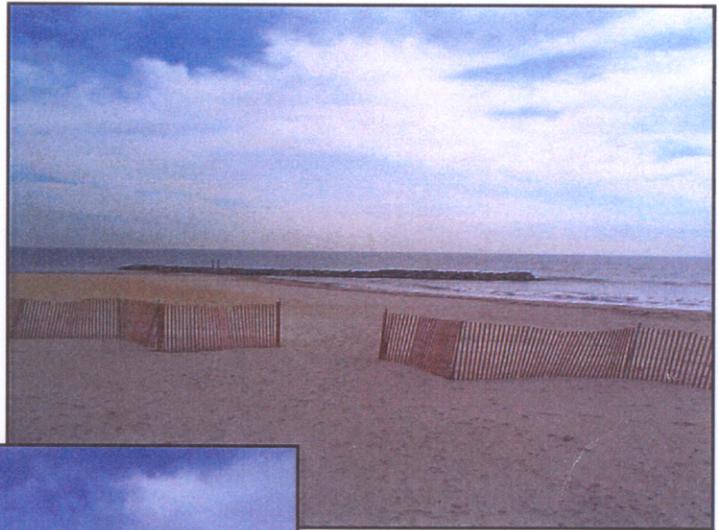


City of Hampton

Floodplain
Management Plan
for the
City of Hampton



Gannett Fleming

March 2002

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RESOLUTION ADOPTING A FLOOD PLAIN MANAGEMENT PLAN IN ACCORDANCE WITH THE ARMY CORPS OF ENGINEERS REQUIREMENTS FOR THE CHESAPEAKE BAY SHORELINE PROTECTION STUDY

WHEREAS, Council at its October 2001 meeting adopted a resolution identifying a locally preferred alternative for the U.S. Army Corps of Engineers' Chesapeake Bay Shoreline Protection Study; and

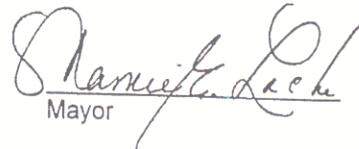
WHEREAS, the Corps required the City to develop a Flood Plain Management Plan as a component of the Shoreline Protection Study; and

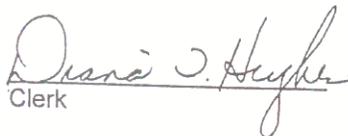
WHEREAS, City staff has developed a draft of this plan and distributed it to various stakeholders in the Buckroe community for review and comment; and

WHEREAS, a public hearing was held by City Council to invite additional public comment.

NOW, THEREFORE, BE IT RESOLVED THAT the City of Hampton's Flood Plain Management Plan is hereby adopted as a component of the Chesapeake Bay Shoreline Protection Study by the U.S. Army Corps of Engineers.

Adopted this 13th day of March, 2002 in the City of Hampton, Virginia


Mayor


Clerk

Part 1: Executive Summary

The City of Hampton, Virginia has approximately 6 miles of shoreline that fronts the Chesapeake Bay. The location and orientation of this shoreline on the western side of the southern Chesapeake Bay and immediately within the mouth of the bay have made the shoreline area susceptible to damage associated with coastal storms such as hurricanes and northeasters. Storm tides, high winds, and wave action have impinged on developed areas resulting in beach erosion, property damage, and the potential for endangered health and safety.¹

A project, under review by the City of Hampton and the U.S. Army Corps of Engineers, Norfolk District, is proposed to help protect the shoreline and reduce the risk of damage to property and loss of life. The project includes beachfill along approximately 3,785 feet of shoreline from the Buckroe Fishing Pier to the northern limit of the public portion of Buckroe Beach at Pilot Avenue, as well as additional beachfill funded by the City along approximately 2,050 feet of shoreline south of the Salt Ponds inlet.

This Floodplain Management Plan, required by the City's agreement with the Corps, has been prepared to identify actions the City can take to address storm damage concerns that will remain after the shoreline protection project has been implemented. These concerns are referred to as "residual risks."

- **Residual risks within project area:** Coastal processes will continue to impact the area. The beach nourishment quantities are considered to be sacrificial material. Although the project increases the buffer zone between the water and shorefront structures, major storms will still cause significant amounts of erosion. In addition, no structures are being removed, relocated, or elevated to decrease the risk of damage.
- **Residual risks outside of the project area:** The privately owned beaches north of Buckroe Beach will still be subject to existing forces without any

additional protection. Development may continue in low-lying areas that may be at risk for flooding.

The City of Hampton already has programs in place that are designed to manage stormwater, regulate development, preserve environmentally sensitive areas, provide emergency services, educate the public, and protect the beachfront. Continuance of these programs in conjunction with the Corps of Engineers' project will serve to increase the amount of protection the citizens of Hampton and their property have against flood damage.

Continued implementation of the City's existing programs will provide the following specific actions to reduce future flood damage, risk to residents, and preserve the level of protection for the project. These actions are summarized below.

- Continue the implementation of stormwater improvements within the study area, consistent with their Citywide priority. Improvements include regular ditch maintenance, culvert installation, and construction of stormwater detention facilities.
- Continue to preserve the capacity of the stormwater conveyance system through the street sweeping program.
- Regulate and control new development through the Site Plan Ordinance, Subdivision Ordinance, Erosion and Sedimentation Control Ordinance, Stormwater Management Ordinance, Building Code, and the Flood Zone District and the Chesapeake Bay Preservation District of the Zoning Ordinance, consistent with provisions of the National Flood Insurance Program.
- Implement provisions of the Flood Zone District of the Zoning Ordinance to promote public health, safety, and general welfare and to minimize flood losses in areas subject to flooding.
- Preserve the interests of emergency management in future planning and development activities.

Part 1: Executive Summary

- Provide for preservation of environmentally sensitive areas by jointly master planning the Grandview Nature Preserve, Grundland Park, and White Marsh to include safe access for educational and recreational purposes.
- Continue the review process of the Emergency Operations Plan in accordance with growth and new development occurring within the City.
- Continue implementation of mitigation and planning activities in order to protect property from disasters, in accordance with the Emergency Operations Plan.
- Review the National Flood Insurance Program, Community Rating System (CRS) to determine potential for credits and explore opportunities to obtain sufficient credits to provide the City’s policy holders with a premium reduction.
- Continue the Citizen’s Code Academy and public information programs conducted by the Public Works Department to educate residents regarding flood zones, erosion and sediment control, stormwater management, and water quality protection within the City of Hampton.
- Monitor and maintain existing marine structures designed to minimize shoreline erosion.
- Proceed with the “betterment” beachfill project at Salt Ponds public beach.

¹ U.S. Army Corps of Engineers, Norfolk District, “Formulation Analysis Notebook, Chesapeake Bay Shoreline, Hampton, Virginia, Hurricane and Storm Damage Reduction Study,” (August 2001) p. 1.

Part 2: Introduction and Background

The City of Hampton is located in the southeastern portion of Virginia, at the junction of Hampton Roads and the Chesapeake Bay. The City is bordered by the Chesapeake Bay on the east; the Chesapeake Bay and Hampton Roads harbor on the south; the City of Newport News on the west; and York County, the City of Poquoson, and the Back River on the north. The City has about 64 miles of shoreline fronting various bodies of water including Hampton Roads Harbor, Hampton River, Mill Creek, Chesapeake Bay, Salt Ponds, Back River, and Harris River. Much of the City is below elevation 9 feet North American Vertical Datum (NAVD) 1988, and approximately one-quarter of the land area would be inundated by the 100-year tidal flood (elevation 7.7 feet, NAVD 1988).²

The shoreline on the western side of the southern Chesapeake Bay and immediately within the mouth of the Chesapeake Bay is especially susceptible to damage associated with coastal storms, such as hurricanes and northeasters. High winds, storm tides, and wave action have caused property damage and extensive beach erosion over the years. For example, during a northeaster in March 1962, 600 feet of retaining wall and 200 feet of timber bulkhead were destroyed, and portions of an amusement park and resort center were damaged at Buckroe Beach, Hampton's most intensively used public beach. Also, 350 homes and 13 businesses were damaged. At Grandview, one half-mile of retaining wall was almost completely destroyed, and 50 homes and 2 businesses were damaged. Since 1962, a significant amount of development has occurred, such that a recurrence of a storm similar in magnitude to the 1962 northeaster would cause damage estimated in the tens of millions of dollars.³

Project Area

The City of Hampton beach nourishment project is a cooperative effort between the City and the Corps of Engineers. The project will be implemented along 3,785 feet of shoreline that extends from the Buckroe Fishing Pier to the northern boundary of the

public portion of Buckroe Beach at Pilot Avenue (See Figure 1). Buckroe Beach consists of 3,785 feet of public beach and 4,770 feet of private beach. In addition to the nourishment project at Buckroe Beach, the City has proposed to fund a “betterment” project that would extend from the end of Buckroe Beach, north 2,050 feet to the Salt Ponds inlet.

Authority and Purpose

The City of Hampton is preparing this Floodplain Management Plan to fulfill the requirement established in 202(c), Floodplain Management Plans (Water Resources Development Act (WRDA) of 2000). Section 202(c) requires the preparation of a plan that is designed to preserve the level of flood protection provided by of a Corps of Engineers project and reduce impacts of future storm events in the project’s vicinity.

The primary intent of the WRDA planning requirement is to recognize that areas not addressed directly by the project may continue to pose threats to people and property. The Floodplain Management Plan is intended to address potential measures, practices and policies which will reduce impacts of future residual flooding, help preserve levels of protection provided by Corps project and preserve and enhance natural floodplain values. The Plan outlines the City’s flood and storm hazards, documents mitigation alternatives that were considered, and creates an action agenda for priority mitigation actions.

By formulation and adoption of the Plan, the City of Hampton, in continued cooperation with the U.S Army Corps of Engineers, will be prepared to reduce future storm damage through continued administration of City ordinances, and to seek and apply for State and Federal funding that may be available for implementation of selected mitigation actions, especially in post-disaster periods.



Figure 1: City of Hampton

Background Documents

The following documents and materials are available through the City Engineer's office. They were developed or used as references as part of the planning process:

- Memorandum for Major Subordinate Commands and District Commands, Subject: Implementation of Section 209, Floodplain Management Requirements, of the Water Resources Development Act of 2000 (WRDA 2000).
- Formulation Analysis Notebook, Chesapeake Bay Shoreline, Hampton, Virginia, Hurricane and Storm Damage Reduction Study prepared by U.S. Army Corps of Engineers, dated August 2001
- National Climatic Data Center online climate data:
www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms
- City of Hampton web site: www.hampton.gov
- City of Hampton Emergency Operations Plan – Abstract
- City of Hampton 2010 Comprehensive Plan
- City of Hampton Stormwater Management Ordinance
- Chesapeake Bay Preservation District of the City of Hampton Zoning Ordinance
- Flood Zone District of the City of Hampton Zoning Ordinance
- Virginia Coastal Primary Sand Dune Zoning Ordinance
- Virginia Department of Soil and Water Conservation's Responsible Land Developer Program
- Interview with various City Departments:
 - Emergency Management
 - Codes Compliance
 - Planning
 - Public Works

Part 2: Introduction and Background

² U.S. Army Corps of Engineers, Norfolk District, p. 1;

³ U.S. Army Corps of Engineers, Norfolk District, p. 3,4

Part 3: Goal Statement

Part 3: Goal Statement

Mitigation Goal Statement

The following goal statement has been developed as part of the planning process. This goal is not only for the purpose of this plan – it is a guiding goal for the City as it plans for its growth and development into the future.

City of Hampton's Flood Mitigation Goal Statement

Within the Chesapeake Bay shoreline area, the City of Hampton will endeavor, through the implementation of appropriate programs, to develop a setting for the citizens to live, work, and grow in concert with the City's supporting infrastructure and the area's environmentally sensitive character, while providing protection from the hazards of flooding.

Part 4: Summaries

The Community and Hazard History: Overview

Tidal Flood History

Table 1: Past Storm Events⁴

Storm Event	Event frequency (years)	Maximum Stillwater Level (NAVD 1988)	Maximum wave height (feet)
August 1933	149	7.42	12.10
September 1933	18	5.53	7.55
September 1936	37	6.12	10.17
April 1956	18	5.52	10.50
September 1960	8	4.77	6.56
March 1962	45	6.35	8.53
October 1977	4	4.30	6.23
April 1978	14	5.32	10.50

As indicated in Table 1, the City of Hampton has a history of being affected by major storms in the region. The August 1933 hurricane and the previously mentioned March 1962 northeaster caused significant damage to beachfront areas. More recently, back to back “twin” northeasters in January and February 1998 caused severe shoreline erosion, especially in the area of Salt Ponds public beach. Additionally, Hurricane Bonnie in August 1998 and Hurricanes Dennis and Floyd in 1999 had significant erosional impacts on the shoreline.

Other Natural Hazards History

A database maintained by the National Climatic Data Center records observed or measured events. While the online accessible database is not extensive, it suggests the

frequency of some types of events and includes unverified estimates of property and crop damage. A query for the City of Hampton produced 19 tropical storm events, 5 tornado and waterspout events, 4 hail events, 3 flood events, and 2 heavy rain events since 1979. As indicated by the database, coastal storms constitute the greatest risk to the area based on frequency of occurrence.

Summary: The Planning Process

The City of Hampton used the following planning process in developing a Floodplain Management Plan to meet the requirement in the Corps' Policy Guidance Letter No. 52.

Organization – Representatives from the City met with Norfolk District Corps of Engineer staff and affected property owners. Because of a lack of support for a project that included private property, the City adopted a resolution endorsing the Local Preferred Alternative in October 2001 (See Preface). The City then began preparation of the Floodplain Management Plan.

Identify Flood Hazards – Flood hazards were identified by reviewing the COE report and by researching historical documentation of previous storm events. The City also considered the existing condition of the shoreline and the degree of development in the area of the project.

Review How Hazards are Addressed – Interviews were conducted with personnel from various City departments to determine what programs were in place to address flood hazards. City ordinances were also reviewed to determine what regulatory controls had been placed on development to preserve and protect life and property from flood damage.

Create Goal Statement – A mitigation goal statement was developed that addresses not only the City's goals for the Floodplain Management Plan, but also the City's future development.

Review Mitigation Actions – A list of twelve mitigation actions was prepared. These mitigation actions were reviewed and grouped into six categories corresponding to existing City programs that together form a comprehensive approach to reducing flood risk.

Draft Plan – Information and mitigation actions were compiled into draft plan that was circulated to various City departments for review and comment. A review meeting was held to consolidate comments and these comments were incorporated into a final draft.

Adoption – The Floodplain Management Plan was formally adopted by the Hampton City Council at its March 13, 2002 meeting.

Summary: NFIP Compliance

The City of Hampton has been a participant in the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA) since January 15, 1971. This program is designed to provide insurance at affordable rates through a Federal subsidy. In return, the City of Hampton has agreed to adopt and administer local flood plain management regulations and practices directed at protecting lives, existing property, and new construction from future flooding. Examples of such regulations in place are those associated with the Flood Zone District and provisions of the Chesapeake Bay Preservation Act.⁵

Based on information from the Commonwealth coordinator for flood plain management activities in Virginia, there were 9,798 flood insurance policies in effect in the City of Hampton as of May 31, 2001. Total annual premiums for these policies are over \$3.6 million for coverage of over one billion dollars in property value. From 1978 to May 31, 2001 there were a total of 867 claims for losses totaling \$4,564,633, with 20 repetitive loss claims. Not all of these policies are for properties located within the

project area; however, a number of flood insurance policies are in effect for properties located along the Chesapeake Bay in the reaches of beach affected by the project.

Summary: Public Involvement

As previously mentioned, community meetings were held in August and September 2001 to brief property owners on the proposed beach nourishment project. As a result of these meetings, the Local Preferred Alternative was developed and subsequently adopted by the Hampton City Council at its October 10, 2001 meeting.

This Floodplain Management Plan was developed primarily by integrating existing state and local programs that already serve to reduce the risk of flood damage to the property within the City. These programs were adopted only after a review process that included public hearings with opportunity for public comment. In addition the City distributed copies of the draft plan to civic organizations in the area affected by the beach nourishment project and will hold a public hearing prior to the adoption of the Floodplain Management Plan.

Summary: Flood Risks

Before Completion of the Beach Nourishment Project: The history of storm damage in the City of Hampton provides a clear summary of flood risks. Throughout the year, the beach is exposed to waves ranging from the north-northeast clockwise to the south-southeast. During the winter, the prevailing winds are from the north and northwest, while during the summer they are predominantly from the southwest. The strongest winds are from the northern quadrant, and since they blow across the longest fetch area, they have the greatest impact on the beach. Storm tides, created by high winds and low barometric pressure and accompanying wave action, have impinged on developed areas resulting in property damage and endangered health and safety.

The most severe storms affecting the area are hurricanes that primarily originate during the months of August, September, and October. In addition to hurricanes, northeasters affect the study area. Winds accompanying these storms are generally not of hurricane force, but are usually persistent enough to cause elevated coastal water levels for extended periods of time.

The most critical problem is the potential for damage from severe coastal storms. Extreme high tides, combined with wave actions, cause severe loss of sand and structural damage to buildings behind the beach. Much of the damage is attributable to the collapse of structures on undermined footings, as well as direct wave attack on structures. A large amount of damage also results when waters saturate floors, floor coverings, walls, furniture, appliances, and other items in structures located adjacent to the beach.

In addition to risks related to storms, there is a significant problem of beach recession resulting in substantial land loss. Historically, the beaches in the project area have experienced erosion rates of about 1.4 cubic yards per linear foot per year. Beach erosion presents a two-fold problem. There is a loss of beachfront land, which is valued at approximately \$1,800 to \$2,000 per linear foot. Also, the eroding shoreline allows waves associated with coastal storms to break further onshore making structures fronting the beach increasingly more susceptible to damage.

Hurricanes and northeasters will continue to impact the project area, whether or not there is a Federal hurricane and storm protection project in place. Without the project, however, the occurrence of major coastal storms would continue to inflict significant damage from storm surge and erosion along the Chesapeake Bay shoreline as residential, commercial, and public development is subjected to wave activity, undermining, and inundation.⁶

It is most likely the City's existing beach nourishment project in the Buckroe Beach public reach between the Buckroe Fishing Pier and Pilot Avenue would continue into the

future without the Federal project. However, a review of the project's performance indicates that the minimum design parameters cannot be maintained by the City of Hampton. In addition, due to funding constraints causing delays in the renourishment schedule, the trend to a much narrower-than-design-beach will continue as the beach continues to erode. If projected over a 50-year period of analysis the conditions are estimated as follows:

- The northern portion will remain at about a 15-foot width at 5.4 feet, since this section would be renourished by the City to some extent about every 6 to 7 years;
- The southern portion would continue to erode to about 30 feet of width, since there would not be sufficient funds to nourish this section of the beach, and it would be wholly supplied from sand coming from the northern half; and
- Conditions would not change until the beach is constructed to closure depth and properly renourished over its full extent with adequate advance nourishment.⁷

After Completion of the Beach Nourishment Project: The periodic nourishment associated with the project is designed to ensure the integrity of the project despite the coastal processes that will continue to impact the project area. The results of the project will provide a berm 50 feet wide at elevation 5.4 feet, a slope to closure, and a renourishment interval of 7 years. The project will extend 3,785 feet from Buckroe Fishing Pier to the northern limit of the public portion of Buckroe Beach. The project beach berm will be tapered back to the existing beach berm on each end of the project. These transition zones would extend 500 feet to the north onto the private portion of Buckroe Beach and 500 feet south beyond the pier. The proposed betterment project will also provide a 50-foot wide berm at elevation 5.4 feet. It will extend approximately 2,050 feet from the northern limit of Buckroe Beach to the Salt Ponds inlet (See Figure 2). Figure 3 indicates the susceptibility of areas in the vicinity of the beachfill projects to 100-year and 500-year floods.

Figure 2: Buckroe Beach Project Area

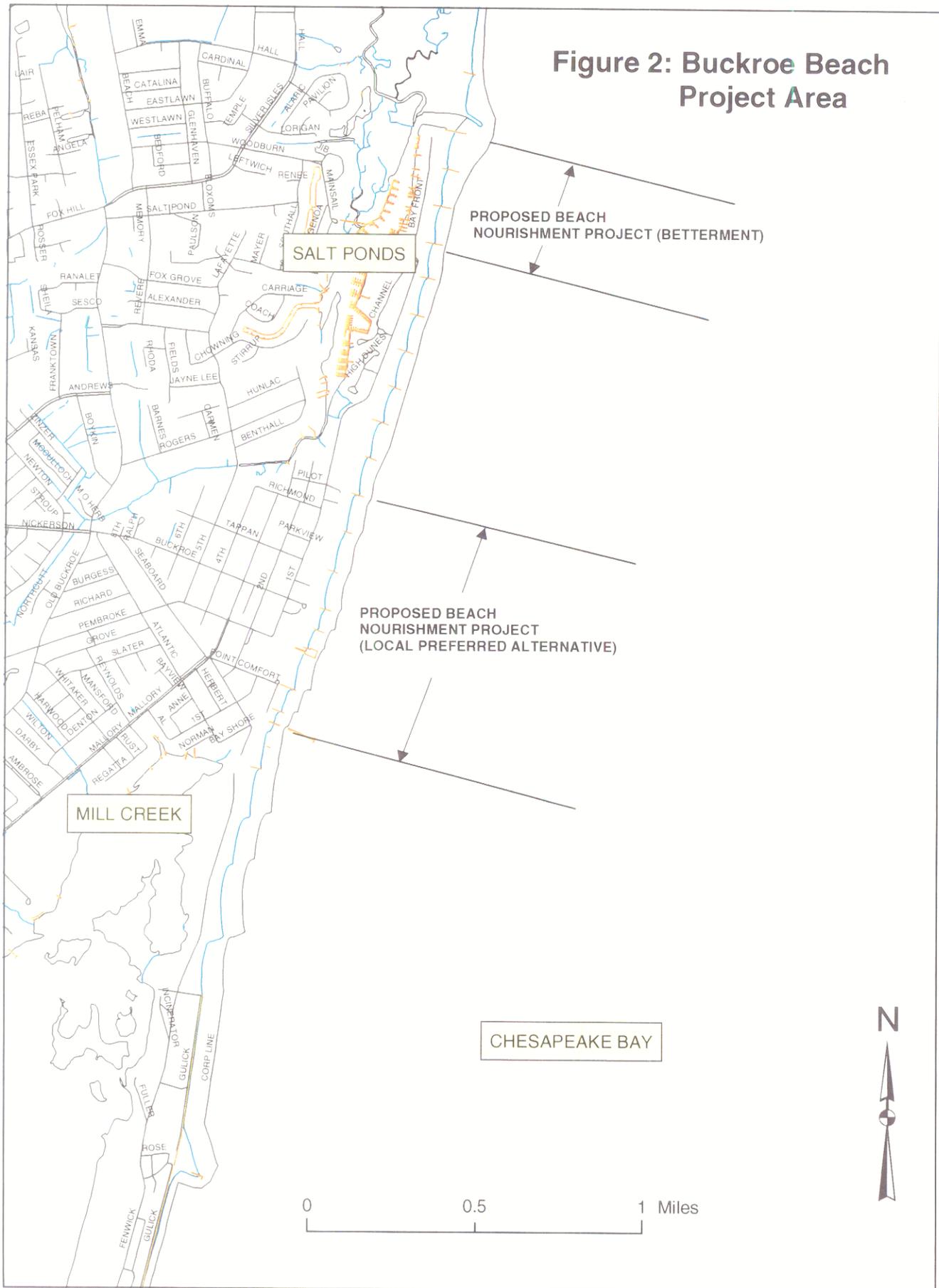
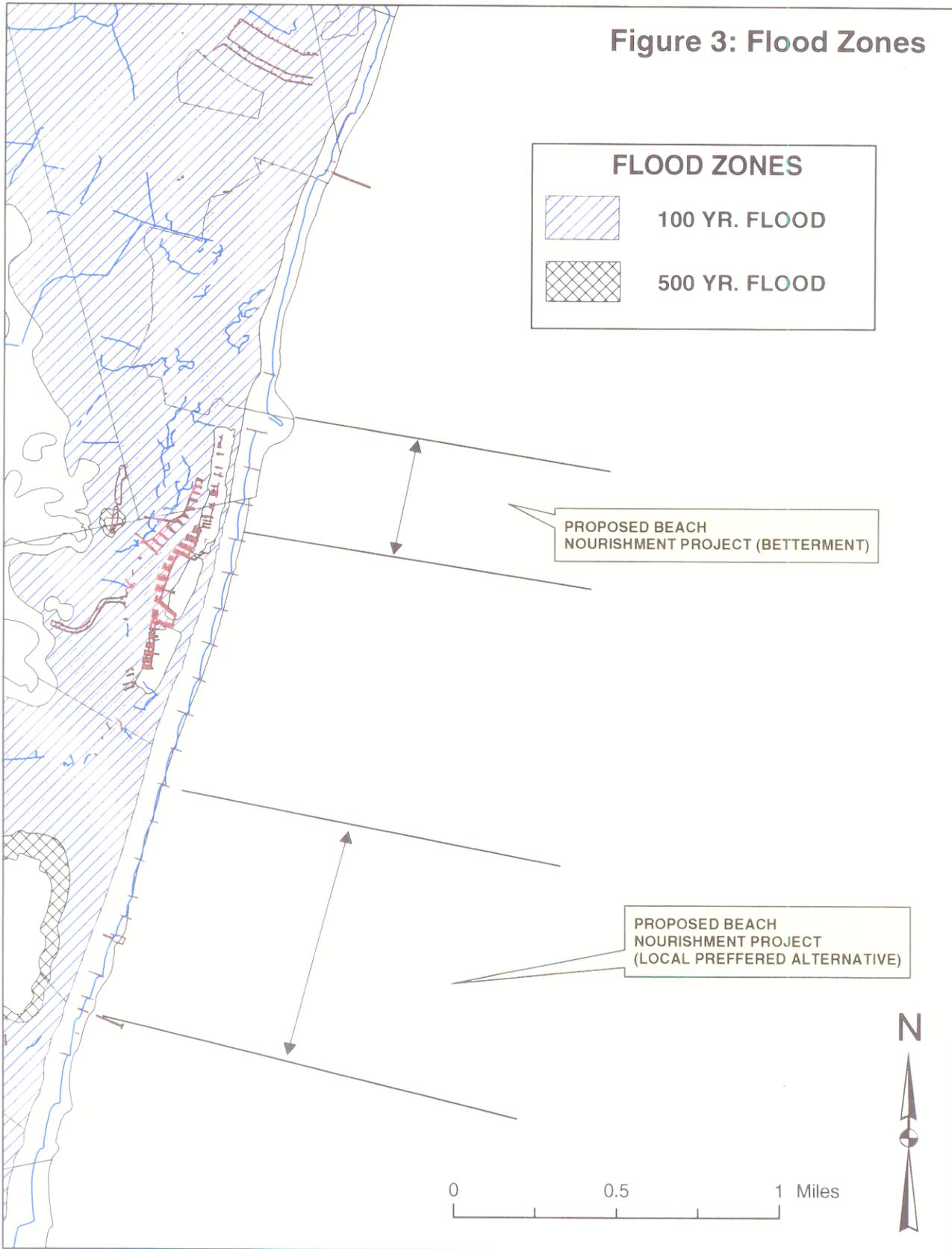


Figure 3: Flood Zones



Approximately 188,000 cubic yards of sandy fill will be placed along the Buckroe Beach shoreline, and 137,000 cubic yards will be placed along Salt Ponds Beach initially to increase the effectiveness of the existing beach in preventing storm damage. This will include “advance nourishment” material to ensure that the project design berm is maintained throughout the cycle until the next nourishment event. The beachfill is designed to be sacrificial. The sandy material will erode during storm events, as well as be susceptible to longshore and cross-shore sediment transport on a daily basis. Periodic beach renourishment will occur to maintain the effectiveness of the storm damage prevention. Approximately 36,000 cubic yards of sand will be placed on Buckroe Beach, and 43,000 cubic yards will be placed on Salt Ponds Beach on an average of every 7 years. Between each beach nourishment cycle, monitoring will take place. Periodic maintenance quantities will vary from one nourishment cycle to the next.

Summary: Existing City Programs

The City of Hampton already has several programs in place designed to protect its citizens and their property from flooding. These programs involve managing stormwater runoff, regulating development in flood prone areas, preserving water quality, educating the public about flood risks, and being prepared to provide effective emergency management. A summary of these programs is provided below.

Stormwater Management

Improperly managed stormwater can increase the incidence of flooding and level of floods, endangering property and human life. The City of Hampton manages stormwater through its Stormwater Management Ordinance, Erosion and Sediment Control Ordinance and provisions of the Chesapeake Bay Preservation Act.

The Stormwater Management Ordinance requires a stormwater management plan to be developed before the commencement of construction or development activities disturbing an area greater than twenty-five hundred (2,500) square feet and directs the Public Works Department to prepare a manual for guidance to persons preparing a stormwater management plan and maintaining a drainage system. A water quality impact assessment must be prepared as part of the stormwater management plan. At a minimum, the water quality assessment must address pre-development and post-development pollutant loads and proposed best management practices. For areas greater than ten thousand (10,000) square feet, the assessment must be more detailed, including items such as efforts to minimize impervious area and decrease runoff velocity.

As a whole, the objective of stormwater management plans are to prevent a net increase in nonpoint source pollution from new development; achieve a ten (10) percent reduction in nonpoint source pollution from redevelopment within the Chesapeake Bay Preservation District; and achieve a forty (40) percent reduction in nonpoint source pollution from agricultural uses. The stormwater management plan must be submitted to the Director of Public Works who may require review by the Chesapeake Bay Local Assistance Department, to insure the proposed development is consistent with provisions of the Chesapeake Bay Preservation Act.

The Erosion and Sediment Control Ordinance requires that an erosion and sediment control plan be prepared in accordance with the Virginia Erosion and Sediment Control Handbook and submitted for review before any land disturbance activities take place. As a prerequisite to approval of an erosion and sediment control plan, the person responsible for carrying out the plan shall provide the name of an individual holding a Responsible Land Disturber Certificate of Competence issued by the Virginia Department of Conservation and Recreation. One of the purposes of the Responsible Land Disturber Program is to improve Erosion and Sediment Control compliance and ensure protection to property and natural resources. An erosion and sediment control plan is also a provision of the Chesapeake Bay Preservation Act.

In accordance with the Chesapeake Bay Preservation Act, the City of Hampton has defined the Chesapeake Bay Preservation District, to be composed of two sub-districts, the Resource Protection Area (RPA) and the Resource Management Area (RMA). The RPA includes tidal wetlands, non-tidal wetlands, tidal shores, tributary streams, and a 100-foot wide vegetated buffer adjacent to and landward of the previous components. The RMA includes properties landward of Resource Protection Areas, which when properly developed serve to protect the quality of state waters. The RMA includes a distance of 100 feet from the RPA boundary. In addition, an Intensely Developed Area (IDA) is identified as an area within the RPA where development is concentrated and little of the natural environment remains.

Prior to issuance of a zoning permit or building permit for any development located within a Chesapeake Bay Preservation District, the developer must provide copies of wetlands permits or approval letters from the Hampton Wetlands Board, the Virginia Marine Resources Commission, and the U.S. Army Corps of Engineers for any improvements or alterations in tidal wetlands. Any proposed development disturbing more than twenty five hundred (2,500) square feet is subject to a Plan of Development process. One of the requirements of this process is to submit a construction plan showing boundaries of the RPA on the property, and notation regarding the inclusion of the property in a RMA, in addition to a stormwater management plan. The only uses permitted in the RPA are water-dependent uses. A 100-foot wide vegetated buffer area must be retained, or established if not present, for the purpose of retarding runoff, preventing erosion, and filtering nonpoint source pollution from runoff. The 100-foot buffer shall be deemed to achieve a seventy five percent (75%) reduction of sediments and a forty percent (40%) reduction of nutrients. As an alternative, a combination of buffer area, not less than fifty feet in width, and appropriate Best Management Practices (BMPs) located landward of the buffer area may be employed in lieu of the full 100-foot buffer, if approved by the Chesapeake Bay Preservation District review committee. This alternative may only be approved if the buffer area and BMPs collectively achieve water

quality protection, pollutant removal, and water resource conservation of at least the equivalent of the full 100-foot buffer area.

Regulation of Development

In addition to development regulation associated with stormwater management, the City of Hampton regulates development through the provisions of the Flood Zoning District. The Flood Zoning District consists of the Flood Plain Area and the Coastal High Hazard Area as delineated by the Flood Insurance Rate Map. It is designed to minimize flood losses in areas subject to flood hazards through protecting storage capacity of flood plains, requiring permitted flood area uses to be protected against floods, and restricting uses which are particularly susceptible to flood damage. The requirements of the Flood Zone District have precedence over all other zoning regulations.

The Flood Zone District is divided into two major areas, the Flood Plain Area and the Coastal High Hazard Area. Construction within the Flood Plain Area must ensure that the lowest floor (including basement) be constructed above the base flood elevation. Fully enclosed areas below the lowest floor used for parking, access, or storage, must be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters.

Any new construction in the Coastal High Hazard Area must be located no nearer to the water's edge than the reach of mean high tide; must be elevated on pilings or columns so that the bottom of the lowest horizontal structure member of the lowest floor is to or above the base flood level; and must have no basement. Man-made alterations to natural sand dunes that result in increased potential for flood damage are also prohibited.

Preservation of Environmentally Sensitive Areas

The City of Hampton recognizes that preserving the environment is a key component of reducing flood damage. Previously discussed stormwater management programs and development regulation programs, in addition to reducing the risk of flood damage, also serve to preserve environmentally sensitive areas by reducing pollutant and sediment loads and protecting the natural habitats of species that are vital to the environmental health of the City. In addition to these programs, the City relies on the Coastal Primary Sand Dune Ordinance, and through the City's 2010 Comprehensive Plan has committed to making environmental preservation a key component of Hampton's future planning.

The Coastal Primary Sand Dune Ordinance is part of the Code of Virginia and is designed to regulate the use and development of coastal primary sand dunes. It is administered by the Virginia Marine Resource Commission (VMRC). The ordinance limits the uses of and activities on sand dunes and requires a permit application be submitted to the VMRC for any proposed uses outside of those outlined by the law. After a public hearing is held on the application, the VMRC determines if the anticipated public and private benefit of the proposed activity exceeds its anticipated public and private detriment.

The 2010 Comprehensive Plan, adopted in December of 1989, outlines the goals of the city with regards to Land Use, Transportation, Community Facilities, Environment, Housing, and Urban Design. The plan is reviewed biannually by the Planning Commission to report on progress the City has made toward accomplishing its goals. The Environment portion of the plan addresses issues such as wetlands, coastal primary sand dunes, severely eroding shorelines, and flood areas. The stated goal of the Environment section is to allow and promote development and land uses which are sensitive to natural and man-made environmental constraints, which protect environmentally sensitive areas, and which do not create additional risks to life or property from environmental hazards. The City has taken steps to attain this goal including preserving water quality of the Chesapeake Bay, balancing environmental restraints and developments needs, and

City of Hampton, Virginia: Floodplain Management Plan

requiring stormwater management. This has been accomplished through actions such as modifications of the Zoning, Site Plan, and Subdivision Ordinances and adoption of the Stormwater Management Ordinance.

Emergency Services

The City of Hampton has developed an Emergency Operations Plan that contains instructions for each department in the event of an approaching weather event that has the potential to cause flooding. This plan is reviewed annually to ensure that it remains up to date with the growth of the City. The City uses the National Weather Service in Wakefield, VA as their forecasting service. In the event of an impending emergency, the Emergency Operations Center is activated to serve as a centralized command station.

The Public Information Office issues press releases and conducts media briefings to disperse information. The 311 Call Center and the 911 operators have pertinent information to give to callers regarding shelters, street closings, and evacuation routes. A reverse 911 system is available to use in localized areas for emergency notification. In the event of an evacuation, police/fire/rescue personnel could make use of vehicle PA systems or possible door-to-door notification.

In non-emergency times, the City relies on the public to report drainage problems via the 311 Call Center, and individual departments to identify potential problem areas as they notice them in the course of their regular duties. Drainage personnel monitor known problem areas, and when heavy rain is forecast these areas are checked prior to the storm's arrival.

Education Programs

Recognizing the need to inform and educate the public about the risks of flooding, the City of Hampton makes every effort to make that information available. The City's web site posts a lot of useful information regarding flood risk and steps individuals can take to protect themselves and their property. In addition, Hampton is an active member of the Hampton Roads Emergency Management Committee, which puts on an annual Hurricane Expo to provide information to the public about flood zones and the risks associated with coastal flooding caused by hurricanes. This year's focus was the National Flood Insurance Program. The City also gives presentations in local community organization meetings as further means of making the public aware of flood hazards.

Beachfront Protection

The City of Hampton has continually made an effort to protect the beachfront from shoreline erosion and damage by coastal storms. Numerous dredging and beach nourishment projects, including the placement of sandbags have taken place and are continuing. For example, biannual dredging of the Salt Ponds Inlet typically provides about 10,000 cubic yards of sand along the Salt Ponds public beach each time dredging occurs. The City has also constructed jetties and bulkheads along large portions of the beachfront. The Salt Ponds geotube project was designed and installed in 1998 in response to back-to-back storms in January and February 1998. A 2,000-foot line of geotextile tubes was installed to become the core of a "naturalized sand dune." The bag project was covered with sand and planted with American beachgrass. The City has also recently completed construction of a breakwater off the coast of Buckroe Beach.

⁴ U.S. Army Corps of Engineers, Norfolk District, p. 68

⁵ U.S. Army Corps of Engineers, Norfolk District, p. 56

⁶ U.S. Army Corps of Engineers, Norfolk District, p. 65

⁷ U.S. Army Corps of Engineers, Norfolk District, p. 66

Part 5: Mitigation Actions

Mitigation Actions Selected

Pursuant to the Mitigation Goal Statement, a review of post-project flood risks was performed to identify where those risks may be reasonably reduced. A review of existing City programs was performed to determine what actions were already being taken to reduce the risk of flood damage. Following these reviews, potential mitigation actions were divided into six categories, corresponding to the existing City programs, as follows:

- Manage Stormwater
- Regulate Development
- Preserve Environmentally Sensitive Areas
- Provide Emergency Services
- Develop Education Programs
- Protect the Beachfront.

Some of the mitigation actions serve to renew focus on programs already in place, while others serve to augment existing programs. The complete list follows:

Manage Stormwater

1. Continue the implementation of stormwater improvements within the study area, consistent with their Citywide priority. Improvements include regular ditch maintenance, culvert installation, and construction of stormwater detention facilities.
2. Continue to preserve the capacity of the stormwater drainage system through the street sweeping program.

Regulate Development

3. Regulate and control new development through the Site Plan Ordinance, Subdivision Ordinance, Erosion and Sedimentation Control Ordinance, Stormwater Management Ordinance, Building Code, and the Flood Zone District, and the Chesapeake Bay Preservation District of the Zoning Ordinance, consistent with provisions of the National Flood Insurance Program.
4. Implement provisions of the Flood Zone District ordinance, to promote public health, safety, and general welfare and to minimize flood losses in areas subject to flooding.
5. Preserve interests of emergency management in future planning and development activities.

Preserve Environmentally Sensitive Areas

6. Provide for preservation of environmentally sensitive areas by jointly master planning the Grandview Nature Preserve, Grundland Park, and White Marsh to include safe access for educational and recreational purposes.

Provide Emergency Services

7. Continue the review process of the Emergency Operations Plan in accordance with growth and new development occurring within the City.
8. In accordance with the Emergency Operations Plan, continue implementation of mitigation and planning activities in order to protect property from disasters.
9. Review the National Flood Insurance Program, Community Rating System (CRS) to determine potential for credits and explore opportunities to obtain sufficient credits to provide the City's policy holders with a premium reduction.

Develop Education Programs

10. Continue the Citizen’s Code Academy and public information programs conducted by the Public Works Department to educate residents regarding flood zones, erosion and sediment control, stormwater management, and water quality protection within the City of Hampton.

Protect the Beachfront

11. Monitor and maintain existing marine structures designed to minimize shoreline erosion.
12. Proceed with “betterment” beachfill project at Salt Ponds public beach.

Part 6: Plan Implementation

Monitoring and Progress Reports

The City of Hampton will review the Floodplain Management Plan every two years, and after any flood event that causes damage. The review should accomplish the following:

- Appropriate changes to the text to reflect natural hazard events that have occurred in the interim;
- Progress due to completion of Mitigation Actions

Revisions

Revisions to the Plan may be prompted by a number of circumstances, including completion of the Beach Nourishment Project, actual flooding events, and identification of specific new mitigation actions.

If the Plan is revised and reprinted, a summary of the revisions will be detailed below:

Summary of Revisions		
Date of Revision	Section Revised	Summary of Revision