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STAFFORD COUNTY TIDAL MARSH INVENTORY

OCT 23 1976

Special Report No. 62 in Applied Marine Science and Ocean Engineering

Kenneth A. Moore

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VIRGINIA INSTITUTE OF MARINE SCIENCE
Gloucester Point, Virginia 23062

APRIL 1975

STAFFORD COUNTY TIDAL MARSH INVENTORY

Special Report No. 62 in Applied Marine Science and Ocean Engineering

Kenneth A. Moore
G.M. Silberhorn, Project Leader

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Dr. William J. Hargis, Jr., Director

APRIL 1975

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I would like finally to thank Mrs. Rhonda Payne and Miss Christine Plummer for typing the various drafts and final manuscript.

Stafford County
Tidal Marsh Inventory

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Introduction

This publication is the fifth in a series of marsh inventory reports compiled by the Wetlands Research Section, Virginia Institute of Marine Science. The four previous reports that have been published are Lancaster County, Mathews County, York County and Town of Poquoson and Northumberland 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 or 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 four sections. Each section attempts to describe one creek-marsh drainage system or significant length of shoreline. There is a section of Stafford County shoreline, however, which is not described here. It includes that portion of Stafford County from Muddy Creek to above Fredericksburg which borders the Rappahannock River. This complete section was observed in the field but was found to contain no tidal marshes.

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 <u>Black Needlerush Community</u>

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 <u>Saltbush Community</u>

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 <u>Big Cordgrass Community</u>

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 <u>Cattail Community</u>

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

Type VII <u>Arrow Arum-Pickerel Weed Community</u>

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 <u>Reed Grass Community</u>

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 <u>Yellow Pond Lily Community</u>

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 <u>Saltwort Community</u>

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

Type XI <u>Freshwater Mixed Community</u>

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 <u>Brackish Water Mixed Community</u>

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 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:

<u>Coastal Wetlands of Virginia</u>
Interim Report No. 3
<u>Guidelines for Activities</u>
<u>Affecting Virginia's Wetlands</u>
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

<u>Local Management of Wetlands</u>
<u>Environmental Considerations</u>
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

<u>Coastal Wetlands of Virginia Interim Report No. 2</u>
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*	*Nelumbo lutea* (Willd.)
Arrow Arum	*Peltandra virginica* (L.) Kunth
Arrowhead	*Sagittaria falcata* Pursh.
Beggar Ticks	*Bidens* spp.
Big Cordgrass	*Spartina cynosuroides* (L.) Roth.
Button Bush	*Cephalanthus occidentalis* L.
Cardinal Flower*	*Lobelia cardinalis* L.
Cattails	
common	*Typha latifolia* L.
narrow-leaved	*Typha angustifolia* L.
Common Threesquare	*Scirpus americanus* Pensoon
Ironweed*	*Vernonia noveboracensis* (L.) Michaux
Jewel-Weed*	*Impatiens capensis* Meerb.
Marsh Hibiscus	*Hibiscus moscheutos* L.
Pickerel Weed	*Pontederia cordata* L.
Reed Grass	*Phragmites australis*
Rice Cutgrass	*Leersia oryzoides* (L.) Swartz

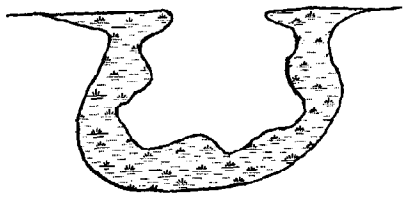
* Marsh species not included in the Virginia Wetlands Act of 1972

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

Glossary of Descriptive Terms

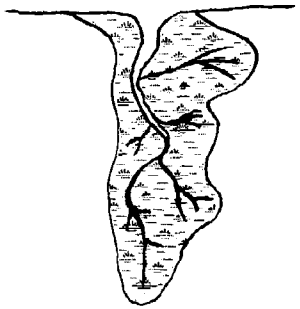
cove marsh

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.



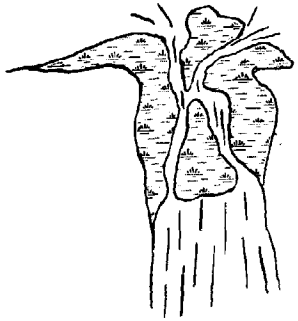
creek or embayed marsh

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

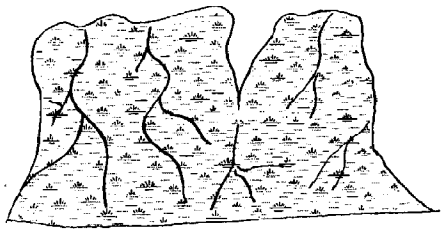
a marsh found growing on sediment deposited at the mouth of a tidal creek; tidal exchange through the creek mouth is usually restricted to narrow channels by the marsh.



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.

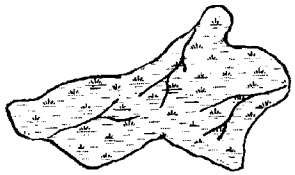
low marsh

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

Glossary of Descriptive Terms

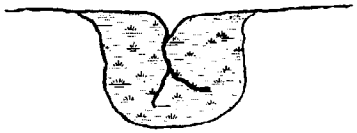
marsh island

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



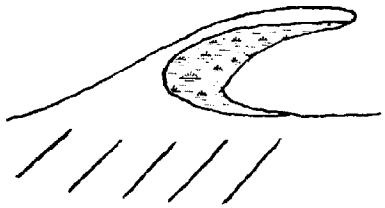
pocket marsh

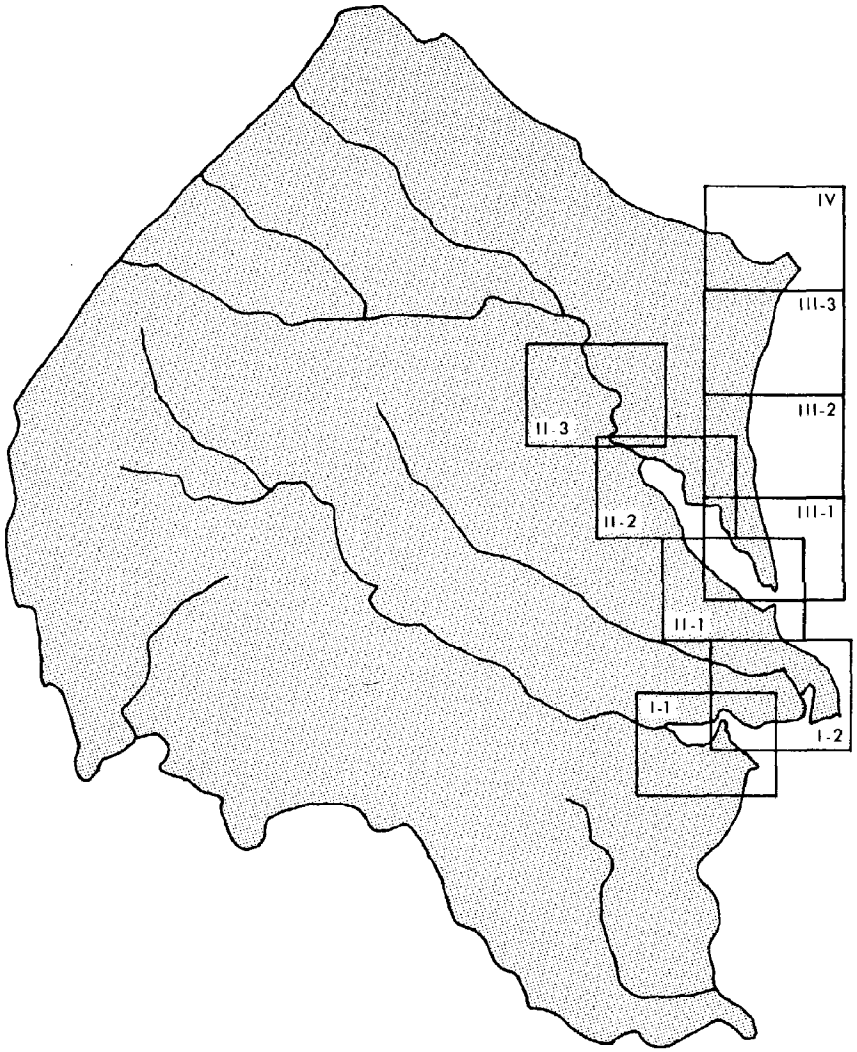
a marsh contained within a small, essentially semi-circular area on a shoreline.



point or spit marsh

a marsh which extends from the uplands in the form of a point or spit; its development is usually influenced by tidal currents that form a sand berm behind which the marsh forms.





REFERENCE MAP

WETLANDS SECTIONS

Stafford County

Section I

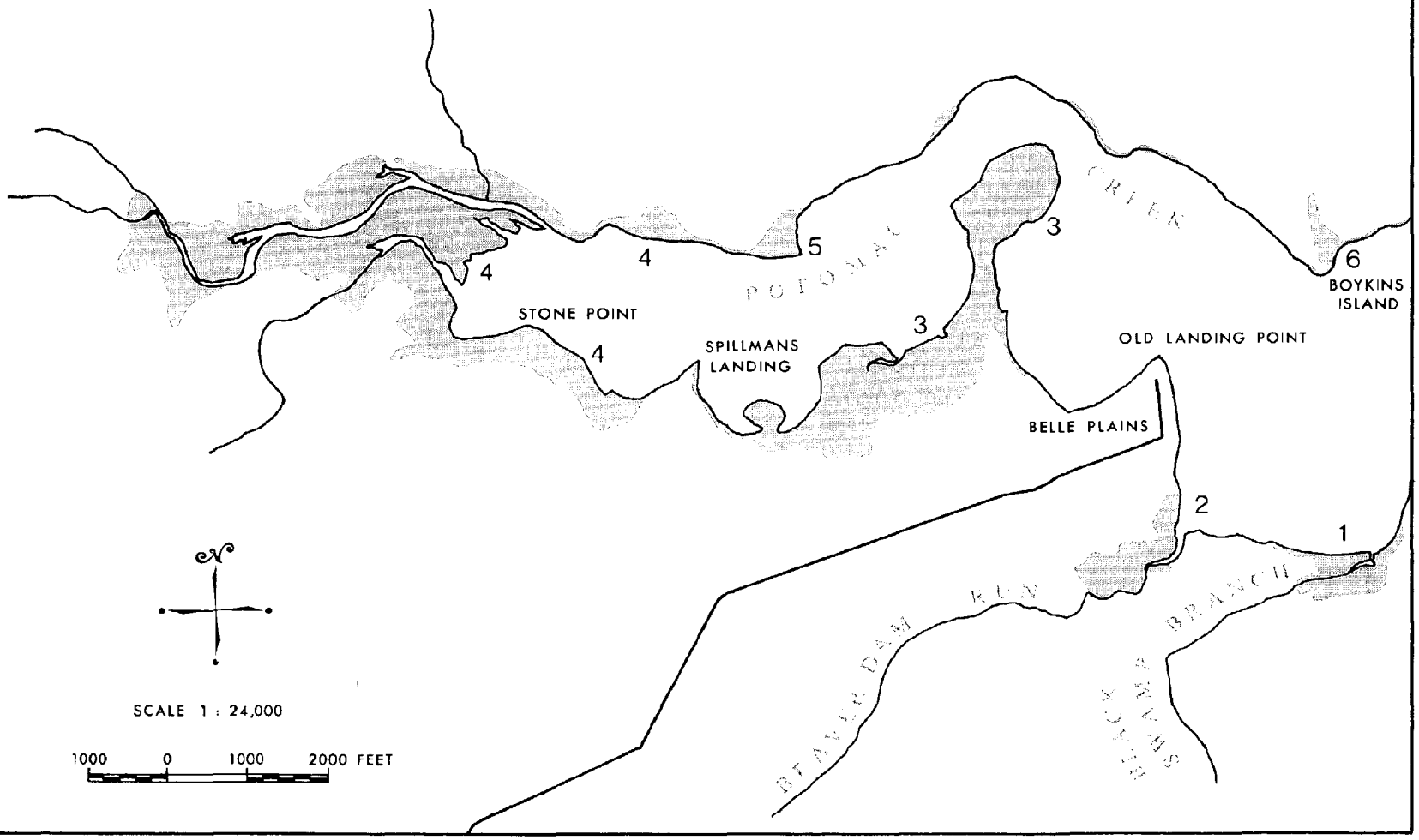
Potomac and Accokeek Creeks

The marshes of Potomac and Accokeek creeks (Parts 1 and 2) consist of 705 acres of the 1337 acres of the tidal wetlands found in Stafford County. Most of the marshes along these two creeks are of the highly productive, freshwater mixed community (Type XI). As are all the other tidal creeks of Stafford County which flow into the Potomac River, these two marsh-creek systems are highly valuable as both spawning and nursery grounds for fishes such as: striped bass, alewife, blueback herring, white perch, hickory shad, yellow perch. The great abundance of marsh plant species such as wild rice, pickerel weed and arrow arum indicates that these marshes are also highly valuable as food sources for many species of waterfowl.

The vegetational zonation within each individual marsh varies with very slight changes in the elevation above mean low water. The lowest areas extend out to mean low water and below and are vegetated with pure stands of yellow pond lily. These plants serve as an important habitat and cover for both fish and waterfowl. At adjacent higher elevations, pickerel weed and arrow arum grow in either pure stands or mixed with wild rice. At highest elevations, a very diverse flora is found including such species as the striking marsh hibiscus, and the sprawling and climbing species of smartweed, jewel weed and beggar ticks. These last three produce seeds which are important as food for birds. Growing on small hummocks througout these high marsh areas and near the borders of fastlands are shrubs such as button bush, alder and small willow saplings. Cattails are also found throughout this zone, as well as along the upland-marsh interfaces where ground water seepages occur.

The wetlands in the upper reaches of both Potomac and Accokeek Creek progress from high marsh to woody swamp and as such provide both a buffer for flooding conditions and an excellent refuge for wildlife. Since the woody swamps include black gum, *Nyssa sylvatica*,which is listed in the Virginia Wetland's 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.

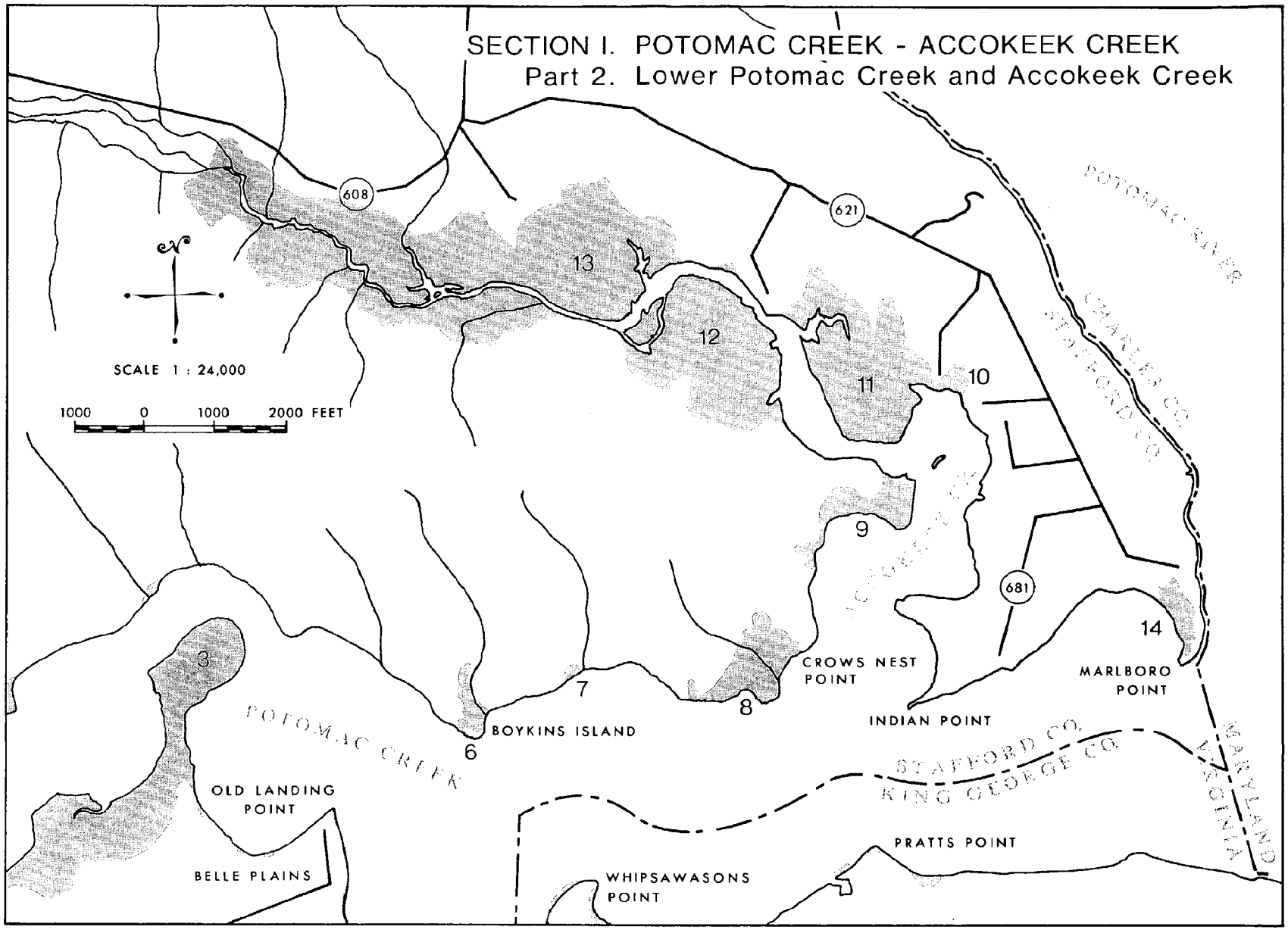
SECTION I. POTOMAC CREEK - ACCOKEEK CREEK
Part 1. Upper Potomac Creek



Section I. Potomac Creek - Accokeek Creek
Part 1. Upper Potomac Creek

#	Marsh Location	Total Acres		Pickerel 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	Black Swamp	4	%	30	5	40		10	5	10																		Stafford Co. section only; pickerel weed at lower elevations; cattails along landward border.	XI
			acres	1.2	0.2	1.6		0.4	0.2	0.4																			
2	Beaverdam Run	18	%	30		40	5	20	5																			Large pocket marsh; cattails located behind zone of pickerel weed and arrow arum.	XI
			acres	5.4		7.2	0.9	3.6	0.9																				
3	Big Marsh	90	%	16	3	14	29	28	3			3							4									Large spit marsh dominated by pickerel weed-wild rice mixture; other species along upland border.	XI
			acres	14.4	2.7	12.6	26.1	25.2	2.7			2.7							3.6										
4	Upper Potomac Creek	168	%	10	40	5	30	5	1		1	1	1	1	1	1	1	1			1							Large creek marsh; lower portion dominated by pond lily; large stands of wild rice.	XI
			acres	16.8	67.2	8.4	50.4	8.4	1.7		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7			1.7								
5	Upper Potomac Creek	8	%	10		55		20			2	1	-									10	2					Point marsh; interior dominated by cattails; fringed by pickerel weed.	VI
			acres	0.8		4.4		1.6			0.2		0.1									0.8	0.2						
6	Boykins Island	6	%	10		50		10	5			5					5					10					c, 5	Cove marsh; interior dominated by cattails; fringed by pickerel weed.	VI
			acres	0.6		3.0		0.6	0.3			0.3					0.3					0.6					0.3		
	Total Section I. Part 1.	294	%	13	24	13	26	14	2	-	1	2	1	1	1	1	1	1	1		1	-	-				c,-		
			acres	39.2	70.1	37.2	77.4	39.8	5.8	0.4	1.9	4.7	1.8	1.7	1.7	1.7	2.0	1.7	3.6		1.7	1.4	0.2				c,0.3		

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


SECTION I. POTOMAC CREEK - ACCOKEEK CREEK
Part 2. Lower Potomac Creek and Accokeek Creek
SCALE 1 : 24,000
1000 0 1000 2000 FEET
608
621
681
POTOMAC RIVER
CHARLES CO.
STAFFORD CO.
ACCOKEEK CR.
POTOMAC CREEK
STAFFORD CO.
KING GEORGE CO.
MARYLAND
VIRGINIA
3
6
7
8
9
10
11
12
13
14
BOYKINS ISLAND
CROWS NEST POINT
INDIAN POINT
MARLBORO POINT
OLD LANDING POINT
BELLE PLAINS
WHIPSAWASONS POINT
PRATTS POINT

Section I. Potomac Creek - Accokeek Creek
Part 2. Lower Potomac Creek and Accokeek Creek

#	Marsh Location	Total Acres		Pickerel 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
7	Lower Potomac Creek	1	%	40		20	5	25										5		5								Small pocket marsh; pickerel weed fringe; other species at higher elevations landward.	XI
			acres	0.4		0.2	-	0.2										-		-									
8	Crows Nest Point	19	%	5		80				5												10						Large pocket marsh; pickerel weed fringe; cattail dominated border.	VI
			acres	1.0		15.0				1.0												2.0							
9	Lower Accokeek Creek	18	%	10		70	5		-		10											5					b, -	Pickerel weed fringe; interior of marsh dominated by cattails.	VI
			acres	1.8		12.6	0.9		-		1.8											0.9					-		
10	Lower Accokeek Creek	4	%	75		5	5	5	5		5																	Pocket marsh dominated by pickerel weed and arrow arrum; other species along landward edge.	VII
			acres	3.0		0.2	0.2	0.2	0.2		0.2																		
11	Lower Accokeek Creek	65	%	10		40	10	10	5		10											10	5					Large creek marsh; cattails are in clumped distribution throughout the marsh.	XI
			acres	6.5		26.0	6.5	6.5	3.2		6.5											6.5	3.2						
12	Upper Accokeek Creek	76	%	15	15	50	10															10						Large creek marsh; pond lilys along the channels; large stands of cattails in the interior.	XI
			acres	11.4	11.4	38.0	7.6															7.6							
13	Upper Accokeek Creek	221	%	20	20	20	40	-	-		-																	Significant increase in wild rice over lower sections of the creek.	XI
			acres	44.2	44.2	44.2	88.4	-	-		-																		
14	Marlboro Point	7	%	20		5		40	5		20									5			5					Spit marsh; pickerel weed fringe with higher marsh species behind.	XI
			acres	1.4		0.4		2.6	0.4		1.4									0.4			0.4						

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

Section I. Potomac Creek - Accokeek Creek
Part 2. Lower Potomac Creek and Accokeek Creek

#	Marsh Location	Total Acres		Pickerel 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
	Total Section I. Part 2.	411	%	17	14	33	25	2	1	-	2							-		-		4	1				b,-		
			acres	69.7	55.6	136.6	103.6	9.5	3.8	1.0	9.9							-		0.4		17.0	3.6				b,-		
	Total Section I.	705	%	15	18	25	26	7	1	-	2	1	-	-	-	-	-	-	1	-	-	3	1				b,- c,-		
			acres	108.9	125.7	173.8	181.0	49.3	9.6	1.4	11.8	4.7	1.8	1.7	1.7	1.7	2.0	1.7	3.6	0.4	1.7	18.4	3.8				b,- c,0.3		

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

Section II

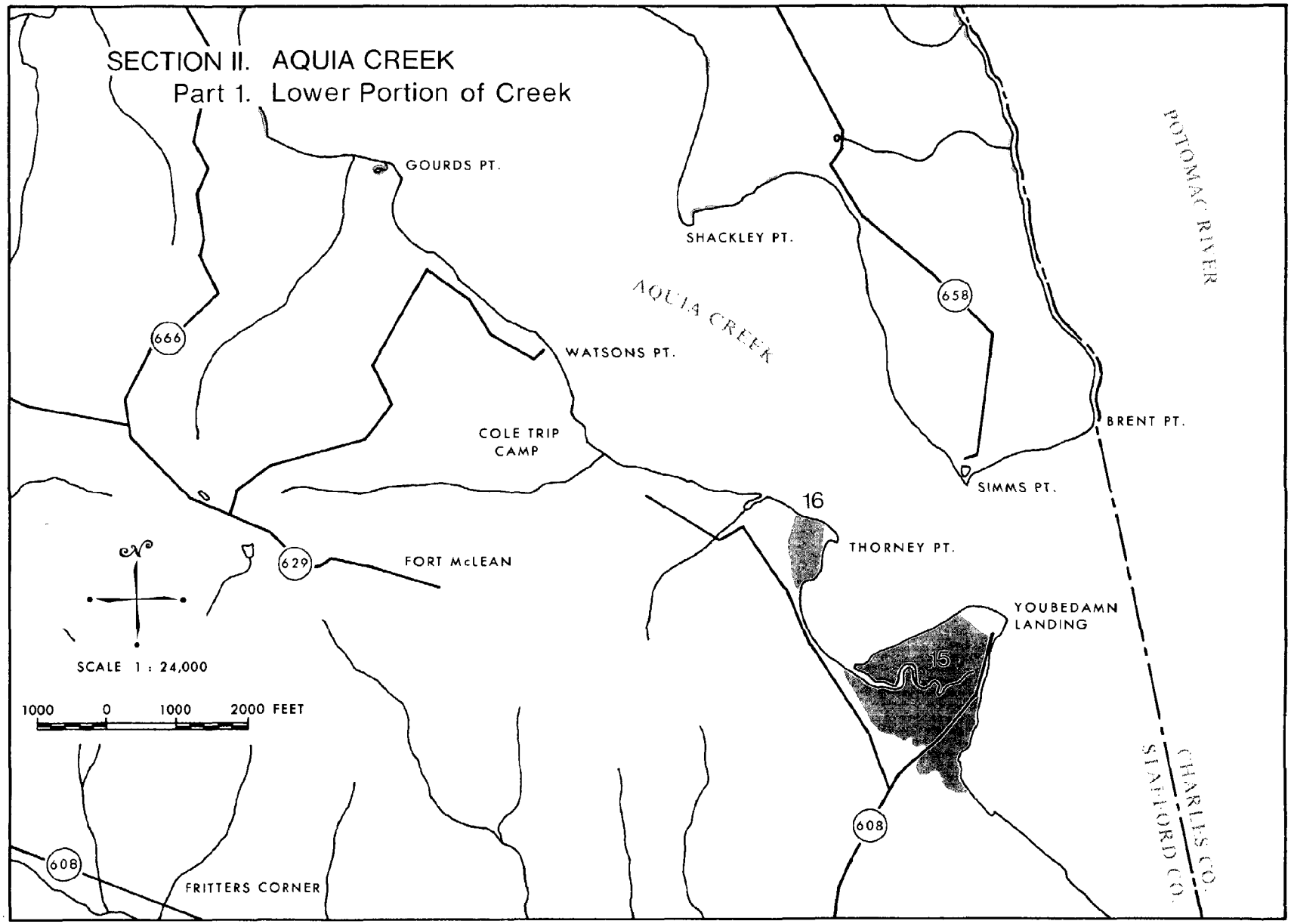
Aquia Creek

Aquia Creek (Parts 1, 2 & 3) is the second largest wetlands system in Stafford County and contains approximately 420 acres of the County's 1337 acres of tidal marsh. The creek is valuable as both a spawning and nursery area for many species of anadromous fish. The upper section of the creek, however, is currently being subject to intense development pressures and much of this area has been altered by the dredging or filling of both woody swamp and marsh. This upper section also appears to be receiving sediment from the surrounding uplands as a result of large-scale construction combined with inadequate sediment control and destruction of the natural upland vegetation. Several of the natural creek channels had light colored sediment, indicative of an upland source, throughout the water column and covering the bottom. Also, several sections of man-made channels were found to be almost completely filled with this type of sediment. The effects of this runoff on both the spawning success in Aquia Creek and shoaling in the lower sections of the creek remain to be determined.

The vegetation of the unaltered marshes in Aquia Creek is largely similar to that found in Potomac Creek, with pond lily and pickerel weed fringing the lowest sections and cattails and shrubs bordering the uplands (Type XI, Freshwater Mixed Communities). One exception to this is marsh #29 which contains a large stand of American lotus, a beautiful marsh plant found only in several places in Virginia.

The wetlands of the middle and lower parts of Aquia Creek consist of creek, pocket, or fringing freshwater marshes. The shoreline is also bordered by many small patches of marsh generally consisting of pickerel weed. Several small marshes have formed on old spoil banks that were left on the sides of a dredged channel. Although greatly eroded today, the spoil if very evident in aerial photographs taken in 1937.

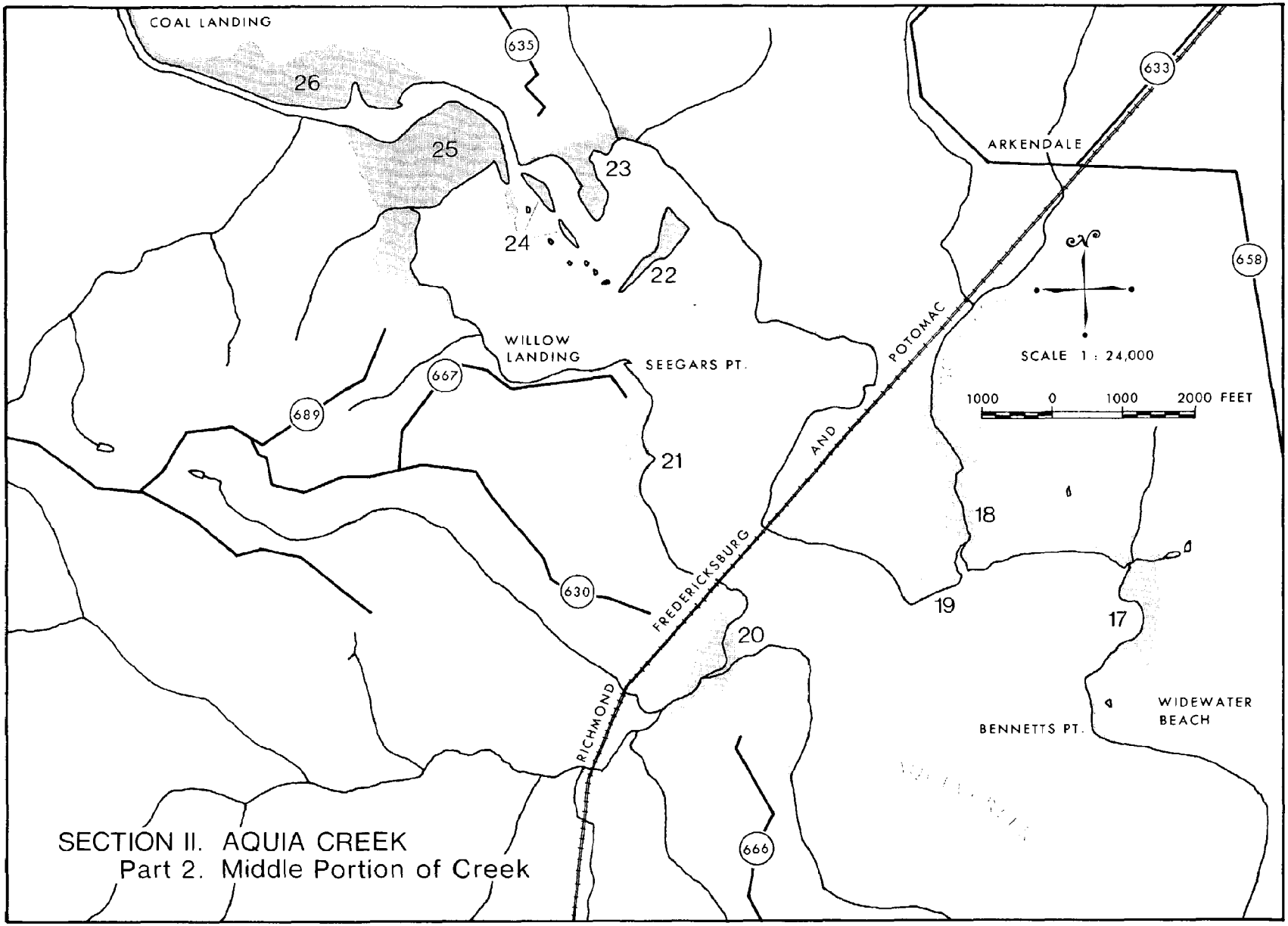
Shoreline erosion within the lower sections of Aquia Creek does not appear to be significant, except along a berm which forms the eastern border of the Youbedamn Landing marsh. The marsh itself does not appear to be in danger of severe erosion at this time, however, the beach along its eastern side has been subject to recent erosion at a rate of over two feet per year.


SECTION II. AQUIA CREEK
Part 1. Lower Portion of Creek
GOURDS PT.
SHACKLEY PT.
AQUIA CREEK
POTOMAC RIVER
666
658
WATSONS PT.
COLE TRIP CAMP
BRENT PT.
SIMMS PT.
16
THORNEY PT.
629
FORT McLEAN
YOUBEDAMN LANDING
15
SCALE 1 : 24,000
1000 0 1000 2000 FEET
608
608
FRITTERS CORNER
CHARLES CO.
STAFFORD CO.

Section II. Aquia Creek
Part 1. Lower Portion of Creek

#	Marsh Location	Total Acres		Pickerel 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
15	Youbedamn Landing	63	%	20		20	5	20		10	15														10			Large spit marsh; severe erosion of beach on eastern shore.	XI
			acres	12.6		12.6	3.2	12.6		6.3	9.6														6.3				
16	Thorney Point	9	%	30		50		5			15																	Spit marsh; large stands of cattails with pickerel weed at lower elevations.	VI
			acres	2.7		4.5		0.4			1.4																		
	Total Section II Part 1.	72	%	21		24	4	18		9	15														9				
			acres	15.3		17.1	3.2	13.0		6.3	11.0														6.3				

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



SECTION II. AQUIA CREEK
Part 2. Middle Portion of Creek

Section II. Aquia Creek
Part 2. Middle Portion of Creek

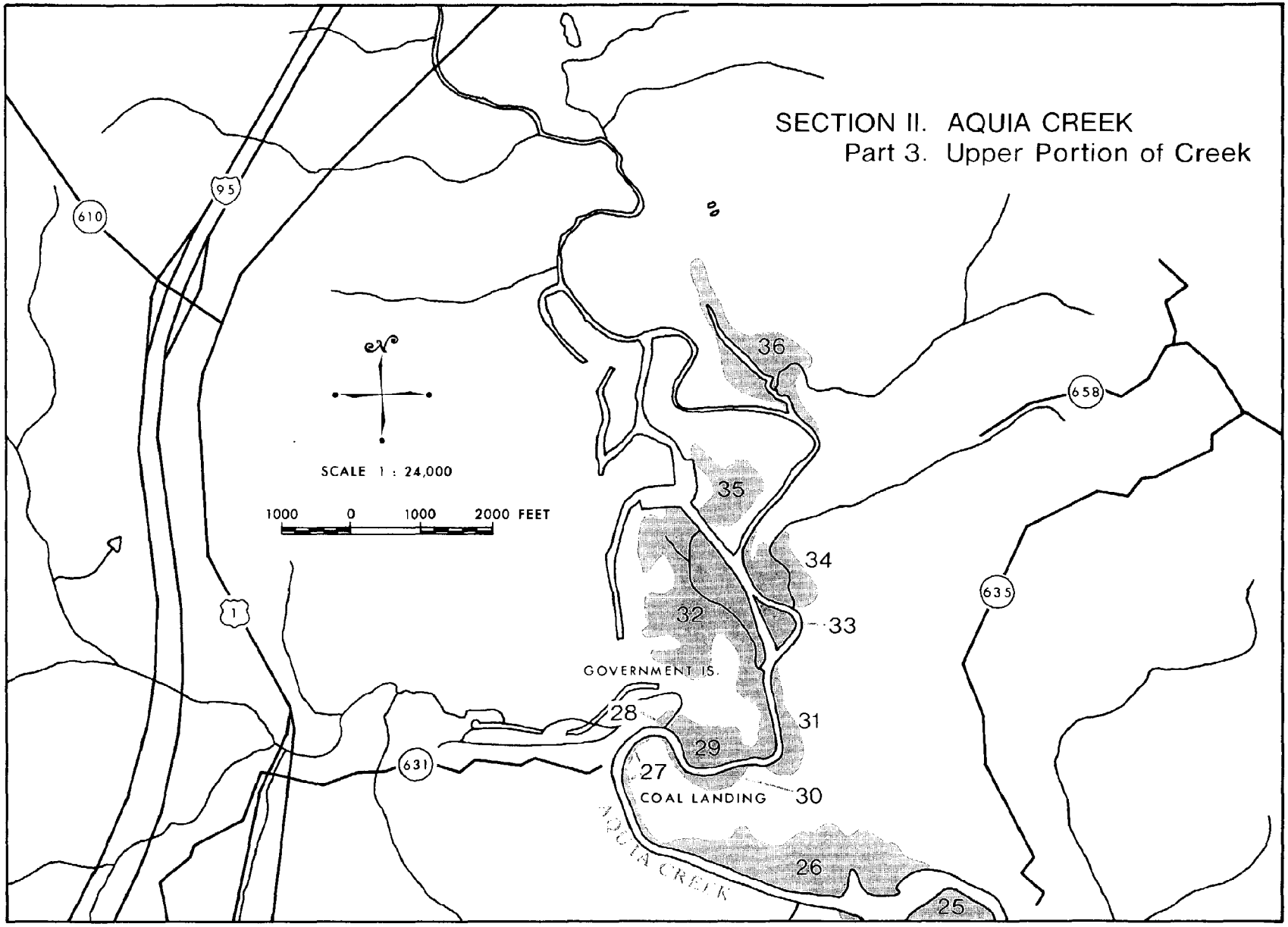
#	Marsh Location	Total Acres		Pickerel Weed-Arrow Arum	Yellow Pond Lily	Cattails	Wild Rice	Marsh Hibiscus	Water Hemp	Common Threesquare	Jewel Weed	Iron Weed	Cardinal Flower	Swamp Milkweed	Tear Thumb	Button Bush	Water Willow	Smart Weed	American Lotus	Arrowhead	Soft Rush	Big Cordgrass	Switch Grass	Saltbushes	Beggar Ticks	Reed Grass	Other	Observations	Marsh Type
17	Widewater Beach	20	%	40		40		15		2	3																	Pickerel weed and arrow arum along channel; cattails along landward edge.	XI
			acres	8.0		8.0		3.0		0.4	0.6																		
18	Boars Creek	18	%	20	15	5	50	5			5																	Pickerel weed and pond lily in lower portion; interior dominated by wild rice; cattails in upper part.	XI
			acres	3.6	2.7	0.9	9.0	0.9			0.9																		
19	Lower Aquia Creek	1	%	10		5		80									5											Pickerel weed fringe along channel; interior of marsh at higher elevation and dominated by hibiscus.	XI
			acres	0.1		-		0.8									-												
20	Lower Aquia Creek	15	%	20	75	2		2			1																	Marsh of low elevation; dominated by pickerel weed and pond lily.	IX
			acres	3.0	11.2	0.3		0.3			0.2																		
21	Seegar's Point	7	%	30	20	30		10	5	2	3																	Fringe marsh; pickerel weed and pond lily along channel; other species along landward edge.	XI
			acres	2.1	1.4	2.1		0.7	0.4	0.1	0.2																		
22	Middle Aquia Creek	8	%	20	25	30		5			5	4	1										10					Marsh island fringed with pond lily and pickerel weed.	XI
			acres	1.6	2.0	2.4		0.4			0.4	0.3	0.1										0.8						
23	Middle Aquia Creek	14	%	9	35	50		5		1																		Spit marsh fringed with pond lily and pickerel weed.	VI
			acres	1.3	4.9	7.0		0.7		0.1																			
24	Middle Aquia Creek	5	%	30	30	20		5			10										5							Low marsh islands formed by spoil from earlier dredging operations.	XI
			acres	1.5	1.5	1.0		0.3			0.5										0.3								

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

Section II. Aquia Creek
Part 2. Middle Portion of Creek

#	Marsh Location	Total Acres		Pickerel 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
25	Middle Aquia Creek	61	%	9	21	64		1			4							1					.					Creek marsh dominated by cattails; pond lily and pickerel weed along channel edge.	VI
			acres	5.3	13.1	39.1		0.5			2.6							0.4											
26	Middle Aquia Creek	49	%	20	40	20		4			10										5		1					Creek marsh; pond lily and pickerel weed along channel edge.	XI
			acres	9.8	19.5	9.8		2.0			4.9										2.5		0.5						
	Total Section II Part 2.	198	%	18	28	36	5	5	-	-	5	-	-				-	-			1		1						
			acres	36.3	56.3	70.6	9.0	9.6	0.4	0.6	10.3	0.3	0.1				-	0.4			2.8		1.3						

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


SECTION II. AQUIA CREEK
Part 3. Upper Portion of Creek
SCALE 1 : 24,000
1000 0 1000 2000 FEET
95
610
1
631
658
635
36
35
34
33
32
31
30
29
28
27
26
25
GOVERNMENT IS.
COAL LANDING
AQUIA CREEK

Section II. Aquia Creek
Part 3. Upper Portion of Creek

#	Marsh Location	Total Acres		Pickerel 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
27	Coal Landing	2	%	15	85																							Long fringing marsh; pond lily extending out to channel, pickerel weed closer to shore.	IX
			acres	0.3	1.7																								
28	Government Island	2	%	40	40	20																				-		Small pocket marsh somewhat disturbed by spoil piles between marsh and creek; reed grass growing on piles.	XI
			acres	0.8	0.8	0.4																				-			
29	Government Island	12	%	40	30			5			5								20									Low marsh dominated by submerged species; large stand of American lotus, uncommon to Virginia.	XI
			acres	4.8	3.6			0.6			0.6								2.4										
30	Coal Landing	6	%	15	85																							Low fringing marsh dominated by submerged species.	IX
			acres	0.9	5.1																								
31	Upper Aquia Creek	9	%	30	70																							Low fringing marsh dominated by submerged species.	IX
			acres	2.7	6.3																								
32	Upper Aquia Creek	55	%	45	40		5	7							1						2							Large creek marsh of low elevation.	XI
			acres	24.8	22.0		2.8	3.9							0.5						1.0								
33	Upper Aquia Creek	5	%	10	20		30	5			20	5		5									5					Creek marsh isolated by dredged channel; disturbed areas overgrown with less productive grasses.	XI
			acres	0.5	1.0		1.5	0.2			1.0	0.2		0.2									0.2						
34	Upper Aquia Creek	15	%	10	20	10	40				5			5							10							Relatively undisturbed creek marsh.	XI
			acres	1.5	3.0	1.5	6.0				0.8			0.8							1.5								

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

Section II. Aquia Creek
Part 3. Upper Portion of Creek

#	Marsh Location	Total Acres		Pickerel 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
35	Upper Aquia Creek	14	%	5		50															45							Creek marsh largely spoiled with dredged material and overgrown with cattails and soft rush.	VI
			acres	0.7		7.0															6.3								
36	Upper Aquia Creek	30	%	15	20	3	30	1			30	1																Muddy, light-colored sediment found in water; indicates runoff from uplands.	XI
			acres	4.5	6.0	0.9	9.0	0.3			9.0	0.3																	
	Total Section II Part 3.	150	%	28	33	7	13	3			8	-		1	-				2		6		-			-			
			acres	41.5	49.5	9.8	19.3	5.0			11.4	0.5		1.0	0.5				2.4		8.8		0.2			-			
	Total Section II.	420	%	22	25	23	8	7	-	2	8	-	-	-	-		-	-	1		3		-		2	-			
			acres	93.1	105.8	97.5	31.5	27.6	0.4	6.9	32.7	0.8	0.1	1.0	0.5		-	0.8	2.4		11.6		1.5		6.3	-			

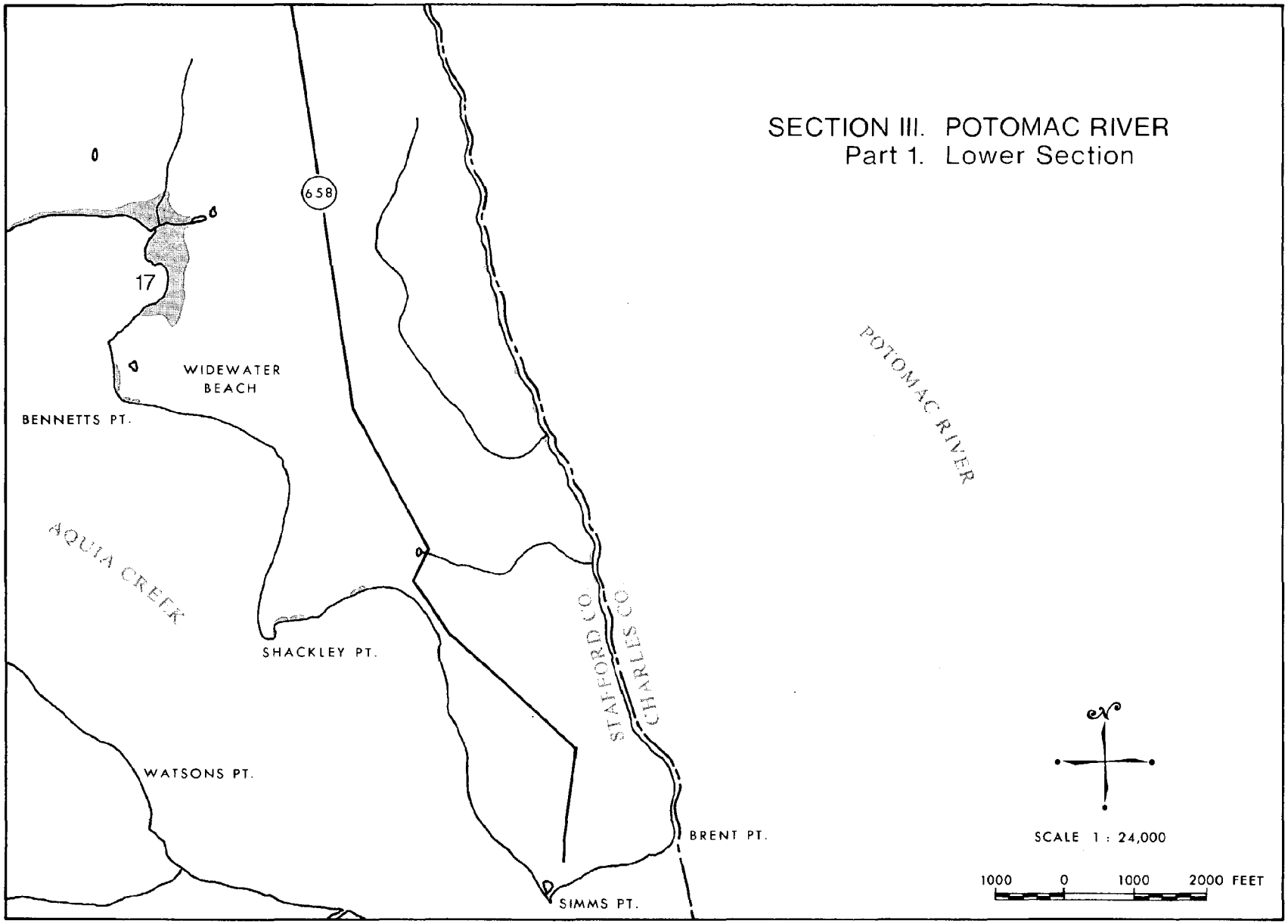
a- Wool Grass, b- Water Hemlock, c- Water Dock, d- Rice Cutgrass, e- Sweet Flag, f- Spike Rush

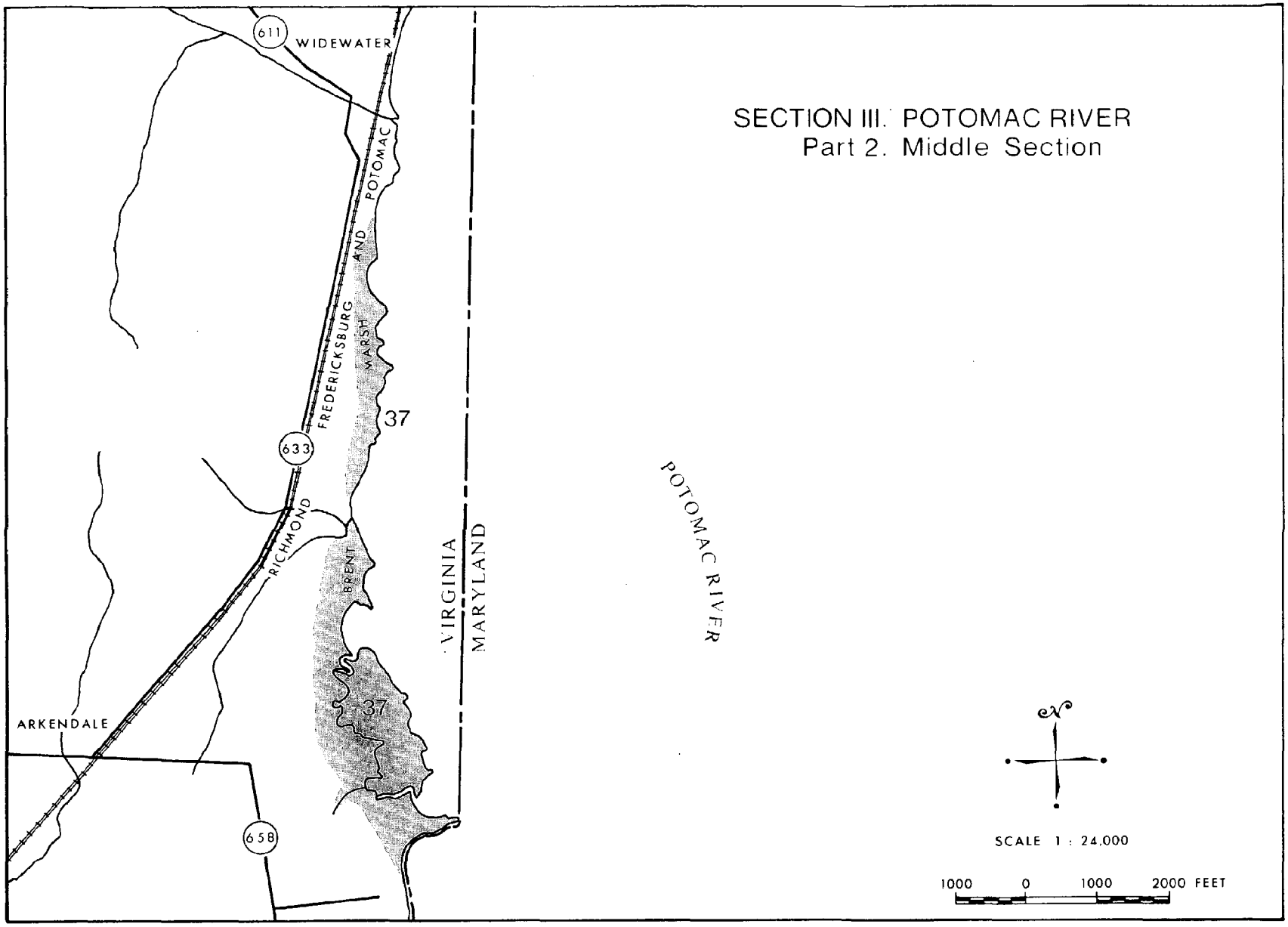
Section III

Potomac River

The segment of shoreline between Aquia Creek and Chopawamsic Creek (Parts 1, 2, 3) is the most dynamic section in Stafford County and consequently, except in Brent Marsh, the marshes of this section are few and scattered in distribution. Most of the shoreline is subject to severe erosion which has resulted in high bluffs of unconsolidated materials.

Brent Marsh (Part 2) consists of a very diverse high marsh flora and appears to support a large population of blue herons. In contrast to the dramatic erosion of the more southern and northern sections of shoreline this marsh appears to be quite stable and, in fact, aerial surveys dating back to 1937 show an outline very similar to that found today.

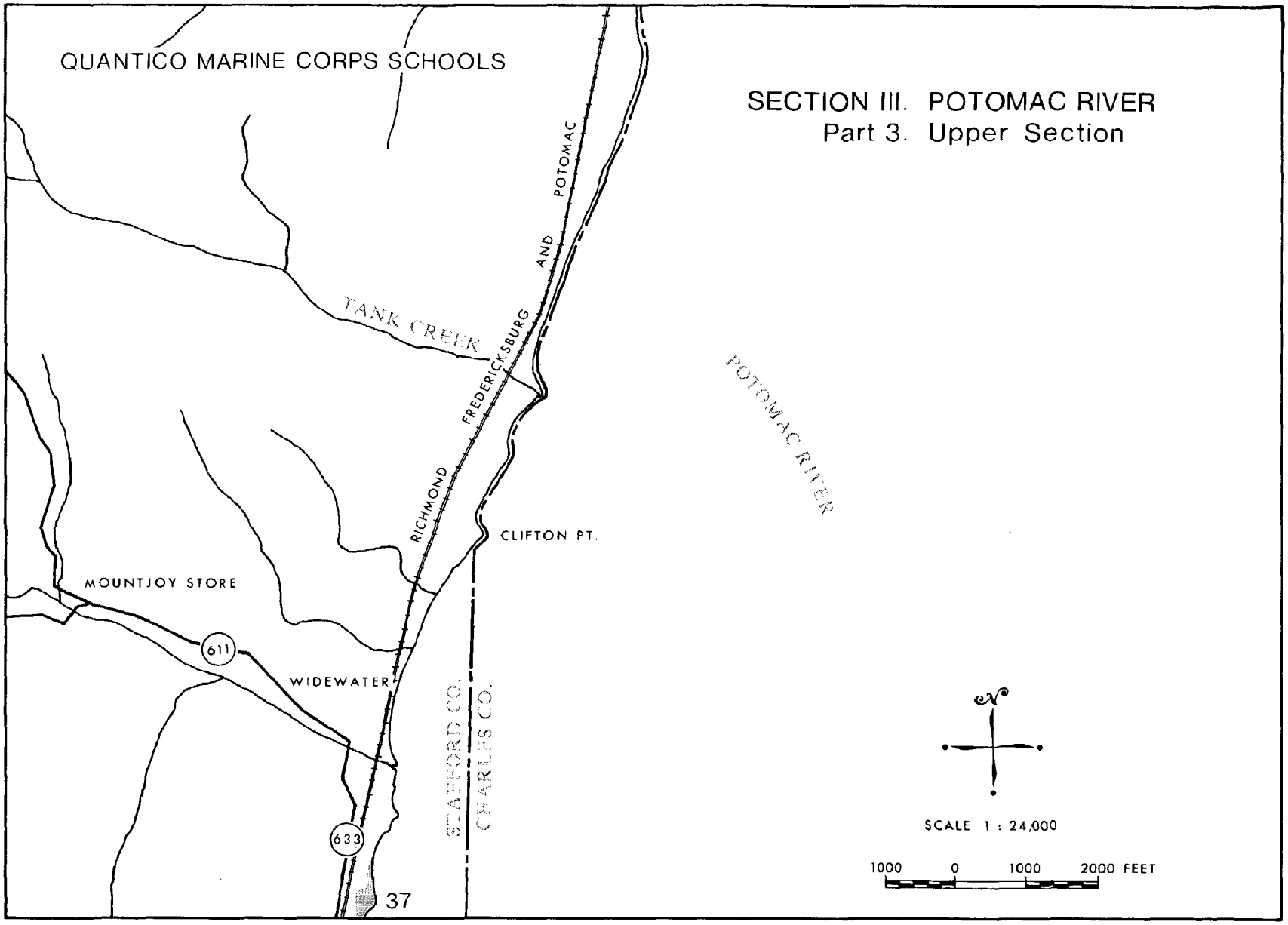

SECTION III. POTOMAC RIVER
Part 1. Lower Section
658
17
WIDEWATER BEACH
BENNETTS PT.
AQUIA CREEK
SHACKLEY PT.
WATSONS PT.
STAFFORD CO.
CHARLES CO.
POTOMAC RIVER
BRENT PT.
SIMMS PT.
SCALE 1 : 24,000
1000 0 1000 2000 FEET


SECTION III. POTOMAC RIVER
Part 2. Middle Section
WIDEWATER
611
FREDERICKSBURG AND POTOMAC
MARSH
37
633
RICHMOND
BRENT
37
ARKENDALE
658
VIRGINIA
MARYLAND
POTOMAC RIVER
SCALE 1 : 24,000
1000 0 1000 2000 FEET

Section III Potomac River
Part 2. Middle Section

#	Marsh Location	Total Acres		Pickerel 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
37	Brent Marsh	117	%	5		25		25			10	5				10		10				10						Very diverse high marsh; shrubs and bushes form a perimeter; cattails and hibiscus dominate the interior.	XI
			acres	5.9		29.2		29.2			11.7	5.8				11.7		11.7				11.7							
	Total Section III	117	%	5		25		25			10	5				10		10				10							
			acres	5.9		29.2		29.2			11.7	5.8				11.7		11.7				11.7							

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

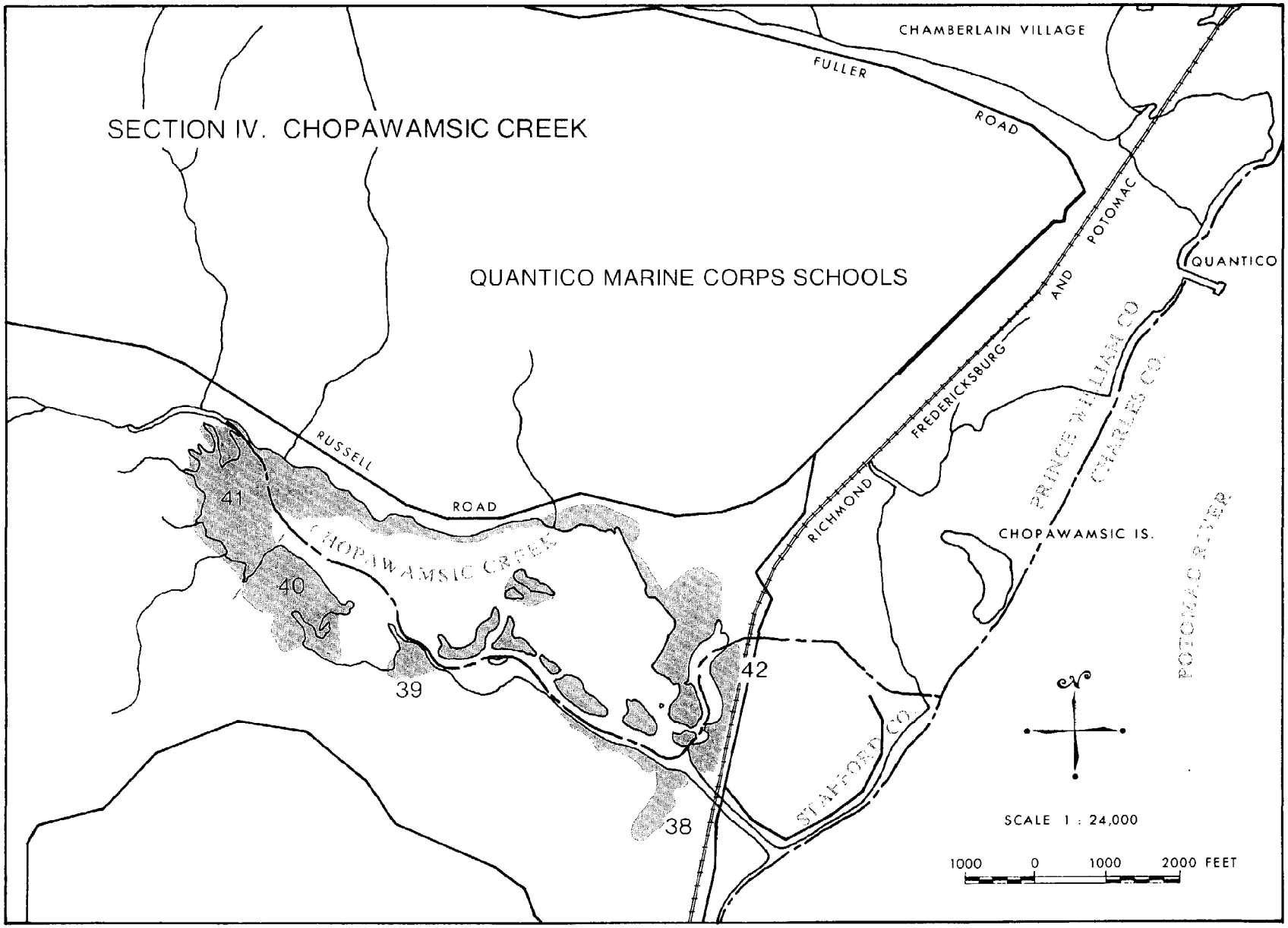

QUANTICO MARINE CORPS SCHOOLS
SECTION III. POTOMAC RIVER
Part 3. Upper Section
POTOMAC
AND
FREDERICKSBURG
RICHMOND
TANK CREEK
POTOMAC RIVER
CLIFTON PT.
MOUNTJOY STORE
611
WIDEWATER
633
37
STAFFORD CO.
CHARLES CO.
N
SCALE 1 : 24,000
1000 0 1000 2000 FEET

Section IV

Chopawamsic Creek

Chopawamsic Creek marks the northern boundary of Stafford County and only those marshes found within the County line are described here. The creek is dominated by several species of low marsh, broad-leaved plants including pickerel weed and yellow pond lily. A stand of American lotus covering approximately seven acres is also found here. As with the other tidal creeks entering the Potomac River from Stafford County, this marsh-creek complex is an important spawning and nursery area for adadromous fish as well as an excellent habitat for ducks and other waterfowl.

The upper reaches of Chopawamsic Creek progress from tidal marsh to woody swamp. As discussed previously for Potomac and Accokeek creeks, the most downstream parts of this swamp might be considered "wetlands", but only those areas upon which marsh-type vegetation is growing are included in this inventory.


SECTION IV. CHOPAWAMSIC CREEK
QUANTICO MARINE CORPS SCHOOLS
CHAMBERLAIN VILLAGE
FULLER ROAD
RUSSELL ROAD
CHOPAWAMSIC CREEK
FREDERICKSBURG AND POTOMAC
RICHMOND
QUANTICO
PRINCE WILLIAM CO
CHARLES CO.
CHOPAWAMSIC IS.
POTOMAC RIVER
STAFFORD CO.
41
40
39
38
42
SCALE 1 : 24,000
1000 0 1000 2000 FEET

Section IV. Chopawamsic Creek

#	Marsh Location	Total Acres		Pickerel 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
38	Chopawamsic Creek	11	%	80		5		10			5																	Cove marsh of low elevation; higher marsh species along landward border.	VII
			acres	8.8		0.6		1.1			0.6																		
39	Chopawamsic Creek	8	%	50	10		40																					Spit marsh including large stand of wild rice.	VII
			acres	4.0	0.8		3.2																						
40	Chopawamsic Creek	33	%	10	30	55		2			1							2										Higher marsh species located on elevated portion of marsh, landward of pickerel weed and pond lily.	VI
			acres	3.3	9.9	18.2		0.6			0.3							0.6											
41	Chopawamsic Creek	35	%	20	50	5		5											20									Large stand of American lotus, uncommon to Virginia.	IX
			acres	7.0	17.5	1.8		1.8											7.0										
42	Chopawamsic Creek	8	%	60				20															20					Pickerel weed dominated marsh; hibiscus and switchgrass along uplands.	VII
			acres	4.8				1.6															1.6						
	Total Section IV	95	%	29	39	22	3	5			1							1	7				2						
			acres	27.9	28.2	20.6	3.2	5.1			0.9							0.6	7.0				1.6						
	Total Stafford County	1337	%	18	19	24	16	8	7	1	4	1	-	-	-	1	-	1	1	-	1	2	1		-	-	b,- c,-		
			acres	235.8	259.7	321.1	215.7	111.2	10.0	8.3	57.1	11.3	1.9	2.7	2.2	13.4	2.0	14.8	13.0	0.4	13.3	30.1	6.9		6.3		b,- c,0.3		

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

Index to Marsh Locations

	Page
Accokeek Creek	18
Lower	21, 22
Upper	21, 22
Aquia Creek	24
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