal Management
DEM.....Division of Environmental Management
DMF.....Division of Marine Fisheries
DoD.....Department of Defense
DSWC.....Division of Soil and Water Conservation
EMC.....Environmental Management Commission
EPA.....Environmental Protection Agency
MSD.....Marine Sanitation Device
NEP.....National Estuarine Program
NPDES.....Natl' Pollution Disch. Elimination Sys.
PC.....Policy Committee
PNA.....Primary Nursery Areas
POTW.....Publically Owned Treatment Works
SAV.....Submerged Aquatic Vegetation
SNA.....Secondary Nursery Area
TC.....Technical Committee
USFWS.....U.S. Fish and Wildlife Service
USCOE.....U.S. Corps of Engineers
WRC.....Wildlife Resources Commission