Task 35

Final Product

A REGIONAL WETLANDS POLICY PLAN FOR THE CRATER REGION

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CRATER PLANNING DISTRICT COMMISSION

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I. INTRODUCTION

The purpose of the draft Regional Wetlands Policy Plan for the Region's "Tidewater communities" which consist of the Cities of Colonial Heights, Hopewell, and Petersburg; the Counties of Chesterfield, Prince George and Surry; and the Towns of Claremont and Surry, is twofold:

- Present a solid background concerning issues surrounding wetlands, as well as a current discussion of the "no net loss" policy, from a national perspective and from a Chesapeake Bay Program viewpoint.
- Present policy directions that would be appropriate for consideration by the Crater Region's "Tidewater communities" in regard to wetlands.

Once the issue surrounding the definition of wetlands has been resolved, this draft Regional Wetlands Policy Plan can be formalized.

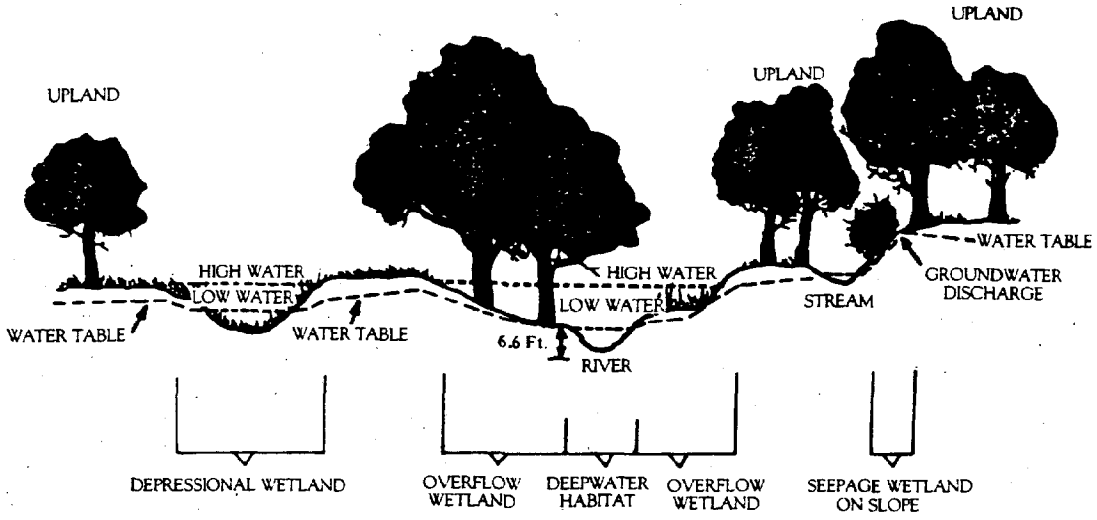
II. BACKGROUND

The collection of wet environments occuring on the landscape in Virginia and elsewhere are called "wetlands". They include tidal marshes and mudflats along the coast and freshwater marshes and swamps, bottomland hardwood forests, wet meadows, ponds, and bogs further inland.

In the past, wetlands were generally viewed as wastelands-places infested with mosquitoes, biting flies and poisonous snakes-and having little real or economic value. Largely because of this negative view, wetlands were regarded as potential sites for development, or as convenient sites for waste disposal. In agricultural areas, many wetlands were drained, cleared, and put into crop production, while in urban areas, other wetlands were filled for houses, industrial facilities, office buildings and sanitary landfills. Consequently, today, less than half of America's original wetlands remain.

During the past thirty years, our knowledge about wetlands and their natural values has greatly increased. We now know that wetlands are important natural resources that provide numerous benefits to our society. First, wetlands are the vital habitats for many plants and animals. In fact, the majority of our threatened and endangered plant species and many endangered animals depend on wetlands for survival. Wetlands also provide more direct values to people in many ways, such as improving water quality, reducing flood and storm damages, minimizing erosion of upland, and supporting tourism and the hunting and fishing industries. Because wetlands are important to people, the federal government is regulating various uses of wetlands. Most states have enacted laws to regulate specific uses of certain types of wetlands. Despite these controls, wetlands, like other natural areas, remain under increasing pressure for development as our population increases.

Schematic Diagram Showing Wetlands, Deepwater Habitats, and Uplands on the Landscape



WETLAND TYPES

Wetlands are largely semi-aquatic lands that are flooded for varying periods of time during the growing season. When not flooded, wetland soils are often saturated near the land surface. Wetlands include areas commonly called marshes, swamps, and bogs, as well as the shallow water zones of rivers, lakes, and ponds. The presence of water in these areas creates environmental conditions that affect the types of soils that develop and the types of plants and animals living there. In general, wetlands are defined by the predominance of "hydrophytes" (plants adapted for life in wet soils), the presence of "hydric soils" (saturated or periodically flooded soils), and "wetland hydrology" (the driving force creating wetlands). A variety of wetland types exist throughout Virginia due to differences in climate, soil, hydrology, salinity, vegetation, and other factors. Two general types of wetlands are recognized: (1) coastal wetlands and (2) inland wetlands. Coastal wetlands consist mainly of tidal marshes and mudflats that are periodically flooded by salt or brackish water. As their name suggests, coastal wetlands are found in the Coastal

Zone along tidal rivers and saltwater embayments. By contrast, inland wetlands are freshwater marshes, swamps, and bogs that are largely non-tidal (not affected by ocean-driven tides). They usually occur on floodplains along rivers and streams, along the margins of lakes and ponds, and in isolated depressions in the upland. Yet, some freshwater wetlands occur in the freshwater portions of tidal coastal rivers. Wetlands are further characterized by their dominant vegetation as: (1) emergent wetlands (commonly called marshes and wet meadows) dominated by grasses, sedges, and other herbaceous (non-woody) plants, (2) shrub wetlands (including shrub swamps and bogs) represented by low to medium-height (less than 20 feet tall) woody plants, and (3) forested wetlands (largely wooded swamps and bottomland hardwood forests) dominated by trees (greater than 20 feet tall).

Coastal Wetlands

Coastal marshes are the dominant type of coastal wetlands. They are largely grasslands flooded by salt or brackish tidal water. Salt-tolerant grasses, including smooth cordgrass, salt hay grass, giant cordgrass, and switchgrass, generally dominate these wetlands. Other herbaceous plants, such as black needlerush, three-squares, narrow-leaved cattail, and rose mallow, may also be abundant, especially in brackish water areas. Coastal marshes can be divided into two zones based on elevation and flooding frequency: (1) low marsh-flooded at least once a day and (2) high marsh-flooded less than daily. Most of the coastal marshes in Virginia are high marshes associated with the Chesapeake Bay and its tributaries. Other coastal wetlands are represented by nonvegetated tidal flats and by shrub wetlands dominated by high-tide bush and groundsel tree.

Inland Wetlands

Virginia inland wetlands are mostly non-tidal (above tidal influence). Three types are most common: (1) emergent wetlands, (2) shrub wetlands, and

(3) forested wetlands. Forested wetlands are, by far, the most common type. Red maple, silver maple, black gum, willow oak, green ash, pin oak, and sweet gum are among the common trees in forested wetlands. Bald cypress is most abundant in southeastern Virginia. Common shrubs include buttonbush, swamp rose, alders, willows, and silky dogwood. Meadowsweet and leatherleaf are more typical of shrub swamps at higher elevations. Emergent wetlands are dominated by a number of herbaceous plants including broad-leaved cattail, bluejoint grass, reed canary grass, soft rush, wool grass, sedges, smartweeds, and certain asters and goldenrods.

VALUE OF WETLANDS

Wetlands in Virginia are important natural resources not only to local residents, but also to others living outside of the State who consume or utilize products produced in Virginia. At the center of Virginia's concern is the Chesapeake Bay-the nation's largest estuary and a national treasure. Wetlands are vital to the well-being of the Bay and its living resources.

In their natural condition, wetlands provide many benefits, including: (1) fish and wildlife habitat, (2) aquatic productivity, (3) water quality improvement, (4) flood damage protection, (5) erosion control, (6) natural products for human use, and (7) opportunities for recreation and aesthetic appreciation. Each wetland works in combination with other wetlands as part of a complex, integrated system that delivers these benefits and others to society. An assessment of the value of a particular wetland must take this critical interrelationship into account.

Fish and Wildlife Habitat

Wetlands are required by many types of animals and plants for survival. For many, like the wood duck and muskrat, or cattail and swamp rose, wetlands are their primary homes or habitats-the only places they can live. For other animals, such as

striped bass or white-tailed deer, wetlands provide food, water, or cover that are important to their well-being, but wetlands are not their primary residences. It is interesting to note that the majority of rare and endangered plants in many states depend on wetlands for survival.

Coastal wetlands are particularly important habitats for estuarine and marine fishes and shellfish, various waterfowl, shorebirds and wading birds, and several mammals. Most commercial and game fishes use coastal marshes and estuaries as nursery or spawning grounds. Menhaden, bluefish, flounder, sea trout, spot, mullet, croaker, and striped bass are among the more familiar fishes that depend on coastal wetlands. In fact, Chesapeake Bay is the major spawning and nursery grounds for striped bass on the East Coast. Blue crabs, the prized shellfish of the Bay, also depend on coastal marshes, as do other shellfish such as oysters, clams, and shrimp.

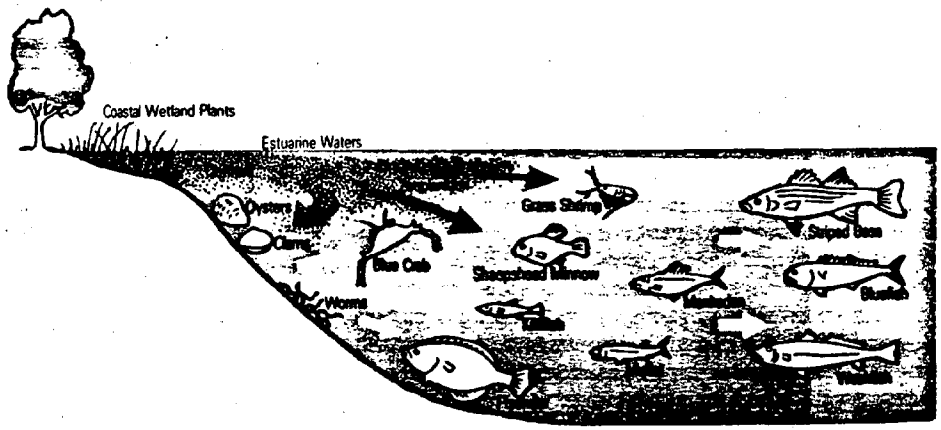
Inland wetlands are also valuable fish and wildlife habitats. Most freshwater fishes feed in wetlands or upon wetland-produced food and use wetlands as nursery grounds. Interestingly enough, almost all important recreational fishes spawn in the aquatic portions of wetlands. A variety of birdlife is also associated with inland wetlands. Ducks, geese, redwinged blackbirds, and a large number of songbirds feed, nest and raise their young in these wetlands. Muskrat and beaver are the most familiar wetland mammals. White-tailed deer (a traditional upland game mammal) use wetlands for food and shelter, especially evergreen forested wetlands in winter.

Aquatic Productivity

Wetlands are among the most productive natural ecosystems in the world and certain types of wetlands may be the highest, rivaling our best cornfields. Wetlands can be regarded as the farmlands of the aquatic environment since great volumes of food (plant material) are produced by them annually. Although direct grazing of most wetland plants is generally limited, their major food value comes from dead

leaves and stems that break down in the water to form small particles of organic material called "detritus". This enriched detritus serves as the principal food for many small aquatic invertebrates and forage fishes that are food for larger predatory fishes, such as bluefish and striped bass. These larger fishes are, in turn, consumed by people. Thus, wetlands provide an important source of food for people as well as for aquatic animals.

Mid-Atlantic Coastal Marshes Annually Produce Over One Million Tons of Organic Material (Detritus) that Supports Fish and Shellfish Important to People



Water Quality Improvement

One of the most important values of wetlands is their ability to help maintain good water quality in our nation's rivers and other bodies of water, and to improve degraded waters. Wetlands do this in several ways: (1) removing and retaining nutrients, (2) processing chemical and organic wastes, and (3) reducing sediment loads to receiving waters. Wetlands are particularly good water filters. Due to their position between upland and deep water, wetlands can both intercept surface-water runoff from land before it reaches open water and help filter nutrients, wastes, and sediment from flooding waters. This function is important in both urban and agricultural areas. The future of the Chesapeake Bay depends on restoring good water quality, and protecting wetlands within the Bay's watershed is

vital to this effort. Clean waters are important to people as well as to aquatic and other wildlife.

Flood Damage Protection

Wetlands have often been referred to as natural sponges that absorb flooding waters, yet they actually function more like natural tubs, storing flood waters that overflow river banks or surface water that collects in isolated depressions. By temporarily storing flood waters, wetlands help protect adjacent and downstream property owners from flood damage. Trees and other wetland plants help slow the speed of flood waters. This action combined with water storage allow wetlands to lower flood heights and reduce the water's erosive potential. Wetlands in and upstream of urban areas are especially valuable for flood protection, since urban development increases the rate and volume of surface-water runoff, thereby increasing the risk of flood damage. In agricultural areas, wetlands help to reduce the likelihood of flood damage to crops.

Erosion Control

Wetlands are often located between rivers and high ground and are, therefore, in a good position to buffer the land against erosion. Wetland plants are most important in this regard, since they increase the durability of the sediment through binding soil with their roots, dampen wave action by friction, and reduce current velocity through friction. The planting of wetland vegetation to control shoreline erosion in coastal environments is currently recommended.

Natural Products

A wealth of natural products are produced by wetlands. Products that are available for human use include timber, fish, and shell fish, wildlife, blueberries and peat moss. The Chesapeake Bay is the largest producer of blue crabs in the world and the largest single source of oysters in this country. Wetland grasses are hayed in

many places for winter livestock feed and during the spring and summer, livestock graze in many freshwater marshes.

Recreation and Aesthetics

Many recreational activities take place in and around wetlands. Waterfowl hunting, fishing and crabbing are popular sports. Other recreation is largely nonconsumptive and involves activities like hiking, swimming, boating, and ice skating. Many people simply enjoy the beauty and sounds of nature and spend their leisure time walking or boating in or near wetlands observing plant and animal life. Through the centuries, wetlands have also captured the attention of artists who have painted wetland scenes or have written about wetlands. Thus, wetlands are without question an important part of the natural heritage of Virginia-one of our most valuable natural treasures.[1]

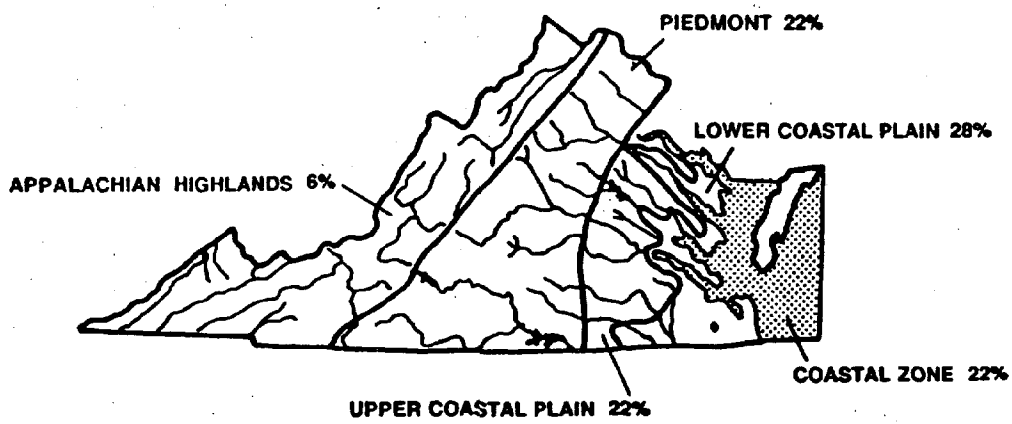
[1] The above information was presented in a 1987 U. S. Fish and Wildlife Service report and was adapted to reflect current Virginia conditions in regard to wetlands.

III. STATUS AND TRENDS IN WETLANDS

Virginia has approximately 215,000 acres of vegetated tidal wetlands, an extensive, but yet to be determined, amount of non-vegetated tidal wetlands, and about 700,000 acres of non-tidal wetlands.

About four (4) percent of the Commonwealth's land area is wetland. Most of Virginia's wetlands are found in the Coastal Plain, where over 60 percent of the Commonwealth's freshwater wetlands are located. The Piedmont has 22 percent of the Commonwealth's total wetlands, which represents almost 30 percent of Virginia's freshwater wetlands.

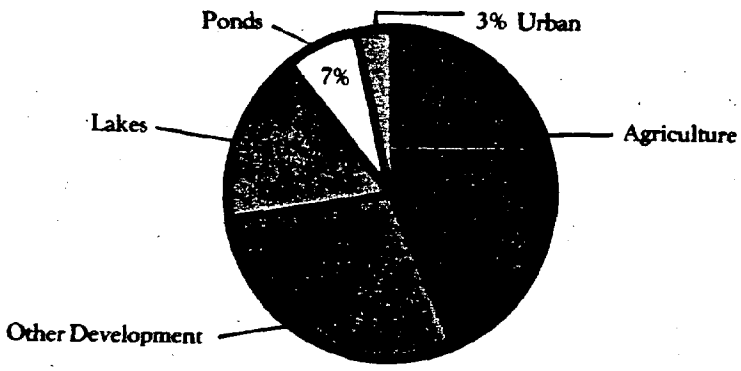
Distribution of Wetlands in Virginia



While detailed current data are not available, the U. S. Fish and Wildlife Service estimated in 1987 that Virginia lost over 63,000 acres of coastal wetlands and inland vegetated wetlands between 1956 and 1977, a six percent loss. Annual losses of these wetlands averaged about 3,000 acres. Inland forested wetlands were most threatened, experiencing a nine percent loss in 21 years. Inland vegetated wetland loss was greatest in the Lower Coastal Plain region where about 14 percent of these wetlands were destroyed. Losses in this region accounted for 80 percent of the state's inland vegetated wetland losses. In stark contrast to other wetland losses, pond acreage increased by about 170 percent.

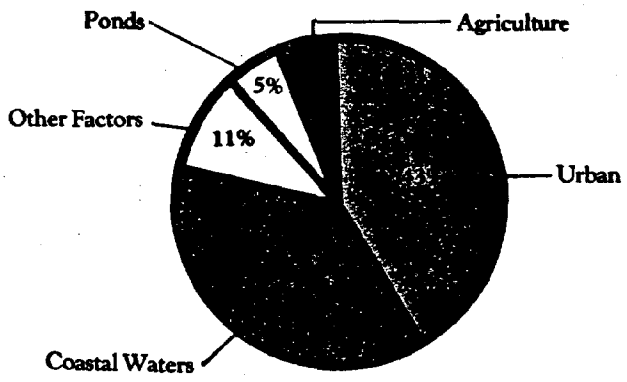
Direct conversion of wetlands to cropland was the major cause of inland wetland loss, while other development (i. e. channelization projects) and lake and pond construction were also major loss factors.

Causes of Inland Vegetated Wetland Losses



Urban development had the biggest impact upon coastal wetlands. Loss of coastal wetlands to estuarine waters through impoundments, dredging projects, and sea level rise was also significant.

Causes of Coastal Wetland Losses



Subsequent to the passage of the Virginia Wetlands Act of 1972, the Commonwealth's loss of tidal wetlands has been reduced to approximately 20-25 acres per year. These losses are the consequences of large numbers of small losses

associated with permitted shoreline stabilization activities, such as the replacement of an existing bulkhead with a new bulkhead. In 1988, the Commonwealth lost less than five acres of vegetated wetlands.

In addition, there is no data available concerning the natural increase or decrease of tidal wetlands that Virginia may be experiencing.

As stated earlier, there is no current information on the trends of nontidal wetlands losses within the Commonwealth. However, due to several federal and state initiatives (regulatory and non-regulatory in nature), the conventional wisdom is that population growth and land development, and associated activities in the Coastal Plain are causing the greatest impacts in regard to the Commonwealth's nontidal wetlands.

IV. REGULATION OF WETLANDS

The increased awareness of a need for water quality protection in the 1960s led to the passage of the Federal Water Pollution Act of 1972, later amended as the Clean Water Act. That act links the main goal of cleaning up the nation's waters with the goal of protecting wetlands.

FEDERAL REGULATORY BACKGROUND

Federal jurisdiction over wetlands, both tidal and non-tidal, is exercised primarily through Section 404 of the Clean Water Act. This statute, and its comprehensive regulations, requires that a permit be obtained from the U. S. Army Corps of Engineers prior to the discharge of "fill material" into the navigable waters of the United States. Fill material is material primarily used to replace "an aquatic area with dryland" or to change "the bottom elevation of a water body."

Although Section 404 specifically applies to navigable waters, this term is defined in the Act as the waters of the United States, which has a far broader scope than traditional navigable waters. Regulations of the Corps of Engineers (Corps) include tributaries of navigable waters, tidal and non-tidal wetlands, interstate waters, mudflats, sandflats, and intermittent streams. In addition, the regulatory definition of "wetlands" is both broad and highly technical, based upon factors including hydrology, soil conditions and vegetation. The Manual administered by the Corps is used to apply this definition.

Those activities subject to federal wetlands regulation include: the placing of fill, construction of sea walls, dikes, roadways, and other structures, laying of underwater and underground pipes and cables, and clearing or grubbing of land.

Under Section 404 and the 404 Guidelines adopted by the U. S. Environmental Protection Agency (EPA), and administered by the Corps, a permit will not be issued

if there is a practical alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem. With respect to wetlands, unless the purpose of the fill is "water dependent, practical alternatives are presumed to be available, unless clearly demonstrated otherwise." Further, "all practical alternatives . . . which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise."

An application for a permit to fill or dredge is made to the District Corps' office (located in Norfolk, Virginia). The Corps can require the completion of an Environmental Impact Statement if it determines that the proposal represents a "significant impact on the quality of the environment", pursuant to the National Environmental Policy Act. A 30 day public comment period follows completion of the application, followed by comment review by staff. Public comments are routinely sent to the applicants for their response. Pursuant to an interagency Memorandum of Agreement between the EPA, U. S. Fish and Wildlife Service ("FWS") and National Marine Fisheries Service, any one agency can object and withhold the Corps' approval of the application. The process of resolving agency objections can take as long as 2-3 years.

Finally, there are two different types of Corps' dredge-and-fill permits; individual and general. Individual permits are issued on a case-by-case basis after application and evaluation by interested agencies. General permits are established by regulation for categories of activities that are "substantially similar in nature and cause only minimal individual and cumulative environmental impacts." These activities are pre-approved and no application needs to be made and reviewed

Federal Manual for Identification and Delineation of Jurisdictional Wetlands

The Corps uses a technical Manual prepared to merge and reconcile the manuals of four federal agencies to determine parcels that constitute wetlands.

In January 1989, the Corps adopted a new definition of wetlands agreed to by the four principal federal wetlands management agencies. The definition is both broad and highly technical. It is based upon multiple factors including hydrology, soil conditions and vegetation. A controversy developed in the spring of 1990 when the Corps revised its interpretation of the definition to remove "normal farming activities" as an exempt activity which did not require a permit. This revised interpretation led to a substantial expansion of land area termed wetlands for regulatory purposes. The new delineation criteria expanded the Corps' jurisdiction over sites in Eastern Virginia because of the region's widespread "hydric" conditions (i. e., poorly drained soils).

On September 26, 1990, the Corps issued a regulatory "clarification" on agriculatural croplands which had been drained and converted from wetlands by 1985. This clarification to the Manual definition of wetlands should exempt from the Section 404 permit process substantial portions of so-called "upland" wetlands currently in agricultural production. The Corps' regulatory clarification defines the meaning of the longstanding requirement that a purported wetland must be capable, under normal circumstances, of supporting typical wetland vegetation. The clarification excludes from this definition agricultural lands, dubbed "prior converted cropland", which although once wetlands, were drained or otherwise converted prior to December 23, 1985, and as a result, no longer exhibit important wetland values. These prior converted croplands must have been farmed continuously since that date with commodity crops and inundated with water less that 15 continuous days per growing season. This regulatory guidance is expected to effectively roll back the 1989 inclusion of extensive tracts of current cropland from regulation.

In July, 1991, EPA released a draft proposal for the Manual revisions. This draft was reviewed and further revised by the U. S. Office of Management and Budget. In August, 1991, the proposed revisions were published in the Federal Register, with a 60-day public comment period. EPA just recently extended the public comment period a second time due to the major interest in the proposed revisions.

The proposed changes include a redefinition of each of the three basic criteria-vegetation, soils, and hydrology. Also modified are the definition of the growing season and the methods to be used in wetlands delineation. Comparisons between the 1989 manual and the proposed revisions are shown below:

Comparison of Criteria for Jurisdictional Wetlands

	1989 Federal Manual	**Proposed Revisions**
Hydrology	*Duration:* Must have saturation or inundation for seven consecutive days during the growing season. *Depth:* Water table must be within 6 to 18 inches of the surface (assumes saturation to the surface). *Indicators:* Wetlands hydrology can be assumed from the presence of hydric soils.	*Duration:* Must have inundation for 15 consecutive days, or saturation for 21 consecutive days during the growing season. *Depth:* Must be saturated to the surface. *Indicators:* Wetlands hydrology cannot be assumed from the presence of hydric soils alone.
Vegetation	More than 50 percent of plants must be able to live in wetlands, or an analysis of plant type and frequency can be used.	Only the analysis of plant type and frequency can be used.
Soils	Hydric soils must be identified.	Existence of hydric soils must be verified by field inspection.
Growing Season	At 20 inches below the surface, soil temperature must be above 41° F (in Virginia, February to October).	Based on local weather data; three weeks before last killing frost of spring to three weeks after first killing frost of autumn.
Criteria	Evidence of all three criteria required, but one criterion can be assumed from the other two in certain cases.	All three criteria required, with exceptions only for some types of wetlands.

If adopted as proposed, the general thrust of the proposed revisions would be to reduce the amount of wetlands that would come under the authority of the Section 404 permit program. It would appear that it will be several months before EPA presents the final revisions to the Manual.

In the interim, Congress directed the Corps to resume using its 1987 Manual to make permitting decisions in regard to wetlands.

In addition, wetlands issues also are being addressed through various bills in Congress. A common theme of many of the proposals before Congress center on the development of a classification system whereby wetlands are ranked according to their ecological importance. It should be noted that the Clean Water Act will be up for reauthorization in 1992 (currently scheduled to expire on December 31, 1992).

A brief history of the federal regulation of wetlands is presented below:

Federal Regulation of Wetlands

1899 The Rivers and Harbors Act gave the Corps power to regulate construction activities in navigable waters by issuing permits for those activities. This act authorized the Corps as the agency with permitting authority over construction in water.

1972 The Federal Water Pollution Control Act included Section 404, which authorized the Corps to issue permits for the discharge of dredge and fill materials into the waters of the United States.

1975 The Corps' regulations were changed to include a broader definition of waters over which they had authority; wetlands were included.

1977 The Federal Water Pollution Control Act was amended and became known as the Clean Water Act. EPA and Corps regulations pursuant to that act included a regulatory definition for wetlands that continues to be used.

1979 The Fish and Wildlife Service (FWS) published a wetland definition and guidelines for identification used by some federal and state agencies (*Classification of Wetlands and Deepwater Habitats of the United States*).

1985 EPA and the Corps signed a memorandum of agreement spelling out the roles of the agencies and the procedures they would follow in issuing 404 permits.

The Food Security Act (Farm Bill) of 1985 denied federal-assistance program participation to farmers who altered wetlands for agricultural purposes (swampbuster program). The Soil Conservation Service's (SCS) *Food Security Act Manual* included a wetland definition used for identifying wetlands on agricultural lands.

1987 The *Corps of Engineers Wetlands Delineation Manual* was published, giving optional technical guidelines for district engineers' use in identifying and delineating wetlands under Section 404.

1989 The Corps, EPA, FWS, and SCS formally adopted the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, which provided mandatory technical criteria, field indicators, and determination methods for identifying wetlands under federal jurisdiction and tracing their upper boundaries.

President Bush announced his administration's "no net loss" policy for wetlands.

1990 EPA and the Corps signed a memorandum of agreement clarifying environmental criteria to be used in evaluating compliance with Section 404 guidelines.

1991 July: EPA released revisions of the 1989 manual to Congress. Negotiations with the executive branch followed, resulting in further changes.

August: Proposed changes to the 1989 manual were published in the *Federal Register*.

VIRGINIA REGULATORY BACKGROUND

Tidal Wetlands

A Wetlands Protection Act was passed by the Virginia General Assembly in 1972 to regulate the use of vegetated tidal wetlands in Virginia. In 1982 this Act was amended to include non-vegetated tidal wetlands, such as tidal flats, sandy beaches, and oyster reefs. The Act requires a special permit prior to initiation of any use or development of a tidal wetland, such as construction, dredging, or filling. In addition, the Act empowers individual localities to establish their own wetlands boards for the purpose of reviewing and deciding permit requests. The Virginia Marine Resources Commission (VMRC) has ultimate authority to administer the Wetlands Protection Act, and reviews all decisions handed down by the local boards. Decisions which will not achieve the policy or standards in the Act may be formally appealed by the Commissioner and modified, remanded, or revised. The Commission also decides permit requests in localities that have not yet established wetlands boards.

Virginia maintains a ranking system based on relative environmental value. The system is designed to guide economic development into wetland communities of lesser environmental value.

The VMRC has recently adopted regulations entitled Wetlands Mitigation Compensation Policy. These regulations evaluate projects which may require wetlands mitigation or compensation. They recommend that compensation be required on a limited basis to replace unavoidable wetland losses.

To destroy and compensate wetlands, three criteria must be met: (1) all reasonable mitigation actions, including alternate siting, must be included in the proposal; (2) the proposal must be water dependent; and (3) the proposal must demonstrate "overwhelming" public and private benefits.

The Act applies to any activity that would "use or develop" any wetland unless the activity falls into categories specifically exempted from coverage under the Act. Exempted activities include, for example, cultivation and harvesting of agricultural, horticultural and silvicultural products; maintenance and repair of roads abutting wetlands; and construction and maintenance of noncommercial structures, such as piers, boathouses, and duckblinds.

In judging a permit application, the local wetlands board or the Virginia Marine Resouces Commission ("VMRC"): (1) weighs the anticipated public and private detriment; and (2) determines whether the activity violates or tends to violate the purposes and intent of the Act. If the detriment outweighs the benefit, or if the activity would violate the purposes of the Act, the wetlands board (or VMRC) must deny the application.

If the criteria are met and compensation is required, the wetland regulations contain guidelines which may be included as conditions of a wetlands permit.

Nontidal Wetlands

Virginia does not operate an independent program for protecting nontidal wetlands. Legal authority to regulate nontidal wetlands is derived primarily from Section 404 of the Clean Water Act of 1972, as amended.

Implementation of the Section 404 program for nontidal wetlands in Virginia has not been guided by state policy and has followed the changing wetlands policies of the various federal agencies. Changes in federal wetlands policies have led to inconsistent definitions and regulatory standards, and instability for private investment and development planning.

Section 401 of the Clean Water Act gives the state authority to deny approval of any Section 404 wetlands permit that violates state water quality standards. This authority allows the Commonwealth to use standards developed in response to state

needs in the protection of nontidal wetlands.

In 1990, in an attempt to enhance wetlands management, Virginia obtained increased authority under the Section 404 program. In addition to its standard Section 401 review of Section 404 permits, the Virginia State Water Control Board currently reviews permits for activities in headwater wetlands which would otherwise be automatically granted under Nationwide Permit 26 of the federal wetlands program.

Chesapeake Bay Preservation Act

The regulations implementing the 1988 Chesapeake Bay Preservation Act create Chesapeake Bay Preservation Areas which, unlike the Wetlands Act, can include nontidal as well as tidal wetlands, if they are connected by surface flow and contiguous to tidal wetlands or tributary streams. These areas must be included in Resource Protection Areas (RPAs), which trigger restrictions on development and require buffer zones in most cases. The regulations also suggest that all other nontidal wetlands be considered for inclusion in separate Resource Management Areas (RMAs), which are subject to less strict limitations on development. In these RMAs, broad limitations are placed on land-disturbing activities, removal of vegetation, use of impervious cover, erosion and sediment control, sewage treatment and disposal, stormwater management, agricultural and silvicultural runoff and other aspects of land use that may have effects on water quality. Performance standards are to be incorporated into local comprehensive plans, zoning regulations, and other ordinances as they relate to these areas.

V. RECOMMENDED WETLANDS POLICY DIRECTIONS

This chapter presents proposed policy directions concerning wetlands that might be applicable to the Crater Region's "Tidewater communities", taking into account the national setting concerning wetlands, as well as the wetlands policies of the Chesapeake Bay Program. The current national perspective on wetlands has been presented in Chapter IV. The Chesapeake Bay Program's wetlands policies are briefly discussed below.

Chesapeake Bay Wetlands Policy

On December 15, 1987, at an historic meeting in Baltimore of the Governors of Virginia, Maryland, and Pennsylvania, the Mayor of the District of Columbia, the Administrator of the U. S. Environmental Protection Agency, and the Chairman of the Chesapeake Bay Commission (Chesapeake Executive Council), the Chesapeake Bay Agreement was signed. This agreement, which outlines goals, objectives, and commitments for cleanup and restoration efforts throughout the Bay region, addresses problems of living resources, water quality, population growth and development, public access to the Bay, governmental cooperation, and public involvement. The agreement is especially significant in that it sets out commitments for specific and measurable cleanup results, and was developed with extensive public participation.

As a follow-up to the 1987 Chesapeake Bay Agreement, the Chesapeake Executive Council adopted, on January 5, 1989, the Chesapeake Bay Wetlands Policy. This Policy establishes an immediate goal of no net loss with a long-term goal of a "net resource gain". The gain of wetland acreage and function over present day conditions serves as a means of recovering the values of wetlands already lost over years of inadequate protection. These values include not only traditional

habitat values for breeding, spawning, nesting and wintering of living resources, but also benefits in water quality, flood protection, and the regional economy.

The Policy addresses the protection and restoration of both tidal and non-tidal wetlands through several elements, each with attendant policy goals and specific action items. The elements comprise a comprehensive wetland protection strategy addressing requlatory and other management mechanisms required to improve current practices. These elements address policies for managing direct and indirect wetland impacts through education and training activities, monitoring, research, private sector incentives, land acquisition, regulatory improvements, and mitigation practices.

The text of the Chesapeake Bay Wetlands Policy is presented in the Appendices.

Chesapeake Bay Wetlands Policy Implementation Plan

The Policy discussed above included a commitment by the Chesapeake Executive Council to adopt implementation plans by June, 1990. The Chesapeake Bay Wetlands Policy Implementation Plan was prepared in response to that commitment. The Plan presents tasks to guide evolving federal and local programs which allow flexibility for diverse jurisdictional priorities and resources.

The Plan establishes a process of implementation in three phases that will 1) strengthen existing programs, establish a baseline and define additional program needs; 2) initiate regional actions such as wetland monitoring and mapping; and 3) implement new programs to achieve no net loss and reach for the goal of net resource gain.

The Plan tasks scheduled for immediate action contribute to the first phase of policy implementation and create the foundation for future actions. They are summarized here in the order that they appear in the Plan text, which does not

connote order of priority.

- Develop and implement a ten year cyclic mapping program to map all tidal and nontidal wetlands in the Chesapeake Bay watershed at a scale and resolution needed to support the actions specified in the Policy. Federal agencies and states will implement this mapping program on a schedule that correlates with individual state programs. The maps created are intended to provide more accessible, more reliable information about wetland locations. These maps are not intended to be used to substitute for on the ground identification and delineation.

- Initiate a five year cyclic analysis of the status and trends of Bay watershed wetlands. The analysis will provide a statistically valid description of changes in wetland locations, types, acreage and functions and the causes of those changes. This task includes the establishment of a baseline, development of an annual monitoring and inventory program and production of a five year status and trends assessment.

- Develop technical guidelines for wetlands protection for land owners, developers and regulators to use for the design and evaluation of regulated and unregulated activities. Substantial efforts are already underway and proposed by the regulatory agencies in this task area. This task will identify technical procedures that can be used to assess and minimize the wetland impacts of proposed projects and actions.

- Identify a Bay wetlands protection strategy based on information about existing state and federal programs and the status of Bay wetlands. State and federal program priorities will be identified in the Bay strategy to provide guidance for targeting regional activities and funds to achieve the goals of the Chesapeake Bay Wetlands Policy.

- Develop advisory criteria for review and approval of mitigation plans. Criteria will include wetland functional analysis and acreage calculations for

wetland impacts using a wetlands assessment model, as well as capability to assure the potential success of proposed mitigation. The development of criteria for mitigation is critical to the successful achievement of no net loss of existing wetlands.

- Formulate and begin execution of incentive programs, as appropriate, to achieve no net loss and net resource gain. Inventory existing and potential incentives for wetlands protection, restoration, rehabilitation, and creation, and institute recommendations for increasing their use.

- Develop programs to provide current information to the public about Bay wetlands values and protection needs. Make educational materials and experiences more accessible.

- Formulate and begin execution of technical training programs for wetland managers in the areas of wetland identification, delineation, functional assessment, mitigation and creation practices. Coordinate and improve current technical training programs.

- Coordinate and expand technical assistance programs to support local government protection efforts. Establish and maintain central sources of information to provide the public with current information about wetlands.

- Establish a process to direct wetlands research and funds to achieve the goals of the Chesapeake Bay Wetlands Policy. This task will provide a comprehensive and continuing evaluation and reporting of research and funding by users, researchers and funders.

The full text of the Chesapeake Bay Wetlands Policy Implementation Plan is presented in the Appendices.

Regional Policy Directions

The following policy directions are presented as potential concepts for the

Crater Region's "Tidewater communities" consideration in regard to wetlands preservation and protection. These proposed directions are intended to closely correlate to national and Chesapeake Bay Programs concerning wetlands.

1. In regard to non-tidal wetlands, the permit review process is time-consuming and cumbersome, as a result of the practical necessity to achieve concurrence of the many agencies involved before a permit may be issued. This permit-by-permit system is inherently inefficient and interferes unreasonably with the local government process. A preferred system might be one in which local governments have the option of developing and administering local implementation plans. Accomplished through the adoption of a local land use plan, which addresses both development and protection of natural resources, including wetlands values, the local plan would be subject to approval by the federal government to ensure consistency with national policy and other local plans.

The Virginia General Assembly passed the Chesapeake Bay Preservation Act in 1988. The legislation was developed to preserve and protect Virginia's wetlands. The Act and its Regulations mandate that local governments administer a local implementation plan. Perhaps, the federal permit review process could be folded into the Virginia program. The Crater Region's "Tidewater communities" should consider supporting this concept as a way of streamlining the permit process.

2. Of all wetlands initiatives, mapping may be the most critical for successful local planning practices. Often, available wetland maps do not provide adequate detail on which to base land use decisions. The Region's "Tidewater communities" are considering a long-range planning effort to protect scenic and environmental quality of the James and Appomattox Rivers, and to promote broader public access to the rivers and appropriate development on adjacent lands. It is recommended that this effort include close coordination with the Chesapeake Bay Wetlands

Program in regard to mapping (once a national definition is finalized). This would assist in the proper protection of two major river corridors in the Crater Region.

3. The Region's local governments should support the development of a classification system for non-tidal wetlands which recognizes relative differences in the ecological value of individual wetlands areas. Where wetlands are of the highest ecological value and irreplaceable, development should be prevented completely. Where individual wetlands areas perform relatively marginal or insignificant ecological functions, their development should be allowed to proceed in a streamlined manner.

4. The Region's local governments should consider supporting appropriate resource management tools (i. e. transfer of development rights from one land parcel to another better suited for development) as a method of dealing with the preservation of wetlands.

5. The Crater Region's local governments should consider establishing a public education and information program to ensure citizens are aware of the important functions and values of wetlands, as well as which measures should be undertaken (or not undertaken) to protect wetlands.

6. The Crater Region's local governments should design wetlands management strategies that anticipate future development, and incorporate incentive-based programs into wetlands regulations. This direction would involve a high level of economic analysis to ensure that resources are properly allocated.

7. The Crater Region's local governments should initiate technical training programs, on a joint basis, for local wetland managers in such areas as wetlands identification, delineation, functional assessment and mitigation. This effort should commence once a national definition of wetlands is finally determined.

APPENDICES

Chesapeake Executive Council

Chesapeake Bay Wetlands Policy

Chesapeake Bay Program

Agreement Commitment Report

December 1988

Chesapeake Bay Wetlands Policy

An Agreement Commitment Report from the
Chesapeake Executive Council

Annapolis, Maryland
December, 1988

ADOPTION STATEMENT

We, the undersigned, adopt the Chesapeake Bay Wetlands Policy, in fulfillment of Living Resources Commitment Number 5 of the 1987 Chesapeake Bay Agreement:

> *"...by December 1988, to develop a Bay-wide policy for the protection of tidal and non-tidal wetlands."*

The Policy establishes an immediate goal of no net loss with a long-term goal of a "net resource gain". The gain of wetland acreage and function over present day conditions serves as a means of recovering the values of wetlands already lost over years of inadequate protection. These values include not only traditional habitat values for breeding, spawning, nesting and wintering of living resources but also benefits in water quality, flood protection, and the regional economy.

The Policy addresses the protection and restoration of both tidal and non-tidal wetlands through several elements, each with attendant policy goals and specific action items. The elements comprise a comprehensive wetland protection strategy addressing regulatory and other management mechanisms required to improve current practices. These elements address policies for managing direct and indirect wetland impacts through education and training activities, monitoring, research, private sector incentives, land acquisition, regulatory improvements, and mitigation practices.

We recognize the values that wetlands provide to the overall health of the Bay and the quality of life afforded to the citizens of the area and therefore support the Policy goals outlined in this document. Further, we agree to commit the necessary funding and resources to carry out the implementation of the Policy.

We direct the Living Resources Subcommittee to prepare an annual report on the status of these implementation programs and the effectiveness of the Policy goals in achieving protection and restoration of Chesapeake Bay wetlands.

Date January 5, 1989

For the Commonwealth of Virginia

For the State of Maryland

For the Commonwealth of Pennsylvania

For the United States of America

For the District of Columbia

For the Chesapeake Bay Commission

CHESAPEAKE BAY WETLANDS POLICY

Preamble

Wetlands within the Chesapeake Bay watershed lie within the transition areas between better drained, rarely flooded uplands and permanently flooded deep waters of streams, rivers, ponds, lakes and coastal embayments. Two basic wetland types, coastal and inland, occupy about three percent of the Chesapeake Bay drainage area or approximately 1.2 million acres. Over 80 percent of these wetlands are inland and the remainder are coastal wetlands. Coastal wetlands consist largely of tidal marshes and mud flats found along the margins of tidal rivers and saltwater embayments. These areas are periodically flooded by salt or brackish water. Inland wetlands within the region are predominantly forested wetlands, followed by shrub and emergent wetlands, most of which are nontidal or not affected by ocean-driven tides.

Wetlands are of importance to the protection and maintenance of living resources associated with the Chesapeake Bay ecosystem as they provide essential breeding, spawning, nesting and wintering habitats for a major portion of the region's fish and wildlife, including migratory birds, endangered species and commercially and recreationally important wildlife.

Wetlands are an important part of the cultural, ecological and economic heritage of the Chesapeake Bay region. Wetlands play a vital and significant role in maintaining the quality of life through material contributions to: the water quality of the region; the regional economy; food supply and fish and wildlife resources.

Wetlands protect the quality of surface waters through retarding the erosive forces of moving water, trapping waterborne sediment and associated pollutants. Wetlands also protect regional water supplies by facilitating the purification of surface and groundwater resources. Wetlands play a crucial role in maintaining critical base flow to surface waters through the gradual release of stored flood waters and groundwater, particularly during periods of drought. Wetlands provide a natural means of flood control and storm damage protection through the absorption and storage of water during high runoff periods and through the reduction of flood crests, thereby protecting against the loss of life and property.

Chesapeake Bay Wetlands are recognized as some of the most important wetland areas in the United States and have received worldwide recognition as "Wetlands of International Importance Especially as Waterfowl Habitat" under the 45 nation Ramsar Convention treaty.

The Chesapeake Bay watershed experienced substantial losses of wetlands between the mid-1950's and late 1970's. Annual losses averaged over 2,800 acres. Tidal marshes declined by about nine percent, whereas nontidal vegetated wetlands fell by six percent. Wetland losses continue to occur as a result of anthropogenic impacts and natural causes.

WETLANDS PROTECTION AND MANAGEMENT POLICIES

It is the intent of the Chesapeake Executive Council to set forth policies in this document to guide the development and implementation of a comprehensive strategy for the protection and management of all wetlands within the Chesapeake Bay watershed.

The goal of the wetland protection and management strategy is to achieve a net resource gain in wetland acreage and function over present conditions by:

(1) protecting existing wetlands; and

(2) rehabilitating degraded wetlands, restoring former wetlands, and creating artificial wetlands.

The policies set forth in this document are organized into four major focus areas, each of which must be incorporated within a comprehensive strategy if that strategy is to result in definitive progress toward the net resource gain goal.

Within each of the four focus areas, specific policy statements have been made to guide the development of the comprehensive strategy. Specific actions, associated with a policy (or group of policies), are considered fundamental to successful achievement of the goal. The signatories are committed to seeking the necessary authority and funding to carry out these actions, including the enactment and improvement, in all jurisdictions, of laws and regulations to protect nontidal wetlands.

As a first step, implementation plans for each of the four focus areas will be adopted by June 30, 1990. These four implementation plans, taken as an integrated whole, will form the comprehensive strategy for wetland protection and management.

DEFINING THE RESOURCE: INVENTORY AND MAPPING ACTIVITIES

Tracking progress toward the net resource gain goal requires the establishment of an effective means of monitoring wetland distribution by type, acreage, and function. Furthermore, effective resource protection and management is predicated both on the availability of information regarding wetland status and trends and the ability to identify and monitor specific wetland areas. This information base is critical to monitor the overall program, direct and target resource protection and management actions, and support essential research and education efforts.

For the purposes of measuring the progress toward a net resource gain in wetland acreage, and to develop a meaningful inventory to guide wetland management, a comprehensive description of the resource is required. For such purposes, identification should encompass the variety of conditions that typify wetland ecosystems. This inventory should be consistent with the identification approach used by the U. S. Fish & Wildlife Service, which has begun extensive wetland identification.

Consequently, for the purpose of developing a Bay-wide inventory, identification should be based on this description:

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Policy:

- The signatories shall collectively design and institute a wetland resource monitoring strategy which will provide for a continuing quantitative evaluation of wetland distribution and functional characteristics.

Action:

Formulate and begin execution of a comprehensive inventory, mapping, and monitoring plan which, at a minimum, includes:

- A cooperative, comprehensive mapping of all wetland areas at a time interval of not less than every ten years.

- A statistically valid status and trends analysis every five years.

- A continuing cumulative impact assessment.
- A monitoring program for existing wetlands sites of various types within selected physiographic regions to quantify functions and values and document changes occurring over time within these systems.
- A monitoring program for invasive or exotic species and appropriate control methods.
- A regional data base of permitted activities.

HOLDING THE LINE: PROTECTING EXISTING WETLANDS

Central to a strategy to achieve a net resource gain in wetland acreage and function must be strong programs to hold the line by protecting existing functioning wetlands. The underlying principle behind this wetland protection is the need to control direct, indirect and cumulative impacts which result in losses of wetland acreage or function. Guided by this principle, various tools, including, but not limited to, regulation and protection standards, incentives, and land acquisition, should be used to protect wetlands.

Impacts may result from direct and indirect alterations to a wetland, cumulative alterations within the wetland, or from natural causes. Controlling the type, extent, intensity and duration of impacts which alter wetlands will further other efforts to reduce nutrients in the Chesapeake Bay and restore and protect its living resources.

Policies:

- The signatories to this agreement will use existing programs and develop new programs to limit permanent and irreversible, direct and indirect impacts to wetlands. Only in rare instances will losses of wetland acreage or function be allowed or considered justifiable.

- The signatories to this agreement will minimize indirect alterations within the watershed which have the potential to adversely impact wetlands.

- The signatories will implement management practices designed to reduce cumulative wetland losses.

Actions:

- The signatories agree to incorporate the principle of wetlands protection and the management of other sensitive Chesapeake Bay living resource habitats into the various strategies, policies and guidelines which will result from the Population Growth and Development Commitments of the 1987 Bay Agreement.

- To eliminate or minimize indirect impacts to wetlands, the signatories will coordinate permitting and management programs and the use of protective buffers and other techniques which serve to maintain important functional characteristics of wetlands.

- The signatories agree to develop a Bay-wide planning process for wetlands with the goal of protecting wetlands and associated resources through innovative land use controls.

Regulatory and Protection Standards

Existing regulatory standards and other programs at the federal and state level do not adequately protect existing wetlands from individual and cumulative losses in acreage and function.

This is particularly the situation for nontidal wetlands. Some of these areas may be difficult to identify, as surface water or saturated soils may not be evident throughout the growing season. The following characteristics reflect the features of vegetated nontidal wetlands:

- Areas that are inundated or saturated by surface or groundwater.
- Areas where a prevalence of vegetation typically adapted for life in saturated soil conditions exists.
- Areas where hydric soils are present as defined by the National Technical Committee for Hydric Soils.

Policy:

The signatories will, at a minimum, implement protection standards for those areas and activities not adequately protected under federal law and programs. These protection standards will address, but not be limited to: enforcement, buffers, protection of basic wetland functions, "best management practices," alternative actions, and water-dependent uses.

Actions:

- Review the effectiveness of existing regulatory programs and recommend corrective actions to honor the policy commitment and monitor and revise such programs as necessary over time.
- Where not otherwise in place, develop a projected implementation schedule by June 1990 to establish protection standards which honor the policy commitment.

- o Cooperatively develop a process to identify and protect wetland areas of special concern, and consider, where appropriate, the institution of procedures under Section 404(c) of the Clean Water Act.

- o Work toward the development of a single Bay-wide field manual for the delineation of vegetated nontidal wetlands.

- o Develop a guidance document for the regulatory and protection standards.

Incentives

The Chesapeake Executive Council recognizes that regulatory programs alone cannot be relied upon to achieve comprehensive protection of wetlands. Hence, incentives aimed at the private sector will be developed to complement and reinforce these regulatory programs. In addition, programmatic inconsistencies or incentives within the state and federal government which directly or indirectly contribute to wetland losses will be eliminated or reduced.

Policies:

- o The signatories will collectively develop and execute a range of private sector incentive programs which support wetland protection.

- o Government sanctioned programs which are counterproductive to wetland protection will be eliminated whenever possible.

Action:

Formulate and begin execution of an incentive policy implementation plan which, at a minimum, includes:

- o Identifying state and federal programs or policies which result in wetland losses and correcting program deficiencies.

- o Enhancing existing incentive programs to encourage wetland protection.

- o Creating new incentive programs to encourage wetland protection.

- o Investigating the use of penalties or other disincentives to reduce wetland losses.

Land Acquisition

The Chesapeake Executive Council recognizes the important role that acquisition can play in a comprehensive wetlands protection program. The council also recognizes that limited funding requires a strategy for targeting the acquisition of wetlands for the purpose of preserving the public's use and enjoyment of wetland resources. Acquisition may be necessary to protect significant educational, scientific, or ecologic values, or where wetlands provide some broader public use including maintaining open space and providing recreation opportunities.

Policies:

- The signatories will identify priority areas for wetland preservation.

- The signatories will provide for acquisition of lands for the purpose of protecting significant wetland values or the public's right to use and enjoy wetlands where such lands are a part of acquisition programs administered by public agencies.

Action:

- Develop a strategic plan for land acquisition which includes wetlands and appropriate adjacent uplands and aquatic areas as a part of new or ongoing public acquisition programs.

BUILDING THE BASE: REHABILITATING, RESTORING, AND CREATING WETLANDS

The signatories will not attain a net resource gain in wetland acreage and function by protecting existing wetlands alone. Efforts must be made to build the base by rehabilitating degraded wetlands, restoring former wetlands, and creating productive new artificial wetlands. While mitigation will play a large role here, incentives and land acquisition are important and useful tools for building the base of functioning wetlands.

Mitigation

Mitigation is the sequential process of avoiding, minimizing, rectifying, reducing over time, or compensating for wetlands losses. The sequence in which mitigation procedures are considered and applied in practice is crucial to realizing the signatories' protection and management strategy. The Chesapeake Executive Council recognizes that compensatory mitigation (generally involving construction of replacement wetlands) must not substitute for efforts to avoid or minimize losses or prejudice an agency determination affecting wetlands.

Policies:

- Mitigation will be included for any project conducted by or subject to review or approval by the signatories.
- Compensatory mitigation shall proceed from the presumption that "in-kind, on-site" is the preferred solution. Other solutions, including off-site and out-of-kind mitigation, will only be allowed when acceptable to public/government agencies and performed in the context of watershed management planning or other specific objectives.
- The Signatories shall require that compensatory mitigation projects, incorporate public or private arrangements for long-term management.
- Compensation projects will generally be designed and evaluated cooperatively among project sponsors, the signatories, and appropriate public and private entities.
- Monitoring and evaluation of the success of compensatory mitigation replacement projects shall be incorporated by the signatories as a fundamental part of the mitigation process.

Action:

- o The federal signatory, in consultation with appropriate governmental agencies, will develop updated standards and criteria in compliance with the overall wetland protection goals and specific mitigation policies incorporating state-of-the-art technological, ecological and biological applications.

Incentives

Since mitigation arises from the unavoidable loss of wetlands, it alone can not be relied upon to build the base of functioning wetlands. Incentives aimed at the private sector should be developed to encourage rehabilitation, restoration, and creation of wetlands.

Policy:

The signatories will collectively develop and execute a range of private sector incentive programs which encourage rehabilitation, restoration, and creation of wetlands.

Action:

Formulate and begin execution of an incentive policy implementation plan which, at a minimum, includes:

- o Enhancing existing incentive programs to encourage the rehabilitation, restoration and creation of wetlands.

- o Creating new incentive programs to encourage rehabilitation, restoration, and creation of wetlands.

Land Acquisition

To further increase the net resource base beyond that achieved through compensatory mitigation requirements, the signatories will develop acquisition plans which support wetlands rehabilitation, restoration and creation.

Policy:

- o The signatories will facilitate acquisition of lands for wetland rehabilitation, restoration, and creation projects beyond that achieved through compensatory mitigation.

Action:

- Develop criteria for the identification of areas where rehabilitation, restoration and creation projects can be undertaken.

- Develop a plan for the acquisition of land and property interests in areas where wetlands, rehabilitation, restoration and creation projects will be undertaken.

EXTENDING THE VISION: EDUCATION AND RESEARCH

The ultimate success of the comprehensive strategy for wetlands protection and management will depend on the depth and breadth of our vision. Research is essential if we are to refine our knowledge of wetland values and improve our ability to protect and manage these resources. Education builds the necessary public support for resource protection as well as ensuring the efficient implementation of wetland protection practices.

Education

The Chesapeake Executive Council recognizes that wetland protection depends upon public awareness of wetland values and management needs and upon landowner support for protection policies. Furthermore, appropriate technical training must be made available to resource managers and to private sector interests who are charged with implementing specific wetland protection practices.

Policy:

The signatories will develop and maintain on-going education and training programs, technical assistance services, and wetland data base systems to improve our understanding of wetland values, functions, management techniques, status, and trends.

Action:

Formulate and begin execution of an education plan which, at a minimum, includes:

- o A current information program available to the public on the values of and need to protect wetlands.
- o Development of a Bay-wide library system and data base for wetland information.
- o Technical training programs for government representatives, consultants, land developers and interested parties in the areas of wetland identification, delineation, functional assessment, and mitigation practices.

- o Development of technical assistance programs to support local government protection efforts, including mapping, management programs, model ordinances, etc.

- o Development of wetland curricula for academic institutions.

Scientific Research

The Chesapeake Executive Council is aware of the role which scientific research plays in determining the effectiveness of current management practices as well as the potential for using research findings to improve management techniques and the general need for better understanding of how natural changes to wetlands may necessitate appropriate management responses.

Policies:

- o The signatories to this agreement will, to the extent possible, facilitate the undertaking of research projects which have the potential to improve wetland management.

- o The signatories will evaluate and adjust their wetland management practices and regulatory standards such that they reflect principles validated through scientific research.

Action:

The signatories will collectively update a prioritized listing and description of those research projects which offer significant opportunities for improving wetland management practices. At a minimum, the research plan shall consider the following:

- o Continued research of basic wetland structure and function.

- o Research to quantify the relationship between upland, wetland, and aquatic natural processes including chemical, ecological, geomorphological and hydrological processes in various watersheds.

- Evaluation of the potential individual and cumulative effects the following factors have upon wetlands including:
    - Current "best management practices" designed to reduce nutrient and sediment loads to wetlands.
    - Alteration of the land/water interface.
    - Increased boating activity.
    - Shallow water dredging impacts on biologic and hydrologic functions of wetlands.
    - Structural shore erosion practices.
    - Stormwater management practices.
- Evaluation of the design, effectiveness and success of artificial wetlands including those developed for:
    - Compensatory mitigation.
    - Wildlife and waterfowl improvement projects.
    - Non-structural shore erosion control.
    - Stormwater management.
    - Acid mine drainage reduction.
    - Wastewater treatment.
- Comparison of natural and artificial wetlands.
- Research on the potential mitigative measures which could be used to counteract wetland losses due to acid rain, sediment starvation, sea level rise, and invasion of exotic species.
- Studies investigating the feasibility and effects of wetlands created for stormwater management upon other wetland functions, particularly with regard to fish and wildlife habitat and trophic structure and support.

Principals' Staff Committee

Chesapeake Bay Wetlands Policy Implementation Plan

Chesapeake Bay Program

Implementation Plan

December 1990

Printed on Recycled Paper

Chesapeake Bay
Wetlands Policy Implementation Plan

A Commitment Implementation Plan from
the Principals' Staff Committee

Annapolis, Maryland
December 1990

Printed by the United States Environmental Protection Agency
for the
Chesapeake Bay Program

Table of Contents

CHAPTER I. SUMMARY

Background

In recognition of the importance of wetlands to the environmental and economic health of the Bay, the Chesapeake Bay Executive Council adopted the Chesapeake Bay Wetlands Policy (the "Policy") in December 1988. The Policy includes a commitment by the Executive Council to adopt implementation plans by June 1990. The Chesapeake Bay Wetlands Policy Implementation Plan (the "Plan") is prepared in response to that commitment.

The Policy establishes an immediate goal of no net loss with a long term goal of a net resource gain for tidal and nontidal wetlands. It defines four areas in which proposed actions are to be accomplished. These four focus areas are:

Defining the Resource: Inventory and Mapping Activities,
Holding the Line: Protecting Existing Wetlands,
Building the Base: Rehabilitating, Restoring and Creating Wetlands, and
Extending the Vision: Education and Research.

In the Plan, education and research are treated as distinct categories, thereby forming five implementation focus areas.

The Policy stipulates, and the Plan incorporates time periods for implementation, particularly with regard to mapping, status and trends analysis, and cumulative impact assessment.

Implementation Plan

The Chesapeake Bay Wetlands Policy Implementation Plan (the "Plan") presents tasks to guide evolving federal, state, and local programs which allow flexibility for diverse jurisdictional priorities and resources.

The Plan establishes a process of implementation in three phases that will 1) strengthen existing programs, establish a baseline and define additional program needs; 2) initiate regional actions such as wetland monitoring and mapping; and 3) implement new programs to achieve no net loss and reach for the goal of net resource gain.

A chart listing all Policy implementation tasks and schedules is found at the end of this Chapter. A glossary of abbreviations used to designate lead implementors is found at the end of the Plan.

The Plan tasks scheduled for immediate action contribute to the first phase of Policy implementation and create the foundation for future actions. They are summarized here in the order that they appear in the Plan text, which does not connote order of priority.

- Develop and implement a ten year cyclic mapping program to map all tidal and nontidal wetlands in the Chesapeake Bay watershed at a scale and resolution needed to support the actions specified in the Policy.

This program will result in the development of new mapping programs in some states but will require the updating of NWI and digitization of SCS hydric soils information at a minimum. Federal agencies and states will implement this mapping program on a schedule that correlates with individual state programs. The maps created are intended to provide more accessible, more reliable information about wetland locations. These maps are not intended to be used to substitute for on the ground identification and delineation. (Task M1)

- Initiate a five year cyclic analysis of the status and trends of Bay watershed wetlands.

  The analysis will provide a statistically valid description of changes in wetland locations, types, acreage and functions and the causes of those changes. This task includes the establishment of a baseline, development of an annual monitoring and inventory program and production of a five year status and trends assessment. (Task M2)

- Develop technical guidelines for wetlands protection for land owners, developers and regulators to use for the design and evaluation of regulated and unregulated activities.

  Substantial efforts are already underway and proposed by the regulatory agencies in this task area. This task will identify technical procedures that can be used to assess and minimize the wetland impacts of proposed projects and actions. (Task P1)

- Identify a Bay wetlands protection strategy based on information about existing state and federal programs and the status of Bay wetlands.

  State and federal program priorities will be identified in the Bay strategy to provide guidance for targeting regional activities and funds to achieve the goals of the Chesapeake Bay Wetlands Policy. (Task P2)

- Develop advisory criteria for review and approval of mitigation plans.

  Criteria will include wetland functional analysis and acreage calculations for wetland impacts using a wetlands assessment model such as WET II, as well as capability to assure the potential success of proposed mitigation. The development of criteria for mitigation is critical to the successful achievement of no net loss of existing wetlands. (Task C1)

- Formulate and begin execution of incentive programs as appropriate to achieve no net loss and net resource gain.

  Inventory existing and potential incentives for wetlands protection, restoration, rehabilitation and creation and institute recommendations for increasing their use. (Task C2)

- Develop programs to provide current information to the public about Bay wetlands values and protection needs.

  Make educational materials and experiences more accessible. (Task E1)

- Formulate and begin execution of technical training programs for wetland managers in the areas of wetland identification, delineation, functional assessment, mitigation and creation practices.

  Coordinate and improve current technical training programs. (Task E3)

- Coordinate and expand technical assistance programs to support local government protection efforts.

Establish and maintain central sources of information to provide the public with current information about wetlands. (Task E4)

- Establish a process to direct wetlands research and funds to achieve the goals of the Chesapeake Bay Wetlands Policy.

This task will provide a comprehensive and continuing evaluation and reporting of research and funding by users, researchers and funders. (Task R1)

The Plan includes annual reports of implementation progress and five year evaluations of success in achieving Policy goals based on actual changes in wetland resources. The first five year evaluation will be in 1995. Oversight of Plan implementation will be provided by the Wetland Workgroup composed of representatives of lead implementing agencies, scientists and citizens.

Short term tasks scheduled through 1992 will cost approximately $400,000 annually. The plan proposed for this funding is that federal and state agencies will provide approximately half of the funds through existing program budgets and for the remaining half to be requested from the Chesapeake Bay Program budget. Funds for long term implementation after 1992 are being sought from new sources including congressional action. The rate of implementation progress depends on the availability of funds.

WETLAND IMPLEMENTATION PLAN TASK CHART

LEAD AGENCY	TASK NO.	TASK NAME	7/90	9/90	12/90	3/91	6/91	9/91	12/91	3/92	6/92	9/92	12/92	NOTES
		MAPPING AND INVENTORY												
		DEVELOP 10 YEAR MAPPING & INVENTORY PROGRAM												
MD	M1a	Develop mapping strategy		•					•					Every 10 years
MD	M1b	Accomplish mapping												To be determined
MD	M1c	Make maps accessible to public												To be determined
MD	M1d	Establish inventory of aerials					•							
		DEVELOP 5 YEAR STATUS & TRENDS ASSESSMENT PROGRAM												
TWS	M2a	Define baseline conditions		•					•					Every 5 years
NOAA	M2b	Design and initiate monitoring program	•					•		•			→	
FWS	M2c	Conduct status and trends analysis												1995
		MANAGE PUBLIC WETLANDS												
FWS	M3a	Identify public wetlands				•							→	3/93
FWS	M3b	Evaluate public stewardship												Evaluation in 1995

Glossary of abbreviations used to designate lead agencies can be found at the end of the plan.

WETLAND IMPLEMENTATION PLAN TASK CHART

LEAD AGENCY	TASK NO.	TASK NAME	NOTES
		PROTECTING EXISTING WETLANDS	
		DEVELOP TECHNICAL GUIDANCE DOCUMENT	
EPA III	P1a	Procedure guidance document	
EPA III	P1b	Evaluate proposed projects	
EPA III	P1c	Evaluate effectiveness	1995
EPA III	P1d	Produce handbook for local users	To be determined
EPA III	P1e	Use delineation manual	
		IDENTIFY BAYWIDE PROTECTION STRATEGY	
VA	P2a	Describe State and Federal programs and objectives	
VA	P2b	Conduct demo mgmt projects	
VA	P2c	Develop Bay strategy	
VA	P2d	Target resources to strategy	1992-1995
VA	P2e	Evaluate regulatory programs	
VA	P2f	Revise strategies	1995
		COORDINATE W/ POP GROWTH COMM	
LRS	P3	Coordinate w/ Pop Growth Comm	
		CREATE PERMIT TRACKING SYSTEM	
ACE-B	P4a	Investigate systems	
ACE-B	P4b	Set up program	
ACE-B	P4c	Report Data	Each year subsequently
		EVALUATE PROGRESS	
EPA-CBP	P5a	Produce annual progress report	
EPA-CBP	P5b	Produce 5 year progress report	1995
EPA-CBP	P5c	Evaluate and revise programs	

Glossary of abbreviations used to designate lead agencies can be found at the end of the plan.

WETLAND IMPLEMENTATION PLAN TASK CHART

LEAD AGENCY	TASK NO.	TASK NAME	7/90	9/90	12/90	3/91	6/91	9/91	12/91	3/92	6/92	9/92	12/92	NOTES
		REHABILITATION, RESTORING AND CREATING WETLANDS												
		DEVELOP AND IMPLEMENT A WETLANDS MITIGATION PROGRAM												
FWS	C1a	Develop mitigation criteria		•	-	-	-	-	•					
MD	C1b	Develop and adopt assessment model						•	-	-	•			
FWS	C1c	Investigate fees												To be determined
FWS	C1d	Develop public review procedures							•	-	-	-	•	
		FORMULATE AND BEGIN INCENTIVES PROGRAM												
PA	C2a	Inventory of incentives		•	-	-	-	•						
PA	C2b	Review existing programs						•	-	•				
PA	C2c	Institute recommendations												To be determined
		DEVELOP AN ACQUISITION PROGRAM												
PA	C3a	Inventory land acquisition programs			•	-	-	-	•					
PA	C3b	Review acquisition programs							•	-	-	-	•	
PA	C3c	Institute recommendations												To be determined
PA	C3d	Evaluate program effectiveness												To be determined

Glossary of abbreviations used to designate lead agencies can be found at the end of the plan.

WETLAND IMPLEMENTATION PLAN TASK CHART

LEAD AGENCY	TASK NO.	TASK NAME	7/90	9/90	12/90	3/91	6/91	9/91	12/91	3/92	6/92	9/92	12/92	NOTES
		EDUCATION												
		DEVELOP CURRENT INFORMATION PROGRAM												
ACE-N	E1a-c	Develop current info program		•	→	→	→	→						
		DEVELOP LIBRARY AND DATA BASE												
EPA-CBP	E2a	Identify System			•	→	→							
EPA-CBP	E2b	Implement recommendation					•	→	→					
		FORMULATE AND BEGIN TECHNICAL TRAINING PROGRAM												
EPAIII	E3a	Identify State efforts		•	→	→								
EPAIII	E3b	Designate Federal assistance				•				•				
EPAIII	E3c	Certification program												To be determined
		DEVELOP TECHNICAL ASSISTANCE PROGRAM												
LGAC	E4a	Develop coordination			•	→	→							
LGAC	E4b	Implement assistance												To be determined
LGAC	E4c	Establish central information sources		•	—	•								
		DEVELOP WETLAND CURRICULA												
FWS	E5 a-c	Develop curricula								•	—	—	•	
		RESEARCH												
		ESTABLISH RESEARCH PROCESS												
VA	R1a	Organize research structure		•										
VA	R1b	Inventory projects and sources		•	—	•						•	→	
VA	R1c	Distribute info to users						•						Every two years
VA	R1d	Develop & Implement procedures to ensure availability of information						•	→	→				

Glossary of abbreviations used to designate lead agencies can be found at the end of the plan.

CHAPTER II. INTRODUCTION

The announcement by President Bush of a national "no net loss" wetlands policy is the result of growing public concern about the rapid loss of these important resources. Wetlands provide essential breeding, spawning, nesting and wintering habitats for a major portion of the region's fish and wildlife. In addition, wetlands function to purify surface water, moderate flood flows, maintain year round stream and river flows, reduce erosion and support commercial fishery and recreation industries.

Chesapeake Bay watershed wetlands are recognized as some of the most important wetlands in the United States and have received worldwide recognition as "Wetlands of International Importance Especially as Waterfowl Habitat" under the 45 nation Ramsar Convention treaty. Millions of recreationists and students enjoy the richness of Chesapeake Bay wetlands every year in local, state and national parks, forests and wildlife refuges.

Wetlands lie within the transition areas between better drained, rarely flooded uplands and permanently flooded deep waters such as rivers, ponds, lakes and coastal embayments. According to US Fish and Wildlife Service studies, tidal and nontidal wetlands occupy about three percent of the Chesapeake Bay watershed or approximately 1.2 million acres. (These figures do not include farmed wetland acreage.) More than 80 percent of these wetlands are nontidal, predominantly forested wetlands. The remaining 20 percent of Chesapeake Bay wetlands are tidal wetlands which consist largely of tidal marshes and mud flats. These areas are periodically flooded by salt or brackish water.

The Chesapeake Bay watershed experienced substantial losses of wetlands between the mid 1950s and late 1970s. Annual losses averaged over 2,800 acres. Tidal marshes were reduced by about nine percent, whereas nontidal vegetated wetlands were reduced by six percent. With increasing population growth and development in the Bay watershed wetland losses continue.

In recognition of the importance of wetlands to the environmental quality and economic productivity of the Bay, the Chesapeake Executive Council adopted the Chesapeake Bay Wetlands Policy (the "Policy") in December 1988. The Policy includes a commitment to adopt implementation plans for the Policy by June 1990. In response to this commitment, the Living Resources Subcommittee appointed a workgroup of representatives from the public and private sectors to develop the Chesapeake Bay Wetlands Policy Implementation Plan (the "Plan.")

A description of the Plan tasks, implementors and schedules is presented in Chapter III. Information about Plan financing is presented Chapter IV. The Plan recommends immediate actions to prevent the loss of existing wetlands, and long-term actions to protect and increase wetlands resources in the future. By providing better information and increasing communication among multiple Bay agencies, Plan implementation will make it easier for land owners, developers, public officials and citizens to protect, increase and enjoy Chesapeake Bay wetlands.

CHAPTER III. IMPLEMENTATION PLAN

A. Plan Framework

The Chesapeake Bay Wetlands Policy (the "Policy") stipulates some time periods for implementation actions which influence the form of the Chesapeake Bay Wetlands Policy Implementation Plan (the Plan.") These schedules include cooperative, comprehensive mapping of all wetland areas at a time interval of not less than every ten years, a statistically valid status and trends analysis every five years, and a continuing cumulative impact assessment.

Implementation of the Policy will be accomplished with a combination of existing and new programs administered by many jurisdictions and organizations. This includes the states of Pennsylvania, Virginia, and Maryland, the District of Columbia, numerous Federal agencies (some with mandated roles in wetland management), many local jurisdictions, public organizations and the private sector. The Plan is constructed in recognition that all of these institutions have varying capabilities to respond in terms of priorities, financial resources, and institutional support.

In response to the varying approaches to wetlands protection in each jurisdiction, the Plan has been designed to guide evolving state, federal and local programs by outlining immediate regional actions and longer term jurisdictional actions that will accomplish the goals of the Policy. Accordingly, the tasks proposed can be considered in three phases, moving from current conditions into the future as envisioned by the signatories of the Policy.

Immediate actions are taken in the first phase of implementation to improve the effectiveness of existing programs, establish a baseline from which to measure the success of future actions, and define additional actions needed to accomplish the long range goals of the Policy. Because these tasks build upon programs already in place, the federal role in this initial stage (especially for nontidal wetlands protection) is substantial.

A program which is critical in this phase is the Federal Clean Water Act (CWA) Section 404 program which regulates the discharge of dredged or fill material. In addition, the "Swampbuster" provisions of the 1985 Farm Bill are important to address wetland loss due to drainage and cropping. During this phase the states will build upon the Clean Water Act Section 401 certification authority and other state programs already in place. As states develop more advanced protection programs, their role in the implementation of the Policy will increase in relation to the federal role .

In recognition that near term budgets are substantially committed, tasks in the first phase of Policy implementation utilize existing information to target and hold down costs of actions in future phases. The most significant of these tasks is to develop a Baywide management strategy to target regional funds and actions to achieve the goals of the Policy.

In the second implementation phase, regional, technical tasks are implemented to support future, long range actions and measure success. Tasks in this phase initiate mapping, inventorying and monitoring programs and develop and implement a compensatory mitigation program. Education and research efforts will accelerate in this phase as well. These and many other actions on the local, state and federal levels will begin to accomplish the goal of no net loss.

In the third phase of Policy implementation, new programs are initiated to achieve no net loss and reach for the long term goal of net resource gain. Tasks in this phase provide increased coordination among wetland management programs and other pollution control and living resource

management programs. Examples of tasks in this phase include more detailed Baywide wetland management planning, implementation of incentive programs and coordination of acquisition programs. Increased education efforts will be essential for implementing these advanced programs.

The Chesapeake Bay Wetlands Policy requires that the Living Resources Subcommittee provide an annual report to the Chesapeake Executive Council about the status of the implementation programs and the effectiveness of the Policy goals in achieving protection and restoration of Chesapeake Bay wetlands. While the annual report can describe the status of programs, it is too frequent to provide a comprehensive assessment of progress towards achieving the Policy goals. For this reason, the Plan includes a cyclic progress evaluation every five years based on the statistical analysis of status and trends required by the Policy. The first five year analysis and evaluation will be in 1995, with others every five years subsequently. The baseline that will be used for the first cycle will be defined in 1990/1991.

Recognizing that jurisdictions will go through the phases of implementation at different speeds, and with somewhat different approaches, the periodic progress evaluation each five years, based on changes in wetland resources, will provide a common perspective from which to measure achievements and refocus efforts.

Oversight of Plan implementation will be provided by the Wetland Workgroup, composed of representatives of lead implementing agencies, scientists and citizens. Representatives of organizations who have an interest in participating in the implementation of Plan tasks will be given an opportunity to be involved. Mailing lists of interested people will be maintained by the Living Resources Subcommittee to provide notices of meetings, reports and other information about Policy implementation.

B. Plan Tasks, Implementors and Schedules

Each of the Plan's five focus area sections are organized as follows:

Policy Commitments: Commitments from the Chesapeake Bay Wetlands Policy are quoted in *italic* at the beginning of each section. Each Policy commitment is assigned a capital and lower case letter designation. These letters are cited after Plan tasks to enable the reader to relate Plan tasks to specific Policy commitments. Capital letters correlate with focus areas as follows: Inventory and Mapping (M), Protecting Existing Wetlands (P), Restoring, Rehabilitating and Creating Wetlands (C), Education (E) and Research (R).

Current Programs: A brief summary of existing wetland protection and management programs and gaps for accomplishing the Policy commitments quoted above is provided.

Tasks: The implementation tasks needed to accomplish the commitments from the Policy are listed in tables with recommended implementors and schedules. Each major task is assigned a capital letter and number designation. The capital letters correlate with the focus areas (as explained in "Policy Commitments" above.) The Policy commitments addressed most directly by each implementation task are referenced in brackets after each major task.

Implementors: The organization with lead responsibility for coordination and completion of each task (the "lead" agency) is listed first before other major organizational participants. The abbreviations used to identify implementors are defined in the glossary found at the end of the Plan.

Schedule: Dates for implementation are specified for immediate tasks that build upon existing programs, provide essential support for future actions and require close coordination among jurisdictions. The dates established will provide information for budget planning and implementation before the five year status and trends assessment in 1995. Dates scheduled for "first phase" implementation tasks are designated with an asterisk (*).

Time frames for long range tasks are noted to indicate that implementation is dependent upon the completion of other tasks ("To be determined") or that their scheduling is cyclic ("1992, every year"; "1995, every five years".)

1. DEFINING THE RESOURCE: INVENTORY AND MAPPING

Chesapeake Bay Wetlands Policy

The following are the Chesapeake Bay Wetlands Policy commitments for inventorying and mapping in the Agreement Commitment Report signed by the Chesapeake Executive Council:

- *"The signatories shall collectively design and institute a wetland resource monitoring strategy which will provide for a continuing quantitative evaluation of wetland distribution and functional characteristics.*

Actions:

[M] Formulate and begin execution of a comprehensive inventory, mapping, and monitoring plan which, at a minimum, includes:

[M(a)] A cooperative, comprehensive mapping of all wetland areas at a time interval of not less than every ten years.

[M(b)] A statistically valid status and trends analysis every five years.

[M(c)] A continuing cumulative impact assessment.

[M(d)] A monitoring program for existing wetlands sites of various types within selected physiographic regions to quantify functions and values and document changes occurring over time within these systems.

[M(e)] A monitoring program for invasive or exotic species and appropriate control methods.

[M(f)] A regional data base of permitted activities."

Current Programs

Numerous federal, state and local wetlands inventory and mapping programs already exist. These programs exhibit a variety of mapping uses, scales and methods.

The National Wetlands Inventory (NWI) is the only comprehensive watershedwide mapping system. However, NWI has shortcomings. Farmed nontidal wetlands are not included in the inventory. These maps exclude many unfarmed wetlands as well, especially the nontidal wetlands which constitute the majority of wetlands in the Bay watershed. The 1:24,000 scale of the NWI is difficult to use for local development planning and review. Maps are needed that can be overlaid with local maps and plans.

National Wetlands Inventory maps have been produced for all of Maryland, Pennsylvania, and Virginia by the US Fish and Wildlife Service. Maps produced with older black and white aerial photographs are less inclusive of all wetland types and sizes than those produced later with color infrared photographs. Maps in Virginia east of the 78th parallel are the most out dated NWI maps in the Bay watershed. Not all Chesapeake Bay NWI maps have been digitized, nor is NWI's MOSS format compatible with most other Bay area geographic information systems.

Maryland has produced Nontidal Wetlands Guidance Maps that are a composite of SPOT satellite images and National Wetlands Inventory (NWI) vector data. Map Image Processing Systems (MIPS) is used by Maryland to store, access, and analyze digital image data for nontidal wetlands and a wide variety of other purposes. MIPS is also used by Maryland's Tidal Wetlands Program to store 1885 aerial photography at a scale of 1"=1000'. Maryland has committed to using computer technology to effectively meet the requirements of the Chesapeake Bay Wetlands Policy.

The agencies of the Commonwealth of Virginia have been working cooperatively in recent years to complete the wetland mapping in Virginia and to update those maps in the coastal areas. The ultimate goal is to have up to date and digitized maps of the entire state incorporated into the Virginia digitized database to facilitate planning and protection efforts and track wetland losses and gains.

The NWI has recently been revised for that portion of Virginia west of the 78th parallel (I95). The VA Department of Conservation and Recreation has contracted with the US Fish and Wildlife Service to digitize these new maps as well as begin the remapping and digitizing of Tidewater or coastal Virginia. All digitized data will be made available to the resource and regulatory agencies of the Commonwealth and the federal government.

NWI maps for Pennsylvania have been completed. To date, Pennsylvania has not developed a statewide geographical information system.

Some local governments throughout the watershed have undertaken wetland inventory and mapping programs to assist in land use planning and wetlands protection efforts. A number of these local efforts are being conducted in response to state programs like the Maryland Critical Areas Law, and the Virginia Chesapeake Bay Preservation Act criteria. In addition, the watershed's local governments through their own initiative have undertaken additional wetland mapping and inventory responsibilities, often in conjunction with other local governments and the Soil and Water Conservation Districts.

Obtaining available maps and statistics is time consuming and difficult for users. The Bay community lacks a clearinghouse for identifying mapping resources and needs. Many Bay agencies invest in mapping products and GIS capabilities to meet specific agency needs. More interagency coordination is needed to enhance the usefulness and economy of such efforts.

There is no comprehensive program to assess the functions of wetlands, to identify or monitor direct, indirect or cumulative impacts, or to evaluate the effectiveness and need for specific management techniques. The limited information generated by the US Fish and Wildlife Service about trends is dated and is not specific enough for state and local program planning and evaluation. There are no plans for the Service to perform a new status and trends assessment. With increasing urbanization in the Bay watershed, frequent updates of trends analyses are needed.

The Baltimore District Corps of Engineers has implemented a computer driven "Permit and Enforcement System". This system is being used by the Philadelphia District and is scheduled to be used by the Norfolk District to provide computerized information about permitted activities. The state of Virginia maintains a permit tracking database for tidal wetlands.

Pennsylvania uses a permit application tracking system (state data base called LUMIS) to determine status, turn-over time and location of applications requesting permission to impact wetlands. The state of Maryland established a permit tracking data base in 1989 that monitors tidal wetlands. Maryland will convert both its tidal and nontidal wetland permit tracking systems in 1991 to the RAMS software developed by the U.S. Army Corps of Engineers.

Alterations to wetlands that are permitted are not currently recorded in regionally comparable formats to summarize the magnitude of permitted activities and the potential impact those decisions have on Chesapeake Bay wetlands. The impact of past decisions are virtually unknown. The current inadequate and inaccessible data base weakens enforcement. In summary, current limitations of existing programs Baywide are incomplete data, data incompatibility among jurisdictions, inefficient access for multiple users, inadequate storage, and lack of analytical capabilities.

Implementation Tasks

M1. Develop and implement a ten year cyclic mapping program to map all tidal and nontidal wetlands in the Chesapeake Bay watershed at a scale and resolution needed to support the actions specified in the Policy. This program will result in the development of new mapping programs in some states but will require the updating of NWI maps and digitization of SCS hydric soils information at a minimum. Federal agencies and states will implement this mapping program on a schedule that correlates with individual state programs. The maps created are intended to provide more reliable indications of wetland locations. These and other maps should not be used to substitute for on the ground identification and delineation. This task will contribute to the accomplishment of Policy action [M(a)].

Implementor	Implementation Task	Schedule
Lead: Other: States LGAC FWS SCS NOAA	a. Develop a regional ten year cyclic mapping program for the Chesapeake Bay watershed wetlands. Recommendations will include an assessment and report of existing mapping programs, recommended actions, costs, responsible agencies and an implementation schedule based on funding and manpower objectives (see Task P2). At a minimum, the mapping program will provide for the updating of NWI and the digitizing of SCS hydric soils information for the purpose of overlaying these two sources of information. Though the accuracy of the early mapped data will vary, the long range objective of the program will be to produce maps with one acre resolution for local and regional land use planning and review. (As the technology improves, the products will reflect revisions to the minimum size mapped.) Recommendations will include mapping standards to allow exchange of information among users and overlaying of wetland maps with other resource and land use maps. The long-term product will provide information about wetland locations, types, acreage and functions. This information will be provided in a form that can be conveniently incorporated with information about hydric soils location and series names, adjacent steep slopes, and erodible soils; perennial waterways; existing land use; and other important natural features. The mapped products will be accessible and useful to local, state and federal public and private users but will not be intended to substitute for on the ground identification and delineation.	9/90->*

(Above)	b. Accomplish the mapping as agreed to in the mapping program developed in (a) above for the ten year cycle as resources permit..	To be determined
(Above)	c. Make hard copy maps of current wetlands information accessible to the public (see Tasks E2 and E4c).	To be determined
(Above) EPA-CBP	d. Establish a central clearinghouse to facilitate access to existing and proposed federal, state and local aerial photographs of the Bay region. Produce a regularly updated list of the date, type, scale and agency in possession of the photography.	6/91*

M2. Initiate a five year cyclic analysis of the status and trends of Bay watershed wetlands. Within the limits of the data available, the analysis will provide a statistically valid description of changes in wetland locations, types, acreage and functions and the causes of those changes. This task includes the establishment of a baseline, development of an annual monitoring and inventory program and production of a five year status and trends assessment. This task will contribute to the accomplishment of Policy actions [M(b,c,d,e)].

Lead: FWS Other: All	a. Define baseline conditions with which to measure progress towards achieving net resource loss and gain.	9/90->*
	1) Produce a summary report of existing information about Bay watershed wetland locations, types, acreages, functions and threats. The report will include information available about the following topics: - gains and losses of wetlands acreage and functions; - the sources and effects of direct, indirect and cumulative impacts, distinguishing the impacts of permitted and unregulated activities where possible; - extent and control of exotic species; - success and failure of restoration, rehabilitation and creation projects; - trends in wetland ownership; - endangered, threatened or rare species habitat; - significant, representative or unique wetland areas within watersheds; - wetland areas subject to high growth pressure; - regions of high historic wetland loss; - wetlands contiguous to other protected open space.	9/90-12/90

	2) Define a baseline of Bay watershed wetland locations, types, acreages and functions which will be used to assess progress in achieving the Policy goals of no net loss and net resource gain (Task P5). Information about functions will be qualitative in nature. The baseline estimate should draw upon the best information and statistical sampling methods available at the time of its development. The definition should include a description of the limitations of the information and methods used.	1/91-6/91
	3) Prepare a report describing the initial baseline that will be used in the five year status and trends analysis in 1995.	6/91-12/91
	4) Produce a report describing a revised baseline estimate every five years in coordination with the five year status and trends assessment (Task M2c).	6/95-12/95 every five years
Lead: NOAA Other: All	b. Design and initiate a monitoring and inventory program for Bay watershed wetlands.	6/90-9/91* 3/92->
	1) Draft a prototype Baywide monitoring and inventory program. This prototype will provide information for developing state monitoring programs.	6/90-9/91
	2) Incorporate applicable components of the prototype monitoring and inventory program into federal, state and local monitoring programs.	9/91-3/92
	3) Conduct the monitoring and inventory program as resources permit.	3/92->
	4) Produce annual monitoring reports. The reports will summarize information from mapping, monitoring and permit tracking relevant to topics specified for the five year status and trends assessment in Task M2a1.	9/92, every year
Lead: FWS Other: All	c. Produce a statistically valid status and trends assessment every five years beginning in 1995. The reports will address the topics specified in Task M2a1. The assessment will take into account the limitations of the information and methods described in the baseline.	1/95-6/95, every five years

M3. Provide an example of Policy implementation with the management of publicly owned wetlands in the Chesapeake Bay. This task will contribute to the accomplishment of all policy actions.

Lead: FWS Other: States DC LGAC Federal	a. Identify locations, acreage, types and management objectives for wetlands on all federal, state, and where possible local government owned land in the Bay watershed.	3/91-3/93
(Above)	b. Evaluate effectiveness of agencies' stewardship in achieving no net loss and net resource gain goals and revise plans in coordination with five year progress evaluation (Task P5).	6/95-12/95 every five years

2. HOLDING THE LINE: PROTECTING EXISTING WETLANDS

Chesapeake Bay Wetlands Policy

The following are the Chesapeake Bay Wetlands Policy commitments for protecting existing wetlands in the Agreement Commitment Report signed by the Chesapeake Executive Council:

"Watershed Management and Planning

- *The signatories to this agreement will use existing programs and develop new programs to limit permanent and irreversible, direct and indirect impacts to wetlands. Only in rare instances will losses of wetland acreage or function be allowed or considered justifiable.*
- *The signatories to this agreement will minimize indirect alterations within the watershed which have the potential to adversely impact wetlands.*
- *The signatories will implement management practices designed to reduce cumulative wetland losses.*

Actions:

[PW(a)] The signatories agree to incorporate the principle of wetlands protection and the management of other sensitive Chesapeake Bay living resource habitats into the various strategies, policies and guidelines which will result from Population Growth and Development Commitments of the 1987 Bay Agreement.

[PW(b)] To eliminate or minimize indirect impacts to wetlands, the signatories will coordinate permitting and management programs and the use of protective buffers and other techniques which serve to maintain important and functional characteristics of wetlands.

[PW(c)] The signatories agree to develop a Baywide planning process for wetlands with the goal of protecting wetlands and associated resources through innovative land use controls."

"Regulatory and Protection Standards

- *The signatories will, at a minimum, implement protection standards for those areas and activities not adequately protected under Federal law and programs. These protection standards will address, but not be limited to: enforcement, buffers, protection of basis wetland functions, "best management practices," alternative actions, and water-dependent uses.*

Actions:

[PR(a)] Review the effectiveness of existing regulatory programs and recommend corrective actions to honor the policy commitment and monitor and revise such programs as necessary over time.

[PR(b)] Where not otherwise in place, develop a projected implementation schedule by June 1990 to establish protection standards which honor the policy commitment.

[PR(c)] Cooperatively develop a process to identify and protect wetland areas of special concern, and consider, where appropriate, the institution of procedures under Section 404(c) of the Clean Water Act.

[PR(d)] Work toward the development of a single Baywide field manual for the delineation of vegetated nontidal wetlands.

[PR(e)] Develop a guidance document for regulatory and protection standards."

"Incentives

- *The signatories will collectively develop and execute a range of private sector incentive programs which support wetland protection.*
- *Government sanctioned programs which are counterproductive to wetland protection will be eliminated whenever possible.*

Actions:

[PI] Formulate and begin execution of an incentive policy implementation plan which, at a minimum includes:

[PI(a)] Identifying state and Federal programs or policies which result in wetland losses and correcting program deficiencies.

[PI(b)] Enhancing existing incentive programs to encourage wetland protection.

[PI(c)] Creating new incentive programs to encourage wetland protection.

[PI(d)] Investigating the use of penalties or other disincentives to reduce wetland losses."

"Land Acquisition

- *The signatories will identify priority areas for wetland preservation.*
- *The signatories will provide for acquisition of lands for the purpose of protecting significant wetland values or the public's right to use and enjoy wetlands where such lands are a part of acquisition programs administered by public agencies.*

Action:

[PA] Develop a strategic plan for land acquisition which includes wetlands and appropriate adjacent uplands and aquatic areas as a part of new or ongoing public acquisition programs."

Current Programs

In the past few years much has been done to improve the level of protection of wetlands in the jurisdictions of the signatories of the Chesapeake Bay Wetlands Policy. Regulatory programs have been reinforced with increased personnel, strengthened enforcement and continued education efforts by local, state and federal agencies. The number of wetland protection programs at the local level is growing as the pressure on wetlands intensifies with increasing population growth and

development. Legislation, regulations and policies on all jurisdictional levels are changing rapidly. These changes reflect growing knowledge of wetlands and their management and protection needs. The following is a summary of some of the gaps that remain despite current efforts.

Federal, state and local priorities for wetland management are not well defined. Interagency protection decisions, especially permit decisions, are therefore often difficult to predict by land owners, planners and developers. Current programs for protecting existing wetlands focus on short term and site specific management problems, without priorities for protecting and managing larger resource systems and more significant long term, cumulative threats. In general, current protection and management efforts are focused on controlling direct impacts within jurisdictional wetland boundaries.

Advance identification is a procedure authorized by the Federal Clean Water Act to identify, in advance of individual permit requests, areas that are generally suitable or unsuitable for the deposit of dredged or fill material. This process has been applied only on a very limited basis in the Chesapeake Bay watershed. Advance Identification and other planning tools such as Special Area Management Plans could contribute to the accomplishment of Chesapeake Bay Wetland Policy goals in every area, particularly in reducing the need for and expense of permit review and enforcement by providing advanced guidance. The urgent need to apply the limited funding and personnel available to permit review and enforcement is the largest reason cited for not making resources available for advance identification.

Section 404 of the Clean Water Act establishes federal authority to protect waters of the United States (including tidal and nontidal wetlands) from the impacts of the discharge of dredged or fill material. This legislation does not require permits for clear cutting wetland vegetation, drying up wetlands by diverting or withdrawing water, or digging out wetlands unless a discharge is involved. The Section 404 program provides for general permits which currently may allow filling of up to ten acres of isolated and headwater wetlands (wetlands adjacent to small streams.) Federal, state and local protection efforts are weakened significantly because of the lack of personnel and funds for enforcement.

Some of the activities impacting wetlands which are not addressed by federal laws are addressed by Maryland's state Critical Area Tidal Wetlands and Wetland Protection laws. Maryland's Nontidal Wetlands Protection Act is the first state wetlands statute with "no net loss, and eventual resource gain" as the main goal. Regulations approved by the Maryland legislature this year for the Nontidal Wetlands Protection Act will be implemented beginning in January 1991. Maryland has been regulating the dredging, filling and alteration of tidal wetlands since the passage of the Tidal Wetlands Act in 1971.

Pennsylvania regulates activities in wetlands under the authority of the Dam Safety and Encroachments Act of 1978, and the rules and regulations developed pursuant to that Act found at Title 25 Pennsylvania Code Chapter 105. These rules and regulations provide greater protection to wetlands than the current federal program developed under the authority of the Clean Water Act.

Pennsylvania has implemented an aggressive wetland protection program which is guided by the "Department of Environmental Resources Wetlands Protection Action Plan" which was issued on September 19, 1988. That plan focuses on strengthening the existing program through improved permit coordination, increased permit review and field enforcement staff, the creation of an education and technical assistance program, and the adoption of the Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The plan also calls for improvements to the present regulations to clarify and further define the Commonwealth's role in wetlands regulations and protection.

Since the passage of the Tidal Wetlands Act in 1972, Virginia has had a permit program for activities in tidal wetlands. Until recently Virginia relied upon federal legislation for the protection of nontidal wetlands. The passage of legislation establishing the Chesapeake Bay Preservation Act will increase protection to tidal and nontidal wetlands in Tidewater Virginia. The Virginia Water Protection Permit Program will also increase Virginia's role in protecting nontidal wetlands.

Many agricultural activities are exempt from federal and state regulatory programs. The major program addressing agricultural drainage of wetlands is the "Swampbuster" provision of the 1985 Food Security Act (Farm Bill). Farmers who fill or drain wetlands and plant commodity crops are subject to loss of federal agricultural subsidies.

Though the ACE permit tracking system provides a start, existing permit tracking systems do not to provide information to assess the impacts of permitted activities, to facilitate coordination of approval and enforcement action among agencies, or to provide easier access for permit applicants to information about the status of their permits.

Regulatory and protection standards are not agreed upon among public agencies. Such agreements would increase consistency and ease of application for multiple reviewers and applicants in the Chesapeake Bay watershed. Innovative protection and management approaches are often discouraged because of lack of standards, manpower, and expertise to assess, follow up and enforce special conditions. Public works standards and other local development guidelines are often in conflict with resource protection goals and limiting to innovative management solutions.

A significant component of wetlands protection programs is a sound and usable method for determining the location of these resources. As wetlands programs continue to develop within the Bay watershed, the use of a consistent methodology for identifying wetlands is an important goal. The Federal Manual for Identifying and Delineating Jurisdictional Wetlands ("Manual") was adopted in 1989 by the US Army Corps of Engineers, US Soil Conservation Service, US Fish and Wildlife Service, and the US Environmental Protection Agency to provide a consistent methodology for determining the location of wetlands. Pennsylvania and Maryland have adopted the Manual for the administration of their wetland regulatory programs. The Manual will continue to provide the methodology for the full range of wetlands determininations. However, as research and program development in the area of wetlands types and functions progress, refinements may be made to the relationship between various types of wetlands identified through the use of the Manual and specific wetlands program procedures.

The most visible incentives for wetlands protection are negative incentives such as penalties for permit violation. A significant exception is the conservation reserve program which pays farmers to take certain areas out of production including farmed wetlands and buffers around wetlands. Despite their innovation, programs such as tax incentives and transfers of development rights are not yet found in many areas of the Bay region.

Conservation easements are restrictions on the use of land for the purpose of preserving its natural features. Easements can be a very effective tool for wetland protection and also benefit the landowner who may receive monetary compensation or tax benefits for granting the easement. However, the success of conservation easements as a wetland protection tool is dependent upon the willingness of property owners to sell or donate their rights to develop their land. Public and private acquisition efforts often are not planned to reinforce each other to efficiently protect wetland systems.

Implementation Tasks

P1. Develop technical guidelines for wetlands protection for land owners, developers and regulators to use for the design and evaluation of regulated and unregulated activities. Substantial efforts are already underway and proposed by the regulatory agencies in this task area. This task will identify procedures that can be used to assess and minimize the wetland impacts of proposed projects and actions. This task will contribute to the accomplishment of the Policy actions [PR(a), P(b) and PR(e)].

Implementor	Implementation Task	Schedule
Lead: EPA III Other: All	a. Produce and distribute a wetlands protection guidance document. The document will describe technical procedures for the design and evaluation of projects and actions potentially affecting wetlands. It will address the following elements of wetland protection at a minimum: buffers, protection of basic wetland functions, "best management practices," alternative actions, water dependent uses, long term maintenance, and enforcement. Protection procedures may vary among jurisdictions.	9/90-12/91*
(Above)	b. Use the guidance document developed in (a) above to evaluate proposed projects and actions. Recommend and take actions where feasible to implement the protection procedures.	9/92->
(Above)	c. Evaluate effectiveness of the wetlands protection guidance document in (a) above in coordination with the five year program evaluation (Task P5).	1995, every five years
Lead: EPA III Other: States	d. Produce or update a handbook similar to that developed by the Environmental Law Institute for Pennsylvania and Maryland for use by citizens and local officials to summarize current wetland protection and management programs and to provide information about actions that can be taken at the local level to protect wetlands.	To be determined
Lead: EPA III Other: All	e. Use the Federal Manual for Identifying and Delineating Jurisdictional Wetlands as the technical basis for the consistent identification of wetlands in all Bay states and work to refine the relationship between various types of wetlands identified under the Manual and specific wetlands program procedures.	12/90->*

P2. Identify a Bay wetlands protection strategy based on information about existing state and federal programs and the status of Bay wetlands. State and federal program priorities will be identified in the Bay strategy to provide guidance for targeting funds and regional actions to achieve the goals of the Chesapeake Bay Wetlands Policy. This task will contribute to the accomplishment of Policy actions [PW(c), PR(c), PA and CA(b).

Lead: VA Other: All	a. Compile a description of existing state and federal programs and objectives for managing and protecting wetlands in the Chesapeake Bay watershed. Informatiocompiled will include identification of:	
	1) program priorities,	
	2) wetlands designated for special management actions such as restoration, rehabilitation and expansion (or established processes and criteria to identify such wetlands), and	
	3) wetland resource management objectives.	9/90-6/91*
(Above)	b. Conduct demonstration watershed management projects in targeted areas to provide examples of Chesapeake Bay Wetlands Policy implementation.	9/90->*
(Above)	c. Develop a Baywide wetlands management strategy based on existing state and federal management programs (Task P2a) and the summary of existing information about Bay wetlands (Task M2a).	12/91-12/92*
(Above)	d. Target Chesapeake Bay Wetlands Policy Implementation Plan tasks and funds to implement the Baywide wetlands management strategy.	1992-1995
(Above)	e. Evaluate the adequacy, gaps, and linkages among existing regulatory programs to achieve the goals of the Chesapeake Bay Wetlands Policy. Report and implement improvements which are needed including recommended sources of funding.	1/92-12/92*
(Above)	f. Revise state and federal management programs and objectives and the Bay wetlands management strategy as part of the five year cyclic evaluation of progress towards achieving the goals of the Chesapeake Bay Wetlands Policy (Task P5). Evaluations will be based on the results of the annual and five year status and trends reports (Task M2).	1995, every five years

P3. Coordinate with the Population Growth and Development Subcommittee to ensure the incorporation of the principles of wetlands protection and the management of other sensitive Chesapeake Bay living resource habitats into the various strategies, policies and guidelines which will result from the Population Growth and Development Commitments of the 1987 Bay Agreement. This task will contribute to accomplishing Policy action [PW(a)].

Lead: LRS	a. Coordinate with the Population Growth and Development Subcommittee to identify innovative and existing land use controls for wetlands protection and creation and ensure the incorporation of wetlands protection into Subcommittee proposals.	9/90->*

P4. Create a permit tracking system that will provide information for an assessment of the cumulative impacts of permitted activities. This system should be accessible to all state and local regulators and should include information about predeveloped conditions, actions taken and resulting impacts that can be used to follow up protection and mitigation actions. This task will contribute to accomplishing Policy actions [M(f), PW(b)].

Lead: ACE-B Other: States LGAC EPA III FWS NOAA	a. Investigate the usefulness of the NMFS, ACE and other regional permit tracking systems as a foundation for networking federal, state and local data collection, analysis, and access. The tracking system should provide information about types of wetlands, acreage, location, kind of impacts, mitigation, violations and enforcement actions.	9/90-12/90*
(Above)	b. Initiate or refine federal, state and local permit tracking programs to increase compatibility as resources permit.	1/91-12/91*
(Above)	c. Produce a report of data for inclusion in the annual and five year status and trends reports (Task P5).	6/92, every year

P5. Provide an annual and five year evaluation of progress towards accomplishing the Chesapeake Bay Wetlands Policy goals based on the results of the annual and five year status and trends reports produced with Task M2.

Lead: EPA-CBP Other: LGAC LRS	a. Produce an annual report of progress in accomplishing the Chesapeake Bay Wetlands Policy goals as part of the annual Chesapeake Bay Program Progress Report. The report will be a summary of reports from separate program areas including annual monitoring results (M2b4).	12/90, every year

(Above)	b. Produce a five year summary of progress in accomplishing the Chesapeake Bay Wetlands Policy goals based on the results of the five year status and trends reports produced with Task M2. Present the report to the Chesapeake Executive Council.	12/95, every five years
(Above)	c. Examine adequacy, gaps, and linkages among existing programs to achieve the goals of the Chesapeake Bay Wetlands Policy. Outline and implement improvements to regulatory and nonregulatory programs which will accomplish Policy goals. Provide a report of program evaluations and recommended improvements, including recommended sources of funding (see P2e).	1/92-12/92

3. BUILDING THE BASE: REHABILITATING, RESTORING AND CREATING WETLANDS

Chesapeake Bay Wetlands Policy

The following are the Chesapeake Bay Wetlands Policy commitments for rehabilitating, restoring, and creating wetlands in the Agreement Commitment Report signed by the Chesapeake Executive Council:

"Mitigation

- *Mitigation will be included for any project conducted by or subject to review or approval by the signatories.*
- *Compensatory mitigation shall proceed from the presumption that "in kind, on site" is the preferred solution. Other solutions, including off site and out of kind mitigation, will only be allowed when acceptable to public/government agencies and performed in the context of watershed management planning or other specific objectives.*
- *The signatories shall require that compensatory mitigation projects incorporate public or private arrangements for long-term management.*
- *Compensation projects will generally be designed and evaluated cooperatively among project sponsors, the signatories, and appropriate public and private entities.*
- *Monitoring and evaluation of the success of compensatory mitigation replacement projects shall be incorporated by the signatories as a fundamental part of the mitigation process.*

Actions:

[CM] The Federal signatory, in consultation with appropriate government agencies, will develop updated standards and criteria in compliance with the overall wetland protection goals and specific mitigation policies incorporating state-of-the-art technological, ecological and biological applications."

"Incentives

- *The signatories will collectively develop and execute a range of private sector incentive programs which encourage rehabilitation, restoration, and creation of wetlands.*

Actions:

[CI] Formulate and begin execution of an inventive policy implementation plan which, at a minimum, includes:

[CIB(a)] Enhancing existing incentive programs to encourage the rehabilitation, restoration and creation of wetlands.

[CI(b)] Creating new incentive programs to encourage rehabilitation, restoration, and creation of wetlands."

"Land Acquisition

- *The signatories will facilitate acquisition of lands for wetland rehabilitation, restoration, and creation projects beyond that achieved through compensatory mitigation.*

Actions:

[CA(a)] Develop criteria for the identification of areas where rehabilitation, restoration and creation projects can be undertaken.

[CA(b)] Develop a plan for the acquisition of land and property interest in areas where wetlands rehabilitation, restoration and creation projects will be undertaken."

Current Programs

All three Bay states require some mitigation for unavoidable permitted impacts to tidal wetlands. Policies to require mitigation for permitted impacts to nontidal wetlands have been developed in Maryland and Pennsylvania and are under consideration in Virginia. However, mitigation is still not required for many regulated activities which result in wetland impacts. When mitigation is required, clear guidance is not established for either regulatory agencies or regulated communities.

The inexact science of freshwater wetland restoration and creation often results in unsuccessful attempts at mitigation, frequently provides little insight into appropriate management strategies and frequently makes it difficult to determine whether a project is successful. Closer monitoring of current and future projects is needed to address this lack of scientific knowledge and technical skills. As our body of knowledge and skills expands, it should provide the basis for a continual evolution in appropriate protection programs.

Investments in restoration, rehabilitation and creation are discouraged by institutional barriers, lack of access to suitable sites and lack of experience and success with wetland restoration and creation technology. In addition to these negative incentives, few positive incentives exist to encourage efforts to achieve net resource gain.

Existing incentive and land acquisition programs are insufficient because they do not specifically target money for wetland restoration, rehabilitation and creation efforts, nor do they offer clear policy guidance. Incentive and acquisition programs should be strengthened to take advantage of the best opportunities for successful restoration and rehabilitation projects. This effort would contribute significantly to a net resource gain in wetland resources.

Implementation Tasks

C1. Develop and implement a replacement mitigation program for wetland impacts. Replacement mitigation shall be defined as the construction, restoration or enhancement of wetland acreage and function to mitigate for wetland impacts that cannot be avoided, minimized, rectified or reduced. The mitigation program will incorporate the technical guidance established for protecting existing wetlands (Task P1). This task will contribute to the accomplishment of Policy action [CM].

Implementor	Implementation Task	Schedule
Lead: FWS Other: States DC Federal	a. Develop advisory criteria for review and approval of mitigation plans. Criteria will incorporate wetland functional analysis and acreage calculations for wetland impacts using a model as specified in task (b) below.	10/90-12/91*
Lead: MD Other: (Above)	b. Develop and adopt a wetland assessment model to determine the wetland functions which are being affected by proposed work. The model should be developed to maintain consistency in the application of functional assessment analysis.	10/91-6/92
Lead: FWS Other: (Above)	c. Investigate the feasibility of a system for requiring and using a fee (impact, application, etc.) when permit applicants are not required to conduct replacement mitigation or when applicants are required to conduct replacement mitigation at a replacement ratio less than 1:1 according to federal and state permit requirements.	To be determined
(Above)	d. Each of the states and federal agencies will evaluate procedures for public review of and comment on compensatory mitigation. Recommend and adopt improvements as appropriate.	1/92-12/92

C2. Formulate and begin execution of incentive programs to achieve no net loss and net resource gain. This task will contribute to the accomplishment of Policy action [C1].

Lead: PA Other: All	a. Prepare an inventory report of all existing and potential incentives for wetland protection, restoration, rehabilitation and creation.	9/90-9/91

(Above)	b. Each state and federal agency will review existing programs to make recommendations about how incentives identified above can be incorporated. Provide a report of recommendations.	9/91-12/91
(Above)	c. Institute recommendations above as appropriate and make information about incentives available to the organizations targeted by them.	To be determined

C3. Develop a land acquisition program that builds upon current acquisition programs where they exist. The program will use the Bay and state management strategies for the identification of areas when acquisition for protection, rehabilitation, restoration and creation projects can be undertaken. (See Task P2.) The program will support protection programs for purposes of "no net loss", but will provide a more important role in contributing to "net resource gain" by identifying and providing opportunities for wetland creation. This task will contribute to the accomplishment of Policy action [CA].

Lead: PA Others: All	a. Prepare an inventory of all existing and potential land acquisition programs for wetlands protection, restoration, rehabilitation, and creation.	1/91-12/91
(Above)	b. Review and recommend improvements to acquisition programs for wetland protection, restoration, rehabilitation and creation in regard to the implementation of the Bay and state wetland management objectives identified with Task P2.	1/92-9/92
(Above)	c. Institute recommended changes where feasible to implement Bay and state wetland management objectives.	To be determined
(Above)	d. Reevaluate program effectiveness in coordination with annual and five year Bay program reassessment (Task P5).	To be determined

4. EXTENDING THE VISION: EDUCATION

Chesapeake Bay Wetlands Policy

The following are the Chesapeake Bay Wetlands Policy commitments for education in the Agreement Commitment Report signed by the Chesapeake Executive Council:

- *"Develop and maintain ongoing education and training programs, technical assistance services, and wetland data base systems to improve our understanding of wetland values, functions, management techniques, status, and trends.*

Actions:

[E] Formulate and begin execution of an education plan which, at a minimum, includes:

[E(a)] A current information program available to the public on the values of and need to protect wetlands.

[E(b)] Development of a Baywide library system and data base for wetland information.

[E(c)] Technical training programs for government representatives, consultants, land developers and interested parties in the areas of wetland identification, delineation, functional assessment, and mitigation practices.

[E(d)] Development of technical assistance programs to support local government protection efforts, including mapping, management programs, model ordinances, etc.

[E(e)] Development of wetland curricula for academic institutions."

Current Programs

Many existing programs contribute or have the potential to contribute to the accomplishment of the Chesapeake Bay Wetlands Policy education objectives. These private and public efforts effectively accomplish specific audience needs. The following is a summary of some of the gaps left by existing programs for accomplishing the education objectives of the Policy.

The most frequent and urgent request for education and information about wetlands is for current information about wetland locations, values and management requirements. The only comprehensive inventory of wetlands, the National Wetlands Inventory (NWI), fails to provide complete information about wetland locations. The maps most frequently used to provide information about wetlands for local development planning, the Soil Conservation Service Soil Surveys, are not designed to provide information about wetlands and are of a scale and format that is difficult to overlay with other mapped information. Programs are not developed in the Bay states to collect or analyze the data available to determine wetlands trends and threats. Information about wetland regulations and management techniques is also difficult to collect and interpret.

The State of Maryland has been offering workshops for several years about wetlands values, the Cowardin classification system, and how to identify and delineate nontidal wetlands. The workshops have been open to local planners, consultants, and other government personnel. The

State has also developed a certification program to ensure uniform and professional standards. An exam has been developed for this program which will be given in the spring. The State of Maryland has put together a Nontidal Wetlands Public Information Package designed with the general public as the target audience. The package explains the values of nontidal wetland regulations. The package is designed so that it can be used in its entirety for group presentations, workshops, or classes, or parts of the package can be used to meet specific education or information needs and requests. The package includes various fact sheets, each of which is geared toward a specific target audience (i.e. agriculture, forestry, property owner, developer). Also included in the package is information on the values of nontidal wetlands, the Nontidal Wetlands Protection Act, and the State Nontidal Wetlands Program.

The federal agencies have begun a coordinated training program for delineation of wetlands within the Bay states, but additional interagency coordination for education and training is needed. Opportunities for combining resources and reinforcing separate agency efforts are often not taken, leaving many gaps in topics covered and audiences served. Most audiences and educators are unaware of what materials and programs are available for education about wetlands. No complete inventory of such information exists.

The demand for technical training and education far exceeds that currently available. Courses offered by the private sector are often prohibitively expensive and inconveniently located for public and private sector audiences with limited budgets. Privately sponsored courses may also present information that is not consistent with public policy. Most training is limited to delineation topics; very few programs address more complex topics such as wetland assessment, management and creation.

There is a growing unmet need to provide on site technical assistance for land owners and managers. The specialized assistance available through each public agency is frequently not adequate for providing integrated assessments of management problems and opportunities. The shortage of personnel is a major factor limiting agency capabilities to respond to current requests for assistance. Additional coordination among agencies is needed to utilize existing program capabilities more efficiently.

Standards for technical training and advanced education in wetland science are not established. The result is lack of guidance for program planning as well as lack of criteria for assessing professional credentials.

Examples of successful wetland management and associated benefits and other positive incentives for wetlands protection and creation are not emphasized by existing programs. Although experiential education programs are the most popular among audiences and educators, too few wetland sites are managed for citizen education, particularly near urban areas.

The importance of watershed land use management by local governments for wetland protection, the effects of indirect and cumulative impacts and the nature and importance of non-tidal wetlands are not well addressed by existing education and information programs. Educational materials about these topics are needed.

Implementation Tasks

E 1. Develop programs to provide current information to the public about Bay wetlands values and protection needs. This task will contribute to the accomplishment of Policy action [E(a)].

Implementor	Implementation Task	Schedule
Lead: ACE-N Other: All	a. Produce film and slide shows to provide information about the multiple values of and threats to tidal and nontidal wetlands of the Chesapeake Bay, and the importance of land use planning for wetland protection. The shows will be designed for use in professional meetings, training seminars, school classes and media programs.	10/90-9/91*
(Above)	b. Designate a lead agency in each state and a lead for the federal agencies to investigate and provide greater opportunities for the public to experience wetland values and management first hand with outdoor recreation, educational tours and exhibits. Participation from the private sector should be encouraged. The following actions should be considered: 1) Where needed acquire and maintain access to local wetland sites for public education and recreation. - Work with local governments and interest groups to identify potential sites and costs for acquisition. - Identify sources of funding for public access and maintenance. - Design outdoor exhibits to educate audiences about the value of wetlands and actions the audience can take to protect them. - Schedule guided tours and workshops in local wetlands with the state wetland training coordinator (Task E3 below) for targeted audiences. - Coordinate with volunteer organizations to contribute to site maintenance. Investigate school internship programs for maintenance manpower. - Expand the Chesapeake Bay Public Access Guide to include a wetland category that will guide the public to established wetland exhibits and attractions.	

	2) Support private and public programs to conduct guided field trips in the Chesapeake Bay watersheds to expose targeted audiences to the broad policy issues associated with tidal and nontidal wetlands protection and management.	
	3) Expand or create wetlands exhibits at zoos, science centers, aquariums and museums to provide more hands on demonstrations of wetlands values and other wetlands topics. Develop program messages. Meet with program directors to discuss messages and existing program models.	
	4) Recommend the expansion of the National Estuarine Research Reserve System program to include nontidal wetlands in the Chesapeake Bay watershed.	To be determined*
Lead: LRS Other: CAC	c. Take appropriate measures to facilitate public input into the implementation of all tasks in the Plan. Maintain a mailing list of interested citizens. Provide notification of Wetland Workgroup meetings, task reports and other information about implementation of the Policy. Make copies of all reports produced through Plan tasks available to the Chesapeake Bay Liaison Office for circulation.	10/90->*

E2. Develop a Baywide library system and data base for wetland information. This task will contribute to the accomplishment of Policy action [E(b)].

Lead: EPA-CBP Other: All	a. Work with Bay wetland data users and providers on a continuing basis to identify information availability and needs, how and where data should be stored and accessed and how the information system will be funded and maintained.	12/90->*
(Above)	b. Implement recommendations as feasible and appropriate.	6/91->

E3. Formulate and begin execution of technical training programs for government representatives, consultants, land developers and interested parties in the areas of wetland identification, delineation, functional assessment, mitigation and creation practices. This task will contribute to the accomplishment of Policy action [E(c)].

Lead: EPA III Other: States LGAC LRS	a. Employ or designate state wetland training and technical assistance coordinators to work with local, state and federal agencies and interest groups on a continuing basis. Coordinators will assist interested parties to:	10/90->*
	1) Identify training and assistance needs.	10/90-12/90
	2) Develop training schedules and identify sites for training sessions in identification, delineation, assessment and management.	1/91-3/91
	3) Develop recommendations for assistance to support local management efforts.	3/91
	4) Administer training programs.	3/91->
	5) Make recommendations about the desirability and method for the adoption of a common set of standards for certification and certification tests for wetland managers in the Bay states.	To be determined
Lead: EPA III Other: LRS Federal	b. Designate appropriate federal agency trainers to assist in the production of training programs. (See (a) above.)	3/91, every year*
Lead: EPA III States Federal	c. Where feasible, adopt certification standards and programs.	To be determined

E4. Develop technical assistance programs to support local government protection efforts, including mapping, management programs and model ordinances. This task will contribute to the accomplishment of Policy action [E(d)].

Lead: LGAC Other: States Federal	a. Develop and exchange information with other agencies about existing local technical assistance needs and services to increase coordination of federal, state and local assistance efforts.	12/90->*
(Above)	b. Implement the recommendations regarding local assistance developed in Tasks E3a3 and E4a (above) as appropriate.	To be determined*

(Above)	c. Establish and maintain central sources of information to provide the public with information about wetland values and management needs, state wetland maps and statistics, summaries of existing regulations and protection programs and indexes to wetland education materials and current research.	9/90-3/91*
	1) Assign the responsibility of providing a central source of information about wetlands to a lead state agency in each state.	9/90
	2) Identify funding mechanisms to make mapped wetlands information available to local, state and regional users. Consideration should be given to charging a small fee for maps.	12/90-3/91

E5. Develop wetland curricula for educational institutions in the Bay watershed. This task will contribute to the accomplishment of Policy action [E(e)].

Lead: FWS Other: States DC PIES	a. Work with local and state public school educators to develop wetland curricula for public schools. Successful examples such as Maryland's Patapsco River School Action Project should be considered for expansion to include a wetland component. This curriculum emphasizes watershed concepts and the importance of individual action for resource protection.	3/92-6/92
(Above)	b. Work with federal and state wetland managers and college and university educators to develop curricula about wetland topics for institutions of higher learning and requirements for a wetlands science major.	3/92-6/92
(Above)	c. Develop a packaged curriculum about wetlands in the Chesapeake Bay watershed for optional use by schools based on the recommendation resulting from (a) and (b) above.	6/92-12/92

5. EXTENDING THE VISION: RESEARCH

Chesapeake Bay Wetlands Policy

The following are the Chesapeake Bay Wetlands Policy commitments for research in the Agreement Commitment Report signed by the Chesapeake Executive Council:

- *"The signatories to this agreement will, to the extent possible, facilitate the undertaking of research projects which have the potential to improve wetland management.*
- *The signatories will evaluate and adjust their wetland management practices and regulatory standards such that they reflect principles validated through scientific research.*

Action:

[R] The signatories will collectively update a prioritized listing and description of those research projects which offer significant opportunities for improving wetland management practices. At a minimum, the research plan shall consider the following:

[R(a)] Continued research of basic wetland structure and function.

[R(b)] Research to quantify the relationship between upland, wetland, and aquatic natural processes including chemical, ecological, geomorphological and hydrological processes in various watersheds.

[R(c)] Evaluation of the potential individual and cumulative effects the following factors have upon wetlands including:

- Current "best management practices" designed to reduce nutrient and sediment loads to wetlands.
- Alteration of the land/water interface.
- Increased boating activity.
- Shallow water dredging impacts on biologic and hydrologic functions of wetlands.
- Structural shore erosion practices.
- Stormwater management practices.

[R(d)] Evaluation of the design, effectiveness and success of artificial wetlands including those developed for:

- Compensatory mitigation.
- Wildlife and waterfowl improvement projects.
- Non-structural shore erosion control.
- Stormwater management.
- Acid mine drainage reduction.
- Wastewater treatment.

[R(e)] Comparison of natural and artificial wetlands.

[R(f)] Research on the potential mitigative measures which could be used to counteract wetland loses due to acid rain, sediment starvation, sea level rise, and invasion of exotic species.

[R(g)] Studies investigating the feasibility and effects of wetlands created for stormwater management upon other wetland functions, particularly with regard to fish and wildlife habitat and trophic structure and support."

Current Programs

Research is by its nature is a dynamic undertaking. As understanding of natural systems such as wetlands advances, new problems are constantly identified and needs for additional information change. This implies a need for a continuing, comprehensive reevaluation of the priorities for research efforts. In recognition of this reality, one time efforts to prioritize research efforts can be viewed as futile, or at least doomed to very brief useful lifespans. To ensure that the focus of wetland research efforts in the Chesapeake Bay region remains appropriate to the needs of the management programs, it will be necessary to constantly review those efforts and reevaluate priorities for future work.

A Comprehensive Research Plan was adopted by the Executive Council in July 1988. Under that plan, the Research Planning Advisory Group of the Scientific and Technical Advisory Committee has as one of its responsibilities the development and annual updating of a list of overall research priorities. To perform this task the Advisory Group contacts each Chesapeake Bay component to determine the research needs of managers. The Advisory Group does not have responsibility for linking research priorities with research support, but that topic is currently under discussion by the Group.

The effort to prioritize wetlands research will be effective only to the extent that it directs support for research. Projects which address high priority information needs must receive similar priority in funding if the research goals of the Chesapeake Bay Wetlands Policy are to be achieved Implementation of the Policy requires first and foremost, the establishment of a process for interdisciplinary exchange to establish priorities for wetland specific research and to link those priorities to funding on a continuing basis.

Implementation Tasks

R1. Establish a process by which wetlands research in the Chesapeake Bay region can be inventoried, evaluated and directed toward the goals of the Chesapeake Bay Wetlands Policy. It is essential that representatives of all of the following three interest groups participate: 1) researchers, 2) managers/regulators including federal, state and local agency personnel representing major land use concerns such as forestry, agriculture, and economic development and 3) funding agencies. This task will contribute to accomplishment of Policy action [R].

Implementor	Implementation Task	Schedule
Lead: VA Other: LRS	a. Request that a Bay organization such as the Scientific Technical Advisory Committee or other Bay organization schedule and organize research planning surveys and/or meetings; the preparation of inventories produced with task R1b; and the production of a report of research priorities identified with Tasks R1c (below).	10/90
Lead: VA Other: All	b. Inventory information needed toconduct this task including the following: 1) Inventory of ongoing and recently completed research including a summary of findings in each of the seven categories of research specified in the Chesapeake Bay Wetlands Policy. (See pages 36 and 37 of the Plan.) Research information in each of the seven categories should be further subdivided based on physical or biological characteristics (e.g. tidal wetlands-euhaline, mesohaline, oligohaline and tidal freshwater, extensive, fringing, shrub/scrub, open water, etc., riparian and isolated.) 2) Inventory of wetlands management issues, including identification of specific information needs. 3) Inventory of wetlands research funding programs, including identification of funding program objectives. This inventory will review activities in each of the focus areas of the Plan.	9/90-3/91, every two years
Lead: VA Other: All	c. Distribute inventories generated in R1b (above) to participants identified in R1. Survey and/or convene participants as needed to review and prioritize proposed projects on the basis of management needs, and transfer those priorities to funding program planning.	9/91, every two years

d. Develop and implement procedures to ensure that information about research and funding generated by previous tasks is made available to wetland managers in a timely and useful manner. (See Tasks E2 and E4c.) 9/91->

CHAPTER IV. FINANCING

Several federal and state agencies have some funds, staff and other resources dedicated to existing wetlands protection programs which affect tidal and nontidal wetlands located within the Bay watershed. One purpose of the Plan is to target these limited resources to improve the protection provided. The Plan also identifies additional efforts that are necessary to achieve the goals of the Chesapeake Bay Wetlands Policy. The availability of funds will significantly influence the pace at which these tasks can be carried out.

In preparing the Plan, the Workgroup outlined funding needs for initial Plan tasks during years 1990-1992. Most of the tasks carried out within this time period involve one time costs for task completion within one to two years. These initial tasks will provide the foundation for future actions and will require coordination among state and federal agencies.

Short term tasks scheduled through 1992 will cost approximately $400,000 annually. This estimate does not include agency staff time and other inkind support. The plan proposed for this funding is for federal and state agencies to provide approximately half of the funds through existing program budgets and for the remaining half to be requested from the Chesapeake Bay Program budget. Funds for long term implementation after 1992 are being sought from new sources including congressional action. The rate of implementation progress depends on the availability of funds.

GLOSSARY OF IMPLEMENTORS

ACE-B	US Army Corps of Engineers - Baltimore District
ACE-N	US Army Corps of Engineers - Norfolk District
CAC	Citizens Advisory Committee - Chesapeake Bay Program
DC	District of Columbia
EPA-CBP	US Environmental Protection Agency - Chesapeake Bay Program
EPA-III	US Environmental Protection Agency - Region III
Federal	Federal agencies (ACE-B,ACE-N,EPA-CBP,EPA-III, FWS,NMFS,NMFS,NOAA,SCS)
FWS	US Fish and Wildlife Service
LGAC	Local Government Advisory Committee - Chesapeake Bay Program
LRS	Living Resources Subcommittee - Chesapeake Bay Program
MD	Maryland state agencies
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PA	Pennsylvania state agencies
PIES	Public Information and Education Subcommittee - Chesapeake Bay Program
SCS	US Soil Conservation Service
States	State agencies in Maryland, Pennsylvania and Virginia
VA	Virginia state agencies