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Shoreline Situation Report
CITY OF HAMPTON, VIRGINIA

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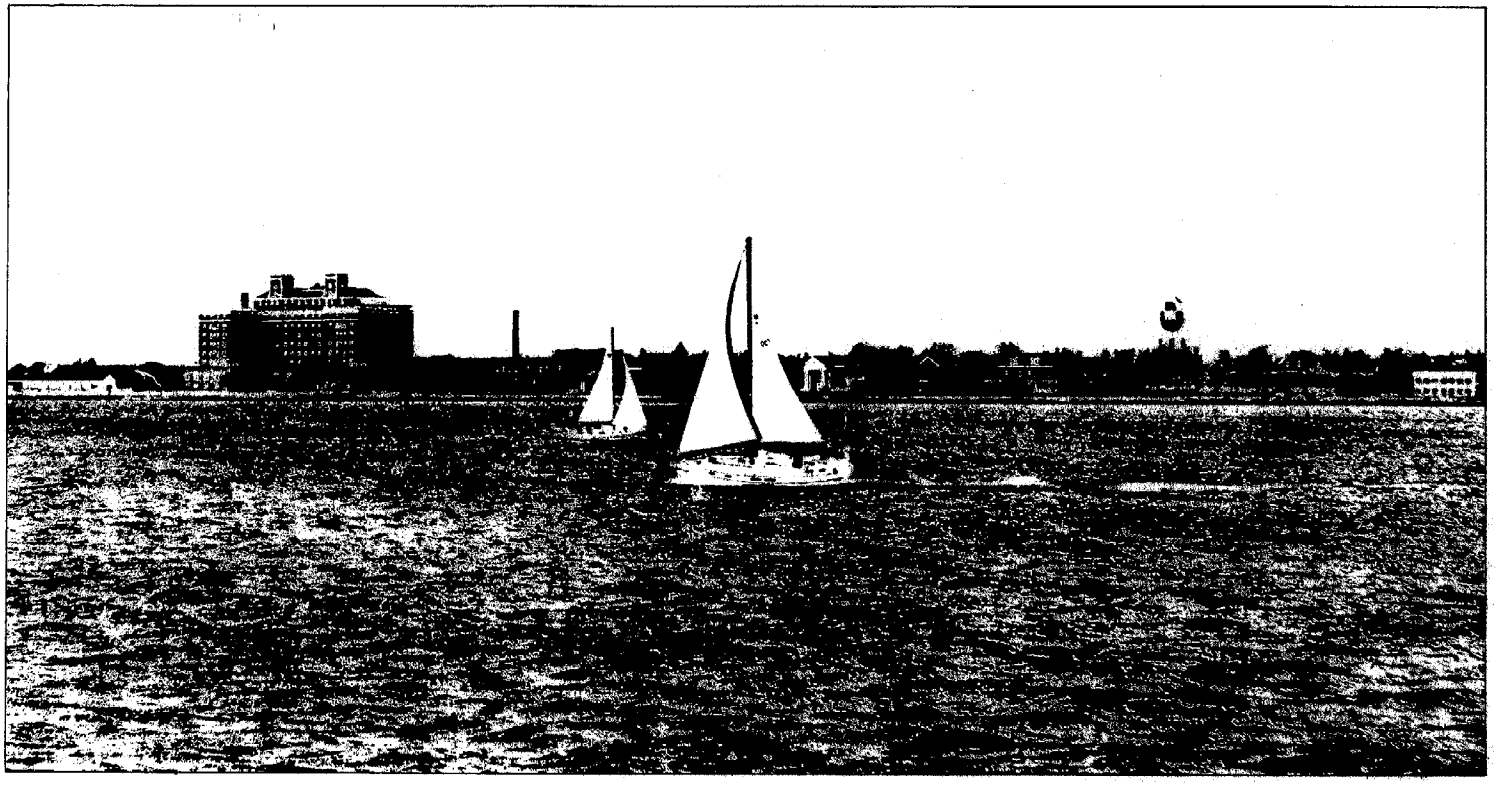

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Chesapeake Research Consortium Report Number 11

Special Report In Applied Marine Science and Ocean Engineering Number 76 of the

VIRGINIA INSTITUTE OF MARINE SCIENCE
William J. Hargis Jr., Director
Gloucester Point, Virginia 23062

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Shoreline Situation Report
CITY OF HAMPTON, VIRGINIA

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and
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TABLE OF CONTENTS

		PAGE
CHAPTER 1:	INTRODUCTION	1
	1.1 Purposes and goals	2
	1.2 Acknowledgements	2
CHAPTER 2:	APPROACH USED AND ELEMENTS CONSIDERED	3
	2.1 Approach to the problem	4
	2.2 Characteristics of the shoreline	4
CHAPTER 3:	PRESENT SHORELANDS SITUATION	9
	3.1 The shorelands of Hampton	10
	3.2 Shoreline erosion in Hampton	10
	3.3 Potential use enhancement of the Hampton shoreline	11
CHAPTER 4:	SUMMARIES AND MAPS OF HAMPTON	23
	4.1 Subsegment summaries	25
	4.2 Segment and subsegment descriptions	29
	Segment 1	30
	Segment 2	30
	Segment 3A	31
	Segment 3B	32
	Segment 4	32
	Segment 5A	33
	Segment 5B	34
	Segment 6	34
	Segment 7	35
	Segment 8	36
	Segment 9	36
	4.3 Segment and subsegment maps	39

LIST OF ILLUSTRATIONS

		PAGE
FIGURE 1A:	Shoreland components	5
FIGURE 1B:	Marsh types	5
FIGURE 2:	Northend Point and Back River aerial photo	13
FIGURE 3:	Hampton and Sunset Creek aerial photo	13
FIGURE 4:	Back River and tributaries aerial photo	13
FIGURE 5:	Beach north of Grand View ground photo	13
FIGURE 6:	Seawall north of Buckroe aerial photo	13
FIGURE 7:	Grand View aerial photo	14
FIGURE 8:	Wythe area aerial photo	14
FIGURE 9:	Strawberry Banks and Hampton Roads Bridge Tunnel aerial photo	14
FIGURE 10:	Hampton Creek aerial photo	14
TABLE 1:	Relative flood heights at Hampton	10
TABLE 2:	Hampton shorelands physiography	21
MAPS 1A-C:	Hampton	15
MAPS 2A-C:	Chesapeake Avenue	41
MAPS 3A-C:	Fort Monroe	47
MAPS 4A-C:	Grand View	53
MAPS 5A-C:	Langley area	59

CHAPTER 1
INTRODUCTION

CHAPTER 1
SHORELINE SITUATION REPORT

1.1 PURPOSES AND GOALS

It is the objective of this report to supply an assesment, and at least a partial integration, of those important shoreland parameters and characteristics which will aid the planners and the managers of the shorelands in making the best decisions for the utilization of this limited and very valuable resource. We have given particular attention to the area of shore erosion and to recommendations concerning the alleviation of problems resulting from erosion. In addition, we have tried to include in our assessment some of the potential uses of the shoreline, particularly with respect to recreational use, since such information could aid in the perception of a shoreline segment by potential users.

The basic advocacy of the authors who prepared this report is that the use of shorelands should be planned rather than haphazardly developed. Careful planning could reduce the conflicts which might arise between different potential users. Shoreland utilization in many areas of the country, and indeed in some places in Virginia, has proceeded in response to local, short term pressures in a manner such that the very elements which attracted people to the shore have been destroyed by the lack of planning and forethought.

The major man-induced uses of the shorelands are:

- -- Recreation
- -- Residential, commercial or industrial development
- -- Transportation
- -- Waste disposal
- -- Extraction of living or non-living resources

Aside from the above uses, the shorelands serve various ecological functions. The role of planners and managers is to optimize the utilization of the shorelands and to minimize the conflicts arising from competing demands. Furthermore, once a particular use has been assigned to a given segment of shorelands, both the planners and the users want that use to operate most efficiently. We hope that the results of our work, by pointing out the technical feasibility of altering or enhancing the present configuation of the shore zone, will be useful to a park planner. Alternately if the use were a residential development, we would hope our work would be useful in specifying the shore erosion problem and by indication defenses likely to succeed in protecting the shore. In summary our objective is to provide a useful tool for enlightened utilization of a limited resource, the shorelands of the Commonwealth.

Shorelands planning occurs, either formally or informally, at all levels from the private owner of shoreland property to county governments, to planning districts to state or federal agency levels. We feel our results will be useful at all these levels. Since the most basic unit of comprehensive planning and zoning in Virginia is at the county or city level, we have executed our report on that level, although we realize some of the information may be more useful at a higher governmental level. The Commonwealth of Virginia traditionally has chosen to place, as much as possible, the regulatory decision processes at the county level. The Wetlands Act of 1972 (Chapter 2.1 Title 62.1, Code of Virginia), for example, provides for the establishment of County Boards to act on applications for alterations to wetlands. Thus, our focus at the county level is intended to interface and to support the existing or pending county regulatory mechanisms concerning activities in the shorelands zone.

1.2 ACKNOWLEDGEMENTS

This report was prepared with the support of funds from the Research Applied to National Needs (RANN) program of the National Science Foundation administered through the Chesapeake Research Consortium, Inc. George Dawes and Gene Silberhorn of the VIMS Wetland Section contributed many useful ideas and criticisms. Dennis Owen, David Byrd, and Edward Hogge assisted with data reduction and preparation. Jane Davis, Kaye Stubblefield, Peter Rosen, Joe Gilley, Russell Bradley, Bill Jenkins, and Ken Thornberry prepared the graphics. Cindy Otey and Beth Tillage prepared the tables and typed the manuscript. We thank the numerous persons in Maryland and Virginia who have contributed comments and criticism on our ideas and methods.

CHAPTER 2

APPROACH USED AND ELEMENTS CONSIDERED

CHAPTER 2

APPROACH USED AND ELEMENTS CONSIDERED

2.1 APPROACH TO THE PROBLEM

In the preparation of this report the authors utilized existing information wherever possible. For example, for such elements as water quality characteristics, zoning regulations, or flood hazard, we reviewed relevant reports by local, state, or federal agencies. Much of the desired information, particularly with respect to erosional characteristics, shoreland types, and use was not available, so we performed the field work and developed classification schemes. In order to analyze successfully the shoreline behavior we placed heavy reliance on low altitude, oblique, color, 35 mm photography. We photographed the entire shoreline of each county and cataloged the slides for easy access at VIMS, where they remain available for use. We then analyzed these photographic materials, along with existing conventional aerial photography and topographic and hydrographic maps, for the desired elements. We conducted field inspection over much of the shoreline, particularly at those locations where office analysis left questions unresolved. In some cases we took additional photographs along with the field visits to document the effectiveness of shoreline defenses.

The basic shoreline unit considered is called a subsegment, which may range from a few hundred feet to several thousand feet in length. The end points of the subsegments were generally chosen on physiographic consideration such as changes in the character of erosion or deposition. In those cases where a radical change in land use occurred, the point of change was taken as a boundary point of the subsegment. Segments are a grouping of subsegments. The boundaries for segments also were selected on physiographic units such as necks or peninsulas between major tidal creeks. Finally, the county itself is considered as a sum of shoreline segments.

The format of presentation in the report follows a sequence from general summary statements for the county (Chapter 3) to tabular segment summaries and finally detailed descriptions and maps for each subsegment (Chapter 4). The purpose in choosing this format was to allow selective use of the report since some users's needs will adequately be met with the summary overview of the county while others will require the detailed discussion of particular subsegments.

2.2 CHARACTERISTICS OF THE SHORELINE INCLUDED IN THE STUDY

The characteristics which are included in this report are listed below followed by a discussion of our treatment of each.

a) Shorelands physiographic classification
b) Shorelands use classification
c) Shorelands ownership classification
d) Zoning
e) Water quality
f) Shore erosion and shoreline defenses
g) Potential shore uses
h) Distribution of marshes
i) Flood hazard levels
j) Shellfish leases and public shellfish grounds
k) Beach quality

a) Shorelands Physiographic Classification

The shorelands of the Chesapeake Bay System may be considered as being composed of three interacting physiographic elements: the fastlands, the shore and the nearshore. A graphic classification based on these three elements has been devised so that the types for each of the three elements are portrayed side by side on a map to provide the opportunity to examine joint relationships among the elements. As an example, the application of the system permits the user to determine miles of high bluff shoreland interfacing with marsh in the shore zone.

Definitions:

Shore Zone

This is the zone of beaches and marshes. It is a buffer zone between the water body and the fastland. The seaward limit of the shore zone is the break in slope between the relatively steeper shoreface and the less steep nearshore zone. The approximate landward limit is a contour line representing one and a half times the mean tide range above mean low water (refer to Figure 1A). In operation with topographic maps the inner fringe of the marsh symbols is taken as the landward limit.

The physiographic character of the marshes has also been separated into three types (see Figure 1B). Fringe marsh is that which is less than 400 feet in width and which runs in a band parallel to the shore. Extensive marsh is that which has extensive acreage projecting into an estuary or river. An embayed marsh is a marsh which occupies a reentrant or drowned creek valley. The purpose in delineating these marsh types is that the effectiveness of the various functions of the marsh will, in part, be determined by type of exposure to the estuarine system. A fringe marsh

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, occupying 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

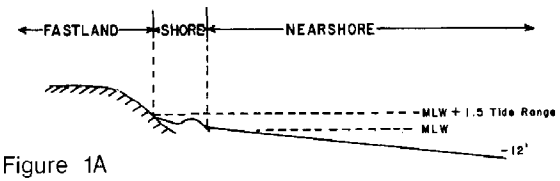


Figure 1A

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

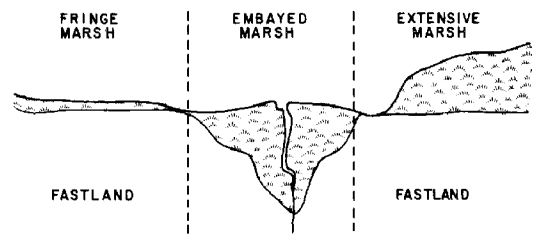


Figure 1B

A generalized illustration of the three different marsh types.

b) Shorelands Use Classification:

Fastland Zone

Residential

Includes all forms of residential use with the exception of farms and other isolated dwellings. In general, a residential area consists of four or more residential buildings adjacent to one another. Schools, churches, and isolated businesses may be included in a residential area.

Commercial

Includes buildings, parking areas, and other land directly related to retail and wholesale trade and business. This category includes small industry and other anomalous areas with the general commercial context. Marinas are considered commercial shore use.

Industrial

Includes all industrial and associated areas. Examples: warehouses, refineries, shipyards, power plants, railyards.

Government

Includes lands whose usage is specifically controlled, restricted, or regulated by governmental organizations: e.g., Camp Peary, Fort Story.

Recreation and Other Public Open Spaces

Includes designated outdoor recreation lands and miscellaneous open spaces. Examples: golf courses, tennis clubs, amusement parks, public beaches, race tracks, cemeteries, parks.

Preserved

Includes lands preserved or regulated for environmental reasons, such as wildlife or wildfowl sanctuaries, fish and shellfish conservation grounds, or other uses that would preclude development.

Agricultural

Includes fields, pastures, croplands, and other agricultural areas.

Unmanaged

Includes all open or wooded lands not included in other classifications:

a) Open: brush land, dune areas, wastelands; less than 40% tree cover.

b) Wooded: more than 40% tree cover.

The shoreland use classification applies to the general usage of the fastland area to an arbitrary distance of half mile from the shore or beach zone or to some less distant, logical barrier. In multi-usage areas one must make a subjective selection as to the primary or controlling type of usage.

Shore Zone

Bathing
Boat launching
Bird watching
Waterfowl hunting

Nearshore Zone

Pound net fishing
Shellfishing
Sport fishing
Extraction of non-living resources
Boating
Water sports

c) Shorelands Ownership Classification

The shorelands ownership classification used has two main subdivisions, private and governmental, with the governmental further divided into federal, state, county, and town or city. Application of the classification is restricted to fastlands alone since the Virginia fastlands ownership extends to mean low water. All bottoms below mean low water are in State ownership.

d) Water Quality

The ratings of satisfactory, intermediate or unsatisfactory assigned to the various subsegments are taken from a listing at the Virginia Bureau of Shellfish Sanitation, based on information from water samples collected in the various tidewater shellfishing areas. The Bureau attempts to visit each area at least once a month.

The ratings are defined primarily in regard to number of coliform bacteria. For a rating of satisfactory the maximum limit is an MPN (Most Probable Number) of 70 per 100 ml. The upper limit for fecal coliforms is an MPN of 23. Usually any count above these limits results in an unsatisfactory rating, and, from the Bureau's standpoint, results in restricting the waters from the taking of shellfish for direct sale to the consumer.

There are instances however, when the total coliform MPN may exceed 70, although the fecal MPN does not exceed 23, and other conditions are acceptable. In these cases an intermediate rating may be assigned temporarily, and the area will be permitted to remain open pending an improvement in conditions.

Although these limits are somewhat more stringent than those used in rating recreational waters

(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 non-critical. 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 cases 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 emphasis 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 portary 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 probably 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.

k) Beach Quality

Beach quality is a subjective judgement based on such considerations as the nature of the beach material, the length and width of the beach area, and the general aesthetic appeal of the beach setting.

CHAPTER 3
PRESENT SHORELANDS SITUATION

CHAPTER 3

THE SHORELANDS OF HAMPTON

3.1 THE SHORELANDS OF HAMPTON

The physiographic make up of Hampton's shorelands is responsible for most of the city's shoreline problems. Most of Hampton is on a low terrace that was cut during the last higher stand of sea level. Of Hampton's 337,000 feet of shoreline, 297,000 feet (80%) is "low shore." The remaining twelve percent is the low barrier beach and dune complex of the Buckroe Beach - Mill Creek - Factory Point area.

Because of the very low nature of the land, flooding from coastal storms poses a significant threat to the Hampton area (Table 1). Historically, several storms have flooded or isolated major portions of the city. The United States Army Corps of Engineers estimates that the Intermediate Regional Tidal Flood, which may be expected to occur roughly once a century, would have a height of eight feet above mean sea level. This coincides with flood height reached by the storm of August 1933. The Standard Project Tidal Flood, which would happen with the worst reasonably conceivable set of circumstances, is estimated to be on the order of thirteen feet above mean sea level.

There are no real flood defenses in Hampton. The beach area bulkheads and seawalls offer some protection from wave damage, but none from high water. It appears that there is little other than building design that can be done to lessen flood damages. The city does have flood plain regulations based on the hundred year flood frequency level (8 feet) as part of zoning ordinances. There is a flood insurance program in Hampton run through the 1968 Housing and Urban Development Act's National Flood Insurance Program.

TABLE 1

RELATIVE FLOOD HEIGHTS AT HAMPTON, VIRGINIA

Standard Project Tidal Flood	13 feet above MSL
Intermediate Regional Tidal Flood August 1933 .	8
March 1962	6.8
April 1956	5.8

source: United States Army Corps of Engineers, Norfolk District, 1968 Coastal Flooding, Hampton, Virginia. 31 p.

Thirty-five percent of the city's shoreline is protected by bulkheads or seawalls and is difficult to classify as beach or fringe marsh. All of Segments 5B and 6 are beach and much of Segments 7, 8, and 9 are marsh. A preliminary inventory by the Wetlands Section of the Virginia Institute of Marine Science defines over two thousand acres of marsh within Hampton. The largest single marsh is the nearly five hundred sixty acres of extensive marsh north of Grand View on Long Creek (Figure 2). Other large marshes are the embayed marshes of Newmarket and Brick Kiln Creeks; each has an area greater than two hundred acres.

Much of the shoreline use is controlled by the federal government. Langley Air Force Base and the Army's Fort Monroe Military Reservation utilize significant portions of Hampton's shorelands. The other prime user of the shorelands is the city itself controlling both preserved and recreational areas in several sections of the city particularly along the Chesapeake Bay waterfront.

The bulk of the privately controlled portions of the city's shorelands are classified for residential use. Other than some of the lower portions of the Hampton River and Sunset Creek, (Figure 3) very little of the shoreline is involved with commercial or industrial uses. Some of the lands bordering on the Back or Harris Rivers (Figure 4) are very little used and are classified either as agricultural or unused shorelands.

3.2 SHORELINE EROSION IN HAMPTON

Severe or significant erosion in Hampton is limited to the Chesapeake Bay shoreline beach area extending from Old Point Comfort to Northend (Factory) Point, Segments 5 and 6 (Figures 2 and 5) of this report. Average erosion rates of from 4.0 to over 6.4 feet per year have been determined for major portions of this shoreline. One specific location, now partially stabilized, has experienced shoreline retreat of nearly a thousand feet in the past century.

At the present time, significant portions of this shoreline are protected by a bulkhead or seawall (35% of the city's entire shoreline is so protected). Most of the property under management of Fort Monroe has seawalls as do the major public use areas of Buckroe Beach (Figure 6) and portions of the Grand View area (Figure 7). Also,

a large groin field occupies the beach and nearshore areas south of the dredged inlet to the Salt Ponds. Most of this groin field (approximately 15 groins between 150 and 200 feet long and at a rough 600-foot spacing) was constructed in the late 1960's as an addition to the few preexisting groins in the Buckroe - Fort Monroe area. Simultaneously with the most recent groin construction, a large promenade area at Buckroe was seawalled. There is little sediment moving in the nearshore system. The reasons for the lack of sediment in the nearshore system are (1) the lack of a major sediment source and (2) the shoreline orientation and exposure. The shoreline orientation is such that there is a bidirectorial longshore drift with essentially no net transport into the area. Discussion with members of the Hampton Parks Commission indicated that the original plan was to fill, that is artificially nourish, the beach area following groin construction, however, for undetermined reasons, this never was done. Thus in ensuing several years, little has happened to stimulate beach growth or to protect the fastland.

As the Buckroe Beach area is a major regional beach facility, it is important that the beach quality not be allowed to deteorate. In terms of suggested beach protection or preservation action, the beach nourishment plan, and the installation of sills across the groins to create a perched beach appear to be the most suitable measures. The construction of secondary groins shorter than the existing groins and located between them might be additional, later beach stabilization measures.

The Factory Point (Figure 2) area already is the site of an experimental beach grass planting. The intent of this experiment is to stabilize the upper beach and dune areas by trapping windblown sand. Since there is a desire on the part of the city to leave this area in a preserved or natural state, construction of material structures such as groins or bulkheads would be out of place; thus artificial, though pseudo-natural structures as man made dunes or beach grass plantings, would be the most reasonable beach stabilization devices.

The erosion problem through these two segments is a function of two distinct factors. There is a definite paucity of sediment available for natural beach accretion and the area is exposed to one of the higher energy regimes on Chesapeake Bay. Situated near the mouth of Chesapeake Bay, the Buckroe - Grand View area is exposed to waves passing into the bay from the ocean and to waves that may have been generated along the full length of the bay. Thus, controlling shoreline erosion in this area requires the conservation of the natural materials already in the system and the construction of proper structures of sufficient strength to withstand the local environment.

In other areas of the Hampton waterfront, local erosion problems have been controlled by individual bulkheads or riprap. Nearly the entire length of Segment 1 (17,000 feet) is protected by a substantial seawall. The seawall is effective in minimizing or eliminating erosion along its length; however, it also has eliminated the shore zone as there is very little, if any, beach left between it and Hampton Roads.

3.3 POTENTIAL USE ENHANCEMENT OF THE HAMPTON SHORELINE

Only a few areas of Hampton's shoreline still retain the potential for enhanced recreational use. In the Wythe area (Figure 8), an artificial beach could be created in front of the seawall. Such a beach would not have to be large, its mere existence would enhance the waterfront by allowing increased, although informal, recreation use. Similarly, the beach in the Strawberry Banks area, west of the Hampton Roads Bridge Tunnel, (Figure 9) could be expanded to meet future needs. Public access to Mill Creek could be improved, thus realizing some to the recreational potential of the calm, shallow lagoon. Improved public facilities in the Buckroe area probably would be utilized as rapidly as they are constructed. Plans already are in motion to upgrade the beach quality in the present public access areas. Other sources have mentioned the great desirability of creating a marina in the Long Ponds area behind Buckroe Beach. Such a marina, if properly constructed and designed, could be a major port for yachts plying the Intercoastal Waterway between New York and Florida.

Several recent studies on waterfront canals indicate that great care should be used in the design of artificial canals, such as shore being dug in upper Hampton Creek (Figure 10). The probability of severe water stagnation problems is great. In particular dead end canals and canal depths greater than adjacent natural water depths should be avoided.

And, finally, the city owned "preserved area" between Grand View and Factory Point might be

enlarged, utilizing more of the low undevelopable land along the Back River's tributaries and benefitting both the wild life of the area and those persons who are content merely to observe an unspoiled, unaltered beach and marsh system.

Other sections of town, specifically those along the Back River's drainage system, might be developed as parks or low key recreational areas. Their susceptibility to flooding precludes extensive construction or development upon them. Similarly, the numerous bridges across the Hampton River close it to water borne recreational development and to all but the smallest vessels.

In short summary, the potential of Hampton's shoreline is severely limited by two factors: (1) the existing uses and modifications of the shoreline preclude new recreational development and (2) the great flood hazard of much of the city virtually forbids construction or development.

Figure 2

Figure 3

Figure 4

Figure 2: Northend Point and the Back River from near Grand View. The dune area is the site of an experimental grass planting. Most of the marsh is city owned.

Figure 3: Hampton and Sunset Creeks, the city's sole industrial-commercial shore area.

Figure 4: The low-lying area of the Back River and its tributaries. Langley Air Force Base is in the background. The area appears to have reached its potential with some residential use and several marinas.

Figure 5: The beach north of Grand View. As the beach retreats over the marsh, peat blocks erode out of the thin beach face.

Figure 6: Seawall north of Buckroe. The groins are approximately 200 feet long and 600 feet apart.

Figure 5

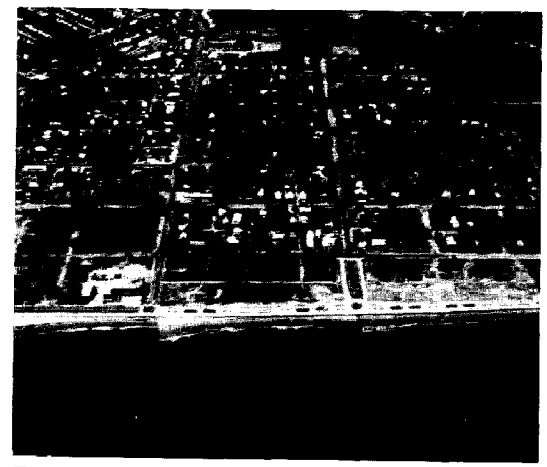


Figure 6

Figure 7

Figure 7: The Grand View section of Hampton.

Figure 8: The Wythe area of Hampton on Hampton Roads. Most of the shoreline of this segment has been bulkheaded to the detriment of the beach. A better beach might be established through a program of artificial nourishment.

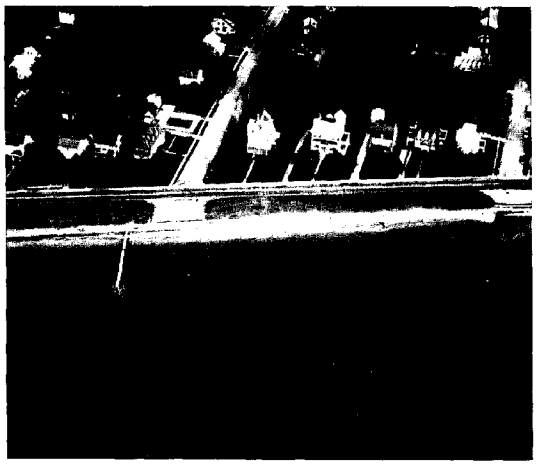


Figure 8

Figure 9

Figure 9: Strawberry Banks and the Hampton Roads Bridge Tunnel.

Figure 10: Hampton Creek near Syms Junior High School. The area is an example of dredge and fill canals dug into existing small creeks and upland areas to produce waterfront property.

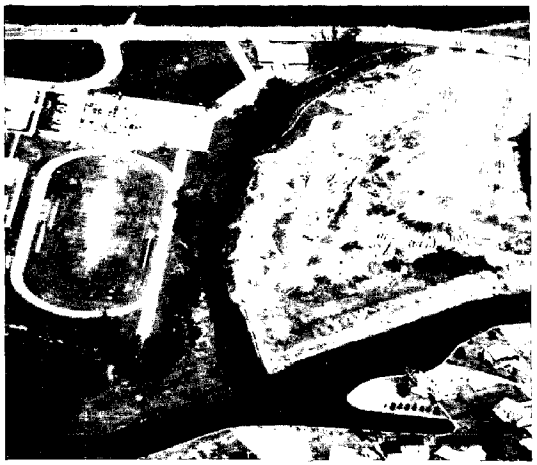
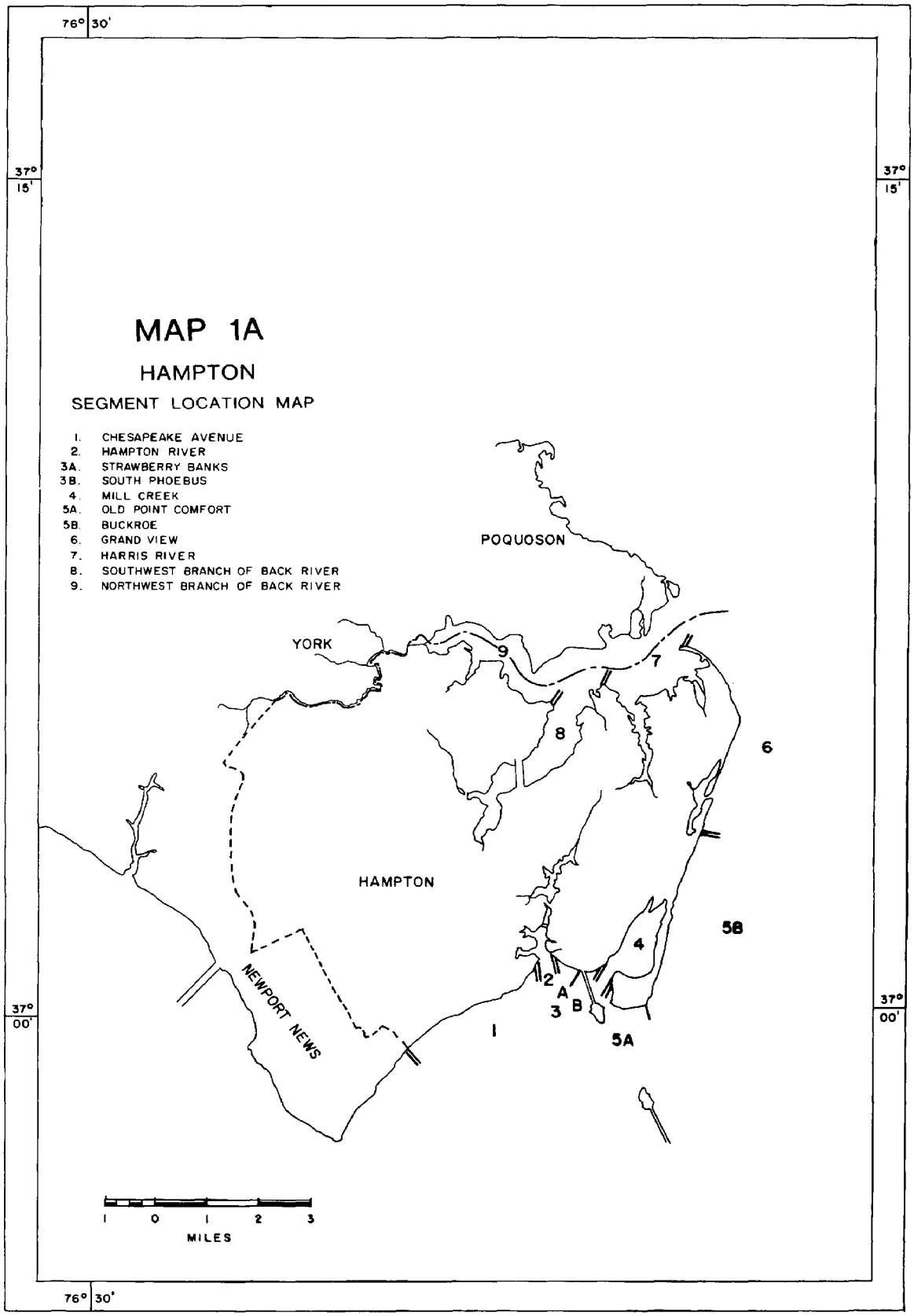
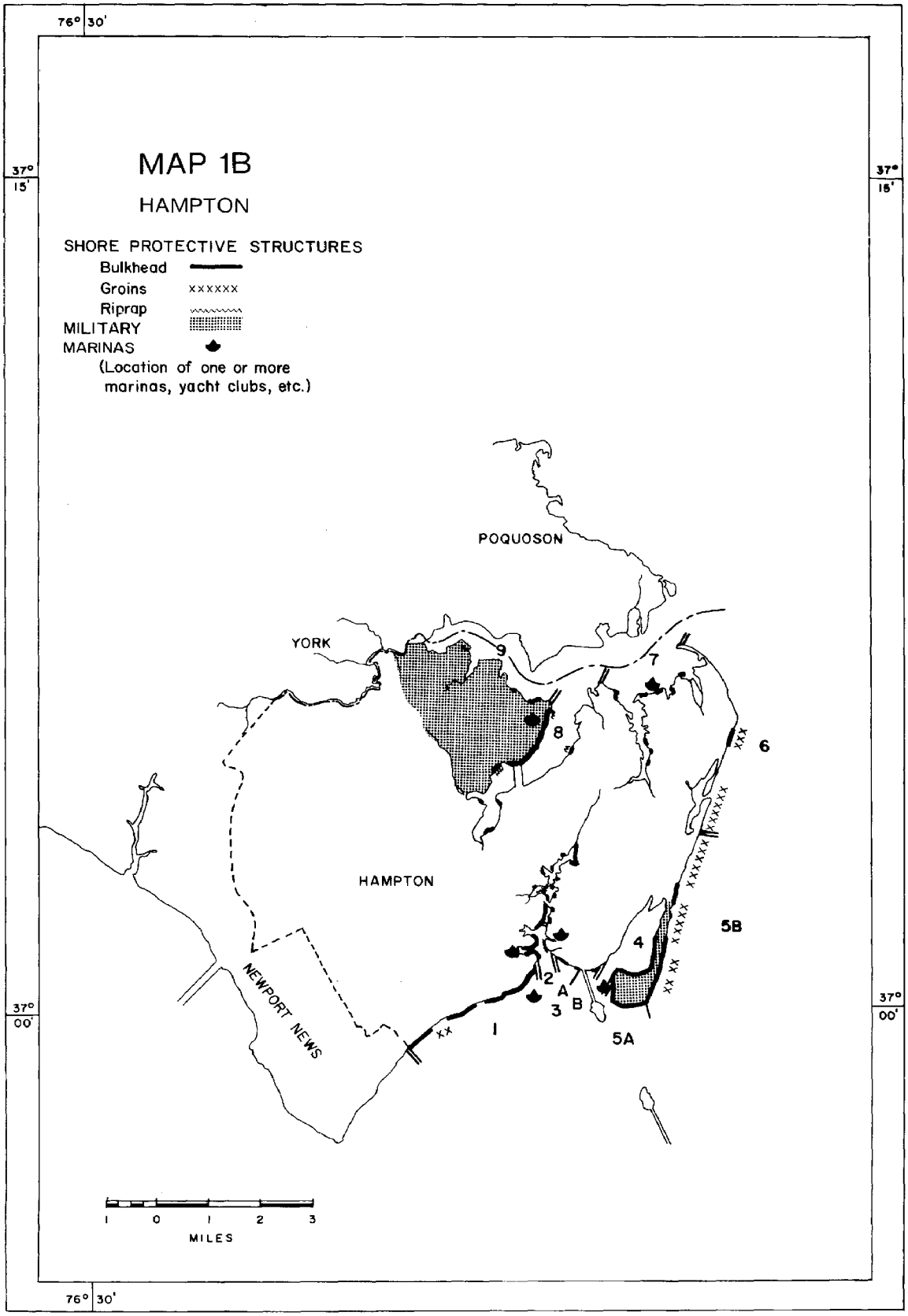


Figure 10


76° 30'
37° 15'
37° 00'
MAP 1A
HAMPTON
SEGMENT LOCATION MAP
1. CHESAPEAKE AVENUE
2. HAMPTON RIVER
3A. STRAWBERRY BANKS
3B. SOUTH PHOEBUS
4. MILL CREEK
5A. OLD POINT COMFORT
5B. BUCKROE
6. GRAND VIEW
7. HARRIS RIVER
8. SOUTHWEST BRANCH OF BACK RIVER
9. NORTHWEST BRANCH OF BACK RIVER
POQUOSON
YORK
HAMPTON
NEWPORT NEWS
1
2
A
3
B
4
5A
5B
6
7
8
9
1 0 1 2 3
MILES


76° 30'
37° 15'
37° 00'
MAP 1B
HAMPTON
SHORE PROTECTIVE STRUCTURES
Bulkhead
Groins
Riprap
MILITARY
MARINAS
(Location of one or more marinas, yacht clubs, etc.)
POQUOSON
YORK
HAMPTON
NEWPORT NEWS
1
2
3
A
B
4
5A
5B
6
7
8
9
1 0 1 2 3
MILES

MAP 1C

HAMPTON

SHORELAND USE, OWNERSHIP, EROSION

USE
- Residential RS
- Commercial C
- Industrial I
- Government G
- Recreational RC
- Agricultural A
- Unmanaged
  - Wooded W
  - Unwooded U
- Preserved P

OWNERSHIP
- Private 1
- Federal 2
- State 3
- City 5

EROSION
- Severe, noncritical
- Severe, critical
- Slight or none no symbol

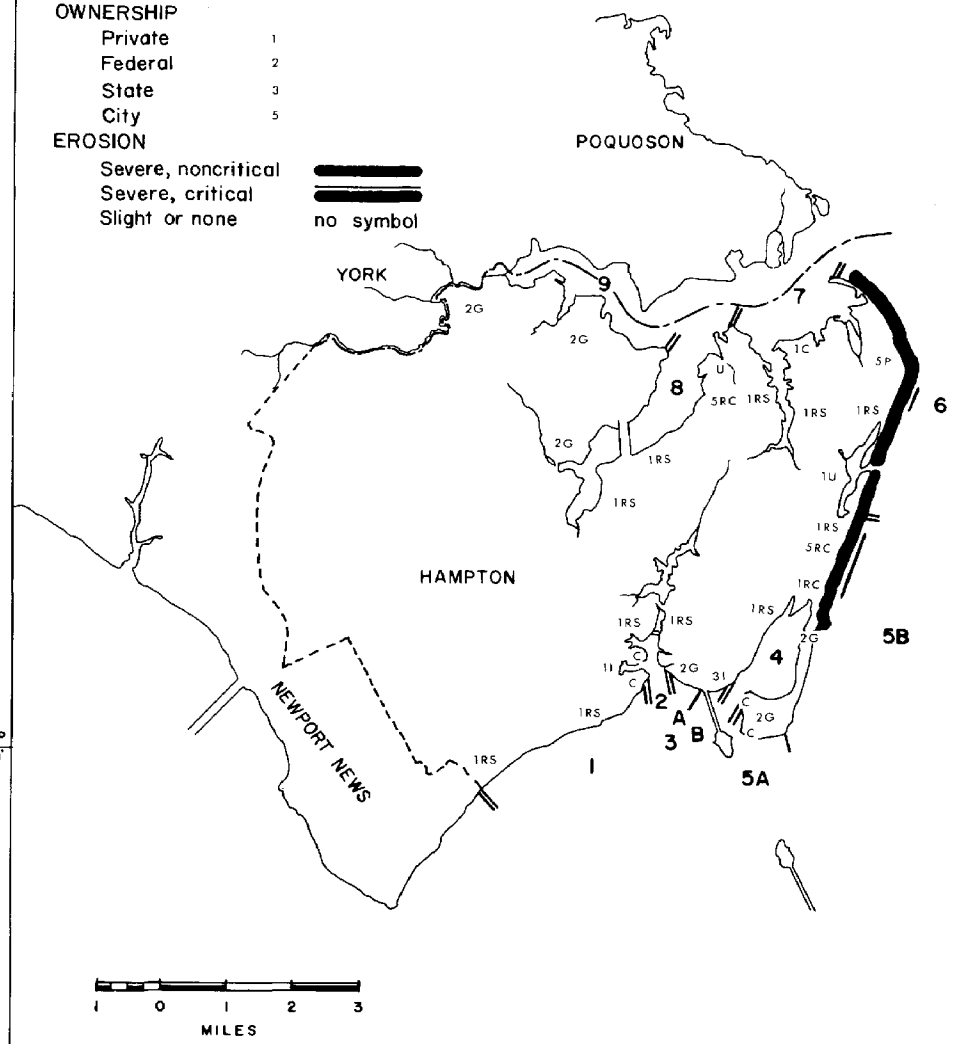


TABLE 2. HAMPTON, VIRGINIA SHORELANDS PHYSIOGRAPHY, FASTLAND USE, OWNERSHIP (STATUTE MILES)

Physiographic, use and ownership classification / Subsegment	SHORELANDS PHYSIOGRAPHY											FASTLANDS USE								OWNERSHIP				TOTAL MILES
	FASTLANDS			SHORE					NEARSHORE															
	LOW SHORE	DUNE	ARTIFICIAL FILL	BEACH	FRINGE MARSH	EMBAYED MARSH	EXTENSIVE MARSH	ARTIFICIALLY STABILIZED	NARROW	INTERMEDIATE	WIDE	AGRICULTURAL	COMMERCIAL	GOVERNMENTAL	INDUSTRIAL	PRESERVED	RECREATIONAL	RESIDENTIAL	UNMANAGED	PRIVATE	FEDERAL	STATE	CITY	
1	3.0		0.2			0.2		3.0			3.2							3.2		3.2				3.2
2	11.2		1.3		5.6			6.9					3.1	0.5	0.4		0.4	8.1		11.6	0.5		0.4	12.5
3A	1.2							1.2			1.2		0.1	0.9				0.2		0.4	0.8	0.1		1.2
3B	0.3			.3							0.3							0.3		0.3				0.3
4	4.7	0.8		0.6	1.8		0.5	2.6						3.3				2.2		2.2	3.3			5.5
5A	1.4							1.4	1.4				0.1	1.3							1.4			1.4
5B	3.4			1.4				2.0	2.3	1.1				2.2			1.2			0.9	2.2		0.3	3.4
6		4.7		4.7						3.7	1.0					3.2	0.2	0.6	0.7	1.5			3.2	4.7
7	9.0		2.2	0.8	5.2	2.0	2.4	0.8				5.8	0.6			2.4		2.4		8.8			2.4	11.2
8	15.5				7.0	3.9		4.6						3.2				6.5	5.8	12.4	2.8		0.3	15.5
9	4.7				1.3	1.2	1.3	0.9						3.8					0.9	0.9	3.6		0.2	4.7
SUBTOTAL	54.4	5.5	3.7	7.8	20.9	7.3	4.2	23.4	3.7	4.8	5.7	5.8	3.9	15.2	0.4	5.6	1.8	23.5	7.4	42.2	14.6	0.1	6.8	63.6
% of SHORELINE	85.6	8.7	5.7	12.3	32.9	11.5	6.6	36.7	5.8	7.5	9.0	9.1	6.2	23.9	0.6	8.9	2.8	36.9	11.6	66.3	22.9	0.1	10.7	100%

CHAPTER 4

4.1 SUBSEGMENT SUMMARIES

4.2 SEGMENT AND SUBSEGMENT DESCRIPTIONS

4.3 SEGMENT AND SUBSEGMENT MAPS

4.1 SUBSEGMENT SUMMARIES

SHORELINE SITUATION REPORT SUMMARY FOR HAMPTON, VIRGINIA

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNERSHIP	ZONING	FLOOD HAZARD	WATER QUALITY	SHORE EROSION SITUATION			POTENTIAL USE ENHANCEMENT	COMMENTS
							RATE	STRUCTURES	SUGGESTED ACTION		
1 Chesapeake Avenue 17,000 ft (3.2 mi.)	Fastland: Low shore and artificial fill (less than 5%). Shore: Some beach below seawall, artificial containment and embayed marsh. Nearshore: Wide.	Fastland: Residential. Shore: Recreational. Nearshore: Wading, boating, fishing and shellfishing.	Private.	Residential.	High.	Unsatisfactory.	Stable.	Seawall protects nearly the full length. Several groins of moderate effectiveness. One small marina, several piers.	Seawall repairs where needed.	Recreational beach is possible with artificial nourishment of the shore between selected groins in the Wythe area.	Beach quality fair.
2 Hampton River 66,000 ft (12.5 mi.) 350 acres	Fastland: Low shore (90%) and artificial fill (10%). Shore: Artificial containment (55%) and fringe marsh (45%). Creek: Dredged harbor below Queen Street; shallow tidal river above.	Fastland: Residential (65%), commercial (25%), government (4%), industrial (3%), and recreational (3%). Shore: Boat support or unused. Creek: Upper portions - small boats and light recreation; lower portion - marinas and commercial boating.	Private, Federal, City.	Residential 83% Industrial 15% Commercial 2%	High.	Unsatisfactory.	No erosion.	Numerous piers, 35,000 ft. bulkheads with marinas.	None.	None.	Navigability: generally good. Dredged 150-ft. wide, 12-ft. deep, channel to Queen Street bridge. Approaches are good.
3A Strawberry Banks 6,300 ft (1.2 mi.)	Fastland: Low shore (98%) and artificial fill (2%). Shore: Artificial containment (98%) and beach (2%). Nearshore: Wide.	Fastland: Government (70%), residential (20%), and commercial (10%). Shore: Some boating and recreation. Much of the shore has no specific use. Nearshore: Boating and shellfishing.	Federal 65%, Private 30%, State 5%.	Residential 60% Commercial 40%	High.	Unsatisfactory.	Stable.	Almost entire area seawalled.	None.	Strawberry Banks beach could be nourished and expanded if there were a demand for it.	Beach quality: One small beach is fair but location near Hampton Roads Bridge Tunnel detracts from it.
3B South Phoebus 1,700 ft (0.3 mi.)	Fastland: Low shore. Shore: Sand beach (90%) and artificial containment (10%). Nearshore: Wide.	Fastland: Residential (90%) and commercial (10%). Shore: Private recreation (90%) and fishing docks (10%). Nearshore: Boating and shellfishing.	Private.	Residential.	High.	Unsatisfactory.	Slight shoreline retreat near bridge tunnel. Nearshore area shoaling.	Seawall and some groins. Two piers.	Complete seawalling would stop the already limited erosion.	Minimal.	Beach quality: Fair. Beach is narrow, nearshore is shallow.
4 Mill Creek 29,000 ft (5.6 mi.) 630 acres	Fastland: Low shore (85%) and dunes (15%). Shore: Beach, fringe and extensive marsh, artificial containment. Creek: Shallow lagoon behind Buckroe-Old Point Comfort barrier beach.	Fastland: Government (60%) and residential (40%). Shore: Recreational and unused. Creek: Some boating, fishing, and recreation.	Federal 60%, Private 40%.	Residential.	High.	Undetermined.	Stable.	One-third of shoreline covered with utility bulkhead. Several private piers, and a boat ramp.	None.	With improved public access, this area might be developed for water sport recreational uses.	Navigability: Low. Bridge clearance and shallow depth limits size of vessels.
5A Old Point Comfort 8,000 ft (1.4 mi.)	Fastland: Low shore. Shore: Artificial containment. Nearshore: Wide to west, narrow to south. Deep dredged channel runs very close to western edge.	Fastland: Government (90%) and commercial (10%). Shore: Boat support and unused. Nearshore: Boating.	Federal.	Residential.	Medium.	Intermediate.	No erosion.	Seawall protects entire subsegment.	None.	None.	
5B Buckroe 18,000 ft (3.4 mi.)	Fastland: Low shore. Shore: Artificial containment and sand beach. Nearshore: South 2/3 narrow; north 1/3 intermediate.	Fastland: Government (65%) and recreacional (35%). Shore: Swimming. Nearshore: Water sports.	Federal 65%, Private 25%, City 10%.	Residential 84% Commercial 16%	High.	Intermediate.	Severe erosion, critical, over 6 ft/yr.	About 12,000 ft. of seawall, 18 groins. Piers at Buckroe.	Building sills along outer edge of groins and artificial nourishment of Buckroe Beach.	An enlarged beach and improved facilities at Buckroe would improve utility of the area.	Beach quality: Good.
6 Grand View 25,000 ft (4.7 mi.)	Fastland: Dunes. Barrier beach dunes complex; extensive tidal marsh behind. Shore: Beach. Nearshore: Intermediate to wide with some nearshore bars.	Fastland: Preserved (68%), unmanaged (16%), residential (12%), and recreational (4%). Shore: Recreational. Nearshore: Swimming, water sports, boating, and fishing.	City 68%.	Residential 90% Commercial 10%	High.	Intermediate.	Severe erosion, critical, over 6 ft/yr.	Several seawalls, groins, one large pier in Grand View area. Numerous, reasonably effective groins in Salt Ponds area.	Further dune stabilization, possibly creation of second dune line. If desirable and funds available, groin field, perhaps artificially nourished.	If development of marina by dredging Salt Ponds area is designed and handled properly it will enhance recreational potential of this area.	Much of region between Grand View and Factory Point is site of experimental beach grass planting project. Beach quality: generally good, but quantity of sand is limited.

SUBSEGMENT	SHORELANDS TYPE	SHORELANDS USE	OWNERSHIP	ZONING	FLOOD HAZARD	WATER QUALITY	SHORE EROSION SITUATION			POTENTIAL USE ENHANCEMENT	COMMENTS
							RATE	STRUCTURES	SUGGESTED ACTION		
7 Harris River 59,000 ft (11.2 mi.)	Fastland: Low shore and artificial fill. Shore: Fringe, extensive and embayed marsh, beach and artificial containment. Creek: Wide, shallow tidal creek.	Fastland: Residential, commercial, agricultural, preserved. Shore: Marinas. Creek: Boating, fishing, water sports.	Private City	Residential	High, critical.	Intermediate	Slight erosion	Bulkheading at Windmill Point. Utility bulkheading at marinas.	None	Low. Factory Point area is preserved, rest of segment is very low and exposed to flood danger.	Beach quality good at Northend Point. Navigability good.
8 SW Branch of Back River 82,000 ft (15.5 mi.)	Fastland: Low shore. Shore: Fringe marsh (45%), artificial (30%) and embayed marsh (25%). Creek: Relatively wide, shallow tidal extension of Newmarket Creek.	Fastland: Residential, government (Langley AFB); unmanaged - open. Shore: Boat storage, recreation. Creek: Fishing, boating, water sports.	Private 80% Federal 18% City 2%	Residential	High	Unsatisfactory	Stable	Bulkheading along most of Langley shoreline. Numerous small, private piers, Langley Yacht Club.	None	Best left as agricultural or open space.	
9 NW Branch of Back River 25,000 ft (4.7 mi.)	Fastland: Low shore. Shore: Artificial containment (20%) and nearly equal portions fringe, extensive and embayed marshes. Creek: Wide, shallow tidal creek.	Fastland: Government (80%) and unmanaged, open and wooded (20%). Shore: Unused. Creek: Fishing, water sports.	Government Private City	Residential	High	Unsatisfactory	No erosion	Langley AFB is bulkheaded.	None	Minimal	

4.2 SEGMENT AND SUBSEGMENT DESCRIPTIONS

4.2 SUBSEGMENT SUMMARIES

CHESAPEAKE AVENUE, HAMPTON, VIRGINIA

SEGMENT 1 (Maps 2A, 2B)

EXTENT: This segment extends 17,000 feet (3.2 mi.) from the Newport News - Hampton line to the mouth of Hampton Creek. Chesapeake Avenue follows the shoreline through most of the segment.

SHORELANDS TYPE
FASTLAND: Low shore and artificial fill (less than 5%).
SHORE: Beach, artificial containment, and two small areas of embayed marsh.
NEARSHORE: Wide, Hampton Flats.

SHORELANDS USE
FASTLAND: Residential, single and multiple family dwellings.
SHORE: Recreational.
NEARSHORE: Wading, boating, fishing, and shellfishing.

OFFSHORE: Hampton Roads.

WIND AND SEA EXPOSURE: The shoreline trend is generally ENE - SSW.
The fetches are:

SW	7 nm	across Hampton Roads
S	4 nm	
SE	3 nm	
E		generally open to the Chesapeake Bay and the Atlantic Ocean.

OWNERSHIP: Private.

ZONING: One family residential district.

FLOOD HAZARD: High.

WATER QUALITY: Found unsatisfactory by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: Fair. What beach there is, is below a seawall.

SHORE EROSION SITUATION: Stable.
EROSION RATE: None. Historical studies show an erosion rate of 2-3 feet per year. The post 1930's seawall has stabilized the shoreline.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Nearly the full length of the segment is protected with a seawall, some sections of which are in poor repair. There are several (c.20) moderately effective groins.

Suggested Action: Seawall repairs where needed.

OTHER SHORE STRUCTURES: There is one small marina in the Kecoughtan area near the Hampton River and several piers.

POTENTIAL USE ENHANCEMENT: A quite satisfactory recreational beach might be created by artificial nourishment of the shore between selected groins in the Wythe area.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970, NORFOLK NORTH Quadr., 1965, photorevised 1970, and NEWPORT NEWS SOUTH Quadr., 1964, photorevised 1968.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/137-139, 189, 190;*
USDA 310ct53 DWJ-4N/30, 32, 33, 38.
C&GS, 3Mar59 W3855.
VaDH 200ct59 5114059/166, 167;
VaDH 23Feb63 5114116/022, 023, 037, 068.
NASA 130ct71 7053, 7054, 7204.
VIMS 270ct72 HP-1/1-22.

Ground - VIMS 12Jun73 HP-1/35-40.

*Photograph filed with Newport News.

HAMPTON RIVER, HAMPTON, VIRGINIA

SEGMENT 2 (Maps 3A, 3B)

EXTENT: Hampton River is a tidal river that extends 14,000 feet (2.7 mi.) northward through the city. The river and its arms have a total of roughly 66,000 feet (12.5 mi.) of shoreline, and an area of 350 acres.

SHORELANDS TYPE
FASTLAND: Low shore (90%) and artificial fill (10%).
SHORE: Artificial containment (55%) and fringe marsh (45%).
CREEK: Below Queen Street the creek is a dredged harbor, above it is a shallow tidal river.

SHORELANDS USE
FASTLAND: Residential (65%), commercial (25%), government, Veterans' Hospital, etc. (4%), industrial (3%), and recreational (3%).
SHORE: Boat support or unused.
CREEK: The upper portions of the creek are used for small boats and light recreation. An amphibious airplane is based in the central portion of the river. The lower portions of the creek, where there is a dredged 12-foot channel, are used for marinas and commercial boating activities.

OWNERSHIP: Private, Federal, and City (due to the nature of this area, ownership percentages are not applicable).

ZONING: One family residential district (72%), light manufacturing district (12%), multiple family residential district (11%), heavy manufacturing district (3%), limited commercial district (1%), and general commercial district (1%).

FLOOD HAZARD: High. The entire area is below the level of the Intermediate Regional Tidal Flood.

WATER QUALITY: Found unsatisfactory by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: There are no significant beaches in this segment.

SHORE EROSION SITUATION: Stable.
EROSION RATE: Apparently none.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: None.

Suggested Action: None.

OTHER SHORE STRUCTURES: There are numerous piers and bulkheads (approx. 35,800 ft.) associated with the marinas and the boating industry and many "utility" bulkheads serving to improve the cosmetics of individual properties. Also, there are several private piers.

NAVIGABILITY: Generally good. There is a dredged 150-foot wide, 12-foot deep channel as far upstream as the Queen Street bridge. The approaches are similarly good. The upper reaches of the creek are not maintained, but are satisfactory for the use they now receive.

POTENTIAL USE ENHANCEMENT: None.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/138, 139, 160, 161;
USDA 310ct53 DWJ-4N/30, 32.
C&GS 3Mar59 W3855.
VaDH 23Feb63 5114116/068, 073.
NASA 130ct71 7053, 7054, 7204.
VIMS 270ct72 HP-2/22-24;
VIMS 30Apr73 HP-2/191-214.

Ground - VIMS 12Jun73 HP-2/41-62.

STRAWBERRY BANKS, HAMPTON, VIRGINIA

SUBSEGMENT 3A (Maps 3A, 3B)

EXTENT: This subsegment extends 6,300 feet (1.2 mi.) from the mouth of Hampton Creek to the Hampton Roads Bridge Tunnel.

SHORELANDS TYPE
FASTLAND: Low shore (98%) and artificial fill (2%).
SHORE: Artificial containment (98%) and beach (2%).
NEARSHORE: Wide, Hampton Flats.

SHORELANDS USE
FASTLAND: Government (70%), residential (20%), and commercial (10%).
SHORE: Boating, recreation, much of the shore has no specific use.
NEARSHORE: Boating and shellfishing.

OFFSHORE: Hampton Roads.

WIND AND SEA EXPOSURE: The shoreline trend is WNW - SSE. The fetch from the South is 3 miles and Southwest about 9 miles into the Nansemond River. The area is protected on the east by Fort Monroe and Willoughby Spit.

OWNERSHIP: Federal (65%), Private (30%), and State (5%).

ZONING: One family residential district (60%), and limited commercial district (40%).

FLOOD HAZARD: High.

WATER QUALITY: Found unsatisfactory by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: The one small beach is fair, but its location near the Hampton Roads Bridge Tunnel toll is a detracting factor.

SHORE EROSION SITUATION
EROSION RATE: None. The area is artificially stabilized. Historical surveys indicate that the old shoreline retreat rate was under one foot per year.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Except for the beach by the Hampton Roads Bridge Tunnel rampart and the small creek, most of the area is seawalled.

OTHER SHORE STRUCTURES: None.

POTENTIAL USE ENHANCEMENT: If there were the demand for it, the Strawberry Banks beach could be nourished and expanded.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor.

PHOTOS: Aerial-USDA 12Apr37 FG 108/138, 139, 160, 161;
USDA 310ct53 DWJ-4N/3, 5, 30, 32.
C&GS 3Apr59 W3855.
VaDH 23Feb63 5114116/073, 074;
VaDH 18Mar66 5114212/010-014.
NASA 130ct71 7053, 7054, 7204.
VIMS 270ct72 HP-3A/25, 26.

SOUTH PHOEBUS, HAMPTON, VIRGINIA

SUBSEGMENT 3B (Maps 3A, 3B)

EXTENT: This subsegment extends 1,700 feet (0.3 mi.), from the Hampton Roads Bridge to the Mellen Street (Route 143 bridge).

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Sand beach (90%) and artificial containment (10%).
NEARSHORE: Wide.

SHORELANDS USE
FASTLAND: Residential (90%) and commercial (10%).
SHORE: Private recreation (90%) and fishing docks (10%).
NEARSHORE: Boating and shellfishing.

OFFSHORE: Hampton Roads Bridge Tunnel (and construction of the second bridge tunnel).

WIND AND SEA EXPOSURE: The shoreline trend is general E - W. The area is protected from all but southwest winds which have a fetch of roughly 8 nm through the bridge-tunnel from Nansemond River.

OWNERSHIP: Private.

ZONING: One family residential district.

FLOOD HAZARD: High.

WATER QUALITY: Found unsatisfactory by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: Fair. The beach is fairly narrow and the nearshore area is quite shallow. There is a nearshore shoaling problem.

SHORE EROSION SITUATION
EROSION RATE: Most of the subsegment shoreline is artificially stabilized, however the unstabilized area near the Bridge-tunnel is experiencing slight shoreline retreat. Interviews with local residents backed up by a study of recent aerial photographs indicates that the shore area is shoaly with sediment transported around the bridge abutment.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: There is a seawall and some small groins.

Suggested Action: Complete seawalling of the area would stop the already limited erosion. Further study is necessary if a solution to the shoaling problem is to be found.

OTHER SHORE STRUCTURES: One small private pier and a larger pier associated with a commercial fishing operation.

POTENTIAL USE ENHANCEMENT: As there is no public access to the shoreline along this subsegment and the area is privately owned, the potential for use enhancement is minimal.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/138, 139, 160, 161;
USDA 30Oct53 DWJ-4N/3, 5, 30, 32.
C&GS 3Apr59 W3855.
VaDH 23Feb63 5114116/073, 074;
VaDH 18Mar66 5114212/010-014.
NASA 13Oct71 7053, 7054, 7204.

MILL CREEK, HAMPTON, VIRGINIA

SEGMENT 4 (Maps 3A, 3B)

EXTENT: Approximately 29,000 feet (8.6 mi.) of the shoreline enclose the nearly 630 acres of Mill Creek.

SHORELANDS TYPE
FASTLAND: Low shore (85%) and dunes (15%).
SHORE: Beach, fringe and extensive marsh, and artificial containment.
CREEK: A shallow lagoon behind the Buckroe - Old Point Comfort barrier beach.

SHORELANDS USE
FASTLAND: Government (60%) and residential (40%).
SHORE: Recreation and unused.
CREEK: Some boating, fishing, and recreation.

OWNERSHIP: Federal (60%) and Private (40%).

ZONING: One family residential district.

FLOOD HAZARD: High, both from increased water levels and wave overwash.

WATER QUALITY: Undetermined.

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

Suggested Action: None.

OTHER SHORE STRUCTURES: Roughly a third of the creek's shoreline, most at Fort Monroe, is covered with utility landscape bulkhead. There are several private piers and a boat ramp.

NAVAGABILITY: The size of vessels are limited by Mellen Street - Route 143 bridge. Low vertical clearance under railroad bridge and shallow depth permits only small motor boats without stand-up cabins to pass into Mill Creek.

POTENTIAL USE ENHANCEMENT: With improved public access, Mill Creek might be developed for water sport recreational uses.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/160, 161;
USDA 310ct53 DWJ-4N/5.
C&GS 3Apr59 W3855.
VaDH 23Feb63 5114116/073, 074, 081 to 084;
VaDH 18Mar66 5114212/010 to 014.
NASA 310ct71 7053, 7054, 7204.
VIMS 30Apr73 HP-4/174-185.

OLD POINT COMFORT, HAMPTON, VIRGINIA

SUBSEGMENT 5A (Maps 3A, 3B)

EXTENT: This subsegment extends 8,000 feet (1.4 mi.) from near the Fort Monroe Entrance to the bend in the shoreline east of the old lighthouse. Although not included in the measurements, Fort Wool is included in the subsegment.

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Artificial containment.
NEARSHORE: Wide to the west and narrow to the south. A dredged channel with deep water runs very close to the western edge of the subsegment.

SHORELANDS USE
FASTLAND: Government, Fort Monroe (90%) and commercial, a small boat marina and a hotel (10%).
SHORE: Boat support and unused.
NEARSHORE: Boating.

OFFSHORE: All shipping entering Hampton Roads must pass offshore of Old Point Comfort.

WIND AND SEA EXPOSURE: The shoreline trend is N - S. The fetch to the west is $1\frac{1}{2}$ miles across Hampton Flats and to the Southwest is 10 miles to the Nansemond River.

OWNERSHIP: Federal.

ZONING: One family residential district.

FLOOD HAZARD: Medium. Much of the area is above ten feet (the Intermediate Regional Tidal Flood level is 8 feet). However, the Standard Project Flood or high storm waves could inflict significant damage to portions of the subsegment.

WATER QUALITY: Found intermediate by the Bureau of Shellfish Sanitation as of July 1973.

SHORE EROSION SITUATION: Controlled.
EROSION RATE: None.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: The entire subsegment is protected by a seawall.

Suggested Action: None.

OTHER SHORE STRUCTURES: Those few associated with the small marina.

POTENTIAL USE ENHANCEMENT: None.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/160-162, 166, 167;
USDA 310ct53 DWJ-4N/5, 7;
USDA 110ct54 DOF-2N/35.
C&GS 3Apr59 W3855.
VaDH 18Feb63 5122109/168;
VaDH 23Feb63 5114116/073, 074, 080-084;
VaDH 3Jan66 5114201/9, 10;
VaDH 18Mar66 5114212/010-014;
VaDH 7Sep66 5114211/118;
VaDH 26Mar68 AW 116, 118.
VIMS 27Oct72 HP-5A/30-32;
VIMS 30Apr73 HP-5A/186-190.

BUCKROE, HAMPTON, VIRGINIA

SUBSEGMENT 5B (Maps 3A, 3B and 4A, 4B)

EXTENT: This subsegment extends 18,000 feet (3.4 mi.) from Old Point Comfort to Malo Beach.

SHORELANDS TYPE
FASTLAND: Low shore. The area is a somewhat stabilized barrier beach and dune complex.
SHORE: Artificial containment and sand beach.
NEARSHORE: The south two-thirds are narrow, the north one-third is of intermediate width.

SHORELANDS USE
FASTLAND: Government, Fort Monroe (65%) and recreational (35%).
SHORE: The beach areas are used for swimming.
NEARSHORE: Water sports.

WIND AND SEA EXPOSURE: This subsegment trends NNE - SSW. The fetch to the northeast is over 20 miles and to the southeast is 10 miles. The fetch to the east is unlimited through the mouth of Chesapeake Bay and into the open Atlantic.

OWNERSHIP: Federal (65%), Private (25%), and City (10%).

ZONING: One family residential district (68%), multiple family residential district (16%), and general commercial district (16%).

FLOOD HAZARD: High, both for high water levels and wave action.

WATER QUALITY: Found intermediate by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: Good. The Buckroe Beach area is one of the best public bathing beaches on the Chesapeake Bay.

SHORE EROSION SITUATION
EROSION RATE: Severe, critical. Erosion rates of over 6 feet per year are documented for this area.
ENDANGERED STRUCTURES: Houses at the Buckroe Beach area.
SHORE PROTECTIVE STRUCTURES: There is approximately 12,000 feet of seawall in this subsegment. 8,500 feet of the seawall is at the Fort Monroe Reservation area. The remaining 3,500 feet is in Buckroe. There are approximately 18 groins along the beach.

Suggested Action: Building sills along the outer edge of the groins and artificial nourishment might increase the size and stability of the beach in the Buckroe public areas.

OTHER SHORE STRUCTURES: There are piers at Buckroe.

POTENTIAL USE ENHANCEMENT: An enlarged beach and improved facilities at Buckroe would improve the utility of the area as a recreational site.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #400, 1:20,000 scale, HAMPTON ROADS, 1965.
#562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/160-162, 166, 167;
USDA 31Oct53 DWJ-4N/5, 7;
USDA 11Oct54 DGF-2N/35.
C&GS 3Apr59 W3855.
VaDH 13Feb63 5122109/168;
VaDH 23Feb63 5114116/073, 074, 080-084;
VaDH 8Jan66 5114201/9, 10;
VaDH 18Mar66 5114212/010-014;
VaDH 7Sep66 5114222/118;
VaDH 26Mar68 AW116, 118.
VIMS 27Oct72 HP-5B/42-54;
VIMS 30Apr73 HP-5B/167-173.

Ground - VIMS 23May73 HP-5B/63-66;
VIMS 28Jun73 HP-5B/86-90.

GRAND VIEW, HAMPTON, VIRGINIA

SEGMENT 6 (Maps 4A, 4B)

EXTENT: This segment extends 25,000 feet (4.7 mi.) from Malo Beach to Northend (Factory) Point.

SHORELANDS TYPE
FASTLAND: Dunes. The segment primarily is a barrier beach-dune complex backed by an extensive tidal marsh.
SHORE: Beach.
NEARSHORE: Intermediate to wide with some nearshore bars.

SHORELANDS USE
FASTLAND: Preserved (68%), unmanaged (16%), residential (12%), and recreational (4%).
SHORE: Recreational.
NEARSHORE: Swimming, water sports, boating, and fishing.

OFFSHORE: Chesapeake Bay.

WIND AND SEA EXPOSURE: The southern half of the segment trends NNE - SSW. The northern half trends NW - SE.
Fetches are:
E unlimited
NE 15 nm
SE 14 nm.
The segment faces the mouth of the Chesapeake Bay and is exposed to the Atlantic Ocean.

OWNERSHIP: City (68%) and Private (32%).

ZONING: One family residential district (90%) and limited commercial district (10%).

FLOOD HAZARD: High, both from high water levels and waves. The beach has been overwashed in several locations.

WATER QUALITY: Found intermediate by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: Generally quite good, but, surprisingly, the quantity of sand is very limited. In several locations the blocks poking through the beachface, locally lowering the beach quality.

SHORE EROSION SITUATION
EROSION RATE: Severe, critical, 6 feet per year average indicated in the VIMS historical survey. Other reports vary in the precise rate, but all agree that the beach is experiencing a dramatic retreat.
ENDANGERED STRUCTURES: Several houses in the Grand View area are endangered.
SHORE PROTECTIVE STRUCTURES: The Grand View area is protected by several seawalls and groins. There are numerous groins, that are reasonably effective, in the Salt Ponds area. Much of the region between Grand View and Factory Point is the site of an experimental beach grass planting project.

Suggested Action: Further dune stabilization and possibly the creation of a second dune line might help stabilize the shoreline of this subsegment. If it were desireable to improve the already good beach quality, and if funds were available, a groin field, perhaps artificially nourished, probably would be the most successful structure.

OTHER SHORE STRUCTURES: There is a large pier south of Grand View.

POTENTIAL USE ENHANCEMENT: The Salt Ponds area behind the beach and dunes is being dredged for use as a major marina or the Intercoastal Waterway. If this development is designed and handled properly it will significantly enhance the recreational potential of the area.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/167-172;
USDA 310ct53 DWJ-4N/7; DWI-4N/12.
USAF 10Nov59 AF59-35 R-21/1941-1944.
VaDH 23Feb63 5114116/083-085, 087, 093-095;
5147116/088;
VaDH 26Mar68 AW 122, 118, 120.
NASA 310ct71 7053, 7055, 7204.
VIMS 270ct72 HP-6/55-75;
VIMS 30Apr73 HP-6/161-168.

Ground - VIMS 23May73 HP-6/67-82;
VIMS 28Jun73 HP-6/83-85;
VIMS 13Aug73 HP-6/1-34.

HARRIS RIVER, HAMPTON, VIRGINIA

SEGMENT 7 (Maps 4A, 4B)

EXTENT: This segment has 59,000 feet (11.2 mi.) of shoreline between Northend Point and Stony Point, including the Harris River.

SHORELANDS TYPE
FASTLAND: Low shore and artificial fill. Marsh areas in upper Harris River recently have been filled for residential housing development.
SHORE: Fringe, extensive, and embayed marsh, beach and artificial containment.
CREEK: Wide, shallow tidal creek. The Harris River is 3.6 miles long and drains 3.06 square miles.

SHORELANDS USE
FASTLAND: Residential, commercial, agricultural, and the city owned preserved area adjacent to Northend Point.
SHORE: Marinas.
CREEK: Boating, fishing, and water sports.

WIND AND SEA EXPOSURE: The exposure of this segment is limited by the opening of the Back River. Except under extreme storm conditions, wave action is not a highly significant factor in this area.

OWNERSHIP: Private and City.

ZONING: One family residential district.

FLOOD HAZARD: High, critical. The area is quite low. Several houses and marinas would be flooded by the Intermediate Regional Tidal Flood. Frequently the area is isolated by storm high tides.

WATER QUALITY: Found intermediate by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: Good at Northend Point, there is little other beach area in the segment.

SHORE EROSION SITUATION: Stable.
EROSION RATE: Slight.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Bulkheading at Windmill Point.

Suggested Action: None.

OTHER SHORE STRUCTURES: There is much utility bulkheading associated with the several marinas in the area.

NAVIGABILITY: Good.

POTENTIAL USE ENHANCEMENT: Low. The Factory Point area is part of a preserved area. The rest of the segment is so low and exposed to flood danger as to preclude development.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970.
C&GS, #562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/155, 158, 169-171;
USDA 310ct53 DWJ-4N/9, 10.
USAF 10Nov59 AF59-35 R-21/1940-1944.
VaDH 23Feb63 5114116/067, 085-087; 5147116/066, 088;
VaDH 26Mar68 AW 122.
VIMS 30Apr73 HP-7/215-277.

SOUTHWEST BRANCH OF THE BACK RIVER,

HAMPTON, VIRGINIA

SEGMENT 8 (Maps 4A, 4B and 5A, 5B)

EXTENT: This segment extends along 82,000 feet (15.5 mi.) of the shoreline from Stony Point upstream to Mercury Boulevard and back to Willoughby Point.

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Fringe marsh (45%), artificial fill or containment (30%), and embayed marsh (25%).
CREEK: Relatively wide, shallow tidal extention of Newmarket Creek. The Southwest Branch is 3.2 miles long and drains 28.99 square miles.

SHORELANDS USE
FASTLAND: Residential, government (Langley AFB), unmanaged-open, recreational, and agricultural.
SHORE: Boat storage and recreation.
CREEK: Fishing, boating, and water sports.

WIND AND SEA EXPOSURE: The Southwest Branch of the Back River is a restricted arm of a tidal river. Although northwest winds blow down its length, there is no direct exposure to open waves.

OWNERSHIP: Private (80%), Federal, Langley AFB and NASA Langley Research Center (18%), and City (2%).

ZONING: One family residential district (95%) and multiple family residential district (5%).

FLOOD HAZARD: High. The entire area is below the 8-foot level of the Intermediate Regional Tidal Flood.

WATER QUALITY: Found unsatisfactory by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: Generally no beach.

SHORE EROSION SITUATION: Stable.
EROSION RATE: Nearly zero.
ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Most of the Langley shoreline is bulkheaded but it is as much cosmetic or utility bulkheading as it is protective.

Suggested Action: None.

OTHER SHORE STRUCTURES: There are numerous small private piers, the Langley Yacht Club, and much cosmetic bulkheading.

POTENTIAL USE ENHANCEMENT: Extreme care should be used with the area between Langley View and Stony Point. Because of its very low open nature, the area might best be left as agricultural or open space.

MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970 and NEWPORT NEWS NORTH Quadr., 1965, photorevised 1970.
C&GS, #562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

PHOTOS: Aerial-USDA 12Apr37 FG 108/141-143, 155-158, 188;
USDA 310ct53 DWJ-4N/9, 10, 25.
USAF 110ct59 AF59-35 R-21/1940-1944.
VaDH 23Feb63 5114116/041-043, 067-069; 5147116/066.
NASA 310ct71 7056, 7202, 7203, 7207.
VIMS 30Apr73 HP-8/99-160, 278-284.

NORTHWEST BRANCH OF THE BACK RIVER,

HAMPTON, VIRGINIA

SEGMENT 9 (Maps 5A, 5B)

EXTENT: This segment extends 25,000 feet (4.7 mi.) from Willoughby Point upstream toward the Big Bethel Reservoir. This report is concerned only with the southern back of the river as the Hampton City - York County, Poquoson boundary follows the center of the river.

SHORELANDS TYPE
FASTLAND: Low shore.
SHORE: Artificial containment (20%) and nearly equal portions of extensive, embayed, and fringe creek marshes.
CREEK: Wide, shallow tidal creek. The Northwest Branch is 2.7 miles long and drains 23.26 square miles.

SHORELANDS USE
FASTLAND: Government, Langley AFB and NASA Langley Research Center (80%) and unmanaged, open and wooded (20%).
SHORE: Unused.
CREEK: Fishing and water sports.

WIND AND SEA EXPOSURE: The Northwest Branch of the Back River is a sheltered tidal river. With the exception of a small area across the river from Tin Shell Point. There is no open access to the shoreline by waves of any appreciable fetch.

OWNERSHIP: Government, Private, and City.

ZONING: One family residential district.

FLOOD HAZARD: High. Most of the area below Brick Kiln Creek is below the 8-foot level of the Intermediate Regional Tidal Flood. All the Brick Kiln Creek area is below the level of the "Standard Project Tidal Flood".

WATER QUALITY: Found unsatisfactory by the Bureau of Shellfish Sanitation as of July 1973.

BEACH QUALITY: There are no beaches in this segment.

SHORE EROSION SITUATION: Stable.
EROSION RATE: None.

ENDANGERED STRUCTURES: None.
SHORE PROTECTIVE STRUCTURES: Langley AFB is bulkheaded.

Suggested Action: None.

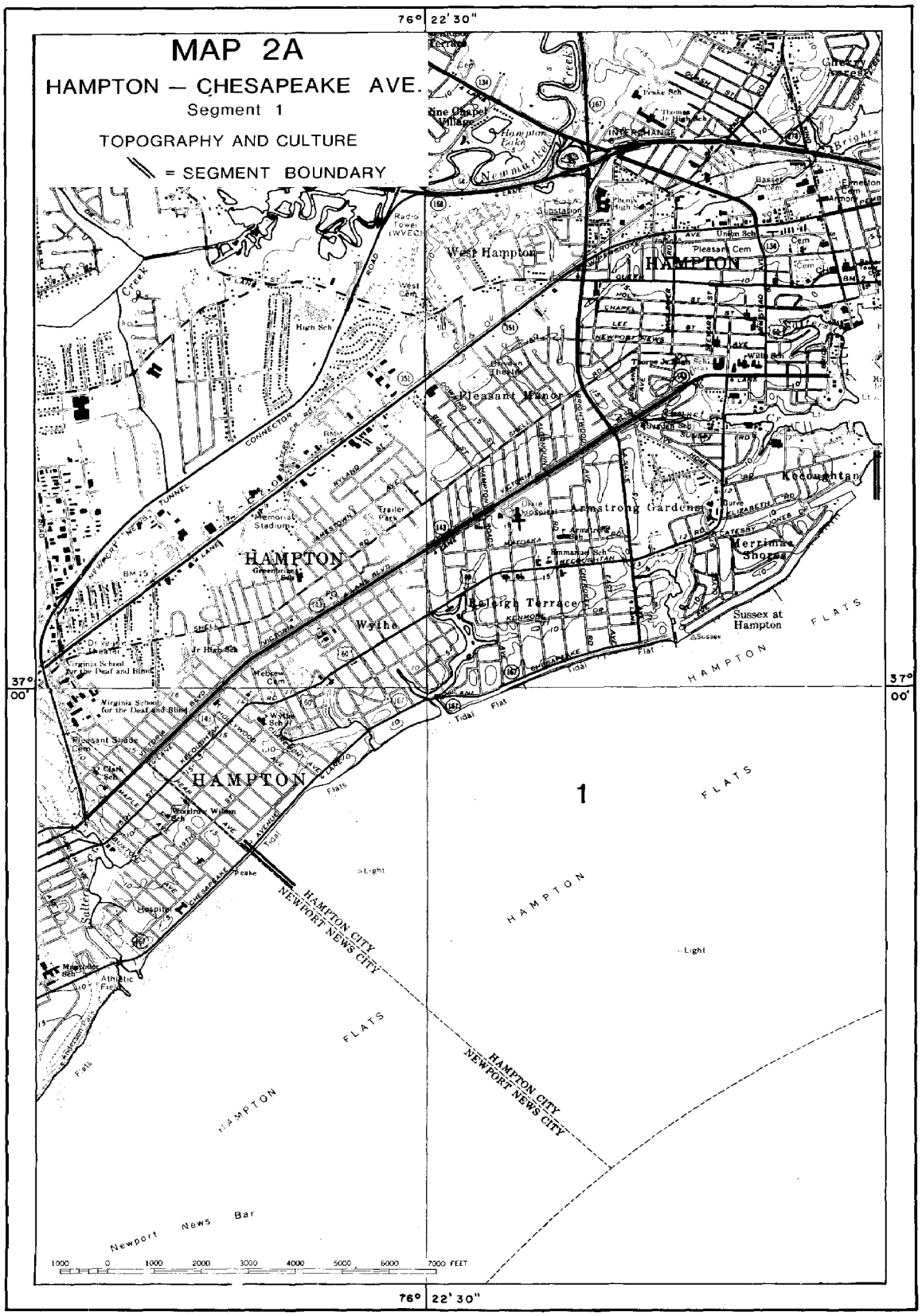
OTHER SHORE STRUCTURES: None.

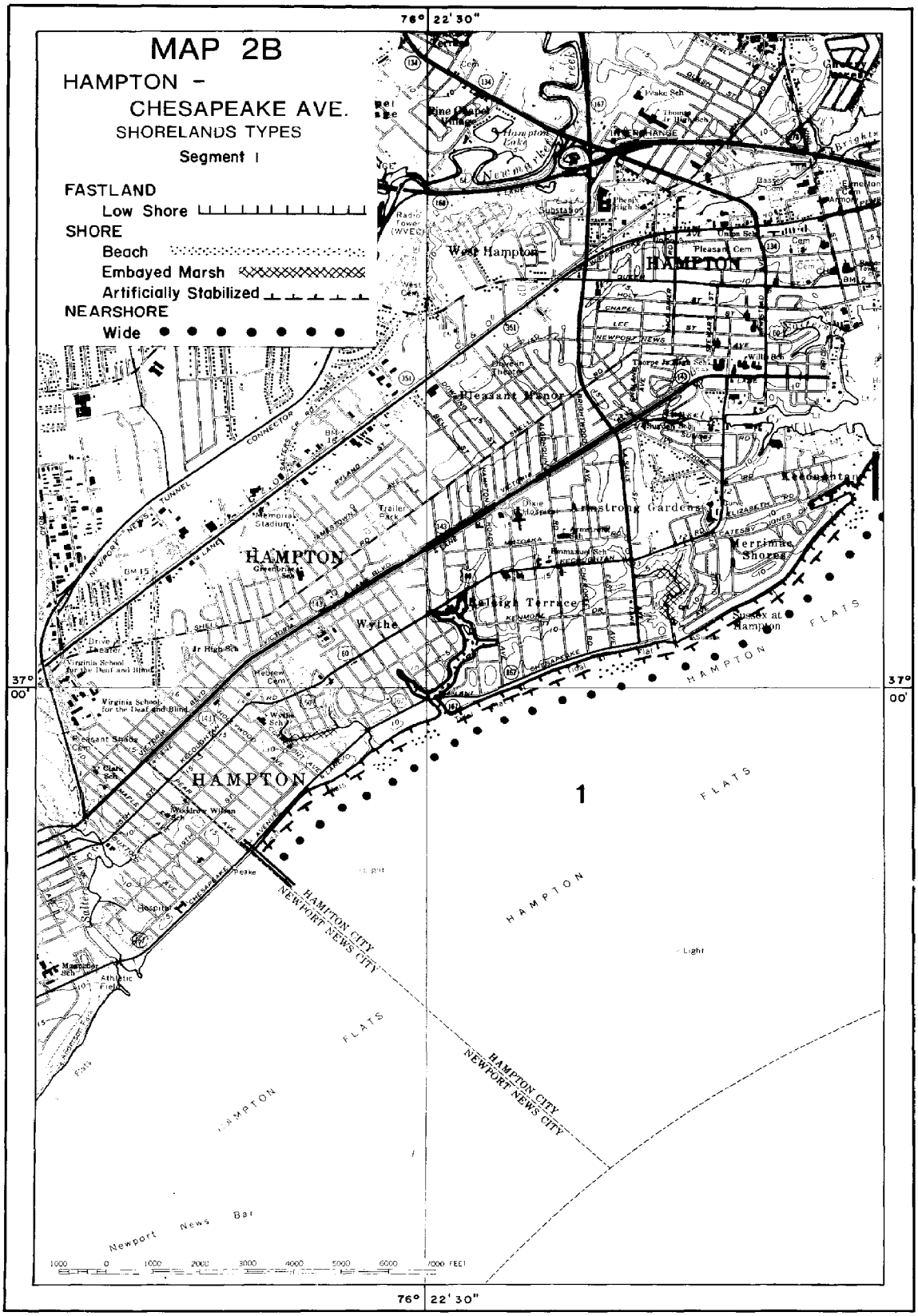
POTENTIAL USE ENHANCEMENT: Minimal.

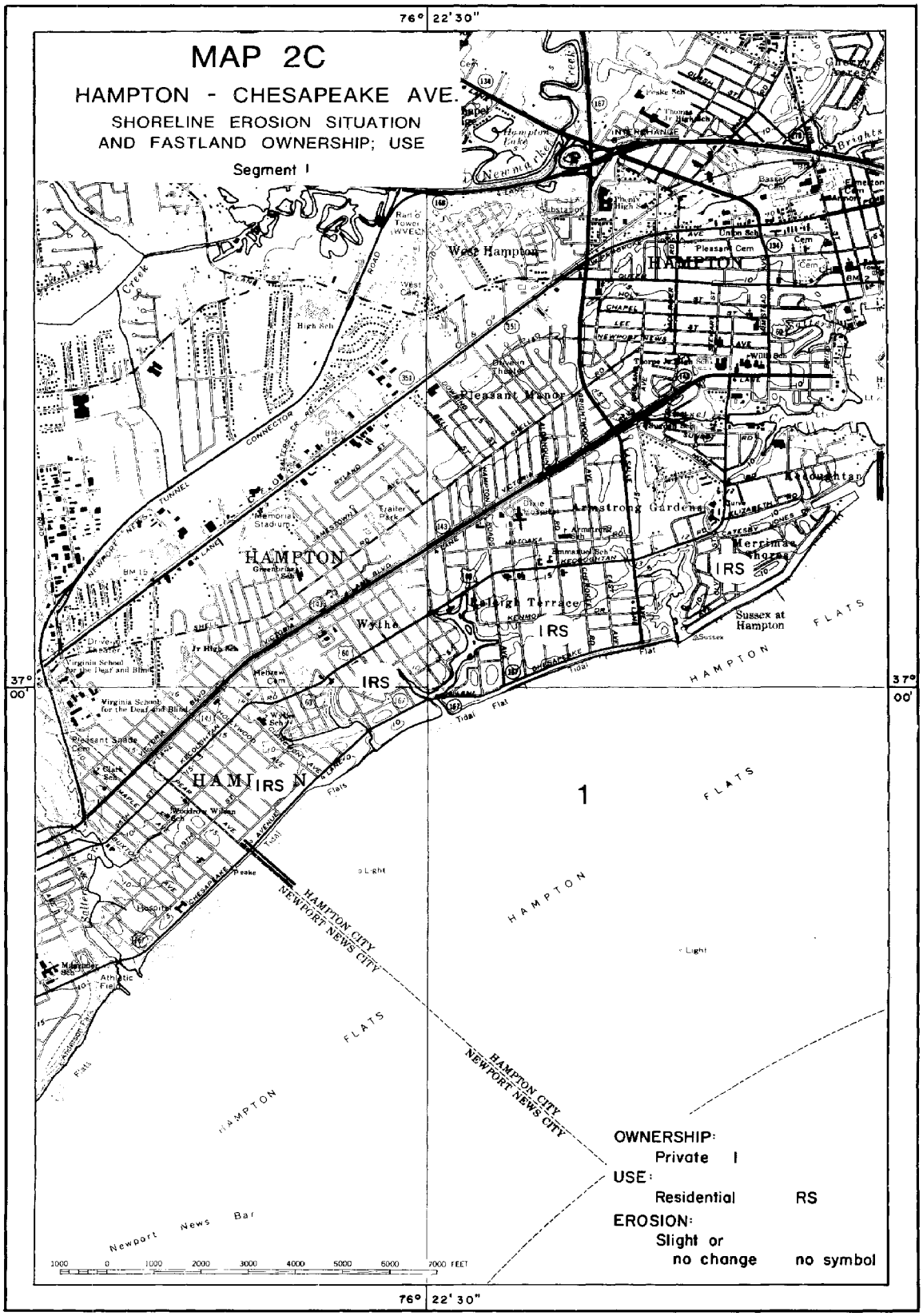
MAPS: USGS, 7.5 Min.Ser. (Topo.), HAMPTON Quadr., 1965, photorevised 1970 and NEWPORT NEWS NORTH Quadr., 1965, photorevised 1970.
C&GS, #562, 1:40,000 scale, CHESAPEAKE BAY, Cape Charles to Norfolk Harbor, 1971.

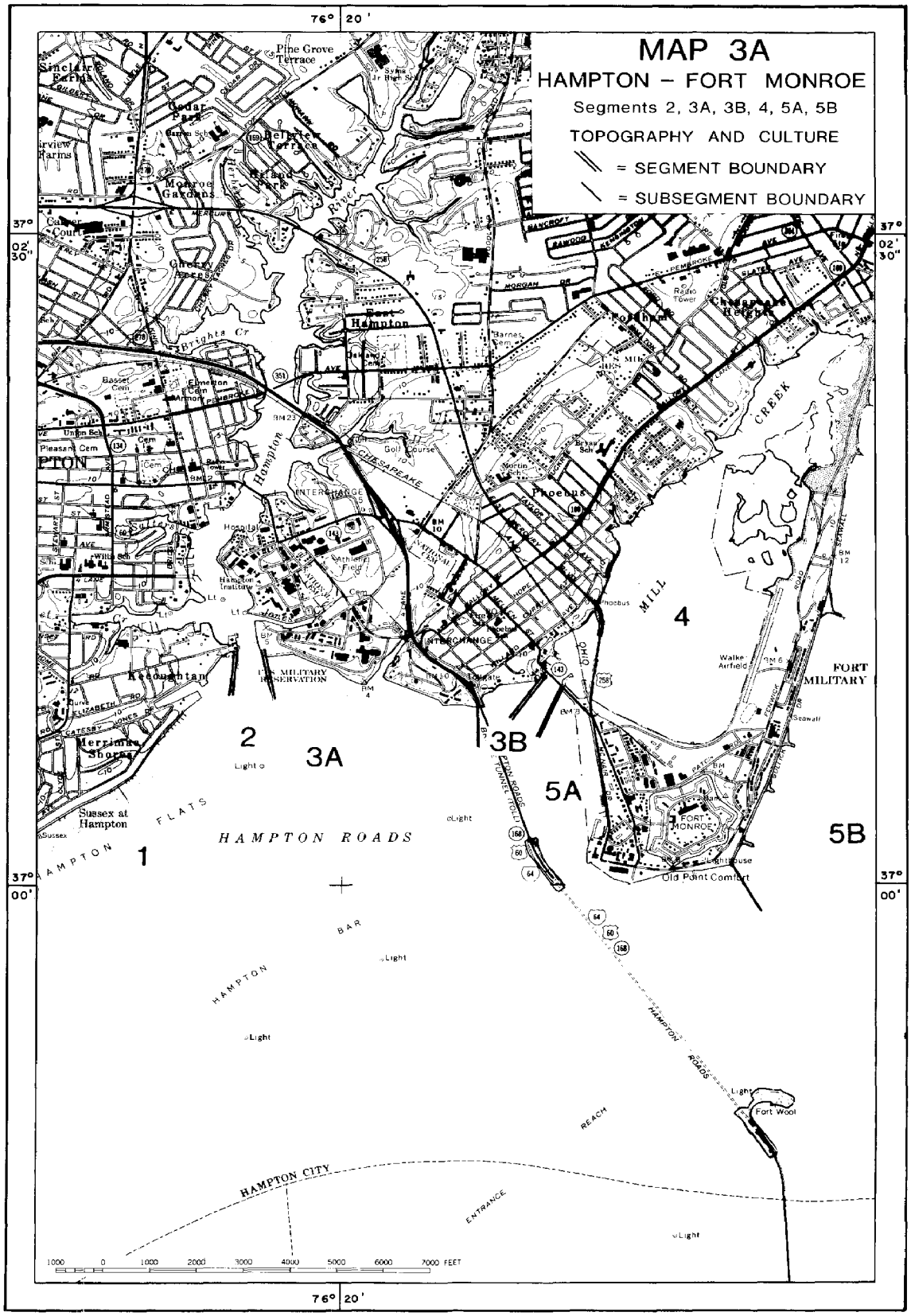
PHOTOS: Aerial-USDA 12Apr37 FG 108/143-144, 155, 188;
USDA 31Oct53 DWJ-4N/25, 45.
USAF 11Oct59 AF59-35 R-21/1940-1944.
VaDH 23Feb63 5114116/044, 045, 067; 5147116/066.
NASA 31Oct71 7049, 7202, 7203, 7207.
VIMS 30Apr73 HP-9/76-97.

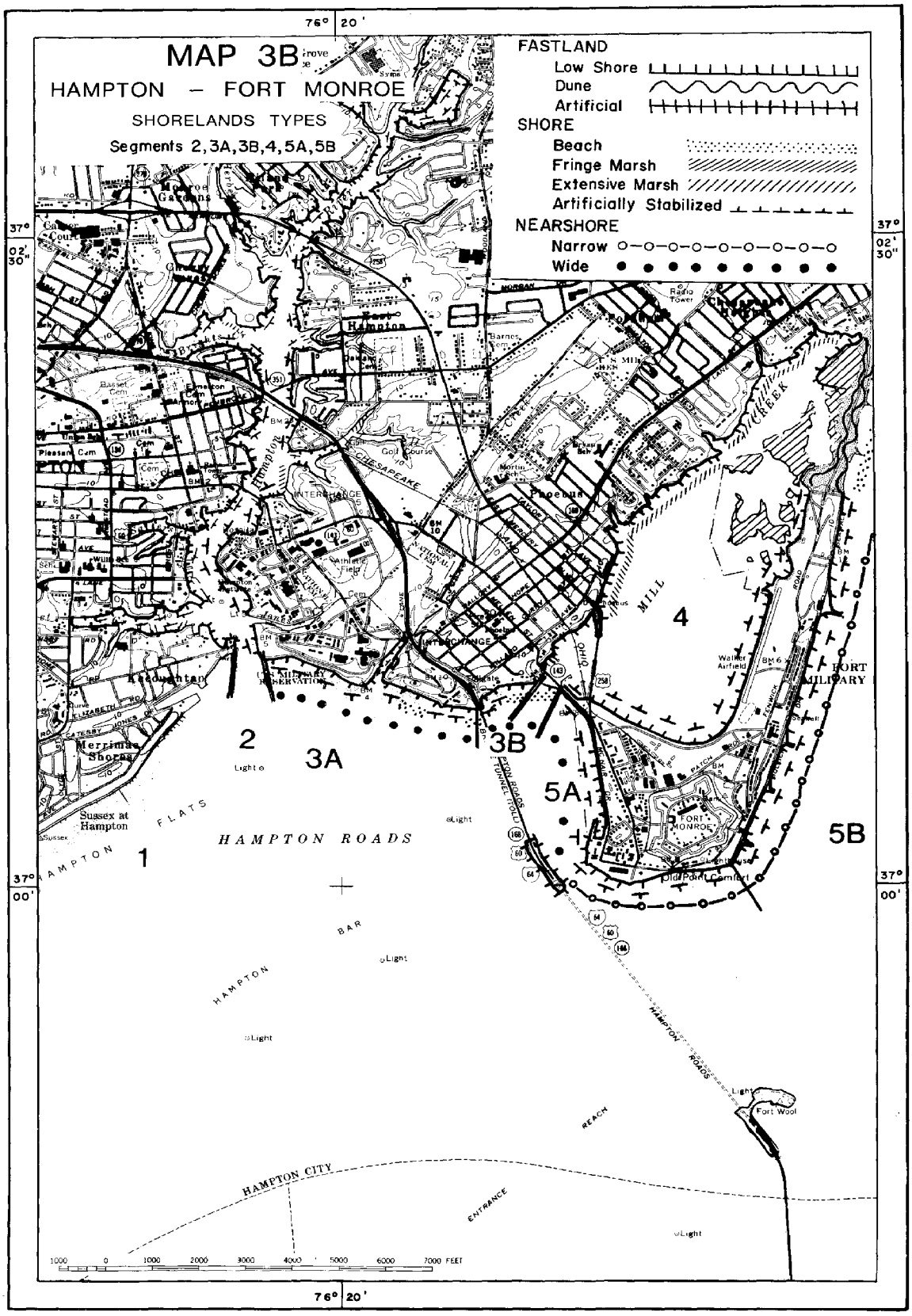
4.3 SEGMENT AND SUBSEGMENT MAPS

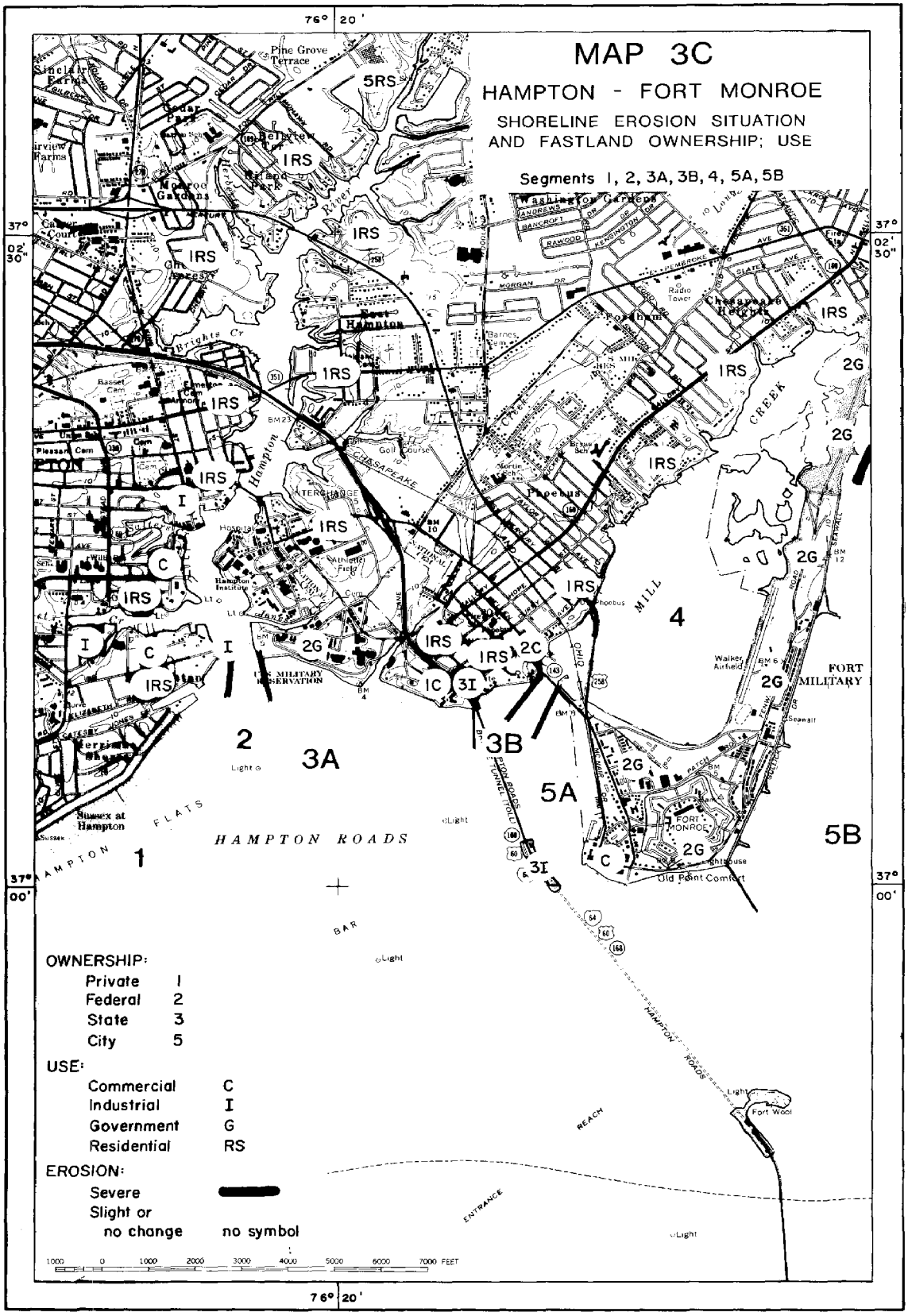

MAP 2A
HAMPTON — CHESAPEAKE AVE.
Segment 1
TOPOGRAPHY AND CULTURE
= SEGMENT BOUNDARY
76° 22' 30"
37° 00'
HAMPTON
West Hampton
Pleasant Manor
Kecoughtan
Armstrong Gardens
Merrimac Shores
Raleigh Terrace
Wythe
Sussex at Hampton
HAMPTON CITY
NEWPORT NEWS CITY
HAMPTON FLATS
Newport News Bar
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

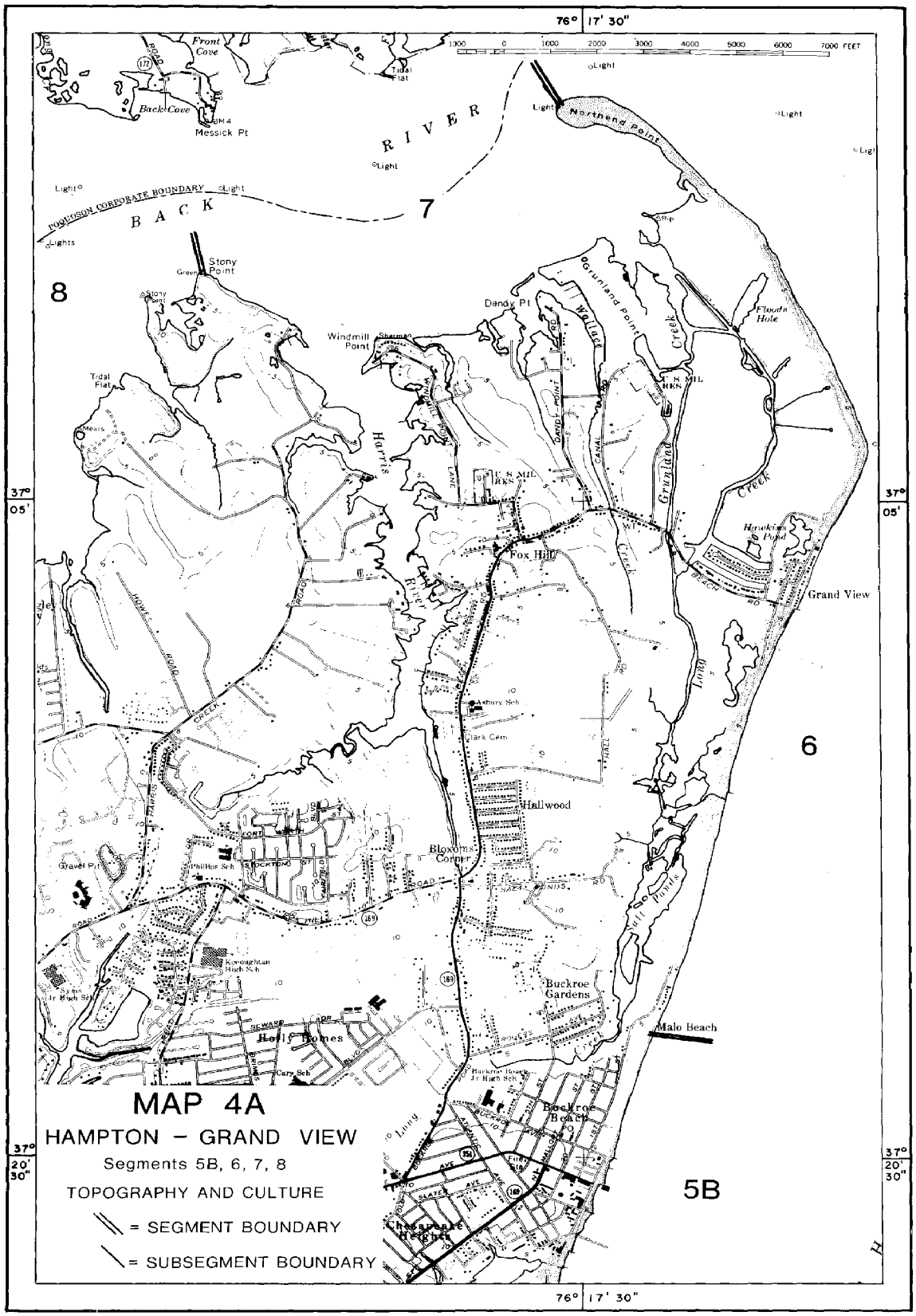

MAP 2B
HAMPTON -
CHESAPEAKE AVE.
SHORELANDS TYPES
Segment 1
FASTLAND
Low Shore
SHORE
Beach
Embayed Marsh
Artificially Stabilized
NEARSHORE
Wide
76° 22' 30"
37° 00'
HAMPTON
West Hampton
Pleasant Manor
Armstrong Gardens
Merrimac Shores
Raleigh Terrace
Wythe
Sussex at Hampton
HAMPTON FLATS
HAMPTON CITY
NEWPORT NEWS CITY
Newport News Bar
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

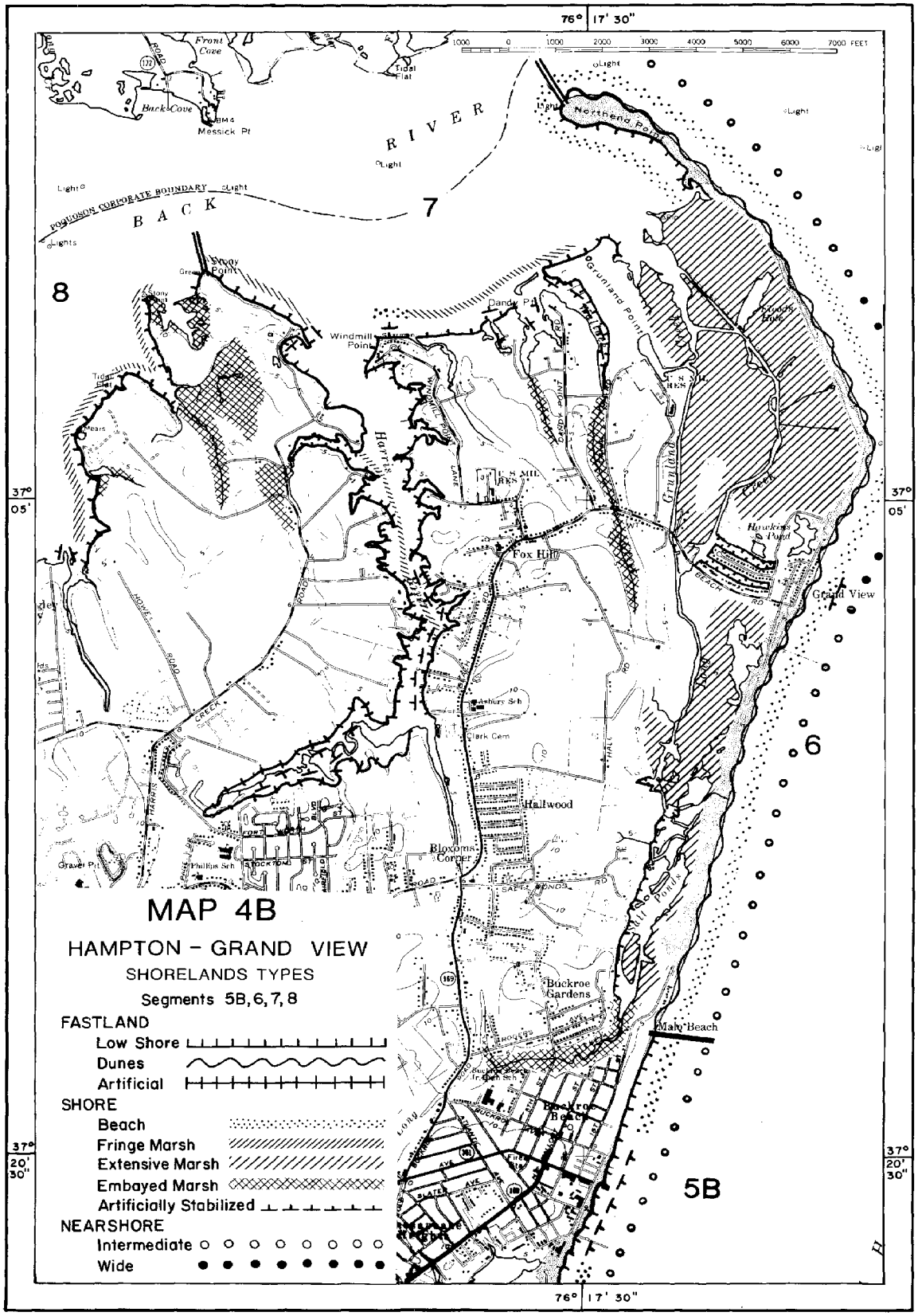

MAP 2C
HAMPTON - CHESAPEAKE AVE.
SHORELINE EROSION SITUATION
AND FASTLAND OWNERSHIP; USE
Segment I
76° 22'30"
37° 00'
HAMPTON
West Hampton
Pleasant Manor
Armstrong Gardens
Merrimac Shores
Raleigh Terrace
Wylhe
Sussex at Hampton
IRS
HAMPTON FLATS
HAMPTON CITY
NEWPORT NEWS CITY
Newport News Bar
1
OWNERSHIP:
Private I
USE:
Residential RS
EROSION:
Slight or
no change no symbol
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

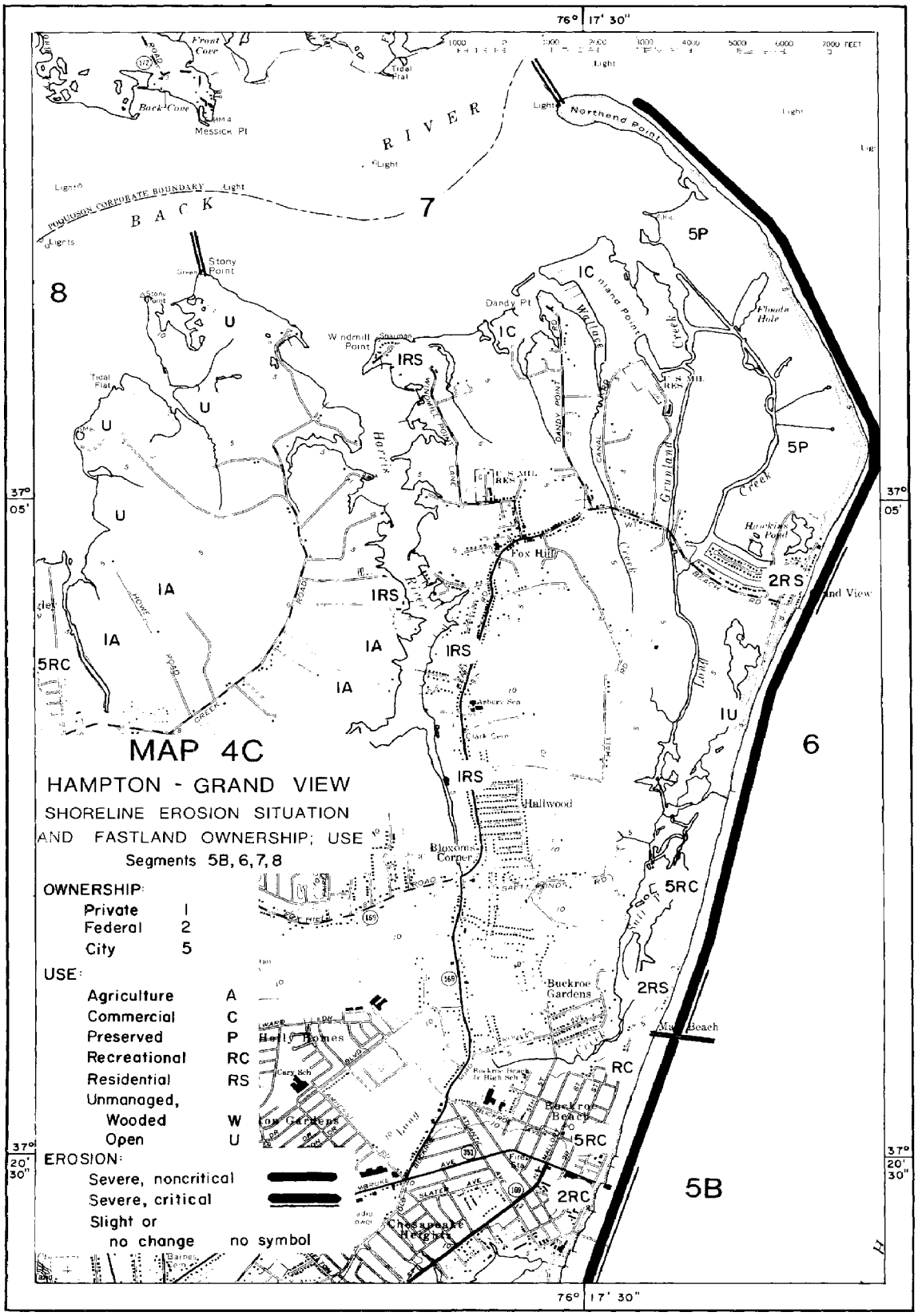

MAP 3A
HAMPTON – FORT MONROE
Segments 2, 3A, 3B, 4, 5A, 5B
TOPOGRAPHY AND CULTURE
= SEGMENT BOUNDARY
= SUBSEGMENT BOUNDARY
76° 20'
37° 02' 30"
37° 00'
1
2
3A
3B
4
5A
5B
HAMPTON ROADS
HAMPTON FLATS
HAMPTON BAR
HAMPTON ROADS
HAMPTON CITY
ENTRANCE
REACH
FORT MONROE
FORT MILITARY
Old Point Comfort
Fort Wool
Phoebus
Hampton
Sussex at Hampton
Keeoughtan
Merrimac Shores
Hampton Institute
Athletic Field
Golf Course
Hospital
Pleasant Cem
Union Sch
Basset Cem
Elmerton Cem
Armory
Cedar Park
Monroe Gardens
Hiland Park
Pine Grove Terrace
Sinclair Farms
Cherry Acres
Brights Cr
Hampton River
Barnes Cem
Fordham
Chesapeake Heights
Radio Tower
Phoebus
Walke Airfield
Seawall
Lighthouse
Light
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


MAP 3B
HAMPTON – FORT MONROE
SHORELANDS TYPES
Segments 2,3A,3B,4,5A,5B
FASTLAND
Low Shore
Dune
Artificial
SHORE
Beach
Fringe Marsh
Extensive Marsh
Artificially Stabilized
NEARSHORE
Narrow
Wide
76° 20'
37° 02' 30"
37° 00'
1
2
3A
3B
4
5A
5B
HAMPTON ROADS
HAMPTON FLATS
HAMPTON BAR
HAMPTON CITY
ENTRANCE
REACH
FORT MONROE
FORT MILITARY
Old Point Comfort
Fort Wool
Sussex at Hampton
Merrimac Shores
Phoebus
Golf Course
Athletic Field
Walker Airfield
Radio Tower
Barnes Cem
Basset Cem
Pleasant Cem
Light
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


MAP 3C
HAMPTON - FORT MONROE
SHORELINE EROSION SITUATION
AND FASTLAND OWNERSHIP; USE
Segments 1, 2, 3A, 3B, 4, 5A, 5B
OWNERSHIP:
Private 1
Federal 2
State 3
City 5
USE:
Commercial C
Industrial I
Government G
Residential RS
EROSION:
Severe
Slight or no change no symbol
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
76° 20'
37° 02' 30"
37° 00'
HAMPTON ROADS
FORT MILITARY
FORT MONROE
Old Point Comfort
Fort Wool
Sussex at Hampton
Hampton Institute
Phoebus
Chesapeake Heights
Washington Gardens
Pine Grove Terrace
Golf Course
Athletic Field
Walker Airfield
Radio Tower
Lighthouse
Light
Seawall
1
2
3A
3B
4
5A
5B
5RS
IRS
2G
2C
3I
IC
C
I


76° 17' 30"
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
Front Cove
Back Cove
Messick Pt
Tidal Flat
RIVER
BACK
POQUOSON CORPORATE BOUNDARY
Light
Lights
Northend Point
7
8
Stony Point
Windmill Point
Dandy Pt
Grunland Point
Wallace
Creek
Floods Hole
Harris
River
Fox Hill
Grunland
Creek
Hawkins Pond
Grand View
Long
Ashbury Sch
Clark Cem
Hallwood
Bloxoms Corner
Gravel Pit
Phillips Sch
Keoughtan High Sch
Buckroe Gardens
Malo Beach
Holly Homes
Cary Sch
Buckroe Beach
Chesapeake Heights
6
5B
37° 05'
37° 20' 30"
MAP 4A
HAMPTON – GRAND VIEW
Segments 5B, 6, 7, 8
TOPOGRAPHY AND CULTURE
= SEGMENT BOUNDARY
= SUBSEGMENT BOUNDARY


MAP 4B
HAMPTON - GRAND VIEW
SHORELANDS TYPES
Segments 5B, 6, 7, 8
FASTLAND
Low Shore
Dunes
Artificial
SHORE
Beach
Fringe Marsh
Extensive Marsh
Embayed Marsh
Artificially Stabilized
NEARSHORE
Intermediate
Wide
76° 17' 30"
37° 05'
37° 20' 30"
BACK RIVER
POQUOSON CORPORATE BOUNDARY
Front Cove
Back Cove
Messick Pt
Tidal Flat
Northend Point
Grunland Point
Dandy Pt
Windmill Point
Stony Point
Harris
Fox Hill
Hawkins Pond
Grand View
Ashbury Sch
Clark Cem
Hallwood
Bloxoms Corner
Buckroe Gardens
Buckroe Beach
Main Beach
Salt Ponds
Phillips Sch
Gravel Pit
Tidal Flat
Mears
Light
Lights
7
8
6
5B



MAP 4C

HAMPTON - GRAND VIEW

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP; USE

Segments 5B, 6, 7, 8

OWNERSHIP:

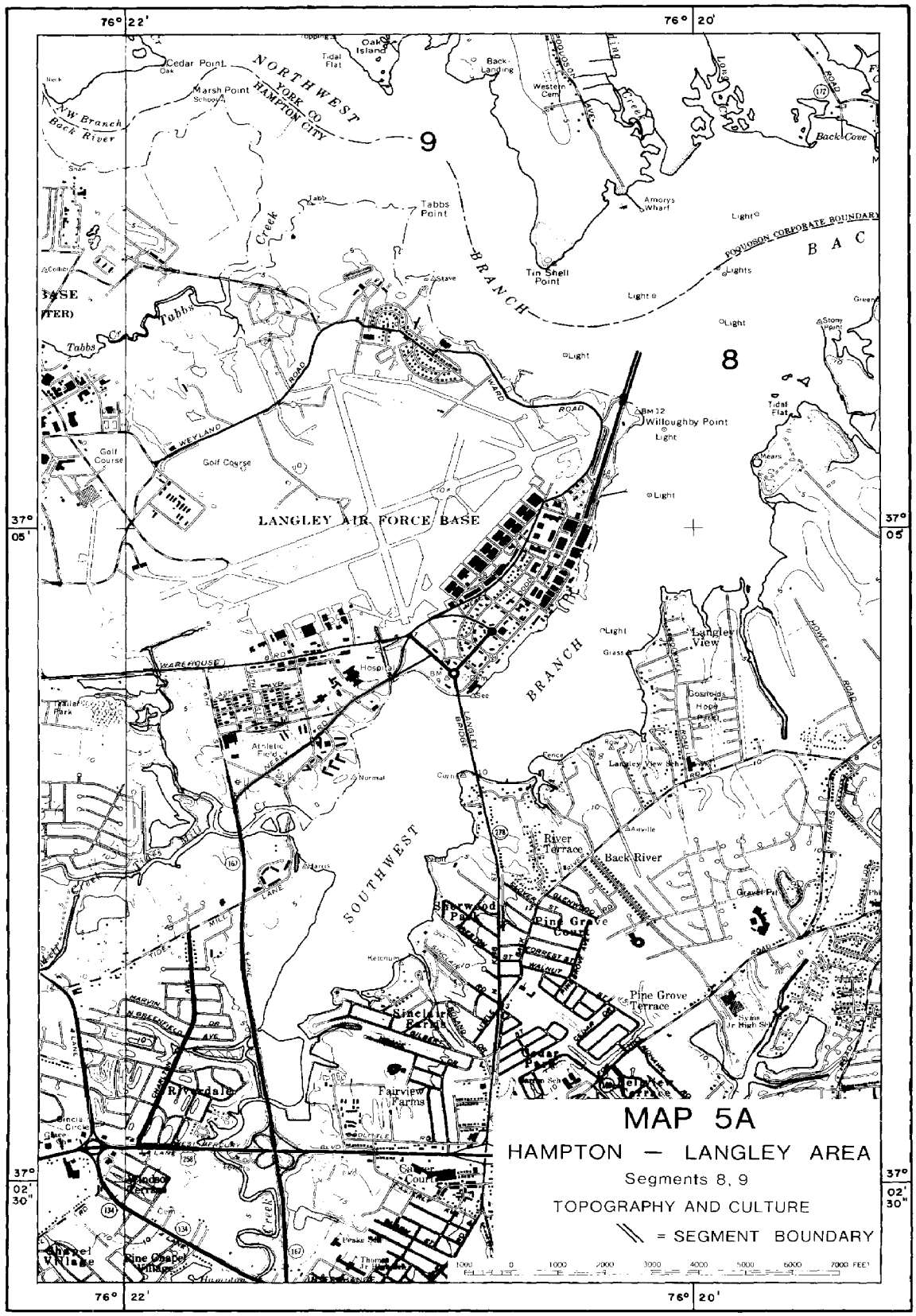
Private	1
Federal	2
City	5

USE:

Agriculture	A
Commercial	C
Preserved	P
Recreational	RC
Residential	RS
Unmanaged, Wooded	W
Open	U

EROSION:

Severe, noncritical	
Severe, critical	
Slight or no change	no symbol



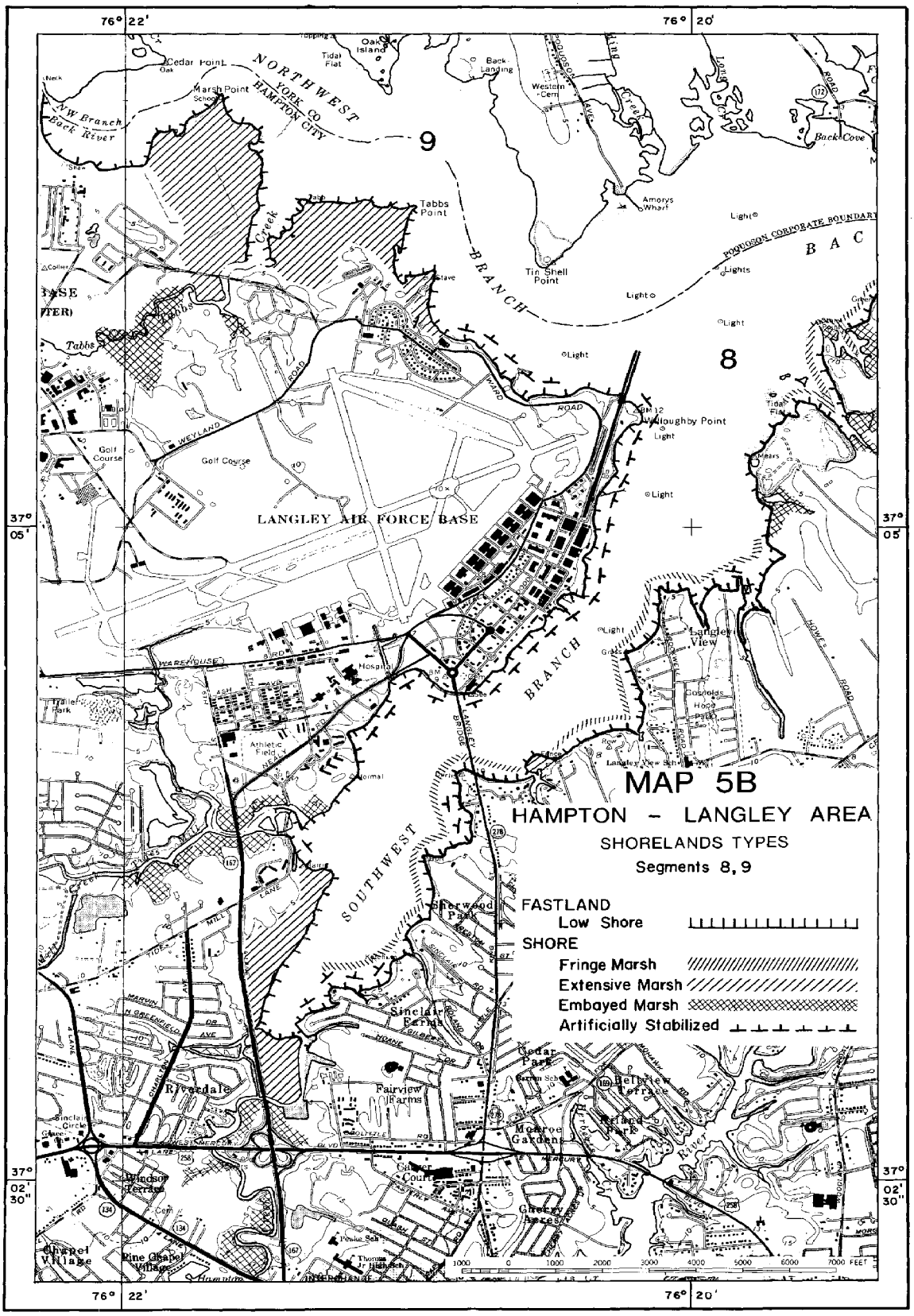
MAP 5A

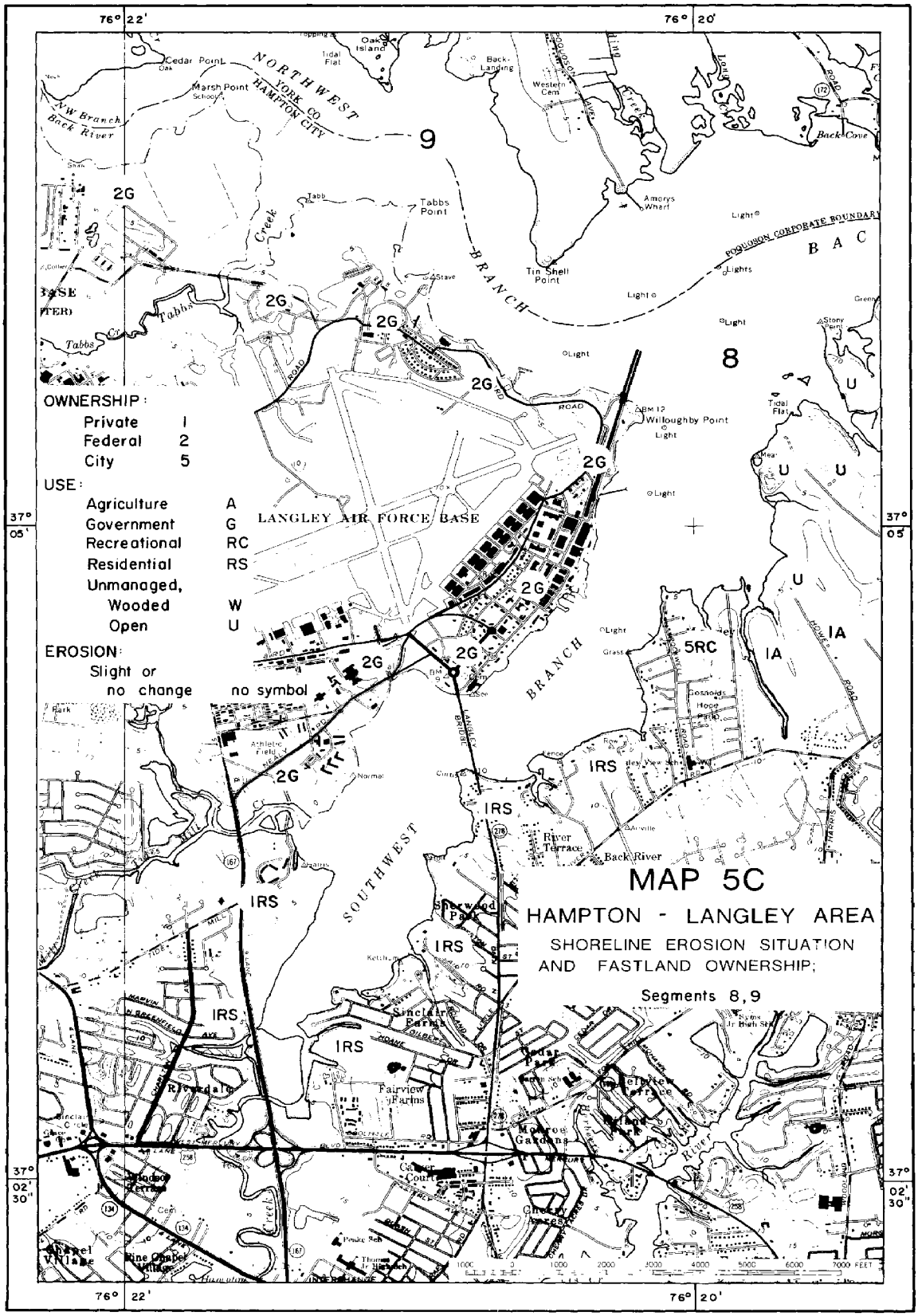
HAMPTON — LANGLEY AREA

Segments 8, 9

TOPOGRAPHY AND CULTURE

\\ = SEGMENT BOUNDARY


MAP 5B
HAMPTON - LANGLEY AREA
SHORELANDS TYPES
Segments 8, 9
FASTLAND
Low Shore
SHORE
Fringe Marsh
Extensive Marsh
Embayed Marsh
Artificially Stabilized
LANGLEY AIR FORCE BASE
NORTHWEST BRANCH
SOUTHWEST BRANCH
BACK
9
8
76° 22'
76° 20'
37° 05'
37° 02' 30"
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET



MAP 5C

HAMPTON - LANGLEY AREA

SHORELINE EROSION SITUATION AND FASTLAND OWNERSHIP;

Segments 8, 9

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