

2014

Worcester County

Hazard Mitigation

Plan Update



Prepared for:
Worcester County
Department of Emergency Services
1 West Market Street
Snow Hill, MD 21863

Prepared by:



S&S Planning and Design
76 Baltimore Street
Cumberland, MD 21502

U.S. Department of Homeland Security
FEMA Region III
One Independence Mall, Sixth Floor
615 Chestnut Street
Philadelphia, PA 19106-4404



FEMA

MAR 13 2014

Mr. Mark James
Maryland Emergency Management Agency
State Hazard Mitigation Officer
5401 Rue Saint Lo Drive
Reisterstown, Maryland 21136

Dear Mr. James:

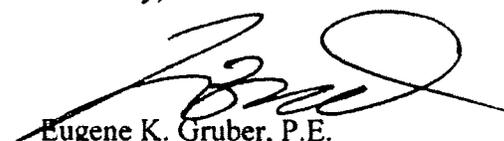
The Federal Emergency Management Agency (FEMA) has reviewed the Worcester County Hazard Mitigation Plan based on the standards contained in 44 CFR, Part 201, as authorized by the Disaster Mitigation Act of 2000 (DMA2K). These criteria address the planning process, hazard identification and risk assessment, mitigation strategy and plan maintenance requirements.

The plan received a "satisfactory" rating for all required criteria and is approvable. However prior to formal approval, each participating jurisdiction in the County is required to provide FEMA an adoption resolution.

We commend you for your dedication demonstrated in supporting the DMA2K and the County's commitment to reduce future disaster losses.

If you have questions, please contact Tess Grubb at (215) 931-5528.

Sincerely,



Eugene K. Gruber, P.E.
Director, Mitigation Division

cc: Fred Webster, Director, Worcester County Emergency Services

RESOLUTION NO. 14 - 22

RESOLUTION ADOPTING 2014 HAZARD MITIGATION PLAN UPDATE
FOR WORCESTER COUNTY, MARYLAND

WHEREAS, a primary mission of the County Commissioners of Worcester County, Maryland is to provide for the safety and well-being of Worcester County citizens and visitors and to cultivate a hazard resilient community through awareness and preparedness to eliminate or reduce hazard related human, economic, and environmental losses; and

WHEREAS, the adoption of a Hazard Mitigation Plan is a pre-requisite for funding from state and federal sources, including the Maryland Emergency Management Administration (MEMA) and the Federal Emergency Management Administration (FEMA), for pre-disaster and post-disaster mitigation projects as well as recovery and reconstruction; and

WHEREAS, the County Commissioners adopted a Hazard Mitigation Plan on September 5, 2006 by Resolution No. 06-20; and

WHEREAS, the 2006 Worcester County Hazard Mitigation Plan has been updated to include new data, mapping, HAZUS Level 2 Analysis, status of 2006 recommendations and new Mitigation Strategies and Actions.

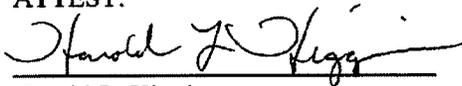
NOW, THEREFORE, BE IT RESOLVED by the County Commissioners of Worcester County, Maryland that the 2014 Worcester County Hazard Mitigation Plan Update is hereby adopted and shall supersede any previous hazard mitigation plans. The Plan includes unincorporated areas of Worcester County and the towns of Berlin, Snow Hill and Pocomoke City. The town of Ocean City, Maryland is referenced, however Ocean City has its own hazard mitigation plan.

AND, BE IT FURTHER RESOLVED that the departments affected are directed to carry out their responsibilities, to coordinate their activities, and to cooperate with local, state and federal agencies responsible for emergency assistance to Worcester County.

AND, BE IT FURTHER RESOLVED that this Resolution shall take effect upon its passage.

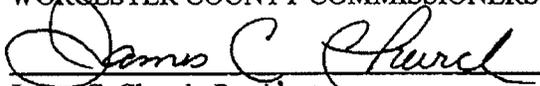
PASSED AND ADOPTED this 7th day of October, 2014.

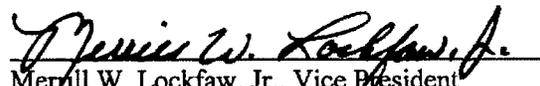
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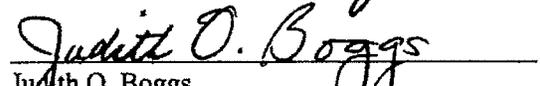


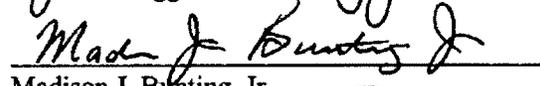
Harold L. Higgins
Chief Administrative Officer

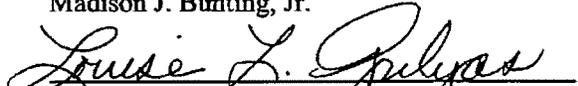
WORCESTER COUNTY COMMISSIONERS

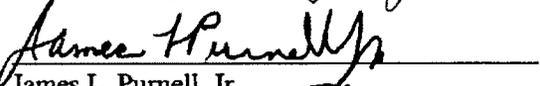

James C. Church, President


Merrill W. Lockfaw, Jr., Vice President


Judith O. Boggs


Madison J. Bunting, Jr.


Louise L. Gulyas


James L. Purnell, Jr.


Virgil L. Shockley

Resolution NO. 486

A Resolution of the Pocomoke City Mayor and Council to adopt the updated Worcester County 2014 Hazard Mitigation Plan.

WHEREAS, Worcester County has prepared an update to its current Hazard Mitigation Plan which has been approved by FEMA; and

WHEREAS, their Plan is authorized by the Federal Disaster Mitigation Act of 2000, and addresses the planning process, hazard identification, and mitigation strategy; and

WHEREAS, Pocomoke City is currently a participant in the County's existing Hazard Mitigation Plan, and wishes to participate in the 2014 update to that plan;

NOW THEREFORE, BE it resolved, that Pocomoke City hereby adopts the 2014 Worcester County Hazard Mitigation Plan, and requests that the City continue to be included in that plan to help reduce future disaster losses.

BE IT FURTHER RESOLVED by the City of Pocomoke City that this Resolution will take effect upon approval of the Mayor.

September 8, 2014
Date Introduced

September 8, 2014
Date Passed

Jane Lauring
Vice President

ATTEST:
SEPTEMBER

APPROVED BY ME THIS 8TH DAY OF

Carol L. Sullivan
Carol L. Sullivan
City Clerk

Bruce A. Morrison
Bruce A. Morrison
Mayor



Adopted
by
Mayor and Council

MAYOR AND COUNCIL OF SNOW HILL

**Resolution No. 2014-02
Hazard Mitigation Plan**

A RESOLUTION OF THE MAYOR AND TOWN COUNCIL OF SNOW HILL ADOPTING THE 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN AS THE TOWN 2014 HAZARD MITIGATION PLAN.

WHEREAS, the Town of Snow Hill, a municipality of Worcester County recognizes the federal Disaster Act of 2000 requiring that all States and local jurisdictions develop, submit, and update hazard mitigation plans that may reduce the impacts of hazards; and

WHEREAS, an adopted hazard mitigation plan is required as a condition of future federal funding for hazard mitigation projects; and

WHEREAS, the Town of Snow Hill's participation in the planning process along with other units of local government within the County to prepare the 2014 Worcester County Hazard Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED, that the Town of Snow Hill, hereby adopts the 2014 Worcester County Hazard Mitigation Plan as an official plan: and

AND BE IT FURTHER RESOLVED that the Worcester County Emergency Services is authorized to submit on behalf of the participating municipalities the adopted 2014 Worcester County Hazard Mitigation Plan to the Federal Emergency Management Agency for final review and approval.

PASSED AND ADOPTED this 14 day of October, 2014.

Jenny Hall
Central District Council

Alison Cook
Eastern District Council

Michael Pruitt
Western District Council

Approved this 14 day of Oct, 2014.

John C. Dorman, Mayor

ATTEST:

Kelly Brewington, Town Manager



Mayor & Council of Berlin

10 William Street, Berlin, Maryland 21811

Phone 410-641-2770 Fax 410-641-2316

www.berlinmd.gov



Mayor
Wm. Gee Williams, III

Vice President
Elroy Brittingham, Sr.

Council Members
Dean Burrell, Sr.
Lisa Hall
Paula Lynch
Troy Purnell

Town Attorney
David Gaskill

Town Administrator
Laura Allen

RESOLUTION 2014-03

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF BERLIN ADOPTING THE 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN AS THE TOWN 2014 HAZARD MITIGATION PLAN.

WHEREAS, the Town of Berlin, a municipality of Worcester County recognizes the federal Disaster Act of 2000 requiring that all States and local jurisdictions develop, submit, and update hazard mitigation plans that may reduce the impacts of hazards; and

WHEREAS, an adopted hazard mitigation plan is required as a condition of future federal funding for hazard mitigation projects; and

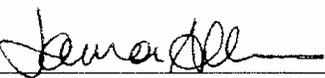
WHEREAS, the Town of Berlin's participation in the planning process along with other units of local government within the County to prepare the 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN;

NOW, THEREFORE BE IT RESOLVED, that the Town of Berlin, hereby adopts the 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN as an official plan; and

BE IT FURTHER RESOLVED, that the Worcester County Emergency Services is authorized to submit on behalf of the participating municipalities the adopted 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN to the Federal Emergency Management Agency for final review and approval.

ADOPTED AND APPROVED by the Mayor and Council of the Town of Berlin on the 14th day of October, 2014.


William G. Williams, III, Mayor

ATTEST: 
Laura Allen, Town Administrator

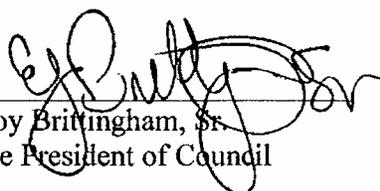

Elroy Brittingham, Sr.
Vice President of Council



Table of Contents

CHAPTER 1:INTRODUCTION 1-1

EXECUTIVE SUMMARY 1-1

PROMULGATION STATEMENT..... 1-2

INTRODUCTION 1-2

PURPOSE 1-3

GOALS 1-4

PLANNING PROCESS..... 1-5

PUBLIC INVOLVEMENT..... 1-6

ADOPTION PROCESS..... 1-7

CHAPTER 2: COUNTY PROFILE..... 2-1

LOCATION 2-1

PHYSICAL..... 2-1

DEMOGRAPHICS 2-4

ECONOMY 2-5

DEVELOPMENT TRENDS 2-6

MITIGATION RECORD 2-9

NATION FLOOD INSURANCE 2-11

CHAPTER 3: VULNERABILITY ASSESSMENT 3-1

INTRODUCTION 3-1

RISK ASSESSMENT 3-1

FLOOD HAZARD VULNERABILITY 3-2

REPETITIVE LOSS PROPERTIES 3-3

HAZUS ANALYSIS 3-8

RIVERINE FLOOD 3-9

COASTAL FLOOD..... 3-13

HURRICANE 3-17

AT-RISK POPULATIONS..... 3-22

CRITICAL FACILITIES 3-26

CHAPTER 4: FLOODING RELATED HAZARDS..... 4-1

INTRODUCTION 4-1

TROPICAL STORMS AND HURRICANES 4-1

HAZARD PROFILE..... 4-1

STORM SURGE ZONES (INUNDATION AREAS) 4-5

HISTORICAL OCCURRENCE 4-7

NOR'EASTERS 4-8

HAZARD PROFILE..... 4-8

HISTORICAL OCCURRENCE 4-8

FLOODING..... 4-10

HAZARD PROFILE..... 4-10

HISTORICAL OCCURRENCE 4-11

FLOOD ZONES 4-13

CHAPTER 5: LESS COMMON HAZARDS..... 5-1

POTENTIAL SEA LEVEL RISE & SHORELINE EROSION 5-1

TORNADO TOUCHDOWNS..... 5-4

TOXIC CHEMICALS AND NATURAL HAZARDS 5-7

WILD FIRES 5-9
HIGH WIND 5-12
WINTER STORM 5-14
DROUGHT 5-15

CHAPTER 6: CAPABILITY ASSESSMENT..... 6-1

OVERVIEW 6-1
FLOODING RELATED HAZARDS – COASTAL AND RIVERINE 6-1
LESS COMMON HAZARDS 6-4
 SEA LEVEL RISE & SHORELINE EROSION 6-4
 TOXIC CHEMICALS AND NATURAL HAZARDS..... 6-5
 WILDFIRES 6-5

CHAPTER 7: MITIGATION STRATEGIES..... 7-1

INTRODUCTION 7-1
MITIGATION ACTIONS 7-3
MITIGATION ACTIONS RANKINGS 7-3
POTENTIAL MITIGATION PROJECTS..... 7-3

CHAPTER 8: PLAN MAINTENANCE & IMPLEMENTATION..... 8-1

RECOVERY AND RECONSTRUCTION PLANNING 8-1
IMPLEMENTATION AND LEADERSHIP..... 8-1
PLAN MONITORING AND EVALUATION 8-2

Appendix

Appendix A: HAZUS MethodologyA-1
Appendix B: 2006 Mitigation Actions StatusB-1 – B-4
Appendix C: Federal & State Funding Sources C-1 – C-9
Appendix D: HMPC Meeting MinutesD-8 pages
Appendix E: Public Meeting Announcements & Minutes..... E
Appendix F: NFIP ComplianceF-1 – F-2
Appendix G: Sources G-1 – G-

Tables

Table 1-1: HMPC Members1-5

Table 2-1: Peak Demoflush Population2-3

Table 2-2: Worcester County Population Trends 1930-20102-4

Table 2-3: Year-Round Populations of Towns and Census Designated Places2-5

Table 2-4: New Development -20062-6

Table 2-5: New Development -20072-6

Table 2-6: New Development -20082-6

Table 2-7: New Development -20092-6

Table 2-8: New Development -20102-7

Table 2-9: New Development -20112-7

Table 2-10: New Development -20122-7

Table 2-11: New Development -2006-20122-7

Table 2-12: Departments and their Roles in the EOP2-9

Table 2-13: NFIP Available Coverage2-11

Table 2-14: Worcester County NFIP Insurance Policies2-11

Table 3-1: MEMA HIRA3-2

Table 3-2: Repetitive Flood Loss Properties3-3

Table 3-3: HAZUS Level 1 & 2 Comparison3-9

Table 3-4: Total Building Exposure by Occupancy Type3-10

Table 3-5: Building Exposure by Occupancy Type for Riverine Flooding3-10

Table 3-6: Total Building Exposure by Occupancy Type3-14

Table 3-7: Building Exposure by Occupancy Type for Coastal Flood3-14

Table 3-8: Expected Building Damage by Occupancy Type for Scenario3-19

Table 3-9: Health Impact Assessment3-25

Table 4-1: Saffir-Simpson Hurricane Intensity Categories4-2

Table 4-2: Velocity Pressure as a Function of Wind Speed4-4

Table 4-3: NCDC Flood Events4-12

Table 4-4: NCDC Heavy Rain Events4-12

Table 4-5: NCDC Flash Flood Events4-13

Table 4-6: FEMA Flood Zones4-14

Table 5-1: Enhanced Fujita (EF) Scale5-7

Table 5-2: Fire Danger Rating Descriptions5-11

Table 5-3: NCDC Thunderstorm/Wind Events 2000--20105-15

Table 5-4: Heat Disorder on High Risks Groups5-18

Table 7-1: 2013 Mitigation Actions7-4

Table 7-2: Flood Prone Roads7-9

Maps

Map 2-1: Location2-1

Map 2-2: Stream System2-2

Map 2-3: Bays2-3

Map 2-4: New Development2-8

Map 3-1: Repetitive Loss Properties - Subdivision Insets3-5

Map 3-2: Repetitive Loss Properties3-6

Map 3-3: Riverine Flood Building Loss3-11

Map 3-4: Riverine Flood Contents Loss3-11

Map 3-5: Riverine Flood Total Loss3-11

Map 3-6: Riverine Flood Total Tons of Debris3-12

Map 3-7: Riverine Flood Displaced Population3-13

Map 3-8: Riverine Flood Shelter - Short Term Needs3-13

Map 3-9: Coastal Flood Building Loss3-15

Map 3-10: Coastal Flood Contents Loss3-15

Map 3-11: Coastal Flood Total Loss3-15

Map 3-12: Coastal Flood Total Tons of Debris3-16

Map 3-13: Coastal Flood Displaced Population3-17

Map 3-14: Coastal Flood Shelter - Short Term Needs3-17

Map 3-15: Hurricane - Probabilistic3-18

Map 3-16: Hurricane - Probabilistic 500 Year Event3-18

Map 3-17: Hurricane - Probabilistic 500 Year Event Minor Residential Damage3-19

Map 3-18: Hurricane - Probabilistic 500 Year Event Essential Facility Damage3-20

Map 3-19: Hurricane - Probabilistic 500 Year Event Total Tons of Tree Debris3-20

Map 3-20: Hurricane - Probabilistic 500 Year Event Displaced Households3-21

Map 3-21: Children under the Age of 53-22

Map 3-22: Population 65 years and older3-23

Map 3-23: Non-English Speaking Population3-23

Map 3-24: Low Income Population3-24

Map 3-25: Critical Facilities North3-29

Map 3-26: Critical Facilities South3-30

Map 3-27: Critical Facilities Berlin3-31

Map 3-28: Critical Facilities Pocomoke City3-32

Map 3-29: Critical Facilities Snow Hill3-33

Map 4-1: Storm Surge Zones4-6

Map 4-2: FEMA Flood Zones4-15

Map 4-3: NCDC Heavy Rain Events4-12

Map 4-4: NCDC Flash Flood Events4-13

Map 5-1: Levels of Inundation5-3

Map 5-2: Tornadoes5-8

Map 5-3: Forestlands5-12

Map 5-4: Children under the Age of 55-18

Map 5-5: Population 65 years and older5-18

Map 7-1: North - Roads with Flood Potential7-12

Map 7-2: South - Roads with Flood Potential7-13

Figures

Figure 5-1: 2010-2012 Traffic Volume Map for Worcester County5-10
Figure 5-2: MEMA Wildfire Risk Map5-13
Figure 5-3: MEMA ASCE Design Wind Speeds5-16
Figure 5-4: Maryland Average Annual Snowfall Map5-17
Figure 5-5: MEMA Agricultural Lands 20105-19
Figure 6-1: Disaster Debris Storage Sites6-3



CHAPTER 1: INTRODUCTION

Executive Summary

The *2014 Hazard Mitigation Plan (Plan Update)* seeks to eliminate or reduce hazard related human, economic, and environmental losses. This is a plan written by and for Worcester County, MD with a multi-jurisdictional scope. The plan includes unincorporated areas of Worcester County and the towns of Berlin, Pocomoke and Snow Hill. Ocean City is addressed somewhat; however, Ocean City prepared its own hazard mitigation plan. To that end, the *2006 Worcester County Hazard Mitigation Plan* has been updated to include new data, mapping, *HAZUS Level 2 Analysis*, status of 2006 recommendation and new Mitigation Strategies and Actions.

As with the 2006 Plan, the Plan Update is intended as a dynamic assessment of natural hazards that will be maintained and updated as needed. It focuses on high risk natural hazards and does not address human caused emergencies.

The plan pays particular attention to the County's coastal location and character. It also analyzes the County's vulnerability to flooding, storms, potential sea level rise, shoreline erosion, tornados, toxic chemicals, and wild fires.

Worcester County is vulnerable to several major hazards. Hurricanes, Nor'easters, floods, and wind can and have caused significant damage, while threatening life and limb.

For each hazard the Plan Update provides a description and history. In addition, the status of previous mitigation strategies and actions as well as new 2014 proposed mitigation strategies and action. For example to mitigate flood damage encouraging the dedication of 100-year floodplains to open-space also identify water and wastewater facilities where additional flood damage avoidance measures may be appropriate; To mitigate wildfires install dry hydrants in appropriate locations to provide a hose hook up at a natural water source.

The intent of the plan is to cultivate a hazard resilient community through awareness and preparedness. Implementing the strategies discussed in this plan will heighten awareness and better prepare individuals as well as agencies to help themselves in the event of a disaster.

With an approved Plan Update, Worcester County and the towns of Berlin, Pocomoke and Snow Hill will remain eligible for funding from several sources including the Maryland Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA). Funding is available for pre-disaster and post-disaster mitigation projects as well as recovery and reconstruction. This funding is not available without an approved plan.

An updated plan is required every five years. The intent of the Departments of Emergency Services is to keep the plan relevant and current, easing the five year plan update process. It is therefore essential that those implementing the plan carefully document their process and the results of the mitigation actions taken.

Promulgation Statement

A primary mission of the Worcester County Commissioners is to provide for the safety and well-being of Worcester County citizens and visitors. To further this objective, the plan has been prepared and follows.

The Plan Update provides a proactive strategy against the natural hazards that endanger the lives and property of Worcester County residents and visitors. Further, the plan evaluates these hazards and presents activities to:

- eliminate or mitigate their effect,
- reduce their negative impact,
- lessen exposures to them,

The Worcester County Commissioners endorse and promulgate this document as the *2014 Hazard Mitigation Plan* and it shall supersede any previous hazard mitigation plan(s). The departments affected are directed to carry out their responsibilities, to coordinate their activities, and to cooperate with local, state, and federal agencies responsible for emergency assistance to Worcester County.

Introduction

Globally, countries have witnessed loss of life and damage to property and natural resources due to volatile weather and geological conditions. Across the United States, towns and communities have experienced escalating natural disaster damage. Weather events, hurricanes, tornadoes, winter storms and severe flooding have caused growing loss of life, property damage and the interruption of government services. Time, money and efforts to recover from these disasters can stretch local, state and federal resources. The alternative to accepting this trend is to engage in proactive efforts, specifically pre-disaster planning, can reduce the effects of a natural hazard.

Hazard mitigation is simply actions taken to prevent or reduce the risks to life and property from hazards. Mitigation breaks the cycle of damage, reconstruction and repeat property damage because it occurs before, and after disasters. Emergency response planning prepares a community for the first response to and immediate aftermath of a disaster. Hazard mitigation planning prepares a community for a disaster, through pre-disaster mitigation and prepares a

community for long term intentional recovery and reconstruction afterward. With careful selection, mitigation projects can be a cost effective means of reducing the risk of property and life loss. Over the long term, mitigation saves both money and lives.

Realizing the benefits of mitigation activities and programs, the federal government and the State of Maryland have determined that mitigation should be the cornerstone of the nation's emergency management efforts. The Federal Emergency Management Administration (FEMA) and the Maryland Emergency Management Administration (MEMA), through grants, encourage local jurisdictions to develop and annually update a hazard mitigation plan. Worcester County has chosen to respond.

Worcester County Emergency Services, with assistance from the Worcester County Department of Comprehensive Planning, MEMA, and the Maryland Department of the Environment (MDE), prepared the *2006 Worcester County Hazard Mitigation Plan*. In an effort to complete an update to the 2006 plan, Worcester County formed a Hazard Mitigation Planning Committee (HMPC) comprised of a cross-section of stakeholders to oversee the Plan Update process. As with the 2006 Plan, the 2014 Plan Update will be successfully implemented and thus accomplish its goal to reduce damage to life and property. The attention, cooperation and support of elected officials, staff and citizens, will ensure success of this goal.

Purpose

With the Atlantic Ocean and the Coastal Bays at our eastern boundary, Worcester County enjoys a natural bounty of recreational and aesthetic benefits. Thirty miles of coastline provide visitors and residents with many recreational opportunities. This has proven to be such an allure that many visitors become permanent residents. Census 2000 revealed that Worcester County had the second fastest percentage growth in Maryland. As in much of the southeastern United States, more residents are building homes along the shoreline. While beautiful, the potential for disaster is substantial. Historically, protected by the Outer Banks, Worcester County is often spared the full wrath of hurricanes and tropical storms. The hurricane of 1933 was the most violent hurricane recorded and caused the greatest damage to the tourism center known as Public Landing.

Wind, flooding and coastal erosion are of constant concern for Worcester County as development along the shoreline continues. Population and property are increasingly vulnerable. The Plan Update identifies ways to reduce this vulnerability and improve disaster response through:

- 1) **Vulnerability Assessment**—The Plan Update provides a description and analysis of existing local hazard mitigation policies and response capabilities. A status of previous policies and

- new 2014 policies to prevent the loss of life and property are discussed in (Chapter III).
- 2) Hazard Analysis—An update of significant hazards are identified and their relative degree of risk characterized (Chapter IV & V). The Plan Update includes the results of the HAZUS Level 2 Analysis for Coastal, Flood and Hurricane.
 - 3) Mitigation Planning--The plan sets forth previous and new goals and objectives for a hazard mitigation agenda and provides the status of 2006 proposed strategies along with specific new mitigation strategies to accomplish those (Chapter IV & V).
 - 4) Post-disaster Planning—Recovery and response planning is essential for organized and sensible planning during the chaotic aftermath of a disaster (Chapter VIII).

In addition, the plan improves the County's eligibility for funding from federal and state agencies for hazard mitigation and disaster relief. This includes the Stafford Disaster Relief and Emergency Act, the Disaster Mitigation Act of 2000, the Flood Mitigation Assistance Program created under the National Flood Insurance Reform Act, the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation Grant Program, and the Maryland Comprehensive Flood Management Grant Program.

“The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. *“HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.”*

The Disaster Mitigation Act of 2000 requires that communities evaluate their hazard mitigation plan every five years. The way in which this is to be accomplished must be documented in the plan. Through the inclusion of a mechanism to evaluate the plan and the implementation process, the County has institutionalized and sustained the mitigation initiative beyond the creation of the original 2006 document.

The plan will continue to be used as a tool to inform officials, the private sector, and the general public of the benefits of hazard mitigation and to encourage awareness, participation, and support for such endeavors. However, a fundamental purpose of the plan is to prevent damage rather than react to emergencies. To this end, an up-to-date plan is an indication to the public, as well as local, state, and federal agencies and decision makers that Worcester County is proactive and will continue to act responsibly. The continued cooperation between all levels of government is essential to the success of this plan. Eliminating or reducing hazards now can save many lives and dollars.

Finally, the plan will continue to foster increased cooperation between the many emergency management entities. When hazards threaten to become disasters, political boundaries become

meaningless. Neighboring communities help one another deal effectively with hazards. The County, in its emergency management role, is best suited to bring together these communities *at the planning stage* so that when hazards occur, appropriate assistance can be provided efficiently.

This plan in conjunction with the Emergency Operations Plan (EOP) identifies channels and methods for cooperation both inside and outside the County. This includes reviewing the roles and resources available to each entity and setting out appropriate roles for each before, during, and after an emergency.

Goals

Following the guidelines of this plan, Worcester County's hazard mitigation goal is to eliminate or reduce hazard related human economic and environmental losses. The county's three sub-goals are to:

1. Promote long term solutions to repetitive problems to avoid unnecessary or recurring expenditures
2. Eliminate or reduce department redundancy and improve communication between response entities.
3. Lessen exposures to hazards.

The county continuously strives to become a storm resilient community. A storm resilient community is one that is educated, individually and collectively prepared, and can react to and recover from a storm in an organized manner.

Planning Process

The County began the plan update process by accepting a hazard mitigation grant from the Maryland Emergency Management Agency (MEMA). In November 2012, S&S Planning and Design was contracted to update the original 2006 Worcester County Hazard Mitigation Plan.

In compliance with the hazard mitigation planning requirements, extensive public participation was sought and encouraged throughout the mitigation plan update process. A Hazard Mitigation Planning Committee (HMPC) was formed in December 2012, and was comprised of various County agencies, non-profit organizations, and representatives from each of the participating communities.

Table 1: HMCP Members				
Name	Organization		Name	Organization
Tom Kane	WC Emergency Services		Teresa Owens	WC Emergency Services
Bob Nelson	OC Planning & Zoning		Dawn Jones	WC Dept. of Social Services
Robyn TyTomi-Dalton	WC Health Dept.		Bill Bradshaw	WC Development Review & Permitting
Bob Rhode	OC Emergency Mgt.		Kelly Henry	WC DRP
Jeff Fleetwood	Town of Berlin		Mark Dunlevy	WC DRP
Gail Mansell	Citizen Representative		Tess Foster	WC DRP
Robert Donnelly	Town of Snow Hill		JC Barbely	Assateague State Park
Kim Moses	WC Administrator		Mike McDermott	WC Sheriff
Blaine Smith	Town of Ocean City		Kenneth Whited	WC Public Works
Ted Morlock	National Park Service		Jeff McMahon	WC Fire Marshall Office
Mark James	MEMA		Kirsten Kvenzi	FEMA Region V
Ed Werkheiser	MEMA		Michael Thornton	Town of Pocomoke
Debra Stevens	WC Health Dept.		John Ross	WC Dept. of Public Works
Fred Webster	WC Emergency Services		James Jackson	MD SHA
Bill Carroll	MEMA			

A series of regular Committee meetings resulted in the development of an effective and current countywide Hazard Mitigation Plan. The Committee was actively involved in reviewing previously-identified hazards within the communities, from the 2006 Hazard Mitigation Plan and in the review of the new hazard data gathered during the Plan update process. Hazard data coupled with local knowledge from various HMPC members was utilized to assess the county's vulnerabilities to natural hazards. In addition, a Level 2 HAZUS Analysis was conducted as part of the update process. Following this assessment, the HMPC reviewed the status of the 2006 Mitigation Strategies' recommendations to reduce and prevent potential damage from these hazards. Following the Mitigation Strategies review, the HMPC then worked together to update, review, and select the most appropriate and feasible mitigation measures to address the County's hazards for the 2014 Hazard Mitigation Plan.

The draft plan was finalized and submitted to MEMA for review and comment in 2013.

Public Involvement

Public meetings were held on 1 April 2014 and ??, for the Hazard Mitigation Plan Update. These meetings coincided with the County's Public Hearing process for adoption. During the hearings, the planning process and the Plan's intent to identify steps the communities could take in order to become more disaster-resistant were presented to the stakeholders. The public was encouraged to provide input regarding the Plan and what type of mitigation measures they would prefer the County and communities to pursue.

Media announcements advertising the public meetings were provided via local newspapers and the County website <http://www.co.worcester.md.us/>. The advertisements for the Public Hearings can be found within *Appendix E: Public Meeting Announcements & Minutes*. Additionally, copies of minutes for both the planning committee meetings and the public meetings are included in Appendix D and Appendix E, respectively.

Adoption Process

On 13 March 2014 Worcester County Emergency Services received a letter from MEMA notifying the county that FEMA has approved the plan pending local adoption. With this assurance the County Commissioners began the local adoption process. On ?? a resolution was introduced to the Worcester County.



CHAPTER 2: COUNTY PROFILE

Location

The physical characteristics of a community, including both the natural and build environment, will greatly affect its vulnerability to hazards. Therefore, a basic understanding of Worcester County’s geography, climatology, and land use practices offers insight into its overall vulnerability. Furthermore, analysis of the County’s economic situation and population patterns aids in determining areas that are highly vulnerable.

Physical

Worcester County lies in the middle of the three-state region known as the Delmarva Peninsula, so named for the states of Delaware, Maryland, and Virginia. The Delmarva Peninsula is the largest peninsula on the East Coast totaling 170 miles in length and 70 miles in width. Worcester County is the seventh largest county in Maryland, having a land area of 490 square miles. It has an irregular shape with its greatest dimensions of approximately thirty miles north and south and twenty-five miles east and west. To the north it is bounded by Sussex County, Delaware, to the south by Accomack County, Virginia, to the west by Wicomico and Somerset Counties, Maryland, and to the east by the Atlantic Ocean.



Source: S&S Planning and Design

Water has always played an important part in the affairs of the county. The 31 miles of beach give Maryland its only ocean

frontage, with the Coastal Bays providing protected waters for shellfish and small boats. In the west, the Pocomoke River affords small-craft navigation to the Chesapeake Bay.

Surface drainage is provided by many short Coastal Bay tributaries in the east, and the Pocomoke River and its tributaries drain the remaining two-thirds of the County. Land elevations range from sea level to about sixty feet, with most of the land lying between twenty and forty



Source: S&S Planning and Design

feet above sea level. The topography is level to gently rolling.

The coastal county includes the two barrier islands of Assateague Island to the south and Ocean City to the north. According to the *2011 Ocean City Multi-Hazard Mitigation Plan*, Ocean City and the national and state seashore parks on Assateague draw 300,000 to 350,000 people on summer weekends bringing County population to about 400,000 at its peak. Annually, eight to ten million people visit Worcester County. To demonstrate the impact of seasonal visitors to the beaches of Worcester County, the *2011 Ocean City Multi-Hazard Mitigation Plan* included the following information and table.

Measuring the seasonal or total population is a difficult task for a resort community. Obviously, the summer season has the highest populations. Since the 1970s, Ocean City has estimated its total population by using a mathematical formula called “demoflush”, which correlates population to flows through the sewage treatment plant. Table 2 shows the peak demoflush (total) population for each year since 2006. This is the number of people in Ocean City on the peak day of each year. The peak population has remained relatively stable at about 326,000. Assuming that current growth policies remain unchanged and no major annexation takes place, it is projected that the total population will not increase dramatically in the future.

Table 2-1: Peak Demoflush Population		
	Peak Demoflush Population	Annual Percent Change
2006	311,321	3.4
2007	315,649	-1.4
2008	309,434	1.9
2009	321,920	-4.0
2010	318,368	1.1

Source: 2011 Ocean City Multi-Hazard Mitigation Plan

The barrier islands enclose five bays; from north to south, these are: Assawoman Bay, Isle of Wight Bay, Sinepuxent Bay, Newport Bay, and Chincoteague Bay. All of these bays have some degree of coastal development and along Assawoman Bay and Isle of Wight Bay development is extensive. For example, the community of Ocean Pines on the Isle of Wight Bay is built on filled wetlands. The residential population of Ocean Pines is 11,710 according to the 2010 US Census. Ocean City backs up to Isle of Wight Bay and Assawoman Bay.

Two major tidally influenced rivers are located in the county. The Pocomoke River has two areas with urban development: Pocomoke City and Snow Hill. The second river, the St. Martin is the main tributary of the Isle of Wight Bay. There is significant development along its southern shore and the northern shore has estate development. The St. Martin River headwaters branch towards the northernmost portion of the county into agricultural and rural areas ending in Delaware.



There are smaller tidally influenced waterways. Several are Isle of Wight Bay tributaries and have significant development currently or proposed new development. These are Manklin Creek, Herring Creek, Turville Creek and Trappe Creek according to the Worcester County Comprehensive Plan.

“Hazard Mitigation works best as a policy objective of local planning when it is so completely integrated into the comprehensive plan that it becomes a normal assumption behind all daily planning activities.”

*Source: American Planning Association, Planning for Post-Disaster Recovery and Reconstruction
<http://www.fema.gov/library>*

Transportation in Worcester County is served by US 13, US 113, and US 50 making Worcester County easily accessible. Access to Assateague Island is by rural two lane highways (MD 376 and MD 611) while Ocean City is served by US 50 (dual highway), MD 90 (two lane controlled access) and MD/DE 54 and DE 1 to the north (two lane rural highway and local highway respectively).

Two airports provide Worcester County with public general aviation access. The Salisbury-Ocean City Wicomico Regional Airport in Wicomico County and the Ocean City Municipal Airport on MD 611 are both publicly owned airports for public use that have control towers. Private airports include Bunting's Field near Berlin, Carey Field near Bishopville, Guy's Field near Pocomoke and Davis Field near Pittsville.

Demographics

The population of the County has grown remarkably since mid-century. In fact, at 51,454 residents, the population has more than doubled since 1970. Statewide, Worcester County was only surpassed in population percentage increase by Calvert County. With a 9.5% increase of 4,911 people since the last census, this trend is expected to continue. More than half of the County's population (23,297) lives in the northeastern quadrant. This area contains the communities of: Berlin, Ocean Pines, West Ocean City and Ocean City. These areas are expected to accommodate much of the County's future growth. The population of Ocean City slightly declined to 7,102 in 2010, a decrease of 71 year-round residents since 2000. The projections for 2000-2020 indicate Ocean City growing by 11% and the whole of Worcester County growing by over 41% to 67,000 residents; Table 2-2 and Table 2-3.

Year	Population	% Change from Prior Period
1930	21,624	-
1940	21,245	-1.7
1950	23,148	8.2
1960	23,733	2.4
1970	24,442	2.9
1980	30,889	20.9
1990	35,028	11.8
2000	46,543	24.7
2010	51,454	9.5

Table 2-3: Year-Round Populations of Towns and Census Designated Places				
Place	Year 2010	Year 2000	Change	Percent Change
Berlin	4,485	3,491	994	29
Girdletree	149	117	32	27
Newark	336	339	-3	-1
Ocean City	7,102	7,173	-71	-1
Ocean Pines	11,710	10,496	1,214	12
Pocomoke	4,184	4,098	86	2
Snow Hill	2,103	2,409	-306	-13
Stockton	92	143	-51	-36
County Total	51,454	46,543	4,711	10

Source: 2010 US Census

According to the 2010 U.S. Census, approximately 23.2% of the County's residents are age 65 or older, while 5% of the population is under the age of 5 years old. Approximately 3% of the Worcester County's population is non-English speaking. There are a total of 55,749 housing units and 22,229 households with approximately 2.28 persons per household.

Economy

Tourism and recreation continue to be strong and growing components of the economy as new golf courses are built, the beach is replenished, and water-based activities flourish. The economy is based primarily on tourism, retail and services, along with construction and manufacturing. Agriculture, timber harvest and fishing are also very important to the economy and have distinct historical importance. The tourism and hospitality industries are focused at the northern end of the county. The rural and coastal character is a major economic draw for Worcester County. Maintaining this character is a major goal of the current Comprehensive Plan, *Worcester County 2005 Comprehensive Plan*.

The tourism industry is a major catalyst for growth in other sectors of the economy as the historically rural sectors catalyze the tourism industry. The fact that the tourism industry is strongly focused on the coastal portion of the County stresses the importance of buffering this area from the harmful impacts of natural hazards. A major interruption in the flow of tourism would reverberate throughout the economy. In addition, a catastrophic event in the coastal area could potentially result in a larger loss of life and property than anywhere else in the County.

Development Trends

New development predominantly occurred in Ocean City, Town of Berlin and Pocomoke City. Tables 2-4 through 2-11 detail new development for the years 2006-2012. Development has declined sharply in Worcester County from 1,522 units in 2006 to 56 units in 2012. Residential Condominiums built primarily in Ocean City and the Town of Berlin account for a large portion of new development during the last planning cycle, at 2,037 units.

Table 2-4: New Development - 2006					
	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	5	1	364	202	572
Bishopville	2	0	30	0	32
Girdletree	0	0	3	0	3
Newark	0	0	2	0	2
Ocean City	3	21	129	635	788
Pocomoke City	2	0	43	0	45
Salisbury	0	0	2	0	2
Snow Hill	0	0	24	0	24
Stockton	0	0	2	0	2
Whaleyville	0	0	5	0	5
County	0	27	17	3	47
TOTAL	12	49	621	840	1522

Table 2-5: New Development - 2007					
	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	6	0	169	32	207
Bishopville	0	0	23	0	23
Girdletree	0	0	2	0	2
Newark	0	0	8	0	8
Ocean City	2	4	90	417	513
Pocomoke City	3	0	37	0	40
Salisbury	0	0	2	0	2
Snow Hill	2	0	24	0	26
Stockton	0	0	4	0	4
Whaleyville	0	0	7	0	7
County	3	32	16	42	93
TOTAL	16	36	382	491	925

Table 2-6: New Development - 2008					
	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	6	0	55	48	109
Bishopville	0	0	17	0	17
Girdletree	0	0	1	0	1
Newark	0	0	4	0	4
Ocean City	3	2	64	441	510
Pocomoke City	3	0	34	7	44
Salisbury	0	0	1	0	1
Snow Hill	1	0	9	0	10
Stockton	0	0	1	0	1
Whaleyville	0	0	4	0	4
County	3	6	14	9	32
TOTAL	16	8	204	505	733

Table 2-7: New Development - 2009					
	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	0	0	30	68	98
Bishopville	1	0	7	0	8
Girdletree	0	0	1	0	1
Newark	0	0	1	0	1
Ocean City	5	0	37	54	96
Pocomoke City	0	0	13	0	13
Salisbury	0	0	2	0	2
Snow Hill	0	0	11	0	11
Stockton	0	0	0	0	0
Whaleyville	0	0	3	0	3
County	0	0	10	18	28
TOTAL	6	0	115	140	261

Table 2-8: New Development - 2010

	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	2	0	31	14	47
Bishopville	0	0	4	0	4
Girdletree	0	0	1	0	1
Newark	0	0	2	0	2
Ocean City	4	7	35	0	46
Pocomoke City	0	0	5	0	5
Salisbury	0	0	0	0	0
Snow Hill	0	0	7	0	7
Stockton	0	0	3	0	3
Whaleyville	0	0	1	0	1
County	2	0	12	2	16
TOTAL	8	7	101	16	132

Table 2-9: New Development - 2011

	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	1	0	30	8	39
Bishopville	0	0	3	0	3
Girdletree	0	0	0	0	0
Newark	1	0	1	0	2
Ocean City	3	0	31	27	61
Pocomoke City	1	0	6	0	7
Salisbury	0	0	3	0	3
Snow Hill	0	0	4	0	4
Stockton	0	0	0	0	0
Whaleyville	0	0	2	0	2
County	1	0	15	2	18
TOTAL	7	0	95	37	139

Table 2-10: New Development - 2012

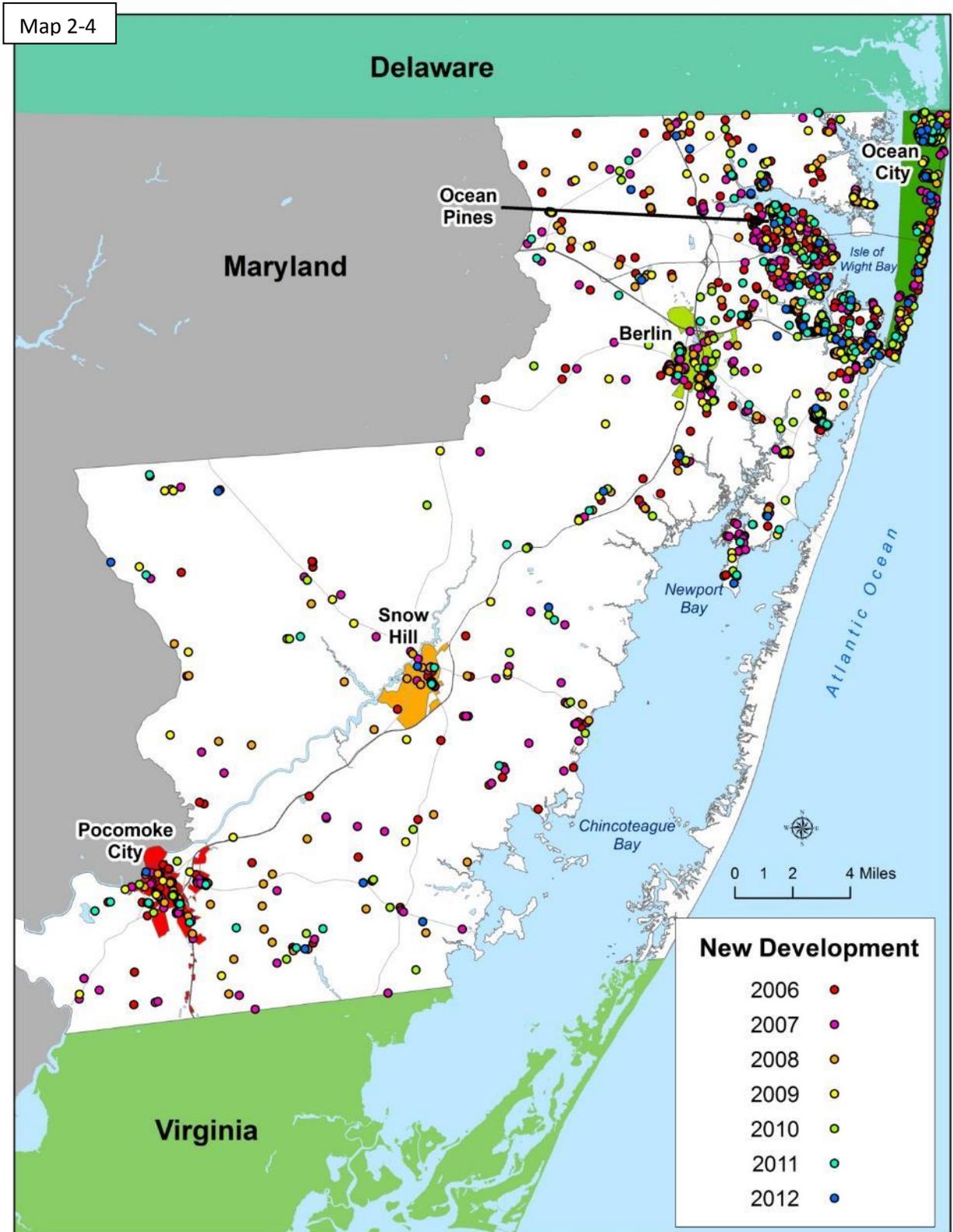
	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
Berlin	0	0	15	0	15
Bishopville	0	0	5	0	5
Girdletree	0	0	0	0	0
Newark	0	0	1	0	1
Ocean City	1	2	14	8	25
Pocomoke City	0	0	1	0	1
Salisbury	0	0	1	0	1
Snow Hill	0	0	1	0	1
Stockton	0	0	1	0	1
Whaleyville	0	0	0	0	0
County	2	0	4	0	6
TOTAL	3	2	43	8	56

Table 2-11: New Development from 2006 - 2012

	Commercial	Commercial Condominium	Residential	Residential Condominium	TOTAL
2006	12	49	621	840	1522
2007	16	36	382	491	925
2008	16	8	204	505	733
2009	6	0	115	140	261
2010	8	7	101	16	132
2011	7	0	95	37	139
2012	3	2	43	8	56
TOTAL	68	102	1561	2037	3768

Source (Tables 4-11): Maryland 2011 Property View Database

Development is depicted by year on Map 2-4. As noted previously, most new development has occurred in the northern portion of the County, in and around existing urban development. Coastal development has continued; thereby impacts from natural hazards may be greater than before due to the increase in housing stock and commercial development. Specifically impacts from coastal flooding and potential sea level rise.



Source: S&S Planning and Design and MD 2011 Property View Database

Mitigation Record

Prior to 1995, the County relied on its *Comprehensive Development Plan* (Comprehensive Plan) and its implementation through the County Code for past hazard mitigation. The measures included therein are summarized in the Capability Assessment. In 1995, the County produced the *Worcester County Emergency Operations Plan* (EOP) as required by the Stafford Act. The EOP clarifies the roles of county departments and support agencies in the event of an emergency. It also calls for the establishment of an Emergency Operations Center (EOC). During the Plan Update planning cycle, the Emergency Operations Plan had not been updated; therefore information from the latest plan has been utilized. The list below, obtained from the *Worcester County, Maryland 1995 Emergency Operations Plan*, summarizes the divisions and roles of those departments involved with emergency management.

Table 2-12: Departments and their Roles in the EOP	
Public Safety Group	
County Sheriff:	<ul style="list-style-type: none"> • Provides representative at EOC during emergency upon request by the Worcester County Department of Emergency Services (WCES) • Activates personnel • Patrols within County sectors • Assists in evacuation operations • Assists in search and rescue operations • Provides general police protection at shelters if needed • Assists in crime prevention activities. • Provides general law enforcement services to insure safety of residents during an emergency • Assists in establishing police lines at emergency incidents
Maryland State Police Barrack "V" Commander:	<ul style="list-style-type: none"> • Provides representative at EOC during emergency upon request by WCES • Activates personnel and requests additional manpower if necessary • Provides traffic control on major highways in County • Supervises National Guard troops if activated • Assists other County police agencies in law enforcement activities • Provides police protection at shelters if needed • Assists in evacuation operations • Assists in search and rescue operations • Assists in establishing police lines at emergency incidents • Procures temporary morgue facilities if necessary
Municipal Police Departments	<ul style="list-style-type: none"> • Report to Director of Emergency Services as the incident requires • Perform duties as required
Department of Natural Resources /Park Police:	<ul style="list-style-type: none"> • Provide communications with EOC • Assist in water related evacuation and search and rescue operations • Perform other duties as requested
Fire Departments:	<ul style="list-style-type: none"> • Provide communications with EOC • Provide fire suppression and emergency medical services as needed • Provide portable generators to school shelters as requested by WCES • Provide fire police upon request
Coast Guard:	<ul style="list-style-type: none"> • Provide communications with EOC • Assist in water related evacuation and search and rescue operations as needed
Emergency Services Director	<ul style="list-style-type: none"> • Coordinate all phases of emergency management • Identify and analyze the effects of hazards that may threaten the County and its citizens • Keep the County Administrator completely informed during any emergency situation • Establish and maintain an emergency communications system to operate in an emergency

	<ul style="list-style-type: none"> Establish and maintain a system to alert key officials, warn the public and provide information to the public in any emergency or disaster
Essential Services	
Department of Public Works Director	<ul style="list-style-type: none"> Reports to EOC or the scene during emergency operations if requested by WCES Oversees operations of Department of Public Works Assesses damage to County roads, bridges, utilities and public buildings Keeps County Commissioners informed
Board of Education:	<ul style="list-style-type: none"> Provide a representative at EOC during emergency operations Work with WCES Director in establishing shelters. Schools and other facilities are designated as shelters. Open and man shelters in conjunction with WCES Have school busses available for evacuation transportation Communicate with EOC during shelter operations Coordinate shelter closing with EOC Provide Red Cross shelter training for staff Provide shelter managers to work in conjunction with Red Cross personnel Provide custodial and food services support at shelters
Department of Social Services:	<ul style="list-style-type: none"> Provide a representative at EOC during emergency operations when requested by WCES Activate personnel as needed Provide registration and reception personnel at shelters if needed in conjunction with Red Cross Provide available shelter training for staff Provide post-disaster assistance as needed
Health Department:	<ul style="list-style-type: none"> Provide a representative at EOC during emergency operations when requested by WCES Provide nursing services and medical supplies at shelters Prioritize patients at shelters Assist in registration at shelters Provide EOC with names and addresses of invalids in County Activate and staff special care shelters Monitor potential environmental problems Monitor water supplies Provide post-disaster assistance
County Roads Department:	<ul style="list-style-type: none"> Coordinate activities with the Public Works Department Provide communication with EOC Provide transportation for cots and other supplies Maintain county roads Provide ramp and bridge damage information to EOC
Department of Development Review & Permitting	<ul style="list-style-type: none"> Conducts post disaster damage assessment of private properties Provides GIS support Keeps County Commissioners informed Provide natural resources information as required
Support Group	
American Red Cross	<ul style="list-style-type: none"> Provide communication with EOC Provide training for shelter managers and staff Provide compensation for operation of shelters Provide necessary forms for shelter operation Provide post-disaster assistance as needed Provide food and water when necessary

Source: Worcester County, 1995 Emergency Operations Plan

National Flood Insurance

In regard to the National Flood Insurance Program (NFIP), a total of 33,721 flood insurance policies are filed within Worcester County and its four municipalities as of the report date, 30 April 2011. The County's participation in the Program is voluntary, however compliance is mandatory. Information regarding Worcester County's strategies for complying with the NFIP can be found in Appendix B.

Details on the types of coverage available and the amount of policies will insure are provided on Table 2-13.

The National Flood Insurance Program (NFIP) is "A federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods."

Table 2-13: NFIP Available Coverage	
Coverage Type	Policies
One to Four-family structure	\$250,000
One to Four-family home contents	\$100,000
Other residential structures	\$250,000
Other residential contents	\$100,000
Business structure	\$500,000
Business contents	\$500,000
Renter contents	\$100,000

Note: Flood insurance is available to anyone in the County and even those structures outside of the 100-year mapped floodplain area. Therefore, in some cases, the number of policies includes structures that are outside the 100-year mapped floodplain.

Source: National Flood Insurance Program (NFIP) FAQ;
www.floodsmart.gov/floodsmart/pages/faq_types

As listed in Table 2-14, Ocean City comprises the majority of insurance policies being enforced with a total of 27,352 policies. As of 30 April 2011, the NFIP reported stated that 1,816 claims filed in Worcester County. The amount paid for the reported claims totaled \$11,190,682.00.

Table 2-14: Worcester County NFIP Insurance Policies		
Location	Number of Policies	Total Coverage
Town of Berlin	73	\$19,950,100.00
Town of Ocean City	27,352	\$4,539,317,800.00
City of Pocomoke City	48	\$10,098,600.00
Town of Snow Hill	20	\$5,909,200.00
Worcester County	6,228	\$1,664,181,300.00
TOTAL	33,721	\$6,239,457,000.00

Source: Federal Emergency Management Agency (FEMA) NFIP Insurance Report; April 2011



CHAPTER 3: VULNERABILITY ASSESSMENT

Introduction

The scope of hazards relevant to Worcester County and its residents is fairly narrow. While the county has encountered hazards other than storms and flooding, the human and financial loss has been minimal in comparison. This document, as a guide to mitigating potential human and financial loss, will focus on the County's vulnerability to storms and flooding. Later in the plan each of the lesser hazards will be discussed. These include potential sea level rise, shoreline erosion, wild fires and tornados. Also byproduct hazards such as manmade toxins will be discussed. During the 2014 Plan Update the HMPC indentified additional hazards not included in the 2006 Plan. Wind storms fronts, winter storm and drought are discussed in Chapter 5. This chapter assesses the risks of storms and flooding and analyzes the counties financial and human vulnerability.

Risk Assessment

In 1999, Worcester County and MEMA, contracted with Geomet Technologies to conduct assessments of individual natural hazards that pose a risk to Worcester County. In 2000, MEMA sponsored the development of the *Maryland Hazard Analysis*. This document provided a historical analysis of risk for all Maryland counties. The *Maryland Hazard Analysis* compared the risk of events that have occurred in Worcester County to the risks in the remainder of the state. A "low" score meant that Worcester County has a lower potential effect relative to the rest of Maryland.

However, the *2011 Maryland State All-Hazard Mitigation Plan* identified hazards differently from the 2006 Plan by categorizing and grouping hazards in a new way. MEMA is encouraging local plan revisions to approach classifying hazards in a similar fashion as completed in this revised risk assessment. The table below provides an outline of what types of events could fall within the designated Hazard Identification and Risk Assessment (HIRA) categories.

The following hazards were identified and ranked by MEMA for Worcester County in the *2011 Maryland State All-Hazard Mitigation Plan Update*:

Table 3-1: MEMA HIRA		
Identified Hazard	Types of Events	Worcester County
Coastal	Coastal Flooding; Coastal Storms; Storm Surge; Hurricane/Tropical Storm; Nor'easter; Potential Sea Level Rise; Shoreline Erosion; Tsunami	High
Drought	Drought; Extreme Heat	Medium-High
Flood	Flood	High
Landslide	Landslide	Medium-Low
Thunderstorm	Thunder-storm; Lightning; Hail	Medium-Low
Tornado	Tornado	Medium
Wildfire	Wildfire; Brush Fire; Conflagration	Medium
High Wind	Thunder-storm winds; Non-thunder-storm wind	Medium-High
Winter Storm	Winter Storm; Extreme Cold; Nor'easter (Snowfall)	Medium-Low
Karst/Sinkhole	Karst; Sinkholes	Low
Earthquake	Earthquake	Low

Source: 2011 Maryland State All-Hazard Mitigation Plan Update

Based on this assessment of risk, the highest priority for natural hazard mitigation should clearly be coastal and flood, as a result of hurricanes and other major storms. Other hazards that did not receive a "high" risk rating will require action, but are of a secondary priority. Therefore this document is dedicated first to flood related hazards with a secondary emphasis on less common hazards.

Flood Hazard Vulnerability

Worcester County and the Delmarva Peninsula have not been a consistent landfall for hurricanes. Many such storms have passed off shore, for example, Gloria in 1985. However, even nearby storms have severe effects with damaging winds, flooding rains, and significant property damage and human danger.

Hurricanes and tropical storms cause impacts throughout the County. They disrupt power, topple trees, spread debris, inundate roads and washout bridges and can wreak havoc on the entire community even without storm surge damage. The Isle of Wight Bay, which borders Ocean City and Ocean Pines, two of the most heavily populated areas, has a serious potential for flooding. Citizens would be forced to evacuate in certain circumstances.

The County participates in the National Flood Insurance Program (NFIP) with 6,228 policies in force excluding municipalities as listed in Table 2-14. County regulations require all new development and redevelopment to be at Base Flood Elevation (BFE) or above (see Worcester County Code §§ BR 2-301 through BR 2- 308). County regulations will be updated based upon

the FEMA Flood Insurance Rate Maps (FIRM) updates, which are planned to be effective in 2014. The components of this vulnerability assessment are:

- Identification of flood prone properties
- Identification of at-risk populations
- Identification of critical facilities
- HAZUS Level 2 Analysis

FEMA defines a "repetitive loss property" as a property that has had two or more flood losses within the past ten years with claims of \$1,000 or more on each loss and where the losses occurred at least ten days apart.

Repetitive Loss Properties

Several areas of the County have a history of flooding and flood damage. Listed in Table 3-2 are repetitive loss properties; most notably homes from the Snug Harbor subdivision on Route 611. Repetitive loss property locations are shown on Map 3-1 and Map 3-2. As of 30 June 2011, there was a statewide total of 901 repetitive loss properties, 87 (10%) are in Worcester County; of these, 17 are located in Snug Harbor. Of the 87 repetitive loss properties, 11 are commercial with the remaining 76 being residential.

As required by the Flood Mitigation Assistance program (FMA) a complete inventory has been made of all of the repetitive loss properties. Each Repetitive Loss Property has been located, photographed and a recommendation has been made to mitigate the flood hazard.

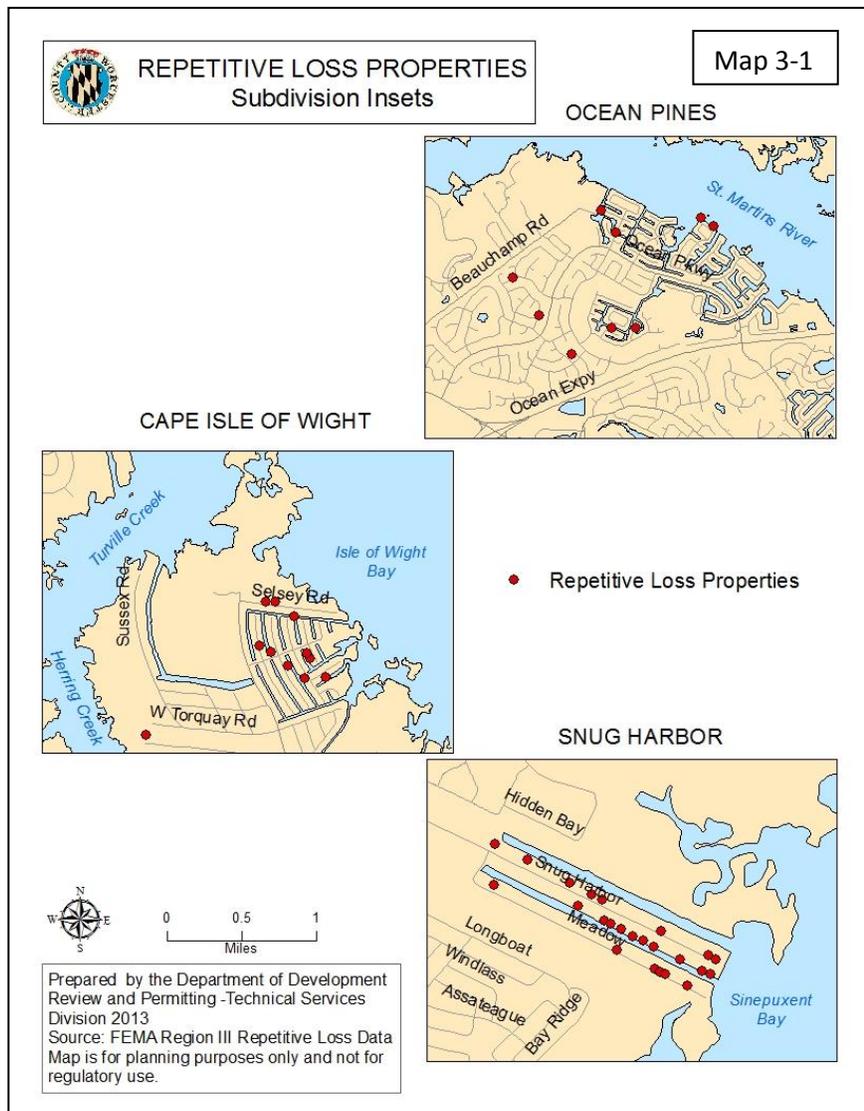
Table 3-2: Repetitive Flood Loss Properties				
Location	ID#	Loss (\$)	Insured	Losses
Berlin	0092322	4,576.33	Yes	2
	0052118	15,167.97	No	3
	0096263	4,706.10	No	2
	0018845	11,800.12	No	3
	0094617	66,424.61	No	2
	0212491	15,766.02	Yes	2
	0063127	33,501.64	Yes	4
	0095386	10,998.20	Yes	2
	0094781	34,378.65	No	2
	0011663	21,141.19	No	4
	0011664	10,430.66	No	2
	0094895	63,900.35	Yes	3
	0091387	128,862.79	No	2
	0005709	77,162.20	Yes	4
	0091509	20,844.23	Yes	2
	0094783	17,202.88	No	2
	0094737	69,279.95	No	2
0093622	44,263.11	Yes	2	
0096264	152,083.47	Yes	2	
0091397	57,776.56	Yes	2	
0096265	76,596.73	Yes	2	
0094786	104,067.66	No	2	
0094586	85,227.24	Yes	2	

Location	ID#	Loss (\$)	Insured	Losses
Berlin	0092324	87,358.22	No	2
	0096266	89,431.55	SDF	2
	0096267	41,057.30	Yes	2
	0095316	20,839.22	Yes	2
	0094825	38,544.86	Yes	2
	0089816	53,614.88	No	2
	0091510	35,559.30	Yes	3
	0188593	18,066.33	No	2
Bishopville	0093621	16,327.97	Yes	3
Ocean City	0005120	85,489.91	Yes	4
	0001862	27,036.70	No	2
	0002333	149,704.75	SDF	2
	0001271	99,855.29	Yes	4
	0001551	133,176.05	Yes	4
	0096268	23,104.47	No	2
	0003185	62,849.09	Yes	3
	0070081	57,421.27	Yes	2
	0094619	3,280.27	Yes	2
	0049595	22,802.83	Yes	3
	0183944	4,848.82	Yes	2
	0063148	9,435.30	No	2
	0002338	307,692.07	Yes	3
	0094751	2,763.91	No	2
	0004785	20,270.19	Yes	2
	0089823	16,865.35	No	2
	0052489	22,116.08	No	4
	0094046	19,575.62	Yes	3
	0095011	166,331.26	SDF	4
	0126340	22,347.95	Yes	4
	0096270	4,199.90	No	2
	0091437	28,979.70	No	2
	0109431	5,817.12	Yes	2
	0094678	6,348.65	Yes	3
	0094779	55,440.21	Yes	3
	0092327	43,409.94	Yes	3
	0096269	19,610.22	Yes	3
	0092326	65,859.09	Yes	3
	0004662	32,810.17	Yes	3
	0001857	9,621.98	No	3
	0094806	13,950.64	Yes	3
	0091394	19,851.06	Yes	2
	0216273	6,802.84	Yes	2
	0092330	2,912.62	Yes	2
	0091378	26,949.22	Yes	2
	0091259	18,855.92	Yes	2
	0004915	16,560.23	Yes	4
	0009371	101,690.66	Yes	4
	0217665	10,750.81	Yes	2
	0091377	31,243.29	Yes	2
0215579	8,565.39	Yes	2	
0189591	7,117.65	Yes	3	
0094845	15,066.79	No	2	
0004282	24,789.10	Yes	3	
0192081	12,637.22	Yes	3	
0091368	14,801.95	No	3	

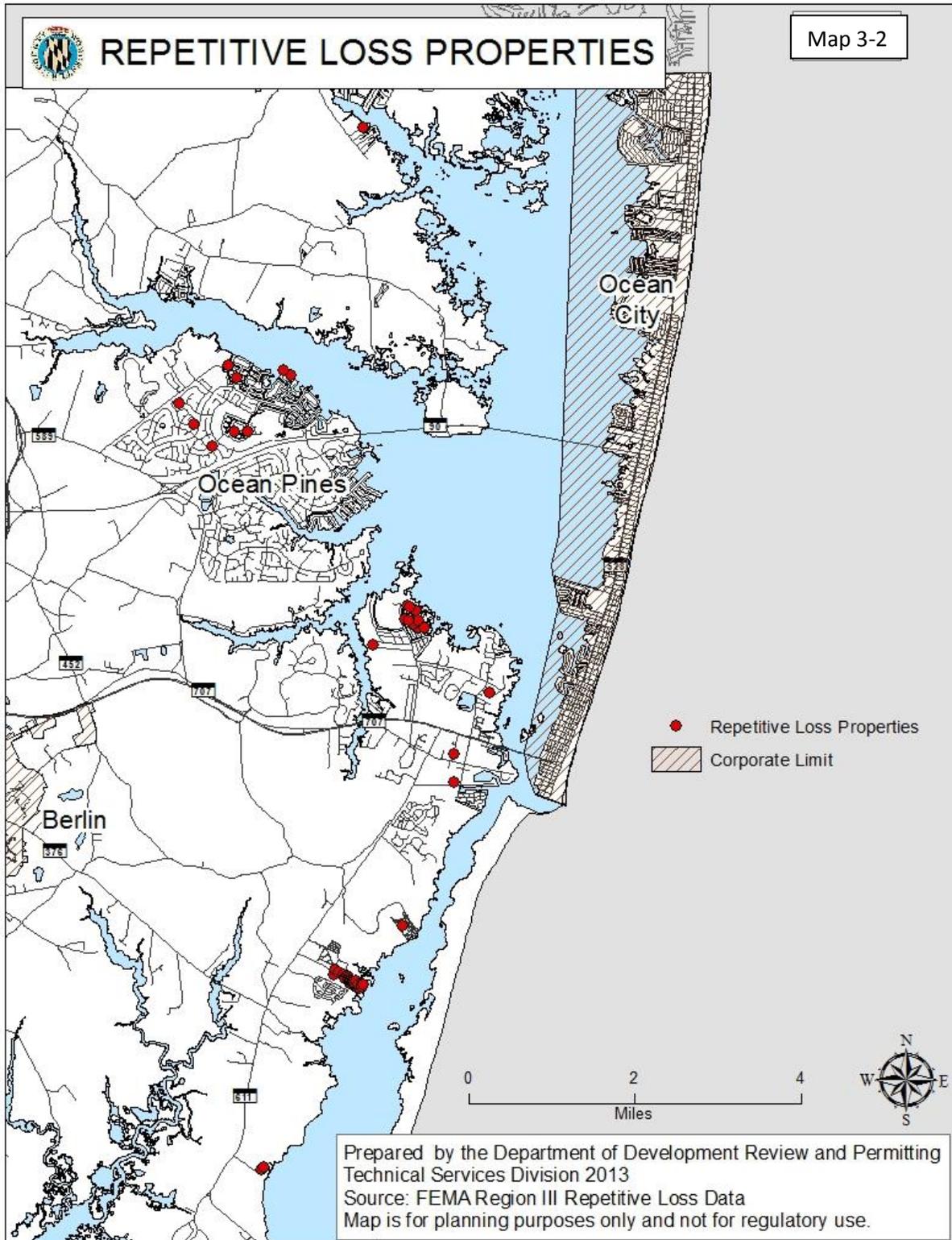
Location	ID#	Loss (\$)	Insured	Losses
Ocean Pines	0215687	35,416.59	Yes	2
	0167733	7,882.75	No	2
Snow Hill	0072294	14,154.12	No	2
	0218905	8,350.69	Yes	2
West Ocean City	0111198	11,437.08	No	2
	0063153	39,959.04	No	2
	0091794	29,497.84	Yes	2
	0094587	57,052.82	No	2
	0092325	2,852.00	No	2

Source: FEMA NFIP Report, February 2013

There are also two (2) severe repetitive loss structures located in Worcester County. One structure is located in the Town of Berlin, while the other is in Ocean City. The structure located in Snug Harbor is consequently found along Snug Harbor Road in addition to the 17 repetitive properties. This structure has endured 2 losses totaling \$89,431.55. Map 3-2 depicts each of the 87 repetitive loss properties.



Source: Technical Services Division



Source: Technical Services Division

Knowing the location and past damage of repetitive loss properties in the County is essential. Worcester County has found this analysis very useful in determining areas of high vulnerability. In addition, knowledge about repetitive loss properties enhances the County's ability to provide assistance and advice to the owners of the properties so that future losses can be avoided. As more data is collected about past losses and as the base flood elevation (BFE) is established for the entire county we will be able to do more comprehensive analysis. Such analysis will be incorporated into the county's continued mitigation efforts. The FIRM's are scheduled for revision and redistribution in a digital format known as a digital flood insurance rate map (DFIRM). The preliminary DFIRM is scheduled to be released in September 2013.

Both coastal and inland flooding are high risk hazards for many parts of the county. Mitigation strategies that specifically address flooding are necessary to abate continued losses of life and property resulting from flooding. In addition, specific measures need to be implemented for repetitive loss properties to either make them more resistant to flooding.

Aside from the repetitive loss properties, there are many structures within the County that are located in the 100-year floodplain. While it is understood that most likely all would not be lost in a storm event, acknowledging the total value of improvements in the floodplain is a good indicator of the economic risk of developing these coastal areas. The County is shifting the direction of growth away from these vulnerable areas. Also it should be noted that just because a structure is out of the 100-year floodplain it is not necessarily away from harm. The 100-year flood is generally equivalent to flooding caused by a category 2 hurricane. Even in a category 1 or 2 storm high winds can threaten inland homes. The Plan Update includes a HAZUS Level 2 Analysis which details information pertaining to structures and critical facilities within hazard areas.

HAZUS Analysis

HAZUS provides different levels of analysis based on the level of effort and expertise employed by the user. Users can improve the accuracy of HAZUS loss estimates by furnishing more detailed data about their community, or engineering expertise on the building inventory.



- **LEVEL 1**

A basic estimate of earthquake, flood and hurricane wind losses is produced based on national databases and expert-based analysis parameters included in the HAZUS software. This is commonly referred to as an "out-of-the-box" or "default" loss estimate.

- **LEVEL 2**

More accurate loss estimates are produced by including detailed information on local hazard conditions and/or by replacing the national default inventories with more accurate local inventories of buildings, essential facilities and other infrastructure. Although there is no standard way to perform a Level 2 study, priority should be given to information that better defines the hazard. Sensitivity studies can guide the user in focusing time and resources on the type of information that will most improve the loss estimate for their study region.

The Eastern Regional GIS Cooperative (ESRGC) in the Spring of 2005, led by John M. Joyce of Maryland Department of Environment and Dr. Michael Scott PhD of Salisbury University sponsored and completed a Level 1 HAZUS analysis for Worcester County. The HAZUS Level 2 analysis, conducted by S&S Planning and Design, utilize integrated user-supplied data in order to yield more accurate loss estimates and risk assessments for the Worcester County Hazard Mitigation Plan Update.

Input parameters were updated utilizing the Worcester County geodatabase provided by Worcester County Development Review and Permitting. The geodatabase contained current shapefiles for all critical facilities within the County. The attribute tables of the provided Worcester County shapefiles were edited to included additional and updated data to the existing tables. The additional and updated data was captured from the 2011 Maryland Property View Database. The data extracted from the 2011 Maryland Property View Database included: building stories, year built, structure value and square footage. The complete methodology for the HAZUS Level 2 is located in Appendix A.

The table below lists the information found in the HAZUS Level 1 default data and by comparison the county data utilized in this HAZUS Level 2 Analysis. As shown, utilizing the County data and running the HAZUS Level 2 Analysis yields more accurate results.

Critical Facility Type	HAZUS Default Data	County Data Utilized for HAZUS Level 2 Analysis
Fire stations/EMS	5	23
Police Stations	7	7
Schools	18	22
Sewer Facilities	7	87
Water Facilities	1	47
Telecommunications	0	39

In order to improve accuracy further, a more precise Digital Elevation Model (DEM) was utilized. For the 2006 HAZUS Level 1 Analysis, a 30 meter DEM was utilized, while the Level 2 Analysis utilized a 10 meter DEM. A Digital Elevation Model is a digital 'bare earth' elevation model or 3D representation of a terrain's surface created from terrain elevation data. The 30 meter DEM is a coarse representation of broad-scale surface relief and is utilized for generalized model of entire river basins and as a surface to drape upon satellite imagery. The 10 meter DEM creates a more geomorphological accurate representation of the surface. This was necessary for developing a stream network at 2 square miles. A stream network developed at 2 square miles, compared to 10 square miles, results in a more precise highly defined stream network within the total land area.

Riverine Flood

The Level 2 Analysis was conducted for Riverine Flood, Coastal Flood and Hurricane Modeling. Riverine and coastal flood modeling analyzes both riverine and coastal flood hazards. Flood hazard is defined by a relationship between depth of flooding and the annual chance of inundation to that depth. Depth, duration and velocity of water in the floodplain are the primary factors contributing to flood losses. Other hazards associated with flooding that contribute to flood losses include channel erosion and migration, sediment deposition, bridge scour and the impact of flood-born debris. The HAZUS Flood Model allows users to estimate flood losses due to depth of flooding. The flood model does not estimate the losses due to high velocity flash floods at this time.

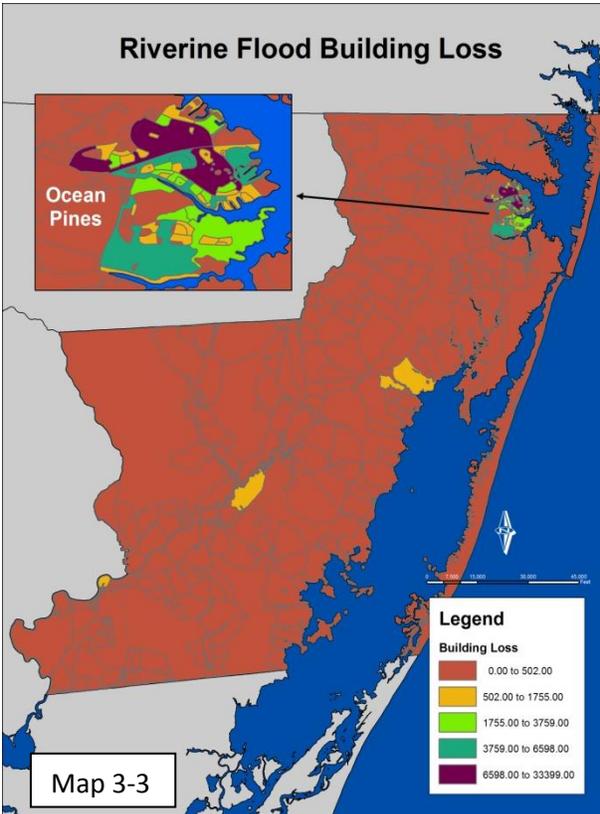
Results generated from the riverine flood model state that there are an estimated 33,137 buildings in the region with a total building replacement value (excluding contents) of \$5,666 million dollars. Approximately 91.79% of the buildings (and 79.23% of the building value) are associated with residential housing.

Table 3-4: Total Building Exposure by Occupancy Type for Worcester County		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,489,700	79.2%
Commercial	861,843	15.2%
Industrial	116,737	2.1%
Agricultural	22,285	0.4%
Religion	103,405	1.8%
Government	40,367	0.7%
Education	31,985	0.6%
Total	5,666,322	100.00%

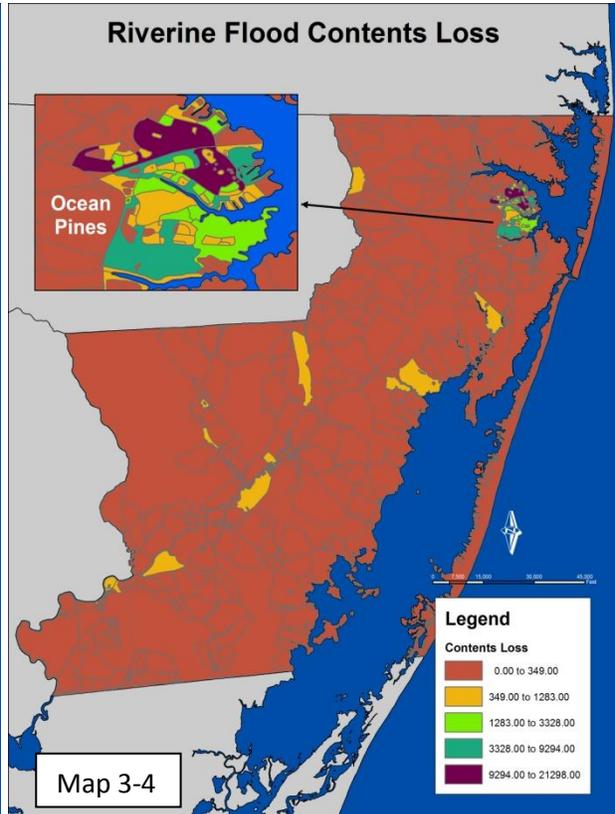
Table 3-5: Building Exposure by Occupancy Type for Riverine Flooding		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,090,838	81.8%
Commercial	158,988	11.9%
Industrial	38,325	2.9%
Agricultural	8,041	0.6%
Religion	25,033	1.9%
Government	9,488	0.7%
Education	2,280	0.2%
Total	1,332,993	100.00%

HAZUS estimates that about 3,001 buildings will be at least moderately damaged. This is over 80% of the total number of buildings in the 100-year flood inundation area. There are an estimated 292 buildings that will be completely destroyed.

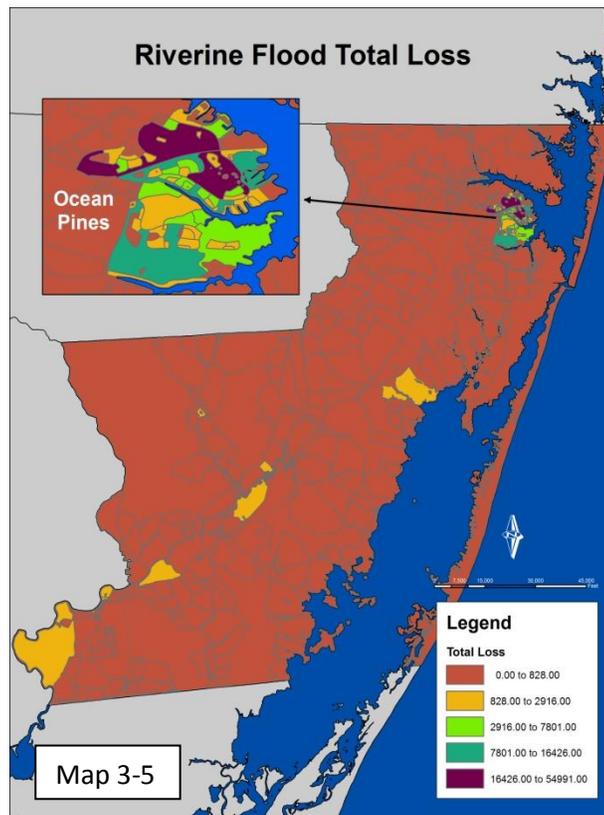
Maps 3-3 through 3-5 provide results which indicate that the areas on the southern shores of the St. Martin River and Isle of Wights Bay are the most vulnerable in terms of loss to riverine flooding. HAZUS utilizes census tract and block boundaries to display results, which is illustrated on Maps 3-3 through Map 3-20.



Source: S&S Planning and Design - HAZUS Results



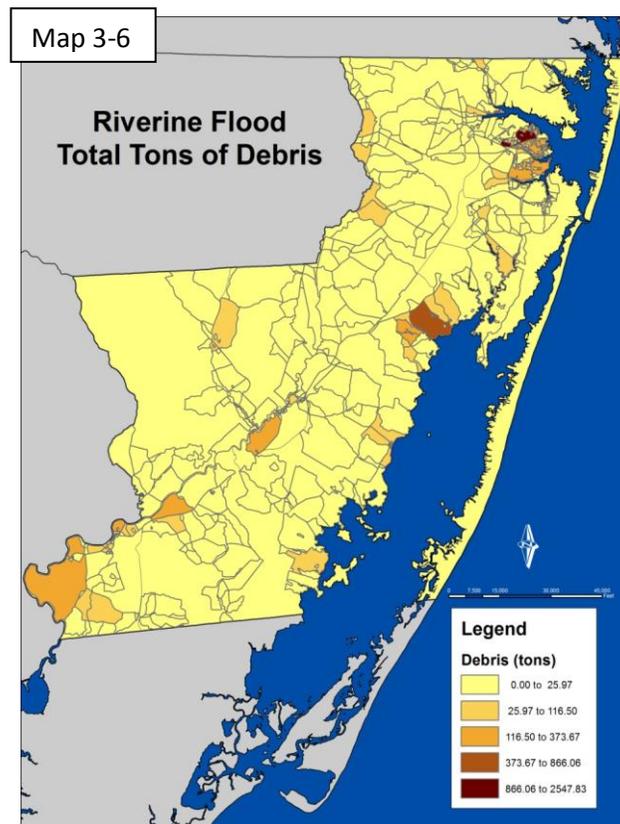
Source: S&S Planning and Design - HAZUS Results



Source: S&S Planning and Design - HAZUS Results

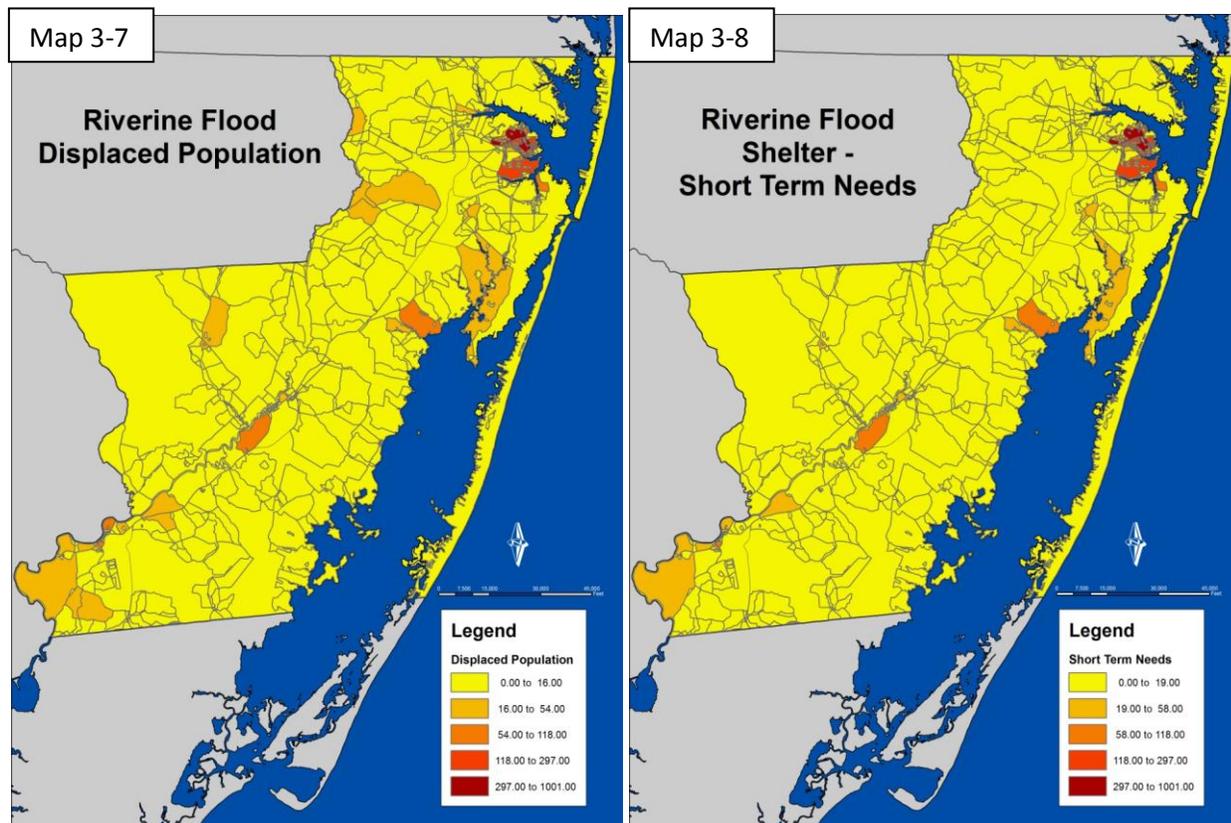
HAZUS estimates the amount of debris that will be generated by the flood scenario. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 11,368 tons of debris will be generated. Finishes account for 56% of the debris total, structure comprises 22% of the total and foundation debris being the least in the categories of debris. If the debris tonnage is converted into an estimated number of truckloads, it will require 455 truckloads (@25 tons/truck) to remove the debris generated by the 100-year flood event scenario.



Source: S&S Planning and Design - HAZUS Results

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 2,748 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 7,062 people (out of a total population of 51,454) will seek temporary shelter in public shelters.



Source: S&S Planning and Design - HAZUS Results

HAZUS expects the loss of one essential facility which is a fire station located in southern Ocean Pines; Ocean Pines Fire Department, 911 Ocean Parkway. However, this facility currently is not located within a FEMA mapped Special Flood Hazard Area (SFHA). The total economic loss estimated for the flood is 340.73 million dollars, which represents 25.56% of the total replacement value of the scenario buildings. The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood. The total building-related losses were 338.72 million dollars. One-percent of the estimated losses were related to the business interruption of the region. The residential occupancies made up 79.80% of the total loss.

Coastal Flood

During the creation of riverine and coastal scenarios, HAZUS provides the option to build a scenario with only river reaches, only shorelines, or a combination of reaches and shorelines. The flood model maintains the riverine and the coastal hazard depth grids separately because the depth of flooding alone does not determine which hazard is producing the most damage by occupancy.

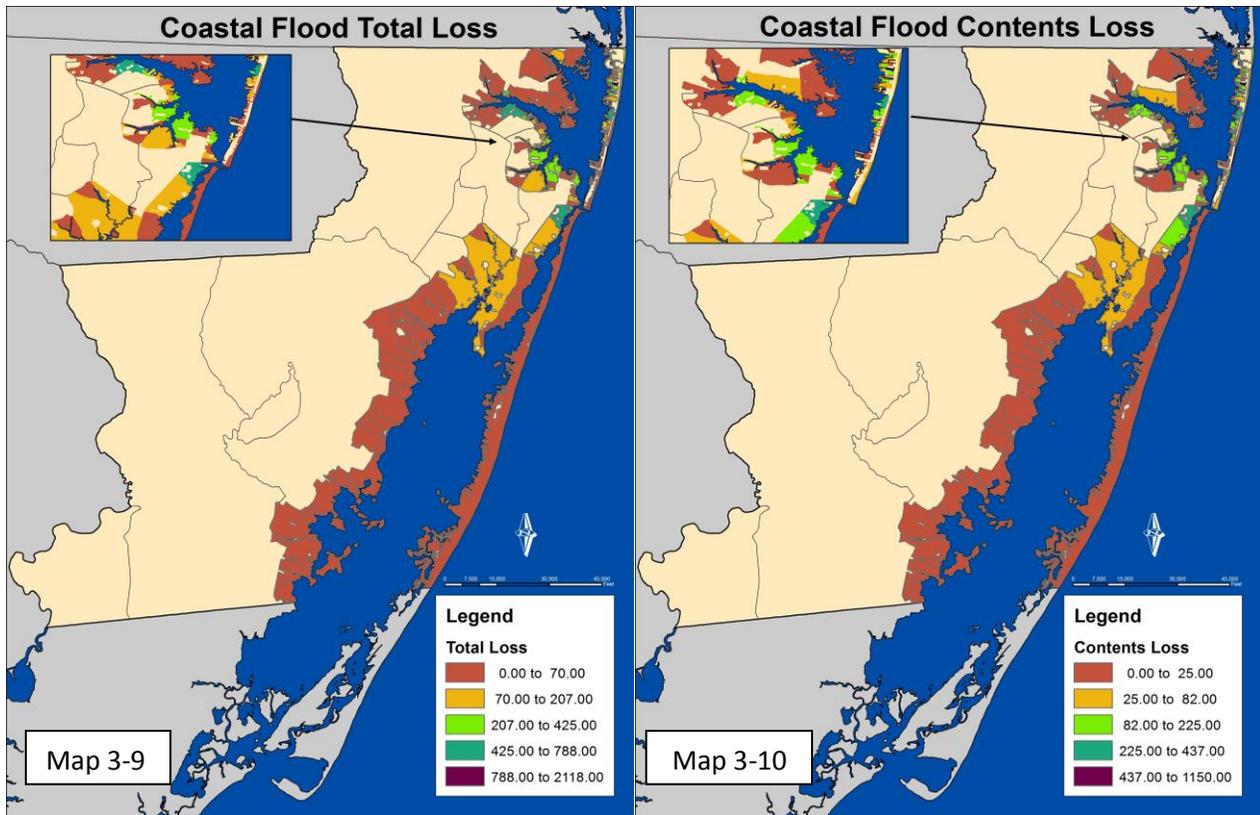
If a scenario is chosen to run with river reaches and coastal shorelines, the flood model will analyze the impact of both hazards on the inventory independently and then compare the resulting losses to see which hazard is the controlling hazard or the hazard with the greatest impact on that occupancy or structure. Results generated analyzing coastal flooding only are provided below.

In terms of coastal flooding, there are an estimated 33,137 buildings in the region with a total building replacement value (excluding contents) of \$5,666 million dollars. Approximately 91.79% of the buildings (and 79.23% of the building value) are associated with residential housing.

Table 3-6: Total Building Exposure by Occupancy Type for Worcester County		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,489,700	79.2%
Commercial	861,843	15.2%
Industrial	116,737	2.1%
Agricultural	22,285	0.4%
Religion	103,405	1.8%
Government	40,367	0.7%
Education	31,985	0.6%
Total	5,666,322	100.00%

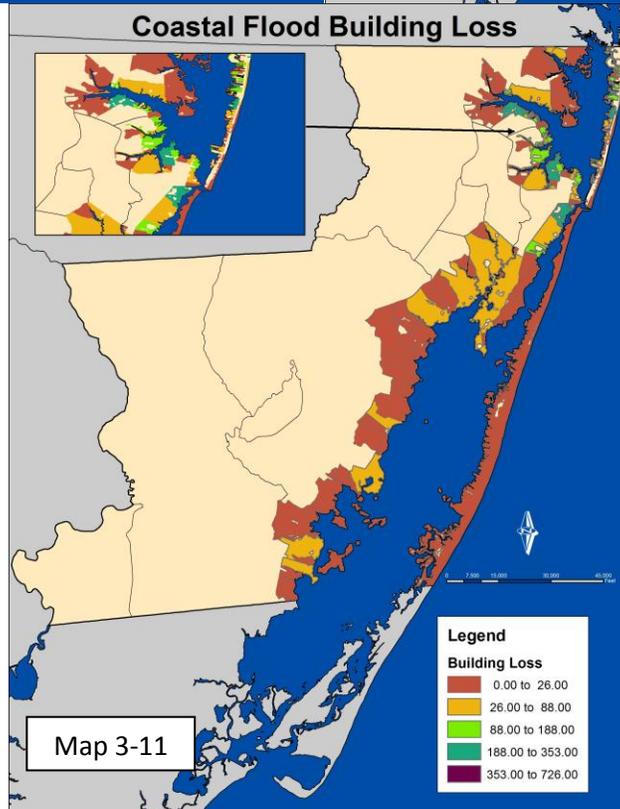
Table 3-7: Building Exposure by Occupancy Type for Coastal Flood		
Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,375,967	78.2%
Commercial	333,033	18.9%
Industrial	20,752	1.2%
Agricultural	4,740	0.3%
Religion	17,642	1.0%
Government	7,847	0.4%
Education	663	0.0%
Total	1,760,644	100.00%

HAZUS estimates that about 93 buildings will be at least moderately damaged. This is over 19% of the total number of buildings in the coastal flood scenario.



Source: S&S Planning and Design - HAZUS Results

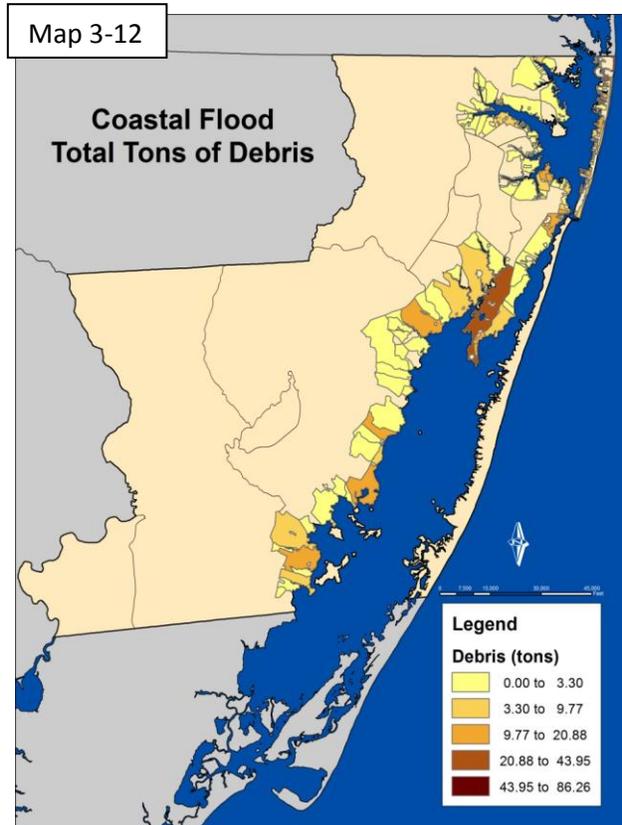
Source: S&S Planning and Design - HAZUS Results



Source: S&S Planning and Design - HAZUS Results

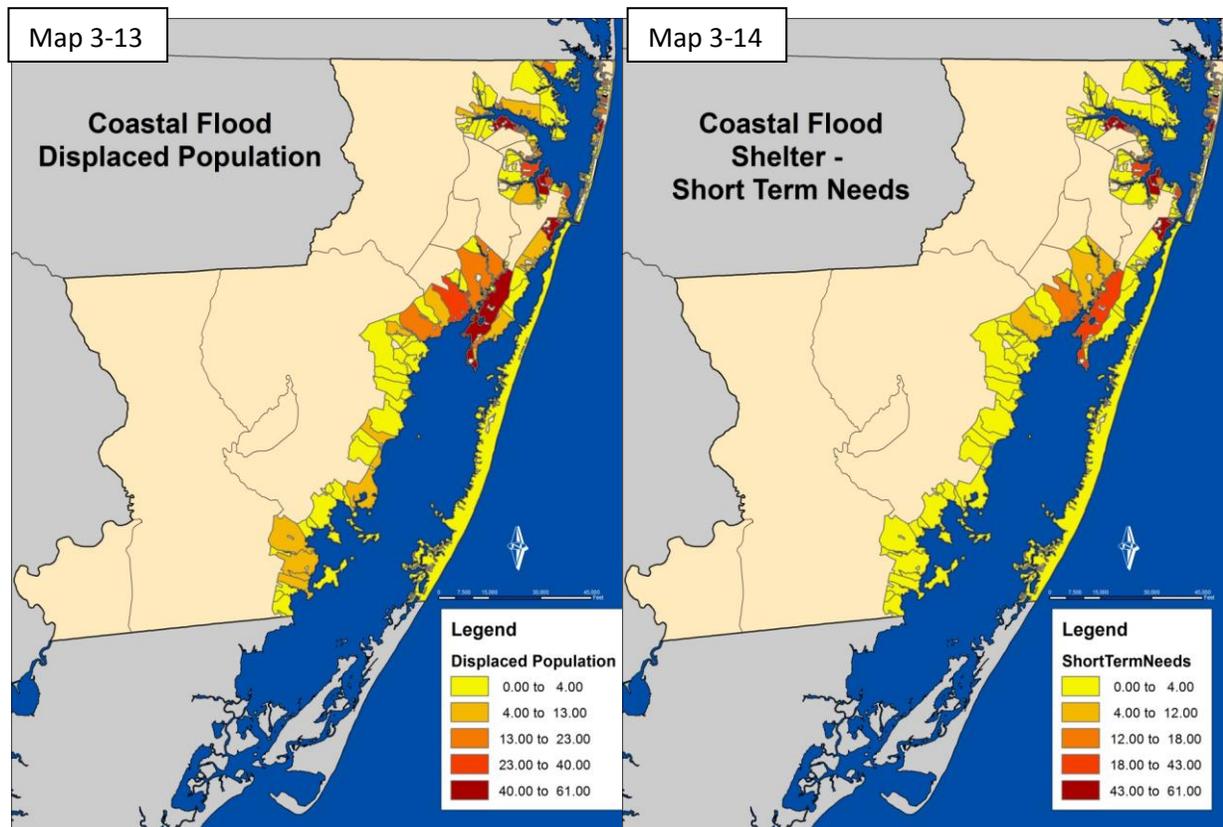
The model estimates that a total of 868 tons of debris will be generated. Finishes comprises 82% of the debris total. If the debris tonnage is converted into an estimated number of truckloads, it will require 35 truckloads (@25 tons/truck) to remove the debris generated by the flood.

HAZUS estimates the number of households that are expected to be displaced from their homes due to the coastal flood scenario and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 474 households will be displaced due to coastal flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 787 people (out of a total population of 51,454) will seek temporary shelter in public shelters.



Source: S&S Planning and Design - HAZUS Results

The areas most vulnerable to displacement are the Newport Bay areas and the Isle of Wights Bay area.



Source: S&S Planning and Design - HAZUS Results

The total economic loss estimated for the flood is 15.78 million dollars, which represents 0.90 % of the total replacement value of the scenario buildings. The total building-related losses were 15.25 million dollars. Three-percent of the estimated losses were related to the business interruption of the region. The residential occupancies made up 62.78% of the total loss.

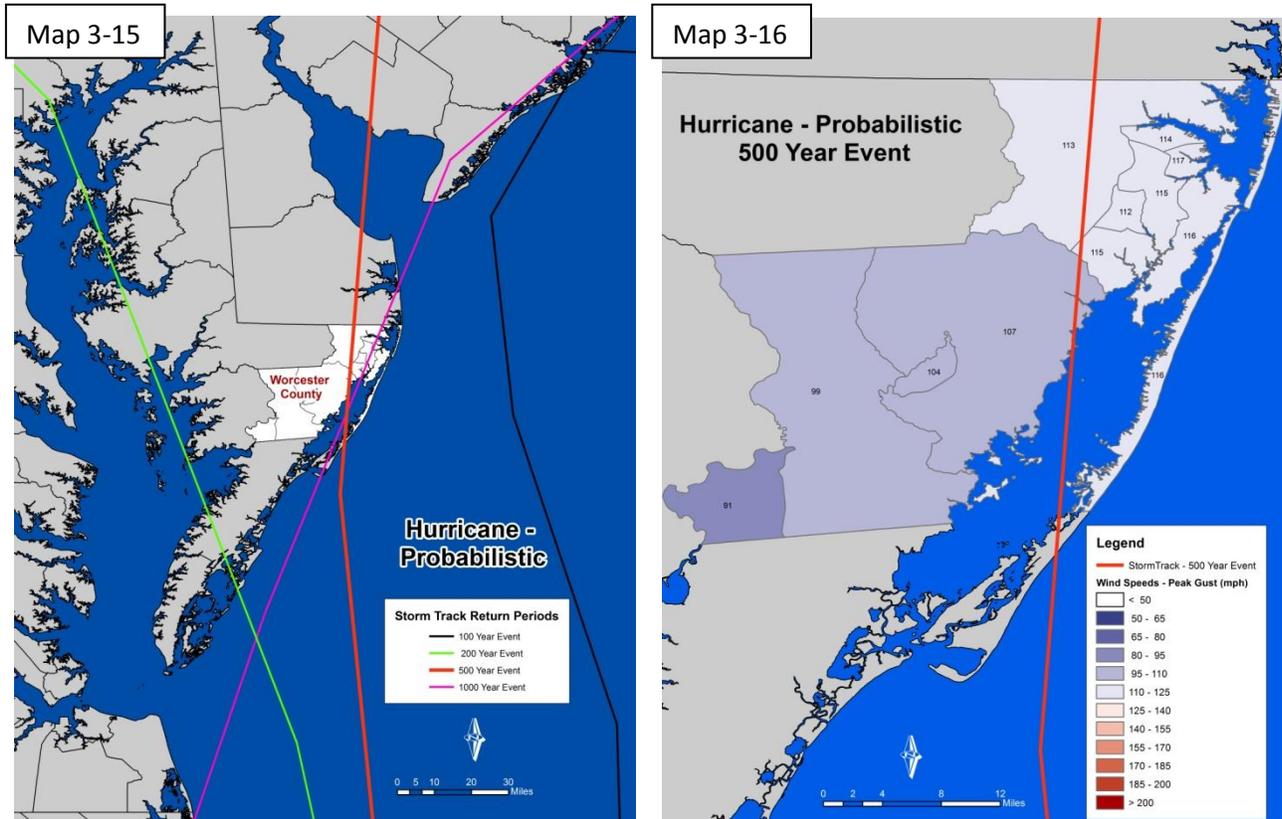
Hurricane

The Hurricane Model was the final HAZUS Analysis conducted. The Hurricane Model allows practitioners to estimate the economic and social losses from hurricane winds. The information provided by the model will assist state and local officials in evaluating, planning for, and mitigating the effects of hurricane winds. The Hurricane Model provides practitioners and policy makers with a tool to help reduce wind damage, reduce disaster payments, and make wise use of the nation's emergency management resources.

Although the software offers users the opportunity to prepare comprehensive loss estimates, it should be recognized that, even with state-of-the-art techniques, uncertainties are inherent in any such estimation methodology. The next major hurricane to affect Worcester County may be quite different than any "scenario hurricane" anticipated as part of a hurricane loss estimation study. Hence, the results of a scenario analysis should not be looked upon as a *prediction* but rather as an indication of what the future may hold.

The Hurricane model utilized for Worcester County was the probabilistic model. The probabilistic scenario is the default hazard option in the Hurricane Model. A probabilistic hurricane hazard activates a database of many thousand potential storms that have tracks and intensities reflecting the full spectrum of Atlantic hurricanes observed since 1886. Activating the Probabilistic hurricane hazard will cause the Hurricane Model to execute a 100,000-year simulation of storms. There are important differences in the format of the results for a probabilistic analysis compared to a scenario analysis. Scenario results represent the expected damage and loss from a single hurricane event, while probabilistic results represent the range of probable losses estimated from a 100,000-year simulation of expected hurricane activity. In all of the probabilistic results displays, you will see sample results for seven different return periods ranging from 10 years to 1,000 years. Probabilistic hurricane analyses inherently account for the full spectrum of probable events, producing both annualized and return period loss estimates.

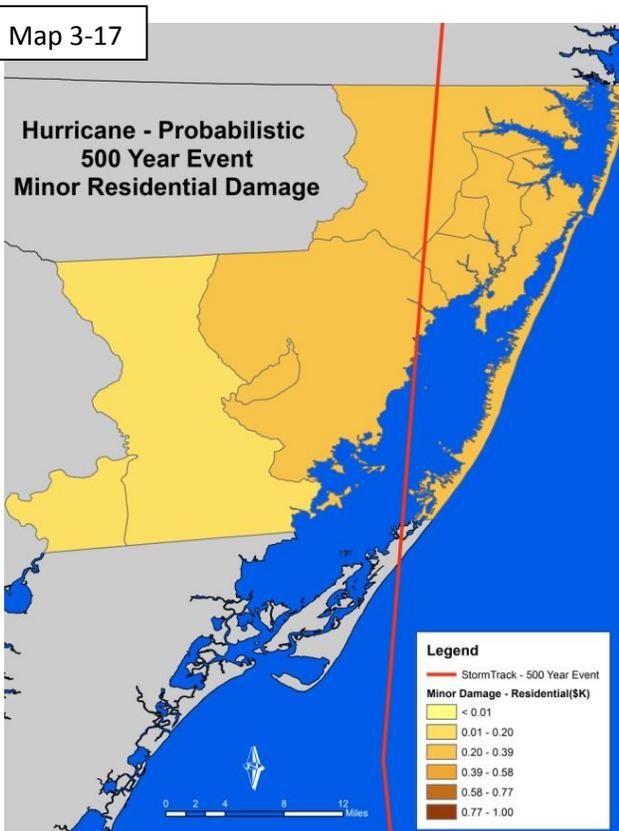
Map 3-15 depicts the Storm Tracks for 100, 200, 500, and 1,000 year events. Results analyzed and provided are for the 500 year return period event illustrated as a red line on Map 3-16. The 500 year event was chosen considering the hurricane track intersects the county.



Source: S&S Planning and Design - HAZUS Results

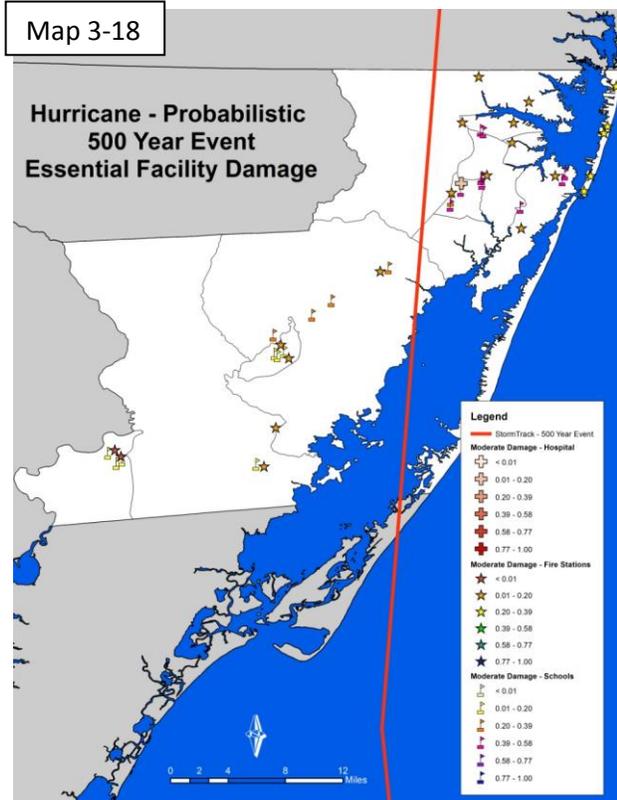
There are an estimated 33, 137 buildings in the region with a total building replacement value (excluding contents) of \$5,666 million dollars. Approximately 91.79% of the buildings (and 79.23% of the building value) are associated with residential housing.

HAZUS estimates that about 7,738 buildings will be at least moderately damaged. This is over 23% of the total number of buildings in the region. There are an estimated 675 buildings that will be completely destroyed.



Source: S&S Planning and Design - HAZUS Results

Table 3-8: Expected Building Damage by Occupancy Type for the Scenario								
Occupancy	Minor Damage		Moderate Damage		Severe		Destruction	
	Count	Percent of Total	Count	Percent of Total	Count	Percent of Total	Count	Percent of Total
Agriculture	39	23.55	19	11.46	11	6.34	2	1.31
Commercial	395	21.94	358	19.88	190	10.54	2	0.10
Education	6	20.20	4	14.70	2	5.71	0	0
Government	9	18.31	6	13.24	3	6.16	0	0
Industrial	105	20.79	92	18.21	47	9.31	2	0.37
Religion	40	23.66	27	15.75	12	7.03	0	0.00
Residential	8,801	28.93	5,267	17.32	1,025	3.37	669	2.20
Total	9,395	--	5,774	--	1,289	--	675	--

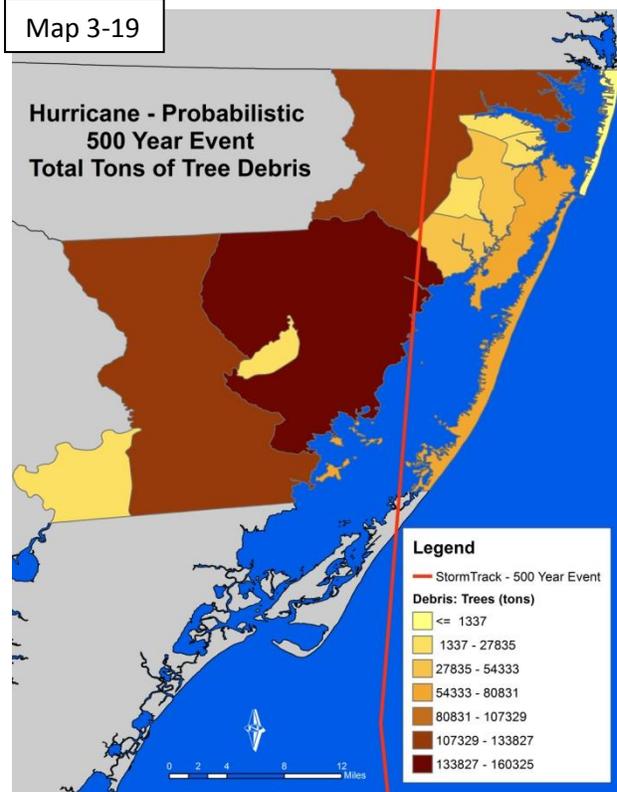


Source: S&S Planning and Design - HAZUS Results

Expected Damage to Essential Facilities includes moderate damage to one hospital, two fire stations and 5 schools. HAZUS estimates the hospital will not be functional for approximately 13 days after the hurricane event. The two fire stations will only be temporarily shut down on the day the hurricane makes landfall. The loss of use for the schools varies upon location.

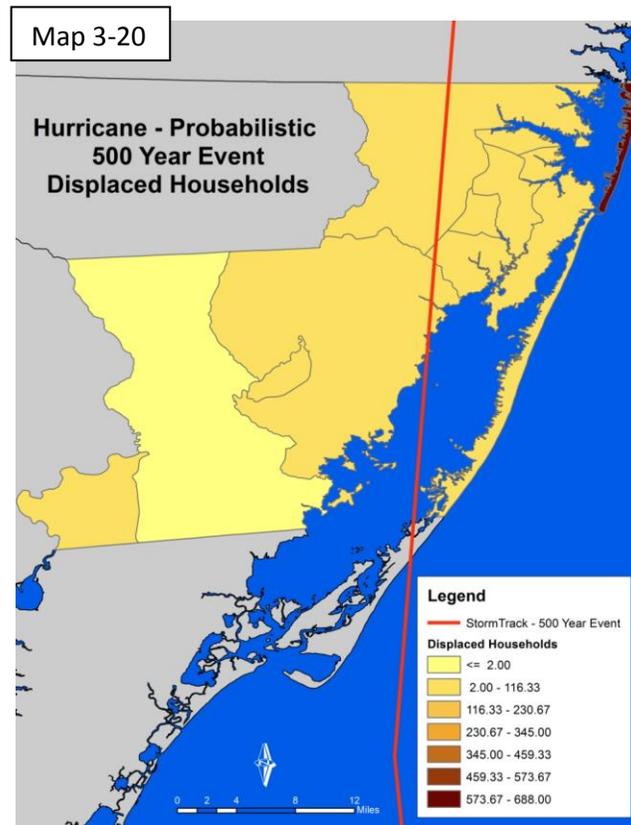
HAZUS estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 669,971 tons of debris will be generated. Other tree debris accounts for 501,633 tons (75) of the total debris. The remaining 168,338 tons, Brick/Wood comprises 71% of the total, Reinforced Concrete/Steel comprises of 3% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 4951 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 44,575 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, un-compacted debris.



Source: S&S Planning and Design - HAZUS Results

HAZUS estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 1,084 households to be displaced due to the hurricane. Of these, 257 people (out of a total population of 51,454) will seek temporary shelter in public shelters.



Source: S&S Planning and Design - HAZUS Results

The total economic loss estimated for the hurricane is 948.4 million dollars, which represents 16.74 % of the total replacement value of Worcester County stock buildings. The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane. The total property damage losses were 948 million dollars. 2% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 82% of the total loss. Ocean City, the area shown in dark brown on Map 3-20, is the most vulnerable area in Worcester County for hurricane impacts.

At-Risk Populations

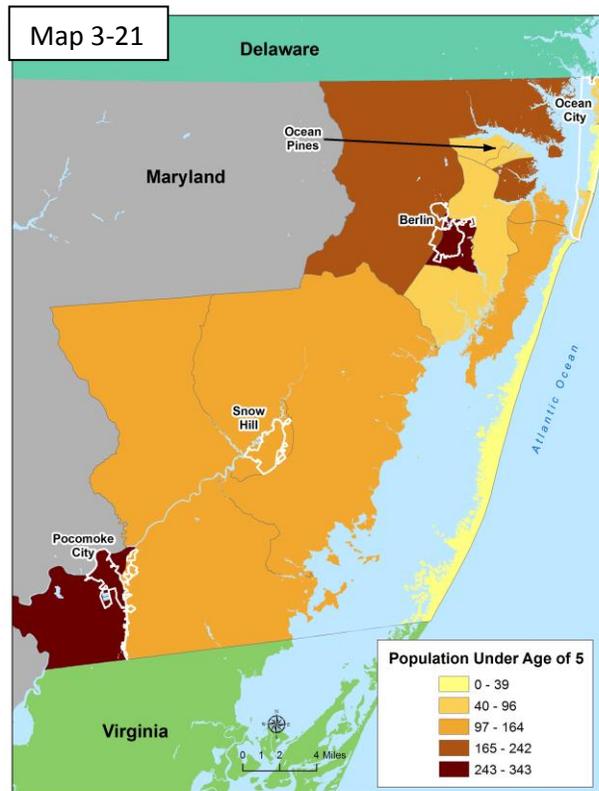
There are population segments that are at greater risk than others. These include:

- Children under the age of 5
- Population 65 years and older
- Non-English Speaking Population
- Special Needs Population
- Low Income Population

Below each group is discussed.

➤ Children under the age of 5

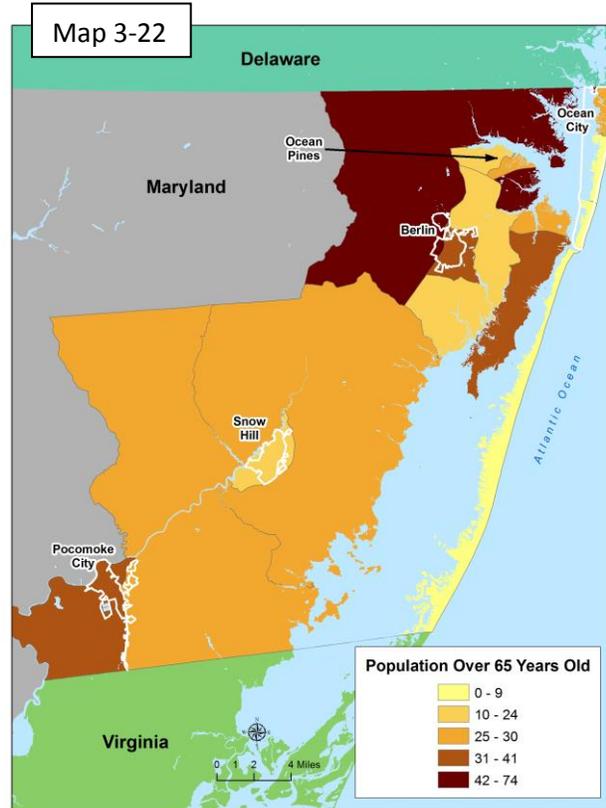
The county is very aware of its young residents and sees them as the future of the county. The county will seek data about this group and take steps to secure their safety in a disaster. The areas with the highest concentration of children under the age of 5 are the Town of Berlin and Pocomoke City.



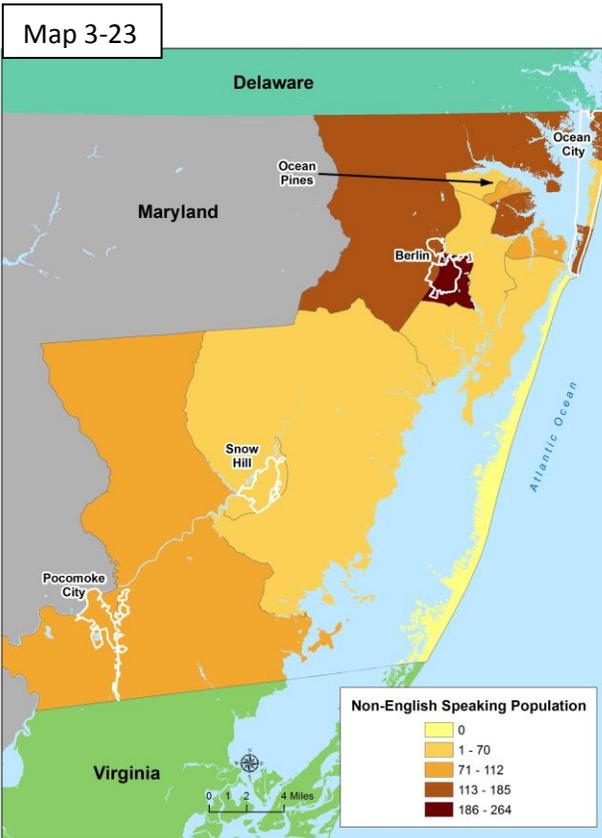
Source: S&S Planning and Design - 2010 US Census Data

➤ **Population 65 years and older**

The population of 65 years and older is becoming a growing component of county population considering many “Baby Boomers” who own second homes in Worcester County will be retiring and relocating to the county permanently. Also communities like Ocean Pines have been attracting elderly citizens for over a decade. A large region of Ocean Pines is within the floodplain, and in the event of a flood, the older population may have a more difficult time evacuating.



Source: S&S Planning and Design - 2010 US Census Data



Source: S&S Planning and Design - 2010 US Census Data

➤ **Non-English Speaking Population**

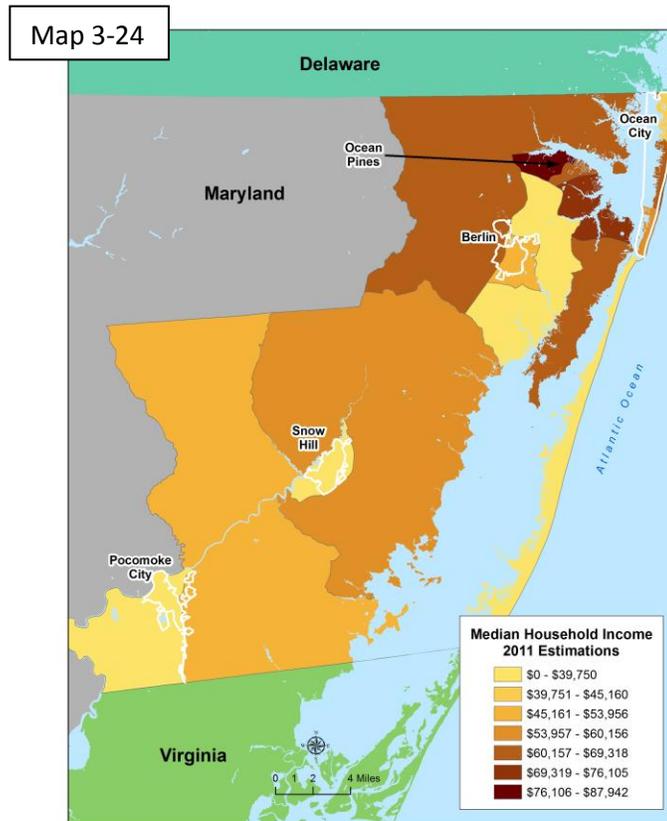
According to the 2010 Census data, the Northern portion of the County has large influx of Hispanic immigrants. The average age of immigrants is nearly 45 and nearly 100 percent of the population growth is immigration. Many of these individuals are learning English as a second language. European student workers live and work in Worcester County during the summer.

➤ **Special Needs Population**

Worcester County has released a Family Preparedness Planning Guide to help families ready themselves for immediate hazard response. Part of this booklet is a special needs survey that the county will use to collect information on the location and needs of each individual. This will help the county have the necessary personnel and supplies at the appropriate shelters to serve these important needs. This booklet is also available in Spanish.

➤ **Low Income Population**

Typically the greatest human loss is experienced by low income residents during disaster events. Many low income citizens have little money and transportation or alternative means for evacuation. Bearing this in mind it is important for Worcester County to acknowledge those areas of predominantly lower income residents. Knowing where these residents are living will help to identify good shelter locations and to establish alternative means of evacuation if need. As shown on Map 3-24, Pocomoke City, Snow Hill and the area surrounding Berlin are the areas with the lowest median household income.



Source: S&S Planning and Design - 2010 US Census Data

The Worcester County Health Department provided the county characteristics for the Health Impact Assessment, which is based on national framework that identifies standards for public health capabilities as defined by the Centers for Disease Control (CDC) and the Assistant Secretary for Preparedness and Response (ASPR) of the Department of Health & Human Services USA.

The At-Risk Populations identified in the assessment include: Hearing Disability, Vision Disability, Ambulatory Disability, Cognitive Disability, Limited English Proficiency, Poverty, Chronic Disease (Diabetes), Children 18 and Under and Elderly 65 and Older. In regards to percentage of total population, Elderly 65 and Older comprises 23.2% of the total population; while Limited English Proficiency is 1.6% of the total population.

Table 3-9: Health Impact Assessment		
At-Risk Populations	Percent of Total Population	Population Size Score
Hearing Disability	2.9	1
<i>Data Source: americancommunity survey</i>		
Vision Disability	3.5	1
<i>Data Source: americancommunity survey</i>		
Ambulatory Disability	3.3	1
<i>Data Source: americancommunity survey</i>		
Cognitive Disability	3.2	1
<i>Data Source: americancommunity survey</i>		
Limited English Proficiency	1.648	1
<i>Data Source: us census</i>		
Poverty	12	3
<i>Data Source: us census</i>		
Chronic Diseases (Diabetes)	10.8	3
<i>Data Source: behavioralriskfactorsurveillancesystem</i>		
Children 18 and under	17.9	4
<i>Data Source: us census</i>		
Elderly 65 and older	23.2	4
<i>Data Source: us census</i>		

Critical Facilities

The Worcester County Development Review and Permitting Department identified and mapped critical facilities within Worcester County and areas of municipal concern during the 2014 Plan Update process. For the purposes of this plan “critical facilities” include: shelters, hospitals and nursing homes, fire and rescue, police, utilities, communications, transportation, and government structures. They are considered “critical” because of their unique characteristics or functions. The plan categorizes critical facilities as:

- **Public Safety and Security**

- Emergency management centers
- Fire stations
- Hospitals and medical facilities
- Emergency shelters
- Police stations

- **Transportation**

- Airports and heliports
- Highways, bridges, tunnels, roadbeds, overpasses, transfer centers
- Railways
- Waterways, seaports, harbors, piers

- **Utilities**

- Radio Stations
- Communications lines, stations, printing presses, antenna complexes
- Electric power, water impoundments, fuel storage, generators, transmission lines (not mapped)
- Potable water facilities (not mapped)
- Wastewater facilities

Knowing the location and characteristics of critical facilities is essential for increasing the County's level of hazard preparedness. This knowledge will help the County limit damage and provide relief assistance. For these reasons, the County has created critical facilities maps and a database that will be kept updated. The following maps identify many of the above listed facilities; however, they are not exhaustive. As more data is collected the maps are being updated. Additionally, the County has listed the sites within each town identified as critical to the town's functions during an emergency.

Pocomoke

Pocomoke City lists the following sites as their top priority locations for risk and the most important locations during an emergency:

- Water and sewer treatment facilities
- Emergency Services Office
- Police Department

Sites of potential flood damage within the town include:

- 8th Street development – a private developer will reroute the drainage
- Winters Quarters Drive
- Various tidal problems throughout town

Berlin

Berlin lists the following locations under the same guidelines:

- Water and sewer treatment facilities
- Town Hall Building
- Police Department Building

Sites of potential flood damage within the town include:

- Roadways along the upstream and downstream flow of Bottle Branch
- Henry's Green Subdivision
- Buckingham II Subdivision
- South Main Street

- Tingle Road on the south side of Town and Nelson Street
- Franklin Avenue
- Pine Street and Grice Avenue on the north side

Snow Hill

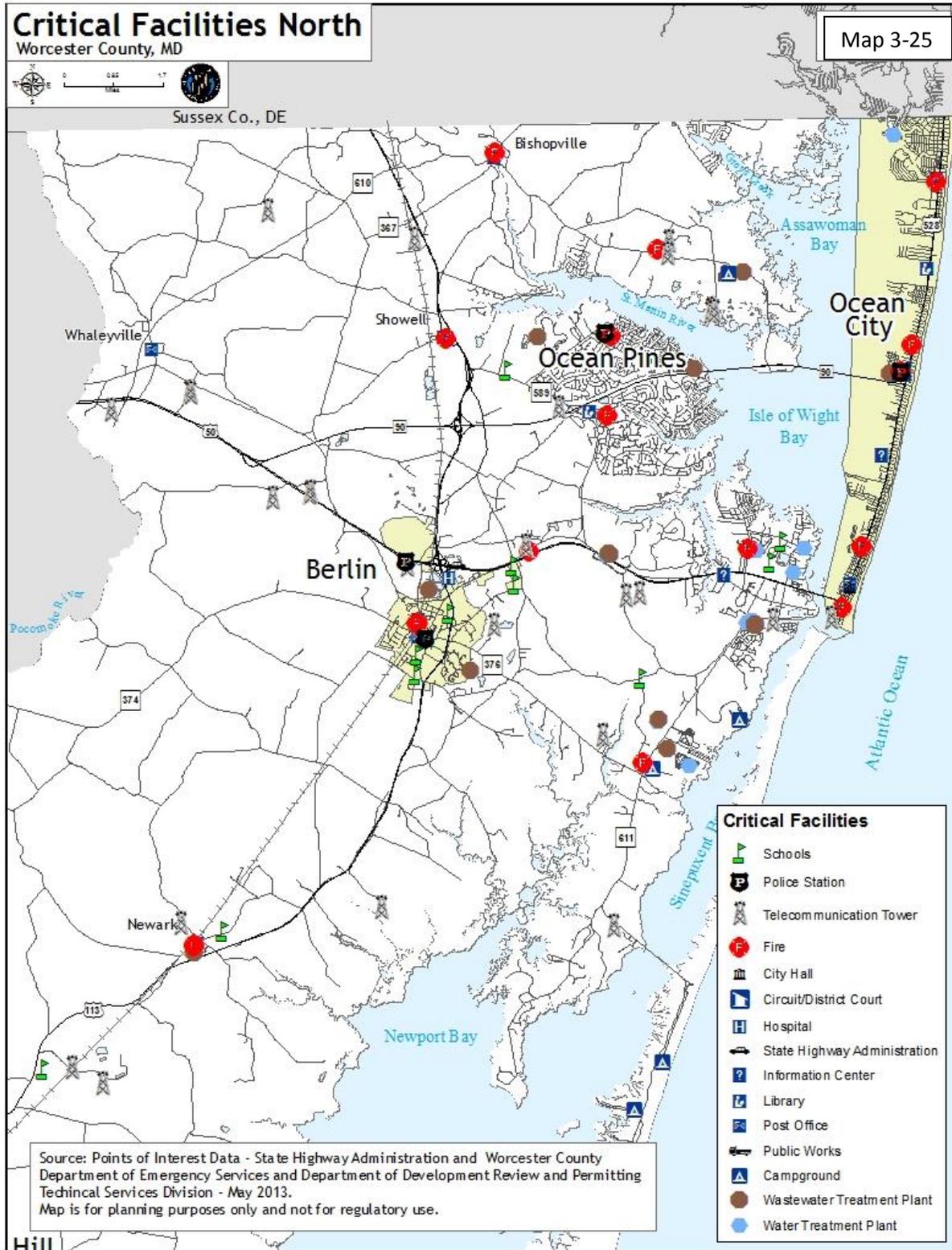
Snow Hill lists the following locations as their most important sites:

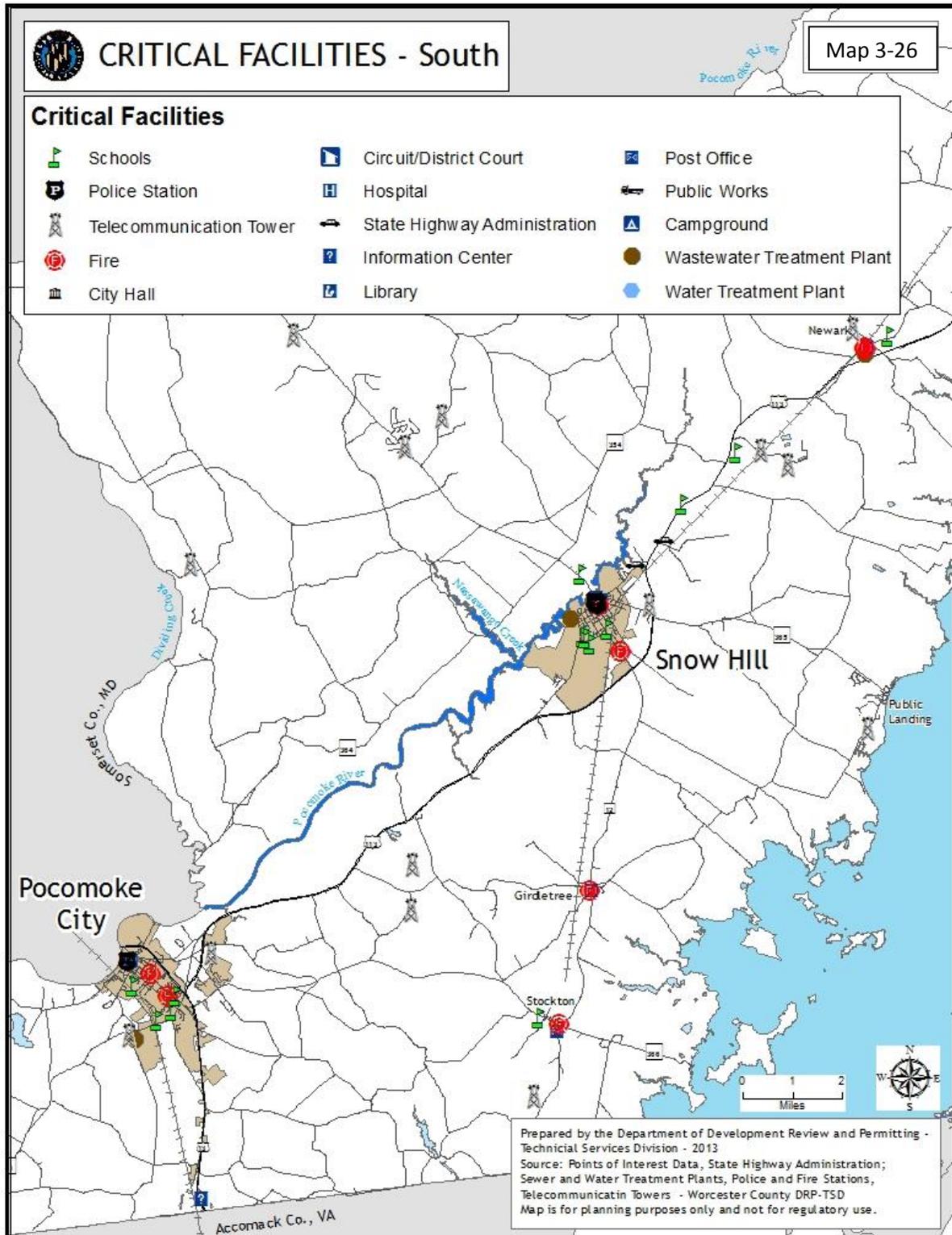
- Town Hall Building
- Sewer Treatment Plant
- Fire Department Building (new structure and the old vacant one downtown)
- Water tower
- Police Department

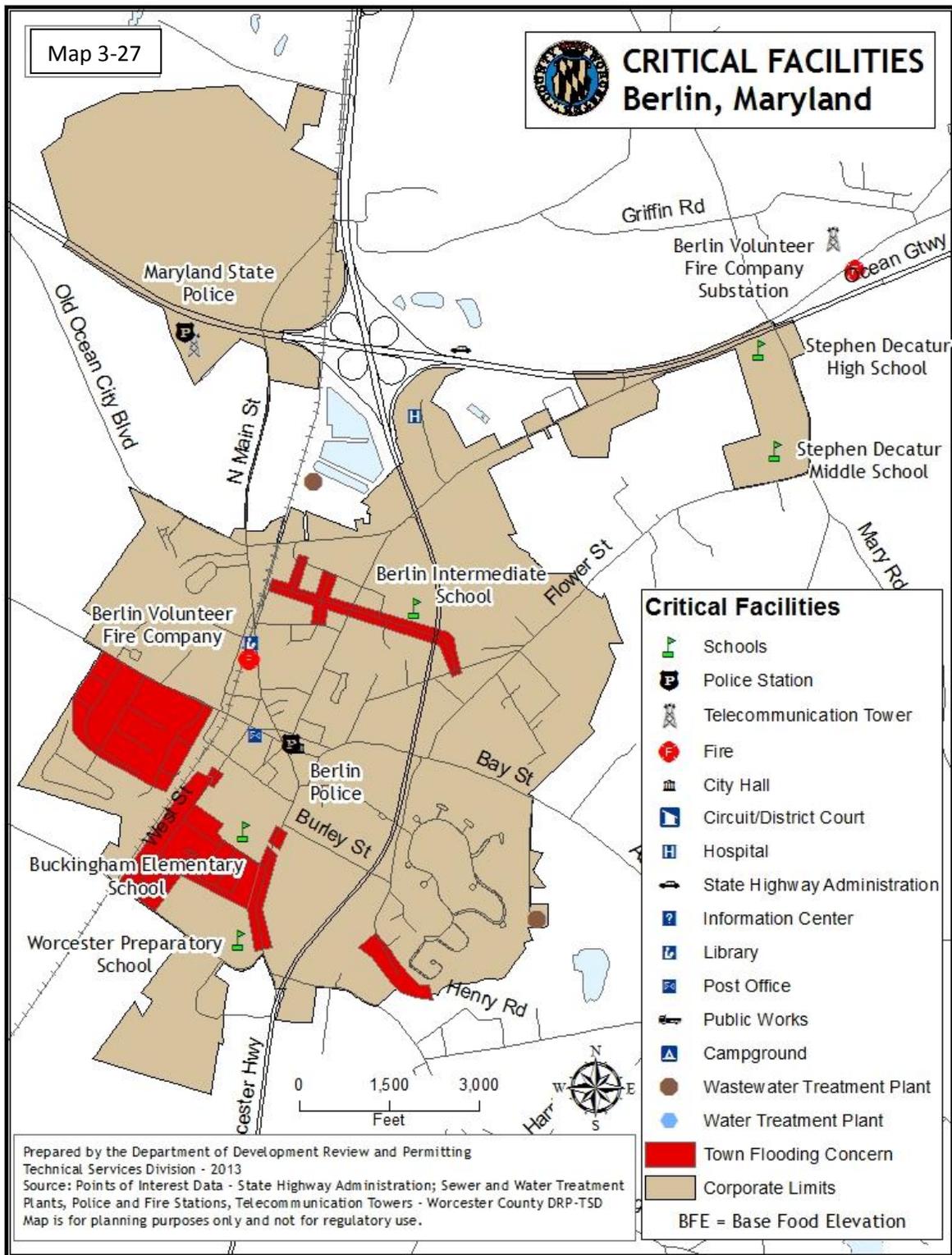
Sites of potential flood damage within the town include:

- Byrd Park/Sewage Treatment Plant (southwest side of town)
- Residential areas along the banks of the Pocomoke River (west side of town)
- Historic structures along the Route 12 corridor entering town from the west, Market Street, Pearl Street, Green Street areas

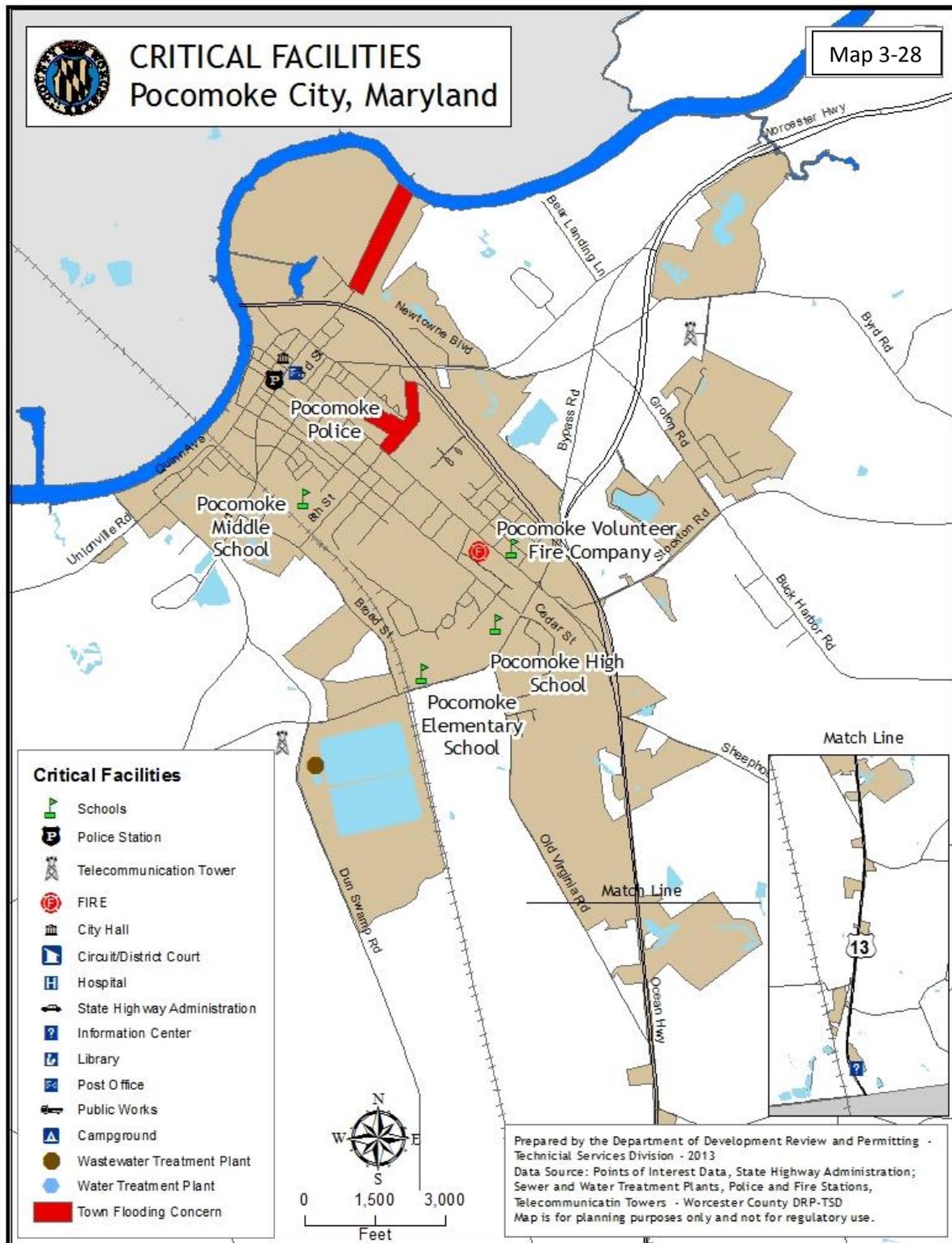
The following maps depict the areas of concern within each jurisdiction as well as the critical facilities identified on Map 3-25 and 3-26. Some of the critical facilities are property or under the direction of the county but located within or directly adjacent to Berlin (Map 3-27), Pocomoke (Map 3-28), or Snow Hill (Map 3-29).

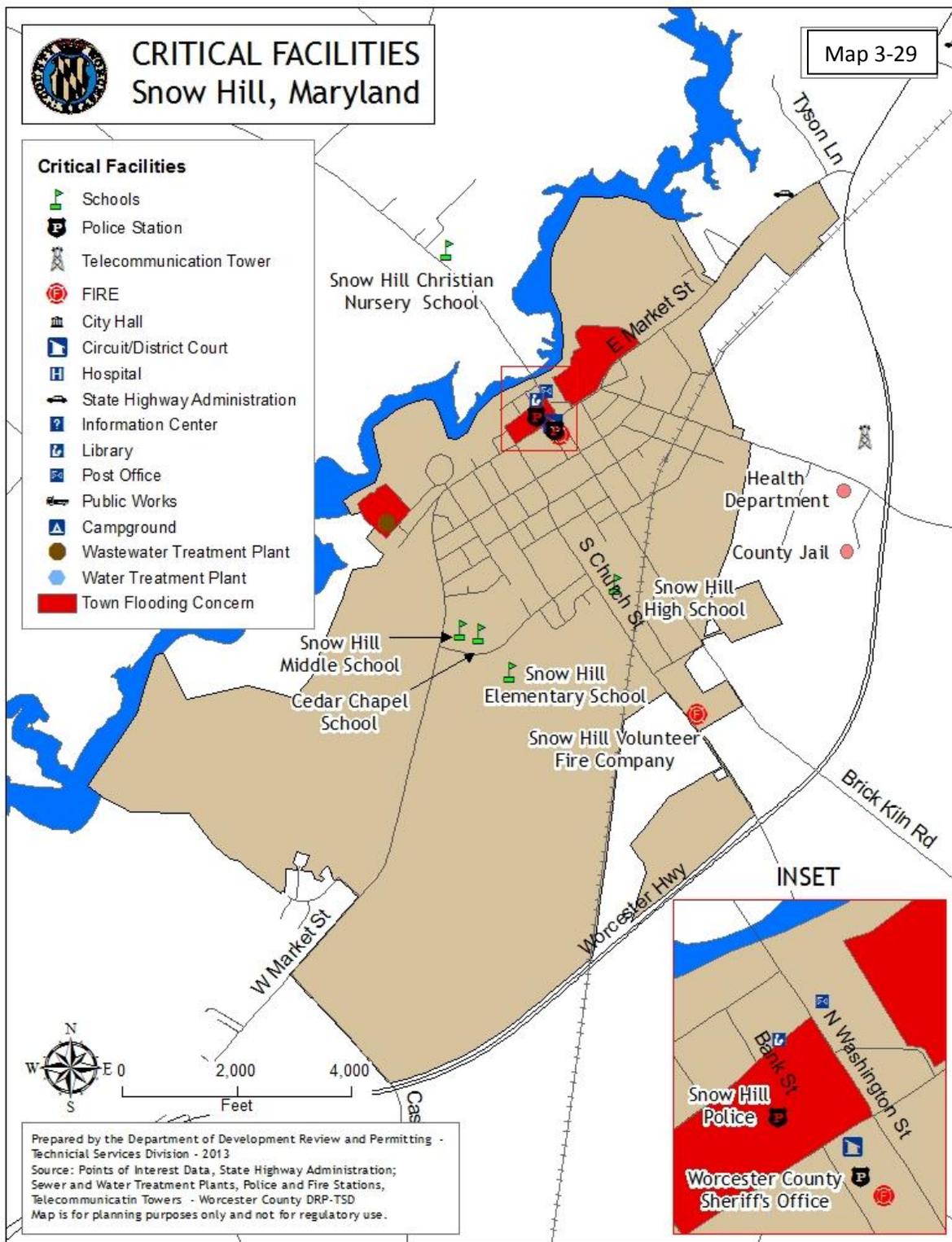






In addition to the mapped facilities the Town of Berlin has some locations and facilities that are critical to the well-being of all citizens within the town limits of Berlin. Those facilities include fourteen (14) lift stations, located throughout the Town, that are used to pump septage to the Town's treatment facility. These locations in time of a power failure would require generators to operate. There is also the Electric Substation located on Schoolfield Street that plays a critical role as it relates to the distribution of electricity to the entire town. Located at this facility is also our "69 Tie Point". This is where the provider, Delmarva Power and the distributor, the Town of Berlin, connect. This is the only "tie point" for the entire town. If this connection is lost then all electric power for the town is lost.







CHAPTER 4: FLOODING RELATED HAZARDS

Introduction

Chapter 4: Flooding Related Hazards have been updated to include additional hazard information and storm event data. Each of the three hazards in this chapter have been profiled and additional information has been included under the historical occurrences heading shown in bold. The three hazards are: Tropical Storms and Hurricane, Nor'easter and Flooding. Storm related data added to this chapter primarily was obtained from the National Climatic Data Center (NCDC) storm data, which is published by the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. The storm event database contains information on storms and weather related phenomena that have caused loss of life, injuries, significant property damage, and/or disruption to commerce.

Another important source for identifying hazards that affect Worcester County is the record of Federal Disaster Declarations. There have been 23 major disaster declarations for the State of Maryland. Specifically, three hurricane and one tropical storm federally declared events impacted Worcester County.

Flooding, our primary concern is most commonly not from hurricanes, but rather from Nor'easters, which can linger for days at a time. Nor'easters are large low pressure systems that develop most often in winter along the East Coast and slowly move up the coast. They bring high winds, storm tides, heavy rains and significant surf and beach erosion. These storms often last 2-3 days. Strong northeast winds trap water in the back bays causing flooding and in extreme cases, inlet formation.

Tropical Storms and Hurricanes

Hazard Profile

Hurricane, tropical storm, and tropical depression are all examples of a tropical cyclone. The categories and associated characteristics are as follows:

- Hurricane: maximum sustained surface wind speed exceeds 73 mph;
- Tropical Storm: maximum sustained surface wind speed from 39-73 mph;
- Tropical Depression: maximum sustained wind speed is less than 39 mph.

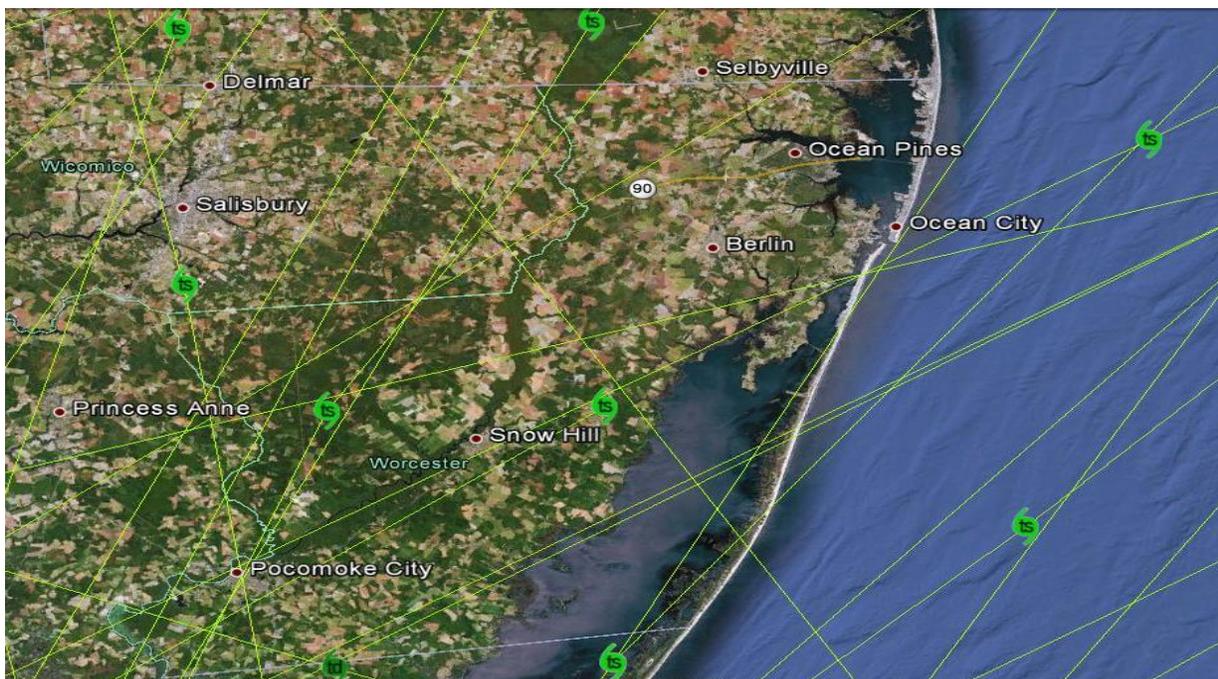
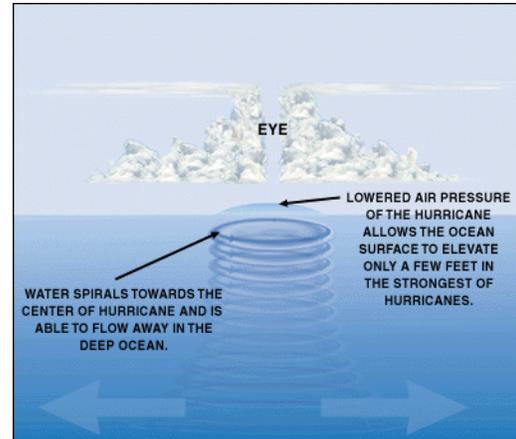
A hurricane is a type of tropical cyclone, which is a very low-pressure, gyrating weather system that forms over tropical waters. Tropical cyclones that occur in the Atlantic Ocean are known as

hurricanes. When such systems begin they are called tropical depressions. Once winds reach a sustained force of 39 miles per hour, a tropical depression becomes a tropical storm. If the winds reach a sustained force of 74 miles per hour, the tropical storm becomes a hurricane. Their further classification depends on the speed of the winds and storm surge. Damage is not, however, a direct function of windspeed. Usually a combination of hazards within a storm causes the most extensive damage. Hurricane Katrina demonstrated this as it was only a category 3 hurricane, but the storm surge, the extensive rainfall, and the failed levees together resulted in unprecedented damage.

Hurricanes are classified by the Saffir-Simpson scale which distinguishes hurricanes based on their intensity and damage level; Table 4-1. The categories from 1 to 5 indicate increasing intensity based on the degree of sustained winds, atmospheric pressure, storm surge and anticipated extent of damage.

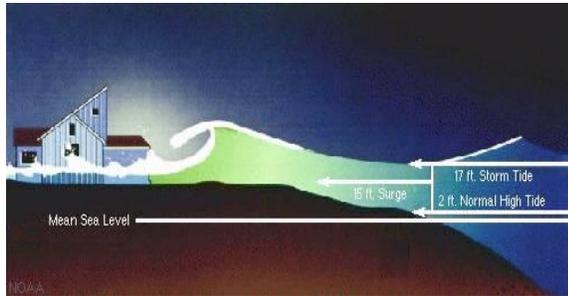
Table 4-1: Saffir-Simpson Hurricane Intensity Categories	
Category Wind Speed Storm Surge	Effects
Category 1-Weak 74-95 mph 4-5 ft	Minimal Damage: Most damage is to vegetation and unanchored mobile homes. No real damage to building structures. Low-lying coastal roads become inundated.
Category 2-Moderate 96-110 mph 6-8 ft	Moderate Damage: Considerable damage to vegetation, some trees blown over. Major damage to mobile homes. Some cosmetic damage done to homes, such as roofing materials, windows, and doors. Low lying coastal roads flooded and some evacuation of some shoreline residents.
Category 3-Strong 111-130 mph 9-12 ft	Extensive Damage: Large trees blown down. Some structural damage to small buildings. Mobile homes are destroyed. Minor amount of failure of certain walls in framed buildings. Some smaller structures near the coast destroyed. Flat terrain <5 feet above sea level flooded inland at least 8 miles. Evacuation of residence within several blocks of shoreline.
Category 4-Very Strong 131-155 mph 13-18 ft	Extreme Damage: All signs down. Extensive roofing, window, and door damage. Failure of roofs on residential housing. Major damage to lower levels of floors of structures near the shore. Major erosion of beaches. Massive evacuation of all residents within 500 yards of shoreline may be required.
Category 5-Devastating >155 mph >18 ft	Catastrophic Damage: Considerable damage to roofs of buildings. Severe and extensive window and door damage. Some complete buildings fail. Small buildings are overturned or blown away. Massive evacuation of residential areas on low ground within 5 to 10 miles of shoreline may be required.

A hurricane may include one or more of the following effects: storm surge, high winds and heavy rain. The cumulative impact of these can be life threatening and cause catastrophic damage. Several hurricanes or tropical storms travel up the Atlantic Coast each season, threatening large areas of the eastern United States and millions of people.



The most destructive of the hurricane's effects is storm surge, an abnormal local rise in sea level. When a hurricane forms and as it moves landward, low barometric pressure and high, gyrating winds create a dome of ocean water that moves under the hurricane's eye. When over open-ocean, the volume of this dome of water is absorbed by the great volume of water characteristic of substantial bottom depths.

Storm surge occurs when the hurricane approaches the coast and the depth decreases, the resulting dome of water floods ashore. Storm surge causes nine out of ten hurricane deaths. Storm surge results in a temporary sea level increase. Any wave action is in addition to the storm surge. Related flooding will be discussed in the next section, "Nor'easters and Flooding."



The stronger the hurricane, the closer to perpendicular its track in relation to the coastline, the higher the storm surge and resulting destruction will be. The depth of the water along the coastline and the slope of the bottom are other determining factors of storm surge height. “...When surging waters come into contact with the gradually sloping shallow bottom, the speed of

the surge decreases and wave heights increase because of the kinetic energy that is forced upward by the bottom.”

Because the local continental shelf slopes gradually, storm surge heights will generally be greater than in areas where the slope is more abrupt. Map 4-1 shows storm surge inundation areas.

The heavy rain that accompanies hurricanes can also be destructive and has a greater area of impact than storm surge. Hurricanes can bring ten to fifteen inches or more of rainfall. This causes flooding and has many secondary impacts. Heavy rain can severely impede the flow of traffic and thus impair evacuation and emergency services. Rainfall, as a symptom of a hurricane can affect inland areas far from the coast.

High winds can also cause a great deal of damage and injuries. The high winds of hurricanes are a threat to the stability of structures including tall buildings, towers, and mobile homes. The destructive wind forces of hurricanes can be divided into several categories:

- Direct pressure and uplift
- Internal pressurization
- Wind-borne debris

Direct pressure and uplift result from sustained winds against a structure. The speed of the wind has a direct and exponential relationship with the amount of pressure exerted; Table 4-2.

Table 4-2: Velocity Pressure as a Function of Wind Speed							
Wind Speed (mph)	75	95	110	130	155	180	200
Velocity Pressure (psf)	19	30.6	41	57.2	81.3	109.7	135

Source: ASCE, 1990

The level of structural damage is a function of its shape and construction. The most common form of damage to structures from wind is uplift that damages or completely separates the roof from the structure. This type of damage is much more likely with gable style roofs.



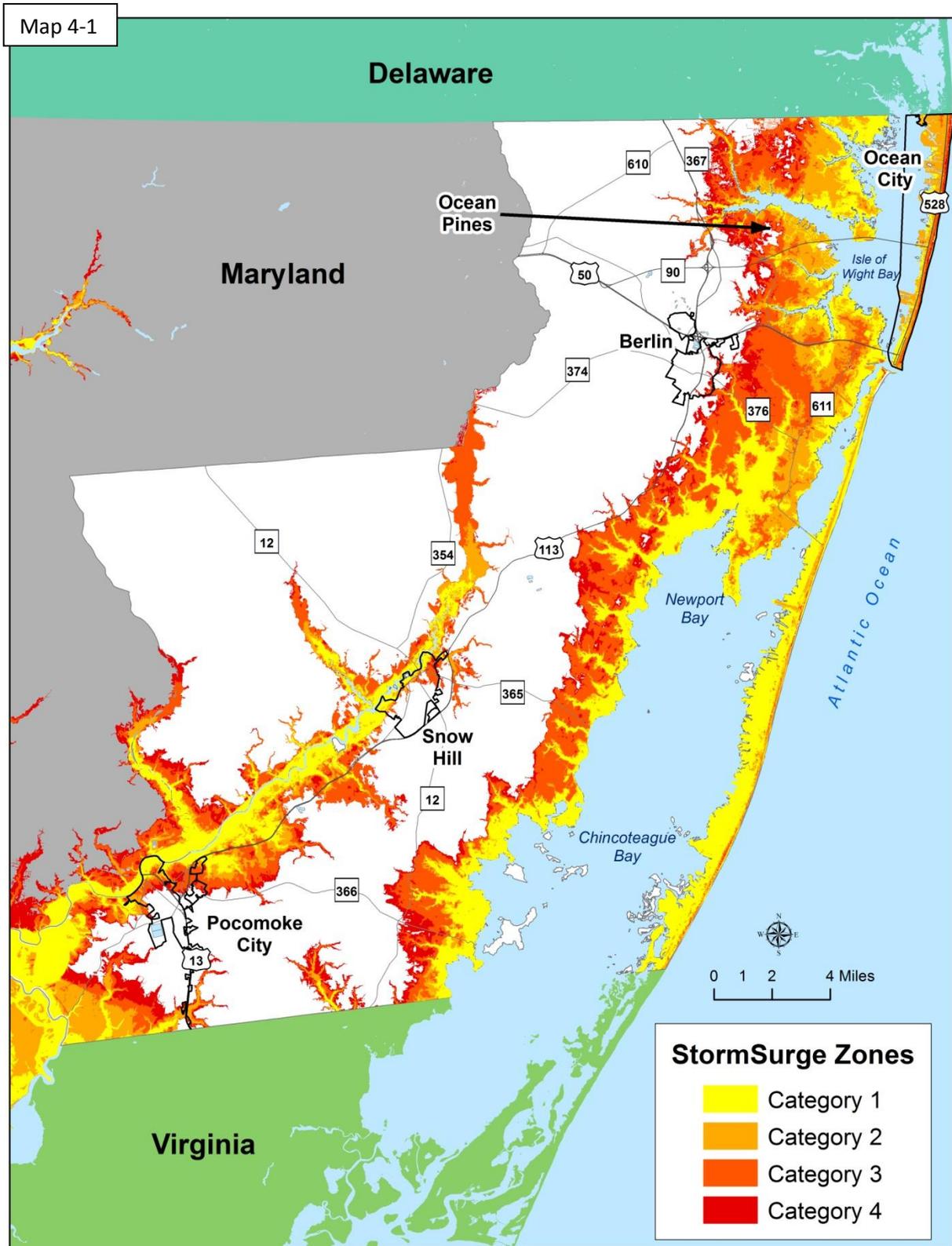
Internal pressurization or depressurization results from the entry of wind forces into the structure through openings. If the opening is on the leeward side of the structure, suction is created resulting in depressurization which can cause the roof or its structural components to cave inward. When the opening is on the windward side, the result is an internal pressurization of the structure that can blow windows, doors and walls outward.

Hurricane winds fling debris at high speeds. Debris can consist of roofing materials, glass from windows, doors, tree branches, lawn furniture, fencing materials, accessory structures, etc. This debris damages anything in its path and, when it hits a structure hard enough, can result in an opening that can cause internal pressurization or depressurization.

Typically wind speeds are thought to be slowed by land. However, wind speed is not a function of distance inland, rather it is a function of time spent over land. A building that is 5 miles inland is therefore not exempt from a wind hazard. A weaker storm that is moving 25 mph could wreak as much wind damage inland as a stronger storm that is moving slowly.

Storm Surge Zones (Inundation Areas)

The higher the Saffir-Simpson rating for the hurricane, the farther inland the storm surge zones. The storm surge zones data was generated using the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model. SLOSH is a computerized model run by the National Weather Service to estimate storm surge heights resulting from historical, hypothetical, or predicted hurricanes. The model creates its storm surge zones by analyzing the pressure, size, forward speed, track, and wind data from a hurricane. The method used for this data was a "worst case scenario" for the entire SLOSH basin. Based on the SLOSH Model, the elevation of inundation ("worst case scenario") for Category One, Two, Three, and Four hurricanes were calculated for Worcester County.



Source: S&S Planning and Design

Historical Occurrences

Federally declared hurricanes impacting Worcester County include Hurricane Sandy in 2012, Hurricane Irene in 2011 and Hurricane Isabel in 2003. In 1972, Tropical Storm Agnes impacted Worcester County and was federally declared.

The most violent hurricane recorded made landfall August 23, 1933. The storm of '33 carved the Ocean City Inlet as well as wiping out the county's tourist center at Public Landing in southern Worcester County. This ended Public Landing's dominance of county tourism. Home to a theater, concession stand dance pavilion and other amusements, Public Landing was destroyed by storm surge. The following is an article from the *Democratic Messenger* the day after the storm. At the time the damage mounted to a staggering 40 million dollars, and only 8 of 41 oyster houses were usable after the storm.

THE DEMOCRATIC MESSENGER
SEVEN YEARS—NO. 27 SNOW HILL, MARYLAND, THURSDAY, AUGUST 24, 1933 ELKS A YEAR, YEAR OUT OF COUNTY

Entire Atlantic Coast Is Swept By Tidal Wave

Terrific Storm in Worcester Does Million Dollars Damage

Story Of The Storm

Public Landing Destroyed. Piers and Amusement Places Swept Into Chincoteague Bay By Tidal Wave. Mansion House and Cottages Saved.

Great Damage At Ocean City. Hotels and Boardwalk Suffer.

Bay Boats Swamped and Many Piled High and Dry In Fields and Marshes.

Trees Broken Off and Torn Up By Their Roots; Orchards Ruined by an 80-Mile Gale.

Worcester County Crops Greatly Damaged By Wind and Water.

Tidal Wave Sweeps From Ocean to Bay. Inlet Cut At Ocean City 50 Feet Wide and Eight Feet Deep. There May Be Other Inlets Between Ocean City and Chincoteague.

Scenes of Devastation By Storm All Along Maryland, Delaware and New Jersey Coast.

Electric Light and Telephone Wires Down Everywhere.

The Messenger Unable To Work For Two Days.

(Article Excerpts)

It seems that in Worcester the greatest damage, considering the size of the place, was done at Public Landing.

We are reliably informed today that two inlets were cut by the storm at Ocean City—one near the south boardwalk and the other at or near the old inlet.

Mr. Leland Richardson and family, who occupied quarters at the end of one of the piers, as a bowling alley and soft drink parlor, came near losing their lives, but were persuaded by their son-in-law, Edward Gladding, to leave. They finally listened to him and before they reached Snow Hill all their belongings, and the house, also the Capitol Theatre and Tilghman's concessions, were swept into the bay.

According to the National Climatic Data Center (NCDC) Hurricane Irene tracked northward over the outer banks of North Carolina and just off the Virginia and Maryland coasts. Heavy rains caused widespread flooding across most of the lower Maryland Eastern Shore starting Saturday,

August 22nd through Sunday August 24th of 2004. Impacts to Worcester County from heavy rains associated with Hurricane Irene produced widespread low-land flooding across much of the County, including roadways which were washed out or closed. Storm total rainfall generally ranged from 5-10 inches. Snow Hill reported 8.10 inches of rain, while Bishopville reported 7.71 inches of rain.

The most recent hurricane related storm event occurred in October 2012. The passage of Hurricane Sandy was relatively insubstantial for Worcester County despite the worst case storm predictions, a storm dub “Frankenstorm” by meteorologist. Ocean City sustained damage due to flooding in low-lying downtown areas of the island. Impacts to Worcester County as a result of the storm included downed trees and debris, power outages and some flooding mainly attributed to high tide prior to the arrival of the rain event. In addition, flash flood, heavy rain and thunderstorm events cause flood conditions that impact the County as well.

Nor’easters

Hazard Profile

“[A Nor’easter is] a strong low pressure system that affects the Mid-Atlantic and New England States. It can form over land or over the coastal waters. These winter weather events are notorious for producing heavy snow, rain, and tremendous waves that crash onto Atlantic beaches, often causing beach erosion and structural damage. Wind gusts associated with these storms can exceed hurricane force in intensity. A nor'easter gets its name from the continuously strong northeasterly winds blowing in from the ocean ahead of the storm and over the coastal areas.”

Nor’easters are notorious for moving more slowly than hurricanes, lingering over a region and therefore causing more intense damage. Most commonly occurring in the winter months Nor’easters combine the detriment of hurricane force winds and flooding, with piercing cold and often heavy snow.

Historical Occurrences

Federally declared storm event of 1962 impacted most of Maryland to varying degrees. Severe storms, high tides and flooding occurred on March 9, 1962. Surviving storms in 1962 Worcester County understands well the magnitude and voracity of a nor’easter. The 1962 storm bears the title “the storm of the century” as it caused extensive damage and loss of life along the Delmarva Coast.

Views of Ocean City



An aerial view of Ocean City, Md., made at the height of its flooding by the terrific northeast storm of March 6-7, 1962. Worse even than the hurricane in which 1933 made history at the seaside resort, this smashing storm was called by people who went through both. It is generally agreed to have been “the big one of the century.”

WEATHER. Abnormal tides with flooding in lowland areas. Rain or snow tomorrow.
TEMPERATURES. At 7 a.m. 32; low last night, 30; for 24 hours up to 5 p.m. yesterday: high, 39; low, 33. A year ago: high, 76; low, 50.

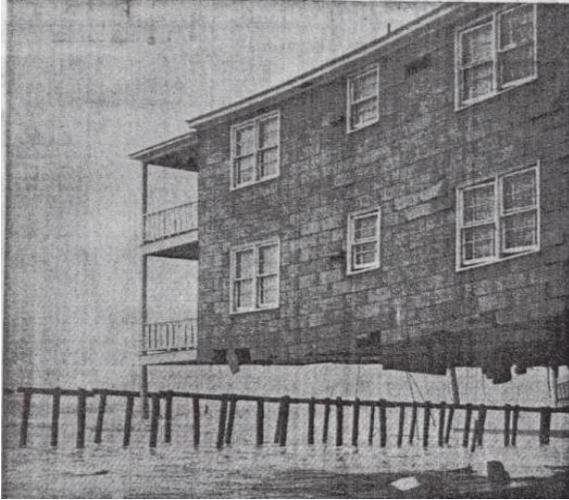
THE SALISBURY TIMES

Delmarva's Largest Daily Newspaper

HOME EDITION
★★★

VOL. 59 NO. 81 PHONE PI 9-7171 SALISBURY, MARYLAND, THURSDAY, MARCH 8, 1962 FIVE DOLLARS 32 PAGES Section One 7c Single Copy 42c Weekly BY Carrier

SHORE ADDS UP VAST STORM TOLL

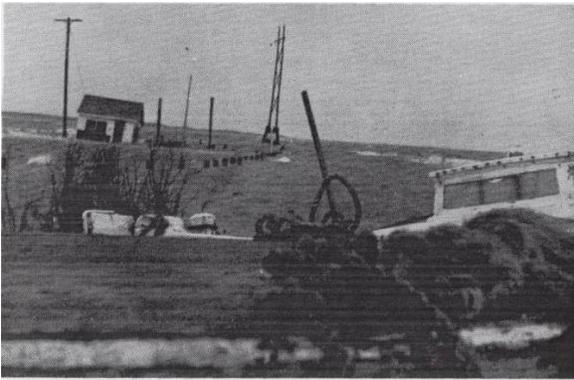


Ocean City apartment appears suspended in midair.

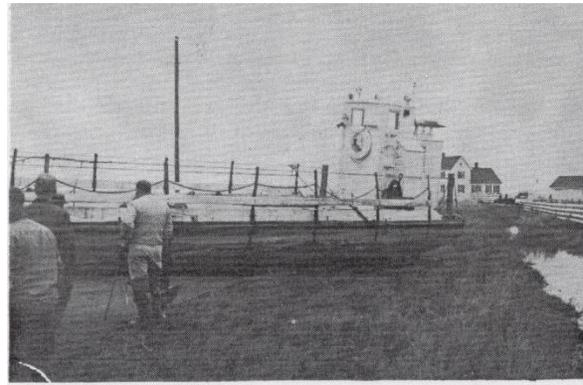


Sheriff Kenneth Tyler Points to 'New Inlet' at 71st

Two views of South Point,



View from South Point toward Assateague Island



Taken Saturday, shows Ocean Beach ferry receding tides left it stranded across South Point Road.

Flooding

Hazard Profile

The word "rainstorm" implies a weather system marked by copious rainfall and often accompanied by strong winds, lightning and thunder. If rainfall continues long enough, streams and rivers will rise, overflow banks and spread across the floodplain. If intensive rainfall occurs within a short period, streams and rivers can rise rapidly and flash flooding develops.

Worcester County is susceptible to rainstorms in all seasons of the year, with the greatest incidence in spring and summer. Severe rainstorms and floods disrupt electrical service, block roads and streets with debris and wash out bridges. Some areas of the county have experienced repetitive losses due to flooding.

Flood damage to businesses can result in loss of income, wages and tax revenues. Residential property damage impairs citizens' safe housing and can severely affect individual financial security. Other effects can be sewer and chemical spills, outbreaks of disease, widespread animal illness, broken gas and sewer lines, water supply pollution and fires. Agricultural lands are frequently affected and crops destroyed.

The extent of flood/flash flood damage in Worcester County has been less severe than in other jurisdictions. This is due in large part to flat topography and an ongoing mitigation program which discourages development in the flood plain through zoning and subdivision requirements.

Applicants for proposed construction activities within the 100-year floodplain must officially acknowledge the heightened risk of living in this hazard area. The County enforces flood plain management regulations which meet or exceed the requirements of federal and state regulations. The Comprehensive Plan redirects growth away from flood prone areas. This will guide future floodplain policy.

According to FEMA, a flood is considered: "a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or the unusual and rapid accumulation of runoff of surface waters from any sources." Insurance policies refer to "rising waters." In Maryland, flooding conditions can be caused or accelerated by:

- Thunderstorms
- Hurricanes and tropical storms with heavy rain and damaging winds.
- Rainstorms/ frontal systems (Nor'easters)
- Snow pack melt
- Destruction of wetlands

Historical Occurrence

The County often experiences events which keep water above flood stage for several days. Nor'easters, tropical storms and hurricane winds can force water into the Coastal Bays and hold it there causing flooding and damage to homes, businesses, and property. Flooding is not isolated to the County's coastal areas; the Pocomoke River overflows its banks after heavy rains.

Historical occurrences for flood events reported by the National Climatic Data Center are displayed in Table 4-3. NOAA defines flood as 'A large abundance of water formed onto normally dry land caused by an overflow of a river, stream, or drainage. Floods differ from flash floods because they are longer, usually lasting from one day to a week.'

Table 4-3: NCDC Flood Events		
Location	Date	Event Narrative
Snow Hill	08/27/2011	Heavy rains associated with Hurricane Irene produced widespread low-land flooding across much of the county, including roadways which were washed out or closed. Storm total rainfall generally ranged from five to ten inches. Snow Hill reported 8.10 inches of rain. Bishopville reported 7.71 inches of rain.
Berlin	08/25/2012	Road closures were reported at Routes 113 and 50 due to high water. There were 15 to 20 rescues from vehicles.
Ocean City ARPT	10/29/2012	Numerous roads were closed due to flooding. Storm total rainfall ranged from five to nine inches across the county. Storm total rainfall of 7.22 inches was reported at OXB.

Source: NCDC (NOAA)

In terms of number of occurrences, the NCDC listed a total of 3 flood events affecting Worcester County from 2000-2012. Therefore, Worcester County experiences 0.23 flood events per year. The database did not include reported property damage.

Heavy rain events influence flooding events that impact Worcester County. NOAA defines a heavy rain event as 'Rainfall greater than or equal to 50 mm in a 24 hour period.' In terms of number of occurrences, the NCDC listed a total of 7 heavy rain events affecting Worcester County from 2000-2012, resulting in \$5k in property damage. Therefore, Worcester County experiences 0.54 heavy rain events per year.

Table 4-4: NCDC Heavy Rain Events			
Location	Date	Event Narrative	Property Damage
Ocean City	07/08/2005	Partial roof damage at City Hall and Fire Station due to heavy rain.	\$5k
Ocean City ARPT	10/24/2007	Rainfall amounts averaged between two and three inches across the county.	-
Berlin	12/10/2008	Rainfall amounts between two and seven inches occurred across the county. Rainfall amount of 6.35 inches was measured at Berlin.	-
Bishopville	11/11/2009	Rainfall amounts ranged between three and six inches across the county. Three miles east of Bishopville recorded 4.78 inches of rain. Ocean City (OXB) recorded 4.54 inches of rain.	-
Snow Hill	03/29/2010	Rainfall amounts of one to three inches occurred across the county. Assateague Island National Seashore reported 2.36 inches of rain. Snow Hill reported 2.29 inches of rain.	-
Worcester	06/27/2011	Parking lots at a Walmart and Home Depot were filled with water. Also, minor street flooding was reported in Berlin due to poor drainage issues. Rainfall amounts were estimated between three and five inches in these areas.	-
Berlin	08/26/2012	Emergency management official measured 13 inches of rain from his cocorahs gage.	-

Source: NCDC (NOAA)

Flash flood, defined by NOAA as ‘A flood resulting from heavy rainfall in less than 6 hours,’ have historically impacted Worcester County. Data for this hazard as reported by the National Climatic Data Center, is displayed in Table 4-5.

Table 4-5: NCDC Flash Flood Events		
Location	Date	Event Narrative
Berlin	07/29/2000	Heavy rain caused flooding on many main and secondary roads around Berlin and Girdletree. Saint Louis Avenue in Ocean City was closed from Talbot Street to 11th Street.
Ocean City	09/03/2000	Slow-moving thunderstorms dumped heavy rainfall of over two inches an hour in parts of Ocean City resulting in the closure of the Coastal Highway in the northern part of the city.
Ocean City	09/01/2002	Numerous roads and bridges reported closed due to flooding between Ocean City, Berlin, Newark, and Snow Hill. Cooperative observer at Snow Hill reported just over 14 inches of rain.
Berlin	05/17/2004	Road closed at Timmons Town Road due to flooding.
Ocean City	07/28/2004	Flooding across 140th Street in northern Ocean City.
Ocean Pines	08/01/2004	Street flooding in Ocean Pines. Several other roads flooded throughout the county.
Pocomoke City	07/05/2006	Most intersections along Market Street under water.
Ocean Pines	08/02/2009	Flash flooding was reported in Ocean City. Street (65TH) was closed due to a foot and a half of water on the road at St. Louis Avenue. Roads were flooded from 8th Street south to Route 50. The intersection of Bayshore Drive and Gull Way was flooded with 2 feet of water on the road.

Source: NCDC (NOAA)

In terms of number of occurrences, the NCDC listed a total of 8 flash flood events affecting Worcester County from 2000-2012. Therefore, Worcester County experiences 0.62 flash flood events per year. The database did not include reported property damage.

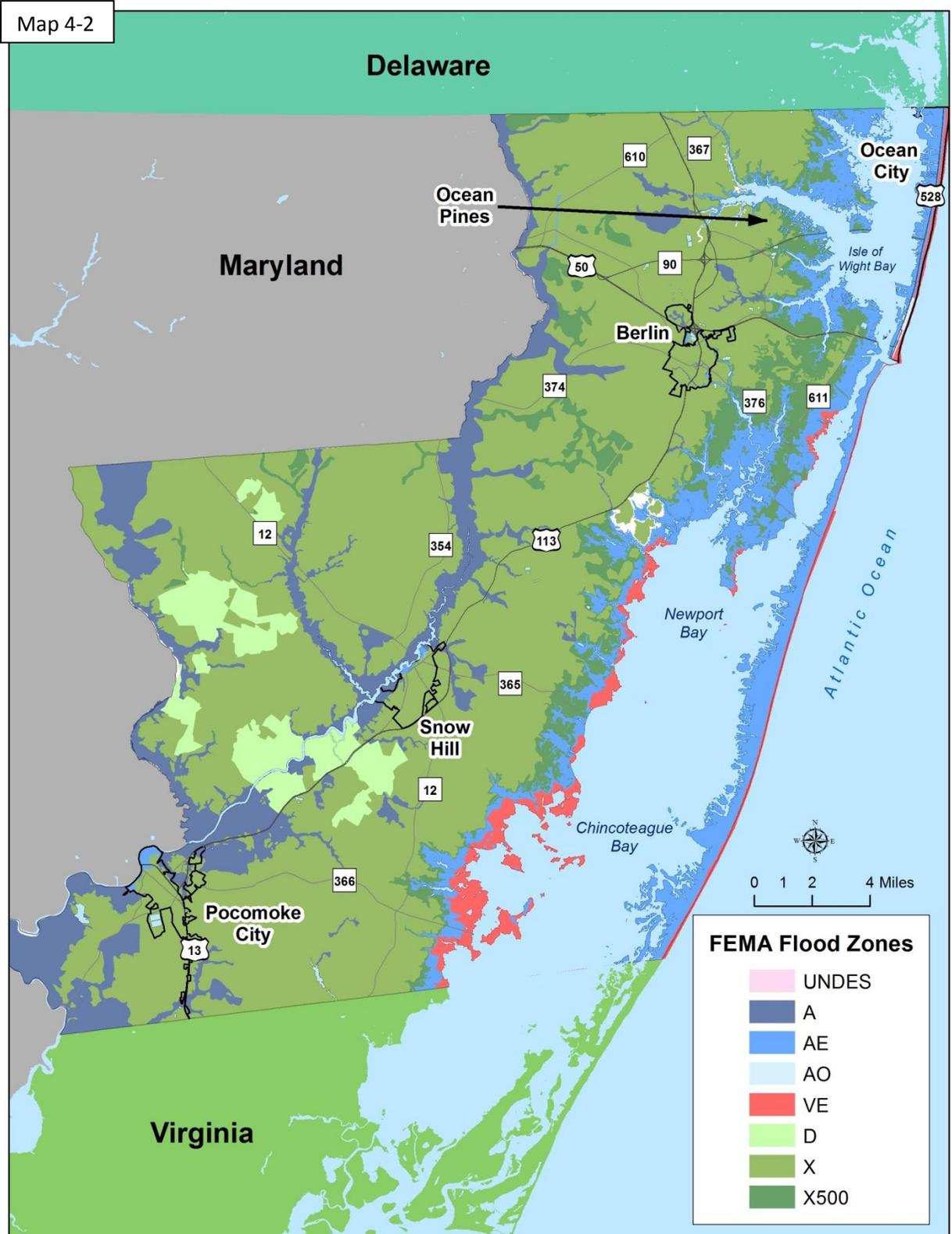
Flood Zones

Table 4-6 shows the floodplain designations within the County. Floodplain designations are an indicator of the flooding frequency within a given area.

The Worcester County Floodplain Management Law requires structures in the V Zone to be built with the lowest structural floor element 2 feet above Base Flood Elevation (BFE); structures built in the A Zone must be at or above BFE. The BFE is the distance above “0” elevation 1929 NGVD. Accessory structures are prohibited in the V Zone. Any construction must also adhere to flood resistant building requirements including elevating building mechanical and electrical systems above BFE. The base flood is a flood that has a 1 percent probability of being equaled or exceeded in any given year (100-year flood).

The FEMA flood zones included on Map 4-2 are:

Table 4-6: FEMA Flood Zones	
Flood Zone	Description
High Risk Areas	
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. This is also referred to as the 100-year floodplain.
AE	The base floodplain where base flood elevations are provided for a 100-year flood event. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
High Risk – Coastal Areas	
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
Moderate to Low Risk Areas	
X	Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.
X500	Areas of 0.2-percent-annual-chance floodplain or the 500-year flood.
Undetermined Risk Areas	
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.
UNDES (Undescribed)	Area of Undesignated Flood Hazard. A body of open water, such as a pond, lake, ocean, etc., located within a community's jurisdictional limits that has no defined flood hazard.



Source: S&S Planning and Design



CHAPTER 5: LESS COMMON HAZARDS

Potential Sea Level Rise & Shoreline Erosion

According to the Maryland Department of Natural Resources, a continuation of the current potential sea level rise trend (3 to 4 mm/year) or one foot over the next century is expected to occur in the Mid-Atlantic region due to global warming, depletion of groundwater, land subsidence, compaction and natural variations in climate. Potential sea level rise impacts vary with coastal characteristics, according to the Intergovernmental Panel on Climate Change (IPCC), Maryland could see as much as two to three feet of rise by 2099. Over the last 100 years, local tidal gauges have registered a one foot increase (30.5 centimeters). Presently, Maryland is experiencing a greater impact from potential sea level rise due to the naturally occurring land subsidence. Land is currently subsiding at a rate of approximately 1.3 mm/year in the Chesapeake Bay region. If the trend continues with a rise of two or three feet in the next century, these impacts will be even greater.

Expected impacts of potential sea level rise include inundation of wetlands and lowlands, accelerated coastal erosion, exacerbated coastal flooding, threatened coastal structures, raised water tables, and increased salinity of rivers, bays, and aquifers. Potential sea level rise can greatly increase the severity of the flood events. In low-lying coastal areas, a one foot rise in sea level translates into a one foot rise in flood level; intensifying the impact of coast flood waters and storm surge. Due to its long-term and on-going effect, potential sea level rise will require long range hazard mitigation planning. Potential sea level rise could eventually have implications on future land use planning and may need to be considered for future policy development and comprehensive planning.

Inundation is the primary impact of potential sea level rise. The gradient of local topography determines the rate at which land will be submerged by water. The recession of shoreline can be exacerbated by erosion and flooding. Due to Worcester County's lower elevations and gradual slopes, large geographic areas could be inundated as the potential sea level rises. Intermediate levels of recession will occur along the sandy beaches fronting the bays since the sediments located there are more susceptible to erosion. Ocean Pines, a heavily developed area, is already vulnerable to flooding and erosion and will be impacted by current rates of potential sea level



rise if no additional action is taken. Ocean Pines has approximately 15,000 year-round residents. The Snug Harbor neighborhood currently contains 17 repetitive loss properties and continued potential sea level rise may result in additional losses.

Accelerated potential sea level rise could also drown vegetation, which in return would reduce sedimentation entrapment and exacerbate substrate erosion. Erosion to the barrier islands also could affect the bays' wetlands if fragmentation of Assateague Island occurs and cause increased wave action against the coastline. The commonly used Brunn Rule states that for every 1 feet in potential sea level rise, the coastline will retreat 50 to 100 feet depending on the slope of the beach profile.

Fringe marsh established along the shoreline in lower energy areas provides significant habitat benefits to the aquatic ecosystem. Marsh vegetation protects water quality by slowing runoff, reducing erosion, and filtering nutrients that reduce oxygen and cause algal blooms. Natural shorelines also provide critical habitat for fish species at both juvenile and adult life stages. Bordering the shorelines of the Coastal Bays is 68 miles of fringe marsh and 6 miles of sandy beach.

Shoreline erosion is not a serious threat to human life; however it is a slow and ongoing geological process that could lead to significant economic, property and infrastructure loss. According to the *2008 Sea Level Rise Response Strategy, Worcester County, Maryland*, approximately 56% of the county's shoreline is receding, with 4% eroding at over 4 feet per year. These eroding areas are candidates for non-structural or living shoreline stabilization approaches to mitigate erosion.

A large portion of Worcester County's bays were inventoried by the Virginia Institute of Marine Science. Of this inventoried area, approximately 26% of the shoreline was armored or contained some form of erosion control structures in place such as bulkheads, riprap, breakwaters, debris, unconventional, groin field, jetty, wharf, dilapidated bulkhead, or marina. The current placement and elevation of most erosion control structures will not stop future potential sea level rise inundation unless modifications and further armoring of neighboring shorelines is completed. Furthermore, according to the *2008 Sea Level Rise Response Strategy*, the bulkheads at Ocean Pines have most likely caused erosion to nearby beaches on either side of the beaches. The inlet armoring between Fenwick and Assateague Islands is an obvious example of how stabilizing one shore can cause erosion to

Barrier Island Migration

Barrier islands are dynamic landforms that can migrate landward through overwash processes as potential sea level rises if they are in their natural state. Fenwick Island and Assateague Island were split during a storm in 1933 and the inlet has been artificially maintained. This has caused severe erosion to northern Assateague Island and accelerated movement landward.



Source: *2008 Potential sea level rise Response Strategy, Worcester County*

nearby unarmored shores.

Although erosion and accretion are natural processes, both could potentially create significant problems for property owners, businesses, and the public, specifically in areas where planning and design activities have either increased natural erosion rates or compounded the impact of erosion processes. Considering waterfront property is costly, many waterfront property owners have a vested interest in the protection and fortification of the shoreline. Homeowners have often choose to stabilize the low eroding or stable shorelines, which has led to an over investment in erosion control and has degraded vital shoreline habitat.

Determining the ecological impacts when selecting one shoreline stabilization option over another depends on the site conditions. If the property is one of a few natural stretches of shoreline in the region, it likely plays a significant role in providing habitat for horseshoe crabs, turtles and other species. Selecting a project that either enhances or maintains those habitat functions would be optimal. On the other hand, if the area is quite pristine where fringe marsh or SAV beds have established less than 30 meters from your property, a non-structural approach could be applied.

Additionally, the higher water tables could reduce the bearing capacity of some soils due to the friction loss between soil particles. This may affect the structural stability of road bases and could lead to more frequent resurfacing. Impacts such as this are more likely to occur in the vicinity of advancing sea level areas that contain hydric soils; sands, sandy loams, silt loams, mucks, and peats; which are hydrologically influenced by adjacent coastal water levels. According to the *2008 Sea Level Rise Strategy*, such conditions are likely to already be common throughout much of Worcester County where more than 58% of the soils are very limited for road building. Roads in some areas of the County have been constructed on fill, which increases the roads' vulnerability to rising ground water.

Furthermore, potential sea level rise could increase storm surge; a major public safety issue. An increase in property and population at risk from storm surge increases the possible need for evacuation. According to the *2008 Sea Level Rise Response Strategy*, the most vulnerable roads in the County include those in the Pocomoke River floodplain, including portions of Pocomoke City and Snow Hill. Also roads that provide access to the western shores of Chincoteague Bay and Sinepuxent Bay, especially portions of South Point Road, Eagles Nest Road, and Airport Road as well as roads within the Assateague



Source: Worcester County Public Information Officer

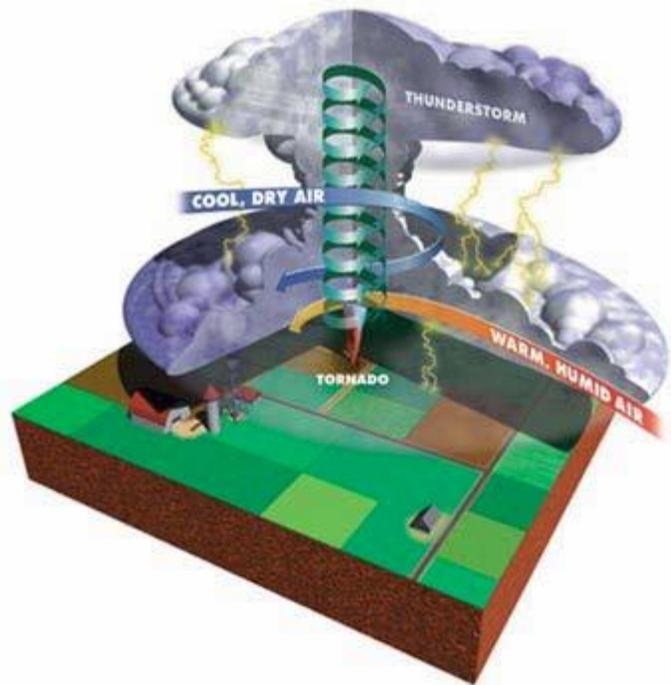
Point and The Landings subdivisions; many of the roads in the subdivisions along Sinepuxent Bay and Isle of Wight Bay in West Ocean City; many of the roads in Ocean Pines and other areas along the St. Martins River, Piney Island Drive, Dixie Drive, Salt Grass Point Road, and St. Martin's Neck Road; roads along Grey's Creek and within Edgewater Acres on the north shore of Assawoman Bay; and many of the bayside roads in Ocean City.

Potential sea level rise could also interfere with navigation under bridges by diminishing the abovewater clearance. This will not be a major issue for the movable-span bridges in Worcester County; however these bridges will need to be opened more frequently as sea level. According to the *2008 Sea Level Rise Response Strategy*, these bridges include the following: the Harry W. Kelley draw bridge (US 50) over Sinepuxent Bay (clearance in closed position is 15 feet above mean high tide); the Snow Hill bridge (MD 19) on the Pocomoke River (closed position clearance is 5 feet); and the Pocomoke City draw bridge (MD 675) on the Pocomoke River (closed position clearance is 4 feet). Bridges over non-navigable, freshwater are typically designed with a "drift clearance" of approximately 2 feet. These streams affected by potential sea level rise are vulnerability to blockage and structural damage from the possible increase of floating debris.

In addition, direct inundation could pose a threat both to water supply lines as well as the wells and water supply treatment and storage facilities. According to the *2008 Sea Level Rise Response Strategy*, saltwater contamination of ground water aquifers due to rising sea level is most likely to occur in areas of Worcester County proximate to the Atlantic Ocean or the interior bays where water is drawn from the surficial, unconfined Pleistocene aquifer; such areas include the Mystic Harbour, Ocean Pines, and River Run water supply service areas.

Tornado Touchdowns

A tornado is defined by Strahler in his *Physical Geography Text* as a violently rotating column of air extending from a thunderstorm to the ground. Normally thunderstorms and associated tornadoes develop in warm, moist air in advance of strong eastward moving cold fronts in late winter and early spring. Tornadoes can also occur along a "dryline" which separates very warm, moist air to the east from hot, dry air to the west. Both of these scenarios are common in the Central Plains. Another way that tornadoes can be



created occurs when warm moist air flows upslope. Under the right temperature and moisture conditions, intense thunderstorms can produce tornadoes in higher terrain.

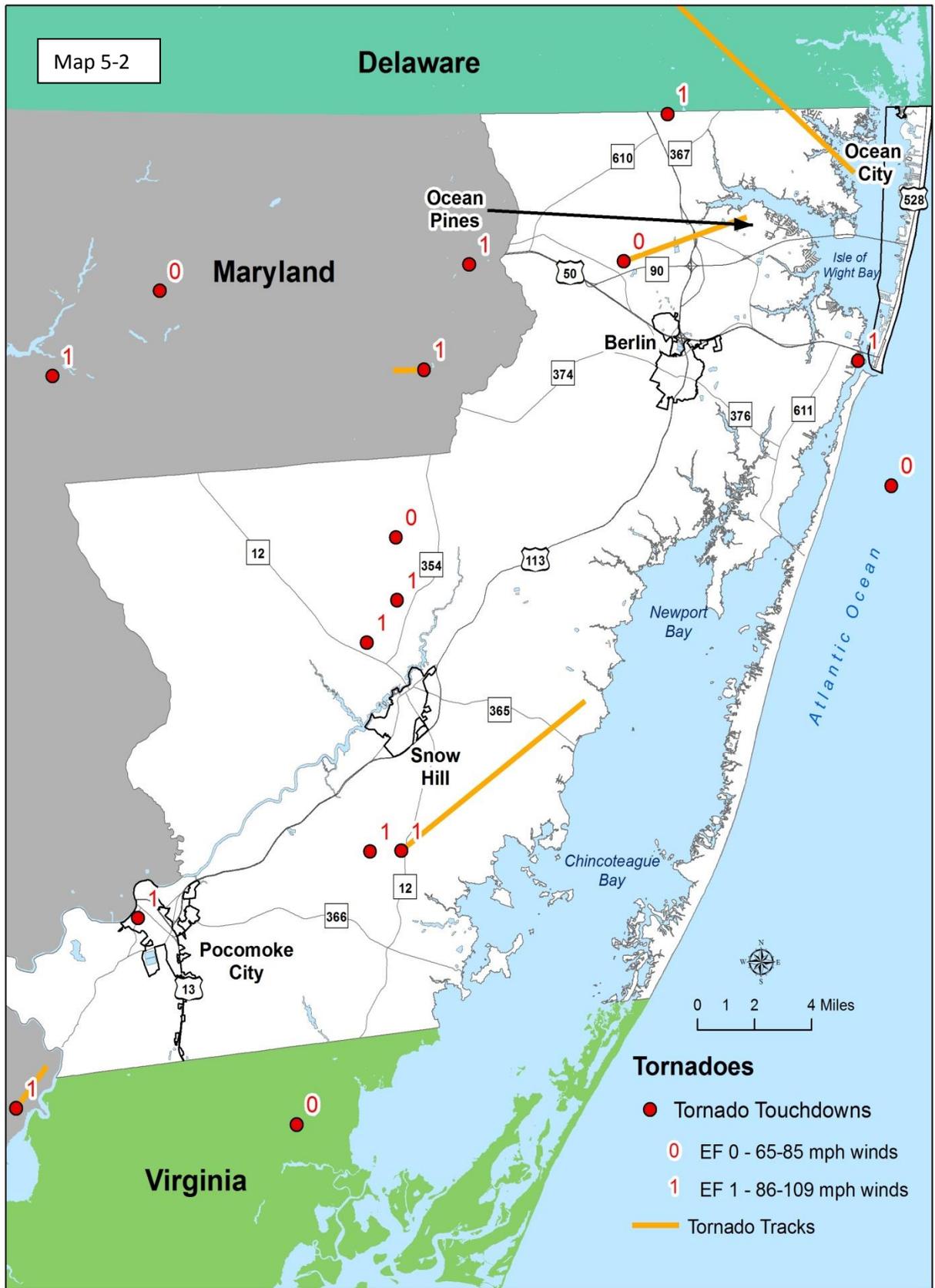
Tornadoes can be ranked by intensity by using the Fujita Scale devised by Dr. Theodore Fujita at the University of Chicago in 1971. The Fujita Damage Scale (F-Scale) is used to determine the tornado strength based on observed damage. The Fujita Tornado Scale assigns a category to tornados based on their wind speed and relates this to the general type of damage that is expected. The damage scale increases in intensity from a weak F0 (40 to 70 mph wind) to a F5 (over 260 mph wind). The Fujita scale of tornado intensity indicates that tornadoes at the F0 classification cause light damage to chimneys, tree branches, and signboards. Tornadoes of F1 magnitude can cause moderate damage to road surfaces, automobiles, and mobile homes. The impact of tornadoes primarily depends upon their occurrence in developed areas-tornadoes in undeveloped areas can cause damage only to a few trees and even go unreported.

According to NOAA, the Enhanced Fujita (EF) Scale has replaced the original Fujita (F) Scale used to rate tornadoes by the NWS. The EF Scale improves upon the limitations of the original F- Scale, which has been used since 1971. The tornado rating categories of the EF Scale range from zero to five, with EF0 as having the lowest wind speed and EF5 as having the highest wind speed. A correlation between the two scales has been developed and this makes it possible to express ratings in term of one scale to the other, thus preserving the historical database. The major improvements of the EF Scale are the more accurate wind speed ranges in each category and an increase in the amount of detail that goes into determining a tornado rating. These improvements will allow for more consistent and accurate tornado ratings by the NWS.

Table 5-1: Enhanced Fujita (EF) Scale						
Fujita Scale			Wind Speed		Typical Damage	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: <http://www.spc.noaa.gov/faq/tornado/ef-scale.html>

Map 5-2 shows the approximate locations of tornadoes touchdown in the County. These tornadoes have been weak and have not exceeded an F1 rating. There have been six recorded touchdowns in the County and one just offshore of Assateague Island.



Source: S&S Planning and Design & NCDC Data

Toxic Chemicals and Natural Hazards

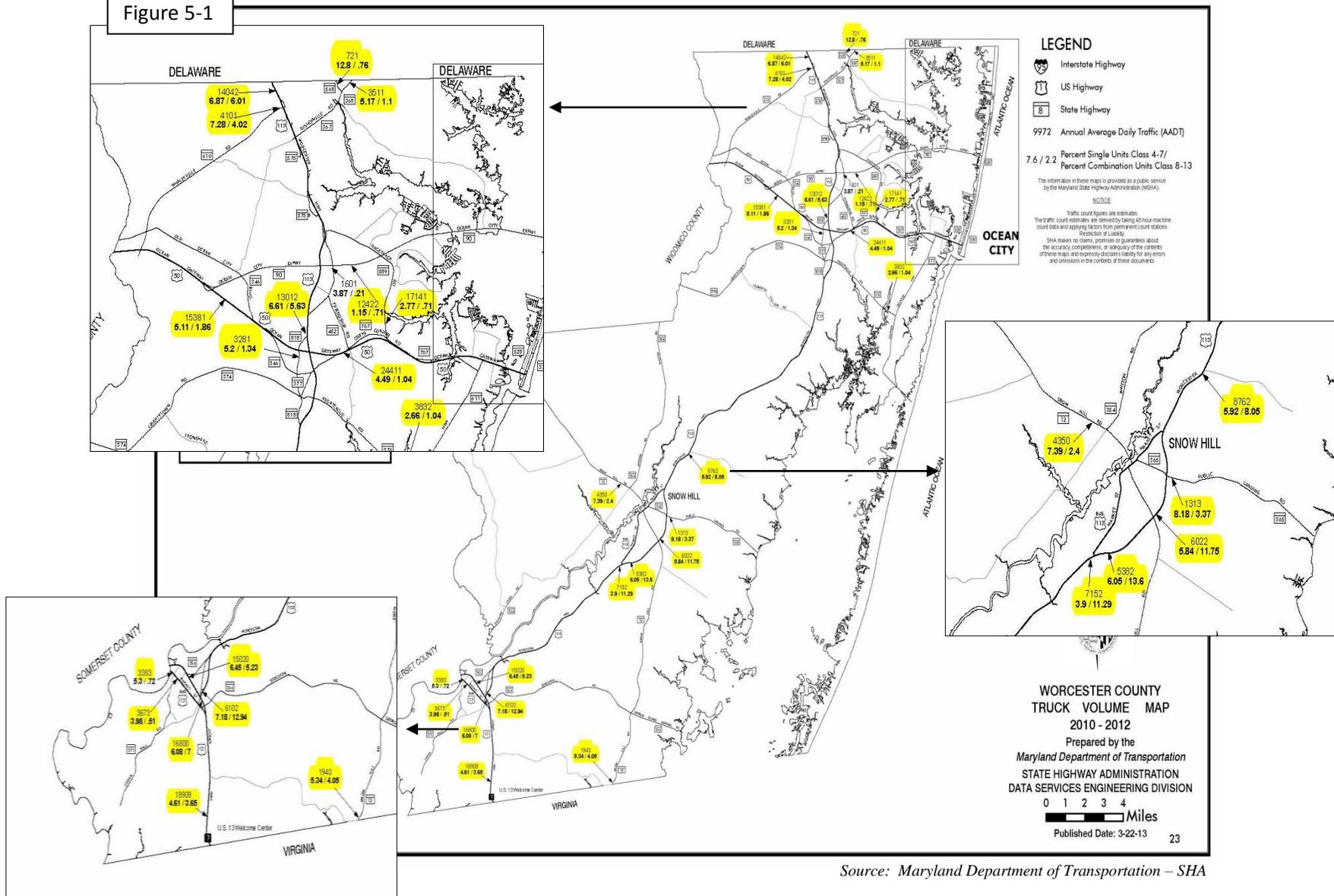
The release of HazMats while in transit is of great concern to the U.S. Department of Transportation. While most hazardous materials are stored and used at fixed sites, these materials are usually produced elsewhere and shipped to the fixed facility by rail car, truck, or onboard ships or barges. While these vehicles are identified by signs denoting the hazard, the possibility of release is present at any time. Hazardous materials are constantly being moved in Maryland on interstate highways and rail systems.

In terms of the number of occurrences, the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration's, Office of Hazardous Materials Safety listed a total of 69 HazMat Transportation Incidents affecting Worcester County between 1990 and June 2013. Therefore, Worcester County experiences 1.08 HazMat Transportation incidents per year. The location of these incidents are: Snow Hill (3 incidents), Berlin (3 incidents), Ocean City (4 incidents) and Salisbury (4 incidents).

As illustrated on the Figure 5-1, the Maryland State Highway Administration tracks the amount of truck traffic traveling on the major road routes throughout the County. Routes 113 and 589, near the Delaware-Maryland line, approximately 14,042 and 17,141 trucks respectively are traveling in and out of the County on a daily basis. Truck traffic through Berlin via Route 50 has approximately 15,381 trucks traveling through from the west and 24,414 trucks from the east. Trucks traveling in and out of Snow Hill via Route 113 average 8,762 trucks daily. Pocomoke City averages 15,020 trucks daily via Route 756 and within the City, approximately 16,800 trucks daily on Route 13. Truck traffic traveling in and out Worcester County via Route 13 at the Virginia border averages 18,909 trucks daily. Critical facilities and residents located in close proximity to these State Routes are more susceptible to a transportation hazmat incident.

Finally, the interplay between propane and oil tanks and flood hazards is very dangerous, and costly. In 2003 hurricane Isabel dislodged and spilled hundreds of residential oil tanks in Maryland alone. Governments subsequently spent \$2.25 million in remediation costs. The cost to individual homeowners was far greater. Elevating and anchoring propane and oil tanks properly mitigate this flood impact.

Figure 5-1



Source: Maryland Department of Transportation – SHA

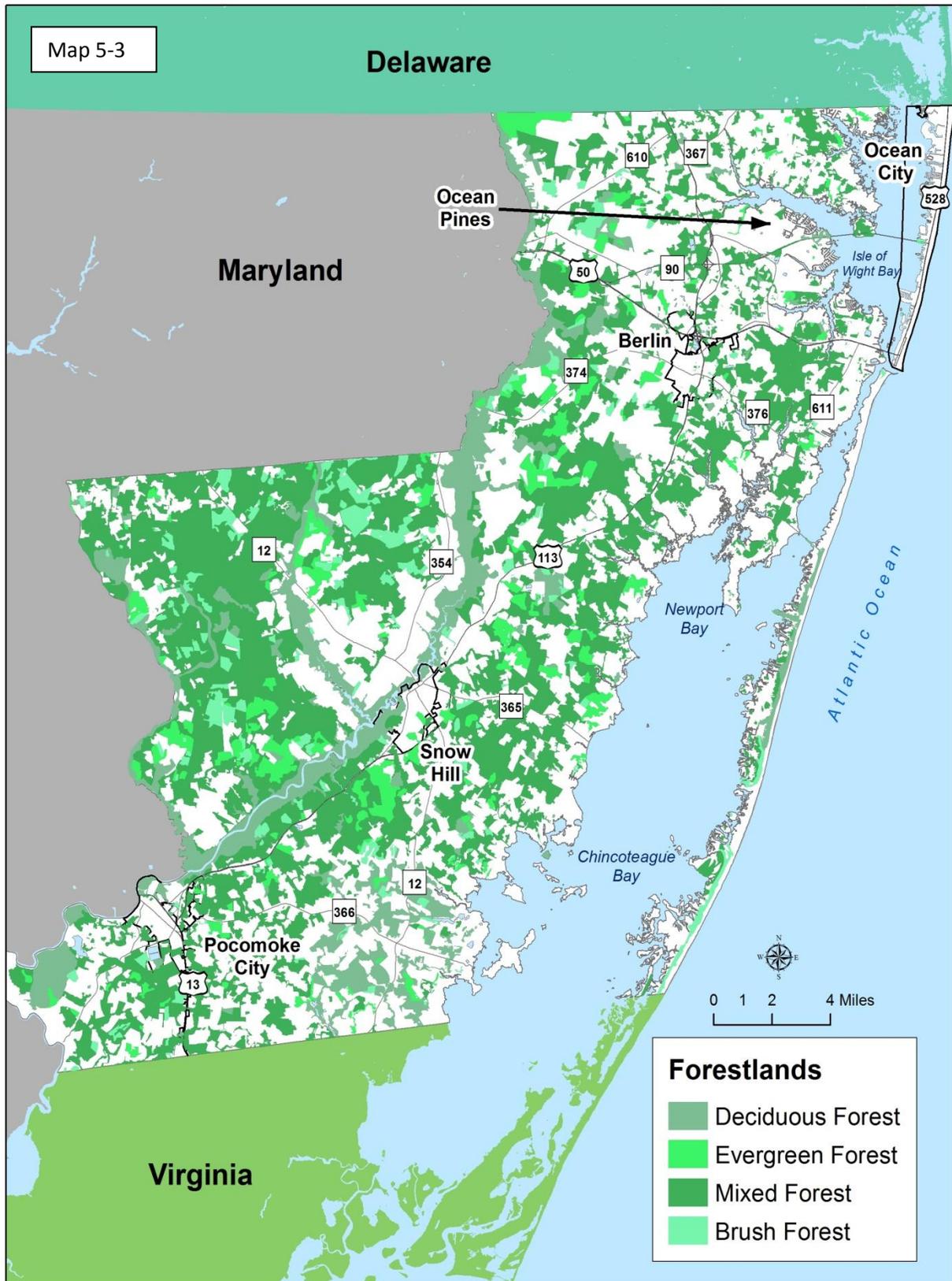
Wild Fires

A wildfire is an uncontrolled fire spreading through vegetative fuels, threatening and possibly consuming structures and other community assets. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. A wildland fire is a fire in an area in which development is almost nonexistent, except for roads, power lines and similar facilities. An urban-wildland interface fire is a wildfire in an area where structures and other human development meet or intermingle with wildland or vegetative fuels. Fire may be rated as low, moderate, high, or very high based on the type of fuels that help sustain them (Table 5-2).

Wildfires can occur at any time of the year, but they mostly occur during long, dry hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can spread out of control. Human carelessness, negligence, and ignorance cause most wildfires. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Because wildfires consume the vegetative land cover, potential aftermath impacts include severe erosion and the silting of stream beds and reservoirs, resulting in damage to the watershed and increased flooding risks.

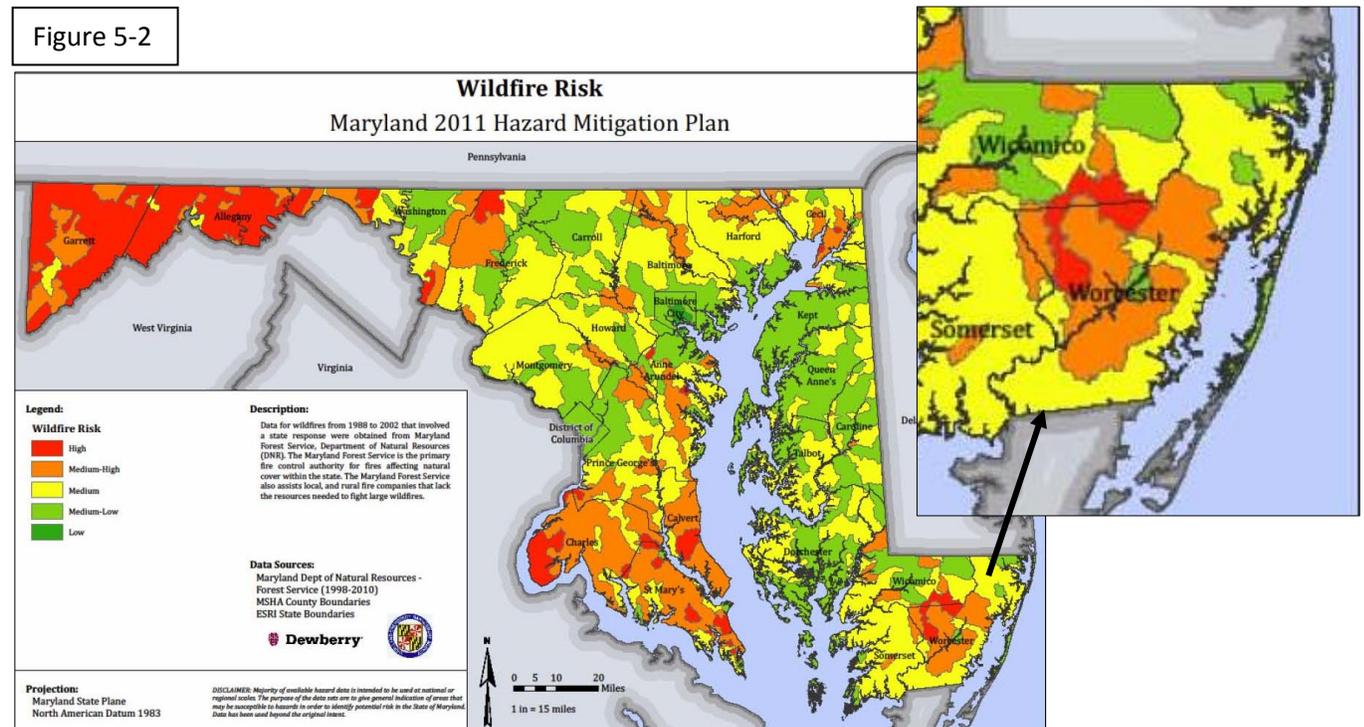
Rating	Description
Low	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely for a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
Moderate	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
High	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High	Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.

Occasionally brush fires threaten urban development where homes are built in close proximity to forest or brush covered land; Map 5-3. As more former agriculture land reverts to brush, this problem will become more prevalent.



Source: S&S Planning and Design & MDP 2010 Land Cover Data

According to the *2011 Maryland State Hazard Mitigation Plan Update*, Worcester County has experienced 144 wildfires between 1998 and 2010. The State Plan also provided a Wildfire Risk Map; Figure 5-2. The western portion of Worcester County is rated medium high and high for wildfire risk.



Source: *2011 Maryland State Hazard Mitigation Plan Update*

Worcester County has abundant and beautiful forests that provide habitat for a plethora of species. The forest lands also provide storm water runoff filtration and serve as a resource for timber. Through the Worcester County Forest Conservation program as well as State and Nationwide programs such as CREP, much of this resource is able to be continually preserved.

In an area so rich in deciduous forest drought has rarely led to wildfires. Somerset County has seen marsh fires, while Worcester with fewer marsh acres has been spared. Around urban areas wild fires are also more common, and damage costs are higher. Wicomico County has experienced such fires. Worcester County has enforced a stringent burn policy as well which has kept fires occurrences to a minimum. Burn regulations will be spelled in the section on existing mitigation strategies.

A common cause of the few fires that the county and the region have seen are from irresponsible human activity such as leaf burning, and burning ditch banks. The county's burn regulations aim to mitigate this type of action. Another cause of wild fire on the lower shore is arson.

High Wind

Wind is the motion of air past a given point caused by a difference in pressure from one place to another. Produced by severe thunderstorms and tropical weather systems, high winds can cause significant damage. Flying debris, downed power lines, damaged communications utilities are just a few of the issues that can be caused by high winds.

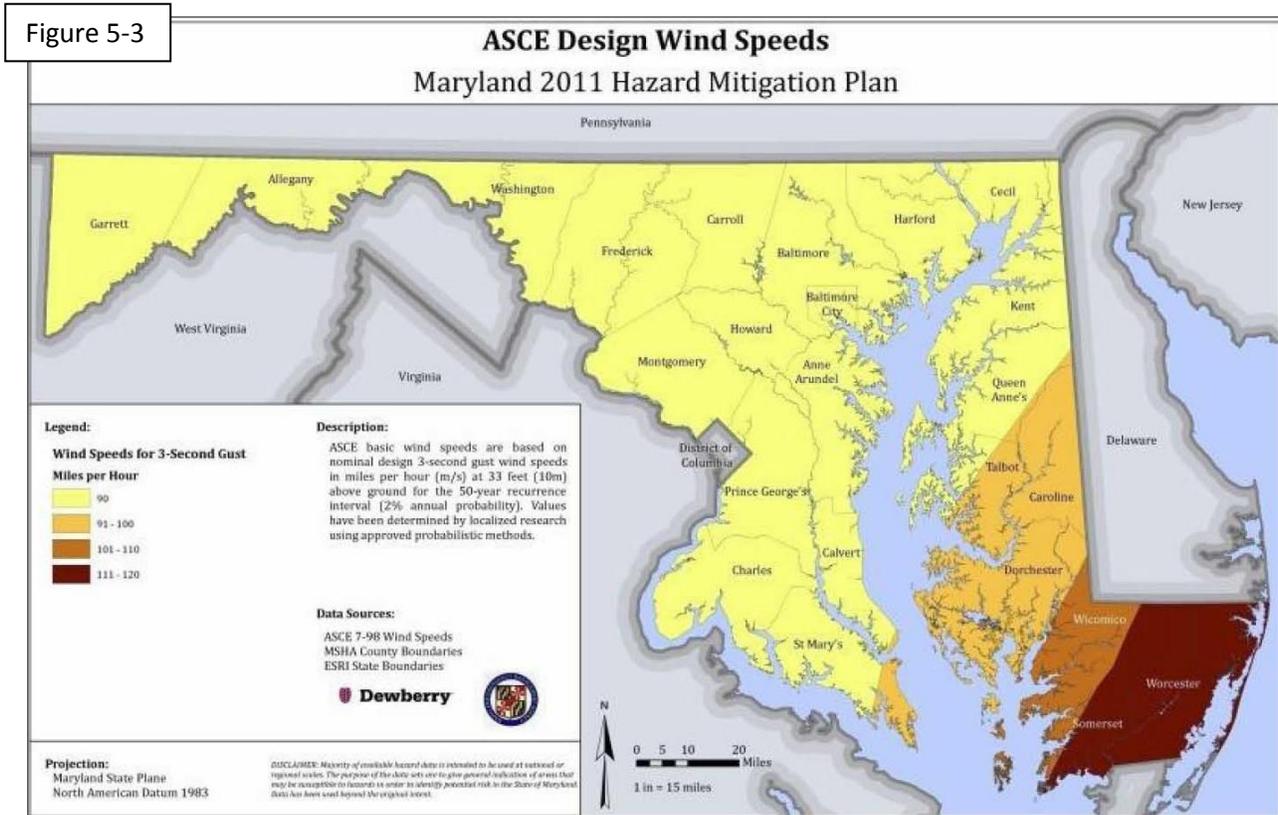
According to the *2011 Maryland State Hazard Mitigation Plan Update*, two basic types of damaging wind events other than tropical systems affect Maryland: synopticscale winds and thunderstorm winds. Synoptic-scale winds are high winds that occur typically with cold frontal passages or Nor'easters. When thunderstorm winds exceed 58 mph, the thunderstorm is considered severe and a warning is issued. "Downbursts" cause the high winds in a thunderstorm. Downburst winds result from the sudden descent of cool or cold air toward the ground. As the air hits the ground, it spreads outward, creating high winds. Unlike tornadoes, downburst winds move in a straight line, without rotation. The term "microburst" refers to a small downburst with damaging winds up to 168 mph and less than 2.5 miles in length. The term "macroburst" refers to a large downburst that can extend greater than 2.5 miles with winds up to 134 mph and can last 5 to 30 minutes.

According to the National Climatic Data Center, a total of 37 thunderstorm/wind events have affected Worcester County between 2000 and 2012; resulting in \$271,000.00 in property damage. In regards to occurrences, Worcester County experiences 2.85 thunderstorm events per year. The data also indicated that three thunderstorm events occurred on the same date, resulting in over \$5,000.00 in damages.

Table 5-3: NCDC Thunderstorm/Wind Events – 2000-2012			
Location	Date	Event Narrative	Property Damage
Berlin	04/28/2002	Trees down on Purnell Crossing Road.	\$2k
CountyWide	05/13/2002	Trees down and damage to chicken houses and residential homes in central and northern portions of county. Occurred between 845 pm and 930 pm.	\$200k
Bishopville	05/13/2002	Roof blown off house.	\$20k
Ocean City	05/13/2002	Minor damage to several structures. Roof partially torn off one building.	\$15k
Stockton	05/18/2002	Trees down.	\$2k
Ocean City	05/18/2002	Tree limbs down and minor roof damage on 136th street.	\$3k
Stockton	08/16/2003	Trees down near Stockton Road and New Town Park.	\$2k
Ocean City	08/26/2003		-
Ocean City	08/27/2003	Wind gust of 58 mph measured.	-
Pocomoke City	07/14/2004	Trees Down.	\$2k
Beaver Dam	07/14/2004	Trees down on Route 13.	\$2k
Berlin	06/28/2006	Trees blown down on Libertytown Road.	\$2k
Bishop	06/28/2006	Trees blown down on Bishopville Road.	\$2k
Beaver Dam	07/28/2006	Trees down on Rockcastle Road.	\$2k
Pocomoke City	07/28/2006	Several trees down.	\$2k
Pocomoke City	06/08/2007	Trees were downed across Dividing Creek Road.	\$2k
Pocomoke City	07/19/2007	Large tree limbs were blown down.	\$1k
Whitesburg	03/05/2008	Several trees were downed along Whitesburg and Dividing Creek Roads. Building was significantly damaged and two barns collapsed near the Somerset/Worcester border.	\$5k
Whaleysville	06/16/2008	Numerous trees were downed.	\$2k
West Ocean city	06/23/2008	Fire siren was blown down in West Ocean City.	\$2k
Whitesburg	06/30/2008	Large tree was downed at the intersection of Whitesburg Road and Oak Hall Road.	\$1k
Whitesburg	07/04/2008	Multiple trees were downed in Whitesburg	\$2k
Snow Hill	07/04/2008	Trees were downed across road near the intersection of Sand Road and Millsville Road.	\$2k
Newark	05/29/2009	Large tree branches were blown down.	\$1k
Snow Hill	07/31/2009	Trees were downed.	\$1k
Berlin	07/31/2009	Tree was downed	\$1k
Bishopville	07/31/2009	Tree was downed across a road	\$1k
Newark	06/24/2010	Trees were downed.	\$2k
Pocomoke City	06/24/2010	Tree was downed onto power lines.	\$1k
Snow Hill	06/24/2010	Tree was downed onto power lines.	\$1k
Snow Hill	07/25/2010	Tree was downed on Old Furnace Road.	\$1k
Berlin	08/05/2010	Large tree limbs were downed.	\$1k
Berlin	07/19/2011	Tree was downed onto a residence.	\$2k
Ironshire	07/24/2011	Trees were uprooted at Ocean City Golf Club.	\$3k
Whaleysville	06/25/2012	Large tree was downed on Sheppard's Crossing Road.	\$1k
Ocean Pines	06/29/2012	Large tree was downed on a home in Ocean Pines. Several additional trees were downed.	\$2k
Snow Hill	09/18/2012	Trees were downed on Saint Lukes Road.	\$2k

Source: NOAA, NCDC

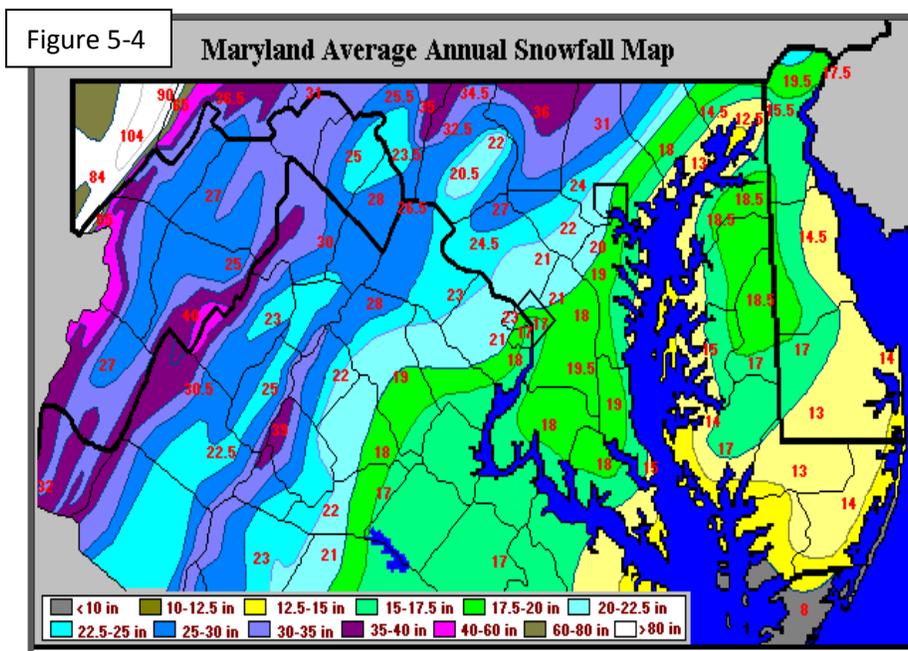
According to the 2011 Maryland State Hazard Mitigation Plan Update, the ASCE design wind speed zones for Worcester County is 111-120 mph; Figure 5-3.



Source: 2011 Maryland State Hazard Mitigation Plan Update

Winter Storm

The typical winter storm in Maryland usually brings heavy snowfall (6+ inches), sleet or freezing rain accompanied by cold temperatures and occasionally high winds. This type of storm usually starts as a mid-latitude depression in the central U.S. and moves north and east between the Appalachians and the East Coast. Depending on the speed at which these storms travel and the air mass temperature, heavy amounts of snow, sleet, freezing rain or some combination will result. Typically, a winter storm will last for 24 – 48 hours and move out of the area into New England. Then, depending on the controlling air mass, temperatures will continue to be cold and the snow or ice will linger for days or sometimes weeks, or, conversely the temperature will warm quickly and the snow or ice will melt in a short time.



Source: NOAA

NOAA defines winter storms as ‘conditions that are favorable for hazardous winter weather conditions including heavy snow, blizzard conditions or significant accumulations of freezing rain or sleet.’ According to the State Hazard Mitigation Plan Update, a total of 73 events between 1993 and 2010 have been recorded in the NCDC database, which has caused \$2,749,710.00 in property damage.

As illustrated in Figure 5-4, Worcester County’s annual snowfall is approximately 14 inches. Significant snowfall amounts have the potential of damaging power lines, communication towers, interfering with transportation and damaging residential and commercial structures. In regards to critical facilities, the age and type of construction determines the vulnerability of the structure. Additionally, critical facilities should have an alternate power source in the chance power lines are downed due to winter storms. Critical facilities at a higher risk for structural damage or loss of power should be retrofitted to sustain the effects of winter storms.

Drought

According to the *National Weather Service*, when temperature and humidity together exceed certain levels (85° F and 100% humidity, 90° F and 70% humidity, or 110° F and 30% humidity) heatstroke is likely if exposure continues for many hours. Such conditions, which can create a heat index temperature of 105° F or greater, are encountered in Maryland virtually each summer.

NOAA defines excessive heat as ‘excessive heat occurring from a combination of high temperatures (significantly above normal) and high humidity. At certain levels, the human body cannot maintain proper internal temperatures and may experiences heat stroke. The “Heat Index” is a measure of the effect of the combined elements on the body.’

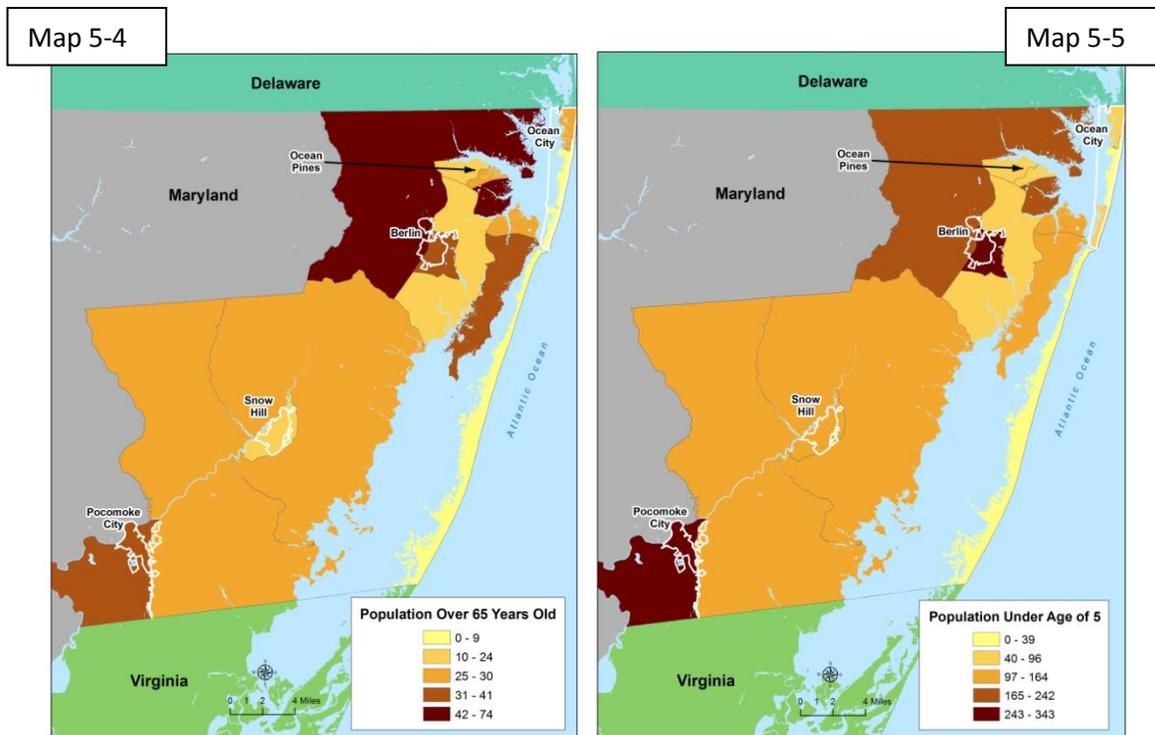
The heat index is an important aspect to consider during the summer months. As mention in Table 25, the heat index refers to how hot it really feels outside. The heat index is based on air temperature and relative humidity. For example, an air temperature of 92°F with a humidity of 100% creates a heat index of 132°F, which is extremely dangerous. Two groups that are most vulnerable to these excessive heat conditions are the elderly population and the younger population. The following table details the heat disorders that may occur to these two groups.

Table 5-4: Heat Disorders on High Risk Groups

Heat Disorders on High Risk Groups	
Heat Index	Possible Heat Disorders
130 or Higher	Heatstroke/sunstroke highly likely with continued exposure.
105-130	Sunstroke, heat cramps or heat exhaustion likely and heatstroke possible with prolonged exposure and/or physical activity.
90-10	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
80-90	Fatigue possible with prolonged exposure and/or physical activity.

Source: NOAA

The following maps illustrate where the concentration of the two vulnerable groups are located. These groups include the population of 65 and older age group and children under the age of 5.



Source: S&S Planning and Design & 2010 US Census Data

Additionally, a prolonged period excessive heat can lead to drought. According to NOAA, drought is defined as ‘a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area.’ Droughts may be short term, a few weeks to a month, or long term, several months to several years. A long term drought may be interrupted by occasional precipitation without breaking the drought cycle. NOAA together with its partners provides short and long term drought assessments.

According to the 2011 State Plan, Worcester County has experienced two drought events between 1995 and 2010. However, an economic loss due to crop damage was not experience during either event. Figure 5-5 illustrates Worcester County’s agricultural lands by crop type for 2010. According to the map the predominate type of crops produced in Worcester County are corn, soybean and winter wheat.

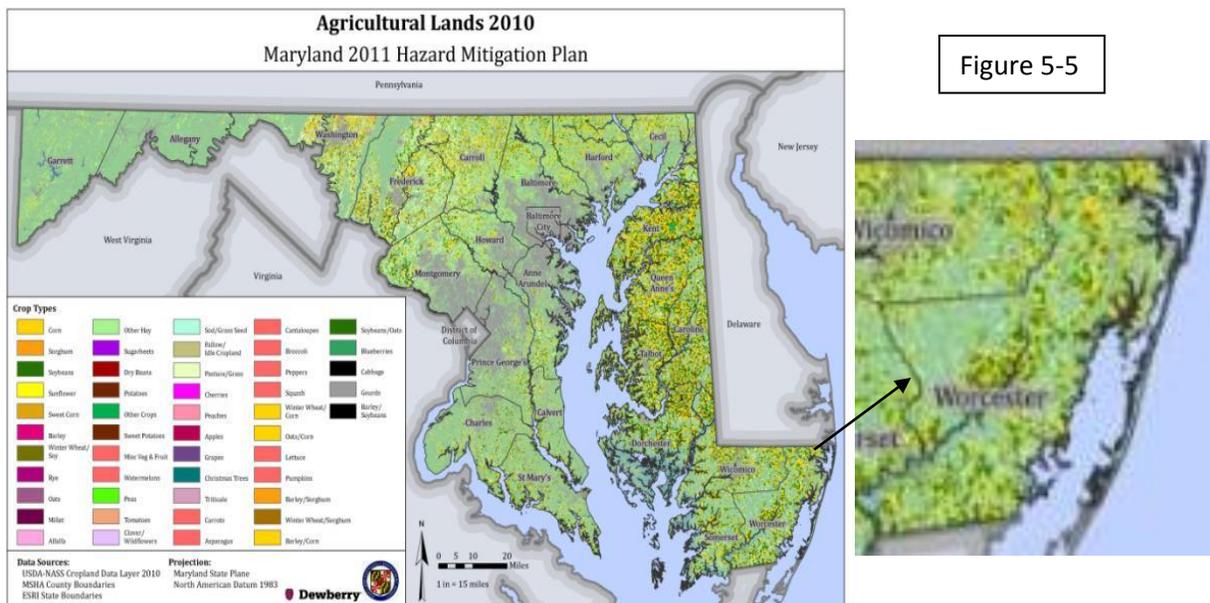


Figure 5-5

Source: 2011 Maryland State Hazard Mitigation Plan Update

Furthermore, groundwater is another concern during a drought event. According to the 2006 Worcester County Comprehensive Plan, groundwater is the County’s only source of drinking water. The plan states the county contains an abundance of sand and gravel aquifers that yield large quantities of groundwater. However this water is also the primary source for irrigation and the major source of freshwater to the coastal bays. During a drought event, farmers will rely heavily on irrigation for crops. Therefore, water usage for irrigation will have to be monitored during a drought event.



CHAPTER 6: CAPABILITY ASSESSMENT

Overview

Through its Emergency Services Department, Worcester County has developed a network of trained agency and volunteer personnel through the Maryland MEMAC, a statewide mutual aid agreement to mitigate and respond to a variety of hazards. This network includes state agencies such as the Maryland State Police, Department of Natural Resources, Department of the Environment, Department of Health and Mental Hygiene, State Highway Administration and the Maryland Emergency Management Agency. County agencies include the Public Works-Roads Department, Sanitary Commission, Board of Education and the Sheriff's Office.

Worcester County's Department of Emergency Services has recently expanded and enhanced their facilities. The County has installed a new 800 MHz radio system to link police, fire, and EMS responders. Pre-planning has been conducted to enable the evacuation of the County's identified special populations (hospital patients, nursing home residents, prison inmates, etc.). Improved access to timely meteorological data has been implemented. Mutual aid agreements with adjacent jurisdictions have been signed. The County also participates in the Delmarva Emergency Task Force with most of the other jurisdictions on the Delmarva Peninsula. This task force endeavors to coordinate all emergency management functions between these jurisdictions.

Flooding Related Hazards – Coastal and Riverine

Hurricanes and major storms have provided opportunities for local emergency services to test response plans. Real events continue to be the proving grounds for developing systems and procedures. Although there has not been major damage from such events for several years, additional preparation has come through participation in County and statewide drills and exercises.

The CABO and BOCA Building Codes were adopted by Worcester County in 1993 and 1988, respectively. Worcester County implemented these codes to improve the quality of construction, regulate building permit issuance and decrease the damage to buildings from storms. Some of the topics covered by these codes are:

- Standards for building construction.
- Wind resistance designs and the placement of glass.
- Foundation design.

- The construction, sizing and attachment of structural members and the reinforcement and bracing of floors, walls, roofs, etc.
- Structural design to resist winds and fastener schedules to improve stability.
- Roof and ceiling installation to create foundation to rafter continuous ties to resist wind uplift.

The International Building Code (IBC) and the International Residential Code (IRC) are designed to ensure safety to life and property from all hazards incident to building design and construction at the least possible cost consistent with national recognized standards. More recently in 2010 and 2012, Worcester County has adopted the IBC, IRC and other codes consistent with the Maryland Building Performance Standards.

Since the previous planning cycle, the Stormwater Management Ordinance was revised and approved by the Maryland Department of Environment in January 2010. The Ordinance became effective for the County in May 2010. The goal of the Stormwater Management Ordinance is to manage stormwater by utilizing an Environmental Site Design in the initial planning phase. Various environmental constraints such as steep slopes, soils, forest, wetlands and floodplains must be delineated prior to submitting SWM design plans. Once the constraints for the site have been established, a site layout can be prepared using the new SWM requirements.

The County Code's building, natural resources, zoning and subdivision articles also provide mechanisms to protect properties against storm damage. Several of the hazard-related topics covered under the Code include:

- Floodplain development regulations; § BR 2-305.
- High hazard area regulations; Subtitle NR3:I: Atlantic Coastal Bays Critical Area.
- Floodplains forest retention; § NR 1-409.
- Limiting new development in coastal areas; Subtitle NR3:I: Atlantic Coastal Bays Critical Area .
- Delineation of the 100-year floodplain for major subdivisions and site plans at the review stage; § BR 2-304.
- A 100-foot buffer for mean high water line of tidal waters, edge of tributary streams and tidal wetlands; § NR 3-104.

The County Code is thus the statutory source for the County's hazard avoidance and mitigation policies and practices. Collectively, the policies established in the comprehensive plan and the county code set a foundation for the reduction of the risks associated with the more common hazards that the county might face.

Additionally, the County’s 2008 Debris Management Plan provides detail information about debris disposal. In accordance with FEMA requirements, the County developed the Plan and established a Debris Management Task Force; which is composed of various county departments. The Plan explains the staff organization and responsibilities; the debris classification and estimation; temporary debris storage and removal sites; and the clearance, removal and disposal strategy. Figure 6-1 illustrates the disaster debris storage sites.

Figure 6-1

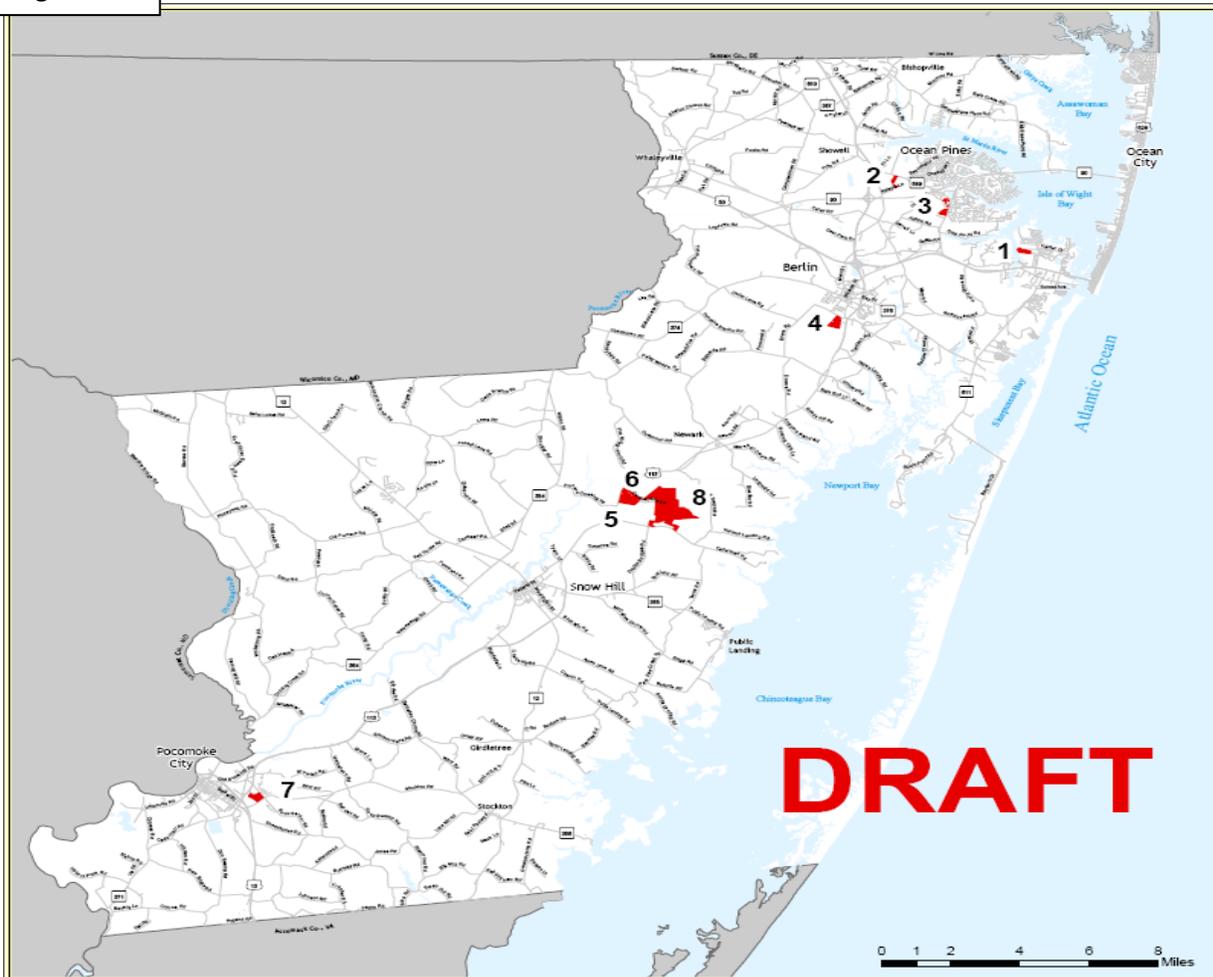


Figure 4-1 Disaster Debris Storage Sites

Number	Site Location and Area Served	Tax Map/ Parcel	Description	Current Use	Parcel Size
1	West Ocean City	21/294	Herring Creek Park	Nature Park	43.55 ac.
2	Ocean Pines (North)	15/220,228	Showell Park	Recreation Fields	29.00 ac.
3	Ocean Pines (South)	21/144	Pennington Commons	Open Space	19.84 ac.
4	Berlin	32/276	Northern Worcester A.C.	Recreation	75.67 ac.
5	Snow Hill (Alternate for full sites)	48/27	Worcester Technical High School	School	146.82 ac.
6	Snow Hill	48/50	Fire Training Center	Training Center	12.27 ac.
7	Pocomoke City	84/36	Newtown Park	Recreation	60.53 ac.
8	Central Landfill Site (Alternative for full sites)	48/58	Central Landfill	Landfill	719.58 ac.

Source: 2008 Worcester County Debris Management Plan

In regards to the pet sheltering, the *2011 Updated Worcester County Emergency Operations Plan* contains Emergency Support Functions (ESF) that addresses pet sheltering. The *ESF 16: Animal Protection* capabilities include: providing immediate, temporary care and control of animals during disaster situations; providing temporary shelter for companion and farm animals during disaster situations; providing emergency care to companion and farm animals injured during disaster situations and; providing a method for returning animals to their owners after a disaster situation has ended.

Additionally, the American Society for the Prevention of Cruelty to Animals (ASPCA) provides press releases during the hurricane season. The press releases provide information for preparedness measures involving pets. The ASPCA advises pet owners to have essential supplies on hand and establish a disaster plan for a hurricane event.

Less Common Hazards

Sea Level Rise & Shoreline Erosion

The Rural Legacy program targets the southeastern portion of the Chincoteague Bay watershed for permanent protection through purchasing voluntary conservation easements. To date, over eight miles of shoreline and 6,000 acres of land are permanently protected from development.

The Maryland Agricultural Land Preservation program, in existence since 1977, is one of the most successful farm preservation programs in the country. It strives to preserve sufficient agricultural land to maintain a viable base of food and fiber production. The Program consists of two basic steps: the establishment of agricultural preservation districts, and the purchase of perpetual agricultural conservation easements. To date, approximately 3,300 acres have been permanently protected under this program in Worcester County.

The Atlantic Coastal Bays Critical Areas regulation is charged with the responsibility of preserving, protecting, and improving water quality and natural habitats of the Atlantic Coastal Bays and their tributaries, accomplished through protection, minimization, and mitigation.

Tornadoes

As stated in the Flooding Related Hazard section, Worcester County enforces the International Building and Residential Codes, which help to mitigate damage to buildings from storm events by establishing building construction standards. Additionally, the International Building Code is enforced in the county and ensures proper building design and construction for exposure to extreme wind speeds.

Toxic Chemicals and Natural Hazards

Worcester County has an established Special Hazards Response Team and regulations for the team (Subtitle VI: Special Hazards Response Team). The purpose of the Team's regulations is to establish responsibility of the County to prepare, respond and mitigate any and all chemical, biological, radiological, nuclear and explosive incidents.

Wildfires

The Department of Natural Resources Forest Service and the Federal government are the lead agencies for wildfire suppression and works with local fire departments and police in training related fire suppression. The Department of Emergency Services assists DNR with coordination and communications during an event.

Additionally, Code § PS 1-504 states households who burn leaves or refuse are not permitted to burn at locations that are less than two hundred feet from any neighboring habitable dwelling or place where people work or congregate.



CHAPTER 7: MITIGATION STRATEGIES

Introduction

Goals and objectives serve as the basis for implementing action items and projects that mitigate the hazards detailed in Chapters 2-5 of the Plan Update. During the Mitigation Strategies Meeting of the Worcester County Hazard Mitigation Planning Committee (HMPC), nine new goals and associated objectives were developed.

Goals as identified in this plan are broad-based and long-term in nature. The following goals identify what the community expects to accomplish through mitigation actions during the next five years. Objectives as identified in this plan are more specific and narrow in scope.

These goals, objectives, and mitigation action items apply to municipal participants as well as the unincorporated part of the county.

GOAL 1 Maintain and enhance Worcester County's Department of Emergency Service's capacity to continuously make Worcester County less vulnerable to hazards, specifically those rated as high and medium high.

- Objective 1.1 Institutionalize hazard mitigation.
- Objective 1.2 Improve organizational efficiency.
- Objective 1.3 Maximize utilization of best technology.
- Objective 1.4 Maximize utilization of GIS software and applications.

GOAL 2 Build and support municipal capacity and commitment to become continuously less vulnerable to hazards.

- Objective 2.1 Increase awareness and knowledge of hazard mitigation principles and practice among local and municipal public officials.
- Objective 2.2 Provide assistance to municipal officials and help municipalities obtain funding for mitigation planning and project activities.
- Objective 2.3 Prepare technical reports for critical facilities as necessary

GOAL 3 Improve coordination and communication with other relevant organizations.

- Objective 3.1 Establish and maintain lasting partnerships.
- Objective 3.2 Streamline policies to eliminate conflicts and duplication of effort.
- Objective 3.3 Incorporate hazard mitigation into activities of other organizations.

GOAL 4 Increase public understanding, support, and demand for hazard mitigation.

- Objective 4.1 Identify hazard specific issues and needs.
- Objective 4.2 Heighten public awareness of natural hazards.

- Objective 4.3 Publicize and encourage the adoption of appropriate hazard mitigation actions.
- Objective 4.4 Work to increase the number of businesses that have developed a business risk reduction plan.

GOAL 5 Protect existing and future properties (residential, commercial, public, and critical facilities).

- Objective 5.1 Utilize the most effective approaches to protect buildings from flooding.
- Objective 5.2 Enact and enforce regulatory measures to ensure that new development will not increase hazard threats from flooding and the threat of wildfire.
- Objective 5.3 Work to reduce the number of houses in the floodplain that are subject to repetitive losses from flooding.
- Objective 5.4 Work to increase the number of critical facilities that have carried out mitigation measures to ensure their functionality in a 100 year flood event, winter storm or high wind event.
- Objective 5.5 Review and update Building Codes as necessary to ensure that all buildings, including manufactured housing and mobile homes, are constructed and installed in a manner to minimize wind damage.
- Objective 5.6 Ensure existing high risk residential structures where possible are utilizing retrofitting techniques to mitigate repetitive flooding.

GOAL 6 Ensure that public funds are used in the most efficient manner.

- Objective 6.1 Prioritize new mitigation projects, starting with sites facing the greatest threat to life, health, and property.
- Objective 6.2 Use public funding to protect public services and critical facilities.
- Objective 6.3 Maximize the use of outside funding sources.
- Objective 6.4 Encourage property-owner self-protection measures.

GOAL 7 Promote sustainable development to improve the quality of life.

- Objective 7.1 Promote open space parks and recreational areas in flood hazard areas.
- Objective 7.2 Provide for the conservation and preservation of natural resources.
- Objective 7.3 Limit additional group housing (especially elderly and high density) in areas of high hazard risk.

GOAL 8 Prevent destruction of forests and structures in the Urban Wildland Interface.

- Objective 8.1 Improve communications capability between municipal and county emergency management and law enforcement personnel.
- Objective 8.2 Identify specific high hazard areas in the Urban Wildland Interface and notify residents of measures to protect their property from wildfire damage.
- Objective 8.3 Develop evacuation procedures to enable residents near forested areas to evacuate safely.

GOAL 9 Protect public infrastructure.

- Objective 9.1 Upgrade or replace public roads and stormwater management features to include mitigation into the project design and construction.
- Objective 9.2 Improve routes utilized in flood hazard events to mitigate life-threatening road conditions and road closures.
- Objective 9.3 Mitigate problem road sections within the County and municipalities.

Mitigation Actions

Upon completing the review of the goals and objectives, the HMPC reviewed and provided status updates for the 2006 mitigation strategies; Appendix B. The 2013 Planning Committee then prioritized all mitigation actions that were not completed during the previous Plan cycle (2006-2014) and new mitigation actions identified during the 2014 Plan Update process. Mitigation Actions address the goals and objectives developed by the HMPC. These actions form the core of the *Worcester County 2014 Hazard Mitigation Plan Update*.

Mitigation Action Rankings

The following table lists the Mitigation Action Items set forth by the Hazard Mitigation Planning Committee (HMPC) and denotes which Goals and Objectives are met by each item, provides the Time Frame for completion and the Priority Ranking established by the HMCP. The prioritization method was based on cost benefit for the County, implementation benefit and the likelihood of the project being completed within the next five years. Cost benefit factors included funding the County would have to contribute and grant funding.

Table 7-1 provides the listing for the new 2013 Mitigation Actions. Overall, 7 action items were rated as high and 22 action items were rated as medium, while 2 action items were rated as low. The 6 action items rated as high are shown in bold text.

Potential Mitigation Projects

Concluding this chapter are potential Mitigation Projects that address the six highest ranked Mitigation Actions. All except two projects involve staff time; therefore these projects can be accomplished at a minimal expense to the County. These projects include: Ocean Pines Fire Station Mitigation Project; Acquire Generators; Floodplain Ordinance Revision; Outreach Material for At-Risk Populations; County GIS Interactive Website; and Integrating Hazard Mitigation Actions into other County Plans.

Mitigation action items were developed during the 2014 Worcester County Hazard Mitigation Plan Update. Actions items that were marked incomplete in the 2006 Plan Status Update-Appendix B have been carried over and included in the 2013 strategy table below. Those items denoted  **CRS** indicate actions that are eligible for credit under the Community Rating System (CRS).

Table 7-1: 2013 Mitigation Actions

STRATEGY	COMMUNITY	GOALS	OBJECTIVES	DEPARTMENT	TIMEFRAME	PRIORITY
FLOOD						
 CRS -Target the Ocean Pines Fire Station for critical facility flood mitigation project.	Ocean Pines	5 6	5.1; 5.3 6.2; 6.3; 6.4; 6.5	DRP,WCES	Short-Term	HIGH
 CRS -Evaluate the effectiveness of the current floodplain protection regulations. Review the State’s new Model Guidelines.	Countywide	2 3 4 5	2.1 3.2 4.3 5.1; 5.2;	DRP	Short-term	HIGH
 CRS -According to the 2006 Land Use Plan, Growth Areas are projected along Cedar Hall Road. This area borders Category 4 in the SLOSH model. Ensure building codes, regulations and proper site designs are enforced for the new proposed development in this area.	Pocomoke	4 5	4.1; 4.2 5.1; 5.2; 5.5; 5.6	DRP	Ongoing	Medium
 CRS -Identify water and wastewater facilities where additional flood damage avoidance measures may be appropriate. Conduct site specific visits and assess alternatives where indicated.	Countywide	1 2 5 6	2.3 5.1; 5.3 6.1; 6.2; 6.4	DPW, WCES	Short-term	Medium
 CRS -Consider participating in the Community Rating System program, to receive flood insurance premium credits. To participate, the flood program must address public information, mapping, regulation; flood damage reduction; and flood preparedness, much of which has been accomplished by this plan.	Countywide	1 2 4 6	1.1 2.1 4.1; 4.3 6.5	WCES	Short-term	Medium
 CRS - Utilizing the National Flood Mitigation Data Collection Tool (FEMA 497), a database should be developed containing information on each “at-risk” property. The data collected should include structure type, condition, foundation type, number of stories,	Countywide	1 2 4 5 6	1.3 2.3 4.1 5.1; 5.3;5.6 6.1; 6.2; 6.3	DRP	Ongoing	Medium

square footage, depth of flooding, flash flooding occurrence, flood velocity, and structure location within the floodway. This database could be utilized in prioritizing the structures most at-risk and in need of mitigation. According to the 2011 Maryland Property View Database, approximately 33% of the housing was built prior to 1979.		7	6.4 7.3			
STRATEGY	COMMUNITY	GOALS	OBJECTIVES	DEPARTMENT	TIMEFRAME	PRIORITY
SHORELINE EROSION & SEA-LEVEL RISE						
Continue to install erosion control structures, bulkheads, in the Ocean Pines area. Inspect current control structures for integrity.	Ocean Pines	5 6	5.1;5.2 6.1; 6.2; 6.3 6.4	Ocean Pines	Ongoing	Medium
Work with Maryland Department of the Environment to identify areas of shoreline that are most vulnerable to erosion and utilize Best Management Practices (BMP) to protect these areas.	Ocean Pines; Pocomoke	2 5 6 7	2.3 6.1; 6.2; 6.3 6.4 7.2	DEP	Long-Term	Low
Request State participation in evaluating long-term options for Ocean Pines, given its current vulnerability to flooding, high ground water levels, saltwater intrusion, and anticipated loss of land due to erosion and sea-level rise that will exacerbate these limiting conditions.	Ocean Pines	3 5 6	3.1; 3.3 5.1 6.2; 6.3; 6.4	DEP	Long-Term	Medium
Engage county and municipal decision makers in identifying hazards and climate change issues and make connections to existing planning and policy efforts.	Countywide	1 2	1.1; 1.3; 1.4 2.1; 2.2	DEP,WCES	Short-term	Medium
Regarding buried infrastructure, conduct a vulnerability assessment by compiling a detailed list of specific buried infrastructure segments that are in or close proximity to areas likely to be inundated by potential sea level rise.	Ocean Pines	2 5	2.3 5.1	DEP	Long-Term	Medium
Host workshop on coastal risk. Seek the assistance of National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center.	Ocean Pines; Development along the shoreslines of Isle of Wight Bay, Newport	2 4 7	2.1 4.2; 4.3 7.1; 7.2	DEP,WCES	Short-term	Medium

	Bay & Chincoteague Bay					
STRATEGY	COMMUNITY	GOALS	OBJECTIVES	DEPARTMENT	TIMEFRAME	PRIORITY
PUBLIC OUTREACH						
Using the information found on pages 3-22 through 3-25 on At-Risk Population(s) form a working committee to identify those in need of wellness checks or additional aid during a disaster event.	Countywide	2 3 4	2.1; 2.2 3.2; 3.3 4.1; 4.3	WCES	Short-term	Medium
 CRS-Develop hazard preparedness and mitigation public outreach materials targeting At-Risk Populations.	Countywide	3 4	3.1 4.2; 4.3; 4.4	WCES	Ongoing	HIGH
 CRS-Continue to strengthen public awareness or hazard mitigation through neighborhood level planning.	Countywide	4	4.2; 4.3; 4.4	WCES, DRP	Ongoing	Medium
 CRS-Include an interactive GIS Map on the County’s website to allow residents to determine their FIRM Zone as well as additional hazards that may impact their property or provide a link to the State’s webpage regarding flood: http://mdfloodmaps.com/homeowners.html .	Countywide	1 4	1.3; 1.4 4.2	DRP	Short-term	HIGH
 CRS-Work with the County Visitors/Tourism Bureau, MD DNR to alert tourists to potential hazard areas and what to do in the event that a man-made or natural hazard event occurs. This would include brochures to be left at hotels, visitor centers, and attractions to inform visitors about evacuation routes, and sheltering info.	Countywide	4 8	4.2 8.1; 8.3	WCES, DNR, VISITORS BUREAU	Short-term	Medium
PLANNING						
Guide safe growth and road improvements or other measures intended to facilitate continuity of passage, evacuation, and other community needs in the event of a disaster.	Countywide	9	9.2; 9.3	DRP	Short-term	Medium
Implement actions listed in the Hazard Mitigation Plan through other County plans or programs.	Countywide	1 2 3	1.1; 1.2 2.1 3.1; 3.2; 3.3	ALL	Ongoing	HIGH

STRATEGY	COMMUNITY	GOALS	OBJECTIVES	DEPARTMENT	TIMEFRAME	PRIORITY
DROUGHT						
Distribute information on cooling stations, specifically in Ocean Pines, Berlin and Pocomoke City during the high temperatures months of July and August and/or an excessive heat event. These areas have a high concentration of children under the age of 5 and populations 65 years and older.	Ocean Pines	4	4.2	WCES	Ongoing	Medium
	Berlin Pocomoke	6	6.5			
Provide information to farmers regarding the assistance that could be provided to livestock producers in approved counties when the growth and yield of hay and pasture have been substantially reduced because of a widespread natural disaster. The grant program utilized for this type of assistance is the Animals: Emergency Haying and Grazing Program.	Countywide	4	4.1; 4.2; 4.3	WCES	Ongoing	Low
		6	4.4 6.3; 6.4; 6.5			
WILDFIRE						
Areas identified as potential problems areas that have large amounts of wildland/urban interface are northwest of Snow Hill, along Route 12. According to the Maryland’s Strategic Forest Lands Assessment, this area is very high to extreme for wildland-urban interface fire threat potential. This area is at a higher wildfire risk than the rest of the County. Target these areas for FIREWISE program.	Snow Hill	4 8	4.1; 4.2; 4.3 8.1; 8.2; 8.3	WCES	Short-term	Medium
TORNADO & WIND						
Assess existing multilevel structures such as hospitals, commercial and residential condominiums and apartment complexes for their wind load capacities.	Countywide	4	4.1; 4.4	WCES, DRP	Long-term	Medium
		5	5.1; 5.3			
		6	6.5			
Consider working with utility companies to identify problem areas and the possibility of changing to underground lines in those areas.	Countywide	2	2.1	WCES	Long-term	Medium
		3	3.1			
		4	4.1			
		5	5.1			

WINTER STORM						
Purchase new generators for critical facilities that currently do not have a generator or that are lacking capacity or are outdated.	Countywide	5 6	5.1; 5.3 6.2; 6.3; 6.4; 6.5	WCES	Long-term	HIGH
STRATEGY	COMMUNITY	GOALS	OBJECTIVES	DEPARTMENT	TIMEFRAME	PRIORITY
HAZMAT						
Distribute information concerning HazMat Transportation to highly developed areas that are located within the transportation route, specifically to the structures located along Route 113 due to high concentration of Industrial land use.	Snow Hill; Pocomoke	4	4.1; 4.2; 4.3	WCES	Short-term	Medium
Inundation due to potential sea level rise and increased flooding could result in pollution of county coastal waterbodies if septic tanks and hazardous materials storage is allowed to remain in inundation and flood-risk areas. Requiring removal of these potential pollutants in areas as flood probability increases due to potential sea level rise will allow existing development to remain, in most circumstances, without putting the health and safety of the community at risk or imperiling environmental quality. Therefore, an overlay zoning district could designate where hazardous materials must be removed. A progression of this district based on potential sea level rise rates in conjunction with a grace period could be used to give property owners advance notice of the requirement.	Countywide	1 2 4 6	1.3 2.2; 2.3 4.1; 4.3 6.4; 6.5	WCES, DEP, DRP	Long-term	Medium
Conduct a Hazardous Materials Survey to identify all hazardous materials that are either stored or traveling through the county.	Countywide	4	4.1; 4.2	WCES	Short-term	Medium

**Timeframe: Short-term (1-2 Years), Long-term (2 or more years)*

During the Final Meeting held on 28 May 2013, repetitive flood locations based on frequent complaints were identified and provided by the Department of Public Works - County Roads Division and listed on Table 7-2. HMCP members also denoted locations on maps provided during the meeting. The roads identified historically flood during a Nor'easter or hurricane event. Municipalities identified flood prone roads (denoted with an asterisk*) that frequently flood during a thunderstorm or heavy rain. Additionally, the *2008 Sea Level Rise Response Strategy Plan* listed roads that are potentially prone to flooding due to potential sea level rise; discussed in Chapter 5. These roads are denoted with a check mark. Issues identified include: Potential Sea Level Rise (SLR), Stormwater Management (SWM), Drainage, Low Road Elevation, Tidal, Undersized Culvert and Wetlands.

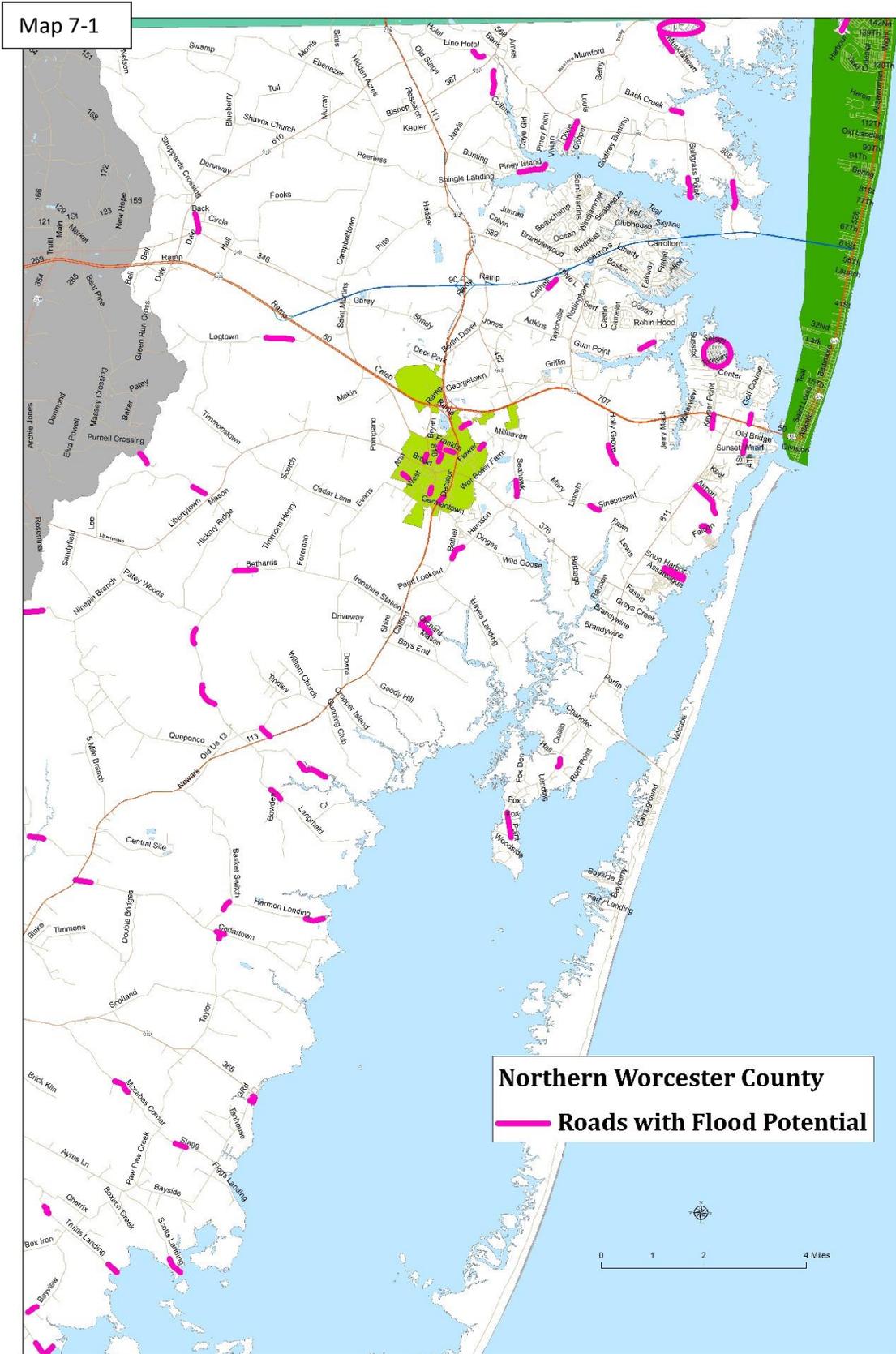
Table 7-2: Flood Prone Roads	
Road	Issue
✓ Airport Road	SLR
Ann Drive	SWM
Back Creek Road	Tidal
Basketwitch Road	Drainage Away Blocked / Low Road Elevation
Bayview Road	Drainage Away Blocked
Beaverdam Creek Road	Drainage Away Blocked
Berlin Bypass (US 113)*	SWM
Bethands Road	Drainage
Betheden Church Road	Drainage Blocked
Brighton Road	Tidal
Brentwood Circle*	Drainage
Byrd Road	Drainage
Cathell Road	Drainage
Cedar Hall Wharf Road	Tidal
Cedartown Road	Drainage
Colona Road	Drainage
Creek Road*	Drainage / Tidal
Cypress Road*	SWM
✓ Dixie Drive	SLR
Dukes Road	Drainage
✓ Eagle's Nest Road	Tidal / SLR
Exeter Road	Tidal
Flower Street*	Undersized Culvert
Franklin Street*	SWM
Front Street*	Drainage
Golf Course Road	SWM not sufficient / Tidal
Greenbackville Road	Drainage
Grice Street	SWM

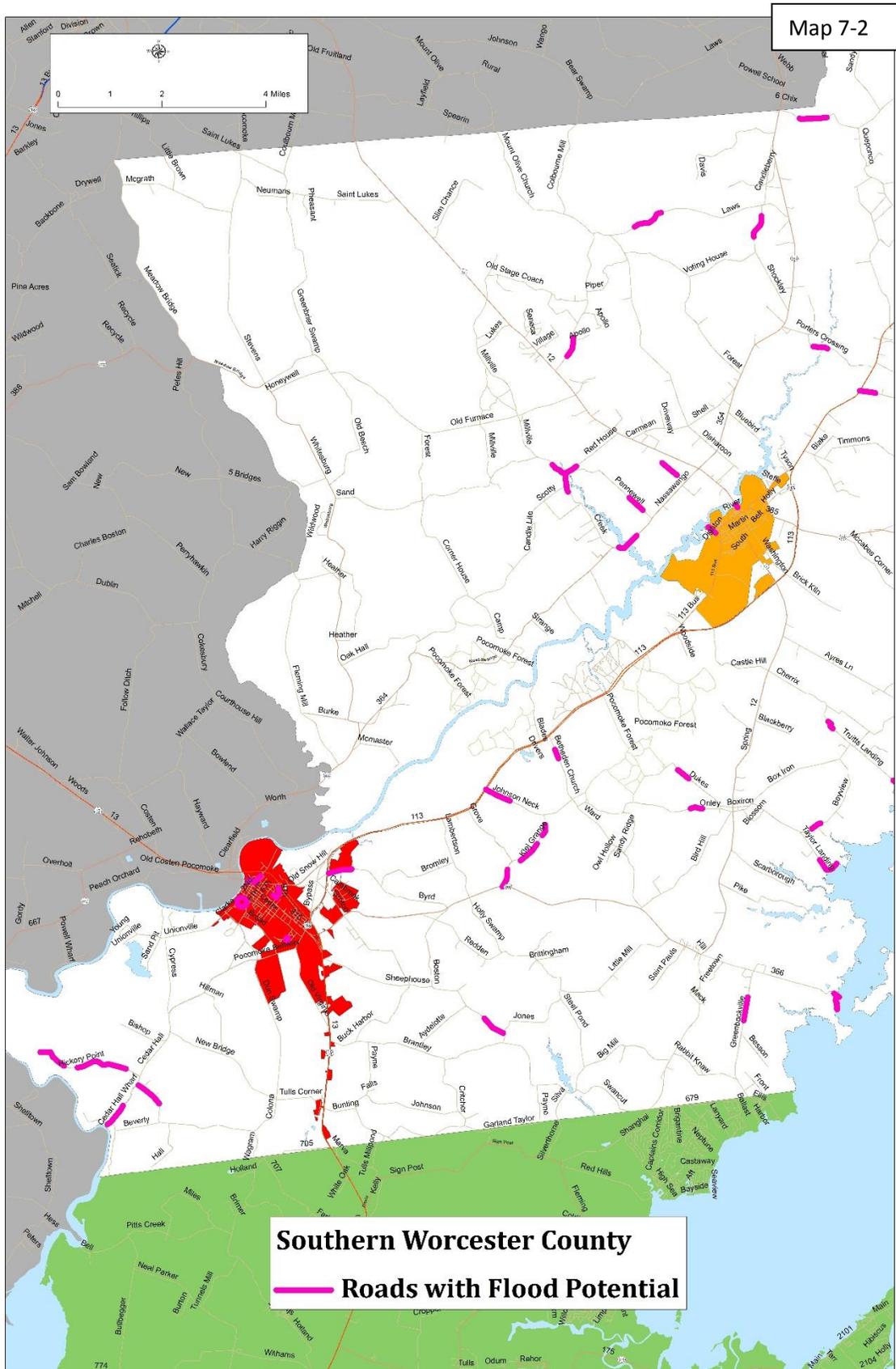
Gum Point Road	Tidal
Harmon Landing Road	Tidal
Harrison Road	Drainage Blocked
Harrison Street*	SWM
Hidden Harbor Road	Tidal
Hickory Point Road	Drainage / Tidal
Holly Grove Road	Drainage Blocked / Nontidal Wetlands
Hotel Road	Drainage Blocked
Island View Road	Drainage / Tidal
Jarvis Road	Drainage
Johnson Neck Road	Drainage
Keyser Point Road	Drainage / Tidal
Klej Grange Road	Drainage – Bridge
Langmaid Road	Drainage
Laws Road	Drainage
Logtown Road	Drainage
Madison Avenue	Drainage / Tidal
Main Street (RT 818)*	SWM
Marshall Creek Road	Tidal
McCabe's Corner Road	Drainage
Meadow Drive	Tidal
Mt. Olive Church Road	Drainage
Muskrattown Road	No Drainage Ditches
Narrow Diet Road	Drainage
Nassawango Road	Tidal
New Quay Road	Tidal
Norwich Road	Tidal
Old Ocean City Road (RT 346)*	SWM
Onley Road	Drainage
Orchard Road	Drainage
Oxford Street*	Drainage
Parker's Bay Road	Tidal
Patey Woods Road	Drainage
Pennewell Road	Pond Overflow
Pine Street*	SWM
✓ Piney Island Drive	SLR
Porter's Crossing Road	Low Bridge
Purnell Crossing Road	Drainage / Tidal – River / Wetland
Railroad Avenue*	Drainage
Red House Road	Drainage / Tidal

Rum Gate Road	Tidal
✓ Salt Grass Point Road	SLR
Sand Road	Drainage / Tidal
Scott's Landing Road	Tidal
Seahawk Road	Drainage
Selsey Road	Tidal
Sheephouse Road	Drainage
Sheffield Road	Tidal
Sheppard's Crossing	Drainage – Ditch
Shockley Road	Drainage
Sinepuxent Road	Tidal – Ditch
Snow Hill Road (RT 12)*	Tidal - Bridge
Snug Harbor Road	Tidal
✓ South Point Road	Drainage / Tidal / SLR
Spencer Road	Drainage
Stagg Road	Drainage
✓ St. Martin's Neck Road	SLR
Taylor Landing Road	Tidal
Taylor Road	Drainage
Truitt's Landing Road	Drainage / Tidal
Whiton Crossing Road	Drainage on Both Sides of Bridge
Williams Street*	SWM
Winter Quarter Street*	Drainage
8 th Street*	Drainage

A total of 92 roads were identified as being potentially flooded during an event. Seventeen of the identified roads are located within a municipality. Seven roads were identified in the *2008 Sea Level Rise Response Strategy Plan* for potentially being flooded due to potential sea level rise. In regards to tidal flooding, a total of 33 roads were identified. Flooding due to drainage issues affected a total of 51 roads. Several of the issues regarding drainage involved blockages or the lack of drainage ditches or bridge interferences. Eleven roads flood due to stormwater management issues. A majority of these issues are located within the municipalities. Flooding occurring on Pennellwell Road is caused by an undersized pond, while flooding on Flower Road is due to an undersized culvert. Of the total roads identified, 15 are affected by more than one issue, for example, Purnell Crossing Road contains drainage, wetland and tidal flooding issues. Additionally, Eagle's Nest Road and South Point Road are currently affected by tidal flooding and have the potential to be inundated due to potential sea level rise.

Maps 7-1 and 7-2 depicts all flood prone roads identified by the County Roads Department and the HMPC during the Mitigation Strategies Meeting.





Potential Mitigation Projects

During the Mitigation Strategies Meeting, 28 May 2013, the HMPC ranked each mitigation action item. Six action items were rated as “High.” Since these items are priority for the HMPC, potential mitigation projects were developed for each.

Action:  *CRS-Target the Ocean Pines Fire Station for critical facility flood mitigation project.*

Discussion: Utilizing the HAZUS Level 2 Analysis, results determined that the Ocean Pines Fire Station could be significantly damaged during a 100-year flood event (Chapter 3). A tributary branching off of the Island Wight Bay is within close proximity as well as a pond located behind the South Station. Both water sources have the potential to not only cause damage to the structure but also to cause the fire department to be non-functional. However, the building currently is not located within the FEMA mapped SFHA.



Project: Relocate if feasible, if not, flood proof existing structure. Acquire the Ocean Pines Fire Department by applying for funding through the Hazard Mitigation Grant Program. Next, relocate the structure in a vicinity that is not flood prone. If acquisition and relocation are not feasible, flood proofing would be necessary.

Responsible Organizations: Ocean Pines Fire Department

Estimated Costs: Project Depended

Possible Funding Sources: FEMA Hazard Mitigation Grant Program, FEMA Pre Disaster Mitigation Grant Program.

Timeline for Implementation: 1 - 2 years

Action: Purchase new generators for critical facilities that currently do not have a generator or that are lacking capacity or are outdated.

Discussion:

The availability of backup power sources (generators) for critical facilities such as government facilities, police and fire departments, and rescue and emergency management personnel is critical for the efficient function of any community and the continuity of operations during a disaster. An alternate source of power is necessary to ensure the 9-1-1 Center is operational during the entire course of a hazard event. Therefore, installation of a new, separate generator (including the necessary wiring) will allow an alternate source of power to be utilized, ensuring proper operation of critical facilities.



Responsible Organizations: Department of Emergency Services

Estimated Costs: \$30,000 - \$50,000

Possible Funding Sources: FEMA Hazard Mitigation Grant Program, FEMA Pre Disaster Mitigation Grant Program, Emergency Operations Center (EOC) Grant Program.

Timeline for Implementation: 1 - 2 years

Project: Determine critical facilities in need of a generator Utilize electrical engineering services to determine necessary specifications for a new generator to be installed. Once specifications are determined, obtain available grant funding to implement the construction phase.

Action:  CRS-Evaluate the effectiveness of the current floodplain protection regulations. Review the State's new Model Guidelines.

Discussion: County Code Title BR2. Construction Regulations, Subtitle III. Floodplain Management provides regulations for appropriate construction practices in an effort to reduce future damage and preserve and enhance the natural characteristics of floodplains and the associated wetland and water bodies. According to the County's Code all new or substantially improved residential structures located in non-tidal and tidal floodplain zones shall have lowest floor elevated to or above the base flood elevation. The 2010 Maryland Model Floodplain Management Ordinance states structures located in Zone A, the lowest floors shall be elevated to or above the flood protection elevation, however structures located in Zone AO, the lowest floor shall be elevated at least as high above the highest adjacent grade as the depth number specified in feet on the FIRM plus two (2) feet, or at least four (4) feet if a depth number is not specified.

Responsible Organizations: Department of Development Review and Permits

Estimated Costs: Staff time

Possible Funding Sources: N/A

Timeline for Implementation: 1 year

Project: Work with FEMA and State to modify and update County code, building construction standards and delineation requirements for different flood zones. §BR 2-305. *Development Regulations in Floodplain Zones speaks of floodplain zones as united not individually. The State Ordinance defines construction requirements for Zone A and Zone AO separately. The County Code should address these Zones independently of the other since the zones are not defined as being the same. For example, Zone A is the special flood hazard area that is subject to inundation by the 100-year flood and base flood elevations are not determined and Zone AO is defined as areas of shallow flooding with flood depths of 1 to 3 feet and may contain base flood elevations or designated flood depths. Additionally the County should consider a freeboard requirement for new development. Freeboard is added elevation above the 100-year floodplain elevation; this is an extra measure of protection.*

Action:  *CRS-Develop hazard preparedness and mitigation public outreach materials targeting “At-Risk Populations.”*

Discussion: The ability to reach every person in a community is one of the major goals for emergency preparedness and response. To do this, a community must know what subgroups make up its population, where the people in these groups live and work, and how they best receive information. In order to accomplish this task, the process must begin with defining and locating the at-risk populations. The term “At Risk Populations” describes individuals or groups whose needs are not fully addressed by traditional service providers or those who cannot comfortably or safely use the standard resources offered during preparedness, response, and recovery efforts. These groups include people who are physically or mentally disabled (e.g., blind, deaf, hard-of-hearing, have learning disabilities, mental illness or mobility limitations), people with limited English language skills, geographically or culturally isolated people, homeless people, senior citizens, and children. Once “At Risk Populations” have been identified and located, distribute outreach materials thru various media outlets detailing how to prepare for a disaster event; how to evacuate if necessary; and provide shelter locations. Outreach materials should also provide assistance in contacting emergency personnel if transportation is needed.

Responsible Organizations: Department of Emergency Services

Estimated Costs: Staff time and Mailing Costs: \$2,000

Possible Funding Sources: Worcester County, Flood: Emergency Advance Measures for Flood Prevention

Timeline for Implementation: Ongoing

Project: Locate “At-Risk Populations” and distribute outreach materials regarding disaster preparedness. Also provide information on where to locate helpful FEMA information for mitigation and preparedness. *These outreach materials would include information on the county’s alert system and how citizens can be notified of flood conditions and forecasts, as well as information on the new links provided on the county’s Emergency Services website. The county’s Emergency Services website provides citizens of the county with links to helpful FEMA related documents.*

Action:  *CRS-Include an interactive GIS Map on the County’s website to allow residents to determine their FIRM Zone as well as additional hazards that may impact their property or*

provide a link to the State's webpage regarding flood:
<http://mdfloodmaps.com/homeowners.html>.

Discussion: Incorporating a user friendly interactive GIS map into the County's website will encourage community participation, especially from younger generations. Inclusion of this interactive map will increase the community's knowledge. The Maryland Property View (MdProperty View) could be utilized as a base map. MdProperty View is a Geographic Information System (GIS) accessible dataset that allows the user to interact with a jurisdiction's property map and parcel information using the advanced features. This database contains all necessary parcel information to make informed planning decisions about the county's future, including land and structural values, owner information, the type of building located on the property and much more. Other useful information that could be used in conjunction with MdProperty View includes: tax map grid, aerial imagery, census data, county bounty, zip code boundaries, generalized zoning, Priority Funding Areas, protected land boundaries, floodplains, watersheds and water and sewer service areas. This website could include additional links, such as a MDE flood link/tab, LEPC link/tab, MEMA link/tab or a FEMA link/tab to promote public information dissemination.

Responsible Organizations: Department of Emergency Services and Department of Development Review and Permits

Estimated Costs: Staff time

Possible Funding Sources: Planning Grants, FEMA Hazard Mitigation Grant Program, FEMA Pre Disaster Mitigation Grant, Cooperating Technical Partners and Map Modernization Management Support

Timeline for Implementation: Ongoing

Project: Design and promote the County's interactive GIS mapping website that not only provides a layer displaying FIRM Zones but also storm surge, current shorelines, evacuation routes, flood prone roads, and any additional pertinent informative information. *The website should also present all hazards preparedness and mitigation content to the public and allow for easy navigation to important topics of interest. It could have a secure login section where employees of the department can access files if needed.*

Action: *Implement actions listed in the Hazard Mitigation Plan through other County plans or programs.*

Discussion: FEMA's *Integrating Hazard Mitigation into Local Planning* document provides information on conducting a safe growth audit. The audit evaluates the extent at which a jurisdiction is expanding safely relative to the natural hazards. The safe growth audit analyzes the impacts of current policies, ordinances, and plans on community safety from hazard risks due to growth. The audit also provides the community a comprehensive but concise evaluation of the positive and negative effects of its existing growth guidance framework on future hazard vulnerability. The audit report informs citizens and decision makers about important safety issues and highlights potential changes in policy and planning instruments.

Responsible Organizations: Department of Emergency Services and Department of Development Review and Permits

Estimated Costs: Staff time

Possible Funding Sources: Planning Grants, FEMA Hazard Mitigation Grant Program, and FEMA Pre Disaster Mitigation Grant

Timeline for Implementation: Ongoing

Project: Use the Basic Safe Growth Audit Questions to ensure actions are implemented though other plans. Utilize the following Safe Growth Audit questions to ensure appropriate actions are implemented throughout other County plans.



BASIC SAFE GROWTH AUDIT QUESTIONS

COMPREHENSIVE PLAN

Land Use

- Does the future land-use map clearly identify natural-hazard areas?
- Do the land-use policies discourage development or redevelopment within natural-hazard areas?
- Does the plan provide adequate space for expected future growth in areas located outside of natural-hazard areas?

Transportation

- Does the transportation plan limit access to hazard areas?
- Is transportation policy used to guide growth to safe locations?
- Are movement systems designed to function under disaster conditions (e.g., evacuation)?

Environmental Management

- Are environmental systems that protect development from hazards identified and mapped?
- Do environmental policies maintain and restore protective ecosystems?
- Do environmental policies provide incentives to development that is located outside of protective ecosystems?

Public Safety

- Are the goals and policies of the comprehensive plan related to those of the FEMA Hazard Mitigation Plan?
- Is safety explicitly included in the plan's growth and development policies?
- Does the monitoring and implementation section of the plan cover safe-growth objectives?

ZONING ORDINANCE

- Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?

- Does the ordinance contain natural-hazard overlay zones that set conditions for land use within such zones?
- Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?
- Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains?

SUBDIVISION REGULATIONS

- Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?
- Do the regulations provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources?
- Do the regulations allow density transfers where hazard areas exist?

CAPITAL IMPROVEMENT PROGRAM AND INFRASTRUCTURE POLICIES

- Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?
- Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?
- Does the capital improvement program provide funding for hazard mitigation projects identified in the FEMA Mitigation Plan?

OTHER

- Do small area or corridor plans recognize the need to avoid or mitigate natural hazards?
- Does the building code contain provisions to strengthen or elevate construction to withstand hazard forces?
- Do economic development or redevelopment strategies include provisions for mitigating natural hazards?
- Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards?

Source: Godschalk 2009 ◀



CHAPTER 8: PLAN MAINTENANCE & IMPLEMENTATION

Recovery and Reconstruction Planning

The Worcester County Department of Emergency Services has published an (EOP) in accordance with state and federal guidelines. An emergency operations center is in place as well. However, the immediate disaster response is only the first step toward rehabilitating an area. “Disaster recovery is ordered, knowable, and predictable.”

There is a four phase recovery and reconstruction process that should be considered. The first two steps are most relevant in an Emergency Operations framework, while the last two highlight the opportunity for preplanning and hazard mitigation.

1. The emergency period covered the initial hours or days following disaster when the community was forced to cope with its losses in property, lives, injuries and normal activities were disrupted.
2. The restoration period covered the time following the emergency period until major urban services and transportation returned, evacuees returned and rubble was removed.
3. During the replacement reconstruction period, the city rebuilt capital stock to pre-disaster levels and social and economic activities returned to their previous levels. Signs of its completion included the return to pre-disaster population levels and the replacement of homes, jobs, and urban activities.
4. Finally, in the commemorative, betterment, and developmental reconstruction period, major reconstruction activities took place, and future growth and development began to take hold.

As the plan is continually maintained recovery and reconstruction will be thoroughly considered. The county understands that without guidelines haphazard redevelopment is inevitable. The comprehensive plan will still apply and be the guiding vision for the future of the county.

Implementation and Leadership

The Worcester County Commissioners have oversight responsibility for all facets of the hazard mitigation plan recommendations, including, but not limited to, implementation timeline, initiation of public meetings about hazard mitigation plans and activities, project budgets, and support of hazard mitigation objectives.

The Worcester County Department of Emergency Services has held primary responsibility for coordinating the writing of the hazard mitigation plan and the implementation of the plan objectives. The Department of Review and Permitting will serve as the project management authority for most hazard mitigation activities.

Plan Monitoring and Evaluation

The plan is intended to be adapted to changing conditions, new information and the knowledge gained by testing its recommended strategies. Mitigation activities will be monitored to determine whether they achieve the objectives of this plan. The plan itself will be evaluated every five years to ensure that it is kept up to date with the changing vulnerabilities and capabilities of the County.

The Local Emergency Planning Committee and Hazard Mitigation Planning Committee, will continue to meet on an annual basis during the five-year cycle to monitor and evaluate mitigation projects and to keep the plan current. The community will be involved in these updates with public hearings and the opportunity to comment on the plan or any of its components.

Copies of the annual status report will be made available to Planning Committee members, local governments, participating agencies and partners and citizens via the Worcester County website: <http://www.co.worcester.md.us/EmergencyServices/emerservindex.aspx>.



Appendix A

HAZUS Methodology

HAZUS Methodology

In an effort to update the Worcester County Hazard Mitigation Plan, a HAZUS Level 2 Analysis was conducted. The previous plan document included a HAZUS Level 1 Analysis. A HAZUS Level 1 Analysis utilizes the default HAZUS parameters which use multiple national databases to produce a loss estimation. Whereas, a HAZUS Level 2 Analysis utilizes local inventories of infrastructure to produce a more accurate loss estimation.

Step 1: The Worcester County geodatabase was acquired from the Worcester County Development Review and Permitting. The geodatabase contained current shapefiles for all critical facilities within the County.

Step 2: The attribute tables of the provided Worcester County shapefiles were edited. Additional, as well as, updated data was added to the existing attribute tables. The additional and updated data was captured from the 2011 Maryland Property View Database. The data extracted from the 2011 Maryland Property View Database included:

- Building stories;
- Year built;
- Structure value;
- Square footage.

For this **HAZUS Level 2 Analysis** **critical facilities** are separated into five categories shown below based on their loss potential.

- **Essential Facilities** are essential to the health and welfare of the whole population. Essential facilities include hospitals and other medical facilities, police and fire stations, emergency operations, evacuation centers and schools
- **Transportation Systems** include airways, highways, railways and waterways.
- **Lifeline Utility Systems** such as potable water, wastewater and communication systems.
- **High Potential Loss Facilities** are facilities with a high loss associated with them, such as nuclear power plants, dams and military installations.
- **Hazardous Material Facilities** includes facilities housing hazardous materials, such as corrosives, explosives, flammable, radio-active and toxic materials.

Step 3: The newly edited Worcester County shapefiles were imported into the HAZUS Analysis Model. The table below lists the information found in the HAZUS default data and by comparison the county data utilized in this HAZUS Level 2 Analysis.

Critical Facility Type	HAZUS Default Data	County Data Utilized for HAZUS Level 2 Analysis
Fire stations/EMS	5	23
Police Stations	7	7
Schools	18	22
Sewer Facilities	7	87
Water Facilities	1	47
Telecommunications	0	39

As shown, utilizing the County data and running the HAZUS Level 2 Analysis yields more accurate results.

Step 4: Results of the HAZUS Level 2 Analysis were completed and imported into the 2014 Hazard Mitigation Plan.



Appendix B

2006 Mitigation Actions

Status

The following table provides the status of mitigation strategies from the 2006 Plan.

STRATEGY	DEPARTMENT	TIMEFRAME	PRIORITY
FLOOD			
For new development, encourage the dedication of 100-year floodplains (not including wetlands) to open space. STATUS UPDATE: While discouraged, subdivision development continues in floodplain; however specified amounts of dedicated open space are required.	DRP	Continuous	High
Discourage the location of new homes and roadways in the “V” or wave velocity zone and the 100-year floodplain. STATUS UPDATE: The County discourages development in the “V” Zones, however subdivisions in the 100-year floodplain may be given waivers in certain instances. Construction of buildings is possible with compliance to current codes.	DRP	Continuous	High
Reevaluate the effectiveness of the current floodplain protection regulations STATUS UPDATE: Incomplete	DRP	2 years	Moderate
Strengthen and enforce construction, zoning, and land use ordinances. This will help to keep future development outside of hazard prone areas. STATUS UPDATE: WC adopted new zoning code and map on November 3, 2009, consistent with the 2006 comprehensive plan and land use map plan. New growth is limited to areas identified in the land use plan as growth areas. The new map includes both Priority Preservation Area (PPA) and Rural Preservation (RP). This limits the intensity of development.	DRP	Continuous	High
Discourage economic activities that are vulnerable to natural hazards by reviewing current building codes and determining if policy changes are required. STATUS UPDATE: Building codes are reviewed and amended as needed.	DRP	1-3 years	Moderate
Consider code changes that will limit impervious surfaces STATUS UPDATE: The County has adopted new storm water management ordinance during this planning cycle.	DRP	5 years	Moderate
Continue infrastructure data collection (spatial and descriptive). This would allow continued development and critical facilities monitoring and hazard preparation. STATUS UPDATE: Ongoing- GIS supports a wide variety of government functions including emergency services.	DCP	1-2 years	High
Identify funding sources for mitigation activities. Consider partnerships and community sponsors. STATUS UPDATE: Incomplete	DCP, WCES	1-5 years	Low

STRATEGY	DEPARTMENT	TIMEFRAME	PRIORITY
<p>Consider participating in the Community Rating System program, to receive flood insurance premium credits. To participate, the flood program must address public information, mapping, regulation; flood damage reduction; and flood preparedness, much of which has been accomplished by this plan. STATUS UPDATE: Not adopted when last presented.</p>	WCES	1-2 years	High
<p>Develop a sea level rise response strategy (include a two foot free board requirement for properties exposed to flooding, not just V-zone, and discourage shoreline hardening). STATUS UPDATE: Incomplete</p>	DCP, DNR	1-2 years	High
<p>Promote green infrastructure uses, such as golf courses, open space easements, natural areas, and recreational open space to reduce impervious surfaces in floodplains. STATUS UPDATE: Ongoing- The County has adopted new storm water management ordinance during this planning cycle.</p>	DCP, DRP	1-10 years	Low
<p>Work to acquire properties in the 100-year floodplain, and return them to a natural state. STATUS UPDATE: Incomplete</p>	DCP, MEMA	1-10 years	Low
<p>Compile a listing of County-owned flood-prone roads and bridges. Prepare a brief description of current policies, guidelines and regulations pertaining to design and location of County roads and bridges and how flood plains are considered. Determine if current procedures provide a sufficient level of safety. Identify roads, culverts or bridges in need of significant repair or replacement to reduce flooding damage to property downstream or upstream, or washout of roads which impact safe travel. STATUS UPDATE: PW maintains floodprone road listing..</p>	DCP, HR, DPW	1-4 years	Moderate
<p>Identify water and wastewater facilities where additional flood damage avoidance measures may be appropriate. Conduct site specific visits and assess alternatives where indicated. STATUS UPDATE: Incomplete</p>	DCP, DPW	1-2 years	High
<p>Develop listing of resource staging areas where equipment can be sent, away from water, to prevent damage prior to the storm. STATUS UPDATE: WC Roads Department has designated staging area and a satellite office at the Berlin Library. Assateague Federal Park has designated the Berlin Fire Department as a staging area for their vehicles and equipment.</p>	WCES	1 year	High
<p>Identify county owned locations that can be used as donation distribution points. STATUS UPDATE: Worcester County has designated Emergency Volunteer Resource Center (EVRC), as the primary donation distribution points. The EVRC is established at the closest library outside of the disaster zone. The County EOC establishes the exact location.</p>	HR	1 year	High

STRATEGY	DEPARTMENT	TIMEFRAME	PRIORITY
Establish a list of areas throughout the county where debris can be taken after the event. Areas should have easy ingress and egress for large truckloads of debris. STATUS UPDATE: WC adopted a Debris Management Plan in December, 2008.	DPW	1 year	High
Designate County buildings for specific purposes. Have each department develop Emergency Protection Plans STATUS UPDATE: Continuity of Operations/Government Plan is currently under development and will be completed in 2013.	DPW, HR	1 year	High
Stress employee responsibility to the County STATUS UPDATE: During new employee orientation process this is completed.	HR	1 year	High
Explore employee housing and food options during an event STATUS UPDATE: The County Recreation Center has been designated for employee housing needs during an emergency event. The County has a contract with SYSCO food vendor.	HR	1-2 years	High
Develop Employee Assistance Teams-Crews that can be sent to secure employee dwellings after the event while that employee is doing his/her regular job. STATUS UPDATE: Incomplete	HR	1-2 years	High
SHORELINE EROSION			
Continue education and encouragement efforts to protect shorelines using natural means. STATUS UPDATE: Stabilization projects including repair/install of bulkheads have been completed during planning cycle.	DNR and MCB	1-3 years	Low
Inform the homeowners of available loans, and other financial assistance opportunities STATUS UPDATE: County libraries are used as Disaster Recovery Centers (DRC), as was the case during Hurricane Sandy. Hours of operation are advertised through the newspaper and County website.	DCP and SEC	1-5 years	Low
Complete the Maryland Coastal Management Feasibility Study STATUS UPDATE: April 8, 2011 Maryland Enforceable Coastal Policies became effective. Section 3 deals specifically with Tidal Erosion.	DNR	2 years	High
TOXIC CHEMICALS & NATURALHAZARDS			
Inform residents with propane tanks they can contact the propane supplier, who must, by law, anchor any propane tank located in the floodplain. STATUS UPDATE: WC Local Emergency Planning Committee (LEPC) completes outreach efforts.	DRP	Continuous	Moderate
Inform Oil Tank owners they can call their local oil supplier to request an estimate on anchoring the oil tank. STATUS UPDATE: WC Local Emergency Planning Committee (LEPC) completes outreach efforts.	DRP	Continuous	Moderate

STRATEGY	DEPARTMENT	TIMEFRAME	PRIORITY
Inform Oil and Propane Suppliers they can contact the Maryland Department of the Environment, Wetlands and waterways program, at 410-437-3914 to receive a list of companies supplying the recommended anchoring systems for fuel tanks. STATUS UPDATE: WC Local Emergency Planning Committee (LEPC) completes outreach efforts.	DRP	Continuous	Moderate
WILDFIRES			
WCES has subcontracted two different private agencies to establish a Computer Aided Dispatch (CAD) system that will greatly accelerate the previously human driven dispatch system. STATUS UPDATE: New CAD System installed during planning cycle. Updates to the system will occur as technology continues to improve.	DCP, WCES, IT	Continuous	High
Install dry hydrants in appropriate locations to provide a hose hook up at a natural water source. Streams and rivers at least four feet deep are candidates for dry hydrants. STATUS UPDATE: Dry hydrants have been installed during planning cycle, however additional hydrants are needed.	Fire	2 years	Moderate
Educating the public of the dangers and responsibilities of being a fire user is the best defense against the problem of forest fires. STATUS UPDATE: WC Fire Marshall enforces fire bans during dry seasons.	Fire, WCES	2 years	Moderate
Map potential wild fire locations and seek funding for other preparedness projects. STATUS UPDATE: Both the Maryland Department of Natural Resources and the Nature Conservancy completes control.	DCP	Continuous	Moderate



Appendix C

Federal & State Funding Sources

Federal & State Grant Funding Sources

The following is a list of Federal and State Grants that may assist in implementing local All Hazard Mitigation Plans. This information is subject to change at any time; contact the federal or state agency for current grant status.

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Flood Proofing, acquisition and relocation of flood prone properties, wind resistant or retrofit, stormwater improvements, education and awareness, All Hazards Mitigation Planning. Acquisition, relocation, elevation and flood-proofing of flood-prone insured properties, flood mitigation planning.	Federal - 75% State - 12.5% Local - 12.5%	Local government must be in compliance with the National Flood Insurance Program to be eligible. Projects must be cost effective, environmentally sound and solve a problem. Repetitive loss properties are a high priority.	After a Presidential Disaster Declaration
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Grants can be used for management costs, information dissemination, planning, technical assistance and mitigation projects.	Federal - 75% Local - 25%	Local governments must be in compliance with the National Flood Insurance Program to be eligible. Projects must be environmentally sound and cost effective.	TBD
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Repair of Infrastructure damaged during a flood that results in a Presidential disaster declaration. Cost effective mitigation measures may be eligible during the repair of damaged facilities.	Federal - 75% State - 12.5% Local - 12.5%	Available for public assets: roads, government buildings, bridges, etc.	After a Presidential Disaster Declaration

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Federal Emergency Management Agency, Pre Disaster Mitigation Grant Program (PDM)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.	Federal - 75% Non Federal - 25%	PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.	TBD
Federal Emergency Management Agency, Flood Mitigation Assistance Program (FMA)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Assist States and communities to implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program.	Federal - 75% Non Federal - 25%	Available once a Flood Mitigation Plan has been developed and approved by FEMA.	TBD
National Flood Insurance Program (NFIP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Provides financial protection by enabling persons to purchase insurance against floods, mudslide or flood related erosion.	Varies	Includes Federally backed insurance against flooding, available to individuals and businesses that participate in the NFIP	Anytime
Economic Development Administration, Economic Adjustment Program	U.S. Department of Commerce Economic Development Administration Curtis Center, Suite 140 South Independence Square West Philadelphia, PA 19106-3821 215-597-4603	Improvements and reconstruction of public facilities after a disaster or industry closing. Research studies designed to facilitate economic development.	Federal - 50%-70% Local- 30%-50%	Documenting economic distress, job impact and proposing a project that is consistent with a Comprehensive Economic Development Strategy are important funding selection criteria.	Anytime

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Economic Development Administration, Public Works and Development Facilities	U.S. Department of Commerce Economic Development Administration Curtis Center, Suite 140 South Independence Square West Philadelphia, PA 19106-3821 215-597-4603	Water and sewer, Industrial access roads, rail spurs, port improvements technological and related infrastructure	Federal - 50%-70% Local- 30%-50%	Documenting economic distress, job impact and projects that is consistency with a Comprehensive Economic Development Strategy are important funding selection criteria.	Anytime
Small Business Administration (SBA) Pre-disaster Mitigation Loan Program	Herbert L. Mitchell, Office of Disaster Assistance, Small Business Administration, 409 3rd Street, SW, Washington, DC 20415;202-205-6734	Activities done for the purpose of protecting real and personal property against disaster related damage.	No information	The mitigation measures must protect property or contents from damage that may be caused by future disasters and must conform to the priorities and goals of the state or local government's mitigation plan.	Anytime
Community Development Block Grants / Entitlement Grants	Office of Block Grant Assistance, 451 Seventy Street SW., Washington, DC 20410-7000;202-708-3587	Used for long-term recovery needs, such as: rehabilitation residential and commercial building; homeownership assistance, including down-payment assistance and interest rate subsidies; building new replacement housing; code enforcement; acquiring, construction, or reconstructing public facilities.	No information	Citizen participation procedures must be followed. At least 70 percent of funds must be used for activities that principally benefit persons of low and moderate income. Formula grants to entitlement communities.	After a Presidential Disaster Declaration

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Community Development Block Grants / States Program	Office of Block Grant Assistance, 451 Seventy Street SW., Washington, DC 20410-7000; 202-708-3587	Used for long-term recovery needs, such as: rehabilitation residential and commercial building; homeownership assistance, including down-payment assistance and interest rate subsidies; building new replacement housing; code enforcement; acquiring, construction, or reconstructing public facilities.	No information	Citizen participation procedures must be followed. At least 70 percent of funds must be used for activities that principally benefit persons of low and moderate income. Formula grants to States for non-entitlement communities.	After a Presidential Disaster Declaration
Fire Suppression Assistance Program	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20472 ; 202-646-4240.	Provides real-time assistance for the suppression of any fire on public (non-Federal) or privately owned forest or grassland that threatens to become a major disaster.	Federal - 70% Local - 30%	The State must first meet annual floor cost (f percent of average fiscal year fire costs) on a single declared fire. After the State's out-of-pocket expenses exceed twice the average fiscal year costs, funds are made available for 100 percent of all costs for each declared fire.	Funds form President's Disaster Relief Fund for use in a designated emergency or major disaster area.
Historic Preservation: Repair and Restoration of Disaster-Damaged Historic Properties	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20472 ; 202-646-4621.	To evaluate the effects of repairs to, restoration of, or mitigation hazards to disaster-damaged historic structures working in concert with the requirements of the Stafford Act.	Federal - 75% Local - 25%	Eligible to State and local governments, and any political subdivision of a State. Also, eligible are private non-profit organizations that operate educational, utility, emergency, or medical facilities.	After a Presidential Disaster Declaration
Transportation: Emergency Relief Program	Director, Office of Program Administration, FHWA, DOT, 400 Seventh Street SW., Washington, DC 20590; 202-366-0450	Provides aid for the repair of Federal-aid roads and roads on Federal lands.	Federal - 100%	Application is submitted by the State department of transportation for damages to Federal-aid highway routes, and by the applicable Federal agency for damages to roads on Federal lands.	After serious damage to Federal-aid roads or roads on Federal lands caused by a natural disaster or by catastrophic failure.

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Animals: Emergency Haying and Grazing	Emergency and Non-insured Assistance Programs, FSA, USDA, P.O. Box 2415, Washington, DC 20013; 202-720-4053	To help livestock producers in approved counties when the growth and yield of hay and pasture have been substantially reduced because of a widespread natural disaster.	No information	Assistance is provided by the Secretary of Agriculture to harvest hay or graze cropland or other commercial use of forage devoted to the Conservation Reserve Program (CRPO in response to a drought or other similar emergency.	Anytime
Emergency Watershed Protection Program	Natural Resources Conservation Service 14th and Independence Avenue, SW Washington, DC 20250	Implementing emergency recovery measures for runoff retardation and erosion prevention to relieve imminent hazards to life and property created by a natural disaster that causes a sudden impairment of a watershed.	Federal - 75% Local - 25%	It cannot fund operation and maintenance work or repair private or public transportation facilities or utilities. The work cannot adversely affect downstream water rights and funds cannot be used to install measures not essential to the reduction of hazards.	TBD
Watershed Protection and Flood Prevention Program	Natural Resources Conservation Service 14th and Independence Avenue, SW Washington, DC 20250	To provide technical and financial assistance in carrying out works of improvement to protect, develop, and utilize the land and water resources in watersheds.	Varies due to project type.	Watershed area must not exceed 250,000 acres. Capacity of a single structure is limited to 25,000 acre-feet of total capacity and 12,500 acre-feet of floodwater detention capacity.	TBD
Watershed Surveys and Planning	Natural Resources Conservation Service 14th and Independence Avenue, SW Washington, DC 20250	To provide planning assistance to Federal, State, and local agencies for the development of coordinated water and related programs in watersheds and river basins. Emphasis is on flood damage reduction, erosion control, water conservation, preservation of wetlands and water quality improvements.	No information	These watershed plans form the basis for installing needed works of improvement and include estimated benefits and costs, cost-sharing, operation and maintenance arrangements, and other information necessary to justify the need for Federal assistance in carrying out the plan.	Anytime

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Emergency Advance Measures for Flood Prevention	USACE Washington DC 20314; 202-761-4561	To perform activities prior to flooding or flood fight that would assist in protecting against loss of life and damages to property due to flooding.	No information	There must be an immediate threat of unusual flooding present before advance measures can be considered. Any work performed under this program will be temporary in nature and must have a favorable benefit cost ratio.	TBD
Emergency Streambank and Shoreline Protection	USACE Washington DC 20314; 202-761-4561	Authorizes the construction of emergency streambank protection measures to prevent damage to highways, bridge approaches, municipal water supply systems, sewage disposal plants, and other essential public works facilities endangered by floods or storms due to bank erosion.	No information	Churches, hospitals, schools, and other non-profit service facilities may also be protected under this program. This authority does not apply to privately-owned property or structures.	TBD
Small Flood Control Projects	USACE Washington DC 20314; 202-761-4561	Authorizes the construction of small flood control projects that have not already been specifically authorized by Congress.	No information	There are two general categories of projects: structural and nonstructural. Structural projects may include levees, floodwalls, diversion channels, pumping plants, and bridge modifications. Nonstructural projects have little or no effect on water surface elevations, and may include flood proofing, the relocation of structures, and flood warning systems.	TBD
Flood: Emergency Advance Measures for Flood Prevention	USACE Washington DC 20314; 202-761-4561	To mitigate, before an event, the potential loss of life and damages to property due to floods.	No information	Assistance may consist of temporary levees, channel cleaning, preparation for abnormal snowpacks, etc.	Anytime

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Continuing Authorities Program (CAP)	USACE Washington DC 20314; 202-761-4561	Initiates a short reconnaissance effort to determine Federal interest in proceeding. If there is interest, a feasibility study is preformed.	Federal - 65% Local- 35%	A local sponsor must identify the problem and request assistance. Small flood control projects are also available.	Anytime
Hazardous Materials: State Access to the Oil Spill Liability Trust Fund	Director, USCG National Pollution Funds Center, Suite 1000, 4200 Wilson Boulevard, Arlington, VA 22203-1804; 202-493-6700.	To encourage greater State participation in response to actual or threatened discharges of oil.	No information	Eligible to States and U.S. Trust Territories and possessions.	Anytime
Emergency Management Assistance (EMA)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Funds may be used for salaries, travel expenses, and other administrative cost essential to the day-to-day operations of State and Local emergency management agencies. Program also includes management processes that ensure coordinated planning, accountability for progress, and trained qualified staffing.	Federal - 50%	EMA funded activities may include specific mitigation management efforts not otherwise eligible for Federal funding. Management Assistance program funds may not be used for construction, repairs, equipment, materials or physical operations required for damage mitigation projects for public or private buildings, roads, bridges, or other facilities.	Anytime
Community Assistance Program, State Support Services Element (CAP-SSSE)	CFDA Number: 97.023	Entering Floodplain Management Data into the Community Information System (CIS) (Required), Strategic Planning, Ordinance Assistance, CAP GAP Analysis, Community Assistance Visits and Community Assistance Contacts (Required), etc.	Local - 25%	Provides funding to States to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	No information

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Cooperating Technical Partners	CFDA Number: 97.045	Flood Hazard Mapping products	Federal - 100%	Provides technical assistance, training, and/or data to support flood hazard data development activities.	TBD
Map Modernization Management Support	CFDA Number: 97.070	Community outreach on Flood Mapping	Federal - 100%	Provides funding to supplement, not supplant, ongoing flood hazard mapping management efforts by the local, regional, or State agencies.	TBD
National Dam Safety Program	CFDA Number: 97.041	Dam safety training for state personnel, increase in the number of dam inspections, Emergency Action Plans, etc.	No information	Provides financial assistance to the states for strengthening their dam safety programs.	Anytime
Assistant to Firefighters Grant	Source: U.S. Fire Administration CFDA Number: 97.044	Vehicles, safety equipment, protective equipment, etc.	Federal Grant Funds match depended upon population served by Fire Departments and nonaffiliated EMS organizations	Provides assistance to local fire department to protect citizens and firefighters against the effects of fire and fire-related incidents	Annually in September projects are due.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	CFDA Number: 97.023	Clean-up of Superfund Sites	Federal - 100%	Provides funding to States to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	TBD

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Homeland Security Grant Program (HSGP)	CFDA Number: 97.067	Planning, organization, equipment, training, and exercise needs at the state and local levels to prevent, protect against, respond to, and recover from acts of terrorism and other catastrophic events	Federal - Up to 75% State - at least 25%	Enhances the capacity of State and local emergency responders to prevent, respond to, and recover from a weapon of mass destruction (WMD) terrorism incident involving chemical, biological, radiological, nuclear, and explosive (CBRNE) devices and cyber attacks.	TBD
State Fire Training System Grants	Source: U.S. Fire Administration CFDA Number: 97.043	Provide support for the Nation's 50 State Fire Training Systems in delivering training and education programs to the Nation's fire and emergency services personnel.	Not Available	Provide financial assistance to State Fire Training Systems for the delivery of a variety of National Fire Academy (NFA) courses/programs.	Annually in August
Superfund Amendments and Reauthorization Act	CFDA Number: 97.020	Training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals.	Federal - no more than 80% Non-Federal - at least 20%	Individuals who would be eligible for this training include public officials, fire and police personnel, medical personnel, first responders, and other tribal response and planning personnel	TBD



Appendix D

HMPC Meeting Minutes

Worcester County, Maryland Hazard Mitigation Planning Committee

Minutes

Meeting:	Kick-Off Meeting		
Date of Meeting:	5 December 2012	Time:	10:00 am – 12:00 pm
Meeting Facilitator:	Virginia Smith, Principal S&S Planning and Design	Location:	Worcester County Government Building

Meeting Topics

<p><u>2006 Worcester County Hazard Mitigation Plan Update</u></p> <ul style="list-style-type: none"> ▪ County Profile & Current Planning Documents-Comprehensive Plan, Water Resources Element & Ocean City Hazard Mitigation Plan ▪ NFIP Questionnaire & Current Building Codes-Ordinances ▪ Vulnerability Analysis Update Process-HAZUS ▪ Status of 2006 Mitigation Strategies

Attendees

Name	Organization	Name	Organization
Tom Kane	WC Emergency Services	Teresa Owens	WC Emergency Services
Bob Nelson	OC Planning & Zoning	Dawn Jones	WC Dept. of Social Services
Robyn TyTomi-Dalton	WC Health Dept.	Bill Bradshaw	WC Development Review & Permitting
Bob Rhode	OC Emergency Mgt.	Kelly Henry	WC DRP
Jeff Fleetwood	Town of Berlin	Mark Dunlevy	WC DRP
Gail Mansell	Citizen Representative	Tess Foster	WC DRP
Robert Donnelly	Town of Snow Hill	JC Barbely	Assateague State Park
Kim Moses	WC Administrator	Mike McDermott	WC Sheriff
Blaine Smith	Town of Ocean City	Kenneth Whited	WC Public Works
Ted Morlock	National Park Service	Jeff McMahan	WC Fire Marshall Office
Mark James	MEMA	Kirsten Kvenzi	FEMA Region V
Ed Werkheiser	MEMA	Matt Smith	S&S Planning & Design

Hazard Mitigation Plan Update Process

Theresa Owens, Director of Emergency Services, welcomed the participants to the meeting. She informed the group that the County had obtained grant funding for planning services. As such, the County hired S&S Planning and Design, to aid in the Hazard Mitigation Plan Update process.

Ms. Owens introduced Mr. Tom Kane, Emergency Management Planner, who will serve as the Project Manager throughout the process.

Virginia Smith with S&S Planning and Design distributed a one-page handout, "*What is Hazard Mitigation?*". Highlights of the HMP Update include:

- Three Core Planning Meetings;
- Attendees present at the HMP Kick-off Meeting comprise the Hazard Mitigation Planning Committee (HMPC); the Town of Pocomoke was not present however, the Town will be included;
- The HMPC will utilize a group email for discussion questions and comments. "Reply to all" will be used, enabling all members to be informed and updated. Portions of the draft plan will be distributed as developed;
- HMPC members to review the 2006 Plan; Tom Kane will distribute the 2006 Plan for HMPC review.

Note: In July 2012, Ocean City adopted a new Hazard Mitigation Plan. Personnel from Ocean City requested that their Plan be reviewed and where appropriate referenced in the HMP Update.

County Profile

Current planning documents and development trends were discussed. Documents include:

- 2006 WC Comprehensive Plan;
- 2011 Water Resources Element;
- Municipal Growth Elements.

These documents will be utilized in the update of the County Profile and the development of a new development trends section. In addition, S&S will obtain *2010 US Census* data for current demographic information.

NFIP Questionnaire & Building Codes/Ordinances

Questionnaire was given to Bill Bradshaw for completion. Current floodplain code for WC remains the same as in 2006, at or above Base Flood Elevation (BFE). New information pertaining to the MD 2010 Stormwater Management Regulations will be included in the plan update. In addition, information regarding minimum wind-resistance construction requirements will be added, as well.

Vulnerability Analysis Update Process-HAZUS

MEMA Hazard Risk Analysis Results for Worcester County (attached) were distributed for HMPC review. Following discussion, the highest priority hazard for WC remained Coastal Storm. In the 2006 HMP, information extrapolated from a HAZUS Level I Analysis, completed by the Maryland Department of the Environment, was included. During the discussion on vulnerability a one-page handout on HAZUS was distributed. Virginia Smith proposed that a Level II HAZUS Analysis be completed as part of the Plan Update. The Level II Analysis utilizes local G.I.S. data and generates results for both wind and flood modeling information. Questions arose pertaining to NFIP mapping. The current mapping is over 30 years old and the preliminary maps are not due for distribution until June 2013. Tom Kane and Virginia Smith will discuss this issue with Kevin Wagner, MDE and Mark James, MEMA.

Critical facilities maps contained in the 2006 HMP are being updated by County G.I.S. staff. These maps will be distributed to the HMPC for review prior to inclusion in the Plan Update.

Data from the NCDC will be added to the Plan Update for various hazards impacting Worcester County.

As part of the Plan Update, "coastal storm" and "flood" will be separated. New hazards will include:

- wind-storm fronts;
- winter storm;
- drought.

Status of 2006 Mitigation Strategies

Virginia Smith distributed pages from the 2006 HMP that detailed Mitigation Strategies and task items (attached). A status of each item will need to be included in the Plan Update. Some information pertaining to status update of certain items was obtained. Additional information is needed. This item will be reviewed further at the next HMPC meeting.

Next Steps

- Determine NFIP Mapping issues: use old maps or wait for preliminary maps for HAZUS Level II
- Update Plan Chapters-County Profile, Hazard Risk & Vulnerability Assessment, & Mitigation Strategies Status
- Obtain Historical data from NCDC
- **Mid-Point Meeting Date:** TBD-Meeting Notices will be distributed
Time: TBD
Location: Worcester County Government Building

Worcester County, Maryland Hazard Mitigation Planning Committee

Minutes

Meeting:	Mid-Point Meeting		
Date of Meeting:	March 19, 2013	Time:	10:00 am – 12:00 pm
Meeting Facilitator:	Virginia Smith, Principal S&S Planning and Design	Location:	Worcester County Government Building

Meeting Topics
<ul style="list-style-type: none"> ▪ Hazard Mitigation Planning Committee ▪ Vulnerability Analysis-HAZUS Level II Results ▪ Status of 2006 Mitigation Strategies

Attendees			
Name	Organization	Name	Organization
Tom Kane	WC Emergency Services	Teresa Owens	WC Emergency Services
Bob Nelson	OC Planning & Zoning	Dawn Jones	WC Dept. of Social Services
Debra Stevens	WC Health Dept.		
Fred Webster	WC Emergency Services	Kelly Henry	WC DRP
Jeff Fleetwood	Town of Berlin	Mark Dunlevy	WC DRP
Gail Mansell	Citizen Representative	Tess Foster	WC DRP
Robert Donnelly	Town of Snow Hill	JC Barbely	Assateague State Park
Michael Thornton	Town of Pocomoke	John Ross	WC Public Works
William Carroll	MEMA	Kenneth Whited	WC Public Works
Robert Mitchell	WC Dept. of Environmental Programs	James Jackson	MD SHA

Hazard Mitigation Planning Committee

The Hazard Mitigation Planning Committee (HMPC) is composed of a broad cross-section of stakeholders. The HMPC currently is comprised of twenty-eight members. Attendance by the HMPC members at various plan development meetings held throughout the plan update process and hours expended in reviewing the plan update document will aid the County in meeting the in-kind grant match contribution.

Vulnerability Analysis-HAZUS Level 2

Michele King discussed the methodology used to perform the HAZUS Level 2 Analysis for Worcester County. A handout was distributed for HMPC review (attached). The model was completed for the following three hazards:

- Riverine Flood & Coastal Storm (100 year flood event)
 - **Definition**

The HAZUS Flood Model analyzes both riverine and coastal flood hazards. Flood hazard is defined by a relationship between depth of flooding and the annual chance of inundation to that depth. Depth, duration and velocity of water in the floodplain are the primary factors contributing to flood losses. Other hazards associated with flooding that contribute to flood losses include channel erosion and migration, sediment deposition, bridge scour and the impact of flood-born debris. The HAZUS Flood Model allows users to estimate flood losses due to depth of flooding. The agriculture component will allow the user to estimate a range of losses to account for flood duration. The flood model does not estimate the losses due to high velocity flash floods at this time.
- Hurricane
 - **Definition**

The Hurricane Model allows practitioners to estimate of the economic and social losses from hurricane winds. The information provided by the model will assist state and local officials in evaluating, planning for, and mitigating the effects of hurricane winds. The Hurricane Model provides practitioners and policy makers with a tool to help reduce wind damage, reduce disaster payments, and make wise use of the nation's emergency management resources.

Although the software offers users the opportunity to prepare comprehensive loss estimates, it should be recognized that, even with state-of-the-art techniques, uncertainties are inherent in any such estimation methodology. The next major hurricane to affect your area will likely be quite different than any "scenario hurricane" anticipated as part of a hurricane loss estimation study. Hence, the results of a scenario analysis should not be looked upon as a *prediction* but rather as an indication of what the future may hold.

A power-point presentation highlighting HAZUS results for each hazard was conducted for HMPC members. The presentation has been uploaded on the S&S FTP Site and may be accessed as follow:

- ftp Site Information
 - Host: <ftp2.ftptoyoursite.com>
 - Username: ssplanning
 - Password: sspPASS10

Status of 2006 Mitigation Strategies

Virginia Smith distributed pages from the 2006 HMP that detailed Mitigation Strategies and task items (attached). HMPC members present discussed the various items and provided status update comments.

Next Steps

- Develop new 2013 Mitigation Goals, Objectives, and Action Items
- Prioritize Action Items and complete HMPC Priority Ranking Process
- Develop 2013 Mitigation Projects
- Complete Draft Plan Update
- **Mitigation Strategies Meeting Date:** TBD-Meeting Notices will be distributed
Time: TBD
Location: Worcester County Government Building

Worcester County, Maryland Hazard Mitigation Planning Committee

Minutes

Meeting:	Mitigation Strategies Meeting		
Date of Meeting:	May 28, 2013	Time:	2:00-4:00 pm
Meeting Facilitator:	Virginia Smith, Principal S&S Planning and Design	Location:	Worcester County Government Building

Meeting Topics

- Review of the Mid-Point Meeting Minutes
- Road Maps-Identification Flood Prone Roads
- Review of new 2013 Mitigation Goals, Objectives, and Action Items
- Prioritize 2013 Action Items and complete HMPC Priority Ranking Process
- Review & Distribution of Mitigation Funding Sources

Attendees

Name	Organization		Name	Organization
Tom Kane	WC Emergency Services		Andy Nunez	WC Social Services
Matt Margotta	OC Planning & Zoning		Ed Carman	WC Human Resources
Robyn Tytomi-Dalton	WC Health Dept.		Kelly Henry	WC DRP
Bill Bradshaw	WC DRP		Mark Dunlevy	WC DRP
Michael Thornton	Town of Pocomoke		Frank Adkins	WC Public Works
John Ross	WC Public Works		Kenneth Whited	WC Public Works
Robert Mitchell	WC Dept. of Environmental Programs		Bryen Deutsh	Citizen Representative
Michele King	S&S Planning and Design			

Mid-Point Meeting Minutes

The HMPC were provided the Minutes via email and copies were distributed during the May meeting for review and comment. Minutes were approved by the HMPC as written.

Identification of Flood Prone Roads

Public Works provided a listing of roads that typically flood during a Nor-easter or Hurricane event. In addition, S&S provided large format road maps for the County and Town personnel to review and label. HMPC members spent time discussing and labeling road maps during the meeting. Labeled maps and flood prone road listing will be included in the Plan Update.

Review of New Mitigation Goals, Objectives, and Action Items

Virginia Smith and Michele King distributed both the 2006 and new 2013 Goals and Objectives. HMPC members present discussed the information and provided comments. The new goals and objectives will be included in the Plan Update. New Action Items were presented in a table format and distributed to those present for review.

New 2013 Action Items Priority Ranking

The 2013 Action Items Table included a column labeled "Priority Ranking". Each member present was asked to review and assign a priority ranking to each action item as follows: H-High, M-Medium, L-Low. Those members not present will receive the handout with directions from Tom Kane. Tom is requesting that all members of the HMPC complete the ranking for inclusion into the Plan Update.

Mitigation Funding Sources

Michele King distributed a listing of various funding sources that may be utilized to complete hazard mitigation activities and projects. These funding sources include multiple agencies and provide funding for many different types of hazard mitigation efforts. Each action item ranked as "high" by the HMPC will be developed further into a project. Projects will include project description, responsible agency(s), timeframe, and eligible funding sources.

Next Steps

- Develop 2013 Mitigation Projects
- Complete Draft Plan Update & Distribute to HMPC for Review and Comment
- MEMA Review
- Plan Revisions and/or Modifications
- FEMA Review
- Approved Pending Adoption (APA) Letter from FEMA
- County Adoption Process-Public Meeting(s)
- Final FEMA Approval Letter

*Note: Municipalities will need to adopt Plan Update and follow their own adoption process.



Appendix E

Public Meeting

Announcements & Minutes

NOTICE OF PUBLIC HEARING
on the Adoption of the Updated
2014 Worcester County Hazard Mitigation Plan
for Worcester County, Maryland

The County Commissioners of Worcester County, Maryland will conduct a public hearing to receive public comment on the adoption of the 2014 Worcester County Hazard Mitigation Plan Update (the Plan) as recommended by the Worcester County Department of Emergency Services and as prepared by S & S Planning and Design of Cumberland, Maryland. The Plan seeks to eliminate or reduce hazard related human, economic, and environmental losses resulting from natural hazards including but not limited to: flooding, storms, sea level rise, shoreline erosion, tornadoes, toxic chemicals, and wildfires. The updated Plan includes new data, mapping, *HAZUS Level 2 Analysis*, status of 2006 Plan recommendations and new Mitigation Strategies and Actions. The intent of the Plan is to cultivate a hazard resilient community through awareness and preparedness in order to provide for the safety and well-being of Worcester County citizens and visitors.

The **public hearing** will be held on:

TUESDAY, OCTOBER 7, 2014
at **11:00 A.M.** in the
COUNTY COMMISSIONERS MEETING ROOM
Room 1101- Government Center
One West Market Street, Snow Hill, MD 21863

Copies of the draft Plan may be obtained from the Department of Emergency Services, Government Center, One West Market Street, Snow Hill, Maryland 21863 or online at www.co.worcester.md.us. The Plan may be reviewed at the Department during the regular business hours of 8:00 A.M. to 4:30 P.M., Monday through Friday (except Holidays). Anyone having questions should contact Tom Kane, Emergency Management Planner, at (410) 632-1311.

All interested citizens are encouraged to attend the hearing and express their views on the draft plan. Both written and oral testimony will be accepted.

WORCESTER COUNTY COMMISSIONERS

AGENDA

WORCESTER COUNTY COMMISSIONERS

October 21, 2014

Item #

- 9:30 AM - Meet in Commissioners' Conference Room - Room 1103 Government Center, One West Market Street, Snow Hill, Maryland - Vote to Meet In Closed Session
- 9:31 - Closed Session: Discussion regarding filling critical vacant positions including - Inventory/Shop Foreman and Roads Worker for the Roads Division of Public Works; receiving legal advice from Counsel; and performing administrative functions
- 10:00 - Call to Order, Prayer, Pledge of Allegiance
- 10:01 - Report on Closed Session; Review and Approval of Minutes
- 10:10 - Chief Administrative Officer: Administrative Matters 1-10
(Law Enforcement Training Scholarship Grant for State's Attorney's Office; Cooperative Reimbursement Agreement with Social Services for Child Support Services Provided by Sheriff's Office; Hazardous Materials Emergency Preparedness Grant for Emergency Services; Maryland Institute for Emergency Medical Services System Grant for Emergency Services; Step Up and Reach for the Stars STEM Enrichment Program Mobile Laptop Memorandum of Understanding; Bid Specifications for John Walter Smith Park Pavilion Repair Project; Bid Specifications for FY15 New County Vehicles for Various Departments; Design Services Proposal for Ocean Pines Pump Stations; Grant Agreement to Administer and Enforce Onsite Sewage Disposal System Regulations for Systems that Utilize Best Available Technology (BAT) for Nitrogen Removal; Request to Schedule Public Hearing on Water and Sewerage Plan Amendment to Expand Mystic Harbour Sanitary Service Area to Serve Frontier Town Campground; and potentially other administrative matters)
- 10:20 -
- 10:30 -
- 10:40 - Public Hearing - Water and Sewerage Plan Amendment - Add Two Outfalls and Increase Wastewater Discharge Permit Flow in the Mystic Harbour Sanitary Service Area 11
- 10:50 -
- 11:00 - Legislative Session - Public Hearings on the following bills:
- Bill 14-6 (Zoning - Solar Energy Regulations) 12
- Bill 14-7 (Zoning - Extended Stay Hotel or Motel) 13
- Bill 14-8 (Public Safety - Fire Sprinkler Systems for Townhouse Units) 14
- Bill 14-9 (Public Safety- Quality Assurance Program for Fire Prevention Code Inspections and Tests) 15
- Bill 14-10 (Zoning - Cemeteries in the V-1 Village District) 16
- Bill 14-11 (Zoning - Aquaculture in the E-1 Estate District) 17
- 11:40 - Chief Administrative Officer: Administrative Matters (if necessary) 1-10, continued
- 11:50 -
- 12:00 - Questions from the Press
- Lunch
- 2:00 PM - Dedication Ceremony for the new Mystic Harbour Wastewater Treatment Plant 18
- at 9624 Stephen Decatur Highway (MD Rt 611) in West Ocean City - Public Invited
- 2:10 -
- 2:20 -
- 2:30 -

AGENDAS ARE SUBJECT TO CHANGE UNTIL THE TIME OF CONVENING

Hearing Assistance Units Available - see Kelly Shannahan, Asst. CAO.

Please be thoughtful and considerate of others.

Turn off your cell phones & pagers during the meeting!

Minutes of the County Commissioners of Worcester County, Maryland

October 7, 2014

James C. Church, President
Merrill W. Lockfaw, Jr., Vice President
Judith O. Boggs
Madison J. Bunting, Jr.
Louise L. Gulyas
James L. Purnell, Jr.
Virgil L. Shockley

Following a motion by Commissioner Gulyas, seconded by Commissioner Purnell, with Commissioners Bunting and Shockley temporarily absent at the start of the meeting, the Commissioners unanimously voted to meet in closed session at 9:00 a.m. in the Commissioners' Conference Room to discuss legal and personnel matters permitted under the provisions of Section 10-508(a)(1) and (7) of the State Government Article of the Annotated Code of Maryland and to perform administrative functions. Also present at the closed session were Harold L. Higgins, Chief Administrative Officer; Kelly Shannahan, Assistant Chief Administrative Officer; Sonny Bloxom, County Attorney; Kim Moses, Public Information Officer; George Bradley, Human Resources Director; and Bob Mitchell, Environmental Programs Director. Topics discussed and actions taken included: filling critical vacant positions, including hiring Tyler Brewington as a Building Maintenance Mechanic I for the Maintenance Division, Michael "Dean" Farlow as a Plant Operator and Andrew Stinson as a Supervisory Control and Data Acquisition (SCADA) Technician for the Water and Wastewater Division of Public Works, and Jeffrey Cramer as an Information Technology (IT) Specialist II within the IT Division of Emergency Services; agreeing to advertise to fill one vacant IT Technician position within Emergency Services; acknowledging the promotion of Theresa Sambrano from Office Assistant V to Jury Commissioner and the hiring of Kelsey Jensen as an Office Assistant V within the Circuit Court and Donna Hughes as an Executive Assistant to the State's Attorney in his office; receiving legal advice from counsel; and performing administrative functions.

After the closed session, the Commissioners reconvened in open session. Commissioner Church called the meeting to order and announced the topics discussed during the morning closed session.

The Commissioners reviewed and approved the minutes of their September 16, 2014 meeting as presented.

The Commissioners presented a commendation to University of Maryland Extension (UME) -Worcester County Agricultural Educator Jessica Flores, 4-H Educator Cindy Morris, Nutrient Management Advisor Shirley Hastings and other staff recognizing the 100th anniversary of UME -Worcester County, which provides nutrient management plans, pesticide applicators training and licenses, educates beginning farmers, equine and poultry growers, and hosts a range

of 4-H projects, all of which are aimed at enhancing the diversity of our farming communities.

The Commissioners presented a proclamation to Worcester County Fire Marshal Jeff McMahon recognizing October 5-11, 2014 as National Fire Prevention Week and October as National Fire Prevention Month, with the theme *Working Smoke Alarms Save Lives - Test Yours Every Month*. Fire Marshal McMahon stated that fire, the third leading cause of home fatalities, spreads fast. He advised that from 2007 to 2011, fires claimed the lives of roughly seven people per day, and 60% of those deaths occurred in structures where smoke alarms either did not work or were not installed. He concluded that working fire alarms cut home fire deaths in half by providing occupants with the advance warning needed to escape, and he urged everyone to test their smoke alarms monthly.

The Commissioners met with Fire Marshal McMahon and Berlin resident Tocarra Derrickson to honor 25 emergency services, police, firefighters and paramedics from the six agencies that responded to a house fire on Branch Street in Berlin on Thursday, April 17, 2014 and rescued Ms. Derrickson and her six-year-old daughter from the home. Ms. Derrickson, who was in critical condition at the Bayview Burn Center for several weeks after the incident, extended an emotional thank you to the public safety personnel who saved their lives. She stated that the two would not be alive today if rescue workers had not intervened in such dramatic fashion. She thanked each of the public safety officials present for their roles in the rescue. Fire Marshal McMahon stated that it only took 18 minutes, from the time the 911 Center within Worcester County Emergency Services (WCES) received the call until the adult victim was pulled out of the home. He advised that this incident is a perfect example of how today's emergency response equipment and well-trained personnel, from the 911 dispatchers to the local police to area firefighters, work together to save lives. He concluded that what could have been a double fatal fire ended with two lives being saved thanks to the vast array of properly trained emergency personnel responding quickly and employing their training and the latest equipment to rescue lives. The Commissioners presented commendations to personnel from WCES, Berlin Police Department (BPD), Berlin Fire Company (BFC), Ocean City Volunteer Fire Company (OCVFC), Ocean Pines Volunteer Fire Department (OPVFD), Showell Volunteer Fire Department (SVFD) and Newark Volunteer Fire Department (NVFD) for responding to the house fire and thanked the members of these organizations for all they do to protect the lives and properties of the residents and visitors of Worcester County. The Commissioners personally recognized WCES Call Taker/Communications Clerk Robert Rhode, Jr., who received the emergency call from Ms. Derrickson, remained on the line with her throughout the incident, even after she lost consciousness, and advised emergency personnel where to locate her; and fellow members of Communications Shift B, including Supervisor Jennifer Kosko and Communications Clerks Ryne Leslie, Nitra Dallas and Cindy Ward; BPD Senior Officers Edward Carmean and Merle Bragg who broke a downstairs window and rescued the child; BFC members Incident Commander/Assistant Chief Bryon Trimble, Operator Harry Trimble, Assistant Chief Logan Helmuth, Firefighter/EMT Moe Cropper and Firefighter/Paramedics Ken Braniecki and Collins Brown, who developed and executed the plan to cut a hole in the home to rescue Ms. Derrickson; BFC Assistant Chief Derrick Simpson, Firefighters and Past Chiefs Bill Scott and Duane Phillips, Firefighters Austin Purnell, Ryan Jones and Frederick "Gino" Carozza, along with

Ocean City Fire Marshal's Office off duty Captain Josh Bunting, OCVFC Assistant Chief William Savage, III, who were involved in the rescue of Ms. Derrickson; and OPVFD Firefighter/Paramedic Jason West and EMS Driver Ron Thorwart, BFC Firefighter/Paramedic Nancy Holland and OCVFC Firefighter/Paramedic Parker Shandrowsky, who provided emergency medical service and transported Ms. Derrickson to Atlantic General Hospital.

The Commissioners conducted a public hearing to receive public comment on proposed amendments to the Worcester County Comprehensive Solid Waste Management Plan to add a State-mandated Apartment Building and Condominium Recycling Program. Public Works Director John Tustin reviewed the proposed amendments, which require recycling in all apartment buildings and condominiums that contain 10 or more units, except in Ocean City which was exempted from the State law. The Commissioners voted September 2, 2014 not to enforce the penalty provision of the bill, as the County is unable to dedicate resources to enforce the new State law. However, even though the State agreed that enforcement was at the option of each county, the County is still required to amend the plan to address such recycling and to report the amount of recyclables collected from each apartment or condominium complex in accordance with the State law. Mr. Tustin stated that the updated plan outlines a strategy and an educational component to encourage these facilities to recycle and a provision to allow the County the option for enforcement if so desired in the future.

Commissioner Church opened the floor to receive public comment.

There being no public comment, Commissioner Church closed the public hearing.

Following some discussion and upon a motion by Commissioner Boggs, the Commissioners unanimously adopted Resolution Number 14-20 adopting amendments to the Comprehensive Solid Waste Management Plan for Worcester County, Maryland as presented.

The Commissioners met with Housing Program Administrator Jo Ellen Bynum to review and discuss adopting updated plans related to the Community Development Block Grant (CDBG) program to remain in compliance with federal guidelines. These include the Minority Business Plan, Fair Housing and Equal Opportunity Plan, and Worcester County, Maryland Section 3 Plan. Upon a motion by Commissioner Purnell, the Commissioners unanimously adopted Resolution Number 14-21 adopting a Fair Housing and Equal Opportunity Plan, Minority Business Plan, and Section 3 Plan as presented.

Pursuant to the request of Lieutenant Neil Adams of the Sheriff's Office and upon a motion by Commissioner Gulyas, the Commissioners unanimously authorized Commission President Church to sign the Maryland Highway Safety Office Project Agreement for a grant of \$13,250 that will be used to reimburse the Worcester County Sheriff's Office for overtime hours related to traffic safety initiatives aimed at reducing the instances of driving while intoxicated and aggressive driving, as well as training for crash investigations. Lieutenant Adams advised that 50% of these grant funds can only be used to reimburse overtime hours occurring between the hours of 9:00 p.m. and 6:00 a.m.

Pursuant to the request of Environmental Programs Director Bob Mitchell and upon a motion by Commissioner Gulyas, the Commissioners unanimously authorized Commission

President Church to sign the FY15 Rural Legacy Area (RLA) Grant Agreements for funding of \$1,060,000 of the original \$3.9 million request for the Coastal Bays RLA and \$600,000 of the original \$2.6 million request for the Dividing Creek RLA. Mr. Mitchell stated that the Coastal Bays RLA grant was the largest grant awarded on the Eastern Shore this year. He advised that grant funds would be used to purchase two to four conservation easements in the Coastal Bays RLA and one to two conservation easements in the Dividing Creek RLA. Katherine Munson, Planner IV, reiterated that this is a voluntary easement purchase program.

Pursuant to the written request of Health Department Fiscal Officer Julie Parker and upon a motion by Commissioner Gulyas, the Commissioners unanimously authorized Commission President Church to sign the revised FY15 Core Public Health Services Funding Agreement between the Department of Health and Mental Hygiene (DHMH) and Worcester County from July 1, 2014 through June 30, 2015, which certifies that Worcester County will contribute \$5,606,155 and the State will contribute \$482,736. The Health Department was originally awarded \$443,001 in State funding, but that amount was increased because additional funding from DHMH became available.

Pursuant to the request of Local Management Board Resource Coordinator Brittany Hines on behalf of Jennifer LaMade, Director of the Worcester County Local Management Board (LMB) who could not attend the meeting, and upon a motion by Commissioner Boggs, the Commissioners unanimously authorized Commission President Church to sign the Community Partnership Agreement between the Local Management Board (LMB) and the Governor's Office for Children for FY15 grant funds of \$537,947, which provides level funding for programs beginning July 1, 2014.

Pursuant to the request of Budget Officer Kathy Whited and upon a motion by Commissioner Gulyas, the Commissioners unanimously approved FY14 Year-End Budget Transfers totaling \$183,089. Ms. Whited explained that the Year End Budget Transfers are a housekeeping measure included in the annual audit process, whereby budgeted funds are redirected to cover unanticipated expenses in other line items.

The Commissioners met with Ms. Whited to review and discuss the proposed Year End Reserve for Assigned Encumbrances in the amount of \$2,574,201. Ms. Whited explained that these funds have been set aside in three separate categories, Currently Approved Projects not completed by June 30, 2014 (\$1,864,270), Grant Funds Appropriated But Unobligated (\$595,640), and Other Projects and Programs (\$114,291). Ms. Whited explained that all encumbrances are for contracts and purchase orders that will be fulfilled in a subsequent fiscal year. A few of the more significant encumbrances include \$421,035 for replacing the Millville and Nelson Road bridges; \$20,401 remaining from the Showell Elementary School (SES) Feasibility Study, \$675,891 for addition to the Worcester County Recreation Center; and \$100,000 to stabilize the Opera House roof in Snow Hill. Ms. Whited advised that there had been a minor change in Other Projects and Programs category regarding laptops for Circuit Court, which has already been covered by other funds, thereby reducing that category by \$4,190 to \$110,101 and the overall total to \$2,570,011.

In response to a question by Commissioner Shockley regarding funds remaining from the SES feasibility study, Ms. Whited advised that Board of Education (BOE) officials had requested that \$20,401 be encumbered, but she would contact them to verify the total amount of outstanding invoices. Following some discussion and upon a motion by Commissioner Purnell, the Commissioners unanimously approved the proposed Year End Reserve for Assigned Encumbrances in the amount of \$2,570,011 contingent upon possible further reduction upon the BOE's outstanding invoice for the SES Feasibility Study.

Pursuant to the request of Public Works Director John Tustin and upon a motion by Commissioner Boggs, the Commissioners unanimously approved bid specifications for construction of new wastewater force mains on Birdsnest Drive and along Ocean Parkway in Ocean Pines for an estimated cost of \$1.8 million. Mr. Tustin advised that funding for the project is included in the recently completed bond issued for improvements to the Ocean Pines wastewater collection system.

Mr. Tustin updated the Commissioners on plans to implement the two options to be available as of January 1, 2015 to area residents for household trash disposal, as approved by the Commissioners at their June 17, 2014 meeting. Option 1 allows area residents to purchase up to two Homeowner Permits (HOP) for use at the Landfill and Homeowner Convenience Centers (HOCs) at a cost of \$100, with the option to purchase additional permits at a cost of \$100 each. Mr. Tustin stated that the permit price is not prorated, based on the date of purchase, nor is it discounted if the homeowner wishes to purchase only one permit. He advised that homeowners are required to fill out an application with their name, address and vehicle tags, and they must provide vehicle registration copies matching each home address to each HOP tag. Option 2 allows residents to participate in the new Pay As You Throw (PAYT) pilot program in which homeowners can purchase tags, at a cost of \$1 per tag and to be sold in units of five, and affix one tag to each 33-gallon bag to be disposed of at the HOCs. Mr. Tustin advised that bags larger than 33 gallons would be permitted under the PAYT program, provided two tags were affixed to each oversized bag. Mr. Tustin pointed out that PAYT tags do not expire and can be used at any time regardless of the purchase date. He also noted that yard waste is not included in the PAYT program. Those selecting Option 2 would be required to take yard waste to the Central Landfill where a tipping charge would be assessed. Commissioner Church commended the outstanding customer service displayed by those working at the HOCs.

The Commissioners conducted a public hearing to receive public comment on the proposed adoption of the 2014 Worcester County Hazard Mitigation Plan Update for Worcester County, Maryland, as recommended by the Worcester County Department of Emergency Services and as prepared by S&S Planning and Design of Cumberland, Maryland. Emergency Services Director Fred Webster advised that the plan seeks to eliminate or reduce hazard related human, economic, and environmental losses resulting from natural hazards, including but not limited to flooding, storms, sea level rise, shoreline erosion, tornadoes, toxic chemicals, and wildfires. The updated plan includes the following: new data; mapping; HAZUS Level 2 Analysis, which is the methodology used by the Federal Emergency Management Agency (FEMA) to estimate potential losses from disasters; status of 2006 plan recommendations; and

new mitigation strategies and actions. He stated that the intent of the plan is to cultivate a hazard resilient community through awareness and preparedness to provide for the safety and well-being of Worcester County citizens and visitors.

Commissioner Church opened the floor to receive public comment.

In response to questions by Jack Collins, Treasurer for the Ocean Pines Association (OPA) Board of Directors, Mr. Webster advised that each of the municipalities are required to either adopt the County's plan or develop their own; however homeowners associations (HOAs), such as the OPA, share no such requirement; however, several members of the Ocean Pines Association had participated in the development of the County's plan, and the Ocean Pines community is covered by the County plan.

There being no further public comment, Commissioner Church closed the public hearing.

Following some discussion and upon a motion by Commissioner Shockley, the Commissioners unanimously adopted Resolution Number 14-22 adopting the 2014 Hazard Mitigation Plan Update for Worcester County, Maryland. Commissioner Bunting thanked Mr. Webster and Emergency Planner Tom Kane for working with him and Commissioner Shockley to address their concerns in the original draft plan.

Mr. Webster advised that public service announcements from the Sheriff's Office are currently airing on the Town of Ocean City's new low-power FM radio stations, which are located at 99.5 FM, which transmits from a water tower at 65th Street in Ocean City, and station 100.3 FM, which transmits from a tower on Maryland Rt. 589. These towers provide radio coverage to Ocean City and Ocean Pines, as well as the Showell, Bishopville and Berlin areas, and these messages are airing along with other County public service announcements.

The Commissioners recessed until 11:30 a.m.

Timothy Ailsworth, Executive Director of Local Government Insurance Trust (LGIT), presented Human Resources Director George Bradley and Risk Manager Eddie Carman with a LGIT Training Grant in the amount of \$3,000 to be used for "Snow Plow Simulator Training." Mr. Ailsworth commended Worcester County staff for proactively addressing the training needs within their organization. He stated that this is an example of LGIT and local government working together to address risk management concerns. In response to a question by Snow Hill Mayor Charles Dorman, Public Works Director John Tustin advised that town employees may participate in this training class, which is offered in Salisbury at a cost of \$300 per participant. In response to comments by County Attorney and LGIT Board of Directors Chair Sonny Bloxom, Mr. Ailsworth advised that LGIT recently increased its annual grant awards from \$75,000 to \$100,000. In closing, Mr. Ailsworth also invited the Commissioners to participate in the 27th Annual LGIT meeting at the Navy-Marine Corps Memorial Stadium in Annapolis on October 30, 2014.

The Commissioners met with Library Director Mark Thomas and Deputy Director Jennifer Ranck and County Engineer Bill Bradshaw to resume discussions from their September 2, 2014 meeting regarding the proposal from Architect Jeff Schoellkopf and JSD, Inc. of The Design Group for planning and architectural services for the new Berlin Branch Library. The

Commissioners previously tabled discussions on the matter to allow Library Board of Trustees President Ron Cascio and Mr. Thomas to work with Mr. Schoellkopf to develop a Fixed Fee Proposal for architectural and engineering services to design the new library. Mr. Thomas advised that, after that meeting, he had worked with Mr. Schoellkopf to develop a more narrowly focused proposal in an amount not to exceed \$39,000, plus reimbursable expenses, to provide Phase 1 services only, including preliminary design and consulting team selection. He stated that the work to be performed would enable the library to complete and refine the building program, to set forth in detail the scope of the overall project, to develop the consulting team, and to create several early schematic design options for the library. The preliminary program assumes a building of about 10,000 square feet, with a construction budget of approximately \$3.6 million and a furnishing budget of approximately \$300,000, with funding sources to include a combination of public and private funds and grants.

In response to a question by Commissioner Boggs, Mr. Bradshaw stated that he would not be the construction manager for this project. Rather that responsibility should be taken on by a firm that could develop plans, with estimates based on their market experience and past data for similar projects. Mr. Thomas stated that a construction manager would be chosen through a Request for Proposals (RFP) process. In response to questions raised by Commissioner Church, County Attorney Sonny Bloxom stated that accepting the proposal before them for Phase 1 of the project gives Mr. Schoellkopf a chance to prove his ability to design the new library, but it does not limit the County from opting to go with a different architect for the next phase of the project if so needed. Following some discussion and upon a motion by Commissioner Shockley, the Commissioners unanimously accepted the proposal from Mr. Schoellkopf for Phase 1 pre-design phase services for the new Worcester County branch library on Harrison Street in Berlin, Maryland as outlined in his September 30, 2014 proposal and at architectural fees not to exceed \$25,000 for planning, architecture, site planning, and project administration, while preliminary engineering services will not exceed a total of \$14,000, for a total of \$39,000 for Phase 1 services, plus reimbursable expenses for transportation, reproduces and postage and special deliveries at an estimated cost of \$2,800.

Chief Administrative Officer Harold Higgins informed those in attendance that the Commissioners plan to host the grand opening ceremony for the new Mystic Harbour Wastewater Treatment Plant (WWTP) on October 21, 2014 at 2 p.m. and invited all to attend.

The Commissioners answered questions from the press, after which they adjourned to meet again on October 21, 2014.



Mayor & Council of Berlin

10 William Street, Berlin, Maryland 21811
Phone 410-641-2770 Fax 410-641-2316
www.berlinmd.gov



Mayor
Wm. Gee Williams, III

Vice President
Elroy Brittingham, Sr.

Council Members
Dean Burrell, Sr.
Lisa Hall
Paula Lynch
Troy Purnell

Town Attorney
David Gaskill

Town Administrator
Laura Allen

BERLIN, MARYLAND

MAYOR AND COUNCIL MEETING

MONDAY, OCTOBER 14, 2014

**COUNCIL CHAMBERS – BERLIN TOWN HALL
10 WILLIAM STREET
BERLIN, MD 21811**

EXECUTIVE SESSION.....6:00 PM

REGULAR SESSION7:00 PM

Anyone having questions about the meetings mentioned above or needing special accommodations should contact Laura Allen, Town Administrator at (410) 641-4144. Written materials in alternate formats for persons with disabilities are made available upon request.

TTY users dial 7-1-1 in the State of Maryland.
TTY users outside Maryland dial 1-800-735-2258

**BERLIN MAYOR AND COUNCIL
COUNCIL MEETING
AGENDA
Monday, October 14, 2014**

6:00 PM EXECUTIVE SESSION - Berlin Conference Room

7:00 PM REGULAR SESSION – Berlin Town Hall Council Chambers

1. Approval of the Minutes for:
 - a) Regular Session of the Mayor and Council on September 22, 2014
 - b) Part 1 of Executive Session of the Mayor and Council on September 22, 2014
Part 1 of Statement of Closure for Mayor and Council on September 22, 2014
 - c) Part 2 of Executive Session of the Mayor and Council on September 22, 2014
Part 2 of Statement of Closure for Mayor and Council on September 22, 2014
2. Application for Special Sunday Permit-Boggs Disharoon A.L. Post 123
Sunday, November 23, 2014 for District Meeting
3. Resolution 2014-03
Adoption of the 2014 Worcester County Hazard Mitigation Plan
4. Motion to Approve – Memorandum of Understanding with Lower Shore Land Trust
5. Motion to Approve – Contract with Worth Construction for construction of Tripoli
Street Sidewalk
6. Motion to Approve – Mass Notification System
7. Motion to Approve – Date and Hours for Halloween Trick or Treating
8. Motion to Approve – Schedule for Mayor and Council Meetings and Town Holidays
for 2015
9. Departmental Reports
 - a. Deputy Town Administrator – Mary Bohlen
 - b. Water Resources & Public Works – Jane Kreiter
 - c. Electric – Tim Lawrence
 - d. Police – Arnold Downing
 - e. Planning – Dave Engelhart
 - f. Human Resources – Jeff Fleetwood
 - g. Economic and Community Development – Michael Day
10. Town Administrator's Report
11. Comments from the Mayor

12. Comments from the Council
13. Comments from the Public
14. Comments from the Press
15. Adjournment

MAYOR AND COUNCIL OF BERLIN, MARYLAND
Regular Session Council Minutes
Monday, September 22, 2014

The meeting of the Mayor and Council for Monday, September 22, 2014 was called to order by Mayor Williams at approximately 7:06 p.m. Councilmembers Brittingham, Burrell, Purnell, Hall and Lynch were present, as well as Town Attorney David Gaskill, Town Administrator Laura Allen, Deputy Town Administrator Mary Bohlen, Human Resources Director Jeff Fleetwood, Police Chief Arnold Downing, Water Resources and Public Works Director Jane Kreiter, Electric Utility Director Tim Lawrence, Planning Director Dave Engelhart and Administrative Assistant Sharon Timmons. Finance Director Natalie Saleh and Economic and Community Development Director Michael Day were absent.

Following the recitation of the Lord's Prayer and the Pledge of Allegiance, Mayor Williams asked for a motion to approve the Regular Session minutes of September 8, 2014. Councilmember Lynch made a motion to approve the Regular session minutes of September 8, 2014 and council voted unanimously to approve 5-0.

Main Street Coordinator Megan Houston, Mayor's Assistant JoAnn Unger and Administrative Assistant Sharon Timmons came before the council to request approval for the Berlin Christmas Parade to be held on Thursday, December 4th at 7:00 p.m. Ms. Houston reported that street closure forms had been sent to State Highway, reviewed the estimated budget for this year's parade and stated that letters requesting donations and entries would be mailed out this week. Councilmember Burrell made a motion to approve the Berlin Christmas Parade and council voted unanimously to approve 5-0.

Darl Kolar of EA Engineering, Science and Technology gave a powerpoint presentation on the Hudson Branch Stormwater project. Mr. Kolar reviewed the three sources of grant funding that had been confirmed; \$165,000 from FEMA, \$964,000 from the Maryland Department of Natural Resources and \$800,000 from the Department of Housing and Community Development. Mr. Kolar reviewed the three phases of the project; Phase I being Flower Street, Phase II would be Hudson Branch near William Street and the Berlin Electric Plant and Phase III would be Hudson Branch along Cedar, Pine, Franklin, Maple, Grice and Nelson Streets. Mayor Williams stated the residents on Showell Street had been promised that a solution to the erosion and stabilization of the land behind the homes would be included in Phase I. Discussion continued on the creation of offline wetlands in the Flower Street area. Mayor Williams asked Mr. Kolar to develop a practical type of barrier that would discourage persons from disposing of large items such as mattresses and furniture in the wetland area and ditch. Discussion continued on the required timeline and Mary Bohlen stated that all 3 projects should be near completion by the summer of 2016. Councilmember Burrell asked when Mr. Kolar could present a plan back to council on the issues regarding the stabilization of the lands behind Showell Street and Mr. Kolar replied that he would have an answer in 3 weeks.

Having completed the items on the Regular Agenda, Mayor Williams asked for the Departmental Reports. Deputy Town Administrator Mary Bohlen reported that the Requests for Proposals on the Mass Notification System had been received and were in the beginning process of being reviewed with the plan to be able to present them to the council by the end of October. Ms. Bohlen also reported they were starting the process for bidding on the bleachers and benches for Henry Park with a bid deadline of October 24th.

Water Resources and Public Works Director Jane Kreiter reported that her departments were working on completion of the fencing surrounding the tot lot in Stephen Decatur Park, painting of the Visitor's Center and preparing for the Open House at the new Spray Site on Friday, October 3rd from 12 noon to 2 p.m. Ms. Kreiter also reported that the bid opening for the sidewalks on Tripoli Street would be held this Thursday and a Request for Proposal for sidewalks on East Branch Street would be advertised next week.

Electric Utility Director Tim Lawrence reported that a net meter had been installed on Upshur Lane for a solar system, lightning protection stands had been installed throughout town and that the electric department had installed a new service at the new Davita facility.

Police Chief Arnold Downing reported that the new police officer had begun his employment with the town today and that interviews for the corporal position had been held. Chief Downing stated that this weekend would be extremely busy with events such as the Seagull Century, Drug Drop-off and the Unity Walk.

Planning Director Dave Engelhart reported that a meeting had been held between State Highway and the Library Board at the proposed site for the new library for any access obstacles.

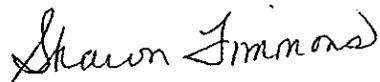
Human Resources Director Jeff Fleetwood reported that Mr. Fred Webster and Mr. Tom Kane from Worcester County would be in attendance at the October 14th council meeting to give an overview of the Hazard Mitigation Plan for the council's approval. Mr. Fleetwood also announced that the two candidates for the Economic Development position would be on site Thursday, September 25th for interviews.

Town Administrator Laura Allen presented 7 purchase orders (201500777, 201500766, 201500765, 201500764, 201500427, 201500783 and 201500838) to the council for approval. Councilmember Brittingham made a motion to approve the other 7 purchase orders and council voted unanimously to approve 5-0.

Councilmember Purnell and Lynch asked Public Works to look into the patching of potholes located on Harrison Avenue and the entrance of Kenwood Court.

Mayor Williams asked for comments from the press and the public. There being no comments, Councilmember Burrell made a motion to adjourn the meeting and the meeting ended at 8:22 p.m.

Respectfully submitted,


Sharon Timmons
Administrative Assistant



Mayor & Council of Berlin

10 William Street, Berlin, Maryland 21811

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Lisa Hall
Paula Lynch
Troy Purnell

Town Attorney
David Gaskill

Town Administrator
Laura Allen

RESOLUTION 2014-03

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF BERLIN ADOPTING THE 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN AS THE TOWN 2014 HAZARD MITIGATION PLAN.

WHEREAS, the Town of Berlin, a municipality of Worcester County recognizes the federal Disaster Act of 2000 requiring that all States and local jurisdictions develop, submit, and update hazard mitigation plans that may reduce the impacts of hazards; and

WHEREAS, an adopted hazard mitigation plan is required as a condition of future federal funding for hazard mitigation projects; and

WHEREAS, the Town of Berlin's participation in the planning process along with other units of local government within the County to prepare the 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN;

NOW, THEREFORE BE IT RESOLVED, that the Town of Berlin, hereby adopts the 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN as an official plan; and

BE IT FURTHER RESOLVED, that the Worcester County Emergency Services is authorized to submit on behalf of the participating municipalities the adopted 2014 WORCESTER COUNTY HAZARD MITIGATION PLAN to the Federal Emergency Management Agency for final review and approval.

ADOPTED AND APPROVED by the Mayor and Council of the Town of Berlin on the _____ day of _____, 2014.

William G. Williams, III, Mayor

ATTEST: _____
Laura Allen, Town Administrator

Elroy Brittingham, Sr.
Vice President of Council

MOTION TO APPROVE

A MOTION OF THE MAYOR AND COUNCIL OF THE TOWN OF BERLIN APPROVE THE HOURS FOR HALLOWEEN TRICK OR TREATING FOR FRIDAY, OCTOBER 31 FROM 5:00 P.M. TO 7:00 P.M.

ADOPTED THIS _____ DAY OF _____, 2014 BY THE MAYOR AND COUNCIL OF THE TOWN OF BERLIN, MARYLAND BY AFFIRMATIVE VOTE OF _____ TO _____ OPPOSED, WITH _____ ABSTAINING.

Elroy Brittingham, Vice President

Approved this _____ day of _____, 2014 by the Mayor of the Town of Berlin.

Wm. Gee Williams, III, Mayor

ATTEST: _____
Laura Allen
Town Administrator

September 8, 2014

The regular meeting of the Pocomoke Mayor and Council was held in the Council Chambers at City Hall on Monday, September 8, 2014. The meeting was called to order at 7:30 P.M.

Present: Mayor Bruce Morrison
Council Members: Rob Clarke, Tracey Cottman,
Diane Downing, George Tasker, Dale Trotter
City Attorney William Hudson
City Manager Russell W. Blake
City Clerk Carol L. Sullivan

Review Minutes:

In a motion (Clarke, Trotter passed), to approve the minutes of August 11, 2014.

Review Bills:

In a motion (Downing, Cottman passed), the bills presented to be paid. (Copy of bill list attached to original minutes).

Ms. Kelly Brinkley, Worcester County Volunteer Coordinator:

Ms. Brinkley stated that she is working with the Worcester County Board of Education and Pocomoke High School in a pilot program called "Making a Difference with Teen CERT". The program trains teenagers in how they can help during an emergency and be prepared for a disaster. She is working with Mr. Record and the 9th graders. They will have 25 students for nine weeks. Also, they will be partnering with other agencies in the near future.

Mayor Morrison asked her to let us know if the City could help in any way; we will be glad to help. He thanked Ms. Brinkley for coming and informing the Mayor and Council about the program.

Mr. Mike Shannon to discuss upcoming Boat Docking Contest (September 13, 2014):

Mr. Shannon thanked the Mayor and Council for their support. He stated that as of tonight they have 19 boats for the event. He has been to the last two events for boat docking in Crisfield and Salisbury. This year the committee has been successful in getting sponsorships and raising funds; the purse this year will be at least \$17,000. They have done more advertising this year and expect anywhere from 2,000 to 5,000 people to attend. Ace Hardware has donated the use of a bounce house for the kids to play in while parents are watching the contest. He stated that Crisfield's committee has been very supportive of Pocomoke's Boat Docking contest and has helped him a lot. The opening ceremony will be at 12:45 P.M. After the event Riverside Grill will have live entertainment on their deck. He encouraged all to attend. Mr. Shannon did

ask for the Police Department to keep the traffic on the draw bridge moving because, last year the traffic would stop to watch the event.

Mayor Morrison thanked Mr. Shannon for all he does for the City.

Special recognition of Mr. Don Holdren and Ms. Elizabeth Eberhart for coordinating and coaching a Jr. Golf training class at Winter Quarters Golf Course in July 2014:

Mayor Morrison presented Mr. Holdren and Ms. Eberhart a “Certificate of Appreciation”. He thanked them for continuing the golf training classes that Mr. Bob Hawkins had coordinated for many years.

Mr. Holdren stated that he had helped Mr. Hawkins with the classes several years ago and was glad to be able to continue them.

Mrs. Eberhart stated that it was a pleasure to assist in this project and she looks forward to next year. She also stated that she conducts tours at the Delmarva Discovery Center and thanked the Mayor and Council for allowing her to be a part of the community. She stated that she is a “come here” but has enjoyed learning about Pocomoke City and its history.

Review recommendation letter from PZC Chairman Kennis Austin, for approval of revised Comprehensive Master Plan:

Mayor Morrison read the letter for the record.

Consider Resolution No. 485 to adopt new Comprehensive Master Plan:

In a motion (Tasker, Trotter passed) to table this item until next meeting.

Discuss letter from Mr. Fred Webster, Worcester County Emergency Services, regarding update of the County’s Hazard Mitigation Plan, which includes Pocomoke City, and consider Resolution No. 486:

Mayor Morrison read a letter from Mr. Fred Webster, regarding whether Pocomoke will participate in the County’s 2014 Hazard Mitigation Plan update.

In a motion (Trotter, Clarke passed) to adopt Resolution No. 486 to participate in Worcester County’s 2014 Hazard Mitigation Plan.

Discuss letter from Wor-Co Federal Credit Union regarding possible Credit union membership as a benefit to City employees:

City Manager Blake stated that this would be similar to the City’s existing credit union plan with SECU, but Wor-Co is a lot closer and more convenient.

Councilwoman Downing asked if Wor-Co Federal Credit Union offers low interest rate loans as other credit unions.

City Manager Blake stated yes, and they also have savings, vacation clubs, Christmas Club, and new and used vehicle loans.

In a motion (Downing, Cottman passed) to allow employees to participate in Wor-Co Federal Credit Union at no cost to the City.

Comments from the Audience:

There were no comments.

Mayor and Council items:

There were no other items to discuss.

There being no further business a motion was made by Councilman Clarke and seconded by Councilwoman Cottman to adjourn at 7:52 P.M.

Carol L. Sullivan
City Clerk

TOWN OF SNOW HILL, MARYLAND

Life on the River

WORK SESSION

OCTOBER 7, 2014

On Tuesday, October 7, 2014 the Mayor and Town Council convened in a work session at 4:35pm in the meeting room of the old Firehouse on W. Green Street.

PUBLIC OFFICIALS PRESENT

Mayor John C. Dorman; Councilwoman Alison Cook; Councilwoman Jenny Hall; and Councilman Michael Pruitt.

STAFF IN ATTENDANCE

Town Manager Kelly Brewington; Asst. to the Town Manager Trish Greene

UNSAFE HOUSES

The property owners of 110 Stevens Street and 407 Covington Street were notified that the Mayor and Town Council deemed their properties as unsafe at the Town Meeting on Tuesday, September 9, 2014. No representatives were present to appeal this decision.

MUNICIPAL PARKING LOT

Mayor Dorman reported that the municipal lot behind the post office has begun to look like a "used car lot", with citizens parking their personal vehicles and boats in the parking spaces. Mayor Dorman consulted with the Council about sending the owners letters requesting they remove their property. Councilman Pruitt volunteered to contact the owners (Gary Weber, The River House Inn, and Barry Laws) personally to request removal prior to formal letters being issued.

CURB CUTS

Mayor Dorman reported that both Gary Weber and the former owners of The River House Inn, Larry and Susanne Knudsen removed the curb cuts in the municipal lot adjacent to their properties to create driveways. Kelly Brewington advised that a call has been placed to the Town Attorney about a legal agreement that prevents the owners from obtaining a right-of-way. Mayor Dorman also requested that the Town Planner check on the deeds to the properties to ensure they have no right to the curb cut area.

EMPLOYEE HANDBOOK

Mayor Dorman reminded the Council to review the draft changes to the Employee Handbook. Several changes have been made to address issues, as well as add the Fire Department EMS staff. Council will continue to review and submit their recommendations and comments.

COUNTY COMMISSIONER MEETING

Mayor Dorman reported that he attended the Commissioners meeting today. They passed the Hazard Mitigation Plan, excluding Berlin and Snow Hill until they adopt the County's plan. The Town will be presenting a Resolution for adoption at the Town Meeting on October 14, 2014.

The Commissioners passed a new refuge permit fee of \$100 for two stickers, each additional would cost \$100, to use the landfill. This fee will start on January 1, 2015. They also discussed a PAY-T program where you pay as you go, per bag.

TRI-COUNTY COUNCIL

The Tri-County Council is looking for elected officials to represent their area on the Council. Councilman Pruitt currently serves and volunteered to serve another term.

ELECTIONS

Mayor Dorman advised that some municipalities are adding provisions regarding not holding an election to their Charters. Currently, if a candidate is running unopposed we do not hold an election. This addition to the Code would make it legally binding.

Councilwoman Cook asked if the deadline for filing for candidacy could be changed, as if a person feels they are running unopposed and a candidate files on the last day it does not give the person much time to order campaign materials.

BOARD OF ZONING APPEALS

Councilman Pruitt reported the Greg Waters agreed to serve on the Board of Zoning Appeals committee. A letter will be sent to welcome him.

SCENIC RAILROAD

Mayor Dorman reported that the County Commissioners will meet on October 21, 2014 at 11 am with the representatives from the railroad to discuss the feasibility study. However, no decisions will be made until after the County election. Kelly suggested clarifying if they still intend to meet.

241 S. WASHINGTON STREET

Kelly received an e-mail from Wells Fargo offering the house on 241 S. Washington Street to Town at no cost and providing \$10,000 toward repairs needed. The estimated cost of repairs would be \$33,000. The Mayor and Council discussed options, including accepting the property and demolishing it in order to sell the property for profit. Kelly will contact the agent and ask if the \$10,000 can be used toward demolition. She will also obtain a quote from Richard Lynch on demolition.

DEVELOPER PROPOSAL

Kelly contacted Tom Ayd in regards to the Market Study and application that he submitted for the review. After reviewing the report from DHCD, it shows a different proposal than what he discussed with the Mayor and Council at the work session. He advised the Council the development would be based on 60% of median income, with 5 units at market value and 7 at 30% for disabled residents.

The application shows a breakdown of percentages from 60% in different levels, all the way to 30%. This would be considered subsidized housing, which Mr. Ayd assured the Council he was not building. Kelly has sent him an e-mail requesting more information.

ASSATEAGUE COASTAL TRUST

Kelly advised that the Mayor and Town Council have received a press release regarding a "Talking Trash" forum being held on Wednesday, October 15, 2014. This workshop will hold discussions on changing the way solid waste is handled. Mayor Dorman commented that Worcester County Public Works does not plan to attend.

OCEAN CITY TODAY

Mayor Dorman advised that a reporter with Ocean City Today newspaper is now living in the former Petroski property. He hopes that this may provide Snow Hill with more media coverage.

ADJOURNMENT

With no further discussion, Mayor Dorman adjourned the meeting at 5:14pm.

Respectfully submitted: Trish Greene, Asst. to Town Manager

Mayor and Council Town Meeting



October 14, 2014

Public Participation in Council Meetings

Members of the audience shall not engage in disorderly or boisterous conduct, including the utterance of loud, threatening, or abusive language; disrespectful or discourteous communication with the Mayor and/or Council members; or other acts that disturb, disrupt, or impede the orderly conduct of the Town Council meeting.

A member of the audience engaging in such conduct shall, at the discretion of the Mayor or a majority of the Council Members, be subject to removal from that meeting.

A police officer will be present at all town meetings and work sessions.



Town of Snow Hill, Mayor and Council
October 14, 2014

Meeting Agenda

1. Salute to the American Flag / The Lord's Prayer
2. PUBLIC HEARING – Hazard Mitigation Plan
3. Opening Comments
4. Proclamation – Breast Cancer Awareness Month
5. Approval of Minutes
6. Financial Report
7. Town Manager Report
8. Economic Development Report
9. Public Works Report
10. Water & Wastewater Reports
11. Planning & Zoning/Code Enforcement Report
12. Museum report
13. Fire department report
14. Public Safety Report
15. Old Business
16. New Business
 - Resolution No. 2014-02 Hazard Mitigation Plan
 - Board of Zoning Appeals – Greg Waters
 - Comprehensive Rezoning Consultant
17. Adjournment

Part of the meeting may be closed to the public in accordance with Open Meetings Act procedures. **This agenda may be subject to change.**

PROCLAMATION

Breast Cancer Awareness Month October, 2014

WHEREAS, while considerable progress has been made in the fight against breast cancer, it remains the most commonly diagnosed cancer and the second leading cause of death among women in the United States; and

WHEREAS, each year it is estimated that more than 220,000 women and men in the United States will be diagnosed with breast cancer and more than 40,000 will die as a result of the disease; and

WHEREAS, October is Breast Cancer Awareness Month, an annual campaign to increase awareness, reaffirming our commitment to support breast cancer research and educate all citizens about its risk factors, detection and treatment; and

WHEREAS, as we display pink ribbons and wear pink clothing to raise awareness, we also support those courageously fighting this disease and honor the lives lost; and

WHEREAS, this October, we ask all citizens to recognize breast cancer survivors, those battling the disease, their families and friends who are a tireless source of love and encouragement, and applaud the efforts of our medical professionals and researchers working hard to find a cure.

NOW, THEREFORE, I, John C. Dorman, Mayor of the Town of Snow Hill, do hereby proclaim October, 2014 as Breast Cancer Awareness Month in Snow Hill and urge all citizens to educate themselves on the facts about early detection of breast cancer.

Proclaimed this 14th day of October, 2014.

John C. Dorman, Mayor

TOWN OF SNOW HILL, MARYLAND

Life on the River

TOWN MEETING

SEPTEMBER 9, 2014

A Regular Meeting of the Mayor and Town Council of Snow Hill, Maryland was held at the Train Station at 200 Belt Street on Tuesday, September 9, 2014 with Mayor John C. Dorman presiding and was called to order at 7:00pm.

PUBLIC OFFICIALS PRESENT

Mayor John C. Dorman; Councilwoman Alison Cook; and Councilman Michael Pruitt.

STAFF IN ATTENDANCE

Town Manager Kelly Brewington; Asst. to the Town Manager Trish Greene; Town Planner Karen Houtman; Public Works Director Bob Donnelly; Executive Director of the Julia A. Purnell Museum Cynthia Byrd; EMS Supervisor John Holloway; Police Chief Kirk Daugherty.

SALUTE TO THE FLAG / LORD'S PRAYER

The Pledge of Allegiance and the Lord's Prayer were recited.

OPENING COMMENTS

Mayor Dorman reported that the Councilwoman Hall was not in attendance due to recuperating from surgery.

Copies of the latest edition of the River Current newsletter were available at the meeting, as well as at Town Hall and various locations throughout Town.

MEETING MINUTES

A motion was given to adopt the August 2014 Town Meeting minutes by Councilman Pruitt and was seconded by Councilwoman Cook. A roll call vote was taken and the motion was carried.

FINANCIAL REPORT

A motion was given to approve the August 2014 Financial Report by Councilwoman Cook and seconded by Councilman Pruitt. A roll call vote was taken and the motion was carried.

TOWN MANAGER REPORT

Councilman Pruitt questioned if the fall festival scheduled for October 4th would interfere with the Celtic Festival at Furnace Town. Kelly responded that there were no issues and both agencies were jointly advertising for the events.

ECONOMIC DEVELOPMENT REPORT

Resident Edward Lee asked if the new staff person could attend the meetings in order to interact with the community. Mayor Dorman advised that Mr. Pishtey would be requested to attend future meetings.

PUBLIC WORKS REPORT

Bob reported that foundation issues were fixed at the former Opera House building. The internal skeleton should be completed in approximately 2-3 weeks.

Bob thanked resident Stanley Cylc for providing feed for the goats.

A large section of Church Street is dug up due to a sewer collapse. Repairs are in progress. Additionally, there is a sewer collapse on Bay Street that will need to be addressed.

Councilman Pruitt asked if the old Firehouse has become costly to maintain and questioned if Council shouldn't look to reduce the amount of properties owned by the Town or fix them correctly. Kelly commented that the old Firehouse is the only Town-owned property that is large enough for community events. Mayor Dorman added that Public Works stores their equipment there at different times throughout the year.

WWTP REPORT

Bob reported that staff continues to work on warranty repair items – progress is slow.

Market Street sewer slip lining project will be ready for bid in October, as will the Martin Street project. Timmons Street sewer line project will begin shortly thereafter.

Mayor Dorman asked if a decision had been made regarding the gravity sewer at Matt Odachowski's property on W. Market Street. Bob advised this could be done but an 8" pipe will need to be installed. The Town Planner emailed the report from Davis, Bowen & Friedel to Mr. Odachowski.

PLANNING & ZONING REPORT

No questions or comments.

MUSEUM REPORT

Cindy reported that the number of visitors YTD compared to last year has increased by 57%. She feels this is due to a growing online presence through the website and social media, as well as networking through the schools with parents, children and teachers.

Staff is looking for activities to implement during the off-season.

A grant application has been submitted for a special exhibit of the history of the Museum as it pertains to Mr. Purnell.

Resident Edward Lee mentioned that the oral history project has taken a back seat. Cindy responded that she would like to schedule a meeting with Mr. Lee to share her ideas. Mr. Lee also requested consideration of how the people with a history in Town can be memorialized. He feels this project should involve the Economic Development Coordinator.

FIRE / EMS REPORT

John reported that Chief Heiser had to work and could not attend tonight's meeting.

John advised that the new truck is in transit and should arrive within the next few weeks.

POLICE REPORT

Chief Daugherty reported that YTD 2013 there were 31 arrests, compared to YTD 2014 showing 49 arrests by Snow Hill Police officers. He commended his officers for doing a great job.

Councilwoman Cook inquired about the car thefts. Chief Daugherty reported that there has only been one approximately a week ago.

Mayor Dorman announced that the SHPD officers now have body cameras that are on their person. Chief Daugherty advised that the cameras are only activated for vehicle stops and felony investigations. They are prohibited to be on all the time. Edward Lee asked if a citizen could request that it be on during an incident and Chief Daugherty advised that it could.

OLD BUSINESS

Mayor Dorman announced that Bike Week starts September 11th in Ocean City. There will be approximately 3000 bikes in Snow Hill beginning the 11th and over the weekend. They will stop at Harvest Moon to have their event passport stamped.

NEW BUSINESS

1. A request was made to deem the structure at 110 Stevens Street as unsafe. The Mayor and Council each viewed the property. Councilman Pruitt gave a motion to deem the property unsafe, which was seconded by Councilwoman Cook. A roll call vote was taken and the motion was carried.
2. A request was made to deem the structure at 407 Covington Street as unsafe. The Mayor and Council each viewed the property. Councilwoman Cook gave a motion to deem the property unsafe, which was seconded by Councilman Pruitt. A roll call vote was taken and the motion was carried.
3. A budget amendment was presented to the Mayor and Council requesting general fund surplus monies be moved to the sewer account for a sewer main replacement on Church Street. The amount is \$53,174. Councilman Pruitt gave a motion to approve the budget amendment, seconded by Councilwoman Cook. A roll call vote was taken and the motion was carried.
4. Resident Judy Menavich asked who maintains the exterior of the Museum, as it is looking like it needs some maintenance. Kelly advised that the Town is responsible and has applied for grant funding for assistance with the exterior painting. Councilman Pruitt asked if the "Friends of the Museum" had funding for this type of project; however, Cindy advised that the group is small with little to no funds and personally painted the building in the 80's.

5. Councilman Pruitt reported that he represented Mayor Dorman at the 100th birthday celebration for Catherine Abbott held at the Snow Hill Nursing Home on Sunday. A Proclamation was presented to Mrs. Abbott at a party held by her close friends and family.
6. Trish Greene, Asst. to the Town Manager reported that the 2nd annual Fun Walk has been scheduled for October 1st in Byrd Park. Registration can be done early or on site at 4:30pm, with the walk beginning at 5pm. Rain date is the 2nd. The first 50 people will receive a T-shirt and we encourage everyone to wear pink or purple in honor of Breast Cancer Awareness Month and Domestic Violence Awareness Month.
7. John Holloway reminded everyone that Seagull Century will be in Town on September 27th.

ADJOURNMENT

With no further discussion, Mayor Dorman adjourned the meeting at 7:44pm.

Respectfully submitted: Trish Greene, Asst. to Town Manager

TOWN OF SNOW HILL, MARYLAND

Life on the River

WORK SESSION

SEPTEMBER 16, 2014

On Tuesday, September 16, 2014 the Mayor and Town Council convened in a work session at 4:30pm in the meeting room of the old Firehouse on W. Green Street.

PUBLIC OFFICIALS PRESENT

Mayor John C. Dorman; Councilwoman Alison Cook; and Councilman Michael Pruitt.

STAFF IN ATTENDANCE

Town Manager Kelly Brewington; Asst. to the Town Manager Trish Greene

DEVELOPER PROPOSAL

Tom Ayd of Green Street Housing presented his plans for a 42 unit mixed-income housing project to be located at 216 Belt Street in Snow Hill. Mr. Ayd stated this would be a low-income tax credit development through USDA. Housing would not be subsidized, but would have income restriction.

The development would include a 2500 sq. ft. community building and playground. Units would be 2 bedrooms, 2 baths or 3 bedrooms, 2 baths, each having a washer and dryer included. The development would be stacked flat style homes, resembling a townhouse, with open floor plans.

Mr. Ayd stated that 5 units will be at market rate and 7 units will be at 30% for disabled residents. The average rent for disabled residents will be \$375 for a 2 bedroom unit and \$420 for a 3 bedroom unit. Standard 2 bedroom rent would range from \$850-\$1000.

Tax credits would be approximately \$700,000 annually with \$7 million equity to table tax credit. Total cost for construction will be \$6 million. The property was bought for \$300,000.

Similar projects can be seen in Dover, Smyrna, Laurel, Grasonville, Princess Anne and Seaford. This project would take approximately 9 months before breaking ground and then a 9 month construction time.

Mayor Dorman expressed concern that Snow Hill currently has a lot of low income housing and he does not want to be known for that. He wants more medium income, affordable housing opportunities for residents.

Councilwoman Cook feels that adding additional low income housing in Town will take away from the vision for Snow Hill, as defined in the Comprehensive Plan and the Strategic Revitalization Plan.

Councilman Pruitt stated that while he wants to ensure that every resident has a warm place to live, he wants to make sure that we don't have vacant rental opportunities that need to be filled prior to creating additional living opportunities.

Resident Edward Lee commented that this could be a first step to decent, affordable housing, as well as provide some additional tax base. He suggested that the developer work with the elected officials on the project to have a voice on the colors, façade, etc.

Councilwoman Cook commented that the developer can proceed with this project without the consent of the Mayor and Council. However, the Town has the opportunity to submit a letter to USDA within 45 days voicing opposition, should they desire.

Kelly Brewington, Town Manager requested a copy of the application submitted by the developer and a copy of the market study that was done showing a need for this type of housing in Snow Hill.

This meeting was for Council's information only, with no legislative action taken or consensus reached.

SNOW HILL LIBRARY FUNDING

Edward Lee requested an update on the status of the funding for the library through the Riley Will. Kelly advised that the Town Attorney has mailed a letter to the library attorney stating that the library can either follow the guidelines currently established by the Mayor and Town Council regarding purchases or the Town shall adopt a new Ordinance that establishes a new committee apart from the library to make the financial decisions. The final option was to allow the church to request the funding. The Town is waiting on a response.

ADJOURNMENT

With no further discussion, Mayor Dorman adjourned the meeting at 5:30pm.

Respectfully submitted: Trish Greene, Asst. to Town Manager

TOWN OF SNOW HILL, MARYLAND

Life on the River

WORK SESSION

SEPTEMBER 30, 2014

On Tuesday, September 30, 2014 the Mayor and Town Council convened in a work session at 4:30pm in the meeting room of the old Firehouse on W. Green Street.

PUBLIC OFFICIALS PRESENT

Mayor John C. Dorman; Councilwoman Alison Cook; and Councilman Michael Pruitt.

STAFF IN ATTENDANCE

Town Manager Kelly Brewington; Asst. to the Town Manager Trish Greene

HAZARD MITIGATION PLAN

The County Commissioners will be meeting to discuss the adoption of their Hazard Mitigation Plan on October 7, 2014. Mayor Dorman feels it will be good for him and the Council to attend this meeting to ask any questions they may have. The Town will be adopting the County's Plan at the Town Meeting on October 14, 2014.

SCENIC TRAIN

The representatives for the Scenic Railway will meet with the County Commissioners on October 21, 2014 at 11am. They will report the findings of the feasibility study in regards to bringing the scenic train to Snow Hill.

BOARD OF ZONING APPEALS

There is a vacant position on the Board of Zoning Appeals Committee. Mayor Dorman asked the Council for recommendations for appointment. Kelly Brewington commented that Karen Houtman, Town Planner has suggested Greg Waters. Councilman Pruitt will contact Mr. Waters to discuss and report back.

EVENTS

The Fun Walk for Awareness will be held on Wednesday, October 1, 2014. Registration is at 4:30pm, followed by a self-defense exhibition and the 1.1 mile around Byrd Park. Free t-shirts will be given to the first 50 registrants.

First Friday will be held on Friday, October 3, 2014 from 5-8pm. Voting for the Snow Hill Scarecrow Stroll will begin. Scarecrows will be on display downtown.

The Fall Festival will be held on Saturday, October 4, 2014 from 12pm-4pm downtown. A children's scarecrow parade will be held and voting for the Scarecrow Stroll entries will continue.

Councilwoman Cook volunteered to judge the children's parade for best scarecrow costume.

Councilman Pruitt volunteered as back-up judge.

TRASH CONTAINERS

Kelly Brewington announced that the Mayor has decided against purchasing the pink trash containers. The color will be either green or brown.

DEVELOPER PROPOSAL

Councilwoman Cook followed up on the last work session, asking if the developer had provided the requested documents. Kelly responded that she has not received anything. The State should be mailing the letter this week that notifies the Town of their 45 days to submit an opposition letter regarding his planned development.

JULIA A PURNELL MUSEUM

Kelly reported that the lowest estimate obtained to paint the exterior of the Museum is \$12,900. A grant has been received for \$6000 and the Façade Improvement Grant will cover \$3500. Virgil Shockley was contacted, requesting that the County fund the remaining balance of \$3400, but he declined. Council gave approval to pay the remaining balance and go forward with the project.

ADJOURNMENT

A motion was given by Councilman Pruitt, seconded by Councilwoman Cook to adjourn to Executive Closed Session at 4:56pm to discuss personnel matters. A roll call vote was taken and the motion was carried.

Closed Session Summary: Following a motion by Councilman Pruitt, seconded by Councilwoman Cook, the Council voted to meet in closed session at 4:46pm at the Firehouse meeting room to discuss personnel matters permitted under the provision of Section 10-508(a)(1) of the State Government Article of the Annotated Code of Maryland. Also present at the closed session were: John C. Dorman, Mayor; Kelly Brewington, Town Manager and Trish Greene, Asst. to Town Manager. Topics discussed and actions taken included: three separate personnel matters. No action was taken at this time. After the closed session, the Mayor and Council reconvened in open session at 5:28pm.

With no further discussion, Mayor Dorman adjourned the meeting at 5:28pm.

Respectfully submitted: Trish Greene, Asst. to Town Manager

TOWN OF SNOW HILL, MARYLAND

Life on the River

WORK SESSION

OCTOBER 7, 2014

On Tuesday, October 7, 2014 the Mayor and Town Council convened in a work session at 4:35pm in the meeting room of the old Firehouse on W. Green Street.

PUBLIC OFFICIALS PRESENT

Mayor John C. Dorman; Councilwoman Alison Cook; Councilwoman Jenny Hall; and Councilman Michael Pruitt.

STAFF IN ATTENDANCE

Town Manager Kelly Brewington; Asst. to the Town Manager Trish Greene

UNSAFE HOUSES

The property owners of 110 Stevens Street and 407 Covington Street were notified that the Mayor and Town Council deemed their properties as unsafe at the Town Meeting on Tuesday, September 9, 2014. No representatives were present to appeal this decision.

MUNICIPAL PARKING LOT

Mayor Dorman reported that the municipal lot behind the post office has begun to look like a "used car lot", with citizens parking their personal vehicles and boats in the parking spaces. Mayor Dorman consulted with the Council about sending the owners letters requesting they remove their property. Councilman Pruitt volunteered to contact the owners (Gary Weber, The River House Inn, and Barry Laws) personally to request removal prior to formal letters being issued.

CURB CUTS

Mayor Dorman reported that both Gary Weber and the former owners of The River House Inn, Larry and Susanne Knudsen removed the curb cuts in the municipal lot adjacent to their properties to create driveways. Kelly Brewington advised that a call has been placed to the Town Attorney about a legal agreement that prevents the owners from obtaining a right-of-way. Mayor Dorman also requested that the Town Planner check on the deeds to the properties to ensure they have no right to the curb cut area.

EMPLOYEE HANDBOOK

Mayor Dorman reminded the Council to review the draft changes to the Employee Handbook. Several changes have been made to address issues, as well as add the Fire Department EMS staff. Council will continue to review and submit their recommendations and comments.

COUNTY COMMISSIONER MEETING

Mayor Dorman reported that he attended the Commissioners meeting today. They passed the Hazard Mitigation Plan, excluding Berlin and Snow Hill until they adopt the County's plan. The Town will be presenting a Resolution for adoption at the Town Meeting on October 14, 2014.

The Commissioners passed a new refuge permit fee of \$100 for two stickers, each additional would cost \$100, to use the landfill. This fee will start on January 1, 2015. They also discussed a PAY-T program where you pay as you go, per bag.

TRI-COUNTY COUNCIL

The Tri-County Council is looking for elected officials to represent their area on the Council. Councilman Pruitt currently serves and volunteered to serve another term.

ELECTIONS

Mayor Dorman advised that some municipalities are adding provisions regarding not holding an election to their Charters. Currently, if a candidate is running unopposed we do not hold an election. This addition to the Code would make it legally binding.

Councilwoman Cook asked if the deadline for filing for candidacy could be changed, as if a person feels they are running unopposed and a candidate files on the last day it does not give the person much time to order campaign materials.

BOARD OF ZONING APPEALS

Councilman Pruitt reported the Greg Waters agreed to serve on the Board of Zoning Appeals committee. A letter will be sent to welcome him.

SCENIC RAILROAD

Mayor Dorman reported that the County Commissioners will meet on October 21, 2014 at 11am with the representatives from the railroad to discuss the feasibility study. However, no decisions will be made until after the County election. Kelly suggested clarifying if they still intend to meet.

241 S. WASHINGTON STREET

Kelly received an e-mail from Wells Fargo offering the house on 241 S. Washington Street to Town at no cost and providing \$10,000 toward repairs needed. The estimated cost of repairs would be \$33,000. The Mayor and Council discussed options, including accepting the property and demolishing it in order to sell the property for profit. Kelly will contact the agent and ask if the \$10,000 can be used toward demolition. She will also obtain a quote from Richard Lynch on demolition.

DEVELOPER PROPOSAL

Kelly contacted Tom Ayd in regards to the Market Study and application that he submitted for the review. After reviewing the report from DHCD, it shows a different proposal than what he discussed with the Mayor and Council at the work session. He advised the Council the development would be based on 60% of median income, with 5 units at market value and 7 at 30% for disabled residents.

The application shows a breakdown of percentages from 60% in different levels, all the way to 30%. This would be considered subsidized housing, which Mr. Ayd assured the Council he was not building. Kelly has sent him an e-mail requesting more information.

ASSATEAGUE COASTAL TRUST

Kelly advised that the Mayor and Town Council have received a press release regarding a "Talking Trash" forum being held on Wednesday, October 15, 2014. This workshop will hold discussions on changing the way solid waste is handled. Mayor Dorman commented that Worcester County Public Works does not plan to attend.

OCEAN CITY TODAY

Mayor Dorman advised that a reporter with Ocean City Today newspaper is now living in the former Petroski property. He hopes that this may provide Snow Hill with more media coverage.

ADJOURNMENT

With no further discussion, Mayor Dorman adjourned the meeting at 5:14pm.

Respectfully submitted: Trish Greene, Asst. to Town Manager



Appendix F

NFIP Compliance

APPENDIX F

Worcester County NFIP Compliance

Participation in the NFIP is based on a voluntary agreement between the County and its community and FEMA; however, complying with the NFIP extends beyond participation. Three components are utilized for complying with the NFIP and include: 1) floodplain identification and mapping risk, 2) responsible floodplain management and 3) flood insurance.

As requested by the Federal Emergency Management Agency (FEMA), additional information regarding Worcester County's strategy for complying with the National Flood Insurance Program (NFIP) has been provided by Worcester County Development Review and Permitting.

Floodplain Identification and Mapping:

1. Do you maintain publicly accessible copy of effective FIRM (flood insurance rate map) maps and FIS (flood insurance study)? Where? How may the public view these? Have you adopted the most current DFIRM or FIRM and FIS; and support of local requests for map updates? *Yes. Maintained in Development Review & Permitting Office. FIRM's and FIS are available upon request.*
2. Have you shared with FEMA any new technical or scientific data that could result in map revisions within 6 months of creation or identification of new data? *No*
3. Do you assist with floodplain determinations? *Yes, determinations from flood maps*
4. Do you maintain a record of approved Letters of Map Change? *Yes.*

Floodplain Management:

1. Does the current adopted floodplain management ordinance regulate the following:
 - a) Issues permits for all proposed development within SFHA? *Yes. Permit applications, plans are reviewed for compliance and construction is inspected in SFHA*
 - b) Obtain, review, and utilize any Base Flood Elevation and floodway data, and require BFE data for all subdivision proposals and other development proposals larger than 50 lots or 5 acres? *Yes. Required on all subdivisions*
 - c) Identify measures to keep all new and substantially improved construction reasonably safe from flooding to or above Base Flood Elevation, including anchoring, using flood resistant materials, designing and locating utilities and service facilities to prevent water damage?

Yes. All included as listed

- d) Document and maintain records of elevation data that document lowest floor elevation for new or substantially improved structures? *Yes. Required for all new and substantially improved structures in SFHA Zones A&Z*
2. Does your office enforce the local ordinance by monitoring compliance and taking remedial action to correct violations? *Yes*
3. Does the County go beyond the minimum requirements? Such as: freeboard; prohibition of production or storage of chemicals in SFHA; prohibition of certain types of structures such as: hospitals, nursing homes, jails; prohibition of certain types of residential housing such as manufactured homes, and finally floodplain ordinances that prohibit any new residential or non-residential structures in the SFHA? *No. No special provisions beyond minimum requirements currently adopted*

Flood Insurance:

1. Do you and by what means-Educate community members about the availability and value of flood insurance? *Yes. As requested by individuals.*
2. Do/Will you and by what means-Inform community property owners about changes to the DFIRM/FIRM that would impact their insurance rates? *Yes. County will participate in Community Outreach when State issues preliminary maps. Staff has informed Commissioners of forthcoming requirements. Will likely add outreach/information sessions as required by Commissioners.*
3. Do you and by what means-Provide general assistance to community members relating to insurance issues? *Can advise of availability and community participation requirements*



Appendix G

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