APPOMATTOX RIVER CORRIDOR STUDY

PHASE IV
WETLANDS

Prepared by Crater Planning District Commission
with assistance from
Crater Coastal Resource Management Task Force
September, 1996

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I. INTRODUCTION

The Appomattox River is a major tributary of the James River. It flows in an easterly direction across the piedmont and coastal plain of south central Virginia between Appomattox Courthouse and its confluence with the James River in Hopewell. The River is an important regional resource that is unique and irreplaceable. The portion of the River in the Crater Planning District meanders through six jurisdictions: the Counties of Chesterfield, Dinwiddie, and Prince George, and the Cities of Colonial Heights, Hopewell and Petersburg, and is a valuable resource for commerce, industry, farming, fishing, and recreation. (See map 1).

As more growth occurs, more pressure is being placed on the Appomattox River and its adjacent lands. Competing uses must find ways to survive compatibly, without significantly depleting the resource available.

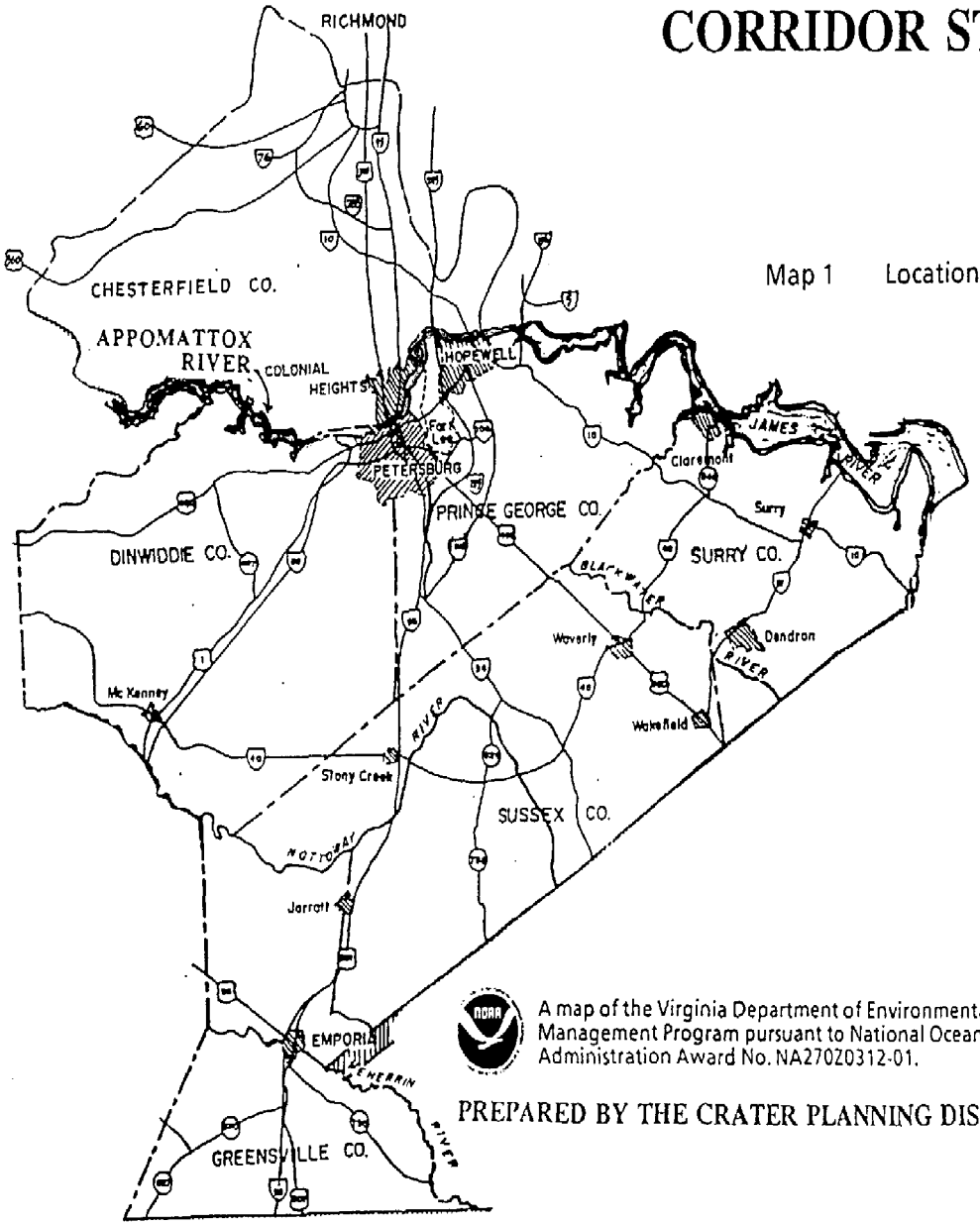
A primary problem with providing a regional perspective has been the lack of a single reliable source of information about the natural, scenic, historic, and man-made features of the Appomattox River. Historically, the River has been the boundary for local planning and decision-making.

The purpose of this corridor study is to help decision-makers understand the complex nature of managing the Appomattox River, and find innovative solutions to balance competing interests while protecting valuable resources. This task is envisioned as the beginning of a corridor effort to establish a regional data base for the purpose of improved coastal planning.

Phase I of the corridor study, completed in 1993, inventoried recreation and riverfront features, such as riverfront configuration, parks and recreation, scenic and cultural areas, as well as wildlife and natural areas. A total of twenty-three existing and potential public access sites were identified. The second phase of the study examined existing and future land use information, zoning, ownership patterns, water and sewer utilities, as well as soils and mineral resources within the corridor. It was completed in 1994. The 1995 Phase III study addressed water quality issues as they relate to the study corridor. This included local water quality policies and state and federal water quality regulations and programs.

The fourth phase will discuss wetland issues, including the definition of wetland, the benefits that wetlands provide, and federal and state laws and regulations governing development in and adjacent to wetlands. Because of the constant debate on wetland issues, it should be noted that continuous monitoring and update of this issue is necessary.

APPOMATTOX RIVER CORRIDOR STUDY



Map 1 Location Map

A map of the Virginia Department of Environmental Quality's Coastal Resources Management Program pursuant to National Oceanic and Atmospheric Administration Award No. NA27OZ0312-01.

PREPARED BY THE CRATER PLANNING DISTRICT COMMISSION

II. DEFINITION OF WETLANDS

"Wetlands" is a general term that describes a variety of ecosystems including marshes, bogs, prairie potholes, and swamps. Wetlands are transitional areas between dry land and open water. Wetlands are defined by the Army Corps of Engineers and the Environmental Protection Agency as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions". In order for an area to be classified as wetland, hydrophytic vegetation (water loving or water tolerant plants), hydric soils (soils formed under saturated or periodically saturated conditions), and wetland hydrology indicators (ground that is continuously or periodically inundated by surface or groundwater) must be present.

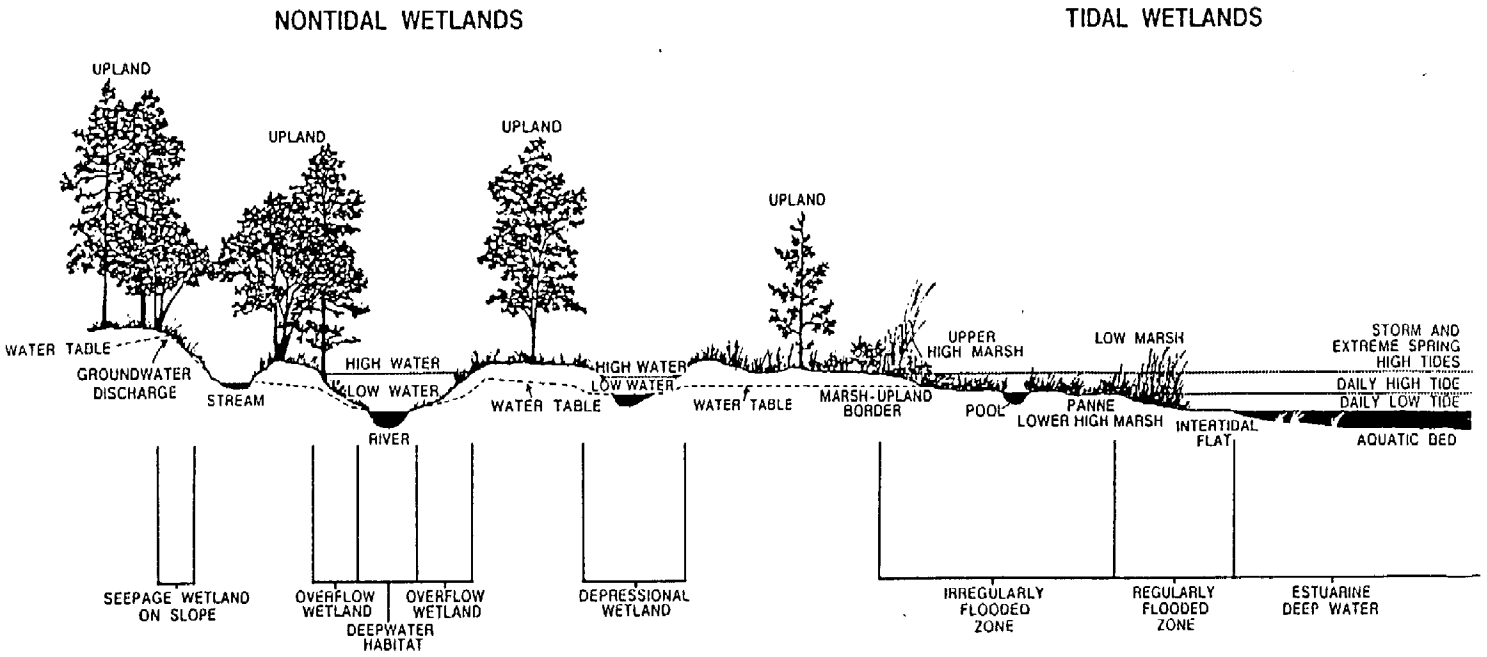
III. WETLAND TYPES

Two general types of wetlands are recognized: (1) tidal wetlands and (2) non-tidal wetlands. Tidal wetlands consist mainly of tidal marshes and mudflats that are periodically flooded by salt or brackish water. As their name suggests, tidal wetlands are found in the Coastal Zone along tidal rivers and saltwater embayments. By contrast, non-tidal wetlands are freshwater marshes, swamps, and bogs. They are usually located adjacent to tidal wetlands and farther inland along rivers and streams. Non-tidal wetlands can also be found in upland areas of poorly drained soils that are isolated from surface waters, and thus, are more difficult to recognize since they may give no surface evidence of the presence of water. Wetlands are further characterized by their dominant vegetation as: (1) emergent wetlands (commonly called marshes and wet meadows) dominated by grasses, sedges, and other 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).

Most of the tidal wetlands in the corridor are forested wetlands. They can be found as far west as Pocahontas Island in Petersburg. Other tidal wetlands are represented by tidal marshes at the confluence of the James River. They are largely grasslands flooded by salt or brackish tidal water. Salt-tolerant grasses generally dominate these wetlands.

Those wetlands which exist in the corridor and west of I-95 are mostly above tidal influence. They are non-tidal wetlands. Again, forested wetlands are, by far, the most common type. Moisture-tolerant trees such as red maple, black gum, willow oak, green ash, pin oak, and sweet gum are among the common trees in forested wetlands.

SCHEMATIC OF WETLANDS TYPES



Source: The Value of Wetlands: A Guide for Citizens, SE VA PDC, September, 1988

IV. VALUE OF WETLANDS

Wetlands provide many ecological and socio-economic 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. Wetlands have traditionally been considered unproductive wastelands, which has lead to their elimination by artificial draining or filling. This view has changed significantly as the connection between wetlands, wildlife, water quality, and other ecological and economic values have been evaluated. 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 inter-relationship 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.

Wetlands are particularly important habitats for estuarine and marine fishes and shellfish, various waterfowl, birds, and several mammals. Most commercial and game fishes use coastal marshes and estuaries as nursery or spawning grounds. A variety of birdlife is also associated with wetlands. Ducks, geese, 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.

Aquatic Productivity

Wetlands are among the most productive natural ecosystems in the world. Wetlands provide food to the aquatic environment in the form of decayed plant material, known as 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.

Water Quality Improvements

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 waters, 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 and to people as well as to aquatic and other wildlife.

In addition, wetlands serve as recharge areas for groundwater aquifers and play an important role in water supply. Other wetlands are sites of groundwater discharge and provide important contributions to freshwater streamflow, especially during drought conditions.

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, dampening wave action by friction, and reducing 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 is produced by wetlands. Products that are available for human use include timber, fish, and shellfish, 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, and boating. 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. Wetlands have also captured the attention of artists who have painted wetland scenes or have written about wetlands. Wetlands are 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 Appomattox River Corridor conditions in regard to wetlands.

V. CAUSES OF WETLAND LOSS

In Virginia, direct conversion of wetlands to cropland by draining and filling is responsible for almost half of the non-tidal wetlands lost each year. Other causes of non-tidal wetland loss include land development (mainly dredging and channelization projects for navigation and flood protection), construction of manmade lakes and ponds, and mineral mining.

According to the U. S. Fish and Wildlife Service, urban development, such as shoreline residential construction, which often involves filling, is responsible for almost half of the coastal wetlands lost each year in Virginia. Tidal wetlands are also lost due to the effects of impoundments and dredging which are usually associated with development.

Pollution may destroy or degrade wetlands, primarily due to runoff of pesticides and sediment, but also due to direct sewage and industrial discharges.

Additionally, natural forces may alter wetlands. Such phenomena as rising sea levels, natural succession, erosion or accretion, and the impacts of droughts and storms can irrevocably alter existing wetland conditions and distribution.

VI. 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, require 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. The regulatory definition of "wetlands" as defined in the Corps' 1987 Wetland Delineation Manual is based upon factors including hydrology, soil conditions and vegetation.

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.

Virginia Regulatory Background

Tidal Wetlands

The 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. Two jurisdictions in the Corridor, the Cities of Colonial Heights and Hopewell, established wetlands boards. 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.

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 wetlands policies of the various federal agencies.

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 Department of Environmental Quality 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.

VII. WETLAND MAPS

Maps A, B, C, D & E of the following pages present the wetlands along the Appomattox River Corridor. They are produced in accordance with the National Wetlands Inventory (NWI) maps. The NWI maps were developed by the U. S. Fish and Wildlife Service and show wetland boundaries as delineated from aerial photographs taken in April, 1974. The small scale of the photography and inherent margin of error in photo interpretation render the maps most useful for general land use planning. The NWI maps are not meant to be used for regulatory purposes. An update and more detailed inventory of wetlands in the Corridor, using color infrared photo imaginaries, is planned and will be underway as soon as funding is secured.

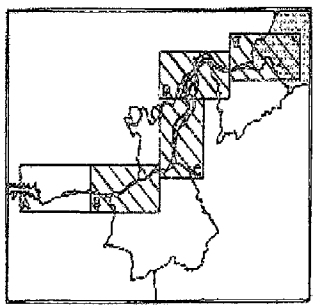
The existing wetland maps illustrate the extent, type and location of wetlands on overlays to the Standard U. S. Geological Survey (USGS) 7.5 minute quadrangle maps. A wetland legend, a general description of the classification scheme, and an example of its application can be found in Appendix A.

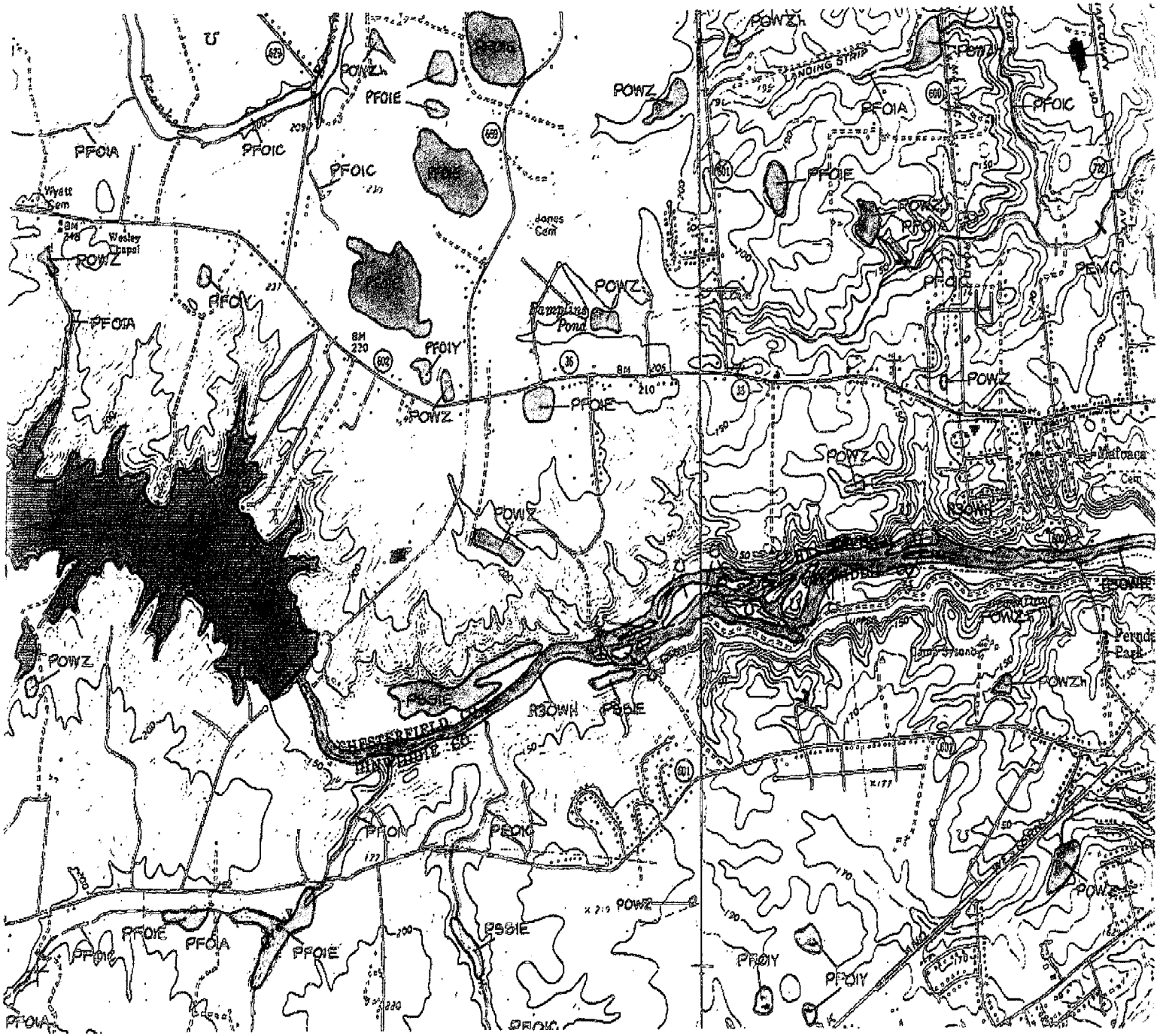
Map A

- Open Water
- Tidal Wetland
- Non-Tidal Wetland

N

1" = 2,000'



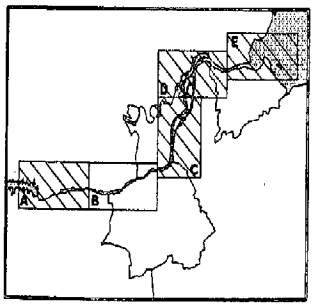


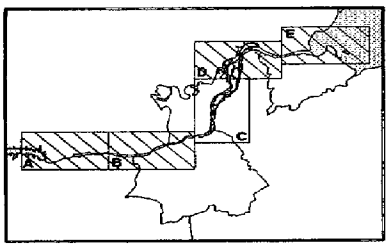
Map B

- Open Water
- Tidal Wetland
- Non-Tidal Wetland

N

1" = 2,000'





Map C

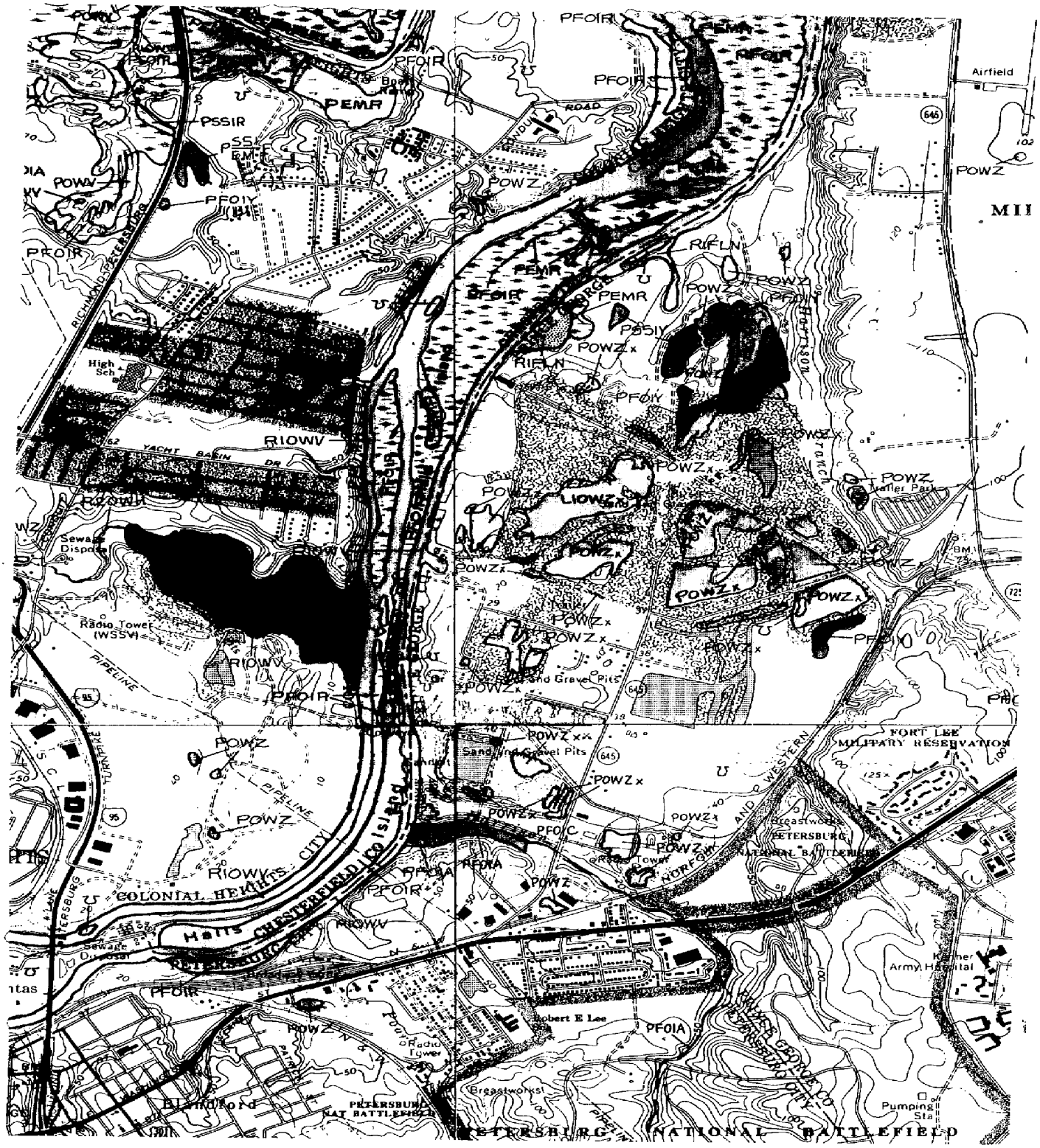
Open Water

Tidal Wetland

Non-Tidal Wetland

N

1" = 2,000'

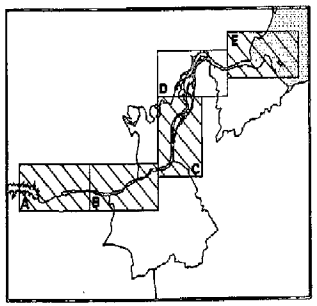


Map D

- Open Water
- Tidal Wetland
- Non-Tidal Wetland

N

1" = 2,000'

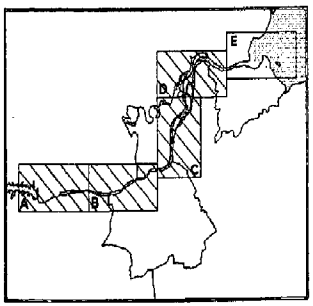


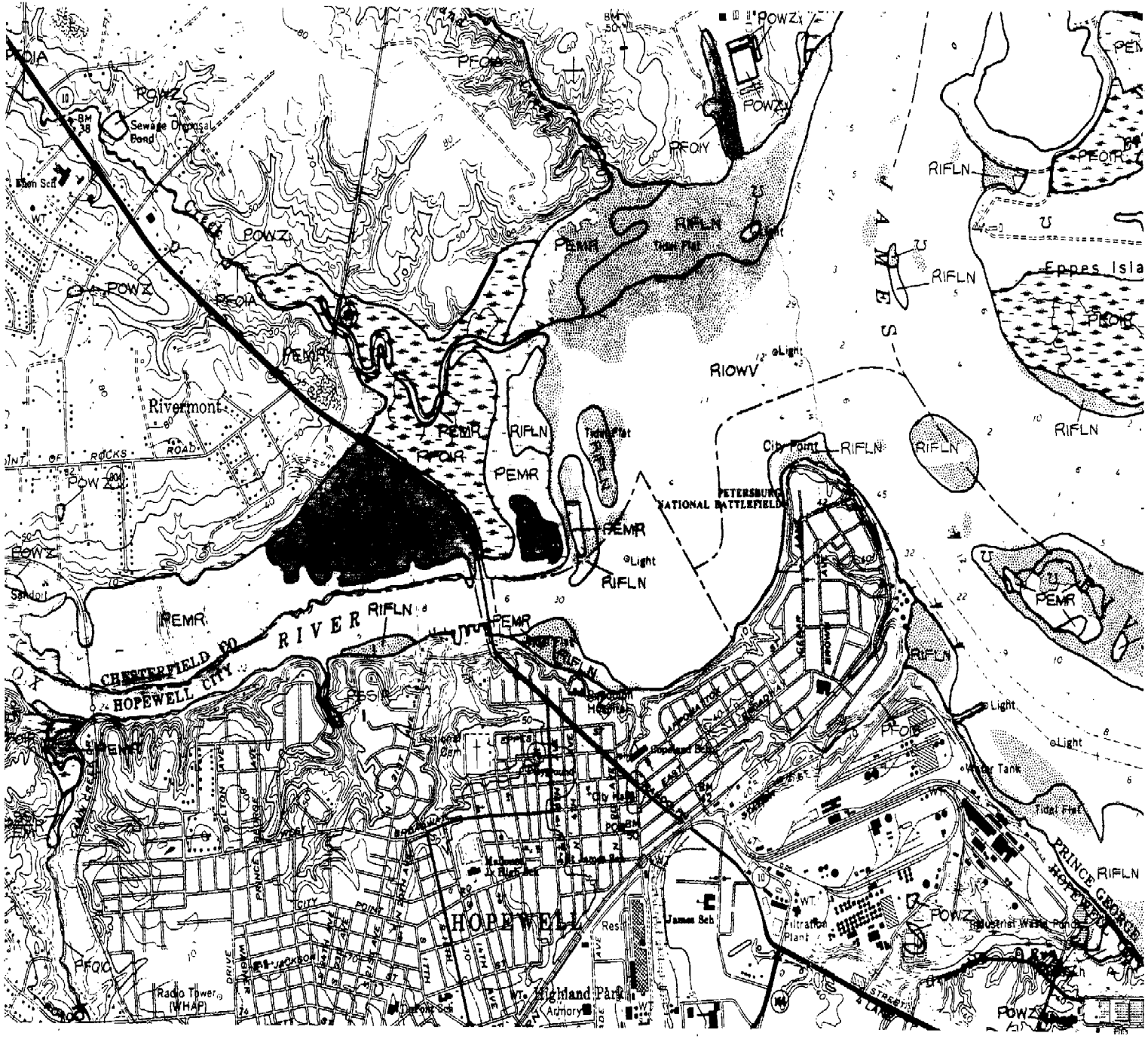
Map E

- Open Water
- Tidal Wetland
- Non-Tidal Wetland

N

1" = 2,000'

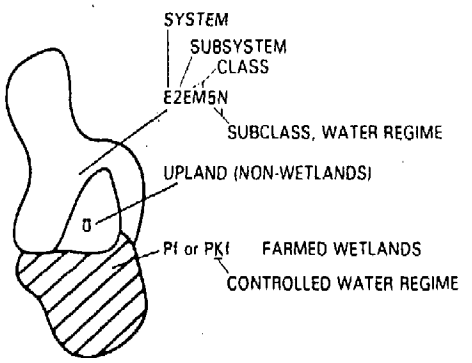




Appendix A

WETLAND LEGEND

SYMBOLOGY EXAMPLE



ECOLOGICAL SYSTEM

P – PALUSTRINE

No Subsystem								
CLASS	RB – ROCK BOTTOM	UB – UNCONSOLIDATED BOTTOM	AB – AQUATIC BED	FL – FLAT	ML – MOSS/LICHEN	EM – EMERGENT	SS – SCRUB/SHRUB	FO – FORESTED	OW – OPEN WATER/Unknown Bottom
Subclass	1 Bedrock 2 Boulder	1 Cobble/Gravel 2 Sand 3 Mud 4 Organic	1 Submergent Algal 2 Submergent Vascular 3 Submergent Moss 4 Floating-leaved 5 Floating 6 Unknown Submergent 7 Unknown Surface	1 Cobble/Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated Pioneer 6 Vegetated Non-pioneer	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent 3 Narrow-leaved Nonpersistent 4 Broad-leaved Nonpersistent 5 Narrow-leaved Persistent 6 Broad-leaved Persistent	1 Broad-leaved Deciduous 2 Needle-leaved Deciduous 3 Broad-leaved Evergreen 4 Needle-leaved Evergreen 5 Dead 8 Deciduous 7 Evergreen	1 Broad-leaved Deciduous 2 Needle-leaved Deciduous 3 Broad-leaved Evergreen 4 Needle-leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	

MODIFYING TERMS

In order to more adequately describe wetland and aquatic habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The *farmed modifier* may also be applied to the ecological system.

WATER REGIME(1)

Non-Tidal

- A Temporary
- B Saturated
- C Seasonal
- D Seasonal Well-drained
- E Seasonal Saturated
- F Semipermanent
- G Intermittently Exposed
- H Permanent
- J Intermittently Flooded
- K Artificial
- Z Intermittently Exposed/Permanent
- W Intermittently Flooded/Temporary
- Y Saturated/Semipermanent/Seasonals
- U Unknown

Tidal

- K Artificial
- L Subtidal
- M Irregularly Exposed
- N Regular
- P Irregular
- R Seasonal Tidal
- S Temporary Tidal
- T Semipermanent Tidal
- V Permanent Tidal
- U Unknown

WATER CHEMISTRY

Coastal Salinity

- 1 Hyperhaline
- 2 Euhaline
- 3 Mixohaline (Brackish)
- 4 Polyhaline
- 5 Mesohaline
- 6 Oligohaline
- 0 Fresh

Inland Salinity

- 7 Hypersaline
- 8 Eusaline
- 9 Mixosaline
- 0 Fresh

pH Modifiers for all Fresh Water

- a Acid
- t Circumneutral
- i Alkaline

SOIL

- g Organic
- n Mineral

SPECIAL MODIFIERS

- b Beaver
- d Partially Drained/Ditched
- f Farmed
- h Diked/Impounded
- r Artificial
- s Spoil
- x Excavated

(1) Information on the water regime modifiers found on this legend, but not found in the classification system, may be obtained from the above listed source.

Source: National Wetlands Inventory Map, U. S. Fish & Wildlife Service, 1990.

Appendix B

Virginia Wetlands
Historical Summary

Background

1966	Virginia legislature establishes special Marine Resources Study Commission.
1967	Study Commission recommends special study on marsh and wetlands.
1968	Legislature directs Virginia Institute of Marine Sciences (VIMS) to conduct the wetlands study.
1970-72	Public hearings, drafting of Wetlands Act and research to determine wetlands definitions and upper limits of wetlands.
1972	Wetlands Act enacted, to become effective July 1, 1972. First local wetlands boards established. VIMS also commences wetlands inventory.
1973	VIMS publishes management manual for wetlands boards.
1974	VIMS publishes recommended wetlands guidelines. Wetlands Guidelines promulgated by Virginia Marine Resource Commission (VMRC) Wetlands of Back Bay and the North Landing River and its Tributaries added by amendments to Wetlands Act.
1982	Nonvegetated wetlands added to Wetlands Act by amendment.
1983	Wetlands Guidelines revised to include nonvegetated areas.
1987	Wetlands Act amended to allow reporting, site inspections, notice to comply and stop work orders.
1989	Wetlands Mitigation-Compensation Policy adopted by VMRC.
1991	Wetlands inventories to be maintained and updated using computer-based Geographical Information System (GIS).
1992	Wetlands and Dunes Act "streamlined," along with other legislation, by the Division of Legislative Services.
1995	"Virginia Wetlands Management Handbook" is revised and updated.