5-1981

Surry County Tidal Marsh Inventory

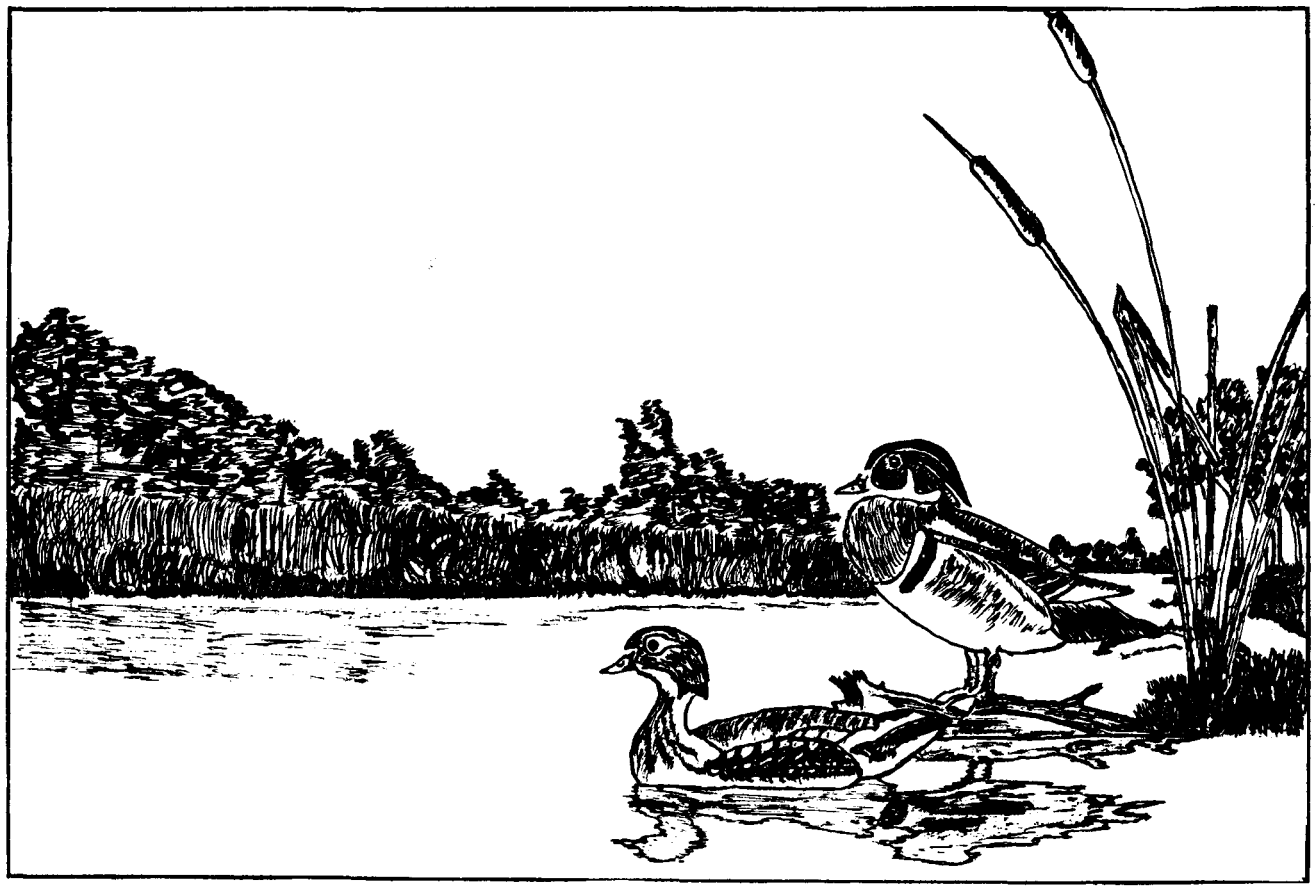
Kenneth A. Moore
Virginia Institute of Marine Science

Gene M. Silberhorn
Virginia Institute of Marine Science

SURRY COUNTY TIDAL MARSH INVENTORY

Special Report No.187 in Applied Marine Science and Ocean Engineering

Kenneth A. Moore



VIRGINIA INSTITUTE OF MARINE SCIENCE, SCHOOL OF MARINE SCIENCE, COLLEGE OF WILLIAM AND MARY

Gloucester Point,Virginia 23062

MAY 1981

SURRY COUNTY TIDAL MARSH INVENTORY

Special Report No.187 in Applied Marine Science and Ocean Engineering

Kenneth A. Moore

Gene M. Silberhorn,Project Leader

VIRGINIA INSTITUTE OF MARINE SCIENCE, SCHOOL OF MARINE SCIENCE, COLLEGE OF WILLIAM AND MARY

Gloucester Point, Virginia 23062

Dr. William J. Hargis, Jr., Director

MAY 1981

ACKNOWLEDGEMENTS

Funds for the publication and distribution of this report have been provided by the State of Virginia and the Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Grant Number 04-6-158-44037.

I would like to express my thanks to Mr. Richard Smith for his field assistance. I wish also to thank Dr. Gene Silberhorn, Mr. Walter Priest and Col. George Dawes for their constructive criticisms and review of this manuscript.

For assistance in the report preparation I am indebted to the VIMS photographic and art departments. In addition I would like to thank Col. Joseph Mizell for help with the data tabulation. Finally, sincere thanks to Mrs. Carole Knox and Mrs. Nancy White for typing the various drafts and the final manuscript.

SURRY COUNTY

TIDAL MARSH INVENTORY

TABLE OF CONTENTS

INTRODUCTION

This publication is one in a series of marsh inventory reports compiled by the Department of Wetlands Ecology and Environmental Impact Assessment, Virginia Institute of Marine Science, College of William and Mary. Previously published reports may be obtained from the library, VIMS, Gloucester Point, Virginia 23062. This report is presented in much the same format as the preceeding reports.

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. The inventory program is designed to assist wetland boards, cities, counties, planning districts and other local, state and federal agencies as well as the general public and private industry. This document, along with its companion, the Shoreline Situation Report, Surry County, Va., 1976, VIMS SRAMSOE No. 112, 50 p., present an inventory and discussion of many shoreline parameters and characteristics.

A previously published study, Guidelines for Activities Affecting Virginia Wetlands, Silberhorn, Dawes and Barnard, 1974, VIMS SRAMSOE No. 46, will be helpful in the utilization of this report. Excerpts from the above document are included in the following text, explaining marsh vegetation types and their evaluation. The reader is also referred to Tidal Wetland Plants of Virginia, Silberhorn, 1976, VIMS Educational Series No. 19, an illustrated field guide describing each of the plants listed in the Act. All documents are available upon request from the library at VIMS.

The wetlands located within Surry County total nearly 1850 acres. Of this total approximately 50 percent are composed of species such as arrow arum, wild rice and beggar ticks, which generally are found only under freshwater and slightly saline conditions (Types VII, XI). The remaining areas are dominated by big cordgrass (Type V), a species associated with areas of low to moderate salinities.

The wetlands are located for the most part in the numerous tidal creeks which are found along the James River. Except for the region known as Hog Island, the majority of Surry County bordering the James River is devoid of marsh areas. This is primarily due to the high energy nature of the river's shoreline, which precludes the establishment of marshes.

The distribution of marsh plant species in Surry County generally follows that of the salinity gradient of the James River. For example, the most upstream creeks in Surry County such as Upper Chippokes Creek (Section I) are dominated largely by freshwater species. Those creeks found along the middle sections of Surry County including Grays Creek and Lower Chippokes Creek (Section V), have primarily freshwater species throughout much of their lengths, with increasing brackish water areas near their mouths. The downstream marsh areas of Hog Island (Section VI) and Lawnes Creek (Section VII), in contrast, are composed largely of brackish water species, with freshwater plants found only in the most upstream section of Lawnes Creek where the freshwater runoff remains largely unmixed with saltwater. Salinity at any particular site is controlled to a great extent by the flow of the James River. After a summer of drought for example, salinities throughout all of Surry County's tidal waters may be considerably increased.

The majority of tidal wetlands in Surry County remain as unaltered natural areas. Exceptions include Sunken Meadow Pond (Section II), a former tidal creek which has been dammed for many years, and Hog Island, a brackish water area that has been diked to form a shallow water impoundment which is managed to provide a feeding and resting area for migrating waterfowl. The remaining unaltered marshes serve in many ways including valuable wildlife habitats and as confirmed nursery and spawning areas for many fish species, including the striped bass, American and hickory shads, river herring and alewife.

METHODS

Aerial photographs and topographic maps (U.S.G.S.) were utilized to obtain 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.

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 (shaded) 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 species 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. For example, a marsh which is judged to contain 60 percent wild rice would be listed as Type XI (Freshwater Mixed).

Marsh Types and Evaluation

For a better understanding of what is meant by marsh types, some background information is required. The personnel of the Department of Wetlands Ecology and Environmental Impact Assessment 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 then 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 and 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 of 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 perserved.

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 XI)
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.

For a better understanding of Virginia's wetlands in general, the Wetlands Act of 1972, and marsh types and their evaluation, the following publications are recommended:

Coastal Wetlands of Virginia Interim Report No. 2
Special Report in Applied Marine Science
and Ocean Engineering No. 27
Kenneth Marcellus, July 1972
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

Laws of Virginia Relating to Wetlands and Subaqueous Waters
Virginia Marine Resources Commission
2401 West Avenue
Newport News, Virginia 23607

Wetlands Guidelines
Virginia Marine Resources Commission
2401 West Avenue
Newport News, Virginia 23607

Tidal Wetland Plants of Virginia
Gene M. Silberhorn, April 1976
Educational Series No. 19
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

MARSH PLANTS

Common and Scientific Names as found in the Data Tables

Arrowhead	*Sagittaria falcata* Pursh
Arrow Arum	*Peltandra virginica* (L.) Kunth
Ash*	*Fraximus* spp.
Bald Cypress	*Taxodium distichum* (L.) Richard
Beggar Ticks	*Bidens* spp.
Big Cordgrass	*Spartina cynosuroides* (L.) Roth
Black Gum	*Nyssa sylvatica* Marshall
Black Needlerush	*Juncus roemerianus* Scheele
Button Bush	*Cephalanthus occidentalis* L.
Cardinal Flower*	*Lobelia cardinalis* L.
Cattails	
Common	*Typha latifolia* L.
Narrow-leaved	*Typha angustifolia* L.
Common Threesquare	*Scirpus americanus* Persoon
Dodder*	*Cuscuta* spp.
Giant Bulrush	*Scirpus validus* Vahl
Ironweed*	*Vernonia noveboracensis* (L.) Michaux

*Marsh species not included in Virginia's Wetlands Act of 1972.

MARSH PLANTS (continued)

Jewelweed*	Impatiens capensis Meerb.
Marsh-Fleabane	Pluchea purpurascens (Swartz) DC.
Marsh Hibiscus	Hibiscus moscheutos L.
Marsh Mallow*	Kosteletzkya virginica (L.) Presl.
Marsh Milkweed*	Asclepias incarnata L.
Orach*	Atriplex patula L.
Pickerelweed	Pontederia cordata L.
Reed Grass	Phragmites australis (Cav) Trin ex Steud.
Saltbushes	
Groundsel Tree	Baccharis halimifolia L.
Marsh Elder	Iva frutescens L.
Saltmarsh Aster*	Aster tenufolius L.
Saltmarsh Bulrush	Scirpus robustus Pursh.
Saltmarsh Cordgrass	Spartina alterniflora Loisel.
Saltmeadow Grasses	
Saltgrass	Spartina patens (Aiton) Muhl.
Saltmeadow Hay	Distichlis spicata (L.) Greene
Sedge*	Carex stricta Lam.
Smartweed	Polygonum spp.

*Marsh species not included in Virginia's Wetlands Act of 1972.

MARSH PLANTS (continued)

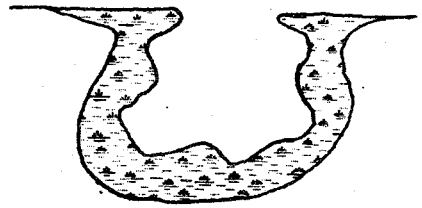
Southern Cutgrass	*Leersia oryzoides* (L.) Swartz
Spike-rush	*Eleocharis* spp.
Swamp Rose*	*Rosa palustris* Marsh
Switch grass	*Panicum virgatum* L.
Tear Thumb*	*Polygonum arifolium* L.
Walter's Millet*	*Echinochloa walteri* (Pursh) Nash
Water Dock	*Rumex verticillatus* L.
Water-hemp	*Amaranthus cannabina* (L.) J. D. Sauer
Water Parsnip*	*Sium suave* Walt.
Wild Pea or Partridge Pea*	*Cassia fasciculata* Michaux
Wild Rice	*Zizania aquatica* L.
Wool Grass	*Scirpus cyperinus* (L.) Kunth
Wool Reed or Wool Reedgrass	*Cinna arundinacea* L.

*Marsh species not included in Virginia's Wetlands Act of 1972.

Glossary of Descriptive Terms

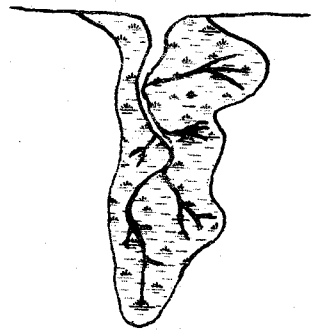
Cove Marsh

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.



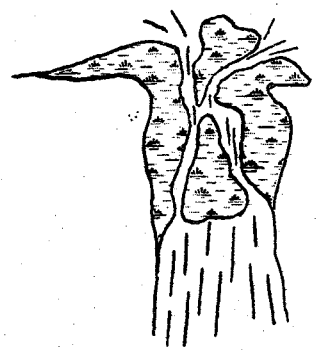
Creek or Embayed Marsh

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.

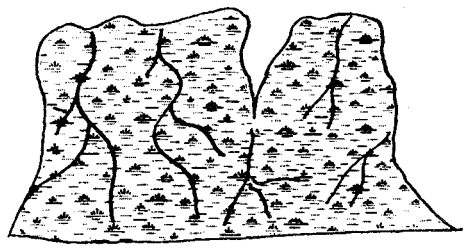


Delta Marsh

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.



Glossary of Descriptive Terms



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.

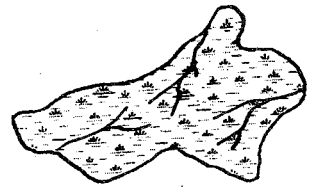
High Marsh — The marsh surface is at an elevation of mean high water or above; it is usually inundated less than twice daily by tidal action.

Low Marsh — The marsh surface is at an elevation below mean high water; it is usually inundated twice daily by tidal action.

Glossary of Descriptive Terms

Marsh Island

An isolated marsh surrounded on all sides by open water. Interior portions of the marsh may contain trees scattered at highest elevations.

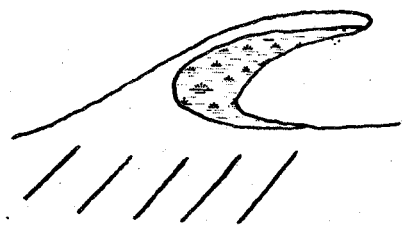


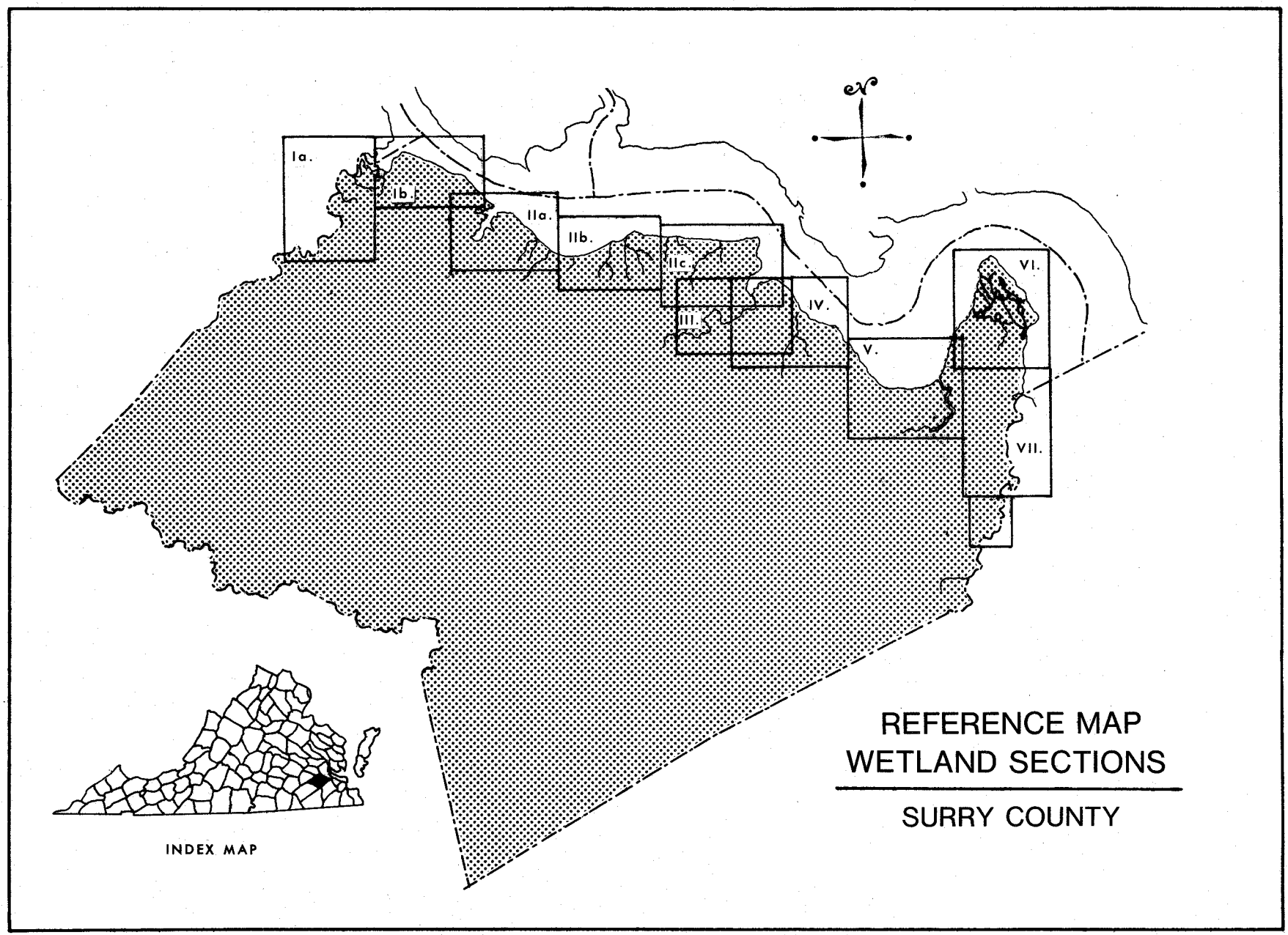
Pocket Marsh

A marsh contained within a small, essentially semi-circular area on a shoreline.

Point or Spit Marsh

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.




Ia.
Ib.
IIa.
IIb.
IIc.
III.
IV.
V.
VI.
VII.
INDEX MAP
REFERENCE MAP
WETLAND SECTIONS
SURRY COUNTY

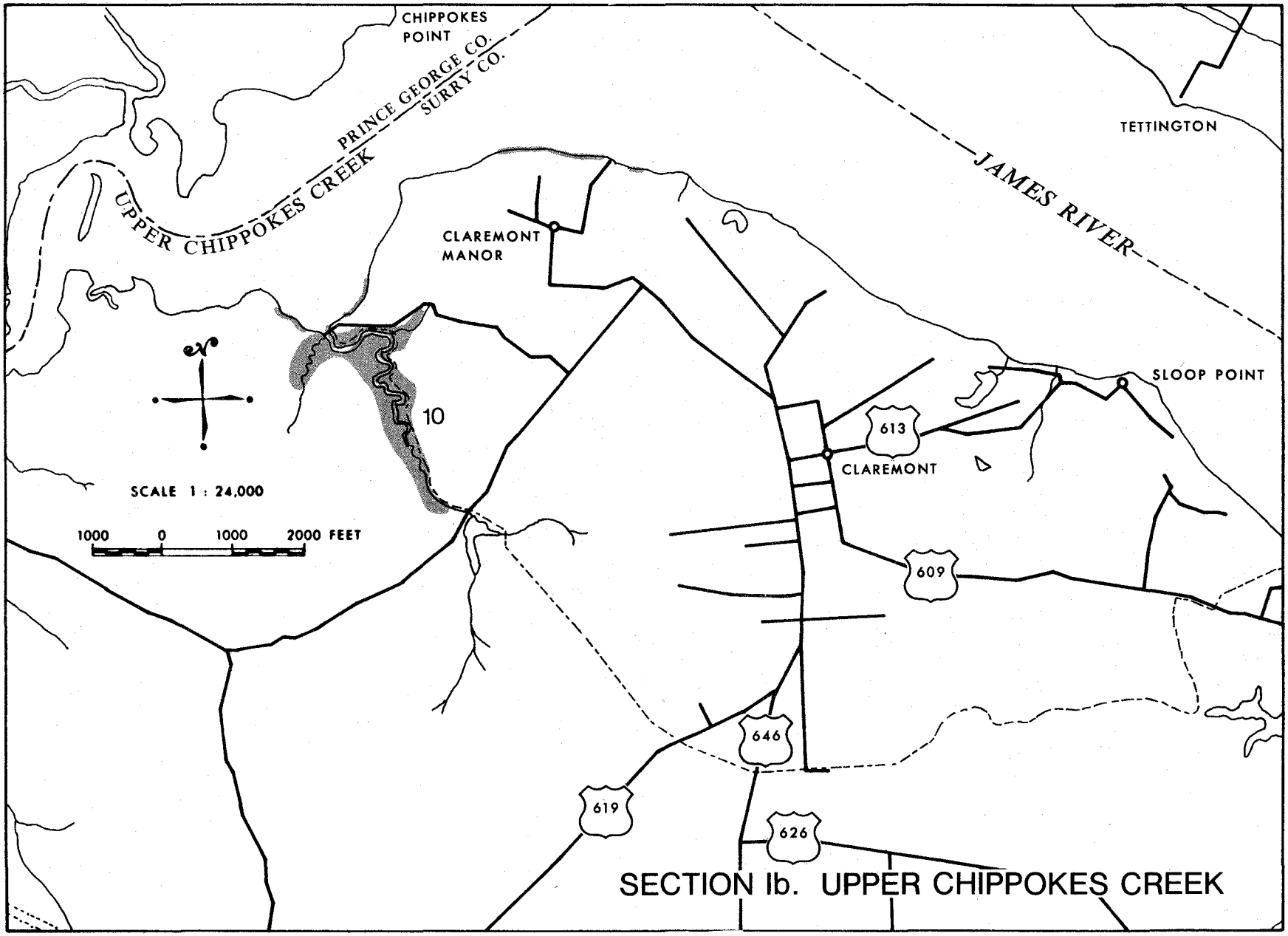
SECTION I.

UPPER CHIPPOKES CREEK

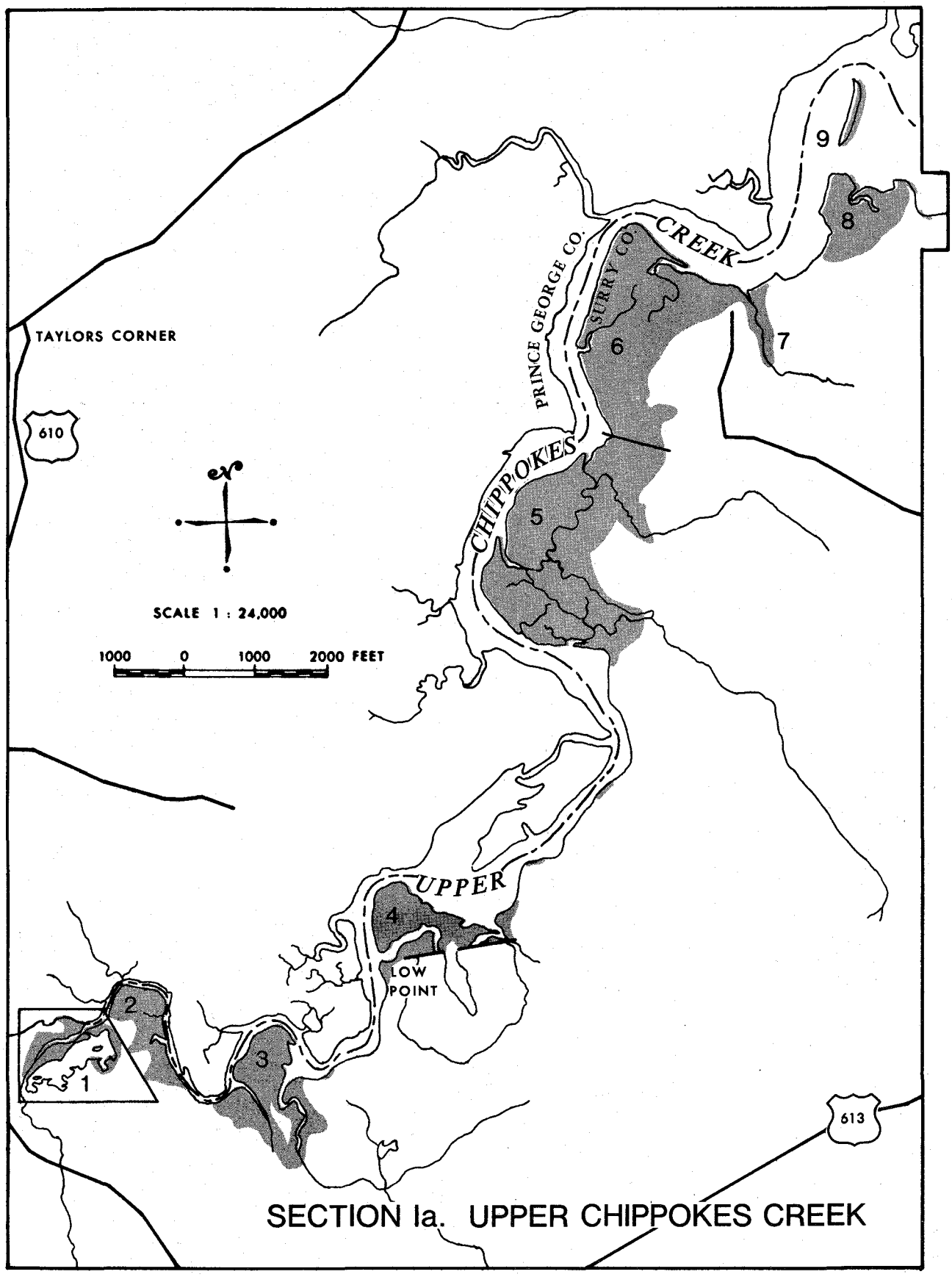
Upper Chippokes Creek marks a portion of the western boundary of Surry County and its shoreline is illustrated on two map plates (IA, IB). Since the Surry County line is located down along the middle of the main creek channel only those marshes located along the southern shoreline are described here.

The tidal waters of Upper Chippokes Creek remain fresh throughout much of the year. Only during periods of prolonged low rainfall and low James River flow, usually occurring during the fall season, will the creek be subject to brackish water. As a result, this general lack of salinity allows the plant communities found within marshes of the creek system to be composed largely of freshwater species (Types VII, XI). This situation may be compared to the other creek systems of Surry County (Section VI) located further down the James River where the occurrence of species such as saltmarsh cordgrass (Type I) mark the increased effect of saltwater.

The marshes found within Upper Chippokes Creek are very diverse but for the most part are composed of arrow arum, pickerelweed, wild rice, cattails, beggar ticks and jewelweed as well as scattered bald cypress. They are considered highly valuable in environmental terms for they act as a valuable food source for many species of fowl and serve as well as an excellent wildlife habitat. The creek is a confirmed nursery and spawning area for fishes of the genus Alosa, a group which includes species such as American and hickory shad as well as river herring and alewife. Other important species such as catfish, white perch, carp, and largemouth bass are also common throughout its tidal waters.



SECTION Ib. UPPER CHIPPOKES CREEK



SECTION Ia. UPPER CHIPPOKES CREEK

Section I. Upper Chippokes Creek

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
1	Upper Chippokes Creek	6.3	%	60	20		5	5	-	-	-	5	-	-	-	-	-	-	-	5	-	-					a,b,d,e,f,g,-	Fringing marsh areas at head of creek; marshes grade to woody swamp; area disrupted by gravel pits.	VII
			acres	3.8	1.3		0.3	0.3	-	-	-	0.3	-	-	-	-	-	-	-	0.3	-	-					a,b,d,e,f,g,-		
2	Upper Chippokes Creek	13.4	%	60	15	-	-	-	-	-	-	-		-	1	-	2	1	-	15	-						a,b,d,e,f,g,-h,i,k,5	Arrow arum dominated creek marsh; scattered swamp trees such as red maple.	VII
			acres	8.1	2.0	-	-	-	-	-	-	-		-	0.1	-	0.3	0.1	-	2.0	-						a,b,d,e,f,g,-h,0.1,k,0.7		
3	Upper Chippokes Creek	30.5	%	50	10	-	-	5	-	-	5	-	-	-	-	-		-		30							a,b,c,d,e,f,g,k,-	Creek marsh section dominated by arrow arum with abundant cattails; grades to swamp along upland.	VII
			acres	15.3	3.0	-	-	1.5	-	-	1.5	-	-	-	-	-		-		9.2							a,b,c,d,e,f,g,k,-		
4	Upper Chippokes Creek	25.6	%	45	4	-	2	15	-	-	15	2	5	-	2		-	-	-	10	-						a,b,c,d,e,f,g,h,-	Creek marsh section of predominately arrow arum with other species throughout; upstream half of marsh has been dammed.	XI
			acres	11.5	1.0	-	0.5	3.8	-	-	3.8	0.5	1.3	-	0.5		-	-	-	2.7	-						a,b,c,d,e,f,g,h,-		
5	Upper Chippokes Creek	96.6	%	40	1	-	-	15	2	-	40	-	1	-	-	-	-	-	-	1	-						a,b,d,e,f,g,h,r,-	Extensive creek marsh section of largely arrow arum with overstory of wildrice and beggar ticks.	XI
			acres	38.6	1.0	-	-	14.5	1.9	-	38.6	-	1.0	-	-	-	-	-	-	1.0	-						a,b,d,e,f,g,h,r,-		
6	Upper Chippokes Creek	81.9	%	40	-	-	-	25	2	-	30	-	3	-	-	-	-	-	-	-	-						a,b,d,e,f,g,h,r,-	Extensive creek marsh section of arrow arum with overstory of wild rice & beggar ticks; stands of cordgrass along upland.	XI
			acres	32.8	-	-	-	20.5	1.6	-	24.6	-	2.4	-	-	-	-	-	-	-	-						a,b,d,e,f,g,h,r,-		
7	Upper Chippokes Creek	3.7	%	55	15	-	-	10	2	1	1	-	15	-	-	-	-	-	-	1							a,b,d,e,-	Pocket marsh area dominated by arrow arum; other species throughout with cypress along upland.	VII
			acres	2.0	0.6	-	-	0.4	0.1	-	-	-	0.6	-	-	-	-	-	-	-							a,b,d,e,-		
8	Upper Chippokes Creek	22.8	%	65	5	-	-	25	2	1	2	-	-	-	-	-		-	-	-	-						a,b,d,e,-	Creek marsh of primarily arrow arum with overstory of beggar ticks; scattered cypress, especially along uplands.	VII
			acres	14.8	1.1	-	-	5.7	0.5	0.2	0.5	-	-	-	-	-		-	-	-	-						a,b,d,e,-		

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

Section I. Upper Chippokes Creek
(continued)

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
9	Upper Chippokes Creek	1.7	%	85	-	-	-	2	5	2			5	-	-						-						a,1	Marsh island of predominately arrow arum; scattered cypress and other species.	VII
			acres	1.5	-	-	-	-	0.1	-			0.1	-	-						-						a,-		
10	Brandon Gut	27.8	%	35	10	-	3	25	5	5	5	2	10	-	-	-	-	-	-	-	-	-					a,b,c,d, e,f,-	Creek marsh of arrow arum with overstory of beggar ticks, jewelweed, etc. scattered cypress other swamp species.	XI
			acres	9.7	2.8	-	0.8	6.9	1.4	1.4	1.4	0.5	2.9	-	-	-	-	-	-	-	-	-					a,b,c,d, e,f,-		
	Total Section I.	310.3	%	44	4	-	-	17	2	-	23	-	3	-	-	-	-	-	-	5	-	-					a,- c,- b,- d,-	e,- g,- k,- f,- h,- r,-	
			acres	138.1	12.8	-	1.6	53.6	5.6	1.6	70.4	1.3	8.3	-	0.6	-	0.3	0.1	-	15.2	-	-					a,- c,- b,- d,-	e,- g,- k,0.7 f,- h,0.1 r,-	

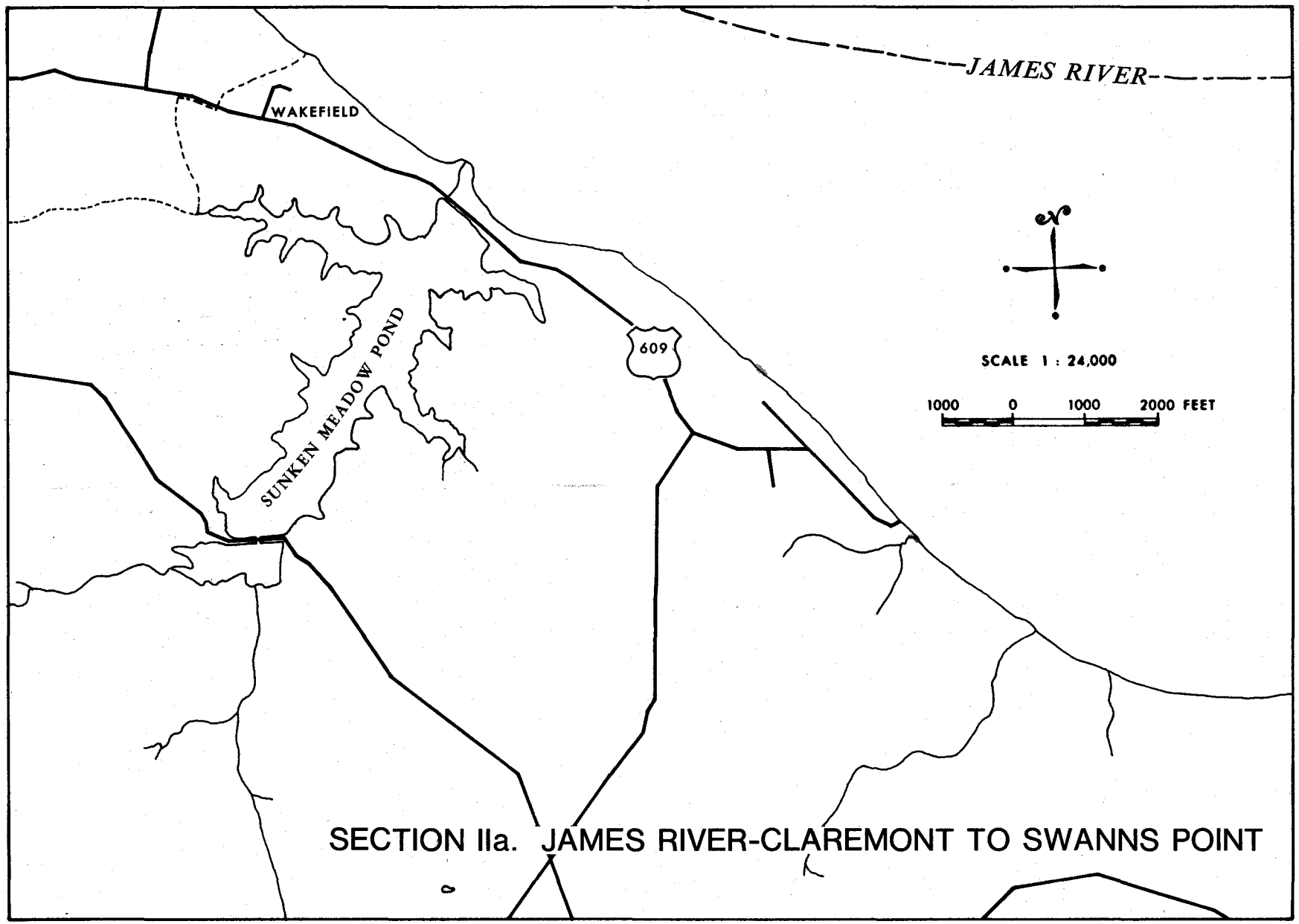
a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

SECTION II.

JAMES RIVER - CLAREMONT TO SWANNS POINT

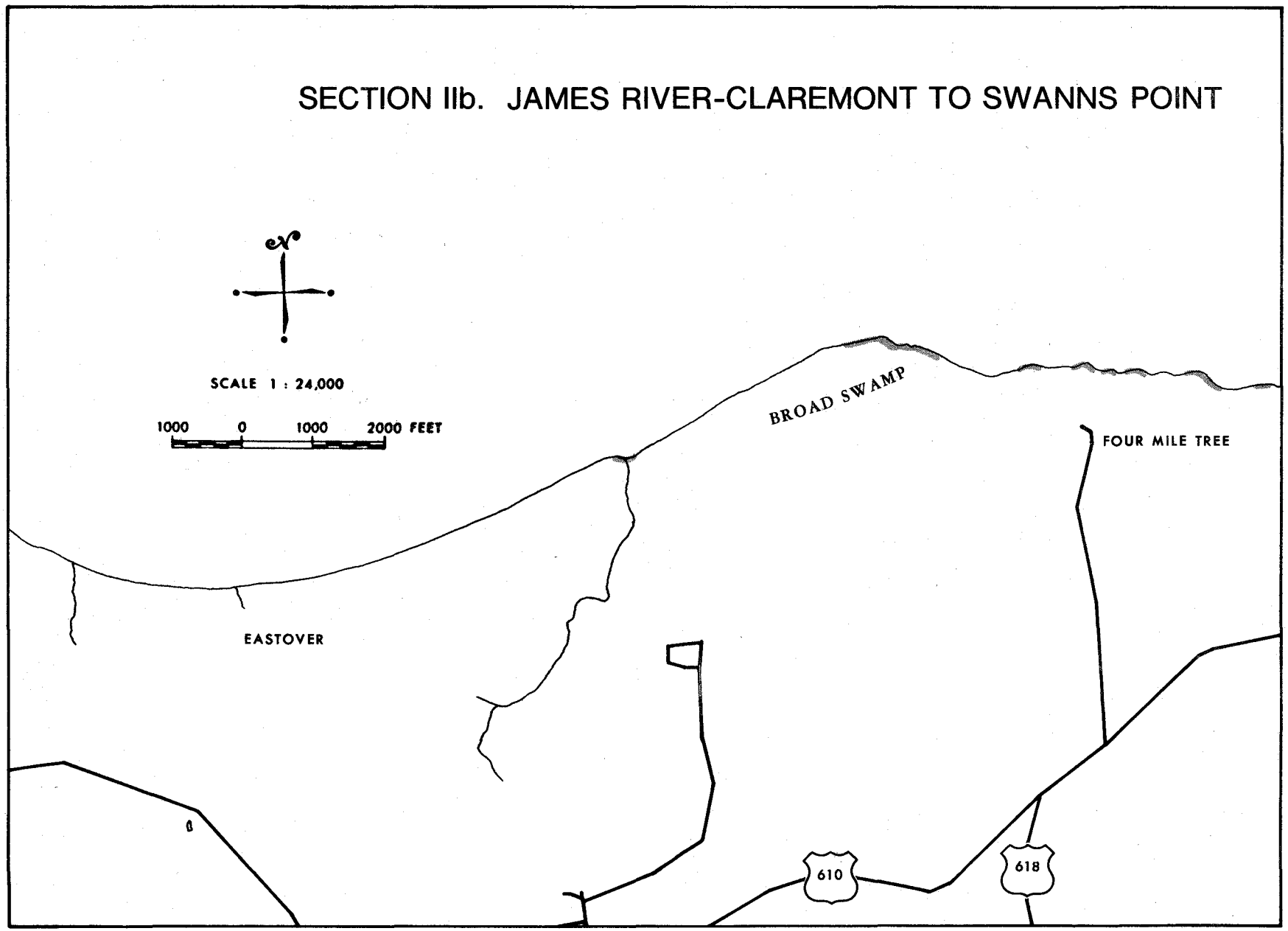
The shoreline found along this section of Surry County is illustrated using three map plates. For the most part it is devoid of marsh areas. This is primarily due to the erosive force of the James River which precludes the establishment of tidal marsh along much of its shoreline. There are numerous small tributary streams (e.g. Broad Swamp) which drain into the river and these are usually found vegetated with woody swamp species dominated by bald cypress. Generally these streams are perched from the river by a high, sandy beach and although they are valuable habitats they would not be considered contiguous to tidal waters by Virginia's wetlands definition. Sunken Meadow Pond (IIA), a man-made impoundment, is another valuable wetland area found along this section of shoreline.

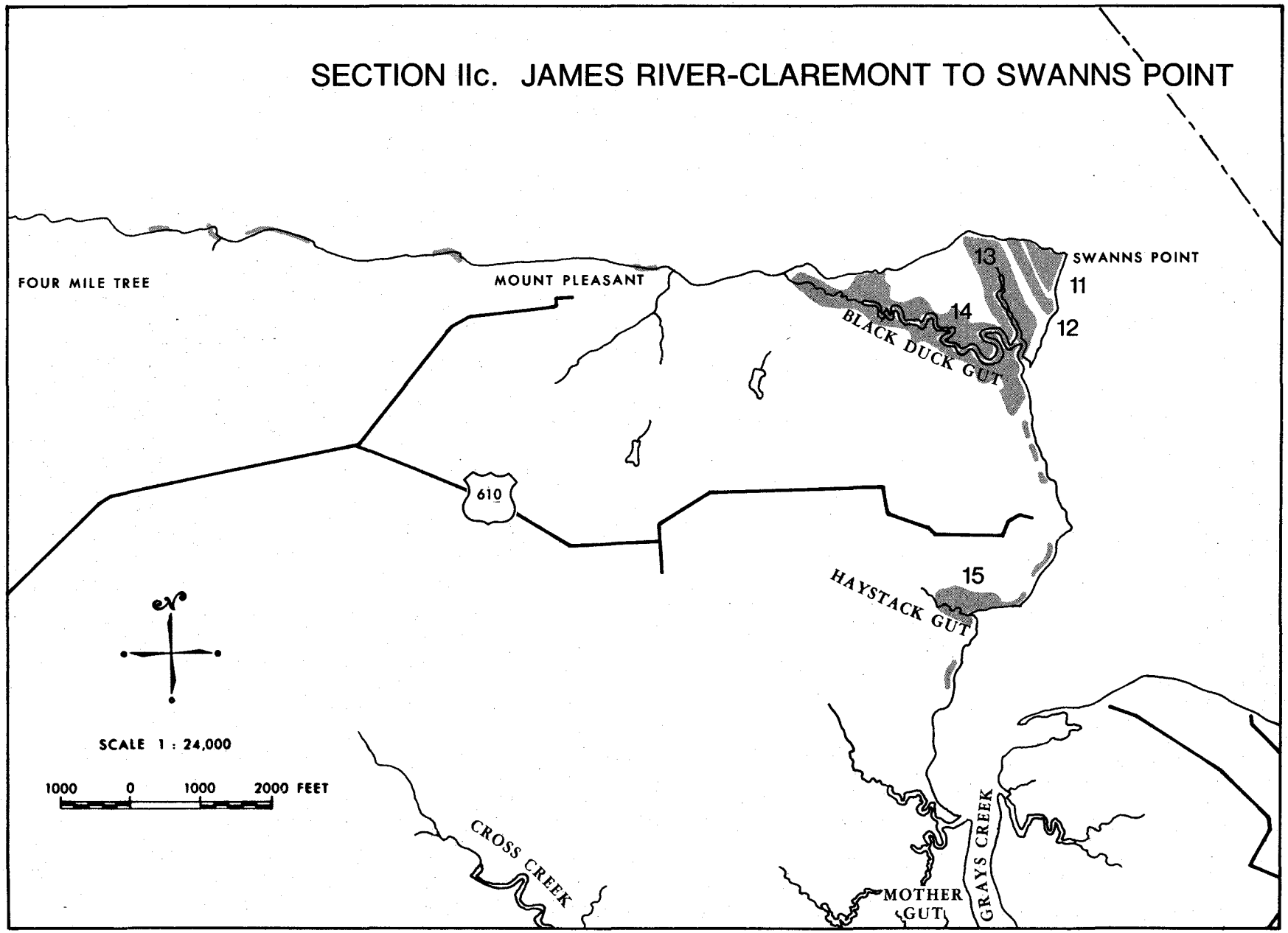
Most of the regularly inundated wetlands found along this section of this river (IIB, IIC) consist of intermittent fringes of bald cypress with an accompanying understory of jewelweed. These species generally occur at an elevation near mean high water on the river bank with the jewelweed found growing in patches only a few feet wide. Swann's Point (IIC) marks the only significant areas of tidal wetlands found here. These marshes are vegetated for the most part by big cordgrass with arrow arum and pickerelweed more abundant in those marshes (#11, 12) that have slightly restricted tidal flooding.



SECTION IIa. JAMES RIVER-CLAREMONT TO SWANNS POINT

SECTION IIb. JAMES RIVER-CLAREMONT TO SWANNS POINT




SECTION IIc. JAMES RIVER-CLAREMONT TO SWANNS POINT
FOUR MILE TREE
MOUNT PLEASANT
SWANNS POINT
13
11
14
12
BLACK DUCK GUT
610
15
HAYSTACK GUT
SCALE 1 : 24,000
1000 0 1000 2000 FEET
CROSS CREEK
MOTHER GUT
GRAYS CREEK

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
11	Swanns Point	3.5	%	45	-	-	-	5	5	5	-	-	-	5	-	-	-	-	-	10	-	25		-	-		d,f,h,i, o,n,-	Spit marsh separated from river by berm with cypress; interior of arrow arum mixed with big cordgrass.	XI
			acres	1.6	-	-	-	0.2	0.2	0.2	-	-	-	0.2	-	-	-	-	-	0.3	-	0.8		-	-		d,f,h,i, o,n,-		
12	Swanns Point	2.8	%	45	-	-	-	5	5	10	-	-	-	5	-	-	-	-	-	10	-	20		-	-		d,f,h,i,-	Long, narrow pocket marsh formed between ridges of upland.	XI
			acres	1.3	-	-	-	0.1	0.1	0.3	-	-	-	0.1	-	-	-	-	-	0.3	-	0.6		-	-		d,f,h,i,-		
13	Black Duck Gut	16.1	%	20	-	-	-	-	2	3			-	-	-	-		-	-	-	-	75	-	-	-		d,f,i, o,n,-	Pocket marsh formed along branch of creek; dominated by big cordgrass with other species throughout.	V
			acres	3.2	-	-	-	-	0.3	0.5			-	-	-	-		-	-	-	-	12.1	-	-	-		d,f,i, o,n,-		
14	Black Duck Gut	33.8	%	20	-	-	-	-	5	5			-	-	-	-		-	-	-	-	65	-	-	-	5	d,f,i,-	Creek marsh dominated by big cordgrass; arrow arum, hemp and hibiscus more abundant towards head.	V
			acres	6.8	-	-	-	-	1.7	1.7			-	-	-	-		-	-	-	-	21.9	-	-	-	1.7	d,f,i,-		
15	Haystack Gut	4.6	%	10	-	-	-	5	5	-			-	-	-	-		-	-	10	-	70	-				d,f,-	Pocket marsh dominated by big cordgrass with some arrow arum; several stands of cattails.	V
			acres	0.5	-	-	-	0.2	0.2	-			-	-	-	-		-	-	0.5	-	3.2	-				d,f,-		
	Total Section II	60.8	%	22	-	-	-	1	4	4	-	-	-	-	-	-	-	-	-	2	-	63	-	-	-	3	d,- h,- f,- i,-	n,- o,-	
			acres	13.4	-	-	-	0.5	2.5	2.7	-	-	-			-	-	-	-	1.1	-	38.6	-	-	-	1.7	d,- h,- f,- i,-	n,- o,-	

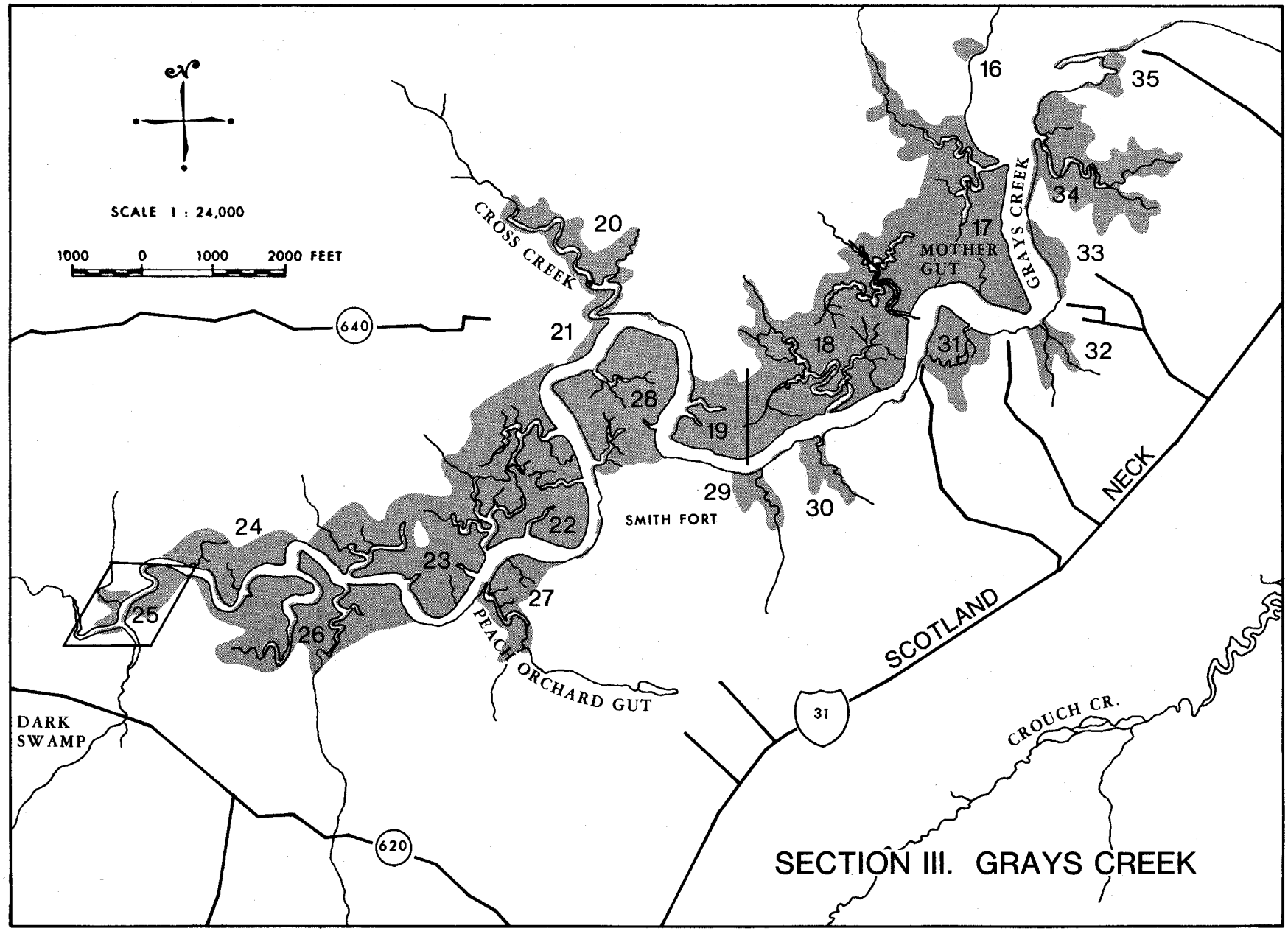
a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

SECTION III.

GRAYS CREEK

This section of Surry County describes the marshes of Gray's Creek, an important wetlands system with over 580 acres of highly productive tidal marsh. The influence of salinity is evident along the lower third of the creek length as big cordgrass (Type V) which can tolerate slightly brackish water is found to dominate the marshes in this area. The upper two thirds of the creek are vegetated for the most part with arrow arum (Type VII) and wild rice (Type XI), species which can tolerate only low salinities. At the head of the creek system this freshwater marsh community grades to woody swamp. This swamp area is generally non-tidal, but may be flooded during periods of exceptionally high tides.

The wetlands located along this largely undisturbed creek are highly valuable in environmental terms. Not only do the marshes produce large quantities of organic material for the estuarine system but the seeds, roots and rhizomes of the plants supply an important food source for many species of waterfowl and other wildlife. The creek system is also a valuable habitat for many types of fish, including resident freshwater and brackish water species. It serves as well as a spawning and nursery area for various Alosa species including river herring, alewife, American and hickory shad.


SCALE 1 : 24,000
1000 0 1000 2000 FEET
CROSS CREEK
GRAYS CREEK
MOTHER GUT
SMITH FORT
NECK
SCOTLAND
PEACH ORCHARD GUT
CROUCH CR.
DARK SWAMP
640
620
31
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
SECTION III. GRAYS CREEK

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
16	Grays Creek	1.3	%	10	-	-	-	5	5	5			-	-	-	-		-	-	10	-	65	-	-	-		d,f,i,-	Small pocket marsh; big cordgrass dominates with other species mixed; cypress along upland edge.	V
			acres	0.1	-	-	-	0.1	0.1	0.1			-	-	-	-		-	-	0.1	-	0.8	-	-	-		d,f,i,-		
17	Grays Creek	86.1	%	25	-	-	-	1	1	2	5	-	-	-	-	-	-	-	-	-	1	65	-	-	-		d,f,g,h,i,j,n,-	Extensive creek marsh section dominated by big cordgrass; arrow arum, other species more abundant in interior section.	V
			acres	21.5	-	-	-	0.9	0.9	1.7	4.3	-	-	-	-	-	-	-	-	-	0.9	55.9	-	-	-		d,f,g,h,i,j,n,-		
18	Grays Creek	84.1	%	20	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	70	-	-	-		d,f,g,h,i,j,n,-	Extensive creek marsh section dominated by big cordgrass; arrow arum, wild rice more abundant in interior.	V
			acres	16.8	-	-	-	-	-	-	8.4	-	-	-	-	-	-	-	-	-	-	58.9	-	-	-		d,f,g,h,i,j,n,-		
19	Grays Creek	20.4	%	40	-	-	-	5	-	5	20	-	-	-	-	-	-	-	-	10	-	20		-	-		d,h,i,-	Marsh section with decrease in big cordgrass but more wild rice and arrow arum than in adjacent marsh section.	XI
			acres	8.2	-	-	-	1.0	-	1.0	4.1	-	-	-	-	-	-	-	-	2.0	-	4.1		-	-		d,h,i,-		
20	Cross Creek	24.4	%	50	-	-	-	10	-	5	35	-	-	-	-	-	-	-	-	-	-	-			-		d,e,f,g,h,i,-	Large pocket marsh dominated by arrow arum; wild rice abundant in interior, upstream portion of marsh.	VII
			acres	12.2	-	-	-	2.4	-	1.2	8.6	-	-	-	-	-	-	-	-	-	-	-			-		d,e,f,g,h,i,-		
21	Grays Creek	1.6	%	75	-	-	-	5		10	10	-	-	-	-	-	-	-	-	-	-	-			-		d,h,i,-	Fringing marsh; dominated by arrow arum with abundant water hemp and wild rice.	VII
			acres	1.2	-	-	-	-		0.2	0.2	-	-	-	-	-	-	-	-	-	-	-			-		d,h,i,-		
22	Grays Creek	66.1	%	40	-	-	-	5	1	2	50	-	-	-	-	-	-	-	-	1	1				-		b,d,e,f,g,h,i,-	Extensive marsh section; dominated throughout by wildrice and arrow arum; other species scattered.	XI
			acres	26.4	-	-	-	3.3	0.7	1.3	33.0	-	-	-	-	-	-	-	-	0.7	0.7				-		b,d,e,f,g,h,i,-		
23	Grays Creek	56.6	%	55	1	-	-	2	1	2	35	-	-	-	-	-	-	-	-	2	2				-		b,d,e,f,g,h,i,-	Extensive marsh section dominated by arrow arum with wild rice; isolated upland area in middle of marsh.	VII
			acres	31.2	0.6	-	-	1.1	0.6	1.1	19.8	-	-	-	-	-	-	-	-	1.1	1.1				-		b,d,e,f,g,h,i,-		

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

Section III. Grays Creek
(continued)

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
24	Grays Creek	17.4	%	55	-	-	-	1	-	1	35	-	5	-	1	-	-	-	-	2	-				-		b,d,e,f, g,h,i,l,-	Creek marsh sedtion of predominately arrow arum and wild rice; cypress along upland edge.	VII
			acres	9.6	-	-	-	0.2	-	0.2	6.1	-	0.8	-	0.2	-	-	-	-	0.3	-				-		b,d,e,f, g,h,i,l,-		
25	Grays Creek	12.3	%	55	5	-	-	-	-	-	25	-	5	-	-	-	-	-	-	10	-				-		b,d,e,f, g,h,i,l,-	Fringing marsh areas at head of creek; marsh borders along areas of wooded swamp.	VII
			acres	6.8	0.6	-	-	-	-	-	3.1	-	0.6	-	-	-	-	-	-	1.2	-				-		b,d,e,f, g,h,i,l,-		
26	Hulls Slash Gut	53.2	%	55	1	-	-	1	-	1	40	-	-	-	-	-	-	-	-	2	-			-	-		b,d,f, h,i,-	Creek marsh of predominately arrow arum mixed with wild rice; other species scattered throughout.	VII
			acres	29.3	0.5	-	-	0.5	-	0.5	21.3	-	-	-	-	-	-	-	-	1.1	-			-	-		b,d,f, h,i,-		
27	Peach Orchard Gut	17.2	%	50	1	-	-	2	-	1	45	-	-	-	-	-	-	-	-	1	-				-		b,d,f, h,i,-	Creek marsh which extends back to pocket area; mostly arrow arum and wild rice; cypress along upland.	VII
			acres	8.6	0.2	-	-	0.3	-	0.2	7.7	-	-	-	-	-	-	-	-	0.2	-				-		b,d,f, h,i,-		
28	Grays Creek	52.7	%	50	-	-	-	5	-	3	40	-	-	-	-	-	-	-	-	1	1	-					d,e,f, h,-	Creek marsh dominated by arrow arum with wild rice; other species throughout with cattails along uplands.	VII
			acres	26.4	-	-	-	2.6	-	1.6	21.1	-	-	-	-	-	-	-	-	0.5	0.5	-					d,e,f, h,-		
29	Grays Creek	6.5	%	55	-	-	-	5	1	2	30		2	-	-	-	-	-	-	5	-	-		-	-		d,e,f, h,i,-	Pocket marsh of mostly arrow arum and wild rice; cattails in interior; cypress along upland.	VII
			acres	3.6	-	-	-	0.3	0.1	0.1	2.0		0.1	-	-	-	-	-	-	0.3	-	-		-	-		d,e,f, h,i,-		
30	Grays Creek	7.4	%	50	-	-	-	10	-	-	40		-	-	-	-	-	-	-	-	-	-		-			d,f,i, j,-	Pocket marsh dominated by arrow arum and wild rice; abundant beggar ticks throughout.	VII
			acres	3.7	-	-	-	0.7	-	-	3.0		-	-	-	-	-	-	-	-	-	-		-			d,f,i, j,-		
31	Grays Creek	17.4	%	50	-	-	-	5	-	5	40	-	-	-	-	-	-	-	-	-	-	-			-		d,e,f, i,-	Creek marsh dominated by arrow arum and wild rice; abundant beggar ticks and hemp throughout.	VII
			acres	8.7	-	-	-	0.9	-	0.9	6.9	-	-	-	-	-	-	-	-	-	-	-			-		d,e,f, i,-		

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

Section III. Grays Creek
(continued)

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
32	Grays Creek	6.5	%	35	-	-	-	5	-	20	40		-	-	-	-	-	-	-	-	-	-			-		d,e,f, h,i,-	Pocket marsh of predominately arrow arum and wild rice; abundant hemp and beggar ticks throughout.	XI
			acres	2.3	-	-	-	0.3	-	1.3	2.6		-	-	-	-	-	-	-	-	-	-			-		d,e,f, h,i,-		
33	Grays Creek	5.6	%	40	-	-	-	3	-	5	50		-	-	-	-	-	-	-	2	-	-			-		d,e,f,h, i,j,-	Broad fringing marsh of mostly arrow arum and wild rice; scattered hemp and beggar ticks with cattails along upland.	XI
			acres	2.2	-	-	-	0.2	-	0.3	2.8		-	-	-	-	-	-	-	0.1	-	-			-		d,e,f,h, i,j,-		
34	Grays Creek	41.5	%	30	-	-	2	-	-	3	-		-	-	-	-	-	-	-	3	2	60	-	-	-		d,f,h, i,-	Big cordgrass dominates interior of marsh; scattered stands of sedges with cattails at head of pockets.	V
			acres	12.5	-	-	0.8	-	-	1.2	-		-	-	-	-	-	-	-	1.2	0.8	25.0	-	-	-		d,f,h, i,-		
35	Grays Creek	4.0	%	50	-	-	-	5	-	15	25		-	-	-	-	-	-	-	5	-	-					d,f,i,-	Arrow arum dominates with other species scattered throughout; cypress along spit.	VII
			acres	2.0	-	-	-	0.2	-	0.6	1.0		-	-	-	-	-	-	-	0.2	-	-					d,f,i,-		
	TOTAL SECTION III	582.3	%	40	-	-	-	3	-	2	27	-	-	-	-	-	-	-	-	1	1	25	-	-	-		b,- e,- d,- f,-	g,- i,- l,- h,- j,- n,-	
			acres	233.3	1.9	-	0.8	15.0	2.4	13.5	156.0	-	1.5	-	0.2	-	-	-	-	9.0	4.0	144.7	-	-	-		b,- e,- d,- f,-	g,- i,- l,- h,- j,- n,-	
			%																										
			acres																										
			%																										
			acres																										
			%																										
			acres																										

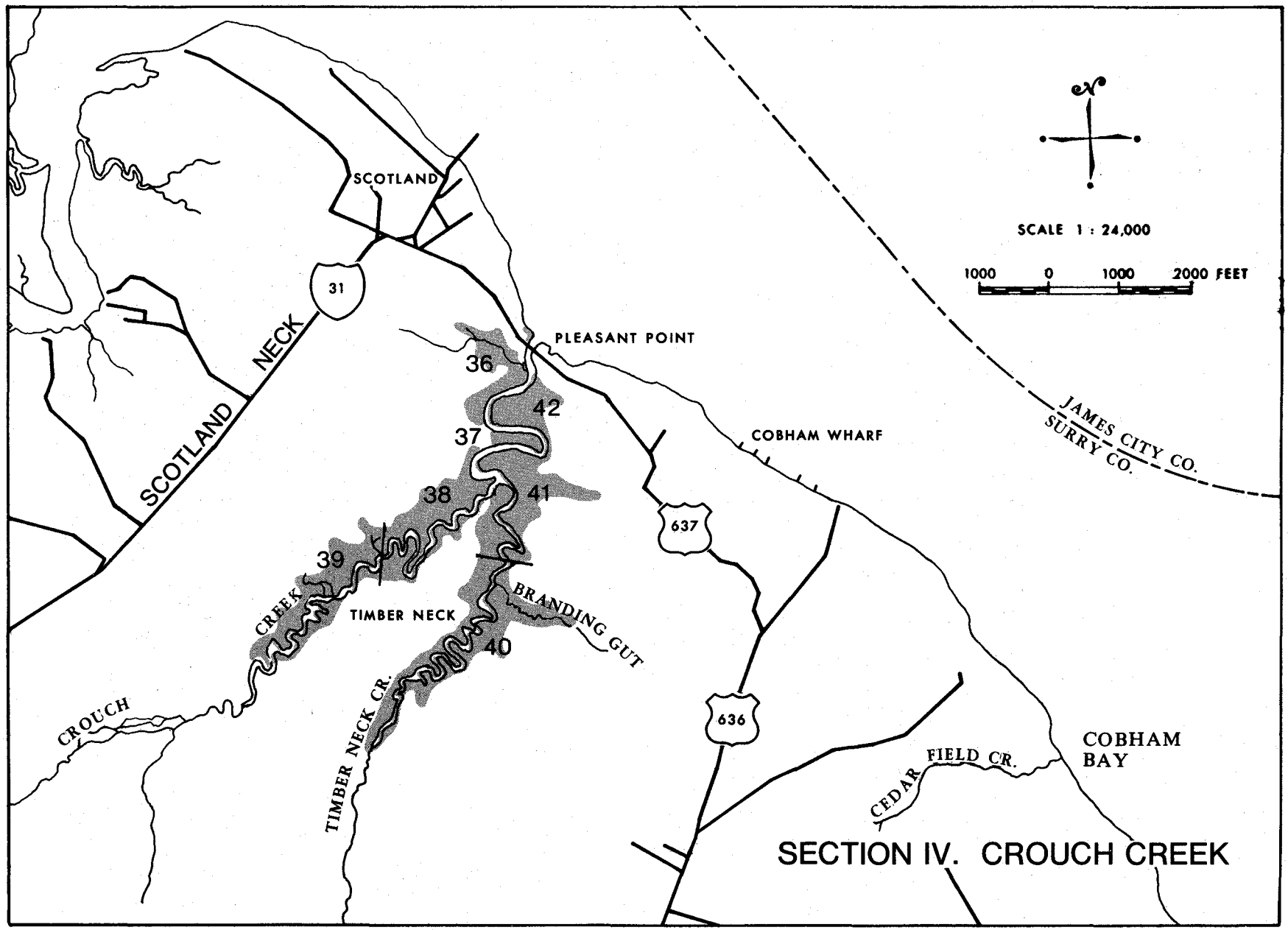
a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

SECTION IV.

CROUCH CREEK

The marshes found within the Crouch and Timber Neck creek system are the only significant tidal wetland areas found along this section of Surry County shoreline. The plant communities are composed of both brackish and freshwater species with arrow arum (Type VII) and big cordgrass (Type V) being most abundant. Generally, big cordgrass dominates the downstream marsh areas with arrow arum most abundant upstream. At the heads of both main creek branches the marsh in turn grades to areas of woody swamp.

Although there has been some filling of marsh areas along Route 637, this creek system has remained relatively undisturbed by man's activities. It should be considered highly valuable in environmental terms, since it serves as important waterfowl and wildlife habitat as well as a valuable habitat and nursery area for finfish.


SCOTLAND
31
SCOTLAND NECK
PLEASANT POINT
36
42
37
38
41
39
TIMBER NECK CREEK
BRANDING GUT
40
TIMBER NECK CR.
CROUCH
637
636
COBHAM WHARF
JAMES CITY CO.
SURRY CO.
COBHAM BAY
CEDAR FIELD CR.
SCALE 1 : 24,000
1000 0 1000 2000 FEET
SECTION IV. CROUCH CREEK

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
36	Crouch Creek	10.0	%	40	-	3	-	10	1	15	-		-	-	-		1	-	-	5	5	20	-	-	-		d,f,h,i j,o,-	Pocket and fringe marsh dominated by arrow arum with abundant big cordgrass hemp, beggar ticks; section along road is filled.	XI
			acres	4.0	-	0.3	-	1.0	0.1	1.5	-		-	-	-		0.1	-	-	0.5	0.5	2.0	-	-	-		d,f,h,i j,o,-		
37	Crouch Creek	2.8	%	30	-	-	-	10	-	10	-		-	-	-		-	2	-	-	3	45	-	-	-		d,f,h, i,s,-	Creek marsh; mostly big cordgrass and arrow arum; other species scattered throughout.	XI
			acres	0.8	-	-	-	0.3	-	0.3	-		-	-	-		-	0.1	-	-	0.1	1.2	-	-	-		d,f,h, i,s,-		
38	Crouch Creek	26.1	%	35	-	-	-	2	1	5	-		-	-	-		-	-	-	5	1	40			-		d,h, f,10 i,1	Creek marsh section; big cordgrass mixed with arrow arum; scattered sedges, cattails, hemp.	XI
			acres	9.1	-	-	-	0.5	0.3	1.3	-		-	-	-		-	-	-	1.3	0.3	10.4			-		d,h, f,2.6,i,0.3		
39	Crouch Creek	28.0	%	50	-	-	-	25	-	5	10		-	-	-	-	-	-	-	5	2	-		-	-		b,d,e,g,h, i,s, -f,3	Upstream section of creek marsh; arrow arum predominates with overstory of beggar ticks; grades to swamp.	VII
			acres	14.0	-	-	-	7.0	-	1.4	2.8		-	-	-	-	-	-	-	1.4	0.6	-		-	-		b,d,e,g,h, i,s, -f,0.8		
40	Timber Neck Creek	37.0	%	45	-	2	1	15	1	15	10		2	-	-	-	-	-	-	2	1	5			-		b,d,f,g, i,-h,1	Upstream portion of creek marsh branch; dominated by arrow arum with other species scattered throughout.	XI
			acres	16.7	-	0.7	0.4	5.5	0.4	5.5	3.7		0.7	-	-	-	-	-	-	0.7	0.4	1.9			-		b,d,f,g, i,-h,0.4		
41	Timber Neck Creek	27.5	%	30	-	-	-	10	-	4	-		-	-	-	-	-	-	-	1	-	50	-	-	-		d,h,i,s, -f,5	Creek marsh section; dominated by big cordgrass with abundant arrow arum; other species scattered.	V
			acres	8.3	-	-	-	2.7	-	1.1	-		-	-	-	-	-	-	-	0.3	-	13.7	-	-	-		d,h,i,s, -f,1.4		
42	Crouch Creek	12.6	%	30	-	-	-	15	-	10	-		1	-	-	-	-	-	-	-	2	40	-	-	-		i,s,- f,1 h,1	Creek marsh section; big cordgrass mixed with arrow arum; other species scattered throughout.	XI
			acres	3.8	-	-	-	1.9	-	1.3	-		0.1	-	-	-	-	-	-	-	0.2	5.1	-	-	-		i,s,- f,0.1h,0.1		
	TOTAL SECTION IV	144.0	%	39	-	1	-	13	1	9	4		1	-	-	-	-	-	-	3	1	24	-	-	-		b,- e,- d,- f,3	g,- i,- o,- h,- j,- s,-	
			acres	56.7	-	1.0	0.4	18.9	0.8	12.4	6.5		0.8	-	-	-	0.1	0.1	-	4.2	2.1	34.3	-	-	-		b,- e,- d,- f,4.9	g,- i,0.3 o,- h,0.5 j,- s,-	

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

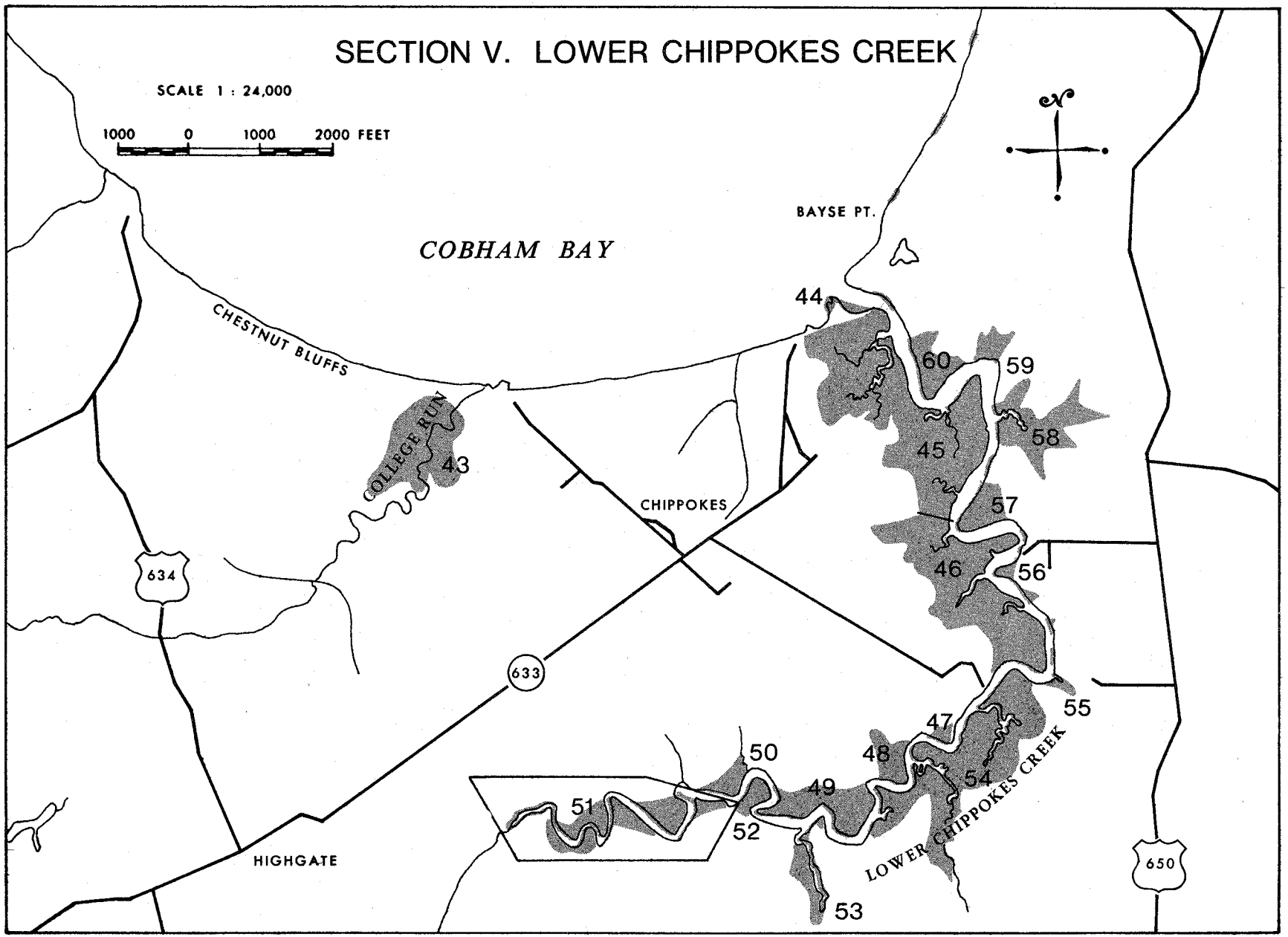
SECTION V.

LOWER CHIPPOKES CREEK

This section of Surry County shoreline includes over 285 acres of wetlands found within College Run and Lower Chippokes Creek. The remainder of the shoreline, bordering Cobham Bay, is composed largely of eroding bluffs and sandy beach, and as such is generally unsuitable for tidal marsh development.

Within College Run there is a large area of marsh (#43) which is connected to the river via a long, narrow channel across a sand beach. The marsh is characterized as a freshwater mixed community (Type XI) but contains large stands of big cordgrass (Type V). It appears that the marsh is slowly being replaced by swamp species, such as red maple, which dominate most of the upstream portion of the creek basin. The basin is apparently filling in with eroding upland sediments, thereby increasing the marsh elevation and reducing tidal inundation.

Lower Chippokes Creek consists primarily of freshwater and brackish tidal marsh areas but grades to woody swamp at its head. Of these marsh areas the lower half of the creek is dominated by big cordgrass (Type V), while in the upstream sections arrow arum, cattails and other freshwater species (Type VII, XI) become more abundant. On the whole, the marsh areas found here should be considered highly valuable natural areas because of their production of organic material as well as their value to wildlife and finfish.


SECTION V. LOWER CHIPPOKES CREEK
SCALE 1 : 24,000
1000 0 1000 2000 FEET
COBHAM BAY
BAYSE PT.
CHESTNUT BLUFFS
COLLEGE RUN
CHIPPOKES
HIGHGATE
LOWER CHIPPOKES CREEK
634
633
650
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
43	College Run	27.2	%	25	10	-	-	-	5	5	-	-	-	-	-	-	-	-	-	5	-	45					b,h,-f,5	Pocket marsh that grades upstream to large wooded swamp; tidal flushing from river through channel across beach.	XI
			acres	6.8	2.7	-	-	-	1.4	1.4	-	-	-	-	-	-	-	-	-	1.4	-	12.1					b,h,-f,1.4		
44	Lower Chippokes Creek	1.5	%	20			-			20								-	-	-	-	20	40					Marsh fringe formed in front of sand spit at mouth of creek.	XII
			acres	0.3			-			0.3								-	-	-	-	0.3	0.6						
45	Lower Chippokes Creek	70.8	%	15	-	-	-		1	3			-	-	-	-	-	-	-	-	1	80					d,f,h,o,-	Creek marsh section dominated by big cordgrass arrow arum and other species scattered.	V
			acres	10.6	-	-	-		0.7	2.1			-	-	-	-	-	-	-	-	0.7	56.7					d,f,h,o,-		
46	Lower Chippokes Creek	48.6	%	25	-	-	-	-	-	20	-	-	-	-	-	-	-	-	-	-	10	-	45				d,f,h,j,-	Creek marsh of largely big cordgrass; water hemp and arrow arum throughout; cattails along uplands.	XI
			acres	12.1	-	-	-	-	-	9.7	-	-	-	-	-	-	-	-	-	-	4.9	-	21.9				d,f,h,j,-		
47	Lower Chippokes Creek	1.6	%	40		-	-	-	-	10			-	-	-	-	-	-	-	-	15	-	35				d,f,h,-	Creek marsh of arrow arum with overstory of water hemp, catails, big cordgrass; cypress along upland.	XI
			acres	0.6		-	-	-	-	0.2			-	-	-	-	-	-	-	-	0.2	-	0.6				d,f,h,-		
48	Lower Chippokes Creek	3.9	%	55	-	-	-	-	-	25			-	-	-	-	-	-	-	-	20	-	-				b,d,f,h,-	Creek marsh of arrow arum with scattered water hemp and cattails; cypress along upland.	VII
			acres	2.1	-	-	-	-	-	1.0			-	-	-	-	-	-	-	-	0.8	-	-				b,d,f,h,-		
49	Lower Chippokes Creek	14.3	%	50	-	-	-	5	-	15			-	-	-	-	-	-	-	-	30	-	-				d,f,g,-	Creek marsh of arrow arum mixed with cattails and water hemp; other species scattered	VII
			acres	7.2	-	-	-	0.7	-	2.1			-	-	-	-	-	-	-	-	4.3	-	-				d,f,g,-		
50	Lower Chippokes Creek	4.2	%	50	-	-	-	5	-	10	5		-	-	-	-	-	-	-	-	30	-					d,f,-	Creek marsh of predominately arrow arum mixed with cattails; other species throughout.	VII
			acres	2.1	-	-	-	0.2	-	0.4	0.2		-	-	-	-	-	-	-	-	1.3	-					d,f,-		

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

Section V. Lower Chippokes Creek
(continued)

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
51	Lower Chippokes Creek	17.3	%	50	5	-	-	15	-	10	10		-	-	-	-	-	-	-	10	-	-					d,f,h,-	Creek marsh areas at head of creek; arrow arum with other species throughout; grades upstream to swamp.	VII
			acres	8.7	0.9	-	-	2.6	-	1.7	1.7		-	-	-	-	-	-	-	1.7	-	-					d,f,h,-		
52	Lower Chippokes Creek	3.2	%	50	2	-	-	3	-	15	5	-	-	-	-	-	-	-	-	25	-						d,e,-	Creek marsh section; predominately arrow arum mixed with cattails other species scattered.	VII
			acres	1.6	-	-	-	0.1	-	0.5	0.2	-	-	-	-	-	-	-	-	0.8	-						d,e,-		
53	Castle Mill Run	5.5	%	55	-	-	-	-	-	35	5		-	-	-		-	-	-	5	-	-					f,-	Pocket marsh area; arrow arum dominates with abundant water hemp; scattered cypress.	VII
			acres	3.0	-	-	-	-	-	1.9	0.3		-	-	-		-	-	-	0.3	-	-					f,-		
54	Lower Chippokes Creek	49.1	%	35	-	-	-	-	-	10	1		-	-	-	-	-			15	-	35					f,4 j,-	Creek marsh section; arrow arum mixed with big cordgrass, cattails, water hemp; scattered wild rice others.	XI
			acres	17.2	-	-	-	-	-	4.9	0.5		-	-	-	-	-			7.4	-	17.2					f,1.9 j,-		
55	Lower Chippokes Creek	1.4	%	40	-	-	-	-	-	15	-		-	-	-	-	-	-	-	45	-	-					d,f,-	Small pocket marsh; arrow arum mixed with abundant cattails and water hemp.	XI
			acres	0.6	-	-	-	-	-	0.2	-		-	-	-	-	-	-	-	0.6	-	-					d,f,-		
56	Lower Chippokes Creek	2.4	%	40		-	-		-	20	-		-	-	-		-	-	-	10	-	30					d,f,-	Creek marsh section of arrow arum mixed with big cordgrass, cattails, water hemp.	XI
			acres	1.0		-	-		-	0.5	-		-	-	-		-	-	-	0.2	-	0.7					d,f,-		
57	Lower Chippokes Creek	7.6	%	45	-	-	-		-	20	-		-	-	-		-	-	-	-	-	30					d,- f.5	Creek marsh of arrow arum mixed with big cordgrass and water hemp; sedge, other species scattered.	XI
			acres	3.4	-	-	-		-	1.5	-		-	-	-		-	-	-	-	-	2.3					d,- f,0.4		
58	Lower Chippokes Creek	17.6	%	30	-	-	-	-	-	5	-		-		-	-				5		60						Large pocket marsh dominated by big cordgrass with understory of arrow arum; other species scattered.	V
			acres	5.2	-	-	-	-	-	0.9	-		-		-	-				0.9		10.6							

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

Section V. Lower Chippokes Creek
(continued)

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
59	Lower Chippokes Creek	2.9	%	30		-	-	-	-	5			-	-	-	-	-	-	-	5	-	60					d,f,-	Pocket marsh dominated by big cordgrass with understory of arrow arum; other species scattered.	V
			acres	0.9		-	-	-	-	0.1			-	-	-	-	-	-	-	0.1	-	1.8					d,f,-		
60	Lower Chippokes Creek	6.5	%	15			-	-	-	2			-	-			-	-	-	3	-	75	5				d,f,j,-	Creek marsh dominated by big cordgrass; other species scattered.	V
			acres	1.0			-	-	-	0.1			-	-			-	-	-	0.2	-	4.9	0.3				d,f,j,-		
	TOTAL SECTION V.	285.6	%	30	1	-	-	1	1	10	1		-	-	-	-	-	-	-	8	-	45	-				b,- e,- d,- f,1	g,- j,- h,- o,-	
			acres	84.4	3.6	-	-	3.6	2.1	29.5	2.9		-	-	-	-	-	-	-	25.1	0.7	129.1	0.9				b,- e,- d,- f,3.7	g,- j,- h,- o,-	

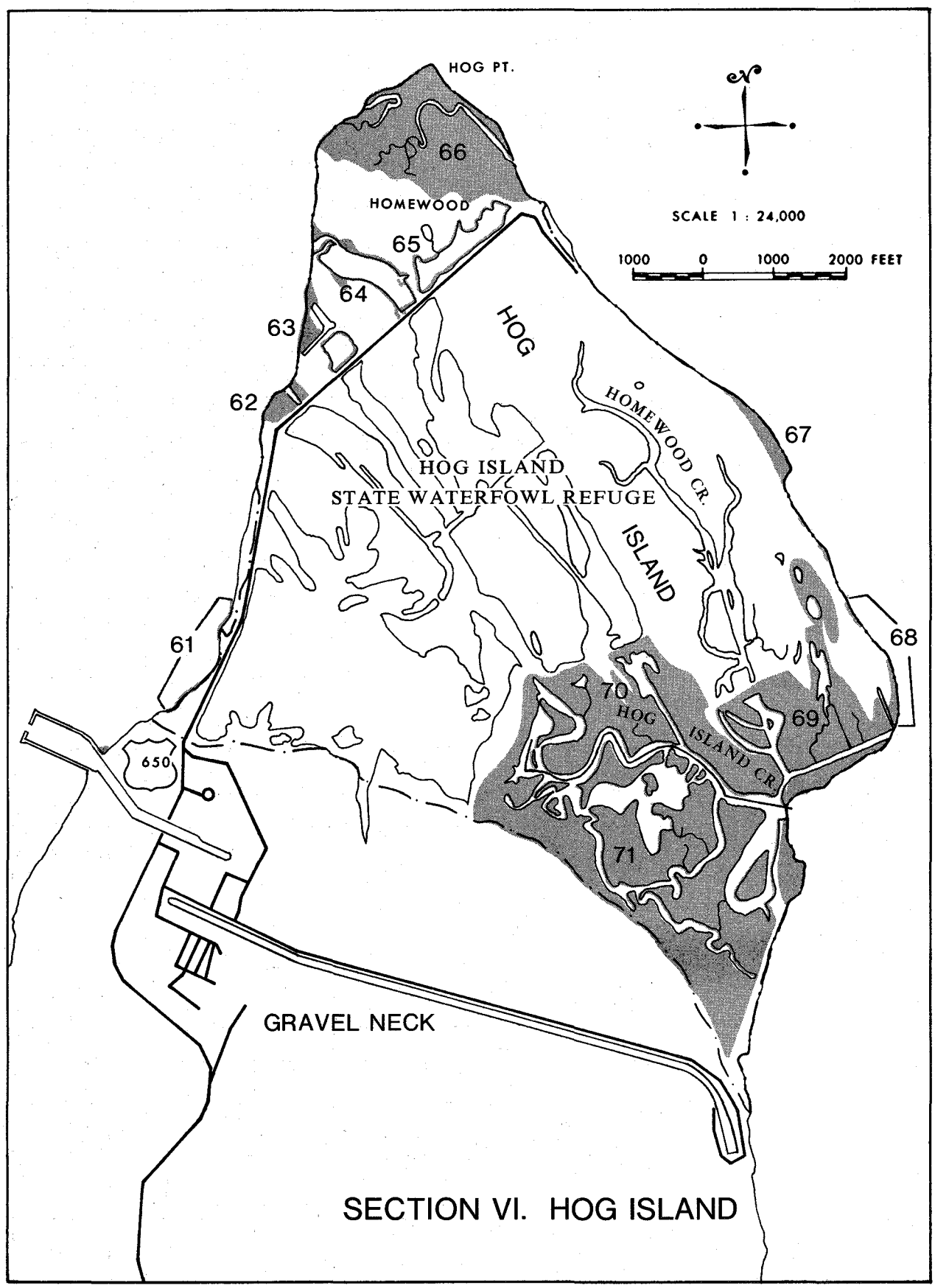
a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

SECTION VI.

HOG ISLAND

This section of Surry County includes over 363 acres of tidal wetlands found along the large peninsula known as Hog Island. Much of the interior of the peninsula, which consists of former tidal marsh areas that have been diked, is managed as a shallow water State Waterfowl Refuge. The water in these impoundments is drawn down during the growing season to encourage the growth of food plants, some of which are planted. During the fall and winter months these areas are flooded to facilitate waterfowl access to the food, as well as to provide a resting area. Although this management scheme produces a shallow, open-water environment favorable for waterfowl it has effectively removed hundreds of acres of tidal wetlands that would have been beneficial to the estuarine environment.

What remains of tidal wetlands on Hog Island consists largely of the lower sections of tidal creeks which have been truncated at some distance from their mouths by man-made dikes. The marsh vegetation is dominated primarily by big cordgrass (Type V) but the saline nature of the area is evident by the presence of many species such as saltmarsh cordgrass, saltmeadow grasses and saltmarsh bulrush, that are tolerant of brackish water. The non-tidal, interior sections of Hog Island are vegetated in large part by plant species such as bulrushes and threesquares which are valuable food sources for waterfowl. However, there still exists remnant stands of big cordgrass and other species characteristic of the formerly existing tidal marshes.



SECTION VI. HOG ISLAND

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
61	Hog Island	0.30	%										5					5		-		20	-		-	65	o,5 i,n,-	Intermittent high marsh fringes; salt meadow with saltbushes, cypress and big cordgrass.	II
			acres										0.02					0.02		-		0.06	-		-	0.02	o,0.02 i,n,-		
62	Hog Island	4.3	%						-				-					-		-		30	60		-	10	i,n,o,-	Pocket marsh extends back to dike; interior of marsh largely salt marsh cordgrass perimeter of trees sand big cordgrass.	I
			acres						-				-					-		-		1.3	2.6		-	0.4	i,n,o,-		
63	Hog Island	2.3	%						-				-					-		-		75	10		5	5	o,5 i,n,-	Pocket marsh; saltmarsh cordgrass grades to big cordgrass; fringe of saltmarsh cordgrass and saltmeadow around pond.	V
			acres						-				-					-		-		1.8	0.2		0.1	0.1	o,0.1 i,n,-		
64	Hog Island	2.2	%						-				-					-				20	40		5	25	o,10 i,-	Cove with marsh fringe around shoreline; saltmarsh cordgrass grades to high marsh species.	XII
			acres						-				-					-				0.4	0.9		0.1	0.6	o,0.2 i,-		
65	Hog Island	0.30	%															5				20			70	5		Irregularly flooded pond; marsh fringe 5-10 ft. wide around perimeter.	XII
			acres															0.02				0.06			0.21	0.02			
66	Hog Island	74.7	%	-					2	-			-					3		-		75	5		2	5	o,q,- n,5 i,3	Extensive marsh; narrow saltmarsh cordgrass fringe along river; interior of marsh big cordgrass, other species.	V
			acres	-					1.5	-			-					2.3		-		56.0	3.7		1.5	3.7	o,q,- n,3.7 i,2.3		
67	Hog Island	5.6	%						-	-			-					-		-		70	5		-	20	o,5 i,n,p,q,-	Fringing marsh; saltmarsh cordgrass along river; interior of big cordgrass with saltmeadow; scattered saltbushes.	V
			acres						-	-			-					-		-		3.9	0.3		-	1.1	o,0.3 i,n,p,q,-		
68	Hog Island	1.7	%						-									-		-		55	5		-	35	o,5 i,n,p,q,-	Marsh fringe; saltmarsh cordgrass along river grades to big cordgrass, saltmeadow, saltbushes.	V
			acres						-									-		-		0.9	0.1		-		o,0.1 i,n,p,q,-		

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

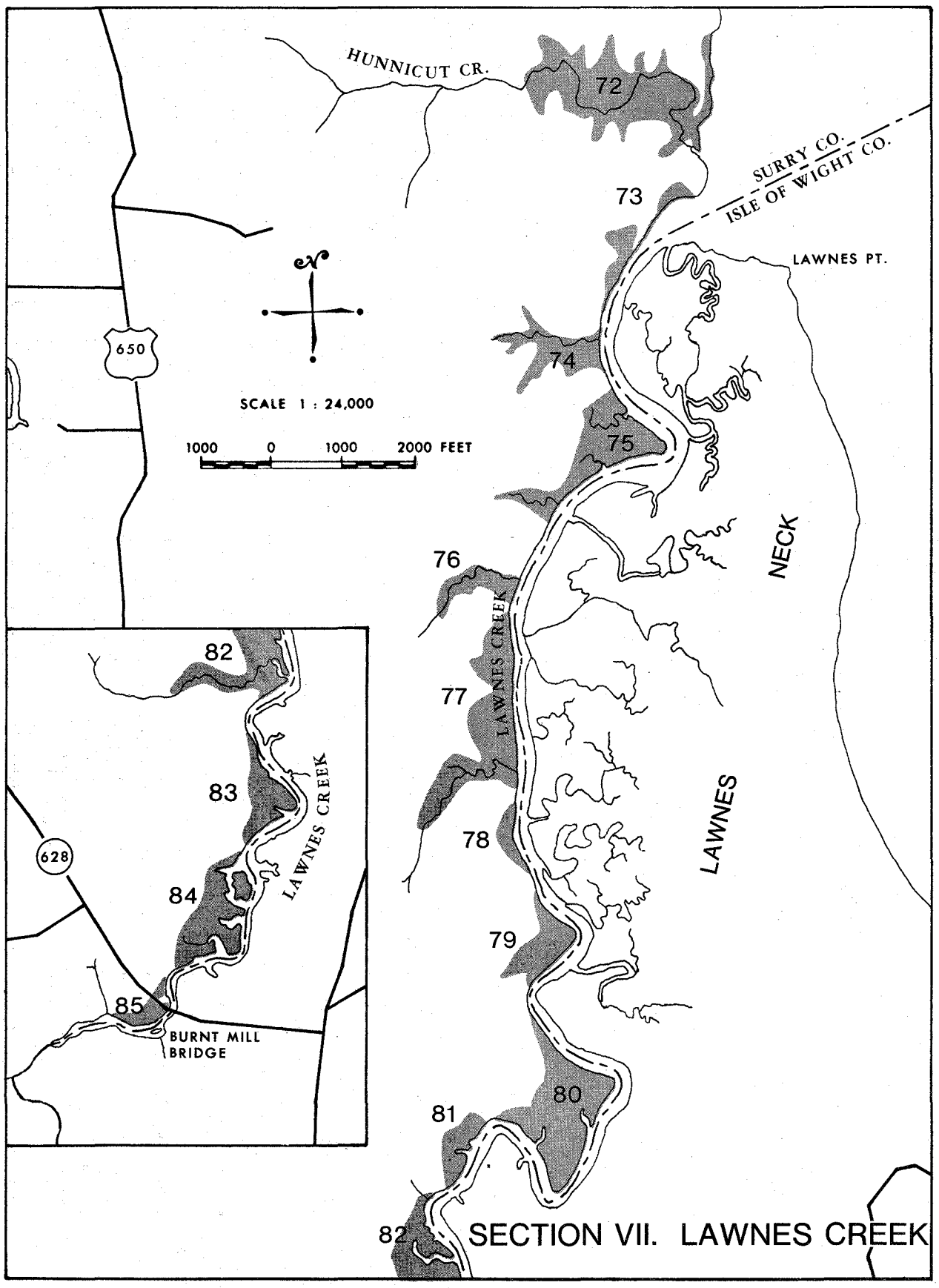
#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
69	Homewood Creek	48.7	%	-				-	1	-								-		-	-	90	5	1	-	3	i,m,n, o,q,-	Extensive marsh with saltmarsh cordgrass in areas of low elevation; remainder dominated by big cordgrass.	V
			acres	-				-	0.5	-								-		-	-	43.8	2.4	0.5	-	1.5	i,m,n, o,q,-		
70	Hog Island Creek	65.8	%	-				-	-	-										-	-	95	5	-	-	-	i,m,n, o,q,-	Creek marsh section along north side of creek channel; extends to diked area; big cordgrass predominates.	V
			acres	-				-	-	-										-	-	62.5	3.3	-	-	-	i,m,n, o,q,-		
71	Hog Island Creek	157.4	%	-				-	-	-								-		-	-	95	5	-	-	-	i,m,p,q,-	Extensive creek marsh area; big cordgrass dominates with saltmarsh cordgrass along areas of lower elevation.	V
			acres	-				-	-	-								-		-	-	149.5	7.9	-	-	-	i,m,p,q,-		
	TOTAL SECTION VI	363.3	%	-				-	1	-			-					1		-	-	88	6	-	-	2	i,l n,- m,- o.1	p,- q,-	
			acres	-				-	2.0	-			-					2.3		-	-	320.3	21.4	0.5	1.9	8.2	i,2.3 n,- m,- o,4.4	p,- q,-	

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

SECTION VII.

LAWNES CREEK

Lawnes Creek marks the eastern boundary of Surry County and as a result only the wetlands located within the western shoreline of the creek are described here. For the most part Hunnicut Creek and the lower two thirds of Lawnes Creek are dominated by big cordgrass (Type V) marshes. These marsh areas provide valuable wildlife habitats, especially for muskrats, while the creek channels themselves support many species of resident finfish from catfish to croaker. Lawnes Creek is quite extensive in length and as a result the most upstream section of the creek is largely a non-saline environment. Here the brackish water species such as big cordgrass are replaced by species such as arrow arum and wild rice (Types VII, XI) which generally tolerate only freshwater.



SECTION VII. LAWNES CREEK

#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
72	Hunnicut Creek	43.2	%	4				-	-	-	-							-		-	1	95	-	-	-	-	i,o,q,-	Large pocket marsh dominated by big cordgrass; other species scattered but more abundant at head;	V
			acres	1.7				-	-	-	-							-		-	0.4	41.1	-	-	-	-	i,o,q,-		
73	Lawnes Creek	6.0	%							-								-		2	-	95	2	-	-	1	i,o,p,q,-	Fringing marsh with pocket areas; interior largely big cordgrass with cattails along upland.	V
			acres							-								-		0.1	-	5.7	0.1	-	-	0.1	i,o,p,q,-		
74	Lawnes Creek	14.8	%	2					1	1								-		2	-	92	2	-	-	-	i,o,p,q,-	Pocket marsh dominated by big cordgrass; saltmarsh cordgrass fringe along creek with arrow arum, cattails at head.	V
			acres	0.3					0.1	0.1								-		0.3	-	13.7	0.3	-	-	-	i,o,p,q,-		
75	Lawnes Creek	29.3	%	1		-			-	1			-					-		-	-	96	2	-	-	-	i,m,q,-	Creek marsh dominated by big cordgrass; saltmarsh cordgrass in fringe along creek; other species scattered.	V
			acres	0.3		-			-	0.3			-					-		-	-	28.1	0.6	-	-	-	i,m,q,-		
76	Lawnes Creek	7.6	%	2		-			-	2										-	-	95	1	-	-	-	i,m,o, p,q,-	Pocket marsh dominated by big cordgrass; arrow arum evident toward head.	V
			acres	0.1		-			-	0.1										-	-	7.3	0.1	-	-	-	i,m,o, p,q,-		
77	Lawnes Creek	25.7	%	3		-			-	5								-		-	-	90	2	-	-		i,m,p,q,-	Fringe and pocket marsh areas dominated by big cordgrass; scattered hemp; arrow arum in interior.	V
			acres	0.8		-			-	1.3								-		-	-	23.1	0.5	-	-		i,m,p,q,-		
78	Lawnes Creek	2.0	%	-		5			-	-								-		-	-	90	5	-	-	-	i,o,q,-	Fringing marsh dominated by big cordgrass; narrow zone of saltmarsh cordgrass along creek channel.	V
			acres	-		0.1			-	-								-		-	-	1.8	0.1	-	-	-	i,o,q,-		
79	Lawnes Creek	10.9	%	5		5			-	15										-	-	70	5	-	-	-	i,m,o,q,-	Creek marsh dominated by big cordgrass with other species scattered throughout.	V
			acres	0.5		0.5			-	1.7										-	-	7.7	0.5	-	-	-	i,m,o,q,-		

a - Button Bush
b - Black Gum
c - Ash
d - Ironweed
e - Spike-rush
f - Sedge
g - Swamp Rose
h - Walter's Millet
i - Marsh Mallow
j - Reed Grass
k - Wild Pea
l - Dodder
m - Saltmarsh Aster
n - Switch Grass
o - Saltbushes
p - Black Needlerush
q - Atriplex
r - Wool Grass
s - Wool Reed

Section VII. Lawnes Creek
(continued)

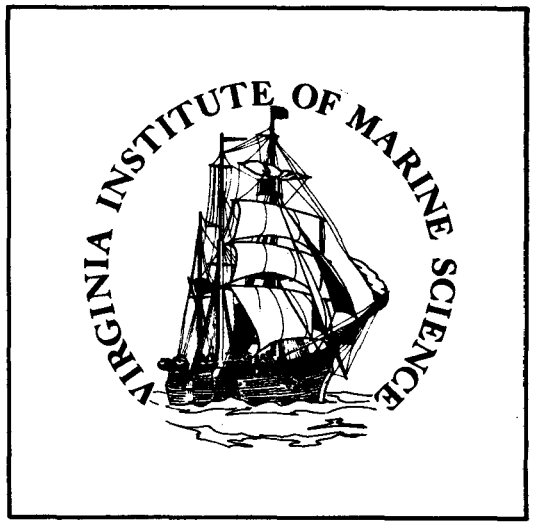
#	Marsh Location	Total Acres		Arrow Arum - Pickerelweed	Jewel-weed	Smartweed	Tear Thumb	Beggar Ticks	Marsh Hibiscus	Water-hemp	Wild Rice	Southern Cutgrass	Bald Cypress	Arrowhead	Giant Bulrush	Marsh Milkweed	Water Parsnip	Common Threesquare	Cardinal Flower	Cattails	Water Dock	Big Cordgrass	Saltmarsh Cordgrass	Marsh Fleabane	Saltmarsh Bulrush	Saltmeadow Grasses	Other	Observations	Marsh Type
80	Lawnes Creek	33.7	%	10		1			-	15			-					-		-	1	70	2		-		m,l i,n,q,-	Creek marsh dominated by big cordgrass; other species especially water hemp and arrow arum found throughout.	V
			acres	3.4		0.3			-	5.0			-					-		-	0.3	23.6	0.8		-		m,0.3 i,n,q,-		
81	Lawnes Creek	7.8	%	15		-			-	30	-		-					-		-	-	30	25		-		i,q,-	Creek marsh with increased abundance of arrow arum water hemp, saltmarsh cordgrass over downstream marshes.	XII
			acres	1.2		-			-	2.3	-		-					-		-	-	2.3	2.0		-		i,q,-		
82	Lawnes Creek	29.5	%	25		5			-	25	-		-					-		-	-	35	10		-		i,h,q,-	Creek marsh section extending back to pocket area; mixture of arrow arum, big cordgrass, water hemp throughout.	XII
			acres	7.4		1.5			-	7.4	-		-					-		-	-	10.3	2.9		-		i,h,q,-		
83	Lawnes Creek	8.0	%	40		3				25	5				-			-		-	-	-	25	-			q,- h,2	Creek marsh section; arrow arum, water hemp predominate; scattered saltmarsh cordgrass; wild rice along upland.	XI
			acres	3.2		0.2				2.0	0.4				-			-		-	-	-	2.0	-			q,- h,0.2		
84	Lawnes Creek	19.0	%	55		2				30	5				-			-		-	-		5				h,3	Creek marsh section dominated by arrow arum; abundant water hemp with scattered stands of wild rice.	VII
			acres	10.5		0.4				5.7	0.9				-			-		-	-		0.9				h,0.6		
85	Lawnes Creek	4.0	%	60	-	-		-	-	20	10		-		-			-		5	-		-				h,5	Upstream section of creek marsh continues above road; arrow arum with scattered cypress and other freshwater species.	VII
			acres	2.4	-	-		-	-	0.8	0.4		-		-			-		0.2	-		-				h,0.2		
	TOTAL SECTION VII	241.5	%	13	-	1		-	-	11	1		-		-			-		-	-	68	4	-	-	-	h, - m,- i,- n,-	o,- q,- p,-	
			acres	31.8	-	3.0		-	-	26.7	1.7		-		-			-		0.6	0.7	164.7	10.8	-	-	0.1	h,1.0 m,0.3 i,- n,-	o,- q,- p,-	
	TOTAL SURRY COUNTY	1987.8	%	28	1	-	-	5	1	4	12	-	1	-	-	-	-	-	-	3	-	42	2	-	-	-	a,- d,- g,- j,- m,- p,- s,- b,- e,- h,- k,- n,- q,- c,- f,- i,- l,- o,- r,-	
			acres	557.7	18.3	4.0	2.8	91.6	15.5	86.4	237.5	1.3	10.6	0.3	0.8	-	0.4	2.5	-	54.8	7.5	831.7	31.4	0.5	1.9	9.9	a,- d,- g,- j,- m,0.3 p,- s,- b,- e,- h,1.6 k,0.7 n,- q,- c,- f,8.6 i,2.6 l,- o,44 r,-	

a - Button Bush d - Ironweed g - Swamp Rose j - Reed Grass m - Saltmarsh Aster p - Black Needlerush s - Wool Reed

b - Black Gum e - Spike-rush h - Walter's Millet k - Wild Pea n - Switch Grass q - Atriplex

c - Ash f - Sedge i - Marsh Mallow l - Dodder o - Saltbushes r - Wool Grass

INDEX TO MARSH LOCATIONS


VIRGINIA INSTITUTE OF MARINE SCIENCE