1974

Shoreline Situation Report Northampton County, Virginia

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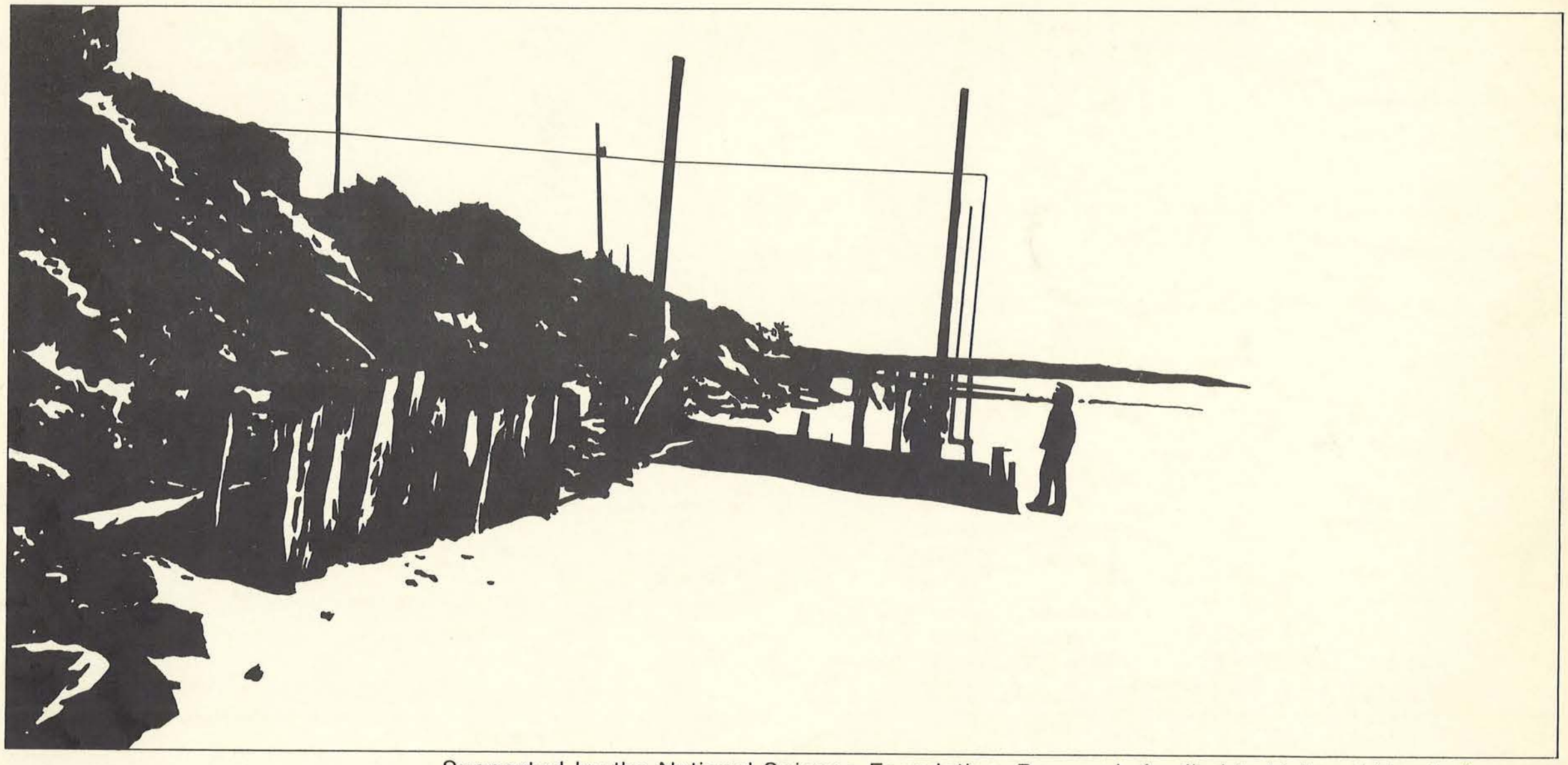
Shoreline Situation Report

NORTHAMPTON COUNTY, VIRGINIA



Supported by the National Science Foundation, Research Applied to National Needs Program
NSF Grant Nos. GI 34869 and GI 38973 to the Chesapeake Research Consortium, Inc.

Chesapeake Research Consortium Report Number 9

Special Report In Applied Marine Science and Ocean Engineering Number 54 of the

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William J. Hargis Jr., Director
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NORTHAMPTON COUNTY, VIRGINIA

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CHAPTER 1
Introduction

CHAPTER 2
Approach Used and Elements Considered

may, for example, have maximum value as a buffer to wave erosion of the fastland. An extensive marsh, on the other hand is likely a more efficient transporter of detritus and other food chain materials due to its greater drainage density than an embayed marsh. The central point is that planners, in the light of ongoing and future research, will desire to weight various functions of marshes and the physiographic delineation aids their decision making by denoting where the various types exist. The classification used is:

Beach

Marsh

Fringe marsh, <400 ft. (122 m) in width along shores

Extensive marsh

Embayed marsh, occuping a drowned valley or reentrant

Artificially stabilized

Fastland Zone

The zone extending from the landward limit of the shore zone is termed the fastland. The fastland is relatively stable and is the site of most material development or construction. The physiographic classification of the fastland is based upon the slope of the land near the water as follows:

Low shore, 20-ft. (6 m) contour >400 ft. (122 m) from fastlands shore boundary

Moderately low shore, 20-ft. (6 m) contour <400 ft. (122 m); with or without cliff

Moderately high shore, 40-ft. (12 m) contour <400 ft. (122 m); with or without cliff

High shore, 60-ft. (18 m) contour <400 ft. (122 m); with or without cliff

Dune

Artificial fill, urban and otherwise

Nearshore Zone

The nearshore zone extends from the shore zone to the 12-foot (MLW datum) contour. In the smaller tidal rivers the 6-foot depth is taken as the reference depth. The 12-foot depth is probably the maximum depth of significant sand transport by waves in the Chesapeake Bay area. Also, the distinct drop-off into the river channels begins roughly at the 12-foot depth. The nearshore zone includes any tidal flats.

The class limits for the nearshore zone classifications were chosen following a simple statistical study. The distance to the 12-foot underwater contour (isobath) was measured on the appropriate charts at one mile intervals along the shorelines of Chesapeake Bay and the James, York, Rappahannock, and Potomac Rivers. Means and standard deviations for each of the separate regions and for the entire combined system were calculated and compared. Although the distributions were non-normal, they were generally comparable, allowing the data for the entire combined system to determine the class limits.

The calculated mean was 919 yards with a standard deviation of 1,003 yards. As our aim was to determine general, serviceable class limits, these calculated numbers were rounded to 900 and 1,000 yards respectively. The class limits were set at half the standard deviation (500 yards) each side of the mean. Using this procedure a narrow nearshore zone is one 0-400 yards in width, intermediate 400-1,400, and wide greater than 1,400.

The following definitions have no legal significance and were constructed for our classification purposes:

Narrow, 12-ft. (3.7 m) isobath located <400 yards from shore

Intermediate, 12-ft. (3.7 m) isobath 400-1,400 yards from shore

Wide, 12-ft. (3.7 m) isobath >1,400 yards

Subclasses: with or without bars
with or without tidal flats
with or without submerged vegetation

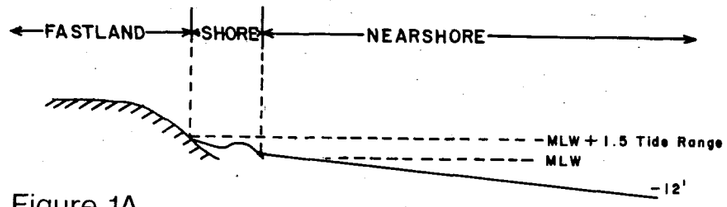


Figure 1A

An illustration of the definition of the three components of the shorelands.

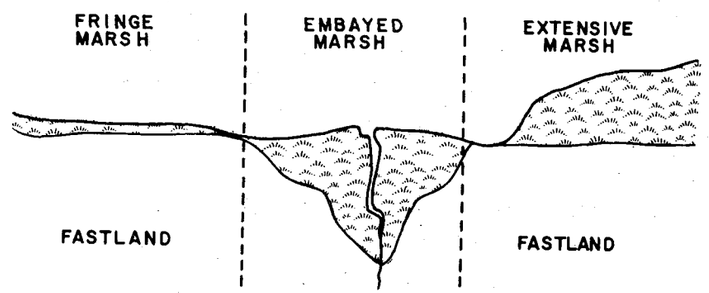


Figure 1B

A generalized illustration of the three different marsh types.

(see Virginia State Water Control Board, Water Quality Standards 1946, amended 1970), they are used here because the Bureau of Shellfish Sanitation provides the best areawide coverage available at this time. In general, any waters fitting the satisfactory or intermediate categories would be acceptable for water recreation.

e) Zoning

In cases where zoning regulations have been established the existing information pertaining to the shorelands has been included in the report.

f) Shore Erosion and Shoreline Defenses

The following ratings are used for shore erosion:

slight or none - less than 1 foot per year
moderate - - - - 1 to 3 feet per year
severe - - - - - greater than 3 feet per year

The locations with moderate and severe ratings are further specified as being critical or noncritical. The erosion is considered critical if buildings, roads, or other such structures are endangered.

The degree of erosion was determined by several means. In most locations the long term trend was determined using map comparisons of shoreline positions between the 1850's and the 1940's. In addition, aerial photographs of the late 1930's and recent years were utilized for an assessment of more recent conditions. Finally, in those areas experiencing severe erosion, field inspections and interviews were held with local inhabitants.

The existing shoreline defenses were evaluated as to their effectiveness. In some case repetitive visits were made to monitor the effectiveness of recent installations. In instances where existing structures are inadequate, we have given recommendations for alternate approaches. Furthermore, recommendations are given for defenses in those areas where none currently exist. The primary emphases is placed on expected effectiveness with secondary consideration to cost.

g) Potential Shore Uses

We placed particular attention in our study on evaluating the recreational potential of the shore zone. We included this factor in the consideration of shoreline defenses for areas of high recreational potential. Furthermore, we gave consideration to the development of artificial beaches, if this method were technically feasible at a particular site.

h) Distribution of Marshes

The acreage and physiographic type of the marshes in each subsegment is listed. These estimates of acreages were obtained from topographic maps and should be considered only as approximations. Detailed county inventories of the wetlands are being conducted by the Virginia Institute of Marine Science under the authorization of the Virginia Wetlands Act of 1972 (Code of Virginia 62.1-13.4). These surveys include detailed acreages of the grass species composition within individual marsh systems. The material in this report is provided to indicate the physiographic types of marshes and to serve as a rough guide on acreages until detailed surveys are completed. Additional information of the wetlands characteristics may be found in Coastal Wetlands of Virginia: Interim Report by Marvin L. Wass and Thomas D. Wright, SRAMSOE Report No. 10, Virginia Institute of Marine Science, 1969, and in other VIMS publications.

i) Flood Hazard Levels

The assessment of tidal flooding hazard for the whole of the Virginia tidal shoreland is still incomplete. However, the United States Army Corps of Engineers, has prepared reports for a number of localities which were used in this report. Two tidal flood levels are customarily used to portray the hazard. The Intermediate Regional Flood is that flood with an average recurrence time of about 100 years. An analysis of past tidal floods indicates it to have an elevation of approximately 8 feet above mean water level in the Chesapeake Bay area. The Standard Project Flood level is established for land planning purposes which is placed at the highest probable flood level.

j) Shellfish Leases and Public Grounds

The data in this report shows the leased and public shellfish grounds as portrayed in the Virginia State Water Control Board publication "Shellfish growing areas in the Commonwealth of Virginia: Public, leased and condemned," November 1971, and as periodically updated in other similar reports. Since the condemnation areas change with time they are not to be taken as definitive. However, some insight to the conditions at the date of the report are available by a comparison between the shellfish grounds maps and the water quality maps for which water quality standards for shellfish were used.

CHAPTER 3
Present Shorelands Situation

3.2 SHORE EROSION PROCESSES AND PATTERNS; SHORE DEFENSES

The magnitude of shore erosion in Northampton County must be classed as severe. Where buildings and other structures are endangered, the situation is critical. Map 1E is a summary of the erosion situation. As the erosion characteristics of the Chesapeake Bay shores and the ocean shores differ, they will be discussed separately.

3.21 The Chesapeake Bay Shore. Before going into a description of the erosion characteristics it is worthwhile to discuss the processes causing erosion and deposition.

Processes. Waves generated by local wind action are the dominate agent of erosion within the Chesapeake Bay and its tributary estuaries (e.g. The James River). The growth and height of the waves is controlled by four factors: the over water distance across which the wind blows, known as the fetch; the speed of the wind; the duration of the wind; and the depth of the water.

Due to the weather patterns affecting the Chesapeake Bay area, peak winds occur during frontal passages and storms. In Northampton County the most severe erosion occurs during the times of northwest and north winds associated with the passage of fronts. To a lesser extent (the southwest and south) summer regional winds also generate wave activity but the destructive wave action is greater with the northerly winds.

The winds of northeast storms during the fall, winter, and early spring generate waves which attack the western shore of the Bay. The winds and the low barometric pressure along the ocean coastline have an additional, indirect effect on the Bay System erosion patterns during the storms by forcing additional water into the Bay. Frequently this local "wind tide" or storm surge may be two or three feet above the normal tide level. For example, the severe northeast storm of March 1962 caused water elevations in Norfolk Harbor to reach an elevation of 7.4 feet above mean sea level. This elevation is approximately 6 feet higher than the average spring tide. When this occurs the wave driven erosional action is concentrated higher on the fastland, above the beach which normally acts as a buffer.

After a storm passes, the winds frequently shift to the northwest and north. In this case the eastern shore of the Bay is exposed to intense wave action. In some cases this occurs before the extra water in the Bay has had sufficient time to drain out of the Bay resulting again in the wave activity being concentrated above the usual beach level. These effects of storms are, of course, further enhanced if they occur in conjunction with the higher spring tides during the lunar month.

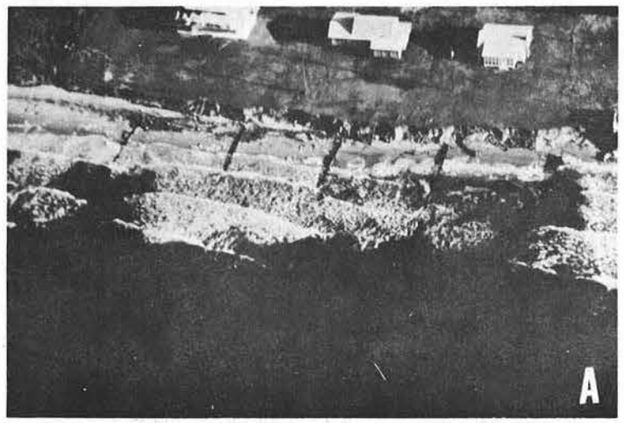
In addition to the height of the waves, the direction at which they impinge upon the shore controls the magnitude of transport along the shoreline, a factor which is central to the question of shoreline stability. In theory, the transport of material along the beach is greatest when the waves break on the shoreline at an angle of 45 degrees. Consider a hypothetical case of a shoreline several miles in length where the fastland is a bluff composed of a mixture of stratified gravel, sand, silt, and clay, a situation which is typical of much of Northampton Bay shoreline. Under wave attack, particularly if the water level is high due to the tide or storm surge, the cliff itself may be undercut causing face material to slump to the base. Continued wave action on the slumped material would winnow away the silts and clays leaving the sand and gravel to form a beach. Some of the sand and gravel will be transported along the beach (littoral drift). The beach itself acts as a buffer to wave energy as the waves break and run up and back down the sloping foreshore. If there is sufficient sand drifting along the shore zone from the up-drift segment of the coast, the beach at any given site may remain full enough to cushion the effects of a particular storm. If, however, the sand supply up-drift is stopped for one reason or another the buffer effect is reduced and erosion will ensue.

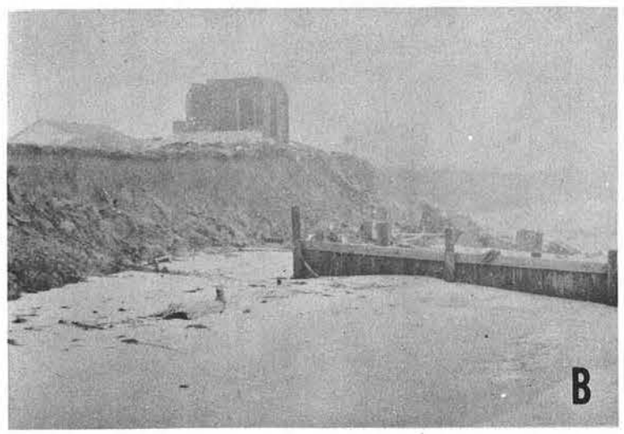
Much of the sand drifted along the Virginia coastline ultimately is deposited as spits or bars in front of lesser tributary creeks where it may contribute to the choking off of the entrance channel.

The erosional behavior of any particular segment of shoreline may be expected to vary from year to year depending upon the frequency and the intensity of storms. Furthermore, similar variability may also arise from differences in average mean sea level elevations. The long term (decades) trend is for a relative rise in sea level. In the lower Chesapeake Bay the trend is about 0.01 ft./yr. However, yearly variations of 0.15 ft./yr. are not uncommon. Although these differences are small they can be significant in terms of horizontal distances across a gently sloping shore. The long term trend has dramatic consequences.

The role played by beaches in the physical processes of the coastline merits reiteration: beaches are natural land forms which serve to absorb inci-

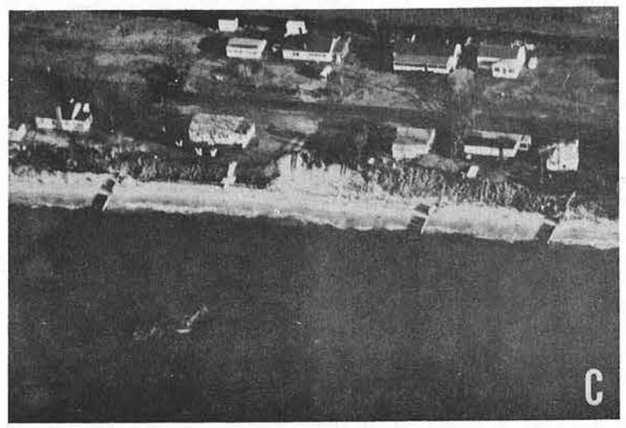
PLATE I

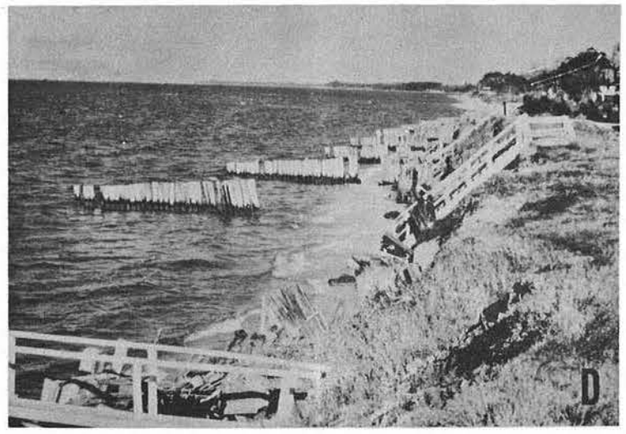




A Tankards Beach Groin System

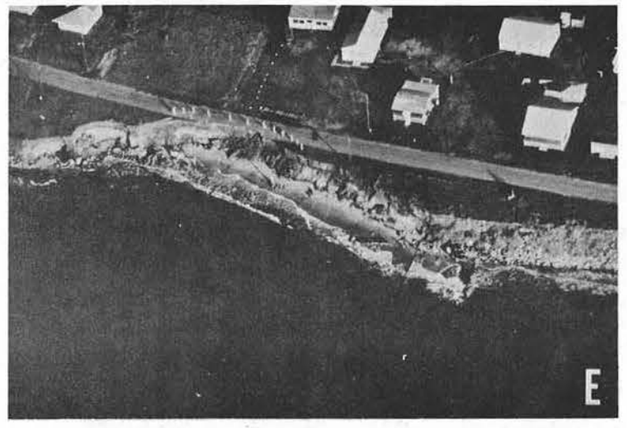
B Tankards Beach May 8, 1973





C Smith Beach Groin System

D Railroad Tie Groins, Smith Beach



E Silver Beach

F Silver Beach Displaced Well

should be used in conjunction with riprap or bulkhead if the maintenance of a beach is desired along with bluff protection. If the groins are successful in trapping sand, the beach thus formed, protects the riprap or bulkhead face.

Although the planning of shore erosion defenses for any particular segment of the Bay shoreline of Northampton County requires detailed evaluation, it is possible to recommend certain generalized guidelines:

a) In those areas experiencing rapid bluff recession and where there is limited up-drift sand supply, the application of groins alone should be discouraged.

b) If bluff stabilization is the main objective, properly designed bulkheading or stone riprap should be used. If possible these installations should be augmented with a groin system to establish a beach for frontal protection.

c) If possible the individual groins in a groin system should be placed in a time sequential manner with the most down-drift groin being the first installed. In those cases where groins alone are being utilized, this procedure will reduce the likelihood of flanking. Furthermore, the observed trapping characteristics will assist in the determination of the spacing between groins.

d) Where possible, groin systems should be artificially filled with sand in order to establish sand by-passing to the down-drift shoreline as soon as possible.

Finally, it must be emphasized that installation of shore defenses in one location generally has an impact on the adjacent down-drift shoreline. The impact can be both direct and indirect. In the case of bluff stabilization by bulkheads or riprap, the act of stabilization removes a source of sand which normally would pass to down-drift beaches. The installation of groin fields is a more aggressive action with a correspondingly greater impact on down-drift beaches as it prevents by-passing of sand until the system is filled.

In all cases shore erosion defenses should be planned under the guidance of persons trained or experienced in coastal processes.

3.22 Ocean shoreline. The ocean shoreline of Northampton County is characterized by a series of six, low-lying barrier islands. The inlets which separate the islands flush the interior marsh and lagoon complexes. For the greater part, the islands are simple, low-lying, marsh segments with backshore dunes and an oceanside veneer of sand. As the littoral drift is relatively small, the situation is one of pronounced erosion. However, local dynamics related to the deep tidal inlets cause accretion on the northern ends of Hog and Cobb Island.

It is essential to understand the processes of oceanside erosion before discussing erosion rates or potential utilization of the islands. It is particularly important to consider what happens during coastal storms.

Along the Virginia coastline the most damaging storms are the "northeasters" and the occasional hurricanes. Aside from the intense wave action there is generally a one to three-foot storm surge. The surge has two important effects. The erosive power of the waves is translated further up onto the island allowing the high waves to wash backshore dune sand into the ocean and to smear sand over the marsh surface. The sand washed over the marsh raises the ground elevation. In time, the highly productive marsh grass is replaced by other species, and the sand in the washovers is temporarily lost from active beach littoral transport system. The washovers can also affect the circulation within the marshes and bays by filling some of the tidal channels and forcing a redistribution of flow. The surge and high waves may also breech the islands, possibly causing new inlets to form.

These processes are natural responses of the barrier islands. As the shoreface retreats, former marsh deposits are excavated, and the washover deposits and wind-shaped dunes supply sand to the beach. The physiographic components one finds on the islands today, beach, dunes, and washovers, existed a century ago even though the entire ensemble is retreating. The ocean side erosion rates on an island by island basis, are:

Hog Island	- North end, accretion at 9 ft./yr. South end, erosion at 18 ft./yr.
Cobb Island	- Erosion at 16 ft./yr.
Wreck Island	- Erosion at 34 ft./yr.
Ship Shoal Island	- Irregular, quasi-stable
Myrtle Island	- Erosion at 19 ft./yr.
Smith Island	- Erosion at 23 ft./yr.

These rates were determined by comparison of the shoreline positions in 1852 and 1962. The magnitude of erosion in any given year, of course, is

controlled by the frequencies and characteristics of the storms during that year. Two over-riding facts must be borne in mind when considering the barrier island erosion problem:

1) Mean sea level is rising.
2) The barrier islands are not receiving a large supply of sand from the north to feed the dominantly southerly littoral drift.

The consequences of these facts is an eroding shoreline.

There have been no attempts at shoreline stabilization of the barrier islands with the exception of isolated, no longer active instances to enhance the growth of backshore dunes on Hog Island. Any suggestions of effective shoreline stabilizations procedures must be predicted on the particular management goals. If the goal were to check further shoreline retreat, the installation of bulkheads with groins would likely be the most successful approach. Costs for this action would approach one million dollars per statute mile and expensive periodic maintenance would be required. The installation of a uniform dune line would inhibit the overwashing and the breeching of the islands. However, the trade-offs in such an approach must be fully realized. The washover process carries sand to the back side of the islands and it is through this mechanism that the island is maintained. Since the installation and maintenance of a dune line inhibits washovers but does not, in itself, stop foreshore erosion, the long term trend would be a reduction in island width.

3.23 Interior oceanside shoreline. The shoreline on the western fringe of the barrier island-marsh-lagoon complex is, to a large extent, protected by fringe or extensive marshes and, therefore, is relatively stable. In those areas without frontal marsh, the rate of erosion is generally very slight due to the limited fetch and shallowness of the adjacent bays.

3.3 Shore use potential and unique features.

3.31 Chesapeake Bay shore. The shorelands of the Bay shore offer many attractive sites for residential development and for private and public recreational facilities. The most outstanding area for recreational potential is the four mile reach which includes Kiptopeke Beach, Butler's Bluff and the dunes north of Pond Drain (Subsegments 1C, 1D, 1E respectively). Although the old ferry pier at Kiptopeke is in rather poor repair, the pier and the surrounding wide beach areas have the potential for a major recreational area including bathing, camping, fishing, sailing, water skiing, and for a limited marina. Land access is very good and there is ample room for supporting amenities. The Butler's Bluff section also offers outstanding potential with scenic views from or to the raw bluff which ranges in height from 20 to 55 feet.

The beach is rather narrow but widening could be achieved without technical difficulty. Widening the beach would also reduce erosion of the bluff. The Pond Drain section, with a wide, stable beach, also offers the full range of normal beach activities. The highlight in this section is the relict sand dune system, rising as much as 50 feet above sea level. The beach sand in the Kiptopeke - Pond Drain reach is of high quality for sun-bathing and swimming.

Another, more extensive sand dune system is located near Custis Pond (Subsegment 4C). This system and that at Pond Drain are unique features which should be preserved. The Custis Pond site is also very favorably suited for development as a shore zone recreational area. Access to the dune area should be severely limited in order to maintain the dunes in their natural state.

Plate 1 Kiptopeke Ferry Pier

As mentioned earlier, there are many sites suitable for residential development provided the water and soils are satisfactory. However, in those areas where there is a significant erosion problem, a coordinated program for erosion prevention and beach enhancement should be part of the development projects.

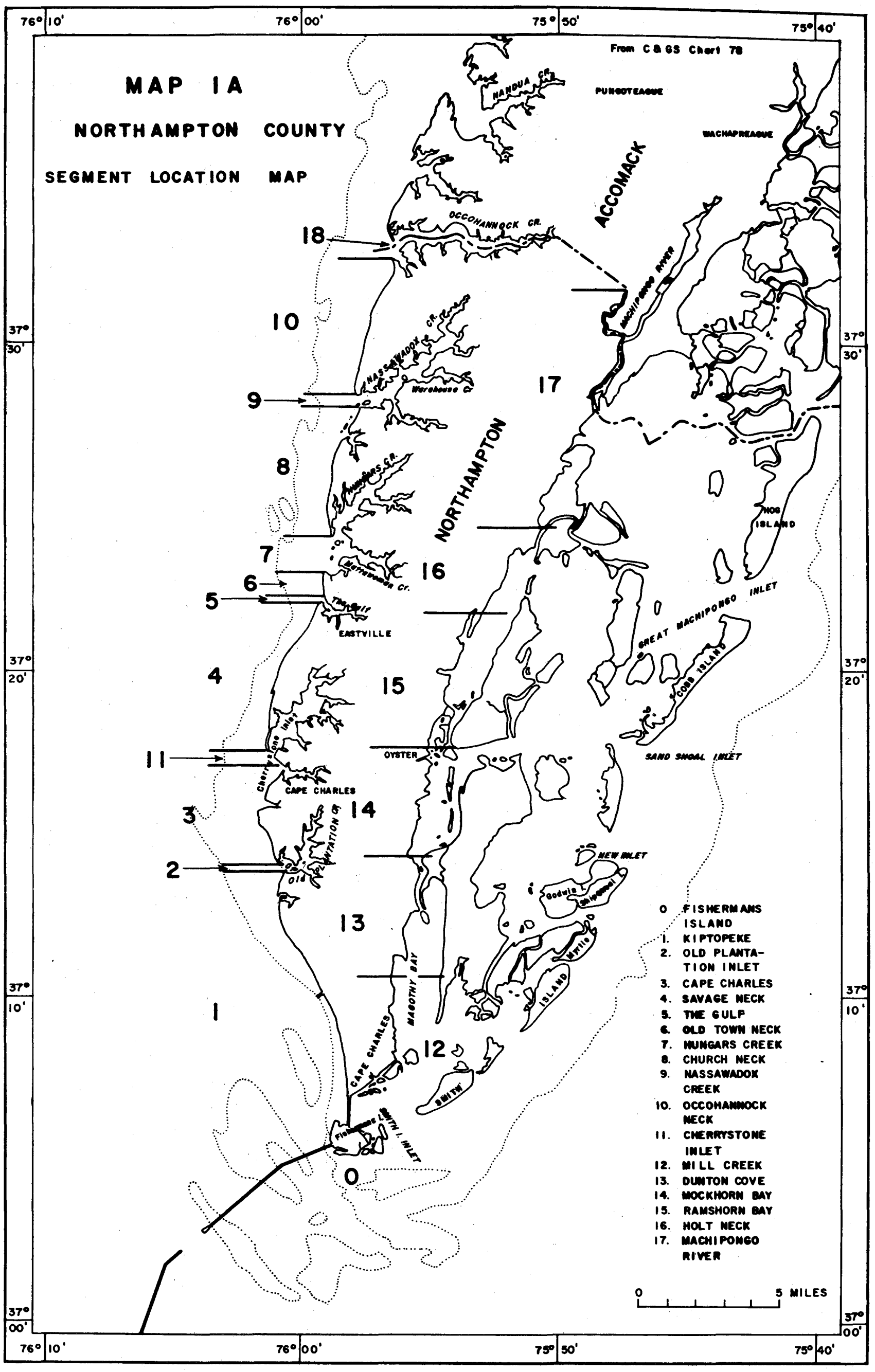
3.32 Ocean shore. The fact that the barrier islands are very low in elevation and are subject to extreme erosion and tidal flooding dictates that they should not be considered for commercial recreational or residential development. Their present status as a preserved area should be continued. Limited access areas should be established on some of the islands for day trip usage of the beach for swimming, surf-fishing, and bird watching.

As the barrier islands of Virginia now represent the only remaining undeveloped barrier system between New York and Cape Hatteras it may be anticipated that this area will become increasingly attractive to the public. Thus, it is reasonable to expect an increasing demand for tourist facilities along the interior shore of the marsh-lagoon-barrier island complex.

MAP 1A

NORTHAMPTON COUNTY

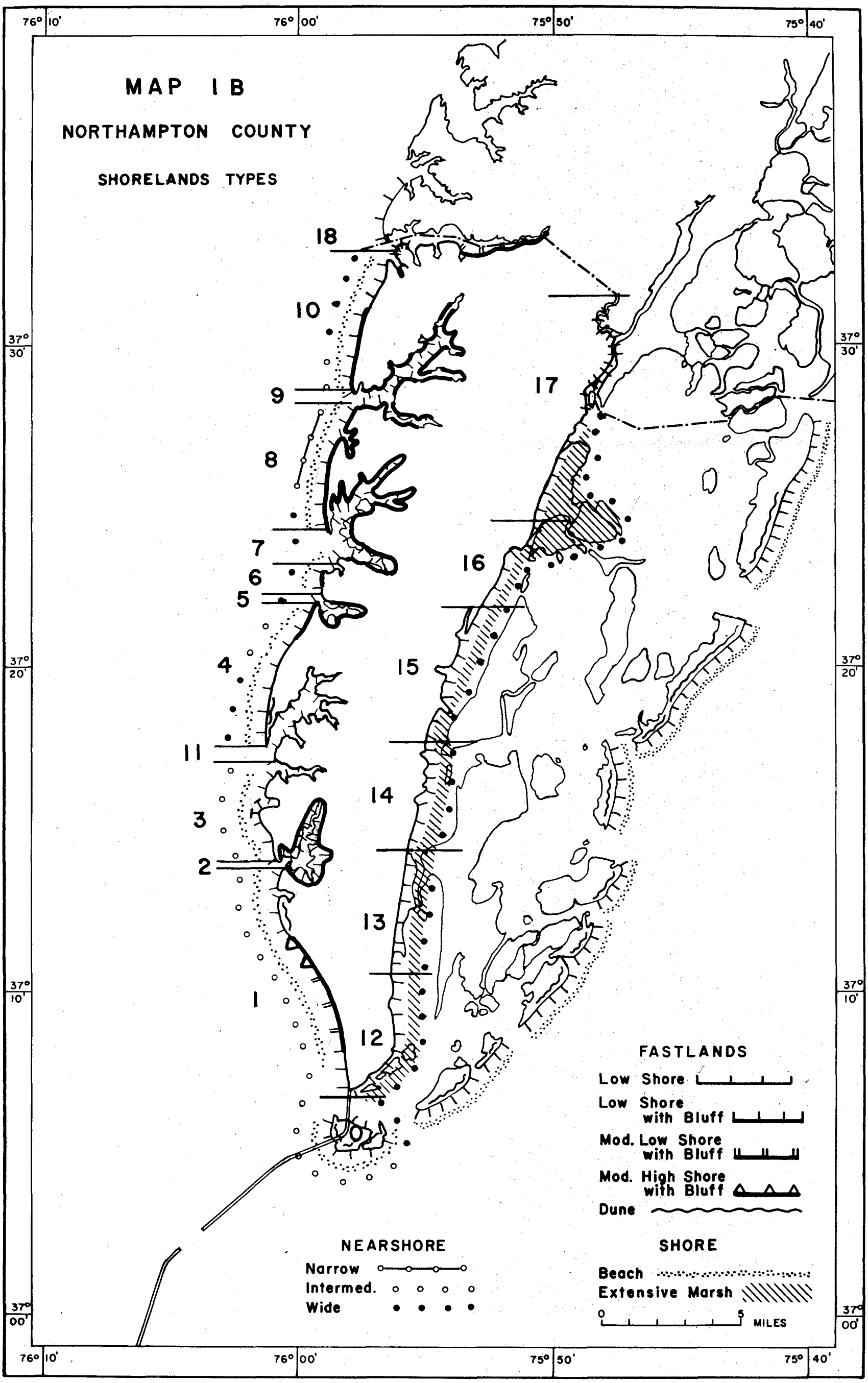
SEGMENT LOCATION MAP



MAP 1B

NORTHAMPTON COUNTY

SHORELANDS TYPES



MAP IC

NORTHAMPTON COUNTY

SHORELAND USES AND OWNERSHIP

From C & GS Chart 78

76° 10' | 76° 00' | 75° 50' | 75° 40'

37° 30' | 37° 20' | 37° 10' | 37° 00'

MARINAS

- Without ramp
- With ramp
- Ramp only

PUNGOTEAGUE
WACHAPREAGUE
NANDUA CR.
ACCOMACK
OCCOHANNOCK CR.
MACHIPONGO RIVER
NASSAWADOX
Warehouse Cr
NORTHAMPTON
HUNGARS CR.
HOG ISLAND
Matthews Cr.
The Gut
EASTVILLE
GREAT MACHIPONGO INLET
COBB ISLAND
Cherrystone Inlet
OYSTER
SAND SHOAL INLET
CAPE CHARLES
PLANTATION CR.
NEW INLET
Godwin
ShipShoal
MAGOTHY BAY
Myrtle
ISLAND
CAPE CHARLES
SMITH
Fishermans
SMITH I. INLET

18 10 9 8 7 6 5 4 11 3 2 1 0 17 16 15 14 13 12

USES

Agricultural = A
Commercial = C
Industrial = I
Governmental = G
Preserved = PR
Recreational = RC
Residential = RS
Unmanaged:
Unwooded = U
Wooded = W

OWNERSHIP

Private = 1
Federal = 2
State = 3

0 5 MILES

MAP ID

NORTHAMPTON COUNTY

SHELLFISH GROUNDS

WATER QUALITY

AND

WASTE DISCHARGES

From C & GS Chart 78

76° 10' 76° 00' 75° 50' 75° 40'

37° 30' 37° 20' 37° 10' 37° 00'

PUNGOTEAGUE

WACHAPREAGUE

ACCOMACK

NANDUA CR.

OCCOHANNOCK CR.

MACHIPONGO RIVER

NASSAWADDOX CR.

Warehouse Cr

HUNGARS CR.

NORTHAMPTON

HOG ISLAND

Cottawomen Cr.

The Gulf

EASTVILLE

MACHIPONGO INLET

GREAT

COBB ISLAND

OYSTER

SAND SHOAL INLET

CAPE CHARLES

Old Plantation Cr.

NEW INLET

Godwin I.

Ship Shoal

Myrtle

ISLAND

CAPE CHARLES

SMITH

SMITH I. INLET

18 10 9 8 7 6 5 4 11 1 3 2 1 S

17 16 15 14 13 12 0

SHELLFISH (OYSTER) GROUNDS:

Public

Leased

Condemned

WATER QUALITY:

Satisfactory = S

Intermediate = I

Unsatisfactory = U

WASTE DISCHARGES

Domestic

Industrial

0 5 MILES

MAP 1E

NORTHAMPTON COUNTY

SHORELINE EROSION SITUATION

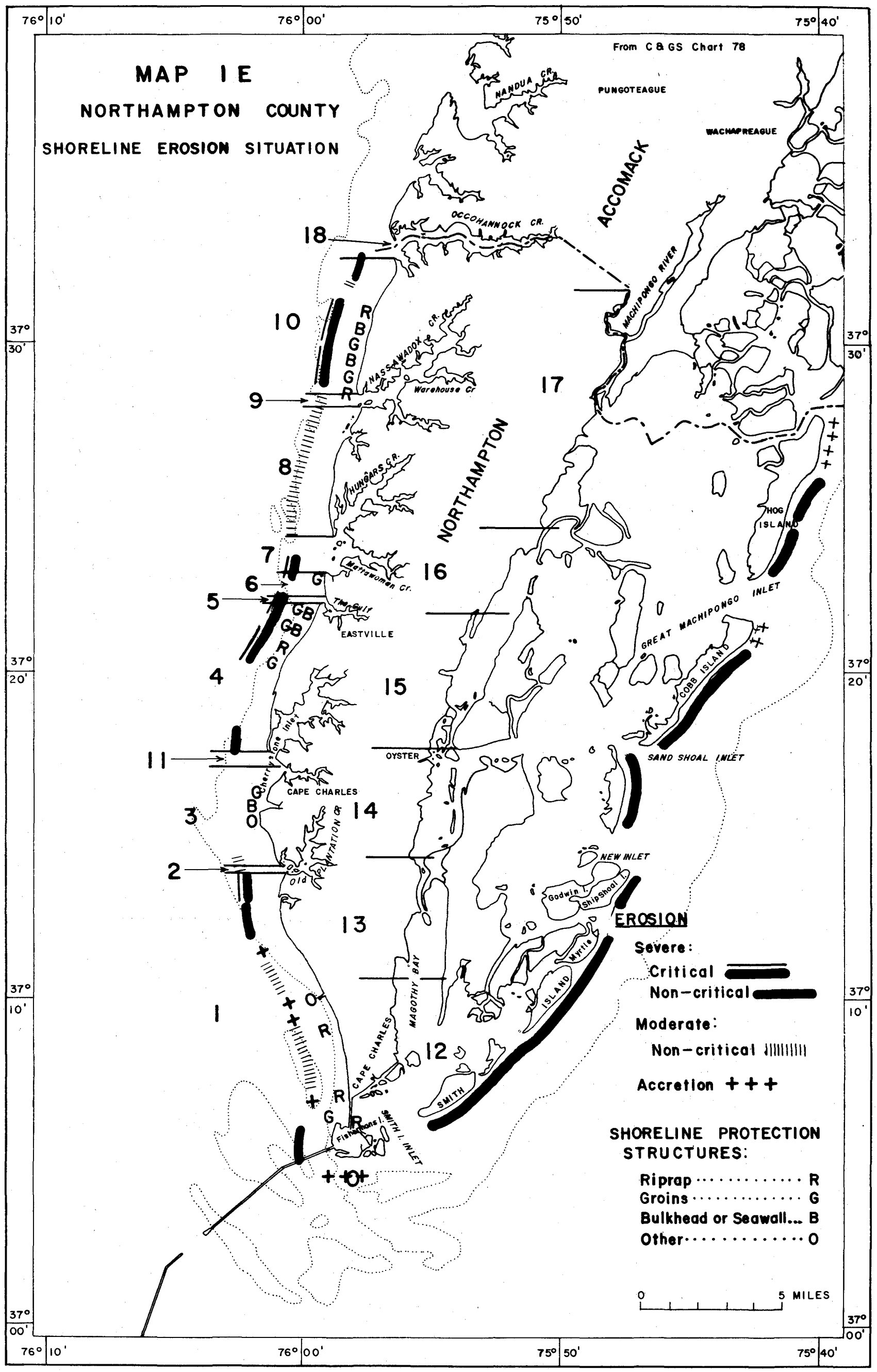


TABLE 1 SUMMARY OF NORTHAMPTON COUNTY SHORELANDS PHYSIOGRAPHY, FASTLAND USE AND OWNERSHIP (STATUE MILES)

Physiographic, use and ownership classification / Segment	SHORELANDS PHYSIOGRAPHY														FASTLAND USE								FASTLAND OWNERSHIP					TOTAL MILES
	FASTLANDS						SHORE					NEARSHORE																
	Primary				Secondary																							
	LOW SHORE	LOW SHORE WITH BLUFF	MODERATELY LOW SHORE WITH BLUFF	MODERATELY HIGH SHORE WITH BLUFF	DUNES	ARTIFICIAL FILL	BEACH	FRINGE MARSH	EMBAYED MARSH	EXTENSIVE MARSH	ARTIFICIALLY STABILIZED	NARROW	INTERMEDIATE	WIDE	AGRICULTURAL	COMMERCIAL	INDUSTRIAL	GOVERNMENT	PRESERVE	RECREATIONAL	RESIDENTIAL	UNMANAGED	PRIVATE	FEDERAL	STATE	COUNTY	CITY	
CHESAPEAKE BAY SHORE																												
0	6.1				3.0		4.6			1.5		1.0	1.7	3.4					6.1				6.1					6.1
1	6.4		3.0	1.3	2.4		8.7	0.6	1.4			0.8	5.7	2.1	3.0							7.8	10.3	0.4				10.7
2	0.6	13.0					0.2	11.1	2.3						13.6								13.6					13.6
3	6.1	6.4			1.1	1.8	3.7	6.5	1.4		0.9	0.8	2.7		8.7	0.9	0.5				0.5	1.9	12.4				0.1	12.5
4	3.1	2.5			3.1		5.6						4.4	1.2	1.5						1.5	2.6	5.6					5.6
5	0.3	6.6						6.1	0.8						6.9								6.9					6.9
6		1.2			0.3		0.7	0.5						1.2							0.6	0.6	1.2					1.2
7		36.6						29.2	7.4						36.6								36.6					36.6
8	0.5	9.6			1.0		4.0	5.3	0.8				2.7	2.2	8.5						0.6	1.0	10.1					10.1
9		46.2						36.9	9.3						44.0						2.2		46.2					46.2
10	2.3	2.7					4.6	0.3	0.1				1.4	3.6	1.5					0.7	1.4	1.4	5.0					5.0
11	20.7						2.1	12.9	5.7						19.7					0.5	0.5		20.7					20.7
18	10.0		8.5					16.0	2.5						17.6	0.3					0.6		18.5					18.5
SUBTOTAL	56.1	124.8	11.5	1.3	10.9	1.8	34.2	125.4	31.7	1.5	0.9	2.6	18.6	13.7	161.6	1.2	0.5		6.1	1.2	7.9	15.3	187.1	6.5		0.1		193.7
% of SHORELINE	29.0	64.4	5.9	0.7	5.6	0.9	17.6	64.7	16.4	0.8	0.5	1.3	9.6	7.0	83.4	0.6	0.3		3.1	0.6	4.1	7.9	96.6	3.3		0.1		

TABLE 1 (CONTINUED) SUMMARY OF NORTHAMPTON COUNTY SHORELANDS PHYSIOGRAPHY, FASTLAND USE AND OWNERSHIP (STATUE MILES)

Physiographic, use and ownership classification / Segment	SHORELANDS PHYSIOGRAPHY															FASTLAND USE								FASTLAND OWNERSHIP					TOTAL MILES
	FASTLAND							SHORE					NEARSHORE																
	Primary					Secondary																							
	LOW SHORE	LOW SHORE WITH BLUFF	MODERATELY LOW SHORE WITH BLUFF	MODERATELY HIGH SHORE WITH BLUFF	DUNES	ARTIFICIAL FILL		BEACH	FRINGE MARSH	EMBAYED MARSH	EXTENSIVE MARSH	ARTIFICIALLY STABILIZED	NARROW	INTERMEDIATE	WIDE	AGRICULTURAL	COMMERCIAL	INDUSTRIAL	GOVERNMENT	PRESERVE	RECREATIONAL	RESIDENTIAL	UNMANAGED	PRIVATE	FEDERAL	STATE	COUNTY	CITY	
INTERIOR OCEANSIDE SHORE																												
12	6.2							0.2			6.0				6.2	0.3			2.1				3.8	4.1	2.1				6.2
13	4.1										4.1				4.1	0.1							4.0	4.1					4.1
14	5.9						0.2									5.4	0.3					0.2		5.9					5.9
15	6.1								1.3	1.0	3.8			2.0	4.1	1.3							4.8	6.1					6.1
16	4.4									0.3	4.1				4.4								4.4	4.4					4.4
17	13.2								4.4	1.2	7.6		6.2		7.0	6.7	0.6					0.4	5.5	13.2					13.2
SUBTOTAL	39.9						0.2	0.2	5.7	2.5	25.6		6.2	2.0	25.8	13.8	0.9		2.1			0.6	22.5	37.8	2.1				39.9
% of SHORELINE	100.0						0.1	0.1	14.3	6.3	64.1		15.5	5.0	64.7	34.6	2.2		5.3			1.5	56.4	94.7	5.3				
BARRIER ISLANDS	27.8				27.8			27.8						27.8						27.8				24.7		3.1			27.8
SUBTOTAL	27.8				27.8			27.8						27.8						27.8				24.7		3.1			27.8
% of SHORELINE	100.0				100.0			100.0						100.0						100.0				88.8		11.2			
TOTAL	123.8	124.8	11.5	1.3	38.7	2.0		62.2	131.1	34.2	27.1	0.9	8.8	48.4	39.5	175.4	2.1	0.5	2.1	33.9	1.2	8.5	37.8	249.6	8.6	3.1		0.1	261.4
% of TOTAL SHORELINE	47.4	47.7	4.4	0.5	14.8	0.8		23.8	50.2	13.1	10.4	0.3	3.4	18.5	15.1	67.1	0.8	0.2	0.8	13.0	0.5	3.2	14.5	3.3		1.2			

Table 2A SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY County Summary - Chesapeake Bay

SEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNERSHIP	WATER QUALITY	FLOOD HAZARD	EROSION SITUATION	POTENTIAL USE ENHANCEMENT
0 FISHERMANS ISLAND	Fastland: Low shore with dunes. Shore: Sand beach - 57%; extensive marsh - 43%. Nearshore: Narrow to wide; some parallel bars at west.	Fastland: Preserved (wildlife refuge). Shore: Preserved (wildlife refuge). Nearshore: Fishing and boat traffic.	Federal	Satis-factory	High, non-critical, most of island; medium in areas with buildings.	Severe erosion, 25-40 ft/yr at west, not critical now, but needs groins; accretion of 15-50 ft/yr at south; no erosion at north; spits at east come and go.	Beach areas might be made available for shore recreation without undue interference to the refuge function of the interior of the island.
1 KIPTOPEKE	Fastland: Low shore with dunes - 36% (1E, F, H); low shore - 14% (1A); medium low shore with bluff - 35% (1A, B, C); medium high shore with bluff - 15% (1D). Shore: Narrow and thin sand beach - 69%; wide sand beach - 31% (1C and 1E). Nearshore: Intermediate to wide; with parallel bars and some tidal flats.	Fastland: Unmanaged, generally wooded - 80%; agricultural - 20%. Shore: Limited beach recreation. Nearshore: Boating, shellfishing, sport fishing.	Private 95% Federal 5%	Satis-factory	High, non-critical-31% (1A, E); medium-19% (1F, H); low-50% of the segment (1A, B, C, D).	Erosion ranges from none to severe, up to 5 ft/yr, averaging 2 ft/yr. Greatest loss is in 1F and 1H. Accretion (26 ft/yr) in 1C.	Moderate. In addition to the already wide beach at the ferry pier (1C) adjacent beaches could be widened with a suitable groin system for recreational purposes. The dune area (1E) is unique and should be preserved in its natural state as a public nature area.
3 CAPE CHARLES	Fastland: Low shore with some dunes (3B); low shore with bluff borders inner part of Kings Creek (3F). Shore: Narrow sand beach - 69% (3A, D, E); wide sand beach - 31% (3B); harbor artificially stabilized (3C); fringe and embayed marsh around Kings Creek (3F). Nearshore: Narrow to intermediate; sandy; with parallel bars.	Fastland: Agricultural-51%; unmanaged-29%; residential-15%; industrial-5%. Shore: Recreational-24%; commercial-8%; none-68%. Nearshore: Sport fishing, commercial fishing, shipping traffic, boating. Boating, shellfishing, waterfowl hunting in Kings Creek (3F).	Private 95% Town 5%	Inter-mediate in harbor vicinity; satis-factory else-where.	Medium	Maximum erosion 3 ft/yr (3A); minor erosion in 3D and 3E. Bulkhead and groins protect most of 3D, jetty holds sand at harbor entrance.	Moderate. At modest expense 3B, 3D & 3E might be improved for beach recreation. Care should be exercised to avoid pollution of Kings Creek (3F) by uncontrolled increase of marina facilities.
4 SAVAGE NECK	Fastland: Sand spit with low dunes-10% (4A); low shore with dunes-45% (4B, C); low shore with bluff-45% (4D). Shore: Narrow sand beach-70%; medium width sand beach-30% (4C). Nearshore: Intermediate to wide; with parallel sand bars more or less at a low angle to the shore in south 2/3; large tidal flat off north 1/3.	Fastland: Unmanaged-60%; agricultural-18%; residential-22%. Shore: Limited beach recreation, mostly in the north (4D). Nearshore: Sport fishing, commercial fishing (nets), shellfishing and some small boat traffic.	Private	Satis-factory	High, non-critical (4A, Wescoat Pt.); low to medium elsewhere.	Severe erosion, critical in 4D, rate varies between 7 and 20 ft/yr, with about 60 houses within 100 feet of bluff edge. Erosion protective structures are mostly ineffective, in fact, detrimental. Severe erosion, non-critical, north 1/3 of 4C. No erosion, 4B and in south 2/3 of 4C. Periodically severe erosion, noncritical in 4A.	High in 4C. The high dunes are unique and warrant preservation for public study and enjoyment. The beach in the area could be developed for public recreation. With effective erosion defense, additional bluff areas in 4D could be used for residential area.
6 OLD TOWN NECK	Fastland: Low shore with bluff-77% (north); with dunes-23% (south). Shore: Narrow sand beach-55%; interrupted at irregular intervals by fringe marsh-45%. Nearshore: Wide; with irregular bars and shoals.	Fastland: Unmanaged, wooded-50%; residential-50%. Shore: Limited beach recreation. Nearshore: Shellfishing.	Private	Satis-factory	Low	Severe erosion, 5-6 ft/yr, becoming critical in north 1/5, where housing exists. Elsewhere, no net loss. North end needs unified erosion protection program.	Moderate in southerly half for public recreation. Homesite development in north already taking place.
8 CHURCH NECK	Fastland: Low shore with some bluff-89% (8B-E); sand spit-11% (8A). Shore: Narrow sand beach-45% (8C, E); looped spit and sand beach-35% (8B); fringe marsh-20% (8A, B). Nearshore: Intermediate to wide; with large, southward migrating parallel bars at a low angle to shoreline.	Fastland: Agricultural-78% (8B, C, E); residential development-11% (8B); unmanaged-11% (8A). Shore: Limited beach recreation. Nearshore: Sport fishing, shellfishing, and pound nets.	Private	Satis-factory	High, non-critical on Great Neck Spit (8A). Low in the bluff area (89%).	Moderate erosion, 2-3 ft/yr, non-critical (8A, B, C, E). Some accretion also in 8B.	The spit areas should be left for recreation or nature study. The bay shore bluffs, if adequately protected from erosion, and the bluffs surrounding Westerhouse Creek (8D), are desirable residential areas.
10 OCCOHANNOCK NECK	Fastland: Low shore with bluff-54% (10A, B); low shore with scarp-46% (10C, D). Shore: Narrow to medium sand beach-95%; fringe marsh-5% (in 10D). Nearshore: Intermediate to wide; sandy; with multiple parallel bars.	Fastland: Agricultural-31%; residential-29%; unmanaged-27%; recreational (campgrounds)-13%. Shore: Beach recreation (10A,C); limited boat access (10A). Nearshore: Sport fishing, commercial fishing (pound nets), boating.	Private	Satis-factory	High, not critical, in part of 10D; medium in 10C (Battle Point residences could receive some flooding); low in 10A, B where most residential area is.	Severe erosion, 5-6 ft/yr over most of the segment; critical in 10A and somewhat in 10B and 10C. Shore erosion defense measures should be unified for best results.	Most potential is probably in seasonal residential development, provided adequate erosion protection is devised. A second potential exists in the possibility of developing public beach and park facilities near Sparrow Point (10D).

Table 2B SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY County Summary - Chesapeake Bay Tributaries

SEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNERSHIP	NAVAGABILITY	WATER QUALITY	FLOOD HAZARD	EROSION SITUATION	USE POTENTIAL ENHANCEMENT
2 OLD PLANTATION CREEK 670 acres 2.8 miles	Fastland: Low shore with bluff. Shore: Fringe and embayed marsh. Creek: Submerged meanders, dendritic branches, shallow.	Fastland: Agricultural. Shore: Incidental to boat use. Creek: Shellfishing, waterfowl hunting, fishing and boating.	Private	Poor. No maintenance, creek is silting in.	Satisfactory	High in vicinity of inlet, non-critical; medium at water's edge elsewhere; low to surrounding fastland properties.	Shoreline appears stable within the creek. Inlet spits subject to shifting and breaching.	Low. Improvements for navigation would be costly. Development would be likely to compromise water quality.
11 CHERRYSTONE INLET 1,706 acres 4 miles	Fastland: Low shore. Shore: Fringe and embayed marsh-90%; narrow sand beach-10%. Creek: Submerged meanders, dendritic branches, many shoals.	Fastland: Agricultural-95%; residential and recreational-5%. Shore: Incidental to boat use. Creek: Shellfishing, waterfowl hunting, fishing.	Private	Fair. An unbuoyed channel, 7 ft deep through inlet, extends with 4 ft depths to vicinity of Eyrehall Creek.	Satisfactory	High in lower half of inlet, non-critical; medium in upper half.	Shoreline is generally stable, except in vicinity of entrance (see 4A, Wescoat Pt., Savage Neck), and in the vicinity of Cherrystone (seawalls in need of repair).	Fair. Channel could be buoyed, but with over 85% of the area in oyster tracts, care should be taken to avoid damaging the shellfishery through increased boat traffic.
5 THE GULF 161 acres 1.8 miles	Fastland: Low shore, wooded with bluff. Shore: Fringe and embayed marsh. Creek: Submerged meanders, dendritic branches, marsh islands, shallow.	Fastland: Agricultural. Shore: Incidental to boating. Creek: Shellfishing, waterfowl hunting, boating.	Private	Poor. Channel narrow, winding into the inlet.	Intermediate	High at the inlet, non-critical; medium within creek; low to bordering fastland.	Shoreline is stable, no apparent problems.	Fair. Surrounding bluff areas might be developed for homesites with desirable overlook on The Gulf. Care should be exercised to prevent deterioration of shore conditions and waters of the creek.
7 HUNGARS CREEK 2,067 acres 4.3 miles	Fastland: Low shore with bluff. Shore: Fringe and embayed marsh. Creek: Submerged meanders, dendritic branches, shallow, marshy.	Fastland: Agricultural. Shore: Incidental to boating. Creek: Shellfishing, fishing, boating and waterfowl hunting.	Private	Good to fair. Channel through inlet of 7-ft depth marked by beacons and poles; 4-ft channel to Sparrow Pt. Elsewhere shallow.	Satisfactory	High at inlet, non-critical; medium within creek; low to surrounding fastland.	Shoreline is stable, no apparent problems.	Fair. Surrounding bluffs offer desirable sites for homesites. Limited navigability of creek, lack of present pollution, extensive oyster tracts recommend restraint in exploitation of creek.
9 NASSAWADOX CREEK 3,193 acres 6.5 miles	Fastland: Low shore with bluff. Shore: Fringe and embayed marsh. Creek: Submerged meanders, dendritic branches, shoals.	Fastland: Agricultural-95%; residential-5%. Shore: Incidental to boating. Creek: Shellfishing, fishing, hunting and boating.	Private	Poor. Channel narrow, winding, many shoals, unmarked except at entrance	Satisfactory	High in lower creek, non-critical; medium elsewhere in creek; low to bordering fastland.	Shoreline is generally stable. A small amount of erosion just east of Nassawadox Pt., partially stabilized by bulkheads.	Fair. Surrounding bluff area offers desirable sites for homes. Creek could be made more accessible to small craft by dredging and buoying, but with nearly half of the creek area in oyster tracts, caution should be exercised in exploitation to avoid pollution.
18 OCCOHANNOCK CREEK 1,916 acres 7 miles	Fastland: Low shore-50%; moderately low shore-50%. Shore: Fringe and embayed marsh. Creek: Submerged meanders, few branches, muddy bottom.	Fastland: Agricultural-95%; commercial and residential-5%. Shore: Incidental to boat use. Creek: Boating, waterfowl hunting, shellfishing.	Private	Fair. Channel narrow, winding but marked for 3 miles in creek, depth, 5 ft; depths to 3 ft to near head of creek, unmarked.	Satisfactory, spring 1973.	High in lower creek area, non-critical; medium in upper creek; low to bordering low bluff on upper creek.	Shoreline appears stable inside inlet.	Good for boating. More extensive marina facilities could be developed, channel improved. Upper creek borders offer good homesites.

Table 2C SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY County Summary - Oceanside Interior Shore

SEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNERSHIP	WATER QUALITY	FLOOD HAZARD	EROSION SITUATION	POTENTIAL USE ENHANCEMENT
12 MILL CREEK 6.2 miles	Fastland: Low shore. Shore: Extensive marsh-97%; medium width sand beach-3%. Nearshore: Shallow bay.	Fastland: Unmanaged, wooded-62%; military reservation-33%; agricultural-5%. Shore: Hunting, fishing, shellfishing, private and military boat landings. Nearshore: Fishing, shellfishing, Intracoastal Waterway traffic.	Federal 33% Private 67%	Satisfactory	High over the marshes, non-critical; medium at the Air Force Station, would be critical with a major flood.	No erosion problems observed. There appears to be slight accretion on the beach east of Wise Point.	Low. There are no beaches of consequence; the shellfishing industry has failed; low-lying land is not desirable for homesite development at present.
13 DUNTON COVE 4.1 miles	Fastland: Low shore. Shore: Extensive marsh. Nearshore: Shallow bay.	Fastland: Unmanaged, wooded-98%; agricultural-2%, near the shore. Agricultural inland. Shore: Hunting, shellfishing, fishing; there is a declining shellfish industry near the south end of the segment. Nearshore: Shellfishing, fishing, Intracoastal Waterway traffic.	Private	Satisfactory	High over the marshes, non-critical; medium at Bulls and Steelmans Landings; low elsewhere.	No erosion problems observed.	Low. Low-lying fastland subject to flooding.
14 MOCKHORN BAY 4.7 miles	Fastland: Low shore. Shore: Extensive marsh, scalloped. Nearshore: Shallow bay, tidal flats.	Fastland: Narrow, unmanaged, wooded-90%; agricultural-8%; residential-commercial-2%. Agricultural land behind. Shore: Hunting, fishing, shellfishing on open marsh and in channels; piers, boat ramps for pleasure and commercial craft at Oyster. Nearshore: Shellfishing and fishing; Intracoastal Waterway traffic.	Private	Satisfactory	High over the marshes, non-critical; high to medium, critical, at Oyster in major flood, low elsewhere.	No erosion problems observed.	Low. Some potential may exist for increasing transient yacht business at Oyster. The marshes should be protected against any artificial development.
15 RAMSHORN BAY 5.1 miles	Fastland: Low shore. Shore: Fringe marsh-2%; extensive marsh-89%; embayed marsh-9%. Nearshore: Shallow bay, tidal flats.	Fastland: Unmanaged, wooded strip along shore-85%; agricultural-10%; creek inlets-5%. Agricultural behind. Shore: Shellfishing, hunting. Nearshore: Shellfishing and fishing.	Private	Satisfactory	High over marsh areas non-critical; low for the fastland.	No erosion problems observed.	Low. There appears to be no incentive at this time to develop the fastland area further.
16 HOLT NECK 4.4 miles	Fastland: Low shore, terraced. Shore: Extensive marsh-95%; embayed marsh-5%. Nearshore: Shallow bay, tidal flats.	Fastland: Unmanaged, wooded zone borders the shore, with agricultural land behind. Shore: Hunting, shellfishing, fishing. Nearshore: Fishing and shellfishing.	Private	Satisfactory	High over the marshes, non-critical; medium to marsh islands and low fastland, could be serious to residents; low to rest of the fastland.	No erosion problems observed.	Low. Little present potential for development in the fastland. There are no beaches, and little to attract transient yachtsmen.
17 MACHIPONGO RIVER 10 miles	Fastland: Low shore, terraced. Shore: Extensive marsh-96%; fringe marsh-1%; scattered embayed marsh-3%. Nearshore: Shallow bay, tidal flats-33%; river and creek channels-67%.	Fastland: Agricultural-50%; unmanaged, wooded-40%; commercial-residential-10%. Shore: Hunting, fishing, shellfishing on and in the marshes; piers, boat ramps in Red Bank and Willis Wharf. Nearshore: Shellfishing and fishing, Intracoastal Waterway and local boat traffic.	Private	Satisfactory	High over the marshes, non-critical; medium to marsh islands and waterfront areas, could be serious in populated areas during high floods; low in upper fastland.	Apparently there has been some occasional creekbank erosion. Seems to be effectively controlled by bulkhead and riprap.	Moderate. There is a modest shellfish industry and some potential may exist for overnight tourist trade.

Table 3. SHORE PROTECTIVE STRUCTURES, NORTHAMPTON COUNTY, VIRGINIA

LOCATION		TYPE	DESCRIPTION	SHORETYPE	LENGTH AFFECTED	COMMENTS	EFFECTIVENESS
0	FISHERMANS ISLAND	GROIN	PLANK	LOW SHORE	--	NOW OBSOLETE DUE TO SPOIL DUMPING.	NONE
		RIPRAP	STONE	LOW SHORE	8500'	PROTECTS ROADWAY TO WISE POINT.	GOOD
1A	WISE POINT	RIPRAP	STONE	LOW SHORE	200'	PROTECTS ROADWAY NEAR END OF CHESAPEAKE BAY BRIDGE TUNNEL - LOCAL EROSION PROBLEM.	FAIR
1B	LATIMER SIDING	RIPRAP	RUBBLE	MODERATELY LOW SHORE WITH BLUFF	25'	TO PROTECT FOOT OF BLUFF BY STAIRWAY.	MARGINAL
1C	KIPTOPEKE BEACH	GROIN	SOLID PIER	LOW SHORE WITH BLUFF	5200'	OLD KIPTOPEKE FERRY PIER. VERY SUCCESSFUL IN TRAPPING SEDIMENT, THUS WIDENING THE BEACH AND PROTECTING THE BACKLAND.	GOOD
		BREAKWATER	GROUNDED SHIPS	LOW SHORE WITH BLUFF	--	--	--
3B	SOUTH OF CAPE CHARLES HARBOR	RIPRAP	JUNK CARS, ETC.	LOW SHORE	20-30'	THE RIPRAPPED AREA IS TOO SHORT AND TOO RANDOM TO BE EFFECTIVE.	POOR
3C	CAPE CHARLES HARBOR	MOLE	EARTH AND STONE	HARBOR	200'	PROTECTS THE HARBOR ENTRANCE. ALSO ACTS AS A GROIN. THERE IS AN AREA OF EROSION TO THE SOUTH OF THE MOLE THAT PERHAPS IS CAUSED BY WAVE REFRACTION AROUND THE MOLE.	GOOD
		BULKHEADS	VARIOUS	HARBOR EDGE	4500'	THE INDUSTRIAL AND COMMERCIAL INTERIOR OF CAPE CHARLES HARBOR.	GOOD
		JETTY	STONE	HARBOR	1200'	PROTECTS THE HARBOR ENTRANCE. ALSO ACTS AS A GROIN.	GOOD
3D	CAPE CHARLES CITY BEACH	SEAWALL	WOODEN	LOW SHORE	2300'	PROTECTS THE RESIDENTIAL SECTION OF CAPE CHARLES.	GOOD
		GROINS	5, PLANK	LOW SHORE	--	THE GROINS ARE TRAPPING A LIMITED QUANTITY OF SAND; HOWEVER, THE BEACH IS QUITE NARROW. A MORE USEFUL AND PLEASING SHOREFRONT MIGHT BE CREATED BY EXTENDING AND HEIGHTENING SOME OF THE GROINS AND FILLING THE BEACH.	POOR
4D	TANKARDS BEACH	GROINS	5, PLANK, 60 FT LONG, 60-FT INTERVALS	LOW SHORE WITH BLUFF	300'	THE GROINS ARE TRAPPING SEDIMENT, BUT ARE TOO CLOSE TOGETHER, TOO SHORT, AND TOO LOW; THEY ARE NOT PARTICULARLY EFFECTIVE IN PROTECTING THE SCARP.	INEFFECTIVE
		RIPRAP	STONE	LOW SHORE WITH BLUFF, ROAD END	200'	PROTECTS THE ROAD END AND THE CAPE CHARLES VHF OMNI-RANGE RADIO NAVIGATION STATION. THE RIP-RAPPING HAS PREVENTED SOME SHORELINE RETREAT, BUT IT IS NOW FLANKED. INCREASING THE LATERAL EXTENT OF THE RIPRAPPING OR BULKHEADING WOULD INCREASE THE EFFECTIVENESS. NOTCHING IS MORE PRONOUNCED ON SOUTH SIDE OF RIPRAP.	MARGINAL
	SMITH BEACH	GROINS	25, WOODEN, 60-FT INTERVALS	LOW SHORE WITH BLUFF	5200'	THE GROINS ARE TOO LOW AND PROBABLY TOO SHORT AND TOO CLOSE TOGETHER TO WIDEN SIGNIFICANTLY THE BEACH AND PROTECT THE BLUFF. THE GROINS ARE FLANKED. THE PERMEABLE CONSTRUCTION IS HARMFUL.	INEFFECTIVE
		BULKHEAD	WOODEN	LOW SHORE WITH BLUFF	200-300'	MOST OF THE BULKHEADING IS OUT OF REPAIR. ANY POSITIVE EFFECTIVENESS IS NEGATED BY THE DISCONTINUITY OF THE STRUCTURES.	FAIR TO POOR
6	OLD TOWN NECK	GROINS	2, PLANK, 60-FT INTERVALS	LOW SHORE WITH BLUFF	100'	THE NORTHERN GROIN IS WORKING WELL AND IS FILLING, BUT THE SOUTHERN GROIN IS TOO CLOSE TO BE EFFECTIVE AND IS BEING FLANKED.	GOOD TO POOR
10A	SILVER BEACH, SOUTH	BULKHEAD	WOODEN	LOW SHORE WITH BLUFF	200'	GENERALLY WORKING, BUT WILL BE FLANKED SOON.	GOOD
		GROINS	20+, PLANK	LOW SHORE WITH BLUFF	3200'	THE GROINS ARE TRAPPING SEDIMENT BUT ARE TOO LOW, TOO SHORT, AND, PERHAPS, TOO CLOSE TOGETHER TO WIDEN THE BEACH AND PROTECT THE BLUFF.	FAIR TO GOOD
	SILVER BEACH	RIPRAP	DEBRIS	LOW SHORE WITH BLUFF	700'	THE DISCONTINUOUS CHARACTER OF THE RIPRAP GREATLY DETRACTS FROM THE LOCAL EFFECTIVENESS.	FAIR TO GOOD
		GROINS	10+, WOODEN	LOW SHORE WITH BLUFF	150'	THE GROINS ARE TOO PERMEABLE TO BE EFFECTIVE.	POOR
		BULKHEAD	WOODEN	LOW SHORE WITH BLUFF	100'	--	NEW
10B	NORTH OF DOWNINGS BEACH	BULKHEAD	WOODEN	LOW SHORE WITH BLUFF	150'	A RATHER INEFFECTIVE STRUCTURE OF QUESTIONABLE CONSTRUCTION.	POOR
10C	BATTLE POINT	RIPRAP	STONE, DEBRIS	LOW SHORE WITH SCARP	500'	DISCONTINUOUS PROTECTION.	GOOD
		BULKHEAD	WOODEN	LOW SHORE WITH SCARP	300'	DISCONTINUOUS PROTECTION.	POOR
		GROINS	5, PLANK	LOW SHORE WITH SCARP	300'	THE GROINS APPARENTLY ARE SUCCESSFUL IN HOLDING SAND IN THE GAP BETWEEN TWO BULKHEADED AREAS.	POOR
11	CHERRYSTONE INLET	GROINS	PLANK	LOW SHORE	--	EITHER END OF NEW BEACH AT CAMPGROUND. PLACED TO HOLD ARTIFICIAL BEACH.	NEW
		SEAWALL	BRICK AND CEMENT	LOW SHORE	1500'	POOR CONDITION, TOPPLED SEVERAL PLACES. NOT VERY EFFECTIVE; IN PLACES RUBBLE MAY CAUSE HARMFUL TURBULENCE.	POOR
12	MILL CREEK	GROINS	3 OR 4	LOW SHORE	--	NORTH SHORE OF HOLLY BLUFF ISLAND. TAKEN FROM AERIAL PHOTOGRAPHS.	NOT DETERMINED
		BULKHEAD	--	LOW SHORE	--	AT CUSHMANS LANDING; IN DETERIORATING CONDITION; FACILITY APPEARS ABANDONED.	FAIR
13	DUNTON COVE	BULKHEADS	WOODEN	LOW SHORE	--	PLACED AT BULLS AND STEELMANS LANDINGS TO RETAIN ARTIFICIAL FILL. REASONABLY EFFECTIVE AS EROSIVE FORCES ARE NOT COMMONLY GREAT.	FAIR
14	MOCKHORN BAY	BULKHEADS	--	HARBOR	--	INSTALLED TO RETAIN ARTIFICIAL FILL AND SERVE AS VERTICAL DOCK SIDES.	GOOD
17	MACHIPONGO RIVER	BULKHEAD	WOODEN	LOW SHORE	200'	ON PARTING CREEK; APPEARS EFFECTIVE IN PROTECTING THE BANK DURING HIGH RUN-OFF TIMES.	GOOD
		RIPRAP	RUBBLE	LOW SHORE	--	AT HEAD OF CHANNEL AT RED BANK AND AT EDGE OF CREEK AT SOUTHWEST SIDE OF WILLIS WHARF.	GOOD

TABLE 4

SHORELINE SITUATION REPORT

NORTHAMPTON COUNTY, VIRGINIA

WETLAND ACREAGE

Segment and Subsegment	Fringe Marsh	Extensive Marsh	Embayed Marsh	Total
NH0: FISHERMANS ISLAND	0	429	0	429
NH1: KIPTOPEKE	3	0	79	82
NH1G: Elliots Creek	3	0	79	
NH2: OLD PLANTATION CREEK	74	0	89	163
NH3: CAPE CHARLES	29	0	26	55
NH3F: Kings Creek	29	0	26	
NH4: SAVAGE NECK	0	0	1	1
NH4C: Custis Pond Dune Area	0	0	1	
NH5: THE GULF	26	0	23	49
NH6: OLD TOWN NECK	3	0	0	3
NH7: HUNGARS CREEK	96	0	376	472
NH8: CHURCH NECK	17	0	21	38
NH8A: Great Neck Spit	3	0	0	
NH8B: Great Neck	3	0	0	
NH8C: South of Westerhouse Creek	1	0	0	
NH8D: Westerhouse Creek	10	0	21	
NH9: NASSAWADOX CREEK	100	0	280	380
NH10: OCCOHANNOCK NECK	6	0	29	35
NH10B: North of Downings Beach	0	0	21	
NH10C: Battle Point	0	0	1	
NH10D: Sparrow Point	6	0	7	
NH11: CHERRYSTONE INLET	41	0	347	388
NH12: MILL CREEK	0	0	766	766
NH13: DUNTON COVE	0	0	529	529
NH14: MOCKHORN BAY	0	446	10	456
NH15: RAMSHORN BAY	10	494	53	557
NH16: HOLT NECK	0	1,107	58	1,165
NH17: MACHIPONGO RIVER	12	3,324	95	3,431
NH18: OCCOHANNOCK CREEK	45	0	106	151
County Totals: (excluding barrier island marshes)	462	5,800	2,888	9,150

CHAPTER 4

4.1 Tables 5A, 5B, 5C, 5D, 5E Segment Summaries

4.2 Segment and Subsegment Descriptions

4. 3 Segment and Subsegment Maps

4.1 Segment Summaries

Tables 5 A,B,C,D&E

TABLE 5A SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY. Segment Summary - Fishermans Island and Kiptopeke Area

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNER-SHIP	ZONING	FLOOD HAZARD	WATER QUALITY	BEACH QUALITY	SHORE EROSION SITUATION					POTENTIAL USE ENHANCEMENT
								Rate	Endangered Structures	Shore Protective Structures: Type	No.	Effectiveness	Suggested Action	
0 FISHERMANS ISLAND 1,000 acres 32,000 feet	Fastland: Low shore with dunes. Shore: Sand beach with dunes - 75%; extensive marsh - 25%. Nearshore: Narrow with parallel bars - west; width intermediate - south; wide - east and north.	Fastland: Preserved (wildlife refuge). Shore: Preserved (wildlife refuge). Nearshore: Commercial and sports fishing; Intracoastal Waterway traffic.	Federal		High. Non-critical on most of island. Medium for higher areas with buildings.	Satis-factory	Fair to good. Beaches have clean, bright sand, are moderately wide.	Severe erosion, 25-40 ft/yr at west; 0 at north; accretion 15-50 ft/yr at south; spits at east come and go.	None	Groin (plank) Riprap	1 8,500 ft.	Obsolete Good	None None necessary A groin system is needed to protect the west shore of the island.	Interior of the island is set aside as a wildlife refuge, but beach area might be developed for shore recreation without undue interference with function of the refuge.
1A WISE POINT 10,900 feet	Fastland: Low shore - 6,500'; moderately low shore with bluff, 4,400'. Shore: Narrow to intermediate sand beach. Nearshore: Width intermediate; multiple, parallel bars.	Fastland: Unmanaged: open - 4,100'; wooded - 6,800'. Shore: Some bathing. Nearshore: Boating and fishing.	Private 80% Federal 20%	Agricultural	High in low plain section (Wise Pt.) but not critical. Low along bluffed fastland to north.	Satis-factory	Fair. Beach is narrow and thin.	Moderate erosion at point, slight accretion elsewhere.	Side road endangered	Riprap	200 ft.	Fair	Add groins around point to augment riprap.	Access road to America House Beach should be improved, beach there should be cleaned periodically.
1B LATIMER SIDING 5,200 feet	Fastland: Moderately low shore with bluff. Shore: Narrow, thin sand beach. Nearshore: Width intermediate; 3 parallel bars offshore.	Fastland: Unmanaged, wooded. Shore: Occasional bathing. Nearshore: Pound nets.	Private	Agricultural	Low. Bluff protects fastland.	Satis-factory	Fair. Beach is narrow and thin.	Moderate erosion, 2.5 ft/yr.	None	Riprap		Questionable	No action necessary at this time, but bulkheading, groins and artificial nourishment desirable to eliminate erosion	Moderate: Added access over the bluff with suggested erosion control measures would improve recreational aspects.
1C KIPTOPEKE BEACH 6,400 feet	Fastland: Moderately low shore with high bluff. Shore: Intermediate to wide sand beach. Nearshore: Narrow to intermediate; smooth, regular bottom.	Fastland: Unmanaged, wooded; agricultural behind. Shore: Occasional bathing. Nearshore: Sport fishing, boating.	Private	Agricultural	Low.	Satis-factory	Good. There is excellent sand supply.	Accretion, 26 ft/yr.	None	2 breakwaters 1 large pier acting as a groin	3	Good	None other than pier maintenance.	Could be developed as a major recreational facility including bathing, fishing, limited marina - land access excellent.
1D BUTLERS BLUFF 7,000 feet	Fastland: Moderately high shore with bluff. Shore: Narrow, thin sand beach. Nearshore: Width intermediate; relatively plane.	Fastland: Unmanaged, wooded. Shore: Occasional bathing, beachcombing. Nearshore: Shellfishing, sport fishing.	Private	Agricultural	Low. Bluff protects fastland.	Satis-factory	Fair. Beach is narrow and thin.	Moderate to low erosion, sand shifts.	None				Beach width may be enhanced by properly designed groin field tied to bulkhead or revetment at toe of bluff plus sand nourishment from nearshore zone.	Would serve as good public beach with addition of adequate access roads. Number of access points should be limited to protect bluff.

Table 5A NORTHAMPTON COUNTY (Continued)

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNER-SHIP	ZONING	FLOOD HAZARD	WATER QUALITY	BEACH QUALITY	SHORE EROSION SITUATION						POTENTIAL USE ENHANCEMENT
								Rate	Endangered Structures	Shore Protective Structures				
										Type	No.	Effectiveness	Suggested Action	
1E POND DRAIN 7,800 feet	Fastland: Low shore with dunes. Shore: Wide, clean, sand beach. Nearshore: Width intermediate; discontinuous, subparallel bars.	Fastland: Unmanaged, wooded; agricultural behind. Shore: Beachcombing. Nearshore: Fishing.	Private	Agricultural	High. Not critical as no structures are endangered.	Satisfactory	Good. There is a wide, clean sand beach.	Accretion, 1-2 ft/yr.	None				None	Could be developed for outdoor public recreation including nature walks, picnic facilities, and normal beach activities. To protect the dunes no beach buggies or four wheel drive vehicles should be allowed in area.
1F SOUTH OF ELLIOTS CREEK 3,400 feet	Fastland: Low shore, fronted by elongate dunes Shore: Narrow, thin beach with numerous fallen trees and outcroppings of clay. Nearshore: Width intermediate; discontinuous subparallel bars; some oblique sand waves near beach.	Fastland: Unmanaged, wooded; some agricultural behind. Shore: None. Nearshore: Fishing.	Private	Agricultural	Medium. Storm surge could overrun lower area, but no structures are below 10' contour.	Satisfactory	Poor. Beach is very thin, encumbered with fallen trees.	Severe erosion, 5 ft/yr.	None				None	Erosion protective measures would be too costly at present for development.
1G ELLIOTS CREEK 56 acres	Fastland: Low shore. Shore: Fringe and embayed marsh 95%; sand beach 5%. Creek: Shallow with narrow inlet.	Fastland: Agricultural. Shore: Landing and launching small boats. Creek: Waterfowl hunting.	Private	Agricultural	Low. Narrow inlet would prevent or slow storm surge.	Satisfactory			None					Small boat recreation, waterfowl hunting or water bird sanctuary. Impractical to clear inlet for boat access to bay.
1H COSTIN POND 5,000 feet	Fastland: Low shore and a few vegetated dunes. Shore: Narrow, thin sand beach, numerous fallen trees Nearshore: Width intermediate; discontinuous, subparallel bars; mud flats.	Fastland: Agricultural and summer residential. Shore: Some bathing. Nearshore: Fishing.	Private	Agricultural	Medium. Storm surge could inundate fastland.	Satisfactory	Fair near pond, poor elsewhere.	Severe erosion, approx. 5 ft/yr.	3 houses				Needs a lengthy bulkhead (3,400' continuous) with a groin field to augment the bulkhead.	Because of expense involved in protecting the shorefront, and storm flood danger, there is little potential at present.

Table 5B SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY **Segment Summary - Cape Charles City Area**

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNER-SHIP	ZONING	FLOOD HAZARD	WATER QUALITY	BEACH QUALITY	SHORE EROSION SITUATION					POTENTIAL USE ENHANCEMENT
								Rate	Endangered Structures	Shore Protective Structures: Type	No.	Effectiveness	Suggested Action
3A ALLEGOOD POND 6,000 feet	Fastland: Low shore. Shore: Narrow sand and marl beach. Nearshore: Width intermediate; parallel bars, sandy bottom.	Fastland: Unmanaged, wooded - south half; agricultural - north half. Shore: Occasional beachcombing. Nearshore: Sport fishing and fish traps.	Private	Agricultural	Medium to high. Most land is below the 10-foot contour.	Satisfactory	Pair to poor. Narrow, thin, debris covered in south part.	Moderate erosion, nearly 3 ft/yr.	None				None at present.	Due to the narrow beach and high erosion rate, it would be expensive to protect shoreline.
3B SPOIL AREA 6,000 feet	Fastland: Artificial fill (backshore); dunes and low shore behind. Shore: Wide sand beach. Nearshore: Intermediate to narrow; parallel bars, some oblique sand bars at beach toe.	Fastland: Agricultural (south 5,000 ft); industrial (north end). Shore: Some beachcombing. Nearshore: Pound nets.	Private	Agricultural	Medium. Most of the area is between 5 and 10 feet.	Satisfactory	Excellent. Wide, clean sand beach.	No erosion.	None	Earthen mole 200 ft long. Riprap (junk) at edge of industrial land.	1 20-30 feet	Good Poor	None Erosion study, then a better organized protective structure.	High. With improved access the area would be suitable for shore recreation.
3C CAPE CHARLES HARBOR 34 acres 0.5 mile	Fastland: Low shore, artificial fill. Shore: Artificially stabilized-80%; beach-20%. Harbor: Dredged to 18-19 ft mostly, 7 ft at northeast end.	Fastland: Industrial-25%; commercial, including 2 marinas and 3 boat-launching ramps-75%. Shore: Incidental to dockage of boats. Harbor: Marine traffic and dockage.	Private 90% Town 10%	Industrial	Medium. Some danger from storm surge.	Intermediate	Poor.	No erosion.	None	Earthen mole, 200 ft, south side of harbor entrance. Stone jetty, 1,200 ft north side. Bulkheading around periphery acts as dockage for boats.	1 1 4,500 feet	Good Good Good	None None None	None
3D CAPE CHARLES CITY BEACH 2,800 feet	Fastland: Low shore. Shore: Sand beach. Nearshore: Narrow; several parallel bars; sandy bottom.	Fastland: Residential. Shore: Recreation. Nearshore: Fishing (pound nets).	Private (fastland) Town (beach area)	Residential	Medium. Most of the urban land is between 5 and 10 ft. Could be flooded by high storm surge.	Intermediate	Fair. The beach is narrow, crossed by storm drains.	Slight erosion.	None	Plank seawall 2,300 ft. Plank groins.	1 5	Good Poor, due to lack of sand source.	None Increase height and length of groins; artificial sand nourishment.	High. Beach could be improved for recreation by widening and by repair or removal of broken storm drains.
3E OWENS LANDING 4,400 feet	Fastland: Low shore. Shore: Sand beach. Nearshore: Width intermediate; sandy bottom with bars in southerly half; grassy bottom, northerly half.	Fastland: Unmanaged - 60%; agricultural - 40%. Shore: None. Nearshore: Some boating.	Private	Agricultural	Medium. Fastland elevations are between 5 and 10 ft.	Satisfactory	Fair. The beach is narrow but sandy, becoming grassy toward the north end.	Slight to moderate erosion, heavier in the southwesterly quarter of the subsegment.	None				No imminent need, but bulkheading from Washington Ave. to vicinity of Kings Creek Inlet would be desirable.	Moderate. Could be developed as a public park. With bulkheading, groins, and sand nourishment a good beach could be built. In the fastland area there is ample room for athletic fields.
3F KINGS CREEK 187 acres 1.8 miles	Fastland: Low shore with bluff. Shore: Fringe and embayed marsh. Creek: Submerged meanders; dendritic branches.	Fastland: Agricultural Shore: Incidental to boating. There are a dozen wharves and a boat ramp. Creek: Shellfishing, waterfowl hunting, boating.	Private	Agricultural	Medium to marinas and oyster facilities; low to fastland.	Satisfactory spring 1973; unsatisfactory earlier in the year.	No beaches.	No erosion.	None				None recommended.	None

Table 5C SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY Segment Summary - Savage Neck & Old Town Neck

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNER-SHIP	ZONING	FLOOD HAZARD	WATER QUALITY	BEACH QUALITY	SHORE EROSION SITUATION						POTENTIAL USE ENHANCEMENT
								Rate	Endangered Structures	Shore Protective Structures: Type	No.	Effectiveness	Suggested Action	
4A WESCOAT POINT 3,000 feet	Fastland: Low shore, sand spit with low dunes. Shore: Sand beach. Nearshore: Wide; multiple, parallel bars, oblique sand waves at beach.	Fastland: Unmanaged. Shore: None. Nearshore: None.	Private	Agricultural	High. Exposed to all storm surge from bay.	Satisfactory	Good. Medium width sand beach.	Severe erosion, the spit grows and retreats periodically, due to storms.	None				None	The ephemeral nature of the spit leads to the recommendation that the area be left wild as a nature study area.
4B OLD ORCHARD 3,300 feet	Fastland: Low shore with single dune line. Shore: Narrow sand beach. Nearshore: Wide; 1 or 2 parallel bars near outer margin; oblique sand waves near beach.	Fastland: Unmanaged, wooded; agricultural behind. Shore: Minimal beach recreation. Nearshore: None.	Private	Agricultural	Medium	Satisfactory	Fair. Sand is bright and clean, but beach is narrow.	No erosion at present.	None				None	Low. Fastland area is small, private; beach is relatively narrow.
4C CUSTIS POND DUNE AREA 9,800 feet	Fastland: Dunes, low shore behind. Shore: Medium width sand beach. Nearshore: Width intermediate; one large bar crosses area from near beach at north, angles seaward to southwest.	Fastland: Dune area unmanaged; agricultural behind. Shore: Minimal beach recreation. Nearshore: Fishing (pound nets), sport fishing.	Private	Agricultural	Low to medium.	Satisfactory	Good in south 2/3, beach medium width, sand good. Poor in north 1/3, narrow, littered with stumps and debris.	No erosion in south 2/3; severe erosion in north 1/3.	None				None in the south, perhaps bulkheading and groins in the north part in the future.	High. For preservation as a natural wild area due to the unique dune terrain. Needs careful management, however, to protect the dunes. By controlled access between the dunes, the beach might be developed for public recreation in conjunction with the dune area.
4D TANKARDS BEACH SMITH BEACH 13,000 feet	Fastland: Low shore with bluff. Shore: Narrow to medium width sand beach. Nearshore: Width intermediate; plain sand bottom to south becomes wider with one large parallel bar or tidal flat near outer margin and many oblique sand waves near the beach.	Fastland: Residential-50%; agricultural-40%; unmanaged-10%. Shore: Beach recreation. Nearshore: Fishing (pound nets), sport fishing, shellfishing, boating.	Private	Agricultural	None	Satisfactory	Fair to good. Sand is bright and clean, but beach is generally narrow.	Severe erosion, critical, 7 to 20 ft/yr.	Approximately 60 houses are within 100 ft of the bluff, some much closer.	Plank groins Post groins Bulkheading (railroad tie) Riprap	5 25 200-300 feet 200 feet	Ineffective. The plank groins are too close together. The post groins are permeable. Not holding the bluff because it is permeable. Marginal.	Nearly the entire length of the subsegment needs solid bulkheading, reinforced with higher, longer impermeable groins in front, tied solidly to the bulkhead.	Fair. About half of the area is already fully developed for residences. With a new, unified approach to the erosion problem, more of the bluff property might be used for dwellings.
6 OLD TOWN NECK 6,500 feet	Fastland: Low shore with bluff (5,000 ft north); dunes with low bluff behind (1,500 ft south). Shore: Alternating narrow sand beach-55%, and fringe marsh-45%. Nearshore: Wide; with irregular bars and shoals.	Fastland: Unmanaged, wooded (south half); residential (north half). Shore: Minimal beach recreation. Nearshore: Shellfishing.	Private	Agricultural	Low	Satisfactory	Fair. Sand is bright and clean, but beach is generally narrow and discontinuous.	Severe erosion, critical, 5 to 6 ft/yr in northerly 1,000 ft. No net loss in southerly 5,500 ft.	1 dwelling within 100 ft of bluff.	Plank groins, 60 ft long, 60 ft apart, north end of segment.	2	Limited. Updrift groin has filled, but has starved the other which is being flanked.	Entire north part of area should be bulkheaded, then longer, higher groins, more widely spaced should be tied securely to bulkhead.	Southerly duned area might be developed for public beach recreation. The northerly part is already subdivided for homesites on the bluff top. The lots are well situated if the bluff is protected from further erosion.

Table 5D SHORELINE REPORT, NORTHAMPTON COUNTY Segment Summary - Church Neck

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNER-SHIP	ZONING	FLOOD HAZARD	WATER QUALITY	BEACH QUALITY	SHORE EROSION SITUATION					POTENTIAL USE ENHANCEMENT
								Rate	Endangered Structures	Shore Protective Structures			
										Type	No.	Effectiveness	Suggested Action	
8A GREAT NECK SPIT 2,800 feet	Fastland: Low shore, (sand spit with low dunes), wooded above high tide. Shore: Fringe marsh, some isolated beach. Nearshore: Wide; with one large parallel bar seaward of extensive tidal flats; small oblique sand waves near shore and on the bar.	Fastland: Unmanaged, wooded. Shore: None. Nearshore: Fishing, shellfishing.	Private	Agricul-tural	High. Spit subject to washover by storm surge.	Satis-factory	Poor	Moderate erosion, 2-3 ft/yr.	None.				None.	Limited area and access suggest the area should be left natural, restricted perhaps to pedestrian travel.
8B GREAT NECK 12,000 feet	Fastland: Low shore with scarp and some low dunes. Shore: Narrow sand beach, fronting looped spits in the north 3/4; fringe marsh with some alternating pocket sand beaches in south 1/4. Nearshore: Intermediate to wide; with more or less parallel bars.	Fastland: Agricultural, but approximately 25% being developed for residential. Shore: Limited beach recreation, beach-combing. Nearshore: Sport fishing and pound nets.	Private	Agricul-tural	None	Satis-factory	Fair. Beach tends to be narrow. Debris accumulates on pocket beaches.	Moderate erosion, 1.5 ft/yr, south ½; accretion 1.5 ft/yr, north ¾.	None.				None.	The bluff is an attractive location for residential use. The looped spits and associated lagoons are of sufficient natural interest that care should be taken not to destroy them.
8C SOUTH OF WESTERHOUSE CREEK 4,700 feet	Fastland: Low shore with low bluff. Shore: Narrow sand beach. Nearshore: Width intermediate, with bars more or less parallel to beach, and oblique to normal sand waves near toe of beach.	Fastland: Agricultural Shore: None. Nearshore: Fishing.	Private	Agricul-tural	None	Satis-factory	Fair. Beach is relatively narrow, but sand is good.	Moderate erosion, 2 ft/yr.	None.				None.	Marginal. Erosion protection would be costly.
8D WESTERHOUSE CREEK 155 acres 1 mile	Fastland: Low shore, steep slopes. Shore: Fringe marsh, sand beaches at inlet (less than 5% of total). Creek: Shallow, mud bottom; tidal delta and marsh at inlet.	Fastland: Agricultural Shore: None. Nearshore: Shellfishing.	Private	Agricul-tural	Medium in creek due to possible storm surge. Low on surrounding bluff.	Satis-factory	No beach.	No erosion.	None.				None.	High for residential use on bluff, but creek should be protected against over-exploitation and pollution.
8E SHOOTING POINT 6,500 feet	Fastland: Low shore with bluff. Shore: Narrow sand beach. Nearshore: Width intermediate; multiple parallel bars with reticulate pattern of sand waves superimposed on bars.	Fastland: Agricultural Shore: None, except occasional beach-combing. Nearshore: Sport fishing.	Private	Agricul-tural	Low	Satis-factory	Fair. Sand is bright, medium-fine, but beach is narrow.	Moderate erosion, 2-3 ft/yr.	None.				None.	Marginal. Would make a fine residential area with a good bay overlook, but erosion problem is serious and would need protection in the form of extensive bulkheading and groins previous to development.

Table 5E SHORELINE SITUATION REPORT, NORTHAMPTON COUNTY Segment Summary - Occohannock Neck

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNER-SHIP	ZONING	FLOOD HAZARD	WATER QUALITY	BEACH QUALITY	SHORE EROSION SITUATION					POTENTIAL USE ENHANCEMENT
								Rate	Endangered Structures	Shore Protective Structures: Type	No.	Effectiveness	Suggested Action	
10A SILVER BEACH 7,400 feet	Fastland: Low shore with bluff. Shore: Narrow sand beach. Nearshore: Width intermediate; sand bottom; up to 6 parallel bars, some oblique sand waves near beach.	Fastland: Residential-80%; agricultural-20%. Shore: Beach recreation, boating activities (2 boat ramps along beach). Nearshore: Boating, fishing.	Private	Agricultural	Low. Bluff protects residences from storm surge.	Satisfactory	Fair to poor. Generally narrow; in riprapped areas beach is non-existant at high tide.	Severe erosion, critical, 5.7 ft/yr	10 houses, road.	Bulkhead, 200 ft long at point. Plank groins. Riprap, with some bulkhead Railroad tie groins Bulkhead, 100 ft near north end of Silver Beach.	1 20 700 ft 10 1	Good, but subject to flanking. Fair to good. Fair to good. Poor Out on beach, too new to determine effectiveness.	Riprap revetment or solid bulkhead needed for built-up part of subsegment. Associated should be a well-designed, impermeable groin field. Unified action needed.	High. The aspect is highly attractive for seasonal dwellings, but definite action is needed immediately to stem the erosion.
10B NORTH OF DOWNINGS BEACH 7,000 feet	Fastland: Low shore with low bluff. Shore: Narrow to medium width sand beach. Nearshore: Wide; sandy; several parallel bars, some capped with oblique sand waves.	Fastland: Agricultural-95%; recreational-5%. Shore: Limited beach recreation. Nearshore: Sport fishing and pound nets.	Private	Agricultural	Low. Most of area above 5 ft contour.	Satisfactory	Good to fair. Best in south 1/3. Narrower, more debris to north.	Severe erosion, critical, 5 ft/yr.	1 house.	Plank bulkhead, 150 ft long, on the beach in front of endangered house.	1	Poor in late 1972.	Needs to be higher and backfilled.	Moderate. A unified shore protection plan would make possible a future shoreside residential area.
10C BATTLE POINT 5,000 feet	Fastland: Low shore with a small scarp. Shore: Narrow sand beach. Nearshore: Wide; sandy bottom; several parallel bars, some capped with oblique sand waves.	Fastland: Recreational (campground)-65%; residential-35%. Shore: Some beach recreation. Nearshore: Sport fishing and pound nets.	Private	Agricultural	Medium. High storm surge could overtop scarp and cause some flood damage to cottages and mobile homes.	Satisfactory	Poor. Very narrow beach, much debris.	Severe erosion, critical, 5 ft/yr.	4 houses.	Discontinuous riprap. Discontinuous bulkheading Plank groins.	500 ft 300 ft 5	Good Poor, has been flanked some in north part. Poor	Needs unified action over the whole area; both bulkheading (or riprap revetment) and groin field.	Low. The area is already developed to near capacity for its purposes (low density seasonal residential and camping), but erosion protection as suggested will preserve and enhance property values.
10D SPARROW POINT 7,300 feet	Fastland: Low shore with a small scarp. Shore: Narrow to medium width sand beach, some fringe and embayed marsh. Nearshore: Wide; sandy; several parallel bars, oblique sand waves.	Fastland: Unmanaged, wooded. Shore: None. Nearshore: Sport fishing and boating.	Private	Agricultural	High, but not critical, to swamp areas. Medium to fastland (above 5 ft contour).	Satisfactory	Fair to poor. Some areas of medium width, elsewhere narrow.	No erosion at turn of shoreline; moderate erosion in south part of subsegment; and severe erosion, non-critical, 6 ft/yr, in north part of subsegment.	None.				None	Low at present. If population pressures increase, central area could be developed for public recreation. The beach at the southerly end could be developed to serve residents of Battle Point community.

4.2 Segment and Subsegment Descriptions

SEGMENT 0, FISHERMANS ISLAND
SEGMENT DESCRIPTION

FISHERMANS ISLAND, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT O (Maps 2A, 2B, 2C)

EXTENT: 6 miles, approximately, omitting inlets between the easterly bars and the perimeter of the north causeway. It is an island, comprising about 1,000 acres, about half of which is marsh, the rest is beach, sand flats and dunes.

SHORELANDS TYPE
FASTLAND: Low shore (dunes and sand flats, sparsely vegetated).
SHORE: Sand dunes and medium width sand beaches, west, south and east (57%); extensive marshes, north (43%). Spit beaches on the east shift considerably and frequently.
NEARSHORE: Narrow to west; intermediate to south; wide to east and north. There are parallel, multiple bars at the northwest.

SHORELANDS USE
FASTLAND: Preserved (wildlife refuge).
SHORE: Preserved (wildlife refuge).
NEARSHORE: Commercial and sport fishing; intracoastal waterway traffic.

OFFSHORE BOTTOM: Variable, shoals and channels occupy the bay entrance area to the west, south, and east of Fishermans Island. Tidal currents up to 2 knots sweep within 800 yards of the beach along the west side of the island on both ebb and flood tides. Along the other side of the island they are much less, due to the more extensive shoal areas off the beaches.

WIND AND SEA EXPOSURE: Sand beaches are oriented west, south and east. Fetches are NW - 20 mi., W - 14 mi., SW - 14 mi., SSW - 10 mi., SE and E - over 1,000 miles.

OWNERSHIP: Federal.

FLOOD HAZARD: High, noncritical to most of the island; medium to higher areas where buildings and structures are located, but flooding could be serious due to possible damage to facilities if it did occur.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair to good. Sand is clean and bright, the beaches are moderately wide.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Recent erosion-accretion trends are complex and to an uncertain extent reflect spoil dumping at the northwest corner, fill for the construction of the bridge-tunnel highway approaches, plus accretion or loss due to the presence of the road. In general, there appears to be natural erosion of the west to northwest face of the island of 25 to 40 feet per year; accretion between 15 and 50 feet per year on the south shore. The spits at the east side shift continually back and forth and do not show any particular trend. The marsh shore on the north side is quite stable.

If erosion on the west side continues at the same rate, the buildings on the island, all located within 600 feet of the west shore in 1967, are in danger of being lost in 20 years or less (from 1973).
ENDANGERED STRUCTURES: None at present.
SHORE PROTECTIVE STRUCTURES: Type and Number: Groin - One plank groin extends at right angles out from the west side of the highway causeway from Fishermans Island to Wise Point. Riprap - The causeway is riprapped on either side of the road from its north end to the marsh shore, a total length of about 8,500 feet (Photos NH-O-13 and 146).
Effectiveness: The groin was installed prior to the existence of the spoil area which was built up to protect the northwest corner of the island and the causeway. It may have been necessary to protect the causeway then, but is unnecessary now. The riprap appears effective around the outer end of the causeway where it is surrounded by water.

Suggested Action: Considering that Fishermans Island is a wildlife refuge, with no habitations presently menaced, and with the highway crossing in good shape, no immediate erosion protective measures appear necessary. However, a groin system along the west shore would be desirable to protect the built up area nearby, the only "high" ground area on the island.

OTHER SHORE STRUCTURES: There are several fish-trap leaders along the northwest and north side of the island and two piers, one on the west side, the other at the northwest corner. The latter is essentially useless as a pier due to sand encroachment. In addition, there are the highway causeway on the north side, and highway bridge abutment and piers at the southwest corner.

POTENTIAL USE ENHANCEMENT: Fishermans Island is presently set aside as a wildlife refuge. As the beaches are good and they might be made accessible from the highway comparatively easily, perhaps accommodation could be made to use the southern and eastern margins of the island for public recreation, while preserving the interior and northern and western shores for wildlife. No auto traffic should be allowed on the beach.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1955 and FISHERMANS ISLAND Quadr., 1968. C&GS, #562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-18, 19.
USAF 10Nov59 AF59-35 R-21 1936.
USGS 30Jan67 GS-SWBK-1 1-91, 98;
USGS 5Feb67 GS-SWBK-1 1-143, 212.
NASA 24Jul72 MSC-207 R-56 0010, 0011.
VIMS 10Oct72 NH-O-1 to 13;
VIMS 18Dec72 NH-O-146 to 148.

SEGMENT 1, KIPTOPEKE
SUBSEGMENTS A-H
SUBSEGMENT DESCRIPTIONS

WISE POINT, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 1A (Maps 2A, 2B, 2C)

EXTENT: 10,900 feet (2.1 mi.), Wise Point to 0.6 mile north of America House Inn.

SHORELANDS TYPE
FASTLAND: Low shore (southerly 6,500 ft.); to moderately low shore, with 25-foot bluff directly behind the beach (northerly 4,400 ft.).
SHORE: Sand beach, narrow to intermediate width.
NEARSHORE: Intermediate (750 yds.); multiple, parallel bars; short, oblique bars at the edge of the beach.

SHORELANDS USE
FASTLAND: Unmanaged, unwooded (4,100 ft.), wooded (6,800 ft.).
SHORE: Some bathing near America House, boat launching at Wise Point.
NEARSHORE: Boating and fishing.

OFFSHORE BOTTOM: A 15-foot deep shoal lies 1 mile off the beach, a 30-foot channel lies between.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 16 miles, W is 15 miles and NW is 24 miles.

OWNERSHIP: Federal (20%), private (80%).

ZONING: Agricultural.

FLOOD HAZARD: High in low plain area (Wise Point) but not critical. The fastland to the north is high enough to be above most flood levels.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Good. Beach is thin and not overly wide, but the sand is bright and the grain size is medium-fine.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Slight accretion apparent but not sufficient, or too recent to have shown up in the historical survey; the bluff supplies the sand. There has been moderate erosion at the point.
ENDANGERED STRUCTURES: Side road in danger of being undermined at the point.
SHORE PROTECTIVE STRUCTURES: Type: Riprap, about 200 feet long, to protect the road at the point.
Effectiveness: Appears to be holding.

Suggested Action: Monitor riprap, elsewhere no action needed. Groins might help riprap.

OTHER SHORE STRUCTURES: Boat ramp at Wise Point.

POTENTIAL USE ENHANCEMENT: At modest cost the access to the beach at America House might be improved, beach should be cleaned and practice of dumping trash discontinued.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FISHERMANS ISLAND and TOWNSEND Quadrs., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-19, 20.
USAF 10Nov59 AF59-35 R-21, 1936;
USAF 1Dec59 AF59-35 R-26 2477, 2478.
VaDH 10Apr63 5 065 129 086, 088.
USGS 30Jan67 GS-SWBK-1 1-89, 90, 91, 95, 96, 98, 99.
VIMS 22Aug72 NH-1A-109 to 112;
VIMS 10Oct72 NH-1A-14, 15;
VIMS 27Dec72 NH-1A-163 to 174.
Ground - VIMS 3Aug72 NH-1A-1G to 4G.

LATIMER SIDING, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 1B (Maps 2A, 2B, 2C)

EXTENT: 5,200 feet (1 mi.), from 0.6 mile north of America House Inn to 0.7 mile south of former Kiptopeke ferry pier.

SHORELANDS TYPE
FASTLAND: Moderately low shore, with 25-foot bluff.
SHORE: Narrow, thin sand beach.
NEARSHORE: Intermediate width (450 yds.), contains at least 3 parallel bars, and has short, frequent, southwest-trending, oblique, sand waves at the toe of the beach.

SHORELANDS USE
FASTLAND: Unmanaged, wooded; agricultural behind.
SHORE: Limited bathing.
NEARSHORE: Fishing, boating.

OFFSHORE BOTTOM: A 15-foot deep shoal lies 1¼ miles off the beach, a 25 to 30-foot channel intervenes.

WIND AND SEA EXPOSURE: The shoreline trend is NNW - SSE. The fetch from the SSW is 17 miles, WSW is 15 miles, and WNW is 20 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low bluff protects fastland property from high seas.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Sand is good, but beach is narrow and thin.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate, 2.5 feet per year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Type: Some rubble riprap at the end of the road from Latimer Siding.
Effectiveness: Questionable.

Suggested Action: Erosion is neither severe nor critical here, so no immediate action is

necessary. However, if it is desired to eliminate erosion and to widen the beach it would probably be necessary to install bulkheading along the base of the bluff, add a groinfield, and artificially nourish the beach, perhaps from the bars of the nearshore zone.

OTHER SHORE STRUCTURES: One dilapidated stairway gives access over the bluff to the beach from the road at Latimer Siding.

POTENTIAL USE ENHANCEMENT: With increased access to the beach and improvements suggested above to widen the beach, the recreational aspect of the shore could be enhanced. However, with the ferry pier beach immediately to the north, the forseeable need to improve this section of the beach is not great. Elimination of potato dumping over the bluff at Latimer Siding would improve the vicinity.

MAPS: USGS, 7.5 Min.Ser. (Topo.), TOWNSEND Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-17, 21.
USAF 10Nov59 AF59-35 R-21, 1936;
USAF 1Dec59 AF59-35 R-26 2477, 2478.
VaDH 10Apr63 5 065 129 088.
USGS 30Jan67 GS-SWBK-1 1-89, 90, 91.
VIMS 22Aug72 NH-1B-113 to 115;
VIMS 10Oct72 NH-1B-16, 17.

Ground - VIMS 3Aug72 NH-1B-5G to 10G.

KIPTOPEKE BEACH, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 1C (Maps 3A, 3B, 3C)

EXTENT: 6,400 feet (1.2 mi.), from 0.7 mile south of the former ferry pier to 0.5 mile north of the pier.

SHORELANDS TYPE
FASTLAND: Moderately low shore, with 30-foot bluff directly behind the beach.
SHORE: Intermediate to wide, sand beach.
NEARSHORE: Narrow to intermediate with a smooth regular bottom.

SHORELANDS USE
FASTLAND: Unmanaged, wooded; agricultural behind.
SHORE: Some bathing, beachcombing.
NEARSHORE: Sport fishing, boating.

OFFSHORE BOTTOM: The breakwater dominates, lies about 2,000 feet off the beach and shields the central two-thirds of the subsegment from heavy seas. The upper end of Latimer Shoal, with a depth of 15 feet, lies 1½ miles off the beach to the southwest.

WIND AND SEA EXPOSURE: The shoreline trend is NNW - SSE. Not considering the breakwater, there is a SSW fetch of 16 miles, a WSW fetch of 17 miles, and WNW fetch of 19 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low. Except for the beach itself, most structures are above the likely reach of storm surge.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Excellent. Although relatively narrow at either end, the beach widens rapidly toward the middle where drifting sand has collected either side of the ferry pier. Sand bright and clean, fine for beach recreation.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None. There is +26 feet per year accretion right at the pier, progressively slower either side away from the pier.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Type and Number: A two-sectioned breakwater, blanketing 3,500 feet of beach, located 2,000 feet out, composed of purposefully sunken, obsolete freighters placed bow to stern. The ferry pier itself acts as a large groin.
Effectiveness: The position of the breakwaters, although placed to provide a lee for the ferries, apparently also aids the pier in trapping large quantities of sand from either direction.

Suggested Action: None other than pier maintenance.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Excellent for major recreational facility including bathing, fishing, limited marina. Land access is already good.

MAPS: USGS, 7.5 Min.Ser. (Topo.), TOWNSEND Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-15, 17.
USAF 1Dec59 AF59-35 R-26 2477, 2478.
VaDH 10Apr63 5 065 129 088.
USGS 30Jan67 GS-SWBK-1 1-89, 90.
VIMS 22Aug72 NH-1C-116, 117;
VIMS 10Oct72 NH-1C-18, 19.

Ground - VIMS 3Aug72 NH-1C-11G to 13G.

BUTLERS BLUFF, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 1D (Maps 3A, 3B, 3C)

EXTENT: 7,000 feet (1.3 mi.), from 0.5 mile north of former Kiptopeke ferry pier to 0.3 mile north of Picketts Harbor.

SHORELANDS TYPE
FASTLAND: Moderately high shore, with a 30 to 55-foot bluff directly behind the beach (southerly 4,500 ft.); to moderately low shore, with a 20 to 25-foot bluff (northerly 2,500 ft.).
SHORE: Narrow, thin, sand beach.
NEARSHORE: Intermediate width (700 to 1,300 yds.), relatively smooth.

SHORELANDS USE
FASTLAND: Unmanaged, wooded; agricultural behind.
SHORE: Occasional bathing, beachcombing.
NEARSHORE: Sport fishing, shellfishing.

OFFSHORE BOTTOM: Comparatively steep slope from nearshore to a deep channel 3,600 feet offshore, rises gently seaward to an extensive plain bottom with average depth of 28 feet. Channel shoals and disappears at about 28 feet, near the ferry pier, deepens to about 85 feet to the northwest.

WIND AND SEA EXPOSURE: The shoreline trend is NNW - SSE. The fetch from the SSW is 16 miles, WSW is 17 miles, and WNW is 19 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low. Bluff protects fastland area from storm surge over-run.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Sand bright and clean, medium-fine in size, but beach is narrow and thin.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate to low. Numerical rate not given in historical survey. Sand appears to move in either direction depending on season of the year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Situation not critical, but in order to stem erosion and perhaps widen the beach, the base of the bluff might be bulkheaded or reveted, a groin field might be included, and nourishment could come from bars offshore by suction dredge.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: If adequate access were provided over the bluff at selected locations along the subsegment, the area could serve as a good bathing beach. Access should be restricted to protect the bluff between stairways. The top of the bluff offers an attractive overlook to sightseers and picnickers.

MAPS: USGS, 7.5 Min.Ser. (Topo.), TOWNSEND Quadr., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-14, 15.
USAF 1Dec59 AF59-35 R-26 2477.
VaDH 10Apr63 5 065 129 127.
USGS 30Jan67 GS-SWBK-1 1-88, 89, 90.
VIMS 22Aug72 NH-1D-118 to 125;
VIMS 10Oct72 NH-1D-20 to 22.

Ground - VIMS 3Aug72 NH-1D-14G to 19G.

POND DRAIN, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 1E (Maps 3A, 3B, 3C)

EXTENT: 7,600 feet (1.4 mi.), from 0.3 mile north of Picketts Harbor to 0.7 mile south of Elliots Creek.

SHORELANDS TYPE
FASTLAND: Low shore with elongate dunes, rising to as much as 50 feet, directly behind the beach.
SHORE: Wide, clean sand beach.
NEARSHORE: Width intermediate (1,250 yds.), with discontinuous bars, sub-parallel; small, oblique sand waves extend out from toe of beach.

SHORELANDS USE
FASTLAND: Unmanaged near beach, sparsely wooded; agricultural behind.
SHORE: Possibly some beachcombing.
NEARSHORE: Sport fishing.

OFFSHORE BOTTOM: Deepens rapidly from 6 feet to 15-22 feet in the southerly part of Cherrystone Channel (about 4,000 ft. off shore), shoals again to 12-15 feet (at about 5,000 ft.), deepens rapidly to 75-83 feet (6,500 ft. out), then finally shoals again to the general offshore depth in this area of about 28 feet.

WIND AND SEA EXPOSURE: The shoreline trend is NNW - SSE. The fetch from the SSW is 18 miles, WSW is 13 miles, and WNW is 18 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High but not critical. Although this is a low plain area, there are no structures to be endangered by storm surge.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Good. Sand is good, clean and bright, beach is wide. Pond Drain outlet crosses the beach near the center of the subsegment, but is intermittent.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Area in general appears to be accreting at a rate of 1-2 feet per year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None necessary on beach.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Excellent area to develop for public recreational purposes. Would include normal beach activities, picnicking, nature walks in dune area. Measures should be taken to protect the dunes from over exploitation, such as by dune buggies, etc.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK Quadr., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-13, 14.
USAF 1Dec59 AF59-35 R-26 2477.
VaDH 10Apr63 5 065 129 125, 127.
VIMS 22Aug72 NH-1E-125 to 127;
VIMS 100ct72 NH-1E-23 to 25.

SOUTH OF ELLIOTS CREEK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 1F (Maps 3A, 3B, 3C)

EXTENT: 3,400 feet (0.7 mi.), from 0.7 mile south of Elliots Creek entrance.

SHORELANDS TYPE
FASTLAND: Low shore, with single, low elongate dune immediately behind beach.
SHORE: Narrow, thin beach, littered with numerous fallen trees. There are frequent outcroppings of clay.
NEARSHORE: Intermediate width (1,100 yds.), with discontinuous, sub-parallel bars, some oblique sand waves at the toe of the beach; the outer part, from 4 to 12 feet deep, slopes more steeply than the inner part.

SHORELANDS USE
FASTLAND: Unmanaged, wooded; some agricultural behind.
SHORE: None, perhaps beachcombing.
NEARSHORE: Fishing.

OFFSHORE BOTTOM: The bottom slopes moderately from 12 feet to 20-23 feet in Cherrystone Channel (4,500 ft. off the beach), then it shoals to 9-10 feet on Old Plantation Flats (7,000 ft. off), and finally deepens rapidly to 75 feet in the bay (10,000 ft. off the beach).

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 14 miles, W is 18 miles, and NW is 14 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. Storm surge could overrun the area, but there are no structures below the 10-foot contour.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Poor. The sand is good, but the beach is narrow and thin, and is littered with eroded debris.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, as evidenced by fallen trees and residual stumps along the narrow beach. Also compare photos ANP22-13 (1938) and 5 065 129 125 (1963). Comparison between these photos indicates a rate of at least 5 feet per year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: The situation is noncritical, and no immediate action is called for. If the area ever does become important to development, bulkheading and an associated groin system will become necessary.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Low at present. High erosion rate would necessitate considerable expense in protecting the fastland. For recreation, the dune area to the south (subsegment 1E) offers much more development potential.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK Quadr., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-13.
USAF 1Dec59 AF59-35 R-26 2477.
VaDH 10Apr63 5 065 129 125.
VIMS 22Aug72 NH-1F-128, NH-1G-129, 130;
VIMS 100ct72 NH-1F-26.

Ground - VIMS 3Aug72 NH-1F-20G, 21G.

ELLIOTS CREEK, NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 1G (Maps 3A, 3B, 3C)

EXTENT: Area - 56 acres; length - (mouth to head of east arm) 0.8 mile, (mouth to head of south arm) 0.9 mile.

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Fringe and embayed marsh about 95% (3 acres fringe, 79 embayed); sand beach about 5%.
CREEK: Shallow. Inlet channel narrow with shoals.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: Landing and launching small boats.
CREEK: Possible waterfowl hunting.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low. Inlet spits provide some protection from storm surge flooding, and watershed area is small.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

OTHER SHORE STRUCTURES: None.

NAVIGABILITY: Generally poor.
APPROACHES: No channel, 2-foot or less depths extend out to 2,000 feet offshore, nearest approach of 6-foot contour is 2,200 feet; appear to be shifting bars and shoals outside of the inlet.
INLET: Narrow with a tortuous channel extending through 0.3 mile of marsh, subject to shifting shoals.
CREEK: Shallow, appears usable only by skiffs or small center-board sailboats.

POTENTIAL USE ENHANCEMENT: Low. Suitable for recreational use with small boats and for waterfowl hunting, or alternately as a waterbird sanctuary. Impractical to attempt to improve inlet and approaches for boating from bay.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK Quadr., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-13.
USAF 1Dec59 AF59-35 R-26 2477.
VaDH 10Apr63 5 065 129 125.
VIMS 22Aug72 NH-1G-129, 130;
VIMS 100ct72 NH-1F-26, NH-1H-27;
VIMS 18Dec72 NH-1G-145.

COSTIN POND, NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 1H (Maps 3A, 3B, 3C)

EXTENT: 4,800 feet (0.9 mi.), from Elliots Creek entrance to Old Plantation Creek entrance.

SHORELANDS TYPE
FASTLAND: Low shore, some vegetated dunes; an elongate pond, normal to the trend of the beach, lies behind the center of the subsegment.
SHORE: Sand beach, very narrow, thin, strewn with fallen trees and bushes either side of Costin Pond area; widens in front of Costin Pond where the backshore is low and subject to occasional washover; the beach also widens at the south spit of the entrance to Old Plantation Creek (Segment 2).
NEARSHORE: Intermediate width (1,100 yds.) on average to 12-foot contour, with discontinuous, sub-parallel bars and mud-flats.

SHORELANDS USE
FASTLAND: Agricultural primarily, with a few summer dwellings near Elliots Creek.
SHORE: Probable intermittent bathing and shellfishing.
NEARSHORE: Fishing.

OFFSHORE BOTTOM: Deepens to 19-23 feet in Cherrystone Channel, 6,000 feet off the beach; then shoals to 9-10 feet on Old Plantation Flats, 8,700 feet off the beach; and deepens again rapidly to 70-75 feet in the bay, 11,500 feet off the beach; contours are fairly regular.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 19 miles, W is 18 miles, and NW is 14 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium from storm surge; most of the fastland is below 10 feet in elevation. A flood situation could be serious considering the dwellings by the beach.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair in front of Costin Pond area, elsewhere poor, as the beach is narrow, thin, and strewn with debris.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, approximately 5 feet per year along most of the length of the subsegment. Situation is critical in area of residences.
ENDANGERED STRUCTURES: There are 3 dwellings, one in imminent danger of destruction (Photo NH-1H-22G, 3Aug72).
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: To protect the endangered dwellings some 3,000 feet of continuous bulkheading along the waterfront is necessary. Shorter lengths in front of the individual houses would be quickly flanked and rendered useless. Groins would be necessary to rebuild the beach.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Low because of expense involved in protecting the shorefront, and storm flood danger.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK Quadr., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-13.
USAF 30Nov59 AF59-35 R-24 2284.
VaDH 10Apr63 5 065 129 123, 125.
VIMS 22Aug72 NH-1G-130, NH-1H-131;
VIMS 10Oct72 NH-1H-27;
VIMS 18Dec72 NH-1G-145.

Ground - VIMS 3Aug72 NH-1H-22G.

SEGMENT 2, OLD PLANTATION CREEK
SEGMENT DESCRIPTION

OLD PLANTATION CREEK, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 2 (Maps 4A, 4B, 4C)

EXTENT: 670 acres; main (north) arm 2¾ miles, east arm 1½ miles long, both measured from the inlet.

SHORELANDS TYPE
FASTLAND: Low shore, generally with a 10-foot bluff rising from the marsh-edge.
SHORE: Fringe and embayed marsh (74 and 89 acres respectively), except sand beaches on spits either side of inlet.
CREEK: Submerged meanders, dendritic branches, shallow, sand and mud flats, no appreciable channel beyond Hunts Point.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: None, except that incidental to boat landing and wharf crossing.
CREEK: Shellfish industry, contains 448 acres of leased oyster tracts; waterfowl hunting, fishing and some small boating.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High in the vicinity of the inlet, medium elsewhere near the water's edge due to the possibility of storm flood surge from the bay but noncritical, as most buildings are at least above the 5-foot contour. Hazard is low to surrounding bluff property.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Stable, except for occasional shifting and breaching of the inlets spits by heavy seas during storms.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

OTHER SHORE STRUCTURES: Some 14 wharves and a few duck blinds are located in the creek.

NAVIGABILITY
APPROACHES: Poor. The 6-foot contour is almost ¾ mile outside of the inlet, the general depth is about 2 feet, there is no well-defined channel.
INLET: Poor. Shifting shoals and spits.
CREEK: Poor. There is more or less of a channel to vicinity of Hunts Point, with depths of 5 or 6 feet, but there are frequent shoal spots of 1 foot depths. Local information indicates that the creek is filling with sediment over the years; there has been no maintenance.

POTENTIAL USE ENHANCEMENT: Would be costly to dredge and maintain the channel for cruising in and out of the inlet due to the instability of the shoals and inlet spits; creek is presently unpolluted and might be better preserved that way for oyster harvesting, fishing, waterfowl hunting and small-boating within the creek.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK, TOWNSEND and CHERITON Quadrs., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-11, 12, 13.
USAF 30Nov59 AF59-35 R-24 2284;
USAF 1Dec59 AF59-35 R-26 2477.
VaDH 10Apr63 5 065 129 123, 125.
VIMS 22Aug72 NH-2-132, 133;
VIMS 10Oct72 NH-2-28, 105 to 108;
VIMS 18Dec72 NH-2-143;
VIMS 27Dec72 NH-2-175 to 241.

Ground - VIMS 11Aug72 NH-2-23G.

SEGMENT 3, CAPE CHARLES
SUBSEGMENTS A-F
SUBSEGMENT DESCRIPTIONS

ALLEGOOD POND, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 3A (Maps 4A, 4B, 4C)

EXTENT: 6,000 feet (1.1 mi.), from entrance to Old Plantation Creek to Cape Charles City Rear Light.

SHORELANDS TYPE
FASTLAND: Low shore with an elongate pond and creek arm consecutively behind and parallel to beach.
SHORE: Narrow, sand and marl beach with tree stumps and debris.
NEARSHORE: Width intermediate (2,400 ft. av.), with multiple, parallel bars, sand bottom.

SHORELANDS USE
FASTLAND: Unmanaged, wooded in southern half; agricultural in northern half.
SHORE: Occasional beachcombing.
NEARSHORE: Sport fishing and fish traps.

OFFSHORE BOTTOM: Cherrystone Channel parallels shore about $\frac{3}{4}$ mile out with depth of about 20 feet; beyond a $\frac{3}{4}$ to 1 mile wide flat, with minimum depths of 11 to 12 feet, shields the area from the NNW around to the SSW; deep channel $\frac{1}{2}$ mile wide, with maximum depths between 90 and 125 feet, borders the flat; and west of this the general depth of the bay is 40 to 45 feet.

WIND AND SEA EXPOSURE: The shoreline trend is NNW - SSE. The fetch from the SSW is 20 miles, WSW is 16 miles, and WNW is 13 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium to high. Most land is below the 10-foot contour.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Poor in southern half, beach is thin, only marly outcrops in some areas, tree stumps are frequent and beach is littered with woody debris, very narrow. The beach is better in the northern half. It is wider, with more sand, and less debris.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate, noncritical, nearly 3 feet per year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Low priority, none warranted at present.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Low. The narrow beach and high erosion rate would necessitate considerable erosion protective work, e.g., groinfield and nourishment.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK Quadr., 1955, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-11.
USAF 30Nov59 AF59-35 R-24 2284;
USAF 1Dec59 AF59-35 R-26 2477.
VaDH 10Apr63 5 065 129 123.
VIMS 22Aug72 NH-3A-134, 135;
VIMS 10Oct72 NH-3A-29.

Ground - VIMS 11Aug72 NH-3A-24G, 25G.

SPOIL AREA SOUTH OF CAPE CHARLES HARBOR,

NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 3B (Maps 4A, 4B, 4C)

EXTENT: 6,000 feet (1.1 mi.), from Cape Charles City Rear Light to the south jetty at Cape Charles Harbor.

SHORELANDS TYPE
FASTLAND: Artificial fill (dredge spoil) backshore area, dunes and low shore behind.
SHORE: Wide, sand beach.
NEARSHORE: Intermediate in width at the south (3,000 ft.) to narrow in the north (1,050 ft.) where it is bordered by the dredged channel to Cape Charles Harbor; multiple, parallel bars, with some less regular, oblique bars at the toe of the beach along most of the length; sand bottom. (Photos NH-3B-137, 138).

SHORELANDS USE
FASTLAND: Unmanaged dunes, wooded to lightly vegetated; agricultural behind over most of the subsegment; industrial, cleared in the northerly 1,000 feet.
SHORE: Limited to occasional beach strollers due to lack of public access.
NEARSHORE: Pound nets, little else.

OFFSHORE BOTTOM: The dredged channel to Cape Charles Harbor and Cherrystone Inlet borders the edge of the nearshore area, with a depth of about 18 feet. Seaward of the channel a 6,000-foot wide shoal, with minimum depths of about 4 feet, constitutes a barrier to large waves impinging on the beach. Beyond, the offshore deepens gradually to a maximum of over 100 feet some 15,000 feet (2.8 mi.) off the beach.

WIND AND SEA EXPOSURE: The shoreline trend is NNW - SSE. The fetch from the SSW is 21 miles, WSW is 16 miles, and WNW is 13 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. Most land in the subsegment is between 5 and 10 feet, there are no buildings.

WATER QUALITY: Satisfactory over the southern two-thirds of the segment; intermediate over northern third (meets water class II B standards but does not meet shellfish standards).

BEACH QUALITY: Excellent. Beach is wide with clean sand.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None. The beach of the entire subsegment appears to have been made up of dredging spoil, reshuffled by waves and wind, and appears to be quite stable at present, except for some local cutting at the bulge south of the harbor jetty, due probably to wave refraction around the jetties. (Photos NH-3B-34, 35).
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Type and Number: At the south side of the harbor an earthen jetty (mole), faced with stone, extends about 200 feet out from the general line of the shore; a few auto bodies and other rubbish have been placed sporadically at the edge of the industrial property to curb the erosion there.
Effectiveness: The mole anchors the end of the beach and helps keep the harbor mouth open; the autos and rubbish are essentially ineffective.

Suggested Action: Additional study is needed to determine the exact cause of erosion at the bulge, then corrective measures might be applied; conditions are not critical at present.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: This is a fine beach for recreation, especially with the dune area behind, but improved access is needed.

MAPS: USGS, 7.5 Min.Ser. (Topo.), ELLIOTS CREEK and CAPE CHARLES Quadrs., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-11;
USDA 13Mar49 ANP2E-138.
USAF 30Nov59 AF59-35 R-24 2284.
VaDH 10Apr63 5 065 129 123.
VIMS 22Aug72 NH-3B-136 to 139;
VIMS 100ct72 NH-3B-30, 34, 35, NH-3C-31, 32;
VIMS 18Dec72 NH-3B-142, 144.

CAPE CHARLES HARBOR, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 3C (Maps 4A, 4B, 4C)

EXTENT: Area - 34 acres; length - ½ mile; perimeter approximately 5,800 feet.

SHORELANDS TYPE
FASTLAND: Low shore, artificial fill.
SHORE: Artificially stabilized - 80%; beach - 20%.
HARBOR: Dredged to 18-19 feet, except to 7 feet at "Harbor of Refuge" at northeast end.

SHORELANDS USE
FASTLAND: Industrial - 25%; commercial - 75%, which includes 2 marinas with berthing for some 50 craft, and 3 boat-launching ramps.
SHORE: Beach is narrow and extremely limited in the subsegment, not suitable for recreation; most shoreline is bulkheaded, providing access to boats over the caprail of the bulkhead or from adjoining piers. Contains 3 boat ramps.
HARBOR: Commercial and pleasure boat traffic and mooring.

OWNERSHIP: Private (approx. 90%), town (approx. 10%).

ZONING: Industrial.

FLOOD HAZARD: Medium. There is very little watershed area draining into the harbor. Principal danger would be from storm surges as most of the city lies between the 5 and 10-foot contours, and damages could be serious.

WATER QUALITY: Intermediate. Meets water class II B standards but not shellfish standards.

BEACH QUALITY: Poor. Narrow and short.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Type and Number: A curved stone jetty at the northside of the harbor entrance, 1,200 feet long; an earthen mole at the south, 200 feet long. Various bulkheads around the periphery of the harbor contain some 4,500 feet of the shoreline and act as dockage for boats.

Effectiveness: Jetty protects the harbor somewhat from waves, also limits sedimentation in the harbor from longshore drift. Bulkheads eliminate most shore erosion.

Suggested Action: No changes recommended at this time.

OTHER SHORE STRUCTURES: Railroad ferry slips on north side of harbor, various finger piers around the harbor.

NAVIGABILITY
APPROACHES: A 2½ mile, well-marked channel, dredged to about 18 feet provides good access to the harbor at all hours.
INLET: Good. Stabilized by the jetties and periodically dredged to 18 feet.
HARBOR: Good. Dredged to 18-19 feet.

POTENTIAL USE ENHANCEMENT: Harbor is currently well utilized for local industry and commerce. Other than the desirability of eliminating any water pollution, no specific recommendations for change are offered.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-9;
USDA 13Mar49 ANP2E-138.
USAF 30Nov59 AF59-35 R-24 2284.
VIMS 22Aug72 NH-3C-140;
VIMS 10Oct72 NH-3C-31, 32, 33 and 3D-36;
VIMS 18Dec72 NH-3C-141, 142.

CAPE CHARLES CITY BEACH,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 3D (Maps 4A, 4B, 4C)

EXTENT: 2,800 feet (0.5 mi.), from the north jetty at Cape Charles Harbor to the old ferry pier.

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Sand beach.
NEARSHORE: Sandy, narrow, with 3 or 4 parallel bars.

SHORELANDS USE
FASTLAND: Residential.
SHORE: Bathing, recreation.
NEARSHORE: Pound nets.

OFFSHORE BOTTOM: Channel to Kings Creek and Cherrystone Inlet forms the seaward boundary of the nearshore zone. Depths are 12 to 15 feet. Seaward is a shoal area a mile wide with minimum depths of 1 to 2 feet over much of its width. This deepens gradually to about 90 feet over the next 2½ miles.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 16 miles, WNW is 12 miles and NNW is 28 miles.

OWNERSHIP: Public street and sidewalk border the beach, private homes behind.

ZONING: Residential.

FLOOD HAZARD: Medium. All structures are above the 5-foot contour, although most of the town is below 10 feet. Hence, if severe hurricane tides occurred, heavy damage might result.

WATER QUALITY: Intermediate. Meets water class II B standards but not shellfish standards.

BEACH QUALITY: Fair. Except near the base of the jetty at the harbor mouth, the beach is narrow, held precariously by several marginally effective groins; it is crossed by broken and unsightly storm drains at the foot of each street, and is generally littered.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Slight. Not listed in the historical survey.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Type and Number: A seawall, wooden plank with wood piling upright supports in front, backfilled behind, runs for 2,300 feet along the back of the beach from the jetty north (Photo NH-3D-103G). Some 5 groins, wooden plank, of various lengths and in fair repair are situated along the length of the subsegment (Photo NH-3D-97G).
Effectiveness: The seawall is holding well; the groins are less effective due somewhat to insufficient height and length, but primarily, it appears, to lack of sufficient natural sand supply for nourishment.

Suggested Action: The existing groins might be extended and heightened, one more might be added between the jetty and the first groin to the north. Artificial nourishment could then be used to fill the beaches between the groins. Due to lack of natural sources, it is likely that artificial replenishment would be an occasional necessity.

OTHER SHORE STRUCTURES: Concrete storm drains extend across the beach at the foot of each street. They are frequently breached (Photo NH-3D-96G). The subsegment terminates at the north at the old ferry pier, which now is just a collection of pilings out in the water (Photo NH-3D-101).

POTENTIAL USE ENHANCEMENT: Good. Widening the beach with a more adequate groin-field and artificial sand nourishment would increase the usefulness of the beach as a recreation area. Repair or perhaps re-design of the storm drain outlets could also improve the appearance of the beach. Removal of the remains of the ferry pier would also enhance the appearance of the waterfront.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-9;
USDA 13Mar49 ANP2E-138.

USAF 30Nov59 AF59-35 R-24 2284.
VIMS 100ct72 NH-3D-36.

Ground - VIMS 9Nov72 NH-3D-94G to 104G.

OWENS LANDING, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 3E (Maps 4A, 4B, 4C)

EXTENT: 4,400 feet (0.8 mi.), from old ferry pier to inlet to Kings Creek.

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Sand beach.
NEARSHORE: Intermediate width, sandy bottom with bars toward ferry pier end, grassy towards Kings Creek Inlet, terminates outward in channel into Cherrystone Inlet.

SHORELANDS USE
FASTLAND: Unmanaged - 60%; agricultural - 40%.
SHORE: None apparent.
NEARSHORE: Boating (traversed by channel to Kings Creek).

OFFSHORE BOTTOM: Beyond Cherrystone Channel, which is 12 feet deep in places, the offshore zone shoals to 2 or 3 feet for nearly a mile, then deepens irregularly over the next 2½ miles to about 90 feet out in the bay.

WIND AND SEA EXPOSURE: The shoreline trend is NE - SW. The fetch from the W is 15 miles, and NW is 14 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. Area behind beach is between 5 and 10 foot elevation, there are no structures at present.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Narrow, but appears sandy. Grass toward northeast end makes that half less desirable for bathing.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Slight to moderate. Rate not listed in historical survey; appears heavier in the southwesterly quarter of the subsegment.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Erosion problem is not critical here as there appears to be no active use of the adjacent land or the beach. For conservation of the land, however, the bulkheading might be extended along the backshore from where it terminates at Washington Avenue (Subseg. 3D), to the area where the eelgrass has taken hold near the entrance to Kings Creek.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Moderate. The whole area north of Cape Charles City could be developed into a large public park. With a continuation of the bulkhead at the back of the beach, plus several groins and fill, an extensive beach could be produced in front of the southwesterly half of the subsegment. The northeasterly half might best be left as it is, as the eelgrass probably helps to stabilize the bottom on the approach to Kings Creek.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-8, 9;
USDA 13Mar49 ANP2E-137, 138.
USAF 30Nov59 AF59-35 R-24 2284.
VIMS 100ct72 NH-3E-37; NH-3F-104.

KINGS CREEK, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 3F (Maps 4A, 4B, 4C)

EXTENT: Area - 187 acres; length - 1.8 miles.

SHORELANDS TYPE
FASTLAND: Low shore, with a 10 to 15-foot bluff rising from the marsh edge except near the inlet.
SHORE: Fringe and embayed marsh (29 and 26 acres respectively).
CREEK: Main body follows a submerged meander pattern; branches are dendritic.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: There is an oyster boat landing at the north side of the inlet, 2 marinas on the south side just inside of the inlet, with associated boat ramp. Shore zone farther up the creek is little used except as incidental to landing small boats and being crossed by small, private wharves.
CREEK: There are 23 leased oyster tracts, covering 115 acres; some fishing; waterfowl hunting; small boating and access to the marinas.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. Most structures, other than wharves and marinas, are above the 10-foot contour; the watershed area is small. The greatest danger is to the marina and oyster boat facilities near the inlet, if high storm tides were to occur.

WATER QUALITY: Satisfactory in spring 1973, but had been unsatisfactory during the winter months in the vicinity of the marinas.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

OTHER SHORE STRUCTURES: The 2 marinas with associated finger piers to accommodate about 140 boats are located just inside the inlet on the south side of the creek. There is a boat-launching ramp at one of the marinas; an oyster wharf is on the north side of the inlet; there are some 10 other private wharves farther up the creek and a few duck blinds.

NAVIGABILITY
APPROACHES: Good. A 5-foot channel, well-marked with lighted and reflector beacons, leads from Cherrystone Channel through the inlet and to the marina area.
INLET: Appears stable. Channel is well-marked.
CREEK: Channel markers extend only to the marinas, but a 5 or 6-foot deep channel extends about two-thirds of the length of the creek.

POTENTIAL USE ENHANCEMENT: For its size and location, the creek appears to be optimally used at present.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES and CHERITON Quadrs., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-8;
USDA 13Mar49 ANP2E-137, 138.
USAF 30Nov59 AF59-35 R-24 2284.
VIMS 10Oct72 NH-3E-37, NH-3F-104;
VIMS 27Dec72 NH-3F-243 to 276, NH-3F-337 to 347.

SEGMENT 4, SAVAGE NECK
SUBSEGMENTS A-F
SUBSEGMENT DESCRIPTIONS

WESCOAT POINT, SAVAGE NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 4A (Maps 5A, 5B, 5C)

EXTENT: 3,000 feet (0.5 mi.) in 1972, from Cherrystone Inlet to vicinity of Old Orchard Point.

SHORELANDS TYPE
FASTLAND: Low shore (sand spit with low dunes, partly vegetated).
SHORE: Sand beach.
NEARSHORE: Wide with multiple, parallel bars crossed by oblique sand waves trending both southwest and northwest.

SHORELANDS USE
FASTLAND: Unmanaged.
SHORE: None.
NEARSHORE: None.

OFFSHORE BOTTOM: The offshore deepens gradually out into the bay, has a trace of an offshore bar with a crest depth of 14-15 feet, positioned 6,900 feet (1.3 mi.) out. Intervening depth is 24 feet.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 16 miles, W is 12 miles, and NW is 20 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High. Storm waves can, no doubt, wash over the entire spit, and breach it in weak places, but there are no structures, so the economic danger is minimal.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Good. Medium width, tan sand beach for the entire length of the beach on both sides of the spit.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, noncritical. The spit was 3,900 feet shorter in 1972 than in 1959, 1,700 feet shorter in 1967, giving a regression rate of 300 or more feet per year, but the losses probably occur suddenly during storms, rather than gradually.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: The ephermeral nature of the spit leads to the recommendation that the area be left wild. As such it could serve as a public reservation for nature study by those willing to traverse the area on foot.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-8;
USDA 13Mar49 ANP2E-137.
USAF 30Nov59 AF59-35 R-24 2284.
VIMS 10Oct72 NH-4A-40, 41;
VIMS 18Dec72 NH-11-332.

OLD ORCHARD, SAVAGE NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 4B (Maps 5A, 5B, 5C)

EXTENT: 3,300 feet (0.6 mi.), from opposite Old Orchard Point to opposite Remus Creek.

SHORELANDS TYPE
FASTLAND: Low shore with a line of dunes at the back of the beach.
SHORE: Narrow, sand beach.
NEARSHORE: Wide (4,500 ft.), with 1 to 2 parallel bars near the outer boundary; oblique bars or sand waves occur at the toe of the beach, (Photo NH-4C-333).

SHORELANDS USE
FASTLAND: Unmanaged, wooded; agricultural behind.
SHORE: Probably very limited use for local bathing and strolling.
NEARSHORE: None.

OFFSHORE BOTTOM: Bottom deepens gradually to 65 feet 4 miles off the beach. An offshore bar lies 8,700 feet ($1\frac{3}{4}$ mi.) off the beach. Its crest is at 23-25 feet, the intervening depth is 34 feet.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 17 miles, W is 12 miles, and NW is 20 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. All of the fastland area is above 5 feet; the dunes form a barrier 10 feet or more high along most of the bay front.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Sand is bright and clean, but beach is narrow.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Shoreline appears stable at present, although historical survey indicates an erosion rate of 3 feet per year.

ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Low. The area is too limited in size and the beach too narrow to warrant any public development other than to provide limited access to Wescoat Point.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-7, 8;
USDA 13Mar49 ANP2E-137.
USAF 30Nov59 AF59-35 R-24 2284.
VIMS 10Oct72 NH-4A-41, NH-4B-42;
VIMS 18Dec72 NH-11-332, 333.

CUSTIS POND DUNE AREA, SAVAGE NECK, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 4C (Maps 5A, 5B, 5C)

EXTENT: 9,800 feet (1.9 mi.), from opposite Remus Creek to an irrigation pond at the beach one-half mile south of Tankards Beach. Shoreline trends approximately north in the southerly half and northeast in the northerly half.

SHORELANDS TYPE
FASTLAND: Dunes, low shore behind.
SHORE: Medium width sand beach, with one acre of embayed marsh immediately behind the beach at the north boundary of the subsegment.
NEARSHORE: Intermediate width (900 yds.), with one large bar with several parallel discontinuous crests, near to or joining the beach at the north and angling out toward the southwest (Photos NH-4C-333, 334).

SHORELANDS USE
FASTLAND: Undeveloped dunes are 400 to 1,600 feet wide, but with a few summer dwellings in the southerly third; agricultural behind.
SHORE: Limited bathing and strolling.
NEARSHORE: Sport fishing, pound nets.

OFFSHORE BOTTOM: Deepens to 62 feet 4 miles off the beach. The general slope is interrupted by a bar with about 10 feet relief, $1\frac{3}{4}$ mile off the beach; crest depths are 25-29 feet. Beach is exposed to seas from all westerly quadrants and from the north.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 18 miles, WNW is 11 miles, and NNW is 27 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low to medium. All structures are in the dunes or behind, and dune relief is 5 to 10 feet immediately behind the beach.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Good in southerly two-thirds where the beach is of moderate width, and the sand is clean and bright and plentiful. Poor in the northerly third where the shore is eroding, is narrower and is littered with stumps and woody debris. Sand is very thin here and marl outcrops frequently (Photo NH-4C-40G).

PRESENT SHORE EROSION SITUATION
EROSION RATE: None in the southerly two-thirds; severe, noncritical, (possibly up to 7 ft./yr.) in the northerly third.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None needed in southerly part. In the north the erosion becomes severe, but not critical as no structures are endangered and no action is specifically recommended for the present. Bulkheading and groins might be considered in the future as a southerly extension of necessary protective works in the critical areas to the north (see 4D).

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: This area has high potential as a preserved natural wild area due to the presence of the high and extensive dunes (Photos NH-4C-36, 37). These should be accessible to the public. The beach is good and perhaps limited access could be provided to it through gaps in the dunes.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-7.
USAF 30Nov59 AF59-35 R-24 2284, 2293.
VIMS 10Oct72 NH-4C-43 to 48;
VIMS 18Dec72 NH-4C-328, 333, 334.

Ground - VIMS 2Nov72 NH-4C-26G to 42G.

TANKARDS BEACH - SMITH BEACH, SAVAGE NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 4D (Maps 5A, 5B, 5C)

EXTENT: 13,000 feet (2.5 mi.), from irrigation pond one-half mile south of Tankards Beach to the entrance to The Gulf. Shoreline trend is northwesterly.

SHORELANDS TYPE
FASTLAND: Low shore, with a 10 to 20-foot bluff directly behind the beach. Composition is approximately 75% sand, 25% silt-clay.
SHORE: Sand beach, narrow to medium width.
NEARSHORE: Intermediate width over most length (600-700 yds.), widening to 1,800 yards off The Gulf. Topography is fairly simple off the southerly half of the subsegment, without prominent bars or shoals; becomes complex as it widens to the north, with a large bar extending down from the vicinity of Hungars Creek (Photo NH-7-335), and terminates 1,200 feet off the shore just north of Tankards Beach. The northerly part of this bar is emergent at low tide. Depths of 7-14 feet occur between the bar and the shore. Immediately adjacent to the shore at Smith Beach are about a dozen bars or sand waves extending up to 300 feet out, normal to the shoreline.

SHORELANDS USE
FASTLAND: Residential (mostly seasonal) 50%; agricultural 40%; unmanaged, wooded 10%.
SHORE: Bathing, beach recreation.
NEARSHORE: Fish traps, fishing, boating, shellfishing on tidal flats.

OFFSHORE BOTTOM: Offshore zone slopes to 60 feet about 4 miles off the beach. It appears terraced, with near flats prevailing between 24 and 30-foot contours and again between 42 and 48-foot contours; somewhat steeper slopes separate these terraces and also occur beyond the 48-foot mark down to the deep bay channel at 65-70 feet.

WIND AND SEA EXPOSURE: The shoreline trend is NE - SW. The fetch from the W is 13 miles, NW is 16 miles, and N is over 50 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: None, except as high waters erode the toe of the bluff.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair to good. Sand is tan and clean, but beaches tend to be on the narrow side, particularly at high water.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, critical, 7 feet per year according to long term rates, but photo and map evidence of recent years indicates higher rates in some places, possibly up to 20 feet per year.
ENDANGERED STRUCTURES: There are about 60 dwellings along the bluff-front of this subsegment which are to some degree endangered as they are for the most part within 100 feet of the bluff edge. In addition there is the Federal Aviation Administration VOR Station, no more than 150 feet from the bluff, whose geographical position is critical to the air navigation network in the Tidewater area. One dwelling at Tankards Beach has been destroyed during the past autumn by bluff retreat (Photo NH-4D-45G).
SHORE PROTECTIVE STRUCTURES: Tankards Beach: A concrete-slab bulkhead was placed along the bluff in front of the destroyed house in the late sixties. This was flanked and soon destroyed (Photo NH-4D-44G). Five 60-foot, plank groins have been placed at about 60 to 70-foot intervals in the summer of 1972 just north of the lost house. They have trapped some sand, but appear to be too low and too short as well as too close together (Photos NH-4D-415 and NH-4D-52G).

Stone riprap has been placed in front of the road to the edge of the bluff at the VOR site. This has been effective in protecting the end of the road, but was being flanked in the autumn of 1972. Rubble has been placed in the vulnerable places in an effort to stem erosion (Photos NH-4D-418 and NH-4D-53, 55).
Smith Beach: Twenty-five groins constructed of railroad ties placed side by side in upright rows are located along a mile stretch of the beach south of the inlet to The Gulf. These are completely ineffective. As they are permeable, no sand has been trapped and they have also been flanked at their inner ends (Photo NH-4D-192G). Railroad tie bulkheads have also been tried in this same area with equally disastrous results (Photo NH-4D-202G).

Two impermeable groins have been placed at the north end of Smith Beach at the entrance to The Gulf (Photo NH-4D-432). The most southerly has been more effective because it is not permeable. The northerly groin does not appear effective probably because it is too much in the shadow of the first and no sand is permitted to reach it.

Suggested Action: Erosion along this subsegment is critical. A unified approach to solving the problem is needed. This should include construction of impermeable bulkheading along the entire length of the bluff, and groins should be spaced appropriately along it and tied solidly to the bulkhead. This will be very costly, and individual owners may not be able to support the whole cost. Governmental assistance will probably be necessary. Greater spacing, added height and increased length of the groins at Tankards Beach would provide a temporary measure of protection there.

OTHER SHORE STRUCTURES: An attempt to build a boat slip on the beach with railroad ties was not particularly successful (Photo NH-4D-58G). Various stairways down the bluff-face are constantly being undermined and in need of repair and moving (Photos NH-4D-203G, NH-4D-56G).

POTENTIAL USE ENHANCEMENT: The greatest need for the Tankards Beach area is adequate shore erosion protection as discussed above. The area as it is, is probably best suited for summer residences since 50% of the area is already in such use.

MAPS: USGS, 7.5 Min.Ser. (Topo.), WESCOAT POINT Quadr., 1955, CAPE CHARLES Quadr., 1968, CHERITON Quadr., 1955 and 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-4, 5.
USAF 30Nov59 AF59-35 R-24 2293.
VIMS 10Oct72 NH-4D-49 to 55;
VIMS 18Dec72 NH-4D-317 to 327;

VIMS 27Dec72 NH-4D-413 to 432.

Ground - VIMS 2Nov72 NH-4D-43G to 61G;
VIMS 7Dec72 NH-4D-192G to 203G;
VIMS 8Mar73 NH-4D-211G to 224G.

SEGMENT 5, THE GULF
SEGMENT DESCRIPTION

THE GULF, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 5 (Maps 6A, 6B, 6C)

EXTENT: Area - 161 acres; length - 1.8 miles (main branch).

SHORELANDS TYPE
FASTLAND: Low shore, with a 15-foot bluff rising from the marsh area except in the vicinity of the inlet.
SHORE: Fringe and embayed marsh (26 and 23 acres respectively).
CREEK: Dendritic in form, submerged meander pattern; several small marsh islands occur within the first half mile inward from the inlet; shallow.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: Appears little used except near the mouth where there are 2 or 3 oyster wharves on the north side, and on the south side below White Cliffs at the north end of Smith Beach, there are approximately a dozen private boat landings.
CREEK: There are 14 leased oyster tracts, comprising 85 acres in The Gulf; there is some small boating, and probably some waterfowl hunting.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High in the vicinity of the entrance, medium within The Gulf to waterfront properties due to possibility of storm surge from the bay. Low to surrounding fastland properties on the bluffs.

WATER QUALITY: Intermediate, late spring of 1973; unsatisfactory particularly in the vicinity of the boat landings and oyster wharves in the previous winter.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

OTHER SHORE STRUCTURES: There are approximately 15 wharves near the inlet for oyster boats and other private small craft.

NAVIGABILITY
APPROACHES: Poor. There is somewhat of a channel, unmarked, with minimum depth of about 4 feet, running up along the nearshore zone off Tankards and Smith Beaches. Chart #563 indicates less than 1 foot of water just outside the entrance, although Photo NH-5-316, taken at extremely low water in December, 1972, shows a small channel hugging the north side of the inlet.
INLET: Subject to shoaling and shifting bars. Presently a small channel along the north side serves the oyster boats. There are no channel markers.
CREEK: There is an intricate pattern of marshy islands and shoals in the first half mile inside the inlet. The remainder of the creek appears quite shallow.

POTENTIAL USE ENHANCEMENT: The small size and difficult approach make The Gulf unsuitable for marina development. Its present precarious condition, regarding pollution, with over half its area devoted to producing oysters, demands extreme caution in any development project. With its stable, low-bluff shoreline, The Gulf best offers sites along its banks for residential use, provided adequate sewage treatment facilities are included.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CHERITON Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USAF 30Nov59 AF59-35 R-24 2293.
VIMS 100ct72 NH-5-100, NH-6-56;
VIMS 18Dec72 NH-5-316;
VIMS 27Dec72 NH-5-433, 434.

SEGMENT 6, OLD TOWN NECK
SEGMENT DESCRIPTION

OLD TOWN NECK, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 6 (Maps 6A, 6B, 6C)

EXTENT: 6,500 feet (1.2 mi.), from The Gulf to the north end of Hungars Beach.

SHORELANDS TYPE

FASTLAND: Low shore, with a 10 to 15-foot bluff behind the beach; except in the southerly 1,500 feet the bluff is behind a 200-foot wide, low dune area.

SHORE: Alternating narrow, sand beach (3,500 ft.), and wider fringe marsh at "nodes" (3,000 ft., 3 acres).

NEARSHORE: Wide, with irregular bars and shoals. Within this zone, at about 3,000 feet off the shore, there is an elongate tidal flat which fronts the entire segment, extending from off Honeymoon Island at the entrance to Mattawoman Creek to the south end of Smith Beach on Savage Neck. Between the flat and the shore, a channel, ranging between 7 and 16 feet deep, runs up the length of the segment from the south. At the north it is reduced to a narrow run only 1 to 2 feet deep. Seaward of the tidal flat there are several irregular fingerlike shoals trending northwest. Other isolated shoals trend north to northeast.

SHORELANDS USE

FASTLAND: Unmanaged, wooded (south half); residential (north half).

SHORE: Minimal use for shore recreation.

NEARSHORE: Shellfishing.

OFFSHORE BOTTOM: The bottom slopes moderately from the 12-foot contour to 42 feet over a distance of about 7,500 feet. The slope decreases to form a terrace sloping very gently to the 48-foot contour over a distance of 9,000 feet. Beyond there the slope steepens sharply to depths of 70 to 80 feet in a distance of 2,500 feet.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 20 miles, W is 12 miles, and NW is 20 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Sand is bright and clean; beach narrow between marshy nodes.

PRESENT SHORE EROSION SITUATION

EROSION RATE: Severe, critical, in the northerly 1,000 feet (5-6 ft./yr.); to the south the net is close to zero (cut and fill as the nodes shift along the beach). Some 700 feet of the north point had been cut back between 1943 and 1967. This was a low, probably sandy, spur pointing toward Honeymoon Island.

ENDANGERED STRUCTURES: None in immediate danger, but one dwelling is located within about 100 feet of the bluff in the severe erosion area.

SHORE PROTECTIVE STRUCTURES: Type and Number: Two plank groins, impermeable, 60 feet long and 60 feet apart, were emplaced at Hungars Beach in November, 1972 by Mr. A. J. Bowden (Photo NH-6-76G).

Effectiveness: The winter littoral drift is southerly and the northerly groin had worked well by the end of the year (Photo NH-6-435), but the southerly groin had gathered nothing. In March, 1972 the site was revisited, the northerly groin remained full and the southerly one had gathered some sand also, but it was being flanked at its inner end and the bluff was continuing to recede at that point (Photo NH-6-201G, 204G, 205G).

Suggested Action: The entire reach, from the tip of Hungars Beach to the accretion area to the south needs protection, probably in the form of continuous bulkheading or riprap, and longer, higher groins, more widely spaced and tied securely to bulkhead.

POTENTIAL USE ENHANCEMENT: Hungars Beach has been subdivided and will be developed for residences along the bluff top. Appropriate shore erosion measures as outlined above should be carried out to protect the bluff. The southerly low dune area does not lend itself well to residential development and would better be used as a public park and recreation area.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CHERITON Quadr., 1968 and FRANKTOWN Quadr., 1943, 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USAF 30Nov59 AF59-35 R-24 2293.
VIMS 10Oct72 NH-6-56 to 59;
VIMS 18Dec72 NH-6-314, 315;
VIMS 27Dec72 NH-6-435, 436.

Ground - VIMS 2Nov72 NH-6-62G to 84G;
VIMS 8Mar72 NH-6-192G to 210G.

SEGMENT 7, HUNGARS CREEK
SEGMENT DESCRIPTION

HUNGARS CREEK, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 7 (Maps 6A, 6B, 6C and 7A, 7B, 7C)

EXTENT: Area - 2,067 acres, including Barlow Creek, Mattawoman Creek, Hungars Creek and its branches along with the combined creek mouth area, limited on the bay side by a line drawn from the north tip of Hungars Beach to the south tip of Great Neck. Length - Hungars Creek, 4.3 miles; Mattawoman Creek, 3.0 miles to the end of the northeast branch; both measurements from the outer boundary of the creek complex.

SHORELANDS TYPE
FASTLAND: Low shore. The creeks and their branches are bounded by low bluffs generally 10 to 15 feet high.
SHORE: Fringe marsh, embayed marsh at heads of creek branches.
CREEK: The Hungars Creek system is dendritic in pattern, with each branch following a submerged meander valley; marsh filling the upper end of each. The creeks are generally shallow with various shoals, and in the lower third of Hungars Creek there are large tidal flats; a few small islands are located in the mouth area.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: None, except to support a few wharves and for occasional boat landings.
CREEK: There are 116 leased oyster tracts comprising 1,102 acres on the combined creeks. There is some trout fishing and waterfowl hunting and a limited amount of small boating.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High in the vicinity of the inlet, medium within the creek to waterfront properties due to possible storm surge from the bay. Low to surrounding bluff properties. Situation noncritical as there are few structures below 10 feet elevation.

WATER QUALITY: Satisfactory in spring 1973, meets both water class II B and shellfish standards; condition was intermediate in the previous winter.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None, except for the sand islands at the mouth, which shift frequently.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

OTHER SHORE STRUCTURES: There are 14 small wharves on the creeks, serving small private boats, including some oyster boats.

NAVIGABILITY
APPROACH AND INLET: A channel, marked by lighted beacons, enters the mouth of the creek from the southwest, across the nearshore zone. Minimum depths are 7 feet.
CREEKS: The channel continues into Hungars Creek, marked by stakes. It crosses the 6-foot contour off the center of Wilsonia Neck and 4-foot depths continue to just past Sparrow Point. Upper Hungars Creek and Jacobus Creek are quite shallow, with only 1 or 2-foot depths. Barlow Creek and Mattawoman Creek are also both quite shallow and manageable only by skiff.

POTENTIAL USE ENHANCEMENT: The large acreage (over 50% of the combined creek areas) of oyster tracts and the present unpolluted condition of the creek waters recommend caution in any development plans. Lack of beaches on the creeks limits the potential of the area for development of public shoreline recreation facilities, but the bluff topography, with little or no erosion problem recommends the area to residential use.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-C&GS 10Mar55 W4338, W4340.
USAF 30Nov59 AF59-35 R-24 2293, R-25 2406, 2407.
USGS 30Jan67 GS-SWBK-1 1-82, 83, 84.
VIMS 100ct72 NH-6-59, NH-7-60, 61, NH-7-97 to 101, NH-8A-62 to 64;
VIMS 18Dec72 NH-7-335.

SEGMENT 8, CHURCH NECK
SUBSEGMENTS A-E
SUBSEGMENT DESCRIPTIONS

GREAT NECK SPIT, CHURCH NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 8A (Maps 7A, 7B, 7C)

EXTENT: 2,800 feet (0.5 mi.), from Hungars Creek entrance to juncture of the spit with mainland Great Neck.

SHORELANDS TYPE
FASTLAND: Low shore, a sand spit with low dunes, well-vegetated with small trees above the maximum tide level, marsh grass at lower elevations on the creek side.
SHORE: Mostly fringe marsh about 50 feet wide (approx. 3 acres), some isolated sand beach areas on the bay side.
NEARSHORE: Wide (1,700 yds.), grassy tidal flat in the first 200 yards off the beach; a large bar, 250 yards wide with a relief of 3 feet, containing extensive tidal flats, is centered 1,100 yards out, parallel to the spit, and extends southward halfway across the entrance to Hungars Creek, slightly overlapping on the seaward side the large tidal flat which lies seaward of Old Town Neck and Smith Beach. Smaller oblique bars or sand waves lie off the spit just beyond the tidal flat, and some are also superimposed on the large bars seaward of the tidal flats.

SHORELANDS USE
FASTLAND: Unmanaged, wooded.
SHORE: None.
NEARSHORE: Fishing (trout and flounder); shellfishing.

OFFSHORE BOTTOM: Slopes irregularly to 70-75 feet at 9,500 yards (5 mi.) off the beach.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 22 miles, W is 12 miles, and NW is 22 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High. The spit is subject to washover from storm waves and it would appear inadvisable to place buildings in the subsegment.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Poor. There is little sand beach available, its accessibility is poor.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate, noncritical, 2-3 feet per year. The length of the spit has remained quite constant over the last 30 years, but the spit appears to have been slowly shifting laterally into the creek inlet, i.e., as the bay side retreats, the creek side advances. A small island just off the southwest tip of the spit has been eroding at a comparable rate on the bay side, but is not building on the other side. It has been cut in two in the past 4 years.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: The spit should probably be left as a natural study area or retreat. Acquisition by the county is suggested, with the area to be set aside for public use, but with access restricted to pedestrian travel by land or by small boat from the water.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-37.
C&GS 10Mar55 W4338.
USAF 30Nov59 AF59-35 R-24 2293.
VIMS 10Oct72 NH-7-61, NH-8A-62.

GREAT NECK - LOOPED SPIT AREA, CHURCH NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 8B (Maps 7A, 7B, 7C)

EXTENT: 12,000 feet (2.3 mi.), from the base of Great Neck to the north end of the looped spit area, 0.9 mile southwest of the inlet to Westerhouse Creek.

SHORELANDS TYPE
FASTLAND: Low shore, with a 5-foot scarp back of the beach, and with some low dunes in the southerly quarter.
SHORE: Narrow sand beach in the northerly three-quarters; mostly fringe marsh, averaging 50 feet wide (approx. 3 acres), in the southerly quarter. This is a complex shore area with a series of looped spits in the northern part, which apparently start out from the beach at the north and grow south just off the beach and then turn back in against the beach, enclosing a narrow lagoon or series of lagoons (Photos NH-8B-66 to 68). Both incomplete and complete phases are present in the subsegment. After the lagoons are enclosed, marsh grass grows into them, tending to fill them in. Comparisons with older photos and maps (1938 and 1943) suggest that these looped spits and lagoons are a repeating phenomenon, starting at the north and slowly shifting southward. Apparently there are cycles of accretion followed by erosion, so that former spits and lagoons are eliminated from north to south before the next cycle starts.
In the southerly quarter the shore is irregularly serrate, with projecting nodes apparently accreting and grassed over, and intervening scalloped areas of sand beach backed by moderately eroding low bluffs (Photos NH-8B-115G, 116G). These nodes may also be shifting south with time, giving rise to alternating cycles of accretion and erosion.
NEARSHORE: Intermediate width (north) to wide (south). There are several irregular, elongated bars, more or less parallel. The bars nearest shore start from the beach and extend southward at an acute angle to the shoreline in an en echelon formation. Their crests emerge as tidal flats at low water. The growth and migration of the looped spits is probably intimately associated with the evolution of

these bars (see C&GS Photo W4338). The more seaward bars are progressively deeper seaward, with reliefs of about 4 feet. They appear to be composed primarily of sand.

SHORELANDS USE
FASTLAND: Agricultural, except just above Great Neck where a residential development is being started (about 25% of the area).
SHORE: Limited use at present; will become more used for shore recreation as the development grows.
NEARSHORE: Sport fishing, pound nets.

OFFSHORE BOTTOM: There is a gently sloping terrace from the 12-foot contour out to the 30-foot contour, 2 miles more gentle slope down to 56-60 feet at the bottom of the bay about 4 miles offshore.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch from the SW is 24 miles, W is 13 miles, and NW is 21 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: None. Bluff is high enough to preclude any flooding of residential areas. Lagoon areas associated with the looped spits however, are subject to high-water flooding.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. The beach is narrow but is generally adequate for limited bathing. There is frequently much algal or grass detritus on the beach in the scalloped areas (Photo NH-8B-121G) and woody detritus on the very narrow beaches in the areas of highest erosion (Photo NH-8B-115G). Beaches on the looped spits tend to be fairly good.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate, noncritical, 1.5 feet per year, between beach nodes in the southerly area, but generally accreting at about the same rate in looped spit area to the north.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Leave as is. There are presently no endangered structures and it appears that erosion alternates with accretion resulting in no appreciable long-term change.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: The bluff area, particularly that behind the looped spits is an attractive location for residential use. The beach could be cleaned to be more attractive, but care should be exercised not to disturb the marsh grass areas which hold the shoreline. Because of the uniqueness of the looped spits it is suggested that they be left unaltered.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-37, 39.
C&GS 10Mar55 W4338, W4340.
USAF 30Nov59 AF59-35 R-24 2293, R-25 2406.
VIMS 100ct72 NH-8B-63 to 69.
Ground - VIMS 9Nov72 NH-8B-105G to 125G.

SOUTH OF WESTERHOUSE CREEK, CHURCH NECK, NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 8C (Maps 7A, 7B, 7C)

EXTENT: 4,700 feet (0.9 mi.), from 0.9 mile southwest of Westerhouse Creek entrance to Westerhouse Creek entrance.

SHORELANDS TYPE
FASTLAND: Low shore, including a small, curved reentrant from the bay near the northern end of the subsegment, probably a former branch of Westerhouse Creek. A 5 to 10-foot bluff occurs directly behind the beach.
SHORE: Narrow sand beach, fringe marsh (1 acre) bordering the reentrant.
NEARSHORE: Intermediate width (1,100 yds.); over half the width is 3 feet or less deep with irregular, subparallel sand bars and normal to oblique sand waves which extend off the toe of the beach.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: None apparent.
NEARSHORE: Fishing.

OFFSHORE BOTTOM: Gently sloping to 30 feet over a 2-mile distance with a few irregularities on the bottom surface, deepens to 62-64 feet more steeply beyond 30 feet.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 15 miles, WNW is 13 miles, and NNW is 20 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: None. There is a low bluff along the entire subsegment which protects the fastland from storm surges.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Beach is relatively narrow, probably thin, sand appears good.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate, noncritical, about 2 feet per year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Because of lack of development in the area, and because of the expense of bulkheading and other protective measures, no action is suggested at present.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: Marginal. Because of the erosion problem at the shore, development with proper safeguards against erosion would be expensive.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-39.
C&GS 10Mar55 W4340.
USAF 30Nov59 AF59-35 R-25 2406.
USGS 30Jan67 GS-SWBK-1 1-1.
VIMS 10Oct72 NH-8B-69, NH-8C-70 to 72.

WESTERHOUSE CREEK, CHURCH NECK, NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 8D (Maps 7A, 7B, 7C)

EXTENT: Area - 155 acres. Length - main arm to the southeast, 1 mile, two others, 0.7 mile, all measured from the inlet.

SHORELANDS TYPE
FASTLAND: Low shore, with steep 10 to 15-foot slopes bordering the marsh edges.
SHORE: Fringe marsh within creek, narrow to intermediate width sand beach each side of the inlet (less than 5%).
CREEK: Shallow, probably muddy, tidal delta and marsh occupy much of inlet area.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: None apparent.
CREEK: Shellfishing (6 leased oyster tracts, covering 53 acres).

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. The watershed is small. Storm surge from the bay could overtop entrance and raise water level in the creek, but the bluffs are 10 to 15 feet high, and all present structures are on the bluffs.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

PRESENT SHORE EROSION SITUATION
EROSION RATE: None.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None.

OTHER SHORE STRUCTURES: None.

NAVIGABILITY: Poor.
APPROACHES: No channel; sand bars and tidal flat are all shallower than 6 feet for a distance of 2,700 feet off the inlet.
INLET: Tidal delta area; shifting shoals.
CREEK: Shallow.

POTENTIAL USE ENHANCEMENT: The creek has a very pleasant aspect for residential use on the bluff, but waste disposal must be carefully judged so water quality of creek remains high. It does not lend itself well to development for yachting or commercial fishing.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-39.
C&GS 10Mar55 W4340.
USAF 30Nov59 AF59-35 R-25 2406.
USGS 30Jan67 GS-SWBK-1 1-1.
VIMS 10Oct72 NH-8C-71, 72, NH-8D-73, NH-8E-74;
VIMS 18Dec72 NH-8D-313.

SHOOTING POINT, CHURCH NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 8E (Maps 7A, 7B, 7C)

EXTENT: 6,500 feet (1.2 mi.), from Westerhouse Creek to the tip of Shooting Point.

SHORELANDS TYPE
FASTLAND: Low shore, with 10 to 15-foot bluffs directly behind the beach, interrupted by "truncated creeks". The backshore area adjacent to the creeks is low and supports a low foredune for a distance of about 1,500 feet.
SHORE: Narrow sand beach, in places with stumps and recent erosional debris.
NEARSHORE: Intermediate width (1,050 yds. av.), containing multiple bars and sand waves in various orientations, almost reticulate pattern (see Photo C&GS W4340). Occasional tidal flats occur and there are also 2 low, grassy islands lying some 200 yards seaward of the point.

SHORELANDS USE
FASTLAND: Agricultural.
SHORE: None, except occasional beachcombing.
NEARSHORE: Some sport fishing.

OFFSHORE BOTTOM: Bottom contours fan out to the north, the shallower terrace (from 12 to 30 ft.) gently sloping, with some more or less longitudinal depressions, about 5,300 yards wide on an average. Then fairly steep slope to 62 feet beyond in the bay channel.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 15 miles, WNW is 20 miles, and NNW is 25 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low. Most of the subsegment is protected by the bluff. Water from storm surges might flood over into the "truncated" creek areas, but these are small, are not developed and are surrounded by moderate slopes.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair. Sand is bright, medium-fine quartz, but the beach is narrow. It is somewhat wider in the middle of the subsegment in the "truncated" creek area and toward the south end. Near the northern tip erosion is greater and there are stumps and debris on the beach. At the very north end the beach widens and there are concentric low dunes and marsh grass around the point.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Moderate, noncritical, 2-3 feet per year. Erosion appears to be most severe at the northerly end, near Shooting Point (Photos NH-8E-89, 91, 92). Erosion of the bluff results in about 80% of the eroded material remaining on the beach or in the nearshore zone for an indefinite period, while about 20% (silt and clay fraction) is carried off in suspension (note water discoloration in Photos NH-8E-85, 87).
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Erosion is moderate to severe here, but not critical as no buildings are present. If development is desired, extensive bulkheading and groinfields will no doubt be necessary. For the present no action is recommended, except, perhaps to monitor the rate of loss, as there are other more critical problems in the county.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: The overlook from the bluff along the shore and around the "truncated" creeks is quite attractive and would lend itself to development for homesites. However, the erosion problem is so serious that considerable expense will be involved in protecting the area. Therefore the present potential is marginal.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-39, 41.
C&GS 10Mar55 W4340, W4342, W4402.
USAF 30Nov59 AF59-35 R-25 2406.
USGS 30Jan67 GS-SWBK-1 1-1.
VIMS 10Oct72 NH-8D-73, NH-8E-74, 75, 76.

Ground - VIMS 9Nov72 NH-8E-85G to 93G.

SEGMENT 9, NASSAWADOX CREEK
SEGMENT DESCRIPTION

NASSAWADOX CREEK, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 9 (Maps 8A, 8B, 8C)

EXTENT: Area - 3,193 acres, including Church Creek, Warehouse Creek, Holly Grove Cove and the main body of the creek plus its smaller unnamed branches. Length - 6½ miles along the main course of the creek from the mouth to where it becomes primarily marsh.

SHORELANDS TYPE
FASTLAND: Low shore, generally with a 10 to 15-foot bluff or steep slope rising from the marsh edge, dissected by several branches and many subbranches of the creek.
SHORE: Fringe and embayed marsh (100 and 280 acres respectively).
CREEK: Dendritic pattern of submerged meander valleys; many irregular shoals and grassy islands in the lower third of the creek.

SHORELANDS USE
FASTLAND: Agricultural, 95%; residential, 5%.
SHORE: None, except for boat landings, support for some 2 dozen wharves and boathouses.
CREEK: Shellfishing, there are 168 leased oyster tracts covering 1,295 acres; fishing; waterfowl hunting; boating.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High near the inlet, medium within the creek due to possible storm surge, for waterfront properties. Low to properties on the surrounding fastland bluffs. Few structures are below the 10-foot contour.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

PRESENT SHORE EROSION SITUATION
EROSION RATE: No erosion for most of the creek except for moderate erosion on point just east of Nassawadox Point (at Rte. 677). Presence of bulkheading suggests that there has been erosion at the point and the unprotected areas do show erosion. This local cutting is due, no doubt, to current action, as the main channel of the creek sweeps against the shore there.

ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Type and Number: There is about 1,200 feet of bulkheading, with 2 or 3 attached groins, at the end of the point east of Nassawadox Point.
Effectiveness: Most of the bulkheading appears to be in good order, but some is in bad shape, due perhaps to faulty construction. The groins do not appear to be effective.

Suggested Action: Repair decrepit bulkheads, and complete bulkheading along those parts of the point where none was originally installed. Unless the channel is diverted, groins probably will be unsuccessful, as the swift current is close to the shore.

OTHER SHORE STRUCTURES: There are about 2 dozen wharves and boathouses on the creek and its branches. There are 2 boat-launching ramps, one at Bayside (Rte. 615) on the north side of the creek, and the other is at Bayford, Elliotts Neck, on the south side of the creek.

NAVIGABILITY: Poor at present.
APPROACHES: There are a buoy and a lighted beacon at the entrance to the creek, but depths indicated on the chart are only 1 or 2 feet, and there are tidals flats. There appears to be no well-defined channel.
INLET: There is a channel with depths ranging between 5 and 15 feet, but it is very crooked and narrow between shoals and tidal flats.
CREEK: The 5-foot or deeper channel extends about halfway up the creek to the Wellington Neck area, but it is very narrow and tortuous. There are deep holes beyond, and much of the creek-bed is 3 feet or more deep, but there are numerous shoals to be avoided. There are no official channel markers within the creek. Navigation should be only by one quite familiar with the creek.

POTENTIAL USE ENHANCEMENT: With some dredging and with more aids to navigation, the creek might be made accessible to moderate sized craft. However, as nearly half of the area of the creek-bed is held by leased oyster tracts, and as the waters are unpolluted at present, the trouble of opening the creek to more extensive boating might not be worth the risk of possible pollution and loss of the shellfish. In common with the other creeks of the area, Nassawadox Creek, with its bluffs, offers attractive vistas for homesites along its shores.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968; JAMESVILLE Quadr., 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-41;
USDA 6May38 ANP17-60.
C&GS 10Mar55 W4340, W4342, W4346, W4402.
USAF 30Nov59 AF59-35 R-25 2406, 2407;
USAF 9Dec59 AF59-35 R-30 3006, 3007.
USGS 30Jan67 GS-SWBK-1 1-1 to 3, 80 and 81.
VIMS 10Oct72 NH-8E-76, NH-9-94 to 96, NH-10A-77;
VIMS 18Dec72 NH-9-292 to 312;
VIMS 27Dec72 NH-9-437 to 439.

SEGMENT 10, OCCOHANNOCK NECK
SUBSEGMENTS A-D
SUBSEGMENT DESCRIPTIONS

SILVER BEACH, OCCOHANNOCK NECK,
NORTHAMPTON COUNTY, VIRGINIA
SUBSEGMENT 10A (Maps 9A, 9B, 9C)

EXTENT: 7,400 feet (1.4 mi.), from Nassawadox Point to the end of the access road to Downings Beach.

SHORELANDS TYPE
FASTLAND: Low shore, with a 10 to 15-foot bluff directly behind the beach; in places near the south end and again in the northerly third, the bluff is capped with low, single elongate dunes.
SHORE: Narrow sand beach.
NEARSHORE: Intermediate width (av. 1,100 yds.), sandy bottom, with up to 6, more or less, parallel bars, and some oblique sand waves near the beach.

SHORELANDS USE
FASTLAND: Residential - 80%; agricultural - 20%.
SHORE: Beach recreation to a limited extent, boat landings (there are 2 ramps along the subsegment).
NEARSHORE: Boating, fishing.

OFFSHORE BOTTOM: Terraced, with the bottom greatly sloping from 12 feet out to 30 feet about 6,500 yards (3.4 mi.) off the beach. There are some elongate shoals or bars in toward the nearshore zone, and elongate swales on the outer part of this terrace, both sets of features roughly parallel to the shore. The slope from 30 to 54 feet is steeper (only by 400 yds. wide), then there is a gentler slope to the bay channel bottom at 60 to 63 feet.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 14 miles, WNW is 18 miles, and NNW is 40 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low. Aside from beach structures themselves, all buildings are at least above the 5-foot contour, and most are above the 10-foot contour. Greatest hazard consists of excessive cutting of the bluff base by storm surge waves.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair to poor. The beach is quite narrow and thin due to the high erosion rate. In riprapped areas the beach is nonexistent at high tide.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, critical. The recent V.I.M.S. historical study of this reach indicates an average of 5.7 feet per year loss. This is amply borne out by field observation at unprotected sites along the shore (Photos NH-10A-441, 442, 449).
ENDANGERED STRUCTURES: Ten residences are less than 40 feet from the edge of the bluff, and many more are within 100 feet. The south road is eroding now.
SHORE PROTECTIVE STRUCTURES: Type and Number: Riprap, composed mostly of asphalt and concrete debris (Photos NH-10A-128G, 150G), has been dumped down the face of the bluff over about 700 feet of its length. Crude bulkheading has been used in some places to hold riprap in place.

A wooden bulkhead 200 feet long has been constructed along the bay side at the tip of Nassawadox Point; and about 100 feet has been placed out on the beach at the north end of Silver Beach.

There are over 30 wooden groins along the length of the subsegment. The 10 older ones were constructed of upright railroad ties; the 20 newer ones of tongue and groove planking.
Effectiveness: The riprap, although it is placed in a rather helter-skelter fashion, appears to be fairly effective, as the areas it protects are standing out farther, while the unprotected areas are deeply cut (Photos NH-10A-450, 452).

The older railroad tie groins had gaps between the uprights and have been unsuccessful in stemming erosion (Photos NH-10A-452; NH-10A-135G, 158G). The newer plank groins, which have been placed over a distance of about 1,400 feet south of Silver Beach, have been much more effective (Photos NH-10A-442 to 445; and NH-10A-137G, 139G, 142G).

The bulkhead at the tip of the point is tight and appears to be effective against frontal assault, but it will be flanked at either end if it is not carried around the point at the creek entrance, and along the bluff at its north end. The length of bulkhead at the north end of Silver Beach is set out from the bluff 10 or 20 feet and is tied to a boat ramp at one end and to a groin at the other. Its position on the beach is peculiar, unless, perhaps the builder intends to fill in behind to recreate the bluff. It is too recent to comment on its effectiveness.

Suggested Action: For the built-up part of Silver Beach, a riprap revetment or a solid bulkhead extending uninterrupted the whole length of the area would be necessary to stem the erosion. Impermeable groins, tied in to the bulkhead or revetment, sufficiently high and long, and appropriately spaced, should gather drifting sand as those to the immediate south have done, and serve to build up a good beach in front. The main point is that a unified action needs to be taken at Silver Beach to avoid the results similar to those shown on Photos NH-10A-449 and 452, where protective action was apparently taken on either side of an eroded area, but ommitted between.

OTHER SHORE STRUCTURES: There are various elevated platforms on the beach, presumably for observation and sun bathing, some in good repair (Photo NH-10A-159G), others dilapidated (Photo NH-10A-147G); stairways; one deep well (Photo NH-10A-150G) which formerly penetrated the bluff, but now stands 15 or 20 feet seaward due to erosion; two private boat ramps, one at Silver Beach and one at Downings Beach.

POTENTIAL USE ENHANCEMENT: The Silver Beach - Downings Beach area is attractive for seasonal homesites, but unless the erosion is stopped, sites along the bluff will not represent a very good investment. The recommended action above should do this and also provide a good recreational beach.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 6May 38 ANP17-60;
USDA 17May38 ANP22-41.
C&GS 10Mar55 W4342, W4400, W4402.
USAF 30Nov59 AF59-35 R-25 2406;
USAF 9Dec59 AF59-35 R-30 3007.
VaDH 10Apr63 5 065 129 048.
USGS 30Jan67 GS-SWBK-1 1-1, 2.
VIMS 10Oct72 NH-10A-77 to 81;
VIMS 18Dec72 NH-10A-283 to 291;
VIMS 27Dec72 NH-10A-440 to 459.

Ground - VIMS 6Dec72 NH-10A-126G to 165G.

NORTH OF DOWNINGS BEACH, OCCOHANNOCK NECK, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 10B (Maps 9A, 9B, 9C)

EXTENT: 7,000 feet (1.3 mi.), from Downings Beach access road to the outlet of "V" ponds, $\frac{3}{4}$ mile south of Battle Point.

SHORELANDS TYPE
FASTLAND: Low shore, with a 5 to 10-foot bluff directly behind the beach, except for a marshy area (5 acres) just north of Downings Beach, and another at the outlet to the "V" ponds (16 acres).
SHORE: Relatively narrow sand beach, wider near Downings Beach.
NEARSHORE: Wide (av. 2,100 yds.), sandy bottom, with 6 shallow, parallel bars within the first 100 yards from the shoreline. On the outer three-quarters of the zone there are deeper parallel bars capped with oblique sand waves. A channel down to 13 feet divides the 2 subzones. The nearshore zone becomes wider to the north.

SHORELANDS USE
FASTLAND: Agricultural (95%); recreational (5%), there is a campground just north of Downings Beach.
SHORE: Little, except for occasional beachcombing and limited shore recreation.
NEARSHORE: Pound nets and sport fishing.

OFFSHORE BOTTOM: The terraced appearance of the offshore zone to the south disappears and the bottom slopes gradually, with some irregularities, to 60 feet about 4 miles off the shore.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 14 miles, WNW is 17 miles, and NNW is 40 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Low. Most of the land is above the 5-foot contour. Storm surge flooding of the small marshes would not be serious as there are no permanent structures.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Good to fair. For the first 2,000 feet above Downings Beach the beach is of intermediate width, the sand is clean and bright. Erosion is more active to the north, the beach is narrow and thin, and there is woody debris on much of the beach.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, critical. The recent V.I.M.S. historical study indicates an erosion rate of 5 feet per year.
ENDANGERED STRUCTURES: There is one seasonal or weekend dwelling at about the middle of the subsegment. It is located between 20 and 30 feet from the edge of the bluff.
SHORE PROTECTIVE STRUCTURES: Type: There is a low plank bulkhead about 150 feet long, built in late 1972 out on the beach in front of the previously mentioned dwelling (Photos NH-10B-460, NH-10B-167G, 168G, 169G). At the time of observation (Dec., 1972) the planks were low and there was no backfill. It was not tied back securely in to the bluff at either end. Evidence of former ineffective post groins remains behind the new structure.
Effectiveness: Poor, as it stood in December, 1972. The planks of the bulkhead should have been built higher and it should have been backfilled, especially as the planks were nailed to the backs of the posts and incoming waves might pound them loose. If the ends are not tied back to the bluff, flanking will occur and the structure will be undermined.

Suggested Action: Except for improvements to the bulkhead discussed above, no action is recommended at present, as the land elsewhere is undeveloped. If development occurs in the future, a groin-field covering almost the whole length of the subsegment might be recommended. Individual groins are not recommended because of likely damage to property downdrift of the groin.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: As a future shoreside residential area, the subsegment has attractive aspects, provided that adequate, unified shore erosion protection is implemented at that time.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FRANKTOWN Quadr., 1943, 1968, and JAMESVILLE Quadr., 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 6May38 ANP17-60, 62.
C&GS 10Mar55 W4400.
USAF 30Nov59 AF59-35 R-25 2406;
USAF 9Dec59 AF59-35 R-30 3007.
VaDH 10Apr63 5 065 129 048.
USGS 30Jan67 GS-SWBK-1 1-2.
VIMS 10Oct72 NH-10A-81, NH-10B-82 to 85;
VIMS 18Dec72 NH-10B-282;
VIMS 27Dec72 NH-10B-460.

Ground - VIMS 6Dec72 NH-10B-166G to 175G.

BATTLE POINT, OCCOHANNOCK NECK, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 10C (Maps 9A, 9B, 9C)

EXTENT: 5,000 feet (0.9 mi.), from the outlet of the "V" ponds to the outlet of the pond at the north end of Battle Point community.

SHORELANDS TYPE
FASTLAND: Low shore with a 5-foot scarp at the back of the beach.
SHORE: Narrow sand beach; a small marsh area (1 acre) at Peaceful Beach Campground.
NEARSHORE: Wide (2,100 yds. av.), sandy bottom, shallow parallel bars just off the beach; deeper and wider bars, capped with oblique sand waves, on the outer part; and a channel 8 to 10 feet deep between.

SHORELANDS USE
FASTLAND: Recreational (campground) - 65%; residential - 35%.
SHORE: Beach recreation where possible.
NEARSHORE: Fishing (pound nets and sport fishing).

OFFSHORE BOTTOM: Slopes gradually over 3 to 3.5 miles from the 12-foot contour (the boundary of the nearshore zone) to about 60 feet at the bottom of the bay. The bottom is mud and sand.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW. The fetch from the WSW is 14 miles, WNW is 17 miles, and NNW is 50 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium. The 5-foot contour quite closely follows the beach, although there are lower areas in the campground, but under exceptional conditions such as storm surge and heavy northwest seas, the water could overtop the scarp and flood much of the residential and camping areas.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Poor. The beach is very narrow due to rapid erosion and it is frequently debris laden (Photos NH-10C-178G, 181G, 190G).

PRESENT SHORE EROSION SITUATION
EROSION RATE: Severe, about 5 feet per year, along the entire subsegment, which results in a considerable loss of real estate where the beach has not been protected, particularly in the campground areas.
ENDANGERED STRUCTURES: There are 4 dwellings, one very close to shore, at Battle Point, just north of access road, which might be considered endangered, although, at present, they are protected by riprap.
SHORE PROTECTIVE STRUCTURES: Type and Number: Stone riprap has been placed around and between two groin-like earthen structures at the end of the access road to Battle Point (Photos NH-10C-464, 465). With a small interruption just to the north, this type of protection has been continued to the north along the shore for a 100 feet or so. Then there is a wooden bulkhead out on the beach running between 200 and 300 feet north of the riprap, and then another 200 feet of stone and debris riprap. More riprap has been emplaced near the north end of the subsegment.
Wooden bulkheading, together with 5 or more plank groins have also been placed near the north end of Battle Point area.
Effectiveness: The riprap at the end of the access road appears quite effective, as it does along various parts of the shore to the north. The bulkheading in the middle of the area is probably too new to determine its usefulness. It should, however, be backfilled. It appears that the north end of the beach was left unprotected longer than that to the south and consequently, deep cuts have been made (Photos NH-10C-468, 469). Where there is riprap the land seems to be holding, but the groins and bulkheading which have been placed since the original deep cutting do not seem to be effective, and some are badly damaged, probably by flanking around their ends (Photos NH-10C-187G, 190G).

Suggested Action: Shore property here is of sufficiently high value that a unified plan of protection should be developed and carried out for the whole of the subsegment including the campground area at the south end which at present is completely unprotected. Stone

riprap has been effective here, but might be too expensive for the whole 5,000 feet of shore front. Further, it alone will not build up the beach. Therefore, a groin-field also needs to be developed. It would appear that a plank bulkhead, solidly backed, with an appropriately spaced field of plank groins might be the best method of overcoming the problem.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: As a seasonal shoreside recreational area, with both permanent and transient capabilities, the Battle Point subsegment is already developed to near capacity, but could be greatly improved by coastal protection measures as outlined above. There is a fair beach just to the north of the subsegment which might be developed as a public recreation area to serve families occupying homesites back from the beach.

The campground has ample length of beach for its needs, but does need the shore protection it now lacks, both to prevent further erosion, and to widen the beach.

MAPS: USGS, 7.5 Min.Ser. (Topo.), JAMESVILLE Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 6Nov38 ANP17-62.
C&GS 10Mar55 W4400.
USAF 9Dec59 AF59-35 R-30 3007.
VaDH 10Apr63 5 065 129 046, 048;
VaDH 15May63 5 001 132 098.
USGS 30Jan67 GS-SWBK-1 1-3.
VIMS 10Oct72 NH-10B-85, NH-10C-86 to 88;
VIMS 18Dec72 NH-10C-278 to 281;
VIMS 27Dec72 NH-10C-461 to 470.

Ground - VIMS 6Dec72 NH-10C-176G, 177G;
VIMS 7Dec72 NH-10C-178G to 191G.

SPARROW POINT, OCCOHANNOCK NECK, NORTHAMPTON COUNTY, VIRGINIA

SUBSEGMENT 10D (Maps 9A, 9B, 9C)

EXTENT: 7,300 feet (1.4 mi.), from the north end of the Battle Point community to Sparrow Point.

SHORELANDS TYPE
FASTLAND: Low shore gently rising toward the interior of Occohannock Neck from a 5-foot scarp along most of the length of the backshore.
SHORE: Narrow to medium width sand beach; occasional fringe and embayed marsh (6 and 7 acres respectively).
NEARSHORE: Wide (av. 2,600 yds.), sandy bottom with multiple, approximately parallel bars and oblique sand waves near the beach, irregular shoals on the outer part where it is crossed in a southwesterly direction by a buoyed channel to Occohannock Creek.

SHORELANDS USE
FASTLAND: Unmanaged, wooded.
SHORE: None.
NEARSHORE: Sport fishing, boating.

OFFSHORE BOTTOM: Slopes gradually to the bay bottom at about 57 feet, 9,500 yards (4.7 mi.) off the beach.

WIND AND SEA EXPOSURE: The shoreline trend is NNE - SSW for two-thirds of the length of the subsegment, then N - S. For the first two-thirds the fetch from the WSW is 15 miles, WNW is 19 miles, and NNW is over 50 miles. For the last one-third the fetch from the SW is 30 miles, W is 16 miles, and NW is 22 miles.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: Medium, noncritical. Most of the fastland, other than the swampy areas, is higher than 5 feet above mean sea level and there is no development in the area.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Fair to poor. There are medium width beaches at both the middle and the south end of the subsegment, a total length of about 1,800 feet. Elsewhere the beaches are narrow. Where the beach is of usable width, the sand is bright and clean.

PRESENT SHORE EROSION SITUATION
EROSION RATE: The erosion rate ranges from none at the turn in the shoreline, to moderate, noncritical, in the southern part of the subsegment, to severe, noncritical (6 ft./yr.) in the Sparrow Point area (compare Photos USDA AN021-1 and USGS 1-3). At the tip of the point the loss averaged 12 feet per year between 1938 and 1971.
ENDANGERED STRUCTURES: None. The area was not visited on the ground, but there appear to be no structures near the shore in this subsegment.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: Because of the lack of development in the area at present, and because of expense required to stem the erosion, no action is recommended at this time.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: If, in the future, population pressures in the northern part of the county require, the beach area at the middle of the subsegment could easily be developed into a public recreation site, with a length of 1,500 to 2,000 feet.

The beach at the southerly end could likewise be developed to serve the residents of the Battle Point community.

MAPS: USGS, 7.5 Min.Ser. (Topo.), JAMESVILLE Quadr., 1943, 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

PHOTOS: Aerial-USDA 7May38 AN021-1.
USAF 9Dec59 AF59-35 R-30 3007.
VaDH 10Apr63 5 065 129 046;
VaDH 15May63 5 001 132 098.
USGS 30Jan67 GS-SWBK-1 1-3.
VIMS 10Oct72 NH-10C-88, NH-10D-89, 90, NH-18-91.

SEGMENT 11, CHERRYSTONE INLET
SEGMENT DESCRIPTION

CHERRYSTONE INLET, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 11 (Maps 5A, 5B, 5C)

EXTENT: Area - 1,706 acres; length - 4 miles (main body), with 4 branches $\frac{1}{2}$ to $\frac{3}{4}$ mile long.

SHORELANDS TYPE

FASTLAND: Low shore.

SHORE: About 90% marsh, fringe along the creek shore (41 acres), embayed at the heads of the various branches (347 acres); 10% narrow sand beach.

CREEK: Main body follows a submerged meander pattern, branches are dendritic; there are numerous and varied shoals in the creek.

SHORELANDS USE

FASTLAND: Agricultural primarily (95%), a little residential at Cherrystone and some recreational at Cherrystone Campground (5%).

SHORE: Mostly untouched, except where it is crossed by a few small boat landings and about 15 wharves. One small man-made beach (200 ft.) between short groins has recently been installed at Cherrystone Campground for bathing.

CREEK: There are 41 leased oyster tracts, comprising 1,486 acres (about 86% of the creek bed). There is one oyster wharf in poor condition. Some boating occurs but there are no marinas. There is some fishing and waterfowl hunting.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High in the lower half of Cherrystone Inlet, medium in the upper half due to the possibility of flooding from storm surge and high waves from the bay. Few structures are menaced, but Cherrystone Campground would be seriously affected by flooding.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: Except for the new, small, artificial beach, the few stretches of beach in the inlet are very narrow and generally littered with debris of active erosion.

PRESENT SHORE EROSION SITUATION

EROSION RATE: None for the most part, but there is slight to moderate erosion (up to 2.5 ft./yr. according to the historical survey) on the east side in the wider parts of the inlet, at Mill Point, Cherrystone and Eyrehall Neck and the point to the southwest.

ENDANGERED STRUCTURES: None at present.

SHORE PROTECTIVE STRUCTURES: Type and Number: Plank groins at either end of the new beach at Cherrystone Campground are new and were placed to hold the artificial beach.

A 30-odd-year-old, brick and cement seawall, about 1,500 feet long, at Cherrystone is in very poor condition, having been toppled in several places.

Effectiveness: The groins are too recent to be able to tell whether they will hold the beach. Their exposure is directly to the northwest, and their effectiveness may be marginal.

The seawall in its broken down condition is not very effective. In places rubble may cause turbulence and do more harm than good.

Suggested Action: None of the erosion in Cherrystone Inlet is presently severe or critical. If it is desired to halt the moderate erosion in the areas mentioned, new bulkheading should be installed with sufficient footing to prevent undermining, and the ends should be protected against flanking.

OTHER SHORE STRUCTURES: There are 15 small boat wharves or fishing piers, including 2 or 3 boathouses.

NAVIGABILITY: Fair for small craft drawing 5 feet or less. A channel 7 feet deep extends into the inlet from the marked channel to Kings Creek for 2 miles to the vicinity of Cherrystone. Four or five-foot depths occur in the channel for another half mile to the Eyrehall Creek vicinity. The channel is presently unmarked but could be marked with little difficulty. Outside the channel depths are about 2 feet, with frequent shoals to 1 foot.

POTENTIAL USE ENHANCEMENT: Navigability is fair and could be improved by buoying, but with over 85% of its area occupied by oyster grounds, care should be exercised not to develop the Cherrystone Inlet area in such a way that pollution of the waters might result. Marina facilities are available at both Cape Charles Harbor and at Kings Creek and do not appear necessary for the inlet at present.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CAPE CHARLES and CHERITON Quadrs., 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-7, 8, 9;
USDA 13Mar49 ANP2E-137, 138.
USAF 30Nov59 AF59-35 R-24 2284, 2285, 2293.
VIMS 10Oct72 NH-11-102, 103;
VIMS 18Dec72 NH-3C-141, NH-11-329 to 332;
VIMS 27Dec72 NH-11-348 to 412.

SEGMENT 12, MILL CREEK
SEGMENT DESCRIPTION

MILL CREEK, MAGOTHY BAY,

NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 12 (Maps 2A, 2B, 2C and 11A, 11B, 11C)

EXTENT: 33,000 feet (6.2 mi.), along the marsh-fastland boundary, from Wise Point to Cushmans Landing.

SHORELANDS TYPE

FASTLAND: Low shore with a very gentle gradient of about 25 feet per mile.

SHORE: Extensive marsh, 32,100 feet long averaging 2,000 feet wide (766 acres); medium width sand beach, 900 feet long, at Wise Point.

NEARSHORE: Very shallow; Magothy Bay, averaging about 1½ miles wide, extends between the marsh edge of the segment and the marsh islands (Mockhorn Island, Big Creek Marsh) to the east. The Intracoastal Waterway, with a controlling depth of 5 feet, passes through the nearshore zone.

SHORELANDS USE

FASTLAND: A military reservation occupies 10,800 feet of shorefront (33%); agricultural land occupies 1,500 feet (5%); the remaining 20,700 feet of frontage (62%) is unmanaged, primarily wooded.

SHORE: The marsh area between Wise Point and Raccoon Island is crossed by 1¾ miles of dredged channel of the Intracoastal Waterway. There are small boat facilities at the edge of the waterway near Raccoon Creek at the Cape Charles Air Force Station, including piers, moorings, and a ramp (Photos NH-12-150 and 481), but these are presumably under military control. Another facility is located at Dixons Dock, with a pier and moorings, but this is private, and inaccessible from land (Photos NH-12-150, 483 and 484). There is another private landing without facilities located at Bulls Dock (NH-12-486). There are also slips, bulkheads, and a building at Cushmans Landing, but the shellfish business has apparently failed here and the facilities are in decrepit condition (Photos NH-12-493, NH-13-152; NH-12-251G to 253G).

The marshes are used extensively for hunting, shellfishing and fishing.

NEARSHORE: The bay provides transit for Intracoastal Waterway traffic and for local fishing and pleasure craft. There is some shellfishing and fishing in the bay.

OWNERSHIP: Federal - 33%, Private - 67%.

ZONING: Agricultural.

FLOOD HAZARD: High over the marsh areas, noncritical because of lack of structures. Medium in the area of the Air Force Station; with a major flood, situation might become serious.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: There is less than 1,000 feet of fair sand beach in Segment 12 right at Wise Point, but access is controlled by the military reservation. No other beaches occur in the segment.

PRESENT SHORE EROSION SITUATION

EROSION RATE: There is no apparent erosion in the segment. The marsh shoreline appears stable, and the small sand beach area at Wise Point shows a small amount of accretion. Some structures on Holly Bluff Island, across from Dixons Dock on the Intracoastal Waterway canal, which appear to be groins, suggest some erosion on the northerly exposure, but cursory examination of aerial photographs since 1938 reveals no significant changes. The area was inaccessible for ground visit.

ENDANGERED STRUCTURES: None.

SHORE PROTECTIVE STRUCTURES: Aerial photographs (NH-12-149 and 150) show 3 or 4 groin-like structures on the north shore of Holly Bluff Island, and there may also be a short stretch of bulkhead on the beach, together with some fencing. It was not possible to determine whether these structures had been effective in gathering sand.

The bulkheads at Cushmans Landing are in a deteriorating condition and the whole facility appears to be abandoned.

OTHER SHORE STRUCTURES: There is a boat ramp at Wise Point. There are small boat piers at Raccoon Creek and Dixons Landing, both on the Intracoastal Waterway canal. There are fences on the beach at the north side of Holly Bluff Island. A concrete pier and building at Cushmans Landing are abandoned and deteriorating.

POTENTIAL USE ENHANCEMENT: Low. There are no beaches of any consequence in the segment, and the shellfish industry (shucking and packing) seems to have failed. The low-lying character of the fastland, fronted by marshes, makes it less desirable, in general, for homesite development than the Chesapeake Bay shore areas.

MAPS: USGS, 7.5 Min.Ser. (Topo.), FISHERMANS ISLAND and TOWNSEND Quadrs., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-20, 21, 23.
USAF 10Nov59 AF59-35 R-21 1936;
USAF 1Dec59 AF59-35 R-26 2477, 2478.
VaDH 10Apr63 5 065 129 086.
USGS 30Jan67 GS-SWBK-1 1-89, 90, 91, 99;
USGS 5Feb67 GS-SWBK-1 1-141, 142, 211.
VIMS 18Dec72 NH-12-149, 150, 152;
VIMS 20Mar73 NH-12-473 to 492, NH-13-493.

Ground - VIMS 16Apr73 NH-12-251G to 253G.

SEGMENT 13, DUNTON COVE
SEGMENT DESCRIPTION

DUNTON COVE, MAGOTHY BAY - MOCKHORN CHANNEL,
NORTHAMPTON COUNTY, VIRGINIA
SEGMENT 13 (Maps 11A, 11B, 11C)

EXTENT: 21,600 feet (4.1 mi.), along the marsh-fastland boundary, from Cushmans Landing to the south side of Marion Scott Cove.

SHORELANDS TYPE
FASTLAND: Low shore with a very gentle gradient at the south (25 ft./mi.), steepening a little to about 25 feet per half mile at the north.
SHORE: Extensive marsh (529 acres), averaging 750 feet wide, in the lower two-thirds, 3,200 feet wide in the upper third of the segment.
NEARSHORE: Shallow; Magothy Bay averaging 1¾ miles wide, extends between the marsh edge of the segment and the marshes to the east (Mockhorn Island). At the north end of the segment Magothy Bay terminates and the marshes extend across from the fastland area to Mockhorn Island, with the exception of the 1,000-foot wide Mockhorn Channel which connects Magothy Bay and Mockhorn Bay. Depths in this channel range between 7 and 21 feet.

SHORELANDS USE
FASTLAND: A belt of unmanaged woodland, averaging 1,200 feet wide, extends along about 98% of the fastland-shore boundary. Agricultural land lies behind this. The remaining 2% is occupied by agricultural land reaching the shore or open creek inlets. A camping area is being developed near the shore east of Capeville.
SHORE: The marshes are largely undeveloped and are used for hunting, shellfishing and fishing. Near the south end of the segment, in the vicinity of Townsend and Magotha, inlets through the marsh were dredged previous to 1938 (see Photo ANP22-23). These are Bulls Landing and Steelmans Landing. There is a limited amount of shellfish handling (oysters and crabs) at both landings. Steelmans Landing appears to be most prosperous at present, but the whole industry seems to be declining in this part of the county.
NEARSHORE: There is shellfishing and fishing in the bay area. The Intracoastal Waterway passes through Magothy Bay and Mockhorn Channel. Controlling depth in the area is 6 feet.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High over the marsh areas, particularly if a storm surge occurred close to time of high water, but not critical. Hazard decreases with elevation, with medium hazard to the few buildings at the landings and low to the farms and villages farther inland.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: There are no beaches in this segment.

PRESENT SHORE EROSION SITUATION
EROSION RATE: No evidence of erosion was observed along the shores of Segment 13.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: There are various bulkheads, built mostly of upright railroad ties, at both Bulls and Steelmans Landings (Photo NH-13-254G to 259G). These were placed primarily to retain artificial fill and have been reasonably effective as erosive forces are not commonly great. Outlying bulkheads at Bulls Landing are in poorer condition (Photo NH-13-254G), but are not critical to the protection of existing buildings. In general the bulkheads are in better repair at Steelmans Landing, and here the boat slip is lined on both sides by bulkheading (Photos NH-13-257G to 259G). In view of lack of erosion and little use, there is no need for action at present.

OTHER SHORE STRUCTURES: One recently enlarged drainage canal crosses the marsh due east of Capeville. No other structures were noted.

POTENTIAL USE ENHANCEMENT: Low. Low-lying fastland subject to storm flooding.

MAPS: USGS, 7.5 Min.Ser. (Topo.), TOWNSEND Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-23, 25, 56, 57.
USAF 30Nov59 AF59-35 R-24 2285;
USAF 1Dec59 AF59-35 R-26 2477, 2478.
USGS 30Jan67 GS-SWBK-1 1-88, 89, 127, 139, 140, 141.
VIMS 18Dec72 NH-13-151 to 154;
VIMS 20Mar72 NH-13-493 to 503.

Ground - VIMS 16Apr73 NH-13-254G to 260G.

SEGMENT 14, MOCKHORN BAY
SEGMENT DESCRIPTION

MOCKHORN BAY, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 14 (Maps 12A, 12B, 12C)

EXTENT: 25,000 feet (4.7 mi.), along the marsh-fastland boundary, from the south side of Marion Scott Cove to Brockenberry Creek.

SHORELANDS TYPE

FASTLAND: Low shore, moderately sloping, with a gradient averaging 25 feet per quarter mile. Inland elevations are about 35 feet.

SHORE: Extensive marsh (446 acres), about 2,000 feet wide, indented by a number of "scallops" 2,000 to 3,000 feet wide, almost reaching the fastland border, and occupied by tidal flats; embayed marsh within Oyster Slip and Cobb Mill Creek (10 acres).

NEARSHORE: Mockhorn Bay, a very shallow body of water, occupied mostly by tidal flats, and averaging 1.4 miles wide, lies between the marsh shore and the extensive marshes to the east (Mockhorn Island). Mockhorn Channel, with depths between 8 and 34 feet, passes along the extreme eastern side of Mockhorn Bay.

SHORELANDS USE

FASTLAND: A thin border of unmanaged woodland, 200 to 400 feet wide, lies just inland from the marsh shore along 90% of the shorefront. Behind is agricultural land. The remaining 10% of the shorefront is occupied by open agricultural land reaching the shore (about 8%) and by the village of Oyster (residential and commercial, 2%).

SHORE: Hunting, fishing, and shellfishing are the main uses of the shore area, except in the immediate vicinity of Oyster where there are piers, ramps and slips for both pleasure and commercial fishing craft.

NEARSHORE: The waters in the harbor and in the immediate vicinity of Oyster are condemned, at present, for the taking of shellfish for direct sale to the consumer. There are, however, shellfishing and fishing in the bay, which also provides transit for Intracoastal Waterway traffic through Mockhorn Channel.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High over the marsh areas due to possible storm surge, but not critical. The hazard is high to medium, critical, in the village of Oyster, depending on elevation and proximity to the water. Elsewhere in the fastland zone, except in the immediate vicinity of the shore, the hazard is low.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: There are no beaches in Segment 14.

PRESENT SHORE EROSION SITUATION

EROSION RATE: No erosion was observed in this segment.

ENDANGERED STRUCTURES: None.

SHORE PROTECTIVE STRUCTURES: Outside of the harbor at Oyster no shore protective structures were noted. Within the harbor there are numerous bulkheads installed to retain artificial fill and serve as vertical dock sides.

OTHER SHORE STRUCTURES: At Marion Scott Cove there is a wooden pier and a small marine railway belonging to a private club. Nearby is a dredged canal, probably for the purpose of drainage from a nearby pond and sand pit. At Oyster an earth dike has been built seaward of the village apparently to contain dredged spoils from the channel (Photo NH-14-155).

POTENTIAL USE ENHANCEMENT: Low. As with other segments on this side of the county, the low marsh areas are best left for hunting and fishing.

The harbor at Oyster provides a haven for local boats as well as for transient yachts. Its position adjacent to the Intracoastal Waterway is advantageous to capturing more boating trade as yachting becomes more and more popular.

MAPS: USGS, 7.5 Min.Ser. (Topo.), TOWNSEND and CHERITON Quadrs., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 17May38 ANP22-52, 54, 56.
USAF 30Nov59 AF59-35 R-24 2285.
USGS 5Feb67 GS-SWBK-1 1-127, 137.
VIMS 18Dec72 NH-14-155 to 159;
VIMS 20Mar73 NH-14-504 to 513.

Ground - VIMS 16Apr73 NH-14-261G to 268G.

SEGMENT 15, RAMSHORN BAY
SEGMENT DESCRIPTION

RAMSHORN BAY, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 15 (Maps 13A, 13B, 13C)

EXTENT: 27,000 feet (5.1 mi.), along the marsh-fastland boundary, from Brockenberry Creek to Holts Neck opposite Kendall Grove, a mile north of Indiantown Creek.

SHORELANDS TYPE
FASTLAND: Low shore, with a moderate slope from the shoreline, of about 25 feet per quarter mile. The general elevation of the plain is 35 feet.
SHORE: Fringe marsh borders the fastland in the southerly quarter of the segment (10 acres), extensive marsh borders the northerly three-quarters and lies offshore of the southerly part (494 acres), embayed marshes are found in the creeks (53 acres).
NEARSHORE: Brockenberry Bay and Ramshorn Bay lie between the marsh shoreline of Segment 15 and the extensive marsh islands (Elkins Marsh and others) to the east. The bays contain mostly muddy tidal flats and are traversed by Ramshorn Channel with depths ranging between 17 and 70 feet.

SHORELANDS USE
FASTLAND: Plots of unmanaged woodland up to 2,000 feet wide, but generally less than 1,000 feet wide, lie along about 85% of the fastland border, about 10% is agricultural land and 5% is accounted for by creek entrances and their bordering marshes. Agricultural land lies inland.
SHORE: There is some small-scale shellfish industry at Indiantown Creek, shellfishing and hunting are carried on in the marsh.
NEARSHORE: Shellfishing and fishing.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High over the marsh shore area in the event of storm surge, but noncritical as there are no structures in the zone. Low to the fastland as all buildings are on or above the 10-foot contour.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: There are no sand beaches in Segment 15.

PRESENT SHORE EROSION SITUATION
EROSION RATE: No erosion was observed in this segment.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None noted.

OTHER SHORE STRUCTURES: The only shoreline structures noted were a pier in considerable disrepair together with a boat ramp, usable only at high water, at the north side of Indiantown Creek, about 1,000 feet in from the bay entrance.

POTENTIAL USE ENHANCEMENT: Low. As with the other segments on the eastern fastland-marsh boundary of Northampton County, development potential at present is low, with the best course of action seeming to be to preserve the marshes as they are for hunting and fishing or as wildlife refuges.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CHERITON Quadr., 1968.
C&GS, #563, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Wolf Trap, 1971.

PHOTOS: Aerial-USDA 6May38 ANP17-77, 78;
USDA 17May38 ANP22-51, 52.
USAF 30Nov59 AF59-35 R-24 2285, 2286, 2293.
USGS 30Jan67 GS-SWBK-1 1-83;
USGS 5Feb67 GS-SWBK-1 1-136, 137.
VIMS 20Mar73 NH-15-514, NH-16-528.

SEGMENT 16, HOLT NECK
SEGMENT DESCRIPTION

HOLT NECK, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 16 (Maps 14A, 14B, 14C and 15A, 15B, 15C)

EXTENT: 23,000 feet (4.4 mi.), along the marsh-fastland boundary, from one mile north of Indiantown Creek to Mill Creek (south end of Brickhouse Neck).

SHORELANDS TYPE

FASTLAND: Low shore, terraced. The 5-foot contour lies close to the marsh boundary and the fastland slopes very gently upward to the 10-foot contour between one-quarter and one-half mile inland. The slope steepens to about 20 feet in two-tenths of a mile, where it becomes very gentle again and finally the general elevation of the inner fastland is 35 to 40 feet.

SHORE: Extensive marsh (1,107 acres); and embayed marsh (58 acres).

NEARSHORE: Ramshorn Bay, with extensive tidal flats, lies between the narrower marsh section of the segment and the extensive marshes to the east.

SHORELANDS USE

FASTLAND: A band of unmanaged woodland from 1,500 to 3,000 feet wide borders the shore. The land behind is primarily agricultural land.

SHORE: There is hunting on the marshes, and fishing and shellfishing in the creeks. A limited shellfish industry (crabs and oysters) exists at Box Tree Creek and Webbs Island where there are small piers and marginally useful boat ramps.

NEARSHORE: Fishing and shellfishing.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High over the marshes due to the possibility of storm surge; medium to the lower fastland and outliers such as Webbs Island. With a very high flood the conditions could become serious as there are several residences on Webbs Island and a few at Box Tree Creek where elevations are between 5 and 10 feet above MSL and road access in each instance is across low marsh areas. Flood danger is low for the remainder of the fastland.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: There are no beaches in Segment 16.

PRESENT SHORE EROSION SITUATION

EROSION RATE: There are no shore erosion problems apparent in the segment.

ENDANGERED STRUCTURES: None.

SHORE PROTECTIVE STRUCTURES: None are noted.

OTHER SHORE STRUCTURES: There are both a pier and a ramp at Box Tree Creek (Photo NH-16-160), and 4 piers, a ramp and some bulkheading to retain fill at Webbs Island (Photo NH-16-161). There are also various fences crossing sections of the marsh in the vicinity of Webbs Island.

POTENTIAL USE ENHANCEMENT: Low. Like the other segments in the easterly part of the county, Segment 16 shows little potential for development at present. There is no possibility for developing beaches, the Intracoastal Waterway bypasses the segment several miles to the east and it appears that present use of the marshes for hunting, fishing and shellfishing should be continued.

MAPS: USGS, 7.5 Min.Ser. (Topo.), CHERITON, FRANKTOWN and NASSAWADOX Quadrs., 1968.
C&GS, #1221, 1:80,000 scale, CHINCOTEAGUE INLET to GREAT MACHIPONGO INLET, 1972.
C&GS, #1222, 1:80,000 scale, CHESAPEAKE BAY ENTRANCE, 1972.

PHOTOS: Aerial-USDA 6May38 ANP17-77, 98, 100.
USAF 30Nov59 AF59-35 R-24 2292; R-25 2407.
USGS 30Jan67 GS-SWBK-1 1-83;
USGS 5Feb67 GS-SWBK-1 1-134, 136.
VIMS 18Dec72 NH-16-160, 161;
VIMS 20Mar73 NH-16-528 to 538, NH-17-539.

SEGMENT 17, MACHIPONGO RIVER
SEGMENT DESCRIPTION

MACHIPONGO RIVER, NORTHAMPTON COUNTY, VIRGINIA

SEGMENT 17 (Maps 15A, 15B, 15C and 16A, 16B, 16C)

EXTENT: 52,800 feet (10 mi.), from Mill Creek to the county limit, a mile north of Willis Wharf on Parting Creek.

SHORELANDS TYPE

FASTLAND: Low shore, about three-quarters of a mile wide from the shore to the 10-foot contour, with several marsh-creek reentrants. Behind is a moderate terrace slope with a gradient of about 20 feet in 1,000 feet (0.2 mi.) rising to an upper plain elevation of 35 to 40 feet. In the northerly 1¾ miles (Willis Wharf area) the terrace slope comes right to the water's edge at Parting Creek.

SHORE: Extensive marsh with hammock islands over the lower three-quarters (3,324 acres) of the segment; fringe marsh in the Parting Creek area (12 acres); and scattered embayed marsh (95 acres).

NEARSHORE: Hog Island Bay, with extensive tidal flats, lies off the lower third of the segment. The shore of the upper two-thirds is bounded by Machipongo River and Parting Creek. Channel widths average 800 feet; depths range between 6 and 66 feet. Parting Creek, above Willis Wharf, is shallow and averages 1,700 feet wide.

SHORELANDS USE

FASTLAND: About 50% is agricultural down to or very close to the shore; 40% is unmanaged, wooded (patchy) and 10% is commercial-residential (Willis Wharf mainly, and Red Bank).

SHORE: The marshes are used for hunting waterfowl; there is fishing and shellfishing (oysters and crabs) in the marsh channels. At Red Bank there are a boat ramp and several small private wharves. At Willis Wharf there are a couple of fairly substantial commercial piers in the central area of the town's waterfront and numerous smaller private wharves, some in poor repair, either side of town. There is a boat-launching ramp at the south side of town.

NEARSHORE: There is shellfishing on the tidal flats and fishing in the channels. The Intracoastal Waterway crosses part of the area, and the river and creek channels provide transit for boats to and from Red Bank and Willis Wharf.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High over the marsh areas due to possibility of storm surges; medium to the higher ground on the marsh islands and the waterfront areas in the towns. During flood times conditions might become serious for those occasional residents of the marsh islands who are dependent on road communication across low marsh areas. Low in the upper fastland areas.

WATER QUALITY: Satisfactory. Meets both water class II B and shellfish standards.

BEACH QUALITY: There are no sand beaches in Segment 17.

PRESENT SHORE EROSION SITUATION

EROSION RATE: No particular erosion was noted in the segment, although it appears that occasionally (probably during times of high run-off) areas along the concave banks of Parting Creek below Willis Wharf and of Machipongo River may undergo some temporary erosion.

ENDANGERED STRUCTURES: None.

SHORE PROTECTIVE STRUCTURES: On Parting Creek, southeast of Willis Wharf, there is a length of some 200 feet of wooden bulkhead which appears effective in protecting the bank there during high run-off times.

There is concrete rubble riprap both at the head of the channel at Red Bank and at the edge of the creek at the southwest side of Willis Wharf. Their effectiveness is apparently satisfactory.

OTHER SHORE STRUCTURES: In addition to riprap and piers at Willis Wharf and Red Bank, there is some bulkheading to retain artificial fill. Much of this in Willis Wharf is in poor repair. There are boat-launching ramps at both towns. At Willis Wharf a dredge spoils area has been diked off southeast of town.

One pier was noted near the mouth of Red Bank Creek on Fowling Point. There is extensive trash dumping on the marsh at the head of one of the branches of Mill Creek at the south end of the segment (Rte. 621).

POTENTIAL USE ENHANCEMENT: Moderate. There is a modest shellfish industry at Willis Wharf and a few boats also operate from Red Bank. From the marketing point of view, this area has the advantage of being situated very near both a major north-south highway (Rte. 13) and a railroad.

Lack of beaches inhibits long stop-over tourism, but as Willis Wharf is near the main highway possibly an overnight tourist industry could be built around the scenic interest of the waterfront area.

The marshes should be left as they are for hunting, nature study, shellfishing and fishing.

MAPS: USGS, 7.5 Min.Ser. (Topo.), NASSAWADOX and EXMORE Quadrs., 1968.
C&GS, #1221, 1:80,000 scale, CHINCOTEAGUE INLET to GREAT MACHIPONGO INLET, 1972.

PHOTOS: Aerial-USDA 6May38 ANP17-98, 106, 119, 121.
USAF 30Nov59 AF59-35 R-25 2408;
USAF 9Dec59 AF59-35 R-30 3005.
USGS 5Feb67 GS-SWBK-1 1-132, 133, 148, 150.
VIMS 18Dec72 NH-17-162;
VIMS 20Mar73 NH-17-539 to 564.

SEGMENT 18, OCCOHANNOCK CREEK
SEGMENT DESCRIPTION

OCCOHANNOCK CREEK,

NORTHAMPTON AND ACCOMACK COUNTIES, VIRGINIA

SEGMENT 18 (Maps 10A, 10B, 10C)

EXTENT: Area - 1,916 acres, including Killmon Cove. Length - 7 miles, from the inlet to the head of the creek.

SHORELANDS TYPE
FASTLAND: Low shore on both sides, lower half; moderately low shore, upper half of the creek, with 25-foot bluffs rising from the marsh edge.
SHORE: Fringe marsh (45 acres), embayed marsh at the heads of the creek branches (106 acres).
CREEK: Submerged meander valley, few tributaries, mostly near the inlet. The bottom is principally muddy.

SHORELANDS USE
FASTLAND: About 95% agricultural, 5% commercial and residential.
SHORE: Little use except for boat landings (wharves and ramps).
CREEK: Shellfishing - there are 96 leased oyster tracts comprising 790 acres; boating; some waterfowl hunting.

OWNERSHIP: Private.

ZONING: Agricultural.

FLOOD HAZARD: High in the lower part of the creek, medium in the upper creek to waterfront and low-lying properties, due to possibility of storm surge from the bay. Low to the bluff area surrounding the upper creek. Most present structures are above 5 feet elevation.

WATER QUALITY: Satisfactory in 1973, meets both water class II B and shellfish standards; but previously the upper creek had been unsatisfactory and closed to the taking of shellfish for direct sale.

PRESENT SHORE EROSION SITUATION
EROSION RATE: Very little erosion in the creek. There was some 40 acres of marsh erosion in various locations along the south side of the creek between 1851 and 1942, and probably a similar amount on the north side, but there was also comparable accretion at other locations.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None at present.

OTHER SHORE STRUCTURES: There are approximately 20 wharves on the creek, and 2 boat ramps.

NAVIGABILITY
APPROACHES: A marked channel with minimum depths of 7 feet crosses the nearshore area. There are many shoals and bars and the channel is narrow and crooked, but with proper attention to the aids to navigation, the approaches to Occohannock Creek are easily navigable.
INLET: The north spit at the entrance to the creek has grown southward and inward considerably in 30 years (cf. Photos USDA AN021-1 1938 and USGS-SWBK-1 1-3 1967), but the channel appears to have remained in about the same position during that time.
CREEK: The channel is marked by day beacons for about half the length of the creek (3 mi.), to the vicinity of Davis Wharf and Morley Wharf. The controlling depth is about 5 feet. There are various shoals off the points along the creek, but even beyond Davis Wharf, to the bridge at Rue Wharf (Rte. 178), at least 3 feet and generally 4 feet of water can be expected along the center of the creek.

POTENTIAL USE ENHANCEMENT: Occohannock Creek offers the first really good shelter for small craft north of the Cape Charles Harbor and Kings Creek vicinity, 20 miles to the south. While care should be exercised to avoid further contamination of the creek waters, the creek morphology offers the capability for additional marina facilities. There are several sheltered sites where such facilities might be placed, such as in Tawes Creek, Johnson Cove, Concord Wharf area or Scarborough Gut, to mention just those nearest the inlet.

As with the other creeks in the region, the bluffs overlooking the creek offer desirable sites for residences, either permanent or seasonal, and Occohannock Creek is particularly attractive since it offers extensive boating possibilities as well.

MAPS: USGS, 7.5 Min.Ser. (Topo.), JAMESVILLE and EXMORE Quadrs., 1943 and 1968.
C&GS, #564, 1:40,000 scale, CHESAPEAKE BAY, Wolf Trap to Pungoteague Creek, 1971.

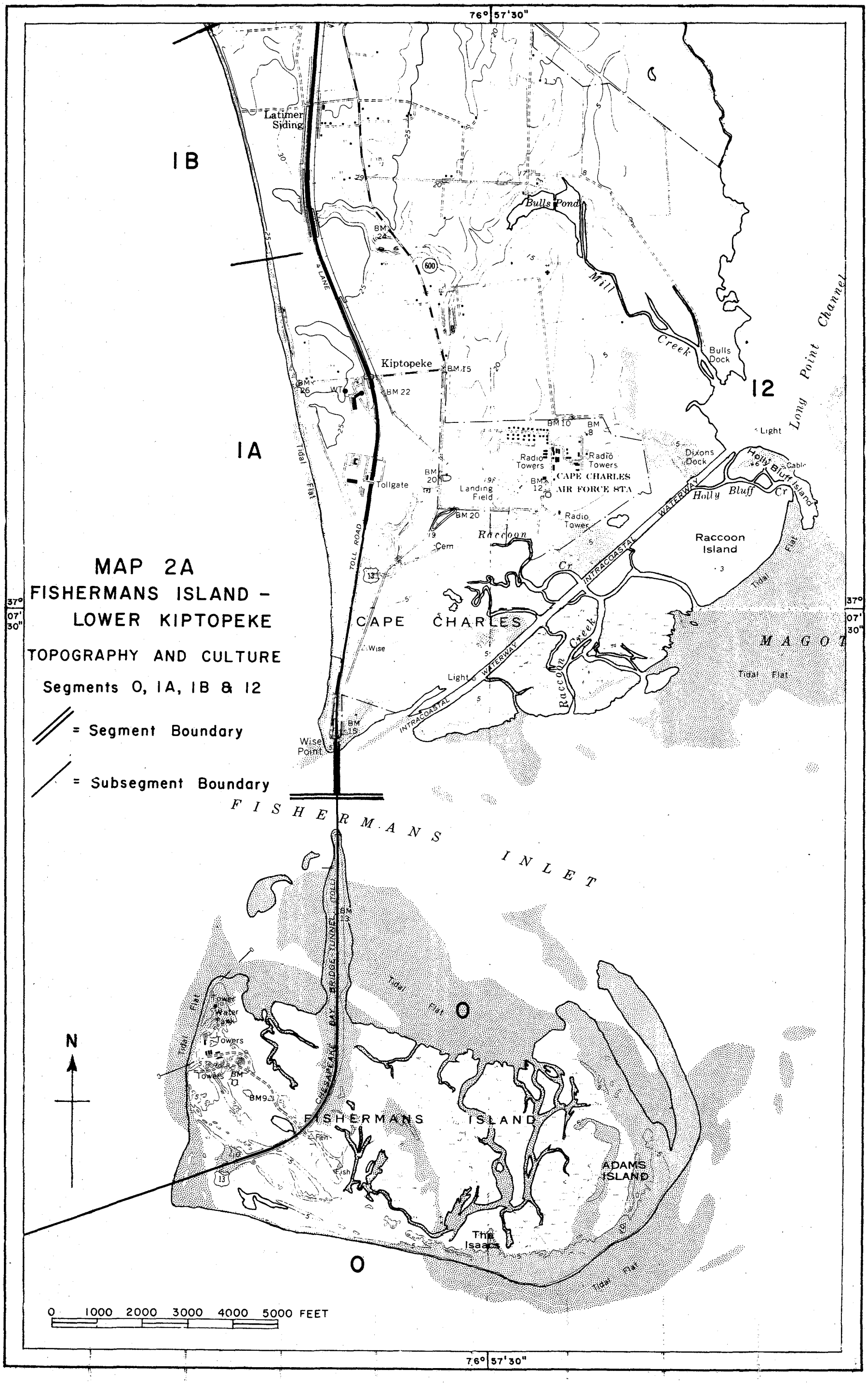
PHOTOS: Aerial-USDA 6May38 ANP17-91;
USDA 7May38 AN021-1, 2, 13, 40.
C&GS 10Mar55 W4346.
USAF 9Dec59 AF59-35 R-30 3006, 3007.
VaDH 15May63 5 001 132 098.
USGS 30Jan67 GS-SWBK-1 1-3.
VIMS 10Oct72 NH-18-91 to 93, AC-1-1 to 5;
VIMS 18Dec72 AC-1-6 to 28, NH-18-277;
VIMS 27Dec72 NH-18-471, 472.

4.3 Segment and Subsegment Maps
2A thru 16C

MAP 2A
FISHERMANS ISLAND - LOWER KIPTOPEKE
TOPOGRAPHY AND CULTURE
Segments 0, 1A, 1B & 12

= Segment Boundary

= Subsegment Boundary



MAP 2B
FISHERMANS ISLAND–LOWER KIPTOPEKE

1B

1A

12

SHORELANDS TYPES
Segments 0, 1A, 1B & 12

FASTLANDS
- Low Shore
- Low Shore with Bluffs
- Low Shore with Dunes
- Mod. Low Shore with Bluffs

SHORE
- Beach
- Extensive Marsh

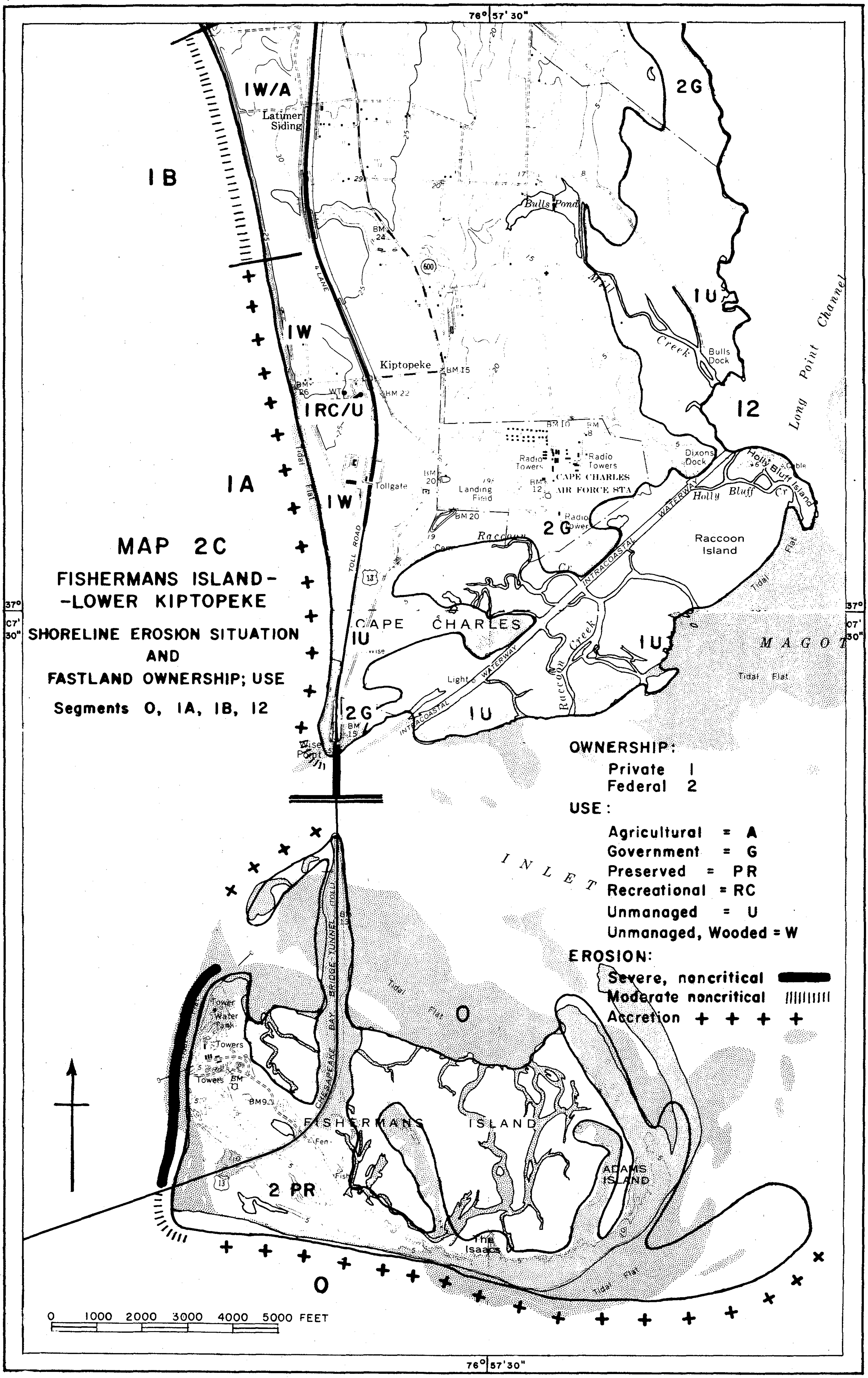
NEARSHORE
- Narrow
- Intermed.
- Wide

76° 57' 30"

37° 07' 30"

Latimer Siding
Bulls Pond
BM 24
600
4 LANE
TOLL ROAD
Kiptopeke
BM 15
BM 26
WT
BM 22
Tollgate
BM 10
BM 8
Radio Towers
Radio Towers
CAPE CHARLES AIR FORCE STA
Dixons Dock
Long Point Channel
BM 20
Landing Field
BM 12
BM 20
Radio Tower
Raccoon Cr
Raccoon Island
Tidal Flat
13
CAPE CHARLES
Wise
Wise Point
MAGOTHY
Tidal Flat
FISHERMANS INLET
BM 15
Tower to Water Tank
Towers
Towers
BM 10
BM 9
FISHERMANS ISLAND
Fen
ADAMS ISLAND
The Isaacs
Tidal Flat

0 1000 2000 3000 4000 5000 FEET


MAP 2C
FISHERMANS ISLAND-
-LOWER KIPTOPEKE
SHORELINE EROSION SITUATION
AND
FASTLAND OWNERSHIP; USE
Segments O, 1A, 1B, 12
OWNERSHIP:
Private 1
Federal 2
USE:
Agricultural = A
Government = G
Preserved = PR
Recreational = RC
Unmanaged = U
Unmanaged, Wooded = W
EROSION:
Severe, noncritical
Moderate noncritical
Accretion + + + +
76° 57' 30"
37°
07'
30"
1W/A
Latimer Siding
1B
1W
Kiptopeke
1RC/U
1A
Tollgate
TOLL ROAD
4 LANE
CAPE CHARLES
1U
2G
Wise Point
Bulls Pond
Mill Creek
Bulls Dock
2G
1U
12
Long Point Channel
Dixons Dock
Holly Bluff Island
Holly Bluff Cr
Radio Towers
CAPE CHARLES AIR FORCE STA
Landing Field
Raccoon Island
Raccoon Creek
INTRACOASTAL WATERWAY
Tidal Flat
MAGOT
Light
1U
INLET
CHESAPEAKE BAY BRIDGE-TUNNEL (TOLL)
Tower
Water Tank
Towers
FISHERMANS ISLAND
2 PR
O
ADAMS ISLAND
The Isaacs
0 1000 2000 3000 4000 5000 FEET

76° 00'

37° 12' 30"

MAP 3A

UPPER KIPTOPEKE

TOPOGRAPHY AND CULTURE

Segments IC, ID, IE, IF, IG, IH

/ = SUBSEGMENT BOUNDARY

0 1000 2000 3000 4000 5000 6000 7000 FEET

N

IH IG IF IE ID IC

Old Plantation Cr
Tidal Flats
Hunts Wharf
Tidal Flat
Arlington
Arlington Wharf
Costin Pond
Elliotts Creek
Dixons Pond
Dixons Pond
Pond Drain
Pond Drain
Willis
Willis
Cheapside
Dalbys
Capeville
Cape Center
Parsons
Lookout Tower
Picketts Harbor
Tidal
Sandpit
Radio Tower
Radio Tower
Gaging Sta
Kiptopeke Beach
PRIVATE
CENTRAL
Cem
BM 36
BM 35
BM 31
BM 38.4
BM 11
BM 9
BM 8
BM 34
644
646
645
650
624
1901
13

37° 12' 30"

76° 00'

76° 00'

37° 12' 30"

MAP 3B

UPPER KIPTOPEKE

SHORELANDS TYPES

Segments IC, ID, IE, IF, IG, IH

FASTLANDS

Low Shore

Mod. Low Shore with Bluff

Mod. High Shore with Bluff

Dune

SHORE

Beach

Fringe Marsh

Embayed Marsh

NEARSHORE

Narrow

Intermediate

0 1000 2000 3000 4000 5000 6000 7000 FEET

N

IH

IG

IF

IE

ID

IC

Old Plantation Cr

Tidal Flats

Hunts Wharf

Tidal Flat

Cem

Dalbys

Capeville Ch

Arlington

Arlington Wharf

Costin Pond

BM 36

BM 35

Parsons

Cape Center

Dixons Pond

Willis

Cheapside

Pond Drain

Lookout Tower

Picketts Harbor

Radio Tower

Sandpit

BM 31

BM 38

BM 11

PRIVATE

CENTRAL

BM 34

644 645 646 624 650 1901 13

MAP 3C

UPPER KIPTOPEKE

SHORELINE EROSION SITUATION
AND
FASTLAND OWNERSHIP; USE

Segments IC, ID, IE, IF, IG, IH

OWNERSHIP:
Private = I

USE:
Agricultural = A
Unmanaged; Wooded = W

EROSION:
Severe
Critical
Noncritical
Moderate
Noncritical
Accretion + + + +

0 1000 2000 3000 4000 5000 6000 7000 FEET

76° 00'

37° 12' 30"

N

IH IA IA IW IW IG IF IA IW/A IW IE IW IW/A ID IW/A IW/A IC IW/A

Tidal Flats
Old Plantation Cr
Hunts Wharf
Cem
Capeville Ch
Dalbys
Tidal Flat
Arlington Wharf
Arlington
644
Costin Pond
BM 36
BM 35
Ell Creek
645
Parsons
Cape Center
Dixons Pond
624
650
Willis
1901
Cheapside
Pond Drain
646
Lookout Tower
Picketts Harbor
Bridge
Buffers Flat
Bluff
Sandpit
Radio Tower
BM 31
BM 38
PRIVATE
Kiptopeke
Beach
CENTRAL
BM 34

MAP 4A

OLD PLANTATION CREEK — CAPE CHARLES CITY

TOPOGRAPHY AND CULTURE

Segments 2, 3A, 3B, 3C, 3D, 3E, 3F, II

= SEGMENT BOUNDARY

= SUBSEGMENT BOUNDARY

1000 0 1000 2000 3000 4000 FEET

76° 00'

37° 17' 30"

37° 15'

II

3F

3E

3D

3C

3B

3A

2

Mill Point

Tidal Flat

Cem

Campground

Westcoat Point

Sandy Island

Light

Owens Landing

Kings Creek

Kings

Golf Course

Cape Charles

WASHINGTON AVE

MASON AVE

Park

WTs

CHANNEL

Cape Charles Harbor

CHANNEL

CHERRYSTONE INLET

CHERRYSTONE

BM 11

BM 12

BM 14

BM 17

PENN CENTRAL

Parsons Siding

Cape Junction

Cape Charles Cem

Old Plantation Creek

Tidal Flat

Long Pond

Lower Northampton

Allegood Pond

Hunts Point

Old Plantation Cr

Hunts Wharf

Tomb of Custis

Arlington

Costin Pond

Arlington Manor

Creek

Flats

184 641 642 644 682 13

MAP 4B

OLD PLANTATION CREEK — CAPE CHARLES CITY

SHORELANDS TYPES

Segments 2, 3A, 3B, 3C, 3D, 3E, 3F, 11

FASTLANDS

- Low Shore
- Low Shore with Bluff
- Dune
- Artificial Fill

SHORE

- Beach
- Fringe Marsh
- Embayed Marsh
- Artificially Stabilized

NEARSHORE

- Narrow
- Intermediate

11 3F 3E 3D 3C 3B 3A 2

76° 00'

37° 17' 30"

37° 15'

1000 0 1000 2000 3000 4000 FEET

Cape Charles
Cape Charles Harbor
Cape Charles Cem
Cape Junction
Parsons Siding
Golf Course
Park
Owens Landing
Campground
Mill Point
Tidal Flat
Kings Creek
Old Plantation Creek
Allegood Pond
Long Pond
Lower Northamp
Hunts Point
Hunts Wharf
Tomb of Custis
Arlington
Costin Pond
Flats
CHANNEL
CHERRYSTONE INLET
PENN CENTRAL
WASHINGTON AVE
MASON AVE
Light
Cem
BM 11
BM 12
BM 14
WTs

MAP 4C

OLD PLANTATION CREEK — CAPE CHARLES CITY

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segments 2, 3A, 3B, 3C, 3D, 3E, 3F

76° 00'

37° 17' 30"

37° 15'

1000 0 1000 2000 3000 4000 FEET

OWNERSHIP
- Private · · · · I
- Town or City · · · · 5

USE
- Agricultural · · · · A
- Commercial · · · · C
- Industrial · · · · · I
- Recreational · · · RC
- Residential · · · · RS
- Unmanaged
  - unwooded · · · U
  - wooded · · · · W

EROSION
- Severe noncritical ▬▬▬
- Moderate noncritical ||||||||||
- Slight or No Change = Absence of symbol alongshore

MAP 5A

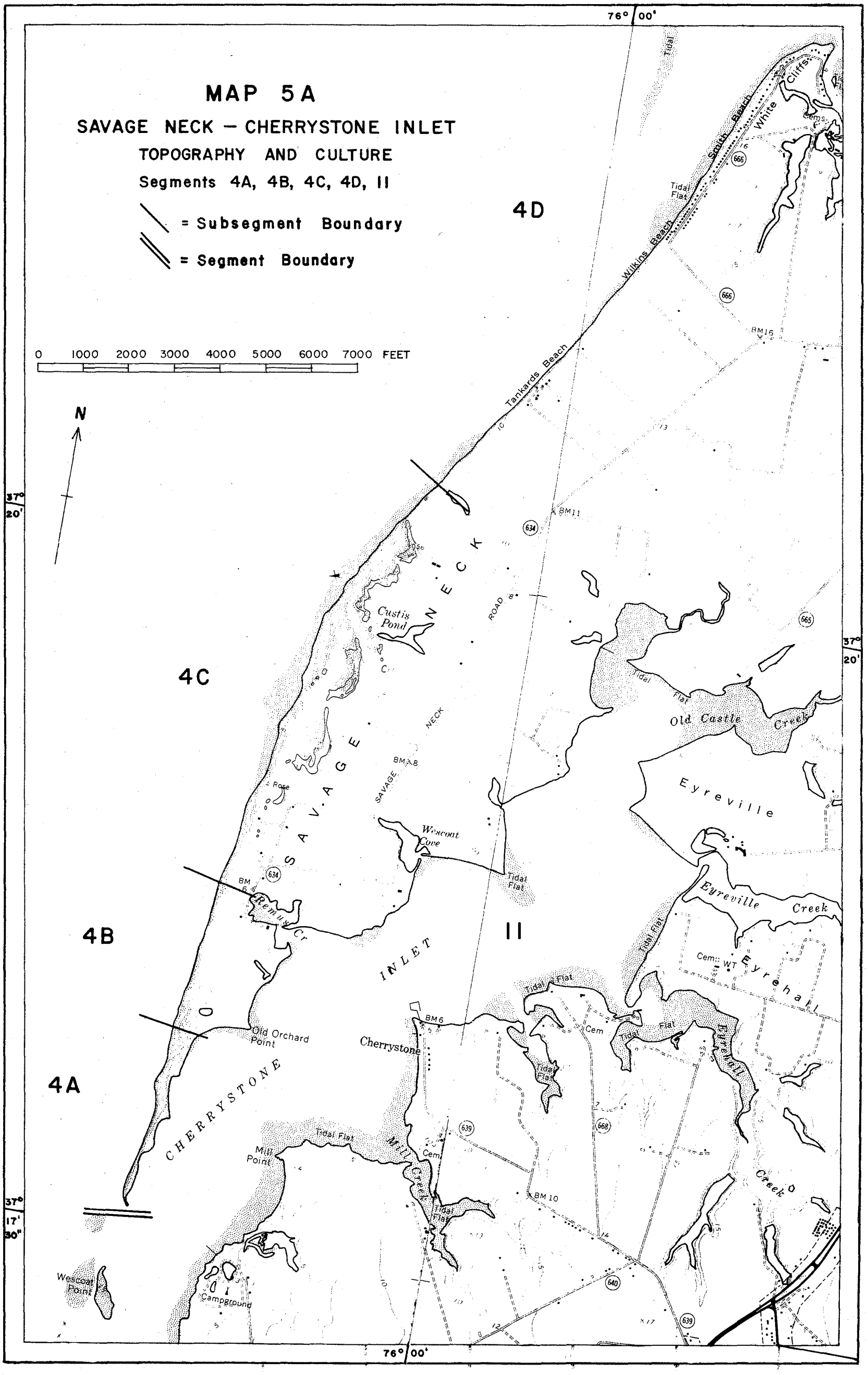
SAVAGE NECK – CHERRYSTONE INLET

TOPOGRAPHY AND CULTURE

Segments 4A, 4B, 4C, 4D, 11

= Subsegment Boundary

= Segment Boundary



MAP 5B

SAVAGE NECK — CHERRYSTONE INLET

SHORELANDS TYPES

Segments 4A, 4B, 4C, 4D, 11

FASTLANDS

Low Shore

Low Shore with Bluff

Dune

SHORE

Beach

Marsh: Fringe

Embayed

NEARSHORE

Intermediate

Wide

0 1000 2000 3000 4000 5000 6000 7000 FEET

N

76° 00'

37° 20'

37° 17' 30"

4A

4B

4C

4D

11

SAVAGE NECK

CHERRYSTONE INLET

Old Orchard Point

Cherrystone

Wescoat Point

Campground

Custis Pond

Wescoat Cove

Eyreville

Eyreville Creek

Cem

WT

Eyrehall

Old Plantation Creek

Tidal Flat

Cliffs

White

BM 10

BM 11

BM 18

ROAD

666

634

639

640

665

668

MAP 5C

SAVAGE NECK – CHERRYSTONE INLET

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segments 4A, 4B, 4C, 4D, 11

OWNERSHIP

I = Private

USE

A = Agricultural
RC = Recreational
RS = Residential
U = Unmanaged, unwooded
W = Unmanagea, wooded

EROSION

Severe:
Critical
Non-critical

Moderate:
Non-critical

N

0 1000 2000 3000 4000 5000 FEET

76° 00'

37° 20'

37° 17' 30"

4A 4B 4C 4D 11

Cherrystone Inlet
Savage Neck
Wescoat Point
Old Orchard Point
Mill Point
Custis Pond
Wescoat Cove
Remus Cr
Old Castle Creek
Eyreville
Eyreville Creek
Eyrehall
Burkhall Creek
Tankards Beach
Wilkins Beach
Tidal Flat
Campground
Cem
BM 6
BM 10
BM 11
ROAD 634
666
665
668
639
640

MAP 6A

THE GULF – MATTAWOMAN CREEK

TOPOGRAPHY AND CULTURE

Segments 5, 6, 7 (Partial)

=SEGMENT BOUNDARY

75° 57' 30"

37° 25'

37° 22' 30"

1000 0 1000 2000 3000 FEET

Cove
Neck
Great
Tidal Flat
Sparrow Point
Cem
Vaucluse Point
HUNGARS
Masden Gut
WILSONIA NECK
Light
Tidal Flat
Taylor Wharf
7
6
5
Honeymoon Island
MATTAWOMAN CREEK
Barlow
Hungars Beach
OLD TOWN NECK
White Cliffs
THE GULF
NECK
James Crossroads
Northampton High Sch
Mattawoman Creek
4 LANE
WT
BM 22
BM16
Footville
619
628
630
631
664
665
674

MAP 6B

THE GULF – MATTAWOMAN CREEK

SHORELANDS TYPES

Segments 5, 6, 7 (Partial)

FASTLAND

- Low Shore
- Low Shore with Bluff

SHORE

- Beach
- Fringe Marsh
- Embayed Marsh

NEAR SHORE

- Wide

75° 57' 30"

37° 25'

37° 22' 30"

1000 0 1000 2000 3000 FEET

Great Wicomico River

Sparrow Point

Vaucluse Point

Masden Gut

HUNGARS

WILSONIA

Tidal Flat

Light

Taylor Wharf

7

6

5

Honeymoon Island

MATTAWOMAN CREEK

OLD TOWN NECK

Cliffs

Creek

James Crossroads

Northampton High Sch

Eastville

BM16

NECK

LANE

MAP 6C

THE GULF – MATTAWOMAN CREEK

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segments 5, 6, 7(Partial)

75° 57' 30"

37° 25'

37° 22' 30"

1000 0 1000 2000 3000 FEET

OWNERSHIP
Private ····· I

USE
Agricultural ····· A
Residential ····· RS
Unmanaged wooded ····· W

EROSION
Severe, critical
Slight or No Change = Absence of Symbol Alongshore

Sparrow Point
Great Wicomico River
Vaucluse Point
HUNGARS NECK
WILSONIA NECK
Light
Tidal Flat
Taylor Wharf
MATTAWOMAN CREEK
Honeymoon Island
Barlow Beach
OLD TOWN NECK
Hungars Creek
White Cliffs
THE GULF
NECK
James Crossroads
Northampton High Sch
4 LANE
Cem
WT
BM16

7
6
5

IA
IRS
IW

MAP 7A

CHURCH NECK – HUNGARS CREEK

TOPOGRAPHY AND CULTURE

Segments 7, 8A, 8B, 8C, 8D, 8E

Segment Boundary

Subsegment Boundary

75° 57' 30"

37° 27' 30"

37° 25'

8A

8B

8C

8D

8E

7

Nassawadox Point

Horse Island

South I

Shooting Pt

Light

Tidal Flat

Westerhouse Cr

CHURCH NECK

Pungoteague Cove

Waterford Point

Jacobus Creek

Jacobus Pt

Cem

Sparrow Point

Great Wick

Vaucluse Point

HUNGARS CREEK

Masden Gut

WILSONIA NECK

Taylor Wharf

622

623

619

657

664

628

BM

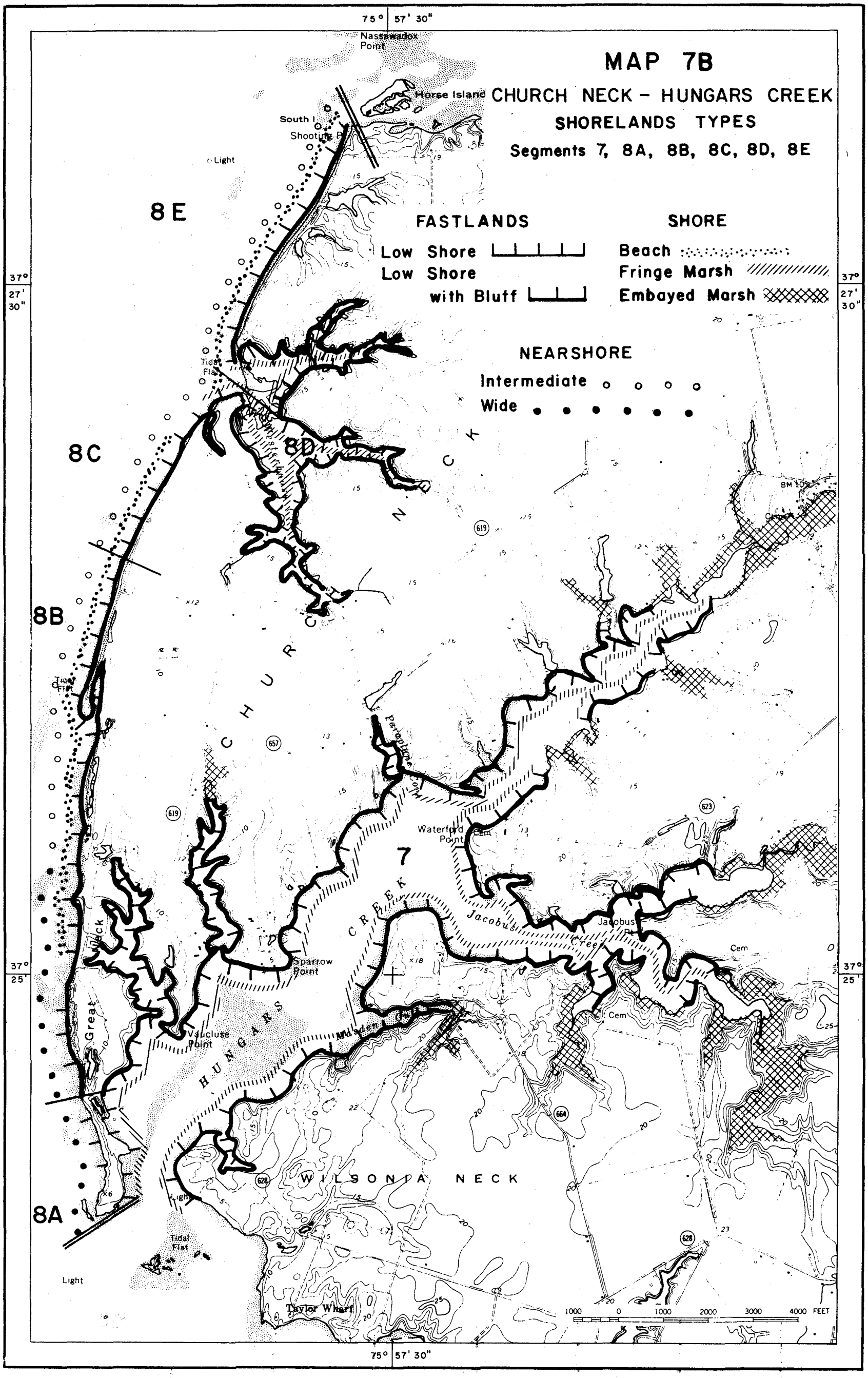
1000 0 1000 2000 3000 4000 FEET

MAP 7B

CHURCH NECK – HUNGARS CREEK

SHORELANDS TYPES

Segments 7, 8A, 8B, 8C, 8D, 8E



MAP 7C

CHURCH NECK - HUNGARS CREEK

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segments 7, 8A, 8B, 8C, 8D, 8E

OWNERSHIP

Private ····· I

USE

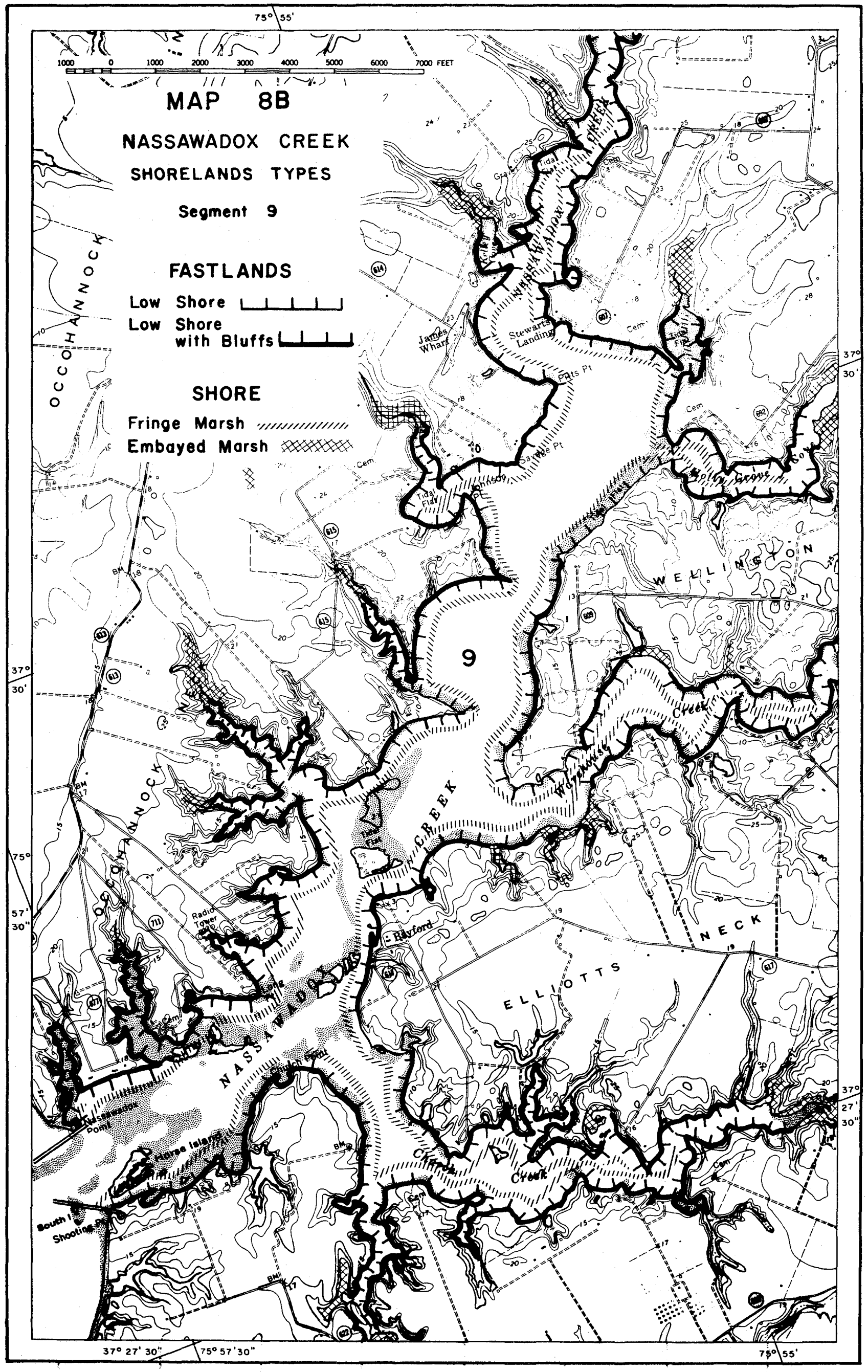
Agricultural ····· A
Unmanaged – unwooded ····· U

EROSION

Accretion + + +
Moderate non-critical ||||||||
Severe non-critical ▬▬

75° 57' 30"
37° 27' 30"
37° 25'
Nassawadox Point
Horse Island
South I
Shooting
Light
8E
8C
8D
8B
8A
7
IA
IU
Tidal Flat
Westerhouse Cr
CHURCH NECK CREEK
Parsley Cove
Waterford Point
Cem
Jacobus Creek
Jacobus Pt
Sparrow Point
Vaucluse Point
Great
Masden Gut
HUNGARS
WILSONIA NECK
Wharf
Light
619
657
623
664
628
1000 0 1000 2000 3000 4000 FEET


MAP 8A
NASSAWADOX CREEK
TOPOGRAPHY AND CULTURE
Segment 9
= SEGMENT BOUNDARY
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
75° 55'
37° 30'
37° 27' 30"
75° 57' 30"
9
Jamesville
St Mary's Ch
Cem
Turner
James Wharf
Stewart's Landing
Tidal Flat
Kelley Cove
Gravel
Pitts Pt
Savage Pt
Johnson Pt
Holly Grove Cove
WELLINGTON
Creek
Warehouse
CREEK
NECK
ELLIOTTS
Radio Tower
Byford
Church Point
Church
Creek
Nassawadox Point
Horse Island
South Is
Shooting Pt
BM
NASSAWADOX


MAP 8B
NASSAWADOX CREEK
SHORELANDS TYPES
Segment 9
FASTLANDS
Low Shore
Low Shore with Bluffs
SHORE
Fringe Marsh
Embayed Marsh
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
75° 55'
37° 30'
75° 57' 30"
37° 27' 30"
OCCOHANNOCK
NASSAWADOX CREEK
ELLIOTTS NECK
WELLINGTON
Stewarts Landing
James Wharf
Tidal Flat
Cem
Radio Tower
Bayford
Nassawadox Point
Savage Islands
South I.
Shooting P.
Wetlands
Creek
9

MAP 8C

NASSAWADOX CREEK

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segment 9

OWNERSHIP

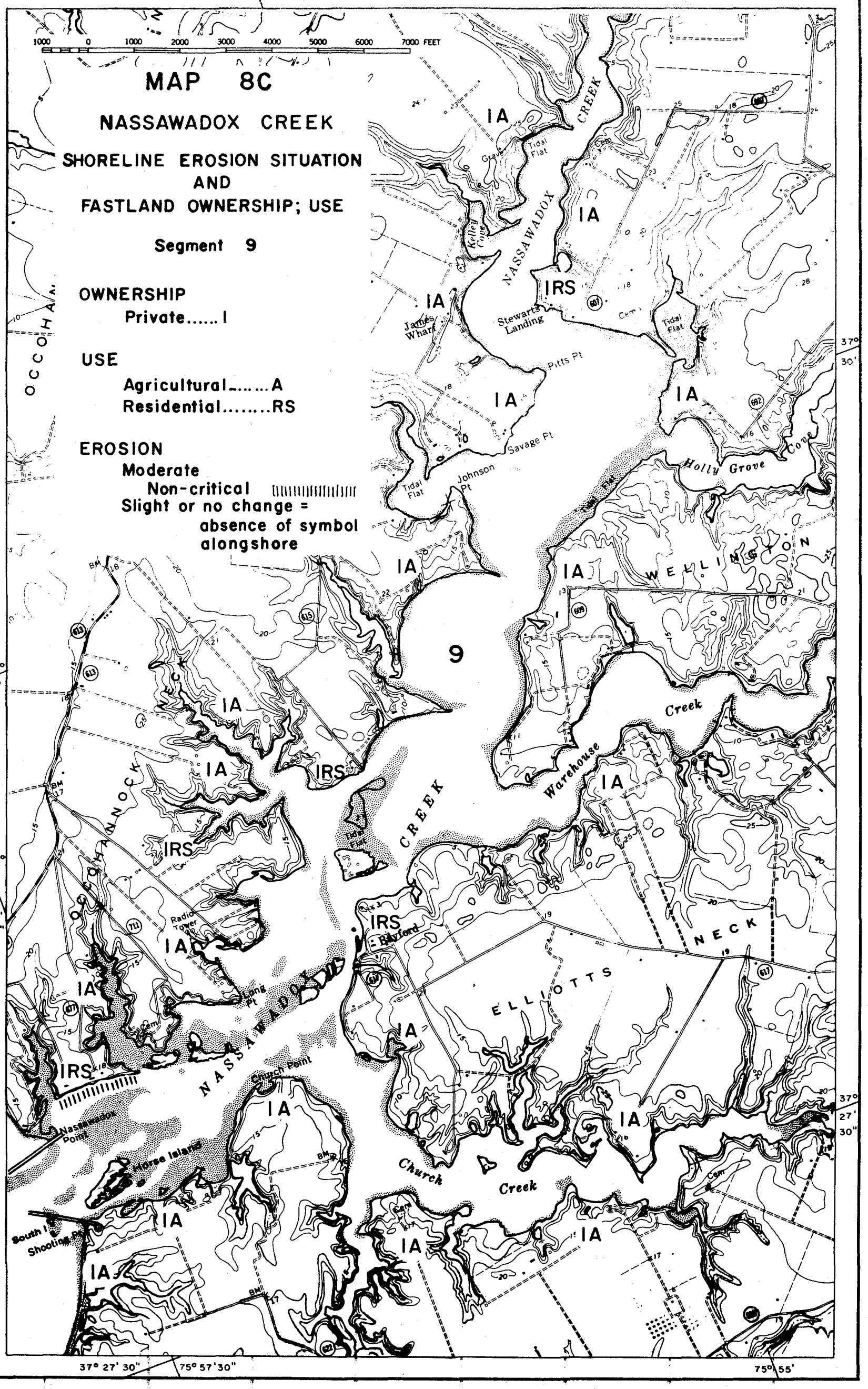
Private..... I

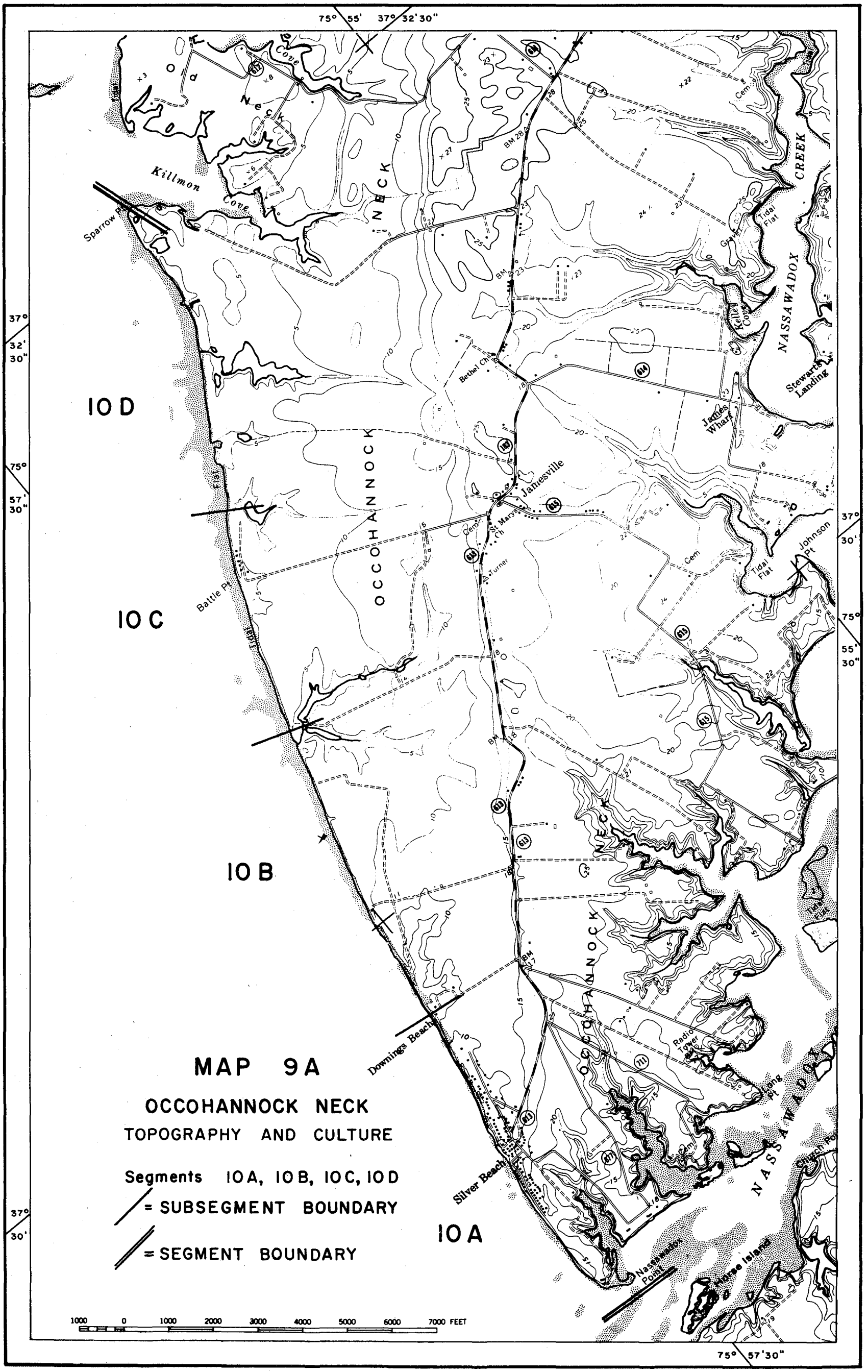
USE

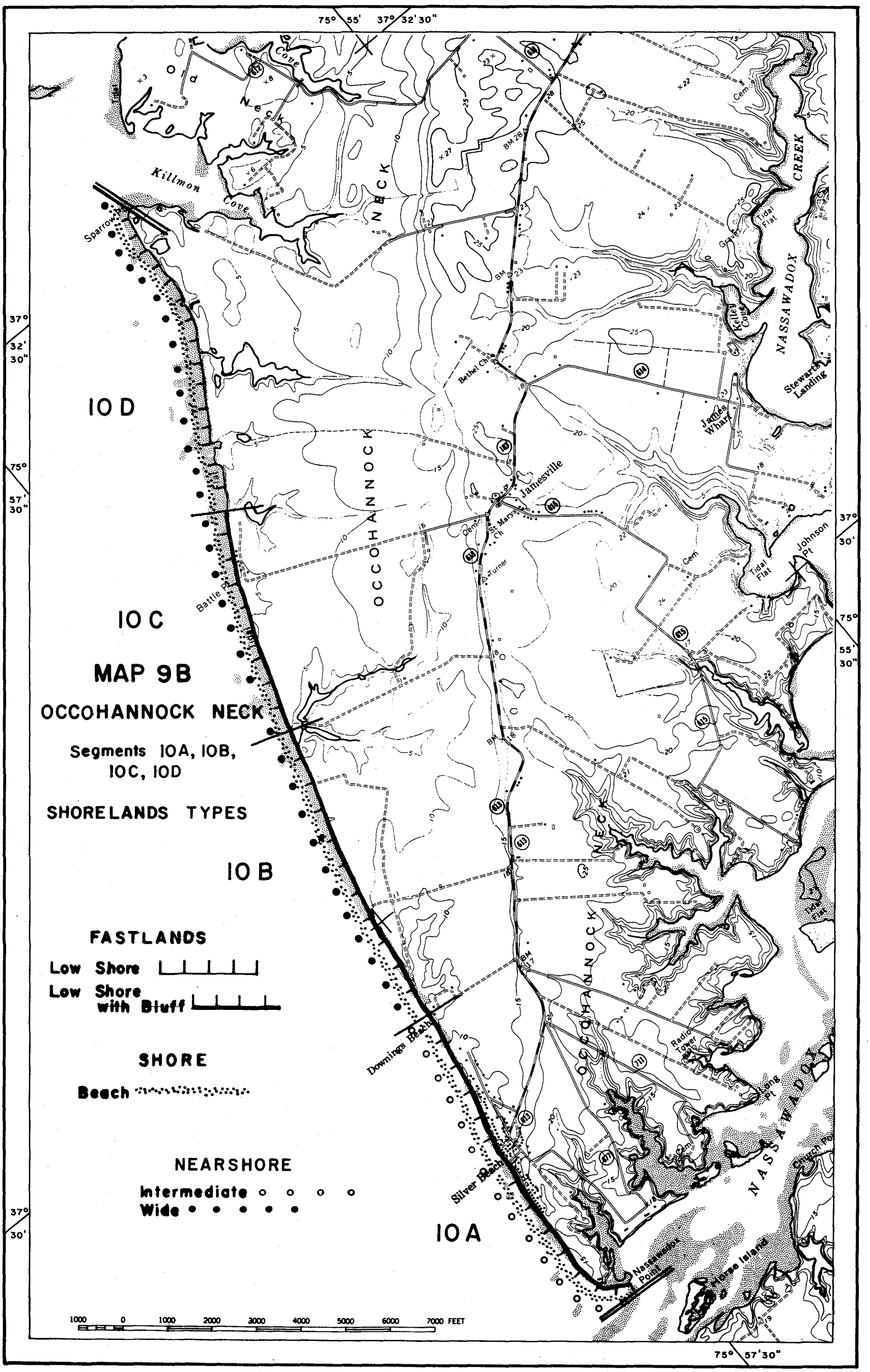
Agricultural.....A
Residential.....RS

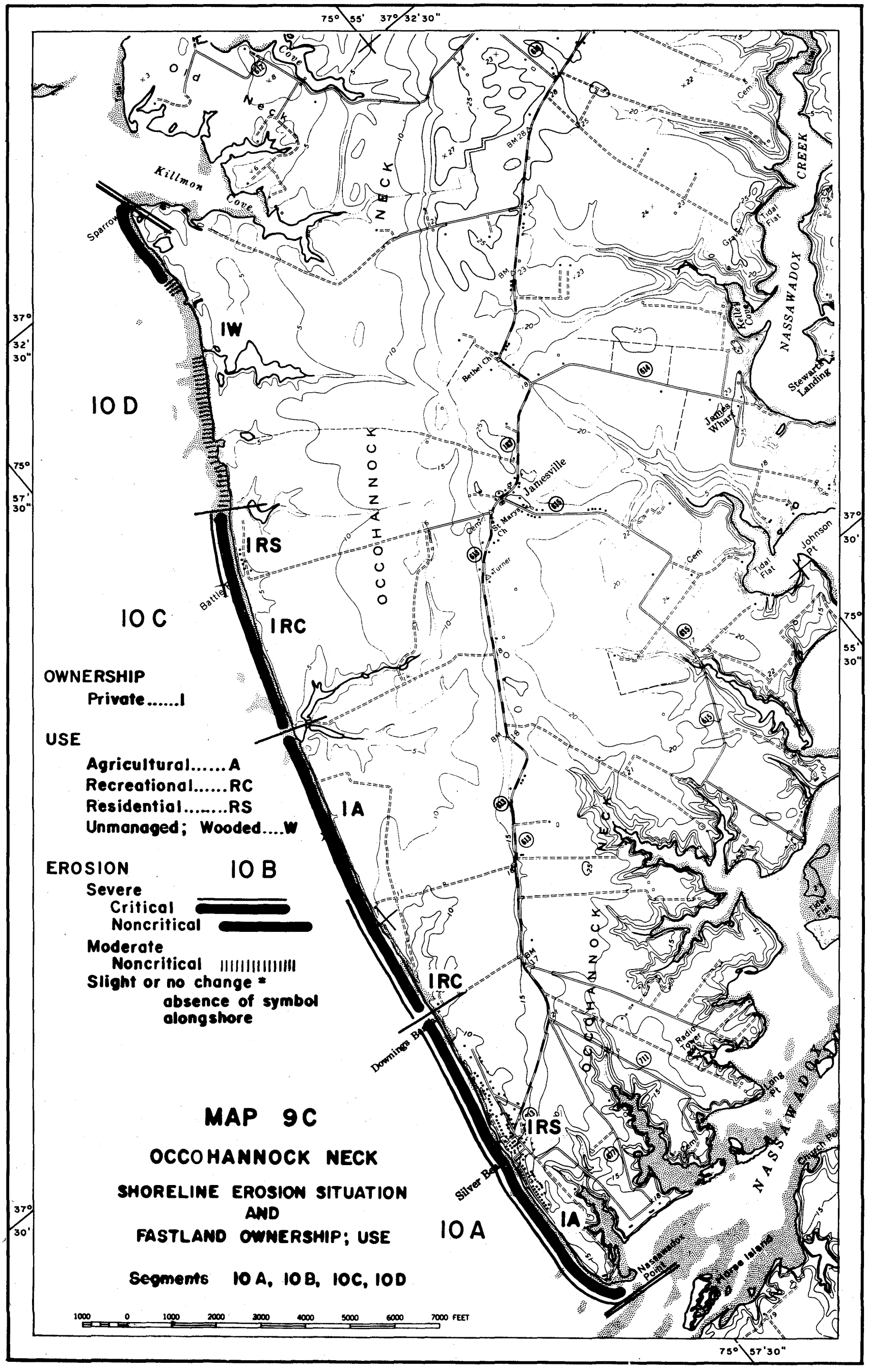
EROSION

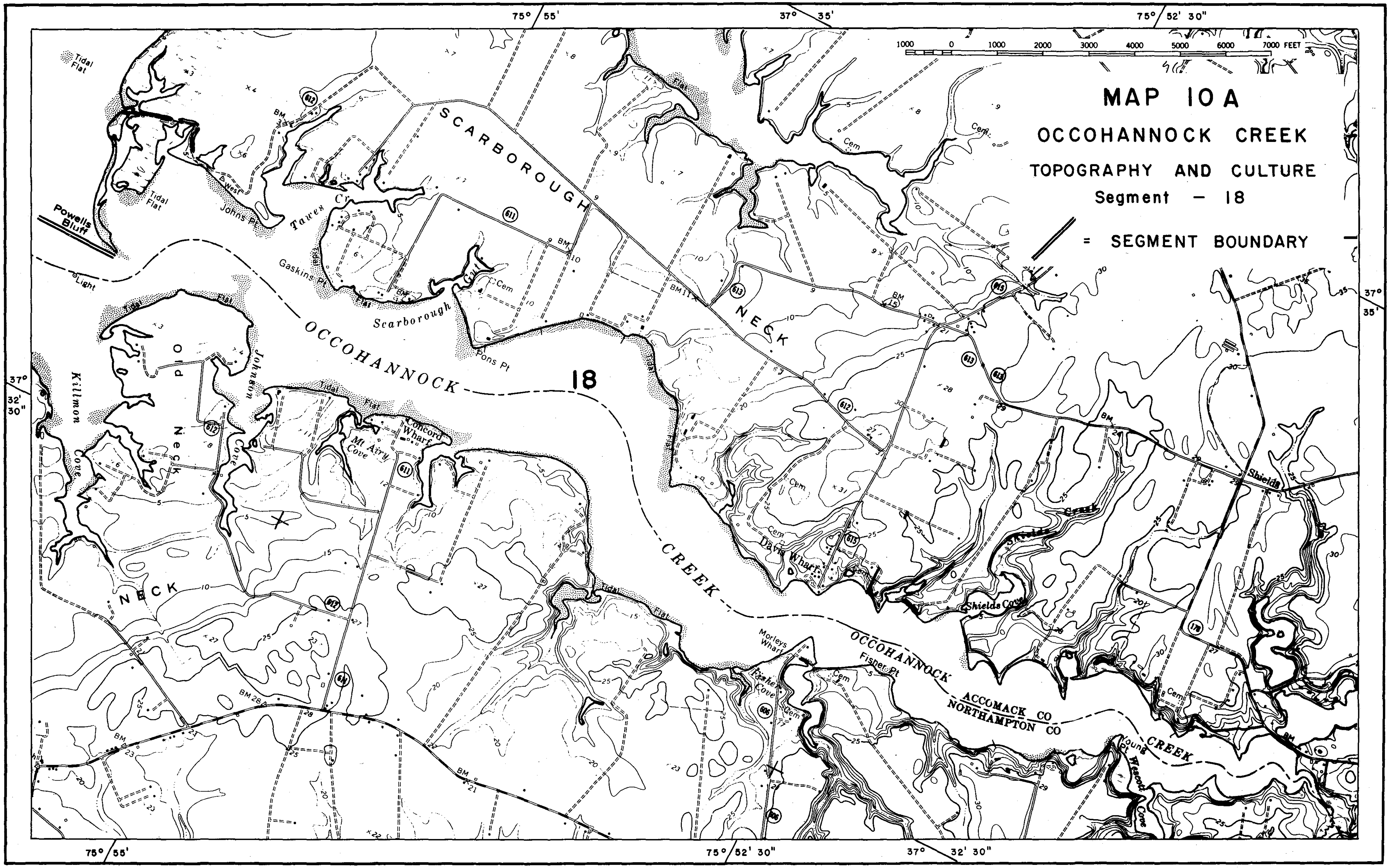
Moderate
Non-critical
Slight or no change = absence of symbol alongshore

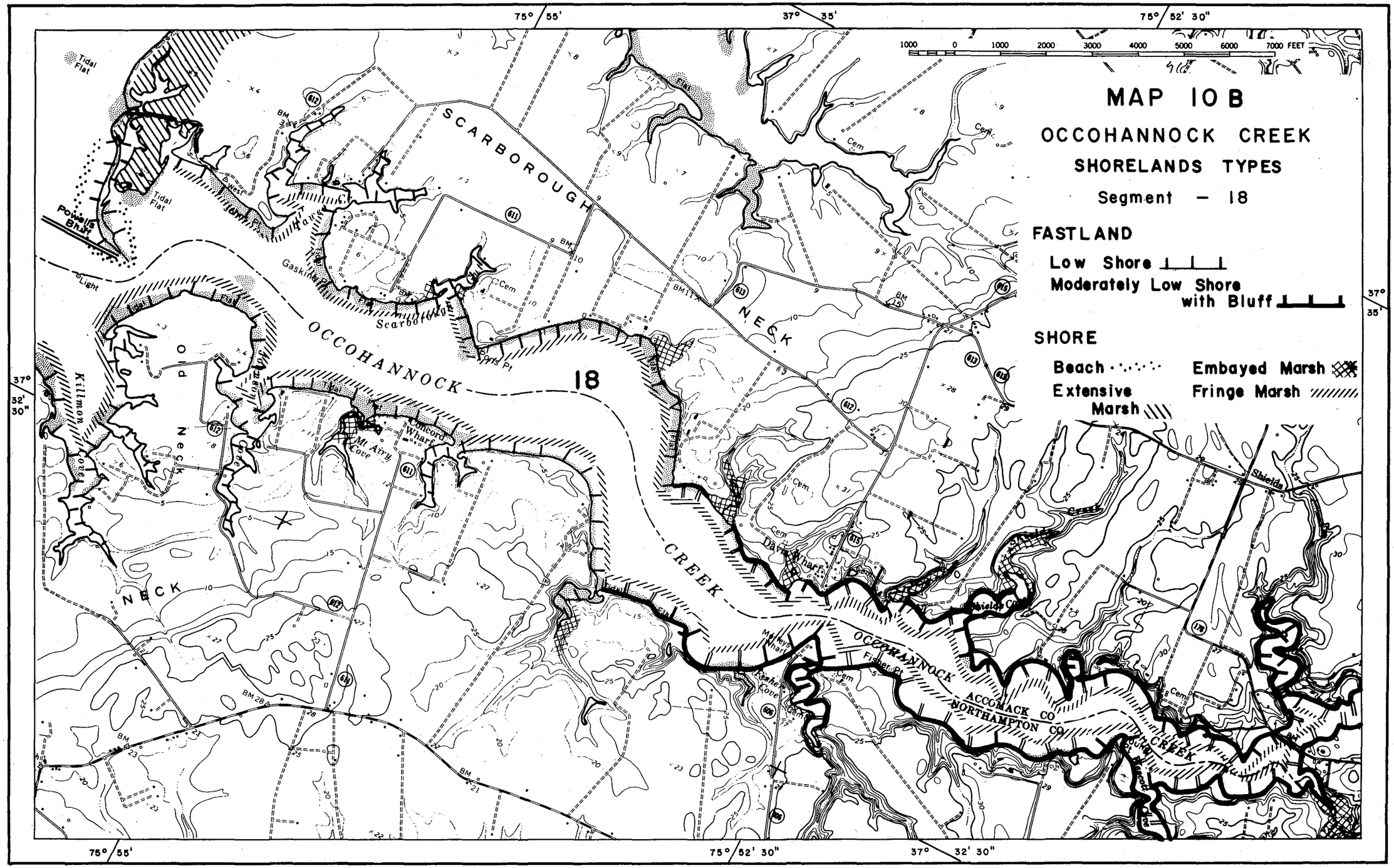



75° 55'
37° 32' 30"
37° 32' 30"
75° 57' 30"
37° 30'
75° 55' 30"
37° 30'
75° 57' 30"
10 D
10 C
10 B
10 A
OCCOHANNOCK NECK
Old Neck
Killmon Cove
Sparrow Pt
Battle Pt
Bethel Ch
Jamesville
St Mary's Ch
Turner
Cem
Tidal Flat
Grave
Kelly Cem
Stewart's Landing
James Wharf
Johnson Pt
Downings Beach
Radio Tower
Long Pt
Silver Beach
Nassawadox Point
Nurse Island
Church Po
NASSAWADOX CREEK
BM 28
BM 23
BM 18
BM 17
MAP 9A
OCCOHANNOCK NECK
TOPOGRAPHY AND CULTURE
Segments 10A, 10B, 10C, 10D
= SUBSEGMENT BOUNDARY
= SEGMENT BOUNDARY
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


75° 55' 37° 32' 30"
10 D
10 C
10 B
10 A
MAP 9B
OCCOHANNOCK NECK
Segments 10A, 10B, 10C, 10D
SHORELANDS TYPES
FASTLANDS
Low Shore
Low Shore with Bluff
SHORE
Beach
NEARSHORE
Intermediate
Wide
Old Neck
Killmon Cove
Sparrow Pt
Battle Pt
Bethel Ch
Jamesville
St. Marys Ch
Turner
Cem
BM 28
BM 23
BM 18
BM 17
OCCOHANNOCK NECK
NASSAWADOX CREEK
Tidal Flat
Gravel
Killen Cove
Stewarts Landing
James Wharf
Johnson Pt
Downings Beach
Radio Tower
Silver Beach
Nassawadox Point
Nurse Island
Church Pt
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
37° 32' 30"
75° 57' 30"
37° 30'
75° 55' 30"


75° 55' 37° 32'30"
Old Neck Cove
Killmon Cove
OCCOHANNOCK NECK
NASSAWADOX CREEK
Sparrow Rock
Bethel Ch
James Wharf
Stewarts Landing
Kellam Cem
Jamesville
St Marys Ch
Cem
Turner
Tidal Flat
Johnson Pt
Battle Rock
Downings Bar
Radio Tower
Silver Beach
Nassawadox Point
Church Pt
Ridge Island
BM 28A
BM 23
BM 18
BM 17
IW
IRS
IRC
IA
10D
10C
10B
10A
37° 32' 30"
75° 57' 30"
37° 30'
75° 55' 30"
OWNERSHIP
Private.....I
USE
Agricultural.....A
Recreational.....RC
Residential.....RS
Unmanaged; Wooded....W
EROSION
Severe
Critical
Noncritical
Moderate
Noncritical
Slight or no change *
absence of symbol alongshore
MAP 9C
OCCOHANNOCK NECK
SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE
Segments 10A, 10B, 10C, 10D
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


MAP 10 A
OCCOHANNOCK CREEK
TOPOGRAPHY AND CULTURE
Segment — 18
= SEGMENT BOUNDARY
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
75° 55'
37° 35'
75° 52' 30"
37° 32' 30"
Tidal Flat
Powells Bluff
Light
West
Johns Pt
Tawes Cr
Gaskins Pt
Scarborough Gut
Cem
Pons Pt
SCARBOROUGH NECK
OCCOHANNOCK CREEK
18
Old Neck
Johnson Cove
Killmon Cove
NECK
Mt Airy Cove
Concord Wharf
Davis Wharf
Shields Creek
Shields Cove
Shields
Morleys Wharf
Fisher Pt
Fisher Cove
ACCOMACK CO
NORTHAMPTON CO
Young Pt
Wescott Cove


MAP 10B
OCCOHANNOCK CREEK
SHORELANDS TYPES
Segment – 18
FASTLAND
Low Shore
Moderately Low Shore with Bluff
SHORE
Beach
Extensive Marsh
Embayed Marsh
Fringe Marsh
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
75° 55'
37° 35'
75° 52' 30"
37° 32' 30"
18
SCARBOROUGH NECK
OCCOHANNOCK CREEK
Neck
Tidal Flat
Powells Bnch
Light
Gaskins Point
Scarborough
Cem
Mt Airy Cove
Concord Wharf
Davis Wharf
Shields
Shields Cem
Mallorys Wharf
Fisher Pt
Fishers Cove
ACCOMACK CO
NORTHAMPTON CO
BM 28
BM 21
BM 11
BM 15
612
611
613
614
178

MAP 10C

OCCOHANNOCK CREEK

FASTLAND OWNERSHIP; USE

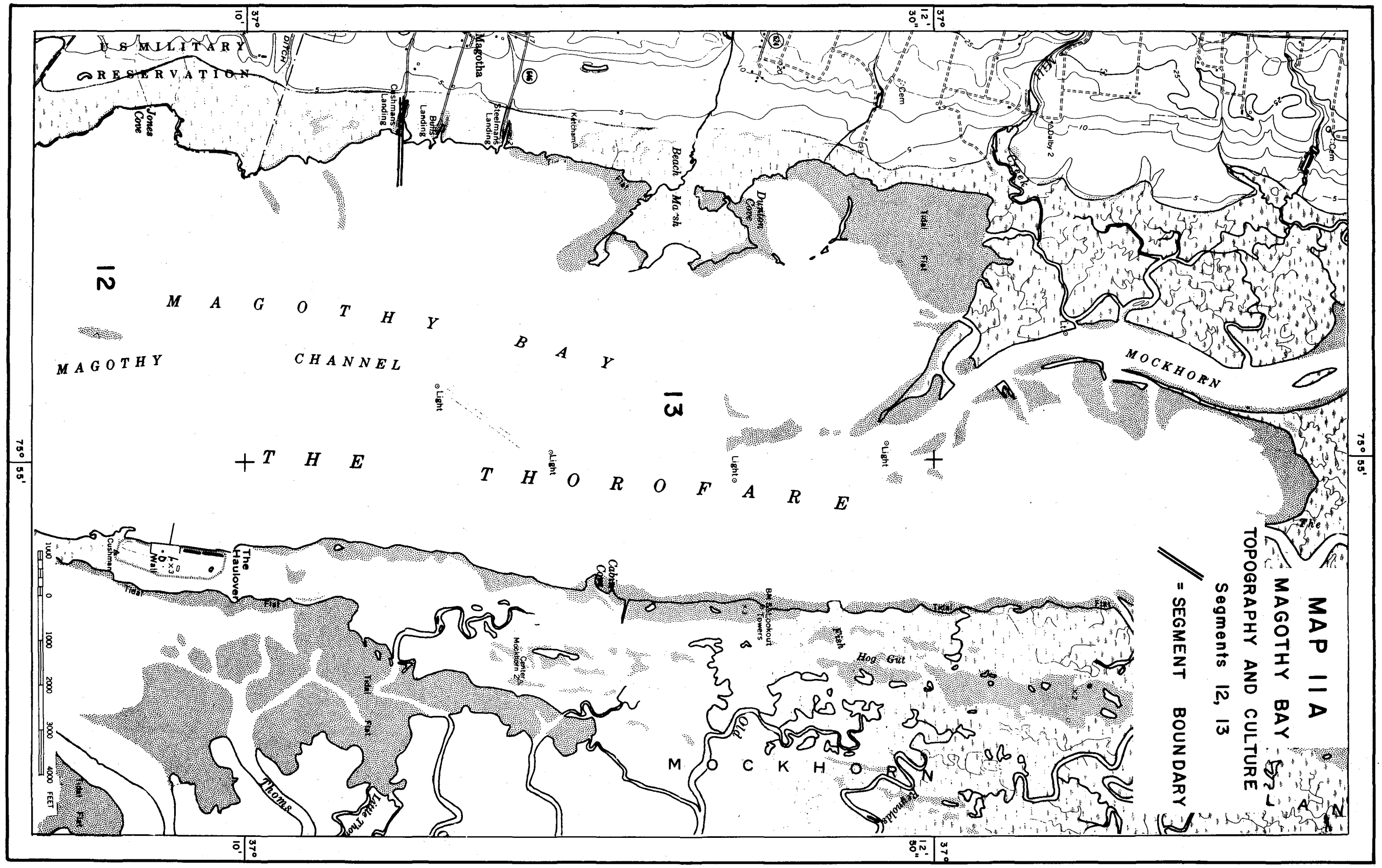
Segment – 18

OWNERSHIP

Private I

USE

Agricultural ... A
Residential ..... RS
Commercial C



MAP 11A

MAGOTHY BAY - ST. JAMES

TOPOGRAPHY AND CULTURE

Segments 12, 13

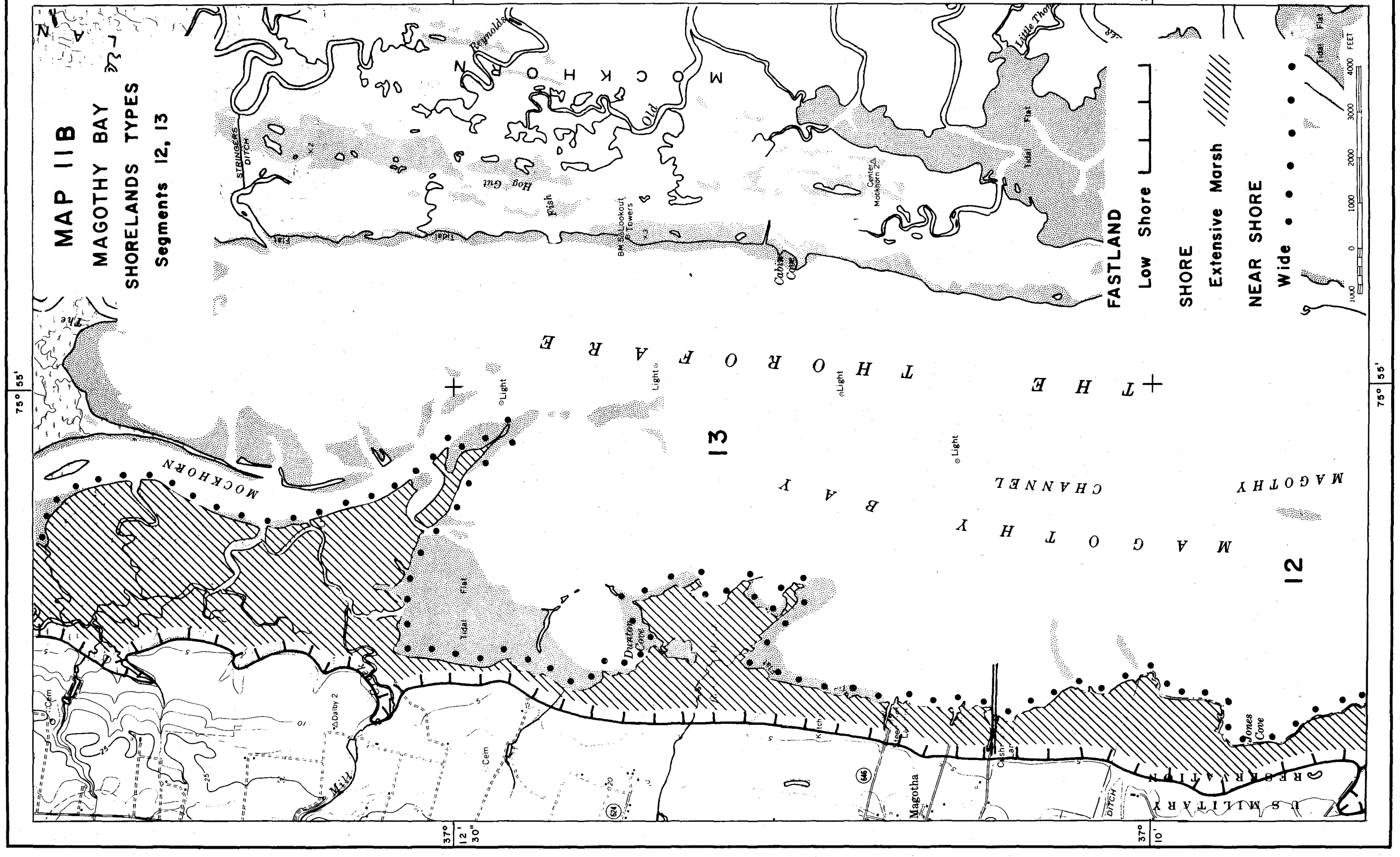
// = SEGMENT BOUNDARY

MAP IIB

MAGOTHY BAY

SHORELANDS TYPES

Segments 12, 13



MAP IIC

MAGOTHY BAY

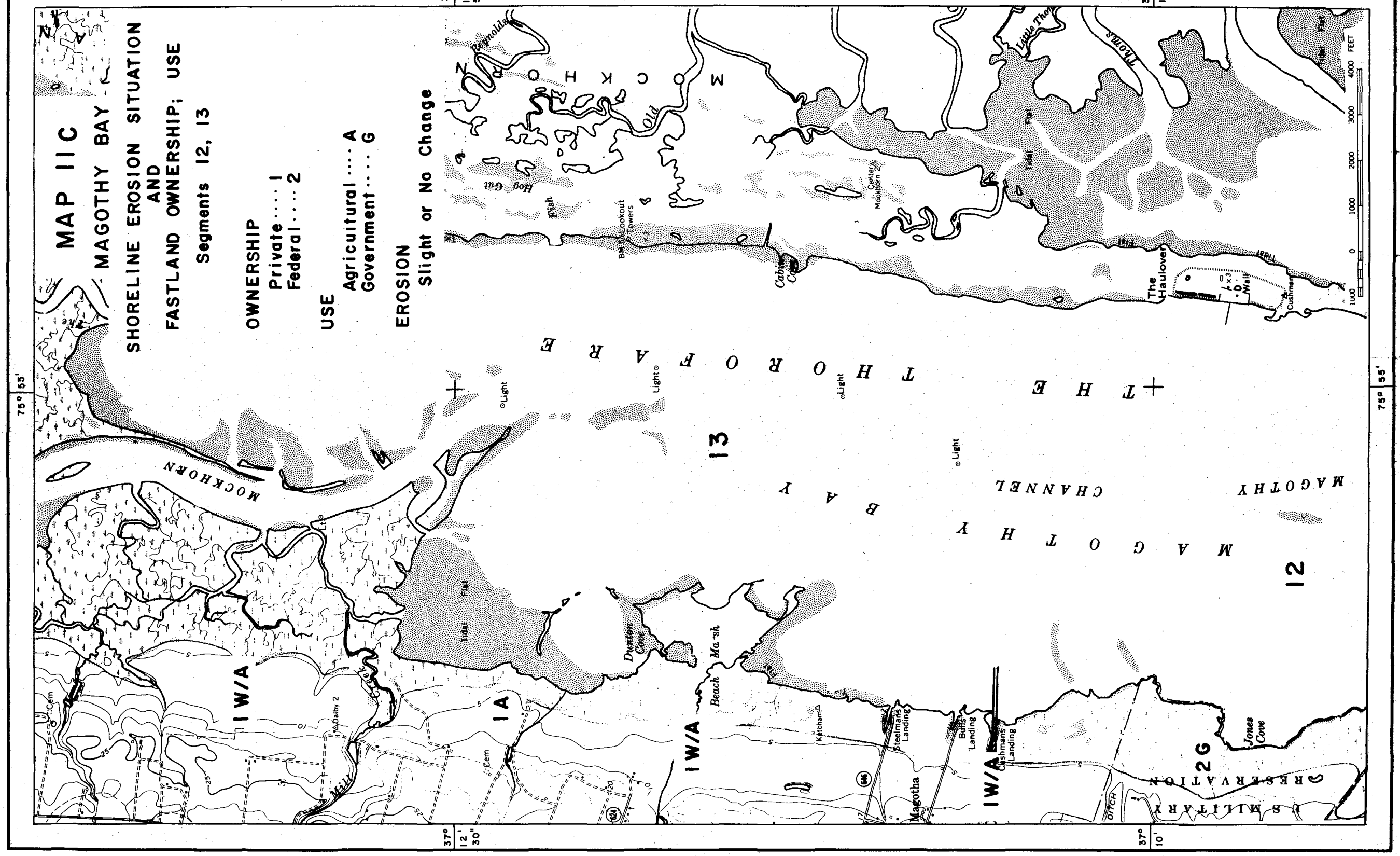
SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

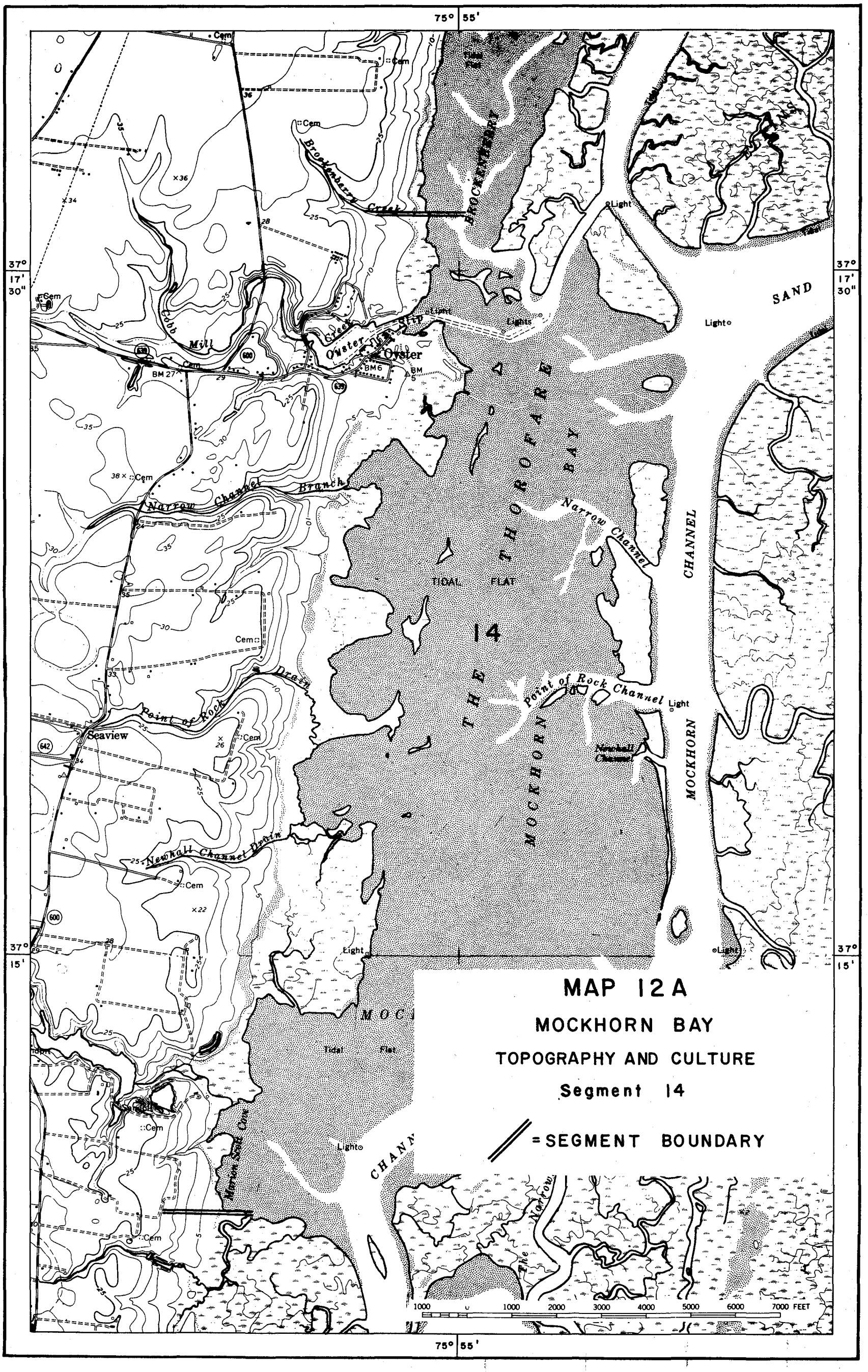
Segments 12, 13

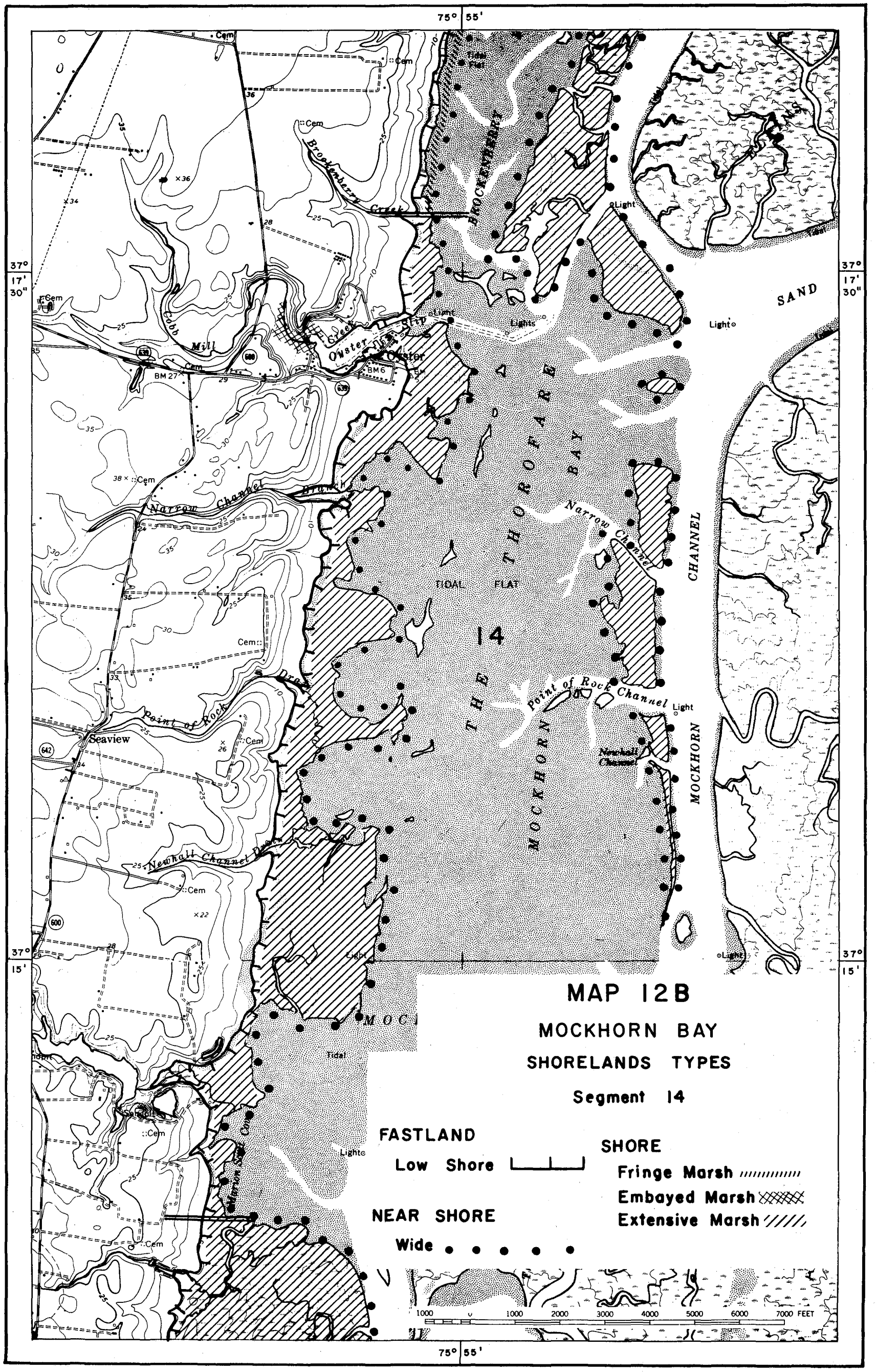
OWNERSHIP
Private..... 1
Federal..... 2

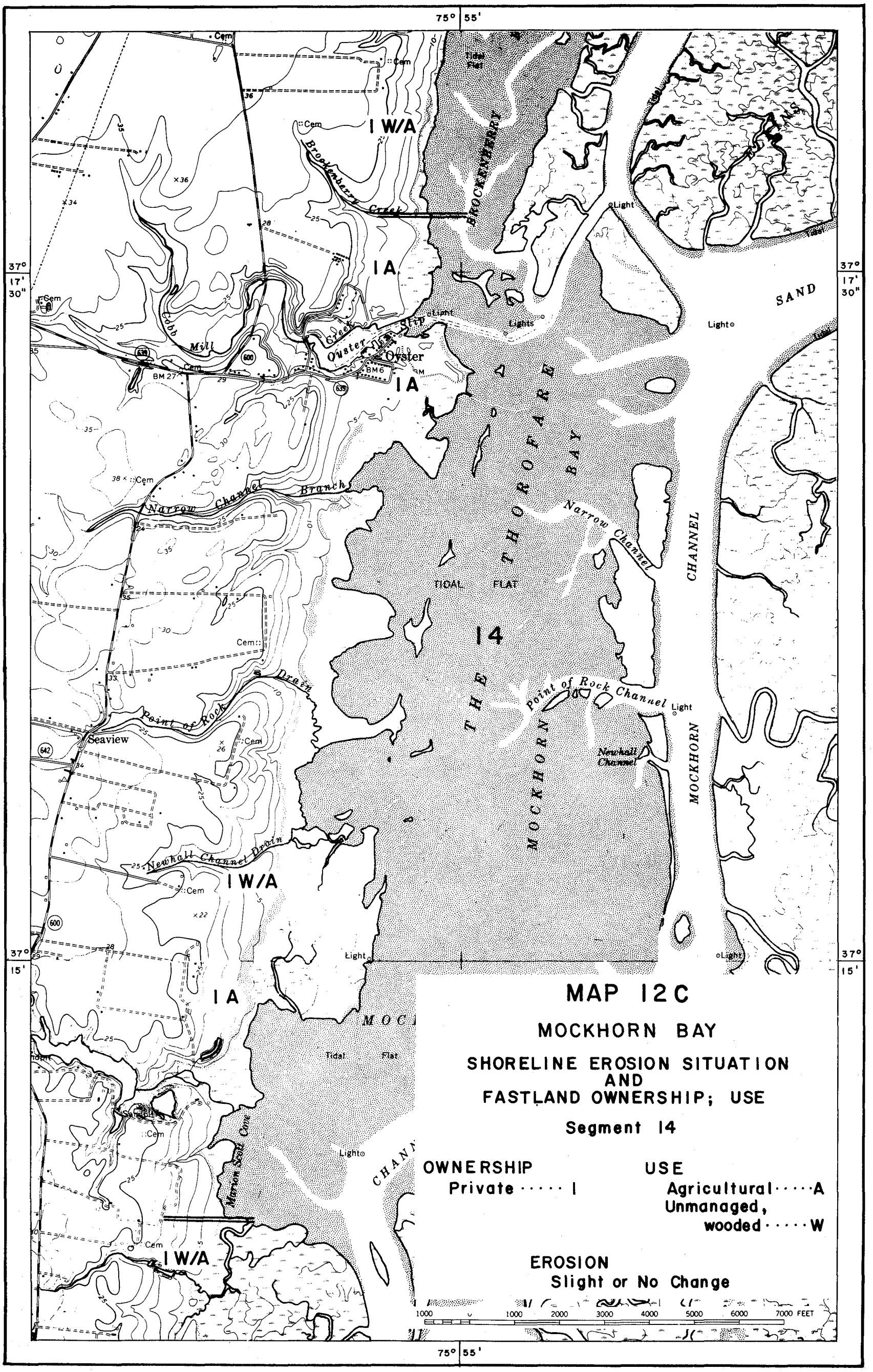
USE
Agricultural.... A
Government.... G

EROSION
Slight or No Change




75° 55'
37° 17' 30"
37° 15'
Broadenberry Gut
Broadenberry Creek
Ebb Mill Creek
Oyster Mill Creek
Oyster
Oyster Mill Slip
Narrow Channel Branch
Point of Rock Drain
Point of Rock
Seaview
Newhall Channel Drain
Newhall Channel
Point of Rock Channel
Marsh Hen Creek
THOROFARE
THE MOCKHORN
MOCKHORN CHANNEL
SAND
Tidal Flat
Light
Lights
Cem
BM 27
BM 6
BM 5
14
MAP 12A
MOCKHORN BAY
TOPOGRAPHY AND CULTURE
Segment 14
= SEGMENT BOUNDARY
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


75° 55'
37° 17' 30"
37° 15'
Brockenbery Creek
Cobb Mill Creek
Oyster Creek
Oyster
Narrow Channel Branch
Point of Rock
Seaview
Newhall Channel
Point of Rock Channel
Light
Lights
Tidal Flat
THOROFARE BAY
Narrow Channel
TIDAL FLAT
14
THE MOCKHORN
MOCKHORN CHANNEL
SAND
Light
Cem
BM 27
BM 6
Tidal
Marsh Island Cut
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
MAP 12B
MOCKHORN BAY
SHORELANDS TYPES
Segment 14
FASTLAND
Low Shore
NEAR SHORE
Wide
SHORE
Fringe Marsh
Embayed Marsh
Extensive Marsh



MAP 12C

MOCKHORN BAY

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segment 14

OWNERSHIP
Private ····· I

USE
Agricultural ····· A
Unmanaged, wooded ····· W

EROSION
Slight or No Change

MAP 13A

RAMSHORN BAY

TOPOGRAPHY AND CULTURE

Segment 15

/ =SEGMENT BOUNDARY

75° 55'

75° 52' 30"

37° 20'

37° 17' 30"

Kendall Grove

Cem

BM

Sandpit

Penn Central

Allen Cem

Holland Cem

Indiantown Creek

Radio Facility

INDIANTOWN NECK

Scott 2

THOROFARE

RAMSHORN BAY CHANNEL

15

TIDAL FLAT

Holt

Taylor Creek

Little Salisbury

Wilkins Cr

Spady Creek

Tidal Flat

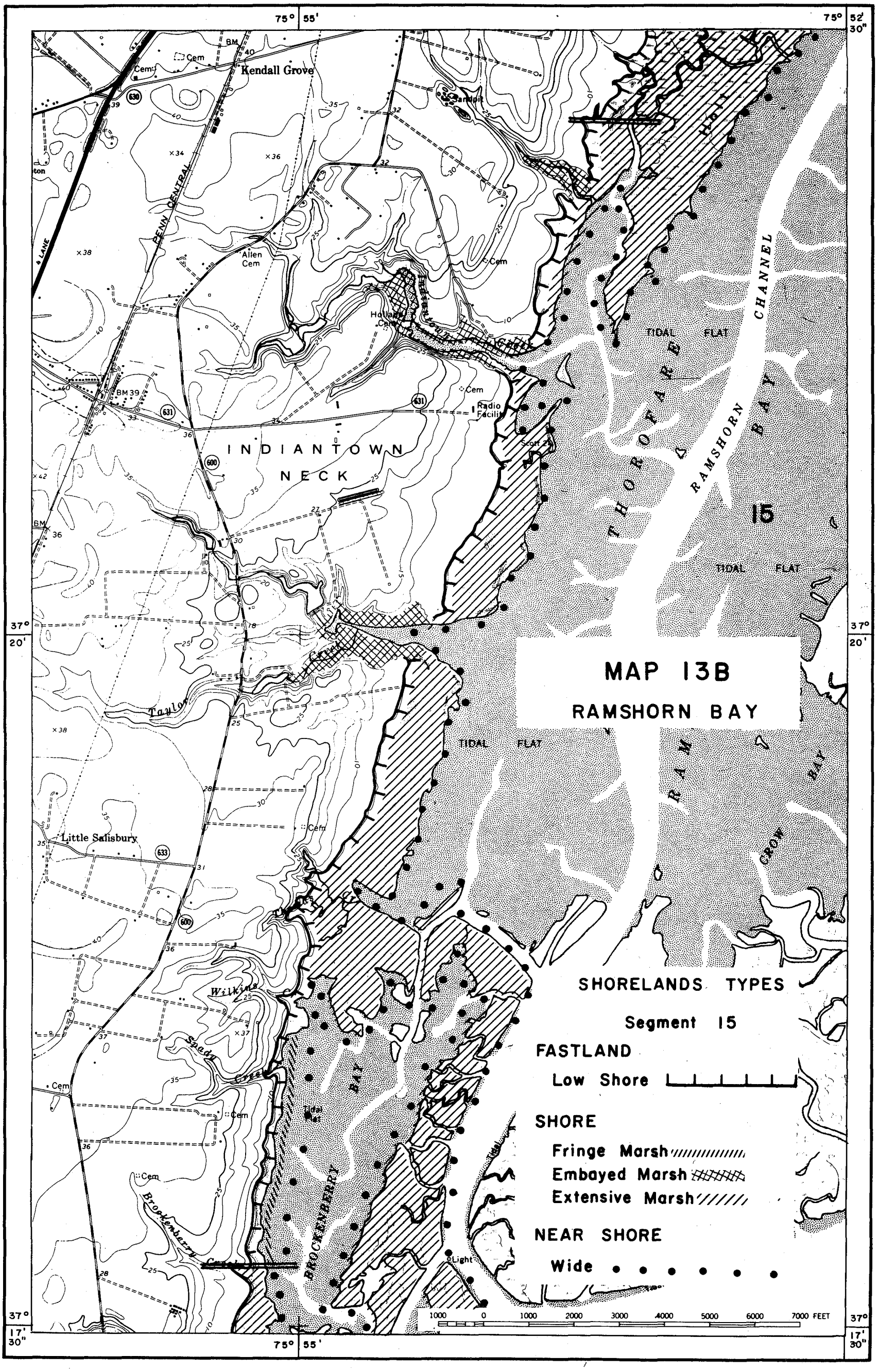
BROCKENBERRY BAY

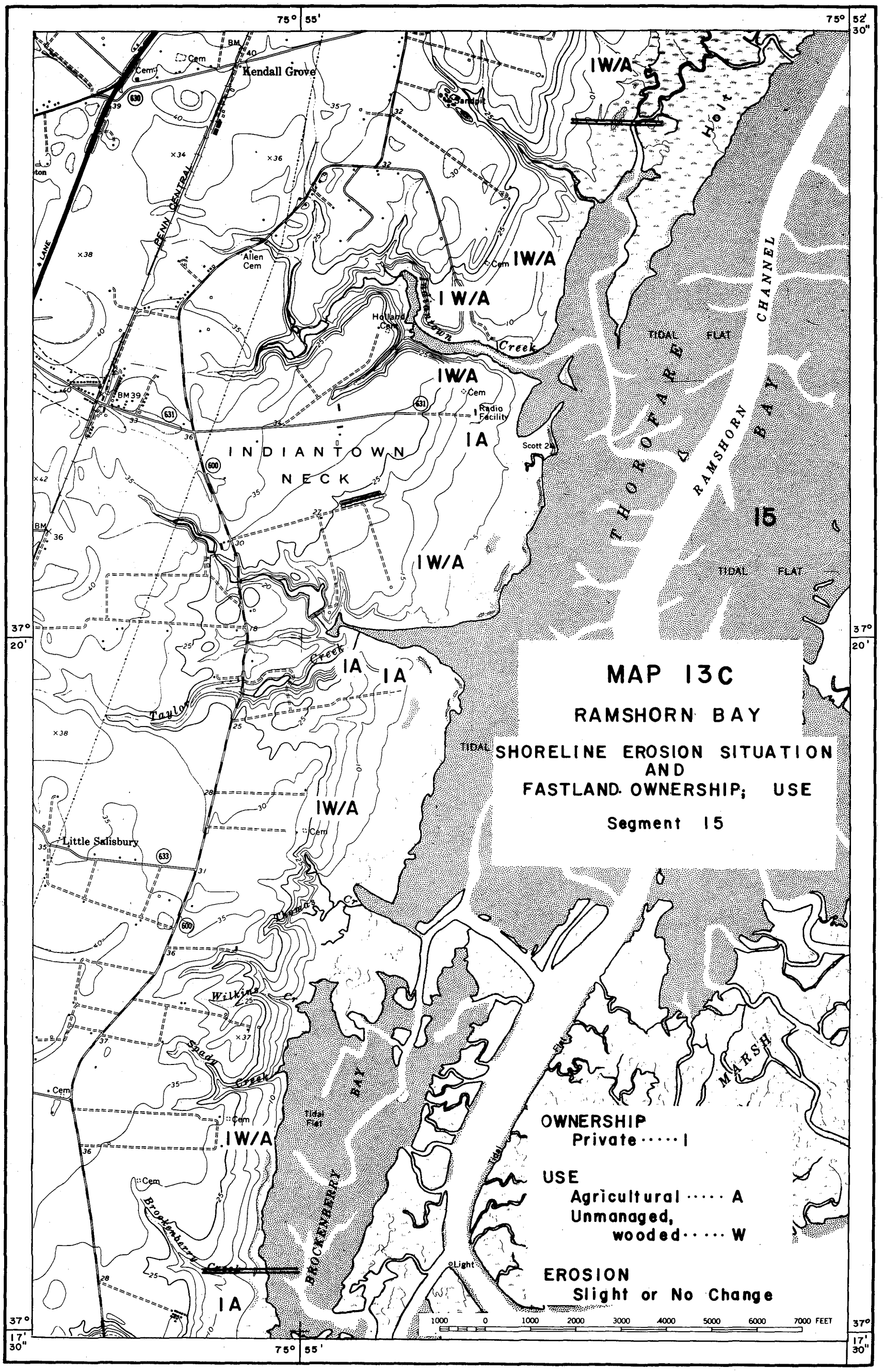
Brockenberry Creek

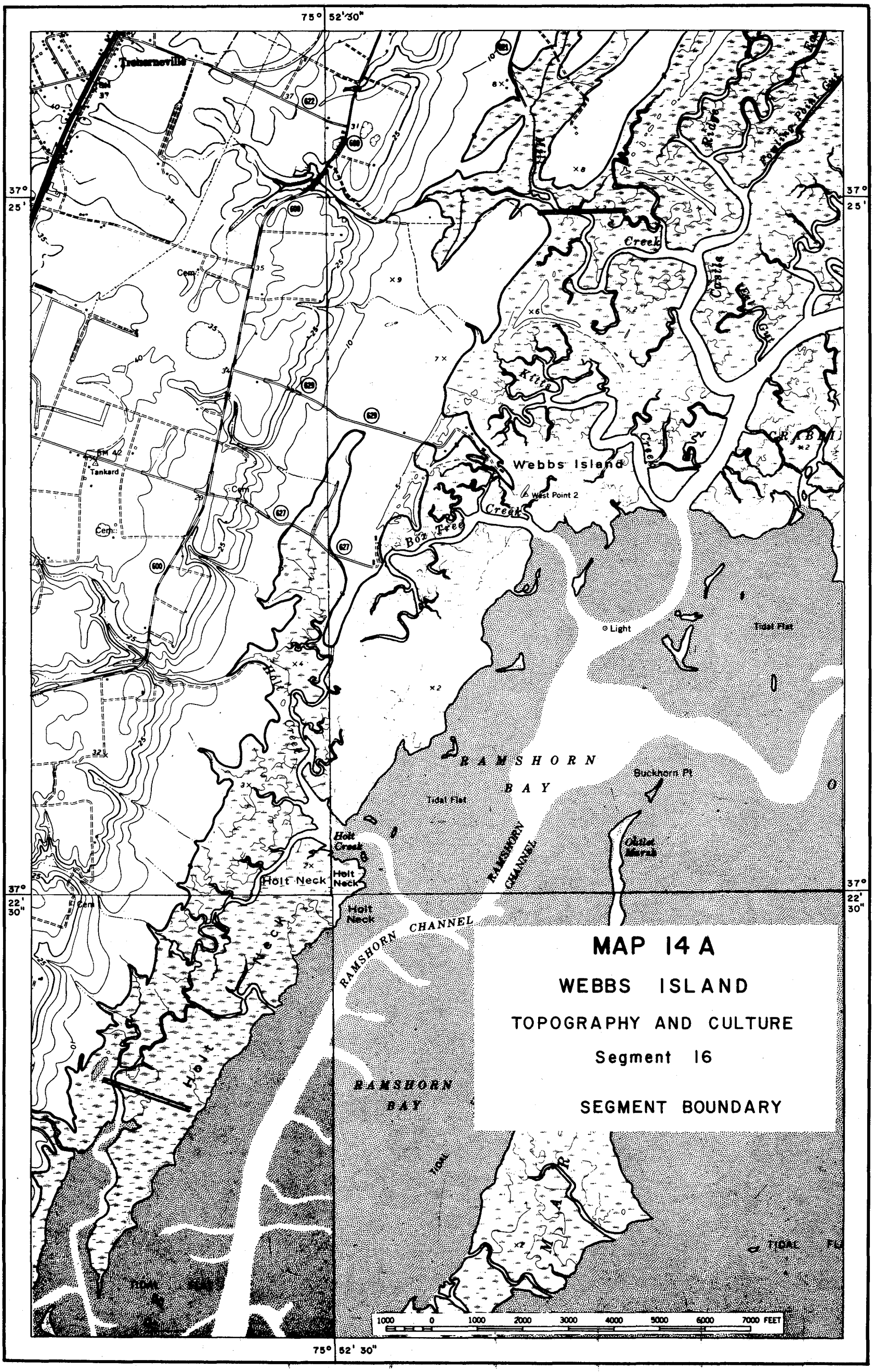
Light

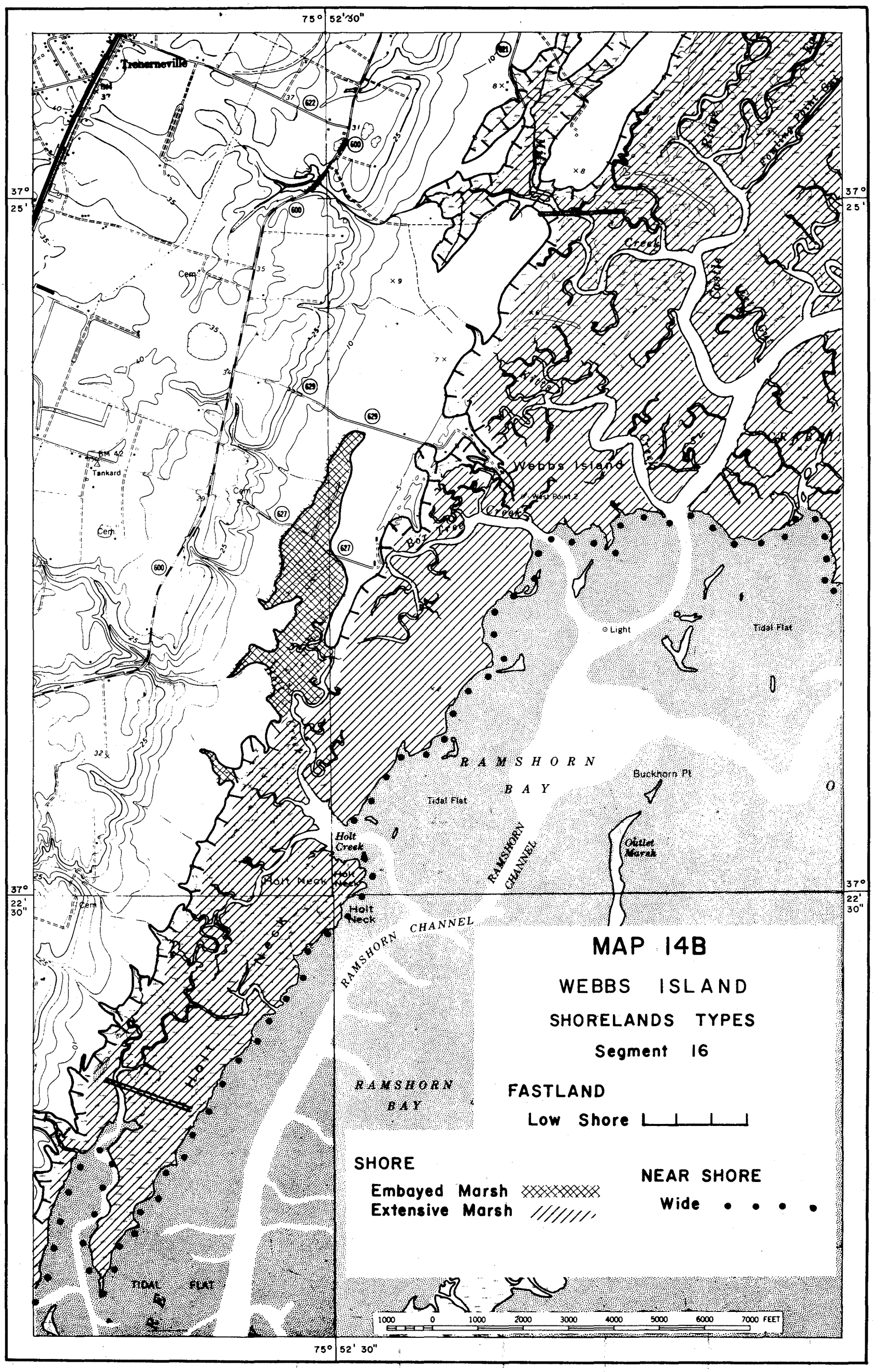
ELKINS MARSH

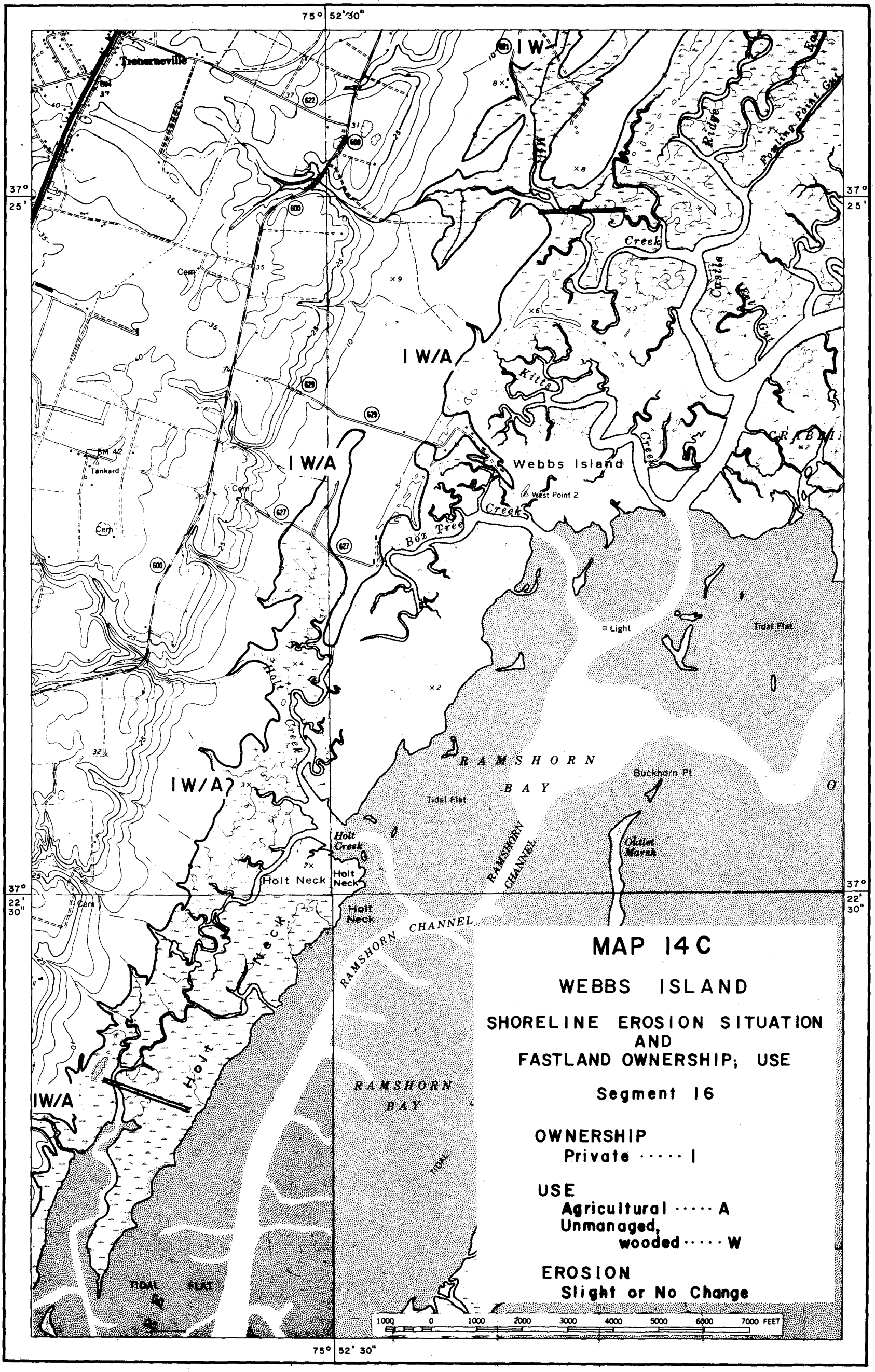
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


75° 55'
75° 52' 30"
37° 20'
37° 17' 30"
75° 55'
Kendall Grove
Cem
BM 40
Sandpit
Allen Cem
Holland Cem
Radio Facility
BM 39
INDIANTOWN NECK
Scott Pt
THOROFARE
RAMSHORN BAY
CHANNEL
15
TIDAL FLAT
TIDAL FLAT
RAM
CROW BAY
Taylor
Little Salisbury
Wilkins
Spady Cove
BROCKENBERRY BAY
Brockenberry Cove
Light
PENN CENTRAL
LANE
630
631
600
633
MAP 13B
RAMSHORN BAY
SHORELANDS TYPES
Segment 15
FASTLAND
Low Shore
SHORE
Fringe Marsh
Embayed Marsh
Extensive Marsh
NEAR SHORE
Wide
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


MAP 13C
RAMSHORN BAY
SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE
Segment 15
OWNERSHIP
Private ····· I
USE
Agricultural ····· A
Unmanaged, wooded ····· W
EROSION
Slight or No Change
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
INDIANTOWN NECK
RAMSHORN BAY
THOROFARE
CHANNEL
TIDAL FLAT
MARSH
Kendall Grove
Allen Cem
Holland Cem
Radio Facility
Scott Cem
Little Salisbury
Wilkins Cr
Spady Creek
Brookeberry Creek
Taylor Creek
Tidal Flat
Light
PENN CENTRAL
IW/A
IA
75° 55'
75° 52' 30"
37° 20'
37° 17' 30"


75° 52'30"
37° 25'
37° 22' 30"
75° 52' 30"
Trebernsville
Tankard
Cem.
Webbs Island
West Point 2
Box Tree
Creek
Cattle Gut
Ridge
Rolling Point Gut
Kitts
Light
Tidal Flat
RAMSHORN BAY
Buckhorn Pt
Oyster Marsh
RAMSHORN CHANNEL
Holt Creek
Holt Neck
MAP 14 A
WEBBS ISLAND
TOPOGRAPHY AND CULTURE
Segment 16
SEGMENT BOUNDARY
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


75° 52'30"
37° 25'
37° 22' 30"
75° 52' 30"
Treherneville
Webbs Island
West Point 2
Creek
Light
Tidal Flat
RAMSHORN BAY
Buckhorn Pt
Outlet Marsh
RAMSHORN CHANNEL
Holt Creek
Holt Neck
TIDAL FLAT
Tankard
Cem
BM 42
MAP 14B
WEBBS ISLAND
SHORELANDS TYPES
Segment 16
FASTLAND
Low Shore
SHORE
Embayed Marsh
Extensive Marsh
NEAR SHORE
Wide
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET



MAP 14C

WEBBS ISLAND

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segment 16

OWNERSHIP
Private ····· I

USE
Agricultural ····· A
Unmanaged, wooded ····· W

EROSION
Slight or No Change

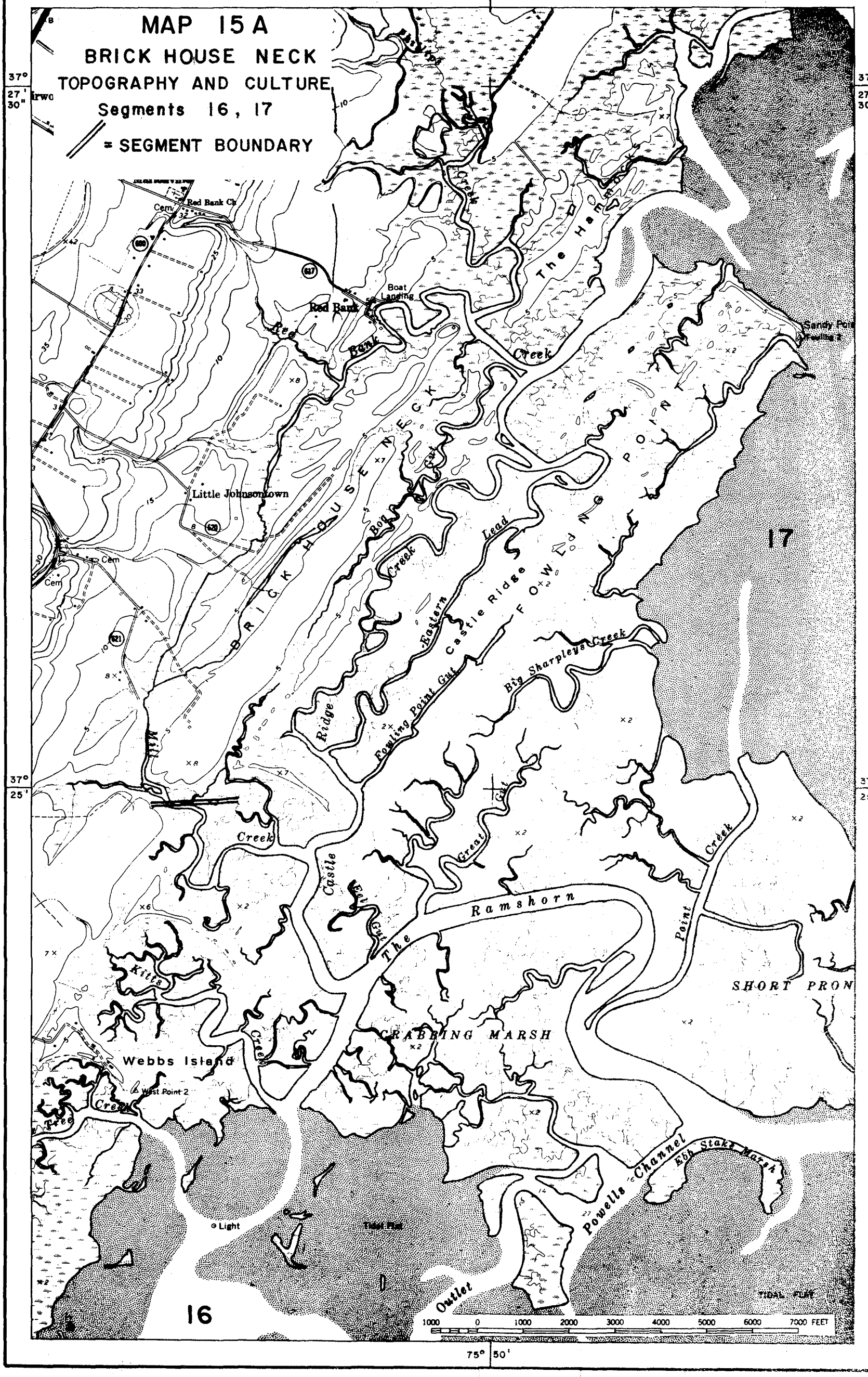
MAP 15A

BRICK HOUSE NECK

TOPOGRAPHY AND CULTURE

Segments 16, 17

= SEGMENT BOUNDARY



MAP 15B

BRICK HOUSE NECK

SHORELANDS TYPES

Segments 16, 17

FASTLAND

Low Shore

SHORE

Embayed Marsh

Extensive Marsh

NEAR SHORE

Wide

75° 50'

37° 27' 30"

37° 25'

Little Johnstown

Boat landing

Sandy Point

Webbs Island

Light

Tidal Flat

Outlet

Powells Channel

Ramshorn Creek

Fox Creek

Back Creek

Broad Creek

Big Sharkeys Creek

Cedar Point Gut

Cedar Point Creek

Ramshorn Point

SHORT PROP

TIDAL FLAT

17

16

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

MAP 15C

BRICK HOUSE NECK

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segments 16, 17

OWNERSHIP
Private····· I

USE
Agricultural·····A
Commercial····C
Residential·····RS
Unmanaged wooded·····W

EROSION
Slight or No Change

75° 50'

37° 27' 30"

37° 25'

IW IA C RS

Boat Landing

Red Bank

Sandy Point

Little Johnsontown

Cem

BRICK HOUSE NECK

The Hands

Bog Gut

Lead Creek

Eastern Castle Ridge

Fowling Point Gut

Big Sharpleys Creek

17

Kitts Creek

Webbs Island

West Point 2

Ramshorn Creek

Great Gut

Castle Rock Gut

The Ramshorn

Point Creek

SHORT PRON

CRABBING MARSH

Light

Tidal Flat

Outlet

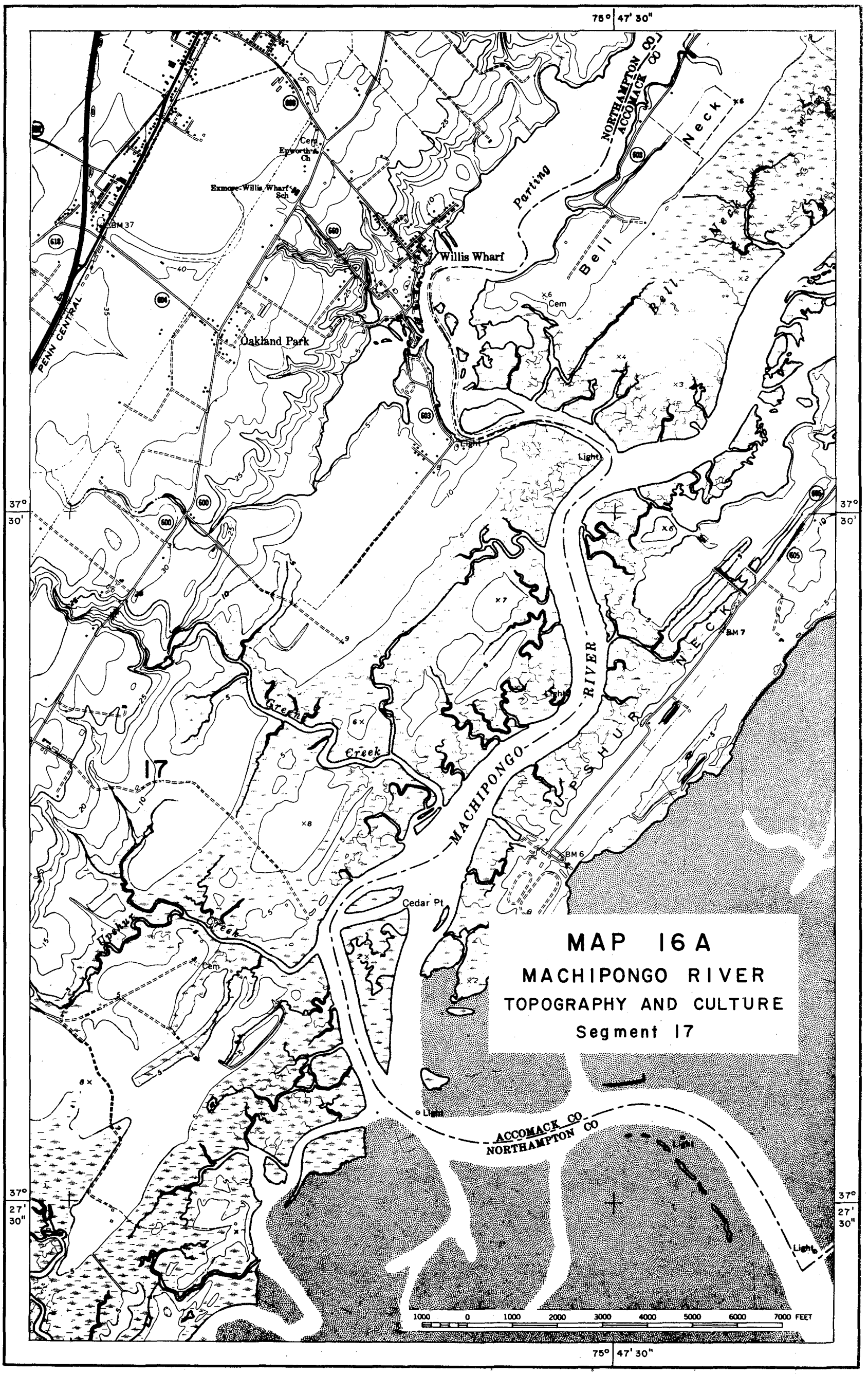
Powells Channel

Ebb Stake Marsh

TIDAL FLAT

16

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

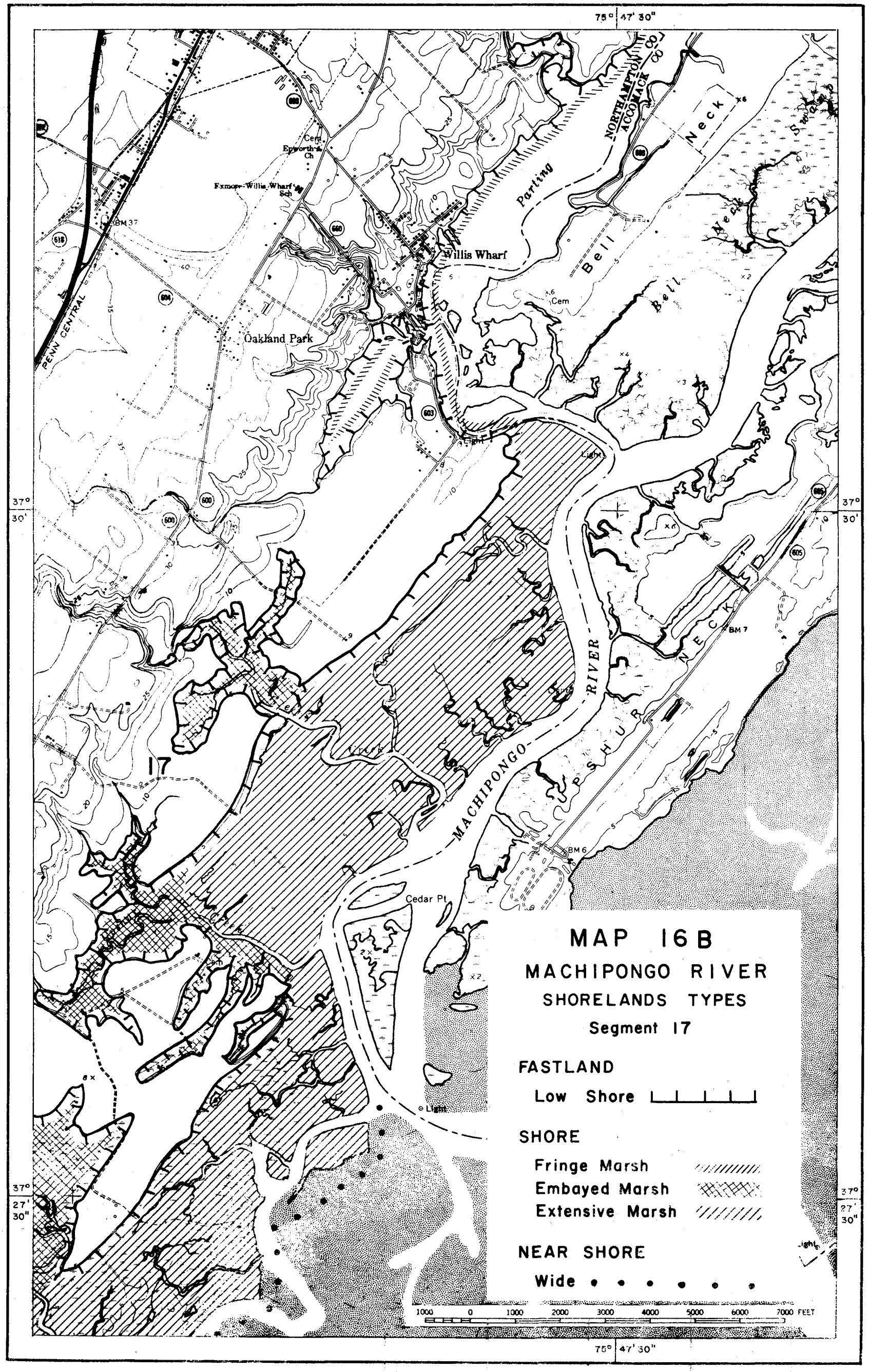


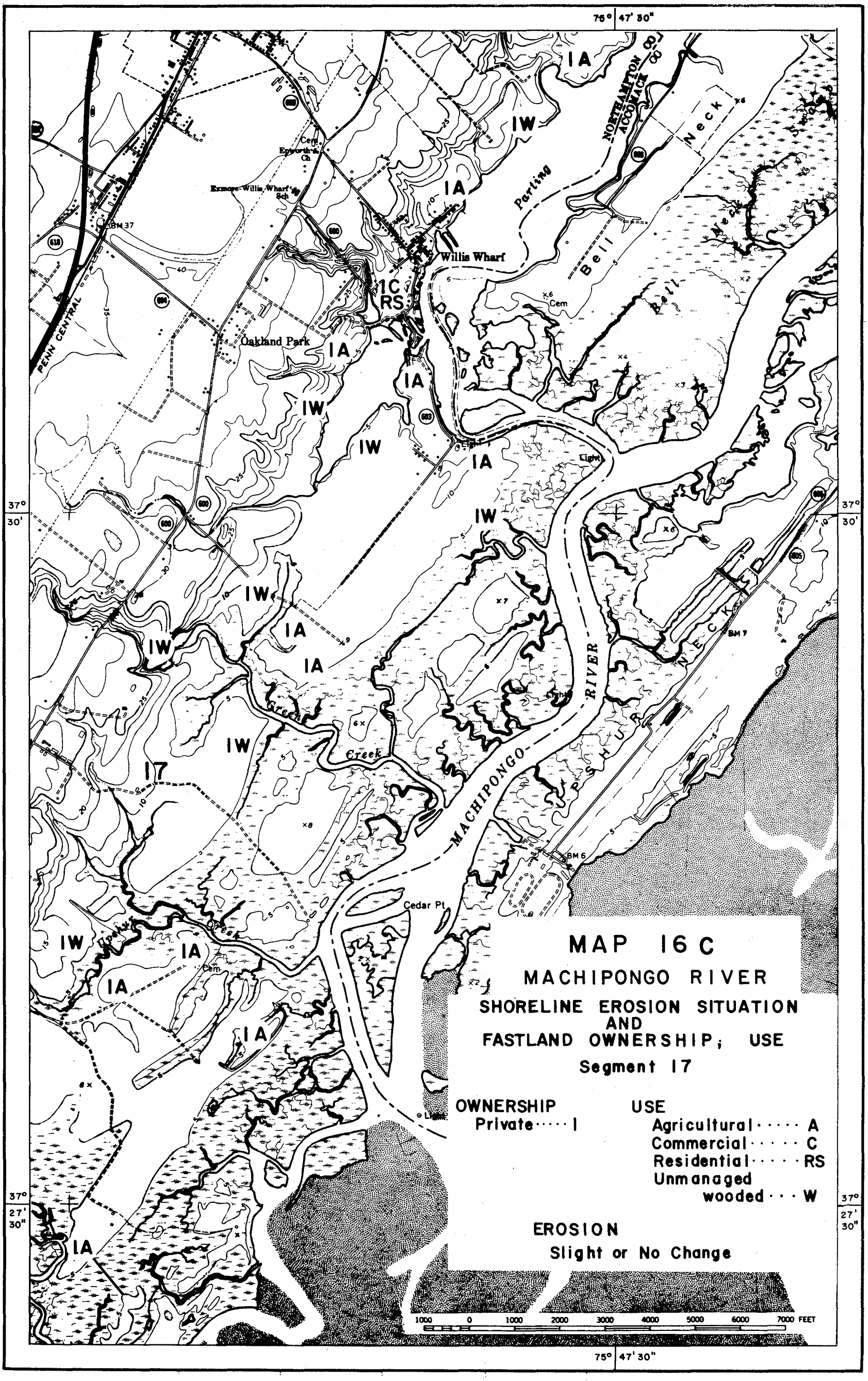
MAP 16A

MACHIPONGO RIVER

TOPOGRAPHY AND CULTURE

Segment 17


75° 47' 30"
37° 30'
37° 27' 30"
NORTHAMPTON
ACCOMACK
Parting
Bell
Neck
West
Willis Wharf
Oakland Park
PENN CENTRAL
Cem
Epworth Ch
Exmore-Willis Wharf Sch
BM 37
Cem
Light
RIVER
MACHIPONGO
NECK
BM 7
BM 6
Cedar Pt
17
MAP 16B
MACHIPONGO RIVER
SHORELANDS TYPES
Segment 17
FASTLAND
Low Shore
SHORE
Fringe Marsh
Embayed Marsh
Extensive Marsh
NEAR SHORE
Wide
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


75° 47' 30"
37° 30'
37° 27' 30"
IA
IW
IC
RS
I7
Oakland Park
Willis Wharf
Exmore-Willis Wharf Sch
Cem
Epworth's Ch
PENN CENTRAL
NORTHAMPTON ACCOMACK
Parting
Bell Neck
Light
Creek
MACHIPONGO RIVER
Cedar Pt
BM 37
BM 7
BM 6
MAP 16C
MACHIPONGO RIVER
SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE
Segment 17
OWNERSHIP
Private····I
USE
Agricultural····A
Commercial····C
Residential····RS
Unmanaged wooded···W
EROSION
Slight or No Change
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET