

MINUTES

ALBEMARLE-PAMLICO ESTUARINE STUDY

POLICY COMMITTEE MEETING

Raleigh, N.C.

November 21, 1989

At 10:10 a.m. Co-chairman Lee DeHihns called the meeting to order (list of attendees Attachment A).

Mr. DeHihns welcomed Dr. John Costlow back to the Policy Committee. Mr. DeHihns also welcomed the newest member of the Policy Committee, Lt. Col. Thomas Sauermann, District Engineer of the Corp of Engineers Office in Wilmington, N.C., and Larry Saunders, a member of the Technical Committee, and Chief of Planning Division in the Wilmington Corps Office.

I. Consideration of Minutes (Attachment B) - Mr. Lee DeHihns

Motion: Don Bryan moved that the minutes be approved. Bud Cross seconded the motion, and the motion was unanimously approved.

II. Director's/Project Officer's Report (Attachment C) - Dr. Robert Holman

During discussion concerning the vacant position of Geographical Information Systems (GIS) Data Coordinator, Dr. Holman noted that we will be advertising the position through a professional journal. Dr. Holman also stated that all avenues, such as direct employment, interagency agreement, in house, and contracting will be pursued.

Dr. Holman announced Bruce Barrett's move to private consulting and Jim Stewart's retirement. Dr. Holman presented resolutions to the Co-Chairmen for both former Technical Committee members. Dr. Holman noted that Dave Moreau, Director of Water Resource Institute, has volunteered to become a member of the Technical Committee (TC) after the first of the year. Dr. Holman entertained a motion to replace Jim Stewart's position with Dave Moreau. Motion: Secretary Cobey made the motion which was seconded by John Costlow. The motion was unanimously approved. Dr. Holman was instructed to send a letter to Dave Moreau advising him of his appointment to the TC. Mr. DeHihns read the resolutions to the committee members. Motion: Derb Carter moved that the resolutions be adopted. Don Bryan seconded the motion, which was unanimously approved.

PC
1/16/89

III. Albemarle Citizen's Advisory Committee (ACAC) Report - Brewster Brown

Mr. Brewster Brown informed the committee that letters asking for resignations were sent to five ACAC members based on conversations at the last Policy Committee (PC) meeting regarding attendance policy. As a result of the resignations of these five members, there are now five positions open. Mr. Brown asked for recommendations with priority on replacing a southside Virginia representative and two minority representatives. It was decided to discuss the openings at the March 7, 1990 meeting. Recommendations with a brief biographical sketch and nominating letter should be sent to Joan or Mr. Brown before the PC meeting on March 7, 1990. Letters were also sent to all ACAC members informing them of the attendance and participation guidelines their status in meeting these guidelines. Mr. Brown then commented on the great turnout of the Annual Meeting.

IV. Pamlico Citizen's Advisory Committee (PCAC) Report - Derb Carter

Mr. Derb Carter noted that letters pertaining to attendance/guidelines were also sent to the PCAC. The PCAC currently has full membership (30). Vice-chairman Ernie Larkin presided over a PCAC meeting to review the draft CFP. Input from that meeting has been incorporated into the CFP. Mr. Carter also commented on the annual meeting held in November. He said the format was received with good turn out.

V. Technical Committee Report - Bowman Crum

Mr. Bowman Crum informed the committee that Richard Batiuk from the Chesapeake Bay Program gave a presentation on the Chesapeake Bay monitoring effort, which is an extensive program that spends about \$2 million dollars annually. Mr. Crum highlighted the CFPs as adopted by the Technical Committee (Attachment D). The TC decided that the Standard Operating Procedures Committee will take the role of coordinating the development of the Comprehensive Conservation Management Plan (CCMP). The vacancy of the Geographic Information System (GIS) Data Coordinator position was announced. The TC Committee recommended that the function of this position be fulfilled through whatever procedures are required. Contracting out (using up to \$100,000) was also discussed as a possibility. Mr. Crum stated that the second draft of the Preliminary Status and Trends report was made available and comments are due by November 25th.

VI. Review of the Recommended Call For Proposals (CFPs)
(Attachment D) - Dr. Bob Holman

During the review of the CFPs Dr. Holman noted that a ACAC priority is a research project to look at the Currituck Sound hydrology and to develop nutrient budgets. Dr. Holman said PCAC priority is to evaluate all existing fishing practices especially trawling. Dr B.J. Copeland informed the committee of a NOAA study currently underway which evaluates the success and failure of coastal management practices in the coastal zone nationwide. Dr. Copeland then suggested to Dr. Holman that he get David Brower, head of this study, to come to the next TC meeting and talk about what they are doing. Bud Cross requested a briefing on the current monitoring program at the next PC meeting. Mr. DeHihns instructed Dr. Holman to put together a cover document describing the current monitoring program. Mike Gantt asked for clarification on what criteria were established or how the decisions were made to focus in on these Early Demonstration Projects (EDPs). Dr. Holman referred to an outline of EDPs (Attachment E) and noted three items under nonpoint sources (1) BMPs for Agriculture (2) urban BMPs and (3) Forestry BMPs. Dr. Holman noted two items under point sources: (1) evaluate all existing wastewater discharges for compliance/sludge disposal, (2) domestic wastewater disposal. Dr. Holman said that these things have direct input into the Comprehensive Conservation Management Plan (CCMP) and that this is a criteria that can be used to implement the CCMP. Mike Gantt and Derb Carter then led the committee into a discussion expressing their concern for the absence of clarified goals and objectives over the continuous undertaking of research projects. Motion: Co-chairman DeHihns moved that the TC develop draft goals and objectives, which are consistent with the EPA Primer on Estuary Program Action, to be applied to the Early Demonstration Plans which will be evaluated for FY 90 funding. Secretary Cobey seconded the motion, and the motion was unanimously approved.

VII. Public Participation Report (Attachment F) - Joan Giordano

During the discussion of the Call for Public Participation proposals, Mr. Holman said that up to 20% of the budget, is open to public participation proposals, and 40% for information acquisition proposals, including monitoring as part of our package. Dr. Holman indicated that Early Demonstration Plans (EDPs) will be a separate funding package. Motion: Bud Cross moved to accept both the information acquisition and the public participation CFPs as attached (Attachment C). The motion was seconded by Secretary Cobey and unanimously approved.

VIII. Status and Trends Report (STR) - Dr. B.J. Copeland

Dr. B.J. Copeland informed the committee that the second draft has been sent out for review and comments are still coming in. Dr. Copeland listed three sections yet to be incorporated:

(1) ground water section - presently in draft form and going through the review process. It will be incorporated in the first chapter of the report, as suggested by the ACAC.

(2) Fisheries practices (suggested by the PCAC) is now being processed and will be incorporated in the Fisheries Chapter.

(3) The Summary and Conclusions Chapter (chapter Six) is being processed. It will address probable causes and the problem areas.

Dr. Copeland noted that an extension of the deadline from November 30 to December 31, 1989 for the Preliminary STR, has been requested from EPA. Dr. Copeland said that the technical version is presently going through the peer review process and will be published in notebook form in December. This will make it possible for revisions to be made over the next year. The final document is due October, 1990. Dr. Copeland said that they are also preparing the Public Version with language readable by everyone which will follow a question and response outline. The draft document (public version) availability date is set for November 27, 1989.

IX. Review Meeting Schedule - Co-chairman DeHihns

Co-chairman DeHihns noted that the schedule changes requested at the last PC meeting have been made. These include four dates in March to allow time between the TC meeting to review proposals and PC meeting, and the call for proposals date. It was requested that the dates between the TC meeting (November 20, 1990) and the PC meeting (November 27, 1990) be stretched out.

X. Public Comments-Questions

Mrs. Joan Giordano announced the near completion of three projects: (1) Environmental Education Calander-(PTRF) (2) Guide to Estuaries-(Judith Gale) (3) State of Estuaries Booklet-(Melva Okun). Mrs. Giordano said that these projects will be donated to 459 school systems in a 33 county area.

Dr. Holman noted that he and Joan Giordano will be attending a joint EPA Technology Transfer and Citizen's Monitoring Conference in New Orleans in December.

Dr. Costlow spoke regarding the Legislative Meeting in Seattle, Washington in October. He indicated that

Representatives Ethridge, DeVane and Hackney may be attending this meeting. He suggested that Representative Lura Tally of the Legislative Research Study Commission on Surface Water also be asked to attend this Seattle meeting.

The A/P Study office has moved from the Archdale Building to the Cooper Memorial Building in October.
Motion: A motion to adjourn was made, seconded, and unanimously approved.

ATTENDANCE LIST

(Attachment A)

POLICY MEETING
November 21, 1989

<u>NAME</u>	<u>AFFILIATION</u>
Bowman Crum	USEPA, Region IV, Atlanta
Larry Mirock	Virginia Canal on the Environment
Ann [unclear]	
Bill Cole	USFWS - Monrovia City
BUD CROSS	NOAA/NMFS
Jan [unclear]	APES Study Staff
John W. Caslow	APES
Don Bryan	APES Pol. Comm.
Rob [unclear]	PCAC
Mike Gull	US FWS - Policy Comm.
LTC T. O. SUERMANN	CORPS OF ENGRS, WASHINGTON
William H. Green	East Carolina University
Lee A. DeHins	US EPA - Policy Comm.
Bill Coley	SECR., DEPT. OF ENR
Robert Holman	A/P Study Staff
Karon Donnell	AIP Study Staff
Brewster Brown	ACAC chair
Ernie Carl	DEHNR
Jo [unclear]	US EPA & Research [unclear]

ATTENDANCE LIST

(Attachment A)

POLICY MEETING
November 21, 1989

NAME

AFFILIATION

B J Apelon d

UNC Sea Grant

LARRY SAUNDERS

Corps of Engineers

John Brown

U.S. Fish and Wildlife Service, Atlanta

Albemarle-Pamlico Estuarine Study
Policy Committee Meeting
August 31, 1989
Williamston, NC

Secretary Cobey called the meeting to order at 9:10 a.m.
(Attendees list Attachment A)

I. Consideration of Minutes

Derb Carter moved to accept minutes of last meeting;
Dr. Queen seconded the motion, and the motion was unanimously
approved.

II. Director's Report - Dr. Bob Holman

Dr. Holman gave an update of the current status of the
program (Attachment B).

During the discussion of the Consistency Report Milestone, it
was agreed that Mr. DeHihns and Secretary Cobey would send a
letter to EPA/OMEP stating that the A/P Study is unwilling to
meet this milestone until it receives the necessary
guidelines from EPA.

The committee discussed the Army Corp of Engineers
involvement with the study. Bill Queen moved that the
district engineer (COE) be invited to become a member of the
Policy Committee and that he designate a representative to be
a member of the Technical Committee. Mike Gantt seconded the
motion, and the motion was unanimously approved. Co-chairs
will extend the invitation.

III. Technical Committee (TC) Report - Dr. Ernie Carl

The Technical Committee meet on August 22 and various
elements of the program were reviewed. The TC felt that the
program was on track and no action by the Policy Committee
(PC) is required. Dr. Carl noted there are four documents to
be produced that must interact; the Milestones, Consistency
Report, Status and Trends, and Comprehensive Conservation
Management Plan (CCMP). Dr. Carl informed the Committee of
some problems encountered with several deliverables/products.
He stated this type of problem will be avoided during the
next cycle of contract awards.

Bob Holman stated that the \$48,000 transfer approved by the
PC from the data management budget was used to expand
Dr. Noga's efforts on the Ulcerative Mycosis project.
Dr. Holman said that approximately \$100,000 was saved during
negotiations with researchers which was used to keep the USGS

monitoring effort going for this next year. Dr. Holman noted that one area lacking funding is DEM's supplemental monitoring with the continuous monitoring stations. In response to Bill Queen and Brewster Brown's concern of incomplete projects from previous years, Dr. Holman stated that proposals, including continuations, are reviewed yearly and contracts are written to cover situations where the Department may have to terminate a project.

Dr. Carl stated that the TC will take the lead in the development of the draft CCMP. Outside experts will be asked to review it. Derb Carter said that the milestones had the experts included as the draft was being developed. During this discussion it was stated that experts will be called upon for input as the draft is being developed. They will also be solicited to review the draft CCMP.

IV. Update of Milestones and Development of CCMP Outline:

The Standard Operating Procedures Subcommittee (SOP) developed the Milestones document. It was revised for further clarification and has been submitted to all other committee members. Dr. Holman repeated the procedures to be used in the development of the CCMP which had been previously discussed.

V. Citizens' Advisory Committees

Pamlico Citizen's Advisory Committee Report - Derb Carter

Mr. Carter said there were four existing vacancies on the PCAC due to resignations. The following four were named as replacements: Mr. Eddie Smith, Mr. Etles Henries, Dr. Vince Bellis, and Dr. John Van Duyn. There was discussion regarding the designated areas of representation on the CACs. Dr. Holman and Mrs. Giordano were instructed to work with the CAC chairmen in categorizing positions on each CAC and insuring correct replacements when vacancies occur. Mr. DeHihns suggested that the categories be reviewed to determine if the structure should be revised. Mr. Carter moved on behalf of PCAC that the four existing vacancies be filled by Mr. Smith, Mr. Henries, Dr. Bellis, and Mr. Van Duyn. The motion was seconded by Don Bryan, and unanimously approved. The issue of geographic location was also discussed. Mrs. Giordano was instructed to develop a form to include pertinent data on each CAC candidate, i.e. occupation, education, affiliation, location, etc. Mr. Carter made a motion to replace Mr. Fred Bonner (sport fishing) and Mr. Neal Lewis (tourism) based on their attendance record. Dan Ashe seconded the motion and the motion was unanimously approved. The committee then discussed the established policy regarding attendance. It was stated that the policy had not been strictly adhered to in the past. The CAC chairs were asked to enforce the

attendance policy. It was stated that a letter would go from the PC informing the members of their replacement. Mr. Carter stated that the committee is essentially making four recommendations for those 2 existing vacancies: Ms. Sharon Gibbs, Mr. Roy Fogle, Mr. Zeno Ratcliff, and Mr. Roger Maze. Mr. DeHihns moved to appoint to the PCAC Sharon Gibbs and Mr. Roy Fogle. Don Bryan seconded the motion, and the motion was unanimously approved.

Albemarle Citizen's Advisory Committee Report - Dr. Parker Chesson

Dr. Chesson noted that there are three existing vacancies on the ACAC and that five individuals were recommended at the last ACAC meeting. Dr. Chesson recommended that Paul Lilly, Shelby Mansfield, and Joe Hollowell be approved to fill the three vacancies on the ACAC. Lee DeHihns seconded the motion. The motion was unanimously approved. Dr. Holman and Mrs. Giordano were instructed to draft three letters for the PC co-chairs stating that the attendance policy will be enforced in the future and to include the attendance record of each member. Dr. Chesson announced his resignation as ACAC Chairman. Brewster Brown was congratulated on his election as ACAC Chairman. Mr. DeHihns proposed a resolution commending Dr. Chesson on his commitment to the A/P Study (Attachment C). Don Bryan made a motion for the unanimous adoption of the resolution which was seconded by Mr. Carter. The resolution was unanimously adopted.

VI. Update of Status and Trends Report - Dr. B. J. Copeland

Dr. Copeland gave a brief overview on the draft Status and Trends Report. He noted that there is considerably more information on the Pamlico Sound than the Albemarle. There is an obvious lack of synoptic analysis of the system. The Status and Trends Report is focusing on the same four areas addressed in the Work Plan: Critical Habitat, Fisheries, Water Quality, and Human Environment (Attachment D). Dr. Copeland said that the second draft of the Status and Trends will be sent out when completed, and he urged everyone to read it and contact him or the members of the working groups regarding their comments. There will not be another round of meetings held to discuss this second draft.

Dr. Holman emphasized that the draft Status and Trends Report is only preliminary and even though Dr. Copeland's work will be completed the end of October, the Status and Trends Report will still be in draft form. It was suggested that additional funding be sought during the FY 1990 funding cycle to develop the mechanism to be used in finalizing the Status and Trends Report.

VII. Special Announcement - Lee DeHihns

Lee DeHihns announced that Bruce Barrett who has been served as co-chairman of the Technical Committee will be stepping down as the EPA Water Management Division Director in Atlanta. Mr. DeHihns has asked Mr. Bowman Crum to sit temporarily in that position for EPA and also act as co-chair of the TC until a replacement is named.

VIII. Review Meeting Schedule

There was discussion on the meeting schedule for 1990. Dr. Holman stated that the February 27 and February 28 meetings will be moved to March 6 and March 7. The Call for Proposals will be sent out on November 22, 1989. Dr. Holman was asked to send the revised schedule to all committee members.

VIII. Public Comments/Questions

Luther Daniels stated that the Status and Trends document will be very useful to him and expressed his thanks for the work which has gone into its development.

The Policy Committee will meet on November 21, 1989, at a place to be announced. The meeting adjourned at 12:45 p.m.

ALBEMARLE-PAMLICO ESTUARINE STUDY

DIRECTOR'S REPORT

POLICY COMMITTEE
NOVEMBER 21, 1989

1) EARLY DEMONSTRATION PROJECTS

- a) Greenville Urban BMP project now has a contract and they are beginning their work.
- b) OMEP did not provide second round funding for the remaining four projects.

2) INFORMATION MANAGEMENT

- a) Land Resource Information Service (LRIS) is currently developing the software for the interactive system between the LRIS system and the user community. Demonstration of preliminary system which was given at the Annual Researchers' Review Workshop on September 14, 1989.
- b) LRIS has developed an atlas of all the information layers that are currently available from the geographic information system (GIS) for the A/P Study area.
- c) Lost our Data Manager and exploring options to include contracting the position up to \$100,000 based on recommendation by the Technical Committee.

3) TECHNICAL COMMITTEE

Technical Review and Citizens Affairs Subcommittees have been busy developing the draft Call For Proposals for 1990-91, that was submitted to the Technical Committee for review at their November 8, 1989 meeting.

4) MEETINGS

- a) Sept. 11 - Meeting with Army Corp Engineers (Wilmington)
- b) Sept. 13 - State and Federal Interaction Meeting (Washington)
- c) Sept. 14 - Annual Researchers' Review Workshop (Washington)
- d) Oct. 05 - Presentation to Raleigh Rotary Club (Crabtree)
- e) Oct. 19 - VA/NC Interaction Meeting (Elizabeth City)
- f) Oct. 25&26- Pamlico and Albemarle CAC meetings
- g) Nov. 8 - Technical Committee Meeting
- h) Nov. 14 - EPA/OMEP Documentation Audit

5) STATUS AND TREND REPORT (STR)

- a) A second draft of the technical STR was sent out to all committee members to comment on the week of November 6, 1989. (Comments due by Nov. 20 to B.J. Copeland).
- b) A draft of the public STR (executive summary) will be available the week of November 27, 1989.

6) FY 1989-90 PROJECTS

- a) All cooperative agreements and contracts are in place for this year's projects except the contract with RTI for the Federal Consistency Report.
- b) Legislative Research Committee - Surface Water Quality and Resource Issues - Members have been appointed and include five members from the Senate, six members from the House of Representatives and three lay members. Membership of the committee totals fourteen members.

7) TECHNICAL COMMITTEE MEMBERS

- a) Bruce Barrett (EPA Water Management Division)-Private Consulting
- b) Jim Stewart (WRI)-Retired

8) ARMY CORPS OF ENGINEERS

- a) Policy Committee-Lt. Col. Thomas C. Suermann
- b) Technical Committee-Larry Saunders

DRAFT CALL FOR PROPOSALS FY 1990

AREAS OF INFORMATION ACQUISITION AND EARLY DEMONSTRATION

Information Acquisition

In 1990, the program is particularly interested in proposals that address submerged aquatics, toxicants, nutrient loading, flow patterns, fisheries issues, and citizen attitudes. Proposals should address specific comments included in each proposed area of information acquisition.

- 1) Utilize aerial photography to characterize submerged aquatic vegetation (SAV) in the Currituck Sound and Albemarle Sound areas. SAV patch shape and size will be estimated by tracing all SAV habitat on the aerial photography. Species composition of each habitat area will be estimated based on ground comparisons. Ground comparisons will consist of collecting representative biomass samples at each site visited and verifying species composition and reproductive mode. Final products of the SAV survey will be information in table form as well as each SAV habitat area overlaid onto U.S. Geological Survey 7.5 topographic base maps.
- 2) Inventory all existing data for effluents, water, sediment and animal tissue from the entire A/P Study area. Toxicants will be defined as metals, toxic elements and organic chemicals. Toxicant budgets will be prepared when possible (e.g. copper, zinc and lead). A literature search using such data bases as DIALOG and SARA Title 3 will be undertaken. In addition, the data will be mapped and examined to determine "hot spots", investigate trends, identify data gaps and recommend strategies for toxicant reduction. Another aspect of this topic would be to evaluate the alteration of "biomarker species" physiology as an indication of toxic problems.
- 3) Develop nutrient budgets (nitrogen and phosphorus) utilizing both land use loadings rates and flow-based budgets to provide a separate budget for both point sources and nonpoint sources. These nutrient budgets will be determined for major tributaries of the Neuse, Pamlico, Chowan and Roanoke Rivers. A literature survey will be conducted to develop loading rates by land use utilizing data bases such as DIALOG and for flow-based information utilizing data bases such as STORET. A nutrient budget also needs to be developed for atmospheric input into the Albemarle-Pamlico Estuarine System. All budgets developed will be put onto a computerized system as to be updated easily and all budgets are to be documented in the same manner for direct comparison.
- 4) Collect and interpret hydrologic data from the mouth of the Chowan and Roanoke Rivers to the two bridges (Rt. 64/264) connecting Roanoke Island to the Outer Banks and mainland. The study will consist of long-term continuous data collections, short-term intensive field studies, data analysis/interpretation to provide information on flow and flow patterns to develop a two dimensional model. A two dimensional hydrodynamic and transport model will be applied by the investigator in the analysis and interpretation of this. Information gained from this study will be used to

determine nutrient budgets, water flow characteristics, sediment movement, cumulative impacts, algal bloom conditions, effect on striped bass development and a preliminary waste-load allocation model. Sensitivity analysis of certain A/P Study areas should also be conducted with a three dimensional data base.

- 5a) Evaluate all existing fishing practices employed throughout the A/P Study area with special consideration given to trawling. The following components should be addressed: determine by fishing practice the direct and indirect impacts on the target species, by-catch and surrounding habitat; identify the habitat necessary to support each species by fishing practice and determine if the fishing practice employed reduces the target populations ability to maintain a sustained yield; and determine the conflicts and their magnitude which exist both in habitat, food supply and target species sustained yield among various fishing practices by location and time. Species such as blue crab, striped bass, flounder, oysters, clams, spotted sea trout, shrimp, and large mouth bass should be included in the investigation.
- 5b) Determine the real value (both direct and indirect) in 1989 dollars of all returns to the A/P Study area for various fishing practices. The study elements should include: determine the values various fishing practices over the last 10 years have as a tourism attraction in total dollar value and contrast it to the red tide event; map the areas and time duration of shellfishing waters lost by all events in the last 10 years and detail all economic losses incurred; evaluate the number of individuals, families or groups which are dependent on each fishery by gear type, practice and time, and identify each ones catch per unit effort in ones total economic returns within the A/P Study area; identify all conflicts both economically and socially between the less than full time fisherman (include all who sell their catch) and recommend regulatory and legislative measures to reduce each conflict consistent with the sustained yield available by species fished and fishing practices over the last 10 years. Species such as clams, shrimp, blue crab, and flounder should be included in the study as well as fishing gear such as pot, trawl, gill net and hook/line.
- 6a) Project to analyze the public attitudes about the Albemarle-Pamlico Estuarine System. Evaluate peoples' attitudes about management alternatives designed to protect these resources. Provide scientifically valid description and comparison of the attitudes of different segments of the public and opinion leaders about the importance of the Albemarle-Pamlico resources and appropriateness of particular management alternatives. Also determine attitudes about the effectiveness and equity of specific programs and policies aimed at improving water quality in the study area that would be tied to the management alternatives. This public attitude survey should encompass the entire state not just the A/P Study area.
- 6b) A project to evaluate both success/failure of management strategies nationwide and identify elements that can be applied to the Albemarle-Pamlico Estuarine System successfully. Efforts should not focus solely on the national estuarine programs or the estuarine setting but rather on successful management elements that can be utilized in the estuarine environment. The resulting report will document specific

management strategies and recommend how these elements can be incorporated into the A/P Study's Comprehensive Conservation Management Plan.

- 6c) Evaluate all existing wastewater discharges within the A/P Study area for compliance, sludge disposal and improvements needed. There is a need to review the compliance record of facilities that are out-of-compliance and determine the cause for them to exceed their effluent limits. Also to explore what improvements are needed for each facility to come into permanent compliance. In addition, a survey of the sludge disposal practices of wastewater dischargers needs to be undertaken to determine what alternative approaches might be needed.
- 7) A research project is needed on the hydrology of Currituck Sound which will bring together all known information about inflows and outflows at the Sound and develop additional flow measurements to fill in the extensive data gaps that exist. After this basic information is assembled, a hydrologic model for the Sound should be developed that will allow the simulation of various weather patterns and also the effect of the many man-made changes in the hydrology of the Sound that are occurring and are expected to occur in the future. All of these efforts should be consistent with the fisheries management plan adapted by the North Carolina Wildlife Resources Commission.
- 8a) Provide a means of determining actual flow input and output rates through the detention pond being constructed by the City of Greenville (1989 Early Demonstration Project). Flow rates will be coupled with another study to further determine the toxicants found in the runoff and the effectiveness of the detention pond in removing these pollutants.
- 8b) Develop a study to further define the toxicants and other pollutants found in the runoff reaching the detention facility being constructed by the City of Greenville. Also determine the effectiveness of the detention pond in removal of specific pollutants and more closely evaluate the land use of the watershed and sources of pollution.
- 9) Continue a citizens' water quality monitoring program. This program has been funded for three years to provide general public participation in the estuarine study and to develop a credible scientific database to supplement the current monitoring of water quality by state and federal government agencies. Adopted from the Chesapeake Bay Citizen Monitoring Program, the A/P Study funded Citizens' Monitoring Program will have approximately 75 monitoring sites throughout the study area by the fall of 1990. Parameters such as temperature, pH, dissolved oxygen, salinity, Secchi disk depth, and field observations are recorded weekly. This effort needs to be maintained by some agency or organization.
- 10) Maintain a baseline water quality monitoring program. This effort has been funded for two years to provide a comprehensive baseline dataset to characterize the water quality, sediment and biological resources of the A/P Study area. To date, continuous monitoring sensors have been located at approximately 29 sites of importance, especially in the open water areas, to monitor temperature, conductivity and dissolved oxygen for changes that rapidly occur in the estuarine environment such as salinity wedges and

anoxic conditions. In addition to the continuous monitoring effort, the State's ambient water quality sampling network has expanded in time and space to include 10 new locations of known importance or risk. Samples are collected monthly and more frequently at selected stations during summer months. Parameters include temperature, pH, dissolved oxygen, conductivity, salinity, total residue, suspended residue, total organic carbon, turbidity, chloride, chlorophyll-a, pheophytin-a, selected metals, sulfide, NH_3 as nitrogen, TKN as nitrogen, $\text{NO}_2 + \text{NO}_3$, total phosphorous, ortho phosphate and sulfate. A continued water quality monitoring effort is needed and possibly expanded to evaluate the long-term trends that implemented management strategies will have on the estuarine system in the A/P Study area. Station location and sampling effort are closely coordinated between the group(s) conducting this effort.

Early Demonstration

The A/P Study for 1990 is interested in "on the ground" type of projects that address alternative on-site/small community domestic wastewater disposal systems and forestry best management practices within the study area. Proposals should be to construct and evaluate specific systems or practices. Please note that a 25 percent cost share match of the total project cost is required by the recipient.

- 1) Construction and evaluation of alternative on-site/small community domestic wastewater disposal systems. Project should focus on disposal systems that utilize ground absorption/plant uptake as an alternative method to failing on-site systems and soil limited site situations. This effort must be conducted within the A/P Study area and the final report will include a plan to implement this system over the entire study area.
- 2) Investigate forestry BMPs in the coastal plain of North Carolina. Especially focus on practices that appear to be effective during harvest operations. Design and construct a series of BMPs that have the potential of significantly reducing the impact to the surrounding habitats during the harvest. This effort must also be conducted within the A/P Study area and the final report will include a plan to implement these practices over the entire study area.

AREAS OF PUBLIC PARTICIPATION

Public Participation

The activities funded under the category of Public Participation are intended to accomplish two purposes: 1) to create effective avenues for disseminating accurate, documented information about the need for planning, conservation and management of the Albemarle/Pamlico Sounds and watershed and 2) to obtain advice and input from the public concerning A/P Study activities. The projects funded in 1990-91 will build on the projects funded in the earlier years of the program. For FY 1990, proposals will be entertained on the following specific topics in addition to any proposals that facilitate public participation in the A/P Study program and its products.

- 1) **Citation/Award Program.** The development of citation, or award program that recognize the involvement of constituent groups such as agriculture, forestry, fisheries, industry, municipalities and private citizens in effective conservation and environmental protection in the A/P Study area. Such programs should emphasize broad participation rather than single "winners", and should include specific provisions for citations or awards to be recognized in public forums.
- 2) **Public Service Announcements (PSAs) targeted to specific audiences.** Such PSAs could be in any media, and should direct their message concerning the need for and solutions to environmental planning and conservation to specific audiences such as farmers, fishermen, homeowners, and other groups. The PSAs should emphasize what each particular group can do to help.
- 3) **Public Education Displays.** There is a need for broader display of educational and interpretive material concerning the A/P Study estuaries and watershed in either permanent or travelling formats. Locations such as waterfronts, public libraries, municipal buildings, parks and major tourist destinations should be considered in display siting.
- 4) **Fact Sheets.** A series of concise, readable, attractive and informative fact sheets should be developed to provide the general public with accurate information concerning the sounds and watershed, their flora and fauna, and the human uses of the watershed area. These fact sheets where appropriate should be produced in a format and quality suitable for durability in outdoor displays and outdoor activities.
- 5) **Outreach Program.** The development of public outreach programs, specifically including increased interaction between the A/P Study and local governments in the study area.
- 6) **Model Estuarine Education Curricula for Public Schools.** Proposals must demonstrate the involvement of, and support from appropriate components of the public school system as a prerequisite for funding.

- 7) **Interactive Media Projects.** Proposals should provide direct opportunities for the public to interact through electronics or print media with technical experts, public officials and resource managers.

- 8) **Estuarine Educational Camp Programs.** Proposals in this area should emphasize opportunities to provide education about the estuaries in the A/P Study area for youth or in a family setting. Programs that focus on direct, "hands on" activities of more than a single day duration in outdoor environments are preferred. Proposals which include a user fee based cost share approach are encouraged.

OUTLINE

EARLY DEMONSTRATION PLAN

I. Introduction

1. A/P Study goal
2. BMPs
3. National Estuary Program support

II. Focus

1. Point sources
 - a. existing point sources
 - b. on-site domestic systems
2. Non-point sources
 - a. agricultural BMPs
 - b. development BMPs (Urban & Rural)
 - c. forestry BMPs

III. Current Projects

1. Agricultural BMPs for Merchant Millpond watershed-Chowan Basin
2. N.C. Solid Set Waste Management System - Chowan Basin
3. VA. Animal Waste Management - Chowan Basin
4. Urban Stormwater Control - City of Greenville

IV. Future Projects

1. On-site alternative wastewater disposal
2. Forestry BMPs
3. Wastewater discharges evaluation

V. Summary

ALBEMARLE-PAMLICO ESTUARINE STUDY

EARLY DEMONSTRATION PLAN

Introduction

The Albemarle-Pamlico Estuarine Study's (A/P Study) goal is to develop management strategies to improve and protect this estuarine system from the impacts man has placed upon it. This involves a balance between continued development of the coastal area and ways of preserving the productivity of the natural system. To this end, there are recognized best management practices (BMPs) that have the potential of being a viable management strategy throughout the entire study area. The National Estuary Program (NEP) has encouraged the individual programs to develop early demonstration projects that appear to be viable basin wide management strategies. The A/P Study has been, and continues to develop these BMPs as will be shown in this Early Demonstration Plan.

Focus

There are many avenues to focus the A/P Study, but the two major areas of direct control and regulation are point and non-point sources of pollution. These two avenues appear to be the main sources of man's direct impact on the estuarine system. Therefore, the A/P Study has focused its resources and energies on these sources of pollution. The strategy is to address point and non-point sources in the following manner.

Point Sources

- 1) Evaluate all existing wastewater dischargers for compliance, sludge disposal and improvements needed.
- 2) Investigate on-site domestic wastewater disposal systems as an alternative to conventional systems that are not reliable.

Non-point Sources

- 1) Explore innovative agricultural BMPs for possible inclusion in the N.C. Agricultural Cost Share Program.
- 2) Evaluate urban and rural BMPs as a means of reducing concentrated pollutant runoff especially in built up areas.
- 3) Investigate forestry BMPs especially during critical harvest operations.

PUBLIC INVOLVEMENT COORDINATOR'S REPORT

1. Citizens' Advisory Committees are meeting regularly (on a quarterly basis), meeting notices and agendas are sent to all public officials and interested citizens residing in the meeting areas.
2. A/P Study exhibit was displayed and staffed by Public Involvement Coordinator at Marine Expo '89 in Wilmington during the first weekend in October. (estimated: 5000 persons attended)
3. A/P Study Exhibit was displayed at Roanoke-Chowan Technical College during mid-September.
4. Public Involvement Coordinator met regularly with State Fair Coordinators to assist with the Departments entry. Also contributed to the staffing, building , and dismantling of EHNR's entry. A/P Study State Fair Exhibit is available for travel since the fair has ended (10-22-89). Public Involvement Coordinator has a 20 minute video entitled "Nursery Areas in The Estuary" which complements the exhibit nicely.
5. Public Involvement Coordinator has met with Melva Okun, principal investigator for "State of the Estuaries Booklet" to determine photos and graphics as well as photo captions for the publication. Completion date of the booklet has been revised to the end of November.
6. Public Involvement Coordinator and Executive Director made presentations at the Board of Directors meetings at all three COGs (Albemarle Commission, Mid-East Commission, and Nuese River Council of Governments) during late August and early September.
7. Public Involvement Coordinator continues to meet with the Community Outreach representatives from PTRF and AEA to develop educational and governmental strategies.
8. Public Involvement Coordinator organized and staffed meetings for development of 4th cycle Public Participation RFP with Citizens' Affairs Subcommittee.
9. Public Involvement Coordinator assisted in staffing and organizing Roundtable/Policy Committee meetings (Aug 31 & 31) and the State, Federal and Researchers Review Meetings (Sept 13 & 14) and Second Annual Meeting (Nov 4) planning committee.
10. Public Involvement Coordinator is working closely with all 3rd year Public Participation Project principal investigators to ensure timely, quality controlled delivery of products.

11. Public Involvement Office is developing a distribution network for delivery of several educational products to 459 schools in the A/P Study area.
12. Public Involvement Office continues to accept and process inquiries into the A/P Study resulting from Newsletter distribution, T.V. PSAs, and general awareness of the program.