Prince George County and City of Hopewell

Gene M. Silberhorn
Virginia Institute of Marine Science

Sharon Dewing
Virginia Institute of Marine Science

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PRINCE GEORGE COUNTY
AND CITY OF HOPEWELL

Special Report No. 293 in Applied Marine Science and Ocean Engineering
Gene M. Silberhorn and Sharon Dewing

Gene M. Silberhorn, Project Leader

VIRGINIA INSTITUTE OF MARINE SCIENCE
School of Marine Science
The College of William and Mary
Gloucester Point, Virginia 23062

Dr. Frank O. Perkins, Dean/Director

JANUARY 1989
Preface

This publication is one of a series of county and city tidal marsh inventories prepared by the Wetlands Advisory Group of the Virginia Institute of Marine Science. The previously published reports include:

- Lancaster County
- Northumberland County
- Mathews County
- York County and the Town of Poquoson
- Stafford County
- Prince William County
- King George County
- City of Hampton
- Fairfax County
- Gloucester County
- City of Virginia Beach
- Vol. 1 and 2
- City of Newport News and Fort Eustis
- Accomack County
- Northampton County
- Westmoreland County
- James City County and the City of Williamsburg
- Surry County
- Spotsylvania and Caroline Counties and the City of Fredericksburg
- New Kent County
- Essex County
- Isle of Wight County
- Middlesex County
- City of Norfolk
- King William County and Town of West Point
- King and Queen County

Under Section 62-1.13.4 of the Virginia Wetlands Act, the Virginia Institute of Marine Science is obligated to inventory the tidal wetlands of the Commonwealth. This inventory program is designed to aid the local wetlands boards, the state and federal regulatory agencies, and regional planning districts in making informed rational decisions on the uses of these valuable resources. They are also intended for use by the general public as a natural history guide and the scientific community as a research data source.

The reader is referred to the Shoreline Situation Report, Prince George County, Virginia, D. W. Owen, L. M. Rogers, M. H. Peoples, and D. Byrd, 1976, SRAMSOE No. 114, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062. This report focuses on various shoreline characteristics including areas of erosion and accretion, beaches, marshes, artificially stabilized areas, and fastland types and uses.

Also of interest may be a booklet, Wetlands Guidelines, available from the Marine Resources Commission, Newport News, Virginia, which describes the wetlands types and the types of shoreline activities which affect wetlands and what these effects are.
Acknowledgments

First among the individuals that we owe thanks are Kelvin Char, Arthur Harris and Charles Roadley for their invaluable field assistance. We also thank Judy Hudgins for editing the manuscript. We are also indebted to Diane Bowers for map illustrations and Harold Burrell and William Jenkins for cover design and photographic reproduction. We greatly appreciate the talents of Janet Walker for text processing and table reproduction, and Sylvia Motley for printing.

This inventory was partially funded by the Virginia Council on the Environment and the National Oceanic and Atmospheric Administration, Grant No. NA87AA-D-CZ092.
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Introduction

Tidal marshes in Prince George County are found along the tributaries, islands and southern shoreline of the James River from Upper Chippokes Creek, which borders Surry County, to the upper reaches of the tidal portion of the Appomattox River, a major tributary of the James River. Slightly over 1,477 acres of tidal marshes occur in Prince George County. Most of the marshes (97.6 percent) are found in the James River system and its tributaries (Upper Chippokes Creek, Wards Creek, Flowerdew Hundred Creek and Powell Creek), totalling 1,441.8 acres.

All of the marshes in the county are classified as tidal freshwater marshes (0.0 to 0.5 ppt salinity). Many of the marshes support such a great diversity of vegetation that they are classified as Type XI Freshwater Mixed Community (see page 7), where no single species dominates. Tidal freshwater marshes characteristically also exhibit a significant seasonal succession, and therefore species composition as estimated by percent cover is strongly dependent on the period of observation. Users of this report should consider this factor when actual observations are made in the field. Many marshes, for example, that are dominated by arrow arum (*Peltandra virginica*) in May or June are often in competition with rice cutgrass (*Leersia oryoides*) and beggars ticks (*Bidens* spp.) in September.

These marshes are highly valuable to the estuarine environment. They are known to provide a wide variety of wildlife and waterfowl with cover and food. Wetlands of this type are also associated with the spawning and nursery areas for anadromous fish species such as herring, shad, striped bass and white perch.

The largest single marsh in Prince George County is Kennon Marsh (#13) on the James River with a total of 422 acres in area. Kennon Marsh has particular landscape appeal because it is associated with large bald cypress trees (tidal freshwater swamp). The entire system appears to be virtually undisturbed by man’s activities.

There are ten man-made islands in a reach of the James River from Windmill Point to City Point at Hopewell. The islands are represented as marshes #55, 80-86 and 89-90 and were created by dredged material in the process of maintaining the main channel depth. Some of the islands are nearly all marsh while others are of higher elevation and are dominated by trees. Marsh island #55, near Windmill Point, was built in the mid-1970’s and at one time had more than 14 acres of marsh in the interior of its outer dikes. In 1988, however, only a small patch of marsh vegetation remains because the dike has been breached in several locations through erosion over the years.
Methods

Aerial photographs and topographic maps (U.S.G.S.) were utilized to determine wetland locations, wetland boundaries and patterns of marsh vegetation. Acreages and wetland boundaries were substantiated by observations on foot, by boat and by low level overflights. Individual plant species percentages are quantitative estimates of coverage based on visual field inspections of every marsh. In some instances, especially in tidal freshwater areas, those percentages are subject to seasonal bias.

Most of the field work for Prince George County was done in the summer of 1978. Subsequent field work and aerial photograph interpretation was done in the summer of 1988.

Marshes one quarter of an acre or larger are designated by number. Many marshes smaller than one quarter acre (usually narrow fringing marshes) are designated by the same symbol (color) as the larger marshes on the section maps but assigned no number. Small marshes (less than one acre) are exaggerated and are not indicated to scale. Information such as individual marsh acreage, plant species percentage and acreage, marsh type, and other observations are recorded in tabular form. Plant species percentages are recorded to the nearest percent, and acreages to the nearest tenth of an acre. In marshes of less than one acre, the areas are recorded to the nearest hundredth of an acre. In those instances where an individual plant species is estimated to amount to less than 0.5 percent, the symbol (-) is used to indicate a trace amount. In unusual situations where an individual marsh is estimated to contain 50 percent or more of a species that is not listed as a marsh type, the closest applicable marsh type is used.
Marsh Types and Evaluation

For a better understanding of what is meant by marsh types, some background information is required. The personnel of the Wetland Advisory Group have classified twelve different, common marsh types in Virginia, based on vegetational composition. These marsh types have been evaluated according to certain values and are recorded in the Guidelines report. The following is a brief outline of the wetland types and their evaluation as found in that publication:

It is recognized that most wetlands areas, with the exception of the relatively monospecific cordgrass marshes of the Eastern Shore, are not homogeneously vegetated. Most marshes are, however, dominated by a major plant. By providing the manager with the primary values of each community type and the means of identification, he then has a useful and convenient tool for weighing the relative importance of each marsh parcel. In Virginia, many wetlands management problems involve only a few acres or a fraction of an acre. The identification of plant communities permits the manager to evaluate both complete marshes and subareas within a marsh.

Each marsh type may be evaluated in accordance with five general values. These are:

1. Production and detritus availability. Previous VIMS reports have discussed the details of marsh production and the role of detritus which results when the plant material is washed into the water column. The term “detritus” refers to plant material which decays in the aquatic system and forms the basis of a major marine food web. The term “production” refers to the amount of plant material which is produced by the various types of marsh plants. Vegetative production of the major species has been measured, and marshes have been rated in accordance with their average levels of productivity. If the production is readily available to the marine food web as detritus, a wetlands system is even more important than one of equal productivity where little detritus results. Availability of detritus is generally a function of marsh elevation and total flushing, with detritus more available to the aquatic environment in the lower, well-flushed marshes.
2. Waterfowl and wildlife utilization. Long before marshes were discovered to be detritus producers, they were known as habitats for various mammals and marsh birds and as food sources for migratory waterfowl. Some marsh types, especially mixed freshwater marshes, are more valuable because of diversity of the vegetation found there.

3. Erosion buffer. Erosion is a common coastal problem. Marshes can be eroded, but some, particularly the more saline types, are eroded much more slowly than adjacent shores which are unprotected by marsh. This buffering quality is derived from the ability of the vegetation to absorb or dissipate wave energy by establishing a dense root system which stabilizes the substrate. Generally, freshwater species are less effective than saltwater plants in this regard.

4. Water quality control. The dense growth of some marshes acts as a filter, trapping upland sediment before it reaches waterways, thus protecting shellfish beds and navigation channels from siltation. Marshes can also filter out sediments that are already in the water column. The ability of marshes to filter sediments and maintain water clarity is of particular importance to the maintenance of clam and oyster production. Excessive sedimentation can reduce the basic food supply of shellfish through reduction of the photic zone where algae grow. It can also kill shellfish by clogging their gills. Additionally, marshes can assimilate and degrade pollutants through complex chemical processes, a discussion which is beyond the scope of this paper.

5. Flood buffer. The peat substratum of some marshes acts as a giant sponge in receiving and releasing water. This characteristic is an effective buffer against coastal flooding, the effectiveness of which is a function of marsh type and size.

Research and marsh inventory work accomplished by VIMS personnel indicate that 10 species of marsh vegetation tend to dominate many marshes, the dominant plant depending on water salinity, marsh elevation, soil type, and other factors. The term “dominant” is construed to mean that at least 50% of the vegetated surface of a marsh is covered by a single species. Brackish and freshwater marshes often have no clearly dominant species of vegetation. These marshes are considered to be highly valuable in environmental terms.
Marsh Types and Their Environmental Contributions

*(Edited from Guidelines for Activities Affecting Virginia Wetlands)*

Type I  
**Saltmarsh Cordgrass Community**

a. Average yield 4 tons per acre per annum. (Optimum growth up to 10 tons per acre.)
b. Optimum availability of detritus to the marine environment.
c. Roots and rhizomes eaten by waterfowl and stems used in muskrat lodge construction. Also serves as nesting material for various birds.
d. Deterrent to shoreline erosion.
e. Serves as sediment trap and assimilates flood waters.

Type II  
**Saltmeadow Community**

a. 1-3 tons per acre per annum.
b. Food (seeds) and nesting areas for birds.
c. Effective erosion deterrent.
d. Assimilates flood waters.
e. Filters sediments and waste material.

Type III  
**Black Needlerush Community**

a. 3-5 tons per acre per annum.
b. Highly resistant to erosion.
c. Traps suspended sediments but not as effective as Type II.
d. Somewhat effective in absorbing flood waters.

Type IV  
**Saltbush Community**

a. 2 tons per acre per annum or less.
b. Nesting area for small birds and habitat for a variety of wildlife.
c. Effective trap for flotsam.
Type V  **Big Cordgrass Community**

a. 3-6 tons per acre per annum.
b. Detritus less available than from Type I.
c. Habitat for small animals and used for muskrat lodges.
d. Effective erosion buffer.
e. Flood water assimilation.

Type VI  **Cattail Community**

a. 2-4 tons per acre per annum.
b. Habitat for birds and utilized by muskrats.
c. Traps upland sediments.

Type VII  **Arrow Arum-Pickerel Weed Community**

a. 2-4 tons per acre per annum.
b. Detritus readily available to marine environment.
c. Seeds eaten by wood ducks.
d. Susceptible to erosion from wave action and boat wakes, particularly in winter months.

Type VIII  **Reed Grass Community**

a. 4-6 tons per acre per annum.
b. Little value to wildlife except for cover.
c. Invades marshes and competes with more desirable species.
d. Deters erosion on disturbed sites.

Type IX  **Yellow Pond Lily Community**

a. Less than 1 ton per acre per annum.
b. Cover and attachment site for aquatic animals and algae.
c. Feeding territory for fish.
Type X  Saltwort Community

a. Less than 0.5 tons per acre per annum.
b. Little value to aquatic or marsh animals.

Type XI  Freshwater Mixed Community

a. 3-5 tons per acre per annum.
b. High diversity of wildlife.
c. High diversity of wildlife foods.
d. Often associated with fish spawning and nursery grounds.
e. Ranks high as a sediment trap and nursery grounds.

Type XII  Brackish Water Mixed Community

a. 3-4 tons per acre per annum.
b. Wide variety of wildlife foods and habitat.
c. Deterrent to shoreline erosion.
d. Serves as sediment trap and assimilates flood waters.
e. Known spawning and nursery grounds for fish.
Evaluation of Wetland Types

(From Guidelines for Activities Affecting Virginia Wetlands)

For management purposes, the twelve types of wetlands identified above are grouped into five classifications based on the estimated total environmental value of an acre of each type.

**Group One:**
- Saltmarsh Cordgrass (Type I)
- Arrow Arum-Pickerel Weed (Type VII)
- Freshwater Mixed (Type XI)
- Brackish Water Mixed (Type XII)

Group One marshes have the highest values in productivity and wildfowl and wildlife utility and are closely associated with fish spawning and nursery areas. They also have high value as erosion inhibitors, are important to the shellfish industry, and are valued as natural shoreline stabilizers. Group One marshes should be preserved.

**Group Two:**
- Big Cordgrass (Type V)
- Saltmeadow (Type II)
- Cattail (Type VI)

Group Two marshes are of only slightly lesser value than Group One marshes. The major difference is that detritus produced in these marshes is less readily available to the marine environment due to higher elevations and consequently less tidal action to flush the detritus into adjacent waterways. Group Two marshes have very high values in protecting water quality and acting as buffers against coastal flooding. These marshes should also be preserved; but if development in wetlands is considered to be justified, it would be better to alter Group Two marshes than Group One marshes.
Group Three: Yellow Pond Lily (Type IX)  
Black Needlerush (Type III)

The two marshes in the Group Three category are quite dissimilar in properties. The yellow pond lily marsh is not a significant contributor to the food web, but it does have high values to wildlife and waterfowl. Black needlerush has little wildlife value, but it ranks high as an erosion flood buffer. Group Three marshes are important, though their total values are less than Group One and Two marshes. If development in wetlands is considered necessary, it would be better to alter Group Three marshes than Groups One or Two.

Group Four: Saltbush (Type IV)

The saltbush community is valued primarily for the diversity and bird nesting area it adds to the marsh ecosystem. To a lesser extent it acts as an erosion buffer. Group Four marshes should not be unnecessarily disturbed, but it would be better to concentrate necessary development in these marshes rather than disturb any of the marshes in the preceding groups.

Group Five: Saltwort (Type X)  
Reedgrass (Type VIII)

Based on present information, Group Five marshes have few values of any significance. While Group Five marshes should not be unreasonably disturbed, it is preferable to develop in these marshes than in any other types.
Wetland Plants

Common and Scientific Names as Found in the Tables

Arrow Arum*  Arrow Head*  Beggar’s Ticks*  Big Cordgrass*  Bonset  Buttonbush*  Cattails*  Common Threesquare*  Gerardia  Giant Bulrush*  Ironweed  Jewelweed  Marsh Hibiscus*  Marsh Mallow


* Species included in the Wetlands Act of 1972
Glossary of Descriptive Terms

**Cove Marsh**
A marsh contained within a concavity or recessed area on a shoreline. The marsh vegetation is usually found surrounding a central, open-water pond, and tidal flushing is permitted through an inlet.

**Creek or Embayed Marsh**
A marsh occupying a drowned creek valley. In many large creek marshes the salinity decreases headward; this type of marsh may be divided for inventory purposes into sections if significant changes in the plant community occur along its length.

**Delta Marsh**
A marsh growing on sediment deposited at the mouth of a tidal creek. Tidal exchange through the creek mouth is usually restricted to narrow channels by the marsh.
**Extensive Marsh**
A large marsh where the length and depth or width are roughly comparable. Most extensive marshes are drained by many tidal channels and creeks which have little freshwater input.

**Fringe Marsh**
A marsh which borders a section of shoreline and generally has a much greater length than width or depth.

**High Marsh**
The marsh surface is at an elevation of mean high water or above; it is usually inundated less than twice daily by tidal action.

**Low Marsh**
The marsh surface is at an elevation below mean high water; it is usually inundated twice daily by tidal action.
<table>
<thead>
<tr>
<th><strong>Marsh Island</strong></th>
<th>An isolated marsh surrounded on all sides by open water. Interior portions of the marsh may contain trees scattered at highest elevations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pocket Marsh</strong></td>
<td>A marsh contained within a small, essentially semi-circular area on a shoreline.</td>
</tr>
<tr>
<td><strong>Point or Spit Marsh</strong></td>
<td>A marsh which extends from the uplands in the form of a point or spit. Its development is usually influenced by tidal currents that form a sand berm behind which the marsh forms.</td>
</tr>
</tbody>
</table>
Section I: Upper Chippokes Creek

Part 1: Upper Reach

Part 2: Mouth and James River Shoreline

Upper Chippokes Creek marks the boundary between Prince George and Surry County. Only those marshes in Prince George County are recorded in this report. Information regarding the other marshes in this creek system is found in the Surry County Tidal Marsh Inventory.

This marsh creek system contains eleven individual marshes and has the largest acreage (423.6 acres) of all the James River tributaries in the county. Upper Chippokes Creek is a nearly pristine waterway with very little evidence of man-made disturbance. The tidal marshes of this creek are often associated with tidal swamps dominated by bald cypress (Taxodium distichum). The marshes of Upper Chippokes Creek are very diverse. Although the dominant plant species reported in most of the marshes is beggars ticks, this species does not mature until September, reflecting the seasonal succession of vegetation in a tidal freshwater marsh. During June, July and August, other plant species are more prevalent such as arrow arum, pickerelweed, cattails, yellow pond lily and others.

This creek system, in addition to being a valuable wildlife and waterfowl habitat, is also a confirmed nursery and spawning area for anadromous fish species such as herring, shad, striped bass, and white perch.
SECTION I. UPPER CHIPPOKES CREEK:
PART I. UPPER REACH.

TAYLORS CORNER

SCALE 1:24000

1000' 0

1000' 2000'

LOW POINT

17

<table>
<thead>
<tr>
<th>#</th>
<th>MARSH LOCATION</th>
<th>TOTAL ACRES</th>
<th>BIG CORN GRASS</th>
<th>TEARLUM</th>
<th>JEWELWEED</th>
<th>WILD RICE</th>
<th>RICE CUTGRASS</th>
<th>BEGGARS TICKS</th>
<th>PICKERELLEWEED</th>
<th>ARROW ARUM</th>
<th>WALTERS MILLET</th>
<th>SMARTWEED</th>
<th>CATTAIL</th>
<th>WATER HEMP</th>
<th>MARSH HIBISCUS</th>
<th>SWITCHGRASS</th>
<th>SWAMP MILKWEED</th>
<th>COMMON THREE SQUARE</th>
<th>PARTRIDGE PEA</th>
<th>BONESET</th>
<th>BUTTONBUSH</th>
<th>OTHERS</th>
<th>OBSERVATIONS</th>
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<tr>
<td>1</td>
<td>Upper Chippokes Creek</td>
<td>14.9%</td>
<td>40</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td>--</td>
<td>10</td>
<td>--</td>
<td>1.49</td>
<td>1.49</td>
<td>1.49</td>
<td>1.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Embayed marsh, dominated by beggar's ticks and jewelweed</td>
<td>XI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Upper Chippokes Creek</td>
<td>.4%</td>
<td>--</td>
<td>40</td>
<td>10</td>
<td>10</td>
<td>30</td>
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<td>.04</td>
<td>.04</td>
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<td></td>
<td></td>
<td></td>
<td>Small embayed marsh</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Upper Chippokes Creek</td>
<td>22.3%</td>
<td>10</td>
<td>2</td>
<td>5</td>
<td>70</td>
<td>5</td>
<td>2</td>
<td>5</td>
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<td>--</td>
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<td></td>
<td></td>
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<td>Large point marsh</td>
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</tr>
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<td>66</td>
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<td>--</td>
<td>2</td>
<td>5</td>
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<td></td>
<td></td>
<td>Extensive marsh</td>
<td>XI</td>
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</tr>
<tr>
<td>5</td>
<td>Upper Chippokes Creek</td>
<td>86.7%</td>
<td>--</td>
<td>11</td>
<td>40</td>
<td>--</td>
<td>31</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>a,- h,-</td>
<td></td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extensive marsh, dominated by wild rice</td>
<td>XI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Upper Chippokes Creek</td>
<td>39.6%</td>
<td>5</td>
<td>20</td>
<td>5</td>
<td>40</td>
<td>5</td>
<td>15</td>
<td>5</td>
<td>5</td>
<td>h,-</td>
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<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Large embayed and fringing marsh</td>
<td>XI</td>
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<tr>
<td>7</td>
<td>Upper Chippokes Creek</td>
<td>30.7%</td>
<td>7</td>
<td>--</td>
<td>10</td>
<td>--</td>
<td>45</td>
<td>--</td>
<td>3</td>
<td>--</td>
<td>--</td>
<td></td>
<td>h,-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Large point marsh dominated by beggar's ticks</td>
<td>XI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
h=BULRUSH  
i=ARROWHEAD
SECTION I. UPPER CHIPPOKES CREEK: PART 2.
MOUTH AND JAMES RIVER SHORELINE.

SCALE 1:24000
## Section I: Upper Chippokes Creek. Part 2: Mouth and James River Shoreline.

<table>
<thead>
<tr>
<th>#</th>
<th>Marsh Location</th>
<th>Total Acres</th>
<th>Big Cordgrass</th>
<th>Tearthumb</th>
<th>Jewelweed</th>
<th>Wild Rice</th>
<th>Rice Cutgrass</th>
<th>Beggars Ticks</th>
<th>Arrow Arm</th>
<th>Walters Millet</th>
<th>Smartweed</th>
<th>Cattail</th>
<th>Water Hemp</th>
<th>Marsh Hibiscus</th>
<th>Switchgrass</th>
<th>Swamp Milkweed</th>
<th>Common Tripesquaro</th>
<th>Partridge Pea</th>
<th>Boneset</th>
<th>Buttonbush</th>
<th>Others</th>
<th>Observations</th>
<th>Marsh Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Upper Chippokes Creek</td>
<td>43.3</td>
<td>%</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>50</td>
<td>40</td>
<td>2</td>
<td>--</td>
<td>--</td>
<td>2</td>
<td>--</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>a, h, l</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>Large creek marsh, scattered bald cypress and black gum</td>
<td>XI</td>
</tr>
<tr>
<td></td>
<td>acres</td>
<td></td>
<td>1.30</td>
<td>1.30</td>
<td>21.65</td>
<td>17.32</td>
<td>.87</td>
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**a** = GERARDIA  
**b** = IRONWEED  
**c** = MARSH MALLOW  
**d** = PLUME GRASS  
**e** = SWAMP ROSE  
**f** = WATER WILLOW  
**g** = WOOLGRASS  
**h** = BULRUSH  
**i** = ARROWHEAD
Section II: Kennon Marsh and Surrounding Area

This section contains only three individual marshes. Marshes #12 and 14 are small marshes found along the James River Shoreline. Marsh #13, Kennon Marsh, is the largest marsh in Prince George County with 422 acres. This wetland is actually a system of tidal creeks, open marsh and tidal swamp dominated by ancient bald cypress trees and associated red maples (*Acer rubrum*), ash (*Fraxinus* spp.), and black gum (*Nyssa sylvatica*). Big cordgrass (*Spartina cynosuriodes*) is the dominant plant species in the marsh area with large patches of beggars ticks (*Bidens* spp.) becoming obvious in the autumn. Big Cordgrass is a very important waterfowl habitat and food plant. Kennon Marsh is one of the largest, undisturbed wetland areas in the upper reaches of the James River estuary.
SECTION II. KENNON MARSH AND SURROUNDING AREA.
## Section II: Kennon Marsh and Surrounding Area.

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<th>Pickerelweed</th>
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- a = GERARDIA
- b = IRONWEED
- c = MARSH MALLOW
- d = PLUME GRASS
- e = SWAMP ROSE
- f = WATER WILLOW
- g = WOOLGRASS
- h = BULRUSH
- i = ARROWHEAD
Section III: Wards Creek

Wards Creek is a largely undisturbed tidal marsh creek with a significant amount of associated tidal swamp and bottomland hardwood forest. There are 23 individual marshes in the system, nearly all of them associated with swamp species such as bald cypress, ash, red maple and black gum. The largest marsh along Wards Creek is marsh #17 with 90.5 acres and is classified as a Freshwater Mixed Community (Type XI) because of its diverse plant community structure. This marsh is of high ecological value as a habitat for wildlife and waterfowl. Wild rice (*Zizania aquatica*), big cordgrass, smartweed (*Polygonum* spp.), waterhemp (*Amaranthus cannabinus*), and Walter’s millet (*Echinochloa walteri*) produce seeds that are prime duck food. A wetlands system of this diversity has the potential to support a large waterfowl population.
## Section III: Wards Creek

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<th>Water Hemp</th>
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**a**=GERARDIA  
**b**=IRONWEED  
**c**=MARSH MALLOW  
**d**=PLUME GRASS  
**e**=SWAMP ROSE  
**f**=WATER WILLOW  
**g**=WOOLGRASS  
**h**=BULRUSH  
**i**=ARROWHEAD
### Section III: Wards Creek

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*a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
g=WOOLGRASS  
h=BULRUSH  
i=ARROWHEAD*
### Section III: Wards Creek

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a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
g=WOOLGRASS  
h=BULRUSH  
i=ARROWHEAD
### Section III: Wards Creek.

| #   | MARSH LOCATION | TOTAL ACRES | BIG | CORDGRASS | TEARSHUMB | JEWELWEED | WILD RICE | RICE CUTGRASS | BEGGER'S TICKS | PICKERELWEED-ARROARUM | WATER'S MILLET | SMARTWEED | CATTAIL | WATER HEMP | MARSH HIBISCUS | SWITCHGRASS | SWAMP MILKWEED | COMMON THREEQUARE | THURSDAY PEAS | BONESET | BUTTONBUSH | OTHERS | OBSERVATIONS | MARSH TYPE |
|-----|---------------|-------------|-----|-----------|-----------|-----------|-----------|--------------|---------------|----------------------|----------------|------------|--------|-----------|-------------|--------------|-------------|----------------|----------------|-------------|---------|------------|-------|--------------|-----------|
| 36  | Wards Creek   | .5          | %   |           |           |           |           |              |               |                      |                |            |        |           | 5           |              |              |                |              |          |           |        | Small cove marsh | XI        |
|     |                | acres       |     | .03       | .15       |           |           |              |               |                      |                |            |        |           | .03         |              |              |                |              |          |           |        |               |           |
| 37  | Wards Creek   | 2.0         | %   |           | 50        |           |           | 5           | 40           |                      |                |            |        |           | 5           |              |              |                |              |          |           |        | Small fringe marsh | XI       |
|     |                | acres       |     | 1.00      | .10       | .80       |           |              |               |                      |                |            |        |           | .10         |              |              |                |              |          |           |        |               |           |
|     | Total This    | 216.5       | %   |           |           |           |           |              |               |                      |                |            |        |           |             |              |              |                |              |          |           |        |               |           |
|     | Section       | acres       |     | 18.1      | 1.02      | 22.54     | 25.54     | 3.11        | 72.10         | 21.92               | 11.97          | 9.05       | 2.35   | 14.02     | 1.11        | 3.20         | 9.17        | 1.41          | .29          |

a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
g=WOOLGRASS  
h=BULRUSH  
i=ARROWHEAD
Section IV: Flowerdew Hundred Creek

Flowerdew Hundred Creek is a relatively undisturbed tidal creek bordered by tidal marshes and swamps. There are 17 individual marshes (#38-54) totalling 116 acres. A number of these marshes are associated with tidal swamps which are commonly vegetated by typical wetland trees such as bald cypress, red maple, black gum and American ash. The largest marsh in the system, marsh #46, occurs in the extreme upper reach of the creek and totals 70.7 acres.

When the original field survey was conducted in September, 1978, the dominant plant species recorded for most of the marshes was beggar’s ticks (*Bidens* spp.). Because of the variability of seasonal vegetational succession, it is not unusual to find *Bidens* as a common or dominant plant in marshes, in that it matures and blooms late in the season. Other marsh species such as arrow arum and pickerelweed reach their peak in June/July and were less evident when the first field survey was made. Later observations of this system and others in the county were made in July, 1988 and at that time beggar’s ticks was not prevalent, but water hemp (*Amaranthus cannabinus*) was. The later species is a very important waterfowl food, a prolific producer of nutritious seeds which are relished by ducks and geese. The data tables in this report reflect the vegetation cover that was reported in 1978. As stated in the introduction, because of vegetational seasonal variability, it is difficult to predict what plants an observer may find in a tidal freshwater marsh.
SECTION IV. FLOWERDEW HUNDRED.

SCALE 1:24000

[Map of FlowerdeW Hundred with labeled sections and geographical features such as rivers and points of interest.]
### Section IV: Flowerdew Hundred Creek.

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<th>SMARTWEEDE</th>
<th>CATTAIL</th>
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<th>MARSH HIBISCUS</th>
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<th>SWAMP</th>
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**Legend:**
- a=GERARDIA
- b=IRONWEED
- c=MARSH MALLOW
- d=PLUME GRASS
- e=SWAMP ROSE
- f=WATER WILLOW
- g=WOOLGRASS
- h= BULRUSH
- i= ARROWHEAD
### Section IV: Flowerdew Hundred Creek

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<th>Beggars Ticks</th>
<th>Pickering's Arrow</th>
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- a=GERARDIA
- b=IRONWEED
- c=MARSH MALLOW
- d=PLUME GRASS
- e=SWAMP ROSE
- f=WATER WILLOW
- g=WOOLGRASS
- h=ARROWHEAD
Section IV: Flowerdew Hundred Creek.

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<th>BRITTLEMILLET</th>
<th>CAT TAIL</th>
<th>WATER HEMP</th>
<th>MARSH HIBISCUS</th>
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Section V: Windmill Point to Maycocks Point

The only marsh in this section is marsh #55. It is a man-made marsh island constructed by the U.S. Army Corps of Engineers in 1975 from dredged material obtained from maintenance dredging of the nearby main channel of the James River. A rectangular-shaped dike was constructed to protect an intertidal interior which eventually became vegetated mainly with pickerelweed (*Pontederia cordata*), arrow arum (*Peltandra virginica*), and arrowhead (*Sagittaria latifolia*). In 1976, the intertidal marsh area within the dike was vegetated by approximately 14 acres of marsh plants, dominated the above mentioned species. When the initial field work was done for the Prince George County marsh inventory in 1978, the marsh had a total of 12 acres and was dominated by pickerelweed, arrow arum and arrowhead.

The dike has been breached in several areas since 1978 because of erosion, and now (1988) the vegetated wetland area has been reduced to only .25 acre of arrow arum and pickerelweed. Only the downriver part of the island remains relatively stable and supports a few trees and shrubs.

The map indicates the relative geomorphological change of this marsh in the last decade.
SECTION V. WINDMILL POINT TO MAYCOCKS POINT

SCALE 1:24000

CHARLES CITY CO.
PRINCE GEORGE CO.

JAMES RIVER

BLAIRS

FLOWERDEW HUNDRED

WINDMILL POINT

FLOWERDEw HUNDRED CREEK
### Section V: Windmill Point to Maycocks Point.

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<th>TEARTHUMB</th>
<th>JEWELWEED</th>
<th>WILD RICE</th>
<th>RICE CUTGRASS</th>
<th>BEGGAR'S TICKS</th>
<th>PICKERELWEED</th>
<th>ARUM MILLET</th>
<th>SMARTWEED</th>
<th>CATTAIL</th>
<th>WATER HEMP</th>
<th>MARSH HIBISCUS</th>
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<th>COMMON THRESQUARE</th>
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Section VI: Powell Creek

This section includes all the tidal marshes (#58-79) of Powell Creek. This creek system has been moderately disturbed in the past by gravel pit operations including channel dredging and gravel transport via barges. Relics of this operation, such as abandoned barges, a derelict dredge, piers and other equipment are still evident. A number of the rotting wooden barges have become vegetated by wetland plants, becoming, inadvertently, man-made marshes.

Most of the marshes have not been disturbed by this operation but actually have expanded because of the placement of abandoned barges immediately adjacent to the marsh shoreline. Over time the barges have deteriorated and accumulated sediment, providing conditions for marsh vegetation succession. A number of the marshes are embayed marshes, often occurring within a tidal swamp community. The species composition in this wetland system is very similar to that of the tidal creek tributaries along this reach of the James River, with the exception of partridge pea (*Cassia fasciculata*) which is more abundant in Powell Creek than any of the others.

As the other marsh creek systems, Powell Creek has high ecological value as a wildlife, waterfowl and fisheries habitat.
### Section VI: Powell Creek

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<th>CATTAIL</th>
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**Abbreviations:**

- a=GERARDIA
- b=IRONWEED
- c=MARSH MALLOW
- d=PLUME GRASS
- e=SWAMP ROSE
- f=QUICKSAND GRASS
- g=WATER WILLOW
- h=BULRUSH
- i=ARROWHEAD

43
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<td>Embayed point marsh with trees scattered throughout, black gum and ash</td>
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a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
g=WOOLGRASS  
h=BULRUSH  
i=ARROWHEAD
### Section VI: Powell Creek

| #  | MARSH LOCATION | TOTAL ACRES | BIG CORN | CORN | CORDGRASS | CORDGRASS | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE 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CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE CUT | RICE C...
## Section VI: Powell Creek

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<th>TEARTHUMB</th>
<th>JEWELWEED</th>
<th>WILD RICE</th>
<th>RICE CUTGRASS</th>
<th>BEGGARS TICKS</th>
<th>PICKERELWEED-ARROW ARUM</th>
<th>WALTERS MILLET</th>
<th>SMARTWEED</th>
<th>CATTAIL</th>
<th>WATER HEMP</th>
<th>MARSH HIBSICS</th>
<th>SWITCHGRASS</th>
<th>SWAMP MILLEWED</th>
<th>COMMON THRESQUARE</th>
<th>PARTRIDGE PEA</th>
<th>BONESET</th>
<th>BUTTONBUSH</th>
<th>OTHERS</th>
<th>OBSERVATIONS</th>
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**Observations**:

- a = GERARDIA
- b = IRONWEED
- c = MARSH MALLOW
- d = PLUME GRASS
- e = SWAMP ROSE
- f = WATER WILLOW
- g = WOOLGRASS
- h = BULRUSH
- i = ARROWHEAD

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Section VII: James River Dredged Material Islands

The marshes recorded in this section are all found on man-made islands in a reach of the James River from Coggins Point to Jordan Point. The islands were formed artificially via overboard disposal of dredged material in the process of maintenance dredging of the main channel of the James River over the years. There are seven islands in the archipelago, four of which are dominated by marsh vegetation (#80, 81, 85, & 86). Three (# 82-84) are predominantly vegetated by trees, chiefly red maple and cottonwood.

The largest marsh island (# 80), is 21.5 acres in area and is dominated by wild rice (Zizania aquatica), a valuable waterfowl food. The entire island complex is a confirmed waterfowl habitat. Other marsh plants occurring in this system noted for their food and cover value are smartweeds (Polygonum spp.), Walter’s millet (Echinochola walteri), arrow arum and pickerelweed.

Two creeks located in this section, Chappell and Jenny creeks, were found to be limited by tidal influence, and although supported swamp and bottomland hardwood forests, no tidal marshes were observed.
### Section VII: James River Dredged Material Islands.

<table>
<thead>
<tr>
<th>#</th>
<th>MARSH LOCATION</th>
<th>TOTAL ACRES</th>
<th>BIG CORDGRASS</th>
<th>CORDGRASS</th>
<th>JEWELWEED</th>
<th>WILD RICE</th>
<th>RICE CUTGRASS</th>
<th>BEKKERS TICKS</th>
<th>ARROW ARUM</th>
<th>WALTERS</th>
<th>SMARTWEED</th>
<th>CATTAIL</th>
<th>WATER HEMP</th>
<th>MARSH HIBISCUS</th>
<th>SWITCHGRASS</th>
<th>SWAMP MILKWEED</th>
<th>COMMON THREEQUARE</th>
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<td>Island and narrow fringe marsh</td>
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</table>

a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
h=BULRUSH  
i=ARROWHEAD
# Section VII: James River Dredged Material Islands.

<table>
<thead>
<tr>
<th>#$</th>
<th>MARSH LOCATION</th>
<th>TOTAL ACRES</th>
<th>BIG</th>
<th>CORDGRASS</th>
<th>TEARLEAF</th>
<th>JEWELWEED</th>
<th>WILD RICE</th>
<th>RICE CUT GRASS</th>
<th>BEGAR'S TICKS</th>
<th>PICKEREL-WEADED</th>
<th>ARROW</th>
<th>WALTER'S</th>
<th>MILLET</th>
<th>SMARTWEED</th>
<th>CATTAIL</th>
<th>WATER HEMP</th>
<th>MARSH HIBISCUS</th>
<th>SWITCHGRASS</th>
<th>SWAMP MILKWEED</th>
<th>COMMON THRESQUE</th>
<th>PARTRIDGE PEA</th>
<th>BONESET</th>
<th>BUTTON BUSH</th>
<th>OTHERS</th>
<th>OBSERVATIONS</th>
<th>MARSH TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Section</td>
<td>53.4</td>
<td>%</td>
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</tr>
<tr>
<td>acres</td>
<td>3.03</td>
<td>17.29</td>
<td>2.97</td>
<td>9.26</td>
<td>4.30</td>
<td>14.26</td>
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</tr>
</tbody>
</table>

a=GERARDIA  
b=IRONWEED  
c=MARSH MALLOW  
d=PLUME GRASS  
e=SWAMP ROSE  
f=WATER WILLOW  
g=WOOLGRASS  
h=BUHLRUSH  
i=ARROWHEAD
Section VIII: James River - Jordan Point to City Point (Hopewell)

Only four marshes are contained in this section. Two of the marshes (# 89 & 90) are on islands in the James River which were likely created by overboard disposal of dredged material. These marshes are dominated by smartweeds, a valuable waterfowl food. The other marshes (# 87 & 88) are small fringe marshes located at the mouth of Baileys Creek.

Baileys Creek itself is a highly polluted waterway and although it supports swamp and bottomland forest wetlands, no tidal marshes of any significance (less than .25 acre) were observed at the time of the initial field work in 1978, as well as in 1988.
# Section VIII: James River-Jordan Point to City Point (Hopewell).

| #   | MARSH LOCATION | TOTAL ACRES | BIG CORDGRASS | CORNTHUMB | JEWELWEED | WILD RICE | RICE CUTGRASS | Beggars Ticks | Pickerelweed-Arrow Arum | WALTER'S MILLET | SMARTWEED | CATTAIL | WATER HEMP | MARSH HIBISCUS | SWAMP MILKWEED | SWAMP THRESQUE | COMMON THRESQUE | PARTRIDGE PEA | BONESET | BUTTONBUSH | OTHERS | OBSERVATIONS                  | MARSH TYPE |
|-----|----------------|-------------|---------------|------------|-----------|-----------|---------------|---------------|---------------------------|----------------|------------|---------|-----------|-------------|---------------|----------------|----------------|----------------|-----------|---------|---------|--------|-----------------|---------|
| 87  | James River    | .25         | %             |            |          |           | 20            | 10            | 60                        | 5              | 5         |         |            |              |                |                |                |           |         |         |       | Fringe marsh    | XI      |
|     |                |             | acres         | .05        | .03       | .15       | .01           | .01           |                           |                |           |         |            |              |                |                |                |           |         |         |       |                 |         |
| 88  | James River    | 1.7         | %             | 60         | 10        | 30        | 1.02          | .17           | .51                       |                |           |         |            |              |                |                |                |           |         |         |       | Fringe marsh dominated by wild rice | XI      |
|     |                |             | acres         | 1.02       | .17       | .51       |              |               |                           |                |           |         |            |              |                |                |                |           |         |         |       |                 |         |
| 89  | James River    | .3          | %             | 5          | 80        | 5         | 10            | 80            | 10                        |                | 5         |         |            |              |                |                |                |           |         |         |       | Island fringe marsh | XI      |
|     |                |             | acres         | 0.02       | .24       | .03       | 0.24          | 0.3           | 0.03                      |                |           |         |            |              |                |                |                |           |         |         |       |                 |         |
| 90  | James River    | 4.0         | %             | 10         | 15        | 70        | --            | --             | --                        |                | --       |         |            |              |                |                |                |           |         |         |       | Marsh island    | XI      |
|     |                |             | acres         | .40        | .20       | .60       | 2.80          | .02           | .02                      |                |           |         |            |              |                |                |                |           |         |         |       |                 |         |
| Total This Section | 6.25   | %             |                | .40        | 1.09      | .20       | .63           | 3.36          | .01                       | .55            | .02      |         |            |              |                |                |                |           |         |         |       |                 |         |

\[ \text{a}=\text{GERARDIA}\]
\[ \text{b}=\text{IRONWEED}\]
\[ \text{c}=\text{MARSH MALLOW}\]
\[ \text{d}=\text{PLUME GRASS}\]
\[ \text{e}=\text{SWAMP ROSE}\]
\[ \text{f}=\text{WATER WILLOW}\]
\[ \text{g}=\text{WOOLGRASS}\]
\[ \text{h}=\text{BULRUSH}\]
\[ \text{i}=\text{ARROWHEAD}\]
Section IX: City of Hopewell (Appomattox River)

The Appomattox River, a major tributary of the James, is a tidal waterway to the fall line, at the City of Petersburg, approximately 10.5 river miles from its mouth.

There are six tidal marshes (#91-96) in this section, totalling slightly over 19 acres. All of these marshes are found within the city limits of Hopewell, except marsh #96, which is partially in Hopewell and Prince George County. This marsh is the largest marsh in this section, with 8.5 acres. Slightly over 12 acres of the total acres in this section, are dominated by smartweeds and tearthumbs (Polygonum spp.). Seeds from these species are a valuable waterfowl food source. Several of the smaller embayed marshes in this section are associated with timbered wetlands such as tidal swamps and/or bottomland hardwood forests.
SECTION IX. CITY OF HOPEWELL (APPOMATTOX RIVER).

SCALE 1:24000

1000' 0 1000' 2000'

RIVERMONT

APPOMATTOX

CHESTERFIELD CO.

HOPEWELL CITY

HOPEWELL

CABIN CREEK

645

904

92

93

94

95

96

36

10

91
### Section IX: City of Hopewell (Appomattox River)

| #  | Marsh Location         | Total Acres | Big Cordgrass | Teartum | Jemeweed | Wild Rice | Rice Cittgrass | Beggar's Ticks | Pickrel Filled Arrow | Walters Millet | Smartweed | Cattail | Water Hemp | Marsh Hibiscus | Switch Grass | Swamp Milkweed | Common Three Square | Pea | Boneset | Buttonbrush | Others | Observations                                      | Marsh Type |
|----|------------------------|-------------|---------------|----------|----------|-----------|---------------|----------------|-------------------|-----------------|------------|---------|----------|------------|--------------|----------|---------------|----------------------|-----|---------|------------|--------|-----------------------------------------------|-------------|
| 91 | Appomattox River       | 1.04        | %             |          |          |           | 30            | 10             | 10                | 50              | --         | --      | --       | --         | --          | --       | --            | Fringe marsh dominated by smartweed | XI  |         |            |        |                                  |
| 92 | Appomattox River       | 3.0         | %             |          |          |           | 15            | 5              | 10                | 60              | 10         | --      | --       | --         | --          | --       | --            | Split marsh with scattered trees | XI  |         |            |        |                                  |
| 93 | Appomattox River       | 1.0         | %             |          |          |           | 80            | 5              | 5                 | 5               | 5          |         |         |            |             |         |               | Small creek marsh | XI  |         |            |        |                                  |
| 94 | Cabin Creek            | 3.0         | %             |          |          |           | 30            | 20             | --                | 20              | 5          | 5       | 10       | --         | --          | --       | a,-           | Large creek marsh | XI  |         |            |        |                                  |
| 95 | Appomattox River       | 2.6         | %             |          |          |           | 20            | 10             | 5                 | 60              | 5          |         |         |            |             |         |               | Small creek marsh | XI  |         |            |        |                                  |
| 96 | Appomattox River       | 8.5         | %             |          |          |           | 45            | 10             | --                | 10              | 10         | --      | --       | --         | --          | --       |               | Large fringe marsh | XI  |         |            |        |                                  |
|    | Total This Section     | 19.14       | %             |          |          |           | 6.05          | 1.45           | .50               | 2.22            | 1.58       | .68     | .50      | .30        | .12        | .28      |               |                                      |     |         |            |        |                                  |

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57
Section X: Upper Appomattox River

This section includes three marshes found along the upper tidal reach of the Appomattox River. Two of the marshes are embayed wetlands, surrounded by bottomland hardwood forests. The dominant vegetation in these two marshes are tear-thumbs (*Polygonum arifolium* and *P. sagittatum*). These two species form dense vine-like growth that become a nearly impenetrable thicket late in the growing season, offering cover for wildlife and seeds for waterfowl food.

Two marshes were observed farther upriver, between Harrison Creek and just below the I-95 bridge in 1978 where this branch of the river terminates into a dredged canal. These marshes were not found during field observations in 1988. It is assumed that they were filled in or were impacted by hydrological changes.
### Section X: Upper Appomattox River.

<table>
<thead>
<tr>
<th>#</th>
<th>MARSH LOCATION</th>
<th>TOTAL ACRES</th>
<th>BIG CORDGRASS</th>
<th>TEARTHUMB</th>
<th>JEWELWEED</th>
<th>WILD RICE</th>
<th>RICE CULRASS</th>
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<th>MARSH HIBISCUS</th>
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<tr>
<td>97</td>
<td>Appomattox River</td>
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<td>.28 .10 .03</td>
<td>.03</td>
<td>.05 .05</td>
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<td>Embayed marsh</td>
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<tr>
<td>98</td>
<td>Appomattox River</td>
<td>4.1 %</td>
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<tr>
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<td>Fringe marsh</td>
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<td>Total This Section</td>
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<td>Grand Total</td>
<td>1,485.79 %</td>
<td>232.68 86.27 77.81 109.03 19.77 489.99 62.73 29.64 73.06 34.90 38.67 43.82 .12 .22 3.26 49.30 13.14 1.82</td>
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d=PLUME GRASS  
e=SWAMP ROSE  
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Appomattox River .................. 1,15,55-57,59-61
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