MINUTES

TECHNICAL COMMITTEE
November 13, 1990
Raleigh, NC

CALL TO ORDER

The meeting was called to order by Co-chairman Bowman Crum at 10:10 a.m. Attendees are listed in Attachment A.

CONSIDERATION OF MINUTES

Mr. Don Hoss moved to adopt the August 21, 1990, Technical Committee minutes. Dr. Ernie Larkin seconded the motion which was unanimously approved.

Mr. Crum introduced Mr. Randy Waite, the new director of the A/P Study.

PROGRAM DIRECTOR'S REPORT

Mr. Waite informed the Committee that all but three of the contracts have been issued for FY 90-91 work. The delays in issuing contracts were due to the continuing resolution on the state budget as well as concerns over the federal budget. Mr. Tom Burns, Albemarle Resource Conservation and Development Council, has indicated that the delay in awarding the contract makes it impossible to complete the Water Quality Awards project. A substitute project is being sought.

Mr. Waite asked for Committee input concerning the fourth year project by the Pamlico-Tar River Foundation (PTRF) for an Estuarine Resources Center. The Policy Committee approved funding the project with the condition that PTRF match $12,000 A/P Study funds. PTRF has obtained $10,000 match. PTRF has money ($4,000) left over from a past contract which would normally come back to APES for other use. PTRF proposes to use $2,000 of this money to fund the Estuarine Resources Center. After discussion, Dr. Michael Orbach moved to recommend to the Policy Committee that the A/P Study fund the Estuarine Resources Center project at $14,000 and accept $10,000 as match from PTRF. The motion was seconded by Mr. Jim Turner and unanimously approved.

Mr. Waite reported that interviews for the Environmental Specialist position will be conducted in the next weeks.

Mr. Waite noted that the STR Executive Summary will be discussed later in the meeting. Public meetings on the STR will be held in January. A final version may be ready for presentation to the Policy Committee in March.

Mr. Waite suggested that an oversight committee be appointed to review staff-developed CCMP drafts prior to full Technical Committee review. This would eliminate numerous reviews of the CCMP draft by the Technical Committee. The Committee agreed that the oversight committee be comprised of subcommittee chairs, CAC nominations, and Policy Committee representation. Mr. Waite was also instructed to develop a timeline for tasks to be completed.

PUBLIC PARTICIPATION REPORT

Mrs. Joan Giordano reported on public participation activities as follows: 1) CAC's meet quarterly and may begin meeting together; 2) DEHNR's State Fair exhibit won the "Governors Award for Best Non-Commercial Exhibit"; 3) the new outreach coordinator from the Albemarle AEA has been hired; 4) the National CAC/NEP workshop in Beaufort was attended by several A/P Study representatives; 5) the Researchers' Review Workshop was held in Beaufort on October 5; and 6) the Annual Public Meeting was held in Morehead City on October 6.

SUBCOMMITTEE REPORTS

INFORMATION MANAGEMENT

Dr. Bob Holman was approved as the new chair for this subcommittee. He reported on the land use mapping project and some problems encountered with classifications. Five scenes were developed with the last scene being received the middle of October. All five scenes are now being put together to form one scene which will then be broken up into USGS 100K-quads. Those maps will be mailed to the counties for review.

MONITORING

Mr. Waite was asked to contact Dr. George Everett regarding chairing this subcommittee.

Mr. Bisterfeld recommended that the Hydrodynamics Workgroup be encouraged to meet to maintain communication between the several hydrodynamic field investigations funded and model development. Dr. Holman suggested that Dr. Len Pietrafesa make a presentation on his project to that group.

FINANCIAL PLANNING ASSISTANCE

Mr. Ken Ruben, President of Apogee Research Inc., said Apogee approached OMEP regarding financial strategies for implementing plans developed by the NEPs and economic effects. Apogee has worked with several NEPs on the process of financial planning for estuary protection and the development of financial plans.

Narragansett Bay started a financial planning process with a small subcommittee two years in advance of the expected release of the CCMP. An evaluated inventory of sources of finance was developed.

Puget Sound has basically created their CCMP and the cost of implementing their action items in the CCMP was well known. A finance subcommittee of the management committee for Puget Sound Water Quality Authority was formed. A report has gone to the Governor and the State Legislature which recommends possible funding sources, management schemes, and necessary financial management institutions which need to be created in order to finance statewide implementation activities. Their action plans include statewide implementation and local government implementation. A water quality finance guidebook was developed for local authorities.

The Puget Sound Plan estimates that approximately $40 million per year is needed and recommended possible sources of funds for statewide implementation: 1) state sources that would finance water quality monitoring/education research and spill prevention activities; 2) a new motor vehicle manufacturers fee of $50 per vehicle; 3) increase in state foodfish/shellfish tax; 4) a marine fuels tax of 1-2 cents/gallon; and 5) a lease hold excess tax proposal in lieu of property tax for private parties leasing state lands for economic activities (grazing, forestry). In addition local sources identified were: 1) user fees (local stormwater utilities, septic utilities, and areawide nonpoint source control authorities); 2) the establishment of a new Puget Sound Foundation to be financed by private donations, grants, fines/penalties; 3) a Puget Sound Stamp, decals, prints and a small percentage from a new credit card to be issued by a Puget Sound bank; 4) a Puget Sound regional fee (head tax) to involve individuals in clean up of sound.

Buzzards Bay started financial planning one year in advance of their projected release of the CCMP. They formed a local government and business advisory board in anticipation of much of their implementation being on a local basis.

Buzzards Bay had no state funds available and identified local sources of finance: 1) activity based taxes (lodging, meals, entertainment, marine fuels, and shellfish extraction taxes); 2) local option rider on local sales taxes that counties or cities could implement with a 2/3 referendum dedicated to clean up the sound; 3) establishment of betterment districts to increase property taxes with a surcharge; 4) dedication of a real estate transfer tax; 5) water/sewer use fees; 6) mooring fees; 7) impact fees for new developments; and 8) private sponsorships to dedicate fines and penalties into a trust fund.

The Long Island Sound Plan anticipates that approximately $6 billion will be needed over the period of implementation and identified several sources of finance: 1) water use fee; 2) nitrogen fertilizer use tax; 3) toilet paper tax; 4) boat registration fee increase; 5) marine fuel tax increase; 6) marina slips fee; and 7) toilet fixtures tax.

Mr. Ruben stated he was not familiar enough with North Carolina to say what would be its sources of funding. He said a finance committee or a group of people dedicated to thinking about issues of financing is very helpful. OMEP has suggested that Apogee conduct a financial planning seminar and provide video tapes to other estuary programs. Assistance is available now for setting up a financial planning committee, conducting seminars, and developing an inventory of sources. A first step would be to determine how programs are financed in North Carolina and identify other funding sources available through the State, counties, and cities.

It was suggested that the A/P staff and Apogee produce a work plan on developing the inventory of resources, planning a seminar, and structuring a financial planning committee.

EXECUTIVE SUMMARY FOR STATUS & TRENDS REPORT

Mr. Ted Bisterfeld provided the Committee with the most current version of the summary report developed by members of the Policy and Technical Committees (Attachment B). Mr. Bisterfeld reported that under Water Quality Findings, Problem 3, the Status statement will be changed to be more specific to the Albemarle and Pamlico system rather than to "coastal North Carolina". After

some discussion the Committee suggested rewriting a statement under Fisheries Findings, Problem 1 to read: "Although trawling by-catch mortality may have a negative impact on fish stocks, relevant studies have not demonstrated an impact." Other minor editorial changes were suggested.

The summary will be presented to the co-chairs of the Policy Committee before the Policy Committee meeting on November 27. The public meetings probably will be held in January 1991. The document needs to be made available to the public in December. Mr. Waite recommended that the Summary Findings be added as the Executive Summary to the Status and Trends Technical Report.

REVIEW OF DRAFT CALL FOR PROPOSAL SUBJECTS FOR FY 1991-92

Mr. Jim Turner presented the proposed technical acquisition CFP to the Committee. He noted that several meetings with input from numerous groups were held in developing the CFP. The Committee discussed the technical call and made modifications (Attachment C). Mr. Turner recommended that the Technical Committee approve the technical CFP as amended. Dr. Michael Orbach seconded the motion which passed unanimously.

Dr. Orbach reviewed the public participation CFP as approved by the Albemarle and Pamlico Citizens' Advisory Committees (Attachment D). Mr. Turner recommended adoption of the public participation CFP for Policy Committee consideration on November 27. Mr. Don Hoss seconded the motion which passed unanimously.

Dr. Orbach also reported that there have been recommendations regarding the publication of the A/P Study newsletter such as changing the format, using more frequent/shorter formats, or contracting it out. The Citizens' Affairs Subcommittee will be reviewing these options over the next few months and will make a recommendation to the Committee prior to the beginning of the next funding cycle.

REVIEW MEETING SCHEDULE

The schedule had been previously distributed to Committee members and there was no discussion on this item.

ADJOURNMENT

The meeting was adjourned at 4 p.m.

Attachment A

ATTENDEES - TECHNICAL COMMITTEE
November 13, 1990

NAME	AGENCY
Randall G. Waite	A/P Staff
Bob Holman	WRRI
Ann DeWitt Brooks	VA/COE
Joan Giordano	A/P Staff
Mike Orbach	Marine Science Council/ECU
Richard B. Hamilton	Wildlife Commission
Ernie Carl	EHNR
Bowman Crum	EPA
Ernie Larkin	P-CAC
Jess H. Hawkins	NC Marine Fisheries
David W. Sides	EHNR Soil & Water
Jim Turner	US Geological Survey
Don Hoss	NOAA/NMFS
Jim Benton	U. S. FWS
Tom Quay	P-CAC
Ted Bisterfeld	EPA IV
Rich Shaw	EHNR Coastal Management
Ken Ruben	Apogee Inc.
Karon Donnelly	A/P Staff
Kathy Norris	A/P Staff

Attachment L

DRAFT

ALBEMARLE-PAMLICO ESTUARINE STUDY

FINDINGS ON THE ENVIRONMENTAL STATUS AND TRENDS OF THE ESTUARY

This synopsis provides the judgments of the Albemarle-Pamlico Estuarine Study on the health of the estuary, which has been under study since 1987. It is based on the best information and observations available about the estuary.

Two preceding documents were used to develop this synopsis: the "Preliminary Technical Analysis of Status and Trends" and the booklet "A Summary of the Preliminary Status and Trends Report of the Albemarle-Pamlico Estuary." Both documents are available for review.

Consideration of these findings by the citizens of North Carolina and southeastern Virginia is requested. 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. The statement will serve as the basis for developing environmental goals, objectives, and action plans in a comprehensive plan to address the environmental problems of the estuary.

As the action plans are developed, it will be important for all interested citizens to be aware of and contribute to their development. Most people who use the estuary or benefit from it will be affected in some degree by the outcome of this effort.

HUMAN ENVIRONMENT FINDINGS

1. PROBLEM: Increasing population creates increasing and conflicting demands

   Status: Permanent population in the A/P Region has increased since 1970 and is expected to reach almost 3 million people by the year 2000. Direct and especially indirect uses of the estuarine area compete with one another and create greater environmental impacts and stresses.

   Trends: Projections indicate that an additional 300,000 new residents can be expected in the study area by the year 2000. This, along with increased leisure activities, will continue to increase the demand on the resource and the cost of maintaining the quality of the environment.

   Causes: There is a direct correlation between the growth and development of this region and the stress that is placed on the coastal environment.

WATER QUALITY FINDINGS

1. PROBLEM: Oxygen-poor waters and fish kills

   Status: Deoxygenation of water is a recurring problem within this estuary and many other estuaries. It occurs sporadically each year within low salinity reaches of tributary rivers. Fish and bottom dwelling organisms are killed during these events.

   Trends: There is no consensus about the long term trends in occurrence of oxygen-poor waters, or anoxia as it is called. Reported fish kills attributed to anoxia have been greater during the 1980's than in previous decades.

   Causes: Natural physical, chemical, and biological interactions lead to the development of anoxia. Human factors such as increased pollutant runoff and modification of freshwater drainage patterns also contribute to the problem.

2. PROBLEM: Algal blooms/Eutrophication

   Status: Excessive blooms of blue-green algae and dinoflagellates are problems in portions of the lower freshwater tributaries/estuaries. These contribute to losses in commercial fishing and recreational uses and subsequent changes in the food chain and productivity.

   Trends: Despite some evidence of nutrient loading reductions, the geographical extent of blooms is increasing, primarily further into the estuary.

   Causes: Excessive nutrients continue to enter the system. Nutrients from bottom sediments, ground water, and atmospheric deposition contribute to and can prolong excessive blooms. Primary contributors of nutrients include point source discharges; agricultural, silvicultural, and urban stormwater runoff; and acid rainfall.

3. PROBLEM: Pollution of Shellfishing Waters

Status: Because of the threat to human health approximately 370,000 acres of surface waters in "coastal North Carolina" are closed to shellfishing due to probable pathogen contamination. About 50,000 of these acres, are thought to produce shellfish. seaward

Trends: The total area closed to shellfishing due to pollution has remained the same since about 1980. In recent years there have been more frequent and extensive temporary closures. However, progress in opening areas due to eliminating point source discharges has been offset by increased contamination from nonpoint sources.

Causes: Pollution of shellfish waters results primarily from domestic waste discharges. Nonpoint sources include agricultural animal wastes, urban stormwater runoff, improperly sited or maintained septic systems, and marinas.

4. PROBLEM: Maintenance of Nursery Area Function

Status: Monitoring of juvenile abundance within nursery areas of the A/P system indicates that these areas are functioning satisfactorily. Designated Primary Nursery Areas are off limits to detrimental fishing activities and are reserved for the propagation of juvenile fish and shellfish. However, uncontrolled activities on adjacent watersheds impact nursery areas.

Trends: Monitoring of juvenile abundance during the past 10 years indicates no significant population trends for any major species except in local, specific areas. Observed water quality changes, such as dissolved oxygen, turbidity and salinity, indicates deterioration of the primary nursery area quality.

Causes: Land use activities associated with nonpoint runoff from agriculture, silviculture, animal waste, and urban and marina development has resulted in the deterioration of water quality in primary nursery areas. Fluctuations in juvenile populations, where they have been recorded, have been attributed to variations in environmental conditions--both natural and man-induced land use variations.

FISHERIES FINDINGS

1. PROBLEM: Decline in Fisheries Productivity

Status: Commercial and recreational fishing catches have declined in the recent past. A number of important commercial and recreational stocks are now lower than market demand. Catches of most commercial estuarine species are down from recent highs during 1978-1982. Major anadromous fisheries, of striped bass, shad, and river herring, collapsed in the mid-1970s. Striped bass and shad have not recovered. River herring experienced a momentary recovery peak in 1985 but then declined drastically to the present levels which are the lowest on record.

Trends: In general, the commercial and recreational catch per unit of effort is decreasing. Recreational fishing pressure is increasing substantially. More than half of the licensed commercial vessels are recreational.

Causes: Greatly increased fishing pressure, fishing practices, reduced habitat quality and quantity, and reductions in water quality are having detrimental impacts on the fisheries. Highly variable spring flows in the Roanoke River resulting from hydroelectric power generation cause reductions in spawning activity and larval survival of striped bass. Illegal mechanical harvesting of shellfish has resulted in impairment and loss of habitat for shellfish and finfish. Although trawling by-catch mortality is perceived by some people as having a negative impact on fish stocks, relevant studies have not shown this to be true. Currituck Sound/Back Bay is a special case in which largemouth bass and other species were severely impacted by salinity changes, both natural and man-induced.

2. PROBLEM: Fish and Shellfish Disease and Contamination

Status: Diseases in fish and shellfish stocks have reached epidemic proportions in certain areas. Some pollutants, found in bottom sediments and surface waters, have entered the estuarine food web. Fish and shellfish are exposed to elevated concentrations of heavy metals in bottom sediments in some tributaries impacted by urban, commercial, and industrial development. Advisories to limit fish consumption due to elevated levels of dioxin, a probable human carcinogen, have recently been issued for large freshwater and estuarine segments of coastal rivers in the A/P region.

Trends: Yearly outbreaks of ulcerative sore disease since 1984 have been increasing in the lower Pamlico River and to a much lesser extent in other low salinity areas of the system. This disease has been documented in other coastal waters. A blue crab disease, causing eroding of the shell, was first found in the A/P system and has recently also been documented elsewhere. Both diseases have the greatest occurrence in the lower Pamlico River. Two diseases of oysters, Dermo and MSX, are becoming more prevalent within Pamlico Sound waters. Increased production of synthetic hydrocarbons can contribute to further contamination of shellfish and finfish.

Causes: Both the ulcerative sore disease in finfish and the crab shell disease are believed to be related to deteriorating water quality conditions. The disease is contracted in certain areas of the estuary. No link has been proven between any specific pollutant(s) and the diseases. Some industrial facilities discharge dioxin to surface waters. Most of the elevated metal concentrations have resulted from point source municipal and industrial discharges. Abnormally high salinity from drought conditions in certain years is believed to facilitate the spread of the oyster diseases.

HABITAT FINDINGS

1. PROBLEM: Declines in Submerged Aquatic Vegetation (SAV)

Status: Submerged aquatic vegetation, normally abundant in the lower salinity areas of western Pamlico and Albemarle Sounds, have been lost or greatly reduced. The changes have not been quantified. SAV in backwater areas around eastern Albemarle Sound are generally in good condition based on observation, not quantified analyses. The SAV in Currituck Sound has undergone significant shifts in species assemblage but remains quite prolific while the adjoining Back Bay is now devoid of SAV. The eastern shore SAV areas of the sounds, including Core and Bogue Sounds, are more extensive than previously documented and are believed to be relatively stable in area of coverage.

Trends: Observations in the western Sounds and Currituck, areas of high water turbidity, show that SAV is probably undergoing gradual recession over the long term. Little trends data, are available on which to base firm conclusions except of the historical loss from Back Bay.

Causes: High water turbidity reducing light availability to the grasses is considered the greatest factor in the losses of SAV in the western sound areas and in Currituck Sound/Back Bay. Excessive nutrients often cause algal blooms which contribute to water turbidity. Excessive nutrients also stimulate over abundance of other algal types that grow upon the SAV plants further limiting light availability. Physical destruction from dredging, boat propellers, and illegal fishing practices are the causes for the losses particularly in certain areas along the eastern side of the sounds.

2. PROBLEM: Loss of Emergent Wetlands Acreage and Function

Status: Best available assessments estimate that approximately one-half of the original emergent wetlands in coastal North Carolina have been destroyed or altered so that their functions are significantly impaired.

Trends: Brackish and salt marsh losses are not now significant. Freshwater wetlands continue to be converted to other uses. Rates of loss from agricultural activities have decreased in recent years.

Causes: Minimal salt and brackish marsh losses occur from carefully permitted activities and from natural shoreline erosion. The freshwater wetland losses are due mostly to land use conversion activities associated with agriculture, forestry, residential and commercial development, and highway construction.

3. PROBLEM: Loss of Unique Barrier Island Habitat

Status: Over the past 300 years, human impact has reduced the original extensive coverage of maritime forest, shrub, herbaceous dune growth, sound-side marsh, and brackish wetlands to remnant quantities.

Trends: Losses of habitat continue at a substantial rate on private lands. Acreage in public trust ownership or jurisdiction is increasing the protection of tiny quantities of some of these habitats.

Causes: Most losses result from development, which includes removal of vegetation, installation of hard surfaces, off road vehicle traffic, and altering dune slopes and configuration.

Draft

Attachment C

Staff rewrite & expand some language

ALBEMARLE-PAMLICO ESTUARINE STUDY
TECHNICAL REVIEW SUBCOMMITTEE
CALL FOR PROPOSALS RECOMMENDATIONS - FY 1991

1. Utilize the Geographic Information System to:

   B) Analyze GIS data set layers of soil types, soil erodability, % under till, ambient surface water Quality data, and nutrient loadings data to then target agricultural Best Management Practices implementation. Results should show causal relationships between land uses and surface water quality.

   delete b) Identify areas of wetland loss and converted land uses from land cover maps. (task of CGIA + A/P Staff)

   X) Develop water use plans for selected coastal counties (combine with A)

   C) Model point/nonpoint source loadings to create future scenarios and impacts (rewrite)

   delete e) Identify the wildlife components of a natural resource inventory to include endangered species, non-game birds, and water fowl. (continuation of Roe's work = in-house / already budgeted task)

   A) Develop watershed management strategies for sub-basins in the A/P Study area. (rewrite - add c; add #5)

   delete g) Evaluate wetland area changes by comparing 1987-88 land use maps, U.S. Fish and Wildlife Service wetland maps, and hydric soil maps. (CGIA task)

   D) Examine the interrelationships of land uses and land types for the protection of critical estuarine areas.

2. Prepare cost estimates for a number of actions or management strategies ~~including~~ such as: trawling restrictions, point and NPS reductions, urban stormwater BMPs, agricultural BMPs, critical areas protection according to Roe reports; marina BMPs for runoff control and sanitation facilities; innovative fishing laws enforcement, innovative DEM compliance strategies; elimination of identified anadromous spawning obstructions; land use restrictions. (expand)

3. Map commercial / recreational fishing areas according to fishing method. Also map spawning and feeding areas. ~~Quantitate~~ Document any known effects of fishing methods. (rewrite)

4. Conduct public attitude surveys to:

   a) Identify and analyze the relative severity of barriers to installation of Best Management Practices. (& other management strategies)

   ~~b) Determine the degree of the publics financial commitment to protect the sounds~~. (included in 2nd yr. Hoban work)

~~6.~~ Develop management strategies to protect shellfish resources from urbanization. (Combine with 1-A)

5 ~~6.~~ In situ and laboratory assessment of biological effects of existing heavy metal concentrations in the Albemarle-Pamlico Estuary. Also analyze organics in previously collected sediment samples. (rewrite / expand)

~~7.~~ Coordinate with EPA Region IV to expedite the development and calibration of a large-scale integrated estuary model for wasteload allocations (WASP), especially for estuarine reaches of 1) Neuse 2) Pamlico initially, then 3) Roanoke-Chowan and 4) Currituck using information from nutrient budgets, hydrologic projects, and algal response data. Factors must include sediment, atmospheric, and point and nonpoint source inputs. End product would be drainage basin nutrient reduction requirements. (in-house function exclude from call)

6 ~~8.~~ Conduct a sensitivity analysis on a combination of existing fisheries dynamics models to identify the common critical factors. (rewrite)

7 ~~9.~~ Identify the groundwater recharge areas within the A/P Study area, their susceptibility to pollution based on the DRASTIC groundwater model, and the impacts placed on these sites. (rewrite)

8 ~~10.~~ Summarize existing information on the value of headwater wetlands for water quality, wildlife, flood control, etc. Include recommendations for protection. (rewrite)

9 ~~11.~~ Estimate the value of non-market goods and services dependent on the estuarine system, through a literature review. (expand)

10 ~~12.~~ Expand on ~~Evaluate~~ state programs not previously addressed in Nichols' work. (rewrite)

a) ~~Include~~ such as fisheries management. ~~Explore methods to document fisheries harvests and enforce fishing laws and regulations. Explore/develop user fees for resources including marinas and private docks.~~

b) ~~Evaluate resource needs of current state programs to implement~~ A/P ~~management plan.~~

11. #1 under additional recommendations

ADDITIONAL RECOMMENDATIONS

11 ~~1.~~ Develop and demonstrate alternative shrimp and oceanic fish trawls, and other alternative gear such as shrimp pots, pound net culling devices, and long haul seine culling devices. (move)

2. Early demonstration project to provide cost sharing to users for alternative fishing gear. (move to appropriate area)

3. Digitize COE files of the locations of previous permitting actions and install on GIS. (include under Data Mgmt. task)

delete ~~4.~~ Additional heavy metal sediment sampling in the upper Albemarle (including the Meherrin River).

delete ~~5.~~ Add tissue sampling around sediment hot spots.

delete ~~6.~~ Further investigate the effects of acid deposition.

delete ~~7.~~ Investigate impacts on herring spawning streams.

delete ~~8.~~ Investigate potential impacts from cogeneration plants, producing fly ash, and develop a management strategy.

CONTINUATION PROJECTS — (Not Advertised on CFP)

1. Complete submerged aquatic vegetation mapping in the western Pamlico sound area and in tributaries (above tide line) for both the Albemarle and Pamlico sounds.

2. Complete modeling efforts on the hydrology of Albemarle sound.

3. Continue baseline water quality monitoring.

4. Complete modeling efforts for Currituck Sound and develop a management plan.

5. Continue Striped Bass egg viability study.

(Continue and complete previous efforts)

Attachment D

DRAFT CALL FOR PROPOSALS FOR APES PUBLIC PARTICIPATION PROJECTS FOR 1991-92

The activities funded under the category of Public Participation are intended to accomplish two purposes: 1) to create effective avenues for dissemination of 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 APES activities. The projects funded in 1991-92 will build on the projects funded in earlier years of the program. For FY 1991, proposals will be entertained on the following specific topics in addition to any proposals that facilitate public participation in the APES program. The following topics are listed in general order of priority, beginning with the highest priority.

1. Public Involvement in CCMP Development - This would include proposals for specific events and activities to foster, in conjunction with the CACs, increased involvement of local government, principal constituencies and the general public in the development of the Comprehensive Conservation and Management Plan for the APES study area. Projects should emphasize activity in the early stages of CCMP development and assure adequate documentation of project activities.

2. Institutional Alternatives for Long-Term Citizen Involvment - This would include proposals for a feasibility study of institutional alternatives for long-term citizen involvement in policy, planning, management, education, implementation, and oversight concerning the APES study area. Of particular interest are comparative evaluations of institutional frameworks, funding sources, and public-private partnership models that have been effective in promoting citizen involvement in coastal environmental issues in post-program phases of estuarine management conferences and other government sponsored programs. These evaluations should identify, in conjunction with the CACs, those alternatives that are most appropriate for consideration in the APES CCMP and be available to the APES program by spring of 1992.

3. Outreach Programs - This would include proposals to facilitate interaction between APES activities and local governments, principal constituencies, the educational system, and the general public in 1991-92.

4. Permanent Educational or Interpretive Displays - This would include proposals for educational or interpretive displays concerning the APES study area in either site-specific or travelling formats. Of particular interest are displays that will last beyond the formal closure of the APES program in 1992, and those that have potential application outside of the coastal area.

5. Public Service Announcements Targeted to Specific Audiences - This would include proposals in television or other media that direct APES-related material to specific audiences such as recreational and commercial fishermen, farmers, homemakers, and other groups, emphasizing the role of these groups and individuals in the environmental policy and management process. Projects should build upon, rather than duplicate, work previously funded by the APES program and give special consideration to public involvement in the CCMP.

6. Interactive Media Projects - This would include proposals for creating direct opportunities for the public to interact, through electronic or print media, with technical experts, public officials, or resource managers, with special attention to public involvement in the CCMP.