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Prince William County Tidal Marsh Inventory

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PRINCE WILLIAM COUNTY TIDAL MARSH INVENTORY

Special Report No. 78 in Applied Marine Science and Ocean Engineering

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G.M. Silberhorn , Project Leader



VIRGINIA INSTITUTE OF MARINE SCIENCE
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MAY 1975

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Prince William County
Tidal Marsh Inventory

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Introduction

This publication is the sixth in a series of marsh inventory reports compiled by the Wetlands Research Section, Virginia Institute of Marine Science. The five previous reports that have been published are Lancaster County, Mathews County, York County and Town of Poquoson, Northumberland County and Stafford County. This report is presented in much the same format as the preceding 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. This inventory program is designed to assist wetlands boards and other local, state and federal agencies which have responsibilities in managing wetlands. Its results are also of interest to scientists and other concerned citizens.

A recently 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 recommendations submitted in the above publication have been adopted and promulgated by the Virginia Marine Resources Commission in booklet form. Titled Wetlands Guidelines, it may be obtained from VMRC, 2401 West Avenue, Newport News, Virginia 23607.

It is our desire that this inventory report and the marsh guidelines study will be useful to those concerned with this valuable resource.

Methods

Aerial photographs and topographic maps (U.S.G.S.) were consulted in order to obtain wetland locations and patterns of marsh vegetation. Marsh community zones and patterns were substantiated by ground truth methods, including observations on foot, by boat and by low level overflights.

Acreages and wetland boundaries were also estimated by these methods.

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. Small marshes (less than one acre) are exaggerated and are not indicated to scale. Information such as individual marsh acreage, plant community percentage and acreage, marsh type and other observations are recorded in tabular form. Plant community percentages are recorded to the nearest percent, and acreages to the nearest tenth of an acre. In those instances where an individual plant species is estimated to amount to less than 0.5 percent of 0.05 acre, 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).

This inventory report is organized into six sections. Each section attempts to describe one creek-marsh drainage system or significant length of shoreline within Prince William County. All of the tidal wetlands found in the county are located along the Potomac River or within a number of tidal creeks which empty into the Potomac River. These sections are illustrated in the Reference Map to Wetlands Sections found elsewhere in this report.

Marsh Types and Evaluation

For a better understanding of what is meant by marsh types, some background information is required. The personnel of the Wetlands Research Section 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 homogenously 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 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 grows. 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-Pickereel 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 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.

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. 3
Guidelines for Activities
Affecting Virginia's Wetlands
Special Report in Applied Marine
Science and Ocean Engineering No. 46
Gene M. Silberhorn, George M. Dawes,
Thomas A. Barnard, Jr., June 1974
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

Local Management of Wetlands
Environmental Considerations
Special Report in Applied Marine
Science and Ocean Engineering No. 35
Kenneth Marcellus, George M. Dawes,
Gene Silberhorn, June 1973
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

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

Coastal Wetlands of Virginia Interim Report
Special Report in Applied Marine
Science and Ocean Engineering No. 10
Marvin Wass and Thomas Wright, December 1969
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

Marsh Plants

Common Names and Scientific Names as found in the Data Tables

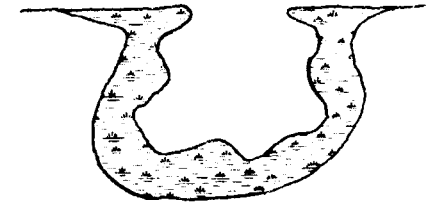
American Lotus*	<u>Nelumbo lutea</u> (Willd.)
Arrow Arum	<u>Peltandra virginica</u> (L.) Kunth
Arrowhead	<u>Sagittaria falcata</u> Pursh.
Beggar Ticks	<u>Bidens</u> spp.
Big Cordgrass	<u>Spartina cynosuroides</u> (L.) Roth.
Button Bush	<u>Cephalanthus occidentalis</u> L.
Cardinal Flower*	<u>Lobelia cardinalis</u> L.
Cattails	
common	<u>Typha latifolia</u> L.
narrow-leaved	<u>Typha angustifolia</u> L.
Common Threesquare	<u>Scirpus americanus</u> Pensoon
Ironweed*	<u>Vernonia noveboracensis</u> (L.) Michaux
Jewel-Weed*	<u>Impatiens capensis</u> Meerb.
Marsh Hibiscus	<u>Hibiscus moscheutos</u> L.
Pickrel Weed	<u>Pontederia cordata</u> L.
Reed Grass	<u>Phragmites australis</u>
Rice Cutgrass	<u>Leersia oryzoides</u> (L.) Swartz

* Marsh species not included in the Virginia Wetlands Act of 1972

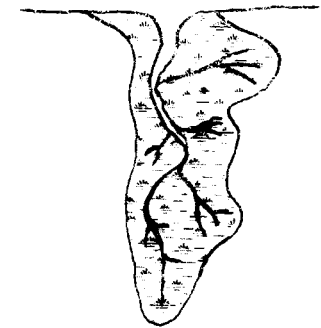
Saltbushes	
Marsh Elder	<u>Iva frutescens</u> L.
Groundsel Tree	<u>Baccharis halimifolia</u> L.
Smartweed	<u>Polygonum</u> spp.
Soft Rush, Giant Bulrush, or Softstem Bulrush	<u>Scirpus validus</u> Vahl.
Spike-Rush	<u>Eleocharis</u> spp.
Swamp Milkweed*	<u>Asclepias incarnata</u> L.
Sweetflag	<u>Acorus calamus</u> L.
Switch Grass	<u>Panicum virgatum</u> L.
Tearthumb*	<u>Polygonum arifolium</u> L.
Water Dock	<u>Rumex verticillatus</u> L.
Water Hemlock*	<u>Cicuta maculata</u> L.
Water Hemp	<u>Amaranthus cannabina</u> (L.) J.D. Sauer
Water Willow*	<u>Decodon venticillatus</u> (L.) Ell.
Wild Rice	<u>Zizania aquatica</u> L.
Wool Grass*	<u>Scirpus cyperinus</u> (L.) Kunth
Yellow Pond Lily	<u>Nuphar luteum</u> (L.) Sibthorp & Smith

Glossary of Descriptive Terms

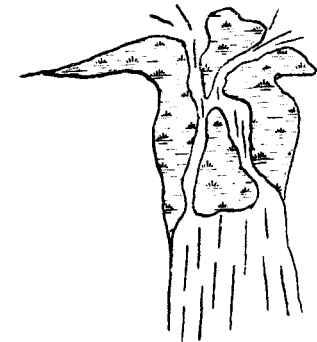
cove marsh a marsh contained within a concavity or recessed area on a shoreline; the marsh vegetation is usually found surrounding a central, open-water pond, and tidal flushing is permitted through an inlet.



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.



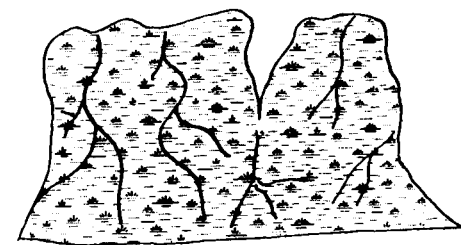
delta marsh a marsh found growing on sediment deposited at the mouth of a tidal creek; tidal exchange through the creek mouth is usually restricted to narrow channels by the marsh.



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 along a section of shoreline and generally has a much greater length than width or depth.



high marsh

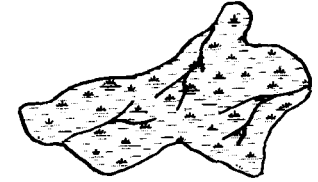
the marsh surface is at an elevation of mean high water or above; it is usually inundated less than twice daily by tidal action.

low marsh

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

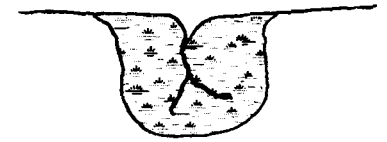
marsh island

an isolated marsh surrounded on all sides by open water; interior portions of the marsh may contain trees scattered at highest elevations



pocket marsh

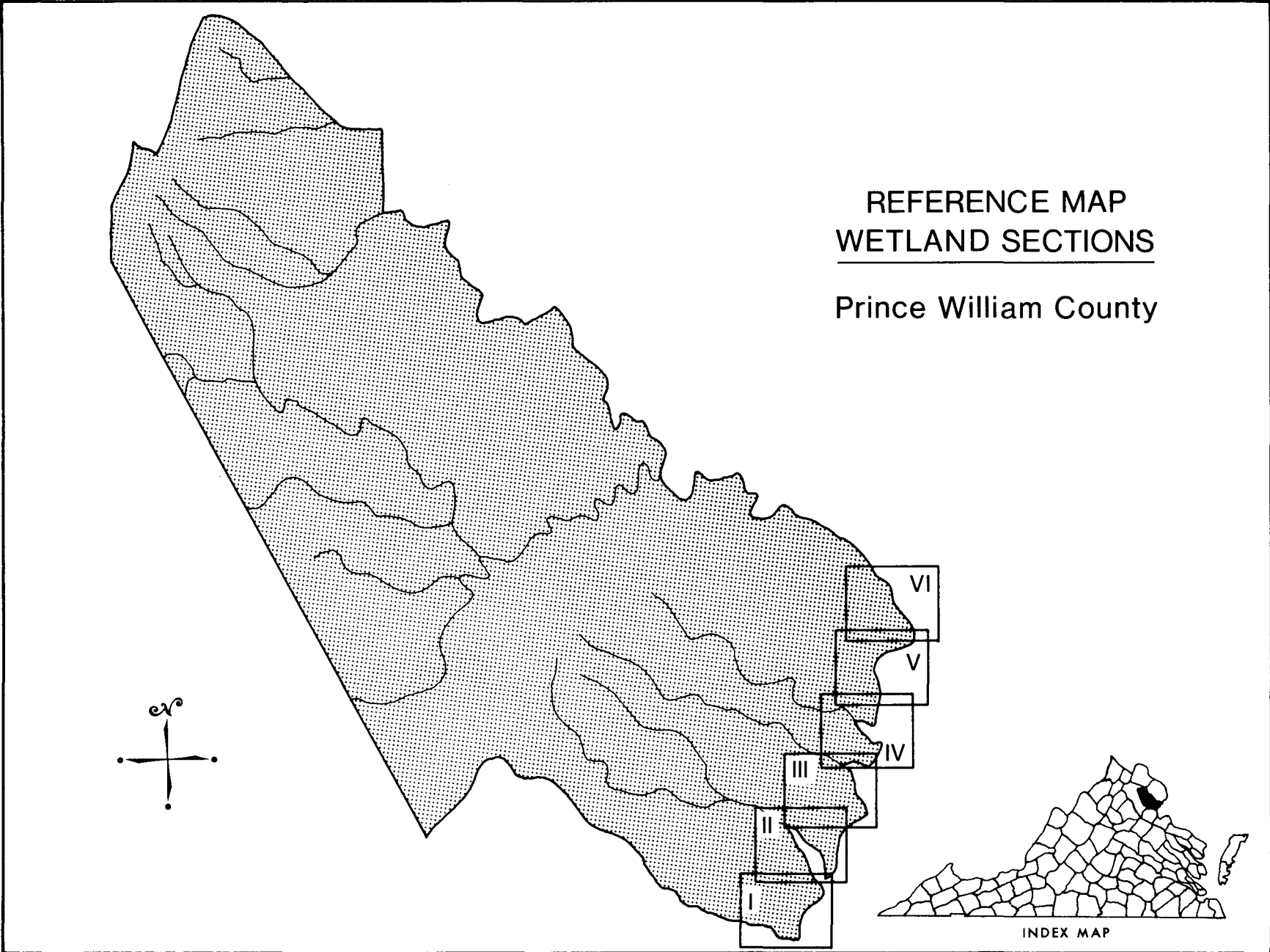
a marsh contained within a small, essentially semi-circular area on a shoreline.



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.





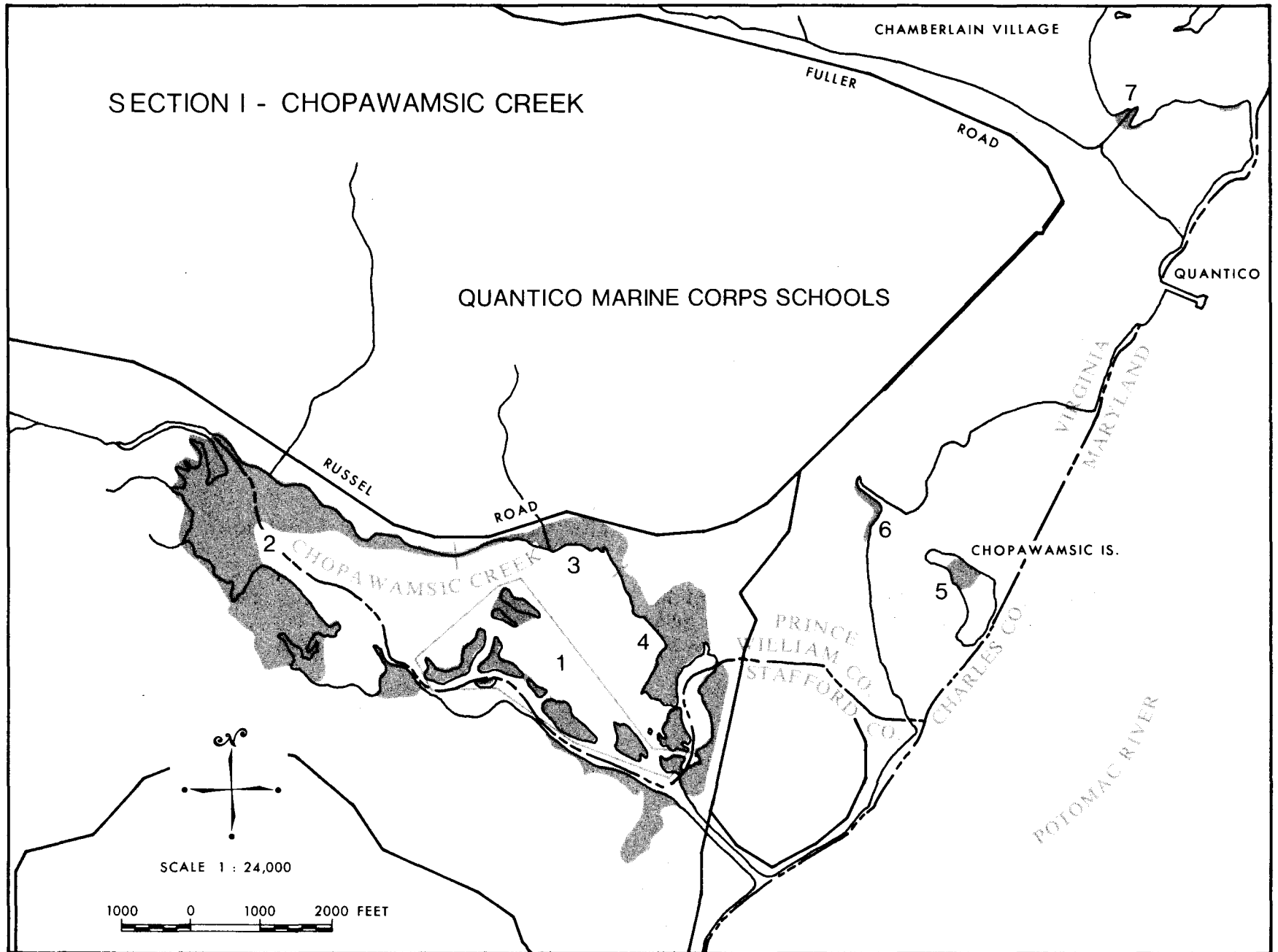
SECTION I

Chopawamsic Creek and Potomac River

Chopawamsic Creek marks the southern boundary of Prince William County and only those marshes found within the county line are described here. The marshes found within the Stafford County section of Chopawamsic Creek are described in Virginia Institute of Marine Science Special Report No. 62, Stafford County Tidal Marsh Inventory.

Chopawamsic Creek contains 106 acres of the 900 acres of tidal wetlands found in Prince William County. This marsh-creek complex is an important spawning and nursery area for many species of fish such as striped bass, herring, shad and perch, and is an excellent habitat for ducks and other waterfowl. The marshes within the Prince William County section of the creek are dominated by several species of low marsh plants including pickerel weed and yellow pond lily. A number of these marshes are in the form of marsh islands which have become established in the shallowest areas of the creek. These areas become tidal mudflats during the winter with the die-back of the above ground portion of the marsh plants.

The section of shoreline bordering the Potomac River contains few marshes. Chopawamsic Island has a small, high marsh dominated by hibiscus. The remaining marshes have been reduced either through erosion or by fill.



Section I. Chopawamsic Creek and Potomac River

#	Marsh Location	Total Acres		Pickereel Weed- Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Beggar Ticks	Reed Grass	Other	Observations	Marsh Type
1	Chopawamsic Creek	27	%	100																								Numerous marsh islands of low elevation; these are mudflats during the winter.	VII
			acres	27.0																									
2	Upper Chopawamsic Creek	28	%	30	60	10																						Creek marsh of low elevation; cattails are found along landward border.	IX
			acres	8.4	16.8	2.8																							
3	Chopawamsic Creek	19	%	35	20	30		10			5																	Pond lily and pickereel weed fringe; other species along landward edge.	XI
			acres	6.6	3.8	5.7		1.9		1.0																			
4	Chopawamsic Creek	32	%	30		40		15	1		5	2											7				Fringing marsh with a large amount of cattails along higher elevations.	XI	
			acres	9.6		12.8		4.8	0.3	1.6	0.6													2.3					
5	Chopawamsic Island	4	%	10				60			10											10					Freshwater high marsh dominated by hibiscus.	XI	
			acres	0.4				2.4		0.4													0.4						
6	Quantico on Potomac River	2	%			90		5																5			This marsh has been disturbed and lower portion largely filled.	VI	
			acres			1.8		0.1																	0.1				
7	Lower Quantico Creek	3	%	70					30																		Marsh of low elevation dominated by pickereel weed; large amount of water hemp.	VII	
			acres	2.1				0.9																					
	Total Section I.	115	%	47	18	20		8	1		3	1		-								-	2	-					
			acres	54.1	20.6	23.1		9.2	1.2		3.0	0.6			0.4								0.4	2.3	0.1				

a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

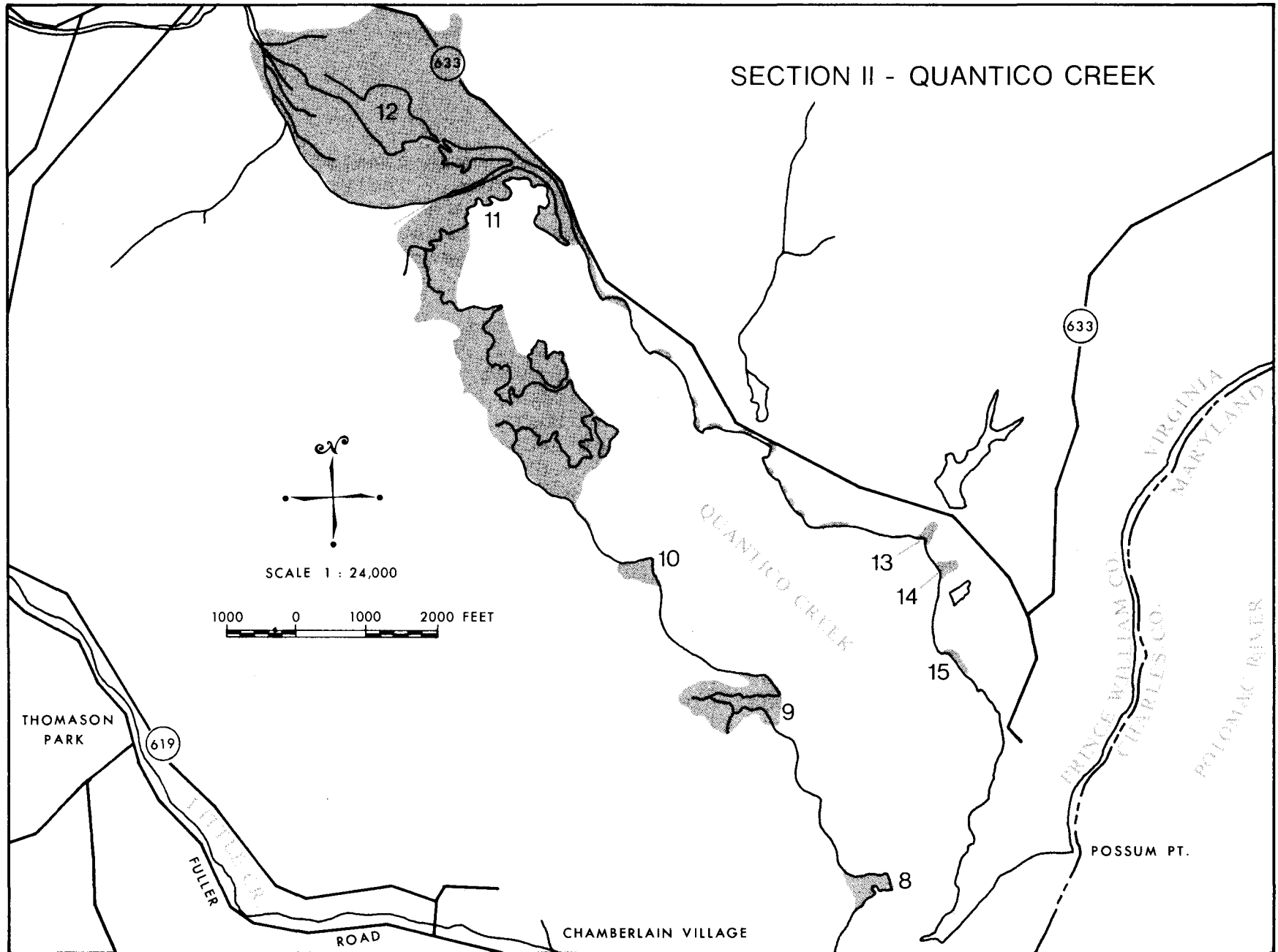
SECTION II

Quantico Creek

The wetlands in the lower portion of Quantico Creek consist mainly of a number of small pocket, spit and fringing marshes. The vegetational zonation within these marshes is generally such that the lowest areas are vegetated by pickerel weed and pond lily and the interior areas of higher elevation or those fringing the uplands are vegetated by marsh hibiscus, jewel weed, and iron weed.

The upper portion of Quantico Creek is dominated by large creek marshes which are found to grade from yellow pond lily at lowest elevations all the way to woody swamp at the highest. Included in these marshes are several large stands of American Lotus, a beautiful marsh species uncommon in Virginia. These areas of marsh and woody swamp provide both a buffer for flooding conditions and an excellent food source for waterfowl and refuge for wildlife. Since the woody swamps include the species black gum, Nyssa sylvatica, which is listed in the Virginia Wetlands Act, those areas of swamp which are contiguous to the tidal marshes and meet the elevational requirements of the Act are to be considered "wetlands". To determine these areas, however, an accurate survey would be required. Therefore, only those areas with marsh-type vegetation are included in this inventory.

As with the other tidal creeks of Prince William County which flow into the Potomac River, Quantico Creek is valuable as both a spawning and nursery grounds for anadromous fishes. The furthest downstream portion of the creek is receiving heated effluent from an electric power generating plant located on Possum Point. Although the water in the vicinity of the outlet pipes was observed during the field visits to be noticeably warmer than surrounding areas, no other effects were evident.



Section II. Quantico Creek

#	Marsh Location	Total Acres		Pickereel Weed- Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Beggar Ticks	Reed Grass	Other	Observations	Marsh Type	
8	Lower Quantico Creek	4	%	20		5		30	20		10	5										5					e, 5	Spit marsh with diverse, high marsh flora and pickereel weed fringe.	XI	
			acres	0.8		0.2		1.2	0.8		0.4	0.2											0.2					0.2		
9	Middle Quantico Creek	17	%	40	40	10		5	1	1	2						1												Large pocket marsh of low elevation dominated by pickereel weed and pond lily; other species along landward border.	XI
			acres	4.8	4.8	1.2		0.6	0.1	0.1	0.2							0.1												
10	Middle Quantico Creek	3	%	30		30		10	10		10	10																	Spit marsh of low elevation dominated by pickereel weed and pond lily.	XI
			acres	0.9		0.9		0.3	0.3		0.3	0.3																		
11	Upper Quantico Creek	109	%	25	20	10	25	5	5	3		2							5										Large fringing marsh; pond lily extending onto tidal flats; pickereel weed and wild rice dominate interior.	XI
			acres	27.2	21.8	10.9	27.2	5.4	5.4	3.4		2.3								5.4										
12	Upper Quantico Creek	106	%	40	25	3	20	2	2		2					1		2	3										Large creek marsh; pond lily along channels and entire lower section; pickereel weed and wild rice dominate interior.	XI
			acres	42.4	26.5	3.2	21.1	2.1	2.1		2.1						1.1		2.1	3.2										
13	Middle Quantico Creek	1	%	10		60		10	10												10								Small pocket marsh dominated by cattails.	VI
			acres	0.1		0.6		0.1	0.1													0.1								
14	Middle Quantico Creek	1	%	10		30		10				5									10					30	f, 5	Small pocket marsh; reed grass indicates that the marsh has been disturbed, probably by fill.	XI	
			acres	0.1		0.3		0.1					-									0.1				0.3	-			
15	Middle Quantico Creek	1	%	40				40			5	10												5					Small fringing marsh with pickereel weed along channel; interior dominated by marsh hibiscus.	XI
			acres	0.4				0.4				-	0.1												-					

a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

Section II, Quantico Creek
(continued)

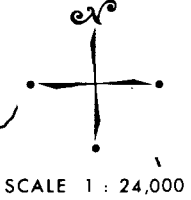
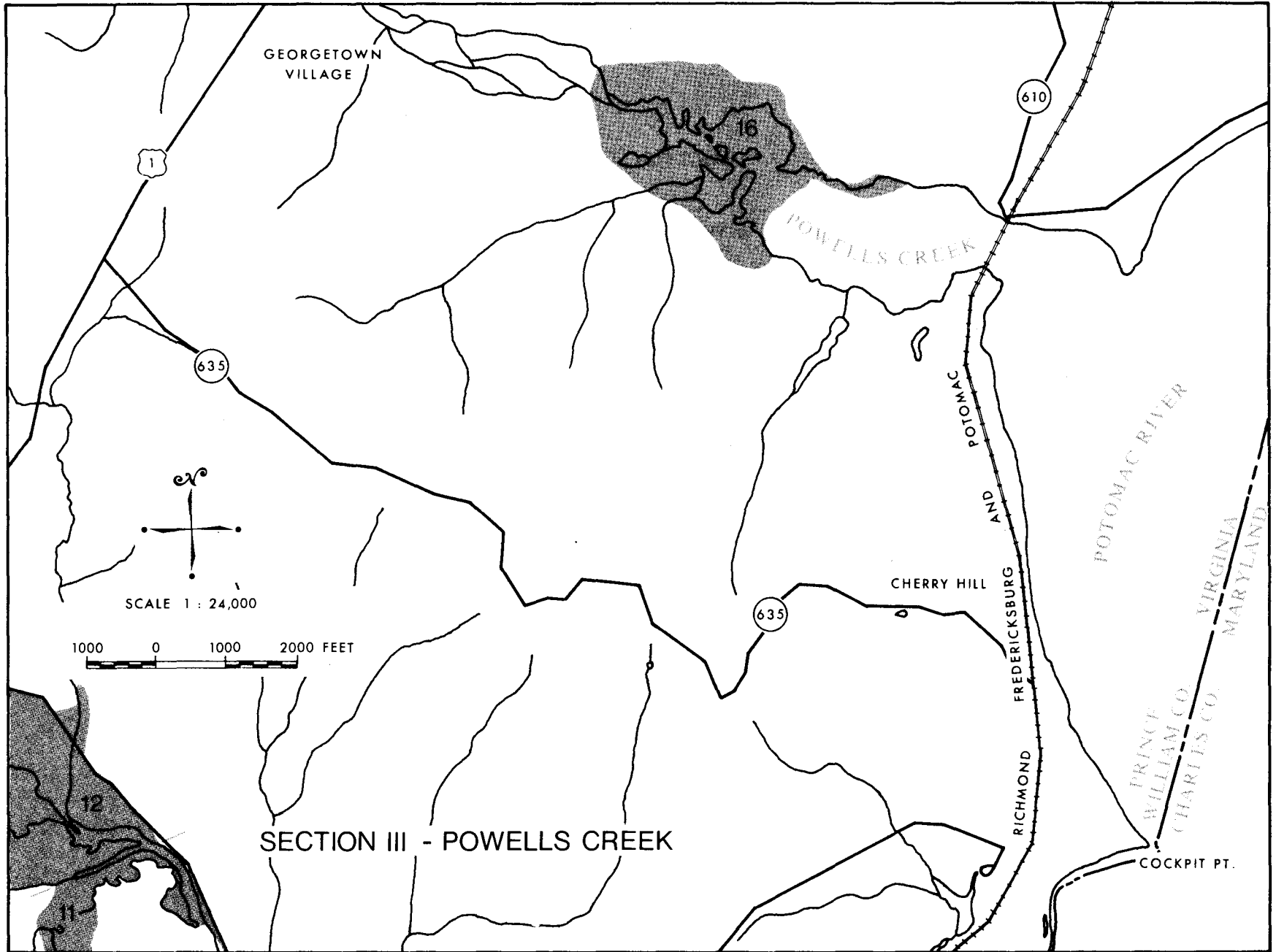
#	Marsh Location	Total Acres	acres		%	Plant Name
			acres	%		
	Total Section II.	242				
			76.7	32		Pickerel Weed-Arrow Arum
			53.1	22		Yellow Pond Lily
			17.3	7		Cattails
			48.3	20		Wild Rice
			10.2	4		Marsh Hibiscus
			8.8	4		Water Hemp
			3.5	1		Common Threesquare
			3.0	1		Jewel Weed
			2.9	1		Iron Weed
						Cardinal Flower
						Swamp Milkweed
						Tear Thumb
			1.1	-		Button Bush
			0.1	-		Water Willow
			2.1	1		Smart Weed
			8.6	4		American Lotus
						Arrowhead
			0.2	-		Soft Rush
			0.2	-		Big Cordgrass
						Switch Grass
						Saltbushes
						Beggar Ticks
						Reed Grass
			10.3	f,-		Other
						Observations
						Marsh Type

a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

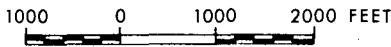
SECTION III

Powell's Creek

The wetlands in Powell's Creek are contained within one, large creek marsh. The lowest, and furthest downstream portions of this marsh are dominated by such species as pickerel weed and yellow pond lily. The interior of the marsh consists of mainly wild rice and pickerel weed, while the uplands and woody swamp are bordered by cattails, hibiscus, and smartweeds. This creek marsh is valuable as both a nursery and spawning area for anadromous fishes as well as a habitat for many other fishes and wildlife.



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SECTION III - POWELLS CREEK

Section III. Powell's Creek

#	Marsh Location	Total Acres		Pickereel Weed- Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Beggar Ticks	Reed Grass	Other	Observations	Marsh Type
16	Powell's Creek	123	%	40	20	2	25	5	2		1	1		1				1			1						b, 1	Mixed freshwater marsh community with pond lily dominating lower section; pickereel weed and wild rice zone is next.	XI
			acres	49.2	24.6	2.5	30.8	6.1	2.5		1.2	1.2			1.2				1.2			1.2							
	Total Section III.	123	%	40	20	2	25	5	2		1	1		1				1			1						b,1		
			acres	49.2	24.6	2.5	30.8	6.1	2.5		1.2	1.2			1.2				1.2			1.2						1.2	

a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

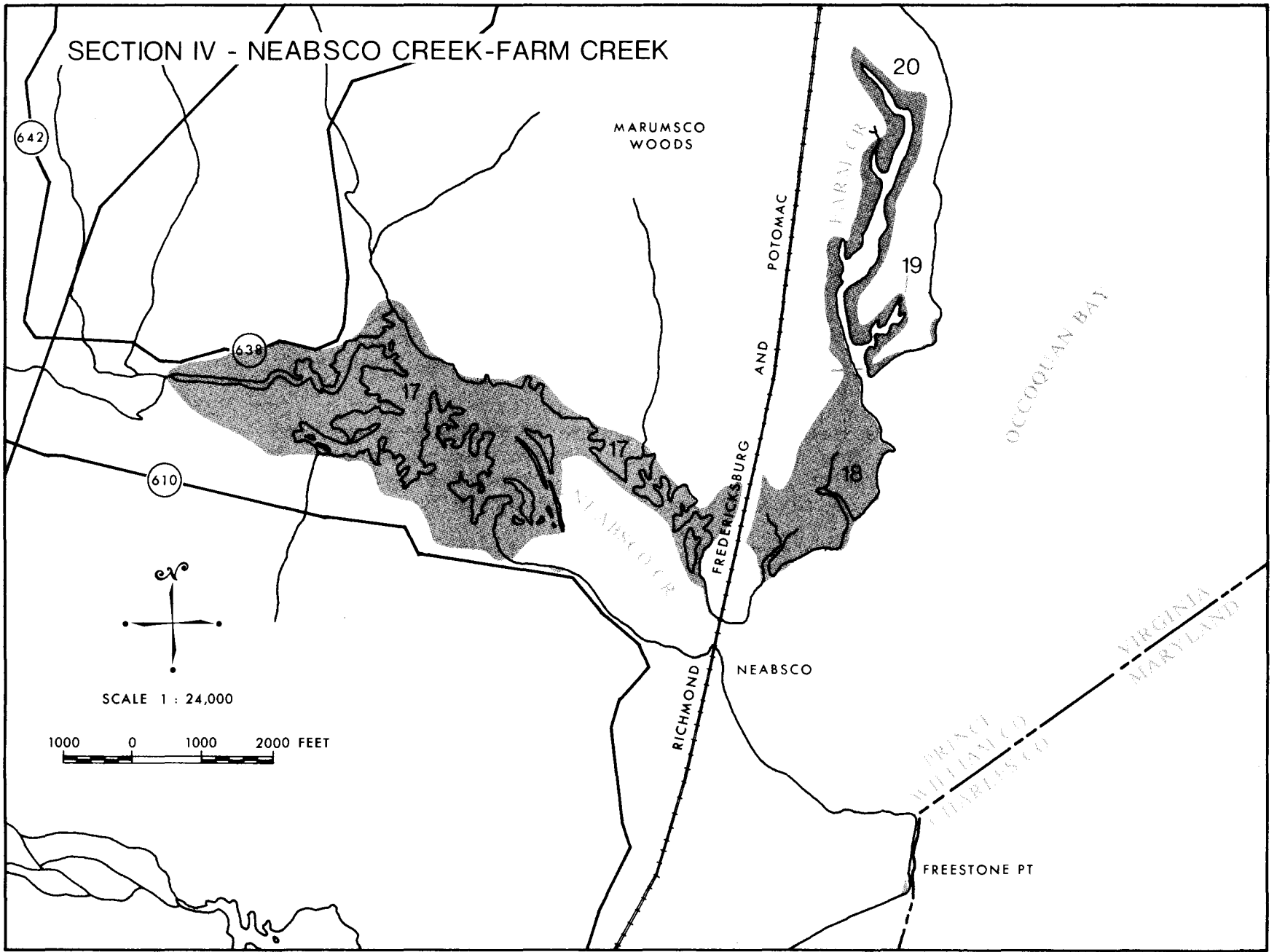
SECTION IV

Neabsco Creek - Farm Creek

Neabsco Creek is dominated by a large creek marsh which grades from low marsh areas that border open water and are dominated by yellow pond lily, through extensive stands of pickerel weed and wild rice, to high marsh areas which border the uplands and woody swamp. This marsh serves both as a haven for wildlife and waterfowl as well as a spawning and nursery area for anadromous fishes.

The shoreline outside of the mouth of Neabsco Creek and bordering Occoquan Bay consists of a large fringing marsh. This marsh contains a border of pickerel weed along the open water, while the interior is largely cattails and marsh hibiscus.

Farm Creek is the next marsh northward along this section of shoreline. This creek has almost entirely fringe marsh which is surrounded by woody swamp. The creek has been crossed by a dirt road but tidal flushing to the upper sections is permitted through a culvert.



Section IV. Neabsco and Farm Creek

#	Marsh Location	Total Acres		Pickereel Weed- Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Beggar Ticks	Reed Grass	Other	Observations	Marsh Type
17	Neabsco Creek	229	%	30	20	10	30	2	2		2			1	1			2										Large creek marsh; mixed freshwater marsh community.	XI
			acres	68.7	45.8	22.9	68.7	4.6	4.6		4.6					2.3	2.3			4.6									
18	Occoquan Bay	61	%	20		45		20		2	2	1				5	1	3									e, 1	Large fringing marsh; cattails dominate interior.	XI
			acres	12.2		27.4		12.2		1.2	1.2	0.6					3.0	0.6	1.8									0.6	
19	Lower Farm Creek	7	%	20	10	20		30	10									10										Pocket marsh; pickereel weed fringe along channel; other species landward.	XI
			acres	1.4	0.7	1.4		2.1	0.7											0.7									
20	Upper Farm Creek	36	%	20	20	40		10	5					1				4										Creek marsh; crossed by dirt road but tidal flushing in upper section unimpaired by culvert.	XI
			acres	7.2	7.2	14.4		3.6	1.8							0.4			1.4										
	Total Section IV	333	%	27	16	20	21	7	2	-	2	-		1	1	1	-	3									e,-		
			acres	89.5	53.7	66.1	68.7	22.5	7.1	1.2	5.8	0.6				2.7	2.3	3.0	0.6	8.5								e,0.6	

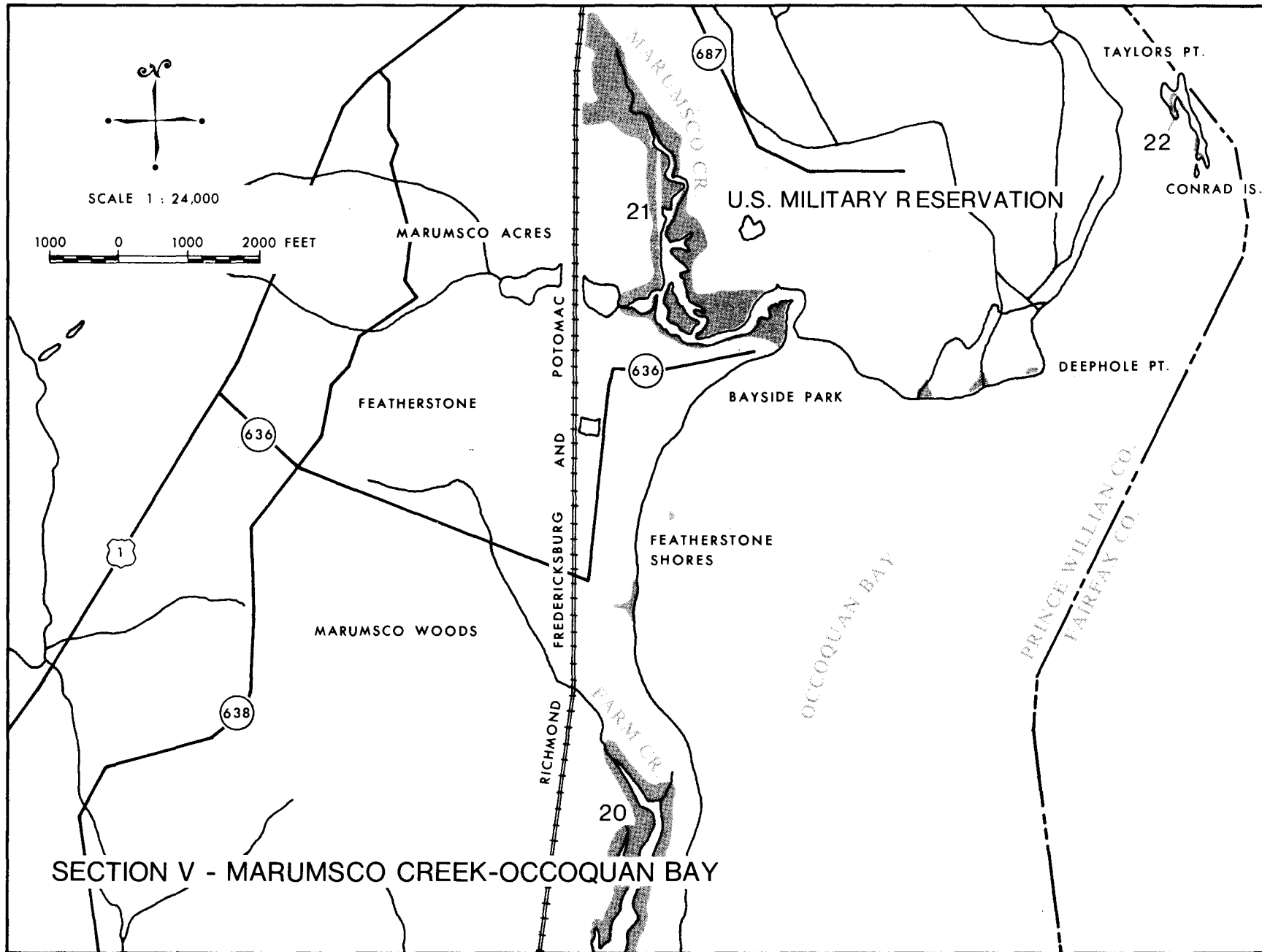
a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

SECTION V

Marumsco Creek - Occoquan Bay

Except for several small fringing marshes the wetlands along this section of shoreline are largely confined to Marumsco Creek. Within the creek, yellow pond lily and pickerel weed are found bordering the channels, while marsh hibiscus and cattails dominate closer to the uplands.

As with other tidal creeks in Prince William County, Marumsco Creek is a valuable spawning and nursery grounds and an excellent habitat for waterfowl and other wildlife. Some man-made channelization is evident but generally the marsh is undisturbed.



Section V. Marumsco Creek and Occoquan Bay

#	Marsh Location	Total Acres		Pickereel Weed-Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Beggar Ticks	Reed Grass	Other	Observations	Marsh Type
21	Marumsco Creek	55	%	10	30	20		30	2									5			3							Creek marsh; pickerel weed and pond lily along the channels; some channelization evident.	XI
			acres	5.5	16.5	11.0		16.5	1.1											2.8			1.6						
22	Conrad Island	1	%	60		5		5			30																	Small fringing marsh dominated by pickerel weed-arrow arum community.	VII
			acres	0.6		-		-			0.3																		
	Total Section V.	56	%	11	29	20		29	2		1							5			3								
			acres	6.1	16.5	11.0		16.5	1.1		0.3									2.8			1.6						

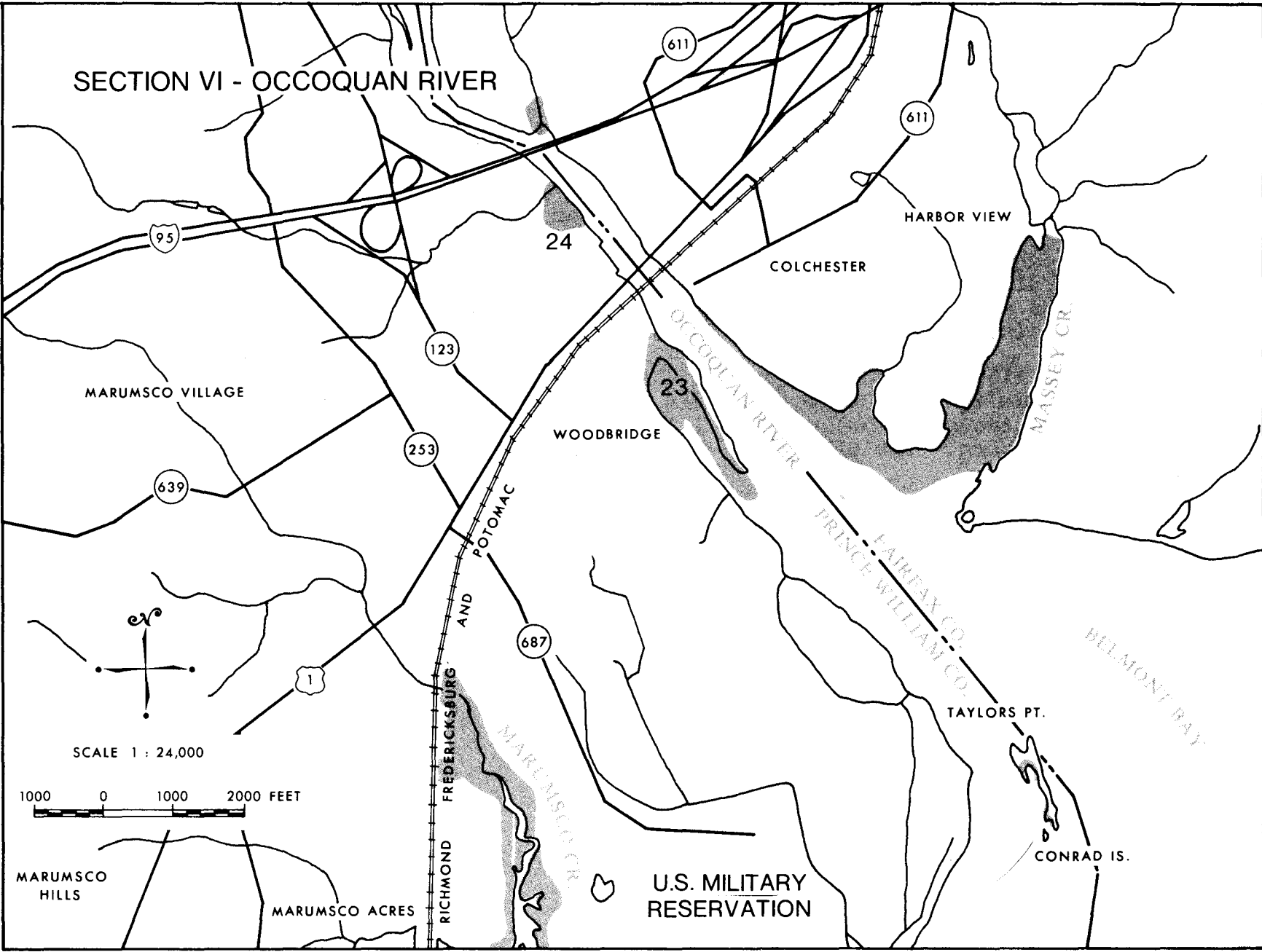
a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

SECTION VI

Occoquan River

The Occoquan River marks the northern boundary of Prince William County and although several marshes along the Fairfax County shoreline are included on this map section, only the marshes within Prince William County are discussed and reported on here.

Tidal wetlands are only found in the lower portion of the Occoquan River. Of the two marshes within this section of the river, one is a low marsh dominated by yellow pond lily which has formed behind a long, tree-covered berm. The other is a pocket marsh dominated by high marsh species.



Section VI. Occoquan River

#	Marsh Location	Total Acres	Pickereel Weed- Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Peggar Ticks	Reed Grass	Other	Observations	Marsh Type
23	Occoquan River at Woodbridge	%	30	50		5		5		5																b, 5	Low marsh dominated by pickereel weed, arrow arum and yellow pond lily.	IX
		acres	7.8	13.0		1.3		1.3		1.3																		
24	Occoquan River	%	10		10		35			40																e, 5	Pocket marsh of high elevation; interior dominated by hibiscus and jewel weed; fringe of pickereel weed.	XI
		acres	0.5		0.5		1.8			2.0																		
	Total Section VI	%	27	42	2	4	6	4		11																b,4 e,1		
		acres	8.3	13.0	0.5	1.3	1.8	1.3		3.3																b,1.3 e,0.2		
	Total Prince William County	%	32	20	13	17	7	2	1	2	1		--	-	-	-	2	1			-	-	-	-				
		acres	28.39	18.15	120.5	149.1	66.3	22.0	4.7	16.6	7.8		4.3	2.3	4.1	0.7	14.6	8.6			3.0	0.6	2.3	0.1		b,2.5 e,0.6	f,0.3	

a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

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