

CITY OF SUFFOLK TIDAL MARSH INVENTORY

Special Report No. 311 in Applied Marine Science and Ocean Engineering

Kenneth A. Moore and Sharon Dewing



WETLANDS PROGRAM

**VIRGINIA INSTITUTE OF MARINE SCIENCE
SCHOOL OF MARINE SCIENCE
THE COLLEGE OF WILLIAM AND MARY
Gloucester Point, Virginia 23062**

MAY 1991

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**Dr. Carl Hershner, Program Director
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MAY 1991

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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	City of Newport News	Middlesex County
Northumberland County	and Fort Eustis	City of Norfolk
Mathews County	Accomack County	King William County and
York County and the	Northampton County	Town of West Point
Town of Poquoson	Westmoreland County	King and Queen County
Stafford County	James City County	Prince George County
Prince William County	and the City of Williamsburg	and City of Hopewell
King George County	Surry County	City of Portsmouth
City of Hampton	Spotsylvania and Caroline Counties	City of Virginia Beach Vol. 3
Fairfax County	and the City of Fredericksburg	Richmond County
Gloucester County	New Kent County	Charles City County
City of Virginia Beach	Essex County	Henrico County, Chesterfield County,
Vol. 1 and 2	Isle of Wight County	Colonial Heights, Petersburg and
		the City of Richmond

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, City of Suffolk, SRAMSOE No. 116, 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.

Acknowledgements

We would like to thank Col. Joe Mizell for his invaluable field assistance in gathering the data for this report.

We would especially like to thank Berch Smithson for his programming expertise, Anna K. Kenne, Paula Hill and Martha Craig for digital cartography, Julie G. Bradshaw for the cover photograph, William Jenkins for the cover photograph line conversion and Janet Walker for tables and typography.

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Introduction

Tidal marshes in the City of Suffolk are located principally along the shorelines of Chuckatuck and Bennett creeks and the Nansemond River. Because of the low to moderate salinities of the tidal waters here, most of the marshes are dominated by salt-tolerant plant communities such as saltmarsh cordgrass (Type I), saltmeadow (Type II), and brackish water mixed (Type XII). In many upstream areas of reduced salinities, big cordgrass (Type V) communities dominate.

Most of the marshes that currently exist in the city are healthy and productive with only a few instances of invasion by noxious and environmentally less valuable species such as reedgrass. In this region the presence of reedgrass indicates a wetland area that sometime in the past has been disturbed by man's activities.

There is, however, ample evidence that man has impacted many existing and former marsh areas within the city. Formerly low salinity and freshwater areas have been lost through the creation of reservoirs. Other areas have been dredged by sand mining operations, while still others have been used as disposal areas for sediments dredged from river channels. Indirect impacts can also be observed as sediments trapped naturally from runoff due to farming and land clearing activities have raised the elevation of many marshes.

Only through careful planning and strict controls can additional impacts to the remaining marsh areas be avoided. It is our desire that this inventory will be helpful in assisting in the wise management of these valuable wetland resources.

Methods

Wetland locations and wetland boundaries were obtained by consulting USGS topographic maps and aerial photographs. The configuration and areal extent of each marsh was confirmed by observations by boat, on foot or by low level overflights. Individual plant species percentages are quantitative estimates of coverage based on visual inspections of every marsh.

Percent cover estimates are subject to a seasonal bias depending on the time of the year the estimates are made. In the winter, for example, most brackish water marshes, such as found in this city, contain only standing remnants of the previous summer's growth. Abundance and diversity estimates made during this time period would be underestimates of the actual amounts. During the spring most species are found to be rapidly sprouting from extensive below rhizome networks. Those species with the greatest stored reserves sprout first. Therefore, it is not until mid summer that maximum abundance and diversity are reached. This inventory was conducted during August and September of 1977; therefore, the plant community compositions reported here reflect maximum levels of abundance and diversity for the marsh areas.

The outline of each marsh as depicted on the topographic map was planimetered to determine its acreage. Marshes 0.25 acres or larger are designated by number. The acreage, plant species percentage and acreage, marsh type and other observations are recorded in tabular form for each of these marshes. Marshes less than 0.25 acres (usually narrow fringing marshes and very small pocket marshes) are indicated by the same shaded symbol as the numbered marshes but are not included in the tabulations. The size of the small marshes (less than one acre) is exaggerated on the maps for clarity and is not always to scale.

Plant species percentages are recorded to the nearest percent and acreages to the nearest 0.1 acre in the larger marshes. In those instances where an individual plant species is estimated to amount to less than 0.5 percent or 0.05 acre, the symbol (-) is used to indicate a trace amount.

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.

Marsh Plants

Common names and scientific names as found in the data tables of this report.

Arrow Arum*	<i>Peltandra virginica</i> (L.) Kunth	Orach	<i>Atriplex patula</i> L.
Arrowhead*	<i>Sagittaria latifolia</i> Willd.	Pickerelweed*	<i>Pontedaria cordata</i> L.
Big Cordgrass*	<i>Spartina cynosuroides</i> (L.) Roth	Reedgrass*	<i>Calamagrostis cinnoides</i> (Muhl.) Barton
Black Grass	<i>Juncus gerardi</i> Loisel	Saltbushes*	<i>Baccharis halimifolia</i> L.
Black Needlerush*	<i>Juncus roemerianus</i> Scheele		<i>Iva frutescens</i> L.
Black Willow	<i>Salix nigra</i> Marshall	Saltmarsh Aster	<i>Aster vimineus</i> Lam.
Cardinal Flower	<i>Lobelia cardinalis</i> L.	Saltmarsh Bulrush	<i>Scirpus robustus</i> Pursh
Cattails*	<i>Typha augustifolia</i> L.	Saltmarsh Cordgrass*	<i>Spartina alterniflora</i> Loisel
	<i>Typha latifolia</i> L.	Saltmarsh Fimbristylis	<i>Fimbristylis spadicea</i> (L.) Vahl.
Clearweed	<i>Pilea</i> sp.	Saltmeadow Grass*	<i>Distichlis spicata</i> (L.) Greene
Common Threesquare*	<i>Scirpus americanus</i> Pers.		<i>Spartina patens</i> (Aiton) Muhl.
Cypress*	<i>Taxodium distichum</i> (L.) Richard	Saltwort*	<i>Salicornia</i> sp.
Dodder	<i>Cuscuta</i> sp.	Sea Lavender*	<i>Limonium carolinianum</i> (Walter) Britton
Giant Bulrush*	<i>Scirpus validus</i> Vahl.	Sea Oxeye*	<i>Borrchia frutescens</i> (L.) DC
Jewelweed	<i>Impatiens capensis</i> Meerb.	Smartweed*	<i>Polygonum</i> sp.
Marsh Fleabane*	<i>Pluchea purpurascens</i> (Swartz) DC	Water Dock*	<i>Rumex verticillatus</i> L.
Marsh Hibiscus*	<i>Hibiscus moscheutos</i> L.	Water Hemp*	<i>Amaranthus cannabinus</i> (L.) J.D. Sauer
Marsh Mallow	<i>Kosteletskyia virginica</i> Presl.	Wild Rice*	<i>Zizania aquatica</i> L.
Olney Threesquare*	<i>Scirpus olneyi</i> Gray		

*Species included in the Wetlands Act of 1972.

Glossary of Descriptive Terms

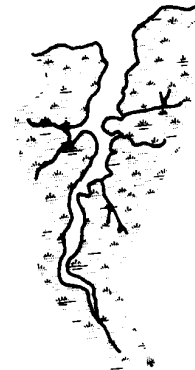
Cove Marsh

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.



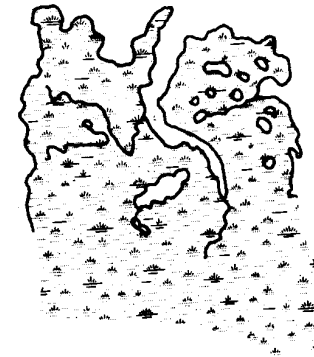
Delta Marsh

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

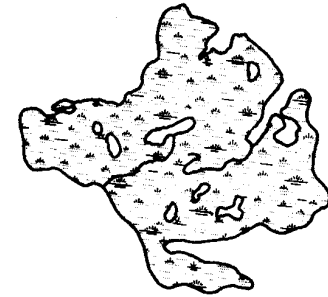
The marsh surface is at an elevation of mean high water or above; it is usually inundated less than twice daily by tidal action.

Low Marsh

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

Marsh Island

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



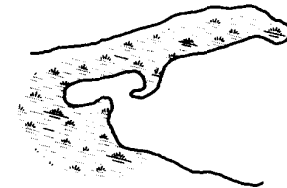
Pocket Marsh

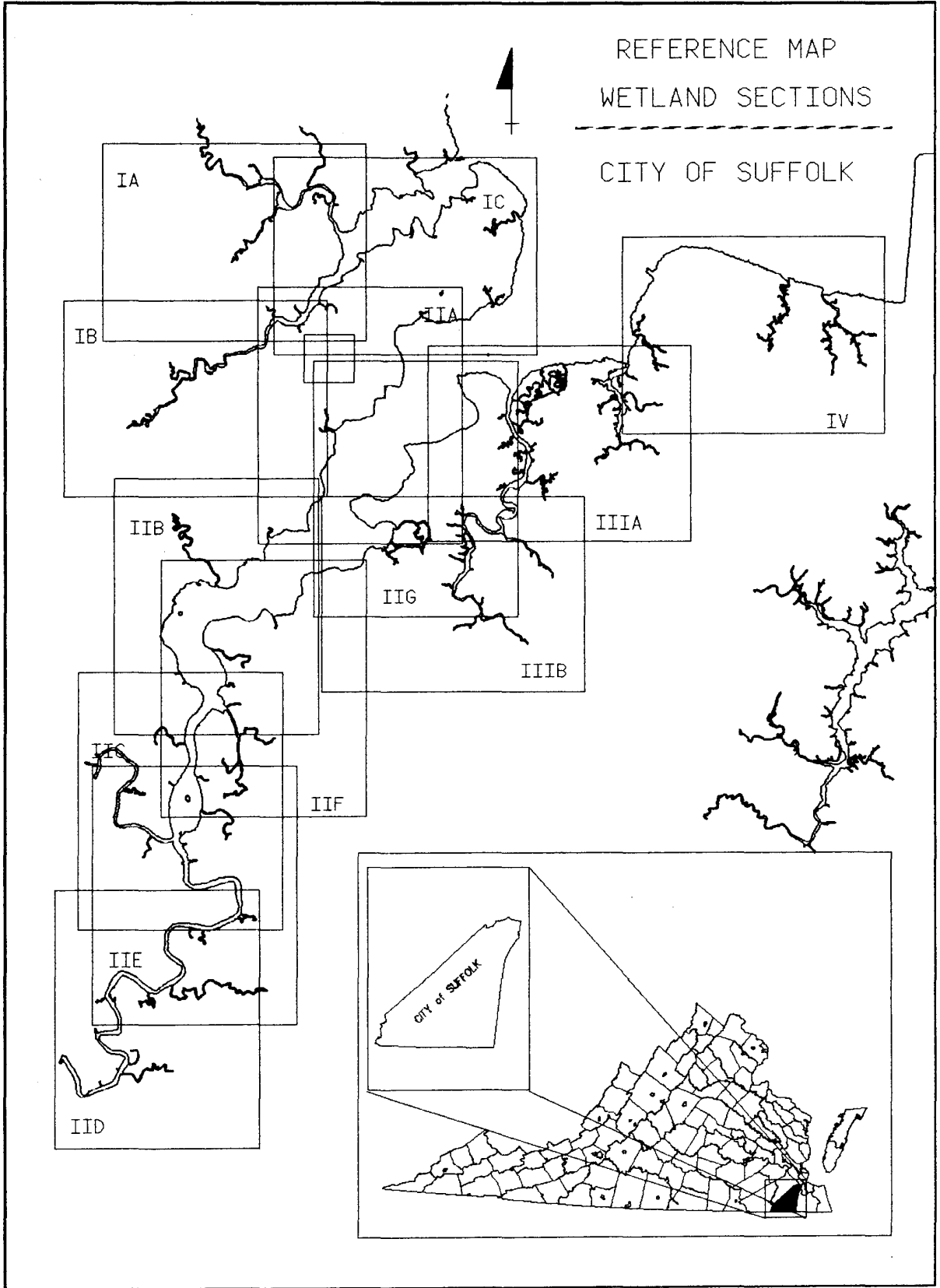
A marsh contained within a small, essentially semi-circular area on a shoreline.



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.

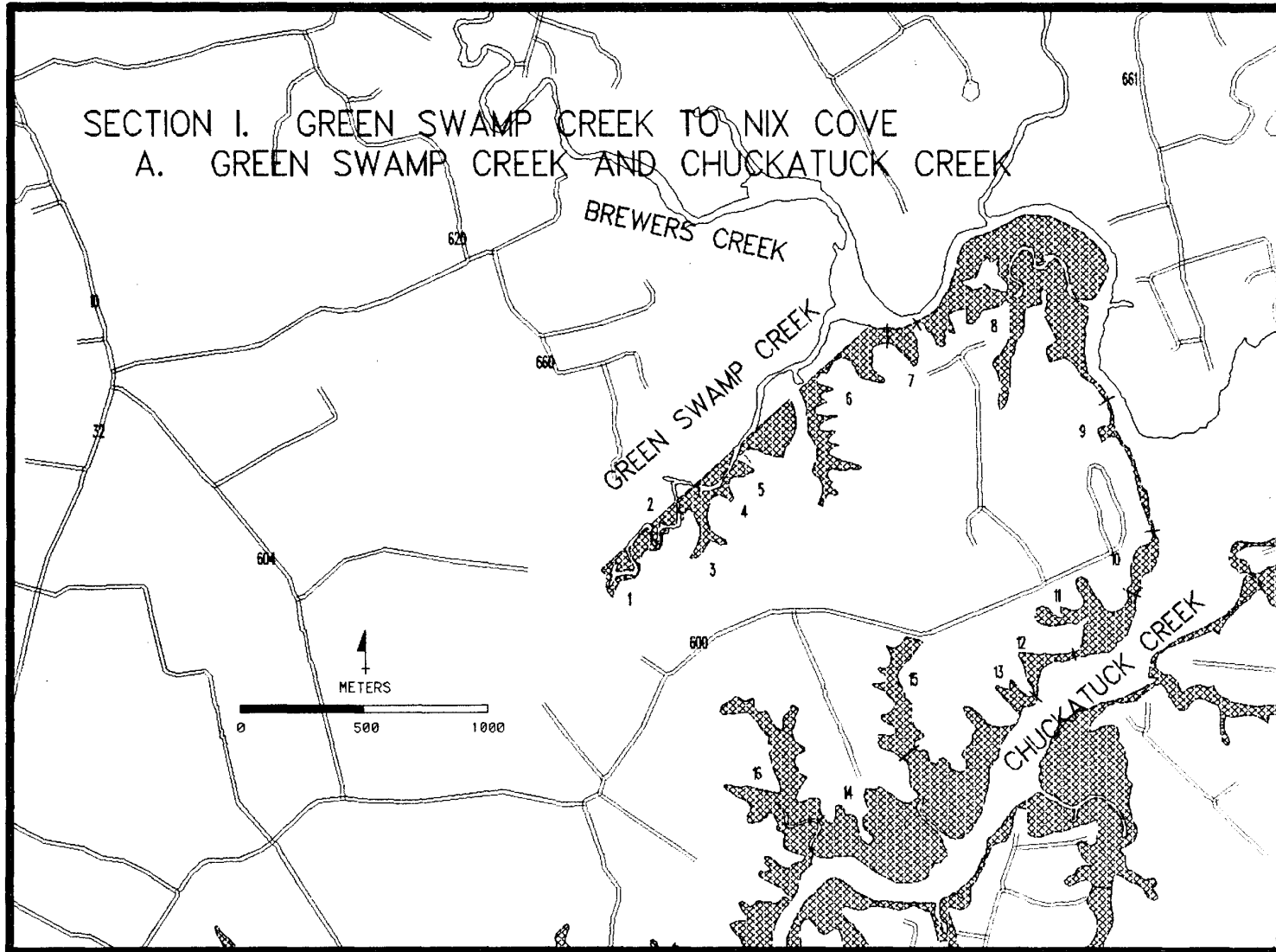


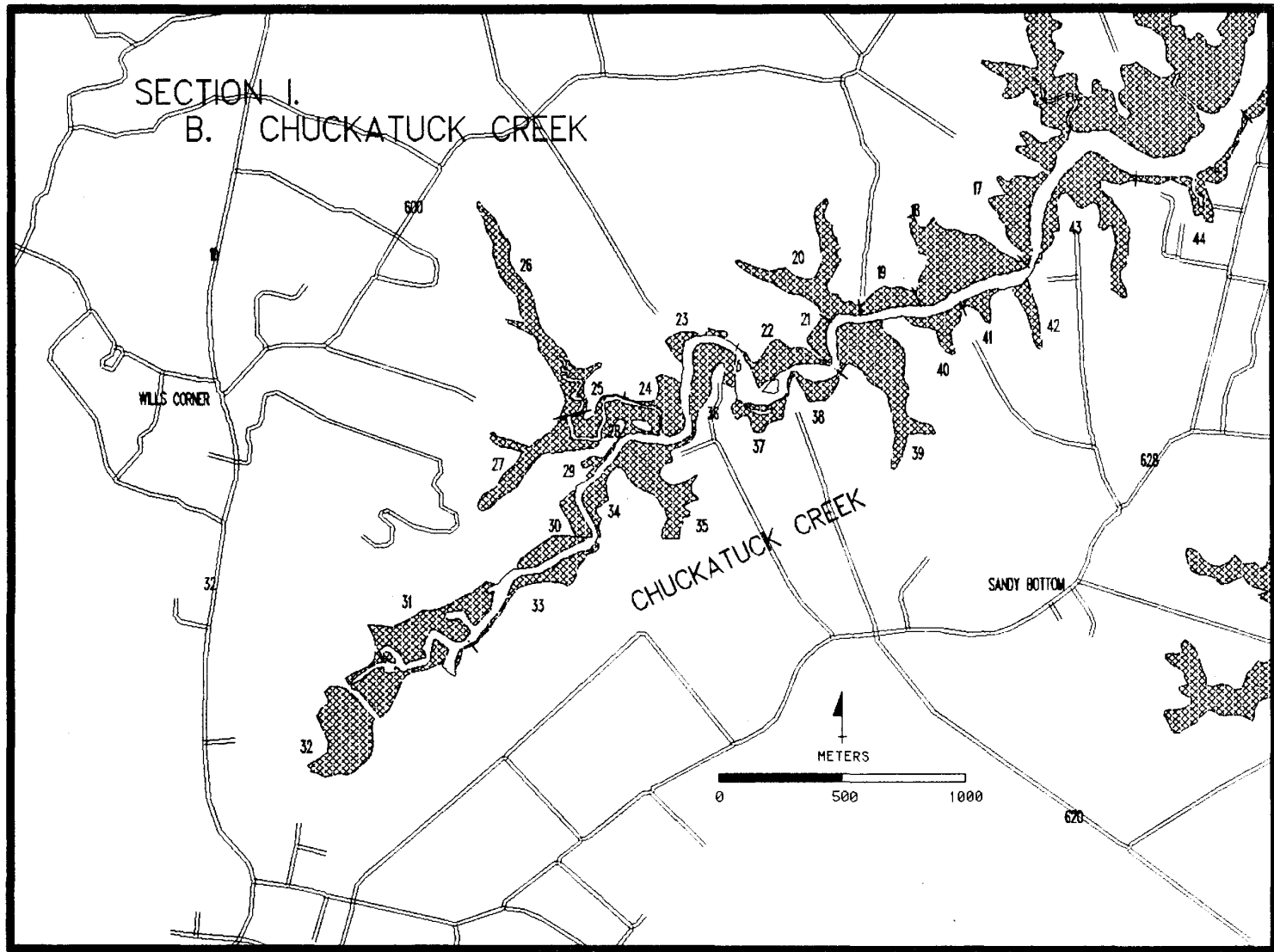


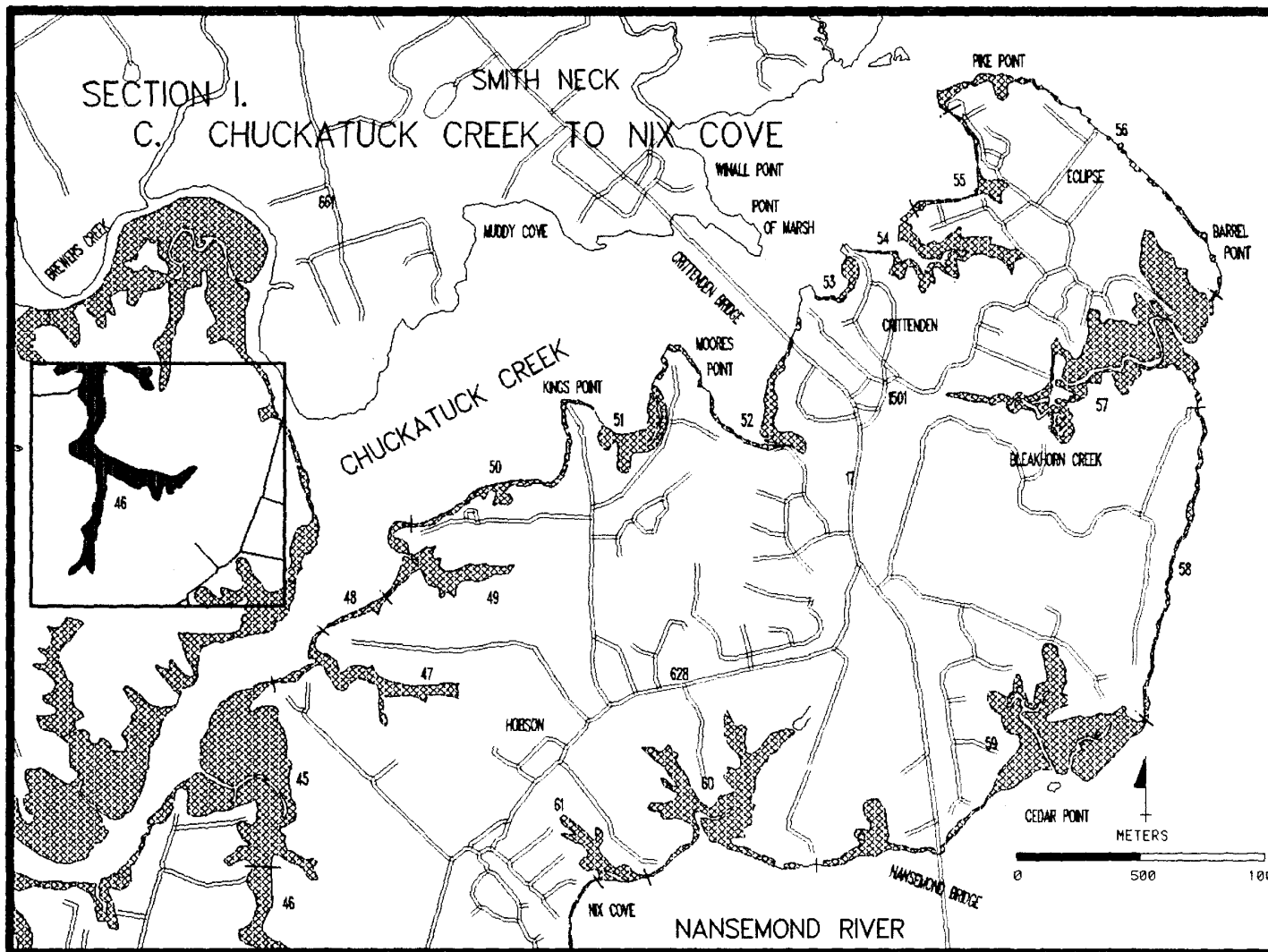
Section I

Chuckatuck Creek

This section of shoreline includes the marshes of the Chuckatuck Creek area located within the city limits of Suffolk. Wetland areas principally consist of creek, pocket and fringing marshes. Channelward marsh areas of lower elevation are dominated by saltmarsh cordgrass, while interior areas of higher elevation are dominated by saltmeadow grasses and saltbushes. Upstream marshes in Chuckatuck Creek, where salinities are lower, are vegetated with an abundance of big cordgrass. Most marshes in the lower reaches of Chuckatuck Creek are relatively unimpacted; however, headwater areas contain extensive sand mining pits which have displaced many acres of marsh.







I. Brewers Creek to Nix Cove.

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Oleay Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
1	Green Swamp Creek	6.1	%	5	30	60	--	--			--	5	--		--	--	--	--					Head of creek, SA fringe along channels, interior mostly SB with SM	IV
			A	.3	1.8	3.7							.3											
2	Green Swamp Creek	1.4	%	10	35	30	25	--			--				--	--	--	--					SA fringe, scattered SM, SB and BN	XII
			A	.1	.5	.4	.4																	
3	Green Swamp Creek	4.8	%	40	20	30	5	--		--	5	--			--		--						SA fringe, interior SM and SB	XII
			A	1.9	1.0	1.4	.2					.2												
4	Green Swamp Creek	.6	%	65	--	--		10		25	--				--		--						Pocket marsh, cattail at head	I
			A	.4					.1		.2													
5	Green Swamp Creek	.7	%	80	5	--	--	5			10	--			--		--	--					Small pocket marsh, cattail at head	I
			A	.6	--				--			.1												
6	Green Swamp Creek	21.3	%	35	15	--	45	--	--	--	5	--	--		--		--	--					SA fringe, SB at head of pocket, interior of SM and BN	XII
			A	7.5	3.2		9.6					1.1												
7	Brewers Creek	2.3	%	40	25	--	30	5		--	--	--			--	--	--	--					SA along channel, cattails along upland, interior of SM and BN	XII
			A	.9	.6		.7	.1																
8	Brewers Creek	66.7	%	10	15	--	75	--	--	--	--	--				--	--	--					SA along creek, interior BN with SM, pocket of SB, SC and cattail	III
			A	6.7	10.0		50.0																	

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
9	Brewers Creek	1.9	%	80	15		5	--		--	--	--			--	--		--				Fringe and pocket marsh dominated by SA, cattails in pocket, SM, BN along upland	I	
			A	1.5	.3		.1																	
10	Chuck-atuck Creek	4.1	%	55	35	5	--	5	--	--	--	--				--	--	--				SA grades to SM, cattail along upland	I	
			A	2.3	1.4	.2		.2																
11	Chuck-atuck Creek	13.5	%	25	45	10	15	3		--	2	--	--	--	--	--	--	--			--	Fringe and embayed marsh, SA along water, interior of BN and SM	XII	
			A	3.4	6.1	1.4	2.0	.4				.3												
12	Chuck-atuck Creek	3.5	%	65	10	--	15	10		--	--				--			--			--	SA grades to BN, cattail along upland	I	
			A	2.3	.4		.5	.4																
13	Chuck-atuck Creek	2.5	%	80	5	--	10	5			--				--			--			--	Pocket marsh dominated by SA, BN and cattail along upland	I	
			A	2.0	.1		.3	.1																
14	Chuck-atuck Creek	54.1	%	35	20	--	40	--	--	--	5	--					--	--				C-	Embayed marsh, broad area of SA along creek, interior BN	XII
			A	18.9	10.8		21.6					2.7												
15	Chuck-atuck Creek	11.5	%	20	10	5	10	5		--	10	40	--	--	--			--				B-,D-,Q-	Head of embayed marsh, cattail along upland, SA along channels grade to BN	XII
			A	2.3	1.2	.6	1.2	.6				1.2	4.6											
16	Chuck-atuck Creek	39.4	%	15	35	--	35	--	--	--	3	10	--	--		--	--	2			--	Q-	SA along creeks, SM and BN interior, SC abundant at head	XII
			A	5.9	13.8		13.8					1.2	3.9						.8					

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbriatilis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
17	Chuck-atuck Creek	13.6	%	40	30	--	25	--		--	5	--				--	--	--				SA grades back to large areas SM and BN, scattered SB	XII	
			A	5.4	4.1		3.4					.7												
18	Chuck-atuck Creek	25.1	%	5	45	5	40	--		--	--	5	--	--		--	--	--				Interior dominated by SM and BN, scattered SB	XII	
			A	1.3	11.3	1.3	10.0					1.3												
19	Chuck-atuck Creek	4.8	%	10	45	5	10	--	--	--	--	25	--	--	--	--	--	5	--	--	Q-	Interior dominated by SM, SC, BN and SB, SA fringe, cattail along upland	XII	
			A	.5	2.2	.2	.5					1.2							.2					
20	Chuck-atuck Creek	13.4	%	5	25	30	--	--	--	--	--	40	--	--	--	--	--				C-,D-,Q-	Creek marsh, SC mixed with SM and SB, cattails at head of branches	XII	
			A	.7	3.4	4.0						5.4												
21	Chuck-atuck Creek	1.9	%	45	5	--	5	--			20	25	--	--	--	--	--	--				Q-	SA mixed with SC, abundant SB	XII
			A	.9	.1		.1					.4	.5											
22	Chuck-atuck Creek	7.9	%	40	5	--		--			--	50	--	--	--	--	--	5				Q-	Creek marsh dominated by SC mixed with SA, interior SM and olneyii	V
			A	3.2	.4							4.0							.4					
23	Chuck-atuck Creek	1.5	%	25	5	--	--	--			--	50	--	--	--	--	--	20				Q-	Fringe marsh, SA and SC mix, interior stand of olneyii	V
			A	.4	.1							.8							.3					
24	Chuck-atuck Creek	7.0	%	10	5	--	5	2			3	70	--	--	--	--	--	5				Q-	Creek marsh dominated by SC, interior SM, SB and olneyii	V
			A	.7	.4		.4	.1				.2	4.9						.4					

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
25	Chuck-atuck Creek	3.2	%	--	--	2		5			--	90	--	--	1			--		--	C-,E1,Q1	Creek marsh section, dominated by SC, scattered wdock, SB and water hemp	V	
			A			.1		.2					2.9			--								
26	Chuck-atuck Creek	16.2	%			--		5			--	70	1	--	4							A-,C15,D-,F-,E2,G-,H-,Q3	Creek marsh, SC mixed with PW and cattail, FW species increase at head	V
			A					.8				11.3	.2		.6									
27	Chuck-atuck Creek	9.8	%	--	--	5		--			--	90	--	--	--	--						A-,C-,D-,F-,Q5	Pocket marsh dominated by SC, PW towards head, scattered SB	V
			A			.5						8.8												
28	Chuck-atuck Creek	6.0	%	5	5	--	--	--		--	--	85	--	--	--	--	--	--				C-,D-,Q5	Creek marsh section, dominated by SC, interior SM and BN	V
			A	.3	.3								5.1											
29	Chuck-atuck Creek	.9	%	--	--			5			--	90	--	--	5	--						A-,B-,C-,D-,E-,Q-	Small fringe marsh dominated by SC	V
			A					--				.8			--									
30	Chuck-atuck Creek	6.4	%	20	--	--		--			--	75	--	--	5	--						A-,B-,C-,D-,E-,F-,Q-	Fringe marsh, SC mixed with SA	V
			A	1.3								4.8			.3									
31	Chuck-atuck Creek	28.8	%	--				--			--	60	--	--	--							A-,C25,D-,E5,G-,I-,J-,Q10	Head of creek dominated by SC; PW, AA, hemp and dock throughout	V
			A								17.3													
32	Chuck-atuck Creek	17.7	%					5			--	50	--	--	--							A-,C30,D-,E5,G-,I-,J-,Q10	Head of creek, SC mixed with PW, large stand cattails along upland	V
			A					.9				8.9												

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olivey Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
33	Chuck-atuck Creek	6.1	%	5	--	--		5			--	80	--	--	--						--	C5,I-,Q5	Creek marsh dominated by SC, cattail along upland	V
			A	.3					.3				4.9										C.3,Q.3	
34	Chuck-atuck Creek	3.5	%	--	5	--	--	10			--	80	--	--	--			5			--	C-,Q-	Dominated by SC, cattail in interior	V
			A		.2				.4				2.8						.2					
35	Chuck-atuck Creek	14.4	%	--	10	--	--	--			--	90	--	--	--			--			--	C-,Q-	Pocket marsh dominated by SC	V
			A		1.4								13.0											
36	Chuck-atuck Creek	7.6	%	5	15	--	25	--		--	--	55	--			--	--	--			--		Creek marsh, SA fringe, interior SM, SC and BN	V
			A	.4	1.1		1.9						4.2											
37	Chuck-atuck Creek	2.6	%	60	10	--	--	--		--	--	30				--	--				--		SA fringe mixed with SC and SM, cattail along upland	I
			A	1.6	.3								.8											
38	Chuck-atuck Creek	3.0	%	50	20	--	--	--		--	--	30	--	--		--	--	--			--		SA fringe grades to SM and SC	I
			A	1.5	.6								.9											
39	Chuck-atuck Creek	19.3	%	5	40	15	5	--	--	--	5	30	--	--	--			--			--	B-	Pocket marsh, interior dominated by SM, SC and SB	XII
			A	1.0	7.7	2.9	1.0					1.0	5.8											
40	Chuck-atuck Creek	5.2	%	40	15		10	2		--	2	30	--	--	--			1			--	Q-	SA along creek, interior of SM, SC and BN	XII
			A	2.1	.8		.5	.1				.1	1.6						.1					

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
41	Chuck-atuck Creek	2.6	%	60	10		5	--		--	10	15	--	--	--	--		--		--		Pocket marsh dominated by SA	I
			A	1.6	.3		.1					.3	.4										
42	Chuck-atuck Creek	3.6	%	35	25	--	15	--	--	--	15	5	--	--	--	--		5		--		Pocket marsh, SA with interior SM and BN, olneyii and s.bul.	XII
			A	1.3	.9		.5					.5	.2						.2				
43	Chuck-atuck Creek	22.2	%	25	40	20	5	--	--	--	5	5	--	--	--	--		--		--	Q-	Upstream dominated by SB, SM, with SC	XII
			A	5.6	8.9	4.4	1.1					1.1	1.1										
44	Chuck-atuck Creek	8.5	%	90	5	2	--	1		--	1	1	--	--	--	--						Fringe and pocket marsh dominated by SA; SM, s.bul., SC, SB along upland	I
			A	7.7	.4	.2		.1				.1	.1										
45	Chuck-atuck Creek	55.0	%	30	25	5	40	--	--	--	--	--	--	--	--	--		--				Large embayed marsh, SA along lower portion	XII
			A	16.5	13.8	2.8	22.0																
46	Chuck-atuck Creek	20.2	%	25	40	25	2	3							--	5		--				Head of creek SB, SC and SM, mixed cattail pockets	XII
			A	5.1	8.1	5.1	.4	.6									1.0						
47	Chuck-atuck Creek	12.5	%	75	20	5	--	--		--	--	--	--	--	--	--					--	Dominated by SA, SB and cattail in upland, areas of SM	I
			A	9.4	2.5	.6																	
48	Chuck-atuck Creek	1.0	%	90	10	--	--			--	--					--						SA dominated fringe, 20' wide; SB and SM along upland	I
			A	.9	.1																		

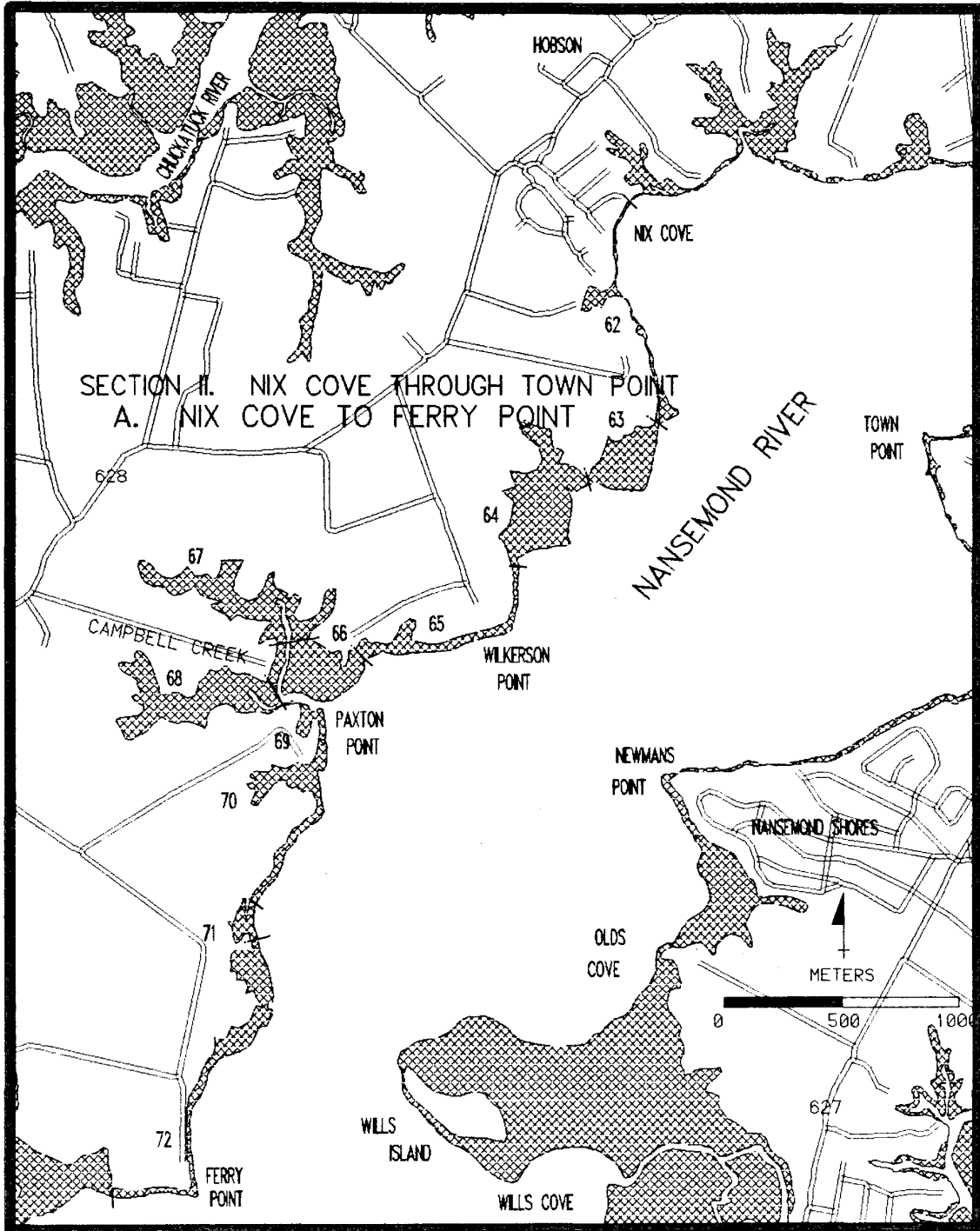
#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
49	Chuck-atuck Creek	9.6	%	85	10	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Pocket marsh dominated by SA; scattered BN, cattails along upland	I
			A	8.2	1.0		.5																
50	Chuck-atuck Creek	3.3	%	55	15	5	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SA dominated fringe marsh, scattered BN; SM, SC and SB along upland	I
			A	1.8	.5	.2	.8																
51	Chuck-atuck Creek	6.5	%	70	15	5	5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	SA dominated embayed marsh with dredged channels, cattails along upland	I
			A	4.6	1.0	.3	.3	.3															
52	Crittenden	3.0	%	65	10	5	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SA fringe grades to SB, BN, SM around cove; cattail pockets	I
			A	2.0	.3	.2	.6																
53	Chuck-atuck Creek	2.3	%	90	5	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SA fringe grades to BN, SM and cattail; RG in pockets	I
			A	2.1	.1		.1																
54	Chuck-atuck Creek	11.9	%	95	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Pocket marsh dominated by SA, cattail pockets along upland	I
			A	11.3	.6																		
55	Chuck-atuck Creek	2.5	%	75	10	5	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	SA fringe, grades to BN and SM, average width 15', cattails at head	I
			A	1.9	.3	.1	.3																
56	Hampton Roads	4.4	%	80	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Intermittent fringe marsh, SA grades to SM, erosion evident	I
			A	3.5	.9																		

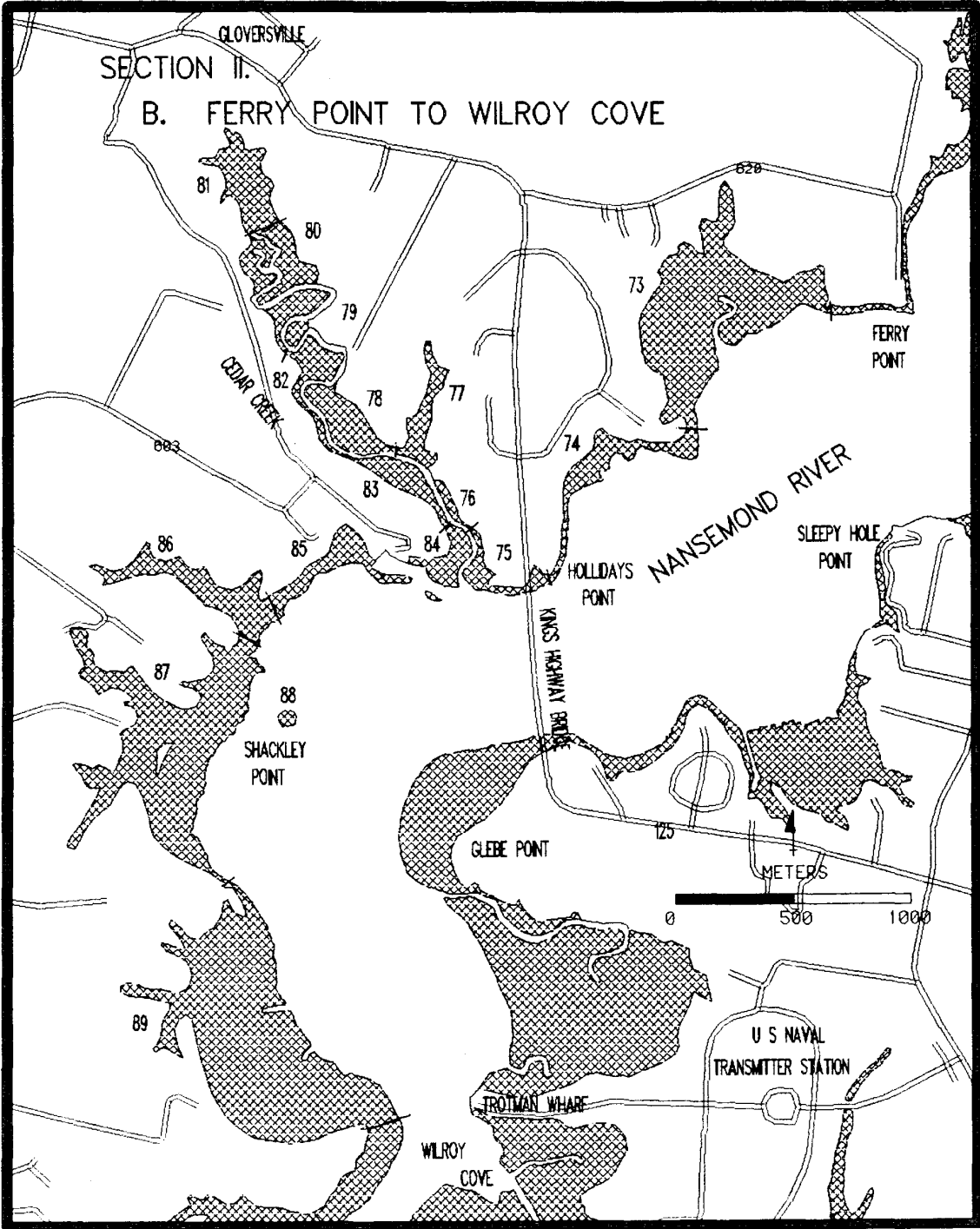
#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Feedgrass	Orach	Others	Observations	Marsh Type
57	Bleak-horn Creek	53.8	%	45	40	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Creek marsh, SB and SM along dredged channels, RG at creek mouth	XII
			A	24.2	21.5	8.1																	
58	Nansemond River	3.5	%	70	10	5	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	Fringe marsh, SA along water, interior of SM, s.bul., reed and SB	I
			A	2.5	.4	.2														.5			
59	Nansemond River	45.3	%	75	20	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Embayed marsh, mostly SA with areas of SM, cattails along upland	I
			A	34.0	9.1	2.3																	
60	Nix Cove	21.5	%	90	5	--	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	Creek marsh dominated by SA, dredged channel	I
			A	19.4	1.1			1.1															
61	Nix Cove	6.6	%	85	10	--	2	3	--	--	--	--	--	--	--	--	--	--	--	--	--	Pocket marsh dominated by SA, dredged channel	I
			A	5.6	.7		.1	.2															
T	Total Section I	760.1	%																				
			A	247.8	158.1	41.2	145.0	7.0		.2	11.2	122.6	.2		.9	1.0		2.6	.5		24.1		
			%																				
			A																				
			%																				
			A																				

Section II

Nansemond River

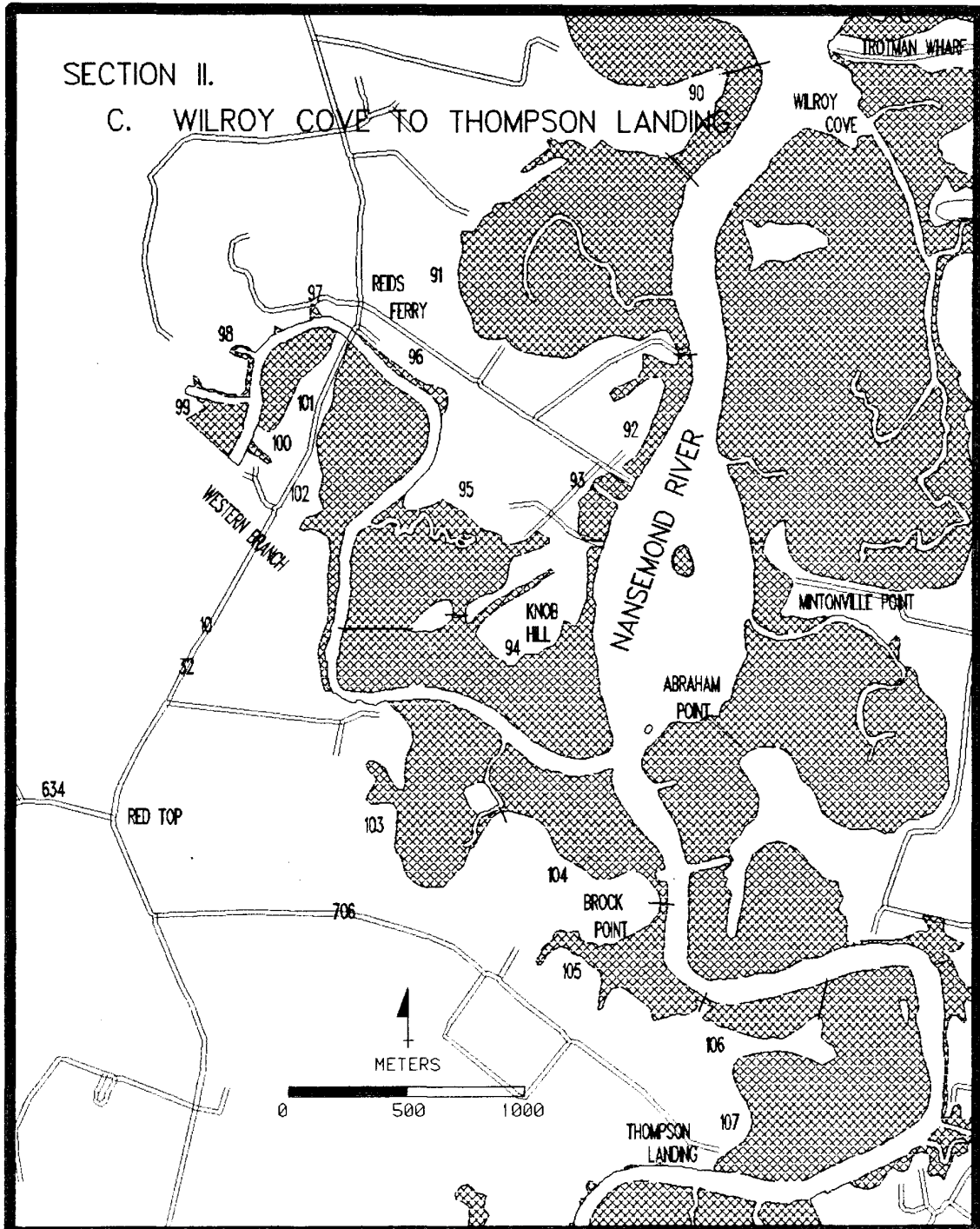
The lower half of the Nansemond River is characterized by broad open water with fungi and pocket marsh areas along the east and west shorelines. The upper half is dominated by extensive creek marsh areas of brackish water species. The upper tidal reaches of both the Nansemond and the Western Branch have been removed from the estuarine system and replaced by freshwater impoundments. Of the remaining marsh areas, only a few appear to have been significantly impacted by man's activities. In a number of locations sediments dredged from the river channel have been placed on the adjacent marsh. Most of these sites are characterized by stands of reedgrass. In a few other areas, such as Bennett Harbor, channels have been dredged through the marsh to provide access to the river. The marsh areas of this section are, for the most part, characterized as Group One or Group Two wetlands. As such, they have very high environmental values in productivity, wildlife and waterfowl habitats, erosion buffers and filters of upland runoff. They should be preserved.





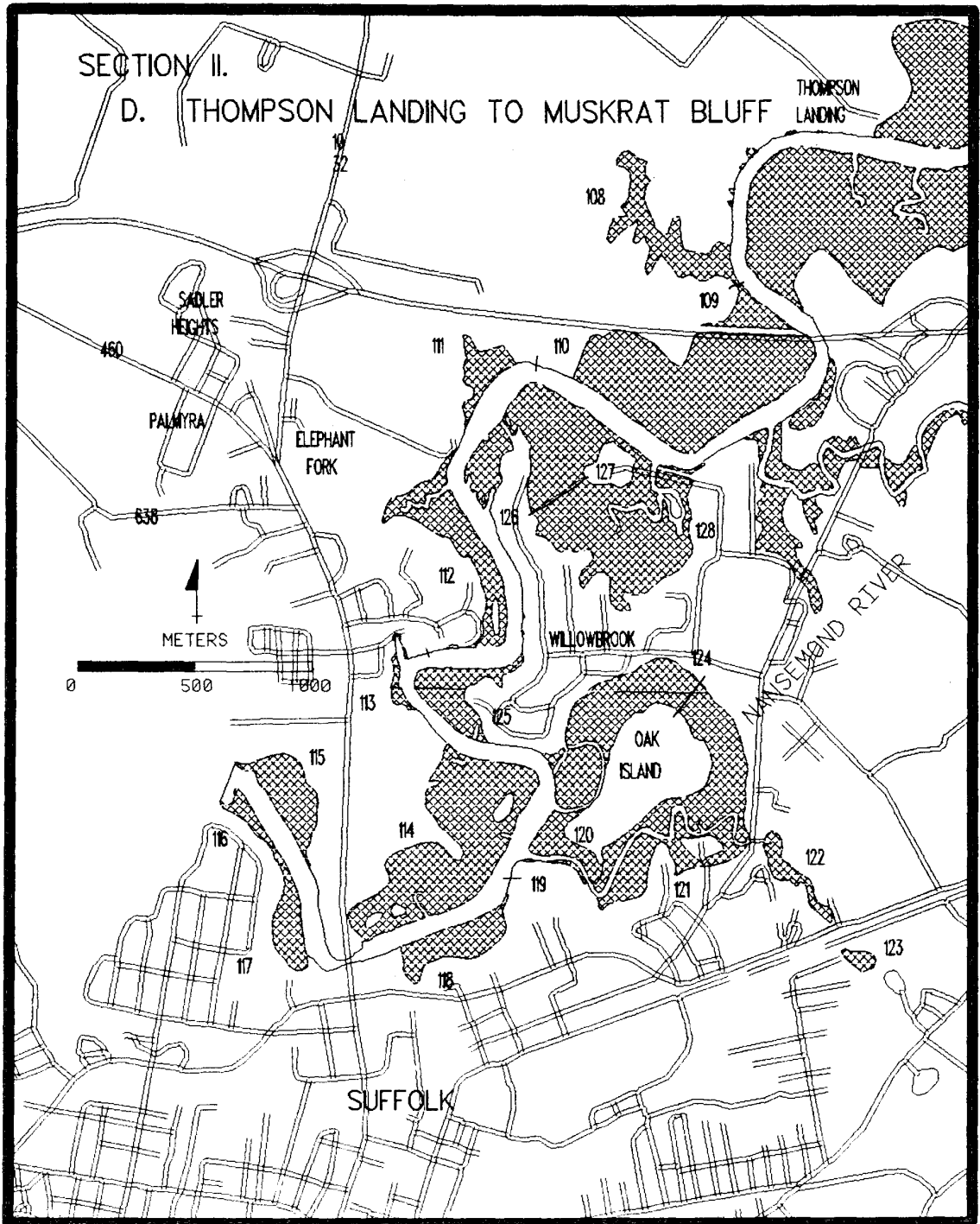
SECTION II.

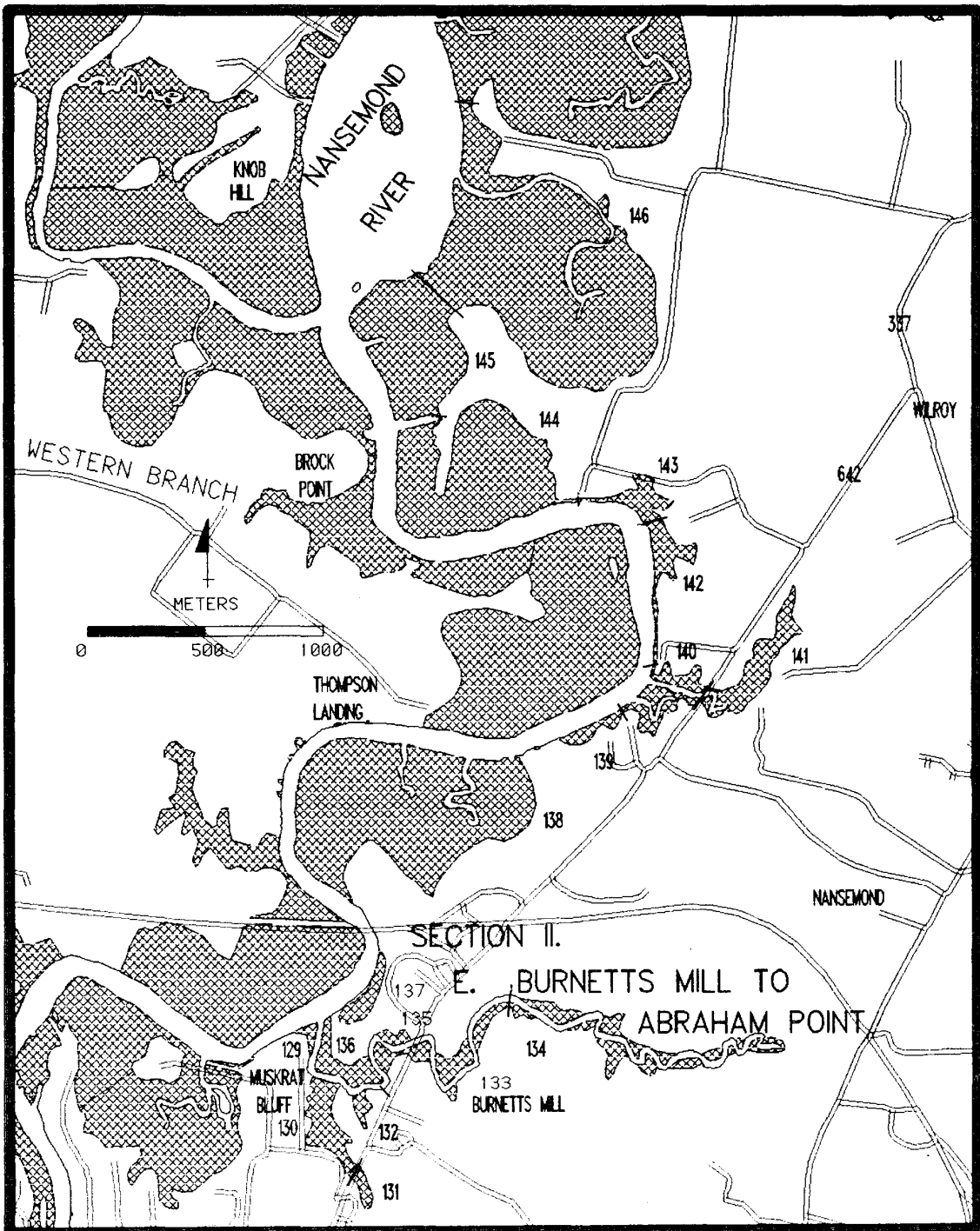
C. WILROY COVE TO THOMPSON LANDING

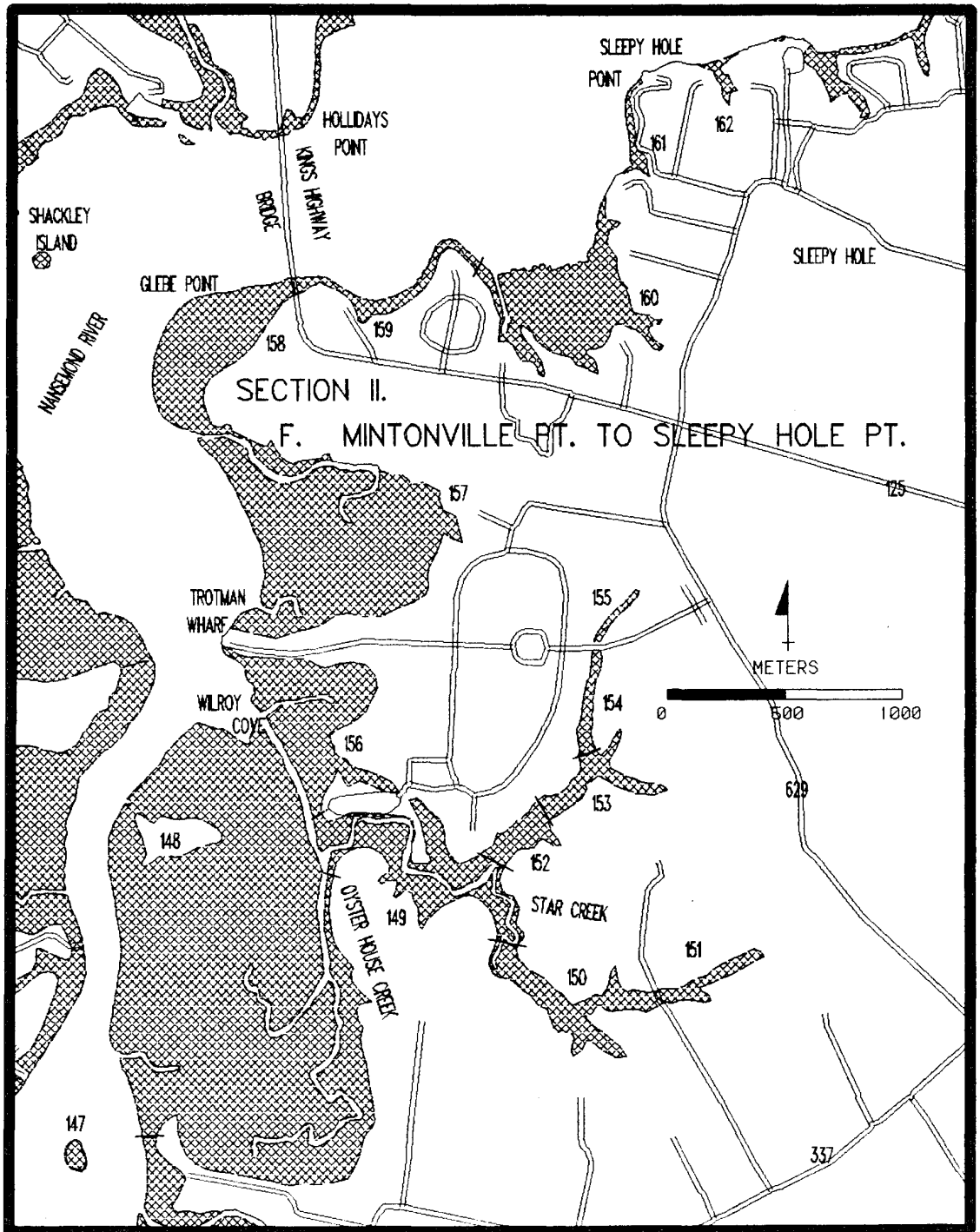


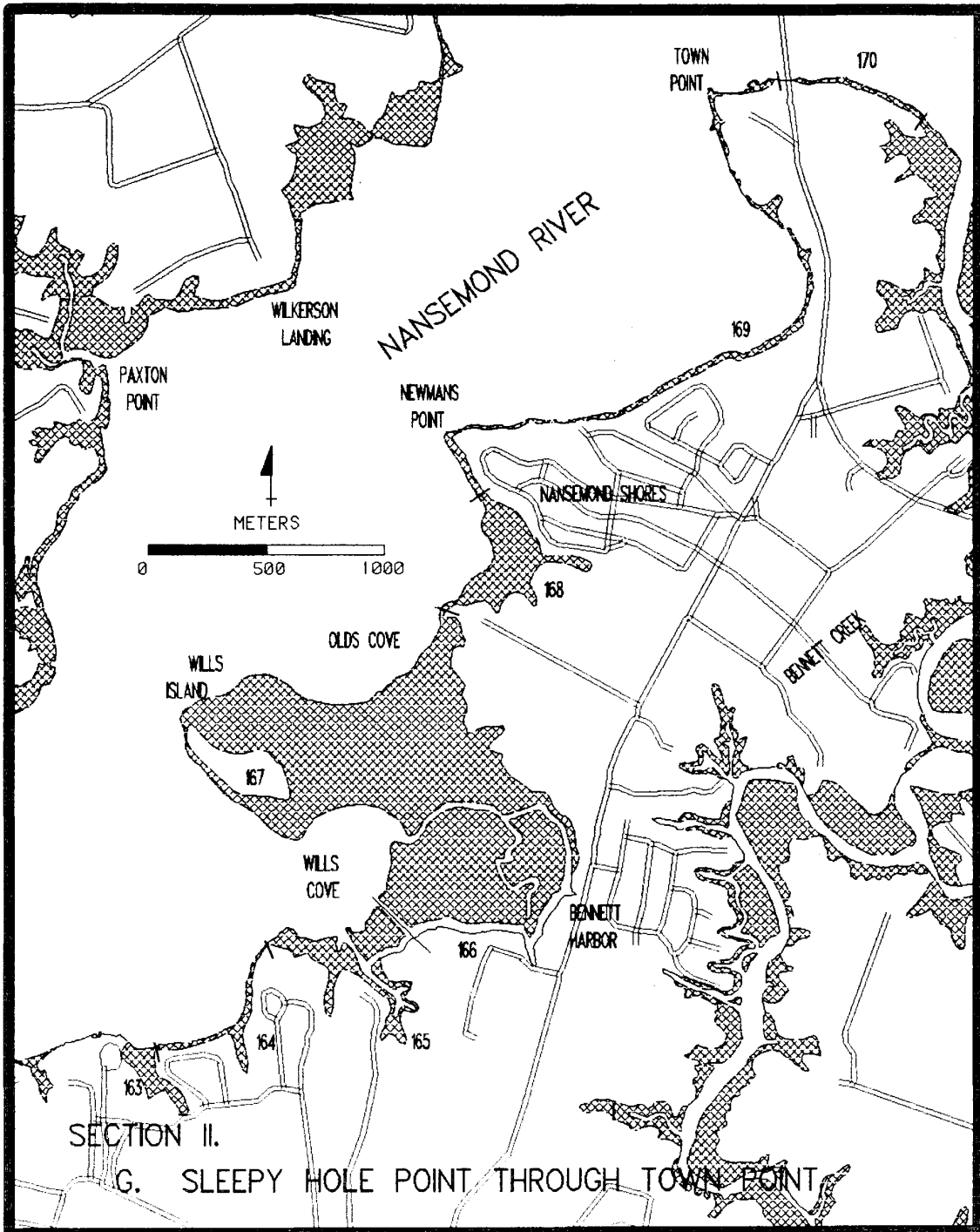
SECTION II.

D. THOMPSON LANDING TO MUSKRAT BLUFF









II. Nansemond River.

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
62	Nansemond River	3.1	%	55	5	5	25	5		--	--	5	--			--						Fringe SA and BN, pocket SC and cattails, SB along upland	I
			A	1.7	.2	.2	.8	.2					.2										
63	Nansemond River	14.1	%	20	70	2	3	5	--	--	--	--	--			--	--	--	--	--		SA along water, interior dominated by SM, cattail along upland	II
			A	2.8	9.9	.3	.4	.7															
64	Nansemond River	31.8	%	30	40	25	3	2		--	--	--	--	--		--	--	--			C-	Embayed marsh, SA along channel, grades to SM, large sections SB and trees	XII
			A	9.5	12.7	8.0	1.0	.6															
65	Nansemond River	4.2	%	55	10	15	20	--			--	--										SA fringe, grades to BN and SB, average width 20'	I
			A	2.3	.4	.6	.8																
66	Campbell Creek	15.0	%	75	15	--	10	--		--	--					--		--	--			Creek marsh section, dominated by SA; cattail, SM and BN towards upland	I
			A	11.3	2.3		1.5																
67	Campbell Creek	24.7	%	85	10	--	--	5			--	--				--		--				Dominated by SA, cattails at heads of pockets	I
			A	21.0	2.5			1.2															
68	Campbell Creek	22.7	%	75	20	--	--	5		--	--	--	--			--	--	--	--	--		Dominated by SA with patches of BN and SM, cattails along upland	I
			A	17.0	4.5			1.1															
69	Campbell Creek	3.3	%	80	5	--	5			--	--					--	--	10	--			SA dominated creek marsh, SB along upland, olneyii in interior	I
			A	2.6	.2		.2												.3				

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
70	Nansemond River	7.0	%	75	10	5	5	5		--	--	--	--			--		--	--			SA dominated fringe and pocket marsh, cattails at head	I
			A	5.3	.7	.4	.4	.4															
71	Nansemond River	3.2	%	5	10	15	--	--			--	--							70			Pocket marsh, SA fringe along river, SB berm behind, interior dominated by reed	VIII
			A	.2	.3	.5														2.2			
72	Nansemond River	9.6	%	30	30	10	--	--		--	--	--				--	--	10	20		L-	Marsh fringe 10-100' wide, SA along water, large stands reed in interior	XII
			A	2.9	2.9	1.0													1.0	1.9			
73	Nansemond River	80.2	%	15	75	1	--	3		--	--	--				--	--	5		1	Q-	Large embayed marsh, SA along channel, SM interior	II
			A	12.0	60.2	.8		2.4											4.0		.8		
74	Nansemond River	11.8	%	45	40	5	--	2		--	--	--	--				--	3	5	--		Fringe with pocket, SA grades to SB, SM and RG	XII
			A	5.3	4.7	.6		.2											.4	.6			
75	Cedar Creek	7.2	%	25	15	5	40	5		--	--	5	--			--	--	--	5			SA grades to BN and SC, cattails and reed along upland	XII
			A	1.8	1.1	.4	2.9	.4				.4								.4			
76	Cedar Creek	1.9	%	75	5	--	5	--		--	--	--	--			--	--		15			SA grades to BN, reedgrass along upland	I
			A	1.4	.1		.1													.3			
77	Cedar Creek	8.5	%	65	15	--	5	5		--	10	--	--			--	--	--	--	--	B-	Pocket marsh dominated by SA, scattered s.bul., patches of BN	I
			A	5.5	1.3		.4	.4				.9											

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olivey Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
78	Cedar Creek	13.4	%	30	40	20	1				3					1		--	5	--		SA grades to interior of SM and SB; reed and cattail along upland	XII
			A	4.0	5.4	2.7	.1					.4						.1			.7		
79	Cedar Creek	2.2	%	30	35	20	--	--		--	--	--	--			--		--	15			Creek marsh section, SA and SM mix	XII
			A	.7	.8	.4															.3		
80	Cedar Creek	23.2	%	15	35	30	--	--				--	--			--		--	20	--	B-	Creek marsh section, reedgrass, SB, SM mix; dredged areas	XII
			A	3.5	8.1	7.0															4.6		
81	Cedar Creek	23.4	%	5				--				90		--	--				5		B-	Head of creek, dominated by SA	V
			A	1.2									21.1										
82	Cedar Creek	8.2	%	35	45	10	--	--		--	5	--	--			--		--	5			Creek marsh section, SA grades to SM and SB	XII
			A	2.9	3.7	.8						.4									.4		
83	Cedar Creek	8.6	%	85	5	--	--	--		--	10	--	--			--		--				Creek marsh section, dominated by SA, stands of SM and s.bul.	I
			A	7.3	.4							.9											
84	Cedar Creek	5.8	%	40	30	--	--	5		--	--	--	--			--		--			C25	SA along channel, grades to SM, reed and cattail along upland	XII
			A	2.3	1.7				.3														
85	Nansemond Creek	9.2	%	85	5	--	5	--			--	--	--					--	5			Marsh fringe, SA grades to BN, SM and SB; reed along upland	I
			A	7.8	.5			.5													.5		

#	Marsh Location	Total Acres																			Observations	Marsh Type																	
			Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others																			
86	Nansemond Creek	20.3	%	55	20	10	5	--		--	--	10				--		--																				Pocket marsh, SA dominated grades to SM, SB and BN	I
			A	11.2	4.1	2.0	1.0						2.0																										
87	Nansemond Creek	86.1	%	50	45	--	--	1		--	1	--				--	--	3	--	--	L-,Q-																	Embayed marsh, SA along water, grades to SM	I
			A	43.1	38.7			.9				.9								2.6																			
88	Shackley Island	1.0	%	65	5	5	25			--	--					--																					Marsh island dominated by SA, interior of BN, SB and SM	I	
			A	.7	.1	.1	.3																																
89	Shackley Island	133.3	%	50	30	--	3	2		--	5	10	--			--	--	--	--	--	L-,Q-																	Large embayed marsh dominated by SA	I
			A	66.7	40.0		4.0	2.7				6.7	13.3																										
90	Nansemond Creek	18.3	%	70	5		5	2		--	3	15	--						--																			SA dominated with SC, SM, BN and cattails along upland	I
			A	12.8	.9		.9	.4				.5	2.7																										
91	Nansemond Creek	173.8	%	30	35	--	30	--		--	--	5				--		--	--																			Large embayed marsh, SA along river with stands of SC; interior BN and SM	XII
			A	52.1	60.8		52.1						8.7																										
92	Nansemond Creek	16.2	%	75	25							--				--																						SA dominated with interior of SM	I
			A	12.2	4.1																																		
93	Nansemond Creek	10.8	%	65	25	--	10	--			--	--	--			--		--																				SA along water, BN, SB, SM, cattails along upland, dredged channel	I
			A	7.0	2.7		1.1																																

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olivey Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
94	Western Branch	102.8	%	20	45	--	25	1			2	5				--		2				SA along creeks, interior of SM and BN, sections grazed by cattle	XII	
			A	20.6	46.3		25.7	1.0				2.1	5.1							2.1				
95	Western Branch	78.3	%	5	10	10	2	--		--	3	70	--			--					--		Creek marsh section dominated by SC, SA fringe along channels	V
			A	3.9	7.8	7.8	1.6					2.3	54.8											
96	Western Branch	1.6	%	25	5	10	--	5		--	--	55	--			--							Small pocket and fringe marsh dominated by SC, SA along river	V
			A	.4	.1	.2		.1					.9											
97	Western Branch	.5	%	5	10	--		--		--	--	85	--	--	--	--						C-,H-	Small pocket marsh dominated by SC, wild rice at head of pockets	V
			A	--	.1								.4											
98	Western Branch	1.0	%	40	10	45	--	5			--	--	--	--		--					--	--	Marsh fringe mostly SA and SB, cattails in pocket	XII
			A	.4	.1	.5		.1																
99	Western Branch	8.6	%	5	30	15	5	--		--	--	45	--	--	--	--	--	--	--			B-	Creek marsh adjacent to dam, SC along water, interior SM, BN and SB	XII
			A	.4	2.6	1.3	.4						3.9											
100	Western Branch	1.5	%	5	5	10	--	--		--	--	75	--	--	--	--				5		C-	Pocket marsh, SC with SB and SA, interior of reedgrass	V
			A	.1	.1	.2							1.1								.1			
101	Western Branch	15.1	%	5	25	5	--	--			--	65	--	--	--	--						B-	SA along creek, interior of SC with SM, stands of reedgrass grade to fill	V
			A	.8	3.8	.8							9.8											

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Oleiny Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
102	Western Branch	66.4	%	5	30	10	7	1			--	45						2	--			Creek marsh dominated by SC and SM	XII
			A	3.3	20.0	6.6	4.6	.7					29.9						1.3				
103	Western Branch	67.4	%	20	60	--	--	--	--	--	--	15	--	--				5			B-	SA, SC along creek, interior SM with stand olneyii	II
			A	13.5	40.4								10.1						3.4				
104	Western Branch	56.0	%	20	30		--	--	--	--	--	50	--	--	--			--			A-, B-	SA, SC along creek, interior SM, cattails along upland	V
			A	11.2	16.8								28.0										
105	Nansemond Creek	28.6	%	15	10	--	--	--			--	75	--	--	--			--	--		A-, B-	Dominated by SC, SA along channels, cattails along upland	V
			A	4.3	2.9								21.5										
106	Nansemond River	17.8	%	10	20	5	--	--			--	65	--	--	--			--	--	--	A-, B-	Dominated by SC, SA along river, interior patches of SM	V
			A	1.8	3.6	.9							11.6										
107	Nansemond River	135.7	%	5	20	10	--	--	--	--	--	65	--	--	--			--	--	--	B-	Extensive marsh dominated by SC, SA fringe along water	V
			A	6.8	27.1	13.6							88.2										
108	Nansemond River	23.1	%	3	--	10		--			1	85	--	--	1	--			--	--	A-, B-, C-, E-, F-, G-, Q-	Creek marsh dominated by SC, cattails in pockets along upland	V
			A	.7		2.3						.2	19.6			.2							
109	Nansemond River	7.5	%	5	10	10	--	--	--		--	75	--		--	--			--		B-	Pocket marsh adjacent to highway, dominated by SC with scattered trees and s.bushes	V
			A	.4	.8	.8							5.6										

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olive Threesquare	Reed grass	Orach	Others	Observations	Marsh Type
110	Nansemond River	82.5	%	5	20	--	--	--	--	--	--	75	--	--	--	--	--	--	--	--	B-	Extensive marsh dominated by SA along channel, interior SM	V
			A	4.1	16.5								61.9										
111	Nansemond River	11.5	%	10	--	--	--	--	--	--	--	90	--	--	--	--	--	--	--	--	Q-	Pocket marsh dominated by SC, SA along channels	V
			A	1.2								10.4											
112	Nansemond River	22.3	%	5	--	--	--	--	--	--	--	95	--	--	--	--	--	--	--	--	G-,H-,Q-	Creek marsh dominated by SC, scattered areas of upland	V
			A	1.1								21.2											
113	Nansemond River	1.5	%	5	--	--	--	--	--	--	--	95	--	--	--	--	--	--	--	--	--	Fringe marsh dominated by SC, scattered	V
			A	.1								1.4											
114	Nansemond River	70.0	%	--	2	--	--	--	--	--	--	95	--	--	--	--	--	--	2	--	A-,B-,C-,D-,E-,F-,G-,Q1	Mostly SC, scattered high marsh along channel, trees on old spoil sites	V
			A		1.4							66.5							1.4		Q.7		
115	Nansemond River	16.8	%	20		5						10		--					65		M-	SA along river, interior mostly reedgrass	VIII
			A	3.4		.8						1.7								10.9			
116	Nansemond River	4.1	%	10								20							70		G-	SA along river, interior mostly reedgrass	VIII
			A	.4								.8								2.9			
117	Nansemond River	12.5	%									90							5		M5	Dominated by SC, partially filled	V
			A									11.3								.6			

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Oney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
118	Nansemond River	20.4	%	--	--	--		1			--	90	1		1	--			5	--	A-,B-,C-,D-,E-,F-,Q2	Dominated by SC, old bulkhead along river edge with filled area behind	V	
			A						.2				18.4	.2		.2				1.0				Q.4
119	Shingle Creek	.5	%	--								95	2		3					--	B-,Q-	Marsh fringe dominated by SC, scattered w.dock and w.hemp	V	
			A									.5	--		--									
120	Shingle Creek	11.5	%	--		--		--				90	2		5					--	B-,D-,Q3	Dominated by SC, Hemp, W. Dock throughout	V	
			A									10.4	.2		.6									Q.3
121	Shingle Creek	51.8	%	--								95	2		3						E-	Large marsh dominated by SC	V	
			A									49.2	1.0		1.6									
122	Shingle Creek	9.3	%					2				60			10						E5,M20,D-,N-,Q3	Open areas with AA, dominated by SC	V	
			A						.2			5.6			.9									E.5,M1.9,Q.3
123	Shingle Creek	4.4	%									80	--	--	--							E5,D5,M10	Pocket marsh at head of creek, partially filled	V
			A									3.5												
124	Oak Island	39.7	%	--				--			--	80	--	--	10				--		A-,C-,D-,E-,F5,G-,H-,Q5	Creek marsh with dredged channel dominated by SC, FW species toward head	V	
			A									31.8			4.0									F2.0,Q2.0
125	Nansemond River	17.0	%	--		--		--			--	95	--	--	3					--	A-,B-,C-,D-,E-,F-,G-,H-,Q2	Dominated by SC, cattails along upland	V	
			A									16.2			.5									Q.3

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
126	Nansemond River	10.6	%	5				--			--	90	--	--	3					--	--	A-,B-,C-,D-,E-,G-,Q2	Dominated by SC with SA, dredged channels with adjacent spoil areas	V
			A	.5										9.5			.3							
127	Nansemond River	34.3	%	5		--		--			--	90	--	--	2					--	--	A-,B-,C-,D-,E-1,F-,Q2	Dominated by SC, hemp and dock throughout, high marsh and trees along river	V
			A	1.7										30.9			.7							
128	Nansemond River	67.1	%	--							--	85	--	--	5					--		A-,C-,E5,G-,Q5	Road across front with tidal flush, dominated by SC	V
			A											57.0			3.4							
129	Burnetts Mill	.7	%	5		--		--			--	95		--	--	--							Marsh section at mouth of creek, dominated by SC with SA at lower elev.	V
			A	--										.7										
130	Burnetts Creek	10.3	%	--		--		--			--	90		--	5	--					--	D-,E-,G-,H-,Q5	Long pocket marsh dominated by SC	V
			A											9.3			.5							
131	Burnetts Creek	1.4	%					5				30	50	5	5							G-,Q5	SC mixed with hibiscus	XII
			A						.1				.4	.8	.1	.1								
132	Burnetts Creek	1.9	%	2		1		--			--	95			1	--				--	--	E-,Q1	Pocket marsh dominated by SC, some fill at mouth	V
			A	--		--							1.8			--								
133	Burnetts Creek	12.6	%	--		5		--			--	95			--	--						E-,Q-	Creek marsh section, mostly SC, SB scattered throughout	V
			A			.6								12.0										

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
134	Burnetts Creek	17.1	%	2								95	--	:	-				3	--	E-,Q-	Creek marsh section, dominated by SC	V
			A	.3									16.2							.5			
135	Burnetts Creek	2.0	%	3				--			--	95			1					--	E-,Q1	Creek marsh section, dominated by SC, SA along creek	V
			A	.1									1.9			--							
136	Burnetts Creek	9.4	%	3		5		--			--	90			1				--	--	E-,Q1	Dominated by SC, SB along channel edge	V
			A	.3		.5								8.5		.1							
137	Nansemond River	5.0	%	--		--		--			--	70	--	--	--				30	--	B-,Q-	Dike across front of marsh with trees and reed, interior SC	V
			A											3.5									
138	Nansemond River	121.1	%	5	25	10	--			--	--	60				--		--		--	B-	SA along channel, interior mostly SC with areas of SM	V
			A	6.1	30.3	12.1								72.7									
139	Nansemond River	2.4	%	10	30	5	2	2	--	--	--	50	--		--			1	--		O-	Fringe and pocket, SA along river, grades to SC and SB, cattail along upland	V
			A	.2	.7	.1	--	--						1.2									
140	Nansemond River	11.0	%	5	5	10	--	--	--	--	--	80	--	--	--	--		--	--		B-	Dredged channel with spoil placed on marsh	V
			A	.6	.6	1.1								8.8									
141	Nansemond River	13.9	%	10	5	10	--	--	--	--	--	75	--		--	--		--	--		B-	Mostly SC with SB and cattails along upland, adjacent to dredged channel	V
			A	1.4	.7	1.4								10.4									

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
142	Nansemond River	8.1	%	10	15	10	--	--		--	--	65	--	--	--	--		--	--	--	B-	Dominated by SC, SA along creek, cattails along upland	V	
			A	.8	1.2	.8							5.3											
143	Nansemond River	5.7	%	5	30	15	10	--		--	--	40	--		--	--		--	--	--	B-	Creek marsh, upper portion dammed, SA along creek channel	XII	
			A	.3	1.7	.9	.6						2.3											
144	Nansemond River	73.5	%	3	35	1	--	--	--	--	1	60	--			--		--		--	B-	SC dominated, grades to areas of SM	V	
			A	2.2	25.7	.7							.7	44.1										
145	Nansemond River	47.9	%	80	5	--					5	10			--							Mostly SA with patches of SBUL, SC along uplands	I	
			A	38.3	2.4								2.4	4.8										
146	Nansemond River	177.5	%	35	20	5	25	1	--	--	3	10				--			1		--	B-	Large embayed marsh, SA along channels grade to areas of BN, SC and SM	XII
			A	62.1	35.5	8.9	44.4	1.8					5.3	17.8						1.8				
147	Nansemond River	2.3	%	100	--					--	--	--				--						Marsh island dominated by SA, scattered SM and SC	I	
			A	2.3																				
148	Wilroy Swamp	423.1	%	35	35	5	2	--	--	--	2	20	--			--	--	1			B-	SA grades to SC and large areas of SM, cattails along upland	XII	
			A	148.1	148.1	21.2	8.5						8.5	84.6					4.2		--			
149	Star Creek	50.9	%	45	40	15	--	--	--	--	--	--	--			--	--	--	--	--	L-,B-	SA grades to areas of SM with SB, SC along upland edge	XII	
			A	22.9	20.4	7.6																		

#	Marsh Location	Total Acres																			Observations	Marsh Type
			Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olivey Threesquare	Reedgrass	Orach	Others		
150	Star Creek	24.3	%	15	15	15	--	--		--	55	--			--	--	--				SA grades to SB, SC and SM	V
			A	3.6	3.6	3.6						13.4										
151	Star Creek	5.7	%					70			--	10	5	5						H5,E5	Head of creek branch dominated by cattails	VI
			A					4.0					.6	.3	.3							
152	Star Creek	10.2	%	60		10					10									E15,P5	Creek marsh dominated by SA	I
			A	6.1		1.0						1.0										
153	Star Creek	13.8	%	10		20					40		--	20						E10	Creek marsh, mostly SC mixed with mallow	XI
			A	1.4		2.8						5.5			2.8							
154	Star Creek	6.3	%			1		90						2						J2,E3,Q2	Creek marsh dominated by cattails	VI
			A			.1		5.7							.1							
155	Star Creek	1.9	%					40										10		E20,Q30	Head of creek branch mostly cattails	XI
			A					.8											.2			
156	Oyster House Creek	60.2	%	55	25	--	5	--	--	--	15	--			--	--	--	--		B-	SA dominating lower portion, SC and BN along upland	I
			A	33.1	15.1		3.0					9.0										
157	Nansemond River	154.8	%	35	60	--	5	--	--	--	--	--	--		--	--	--	--		B-	Embayed marsh, SA grades to SM, cattails along upland edge	II
			A	54.2	92.9		7.7															

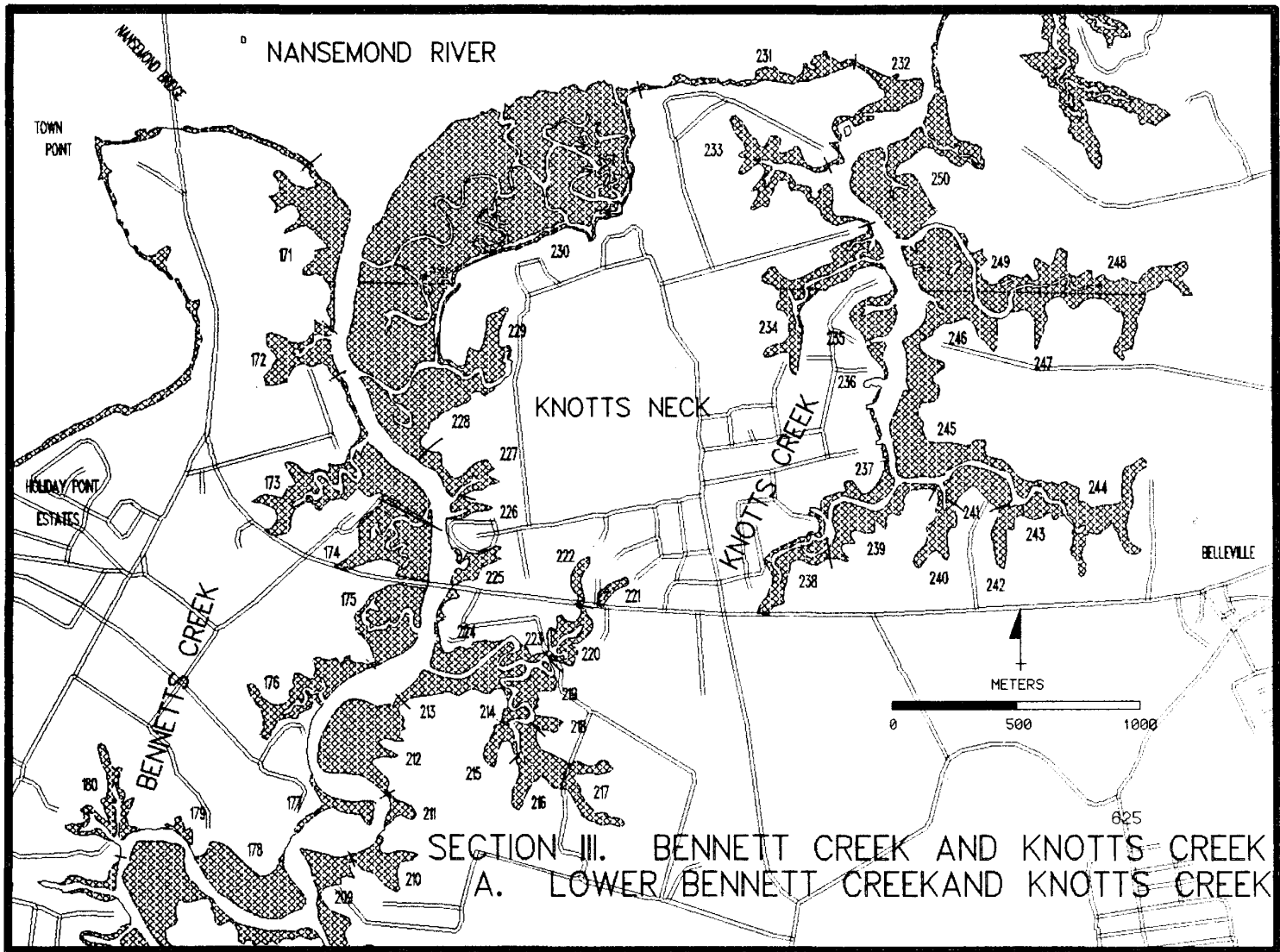
#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needletush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
158	Glebe Pt.	57.6	%	35	25	--	--		--	--	2	30	--			--		3	5		B-	SA grades to SC and SM, patches of olneyii, stands of reed	XII	
			A	20.2	14.4							1.2	17.3						1.7	2.9				
159	Nansemond River	10.4	%	40	20	5	--	5	--	--	--	20	--			--	--	--	10			B-	Marsh fringe, SA grades to SB, SC, SM and reed	XII
			A	4.2	2.1	.5		.5					2.1							1.0				
160	Nansemond River	62.3	%	40	25	10	15	--	--	--	--	5	--	--		--	--	--	5			B-	Embayed marsh with diked sections, SB on dikes, SA dominating outside of dikes	XII
			A	24.9	15.6	6.2	9.3						3.1							3.1				
161	Nansemond River	2.3	%	65	15	5	--	10	--	--	--	5	--				--	--				B-,O-	Fringe and pocket marsh, mostly SA grading to SC and high marsh species	I
			A	1.5	.3	.1		.2					.1											
162	Nansemond River	1.8	%	40	15	5	25	--				15							--				Fringe and pocket marsh, SA along water grades to BN, SM, SC and SB	XII
			A	.7	.3	.1	.5						.3											
163	Nansemond River	7.5	%	55	15	5	5	5		--	--	15					--	--	--			B-	Pocket, SA grades to BN, SB, SM and SC; cattails along upland	I
			A	4.1	1.1	.4	.4	.4					1.1											
164	Nansemond River	5.4	%	55	5	5	15	5		--	--	15	--	--					--				Fringe and pocket marsh, cattails along upland, SA and BN grade to SC, SM and SB	I
			A	3.0	.3	.3	.8	.3					.8											
165	Wills Cove	23.3	%	40	30	10	10	5		--	--	5	--	--			--	--	--				SA along water, grades to BN, SB, SM, SC	XII
			A	9.3	7.0	2.3	2.3	1.2					1.2											

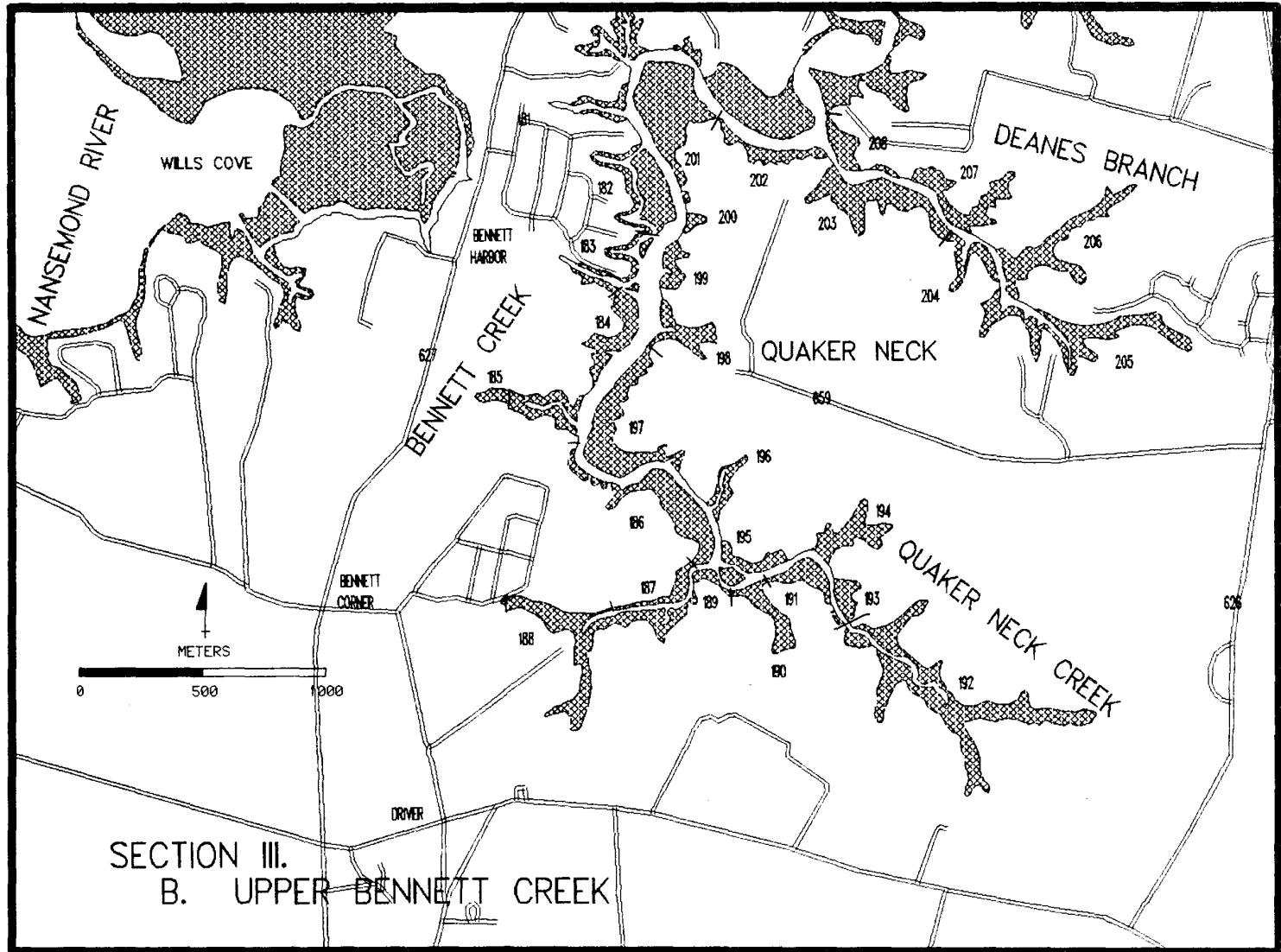
#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
166	Wills Cove	84.0	%	20	50	--	30	--	--	--	--					--	--	--	--		B-	SA along water, grades to large area SM, dredged channels with SB on spoil	II	
			A	16.8	42.0		25.2																	
167	Wills Island	170.8	%	15	45	5	30	--	--	--	--	5	--			--	--	--	--		--	C-	SA along water, grades to SM, BN and SC, large area with old dike	XII
			A	25.6	76.9	8.5	51.2						8.5											
168	Olds Cove	28.5	%	35	30	--	30	5		--	--		--			--			--	--		Embayed marsh, SA grades to SM and BN	XII	
			A	10.0	8.6		8.6	1.4																
169	Nansemond River	7.9	%	70	10	15	5	--	--	--	--	--	--	--	--	--	--	--	--	--		B-, Q-	SA dominated marsh, fringe 15-50' wide	I
			A	5.5	.8	1.2	.4																	
170	Nansemond River	1.5	%	25	30	25	20		--	--	--	--	--	--	--	--	--	--	--	--		Marsh fringe, SA along river with SM, SB and BN behind	XII	
			A	.4	.5	.4	.3																	
T	Total Section II	3640.1	%																					
			A	929.8	1015.2	145.0	264.0	30.6					33.4	1116.8	2.8	.5	16.2	.1		22.8	39.2	.8		
			%																					
			A																					
			%																					
			A																					

Section III

Bennett Creek and Knotts Creek

The marshes in this section comprise over 900 acres or 16.5% of the total in the city. Most are characterized as creek or pocket marsh types which are from one to 30 acres in size. An extensive marsh area at the mouth of Bennett Creek is, however, over 200 acres in size. The marshes here are of very high value to the marine environment and serve as important buffers between upland development and the marine environment. Impacts to them will likely occur in small amounts at many locations as upland areas become increasingly urbanized. It is, therefore, important that regulations be closely observed to minimize the potentially large cumulative effect on this important resource.





III. Bennett Creek and Knotts Creek.

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Nodderush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
171	Bennett Creek	18.7	%	55	35	3	5	2		-		-	-			-	-	-	-	-	K-	SA grades to SM then BN and SB, cattail along upland	I
			A	10.3	6.5	.6	.9	.4															
172	Bennett Creek	10.3	%	70	30	--	--	--		--	--	--	--		--	--	--	--	--	--		Pocket marsh, dominated by SA with SM, SC, cattails	I
			A	7.2	3.1																		
173	Bennett Creek	28.7	%	60	40	--	--	--	--	--	--	--	--	--		--	--	--	--	--		SA dominated with large areas of SM	I
			A	17.2	11.5																		
174	Bennett Creek	18.2	%	30	50	20	--	--	--	--	--	--	--			--	--	--	--	--	L-	Embayed marsh, SA grades to SM and SB, old dredge spoil area with SB on dike	II
			A	5.5	9.1	3.6																	
175	Bennett Creek	17.6	%	55	25	--	20	--		--	--	--	--			--	--	--	--	--		SA along creek and channel, interior SM, patches BN	I
			A	9.7	4.4		3.5																
176	Bennett Creek	12.8	%	70	25	--	2	1		--	1	--	--			--	--	1	--	--		Dominated by SA, cattail along upland	I
			A	9.0	3.2		.3	.1				.1							.1				
177	Bennett Creek	3.3	%	25	75	--	--			--	--	--	--			--	--	--	--	--		Spit marsh, SA fringe, interior SM, patches of BN	II
			A	.8	2.5																		
178	Bennett Creek	19.7	%	40	30	--	25	--		--	5	--	--			--	--	--	--	--		SA along creek, grades to SM and BN, cattail and SB along upland	XII
			A	7.9	5.9		4.9					1.0											

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
179	Bennett Creek	.8	%	75	5	--		20			--												Pocket marshes, SA dominant, cattails at head	I
			A	.6	--			.2																
180	Bennett Creek	6.3	%	95	5	--	--	--			--	--						--					SA dominant throughout, scattered olneyii, s.bul. and SM	I
			A	6.0	.3																			
181	Bennett Creek	1.0	%	85	5	--	--	--		--	--	5						--	5				Creek marsh with large dredged channel, mostly SA	I
			A	.9	.1								.1							.1				
182	Bennett Creek	10.3	%	30	25	5	40	--	--	--	--	--	--			--	--	--	--				SA along water, interior mostly SM and BN, dredge channel along upland	XII
			A	3.1	2.6	.5	4.1																	
183	Bennett Creek	.7	%	90	5	5		--			--	--											Marsh fringe along dredged creek	I
			A	.6	--	--																		
184	Bennett Creek	7.6	%	40	15	25	20	--		--	--	--	--			--	--		--				SA along creek, grades to SM, BN and SB, cattails in pockets	XII
			A	3.0	1.1	1.9	1.5																	
185	Bennett Creek	7.9	%	80	5	--	--	5			--	10				--	--		--	--			Pocket marsh, dominated by SA; SC, cattail along upland	I
			A	6.3	.4			.4					.8											
186	Bennett Creek	12.8	%	30	15	--	25	--		--	30	--	--		--				--	--			SA mixed with stands of SC and BN, cattail along upland	XII
			A	3.8	1.9		3.2					3.8												

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Oleay Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
187	Bennett Creek	4.0	%	5	5	--		--			--	90	--	--	--					--	Q-	Creek marsh section, mostly SC	V	
			A	.2	.2								3.6											
188	Bennett Creek	17.7	%	5	5	--		--			--	90	--	--	--						--	C-,D-,H-,Q-	Head of creek branch, mostly SC	V
			A	.9	.9								15.9											
189	Quacker Neck Creek	1.3	%	10	5	--		--			--	85	--	--	--						--	Q-	Creek marsh section, mostly SC	V
			A	.1	.1								1.1											
190	Quacker Neck Creek	4.5	%	5		--	--	--			--	95	--	--	--						--	B-,C-,D-,Q-	Pocket marsh dominated by SC	V
			A	.2									4.3											
191	Quacker Neck Creek	4.3	%	5	5	--		--			--	85	--	--	5						--	B-,Q-	Mostly SC, scattered SA and SB	V
			A	.2	.2								3.7			.2								
192	Quacker Neck Creek	26.0	%	5		--		--				89		1	5						--		Creek marsh above R.R. crossing, mostly SC	V
			A	1.3									23.1		.3	1.3								
193	Quacker Neck Creek	2.8	%	5			--	--				90		--	5						--	Q-	Dominated by SC, SA along creek	V
			A	.1									2.5			.1								
194	Quacker Neck Creek	5.8	%	5		--	--	--				95	--	--	--						--	Q-	Pocket marsh dominated by SC, cattails in pockets along upland	V
			A	.3									5.5											

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
195	Quacker Neck Creek	5.6	%	5	5		--			--	--	90	--								--	B-, Q-	Creek marsh section, mostly SC	V
			A	.3	.3									5.0										
196	Bennett Creek	1.4	%	2		--		1			1	94	--	--	2						--	B-, Q-	Dredged pocket marsh, mostly SC	V
			A	--					--			--	1.3			--								
197	Bennett Creek	15.4	%	5	20	30	25					20											SC along channel, interior SM and BN	XII
			A	.8	3.1	4.6	3.9						3.1											
198	Bennett Creek	4.4	%	45	5	--	20	--			--	30	--	--	--						--	B-, Q-	SA mixed with SC grades upstream to BN	XII
			A	2.0	.2		.9						1.3											
199	Bennett Creek	2.4	%	35	--	--	40	5			--	20	--	--	--						--	Q-	Marsh fringe SA and SC mixed, stands of BN, cattails along upland	XII
			A	.8			1.0	.1					.5											
200	Bennett Creek	.9	%	60	--	--		5			--	35	--	--	--						--	Q-	SA and SC dominating lower portion, cattails at head	I
			A	.5				--					.3											
201	Nansemond River	23.2	%	25	35	--	40	--			--	--			--						--	B-	SA along water, interior SM and BN, scattered SC	XII
			A	5.8	8.1		9.3																	
202	Nansemond River	5.3	%	80	10	--	5	5			--	--	--		--						--	B-, Q-	Marsh fringe dominated by SA, cattails along upland	I
			A	4.2	.5		.3	.3																

#	Marsh Location	Total Acres																			Observations	Marsh Type
			Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olivey Threesquare	Reedgrass	Orach	Others		
203	Deanes Branch	13.6	%	80	15		2	2			1	--	--				--	--			SA mixed with SM, cattails along upland	I
			A	10.9	2.0		.3	.3				.1										
204	Deanes Branch	5.0	%	90	5	--	--	--			5	--	--					--			Fringe and pocket, mostly SA, s.bul. throughout	I
			A	4.5	.3							.3										
205	Deanes Branch	15.7	%	75	10	--		--			10	5	--					--	Q-		Dominated by SA, s.bul. scattered throughout, cattails at head	I
			A	11.8	1.6							1.6	.8									
206	Deanes Branch	10.6	%	65	5	--	5	5			15	5	--					--	Q-		Pocket marsh, SA mixed with s.bul., cattails at head	I
			A	6.9	.5		.5	.5				1.6	.5									
207	Deanes Branch	10.1	%	65	10	--	15	5	--	--	5	--	--					--	Q-		Mostly SA mixed with s.bul., stands of BN	I
			A	6.6	1.0		1.5	.5				.5										
208	Deanes Branch	3.2	%	95	5			--			--							--			Creek marsh dominated by SA	I
			A	3.0	.2																	
209	Bennett Creek	5.8	%	25	65	--	5	5			--	--	--								SA along water, interior SM, patches BN	II
			A	1.5	3.8		.3	.3														
210	Bennett Creek	5.4	%	80	20	--	--	--			--	--	--					--			Creek marsh, mostly SA, mixed SM	I
			A	4.3	1.1																	

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type	
211	Bennett Creek	1.5	%	80	5	--	--	10	--	--	5	--	--	--	--								Pocket marsh dominated by SA, cattail at head	I
			A	1.2	.1			.2				.1												
212	Bennett Creek	23.2	%	20	60	--	20	--	--	--	--					--	--	--				B-	SA grades to SM, scattered BN	II
			A	4.6	13.9		4.6																	
213	Bennett Creek	9.6	%	55	40	5	--	--	--	--	--	--			--	--		--			--	B-	Mostly SA mixed with SM and SB, cattail along upland	I
			A	5.3	3.8	.5																		
214	Bennett Creek	1.3	%	65	35	--		--		--								--					SA along channel, interior SM, scattered s.bul.	I
			A	.8	.5																			
215	Bennett Creek	2.8	%	75	5	--	--	5		--	15		--		--	--		--					Pocket marsh dominated by SA, abundant s.bul., cattails along upland	I
			A	2.1	.1			.1				.4												
216	Bennett Creek	8.5	%	20	45	30		--		--	5				--		--				--		SA along channel, interior SM and SB, cattail along upland	XII
			A	1.7	3.8	2.6						.4												
217	Bennett Creek	4.7	%	--	50	45		5		--	--	--	--		--		--				--		Dominated by SM and SB, cattails and SC at head	II
			A		2.4	2.1		.2																
218	Bennett Creek	1.6	%	5	65	15		15			--	--	--	--	--		--				--	Q-	SA along creek, grades to SM and SB	II
			A	.1	1.0	.2		.2																

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
219	Bennett Creek	4.4	%	40	50	10	-	-			-				-	-	-	-	-	-		SA along creek, interior SM with SB, some pine on area of dredge spoil	II
			A	1.8	2.2	.4																	
220	Bennett Creek	5.1	%	20	40	35	3	-			2		-	-	-		-	-	-	-		SA along channel, interior SM, SB and BN, section near highway filled with spoil	XII
			A	1.0	2.0	1.8	.2					.1											
221	Bennett Creek	1.2	%	-		50		35				5	-	-							E10	SB with patches of cattails	IV
			A			.6		.4				.1											
222	Bennett Creek	1.0	%	-		50		35				5	-	-							E10	Head of creek marsh, SB with patches of cattails, tidal flooding under highway	IV
			A			.5		.4				.1											
223	Bennett Creek	2.2	%	35	30	35	-	-		-	-				-	-	-	-				SA along creek, grades to SM and SB	XII
			A	.8	.7	.8																	
224	Bennett Creek	6.0	%	55	45	-		-		-	-					-		-			K-	SA dominating interior areas of SM	I
			A	3.3	2.7																		
225	Bennett Creek	3.4	%	90	5	-		5			-	-			-	-						Pocket marsh, mostly SA, scattered SM, BN, dredge spoil at mouth	I
			A	3.1	.2			.2															
226	Bennett Creek	2.1	%	80	10	-		10		-	-				-		-					SA with cattails at head, channel dredged and bulkheaded	I
			A	1.7	.2			.2															

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olive Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
227	Bennett Creek	6.8	%	90	5	--	--	5		--	--											Pocket marsh mostly SA, cattail at head	I
			A	6.1	.3			.3															
228	Bennett Creek	25.5	%	40	45	5	10	--		--	--					--	--	--			K-	SA grades to SM and BN, scattered s.bul., SB along dredged channel	XII
			A	10.2	11.5	1.3	2.6																
229	Bennett Creek	8.6	%	55	40	--	1	2			2	--			--	--		--	--	--		SA grades to SM and BN, cattails in pockets, upstream portions dammed	I
			A	4.7	3.4		.1	.2			.2												
230	Bennett Creek	191.2	%	50	45	--	5	--		--	--	--				--	--	--	--	--	K-	SA grades to SM, SB on dredged spoil	I
			A	95.6	86.0		9.6																
231	Nansemond River	3.5	%	25	5	--													70			Marsh fringe mostly reedgrass	VIII
			A	.9	.2															2.5			
232	Knotts Creek	11.9	%	95	5	--	--	--			--				--	--			--			Spit marsh at mouth of Creek	I
			A	11.3	.6																		
233	Knotts Creek	15.9	%	96	2	--		1			--	--	--		--	--			1		Q-	Cove with broad fringe of SA	I
			A	15.3	.3			.2												.2			
234	Knotts Creek	20.8	%	90	5	--		2			3	--	--		--	--						Creek marsh dominated by SA, cattail in pockets	I
			A	18.7	1.0			.4			.6												

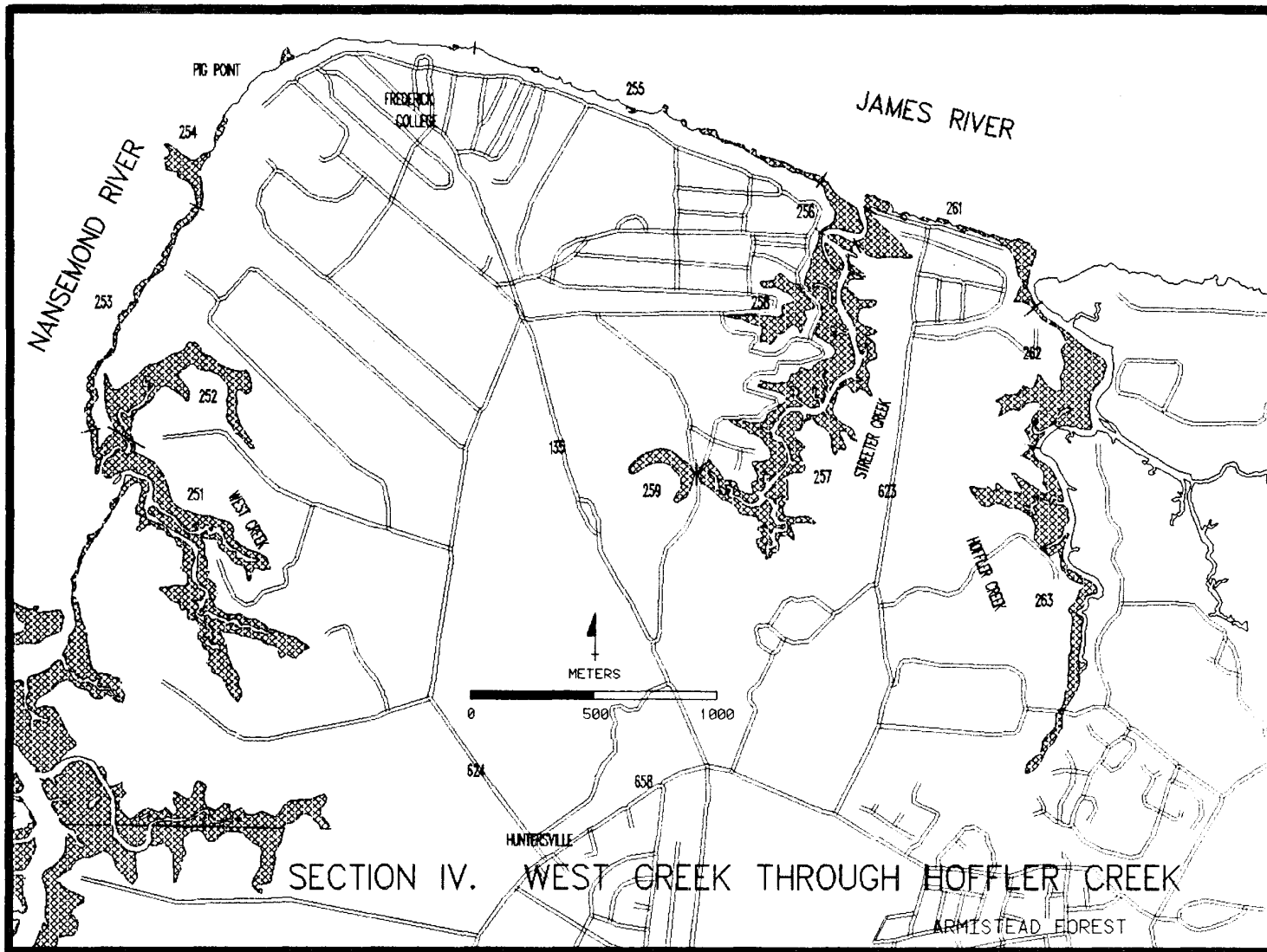
#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Nelderush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
235	Knotts Creek	8.3	%	98	2	--	--	--		--	--	--				--			--	--		Embayed marsh dominated by SA	I
			A	8.1	.2																		
236	Knotts Creek	.9	%	85	5	3	--	5			2	--	--			--						Mostly SA; SB, cattail, s.bul. at head of pocket	I
			A	.8	--	--			--			--											
237	Knotts Creek	4.0	%	95	--	--		--	--	--	5	--	--			--			--			SA mixed with s.bul., portion along upland filled	I
			A	3.8								.2											
238	Knotts Creek	7.4	%	85	5	1	--	2			5	--			--				2			Mostly SA with cattails in pockets, dredged channel	I
			A	6.3	.4	.1		.1				.4								.1			
239	Knotts Creek	8.1	%	90	5	1	--	1			3	--	--		--							Mostly SA with patches of SM; cattail and SB along upland and in pocket	I
			A	7.3	.4	.1		.1				.2											
240	Knotts Creek	4.9	%	95	3	--		1			1	--	--		--				--			Mostly SA, scattered s.bul.	I
			A	4.7	.1			--				--											
241	Knotts Creek	8.0	%	70	25	--	--	--		--	5	--	--		--	--						SA mixed with SM, scattered s.bul.	I
			A	5.6	2.0							.4											
242	Knotts Creek	4.5	%	30	35	30	--	--		--	5	--	--		--	--					--	Pocket marsh with SA along channel	XII
			A	1.4	1.6	1.4						.2											

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Nodderush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
243	Knotts Creek	2.6	%	60	30	5	--	--			5	--	--		--	--						SA along creek, interior SM with s.bul.	I
			A	1.6	.8	.1						.1											
244	Knotts Creek	15.7	%	10	50	40	--	--		--	--	--	--	--	--	--	--	--	--	--	Q-	Fringe of SA along creek, interior SM and SB	II
			A	1.6	7.9	6.3																	
245	Knotts Creek	27.9	%	60	35	--	2	--		--	3	--	--		--		--	--				SA mixed with areas of SM, patches of BN	I
			A	16.7	9.8		.6					.8											
246	Knotts Creek	23.6	%	82	15		2	--		--	1	--				--						SA mixed with areas of SM, patches of BN	I
			A	19.4	3.5		.5					.2											
247	Knotts Creek	5.9	%	75	20	--	--	--			5	--	--		--	--						SA mixed with areas of SM, s.bul. throughout	I
			A	4.4	1.2							.3											
248	Knotts Creek	15.3	%	25	40	30	--	2			3	--	--	--	--							SA along creek, interior SM and SB	XII
			A	3.8	6.1	4.6		.3				.5											
249	Knotts Creek	11.1	%	70	30	--	--	--			--					--						Mostly SA, interior SM and scattered s.bul. and BN	I
			A	7.8	3.3																		
250	Knotts Creek	33.0	%	90	10	--	--	--			--					--						Mostly SA, interior SM, cattail and BN	I
			A	29.7	3.3																		

Section IV

West, Sheeter and Hoffler Creeks Area

The marsh areas in this section are located along three small tidal creeks. Nearly all the wetlands here are dominated by saltmarsh cordgrass. As such they are characterized as Group One marsh and are of highest value to the marine environment. Much of the river shoreline between the creeks is fringed with saltmarsh cordgrass marsh that is serving to reduce upland erosion through strong root and rhizome mats. All of these marshes are valuable and should be protected the highest degree possible.



IV. West Creek to Hoffler Creek.

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Needlerush	Cattails	Sea Oxeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Olney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
251	West Creek	54.1	%	94	5	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	Creek marsh dominated by SA mixed with SM and BN	I
			A	50.9	2.7							.5											
252	West Creek	21.6	%	85	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Dominated by SA; area of SB and SM at mouth	I
			A	18.4	3.2																		
253	Nansemond River	1.3	%	50	20	15	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	SA dominated marsh fringe, grades to SM, SB, erosion evident	I
			A	.7	.3	.2														.2			
254	Nansemond River	4.3	%	10	30	--		25	--	--	--	--	--	--	--	--	--	--		35		Spit marsh, large area RG, cattails along upland	XII
			A	.4	1.3			1.1													1.5		
255	Hampton River	.8	%	80	10	5	--		--	--	--	--	--	--	--	--	--	--	5			SA dominating fringe; SB, SM along upland	I
			A	.6	.1	--														--			
256	Streeter Creek	4.6	%	60	15	15	--		--	--	--	--	--	--	--	--	--	--	10			Creek marsh section, mostly SA	I
			A	2.8	.7	.7														.5			
257	Streeter Creek	60.4	%	95	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Mostly SA; cattails, SB along upland	I
			A	57.4	3.0																		
258	Streeter Creek	10.4	%	95	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Formerly a lake, mostly SA	I
			A	9.9		.5																	

#	Marsh Location	Total Acres		Saltmarsh Cordgrass	Saltmeadow Grass	Saltbushes	Black Nelderush	Cattails	Sea Oxeeye	Sea Lavender	Saltmarsh Bulrush	Big Cordgrass	Marsh Hibiscus	Marsh Mallow	Water Hemp	Saltmarsh Aster	Saltmarsh Fimbristylis	Oiney Threesquare	Reedgrass	Orach	Others	Observations	Marsh Type
259	Streeter Creek	5.1	%	70		2	3	20			--										E5	Pocket marsh, mostly SA, cattails in pockets	I
			A	3.6		.1	.2	1.0															
260	Streeter Creek	5.9	%	30	30	20	--		--	--	--	--					--	--	20	--		SA grades to high marsh with fill	XII
			A	1.8	1.8	1.2														1.2			
261	Hampton Roads	5.7	%	50	20	15	--		--	--	--	--					--	--	15			Fringe dominated by SA, intermittent bulkheads	I
			A	2.9	1.1	.9														.9			
262	Hoffler Creek	21.3	%	95	5	--	--	--		--	--	--							--			Mostly SA; SB, SM along upland	I
			A	20.2	1.1																		
263	Hoffler Creek	23.7	%	95	3	--	--	2		--	--	--			--				--			Mostly SA, cattails at head pockets	I
			A	22.5	.7			.5															
T	Total Section IV	219.2	%																				
			A	192.1	16.0	3.6	.2	2.6				.5								4.3		.3	
GT	GRAND TOTAL	5534.5	%																				
			A	1842.1	1443.5	224.4	463.8	46.8		.2	59.2	1313.0	3.0	.8	18.7	1.1		25.5	46.9	.8	50.0		
			%																				
			A																				

City of Suffolk: Others List

- A. Giant Bulrush
- B. Marsh Fleabane
- C. Pickerelweed
- D. Cardinal Flower
- E. Smartweed
- F. Clearweed
- G. Common Threesquare
- H. Wild Rice
- I. Arrowhead
- J. Jewelweed
- K. Black Grass
- L. Saltwort
- M. Arrow Arum
- N. Dodder
- O. Cypress
- P. Black Willow
- Q. Water Dock

Index to Marsh Locations

Abraham Point	36	Newmans Point	34,40
Barrel Point	24	Nix Cove	24,34
Bennett Creek	40,56	Oak Island	37
Brewers Creek	22,24	Olds Cove	34,40
Brock Point	36,38	Oyster House Creek	39
Burnetts Mill	38	Paxton Point	34,40
Cedar Creek	35	Pig Point	70
Cedar Point	24	Pike Point	24
Chuckatuck Creek	22,23,24,34	Point of Marsh	24
Crittenden Bridge	24	Quaker Creek	57
Deanes Branch	57	Reids Ferry	36
Ferry Point	34,35	Shackley Point	35,39
Glebe Point	35,39	Sleepy Hole Point	35,39
Green Swamp Creek	22	Star Creek	39
Hoffler Creek	70	Streeter Creek	70
Hollidays Point	35,39	Thompson Landing	36,37,38
Kings Highway Bridge	35,39	Town Point	34,40,56
Kings Point	24	Trotman Wharf	35,36,39
Knob Hill	36,38	West Creek	70
Knotts Creek	56	Western Branch	36,38
Mintonville Point	36	Wilkerson Landing	40
Moores Point	24	Wilkerson Point	34
Muskrat Bluff	38	Wills Cove	34,40
Nansemond Bridge	24,56	Wills Island	34,40
Nansemond River	24,34,35,36,37,38,39	Wilroy Cove	35,36,39

