1875 - CID510103_Newport News_CFPF-2_Stoney Run Flood Reduction Improvements

Application Details

Funding Opportunity:	1448-Virginia Community Flood Preparedness Fund - Study Grants - CY23 Round 4
Funding Opportunity Due Date:	Nov 12, 2023 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Nov 9, 2023 11:40 AM
Initially Submitted By:	Doug Fritz
Last Submit Date:	
Last Submitted By:	

Contact Information

Primary Contact Information

Active User*:	Yes
Type:	External User
Name*:	Ms. (Salutation) Kathie (First Name) Middle Name Angle (Last Name)
Title:	PE CFM, City of Newport News
Email*:	anglekk@nnva.gov
Address*:	2400 Washington Avenue Department of Engineering , 7th Floor Newport News (City) Virginia (State/Province) 23607 (Postal Code/Zip)
Phone*:	(757) 926-8655 Ext. Phone ###-###-####
Fax:	###-###-####
Comments:	

Organization Information

Status*:	Approved
Name*:	Newport News, City of
Organization Type*:	Local Government
Tax ID*:	546022059

Unique Entity Identifier (UEI)*: qr2ga81mjnf3

Organization Website: https://www.nnva.gov/

Address*: 2400 Washington Avenue

Department of Engineering , 7th Floor

Newport News (City) Virginia (State/Province) 23607- (Postal Code/Zip)

Phone*: (757) 926-8655 Ext.
###-###-####

Fax: ###-###-####

Benefactor:

Vendor ID:

Comments:

VCFPF Applicant Information

Project Description

Name of Local Government*: City of Newport News

Your locality's CID number can be found at the following link: Community Status Book Report

NFIP/DCR Community Identification Number (CID)*: 510103

If a state or federally recognized Indian tribe,

Name of Tribe:

Authorized Individual*: Kathie (First Name) Angle (Last Name)

Mailing Address*: 2400 Washington Avenue
Address Line 1

Address Line 2

Newport News (City) Virginia (State) 23607 (Zip Code)

Telephone Number*: 757-926-8655

Cell Phone Number*: 757-274-7164

Email*: anglekk@nnva.gov

Is the contact person different than the authorized individual?

Contact Person*: No

Enter a description of the project for which you are applying to this funding opportunity

Project Description*:

The Stoney Run watershed floods frequently. In 2022, the City completed a detailed engineering study identifying multiple potential improvement projects to reduce flooding. Downstream impacts must be evaluated to advance these projects. This project will provide surveying, modeling, FEMA MT-2 application processing, environmental permitting, geotechnical testing, and design engineering to develop plans and documents for the required improvements which the City will then advertise for bids.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

Benefit a low-income geographic area*: Yes

Information regarding your census block(s) can be found at census.gov

Census Block(s) Where Project will Occur*: 32007.1, 32113.1, 32113.2, 32123.1, 32123.3, 32124.1, 32124.2, 32131.1, 32131.2, 32131.3, 32131.4, 3

Is Project Located in an NFIP Participating Community?*: Yes

Is Project Located in a Special Flood Hazard Area?*: Yes

Flood Zone(s) (if applicable): A, AE, Regulatory Floodway AE

Flood Insurance Rate Map Number(s) (if applicable): FIRMs: 5101030041D, 5101030042D, 5101030044D, 5101030043D, 5101030039D, 51199C0120D

Eligibility - Round 4

Eligibility

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?

Local Government*: Yes

Yes - Eligible for consideration
No - Not eligible for consideration

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

Letters of Support*: N/A

Yes - Eligible for consideration
No - Not eligible for consideration

Has this or any portion of this project been included in any application or program previously funded by the Department?

Previously Funded*: No

Yes - Not eligible for consideration
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

Evidence of Match Funds*: Yes

Yes - Eligible for consideration
No - Not eligible for consideration
N/A - Match not required

Scope of Work - Studies - Round 4

Scope of Work

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

Scope of Work*: CID510103-2_Newport News_Stoney Run_Scope of Work.pdf

Comments:

CID#50103-2_Newport News Stoney Run Scope of Work

Budget Narrative

Budget Narrative Attachment*: CID510103-2_Newport News_Stoney Run Grant Budget.pdf

Comments:

CID510103-2_Newport News Stoney Run Flood Improvements CFPF Grant Application Budget

Scoring Criteria for Studies - Round 4

Scoring

Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

Revising Floodplain Ordinances*: No
Select

Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.

Mapping Platform*: Yes
Select

Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).

Hydrologic and Hydraulic Studies*: Yes
Select

Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:
Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.

Updating Precipitation Data and IDF Information*: No
Select

Regional relative sea level rise projections for use in determining future impacts.

Projections*: No
Select

Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.

Vulnerability Analysis*: Yes
Select

Flash flood studies and modeling in riverine regions of the state.

Flash Flood Studies*: Yes
Select

Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.

Stream Gauge Monitoring*: No
Select

New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.

Delineations of Areas of Recurrent Flooding*: Yes
Select

Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.

Regional Flood Studies*: No
Select

Regional Hydrologic and Hydraulic Studies of Floodplains

Regional Hydrologic and Hydraulic Studies of Floodplains*: No
Select

Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.

Potential Land Use Strategies*: No
Select

Other proposals that will significantly improve protection from flooding on a statewide or regional basis.

Other Proposals*: No
Select

Is the project area socially vulnerable? (based on ADAPT Virginia?s Social Vulnerability Index Score)
Social Vulnerability Scoring:
Very High Social Vulnerability (More than 1.5)
High Social Vulnerability (1.0 to 1.5)
Moderate Social Vulnerability (0.0 to 1.0)

Low Social Vulnerability (-1.0 to 0.0)
Very Low Social Vulnerability (Less than -1.0)

Socially Vulnerable*: Very High Social Vulnerability (More than 1.5)

Is the proposed project part of an effort to join or remedy the community?s probation or suspension from the NFIP?

NFIP*: Yes

Is the proposed project in a low-income geographic area as defined below?
"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Low-Income Geographic Area*: Yes

Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs.
Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?

Reduction of Nutrient and Sediment Pollution*: Yes

Comments:

Study will identifiy future projects that will lead to nutrient and sediment reductions.

Scope of Work Supporting Information - Studies

Scope of Work Supporting Information

Is the proposed study a new study or updates on a prior study?

New or Updated Study*: New Study

Describe the relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual

Relationship of Study to Priorities Contained in this Manual*:

As described throughout this grant application, based on detailed engineering studies the City has already completed, flooding relief for residents in the Stoney Run watershed cannot be provided until:
- Downstream flood impacts from the proposed flood reduction projects are modeled, and appropriate design adjustments are made to protect downstream structures, properties, roadways, and the CSX railroad corridor.
- Topographic and boundary surveying is completed and incorporated into the modeling, permitting, and full construction design plans, and easement acquisition plats are prepared for all 6 projects identified, any required downstream improvements, and basin retrofits.
- A Joint Permit Application (JPA) is submitted and approved for the improvement projects.
- A FEMA Conditional Letter of Map Revision is submitted and approved.
- Easements are acquired.
- Geotechnical analyses and underground utility locations (test pits) are prepared and located.
- Design plans, specifications, and supporting documents are prepared and approved
- Schedule.

This grant application will significantly enhance the chances of timely and successful project implementation.

Newport News has been working since the 1990s to solve flooding problems in the Stoney Run watershed. Since then, multiple significant flooding events have occurred with much of the urban flooding occuring in residential areas outside of a floodzone. Stoney Run contains areas with high social vulnerability, reflected in the low percentage of flood insurance policies (less than two percent of all parcels). The City's ability to obtain or otherwise earmark construction funding for these projects will determine the implementation schedule.

The need for these projects is documented in the 2022 Hampton Roads Hazard Mitigation Plan (Newport News Mitigation Actions 4 and 16), in multiple engineering reports prepared by and for the Newport News Department of Engineering (most recently the 2022 Stoney Run Drainage Improvements study), and the City's 2023 Interim Resilience Plan.

The flood reduction projects will incorporate green infrastructure design practices where feasible and appropriate and wherever adjustments to

existing impoundments, such as the 3 existing basins and numerous large grassed channels, are designed. The projects will reduce flood impacts for the 100-year design event and remove at least 236 structures - many of which are multi-family apartments - from the SFHA.

Describe the qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

Qualifications of Individuals Conducting Study*:

The City will utilize an engineering firm contracted to provide stormwater category services through the City's 2022 Professional Services - General Civil Engineering Design and Construction Management Request for Proposal solicitation. The selected firm will employ knowledgeable and capable registered professional engineers, modelers, hydrologists, planners, and GIS analysts. In addition to professional engineering credentials, technical personnel will also hold specialty certifications in floodplain management, erosion and sediment control, stormwater management, stream restoration (Rosgen), green infrastructure, and water resources engineering. The selected consulting firm will specialize in all aspects of stormwater management including modeling and design of flood control improvements and FEMA CLOMR and LOMR processes. The selected firm will have a history of working with the City and will have previously completed a similar studies for local, state, and federal organizations.

Describe the expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach

Expected use of Study Results*:

The City's Interim Local Resiliency Plan is comprised of a series of inter-related resources, plan documents, and implementation tools. This project/study aligns with the Interim Local Resiliency Plan as it implements Mitigation Action 16 of the 2022 Hampton Roads Hazard Mitigation Plan. Under Mitigation Action 16, the City will analyze and improve drainage/stormwater system along Stoney Run. In addressing the Mitigation Action, the City will address the hazards of flooding, sea level rise, and tropical/coastal storms to provide a moderate impact on socially vulverable popuultations.

If applicable, describe how the study may improve Virginia's flood protection and prevention abilities in a statewide context (type N/A if not applicable)

Statewide Improvements*:

N/A

Provide a list of repetitive and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive and/or severe repetitive loss structures within the project area

Repetitive Loss and/or Severe Repetitive Loss Properties*: CID510103-2_Newport News_Stoney Run_Loss ListRLSRL.pdf

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of these structures in the project area

Residential and/or Commercial Structures*:

The Stoney Run watershed is home to 9,379 residential buildings and 423 commercial buildings. There are two historically valued sites within the watershed, as well as a community center, 3 parks, and lands designated for tourism. The social vulnerability index within the watershed ranges from moderate to very high, with apartments in this watershed providing low-income hosing options. Portions of this watershed have been identified in Newport News' opportunity and enterprise zones, describing locations targeted for economic development. Even so, as of 2018, 21.5% of the homes within those opportunity zone experience poverty, the highest out of all opportunity zones within the City.

If there are critical facilities/infrastructure within the project area, describe each facility

Critical Facilities/Infrastructure*:

Critical structures/infrastructure within this watershed include:
- 1 hospital, 17 houses of worship, 7 schools, 1 fire station, 1 police station, and 1 library
- 4 nursing homes, 10 large rehabilitation clinics, 1 emergency shelter, and 1 telecommunications facility
- 10 flood storage basins and 51 water treatment facilities and pump stations
- CSXT railroad corridors (industrial and passenger transportation)
- Major urban arterial roadway (ADT 33k as of 2021) and Interstate highway (I-64, ADT 103k as of 2021)

Budget

Budget Summary

Grant Matching Requirement*: LOW INCOME - Flood Prevention and Protection Studies - Fund 90%/Match 10%

I certify that my project is in a low-income geographic area:	Yes
Total Project Amount*:	$4,747,000.00
REQUIRED Match Percentage Amount:	$474,700.00

BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

Match Percentage:	10.00% Verify that your match percentage matches your required match percentage amount above.
Total Requested Fund Amount:	$4,272,300.00
Total Match Amount:	$474,700.00
TOTAL:	$4,747,000.00

Personnel

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Travel

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Equipment

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Supplies

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Construction

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Contracts

Description	Requested Fund Amount	Match Amount	Match Source
Contracted Professional Engineer Modeling, Surveying, Permitting, Geotech Engineering, and Designs	$4,272,300.00	$474,700.00	Local Stormwater Utility Fee
	$4,272,300.00	**$474,700.00**	

Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Supporting Documentation

Supporting Documentation

Named Attachment	Required	Description	File Name	Type	Size	Upload Date
Detailed map of the project area(s) (Projects/Studies)		CID#510103-2 Newport News Stoney Run Watershed Location Map	CID510103-2_Newport News_Stoney Run Watershed_Location Map.pdf	pdf	3 MB	11/01/2023 07:41 AM
FIRMette of the project area(s) (Projects/Studies)		CID#510103-2_Newport News Stoney Run CFPF FIRMettes	CID510103-2_Newport News_StoneyRunCFPF_FIRMettes.pdf	pdf	532 KB	11/06/2023 09:39 AM
Historic flood damage data and/or images (Projects/Studies)		CID#510103-2_Newport News_Stoney Run Flood Photos	CID510103-2_Newport News_Stoney Run Flood Photos.pdf	pdf	6 MB	11/01/2023 11:57 AM
A link to or a copy of the current floodplain ordinance		CID#510103-2 City of Newport News Floodplain Ordinance	CID510103-2_Newport News_Floodplain Ordinance.pdf	pdf	463 KB	10/09/2023 03:03 PM
Maintenance and management plan for project						
A link to or a copy of the current hazard mitigation plan		CID#4510103 Newport NEws Hampton Roads REgional Hazard Mitigation Plan	CID510103-2_Newport News_Current Hazard Plan_Hampton Roads Hazard Mitigation Plan 2022 FINAL.pdf	pdf	102 MB	10/09/2023 03:14 PM
A link to or a copy of the current comprehensive plan		CID#510103-2 Newport News Comprehensive Plan	CID510103-2_Newport News_Comprehensive Plan.pdf	pdf	70 MB	10/09/2023 03:16 PM
Social vulnerability index score(s) for the project area		CID#510103-2_Newport News Stoney Run Social Vulnerability	CID510103-2_Newport News_Social Vulnerability Final.pdf	pdf	635 KB	11/06/2023 09:43 AM
Authorization to request funding from the Fund from governing body or chief executive of the local government		CID#510103-2_Newport News_Stoney Run CFPF Authorization to Apply for Funding	CID510103-2_Newport News_Stoney Run_CFPF Authorization to Apply.pdf	pdf	202 KB	11/09/2023 11:27 AM
Signed pledge agreement from each contributing organization		CID#510103-2_Newport News Stoney Run Drainage Improvements Budget Sheet demonstrating City local match to CFPF grant.	CID510103-2_Stoney Run Drainage Improvements Budget Sheet.pdf	pdf	43 KB	11/07/2023 01:13 PM
Maintenance Plan						
Benefit-cost analysis must be submitted with project applications over $2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.						
Benefit Cost Analysis						
Other Relevant Attachments		CID#510103-2_Newport News_Stoney Run Relevant Attachments 1. Gantt Chart with Schedule 2. Local Resilience Plan	CID510103-2_Newport News_Stoney Run_Relevant Attachments.pdf	pdf	2 MB	11/06/2023 09:54 AM

Letters of Support

Description	File Name	Type	Size	Upload Date
No files attached.				

DIVISION 2. - FLOODPLAIN DEVELOPMENT REGULATIONS

Sec. 45-3110. - Purpose and authority.

This division is adopted pursuant to authority granted by Virginia Code § 15.2-2280 and Virginia Code §10.1-600, et seq. The purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

(1) Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies.

(2) Restricting or prohibiting certain uses, activities, and development from locating within district subject to flooding.

(3) Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or floodproofed against flooding and flood damage.

(4) Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3111. - General provisions.

(a) *Applicability:* These provisions shall apply to all privately and publicly owned lands within the jurisdiction of Newport News and identified as areas of special flood hazard according to the flood insurance rate map that is provided to the City of Newport News by FEMA, as set forth in section 45-3114(a)(1) below.

(b) *Compliance and liability:* No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this chapter and other applicable ordinances and regulations which apply to uses within the jurisdiction of this chapter.

(1) The degree of flood protection sought by the provisions of this chapter is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This chapter does not imply that districts outside the floodplain district or that land uses permitted within such district will be free from flooding or flood damages.

(2) This section shall not create liability on the part of the City of Newport News or any officer or employee thereof for any flood damages that result from reliance on this section or any administrative decision lawfully made thereunder.

(c) *Records:* Records of actions associated with administering this section shall be kept on file and maintained by the floodplain administrator.

(d) *Abrogation and greater restrictions:* This division supersedes any ordinance currently in effect in flood-prone districts.

(e) *Severability:* If any section, subsection, paragraph, sentence, clause, or phrase of this division shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this division. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this division are hereby declared to be severable.

(f) *Penalty for violations:* Any person who fails to comply with any of the requirements or provisions of the division of this article shall be guilty of a misdemeanor and subject to the penalties therefore.

(1) Chapter 13 Building Regulations of the Newport News City Code section 13-23 Adopted; general construction standards adopts the Virginia Uniform Statewide Building Code (VA USBC). Section 13-2 addresses the general penalty for violations of chapter 13. Violations and associated penalties of chapter 45, Zoning Ordinance, of Newport News City Code are addressed in article 35, Administration, Enforcement, Violation Penalty and Remedy. Any violations of chapter 13 and chapter 45 may be enforced according to said sections and may be brought in addition to the violations of division 2, article XXXI of chapter 45.

(2) In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliance within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the City of Newport News to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.

(Ord. No. 7123-14, § 1)

Sec. 45-3112. - Definitions.

(a) *Administrator:* the federal insurance administrator responsible for the administration of the National Flood Insurance Program (34 F.R. 2600-81, February 27, 1969).

(b) *Appurtenant or accessory structure:* Accessory structures not to exceed 200 sq. ft.

(c)

Base flood/one-hundred-year flood: A flood having a one percent chance of occurring each year being equaled or exceeded in any given year.

(d) *Base flood elevation:* The water surface elevation at which the Federal Emergency Management Agency (FEMA) designated one (1) percent annual chance water surface elevation. The water surface elevation of the base flood in relation to the datum specified on the community's Flood Insurance Rate Map. For the purposes of this division, the one-hundred-year flood or one (1) percent annual chance flood.

(e) *Basement:* Any area of the building having its floor sub-grade (below ground level) on all sides.

(f) *Board of zoning appeals:* The board appointed to review appeals, variances and special exceptions made by individuals with regard to decisions of the zoning administrator in the interpretation of this chapter of the City Code.

(g) *Channel:* A natural or artificial watercourse with a definite bed and banks to confine and conduct continuously or periodically flowing water.

(h) *Coastal A Zone*: Flood hazard areas that have been delineated as subject to wave heights between one and one-half (1.5) feet and three (3) feet.

(i) *Coastal high hazard area:* Areas of waves greater than three (3) feet and seaward of the landward toe of the primary frontal dune.

(j) *Development:* Any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, storage of equipment and materials, mining, dredging, filling, grading, paving, excavation or drilling operations.

(k) *Elevated building:* A non-basement building built to have the lowest floor elevated above the ground level by means of solid foundation perimeter walls, pilings, or columns (posts and piers).

(l) *Encroachment:* The advance or infringement of uses, plant growth, introduction of fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

(m) *Existing construction:* structures for which the "start of construction" commenced before the effective date of the FIRM or before May 2, 1977 for FIRMs effective before that date. "Existing construction" may also be referred to as "existing structures."

(n) *Flood* or *flooding:*

(1) A general and temporary condition of partial or complete inundation of normally dry land areas from:

a. The overflow of inland or tidal waters.

b. The unusual and rapid accumulation or runoff of surface waters from any source.

c.

Mudflows which are proximately caused by flooding as defined in subsection b. above of this definition and are akin to a river of liquid and flowing on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

(2) The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as a flash flood or by some similarly unusual and unforeseeable event which results in flooding as defined in subsection (1) above.

(o) *Flood boundary and floodway map (FBFM):* An official map of a community issued by the administrator, where the boundaries of the flood, mudslide, and related erosion areas have been designated and the floodway, floodway fringe, approximated floodplain and coastal high hazard areas have been delineated.

(p) *Flood hazard district:* A district established by the Zoning Ordinance for the City of Newport News and in which the restrictions and conditions of these regulations apply.

(q) *Flood insurance rate map (FIRM):* An official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

(r) *Flood Insurance Study (FIS):* a report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

(s) *Floodplain:*

(1) A relatively flat or low land area adjoining a river, stream or watercourse which is subject to partial or complete inundation;

(2) An area subject to the unusual and rapid accumulation of runoff of surface water from any source.

(t) *Flood-prone area:* Any land area susceptible to being inundated by water from any source.

(u) *Flood proofing:* means any combination of structural and nonstructural additions, changes or adjustments to properties and structures which reduce or eliminate flood damage to lands, water and sanitary facilities, structure and contents of buildings to include the provisions of the Virginia Uniform Statewide Building Code as amended.

(v) *Floodway:* The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

(w)

Freeboard: A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed. When a freeboard is included in the height of a structure, the flood insurance premiums may be less expensive.

(x) *Highest adjacent grade:* the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

(y) *Historic structure:* Any structure that is:

(1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

(2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the secretary to qualify as a registered historic district; or

(3) Individually listed on a state inventory of historic places which has been approved by the Secretary of the Interior.

(4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either

a. By an approved state program as determined by the Secretary of the Interior; or,

b. Directly by the Secretary of the Interior in states without approved programs.

(z) *Hydrologic and hydraulic engineering analysis:* Analyses performed by a licensed professional engineer, in accordance with standard engineering practices that are accepted by the Virginia Department of Conservation and Recreation and FEMA, used to determine the base flood, other frequency floods, flood elevations, floodway information and boundaries, and flood profiles.

(aa) *Intermediate regional flood:* A flood which is caused by rainfall runoff and is not primarily affected by tidal action.

(bb) *Intermediate regional tidal flood:* a flood which is caused by tidal action and is not primarily affected by rainfall runoff.

(cc) *Letters of map change (LOMC):* A Letter of map change is an official FEMA determination, by letter, that amends or revises an effective flood insurance rate map or flood insurance study. Letters of map change include:

(dd) *Letter of map amendment (LOMA):* An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. ALOMA amends the current effective flood insurance rate map and establishes that a specific property or structure is not located in a special flood hazard area.

(ee) *Letter of map revision (LOMR):* A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. A Letter of map revision based on fill (LOMR-F) is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.

(ff) *Conditional letter of map revision (CLOMR):* A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective flood insurance rate map or flood insurance study; upon submission and approval of certified as-built documentation, a letter of map revision.

(gg) *Lowest floor:* The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Federal Code 44CFR §60.3.

(hh) *Manufactured home:* A structure subject to federal regulations which is transportable in one (1) or more sections, which is eight (8) body feet or more in width and forty (40) body feet or more in length in the traveling mode or is three hundred twenty (320) or more square feet when erected on-site; is built on a permanent chassis; is designed to be used as a single-family dwelling, with or without a permanent foundation when connected to the required facilities; and includes plumbing, heating, air conditioning, and electrical systems contained in the structure. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty (180) consecutive days, but does not include a recreational vehicle.

(ii) *Manufactured home park or subdivision:* A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

(jj) *New construction:* For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial FIRM or after May 2, 1977, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

(kk) *Post-FIRM structures:* A structure for which construction or substantial improvement occurred after May 2, 1977.

(ll) *Pre-FIRM structures:* A structure for which construction or substantial improvement occurred on or before May 2, 1977.

(mm) *Recreational vehicle:* A vehicle which is:

(1) Built on a single chassis;

(2) Four hundred (400) square feet or less when measured at the largest horizontal projection;

(3) Designed to be self-propelled or permanently towable by a light duty truck; and

(4) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

(nn) *Repetitive loss structure:* A building covered by a contract for flood insurance that has incurred flood-related damages on two (2) occasions during a ten-year period ending on the date of the event for which a second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded twenty-five (25) percent of the market value of the building at the time of each flood event.

(oo) *Shallow flooding area:* A special flood hazard area with base flood depths from one (1) to three (3) feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

(pp) *Special flood hazard area:* The land in the floodplain subject to a one (1) percent or greater chance of being flooded in any given year as determined in the Flood Insurance Study (FIS) and the Flood Insurance Rate Maps (FIRM) for the City of Newport News prepared by the Federal Emergency Management Agency, Federal Insurance Administration.

(qq) *Start of construction:* For other than new construction and substantial improvement under the Coastal Barriers resource Act (P.L. - 97-348) 16 U.S.C. § 3501, et seq., mean the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement within one hundred eighty (180) days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways, nor does it include excavation for a basement, footings piers, or foundations of the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds nor occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration on any wall, ceiling, floor, or other structural part of a building, whether or not the alteration affects the external dimensions of the building.

(rr) *Structure:* for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

(ss) *Substantial damage:* Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.

(tt) *Substantial improvement:* Any reconstruction rehabilitation, addition, or improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage" regardless of the actual repair work performed. The term does not, however, include either:

(1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or

(2) Any alteration of a "historic structure", provided that the alteration will not preclude the structures continued designation as a "historic structure".

(3) Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

(uu) *Trailer park (mobile home park):* An area designed, constructed, equipped, operated and maintained for the purpose of providing spaces for trailers or mobile homes intended to be used as temporary or permanent living facilities.

(vv) *Violation:* the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence required to demonstrate compliance with the City of Newport News floodplain management regulations is presumed to be in violation until such time as that documentation is provided.

(ww) *Watercourse:* A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3113. - Administration.

(a) *Designation of the floodplain administrator.* City manager, is hereby appointed to administer and implement these regulations and is referred to herein as the floodplain administrator, unless the city manager, in writing, appoints a floodplain administrator. The floodplain administrator may:

(1) Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.

(2) Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the community of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22.

(b) *Duties and responsibilities of the floodplain administrator.* The duties and responsibilities of the floodplain administrator shall include but are not limited to:

(1) Review applications for permits to determine whether proposed activities will be located in flood hazard areas.

(2) Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.

(3) Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.

(4) Review applications to determine whether all necessary permits have been obtained from the Federal, State or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the one-hundred-year frequency floodplain of free flowing nontidal waters of the state.

(5) Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), and other appropriate agencies (VADEQ, USACE) and have submitted copies of such notifications to FEMA.

(6) Approve applications and issue permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.

(7)

Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.

(8) Review elevation certificates and require incomplete or deficient certificates to be corrected.

(9) Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the City of Newport News, within six (6) months after such data and information becomes available if the analyses indicate changes in base flood elevations.

(10) Maintain and permanently keep records that are necessary for the administration of these regulations, including:

a. Flood insurance studies, Flood insurance rate maps (including historic studies and maps and current effective studies and maps) and letters of map change; and

b. Documentation supporting issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been flood proofed, other required design certifications, variances, and records of enforcement actions taken to correct violations of these regulations.

(11) Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.

(12) Advise the board of zoning appeals regarding the intent of these regulations and, for each application for a variance, prepare a staff report and recommendation.

(13) Administer the requirements related to proposed work on existing buildings:

a. Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.

b. Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.

(14) Undertake, as determined appropriate by the floodplain administrator, due to the circumstances, other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other federal, state, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for increased cost of compliance coverage under NFIP flood insurance policies.

(15) Notify the Federal Emergency Management Agency when the corporate boundaries of the City of Newport News have been modified and:

a. Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and

b. If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in this division prepare amendments to this division to adopt the FIRM and appropriate requirements, and submit the amendments to City Council for adoption; such adoption shall take place at the same time or prior to the date of annexation and a copy of the amended division shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

(16) Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the SFHA, number of permits issued for development in the SFHA, and number of variances issued for development in the SFHA.

(17) It is the duty of the floodplain administrator to take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the City of Newport News, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

(c) Use and interpretation of FIRMs. The floodplain administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

(1) Where field surveyed topography indicates that ground elevations:

a. Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of this division;

b. Are above the base flood elevation, the area shall be regarded as special flood hazard area unless the applicant obtains a letter of map change that removes the area from the special flood hazard area.

(2) In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified special flood hazard areas, any other flood hazard data available from a federal, state, or other source shall be reviewed and reasonably used.

(3)

Base flood elevations and designated floodway boundaries on FIRMs and in FISs shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.

(4) Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodway areas than are shown on FIRMs and in FISs.

(5) If a preliminary flood insurance rate map and/or a preliminary flood insurance study has been provided by FEMA:

a. Upon the issuance of a letter of final determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.

b. Prior to the issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to section 1.5(C) and used where no base flood elevations and/or floodway areas are provided on the effective FIRM.

c. Prior to issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodway areas exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

(d) *Jurisdictional boundary changes.* All plats or maps of annexation shall show the floodplain boundaries, base flood elevation, and location of the floodway where determined.

If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in this division, the floodplain administrator, with the assistance of the city attorney, will prepare amendments to this division to adopt the FIRM and appropriate requirements, and submit the amendments to the City Council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended division shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22(a)(9)(v), the city must notify the Federal Insurance Administration and optionally the state coordinating office in writing whenever the boundaries of the city have been modified by annexation or the city has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.

In order that all flood insurance rate maps accurately represent the city's boundaries, a copy of a map of Newport News suitable for reproduction, clearly delineating the new corporate limits or new area for which the city has assumed or relinquished floodplain management regulatory authority must be included with

the notification.

(e) *District boundary changes.* The delineation of any of the floodplain districts may be revised by the City of Newport News where natural or man-made changes have occurred and/or where more detailed studies have been conducted or undertaken by the U.S. Army Corps of Engineers or other qualified agency, However, prior to any such change, approval must be obtained from the Federal Emergency Management Agency.

(f) *Interpretation of district boundaries.* Initial interpretations of the boundaries of the floodplain districts shall be made by the zoning officer. Should a dispute arise concerning the boundaries of any of the districts, the board of zoning appeals shall make the necessary determination. The person questioning or contesting the location of the district boundary shall be given a reasonable opportunity to present his case to the board and to submit his own technical evidence if he so desires.

(g) *Submitting technical data.* The city's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six (6) months after the date such information becomes available, the city shall notify the Federal Emergency Management Agency of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

(h) *Letters of map revision.* When development in the floodplain causes a change in the base flood elevation, the applicant must notify FEMA by applying for a conditional letter of map revision or a letter of map revision.

Examples:

•Any development that causes a rise in the base flood elevations within the floodway.

•Any development occurring in Zones A1-30 and AE without a designated floodway, which will cause a rise of more than one (1) foot in the base flood elevation.

•Alteration or relocation of a stream (including but not limited to installing culverts and bridges, as required by 44 C.F.R. § 65.3 and §65.6(a)(12).

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3114. - Establishment of flood hazard overlay district.

(a) An overlay district to be known as the FH-flood hazard district is hereby established. Upon identification by the floodplain administrator, areas having special flood hazards but where water surface elevation data for the one-hundred-year flood and data sufficient to identify the floodway

have not been delineated, the definitions of section 45-3112 are in effect.

(1) Basis of district. The various floodplain districts shall include the special flood hazard areas (SFHAs). The basis for the delineation of these districts shall be the flood insurance study (FIS) and the flood insurance rate maps (FIRM) for the City of Newport News prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated December 9, 2014 and any subsequent revisions or amendments thereto.

The City of Newport News may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas may be delineated on a "Local Flood Hazard Map" using best available topographic data and locally derived information such as flood of record, historic high water marks or approximate study methodologies.

The boundaries of the SFHA districts and floodplain districts are established as shown on the FIRM, which is declared to be a part of this division and which shall be kept on file at the City of Newport News Department of Engineering.

a. The floodway district is in an AE Zone and is delineated, for purposes of this regulation, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one (1) percent annual chance flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this district are specifically identified in the above-referenced FIS and shown on the accompanying FIRM. The following provisions shall apply within the floodway district of an AE zone (see, 44 CFR 60.3(d)):

1. Within any floodway area, no encroachment, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in flood levels within the community during the occurrence of the base flood discharge. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.

   Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies, with the city on Newport News' endorsement, for a conditional letter of map revision (CLOMR), and receives the approval of the Federal Emergency Management Agency.

If the requirements of this section are satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of article 4.

2. The placement of manufactured homes (mobile homes) is prohibited, except in an existing manufactured home (mobile home) park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring, elevation and encroachment standards are met.

(b) The AE zone on the FIRM accompanying the FIS shall be those areas for which one (1) percent annual chance flood elevations have been provided and the floodway has not been delineated, The following provisions shall apply within an AE zone:

(1) Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A1-30 and AE on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the City of Newport News. This requirement, pursuant to 44 CFR 63.3(c)(10), only applies along rivers, streams, and other watercourses where FEMA has provided base flood elevations. The requirement does not apply along lakes, bays and estuaries, and the ocean coast.

(2) Development activities in Zones A1-A30 and AE, on the City of Newport News FIRM which increase the water surface elevation of the base flood by more than one (1) foot may be allowed, provided that the applicant first applies, with the City of Newport News' endorsement, for a conditional letter of map revision, receives the approval of the Federal Emergency Management Agency.

(c) The A zone on the FIRM accompanying the FIS shall be those areas for which no detailed flood profiles or elevations are provided, but the one (1) percent annual chance floodplain boundary has been approximated. For these areas, the following provisions shall apply, pursuant to 44 CFR 60.3(b):

(1) The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a one-hundred-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the FIS. For these areas, the base flood elevations and floodway information from federal, state, local and other acceptable sources shall be used, when available. Where the specific one (1) percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers floodplain information reports, U.S. Geological

Survey flood-prone quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this base flood elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted non-detailed technical concepts, such as point on boundary, high water marks, or detailed methodologies hydrologic and hydraulic analyses. Studies, analysis, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.

(2) The floodplain administrator reserves the right to require a hydrologic and hydraulic analysis for any development. When such base flood elevation data is utilized, the lowest floor shall be elevated to two (2) feet above the base flood level. During the permitting process, the floodplain administrator shall obtain:

a. The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and

b. If the structure has been floodproofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been floodproofed.

(3) Base flood elevation data shall be obtained from other sources or develop using detailed methodologies comparable to those contained in a FIS for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty (50) lots or five (5) acres, whichever is the lesser.

(d) The AO zone on the FIRM accompanying the FIS shall of those areas of shallow flooding identified as AO on the FIRM. For those areas the following provisions shall apply:

(1) All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated to or above the flood depth specified on the FIRM, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than two (2) feet above the highest adjacent grade.

(2) All new construction and substantial improvements of non-residential structures shall:

a. Have the lowest floor, including basement, elevated to or above the flood depth specified on the FIRM, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least two (2) feet above the highest adjacent grade; or

b. Together with attendant utility and sanitary facilities be completely floodproofed to the specified flood level so that any space below that level is watertight with wall substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyance.

(3)

Adequate drainage paths around structures on slopes shall be provided to guide flood waters around and away from proposed structures.

(e) The Coastal A Zone District shall be those areas designated as Limits of Moderate Wave Action (LiMWA) line and the VE Zone on the FIRM, and subject to wave heights between one and one-half (1.5) feet and three (3) feet. Buildings and structures in the these areas shall have the lowest floor elevated to or above the base flood elevation plus two (2) feet of freeboard, and must comply with applicable provisions of sections 45-3114 and 45-3115 of this division.

(f) The VE or V Zones on FIRMs accompanying the FIS shall be those areas that are known as Coastal High Hazard areas, extending from offshore to the inland limit of a primary frontal dune along an open coast. For these areas, the following provisions shall apply:

(1) All new construction and substantial improvements in Zones V and VE (V if base flood elevation is available) shall be elevated on pilings or columns so that:

a. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated two (2) feet above the base flood level if the lowest horizontal structural member is parallel to the direction of wave approach or elevated at least two (2) feet above the base flood level of the lowest horizontal structural member is perpendicular to the direction of wave approach; and.

b. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one (1) percent chance of being equaled or exceeded in any given year (one (1) percent chance).

(2) A registered professional engineer or architect shall develop or review the structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of these regulations.

(3) The floodplain administrator shall obtain the elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures in Zones V and VE. The floodplain administrator shall maintain a record of all such information.

(4) All new construction shall be located landward of the reach of mean high tide.

(5) All new construction and substantial improvements shall have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood-lattice work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purpose of this section, a breakaway

wall shall have a design safe loading resistance of not less than ten (10) and no more than twenty (20) pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of twenty (20) pounds per square foot (either by design or when so required by local codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

a. Breakaway wall collapse shall result from water load less than that which would occur during the base flood; and

b. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination shall each have a one (1) percent chance of being equaled or exceeded in any given year.

(6) The enclosed space below the lowest floor shall be used solely for parking of vehicles, building access, or storage. Such space shall not be portioned into multiple rooms, temperature-controlled, or used for human habitation.

(7) The use of fill for structural support of buildings is prohibited. When non-structural fill is proposed in a coastal high hazard area, appropriate engineering analyses shall be conducted to evaluate the impacts of the fill prior to issuance of a development permit.

(8) The man-made alteration of sand dunes, which would increase potential flood damage, is prohibited.

(g) Overlay concept. The floodplain districts described above shall be overlays to the existing underlying districts as shown on the official zoning ordinance map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

If there is any conflict between the provisions or requirements of the floodplain districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

(Ord. No. 5028-97, § 1; Ord. No. 6577-09; Ord. No. 7123-14, § 1)

Sec. 45-3115. - District provisions.

(a) *Permit and application requirements.*

(1)

Permit requirement. All uses, activities, and development occurring within any floodplain district, including placement of manufactured homes, shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of this division and with other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (VA USBC) and the City of Newport News Subdivision Regulations. Prior to the issuance of any such permit, the floodplain administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

(2) *Site plans and permit applications.* All applications for development within any floodplain district and all building permits issued for the floodplain shall incorporate the following information:

a. The elevation of the base flood at the site.

b. The elevation of the lowest floor (including basement) or, in V zones, the lowest horizontal structural member.

c. For structures to be floodproofed (non-residential only), the elevation to which the structure will be floodproofed.

d. Topographic information showing existing and proposed ground elevations.

(b) *General standards.* The following provisions shall apply to all permits:

(1) New construction and substantial improvements shall be according to the this division and the Virginia Uniform Statewide Building Code (VA USBC), and anchored to prevent flotation, collapse or lateral movement of the structure.

(2) Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state anchoring requirements for resisting wind forces.

(3) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(4) New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

(5) Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(6) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

(7) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

(8) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

(9) In addition to provisions (1)—(8) above, in all special flood hazard areas, the additional provisions shall apply (i) prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U.S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations.) Furthermore, in riverine areas, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the department of conservation and recreation (division of dam safety and floodplain management), other required agencies, and the Federal Emergency Management Agency and (ii) the flood-carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

(c) *Elevation and construction standards.* In all identified flood hazard areas where base flood elevations have been provided in the FIS or generated by a certified professional the following provisions shall apply:

(1) *Residential construction.* New construction or substantial improvement of any residential structure (including manufactured homes) in zones AE, AO, and A with detailed base flood elevations shall at a minimum have the lowest floor, including basement, elevated to two (2) feet above the base flood level.

(2) *Non-residential construction.* New construction or substantial improvement of any commercial, industrial, or non-residential building (or manufactured home) shall at a minimum have the lowest floor, including basement, elevated to two (2) feet above the base flood level. Buildings located in all AE zones may be floodproofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the BFE plus two (2) feet are watertight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the floodplain administrator.

(3) *Space below the lowest floor.* In zones A, AO, and AE, fully enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

a.

Not be designed or used for human habitation, but shall only be used for parking, building access and storage in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

b. Be constructed entirely of flood resistant materials below the regulatory flood protection elevation.

c. Include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

1. Provide a minimum of two (2) openings on different sides of each enclosed area subject to flooding.
2. The total net area of all openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding.
3. If a building has more than one (1) enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.
4. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.
5. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.
6. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

(d) *Standards for manufactured homes and recreational vehicles.*

(1) All manufactured homes placed, or substantially improved, on individual lots or parcels, must meet all the requirements for new construction, including the elevation and anchoring requirements in section 45-3115(b) and (c).

(2) All recreational vehicles placed on sites must either:

a. Be on the site for fewer than one hundred eighty (180) consecutive days, be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions); or

b. Meet all the requirements for manufactured homes in section 45-3115(d)(1).

(e) *Standards for subdivision proposals.*

(1) All subdivision proposals shall be consistent with the need to minimize flood damage;

(2) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

(3) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards; and

(4) Base flood elevation data shall be obtained from other sources or developed using detailed methodologies, hydraulic and hydrologic analysis, comparable to those contained in a flood insurance study for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty (50) lots or five (5) acres, whichever is the lesser.

(f) *[Obtaining permits prior to work.]* Within any flood hazard district, the property owner or corporation having fee simple title or rights of construction to a property, shall obtain a permit for all proposed development prior to the initiation of work.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1; Ord. No. 7593-19)

Sec. 45-3116. - Relationship of city approval to National Flood Insurance Act of 1968, as amended.

(a) The city shall maintain for public inspection and furnish upon request, with respect to each area having special flood hazards, information on elevations (in relation to mean sea level) of the lowest floors, including basements, of all new or substantially improved structures and, where there is a basement, the distance between the first floor and the bottom of the lowest opening where water flowing on the ground will enter. For structures which have been floodproofed (nonresidential only), the elevation to which the structure has been flood proofed shall be maintained. For all structures within the coastal high hazard area, the elevation of the bottom of the lowest structural member of the lowest floor excluding pilings or columns shall also be recorded and maintained. All such information shall be filed in the department of codes compliance and planning.

(b) In approving new construction and improvements, the city assumes no obligation to act on behalf of the property owner in obtaining approval for flood insurance under the terms of the Flood Insurance Act of 1968, as amended (42 U.S.C. 4001-4127). Nor does the city assume responsibility for errors or omissions in submitted material which may affect the flood insurance rates for an individual's property.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1; Ord. No. 7913-23)

Sec. 45-3117. - Existing structures in floodplain areas.

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

(1) Existing structures in the floodway area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.

(2) Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than fifty (50) percent of its market value shall conform to this division and the VA USBC.

(3) The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with this division and shall require the entire structure to conform to the Virginia USBC.

(Ord. No. 5028-97, § 1; Ord. No. 5644-01; Ord. No. 7123-14, § 1)

Sec. 45-3118. - Uses permitted—General restrictions.

Any use normally permitted in the regular zoning district shall be permitted in a flood hazard district with the following restrictions:

(1) No construction on or improvement of land within a flood hazard district except for nonstructural agricultural and outdoor recreational purposes and certain water related structures as provided in subsection (g) below may be initiated until a permit shall have been obtained as provided in section 45-3115(g).

(2) No construction or improvement within the flood hazard district shall obstruct any channel whether or not such channel lies within a designated floodway.

(3) All new construction or substantial improvement of residential structures shall have the lowest floor level (including basements) elevated a minimum of two (2) feet above the level of the one-hundred-year flood and adequately anchored to prevent flotation, collapse or lateral movement of the structure. The elevation of the lowest floor level shall be certified by a licensed land surveyor or professional engineer, and filed in the department of codes compliance and department of planning.

a. Manufactured homes, whether residential or nonresidential, to be located within the floodplain or the flood hazard district of the City of Newport News shall be placed in accordance with the building code adopted in chapter 13 of the City Code.

b.

An evacuation plan indicating alternate vehicular access and escape routes shall be filed by the owner with the civil defense director for manufactured home subdivisions located within the floodplain or flood hazard district.

(4) All new construction and substantial improvements of nonresidential structures shall have the lowest floor (including basement) elevated a minimum of two (2) feet above the base flood level or together with attendant utility and sanitary facilities be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. New construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement.

(5) When flood proofing is not utilized, the elevation of the lowest floor level shall be certified by a licensed land surveyor or professional engineer and filed in the department of codes and compliance and planning.

(6) Sites for the storage or processing of bases, chemicals or other materials that are buoyant, flammable or explosive shall be elevated to a level no less than three (3) feet above the level of the one-hundred-year flood and securely anchored; provided, however that buried fuel tanks, when adequately anchored to prevent flotation when empty and sealed to prevent entry of flood water or discharge of fuel therefrom, may be at the elevation of the one-hundred-year flood.

(7) The following activities may occur below the level of the one-hundred-year flood:

a. Nonstructural agricultural activities providing that any storage or stockpiling of manure shall be elevated to a level no less than three (3) feet above the level of the one-hundred-year flood.

b. Outdoor recreational uses including park areas, golf courses, tennis courts, basketball courts, and swimming pools.

c. Water related structures such as docks, piers and wharves.

d. Access roads and parking areas for the above.

(8) Adequate drainage shall be provided to reduce exposure to flood hazards.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1; Ord. No. 7913-23)

Sec. 45-3119. - Special restrictions for riverine floodplain area.

(a) In riverine situations, all adjacent communities and the state coordinating office shall be notified prior to any relocation or alteration of a watercourse; copies of such notifications shall be submitted to the federal insurance administrator.

(b)

The city manager, or designee, shall assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3120. - Floodway.

The following special restrictions shall apply to construction or improvements to land within the floodway:

(1) Existing nonconforming uses within the floodway may not be expanded; however, they may be repaired, altered or modified to incorporate flood proofing measures provided such measures do not raise the level of the one-hundred-year flood.

(2) No use, change, fill or other encroachment within the designated floodway can be initiated or accomplished without obtaining a permit as provided in section 45-3115. There shall be no exceptions to this permit requirement in the floodway.

(3) In no case shall a permit be issued for work which would impair the ability of the floodway to pass the one-hundred-year flood except where the effect upon elevations is fully offset by floodway improvements.

Such proposals shall be submitted to the city manager, or designee, along with plans, data and computations necessary to fully evaluate the effect of the proposal.

(4) No manufactured home may be placed within a floodway except in an existing manufactured home subdivision.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3121. - Coastal high hazard area (CHHA).

The following special restrictions apply to land within the coastal high hazard area:

(1) Existing structures located on land below the elevation of the one-hundred-year flood in the CHHA shall not be expanded.

(2) All new construction and substantial improvements in Zones V and VE (V if base flood elevation is available) shall be elevated on pilings or columns so that:

a. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to two (2) feet above the base flood level if the lowest horizontal structural member is parallel to the direction of wave approach or elevated at least two (2) feet above the base flood level if the lowest horizontal structural member is perpendicular to the direction of wave approach; and,

b.

The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one (1) percent chance of being equaled or exceeded in any given year (one (1) percent annual chance).

(3) A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice.

(4) The floodplain administrator shall obtain the elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures in Zones V and VE. The floodplain administrator shall maintain a record of all such information.

(5) No land below the level of the one-hundred-year flood in a CHHA may be developed unless the structure or substantial improvements:

a. Is located landward of the reach of the mean high tide.

b. Is constructed in accordance with the building code adopted in chapter 13 of the City Code.

(6) All new construction and substantial improvements shall have the space below the lowest floor either free of obstruction or constructed with nonsupporting breakaway walls, open wood-lattice work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than ten (10) and no more than twenty (20) pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of twenty (20) pounds per square foot (either by design or when so required by local codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

a. Breakaway wall collapse shall result from water load less than that which would occur during the base flood; and

b. The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination shall each have a one (1) percent chance of being equaled or exceeded in any given year.

(7) The enclosed space below the lowest floor shall be used solely for parking of vehicles, building access, or storage. Such space shall not be partitioned into multiple rooms, temperature-controlled, or used for human habitation.

(8) The use of fill for structural support of buildings is prohibited. When fill is proposed in a coastal high hazard area, appropriate engineering analyses shall be conducted to evaluate the impacts of the fill prior to issuance of a development permit.

(9) No manufactured home shall be placed within the CHHA except in existing manufactured home subdivisions.

(10) No manmade alteration of sand dunes or mangrove stands within the CHHA will be permitted which will increase potential flood damage.

(Ord. No. 5028-97, § 1; Ord. No. 5644-01; Ord. No. 7123-14, § 1)

Sec. 45-3122. - Utilities.

All new or replacement water and/or sanitary sewage systems and all other new or replacement utilities or facilities shall be designed to minimize or eliminate infiltration of flood waters into the systems. On-site sanitary waste systems, including septic tank systems, shall be a minimum of two (2) feet above the level of the one-hundred-year flood.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3123. - Special exception uses permitted in regular zoning district.

(a) Special exception uses permitted in the regular zoning district may be authorized in the flood hazard district; provided that applicable restrictions of this article are observed, and provided that the plans as required for the issuance of a building permit shall be submitted to the city manager or designee for review and recommendation prior to public hearing by the board of zoning appeals.

(b) Any application for special exception requested in the flood hazard district along with the required plans shall be referred to the zoning administrator and the director of engineering not less than thirty (30) days prior to the date of public hearing.

(Ord. No. 5028-97, § 1; Ord. No. 5644-01; Ord. No. 7123-14, § 1)

Sec. 45-3124. - Special regulations for land development.

(a) For the purposes of this article the term "land development" shall include any subdivision of land as defined in the Subdivision Ordinance of Newport News, Virginia, as amended and any planned residential development, mobile home park, condominium, townhouse or apartment project, commercial or industrial project, and any community facility, whether publicly or privately owned, including but not limited to churches, schools, colleges, fire stations and libraries.

(b)

In addition to the general and special restrictions of this article, the following special requirements pertain to a land development, whether new construction or improvement, when such development is in part or in whole within a flood hazard district:

(1) All drawings and plans including record plats shall show thereon boundaries and locations of designated floodplains having special flood hazards, floodway, coastal high hazard areas and elevations of the one-hundred-year flood.

(2) Each parcel or lot established for purposes of sale and/or construction thereon within the land development must be capable of permitting new construction meeting the requirements of the provisions of this chapter.

(3) Utility systems such as water, sewer, gas and electrical systems shall be located and constructed to minimize or eliminate flood damage and infiltration of flood waters into the systems and discharges from such systems into flood waters. Sanitary sewer facilities shall be elevated two (2) feet above the level of the one-hundred-year flood so as to eliminate entrance of flood water into the system. Manhole tops shall either be elevated to a minimum of two (2) feet above the level of the one-hundred-year flood, or have installed water-tight frames and covers, or utilize manhole inserts to eliminate the entrance of flood water into the system.

(4) It shall be the responsibility of the developer to provide such plans, data and computations, certified by a registered professional engineer, to demonstrate compliance with this section to the satisfaction of the city manager or designee.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3125. - Annual report to administrator.

The city manager, or his designated representative, is hereby designated as the official responsible to submit an annual report to the administrator on the progress made during the past year in the development and implementation of floodplain and/or mudslide area management measures.

(Ord. No. 5028-97, § 1; Ord. No. 7123-14, § 1)

Sec. 45-3125.5. - Variances.

No variances to the provisions of division 2, Floodplain Development Regulations, shall be considered by the board of zoning appeals.

(Ord. No. 7123-14, § 1)

Editor's note— Ord. No. 7123-14, § 1, enacted provisions intended for use as § 45-3126. Inasmuch as there were already provisions so designated, said section has been included herein as § 45-3125.5 at the discretion of the editor.

June 2022 Final

Hampton Roads Hazard Mitigation Plan

City of Hampton
City of Newport News
City of Poquoson
City of Williamsburg
James City County
York County
City of Norfolk
City of Portsmouth
City of Suffolk
City of Virginia Beach
City of Chesapeake
Isle of Wight County
Town of Smithfield
Town of Windsor
City of Franklin
Southampton County
Surry County
Town of Claremont
Town of Dendron

AECOM

REPORT DOCUMENTATION

TITLE	REPORT DATE
Hampton Roads Hazard Mitigation Plan	June 2022 Final

ABSTRACT

The *Hampton Roads Hazard Mitigation Plan* has been updated for 2022. The region is vulnerable to a wide range of hazards that threaten the safety of residents and have the potential to damage or destroy both public and private property and disrupt the local economy and overall quality of life. While the threat from hazards may never be fully eliminated, the *Hampton Roads Hazard Mitigation Plan* recommends specific actions designed to protect residents, business owners and the built environment.

GRANT/SPONSORING AGENCY

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INTRODUCTION

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2022 UPDATE

As part of the 2022 update process, participating communities and stakeholders were engaged in a facilitated process to review all plan components in light of new circumstances. Accordingly, each section of this plan has been updated. At the beginning of each section, there is a synopsis of the changes made to that section as part of the update. The biggest changes for 2022 are in Section 5 and include new information regarding social vulnerability and climate change impacts for each of the hazards assessed in detail in this plan. Pandemic Flu or Communicable Disease and Radon Exposure were added as hazards of interest in the region.

Section 1 was updated to modify the scope to include Surry County, the Town of Dendron and the Town of Claremont, which participated in this Hampton Roads planning process for the first time.

BACKGROUND

The Hampton Roads region of southeastern Virginia is vulnerable to a wide range of natural hazards that threaten the safety of residents and have the potential to damage or destroy both public and private property and disrupt the local economy and overall quality of life.

While the threat from hazards may never be fully eliminated, much can be done to lessen their potential impact. The concept and practice of reducing risks associated with known hazards is referred to as *hazard mitigation*. As discussed in the National Mitigation Framework, mitigation includes the capabilities necessary to reduce loss of life and property by lessening the impact of disasters.

FEMA Definition of Hazard Mitigation

"Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards."

Hazard mitigation techniques include both structural measures, such as strengthening or protecting buildings and infrastructure, and non-structural measures, such as the adoption of sound land use or floodplain management policies and the creation of public awareness programs. Effective mitigation measures are often implemented at the county or municipal level, where decisions that regulate and control development are made. A comprehensive mitigation approach addresses hazard vulnerabilities that exist today and in the foreseeable future. Therefore, projected patterns of future development must be evaluated and considered in terms of how that growth will increase or decrease a community's hazard vulnerability over time.

As a community formulates a comprehensive approach to reduce the impacts of hazards, a key means to accomplish this task is through the development, adoption, and regular update of a local hazard mitigation plan. A hazard mitigation plan establishes the community vision, guiding principles, and the specific actions designed to reduce current and future hazard vulnerabilities.

The Hampton Roads Hazard Mitigation Plan (hereinafter referred to as "Hazard Mitigation Plan", "Plan", or "HMP") is a logical part of incorporating hazard mitigation principles and practices into routine government activities and functions. The Plan recommends specific actions designed to protect residents, business owners, and the developed environment from those hazards that pose the greatest risk. Mitigation actions should go beyond recommending structural solutions to reduce existing vulnerability, such as elevation of structures, retrofitting, and acquisition projects. Local policies that guide community growth and development, incentives tied to natural resource protection, and public awareness and outreach activities should be considered to reduce the region's future vulnerability to identified hazards.

In keeping with federal requirements and to present a review of Hampton Road's risk and vulnerability, state and regional capabilities, and current local capabilities, the Hampton Roads Planning District Commission (HRPDC) prepared this updated Hazard Mitigation Plan over the course of 2021. The planning committee worked throughout the planning period to update mitigation goals, objectives, and recommended actions, as outlined in detail in Section 2. As part of the ongoing mitigation planning process, this Plan is the result of the 2021/2022 mitigation evaluation.

DISASTER MITIGATION ACT OF 2000

In an effort to reduce the Nation's mounting natural disaster losses, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000). Section 322 of DMA 2000 requires that state and local governments develop a hazard mitigation plan in order to remain eligible for pre- and post-disaster mitigation funding. These funds include the Hazard Mitigation Grant Program (HMGP), Hazard Mitigation Assistance (HMA) and the Pre-Disaster Mitigation (PDM) program, which are administered by the Federal Emergency Management Agency (FEMA). Communities with an adopted and federally-approved hazard mitigation plan are eligible for available mitigation funds before and after the next disaster strikes.

This Plan was prepared and updated in coordination with FEMA and the Virginia Department of Emergency Management (VDEM) to make certain it meets all applicable state and federal mitigation planning requirements. In addition, guidance from the March 2013 FEMA manual, *Local Mitigation Planning Handbook* was used by the committee and professional consultants to guide the plan update process. The *Local Mitigation Plan Review Tool*, found in Appendix A, provides a summary of FEMA's current minimum standards of acceptability, and notes the location within the Plan where each planning requirement is met.

NATIONAL MITIGATION FRAMEWORK

The National Mitigation Framework establishes a common platform and forum for coordinating and addressing how the Nation manages risk through mitigation capabilities. Mitigation reduces the impact of disasters by supporting protection and prevention activities, easing response, and speeding recovery to create better prepared and more resilient communities. This Framework describes mitigation roles across a whole community. The Framework addresses how the Nation will develop, employ, and coordinate core mitigation capabilities to reduce loss of life and property by lessening the impact of disasters. Building on a wealth of objective and evidence-based knowledge and community experience, the Framework seeks to increase risk awareness and leverage mitigation products, services, and assets across a whole community or, in this case, across a region.

National Mitigation Framework, Second Edition, June 2016, was published by the Department of Homeland Security to further discuss seven core capabilities required for entities involved in mitigation:

threats and hazards identification, risk and disaster resilience assessment, planning, community resilience, public information and warning, long-term vulnerability reduction, and operational coordination. The document focuses on the need for the whole community (or region) to be engaged in examining and implementing the doctrine contained in the Framework and to create a culture that embeds risk management and mitigation in all planning, decision making and development.

The operational work plan for this Hazard Mitigation Plan Update considered the objectives of the National Mitigation Framework in many aspects of its implementation: building the committee and choosing committee leaders; providing risk and vulnerability data early in the planning process; requesting capability update information from communities to foster understanding of capability gaps early in the planning process; and creating regional mitigation actions that help create a culture of mitigation at the local and regional levels that brings together a larger group of stakeholders.

PURPOSE

The general purposes of this Hazard Mitigation Plan are to:

- protect life and property by reducing the potential for future damages and economic losses that result from natural hazards;
- qualify for additional grant funding, in both the pre-disaster and post-disaster environment;
- speed recovery and redevelopment following future disasters;
- integrate existing mitigation documents;
- demonstrate a firm local commitment to hazard mitigation principles; and
- comply with state and federal legislative requirements tied to local hazard mitigation planning.

SCOPE

This Hazard Mitigation Plan shall be updated and maintained to continually address those natural hazards determined to be of high and moderate risk as defined by the results of the risk assessment (see “Conclusions on Hazard Risk” in Section 5: *Vulnerability Assessment*). This enables Hampton Road’s planning committees to prioritize mitigation actions based on those hazards which present the greatest risk to lives and property.

The planning area includes the following communities in Hampton Roads, which were further broken down into 3 categories based on geography:

The Peninsula:

City of Hampton
City of Newport News
City of Poquoson
City of Williamsburg
James City County
York County

The Southside:
- City of Norfolk
- City of Portsmouth
- City of Suffolk
- City of Virginia Beach
- City of Chesapeake

Western Tidewater:
- Isle of Wight County
- Town of Smithfield
- Town of Windsor
- City of Franklin
- Southampton County
- Surry County
- Town of Claremont
- Town of Dendron

AUTHORITY

This updated Hazard Mitigation Plan was adopted by each of the participating communities in 2022. A copy of each resolution adopting the Plan is included in Appendix B.

This Plan was developed and updated in accordance with current state and federal rules and regulations governing local hazard mitigation plans. The Plan shall be monitored and updated on a routine basis to maintain compliance with the following legislation:

- Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390); and
- Title 44 Code of Federal Regulations, Part 201, used as the basis for the October 1, 2011, update to FEMA's *Local Mitigation Plan Review Guide*.

APPENDICES

Several appendices are used to provide additional background information and references for information included in this plan. The appendices are referenced within the text, but are included her as an additional tool for navigating the document:

Appendix A - Local Hazard Mitigation Plan Review Crosswalk
Appendix B – Resolutions of Adoption
Appendix C - Hazard Mitigation Planning Committee and Public Meeting Advertisements and Minutes
Appendix D – Public Participation Survey Responses
Appendix E – Review Comments
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Appendix G - Acronyms
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PLANNING PROCESS

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2022 UPDATE

Summaries of each meeting and the procedures followed during the update process were updated for each subsection. Summaries of previous planning processes were removed for brevity and because they are available in previous plans.

OVERVIEW OF MITIGATION PLANNING

Local hazard mitigation planning involves the process of organizing community resources, identifying and assessing hazard risks, and determining how to minimize or manage those risks. This process results in a hazard mitigation plan that identifies specific actions designed to meet the goals established by those that participate in the planning process. To ensure the functionality of each mitigation action, responsibility is assigned to a specific individual, department or agency along with a schedule for its implementation. Plan maintenance procedures are established to help ensure that the plan is implemented, as well as evaluated and enhanced as necessary. Developing clear plan maintenance procedures helps ensure that the Hazard Mitigation Plan remains a current, dynamic, and effective planning document over time.

Participating in a hazard mitigation planning process can help local officials and citizens achieve the following results:

- save lives and property;
- save money;
- speed recovery following disasters;
- reduce future vulnerability and increase future resiliency through wise development and post-disaster recovery and reconstruction;
- enhance coordination within and across neighboring jurisdictions;
- expedite the receipt of pre-disaster and post-disaster grant funding; and
- demonstrate a firm commitment to improving community health and safety.

Mitigation planning is an important tool to produce long-term recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that pre-disaster investments will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices will enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

The benefits of mitigation planning go beyond reducing hazard vulnerability. Measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, improving water quality, maintaining environmental health, and enhancing recreational opportunities. It is the intent of this document to help identify overlapping community objectives and facilitate the sharing of resources to achieve multiple aims, and to include information wherever possible to demonstrate when the plan is or has been implemented through other planning mechanisms.

PREPARING THE PLAN

44 CFR Requirement

44 CFR Part 201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how the public was involved.

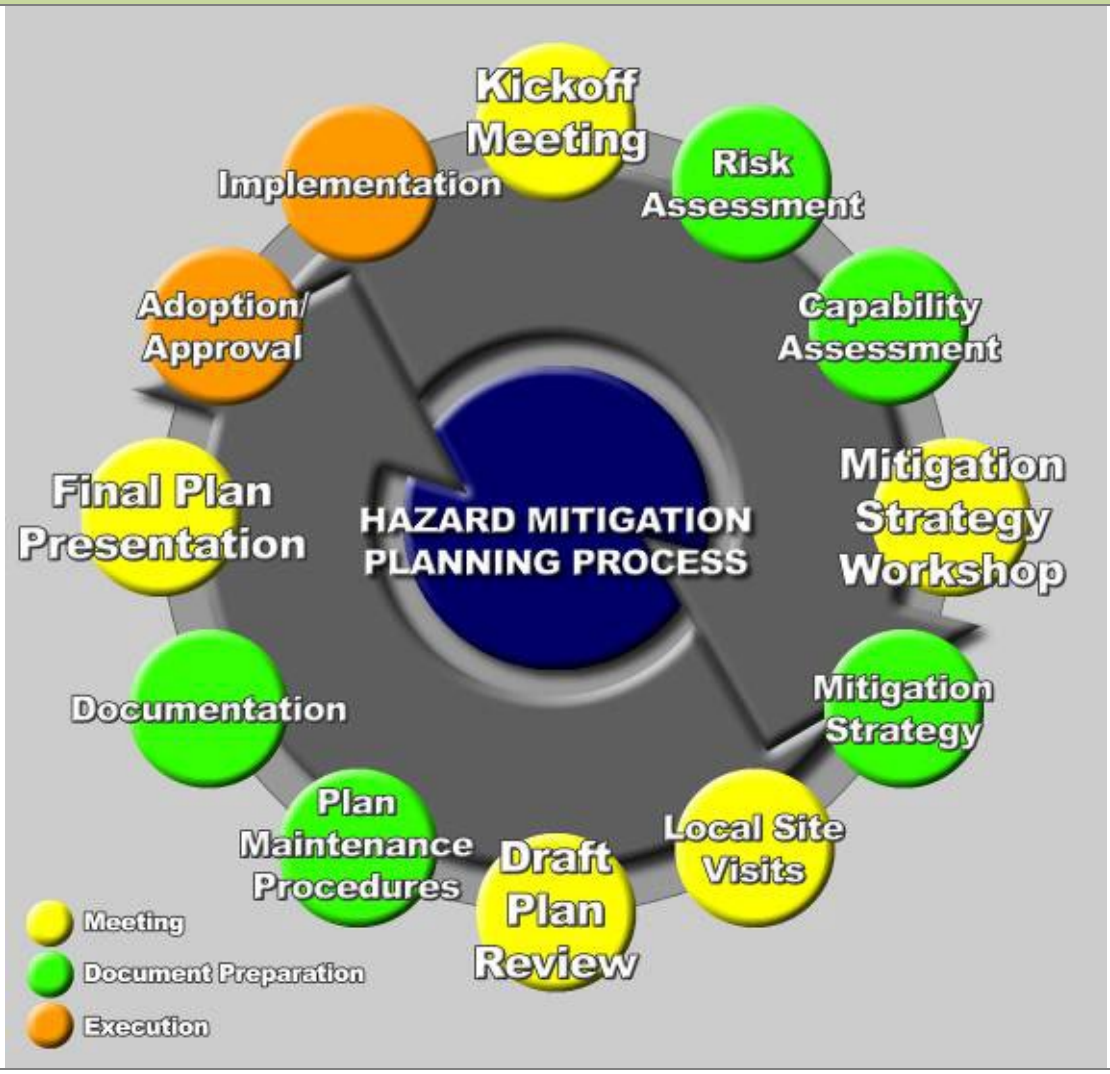
The HRPDC used FEMA guidance (FEMA Publication Series 386) to develop and update this Hazard Mitigation Plan. A Local Mitigation Plan Review Tool, found in Appendix A, provides a detailed summary of FEMA's current minimum standards of acceptability for compliance with DMA 2000 and notes the location where each requirement is met within the Plan. These standards are based upon FEMA's Interim Final Rule as published in the Federal Register on February 26, 2002, and October 31, 2007, in Part 201 of the Code of Federal Regulations (CFR).

The planning process included eight major steps that were completed during 2021 through 2022; they are shown in green and yellow in **Figure 2.1**. Each of the planning steps illustrated in Figure 2.1 resulted in work products and outcomes that collectively make up the Hazard Mitigation Plan.

Table 2.1 provides a summary of the National Flood Insurance Program's Community Rating System (CRS) User's Manual 10-step guidance for plan preparation and how that guidance fits within the 10-step, 4-phase process advocated by FEMA. This plan strives to accomplish the steps in each of these processes.

TABLE 2.1: FEMA GUIDANCE AND CRS HAZARD MITIGATION PLANNING GUIDANCE	
FEMA Guidance	**CRS Guidance**
Phase I: Organize Resources Step 1. Get Organized Step 2. Plan for Public Involvement Step 3. Coordinate with Other Departments & Agencies	 Step 1. Organize Step 2. Involve the Public Step 3. Coordinate
Phase II: Assess Risk Step 4. Identify the Hazards Step 5. Assess the Risks	 Step 4. Assess the hazard Step 5. Assess the Problem
Phase III: Develop Mitigation Plan Step 6: Review Mitigation Alternatives Step 7: Draft an Action Plan Step 8: Set Planning Goals	 Step 6. Set Goals Step 7. Review Possible Activities Step 8. Draft an Action Plan
Phase IV: Adopt & Implement Step 9: Adopt the Plan Step 10: Implement the Plan	 Step 9. Adopt the Plan Step 10. Implement, Evaluate, Revise

FIGURE 2.1: HAMPTON ROADS HAZARD MITIGATION PLANNING PROCESS



THE PLANNING COMMITTEE

A community-based planning team made up of local government officials and key stakeholders has continually helped guide the development of this Plan. The committee organized local meetings and planning workshops to discuss and complete tasks associated with preparing the Plan, including reviewing plan drafts and providing timely comments. Additional participation and input from residents and other identified stakeholders were sought through public meetings that described the planning process, the findings of the risk assessment, and the proposed mitigation actions. The committee convened in 2021.

HAMPTON ROADS MITIGATION PLANNING COMMITTEE

Due to the large geographic area covered and the number of communities participating, the project leaders felt that a Steering Committee was necessary to help more efficiently guide the planning process

and facilitate the numerous Working Group members. Thus, the representatives for the communities and stakeholders were divided into a primary Steering Committee and a Working Group. The division was based on discussions with potential committee members from each community and stakeholders and a determination as to which members were most willing to commit themselves to the entire process, to do the majority of the work, to debate goals and objectives and discuss alternatives, and to report back to their constituencies and Working Group members. The participants listed in **Table 2.2a** are the Steering Committee and **Table 2.2b** shows the Working Group members for the 2022 Hampton Roads Hazard Mitigation Plan Update. Names marked with an asterisk indicate the lead person responsible for that community in the planning, update and maintenance process. Specifically, the tasks assigned to the Steering Committee members included:

- participate in mitigation planning meetings and workshops;
- provide best available data as required for the risk assessment portion of the Plan;
- provide copies of any mitigation or hazard-related documents for review and incorporation into the Plan;
- support the development of the Mitigation Strategy, including the design and adoption of community goals and objectives;
- help design and propose appropriate mitigation actions for incorporation into the Mitigation Action Plan;
- review and provide timely comments on all study findings and draft components of the plan; and
- support the adoption of the Hazard Mitigation Plan by community leaders.

The Working Group includes the Steering Committee members. Working Group members were provided the opportunity and invitation to participate in workshops and public meetings, asked for best available data, asked to review and comment on plan elements, and relied upon to ensure successful adoption of the plan in their community. In many cases, the Working Groups for individual communities also met with additional local staff outside of the more official planning process in additional meetings facilitated by Steering Committee members. Additional participation and input from other identified community staff and stakeholders was sought by the Steering Committee during the planning process primarily through e-mails and phone calls. Stakeholder involvement is discussed in more detail later in this section.

TABLE 2.2a: HAZARD MITIGATION PLANNING STEERING COMMITTEE MEMBERS

NAME AND POSITION	COMMUNITY AND AGENCY	EXPERTISE
Tracy Hanger, Emergency Planner	City of Hampton, Emergency Management	Fire Department/Emergency Management
*Hui-Shan Walker, Deputy Coordinator	City of Hampton, Emergency Management	Emergency Management, Public Information
*George Glazner, Deputy Coordinator	City of Newport News, Emergency Management	Emergency Management/Public Information
Heather Brown, Emergency Operations Planner	City of Newport News, Emergency Management	Emergency Management/Public Information
*Michael Bryant, Emergency Management Coordinator	City of Poquoson, Emergency Management	Emergency Management, Public Information
Ken Somerset, Building Official	City of Poquoson, Community Development	Preventive Measures, Property Protection
Michael Teener, Emergency Management Planner	James City County, Emergency Management	Emergency Management, Public Information
*Sara Ruch, Deputy Coordinator	James City County, Emergency Management	Emergency Management/Public Information

TABLE 2.2a: HAZARD MITIGATION PLANNING STEERING COMMITTEE MEMBERS

NAME AND POSITION	COMMUNITY AND AGENCY	EXPERTISE
*Sean Segerblom, District Captain	York County, Fire and Life Safety	Fire Department/Emergency Management, Public Information
Kent Henkel, Environmental Specialist	York County, Public Works	Property Protection, Natural Resource Protection
*Matthew Simons, Coastal Resiliency Manager	City of Norfolk, Office of Resilience	Planning/Preventive Measures, Property Protection, Resiliency
Tristian Barnes, Floodplain Administrator and Principal Planner	City of Norfolk, Planning	Planning/Preventive Measures, Property Protection, Resiliency
*Joseph Rubino, Response & Recovery Specialist	City of Portsmouth, Fire Rescue & Emergency Services	Fire Department/Emergency Management, Public Information
John Millspaugh, Senior Engineer	City of Portsmouth/Arcadis (consultant)	Preventive Measures, Property Protection
Whitney McNamara, Environmental Planner	City of Virginia Beach, Wetlands & Shoreline Construction Team, Planning Administration	Planning/Preventive Measures, Property Protection, Resiliency
*Danielle Spach, Emergency Management Planner	City of Virginia Beach, Emergency Management	Emergency Management, Public Information
Lucy Stoll, Principal Planner	City of Chesapeake, Planning Department	Planning/Preventive Measures, Property Protection, Resiliency
*Robert Gelormine, Senior Planner	City of Chesapeake, Office of Emergency Management	Emergency Management, Public Information
*Will Drewery, Emergency Management Coordinator	Isle of Wight County, Emergency Services	Emergency Management, Public Information
*Vernie Francis, Deputy Chief	City of Franklin, Emergency Services	Emergency Management, Public Information
Carlee Smith, Environmental Specialist	City of Franklin, Community Development Department	Planning/Preventive Measures, Property Protection, Resiliency
Markiella Moore, Citizen member	Stakeholder: Chesapeake National Event Mitigation Advisory Committee (NEMAC)	Public Information, Property Protection
Noelle Slater, Senior Water Resources Engineer	Stakeholder: AECOM	Planning/Preventive Measures, Property Protection, Resiliency, Natural Resource Protection
Bill Egerton, Disaster Program Manager	Stakeholder: American Red Cross, Coastal Chapter	Emergency Services, Public Information
Ed Barnette, Government Liaison	Stakeholder: American Red Cross, Coastal Chapter	Emergency Services, Public Information
Judy Hinch, Citizen	Stakeholder: Old Dominion University Ph.D. student and climate researcher; also Citizen member of Chesapeake NEMAC	Property Protection, Resiliency, Natural Resource Protection
Alex Gurchinoff Schlebach, Emergency Management Specialist	Stakeholder: U.S. Army Corps of Engineers	Structural Flood Control Projects, Property Protection
Robert Angrisoni, Emergency Management Specialist	Stakeholder: U.S. Army Corps of Engineers	Structural Flood Control Projects, Property Protection
Judy Shuck, Regional Coalition Coordinator	Stakeholder: Eastern Virginia Healthcare Coalition	Emergency Services, Public Information
Harrison Bresée, Chief Regional Coordinator, Region 5	Stakeholder: Virginia Department of Emergency Management	Emergency Services
Elaina Dariah, Outreach Manager	Stakeholder: Virginia 211	Emergency Services
Mari Radford/Renee Hupp, Community Planning Lead	Stakeholder: FEMA, Region III	Emergency Services

TABLE 2.2a: HAZARD MITIGATION PLANNING STEERING COMMITTEE MEMBERS

NAME AND POSITION	COMMUNITY AND AGENCY	EXPERTISE
Mark Heckler, Representative	Stakeholder: Hampton Roads Association, Chiefs of Police (also Chief of Police in Chesapeake)	Emergency Services
John Sadler, Emergency Management Administrator	Stakeholder: Hampton Roads Planning District Commission	Planning/Preventive Measures, Property Protection, Resiliency
Ben McFarlane, Senior Regional Planner	Stakeholder: Hampton Roads Planning District Commission	Planning/Preventive Measures, Property Protection, Resiliency
Anas Malkawi, Chief of Asset Management	Stakeholder: Hampton Roads Sanitation District	Structural Flood Control Projects, Property Protection
Leigh Ann Erdman, Emergency Management Specialist	Stakeholder: U.S. Department of Veterans Affairs	Emergency Services
Mark Killgore, Dam Safety Engineer	Stakeholder: Virginia DCR, Dam Safety	Structural Flood Control Projects
David Luke, Safety & Health Program Manager	Stakeholder: Jefferson Labs	Planning/Preventive Measures, Property Protection
Kaleen Lawsure, Senior Project Scientist	Stakeholder: Old Dominion University, Virginia Modeling and Simulation Center	Emergency Management, Public Information
Michael Player, Executive Director	Stakeholder: Peninsulas EMS Council	Emergency Management, Public Information
Steve Pincus, EMS Planner & Emergency Mgmt Coordinator	Stakeholder: Peninsulas EMS Council	Emergency Management, Public Information
Leigh Chapman, Senior Planner & Hampton property owner	Stakeholder: Salter's Creek Consulting	Planning/Preventive Measures, Property Protection, Resiliency
David Long, Executive Director	Stakeholder: Tidewater EMS Council	Emergency Management, Public Information
Ross Weaver, Program Assistant Director	Stakeholder: Wetlands Watch	Property Protection, Resiliency, Natural Resource Protection
Kenton Towner, Emergency Management Coordinator	Stakeholder: William & Mary	Emergency Management, Public Information, Property Protection
Jim Kaste, Professor of Geology	Stakeholder: William & Mary	Property Protection

* Lead person responsible for that community in the planning, update and maintenance processes outlined in Section 8.

TABLE 2.2b: HAZARD MITIGATION PLANNING WORKING GROUP MEMBERS

NAME AND POSITION	COMMUNITY AND AGENCY	EXPERTISE
* Larry Snyder, Deputy Fire Chief	City of Williamsburg, Fire Department	Emergency Management, Public Information, Property Protection
* Richard Stephens, Deputy Coordinator	City of Suffolk, Fire & Rescue	Emergency Management, Public Information, Property Protection
* Michael Stallings, Town Manager	Town of Smithfield	Public Information
* William Saunders, Town Manager	Town of Windsor	Public Information
* Beth Lewis, Community Development Director	Southampton County, Community Development	Planning/Preventive Measures, Public Information, Property Protection
* Ray Phelps, Chief	Surry County, Emergency Management	Emergency Management, Public Information, Property Protection
Angela King, Asst City	City of Hampton, City Attorney's Office	Public Information

TABLE 2.2b: HAZARD MITIGATION PLANNING WORKING GROUP MEMBERS		
NAME AND POSITION	**COMMUNITY AND AGENCY**	**EXPERTISE**
Attorney		
Mohammed Shar, Senior Civil Engineer	City of Hampton, Public Works	Property Protection
Scott Smith, Senior Civil Engineer	City of Hampton, Public Works	Property Protection
Tamara Bullock, Business Services Administration	City of Hampton, Parks & Rec	Natural Resource Protection
Carolyn Heaps, Resiliency Officer	City of Hampton, Community Development	Planning/Preventive Measures, Property Protection, Resiliency
Hanna Sabo, Zoning Administrator	City of Hampton, Community Development	Planning/Preventive Measures, Property Protection
Cashayla Rodgers, Neighborhood Development Associate	City of Hampton, Housing & Neighborhood Services	Planning/Preventive Measures, Property Protection
Sara Snowden, Planner	City of Hampton, Emergency Management	Emergency Management
Brian Lewis, Water Resource Engineer	City of Hampton, Public Works	Property Protection
Jonathan McBride, Divisional Manager	City of Hampton, Housing & Neighborhood Services Division	Planning/Preventive Measures, Property Protection
Bruce Sturk, Director	City of Hampton, Federal Facilities	Public Information
Anna Hammond, Neighborhood Development Associate	City of Hampton, Community Development	Planning/Preventive Measures, Property Protection
Phil Prisco, Building Official	City of Hampton, Community Development	Planning/Preventive Measures, Property Protection
Mike Hayes, Planning & Zoning Administration Manager	City of Hampton, Community Development	Planning/Preventive Measures, Property Protection, Natural Resource Protection
Tim Drewry, Deputy City Attorney	City of Hampton, City Attorney's Office	Public Information
Robin McCormick, Communications Strategist	City of Hampton, Marketing	Public Information
Gwen Pointer, Emergency Mgmt Planner	City of Hampton, Emergency Management	Emergency Management
Nicole DelValle, Emergency Operations Planner	City of Newport News, Emergency Management	Emergency Management
Kathie Angle, Civil Design Engineer	City of Newport News, Public Works	Property Protection
Louis Bott	City of Newport News	Emergency Management
John Anderson, Director	City of Poquoson, Public Works	Property Protection
Thomas Cannella, Planner	City of Poquoson, Planning	Planning/Preventive Measures, Property Protection, Natural Resource Protection
Tonya O'Connell, Asst City Manager	City of Poquoson, City Manager's Office	Public Information
Jessica Davis, Finance Specialist	City of Poquoson, Finance	Public Information
Caroline Dunlap, Emergency Management Planner	James City County, Emergency Management	Emergency Management , Public Information
Mike Woolson, Section Chief, Resource Protection	James City County, General Services	Planning/Preventive Measures, Property Protection
Steve Kopczynski, Fire Chief, Director	York County, Fire & Life Safety	Emergency Management , Planning/Preventive Measures, Property Protection

TABLE 2.2b: HAZARD MITIGATION PLANNING WORKING GROUP MEMBERS		
NAME AND POSITION	**COMMUNITY AND AGENCY**	**EXPERTISE**
Susan Kassel, Director	York County, Planning & Development Services	Planning/Preventive Measures
Amy Parker, Senior Planner	York County, Planning Division	Planning/Preventive Measures
Gail Whittaker, Public Information Officer	York County, Public Affairs	Public Information
Daniel Hudson, Deputy Emergency Mgmt Coordinator	City of Norfolk, Emergency Management	Emergency Management
Jalesha Smith, Management Analyst	City of Norfolk, City Manager's Office of Diversity, Equity & Inclusion	Public Information
Jim Redick, Director	City of Norfolk, Emergency Preparedness & Response	Emergency Management
Scott Mahone, Deputy Emergency Mgmt Coordinator	City of Norfolk, , Emergency Preparedness & Response	Emergency Management
Kyle Spencer, Chief Resilience Officer	City of Norfolk, Office of Resilience	Planning/Preventive Measures, Property Protection, Resilience, Natural Resource Protection
David Topczynski, Deputy Emergency Management Coordinator	City of Portsmouth, Office of Emergency Management	Emergency Management
Stephen Davis, Deputy Emergency Management Coordinator	City of Portsmouth, Office of Emergency Management	Emergency Management
Danielle Progen, Director	City of Virginia Beach, Office of Emergency Mgmt	Emergency Management
Marissa Jones, Office Asst	City of Virginia Beach, Emergency Mgmt	Emergency Management
PJ Scully, Landscape Architect	City of Virginia Beach, Office of Planning	Planning/Preventive Measures, Natural Resource Protection
Brian Spicer, Emergency Mgmt Coordinator	City of Suffolk, Suffolk Fire & Rescue	Emergency Management
Michael Barber, Director	City of Chesapeake, Parks, Recreation & Tourism	Planning/Preventive Measures, Property Protection, Resilience, Natural Resource Protection
David Jurgens, Director	City of Chesapeake, Public Utilities	Property Protection
Ana Elezovic, Planner	City of Chesapeake, Planning	Resilience, Natural Resource Protection
Patrick Hughes, Citizen member	City of Chesapeake, NEMAC	Planning/Preventive Measures
James Haluska, Citizen member	City of Chesapeake, NEMAC	Planning/Preventive Measures
Heather Stanton, Public Utilities Representative	City of Chesapeake, Public Utilities & NEMAC	Property Protection, Planning/Preventive Measures
Michael Johnson, County Administrator	Southampton County	Public Information
Regan Prince, Environmental Specialist	Southampton County, Environmental Services Division	Property Protection
Natalie Rountree, Director	City of Franklin, Community Development	Planning/Preventive Measures, Property Protection, Resilience, Natural Resource Protection

* Lead person responsible for that community in the planning, update and maintenance process outlined in Section 8.

2021/2022 COMMITTEE MEETINGS AND WORKSHOPS

Below is a summary of the key meetings and committee workshops during the 2021/2022 update process. Routine discussions and additional meetings were held by local officials to accomplish planning tasks specific to their department or agency. A consultant team (AECOM, partnered with Salter's Creek Consulting, Inc., of Hampton, Virginia) was hired with grant funds to update the hazard identification and vulnerability analysis, to guide the committee through the planning process based on the revised information and to assist each community with adoption of the final plan. All meeting summary information is included in Appendix C, which includes committee and public meeting minutes, attendance sheets, and correspondence with committee members and stakeholders.

FEBRUARY 25, 2021: PROJECT KICKOFF MEETING

Participants in the Kickoff Meeting discussed the overall approach to updating the Hazard Mitigation Plan, including strategies for outreach and public participation, as well as the steps necessary to meet the requirements of the DMA 2000, and the Community Rating System (CRS) of the National Flood Insurance Program (NFIP). The consultant initiated data collection efforts at the meeting and reviewed the existing list of hazards with the representatives present.

The group discussed project schedule and potential stakeholders and how they would be asked to participate, including tasks such as: reviewing drafts, participating on the committee, and/or attending public meetings. Due to the ongoing COVID-19 safety protocols in place at the time , the group and the consultant decided that each of the main three meetings would be held virtually through online meeting software. Committee meetings would be held virtually, as well.

JULY 27, 2021: FIRST PLANNING COMMITTEE MEETING

The consultant provided an overview of the proposed update approach to committee members. The Committee reviewed the Hazard Identification and Vulnerability Assessment information presented. Committee members discussed the hazards of most critical concern to the region, and concurred to adjust the names of several hazards, removed several hazards and added hazards.

The committee members present voted on their mitigation priorities and ranked hazards using the methodology described in Section 5. The committee considered a list of hazards that included flooding, sea level rise and land subsidence, coastal and tropical storms, severe thunderstorm/hail/lightning, winter storm, drought, high hazard dam failure, tornado, extreme heat, earthquake, wildfire, coastal erosion and landslides, hazardous materials incidents and pandemic flu.

The first part of the meeting focused on the flood analysis, including the hybrid analysis conducted using HAZUS. Participants discussed their frustration with obtaining NFIP repetitive flood loss data and the inability to know flood insurance coverage happening in private flood insurance market. The group discussed nomenclature for Infectious Disease/Pandemic Flu. Surry County requested that landslides not be deleted as it is a significant hazard in their region, and several participants indicated Extreme Heat and Winter Storm should be moved up in the risk assessment.

SEPTEMBER 28, 2021: SECOND PLANNING COMMITTEE MEETING

The second Planning Committee meeting was the beginning of the "Mitigation Strategy Workshops." The meeting began with a presentation on how a complete capability assessment contributes to identification of effective mitigation strategies. The discussion focused on local capabilities and the capability matrix each community was asked to complete.

The consultant helped Committee members review several documents in preparation for the goal setting exercise which was the focus of the workshop. This background helped Committee members maintain continuity and to develop linkages between various local, regional, and state planning efforts.

Data, documents, plans and procedures reviewed as part of the goal setting portion of the planning process included, but were not limited to the following:

- *2018 Commonwealth of Virginia Hazard Mitigation Plan* goals and objectives –
    - These items were reviewed by committee members prior to the work on updating the goals and objectives to help ensure that the regional plan supports and does not contradict the State's goals and objectives;
- Goals, objectives and recommendations from Virginia Beach, Hampton and Norfolk Resiliency planning efforts;
- Goals and objectives from the Virginia Coastal Resilience Master Planning Framework, 2020;
- *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*, FEMA January 2013;
- Hampton Roads Planning District Commission three-part study entitled *"Climate Change in Hampton Roads"*;
    - Impacts and Stakeholder Involvement (Phase I, released in February 2010);
    - Storm Surge Vulnerability and Public Outreach (Phase II, released June 2011);
    - Sea Level Rise in Hampton Roads, Virginia (Phase III, released July 2012);
- Each of the existing plan's three primary goals and related objectives; and
- Dam Safety Data Sheets for the region's High Hazard Potential Dams, as well as the list of all State-regulated dams in the region (included in **Appendix H**).

The group was provided a list of potential, broad community goal key phrases extracted from the existing plans in order to encourage brainstorming about revising the goal statements. The members also reviewed existing goal statements from the current plan and other plans pertinent to the region. The group then went to work carefully reviewing the existing mitigation plan goal statements. Participants were encouraged to critique each word in light of the goal key words identified earlier and any changes that had taken place in their communities in the previous five years. The facilitator reworked, grouped together, and presented the revised goals and objectives in real time during the meeting so that the group could arrive at a consensus on the broader mitigation goals and objectives associated with the updated mitigation plan. Detailed notes on the reasoning behind why the mitigation goals and objectives were modified is included in Section 7, which shows the changes and the revised goals and objectives.

The group discussed the current status of COVID-19 protocol and the ability to meet in person for the third workshop. Those present preferred a hybrid approach for Workshop #3 and the development of new and revised mitigation actions for 2022. The consultant proposed a virtual group workshop that would discuss the types of mitigation actions and provide examples and some suggested reading materials, followed by a series of in-person working group meetings, termed "office hours" at three locations in the study area to facilitate review, revision and development of each community's existing mitigation actions.

NOVEMBER 9, 2021: THIRD MITIGATION PLANNING COMMITTEE MEETING

The group reviewed a general list of potential mitigation actions categorized by type and the consultant provided examples, both local and national, of various successful mitigation actions. A brief discussion of the various categories followed. The consultant discussed a variety of mitigation categories for considering and evaluating possible mitigation action alternatives appropriate to each community. Suggested reading materials for the group included:

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, FEMA 2013;
Mitigation Best Practices – FEMA web site;
Mitigation Success Stories, Association of State Floodplain Managers, 2002;
Mitigation Matters: Policy Solutions to Reduce Local Flood Risk, Pew Charitable Trusts web site;
Zoning for Coastal Flood Resiliency, New York City Planning;

Mitigation Action Portfolio, FEMA web site;
*Buoyant City: Historic District Resiliency & Adaptation Guideline*s, Miami Beach, 2020; and
Coastal Flood Resilience Design Guidelines, Boston Planning & Development Agency, 2019.

The consultant then facilitated a discussion on regional mitigation actions from the 2017 plan and made real-time edits to those actions. Action 1 was modified to remove sidescan Light Detection and Ranging (LIDAR) and replaced with the group's desire to collect lowest floor elevations by collecting existing or creating new Elevation Certificates. Action 2 was edited to reflect desire to use existing mechanisms of the HRPDC to develop additional regional mitigation strategies and host annual workshop on funding. Action 3 was edited to refocus on Hazards U.S. Multi-Hazard (Hazus) input and output data. The group decided to remove Action 4 because a Commodity Flow Study has been identified as a capability gap in regional planning and has been referred to the Local Emergency Planning Committee (LEPC) for completion. The group discussed the addition of several new regional mitigation actions regarding: NFIP repetitive flood loss data analysis at the state or regional level and preparation of repetitive flood loss area analyses; use of radon test kits to test structures; verifying status of significant hazard dams region-wide; and, strengthening/creating transportation networks for evacuation; and partnering with private companies on critical lifeline continuity.

In addition to the facilitated discussion, the consultant cross referenced the final list of proposed mitigation actions and worked with community staff to ensure that each High Hazard Potential Dam listed in Table 4.4 with a "poor" or "unsatisfactory" condition assessment is addressed in the final Mitigation Action Plan. Regional mitigation actions in Section 7 were also added to help clarify the role of the region in addressing dam safety management.

COMMUNITY-SPECIFIC WORKING GROUP MEETINGS

All communities were invited by email to schedule a one-on-one meeting with the consultant toward the end of the planning process. Most of the communities involved in the plan took advantage of these consultant-facilitated brief, in-person meetings at the community level to discuss their final Mitigation Action Plan. Participants worked carefully through a review of the list of existing mitigation actions from their existing plan, deciding which actions to modify or delete based on their progress toward completion. The group then selected and discussed priorities for several new proposed actions suggested by the consultant.

The consultant shared additional review notes on several items that varied by community, and that typically included:

comprehensive plan, resilience plan and strategic plan review notes;
floodplain management regulation review notes;
capabilities or capability gaps noted over the course of the planning process;
repetitive loss area maps (hard copies provided during the meeting);
community-specific critical facility vulnerabilities as shown in the HIRA, and as discussed in the First Planning Committee Meeting; and
other pertinent materials such as news clippings.

While previous plans have benefitted from the synergies of having all communities attend a large workshop to address the MAP revisions and share mitigation ideas, COVID 19 protocols in 2021 required a revised methodology to allow some one-on-one discussion of mitigation actions, but to limit the number of people convened at any one time. The meetings were held over the course of several days in November 2021. York County and the City of Hampton met November 16, 2021 at the City of Hampton Emergency Operations Center. The consultant met with Poquoson representatives on November 16, 2021, as well, in their City Hall Meeting Room. November 19, 2021, in the Isle of Wight Board of Supervisors Board Room, the consultant met with Southampton County, City of Franklin, City of Suffolk, and Isle of Wight County. A virtual meeting was held that same day with James City County staff.

November 22, 2021, the consultant met with City of Williamsburg officials in their Fire Department Headquarters. Finally, on November 30, 2021, the cities of Virginia Beach, Portsmouth, Newport News, Chesapeake and Norfolk sent staff for individual one-hour sessions with the consultant in the HRPDC headquarters in Chesapeake. Attendance for each community was as follows:

City of Hampton	Hui-shan Walker
	Angela King
	Tracy Hanger
	Scott Smith
	Carolyn Heaps
	Sara Snowden
	Brian Lewis
	Jonathan McBride
	Bruce Sturk
	Anna Hammond
	Phil Prisco
	Mike Hayes
	Tim Drewry
	Robin McCormick
City Newport News	George Glazner
	Heather Brown
	Kathy Angle
City of Poquoson	Michael Bryant
	Ken Somerset
	John Anderson
	Thomas Cannella
	Tonya O'Connell
	Jessica Davis
James City County	Michael Teener
	Sara Ruch
City of Williamsburg	David Eagle
	Larry Snyder, Williamsburg
	Erin Burke, Planning Department
	Kenton Towner, William & Mary
	Joanne Chapman, Colonial Williamsburg Foundation
	Sela Gordon
York County	Sean Segerblom, York County
	Kent Henkel
City of Norfolk	Daniel Hudson
	Matthew Simons
	Tristian Barnes

City of Portsmouth	Joseph Rubino
	John Millspaugh (Arcadis)
City of Virginia Beach	Whitney McNamara, Virginia Beach
	Danielle Spach
City of Suffolk	Richard Stephens, Suffolk
City of Chesapeake	Robert Gelormine
	Markiella Moore
Isle of Wight County	Will Drewery
Southampton County	Beth Lewis
City of Franklin	Vernie Francis, Franklin
	Carlee Smith
	Natalie Rountree

Participation in the planning process by the towns of Boykins, Branchville, Capron, Courtland, Ivor, and Newsoms was negligible, despite multiple attempts at communication. PDC staff specifically reached out again to many of these communities in mid-February 2022 to inform them verbally about the final Public Meeting in March, and to encourage their attendance. The PDC called and emailed Boykins on February 22 and 23; they called Branchville and Capron on February 24 and left voicemails; they called Courtland and spoke with the Town Clerk on February 24. The PDC also called and emailed the Mayors of Ivor and Newsoms between February 22 and February 24, 2021. Despite these efforts, the towns did not send representatives to the meetings and, therefore, are not considered participants at the time of initial approval. Their mitigation actions from previous plans have been placed in Appendix J, Archived Mitigation Actions, should they need to reference or edit them in the future.

INVOLVING THE PUBLIC

44 CFR Requirement

Part 201.6(b)(1): The planning process shall include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

Individual citizen involvement provides the planning committee with a greater understanding of local concerns and increases mitigation success by developing community "buy-in" from those directly affected by public policy and planning decisions. As citizens become more involved in decisions that affect their life and safety, they are more likely to gain appreciation of the natural hazards present in their community and take personal steps to reduce hazard impacts. Public awareness is a key component of an overall mitigation strategy aimed at making a home, neighborhood, school, business or locality safer from the effects of natural hazards.

Public input was initially sought using three primary methods: (1) open public meetings advertised locally; (2) broadly-distributed public survey; and, (3) the posting of the draft Hazard Mitigation Plan on the HRPDC web site. Public meetings were held at three stages of the planning process; early in the process to introduce the plan update process, again in the middle stage to share results of the Hazard Identification and Risk Assessment; and again, after the planning committee workshops, but prior to adoption by governing bodies.

2021/2022 Public Meetings

Three open public meetings were held virtually via Zoom to present the planning process and to review mitigation actions to be included in the Hazard Mitigation Plan.

The first public meeting was held April 20, 2021. The goal was to introduce the public to the planning process and invite their involvement. The group discussed the hazards in the 2017 plan and provided comments on hazards proposed to be included in the update. The facilitator polled the group about their concerns regarding various hazards and provided a Q&A session at the end.

Upon completion of the Hazard Identification and Risk Assessment, the Committee held another open, virtual public meeting on July 29, 2021. This meeting included review of the results of the hazard study for the region, including detailed information regarding exposure, risk assessment and social vulnerability.

Upon completion of a draft Plan, the Committee held another public meeting on the draft Hazard Mitigation Plan on March 2, 2022. The meeting provided further opportunity for the public and identified stakeholders to review and comment on the draft plan. The plan was posted on the HRPDC web site on February 7, 2022, and contact information for the HRPDC Emergency Management Division was provided if the public needed instructions for submitting comments by March 9. The meeting and review period after the March 2 meeting, provided citizens with an opportunity to review the content of the Plan's sections.

All public meetings were advertised broadly by the communities on social media, on physical bulletin boards, and via email to help ensure that local officials, residents, businesses, and other public and private interests in the region, including neighboring communities, were notified on how to be involved in the local mitigation planning process. Additionally, HRPDC and the communities advertised the meetings on their web sites. The public meeting advertisements are included in Appendix C, which also includes all committee and public meeting minutes, attendance sheets, and invitation correspondence.

The public meeting on March 2, 2022 was termed the "Feedback Forum" in an effort to solicit public comment and feedback on the draft plan. Once again, the committee relied on the efforts of multiple community Public Information Officers, web masters, and other communication specialists, including HRPDC's Administrator of the Office of Community Affairs and Civil Rights, to use a variety of sources to spread the word about the planning effort. Records of advertisements and solicitations for involvement are included in Appendix C (meeting minutes), Appendix D (public survey response summaries), and Appendix E (responses to public comments).

Additionally, the plan was reviewed and presented to each community's elected officials at a public hearing prior to adoption. Though the plan was in its final format for these meetings, this did provide additional opportunity to answer questions and present findings to the public and elected officials. The resolution of adoption by each community is included in Appendix B. Adoption dates are shown in **Table 2.3**.

TABLE 2.3: DATE OF PLAN ADOPTION BY ELECTED OFFICIALS

SUBREGION	COMMUNITY	DATE OF PLAN ADOPTION
Peninsula	City of Hampton	August 10, 2022
	City of Newport News	September 27, 2022
	City of Poquoson	June 13, 2022
	City of Williamsburg	July 14, 2022
	James City County	June 28, 2022
	York County	August 2, 2022
Southside	City of Norfolk	July 12, 2022
	City of Portsmouth	September 27, 2022
	City of Suffolk	June 15, 2022
	City of Virginia Beach	June 7, 2022
	City of Chesapeake	July 12, 2022
Western Tidewater	Isle of Wight County	June 16, 2022
	Town of Smithfield	July 5, 2022
	Town of Windsor	July 12, 2022
	City of Franklin	June 27, 2022
	Southampton County	June 28, 2022
	Surry County	July 7, 2022
	Town of Claremont	October 5, 2022
	Town of Dendron	November 7, 2022

Public Survey

A public survey was distributed early in the planning process to solicit additional feedback from attendees. As indicated above, the public survey was also distributed online in spring 2021 as part of the committee's effort to improve and use public feedback. The results of a total 130 responses collected are summarized in Appendix D. Unfortunately, the response period for the survey was somewhat limited due to another public survey ongoing in the region with similar questions and content.

The majority of respondents to the survey were in Norfolk, Portsmouth, Virginia Beach and Chesapeake. Eighty-seven percent of respondents indicated that, beyond COVID-19, they had experienced or been impacted by a natural or manmade disaster. The highest threats were perceived as hurricanes/tropical storms, floods, pandemic flu/disease, and sea level rise. The majority of participants (72%) did not live in the floodplain, while 44% did have a home in the floodplain. Interestingly, 53% of respondents had flood insurance indicating that many with homes out of the floodplain still had flood insurance. Many (84%) had

measures and structural projects were seen as the most effective mitigation actions that local governments could administer.

The information in the survey was distributed to all committee members via the HRPDC's SharePoint data sharing site set up early in the planning process. Committee members were invited via email to review the data, particularly as it related to their community, as soon as the survey closed. The contractor reviewed the responses and used them to inform the development of the Mitigation Action Plan and other components of the plan.

HRPDC Web Site

Throughout the planning process, HRPDC maintained a web site at https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan that provided a description of the planning process and posted meeting information. The page included a copy of the draft plan prior to the final Public Meeting to provide the public an opportunity to comment. Those comments are addressed through the standard comment/response format documented in Appendix E.

Brochure

In addition to the public meetings, web site and survey, the Committee issued a brochure template that was distributed by many of the jurisdictions, primarily via social media and web postings on their respective web sites. The brochure template is shown in **Figure 2.2** below and provides background information on the planning process, the Community Rating System, and how citizens can become involved. The blank lines are intended for individual jurisdictions to input contact information for their staff point of contact.

FIGURE 2.1: HAMPTON ROADS HAZARD MITIGATION PLANNING BROCHURE

2022 Hampton Roads Hazard Mitigation Plan Update Process

Hazard Mitigation Planning

A Hazard Mitigation Plan is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. This planning process is structured around the four phases of the Disaster Mitigation Act of 2000, which the region's planning consultant has aligned with the ten steps of the Community Rating System (CRS). Having an adopted Hazard Mitigation Plan that is updated every five years helps ensure each community in the region is eligible for federal disaster funding following a disaster event.

The Community Rating System (CRS)

The CRS is a national program developed by the Federal Emergency Management Agency (FEMA) to encourage communities to reduce their risk to flood-related hazards. The CRS rewards the efforts communities take that go above and beyond the minimum requirements of the National Flood Insurance Program (NFIP) by providing discounts on flood insurance premiums.

Phase 1
1. Organize Planning Team
2. Plan for Public Involvement
3. Coordinate with Other Agencies

Phase 2
4. Identify the Hazards
5. Estimate Losses

Phase 3
6. Identify Goals & Objectives
7. Develop Potential Mitigation Actions
8. Draft the Mitigation Plan

Phase 4
9. Adopt the Plan
10. Implement and Maintain the Plan

Hazards Addressed by the Hampton Roads Hazard Mitigation Plan

The planning committee has initially identified the following hazards for inclusion in the Hampton Roads Hazard Mitigation Plan:

- Flooding
- Sea Level Rise
- Tropical Storm
- Shoreline Erosion
- Dam Failure
- Tornado
- Winter Storm
- Earthquake
- Wildfire
- Drought
- Extreme Heat
- Hazardous Materials Incident
- Communicable Disease

Citizen Involvement

Citizen participation is an important component of mitigation planning. The planning team needs your input on the types of hazards that are your priority concern, and your opinion on ways to lessen their impact.

- Visit the web site. Get more information and follow the planning process at https://www.hrpdcva.gov. The website contains announcements for upcoming meetings, minutes and presentations from past planning meetings, information on the identified hazards, draft planning documents for review, a public survey, and more.
- Take the survey. A public outreach survey is available online here. Please complete the survey as soon as possible to ensure that your opinion is captured! If you would like a hard copy, please use the email below.
- Send us information or comments. If you have information to share for inclusion in the plan, please contact _____ at _____. The draft plan will be made available for public review on the web site prior to being submitted to FEMA.

INVOLVING STAKEHOLDERS

44 CFR Requirement

Part 201.6(b)(2): The planning process shall include an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process.

A range of stakeholders, including neighboring communities, agencies, businesses, academia, nonprofits, hospitals, and other interested parties were invited and encouraged to participate in the development of the Hazard Mitigation Plan. Stakeholder involvement was encouraged through notifications and invitations to agencies or individuals to participate in Planning Committee meetings, the Mitigation Strategy Workshops and document review.

In addition to the Planning Committee meetings, the committee encouraged open and widespread participation in the mitigation planning process through the design and publication of advertisements that promoted the open public meetings. These media and social media advertisements and the HRPDC web page postings provided opportunities for local officials, residents, and businesses to offer input.

During the 2021/2022 update process, additional stakeholders were contacted and invited to participate in one of three ways: 1) attend and participate in Committee meetings; 2) attend and participate in the Public Meetings; and/or 3) review draft documents and provide comments and critique.

Additional stakeholders who were invited *and did participate* at some point in the planning process but who were not included on the Steering or Working Committees in Table 2.2 include:

Neighboring communities:
- Brett Major, Gloucester County
- John Hutcheson, Fort Monroe Authority

Local and regional agencies involved in hazard mitigation activities:
- Christina Johnson, Jefferson Labs
- Lewis Bush, Sentara Leigh Hospital

Stakeholder-type organizations that are not represented on the planning committee:
- Perla Santillan, Office of the Chief Medical Examiner for Virginia
- John Cooke, Virginia Department of Health, Office of Emergency Preparedness
- Mike Monteith, Peninsula Community Foundation
- Carolyn Malloy, Virginia EMS
- Gary Lupton, Sr., Virginia 1st

Regional and metropolitan planning agencies:
- Riana Rich, HRPDC
- Danielle Spach, HRPDC (later on the Steering Committee for Virginia Beach);
- Jay Ruffa, Crater Planning District Commission (also representing neighboring communities)
- Katie Moody, PlanRVA (PDC for Richmond region, also representing neighboring communities)

Higher Education Facilities:
- Paul Long, Thomas Nelson Community College
- Jessica Whitehead, ODU ICAR
- Barry Ezell, ODU VMASC
- Pamela Mason, Virginia Institute of Marine Science, College of William & Mary
- William Berquist, College of William & Mary

Other State agencies:
- Allen Evans, Virginia Department of Military Affairs
- John Highsman, Virginia Department of Forestry

State geological agency:
- Anne Witt, Virginia Department of Energy

State emergency management agency;
- Bruce Sterling, VDEM
- Chris Bruce, VDEM

National Weather Service:
- Eric Seymour, NWS Wakefield Office

U.S. Army Corps of Engineers;
- Greg Williams
- Paul Moye

American Red Cross:
- Aubrie McClendon
- Lisa Mike

Representatives from military bases in the region:
- Rob Starr, Joint Base Langley-Eustis
- Steve Harrison, U.S. Coast Guard
- Don Clayton, U.S. Coast Guard.

Additional stakeholders who were invited *but chose not to participate* as stakeholders include:

State agency representatives:
- Virginia Department of Health

Representatives from colleges and universities in the region:
- Christopher Newport University

Representatives from utilities servicing the region:
- Dominion Energy

Social service providers in the region:
- The Planning Council

Representatives from the medical community:
- Riverside Health System.

COMMUNITY PROFILE

Contents

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2022 UPDATE

Section 3 was updated to align the format and content of the existing plans and incorporate the most recent data available for each community. Tables and figures were updated, when necessary, to incorporate data from the 2020 U.S. Census, the 2019 American Community Survey (ACS), the HRPDC and other sources. Surry County data were appended. Figure 3.1, and Figures 3.3 through 3.7 were reviewed and determined to remain relevant; thus, they remain in the plan. Towns in Southampton and Surry County that did not participate in the planning process remain represented in this and subsequent sections with the expectation that they may participate at a later date via plan amendment.

GEOGRAPHY AND THE ENVIRONMENT

Located in the southeastern quadrant of Virginia, the portion of Hampton Roads included in this study is bordered to the north by Gloucester County, to the south by Currituck and Camden Counties in North Carolina, to the east by the Atlantic Ocean and Chesapeake Bay, and to the west by the counties of Sussex and Greenville **(Figure 3.1)**. Although Gloucester County is generally considered part of the Hampton Roads region for planning purposes, the county is participating in hazard mitigation planning processes in conjunction with another, adjacent planning district.

Table 3.1 provides a summary of the geographic characteristics of each of the participating communities.

FIGURE 3.1: THE HAMPTON ROADS REGION OF VIRGINIA

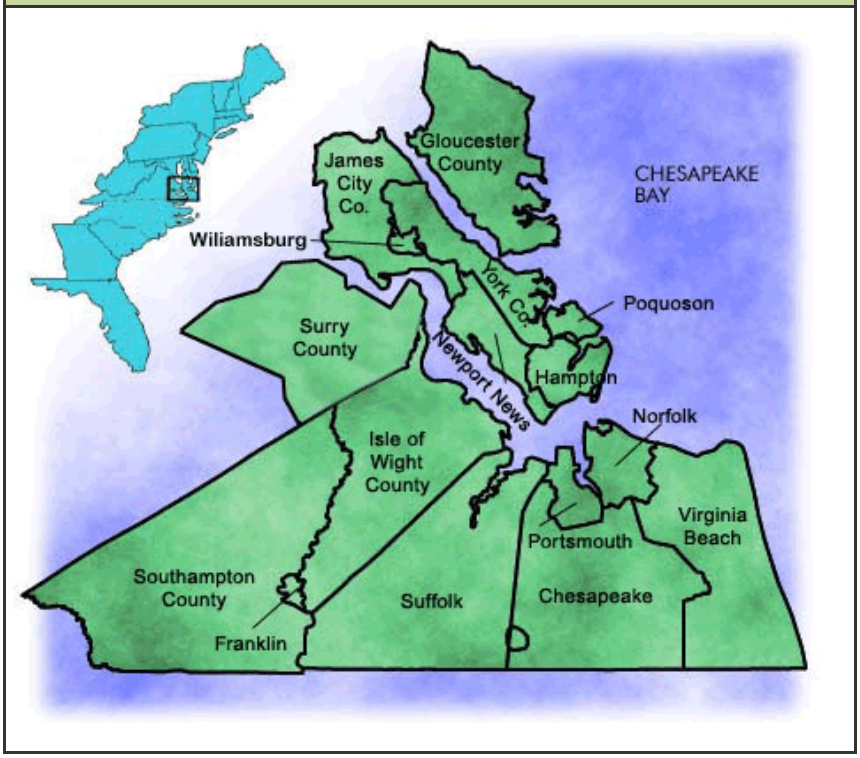


TABLE 3.1: SUMMARY OF GEOGRAPHIC CHARACTERISTICS

SUBREGION	COMMUNITY	2018 LAND AREA IN SQUARE MILES	2018 POPULATION DENSITY PER SQUARE MILE	HOUSING UNITS PER SQUARE MILE
Peninsula	Hampton	52	2,608.3	1,156
	Newport News	70	2,587.4	1,106
	Poquoson	16	770.0	298
	Williamsburg	9	1,687.0	570
	James City County	153	495.7	211
	York County	106	648.3	259
Southside	Norfolk	54	4,570.8	1,791
	Portsmouth	33	2,877.4	1,239
	Suffolk	400	231.8	89
	Virginia Beach	259	1,828.3	706
	Chesapeake	340	717.3	261
Western Tidewater	Isle of Wight County	316	118.6	49
	Smithfield	10	844.1	346
	Windsor	4	675.0	271
	Franklin	8	1,038.5	460
	Southampton	600	29.8	13

TABLE 3.1: SUMMARY OF GEOGRAPHIC CHARACTERISTICS

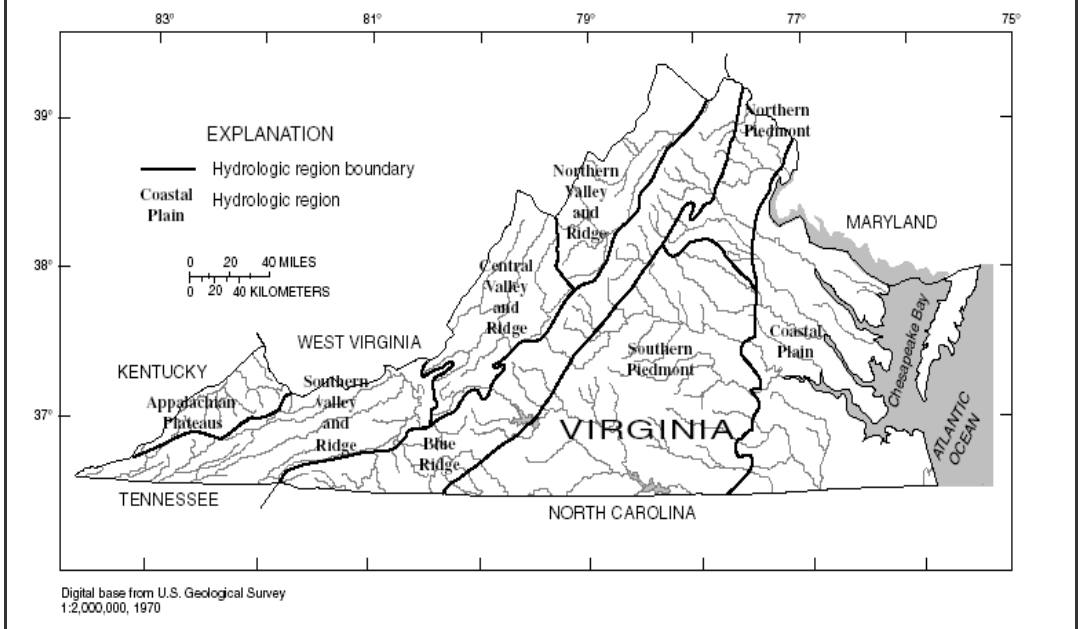
SUBREGION	COMMUNITY	2018 LAND AREA IN SQUARE MILES	2018 POPULATION DENSITY PER SQUARE MILE	HOUSING UNITS PER SQUARE MILE
	County			
	Boykins	<1	854	269
	Branchville	<1	112	57
	Capron	<1	139	69
	Courtland	<1	1,958	523
	Ivor	1	495	152
	Surry County	279	23.6	13
	Claremont	3	107.7	67
	Dendron	4	85.0	32

Source: Weldon Cooper Center (land area and density) and U.S. Census Bureau 2013-2017 American Community Survey Estimates (housing unit data)

Hampton Roads is located within the Atlantic Coastal Plain Physiographic Province, which is characterized by its low, flat relief **(Figure 3.2)**. Much of the region's elevation is nearly level, with the highest elevation point in the study area being just 177 feet above sea level. For example, the overall elevation for the City of Chesapeake averages 12.2 feet above sea level.

The Atlantic Coastal Plain is the easternmost of Virginia's physiographic zones. The zone extends from New Jersey to Florida and includes all of Virginia east of the Fall Line, which is the point at which east-flowing rivers cross from the hard, igneous, and metamorphic rocks of the Southern Piedmont to the relatively soft, unconsolidated strata of the Coastal Plain (U.S. Geological Survey (USGS) 2001).

FIGURE 3.2: PHYSIOGRAPHIC REGIONS OF VIRGINIA

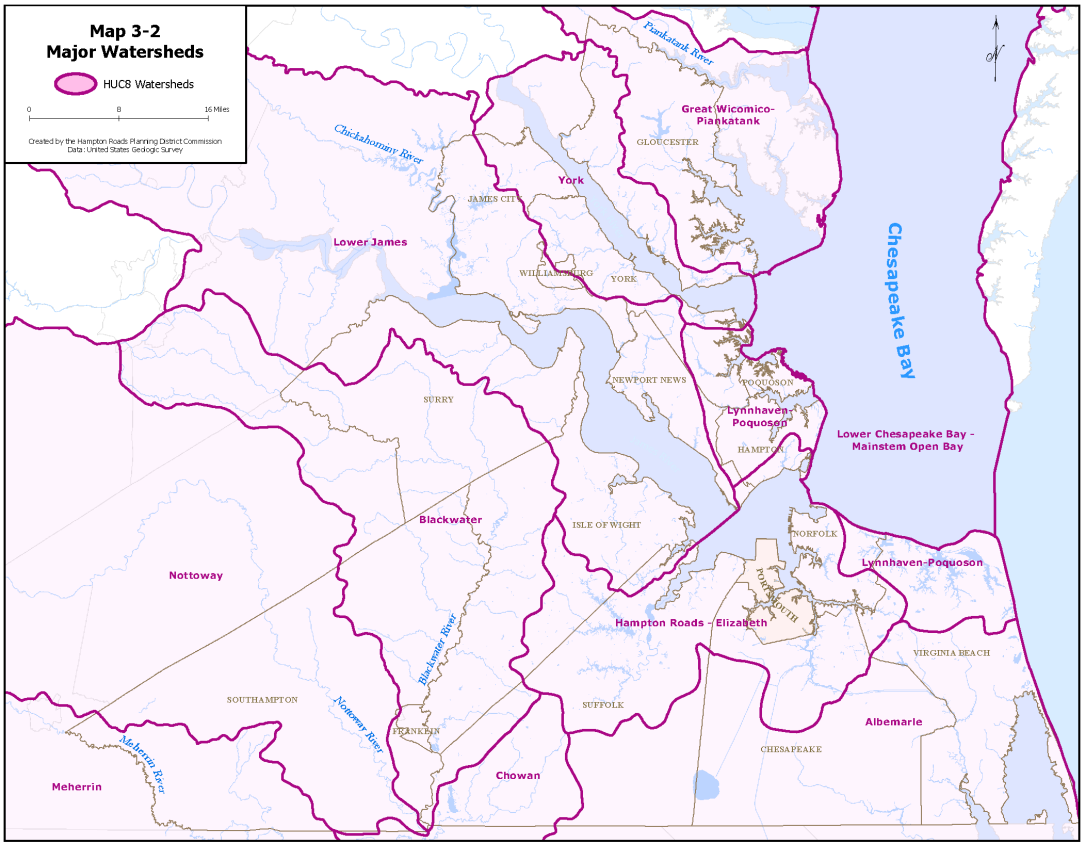


Hampton Roads contains portions of four major river basins: the James River Basin, the York River Basin, Lower Chesapeake Bay, and the Albemarle-Chowan Basin. **Figure 3.3** provides a graphical

illustration of the watersheds designated by their USGS Hydrologic Unit Code. The James River Watershed encompasses approximately 10,200 square miles, and its headwaters are located in Bath and Highland Counties. The James River, which is a part of the larger Chesapeake Bay Basin, empties into the Chesapeake Bay at Hampton Roads. The Lower James subbasin, as shown in **Figure 3.3**, has an area of 1,440 square miles, and the Hampton Roads – Elizabeth subbasin has an area of 425 square miles. The York River Basin encompasses 2,626 square miles with headwaters in Orange County, Virginia. The Lower York River subbasin shown in **Figure 3.3** has an area of just 275 square miles. Several tributaries in the study area flow directly into the Chesapeake Bay, including Poquoson River, Back River, and Lynnhaven River, but the basin also includes the small bays, river inlets, islands and shoreline of the Bay. While the entire basin includes just over 3,000 square miles of land area, just 53% of that land area is within the study area.

Land in both North Carolina and Virginia contribute runoff to the Albemarle-Chowan River Basin. The drainage basin within Virginia is 4,061 square miles, and the basin begins as far west as Charlotte County. Major tributaries include the Meherrin, Nottaway and Blackwater Rivers. In Virginia, there are four distinct sub-watersheds — the Great Dismal Swamp, North Landing River, Northwest River, and Back Bay. These waters flow into the Albemarle and Pamlico Sounds in southeastern North Carolina.

FIGURE 3.3: HYDROGRAPHIC REGIONS OF HAMPTON ROADS



2011

Source: Hampton Roads Regional Water Supply Plan, HRPDC, 2011

According to the Virginia Department of Conservation and Recreation (DCR) natural heritage inventory, there are at least seven important ecological community groups in Hampton Roads that are interrelated with the water resources of the region:

- Pine/Scrub Oak Sandhills – includes slightly elevated sand deposits along the Blackwater and Nottoway Rivers in Southampton and Isle of Wight counties and the City of Suffolk.
- Fluvial Terrace Woodlands – Nottoway River and Chickahominy River
- Bald Cypress – Tupelo Swamps – swamps dominated by old-growth bald cypress along the Blackwater River in Isle of Wight County and the Nottoway River in Southampton County.
- Coastal Plain/Piedmont Swamp Forests;
- Coastal Plain/Piedmont Floodplain Forests;
- Tidal Bald Cypress Forests and Woodlands; and,
- Tidal Freshwater and Oligohaline Aquatic Beds

The Virginia Scenic Rivers program, administered by DCR, identifies, recognizes and provides limited protection to rivers whose scenic beauty, historic importance, recreation value, and natural characteristics make them resources of particular importance. Reaches of the Blackwater, lower James, North Landing and Nottoway Rivers are all designated scenic rivers through the program. Similarly, the Nationwide Rivers Inventory is a register of river segments that possess unique, rare or exemplary features that are significant at a comparative regional or national scale. Segments of the Blackwater, Chickahominy, James, Northwest, Nottoway, Ware, Yarmouth, and York Rivers are designated on the National Rivers Inventory for various reasons. Additional information on the significance of each designated reach can be found at: https://www.nps.gov/subjects/rivers/virginia.htm.

The summer, fall, spring, and winter temperatures in the Hampton Roads region are typically mild. **Table 3.2** provides the annual meteorological averages for maximum, minimum, and mean temperatures, as well as total precipitation from three airports in the coastal part of the region. The region usually receives small amounts of snowfall annually. Additional discussion of weather extremes, including winter storms, is included in Section 4.

TABLE 3.2: ANNUAL METEOROLOGICAL AVERAGES

WEATHER STATION	TEMPERATURE (DEGREES FAHRENHEIT)			TOTAL PRECIPITATION (INCHES)
	MAXIMUM	MINIMUM	MEAN	
Joint Base Langley-Eustis (Hampton) 1918-2007	67.5	51.3	59.4	43.6
Holland (Suffolk) 1933-2008	70.2	47.4	58.8	48.4
Norfolk International Airport 1946-2008	68.5	51.4	59.9	45.3

Source: Hampton Roads Regional Water Supply Plan, HRPDC, 2011

The following information provides a brief overview of the history, geography and unique characteristics of the jurisdictions in the study area.

City of Hampton

Hampton is the oldest continuously settled English-speaking community in the United States. The area now occupied by Hampton was first noted by English colonists before they sailed up the James River to settle in Jamestown, where they visited an Indian village called Kecoughtan.

In 1610, the construction of Fort Henry and Fort Charles at the mouth of Hampton Creek marked the beginnings of Hampton. In 1619, the settlers chose an English name for the community, Elizabeth City. The settlement was known as Hampton as early as 1680, and in 1705 Hampton was recognized as a town. The City of Hampton was first incorporated in 1849. In 1952, Hampton, the independent town of Phoebus, and Elizabeth City County, encompassing Buckroe and Fox Hill, were consolidated under one municipal government.

Benjamin Syms and Thomas Eaton founded the first free public schools in the United States in Hampton. Hampton is the site of Hampton University, established in 1868 to educate freed slaves. St. John's Episcopal parish was founded in 1610, making it the oldest in the country.

Fort Monroe was the only active moat-encircled fort in the country from 1819 until it was decommissioned in 2011. For a long period during the Civil War, the fort was the only Union outpost in the Confederacy. The famous battle between the first ironclad battleships, the Monitor and the Merrimac, was fought just offshore in Hampton Roads, near the Hampton-Newport News municipal boundary.

During the Civil War, rather than surrender to the Federal army, Hampton was burned down by its own troops. Before the fire, Hampton had 30 businesses and over 100 homes. Fewer than six buildings remained intact after the fire. In 1884, fire again besieged Hampton and almost completely destroyed the downtown business district.

Hampton is now a thriving city with numerous industries including high-tech firms, seafood processing, NASA, military, and tourism. Fort Monroe was the headquarters for the U.S. Army Training and Doctrine Command until base decommission in 2011. It has since been redeveloped as a result of the 2005 Base Realignment Closure Commission. The *Fort Monroe Reuse Plan* was signed into effect August 2008, and the city, the Fort Monroe Authority and the Federal government have worked together on implementation of the Plan. Today, Fort Monroe is a National Park with housing units, offices, and public access to the waterfront and the entire fort. The Fort Monroe Authority works to preserve the history of the Fort and maintain the buildings and grounds for continued use. Langley Air Force Base, where historic Langley field was constructed in 1917, is home of the United States' Air Force First Fighter Wing. NASA Langley Research Center, where America's first astronauts were trained, is now a major center for aviation research.

City of Newport News

Established as a town in 1880, Newport News was incorporated as a city in 1896. In the 1960s, the City of Newport News merged with Warwick County to create today's incorporated area.

The most widely accepted version of how Newport News was named relates to Captain Christopher Newport's return to the area from England in 1610. Newport met the Jamestown colonists on Mulberry Island, (located offshore on the James River) as they were preparing to return to England. The news of his arrival with three vessels, a plentiful supply of provisions, and 150 men gave heart to the dispirited colonists who agreed to go back to Jamestown. In gratitude, they named the point of landing "Newport's News." Over the years, the "s" was dropped, thus the name Newport News.

The City of Newport News played a major role in the Peninsula Campaign during the Civil War. Numerous earthen fortifications and attractions that relate to the Civil War are still visible. Additionally, the famous Battle of the Ironclads took place off the shores of Newport News in 1862. Collis P. Huntington, a Northern railroad tycoon from Connecticut, established two major industries in Newport News: the C&O Railroad and Newport News Shipbuilding. Newport News Shipbuilding and Dry Dock Company, established in 1886, built many of the United States' aircraft carriers, including the Enterprise, Kennedy, Washington, Vinson, and Roosevelt. On November 7, 2001, Newport News Shipbuilding signed a merger agreement with Northrop Grumman, and officially became Northrop Grumman Newport News.

The U.S. Army designated the City of Newport News as a Port of Embarkation immediately after America's entry into World War I. The final major military base during WWI was Camp Eustis, which later became known as Fort Eustis. Named after the founder of Fort Monroe's Artillery School of Practice and a War of 1812 veteran, Brigadier General Abraham Eustis, the camp was created in 1918 to meet the need for an artillery firing range. Today, Fort Eustis is the home of the U.S. Army Transportation Corps, and the Transportation Corps Regiment. The U.S. Army Transportation Museum is also located at Fort Eustis.

City of Poquoson

The name "Poquoson" comes from a Native American term that has been translated as either "flat land" or "great marsh." Plum Tree Island National Wildlife Refuge covers approximately 5.5 square miles and dominates the eastern portion of the City. Together with privately owned salt marsh lands, the area makes up the largest saline marsh in the lower Chesapeake Bay.

Poquoson was part of York County for over three centuries and incorporated as a town in 1952. It was later chartered as a city in 1975. It is the oldest continuously named city in Virginia. General agriculture and seafood related businesses remained the predominant activities of the City until the construction of Langley Field in 1917 prior to the United States' entry into World War I. The Field offered residents many employment opportunities either working directly for Langley Field, its many military contractors, or ancillary businesses. Since World War II, Poquoson has been a residential community for people working all over the peninsula.

City of Williamsburg

In 1699, the General Assembly of Virginia established the City of Williamsburg as the colony's capital. The new city, formerly known as Middle Plantation, was named in honor of King William III. In 1722, King George I granted a royal charter incorporating the City of Williamsburg after the fashion of the English municipal borough.

During the 1700's, Williamsburg developed into a bustling capital city and played a singularly historic role in events leading to American Independence. In 1780, the capital of Virginia moved to Richmond, and the Williamsburg area reverted to a quiet college town and rural county seat. In retrospect, Williamsburg's loss of capital city status was its salvation. Many eighteenth century buildings survived into the early twentieth century, when John D. Rockefeller Jr. supported a massive restoration effort. Now a center of tourism and history, the area is preserved and managed by the Colonial Williamsburg Foundation, a non-profit organization.

The College of William and Mary, located in Williamsburg, currently enrolls 5,800 undergraduate and almost 2,000 graduate students. Originally founded on February 8, 1693, William and Mary is the second-oldest institution of higher learning in the United States and the fourth oldest in North America. The school was one of the original Colonial colleges; the College's Wren Building is one of the oldest academic buildings in continuous use in the United States. The College educated several American leaders, including three U.S. Presidents. George Washington served as one of the College's first Chancellors. Robert M. Gates '65, L.H.D. '98, was named twenty-fourth Chancellor of William & Mary by the Board of Visitors at his investiture on February 3, 2012. He succeeded Sandra Day O'Connor, former Associate Justice of the United States Supreme Court, who was appointed in 2005. He was re-invested for a second term on February 8, 2019.

William and Mary was occupied during the Civil War and closed from 1882-1888 due to financial strains (the College had invested in Confederate bonds). In 1888, William and Mary reopened its doors and began to expand. Today, William and Mary is one of Virginia's most-cherished universities and was one of the first universities to become coeducational in 1918. William and Mary is consistently ranked among the premier public universities in America.

James City County

On May 13, 1607, 144 English explorers arrived and soon established James Towne as the administrative center or capitol. In 1634, by order of the King of England, Charles I, eight shires or counties with a total population of approximately 5,000 inhabitants were established in the colony of Virginia. James City Shire, as well as the James River and Jamestown, took their name from King James I, the father of King Charles I. During 1642 or 1643, the name of the James City Shire was changed to James City County. The original county included what is now Surry County across the James River, part of Charles City County, and some of New Kent County.

Williamsburg became an independent city from James City County in 1884; however, the city is still the county seat of James City County, and they share a school system, courts, and some constitutional officers.

James City County encompasses land important in the early history of our nation. Three jurisdictions, James City County, York County, and the City of Williamsburg, work collaboratively on policies, programs, infrastructure, and land use to preserve this historic area.

York County

York County was formed in 1634 as Charles River Shire, named for King Charles I. It was one of the eight original shires in the Colony of Virginia. The county was renamed in 1642-43 as York County. The river, county, and town are believed to have been named for York, a city in Northern England. The first courthouse and jail were located near what is now Yorktown, although the port used for shipping tobacco to Europe was variously called Port of York, Borough of York, York, or Town of York, until Yorktown was established in 1691. Never incorporated as a town, Yorktown is the county seat of York County. The only town ever incorporated within the county's boundaries was Poquoson, which was incorporated in 1952 and became an independent city in 1975.

York County is most famous as the site of the surrender of General Cornwallis to General George Washington in 1781, ending the American Revolutionary War. Yorktown also figured prominently in the Civil War, serving as a major port to supply both Union and Confederate towns, depending upon who held Yorktown at the time.

Yorktown is part of an important national resource known as the Historic Triangle of Yorktown, Jamestown, and Williamsburg, and is the eastern terminus of the Colonial Parkway.

City of Norfolk

The City of Norfolk, located on the Elizabeth River, was founded in 1682 but was not incorporated as a city until 1845. Initially comprised of only 50 acres, the city has grown to a total of 96 square miles today.

Norfolk has seven miles of Chesapeake Bay waterfront and a total of 144 miles of shoreline, including lakefront, rivers and the Bay. Naval Station Norfolk, which was established on the old Jamestown Exposition grounds in 1917, is the world’s largest naval base. The city is also home to the North American Headquarters for the North American Treaty Organization (NATO) and Old Dominion University (ODU). Norfolk is the most densely developed jurisdiction in the Southside Hampton Roads region at 4,486 people per square mile.

City of Portsmouth

The City of Portsmouth was founded as a town in 1752 on the shores of the Elizabeth River by Colonel William Crawford. In 1858, the town was separated from the county government and given status as an independent city.

Portsmouth's location as an East Coast deep-water port, and available business sites in proximity to the nation's largest shipyard, have provided a significant impetus for economic growth in the area. Today Portsmouth is in the middle of the dynamic Norfolk-Virginia Beach metropolitan area and home to almost 100,000 people. In addition to the many medical, cultural and recreational facilities within the immediate community, Portsmouth's downtown is bustling with retail, restaurant and service-related businesses. The historic waterfront neighborhood of Olde Towne lines the Elizabeth River and is easily traversed by the famous downtown seawall, and the City of Norfolk is easily accessible by a 5-minute ferry ride across the river.

City of Suffolk

In 1742, the Town of Suffolk, which was originally part of the County of Nansemond, was established. The town was burned by the British in 1779 and damaged by other fires throughout the next century but survived to eventually become incorporated as a city in 1910. In 1974, the City of Suffolk consolidated with the towns of Holland and Whaleyville, and the County of Nansemond. At that point it became the largest city (geographically) in Virginia and the 11th largest in the country, encompassing a total of nearly 430 square miles. This large area is made up of land with woods, lakes, rivers, and rolling terrain.

The City of Suffolk is located along the Nansemond River and is still largely recognized as the "Peanut Capital" of the world and as the home of "Mr. Peanut." In 1912, an Italian immigrant named Amedeo Obici moved from Pennsylvania to Suffolk and opened Planters Nut and Chocolate Company. Today, Suffolk remains a major peanut processing center and transportation hub.

City of Virginia Beach

The first settlement inside the city limits of Virginia Beach was made on Lynnhaven Bay in 1621, and the area first became incorporated as a town in 1908. In 1963, the Town of Virginia Beach merged with Princess Anne County to form the independent City of Virginia Beach.

The city consists of 51.3 square miles of inland water and 258.7 square miles of land. The topography is relatively flat with an average elevation of twelve feet above sea level. The area contains extensive brackish tidal areas, such as the Lynnhaven and Elizabeth River systems, and expansive freshwater tidal areas, such as the North Landing River and Back Bay systems.

Due to a combination of the city's geographic position on the mid-Atlantic coastline and the straddling of two ecologically significant estuaries, Chesapeake Bay and Pamlico Sound, the area serves as the southern limit of many northern plant and animal species. The Back Bay National Wildlife Refuge, established in 1938 and managed by the U.S. Fish and Wildlife Service, is an 8,000-acre freshwater refuge that borders the Atlantic Ocean on the east and Back Bay on the west. The barrier islands feature large sand dunes, maritime forests, freshwater marshes, ponds, ocean beach, and large impoundments for wintering wildfowl.

Virginia Beach is best known as a major resort destination, with miles of beaches and dozens of hotels, motels, and restaurants. The city is also home to several state parks, several protected beach areas, four military bases, a number of large corporations, and two universities. Much of the land remained undeveloped until World War II when the U.S. Navy built Oceana Naval Air Station, followed by three more military bases, including Little Creek, Fort Story, and Dam Neck. Since the end of the war, Virginia Beach has experienced continued rapid growth and is the region's most populous jurisdiction at almost 450,000 people.

City of Chesapeake

Chesapeake's history dates back much further than 1963 when Norfolk County and the City of South Norfolk merged to create Chesapeake. The first English settlement of the area began around 1620 along the banks of the Elizabeth River. Norfolk County's founding dates back to 1636.

In the early months of the Revolutionary War, in December 1775, British Royal Governor Lord Dunmore moved his forces from Norfolk to Great Bridge where his army entrenched itself to await the arrival of American forces. The two armies clashed on December 9, 1775, in the historic Battle of Great Bridge, just a few hundred yards from where the Chesapeake Municipal Center complex stands today. In a brief but decisive battle, the Americans routed Lord Dunmore's forces which fled to Norfolk and later abandoned that city.

In 1793, work began on the Dismal Swamp Canal, an idea first envisioned by George Washington in 1763, when he visited the swamp. Because the canal was dug completely by hand, progress was slow, and expenses were high. The canal opened in 1805. Now on the National Register of Historic Places, the Dismal Swamp Canal is the oldest operating artificial waterway in the country. Both the Dismal Swamp Canal and the Albemarle and Chesapeake Canal are operated by the Army Corps of Engineers and form part of the Atlantic Intracoastal Waterway. According to the City of Chesapeake 2003 Legislative Program Document, the City has more miles of deep-water canals than any other city in the country.

The first local encounter of the Civil War occurred at Sewell's Point in May 1861. Although no battles were fought in the Chesapeake area, Union troops occupied and laid waste to much of the land. When the war ended, Norfolk County took advantage of its abundant natural resources. Its coastal location, miles of riverfront and deep-water harbors and the fertile, level farmland allowed county residents to recover quickly from the wartime destruction, moving without hesitation into the 20th century.

While most of the area retained its rural atmosphere through the early 1900s, the northern section near the growing City of Norfolk began to develop as the suburb of South Norfolk. By 1900, South Norfolk had its own waterworks, public schools and a post office. Two rail lines spurred rapid growth, allowing South Norfolk to incorporate as an independent town in 1919 and a city of the first class, independent of Norfolk County, in 1950.

The area that now comprises Chesapeake grew with residential and commercial development of "community crossroads." These areas are still commonly referred to today with community names such as Pleasant Grove, Great Bridge, Oak Grove, Fentress, South Norfolk, Portlock, Deep Creek, Western Branch, Indian River and Hickory.

During the 1950s, both Norfolk County and South Norfolk fell victim to annexation suits filed by neighboring cities. Between 1950 and 1960, the county lost nearly 50,000 residents and 30 square miles of land area. Under these circumstances, both Norfolk County and South Norfolk officials found it difficult to plan for the future.

In the fall of 1961, city and county officials met to discuss the feasibility of a merger. After several weeks of negotiations, both governing bodies approved a merger agreement on December 22, 1961. On February 13, 1962, citizens of both communities turned out in near-record numbers for a special election and approved the merger. Later that year, in June, the citizens voted again and selected the name "Chesapeake" for the new city. On January 2, 1963, the Chesapeake City Council, with five members from South Norfolk and five from Norfolk County, met for the first time.

Isle of Wight County

Isle of Wight County was established as Worrosquoyacke County in 1634, one of eight counties divided from the Virginia colony. The original boundaries of the county included Lawne’s Creek to the north, the James River to the east, the head of Colonel Pitt's Creek to the south and undeveloped wooded area to the west. In 1656, Ragged Island and Nansemond County were incorporated into Isle of Wight County. A long dispute between the counties of Isle of Wight and Nansemond continued until 1674, when the General Assembly established the boundaries that exist today.

Isle of Wight County is thirty-seven miles in length and maintains an average breadth of eleven miles. The county is comprised of approximately 363 square miles, of which 80 percent is land area. The area contains relatively flat but rolling terrain with average elevation of approximately 80 feet above sea level.

The land generally dips to the northeast from a plateau west of Bethel Church, and from that same plateau, the land dips to the northwest and west. Several swamps, ravines and creeks drain to the James River, the Blackwater River and the Nansemond River.

Today, Isle of Wight's residents enjoy the rural nature of the County coupled with the quaint atmosphere of the two incorporated towns, Smithfield and Windsor. While the local economy remains agriculturally-based, the area's scenic beauty, history and proximity to other attractions in the Hampton Roads area greatly contribute to the tourist draw. In addition, the County is close enough to the transportation hubs and employment centers of the Norfolk-Virginia Beach area to attract year round residents and businesses alike.

Town of Smithfield

The Town of Smithfield was incorporated in 1752 by Arthur Smith, IV, who parceled out his family farm into 72 lots and 4 streets in order to house British merchants and ship captains. The town is located on the banks of the Pagan River, which flows into the James River. Smithfield was a river town from its very beginning, and the livelihood of its residents and continued growth over the years has been influenced by the river. The town measures approximately ten square miles.

Nurtured by trade and commerce, Smithfield soon became a town of industry with four plants devoted to the art of curing the world famous "Smithfield Ham." Located within the town is Smithfield Foods, Inc., the area's largest meat-processing industry as well as a major employer for the region.

Smithfield has many of the charms associated with Hampton Roads communities, including many historic homes representing 18th and 19th century architecture, a revitalized historic downtown, and the character of a former colonial seaport. To preserve the historical charm, the Town of Smithfield and individual property owners enacted a Historic Preservation District Ordinance in 1979. Smithfield offers residents a small-town atmosphere, a high quality school system, affordable housing, a historic downtown, and a state-of-the-art community/conference center.

Town of Windsor

The Town of Windsor is located in the heart of Isle of Wight County. The town's original name was Corrowaugh, and it was established as a post office in 1852. Five years later, the Norfolk and Petersburg Railroad obtained the post office and built a depot called Windsor Station. In 1902, a town charter was granted by the General Assembly and the town became known simply as Windsor.

In 1950, the Windsor Ruritan Club and the Town of Windsor built a "Community House" which has been a valuable asset to the community over the years. Over the next three decades, town services improved and expanded. The streets were upgraded and paved, sidewalks extended, additional streetlights installed, drainage improved, and ditches piped. The privately owned water systems in the town limits were purchased by the town, upgraded, extended and an above ground water storage tower was erected. In 1971, the Windsor Volunteer Rescue Squad was founded and continues to provide service to the town and surrounding community.

In July 2001, the Town of Windsor annexed 2.82 square miles of Isle of Wight County. As a result, the total area increased from one square mile to 3.82 square miles and population increased from approximately 900 to 2,347. Also in 2001, Isle of Wight County helped install a central sewer system in the town which opened up many areas for new homes and businesses. The Town of Windsor remains a small rural town amidst the region's larger, more populated cities which are easily accessible through two main roads bisecting the town, Route 460 and Route 258.

City of Franklin

Franklin was incorporated as a Town within Southampton County in March of 1876. The first official census of 1880 indicated that there were 447 inhabitants within its limits. By 1970, nearly 7,000 people lived in Franklin.

Franklin developed considerable steamboat commerce along the Blackwater River southward to North Carolina ports from the late 1800s and early 1900s through the 1920s. The combination of rail and water transportation led to more rapid growth in Franklin than in the other towns. The steady growth of the Camp family's lumber business after the Civil War accelerated this growth. Franklin also became a major collection point for peanuts in that period. Franklin is now the major center of commerce and industry for Southampton County.

The Blackwater River is a relatively slow moving, dark river that traverses the City and serves as a valuable resource. Residents rely on the river for recreation, using it heavily for boating and freshwater fishing.

Southampton County and towns

The earliest explorations of the area began a few years after the settlement of Jamestown. The inhabitants were then members of several small Indian tribes, mainly the Nottoways and Meherrins, with settlements along the rivers that now bear their names. In 1634, the western limit of English colonization was established at the "Blackwater Line," which extended southeast from Fort Henry (now Petersburg) through the Blackwater Swamp. Increasing pressure from colonists resulted in lifting of the line in 1705, and in following years the County lay in the path of the general southwesterly migration from the James River settlements. The soils were good for farming and there were forests for timber. More settlers were attracted, and later their slaves, as the Indians were gradually collected in reservations before they finally dispersed. There was a remnant of the Nottoway reservation still in existence in 1856 and probably for some years thereafter.

Water commerce to the south on the Blackwater and Nottoway Rivers was prominent in the early history of the County during both the Revolutionary and Civil Wars. Efforts to maintain or interrupt these routes for military supplies resulted in skirmishes on several occasions, but no major battles. South Quay on the Blackwater River was an established port from the early years of the 18th century. A most dramatic event of the County's history between the Revolutionary and Civil Wars was the slave rebellion led by Nat Turner in 1831. This bloody revolt and its aftermath resulted in the deaths of approximately 100 blacks and whites and drew national and international attention from both pro- and anti-slavery factions.

In order to establish a more convenient administrative center, the present County was split off from Isle of Wight County in 1749. The County seat was Jerusalem, renamed and incorporated as Courtland in 1888. The new County is believed to have been named for Henry Wriothesley, third Earl of Southampton, who was active in promoting colonization of Virginia under the English King James I.

The isolation of Southampton County diminished with the coming of the first railroad in 1834, as the first leg of the Portsmouth and Roanoke Railroad (now CSX) extended to the Nottoway River on its way to western Virginia and made connection with water travel to the south on the river. The Petersburg Railroad (now also CSX) had gone into operation west of the Meherrin only a year before. With the coming of the Portsmouth and Roanoke line, Southampton farmers now had access to both the Petersburg and Norfolk markets. In 1858, the Petersburg and Norfolk Railroad was completed, crossing the northeastern section of the County. Courtland eventually gained rail service with the coming of the Atlantic and Danville Railroad in 1888, about the same time the Surry, Sussex and Southampton Railway (now abandoned) provided service from the north central County to Scotland Wharf on the James River in Surry County. The Virginian Railroad (also abandoned) was built through Sebrell and Sedley in 1906. Over the years, the economic life of the County became centered on the railroad depots that were established at road crossings. Towns and villages gradually formed at these points: Newsoms, Boykins, and Branchville; Courtland, Capron, and Drewryville; and Sedley and Sebrell. Ivor to the northeast, perhaps somewhat more associated with the other towns along its railroad (Waverly, Wakefield and Zuni) also formed.

In more recent times the County's highways have assumed an increasing share of the responsibility for transporting farm products, timber, and manufactured products. In addition, improved roads and widespread automobile ownership have enabled the same kind of widely dispersed residential pattern once maintained by farming, but now maintained by community centers of trade, services, and manufacturing employment.

Surry County and Towns

When the first English settlers sailed up the James River in 1607, they first landed on the south side of the river near the present Town of Claremont in Surry County. Here they visited the Quioughcohancock Indians, allies of the Powhatan Confederacy. The English reported that they were graciously entertained during this first visit with the Native American inhabitants. These settlers went on to establish the first English settlement in the New World on Jamestown Island. The Virginia Company listed sixteen settlers on the south side of the James in May of 1625; this is the area which would later become Surry County. Surry County was formed in 1652 from a portion of James City County and was named for the English County of Surrey.

Following the American Revolutionary War, Surry County became part of the new Commonwealth of Virginia. In over 350 years of existence, the County of Surry has taken care to guard its history and its rural nature. The county is home to several picturesque small towns, historic homes and churches, and Chippokes State Park. Surry County is connected to Virginia's Historic Triangle (Jamestown, Williamsburg and Yorktown) by the Jamestown/Scotland Ferry.

Surry County is a rural county characterized by a rolling topography that gradually becomes more level in the eastern portions of the county. Seventy-five percent of the county is forested. Traditionally, forestry and agricultural land uses have supported the majority of employment but have experienced recent decline. Surry County is the location of the Surry Power Station, a nuclear power plant built in 1972 which is the County's main employer.

POPULATION AND DEMOGRAPHICS

According to the *U.S. Census Bureau 2020 Census*, the study area portion of Hampton Roads has a population of 1,693,394 people. **Table 3.3** shows total population breakdowns, including percent of children under the age of 18, percent of elderly population (age 65 and over), and percent of population living below the poverty level. Data in Table 3.3 are based on 2020 Census data and the most recent American Community Survey.

TABLE 3.3: DEMOGRAPHIC CHARACTERISTICS						
SUBREGION	COMMUNITY	TOTAL POPULATION	% UNDER 18 YEARS OLD	% 65 YEARS AND OVER	MEDIAN AGE	% PERSONS IN POVERTY
Peninsula	Hampton	134,510	21	15	35.7	15.2
	Newport News	179,225	23.1	13.3	33.4	15.1
	Poquoson	12,271	22.4	19.6	42.4	5.3
	Williamsburg	14,954	10.4	15.7	24.9	20.7
	James City County	76,523	19.7	25.8	47.0	5.8
	York County	68,280	23.5	16.6	41.3	5.1
Southside	Norfolk	242,742	19.7	10.9	31.1	18.7
	Portsmouth	94,398	23.4	14.5	36.7	16.8
	Suffolk	92,108	24.3	14.2	37.9	10.4
	Virginia Beach	449,974	22.3	13.7	36.6	7.3
	Chesapeake	244,835	24.2	13.0	37.8	8.6
Western Tidewater	Isle of Wight County	37,109	20.8	19.8	44.3	9.1
	Smithfield	8,475	23.1	18.0	40.2	17.0
	Windsor	2,746	23.6	21.5	43.6	11.0
	Franklin	7,967	25.2	19.3	39.4	14.7
	Southampton County	17,631	18.6	20.8	46.9	13.3
	Boykins	516	18.6	12.7	46.3	5.0
	Branchville	118	16.7	10.5	39.5	7.1
	Capron	141	15.8	40.5	59.7	3.8
	Courtland	1,295	23.9	19.7	43.5	17.8
	Newsoms	286	17.1	14.2	47.4	8.4
	Ivor	312	27.4	16.1	40.5	11.9
	Surry County	6,422	16.6	23.9	49.8	11.9
	Claremont	305	10.2	31.9	57.2	20.9
	Dendron	251	20.4	12.5	45.3	12.7

Source: U.S. Census Bureau, 2019 American Community Survey

Table 3.4 provides the population change experienced by communities in the region between 1980 and 2020, as well as the HRPDC population projection through 2045. Much of the projected population increase between 2020 and 2045 is fueled by population growth in rural or suburban areas, not in the more urbanized cities like Hampton, Norfolk, Newport News and Portsmouth.

TABLE 3.4: REGIONAL POPULATION CHANGE AND PROJECTED CHANGE, 1980 - 2045

SUBREGION	COMMUNITY	1980	1990	2000	2010	2020	2045
Peninsula	Hampton	122,617	133,811	138,437	137,436	134,510	139,207
	Newport News	144,903	171,439	180,150	180,719	179,225	189,962
	Poquoson	8,726	11,005	11,566	12,150	12,271	12,637
	Williamsburg	10,294	11,530	11,998	14,068	14,954	18,341
	James City County	22,339	34,859	48,102	67,009	76,523	120,741
	York County	35,463	42,422	56,297	65,464	68,280	85,930
Southside	Norfolk	266,979	261,250	234,403	242,803	242,742	263,837
	Portsmouth	104,577	103,910	100,565	95,535	94,398	97,752
	Suffolk	47,621	52,143	63,677	84,585	92,108	129,682
	Virginia Beach	262,199	393,089	425,257	437,994	449,974	518,777
	Chesapeake	114,486	151,982	199,184	222,209	244,835	317,206
Western Tidewater	Isle of Wight County	21,603	25,053	29,728	35,270	37,109	52,417
	Franklin	7,308	7,864	8,346	8,582	7,967	8,751
	Southampton County	18,731	17,550	17,482	18,570	17,631	20,218
	Surry County	6,046	6,145	6,829	7,058	6,422	7,374
REGION TOTAL		**1,193,892**	**1,424,052**	**1,532,021**	**1,629,452**	**1,678,949**	**1,982,832**

Source: Hampton Roads 2045 Socioeconomic Forecast, HRPDC, July 2020

HOUSING, INFRASTRUCTURE AND LAND USE

According to the U.S. Census Bureau, *2019 American Community Survey 5-Year Estimates*, there are 650,877 housing units in the study area portion of Hampton Roads, with more than 90-percent of the units classified as occupied. The majority of structures were built after 1970 (68%). According to the 2009-2013 American Community Survey Estimates (the most recent period available for all communities in the study area), 56% of all housing units are owner-occupied and slightly more than 40% of the housing units are mortgaged. **Table 3.5** summarizes recent data on housing characteristics. More specific information regarding the vulnerability of residential units to various hazards is provided in Section 5, *Vulnerability Assessment*.

TABLE 3.5: HOUSING CHARACTERISTICS

SUBREGION	COMMUNITY	TOTAL HOUSING UNITS	OCCUPIED UNITS	MEDIAN VALUE	AVERAGE HOUSEHOLD SIZE	% HOUSING STRUCTURES BUILT BEFORE 1970
Peninsula	Hampton	62,444	92%	$193,500	2.42	45%
	Newport News	81,901	92%	$186,600	2.45	35%
	Poquoson	4,926	94%	$307,800	2.67	28%
	Williamsburg	5,753	89%	$320,600	2.17	33%
	James City County	33,993	93%	$334,700	2.45	9%
	York County	27,827	93%	$346,200	2.7	18%
Southside	Norfolk	101,386	92%	$218,000	2.43	59%
	Portsmouth	43,164	92%	$169,600	2.47	56%
	Suffolk	38,364	93%	$263,500	2.70	26%
	Virginia Beach	190,059	94%	$296,200	2.60	21%
	Chesapeake	94,829	96%	$290,900	2.75	20%
Western Tidewater	Isle of Wight County	16,441	93%	$243,000	2.55	23%
	Franklin	3,886	88%	$178,700	2.39	48%
	Southampton County	7,724	88%	$159,700	2.53	37%
	Surry County	3,402	82%	$169,000	2.50	31%
REGION TOTAL		**650,877**	**91%**			**32%**

Source: U.S. Census Bureau, 2020 Census, 2010 Census, and 2019 American Community Survey 5-Year Estimates

The Hampton Roads region provides an integrated network of transportation facilities and infrastructure that includes many interstates (I-64, I-264, I-464, I-564, I-664) and highways (U.S. 13, 17, 58, 60, 258, 460 and State Route 164), along with hundreds of secondary roadways and bridges throughout the area. Route 168 is a four-lane highway that links I-64 to North Carolina and the Outer Banks region, a major

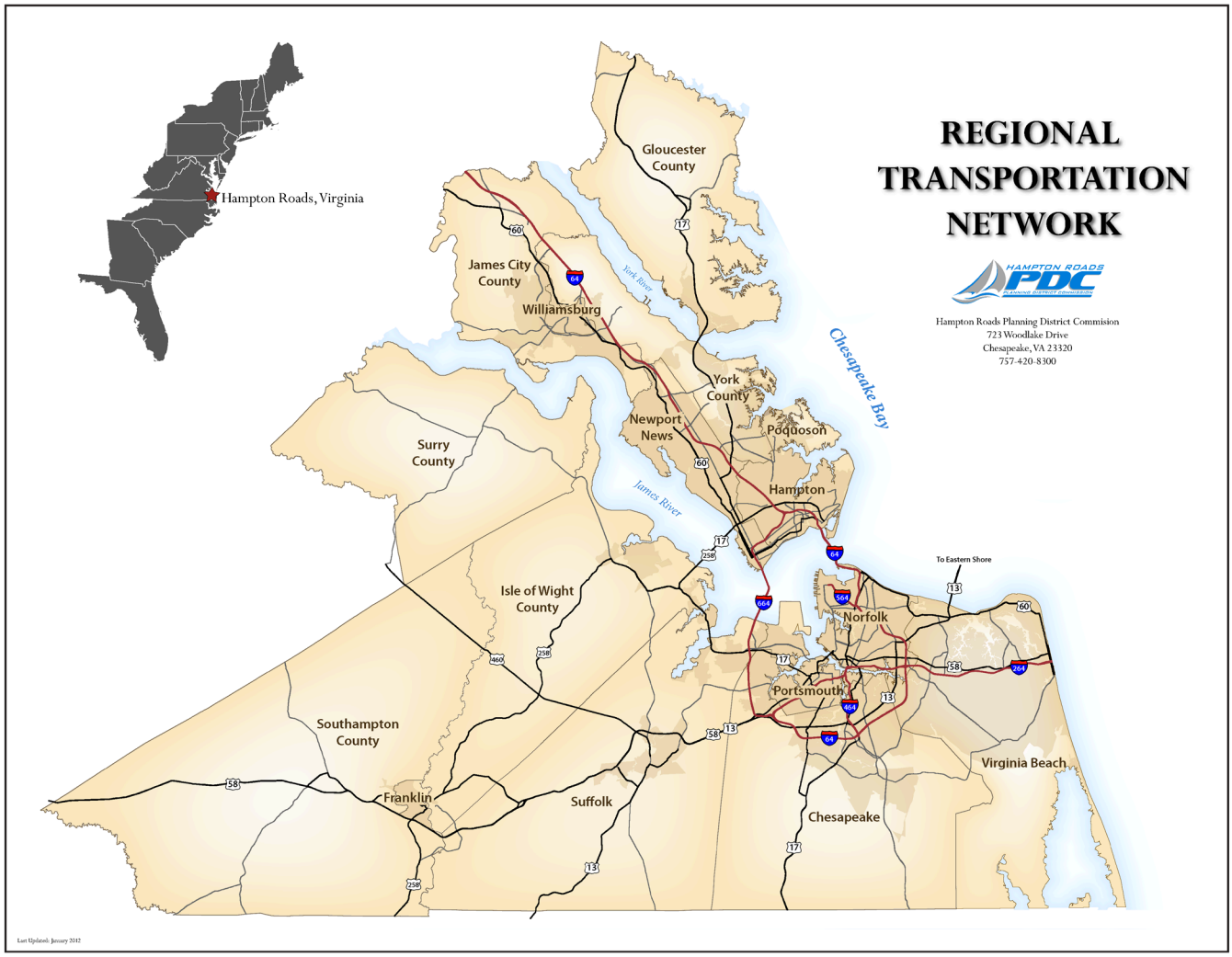
tourist destination throughout the year. US Route 58 and Interstate 64 link Hampton Roads with I-95 and I-85, which are the primary north-south interstate highways in Virginia. The Chesapeake Bay Bridge-Tunnel, which opened in 1964, connects Virginia's Eastern Shore with Virginia Beach and remains one of the world's modern engineering wonders. **Figure 3.4** illustrates the transportation network in the region. Freight rail service is provided by CSX Transportation and Norfolk Southern, Commonwealth Railroad, the Chesapeake and Albemarle Railroad, and the Norfolk/ Portsmouth Beltline. The nearest passenger rail is available through Amtrak at the Newport News station on the Peninsula and a station in downtown Norfolk.

Convenient commercial air service is available through two major airports: Southside's Norfolk International Airport which boasted over 75,000 flight operations in 2019, and the Peninsula's Newport News/Williamsburg International Airport, which services over 430,000 customers each year. The military maintains a long list of airfields in the region with national significance, including Oceana Naval Air Station in Virginia Beach, Naval Station Norfolk, the airfield at Joint Base Langley-Eustis in Hampton, and Fentress Naval Auxiliary Landing Field in Chesapeake. Several other small airports across the region service private aviation.

Water-related infrastructure is prevalent throughout the region's waterways for commercial, industrial, and recreational uses. On the Peninsula, Newport News Shipbuilding, a Division of Huntington Ingalls Industries, is located near the mouth of the James River in Newport News. Massive coal loading piers and facilities were established in the late 19th and early 20th century by the Chesapeake & Ohio (C&O), Norfolk & Western, and Virginian Railways at the end of the Peninsula in Newport News. CSX Transportation now serves the former C&O facility at Newport News. On Southside, over 95 percent of the world's shipping lines call on the Port of Virginia, linking the Commonwealth and the U.S. to more than 250 ports in over 100 countries around the world. With its six terminals across over 1800 acres, 19,885 linear feet of berth and 30 miles of on-dock rail, the Port of Virginia is determined to become the East Coast's leading gateway for global trade. Between 2015 and 2025, the port will have invested $1.5 billion in infrastructure, creating a network to handle any type of cargo, with the deepest channels on the East Coast. Two Class I railroads, CSX and Norfolk Southern, serve the Port via on-dock intermodal container transfer facilities at Virginia International Gateway and Norfolk International Terminals. The service offered by the Class I's is augmented by vital short line rail partners including the Norfolk & Portsmouth Belt Line and the Commonwealth Railway.

Also intersecting the southern part of the study area is a portion of the Atlantic Intracoastal Waterway, a series of federally-maintained inland navigation channels that extend from Norfolk, Virginia to Miami, Florida. The Intracoastal Waterway was authorized by the Rivers and Harbors Act of 1938 and was developed and is still maintained by the U.S. Army Corps of Engineers.

FIGURE 3.4: REGIONAL TRANSPORTATION NETWORK



2012

Source: Hampton Roads Planning District Commission

According to the HRPDC, *Hampton Roads Benchmarking Study,* 2015, the transportation network in Hampton Roads has garnered considerable attention as aging infrastructure and traffic congestion are closely tied to the economy and quality of life within the region. The recent downturn in the economy has affected many aspects of the region's transportation system, with growth in roadway travel coming to a halt and a decrease in air travel from Hampton Roads airports. In spite of relatively lower amounts of travel per capita in Hampton Roads than in competitor regions, congestion is a significant issue, particularly at the bridges and tunnels. Only Washington, DC, Baltimore, and Atlanta had a higher indexed measurement of the extra amount of time trips take during congested peak travel periods in 2011.

As a result of the congestion occurring at the Hampton Roads Bridge Tunnel, an expansion project is underway to increase capacity, ease major congestion and enhance travel time reliability. The Hampton Roads Bridge-Tunnel Expansion is the largest highway construction project in Virginia's history. This transformative undertaking, scheduled for completion in November 2025, will widen the current four-lane segments along nearly ten miles of the I-64 corridor in Norfolk and Hampton, with new twin tunnels

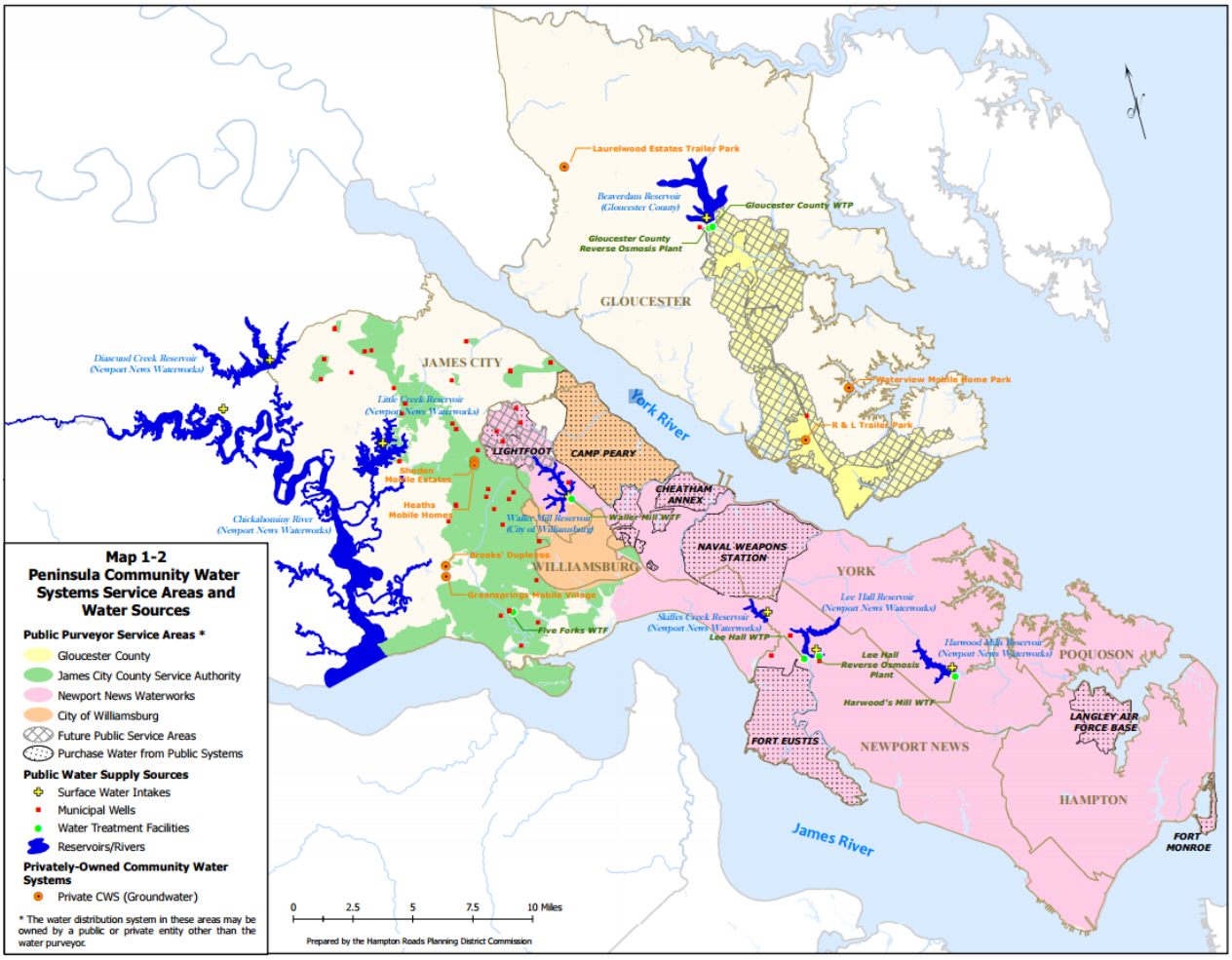
across the harbor. Including the construction contract and owner's costs, the project's total budget is over $3.8 billion, making it one of the largest infrastructure projects in the country.

Public transportation continues to play a small role in the region when compared to some other areas of similar size due in part to low population density and the geography of interspersed water bodies. Norfolk has completed building the region's first light rail line, running 7.4 miles from Eastern Virginia Medical Center to Newtown Road. Light rail has the capability to impact future land use decisions and encourage increased density in development.

The communities of Hampton Roads maintain a significant number of critical facilities and infrastructure that include hospitals, schools, police stations, fire stations, energy facilities, water and wastewater facilities and hazardous material facilities (further discussed in Section 5: *Vulnerability Assessment*). The large military presence provides its own significant facilities and infrastructure base, though these are located on federal land and outside the planning area. Electrical service is supplied throughout the region by Dominion Virginia Power and Franklin Municipal Power & Light (City of Franklin and surrounding areas), and natural gas is provided by Columbia Gas and Virginia Natural Gas. Verizon, Verizon Wireless, FIOS and Cox Communications are primary service provider for cable television, phone and internet service. Surry Power Station is a nuclear power plan located in Surry County, on the south bank of the James River, across from historic Jamestown. The facility provides 14-percent of Virginia's electricity.

In order to examine the existing sources of water in Hampton Roads, the region is divided into three sub-regions. The first sub-region is the Peninsula sub-region, and it is composed of the cities of Hampton, Newport News, Poquoson, and Williamsburg and the counties of Gloucester, James City, and York. There are 26 community water systems that provide water to this sub-region as seen in **Figure 3.5**. According to the Hampton Roads District Planning Commission, these community water systems serviced about 512,000 people in 2011. The water used in the Peninsula sub-region comes from groundwater, reservoirs and the Chickahominy River and serves both urban and rural areas. The majority of the water used comes from surface water in five reservoirs located throughout the sub-region.

FIGURE 3.5: PENINSULA SUB-REGION WATER SOURCES

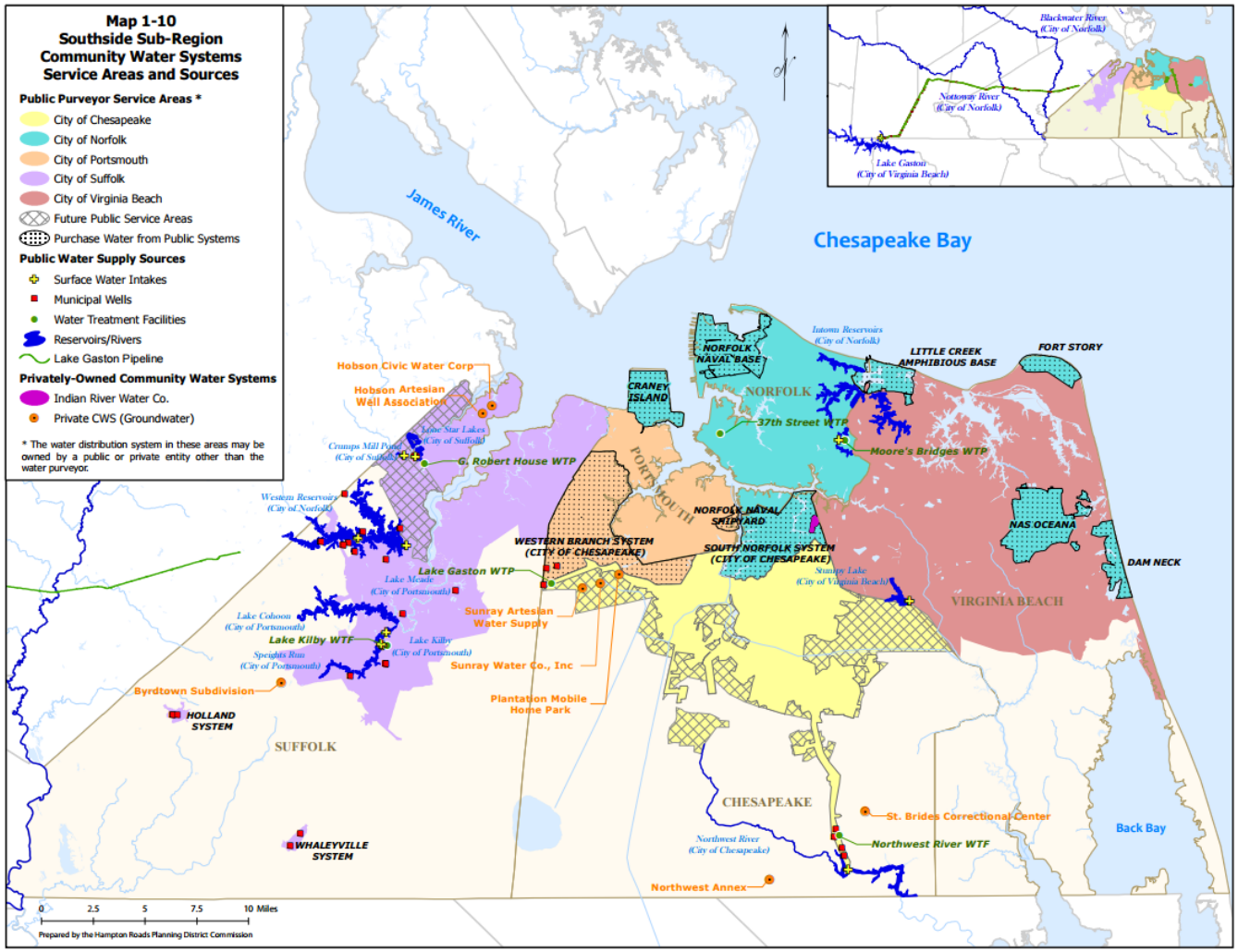


2011

Source: Hampton Roads Regional Water Supply Plan, HRPDC, 2011

The Southside sub-region includes the cities of Chesapeake, Norfolk, Portsmouth, Suffolk, and Virginia Beach. Approximately 975,000 people were served by 15 publicly-owned community water systems in 2011. Water sources for the Southside sub-region include aquifers, reservoirs, Lake Gaston, and the Northwest, Blackwater, and Nottoway Rivers and can be seen in **Figure 3.6**. Both urban and rural areas are serviced by the community water systems in the Southside sub-region.

FIGURE 3.6: SOUTHSIDE SUB-REGION WATER SOURCES

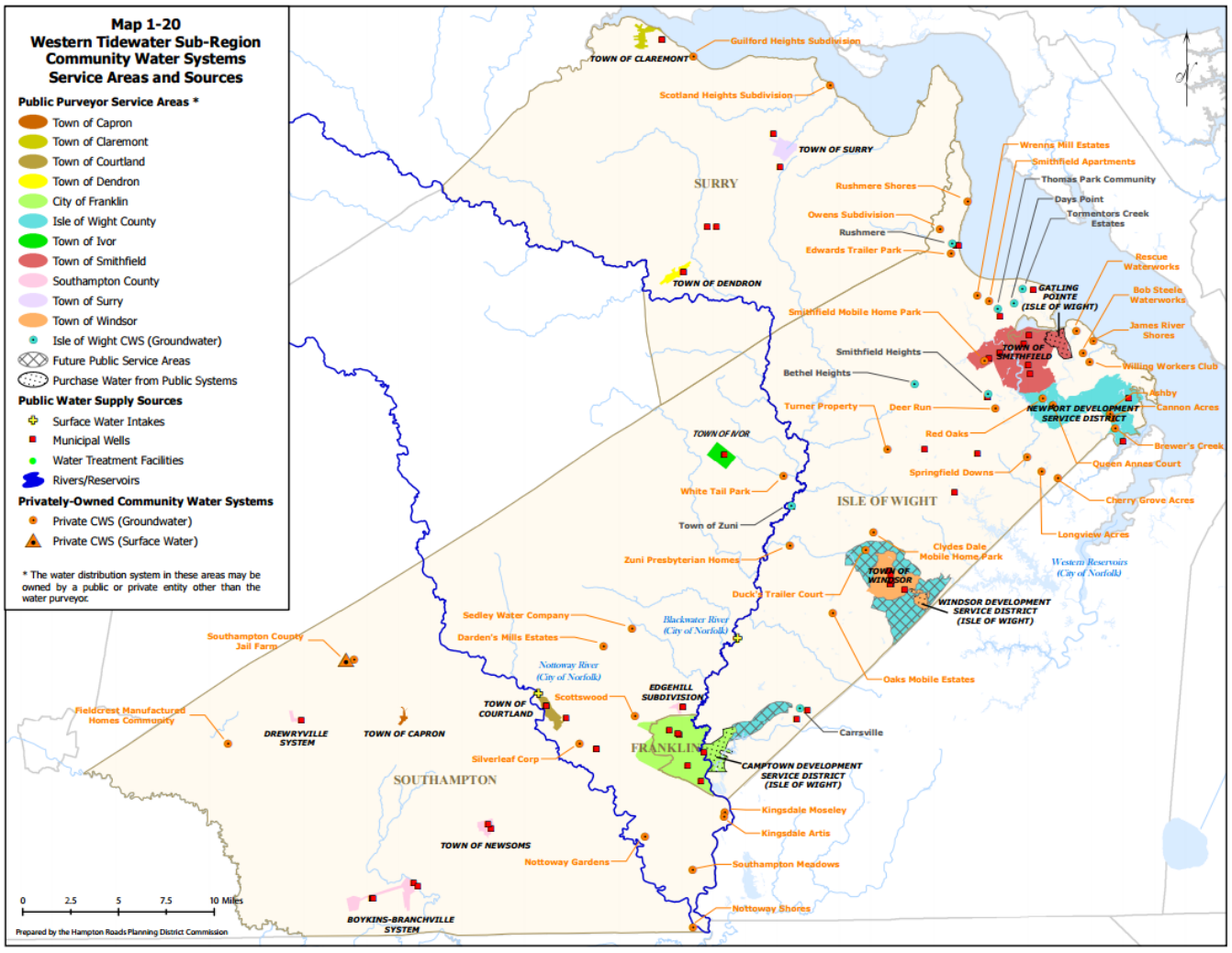


2011

Source: Hampton Roads Regional Water Supply Plan, HRPDC, 2011

The third sub-region in Hampton Roads is the Western Tidewater sub-region. It includes the city of Franklin and the Counties of Isle of Wight, Southampton, and Surry. Since it is a mostly rural sub-region, all but one of the 24 community water systems use groundwater to service 28,000 people. The water sources for the Western Tidewater sub-region can be seen in **Figure 3.7**.

FIGURE 3.7: WESTERN TIDEWATER SUB-REGION WATER SOURCES



2011

Source: Hampton Roads Regional Water Supply Plan, HRPDC, 2011

EMPLOYMENT AND INDUSTRY

Nearly two million people live in or within an hour's drive of the Hampton Roads region, and because of the presence of several military bases, a large proportion of the total population is employed in military- and service-related industries. The military bases not only contribute billions of dollars annually to the regional economy, but also supply a skilled labor force. Over 15,000 trained and disciplined personnel leave the military installations each year, and many of these skilled professionals decide to stay in the area and look for local private sector employment. In addition, there are approximately 40,000 military spouses available to work. The region's tourism industry creates over 10,000 seasonal jobs during summer months. This group provides an additional source of workers to companies with personnel needs that peak at other times of the year. Lastly, over 86,000 students attend eight universities and four community colleges in the area. Most of these students are permanent residents available for part-time or full-time employment while in school and upon graduation.

Table 3.6 shows basic employment data for the study area.

TABLE 3.6: REGIONAL EMPLOYMENT

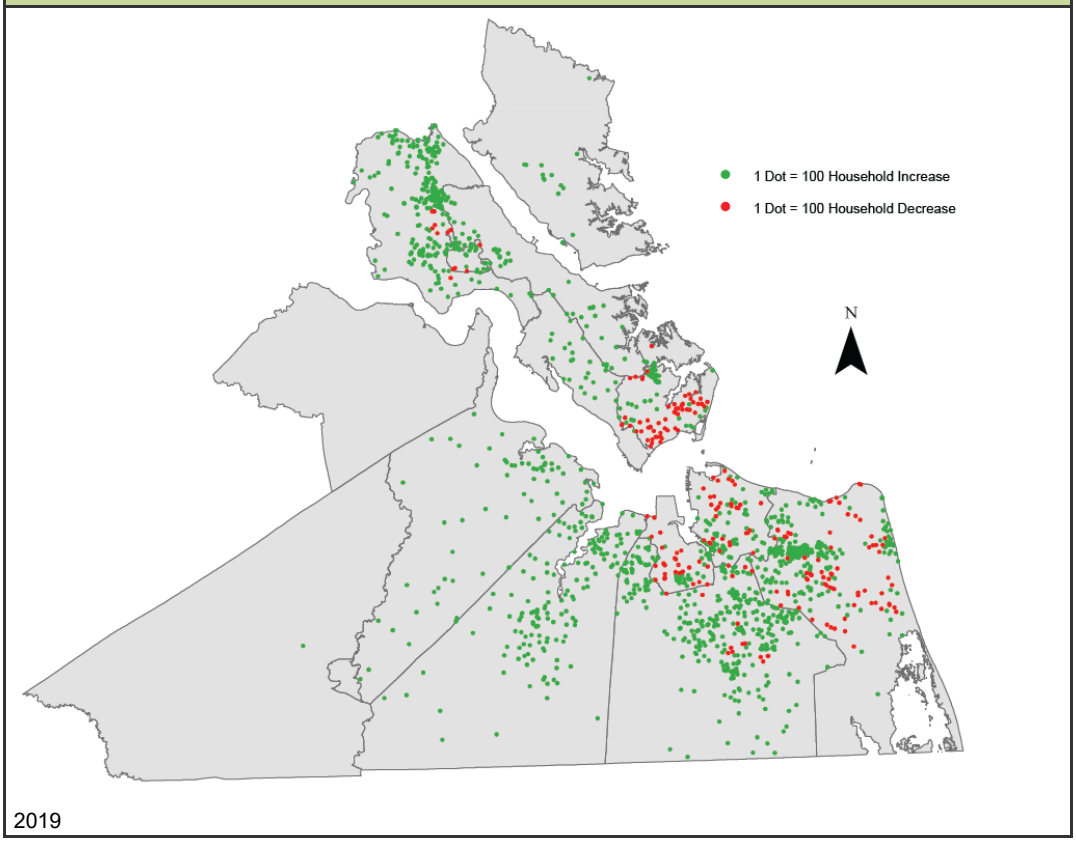
SUB-REGION	COMMUNITY	LABOR FORCE (2020 annual average)	UNEMPLOYMENT RATE (2020 annual average)
Peninsula	Hampton	64,604	8.5
	Newport News	89,715	8.7
	Poquoson	6,249	4.2
	Williamsburg	6,705	8.2
	James City County	36,558	6.1
	York County	32,390	5.6
Southside	Norfolk	111,825	8.7
	Portsmouth	44,701	9.6
	Suffolk	44,546	6.5
	Virginia Beach	230,322	6.2
	Chesapeake	122,036	6.1
Western Tidewater	Isle of Wight County	19,092	5.1
	Franklin	3,640	8.5
	Southampton County	9,063	5.0
	Surry County	3,603	5.7
	VIRGINIA	**4,244,200(September 2021)**	**3.8% (September 2021)**

Source: U.S. Bureau of Labor Statistics, April 16, 2021, except as noted

DEVELOPMENT TRENDS

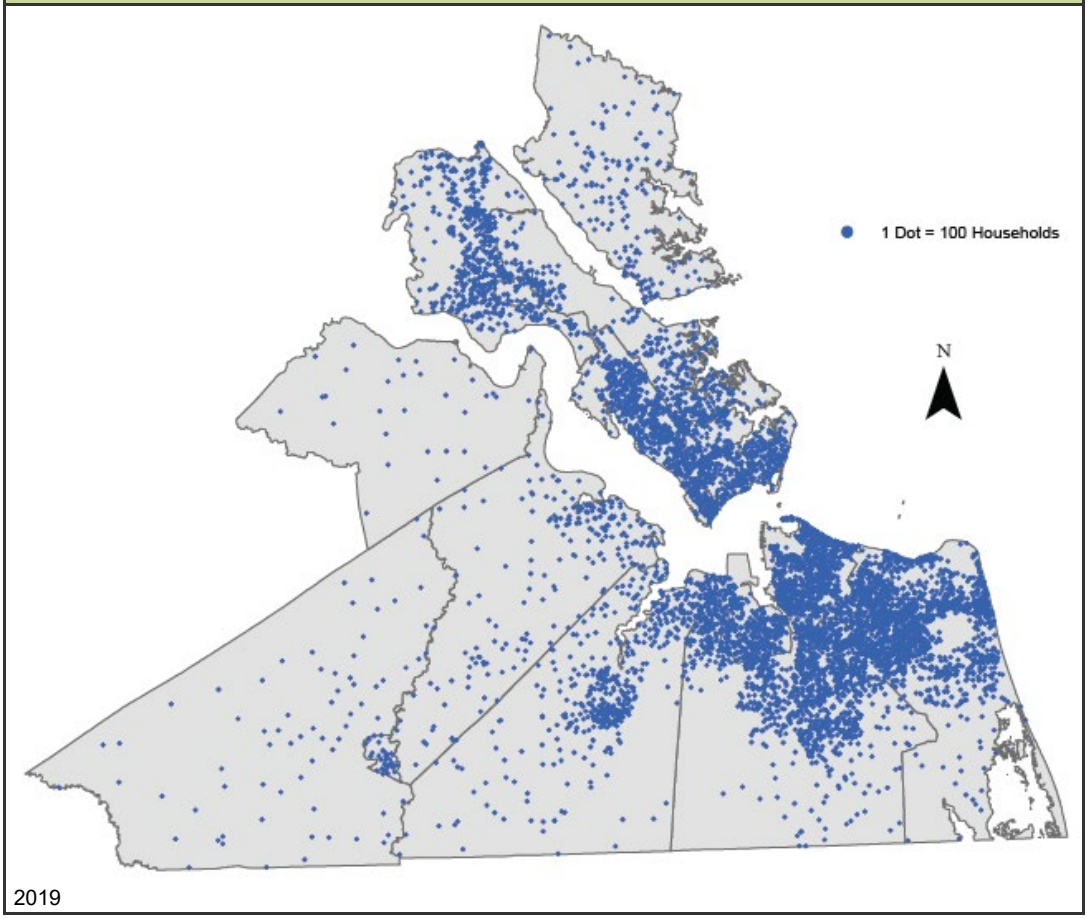
The Hampton Roads 2045 Socioeconomic Forecast prepared by the Hampton Roads Transportation Planning Organization in February 2019 provides the maps shown in **Figures 3.8 and 3.9** to help visualize where demand for employment will impact the number of households in the region. These growth patterns show expected change from 2015 through 2045 and provide a regional summary intended for the purpose of transportation planning; however, the data points shown are also relevant to hazard mitigation planning in that they provide a relative indicator of future housing needs in the region. Where and how those houses will be built influences the region's vulnerability to a range of hazards.

FIGURE 3.8: CHANGE IN HOUSEHOLDS, 2015 TO 2045



Source: Hampton Roads Transportation Planning Organization, Hampton Roads 2045 Socioeconomic Forecast and Transportation Analysis Zones (TAZ) Allocation, February 2019.

FIGURE 3.9: 2045 FORECASTED HOUSEHOLDS



Source: Hampton Roads Transportation Planning Organization, Hampton Roads 2045 Socioeconomic Forecast and TAZ Allocation, February 2019.

The Hampton Roads area expects to add 124,356 net new jobs by 2033. These net new jobs would increase employment by 16.4% with jobs being added to professional and business services, health services, construction and administrative, and waste service sectors. In order to attract workers to these jobs and remain a competitive region that people want to live in, it is imperative that there is adequate housing and transportation and a skilled workforce to do the jobs.

The number of houses needed will vary by jurisdiction. It is estimated that 86,098 net new housing units must be built by 2033. In order to be able to house all of the workers of Hampton Roads, 4,305 net new units must be built each year. Assuming people live near where their jobs are and do not commute, Virginia Beach and Chesapeake will see the most job growth in the region, resulting in more housing units being built. **Table 3.7** illustrates where the housing units need to be built based on how many net new jobs will be in the jurisdiction and whether workers will commute to work or live close to their jobs. The "Remainder of Region" includes Suffolk, Franklin, Gloucester, Isle of Wight, Southampton, Surry, and York County. Gloucester County figures could not be separated out of these published data.

TABLE 3.7: PROJECTED HOUSING DEMAND FOR NEW NET WORKERS 2013-2033

SUBREGION	COMMUNITY	NET NEW JOBS	BY WORK LOCATION	BY CURRENT COMMUTING PATTERNS		
				NON-COMMUTERS	COMMUTERS	TOTAL BY COMMUTING PATTERN
Peninsula	Hampton	2,698	1,800	838	2,693	2,556
	Newport News	5,930	3,911	1,897	3,418	5,316
	James City County and Williamsburg	23,707	17,222	6,860	645	7,506
Southside	Norfolk	13,061	8,947	3,719	3,418	5,316
	Portsmouth	1,675	1,196	414	2,142	2,556
	Virginia Beach	24,661	16,659	11,987	7,974	19,962
	Chesapeake	20,868	13,578	6,634	5,864	12,498
Remainder of Region*		31,756	22,785	12,312	7,976	20,285

** Includes Gloucester County.*
Source: Sturtevant, Lisa. Housing the Future Workforce in the Hampton Roads Region, May 2014. Prepared for Housing Virginia and shared on Hampton Roads Planning District Commission web site.

Due to changes in the demographic of the average net new worker, the type of housing that will need to be built will be different than it has been in the past. The new workers who will move to Hampton Roads will be young people working for lower wages. They will require more single family houses and rental units with moderately priced rent. According to a survey done by the American Community Survey, the percentage of multi-family housing units will increase by 5.2% to 39.7% in the coming years. The percentage of rental units will also increase to 46.5%, compared to 36.4% in previous years. **Table 3.8** illustrates how many housing units will need to be built in each community and the number of units that will be owned compared to those that will be rented. The "Remainder of Region" data include the City of Franklin, and the counties of Gloucester, Isle of Wight, Southampton, Surry, and York.

TABLE 3.8: ADDITIONAL HOUSING UNITS NEEDED BY 2033

SUBREGION	COMMUNITY	TOTAL UNITS NEEDED	SINGLE FAMILY		TOWNHOUSE/MULTI-FAMILY	
			OWNER	RENTER	OWNER	RENTER
Peninsula	Hampton	1,800	1,019	118	240	423
	Newport News	3,911	1,311	495	323	1,782
	James City County and Williamsburg	17,222	8,420	2,938	1,002	4,863
Southside	Norfolk	8,947	3,400	927	930	3,690
	Portsmouth	1,196	401	233	31	531
	Virginia Beach	16,659	6,124	1,920	1,618	6,997
	Chesapeake	13,578	7,684	1,961	916	3,017
	Suffolk	13,730	6,743	2,286	881	3,820
Remainder of Region*		9,055	4,445	1,513	549	2,545
Hampton Roads Region		86,098	39,547	12,391	6,491	27,668

* Includes Gloucester County.

Source: Sturtevant, Lisa. Housing the Future Workforce in the Hampton Roads Region, May 2014. Prepared for Housing Virginia and shared on Hampton Roads Planning District Commission web site.

Virginia law requires that all communities have a comprehensive land use plan and that it be updated every five years. Each county or city government in the study area has adopted a comprehensive plan that provides additional detail on the development trends for that community. Additionally, zoning maps and ordinances within each community further dictate allowable uses and show where future development is guided, or where higher density housing is allowable. Additional information and figures in the Section 5 *Vulnerability Assessment* show recent community development patterns in more detail.

HAZARD IDENTIFICATION AND ANALYSIS

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2022 UPDATE

The hazards significantly affecting the region, as determined by the planning group during the process outlined in Section 2, were updated with current hazard history information from several sources, including the National Centers for Environmental Information (NCEI), National Oceanic and Atmospheric Administration (NOAA) Hurricane Tracks, National Weather Service (NWS), and the *2018 Commonwealth of Virginia Hazard Mitigation Plan*. Flooding Due to Impountment Failure/High Hazard Dam, Pandemic Flu or Communicable Disease, and Radon Exposure were added and described.

INTRODUCTION

This section of the Plan describes the hazards that threaten the Hampton Roads region and provides general background information, local data (e.g., the location and spatial extent), and historical occurrences for each hazard. This section also presents best available data regarding notable historical damages within the region. The hazards discussed in this section are as follows:

- FLOODING
- FLOODING DUE TO IMPOUNDMENT FAILURE/HIGH HAZARD DAM
- SEA LEVEL RISE AND LAND SUBSIDENCE
- TROPICAL/COASTAL STORM

- LANDSLIDE/COASTAL EROSION
- TORNADO
- WINTER STORM
- EARTHQUAKE
- WILDFIRE
- DROUGHT
- EXTREME HEAT
- HAZARDOUS MATERIALS INCIDENT
- PANDEMIC FLU OR COMMUNICABLE DISEASE
- RADON EXPOSURE

44 CFR Requirement

Part 201.6(c)(2)(i): The risk assessment shall include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Some of these hazards are interrelated (e.g., tropical/coastal storm events can cause flooding and tornado activity, and flooding can be associated with winter storms and erosion); thus, hazard discussions overlap where necessary throughout the risk assessment.

To a large extent, historical records are used to identify the level of risk within the planning area—with the assumption that the data sources cited are reliable and accurate. Maps are provided to illustrate the location and spatial extent for those hazards within the region that have a recognizable geographic boundary (i.e., hazards that are known to occur in particular areas of the region such as the 100-year floodplain). For those hazards with potential risk not confined to a particular geographic area (such as winter storms and tornadoes), historical event locations and/or general information on the applicable intensity of these events across the entire planning area is provided.

For most hazards analyzed in this section, some level of property damage was associated with any or all of the hazard events cataloged. However, for some historic events reports of property damage were not available. Therefore, totals of past property damages derived from historical records are best estimates and should not be used as a stand-alone indicator of hazard risk.

The terms “likely”, “highly likely” and “unlikely” are used to describe the probability of future occurrence for each hazard. Hazards termed “likely” to occur again in the future are expected to occur but may not have occurred with such high frequency in the past that future events are a certainty. Hazards termed “highly likely” have a history of occurrence or have characteristics that make a future event almost guaranteed. “Unlikely to occur” indicates that committee members, based on review of past events, have the impression that any future occurrence will be a rare and unique event.

The *Vulnerability Assessment*, Section 5 of this plan, expands upon the foundation provided here and assesses the vulnerability of the region to these natural hazards.

SUMMARY OF PRESIDENTIAL DISASTER DECLARATIONS

A presidential disaster declaration is issued when a disaster event is determined to be beyond the response capabilities of state and local governments. Since 1953, the first year presidential disaster declarations

were issued in the United States, the region has been named in sixteen such declarations (**Table 4.1**). Under a presidential disaster declaration, the state and affected local governments are eligible to apply for federal funding to pay 75% of the approved costs for debris removal, emergency services related to the storm, and the repair or replacement of damaged public facilities. The types of natural hazards that led to these disaster declarations in Hampton Roads include ice storms, winter storms, hurricanes and tropical storms, the Hurricane Katrina evacuation in 2005 and pandemic. The most recent declarations were for Hurricanes Matthew (2016) and Florence (2018), Tropical Storm Michael (2018), and the Covid-19 Pandemic in 2020.

TABLE 4.1: PRESIDENTIAL DISASTER DECLARATIONS ISSUED FOR HAMPTON ROADS

YEAR	DATE OF DECLARATION	DISASTER NUMBER	DISASTER TYPE	DESIGNATED AREAS
1972	September 8	339	Tropical Storm Agnes	Chesapeake, Hampton, Isle of Wight Co, James City Co, Newport News, Norfolk, Portsmouth, Suffolk, Virginia Beach, Williamsburg, York Co
1996	February 16	1086	Blizzard of 1996	All study area communities
1996	October 23	1135	Hurricane Fran	Hampton, Isle of Wight Co, James City Co, Newport News, Poquoson, Suffolk, Williamsburg, York Co
1998	October 9	1242	Hurricane Bonnie	Chesapeake, Norfolk, Portsmouth, Suffolk, Virginia Beach
1999	September 6	1290	Tropical Storm Dennis and Tornadoes	Hampton
1999	September 24	1293	Hurricane Floyd	All study area communities
2000	February 28	1318	Severe Winter Storms	Franklin, Isle of Wight Co, James City Co, Newport News, Southampton Co, Suffolk, Williamsburg, York Co
2003	September 18	1491	Hurricane Isabel	All study area communities
2005	September 12	3240	Hurricane Katrina Evacuation	All study area communities
2006	September 22	1661	Tropical Depression Ernesto	Isle of Wight Co, James City Co, Newport News, Poquoson, York Co
2009	December 9	1862	Tropical Depression Ida and a Nor'easter	Chesapeake, Hampton, Isle of Wight Co, Newport News, Norfolk, Poquoson, Portsmouth, Virginia Beach
2011	August 26	4024	Hurricane Irene	All study area communities
2016	November 2	4291	Hurricane Matthew	Chesapeake, Franklin, Isle of Wight County, Norfolk, Portsmouth, Southampton County, Suffolk, Virginia Beach
2018	December 18	4411	Tropical Storm Michael	James City County
2018	October 15	4401	Hurricane Florence	Newport News, Hampton, Williamsburg, Isle of Wight County
2020	April 2	4512	Covid-19 Pandemic	All study area communities

Source: FEMA, 2021

NATIONAL CENTER FOR ENVIRONMENTAL INFORMATION STORM EVENT DATABASE

Much of the data in the remaining tables of this section were taken from the NOAA NCEI database. NCEI receives storm data from the NWS which, in turn, receives their information from a variety of sources, including: city, county, state, and federal emergency management officials, local law enforcement officials, skywarn spotters, NWS damage surveys, newspaper clippings, the insurance industry, and the general public. Information on hazard events not recorded in this database is provided in narrative format for each hazard subsection to supplement the NCEI data and to provide a more accurate depiction of historic hazard events in the region. While far from perfect, the NCEI data represents the best weather history data available that covers the entire region, and provides damages.

FLOODING

BACKGROUND

Nationwide, the primary types of flooding include riverine, coastal, and urban flooding. Riverine flooding is a function of excessive precipitation levels and water runoff volumes within a stream or river. Coastal flooding is typically a result of storm surge, wind-driven waves, and heavy rainfall produced by hurricanes, tropical storms, nor'easters, and other large coastal storms. Urban flooding occurs when manmade development obstructs the natural flow of water or when impervious surfaces significantly decrease the ability of natural groundcover to absorb and retain surface water runoff.

Photo courtesy of the City of Chesapeake.

Hampton Roads is subject to a variety of flood sources. The three major sources are: coastal flooding and storm surge associated with large amounts of tidally-influenced water being pushed inland from Hampton Roads and nontidal, riverine flooding as a result of excess precipitation in the watershed. Precipitation flooding occurs when rain intensity exceeds capacity of storm drain systems due to blockages or naturally low-lying areas. Tidal floods are influenced by tidal variations and are directly related to land elevation and proximity to the coastline. This type of flooding occurs in the study area with increasing regularity and is exacerbated by wind speed and direction, sea level rise and occurrence in conjunction with other types of flooding.

Similar to hurricanes, nor'easters are ocean storms capable of causing substantial damage to coastal areas in the Eastern United States due to their strong winds and heavy surf. Nor'easters are named for the winds that blow in from the northeast and drive storms up the East Coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast. They are caused by the interaction of the jet stream with horizontal temperature gradients and generally occur during the fall and winter months when moisture and cold air are plentiful.

Nor'easters are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surf that causes severe beach erosion and coastal flooding. There are two main components to a nor'easter: (1) a Gulf Stream low-pressure system (counter-clockwise winds) generated off the southeastern U.S. coast, gathering warm air and moisture from the Atlantic, and pulled up the East Coast by strong northeasterly winds at the leading edge of the storm; and (2) an Arctic high-pressure system (clockwise winds) which meets the low-pressure system with cold, arctic air blowing down from Canada. When the two systems collide, the moisture and cold air produce a mix of precipitation and have the potential for creating dangerously high winds and heavy seas. As the low-pressure system deepens, the intensity of the winds and waves increase and can cause serious damage to coastal areas as the storm moves northeast.

The presence of the Gulf Stream off the eastern seaboard in the winter season acts to dramatically enhance the surface horizontal temperature gradients within the coastal zone. This is particularly true off the Virginia coastline where, on average, the Gulf Stream is closest to land north of 32 degrees latitude. During winter offshore cold periods, these horizontal temperature gradients can result in rapid and intense destabilization of the atmosphere directly above and shoreward of the Gulf Stream. This air mass modification or conditioning period often precedes wintertime coastal extra-tropical cyclone development. The temperature structure of the continental air mass and the position of the temperature gradient along the Gulf Stream drive this cyclone development. As a low pressure deepens, winds and waves can increase and cause serious damage to coastal areas as the storm generally moves to the northeast.

The coastal communities of Virginia are most vulnerable to the impacts of nor'easters. Since the storms typically make landfall with less warning than hurricanes (due to their rapid formation along the coast), residents and business owners may be caught unprepared for the impacts. Fortunately, nor'easters typically occur during the tourist off-season when fewer non-residents are visiting the coast. As with hurricanes, structural vulnerability to nor'easters is proportional to the strength of the structure, with mobile homes being particularly vulnerable.

Additional causes of flooding, especially in the western Tidewater portion of the study area, may include features, such as roadways and pipelines, that act as choke points in the river, blocking debris and restricting the flow of water during heavy flooding events; development of the watershed resulting in the loss of riparian zone and vegetation coverage; land management, including forestry and farming practices; and deficiencies in manmade drainage systems.

The periodic inundation of floodplains adjacent to rivers, streams, and shorelines is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals. FEMA has studied and mapped both the 100-year floodplain (with a 1% chance of being equaled or exceeded in any given year), and the 500-year floodplain (with a 0.2% chance of being equaled or exceeded in any given year) for the study area.

LOCATION AND SPATIAL EXTENT

Flooding can occur along all waterways in the region. Localized riverine flooding can occur in areas of Hampton Roads not adjacent to a major body of water. Large sections of the region are low and subject to tidal flooding during hurricanes and severe nor'easters. Flood duration is typically shorter for hurricanes and tropical storms than for nor'easters because the storms tend to move faster and affect only 1 to 2 tidal cycles. The main impacts from flooding include:

- Inundation of low-lying residential neighborhoods and subsequent damage to structures, contents, garages, and landscaping; over time, mold and mildew from flooding can damage building components and mold spores can cause adverse health effects, including allergic reactions;
- Impassable road crossings and consequential risk for people and cars attempting to traverse flooded crossings;
- Damage to public and private infrastructure, possibly including but not limited to water and sewer lines, bridge embankments, and both small and large drainageways;
- Wave action responsible for shoreline damage, and damage to boats and facilities, including ships, ports and shipyards;
- Inundation of critical facilities, possibly including some fire stations, police facilities, public shelters, emergency operations centers (EOC), and several publicly-owned buildings. Public shelter availability is limited by the expected severity of flooding. (See **Table 5.2** for number of critical facilities in flood hazard areas.)
- Recovery time needed to bring critical infrastructure, schools and employers back online. Of particular concern in the region are transportation routes, including school buses, housing for displaced residents and debris management.

Communities in the study area have outlined detailed plans for activating their EOC, protecting critical facilities and taking specific drainage system actions when faced with an impending flood. Since power outages and threats to the water supply can result from both the wind and flood hazard (which often occur simultaneously in the region), residents are advised of appropriate precautions and specific low-lying areas are evacuated to protect the safety of residents, tourists and responders, and to minimize loss of life.

When severe floods occur, the regional economy is severely impacted by the inability of flooded homeowners to get back to work quickly, the slow rebound of closed or debris-strewn transportation routes, the closing of schools and businesses, and the general state of emergency. Power outages and boil-water advisories are common and can affect many thousands of residents and businesses in the region for several days or even weeks if the damage is severe. Severely flooded homes and even whole

neighborhoods result in displaced residents, including schoolchildren. Loss of life due to people traversing flooded roads, remaining in or becoming trapped in flooded structures, and curiosity-seekers watching storm surge is possible. Flooded businesses that decide to close, move or cease operations in the region have an impact on land values and the labor force, as does flood damage to the facilities of large port-related employers in the region such as shipyards and marinas. Time spent repairing flood damage versus productive value-added labor is costly to employers.

Over time, the pressure on communities and elected officials to fix flooding problems has increased in the region. Longer-term impacts to the real estate market from flooding and flood insurance costs are impacting property sales, especially for older homes in the densely-populated floodplains of Hampton, Newport News, Poquoson, Norfolk, Portsmouth and Virginia Beach. The large number of structures vulnerable to flood damage (see Section 5 for more details) and the cost of measures needed to mitigate such a large-scale problem is daunting for emergency managers, floodplain managers, planners and building professionals throughout the region.

Areas identified as vulnerable to flooding are depicted on FEMA's Flood Insurance Rate Maps (FIRMs), which were developed through the National Flood Insurance Program (NFIP), show the existing potential flood hazard areas throughout the region based on the estimated 100-year floodplain (**Figure 4.1**). The 100-year floodplain represents the area susceptible to the 1% annual flood. The 100-year flood, or base flood, has at least a 26% chance of occurring over the life of a typical 30-year mortgage. FIRM data is available through several sources for more detailed viewing at the parcel level:

- Paper FIRMs are available for viewing in each jurisdiction in the study area that participates in the NFIP;
- The FEMA Map Service Center at https://msc.fema.gov/portal/ is the official public source for flood hazard information produced in support of the NFIP;
- The Virginia Flood Risk Information System (VFRIS) is a collaboration between the Virginia Department of Conservation and Recreation (DCR) and the Virginia Institute of Marine Science (VIMS). The tool has flood depths, changes since the last FIRM, limit of moderate wave action (LiMWA), parcel boundaries, and the ability to download flood insurance studies and flood risk reports - http://cmap2.vims.edu/VaFloodRisk/vfris2.html
- Most localities in the study area have property information viewer tools with flood data layers, and several have included additional sea level rise inundation viewers. The following may be helpful:

  Hampton - https://webgis2.hampton.gov/sites/ParcelViewer/Account/LogOn
  Newport News - http://gis2.nngov.com/gis/
  Poquoson - https://parcelviewer.geodecisions.com/Poquoson/Account/Logon
  Williamsburg - https://williamsburg.maps.arcgis.com/apps/webappviewer/index.html?id=a5996d069d934d58bbcf1918129858f8 (does not have flood layer)
  James City County - http://property.jamescitycountyva.gov/JamesCity/Account/Logon
  York County - http://maps.yorkcounty.gov/York/Account/Logon
  Norfolk STORM Map – real-time event mapping - https://orf.maps.arcgis.com/apps/webappviewer/index.html?id=eb7164021ada45fea397d66fa84f4441
  Interactive Norfolk – various GIS layers, including flood zones - https://orf.maps.arcgis.com/apps/webappviewer/index.html?id=eb7164021ada45fea397d66fa84f4441
  TITAN (Tidal inundation Tracking Application for Norfolk) – https://orf.maps.arcgis.com/apps/dashboards/1fd204f3515e40428e77eea7c659a0e1
  Portsmouth - https://www.portsmouthva.gov/328/Flood-Maps
  Suffolk - http://apps.suffolkva.us/realest/
  Virginia Beach - https://gisapps.vbgov.com/map/

Chesapeake - https://www.cityofchesapeake.net/government/city-departments/departments/Real-Estate-Assessor/app.htm
Isle of Wight County, Smithfield, Windsor - http://iowgis.maps.arcgis.com/apps/webappviewer/index.html?id=4889333b70534c018c2c723b4d953f51
Southampton County, Franklin, towns - http://www.southampton.interactivegis.com/index.php#
Surry County - https://parcelviewer.geodecisions.com/surry/Account/Logon

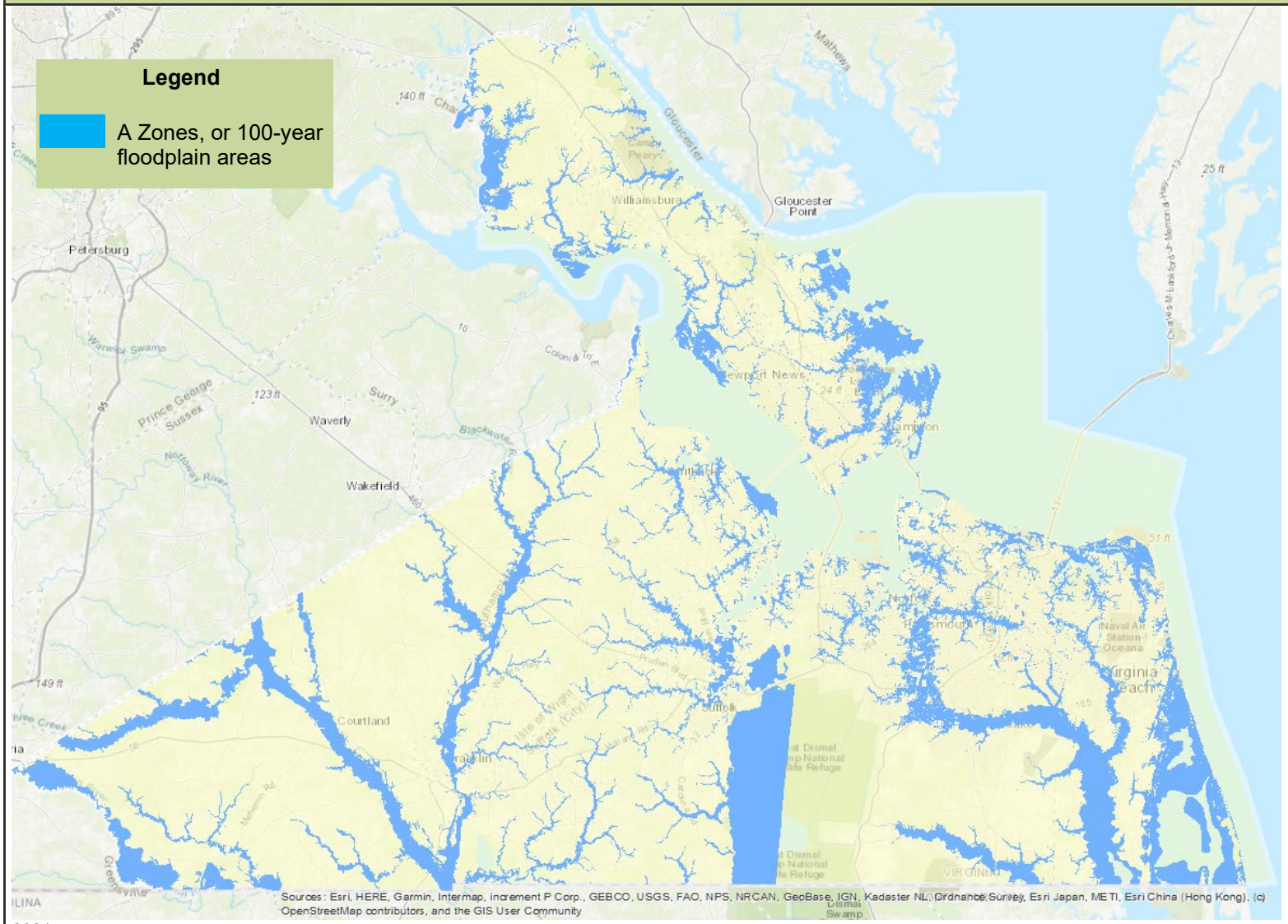
Figure 4.2 shows the 500-year flood hazard area with a 0.2-percent annual chance of flooding) and floodways, which are the channels of rivers or other watercourses and the adjacent land areas that must be reserved in order to discharge the base flood. Floodways are typically reserved for the fastest and strongest flows during the base flood.

Figure 4.3 shows the LiMWA, which delineates the Coastal A Zone, and the Coastal V Zone, or coastal high hazard area, an area of special flood hazard which is subject to high velocity waters from tidal surge or hurricane wave wash.

Figure 4.4a shows the most recent storm surge hazard areas that can be expected as the result of Category 1, 2, 3, and 4 hurricanes, based on the Sea, Lake and Overland Surge from Hurricanes (SLOSH) model. SLOSH is a computerized model run by the NWS to estimate storm surge heights resulting from hypothetical hurricanes by taking into account the maximum of various category hurricanes as determined by pressure, size, forward speed, and sustained winds. The regional analysis represents the composite maximum water inundation levels for a series of parallel tracks making landfall at various points along the coast. The SLOSH model, therefore, is best used for defining the “worst case scenario” of potential maximum surge for particular locations as opposed to the regional impact of one singular storm surge event.

Figure 4.4b shows the Virginia Hurricane Evacuation Routes for Hampton Roads. Termed the “Know Your Zone” initiative, this map and the effort to get the information engrained into residents’ minds prior to impending hurricane-related flooding or high winds, emphasizes the importance of warning and evacuating residents and visitors well before weather conditions deteriorate. When a storm is approaching, emergency managers will determine which zones are most at risk considering the intensity, path, speed, tides and other meteorological factors. Emergency managers at the state and local level will work with local media and use social media and other tools to notify residents of impacted zones and what they should do to stay safe. Depending on the emergency, being safe might mean staying at home, a short trip to higher ground, or traveling to a different region of the state. Given the geography of the region and the reliance of the transportation system on tunnels and bridges, early evacuation is a crucial element in public safety.

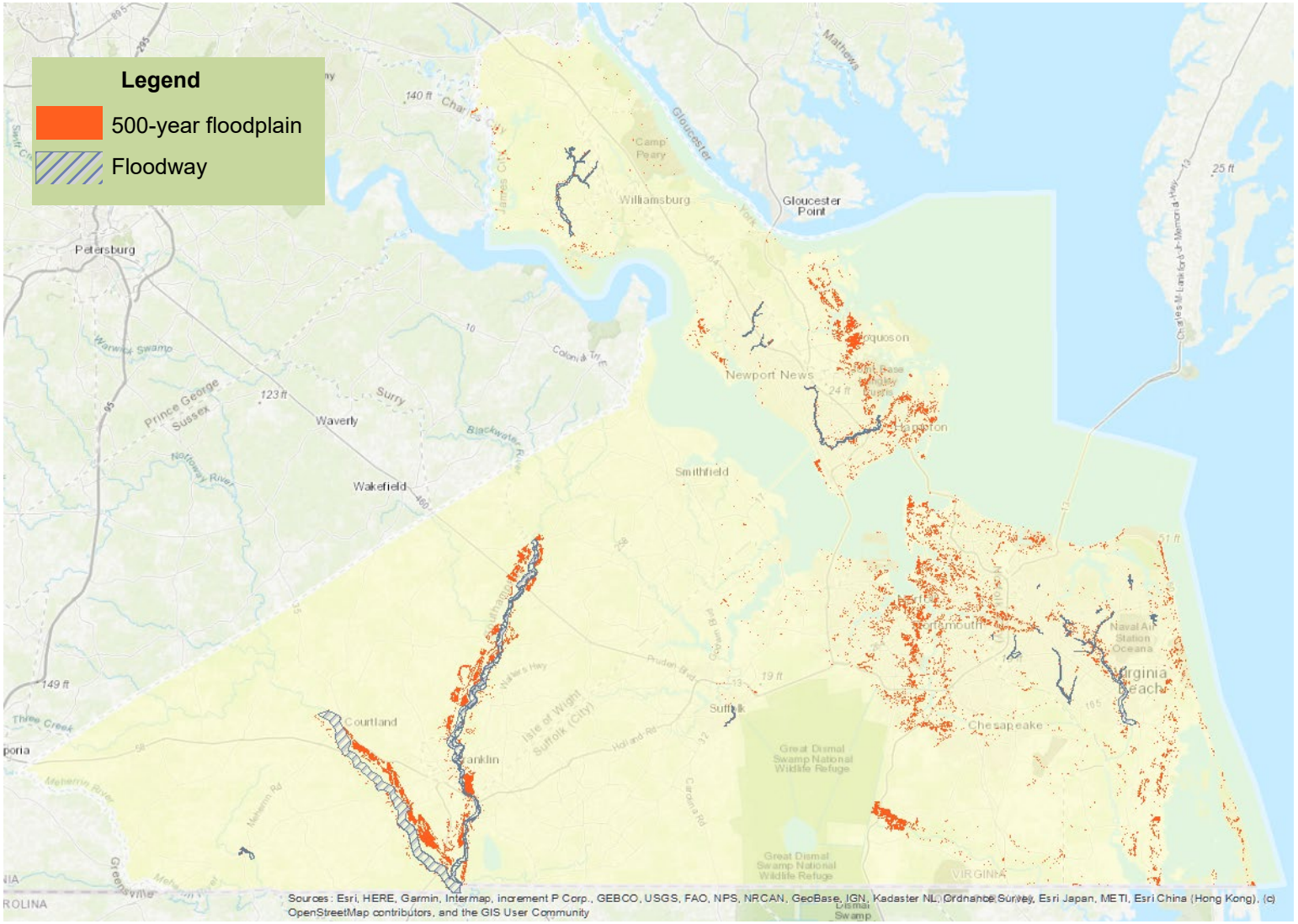
FIGURE 4.1: 100-YEAR FLOOD HAZARD AREAS



2021

Source: Federal Emergency Management Agency, 2021

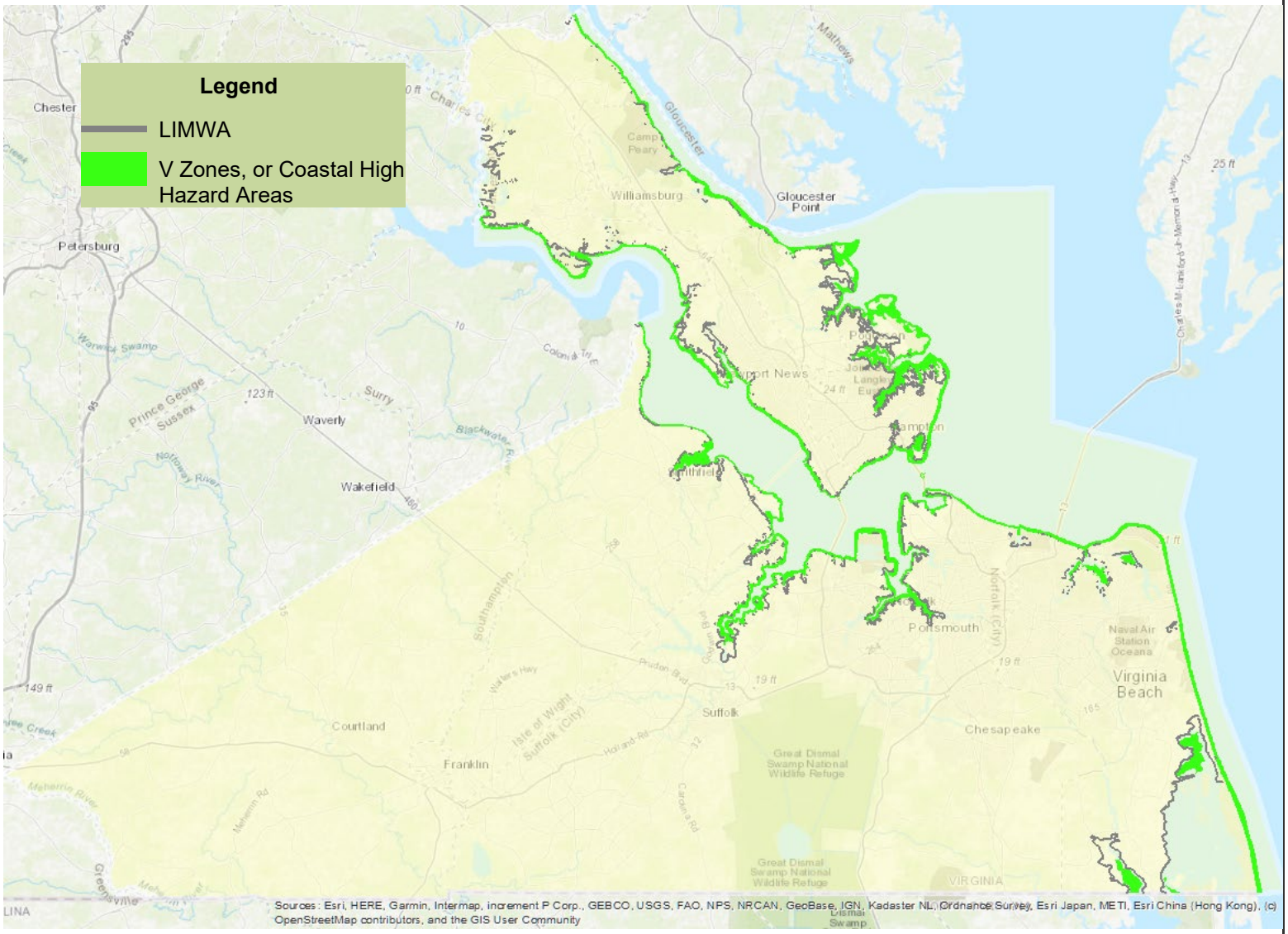
FIGURE 4.2: 500-YEAR FLOOD HAZARD AREAS AND FLOODWAYS



2021

Source: Federal Emergency Management Agency, 2021

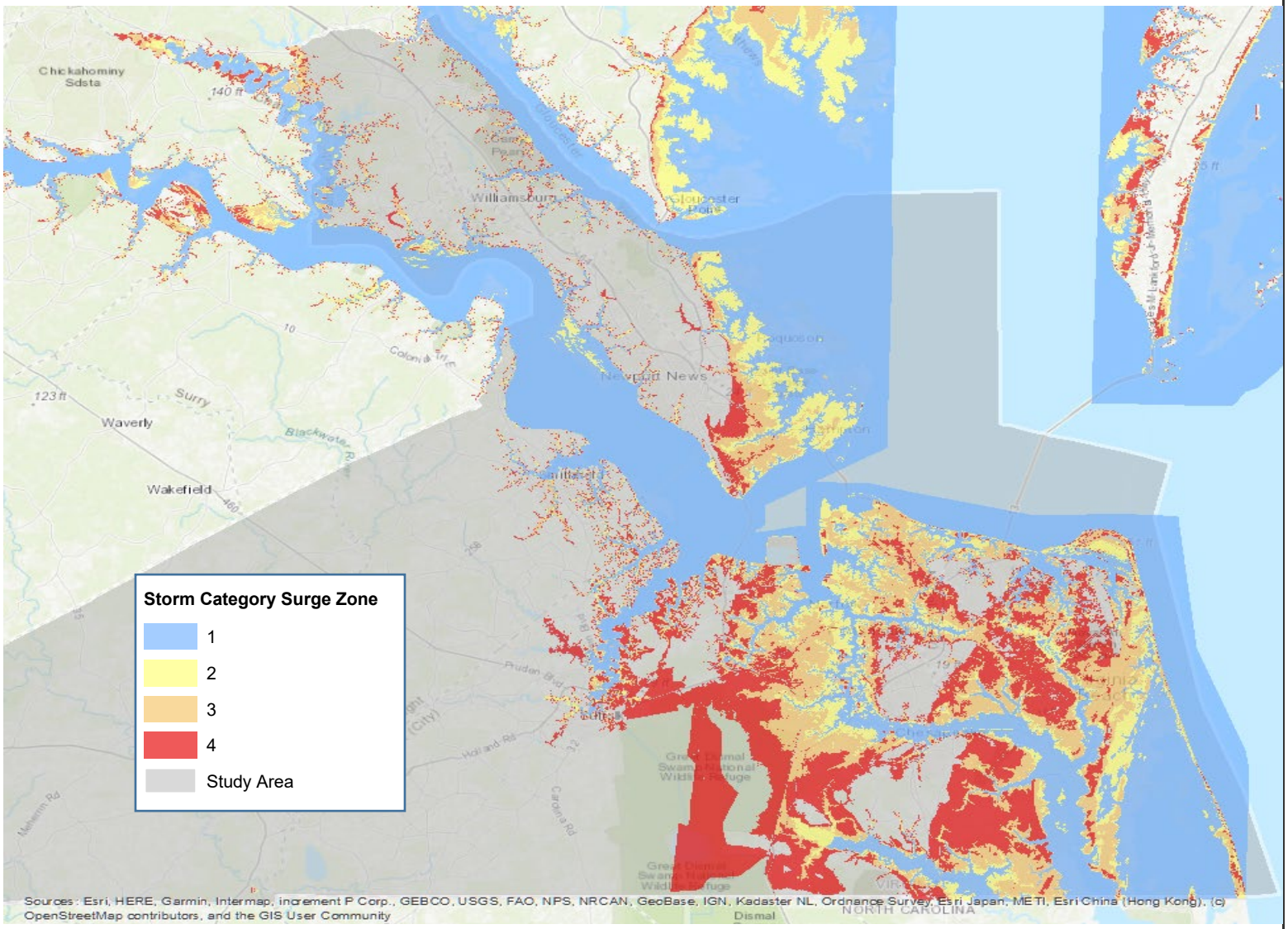
FIGURE 4.3: COASTAL HIGH HAZARD AREAS (V ZONES) AND LIMITS OF MODERATE WAVE ACTION (LIMWA)



2021

Source: Federal Emergency Management Agency, 2021

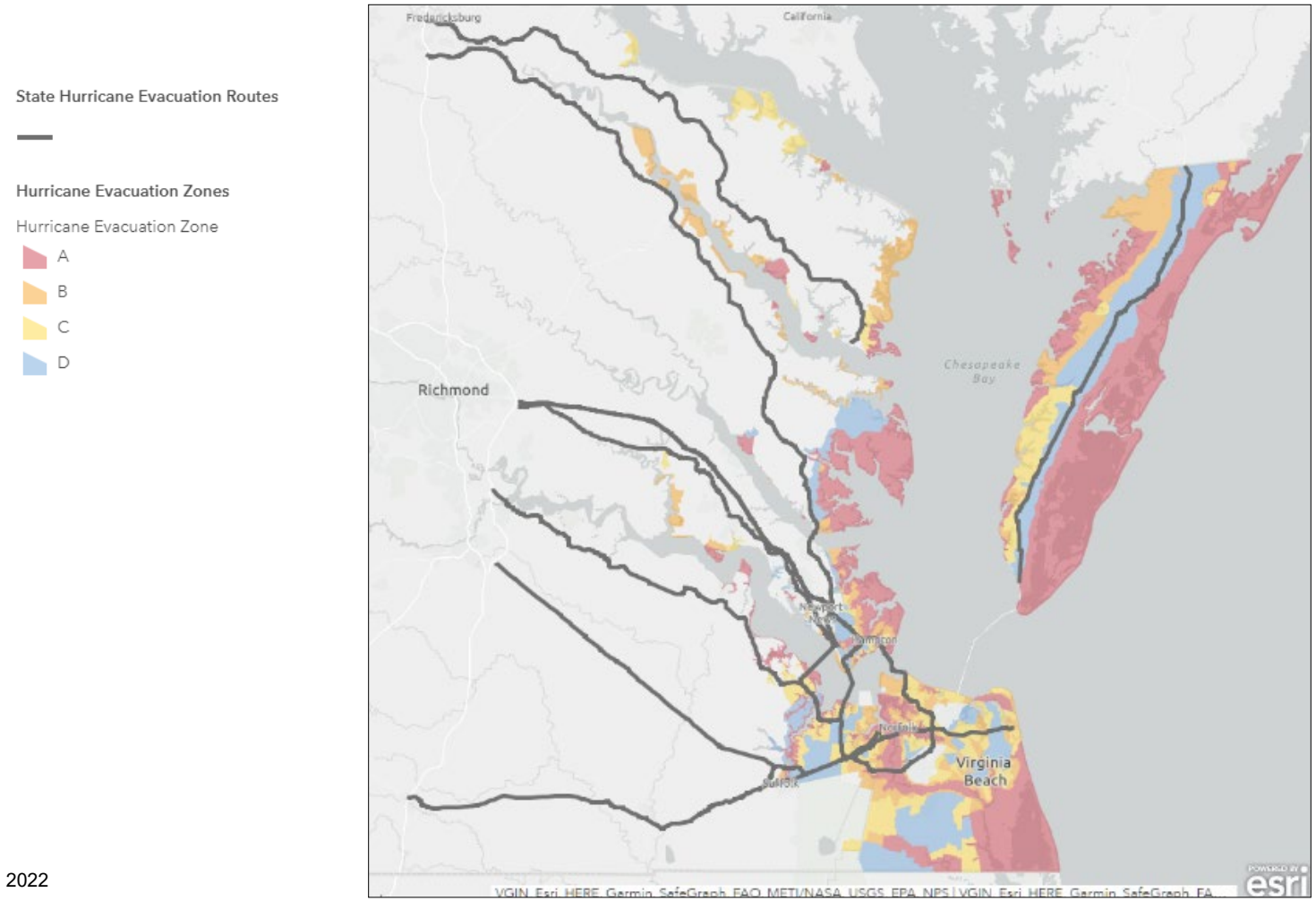
FIGURE 4.4A: HAMPTON ROADS STORM SURGE ZONES



2021

Source: U.S. Army Corps of Engineers, Norfolk District, 2021.

FIGURE 4.4B: VIRGINIA HURRICANE EVACUATION ROUTES



2022

Source: Virginia Department of Emergency Management, 2022.

In addition to floodplains, tidal and non-tidal wetlands within all of Hampton Roads' watersheds help store floodwaters, reduce erosion and filter pollutants. Wetlands are the transition area between aquatic and terrestrial habitats. A primarily low, marshy area, a wetland is saturated or even submerged all or part of the year, with soils that support unique plant and animal life. Wetlands work as a natural measure to help slow down the rising water from storms that may cause flooding, which is accomplished by acting as a giant sponge, absorbing and holding water during storms. Fast moving water is slowed by vegetation and temporarily stored in wetlands. Wetlands also filter pollutants carried by stormwater, which can be trapped by wetland vegetation. These excess nutrients are then used by the plants to promote growth.

Wetlands are resting, nesting, breeding, and spawning areas for many species of fish, shellfish, as well as other plant and animal life. More than one half of all threatened and endangered species depend on wetlands at one point of their life cycle. Hampton Roads, though located entirely within the Coastal Plain, spans a diverse range of habitats, including sandy ocean beaches, salt marshes of the Chesapeake Bay, wind tidal fresh marshes, dry sandhills, seasonally wet ponds and blackwater swamps. These habitats support many rare and significant plant communities and rare species, including:

Mabee's Salamander	*Ambystoma mabeei*	State threatened
Tiger Salamander	*Ambystoma tigrinum*	State endangered
Piping Plover	*Charadrius melodus*	State & Federal threatened
Wilson's Plover	*Charadrius wilsonia*	State endangered
Red-cockaded Woodpecker	*Dryobates borealis*	State & Federal endangered
Peregrine Falcon	*Falco peregrinus*	State threatened
Gull-billed Tern	*Gelochelidon nilotica*	State threatened
Black Rail	*Laterallus jamaicensis*	State endangered & Federal threatened
Yellow Lance	*Elliptio lanceolata*	State & Federal threatened
Atlantic Pigtoe	*Fusconaia masoni*	State & Federal threatened
Northeastern Beach Tiger Beetle	*Cicindela dorsalis dorsalis*	State & Federal threatened
Atlantic Sturgeon	*Acipenser oxyrinchus*	State & Federal endangered
Roanoke Logperch	*Percina rex*	State & Federal endangered
Eastern Big-eared Bat	*Corynorhinus rafinesquii macrotis*	State endangered
Little Brown Myotis	*Myotis lucifugus*	State endangered
Northern long-eared Myotis	*Myotis septentrionalis*	State & Federal threatened
Tricolored bat (=Eastern pipistrelle)	*Perimyotis subflavus*	State endangered
Loggerhead (Sea Turtle)	*Caretta caretta*	State & Federal threatened
Canebrake Rattlesnake	*Crotalus horridus [Coastal Plain population]*	State endangered
Chicken Turtle	*Deirochelys reticularia*	State endangered
Eastern Glass Lizard	*Ophisaurus ventralis*	State threatened
Sensitive Joint-vetch	*Aeschynomene virginica*	State & Federal threatened
Harper's fimbry	*Fimbristylis perpusilla*	State endangered
Small Whorled Pogonia	*Isotria medeoloides*	State endangered & Federal threatened
New Jersey Rush	*Juncus caesariensis*	State threatened
Narrow-leaved Spatterdock	*Nuphar sagittifolia*	State threatened
Reclining Bulrush	*Scirpus flaccidifolius*	State threatened

Source: Virginia Department of Conservation and Recreation, Natural Heritage Program, April 2022

Coastal wetlands absorb the erosive energy of waves, thus reducing further erosion. The vegetation provides a buffer to the shoreline from the wave action while the root systems provide support to help hold the soil together. Once plant material is removed or destroyed, the erosion potential increases dramatically. When any type of wetlands are filled in or drained, the areas designed by nature to control floodwaters from damaging storms, extreme high tides, and extreme precipitation are lost.

Existing natural area preserves in the region include: Antioch Pines; Blackwater Ecological Preserve; Blackwater Sandhills; Cypress Bridge; False Cape; Grafton Ponds; North Landing River; Northwest River; and, South Quay Sandhills. There are approximately 236,660 acres of conserved lands in the region, with the largest concentrations in Chesapeake, Suffolk, Virginia Beach, and York County. Conservation targets of special significance in the Hampton Roads region include:

- Pine barren communities;
- Seasonal depression ponds and other significant wetlands;
- Large blocks of old-growth cypress-tupelo swamps;
- Habitat for rare reptiles and amphibians;
- Lands along the Northwest and North Landing rivers; and
- Forestland along the Blackwater, Meherrin and Nottoway rivers.

SIGNIFICANT HISTORICAL EVENTS

Many flood events that have occurred in the region have been the result of coastal storms, tropical storms or hurricanes. Other localized flooding occurs when heavy rains fall during high tide causing waters that would normally drain quickly to back up because of the tides. Based on historical and anecdotal evidence, it is clear that there is a relatively high frequency of flooding in the region. Some of the notable flood events to impact Hampton Roads are discussed below.

The "**Dreadful Hurricane of 1667"** occurred on September 6th. This system is considered one of the most severe hurricanes to ever strike Virginia. On September 1st, this same storm was reported in the Lesser Antilles. The hurricane devastated St. Christopher as no other storm had done before. The "great storm" went on to strike the northern Outer Banks of North Carolina and southeastern Virginia. The wind turned from the northeast to due south and finally to the west, which suggested a track similar to the August 1933 hurricane. This 1667 hurricane lasted about 24 hours and was accompanied by very violent winds and tides. Approximately 10,000 houses were blown over. Area crops (including corn and tobacco) were beat into the ground. Many cattle drowned in area rivers and bays by the twelve foot storm surge and many people had to fleet the region. The foundations of the fort at Point Comfort were swept into the river. A graveyard of the First Lynnhaven parish church tumbled into the waters. Twelve days of rain followed this storm across Virginia. This system is blamed for the widening of the Lynnhaven River. Ships in regional rivers sustained great damage.

The Storm of 1749 is one of the most notable storms to occur in the region. It was responsible for the formation of Willoughby Spit, a formation of land approximately two miles long and a quarter mile wide. This storm created a 15-foot storm surge that flooded much of the region.

On **March 1-3, 1927** a nor'easter hit the region with high winds gusting to 62 mph at Cape Henry and 52 mph at Norfolk. Heavy snow fell across North Carolina into Virginia and travel was delayed for two to three days. In Virginia Beach, high tide and heavy surf on March 2 inflicted considerable damage. The beaches in some places were washed back 50 feet and denuded of the overlying sand, exposing the clay beneath.

The Chesapeake-Potomac hurricane struck the region on **August 23, 1933** and created a high tide in Norfolk of 9.69 feet above Mean Lower Low Water (MLLW), a record for the area. Eighteen people were killed by this storm that also flooded downtown Norfolk and destroyed homes at Ocean View. Winds were recorded at 70 mph in Norfolk, 82 mph at Cape Henry, and 88 mph at the Naval Air Station in Norfolk.

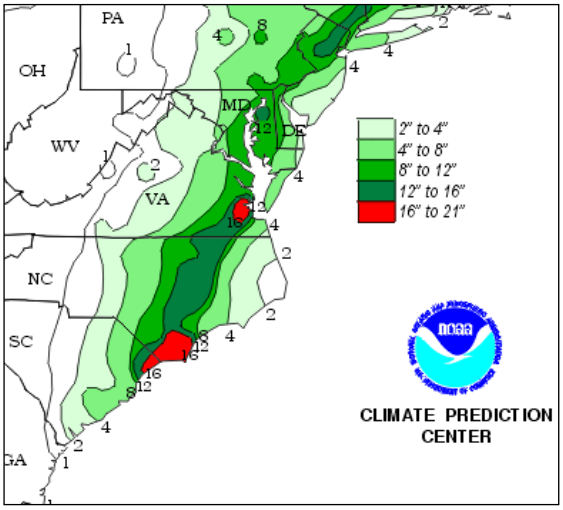
Flooding of **August 13-18, 1940**, was the result of four significant rainfall events within a three-week period. During this historical flood for the region, the Blackwater River crested at 21.9 feet, approximately 10 feet above flood stage for the City of Franklin. One of the primary causes of this flood event was an unnamed tropical cyclone that meandered across the southeast United States for four days before dissipating on August 15. Rains began in earnest in Virginia on August 13 as the storm entered the state from the west. Deluges flooded locations statewide with 4.76 inches of rainfall being measured in Hampton Roads. The Meherrin River at nearby Emporia reached a flood of record stage on August 17 when the river crested at 31.5 feet, 8.5 feet above flood stage. A total of 16 deaths in Virginia and neighboring states are directly attributed to this flood event.

On **April 11, 1956**, a severe nor'easter gave gale winds (greater than 40 mph) and unusually high tides to the Tidewater Virginia area. At Norfolk, the strongest gust was 70 mph. The strong northeast winds blew for almost 30 hours and pushed up the tide, which reached 4.6 feet above normal in Hampton Roads. Thousands of homes were flooded by the wind-driven high water and damages were large. Two ships were driven aground. Waterfront fires were fanned by the high winds. The flooded streets made access to firefighters very difficult, which added to the losses.

The Ash Wednesday storm of 1962 produced very severe flooding throughout the Hampton Roads region partly because it occurred during "Spring Tide" (sun and moon phase to produce a higher than normal tide). The storm moved north off the coast past Virginia Beach and then reversed its course moving again to the south and bringing with it higher tides and waves which battered the coast for several days. The storm's

center was 500 miles off the Virginia Capes when water reached nine feet at Norfolk and seven feet on the coast. Huge waves toppled houses into the ocean and broke through Virginia Beach's concrete boardwalk and sea wall. Houses on the bay side also saw extensive tidal flooding and wave damage. The beaches and shorefront had severe erosion. Locals indicated that the damage from this storm was worse in Virginia Beach than that caused by the 1933 Hurricane. The islands of Chincoteague and Assateague on the Eastern Shore were completely submerged. Receding water exposed hundreds of thousands of dead chickens drowned by the flooding. The Virginia Department of Health (VDH) indicated that it was an extreme health hazard and asked all women, children, and elderly to evacuate. A million dollars in damage was done to NASA's Wallops Island launch facility and an estimated $4 million in wind and flood damages occurred in the City of Hampton. Winds were recorded at speeds up to 70 mph causing 40-foot waves at sea. This storm also produced Virginia's greatest 24-hour snowfall with 33 inches and the greatest single storm snowfall with 42 inches (these were recorded in the mountainous western region of the Commonwealth).

In September of 1999, **Hurricane Floyd** was responsible for wind and flood damage in the Hampton Roads region. Several trees were uprooted as wind speeds were recorded between 50 and 80 mph across the region. This event brought over 10 inches of rain to Chesapeake, and approximately 13 inches to the Southampton County/City of Franklin area, and occurred just two weeks after Tropical Storm Dennis had saturated the area with 6.2 inches of rain. Hurricane Floyd caused the Great Dismal Swamp to overflow its banks creating flooding along the Northwest River. In Suffolk, during Hurricane Floyd in 1999, Speight's Run spillway was compromised rendering Turlington Road impassable. Other dams in Suffolk were overtopped by what was reported as 8 feet of water. In western Tidewater, primary routes out-of-service due to flooding included U.S. Highway 58 near Franklin and Interstate 95 south of Petersburg to Emporia. Riverine flooding was extensive and prolonged throughout the Chowan River Basin with the Blackwater, Meherrin and Nottoway Rivers all exceeding flood stage. Water levels within the City of Franklin were estimated to be more than four feet above the previous flood of record, which occurred in August 1940, making it the new flood of record. Gage height indicated that the water reached a height of 26.27 feet on September 18, 1999. By early morning on September 16, the Blackwater River had made its way to Main Street bringing four to five feet of water to even the higher elevations of Downtown Franklin, and floodwaters continued to rise at a rate of approximately six inches per hour. Approximately 100 homes and 182 businesses were totally destroyed as a result of the flooding. Floodwaters did not begin to recede until September 21, and home and business owners were not able return to their properties and begin to evaluate their losses until September 28. The flooding was a 500-year flood of record for parts of the basin. Also, there were enormous agricultural/crop losses due to the flooding.



Rainfall totals from Hurricane Floyd.
Source: NOAA Climate Prediction Center, 1999

On **October 17, 1999**, a flash flood, which resulted from very heavy rainfall associated with Hurricane Irene, ranged from five to nine inches in the City of Franklin and Southampton County. The precipitation resulted in numerous flooded roads and road closures due to high water. Specific problem areas in Franklin included: a ditch along Armory Drive near the Wal-Mart Shopping Plaza where fast-moving water and drainage issues caused some road erosion; and flooding near the library caused problems along Second Avenue.

In September of 2003, **Hurricane Isabel** caused widespread flooding, comparable to that caused by the 1933 hurricane and the Ash Wednesday Storm of 1962. Hurricane Isabel proved to be the costliest disaster in Virginia's history. The storm produced a high storm surge (four to five feet in Southside Hampton Roads)

which inundated the tidal portions of the region's creeks and rivers. Damage from flooding was extensive to structures and infrastructure in the planning area. The NFIP processed more than 24,000 Isabel claims in six states and the District of Columbia, totaling nearly $405 million. As a result of polluted runoff, VDH forbade gathering shellfish in the Virginia portion of the Chesapeake Bay, and rivers flowing into the bay. On September 18, 2003, Hurricane Isabel made landfall off the coast of northeast North Carolina. The hurricane, which had originally been a Category 5 storm, reached Chesapeake as a weak Category 1 storm. The magnitude of Hurricane Isabel's impact on the region was historic with rain, storm surge, and wind severely affecting many areas. Rainfall from Hurricane Isabel averaged four to seven inches over large portions of eastern North Carolina, east-central Virginia, and Maryland.

Although no damage was reported in the NCEI records, several streets in Franklin flooded as a result of precipitation associated with **Tropical Storm Ernesto** during the first four days of **September, 2006**. Ernesto strengthened throughout the day on Thursday, August 31 with maximum sustained winds reaching 70 mph. The Tropical Storm made landfall in Brunswick County, North Carolina near Long Beach at 1130 PM on Thursday, August 31. Ernesto moved north across the Coastal Plain of North Carolina on Friday, September 1, reaching southeastern Virginia as a Tropical Depression during the late afternoon on Friday. The system became extratropical late Friday evening as it moved across eastern Virginia. The Blackwater River crested at 15.61 feet according to stream gage data.

Between **October 7 and 10, 2006**, a strong low pressure system off the North Carolina coast coupled with an upper level cutoff low to dump intense rainfall across portions of southeastern Virginia and western Tidewater. Rainfall amounts in excess of 10 inches resulted in numerous road closures and moderate to major river flooding from late Friday, October 6th through Saturday, October 7th. In Franklin, the Blackwater River flooded much of downtown Franklin. Numerous businesses and residences sustained water damage, with estimates of property damage totaling approximately $4 million and crop damage estimated at $700,000. The Blackwater River crested October 10, 2006, at 22.77 feet.

Downtown Franklin during the October, 2006 flood. Source: City of Franklin photo

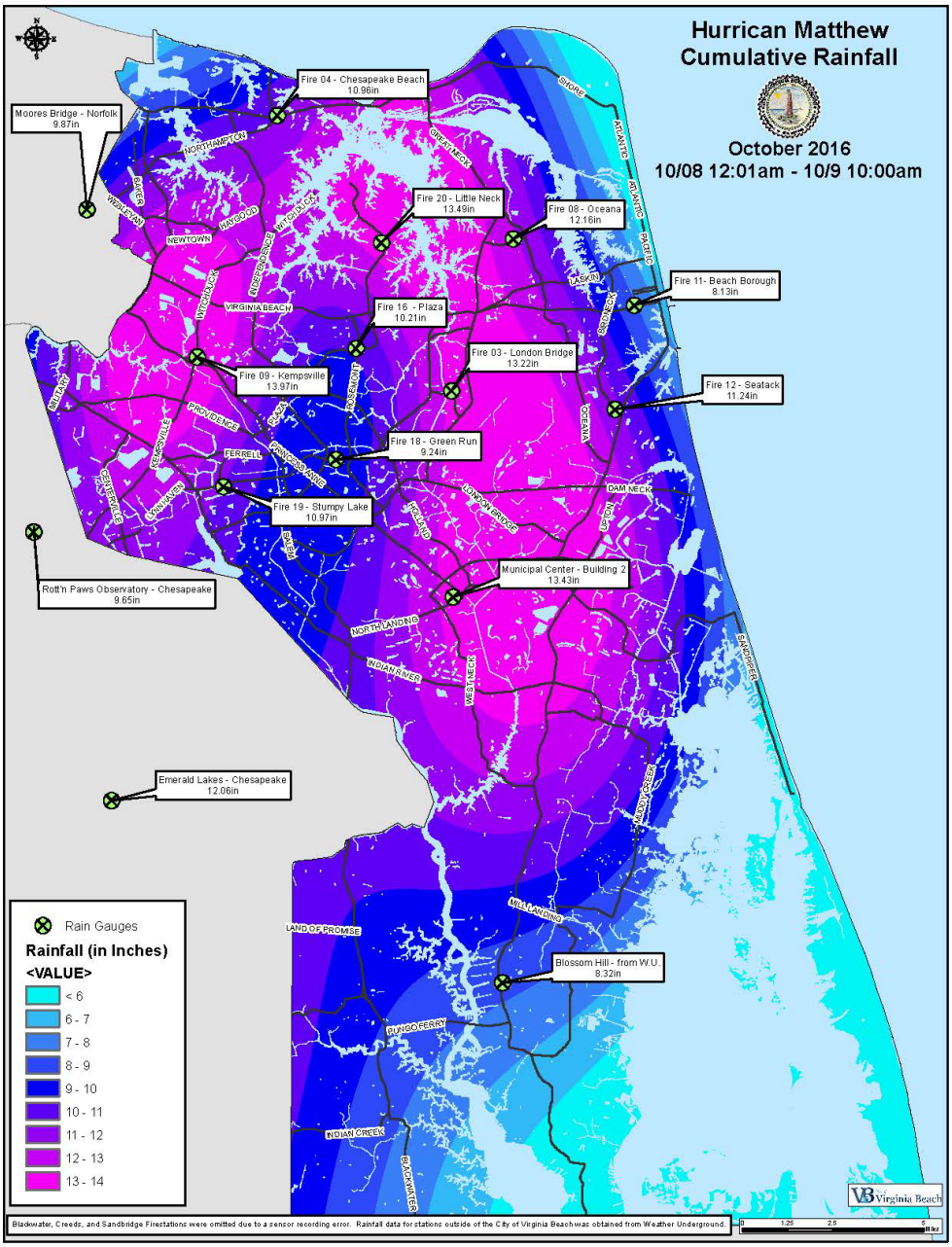
The November **2009 Mid-Atlantic nor'easter** (or "Nor'Ida") was a powerful storm that caused widespread flooding throughout the region. Persistent onshore flows brought elevated water levels for four days. At Sewells Point, a max storm tide of 7.74 feet MLLW was recorded on November 13th, the third highest recorded tide of all time at that location. Widespread coastal damage and major flooding occurred as a result of seven inches of rainfall and large wind-driven waves impacting beaches. Damage in Virginia exceeded $38.8 million, of which 64% was in Norfolk alone. According to the NWS, 7.4 inches of rain fell in Norfolk between November 11 and 13. Hurricane-force winds also affected the region, with a peak gust of 75 mph recorded at Oceana.

In August 2011, **Hurricane Irene** moved northward over the Outer Banks of North Carolina and just off the Virginia coast, producing heavy rains which caused widespread flooding across most of south central and southeast Virginia Saturday morning, August 27th into early Sunday morning, August 28th. Storm total rainfall generally ranged from six to as much as 12 inches. Heavy rains associated with Hurricane Irene produced widespread lowland flooding across much of Southside Hampton Roads, including roadways which were washed out or closed. Great Bridge reported 10.75 inches of rain. Deep Creek reported 9.72 inches of rain. Very heavy rainfall ranged from five to nine inches in the City of Franklin and Southampton County. The precipitation resulted in numerous flooded roads and road closures due to high water. Fort Monroe estimated wind and water caused an estimated $2.2 million in damage to properties leased by the Fort Monroe Authority.

At the end of October 2012, **Tropical Cyclone Sandy** moved northward well off the Mid Atlantic Coast producing heavy rain which caused flooding across much of eastern and southeast Virginia. Storm total rainfall ranged from four inches to as much as 10 inches across the area. Numerous roads were closed due to flooding. Storm total rainfall ranged from three to six inches across Chesapeake. Although the storm did not cause the destruction locally that it did in the northeast, it remains a significant rain and coastal flood event for parts of the Hampton Roads region.

In early October 2016, the combination of the tropical moisture from **Hurricane Matthew**, combined with a cold front moving across the middle Atlantic, allowed for heavy rain to fall from North Carolina through Southeast Virginia. Some locations across the Tidewater region of Virginia received more than 10 inches of rain for the storm total. This created considerable flooding across the region with many roads becoming impassible and some even washed out. According to the National Weather Service, Deep Creek in Chesapeake recorded 10.01 inches on October 9; areas in Norfolk and Portsmouth recorded just shy of 10 inches by late on October 8, or the morning of October 9. Rainfall totals on the Peninsula ranged from 5 to 9 inches. **Figure 4.5** shows the cumulative rainfall totals for Virginia Beach. The rainfall and resultant flooding resulted in 5,576 Virginia homeowners and renters applying to FEMA for disaster assistance. As of January 2017, more than $7.4 million in individual housing assistance grants and nearly $1.6 million in other needs assistance had been approved for residents of the 7 designated cities: Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Suffolk and Virginia Beach. In addition to the FEMA grants, and SBA loans, the NFIP paid out $46.8 million to 2,263 claimants to settle Flood Insurance Claims. The *Virginia Pilot* reported that Matthew damaged roughly 2,000 structures at a cost of about $30 million. In Virginia Beach in particular, the extraordinarily heavy rainfall overwhelmed the existing drainage system and left infrastructure incapable of performing to design expectations. The storm has marked a turning point for City leaders as they prioritize flood mitigation projects in coming years.

FIGURE 4.5: HURRICANE MATTHEW CUMULATIVE RAINFALL, VIRGINIA BEACH 2016



Source: City of Virginia Beach

Table 4.2 provides information on significant flood events documented by the NCEI between 1995 and December 2020 for the study area, representing the most recent data available. These events resulted in two reported deaths and one reported injury, and $189,684,000 million in property damages reported to the NCEI. Additional unreported property damages are likely. Additional data on repetitive flood losses is provided in Chapter 5. Bolded events in **Table 4.2** are described in additional detail above.

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)

LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
SURRY COUNTY	1/19/1996	Flood	0/0	-	1 to 2 feet of water on Rte. 10 between Surry and Bacon Castle Rd.
SOUTHAMPTON	6/11/1996	Flash Flood	0/0	-	Heavy rain in 3 hours caused road closures in the Sebrell area.
NORFOLK	6/18/1996	Flood	0/0	-	Heavy rain in 2 hours caused road closures in the Ocean View and Willoughby Spit sections of Norfolk.
VIRGINIA BEACH	6/18/1996	Flood	0/0	$10,000	Heavy rain in a few hours caused road closures in Lynnhaven and Oceanfront sections of Northern Virginia Beach.
VIRGINIA BEACH	6/20/1996	Flood	0/0	-	Heavy rain in 1 hour caused road closures in the Alanton and Oceana sections of Virginia Beach.
NORFOLK and VIRGINIA BEACH	7/18/1996	Flash Flood	0/0	-	Heavy rain in 6 hours caused road closures with people trapped in cars along the 300-400 block of East Little Creek Road and along Campostella Road. Flooding was also reported in the Kempsville area along Indian River Road and Princess Anne Road. High water was reported in the Oceanfront area along Atlantic Avenue.
CHESAPEAKE	7/18/1996	Flash Flood	0/0	-	Heavy rain in a few hours resulted in water along Bainbridge Boulevard and Freeman Avenue and a split of Interstate 64 and 264.
VIRGINIA BEACH	7/18/1996	Flash Flood	0/0	-	Heavy rain in a few hours resulted in flooding in the Kempsville area along Indian River Road and Princess Anne Road and the Oceanfront area along Atlantic Avenue.
NORFOLK	7/31/1996	Flood	0/0	-	Streets were flooded due to two storms in an afternoon.
NEWPORT NEWS, YORK/POQUOSON, NORFOLK/HAMPTON/ PORTSMOUTH, AND VIRGINIA BEACH	4/23/1997	Coastal Flood	0/0	-	Moderate coastal flooding caused tides to peak at 5.8ft above the Mean Lower Low Water especially in Willoughby Spit, Ghent, and downtown sections of Norfolk, the Old-Town section of Portsmouth, the Buckroe Beach and Grandview sections of Hampton, and the Sandbridge section of Virginia Beach. Minor coastal flooding was reported in Newport News and York county.
NORFOLK AND VIRGINIA BEACH	6/3/1997	Coastal Flood	0/0	-	Minor to moderate flooding resulted in loss of part of the boardwalk and a couple lifeguard stands in Virginia Beach and several streets flooded in downtown Portsmouth and downtown Norfolk.
VIRGINIA BEACH, YORK/POQUOSON, NORFOLK/HAMPTON/ PORTSMOUTH, AND NEWPORT NEWS	10/19/1997	Coastal Flood	0/0	-	Minor to moderate flooding resulted in streets being closed and water in a few houses in Norfolk, downtown Portsmouth, Sandbridge and Sandfiddler areas of Virginia Beach. Minor flooding was reported in Newport News and York County.
VIRGINIA BEACH, NEWPORT NEWS, NORFOLK, AND YORK	1/27/1998	Coastal Flood	0/0	$1,500,000	A Nor'easter caused high tides and moderate coastal flooding combined with gale and storm force winds. A couple houses were damaged and power outages were scattered across the Hampton Roads area.
NORFOLK, HAMPTON, PORTSMOUTH, VIRGINIA BEACH, NEWPORT NEWS, AND YORK/POQUOSON	2/4/1998	Coastal Flood	0/0	$75,000,000	A Nor'easter caused gale & storm force winds & high tides that resulted in moderate to severe coastal flooding with damage to buildings, road closures, & scattered power outages especially in Norfolk, Virginia

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	**DATE OF OCCURRENCE**	**TYPE OF EVENT**	**DEATHS/ INJURIES**	**PROPERTY DAMAGE**	**DETAILS**
					Beach, and Hampton. Willoughby & Ocean View had the most damage.
NORFOLK, CHESAPEAKE, VIRGINIA BEACH, SUFFOLK, and PORTSMOUTH	7/24/1999	Flash Flood	0/0	-	Roads were flooded including Hampton Boulevard. Parts on Interstate 264, Ballahack Road, and Military Highway in Chesapeake were flooded. Many other roads were flooded and impassable.
VIRGINIA BEACH, NORFOLK, CHESAPEAKE, AND PORTSMOUTH	8/14/1999	Flash Flood	0/0	-	Primary roads and underpasses were flooded including Route 13 in Chesapeake.
VIRGINIA BEACH, NORFOLK, CHESAPEAKE, SUFFOLK, AND PORTSMOUTH	9/7/1999	Flash Flood	0/0	-	A line of thunderstorms caused flooding on roads.
SUFFOLK	9/7/1999	Flash Flood	0/0	-	Road (1500 block Camp Pond Road) flooded out.
CHESAPEAKE, ISLE OF WIGHT, SUFFOLK, NORFOLK, FRANKLIN, SOUTHAMPTON, PORTSMOUTH, NEWPORT NEWS, HAMPTON, YORK, JAMES CITY, POQUOSON, SURRY COUNTY AND WILLIAMSBURG	**9/15/1999**	**Flash Flood**	**0/0**	**$35,000**	**Hurricane Floyd caused heavy rain and widespread flooding and flash flooding across eastern Virginia. 12 to 18 inches of rain fell in the Tidewater region. Numerous roads were washed out and several rivers exceeded flood stage including the Chowan River Basin and the Blackwater, Meherrin, and Nottoway Rivers. There were enormous agricultural losses due to flooding.**
SUFFOLK, SOUTHHAMPTON, ISLE OF WIGHT, FRANKLIN, NORFOLK, VIRGINIA BEACH, CHESAPEAKE, PORTSMOUTH, NEWPORT NEWS, POQUOSON, YORK, AND HAMPTON	**10/17/1999**	**Flash Flood**	**0/0**	**-**	**Heavy rainfall associated with Hurricane Irene caused flooded roads and road closures.**
JAMES CITY	7/19/2000	Flash Flood	0/0	-	Heavy rain caused flooding and standing water across the intersection of Routes 30 and 60 near Toano.
HAMPTON, NEWPORT NEWS	7/24/2000	Flash Flood	0/0	$350,000	Heavy rain caused 35 residences to be evacuated due to high water on Scoggin Circle and Grimes Road in the Buckroe Beach section of Hampton. Widespread flooding of main and secondary roads was reported in Newport News.
SOUTHAMPTON, POQUOSON, YORK AND SURRY COUNTY	7/24/2000	Flash Flood	0/0	-	Flooding on secondary roads and several roads washed out. Three interstate off-ramps were closed due to flooding in York.
NORFOLK	7/26/2000	Flash Flood	0/0	-	Heavy rain flooded roadways and caused closure of underpasses on Tidewater Drive in downtown Norfolk. Flooding also occurred at Chesapeake Boulevard and Chesapeake Street in the East Ocean View section of Norfolk.
SUFFOLK	7/30/2000	Flash Flood	0/0	-	Heavy rain caused flooding of Kings Fork Road in the western part of the city.
SOUTHAMPTON CO AND SURRY CO	8/3/2000 – 8/4/2000	Flash Flood	0/0	$2,000	Heavy rain caused flooding on Route 58 near Drewryville and two minor accidents

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					on Route 308 were due to high water. Heavy rain caused flooding on Route 31 between Dendron and Scotland. Flooding also occurred on Route 10 in Surry.
PORTSMOUTH, AND NORFOLK	8/11/2000	Flash Flood	0/0	-	Flooding caused the closure of Interstate 264 at Frederick Boulevard. The intersections of Granby Street and Brambleton Avenue, Princess Anne Road and Monticello Avenue, and City Hall Avenue and Granby Street were all closed due to high standing water in Norfolk. Also, underpasses on Campostella Avenue, Tidewater Drive and Colley Avenue were closed due to accumulated water.
VIRGINIA BEACH	8/14/2000	Flash Flood	0/0	-	Widespread flooding caused the closure of several roads in the vicinity of Princess Anne Plaza. Sections of Rosemont Road were closed due to flooding.
SOUTHAMPTON COUNTY AND SURRY COUNTY	9/1/2000	Flash Flood	0/0	-	Several roads flooded. Route 10 under water near the Surry/Prince George county line.
NORFOLK	9/5/2000	Flash Flood	0/0	-	Heavy rain caused the side of an underpass wall to slide into the road at Granby Street and Interstate 64 resulting in road closure.
SOUTHAMPTON / FRANKLIN	9/5/2000	Flood	0/0	$3,000	The Nottoway and Blackwater Rivers flooded and caused some road closures including: Route 653 from Route 719 to Cary's Bridge, Route 619 at the intersection of Route 629, Route 614 from Route 622 to the Isle of Wight county line, and Route 651 (Indian Town Road) from Route 35 at Hancock Peanut to Route 652.
SUFFOLK AND ISLE OF WIGHT	6/16/2001	Flash Flood	0/0	-	Flooding caused one road closure near Whaleyville. Knoxville Road, Rose Drive, and numerous other secondary roads were impassable around Windsor.
NORFOLK	7/23/2001	Flash Flood	0/0	-	One car was submerged at the underpass on Colley Avenue and 21st Street and roads were covered with water.
SOUTHAMPTON	8/18/2001	Flash Flood	0/0	-	Flooding resulted in impassable roads and high water on Route 35.
HAMPTON AND NEWPORT NEWS	6/14/2002	Flash Flood	0/0	-	Streets were flooded and water was shooting out of a manhole cover.
VIRGINIA BEACH, NORFOLK, HAMPTON, AND NEWPORT NEWS	8/28/2002	Flash Flood	0/0	-	Heavy rains caused roads closures along Rosemont at the Virginia Beach Boulevard and around Kings Grant area. A car stalled in deep water. Union street and areas near City Hall and Granby were flooded in Norfolk. A section of West Mercury Boulevard and Powhatan Parkway in Hampton were closed due to high water. Roads were closed at the intersection of 27th and Buxton streets and flood barricades were in place at the City Line Apartment Complex in Newport News.
VIRGINIA BEACH AND NORFOLK	10/11/2002	Flash Flood	0/0	-	Atlantic Avenue was closed in Virginia Beach between 42nd and 65th streets due to flooding. The intersection of Tidewater Drive and Virginia Beach Boulevard in Norfolk were flooded.

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
NEWPORT NEWS, YORK/POQUOSON, NORFOLK/HAMPTON/ PORTSMOUTH, AND VIRGINIA BEACH	4/10/2003	Storm Surge/tide	0/0	-	Flooding occurred at high tide resulting in water in some streets portions of the Middle Peninsula and Hampton Roads.
NEWPORT NEWS AND YORK	7/19/2003	Flash Flood	0/0	-	Heavy rain caused street flooding near Leesville Mill Subdivision. Route 17 was reported closed at intersection with Route 173 due to street flooding.
NEWPORT NEWS	8/5/2003	Flash Flood	0/0	-	6 families had to be evacuated due to flash flooding.
POQUOSON	8/17/2003	Flash Flood	0/0	-	High water occurred on Poquoson and Huggins roads, and also in Hunts Neck are and in yards.
SUFFOLK, HAMPTON, NEWPORT NEWS, NORFOLK, AND PORTSMOUTH	**9/3/2003**	**Flash Flood**	**0/0**	**-**	**Streets were flooded in northern Suffolk. Many roads closed due to high water, including 27th and Buxton Streets in Newport News and the 8000 block of Hampton Boulevard in Norfolk.**
NEWPORT NEWS AND YORK	5/19/2004	Flash Flood	0/0	-	High water on Warwick Boulevard between 36th and 50th Street and at Center and Jefferson Avenue, and underpasses along Main Street and Center Avenue. Dare Road reported closed due to high water in York.
NEWPORT NEWS	5/22/2004	Flash Flood	0/0	-	High water at Flint Drive and Tillerson Drive.
PORTSMOUTH	6/10/2004	Flash Flood	0/0	-	High water at Airline Boulevard and I-264 and at intersection of Oregon and Dakota Roads.
CHESAPEAKE	7/4/2004	Flash Flood	0/0	-	A section of Route 17 in the Great Dismal Swamp Area was washed out due to rain.
NORFOLK, ISLE OF WIGHT CO, SURRY CO	7/25/2004	Flash Flood	0/0	-	Streets were flooded in downtown Norfolk including Waterside Drive. Lawnes Creek Bridge on Route 10 near Rushmere and several other roads were reported closed due to flooding in Isle of Wight. Route 617 closed due to flooding in Surry County.
SURRY COUNTY	7/29/2004	Flash Flood	0/0	-	Road closed on Route 611 near the intersection of Highway 40 due to flooding.
NORFOLK AND PORTSMOUTH	8/2/2004	Flash Flood	0/0	-	Some streets were flooded including the intersection of Park Avenue and Virginia Beach Boulevard and at the intersection of Robinhood Road and I-64 Underpass. Duke and Randolph Streets reported closed due to high water. Flooding on I-264 and Portsmouth Boulevard in Portsmouth.
CHESAPEAKE	7/13/2005	Flash Flood	0/0	-	One half mile of Murray Drive near Fentress in the Green Haven subdivision was underwater.
SUFFOLK, CHESAPEAKE, PORTSMOUTH, AND NORFOLK	8/9/2005	Flash Flood	0/0	-	College Drive and Camelia Drive flooded in Suffolk. Parts of Taylor Road were flooded in Chesapeake. Numerous roads were closed including Hampton Boulevard with vehicles flooded in Norfolk. Effingham and London Boulevard and the entrance to Route 264 at Frederick Boulevard were flooded in Portsmouth.
NORFOLK / HAMPTON / PORTSMOUTH…, NORFOLK, SUFFOLK, PORTSMOUTH, CHESAPEAKE, HAMPTON, NEWPORT	10/8/2005	Flood	0/0	-	Street flooding reported at Hampton Boulevard and Terminal Boulevard, Granby Street and Tidewater Drive, 900 Block of East Oceanview Avenue, Virginia Beach Boulevard and Brambleton, Princess Anne and Monticello Avenue. Areas of flooding

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
NEWS, AND POQUOSON					were reported along sections of Route 58, on College Drive in the College Square Section, and on Kilby Shores Drive in Suffolk. The 56th block of Cranny Brook Road, Bunch Boulevard at Dwight Avenue, Powhatan and Vahallia, Scott Drive at Westhaven, 264 West bound off ramp, and Gateway Drive were closed due to flooding in Portsmouth. Bruce Road was closed near Tyre Neck Road in Western Branch part of Chesapeake. Grimes Road and Lee Street were under water in Hampton. Buxton Avenue was closed at 25th Street in Newport News. North Lawson Road was flooded in Poquoson.
CHESAPEAKE, NORFOLK, PORTSMOUTH, SUFFOLK, AND VIRGINIA BEACH	6/14/2006	Flash Flood	0/0	-	Heavy rain from the remnants of Tropical Storm Alberto caused flash flooding and road closures and the closure of Bainbridge Boulevard near the Triple Decker Bridge in Chesapeake. Brambleton Avenue near Route 264 overpass was closed and flooding occurred at Texas Avenue in the Norvell Heights area in Norfolk. The 2000 block of Frederick Boulevard was closed due to flash flooding in Portsmouth. The 2500 block of Pruden Boulevard was closed due to flash flooding in Suffolk. Atlantic Avenue between 49th and 71st streets was closed in Virginia Beach due to flash flooding.
YORK, HAMPTON, ISLE OF WIGHT, AND NEWPORT NEWS	6/23/2006	Flood	0/0	-	High water on several roads including Main Street in Isle of Wight.
SUFFOLK, NORFOLK, VIRGINIA BEACH, CHESAPEAKE, SOUTHAMPTON, FRANKLIN, YORK, PORTSMOUTH, HAMPTON, JAMES CITY CO, SURRY CO AND NEWPORT NEWS	**9/1/2006**	**Flash Flood**	**0/0**	**-**	**Numerous streets flooded with a couple feet of water including Route 600 between Routes 614 to 623 in Southampton, Route 264 ramp to Frederick Boulevard in Portsmouth, London Bridge Road and Corporate Landing Street in Virginia Beach, Route 64 at Mercury Boulevard in Hampton, Route 664 at 35th street to Jefferson Avenue in Newport News, and Route 632 in James City. Route 630 in Surry County closed.**
YORK / POQUOSON	**9/1/2006**	**Coastal Flood**	**0/0**	**$1,900,000**	**Tides of 4 to 5 feet above normal caused significant property damage across portions of the Virginia Peninsula and Middle Peninsula near the Chesapeake Bay and adjacent tributaries.**
NORFOLK AND YORK	**10/6/2006**	**Coastal Flood**	**0/0**	**$200,000**	**Strong onshore winds caused moderate coastal flooding during high tide and caused road closures and power outages in western portions of the southern Chesapeake Bay.**
SOUTHAMPTON, ISLE OF WIGHT, FRANKLIN, SURRY COUNTY AND JAMES CITY	**10/7/2006**	**Flash Flood**	**0/0**	**$8,800,000**	**Intense rainfall caused river flooding, road closures, and power outages in western portions of the southern Chesapeake Bay. HWY 460 was closed from Ivor to the Sussex county line. HWY 258 and parts of HWY 460 near Windsor in Isle of Wight. The Blackwater River flooded much of downtown Franklin where numerous businesses**

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					and residences sustained water damage. Crop damage and road closures in Surry County.
NORFOLK, YORK, CHESAPEAKE, SUFFOLK, AND VIRGINIA BEACH	11/22/2006	Coastal Flood	0/0	$225,000	Strong onshore winds caused moderate coastal flooding during high tide and caused road closures across portions of eastern and southeast Virginia including the intersection of Tidewater Drive and Brambleton Avenue and the intersection of Virginia Beach Boulevard and Tidewater Drive. The 700 block of North Main Street and East Constance Road in the 100 block between North Main and Katherine Street were closed due to high water in Suffolk.
NORFOLK AND VIRGINIA BEACH	6/26/2007	Flash Flood	0/0	-	Heavy rain caused flash flooding on roads and in underpasses including Tidewater Drive underpasses. Flooding was reported on Virginia Beach Blvd and Kempsville Road in Virginia Beach.
PORTSMOUTH AND NORFOLK	4/21/2008	Flash Flood	0/0	-	Heavy rains caused flash flooding and road closures across portions of southeast Virginia.
SUFFOLK	5/5/2009	Flash Flood	0/0	-	Isolated thunderstorm produced heavy rain which caused flash flooding across portions of Suffolk. High water was reported at the 3800 Block of Whaleyville Boulevard in Whaleyville.
SOUTHAMPTON	8/5/2009	Flash Flood	0/0	-	Isolated thunderstorms produced heavy rains which caused flash flooding across portions of Southampton county and a section of State Highway 186 was flooded and partially closed.
PORTSMOUTH, CHESAPEAKE, AND NORFOLK	8/12/2009	Flash Flood	0/0	-	Scattered thunderstorms produced heavy rain which caused flash flooding and road closures across portions of southeast Virginia. Gracie Road and State Highway 407 were flooded in Chesapeake. Westbound Route 264 at the downtown tunnel was closed from Norfolk to Portsmouth. Road was flooded at South Brambleton Road and Kimball Terrace near the Exit 11A interchange of Interstate 264 in Norfolk.
HAMPTON	8/13/2009	Flash Flood	0/0	-	Isolated thunderstorm produced heavy rain which caused flash flooding across portions of Hampton.
NEWPORT NEWS	8/14/2009	Flash Flood	0/0	-	Isolated thunderstorm produced heavy rain which caused flash flooding across portions of Newport News.
NORFOLK	8/22/2009	Flash Flood	0/0	-	Scattered thunderstorms produced heavy rain which caused flash flooding and road closures in numerous locations downtown, including the Ghent area and in the vicinity of Old Dominion University.
CHESAPEAKE, ISLE OF WIGHT, NEWPORT NEWS, NORFOLK, VIRGINIA BEACH, YORK, SURRY COUNTY AND SUFFOLK	**11/12/2009**	**Coastal Flood**	**0/0**	**$39,250,000**	**A Nor'easter produced moderate to severe coastal flooding across much of eastern and southeastern Virginia causing flooding of streets, homes, and businesses. Tidal flooding took out the clubhouse north of the Godwin Bridge, and destroyed a number of piers in Suffolk. The flooding was extensive, well above what was experienced in Isabel, in the Long Creek, Lynnhaven**

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	**DATE OF OCCURRENCE**	**TYPE OF EVENT**	**DEATHS/ INJURIES**	**PROPERTY DAMAGE**	**DETAILS**
					Colony and Bay Island areas of Virginia Beach. In Surry County, several streets, homes and businesses were flooded in low lying areas of the county close or directly exposed to the James River. Many decks and piers were damaged or destroyed.
CHESAPEAKE, NORFOLK, VIRGINIA BEACH, AND YORK	12/19/2009	Coastal Flood	0/0	$40,000	A coastal low pressure area produced moderate to severe coastal flooding across much of eastern and southeast Virginia and several streets, homes and businesses were flooded in low lying areas
VIRGINIA BEACH, PORTSMOUTH, AND HAMPTON	7/29/2010	Flash Flood	0/0	-	Scattered thunderstorms produced flash flooding across portions of southeast Virginia and numerous roads were flooded in north Virginia Beach, the City of Hampton, and the City of Portsmouth.
PORTSMOUTH, HAMPTON, YORK, NORFOLK, AND CHESAPEAKE,	9/30/2010	Flash Flood	0/0	-	Thunderstorms produced flash flooding and caused road closures including Portsmouth Boulevard, County Street, Effingham Street, and the Interstate 264 Exit at Effingham.
VIRGINIA BEACH, CHESAPEAKE, FRANKLIN, ISLE OF WIGHT, NORFOLK, PORTSMOUTH, SOUTHAMPTON, SUFFOLK, YORK, HAMPTON, JAMES CITY, NEWPORT NEWS, SURRY COUNTY AND JAMES CITY COUNTY	**8/27/2011**	**Flood**	**0/0**	**-**	**Hurricane Irene produced heavy rains which caused widespread flooding and either closed or washed out roadways. Rainfall ranged from four to twelve inches across the region.**
SURRY COUNTY	9/7/2011	Flash Flood	0/0	-	The combination of the remnants from Tropical Storm Lee and a frontal boundary draped over the region caused heavy rain which produced flash flooding. Blackwater swamp rose and flooded a road. Portions of Carsley Road were impassable due to high water.
SOUTHAMPTON	9/9/2011	Flood	1/1	-	The driver of a vehicle drowned after his vehicle went into a swamp in Southampton county. The passenger was able to escape from the vehicle.
VIRGINIA BEACH	9/28/2011	Flash Flood	0/0	-	Scattered thunderstorms caused heavy rain which produced flash flooding and flooded Jeanna Street and Shore Drive.
ISLE OF WIGHT, NEWPORT NEWS, AND YORK	5/15/2012	Flash Flood	0/0	-	Scattered thunderstorms produced heavy rain and flash flooding resulting in flooding on several roads and high water west of Carrollton in Isle of Wight. In Newport News, flooding was reported on Interstate 64 at Jefferson Avenue. Several accidents were reported near the Patrick Henry Mall. The underpasses at Main Street and Center Avenue were flooded several feet. Winterhaven Drive had several cars floating. There was significant flooding off of Harpersville Road. There was flooding at the Virginia Living Museum. Three feet of water was reported on a road in the Coventry Subdivision in York.
NEWPORT NEWS AND HAMPTON	8/25/2012	Flash Flood	0/0	$2,000,000	Scattered thunderstorms produced heavy rain which caused flash flooding which

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LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					resulted in flooding on Warwick Boulevard, Main Street, Deep Creek Road and cars were submerged on Warwick Boulevard just west of Mercury Boulevard in Newport News. An apartment building was flooded in Hampton.
HAMPTON	8/28/2012	Flash Flood	0/0	-	Scattered thunderstorms produced heavy rain which caused flash flooding. Fox Hill Road was almost impassable at Mercury Boulevard due to flooding. Other roads were closed or impassible and an apartment complex was evacuated.
SOUTHAMPTON	8/28/2012	Flood	0/0	-	Scattered thunderstorms produced heavy rain which caused flooding and road closures mainly western sections along and south of Route 58.
ISLE OF WIGHT, VIRGINIA BEACH, YORK, SUFFOLK, NEWPORT NEWS, CHESAPEAKE, NORFOLK, SURRY COUNTY AND JAMES CITY COUNTY	**10/28/2012**	**Coastal Flood**	**0/0**	**$2,144,000**	**Tropical Cyclone Sandy produced very strong winds which caused moderate to severe coastal flooding especially on the James River, York River, Chesapeake Bay, and at Sewells Point. Some streets were flooded in Chesapeake. Water levels reached 2.5 to 3.5 feet above normal along the James River up into Surry County.**
NEWPORT NEWS, JAMES CITY, ISLE OF WIGHT, HAMPTON, CHESAPEAKE, WILLIAMSBURG, PORTSMOUTH, SUFFOLK, YORK, VIRGINIA BEACH, AND NORFOLK	**10/29/2012**	**Flood**	**0/0**	**-**	**Tropical Cyclone Sandy produced very strong winds which caused flooding and closed numerous roads.**
YORK	7/21/2013	Flash Flood	0/0	-	Scattered thunderstorms produced heavy rain which caused flash flooding. Flooding was reported along Farm Road just off of Route 17. Oriana Road (Route 620) was flooded just north of Newport News Airport. Two to three inches of water was over roadway along Route 17 just south of the Coleman Bridge.
NORFOLK, PORTSMOUTH, AND CHESAPEAKE	5/16/2014	Flood	0/0	-	Heavy rain caused flooding during high tide. Numerous roads were closed due to high water. The first floor of some apartments and a couple of cars were under water in Ghent. Norfolk Public Schools experienced flooding inside some of their buildings.
VIRGINIA BEACH	7/9/2014	Flood	0/0	-	Scattered severe thunderstorms produced heavy rain which caused minor flooding on Sandbridge Road.
NORFOLK, ISLE OF WIGHT, AND PORTSMOUTH	7/10/2014	Flood	0/0	-	Scattered severe thunderstorms produced heavy rain which caused some minor flooding on Windsor Boulevard in Windsor and Elm Street in Portsmouth.
VIRGINIA BEACH	7/15/2014	Flood	0/0	-	Scattered severe thunderstorms produced heavy rain which caused some minor flooding at the intersection of Baxter Road and Princess Anne Road and on Mill Dam Road near First Colonial Road.
SUFFOLK	7/24/2014	Flash Flood	0/0	-	Scattered thunderstorms produced heavy rain which caused flash flooding on Clay Street with water flowing into homes in

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					Suffolk. A car was partially submerged in high water in the Pleasant Hill area.
ISLE OF WIGHT, NEWPORT NEWS, PORTSMOUTH, NORFOLK, CHESAPEAKE, AND HAMPTON	9/8/2014	Flood	0/0	-	Showers and scattered thunderstorms produced locally heavy rainfall and resulted in flooding across portions of southeast Virginia. Several roads were flooded or impassable over northeast Isle of Wight county. Several roads were flooded in southern portions of Newport News, including 26th Street near Interstate 664, and Warwick Boulevard and 35th Street. Also, several streets were flooded around Mercury Boulevard. An apartment complex was evacuated in Hampton. Heavy rain closed several roads and underpasses across the region.
SURRY COUNTY	7/11/2015	Flood	0/0	-	Scattered thunderstorms produced heavy rain. There were multiple reports of water over the road along Route 10 in Surry.
VIRGINIA BEACH, NORFOLK, HAMPTON, POQUOSON, YORK, CHESAPEAKE, ISLE OF WIGHT, NEWPORT NEWS, JAMES CITY, SURRY AND SUFFOLK	10/2/2015	Coastal Flood	0/0	1,000,000	A tidal departure of 3 to 4 feet resulted in moderate flooding along the Atlantic coast and Chesapeake Bay. A combination of Hurricane Joaquin near the Bahamas and strong high pressure over New England produced strong onshore winds over the Mid-Atlantic. The strength and duration of the onshore winds produced moderate coastal flooding along the Atlantic Coast and Chesapeake Bay.
VIRGINIA BEACH	1/23/2016	Coastal Flood	0/0	-	A tidal departure of 2.5 to 3.5 feet resulted in moderate coastal flooding along the Atlantic Ocean and Chesapeake Bay. The peak water level at the Chesapeake Bay Bridge Tunnel was 5.72 feet at 606 am on January 23.
CHESAPEAKE	7/1/2016	Flash Flood	0/0	-	Scattered showers and thunderstorms in advance of a cold front produced heavy rain and caused flash flooding across portions of eastern and southeast Virginia. Rainfall totals ranged from five to as much as eleven inches in areas where flash flooding occurred.
CHESAPEAKE, NORFOLK, PORTSMOUTH	7/19/2016	Flood, Flash Flood	0/0	-	Scattered thunderstorms in advance of a cold front produced heavy rain and caused flash flooding across portions of southeast Virginia. Flooding on Bainbridge Blvd at Rte 13; water covering Olney Rd with vehicles stuck in water; streets flooded on Old Town Portsmouth with vehicles trapped.
VIRGINIA BEACH, NORFOLK	7/31/2016	Flash Flood	0/0	-	Heavy rain from thunderstorms caused flash flooding, with rainfalls ranging between 2 and 7 inches. 2800 block of Shore Drive closed, roads closed near Fairfield Shopping Center, Little Creek/Ft Story, and streetlights out in Ocean View.
PORTSMOUTH, SUFFOLK, CHESAPEAKE, NORFOLK, VIRGINIA BEACH, ISLE OF WIGHT, SOUTHAMPTON, FRANKLIN	9/21/2016	Flood	0/0	$1,085,000	The combination of a stalled frontal boundary and the remnant low pressure area that was Tropical Storm Julia, produced heavy rain which caused flooding across much of southeast Virginia from Wednesday morning, September 21st into early Thursday morning, September 22nd. Numerous roads washed out or closed.

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)					
LOCATION	**DATE OF OCCURRENCE**	**TYPE OF EVENT**	**DEATHS/ INJURIES**	**PROPERTY DAMAGE**	**DETAILS**
ISLE OF WIGHT, FRANKLIN, SUFFOLK SOUTHAMPTON, NORFOLK, PORTSMOUTH, CHESAPEAKE, YORK, NORFOLK, NEWPORT NEWS, HAMPTON, JAMES CITY, VIRGINIA BEACH, POQUOSON, SURRY	**10/8/2016**	**Flood, Flash Flood, Coastal Flood**	**1/0**	**$56,140,000**	**The combination of a cold front moving through the mid-Atlantic and Post Tropical Cyclone Matthew tracking northeast just off the coast, produced heavy rain which caused flash flooding. Strong northeast or north winds over southeast Virginia causes coastal flooding over the study area. Heavy rain caused an extended period of significant flooding. Numerous roads were impassable or closed for several days, and many homes and businesses were impacted. Numerous roads were impassable or closed, and some small creeks or streams were out of their banks due to heavy rain causing flash flooding. Coastal storm tides of 2 to 3.5 feet above astronomical tide levels were common, with only minor beach erosion reported. The maximum storm tide reached 5.86 feet MLLW at Sewalls Point, which resulted in moderate coastal flooding.**
CHESAPEAKE	3/31/2017	Flash Flood	0/0	-	Knee high water was reported at Sparrow Intermediate School.
VIRGINIA BEACH	7/24/2018	Flood	0/0	-	Numerous roads were flooded and closed for several days across much of central and eastern portions of Virginia Beach due to heavy rain.
VIRGINIA BEACH	8/6/2018	Flood	0/0	-	High water was reported on Interstate 64 at Mile marker 291. Vehicle accident was reported due to the high water.
NORFOLK	8/11/2018	Flash Flood	0/0	-	Neighborhood roadways were flooded. Rainfall total of 2.19 inches was measured in 45 minutes. Colley Avenue was closed due to flooding at the underpass. One vehicle was caught in the flood waters.
CHESAPEAKE, VIRGINIA BEACH	8/20/2018	Flood	0/0	-	Thunderstorms caused heavy rain that flooded roads.
HAMPTON	9/9/2018	Flood	0/0	-	Road was closed due to flooding at Coliseum Drive and Merchant Lane. Radar estimates indicated that two to four inches of rain had fallen in the area.
JAMES CITY COUNTY, YORK COUNTY	10/12/2018	Flash Flood	0/0	-	Showers and scattered thunderstorms associated with Tropical Cyclone Michael produced heavy rain which caused flash flooding across portions of central and south central Virginia and the Middle Peninsula. Several roads remained impassable or closed across much of the county due to lingering flooding. Route 737 was flooded at Otey Drive.
CHESAPEAKE, NORFOLK	6/7/2019	Flash Flood	0/0	-	Slow moving thunderstorms produced intense rainfall of 4 to 6 inches resulting in flash flooding on June 7th. Flooding was reported at Triple Decker Bridge underpass at Bainbridge Boulevard and Highway 113 in South Norfolk. Monticello Drive and 16th Street were closed due to flooding.
NORFOLK, CHESAPEAKE	8/7/2019	Flash Flood	0/0	-	Thunderstorms produced heavy rain which caused flash flooding. Reported along Chesapeake Boulevard, Johnstons Road, and Auburn Drive, at the intersection of 26th and 27th Streets, Granby Street and

TABLE 4.2: SIGNIFICANT FLOOD EVENTS (1995 - 2021)

LOCATION	DATE OF OCCURRENCE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					Colonial Avenue, and outside of WTKR studio. Also, portions of Boush Street were impassible. Oxford Street and Newport Avenue and streets in Ocean View were impassible due to high water.
VIRGINIA BEACH	8/22/2019	Flood	0/0	-	Minor street and roadway flooding was reported.
NORFOLK, VIRGINIA BEACH, YORK COUNTY, SURRY COUNTY	9/6/2019	Coastal Flood	0/0	-	Very strong northeast to north winds associated with Hurricane Dorian produced tidal anomalies between 2.5 and 3.5 feet over the southern Chesapeake Bay. This caused moderate coastal flooding over portions of the study area. Sewells Point reached 5.87 feet MLLW at 342 pm on September 6. Some streets were flooded and closed, and vehicles were stranded in the Ghent area.
YORK COUNTY, JAMES CITY COUNTY, SURRY COUNTY	10/11/2019	Coastal Flood	0/0	-	Persistent north or northeast winds, along with high waves, produced tidal anomalies between 2.0 and 3.0 feet over the York and James Rivers. This caused moderate coastal flooding. Yorktown USCG Station reached 5.24 feet MLLW.
VIRGINIA BEACH, NORFOLK	11/17/2019	Coastal Flood	0/0	-	Very strong northeast to north winds produced tidal anomalies between 2.0 and 3.0 feet over the southern Chesapeake Bay. This caused minor to moderate coastal flooding over portions of Virginia Beach and Norfolk. Chesapeake Bay Bridge Tunnel reached 5.88 feet MLLW. Some streets were flooded.
JAMES CITY COUNTY	5/19/2020	Coastal Flood	0/0	-	Minor to moderate tidal flooding occurred over portions of James City county along the James River. Jamestown reached 4.72 feet MLLW.
YORK COUNTY, JAMES CITY COUNTY	5/29/2020	Flash Flood	0/0	-	Right lane of Interstate 64 East at Mile Marker 240 was closed due to high water. Portions of Merrimac Trail were impassible due to high water.
PORTSMOUTH, CHESAPEAKE	6/20/2020	Flash Flood	0/0	-	In Portsmouth, total rainfall of 3.38 inches was reported, with 3.00 inches of rain reported in one hour. Several roads were flooded.
VIRGINIA BEACH	7/1/2020	Flash Flood	0/0	-	Interstate 264 East and West bound lanes were flooded. Two lanes were closed due to high water. Total rainfall between 3.37 inches and 4.05 inches was reported across the area.
VIRGINIA BEACH	8/4/2020	Coastal Flood	0/0	-	Strong south to southeast winds associated with Tropical Storm Isaias resulted in moderate (perhaps some locally major) tidal flooding over portions of Virginia Beach adjacent to Back Bay.
VIRGINIA BEACH, CHESAPEAKE	8/6/2020	Flash Flood	0/0	-	Flash flooding was reported in the Dam Neck area of Virginia Beach. Numerous cars were flooded. Rainfall total of 5.50 inches was reported. Some water was reported in garages and starting to enter homes.
CHESAPEAKE, VIRGINIA BEACH, NORFOLK	8/11/2020	Flash Flood	0/0	-	Water over the roadway reported near Chesapeake Square Mall, and along Great Neck Rd. Several streets were flooded in the city of Norfolk with water almost up to

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LOCATION	**DATE OF OCCURRENCE**	**TYPE OF EVENT**	**DEATHS/ INJURIES**	**PROPERTY DAMAGE**	**DETAILS**
					car windows near Redgate Avenue in Ghent.
JAMES CITY COUNTY, YORK COUNTY, NEWPORT NEWS, SURRY COUNTY, SOUTHAMPTON COUNTY, ISLE OF WIGHT COUNTY	8/15/2020	Flash Flood	0/0	-	All north and south lanes were closed on Route 614 near John Tyler Memorial Highway due to flooding, Dare Rd had lane closures, multiple roads in Newport News and York County impassible, portions of Rte 10, Rte 616, roads in Colony Pines neighborhood closed, and flooding the Rushmere area.
ISLE OF WIGHT COUNTY, SURRY COUNTY, SOUTHAMPTON COUNTY, YORK COUNTY	9/9/2020	Flash Flood	0/0	-	Windsor Elementary School partially flooded (no damages reported), Post Office in Isle of Wight Co flooded, multiple roads closed, washed out or impassable; water rescues performed and cars stranded in Smithfield/Isle of Wight County.
JAMES CITY COUNTY, VIRGINIA BEACH, ISLE OF WIGHT COUNTY, PORTSMOUTH	9/18/2020	Flash Flood	0/0	-	Post Tropical Cyclone Sally tracking northeast across the Southeast United States and off the Mid Atlantic Coast produced heavy rain which caused flash flooding across portions of southeast Virginia. Multiple road closures, including Centerville Road, Brick Bat Road, Nike Park Rd, and roads in Virginia Beach. One person rescued from car in Lansdowne, Virginia Beach.
ISLE OF WIGHT COUNTY, HAMPTON, NORFOLK, CHESAPEAKE, YORK COUNTY, SURRY COUNTY, SOUTHAMPTON COUNTY, NEWPORT NEWS, WILLIAMSBURG, JAMES CITY COUNTY, VIRGINIA BEACH, SUFFOLK, PORTSMOUTH, FRANKLIN	11/12/2020	Flood, Flash Flood	0/0	-	Deep tropical moisture streaming northward into the mid-Atlantic region combined with the approach of a cold front and low pressure, produced heavy rain which caused flash flooding across portions of central and southeast Virginia. Numerous roads were impassible or closed due to continued flooding from heavy rainfall throughout the study area, including standing water on portions of interstate highways.
YORK COUNTY	12/24/2020	Flash Flood	0/0	-	Intersection of Airport Road and Mooretown Road was closed due to high water over the roadway.
TOTAL			**2/1**	**$189,684,000**	

Source: NCEI (1995 to January, 2021 data)

PROBABILITY OF FUTURE OCCURRENCES

Flooding remains a highly likely occurrence throughout the identified flood hazard and storm surge areas of the Hampton Roads region. Smaller floods caused by heavy rains and inadequate drainage capacity will be frequent, but not as costly as the large-scale floods caused by hurricanes and coastal storms, which may occur at less frequent intervals.

FLOODING DUE TO IMPOUNDMENT FAILURE/HIGH HAZARD DAM

Flooding in the region is also possible as the result of a dam that malfunctions or is overtopped. There are approximately 80,000 dams in the United States today, the majority of which are privately owned. Other owners include state and local authorities, public utilities and federal agencies. The benefits of dams are numerous: they provide water for drinking, navigation and agricultural irrigation. Dams also provide hydroelectric power, create lakes for fishing and recreation, and save lives by preventing or reducing floods.

Lake Burnt Mills in Suffolk.
Photo source: City of Suffolk

Though dams have many benefits, they also can pose a risk to communities if not designed, operated and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and great property damage if development exists downstream of the dam. The failure of dams has the potential to place large numbers of people and great amounts of property in harm's way.

Flooding due to impoundment failure refers to a collapse, overtopping, breaching, or other failure that causes an uncontrolled release of water or sludge from an impoundment, resulting in downstream flooding. Dam or levee failures can occur with little warning. Intense storms may produce a flood in a few hours or even minutes from upstream locations. Flash floods can occur within six hours of the beginning of heavy rainfall, and impoundment failure may occur within hours of the first signs of breaching. Other failures and breeches can take much longer to occur, from days to weeks, because of debris jams or the accumulation of melting snow.

Failure of dams may result in catastrophic localized damages. Vulnerability to dam failure is dependent on dam operations planning and the nature of downstream development. Depending on the elevation and storage volume of the impoundment, the impact of flooding due to dam failure may include loss of human life, economic losses such as property damage and infrastructure disruption, and environmental impacts such as destruction of habitat. Flooding following a dam failure may occur due to any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding;
- Inadequate spillway capacity;
- Internal erosion caused by embankment or foundation leakage or piping, or earth movement resulting from an earthquake;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross section of the dam and abutments, or maintain gates, valves, or other operational components;
- Improper design, including the use of improper construction materials and construction practices;
- Negligent operation, including failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway;
- High winds, which can cause significant wave action and result in substantial erosion; or
- Intentional criminal acts.

Dams are classified by DCR, with a hazard potential depending on the downstream losses estimated in event of failure. Hazard potential is not related to the structural integrity of a dam but strictly to the potential for adverse downstream effects if the dam were to fail. State regulatory requirements administered by DCR, such as the frequency of dam inspection, the standards for spillway design, and the extent of emergency operations plans, are dependent upon the dam classification. **Table 4.3** provides additional information on these classes and the possible effects on downstream areas if failure were to occur.

TABLE 4.3: VIRGINIA DAM CLASSIFICATION SYSTEM

HAZARD POTENTIAL	DESCRIPTION	INSPECTION
High (Class I)	Failure will cause probable loss of life or serious economic damage (to buildings, facilities, major roadways, etc.)	Annual, with inspection by a professional engineer every 2 years.
Significant (Class II)	Failure may cause loss of human life or appreciable economic damage (to buildings, secondary roadways, etc.)	Annual, with inspection by a professional engineer every 3 years.
Low (Class III)	Failure would result in no expected loss of human life, and cause no more than minimal economic damage	Annual, with inspection by a professional engineer every 6 years.

Source: 2018 Commonwealth of Virginia Hazard Mitigation Plan

The owner of each regulated high, significant, or low hazard dam is required to apply to DCR for an Operation and Maintenance Certificate. The application must include an assessment of the dam by a licensed professional, an Emergency Action Plan, and the appropriate fee(s), submitted separately. An executed copy of the Emergency Action Plan or Emergency Preparedness Plan must be filed with the appropriate local emergency official and the Virginia Department of Emergency Management. The Virginia Soil and Water Conservation Board, a division of DCR, issues Regular Operation and Maintenance Certificates to the dam owner for a period of six years. If a dam has a deficiency but does not pose imminent danger, the board may issue a Conditional Operation and Maintenance Certificate, during which time the dam owner is to correct the deficiency. After a dam is certified by the board, annual inspections are required either by a professional engineer or the dam owner, and the Annual Inspection Report is submitted to the regional dam safety engineer.

Dam risk can be classified as incremental, non-breach or residual risk. Incremental risk is the risk (likelihood and consequences) to the pool area and downstream floodplain occupants that can be attributed to the presence of the dam should the dam breach prior or subsequent to overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach. The consequences typically are due to downstream inundation, but loss of the pool can result in significant consequences in the pool area upstream of the dam. Non-breach risk is the risk in the reservoir pool area and affected downstream floodplain due to 'normal' dam operation of the dam (e.g., large spillway flows within the design capacity that exceed channel capacity) or 'overtopping of the dam without breaching' scenarios. Residual risk is the risk that remains after all mitigation actions and risk reduction actions have been completed. With respect to dams, FEMA defines residual risk as "risk remaining at any time" (FEMA, 2015, p A-2). It is the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue.[1]

At this time, limited information is available to conduct an analysis of incremental, non-breach and residual risk relative to the high hazard potential dams in the region. Please refer to Section 3.11: Flooding Due to Impoundment Failure of the *2018 Commonwealth of Virginia Hazard Mitigation Plan*, as amended, for

[1] FEMA, Rehabilitation of High Hazard Potential Dams Grant Program Guidance, June 2020

additional information regarding the statewide approach to dam risk. That section of the state's plan is hereby incorporated by reference.

The Commonwealth of Virginia relies upon FEMA's definition of risk: "Risk is the product of the likelihood of a structure being loaded, adverse structural performance, and the magnitude of the resulting consequences." Risk data are compiled in the state's Dam Safety Inventory System (DSIS) for each high hazard dam. DCR, VDEM and local emergency and planning staff are given copies of emergency action plans and plans include detailed information on risk to the following:

- Dwellings
- Schools
- Hospitals
- Businesses
- Railroads:
- Utilities:
- Parks:
- Golf Course
- Public Trails
- Emergency Infrastructure.

The summary impacts shown in **Table 4.4** are drawn from the information in DSIS and the EAPs for the high hazard potential dams, These data represent how Virginia summarizes significant economic, environmental and social impacts from a dam incident. Factors considered in risk assessment include the population at risk, land use, inspection condition assessment and any missing studies such as stability analyses under normal and extreme loading conditions (seismic and hydrologic), and any measures underway that affect the operational status, such as drawdowns or temporary pumps and siphons, when dams are compromised.

LOCATION AND SPATIAL EXTENT

Owners of impounding structures are required to have dam break inundation zone maps that meet the standards of the Virginia Impounding Structure Regulations. The properties that are identified within the dam break zone are recorded in the dam safety emergency action plan for that impoundment. DCR is pursuing efforts to make this information available in a digital form, but it is not currently available for all dams. The *2018 Commonwealth of Virginia Hazard Mitigation Plan* indicates that such data would greatly improve ability to identify impact and vulnerability due to dam inundation.

Table 4.4 lists the high hazard dams in the study area from DCR's database and includes key details regarding each dam's basic characteristics, Emergency Action Plan status and a summary of expected impacts resulting from dam failure. Three dams with a "poor" condition rating (Harwood's Mill Dam, Little Creek Dam in James City County, and Godwin's Millpond Dam in Suffolk) are considered to have a greater risk of flooding and are a potential target for mitigation action.

TABLE 4.4: HIGH HAZARD DAMS IN THE HAMPTON ROADS REGION

COMMUNITY	NAME OF DAM	DAM TYPE	YEAR BUILT	PRIMARY PURPOSE	TOP HEIGHT (FEET)	TOP CAPACITY (ACRE FEET)	EMERGENCY ACTION PLAN STATUS (LAST APPROVAL DATE)	SUMMARY IMPACTS	MOST RECENT CONDITION ASSESSMENT
York County	Harwood's Mill Dam	Earth	1919	Water Supply	27	5,845	Active (08/18/2016)	172 homes, 21 roadways	Poor
York County	Waller Mill Dam	Earth	1965	Recreation & Water Supply	40	7,274	Expired (8/25/2005)	3 homes, 1 business, 3 roadways, 1 downstream dam	Fair
James City County	Little Creek Dam	Earth	1980	Water Supply	67	32,143	Active (4/26/2016)	2 homes, 2 roadways	Poor
James City County	Diascund Creek Dam	Earth	1961	Water Supply	35	29,093	Active (08/18/2016)	208 homes, 25 roadways	Fair
Williamsburg	Lake Matoaka Dam	Earth	1694	Recreation	24	587	Expired (04/30/2008)	7 homes, 2 businesses, 4 utilities, 1 roadway	Fair
Norfolk	Lake Whitehurst	Gravity	1900	Water Supply	26	4,200	Expired (5/31/2011)	none listed	Fair
Virginia Beach	Lake Smith Dam	Earth	1885	Water Supply	15.35	1,385	Expired (5/31/2012)	352 homes, 2 roadways, 1 downstream dam	Fair
Virginia Beach	Little Creek Reservoir	Earth	1899	Water Supply	7.6	1,819	Expired (5/31/2011)	none listed	Fair
Chesapeake	Chesapeake Energy Center Bottom Ash Dam	Earth	1955	Coal Ash Storage	20	56	Active (11/14/2018)	none listed	Satisfactory
Suffolk	C-Pond Dam	Earth	1962	Other	52	29,800	Active (04/24/2020)	287 homes, 4 roadways, 1 downstream dam	Satisfactory
Suffolk	Godwin's Millpond Dam	Earth	1960	Water Supply	14	214	Expired (03/14/2013)	1 home, 3 businesses, 1 road	Poor
Suffolk	Lake Burnt Mills	Earth	1942	Water Supply	46.5	18,500	Active (09/16/2019)	310 homes, 8 roadways, 1 downstream dam	Fair
Suffolk	Lake Cohoon	Earth	1919	Water Supply	28.8	9,300	Active (07/13/2015)	39 homes, 1 business, 1 railroad, 5 roadways, 1 downstream dam	Satisfactory
Suffolk	Lake Kilby	Earth	1892	Water Supply	18.6	3,400	Active (07/13/2015)	1 downstream dam	Satisfactory
Suffolk	Lake Meade Dam	Gravity	1958	Water Supply	25	9,281	Active (08/10/2020)	86 homes, 29 businesses, 5 railroads, 2 parks, 17 roadways	Satisfactory
Suffolk	Speight's Run Dam	Earth	1957	Water Supply	25.7	4,000	Active (07/13/2015)	2 downstream dams	Satisfactory
Suffolk	Western Branch	Earth	1963	Recreation & Water Supply	41	35,300	Active (09/16/2019)	310 homes, 8 roadways	Satisfactory
Isle of Wight County	ASB Pond	Earth	1901	Other	16.7	1,103	Active (4/24/2020)	52 homes, 7 roads, 1 downstream dam	Fair

TABLE 4.4: HIGH HAZARD DAMS IN THE HAMPTON ROADS REGION

COMMUNITY	NAME OF DAM	DAM TYPE	YEAR BUILT	PRIMARY PURPOSE	TOP HEIGHT (FEET)	TOP CAPACITY (ACRE FEET)	EMERGENCY ACTION PLAN STATUS (LAST APPROVAL DATE)	SUMMARY IMPACTS	MOST RECENT CONDITION ASSESSMENT
Isle of Wight County	B-1 Pond Dam	Earth	1950	Other	13	668	Expired (12/17/2013)	54 homes, 6 roadways	Satisfactory
Isle of Wight County	B-2 Pond Dam	Earth	1901	Other	15.3	1,668	Expired (12/17/2013)	54 homes, 6 roadways	Satisfactory
Newport News	Lee Hall Reservoir Dam	Gravity	1893	Water Supply	23.7	4,640	Active (1/31/2019)	861 homes, 1 business, 3 schools, 2 parks, 28 roadways	Satisfactory

Source: Virginia Department of Conservation and Recreation, Dam Safety Inventory System, May 2021

Appendix H contains a list of all dams in the study area from the DCR database, as well as the DCR Dam Safety Data Sheet for each high hazard dam, ordered alphabetically by dam name. Each data sheet includes general characteristics, watershed information, technical basics, hydrology/hydraulics data, inspection dates and condition, EAP quick reference data, potential impacts and a detailed map of each impoundment. Section 3.11 of the *2018 Commonwealth of Virginia Hazard Mitigation Plan* is also hereby adopted by reference, specifically the information regarding dams in the region.

SEA LEVEL RISE AND LAND SUBSIDENCE

BACKGROUND

Global sea level is determined by the volume and mass of water in the world's oceans. Sea level rise occurs when the oceans warm or ice melts, bringing more water into the oceans. Sea level rise caused by warming water or thermal expansion is referred to as steric sea level rise, while sea level rise caused by melting snow and ice is called eustatic sea level rise. The combination of steric and eustatic sea level rise is referred to as absolute sea level rise. Absolute sea level rise does not include local land movements. Additionally, while it is often represented as a global average, absolute sea level rise varies from place to place as a result of differences in wind patterns, ocean currents, and gravitational forces.

The primary consequences of continuing sea level rise are interrelated and include:

Increased Coastal Erosion – Sea level rise influences the on-going processes that drive erosion, in turn making coastal areas ever more vulnerable to both chronic erosion and episodic storm events (Maryland Commission on Climate Change, 2008). Secondary effects of increased erosion include increased water depths and increased sediment loads which can drown seagrass and reduce habitat and food sources for fish and crabs. Increased wave action contributes to the increased erosion as the wave energy attacks intertidal and upland resources.

Inundation of Normally Dry Lands – The loss of coastal upland and tidal wetlands through gradual submergence or inundation is likely over time. Wetlands can provide protection from erosion, subdue storm surges, and provide a nursery and spawning habitat for fish and crabs. Without impediments, such as hardened shorelines, and with a slow enough rate of sea level rise, wetlands can normally migrate upland. However, if barriers are present and sea level rise outpaces upland migration, wetlands can drown in place (*Virginia Governor's Commission on Climate Change*, 2008). Many communities in the region have noted an influx of requests in recent years for bulkhead repair as a result of more frequent inundation behind failing bulkheads. Tidal wetlands are slowly migrating landward. The loss of wetlands means increased coastal and shoreline erosion, reduced storm surge protection, and reduction in nursery and spawning habitat for fish and crabs.

Coastal Flooding – An increase in duration, quantity, and severity of coastal storms results in increased flood damages to infrastructure. Increased sea level and/or land subsidence increases the base storm tide, which is the storm surge plus astronomical tide (Boon, Wang, and Shen, undated). Ultimately, sea level rise increases the destructive power of every storm surge. Minor storms that may not have caused damage in the past will begin to affect infrastructure in the future (Boon, et al, undated). Higher wave energy from higher storm tides will translate each storm's destructive forces landward. The damage caused by major storms becomes increasingly costly. Sea level rise will threaten the longevity and effectiveness of stormwater drainage systems and other infrastructure, especially during significant rain events that occur during high tides such as that which may be caused by a nor'easter.

Saltwater Intrusion – As sea level rises, the groundwater table may also rise, and saltwater may intrude into freshwater aquifers. This impact may have secondary impacts related to drinking water and agriculture, even for home gardeners.

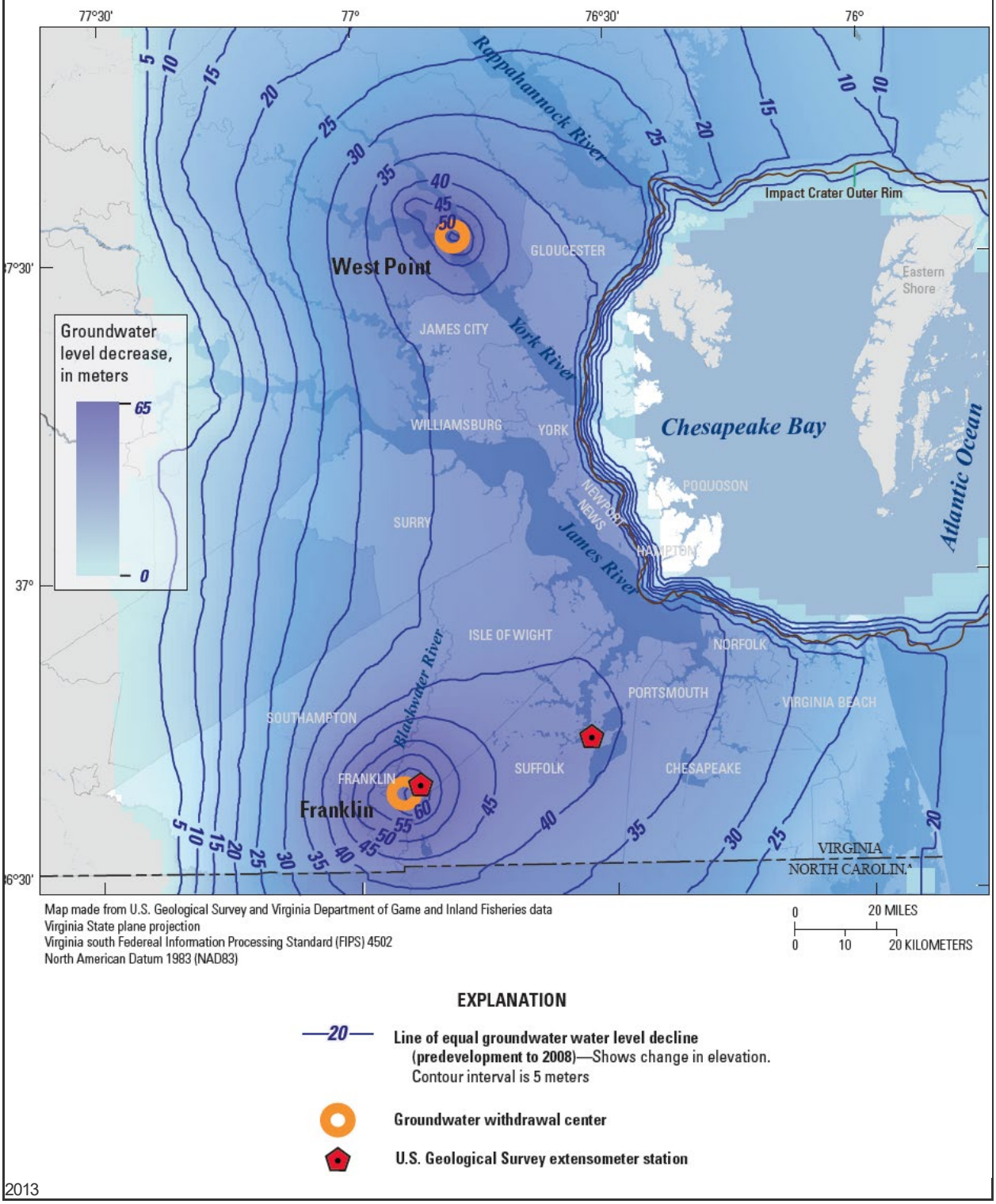
LOCATION AND SPATIAL EXTENT

According to the Old Dominion University Center for Sea Level Rise, sea level rise has a very localized spatial extent related to past development activities. Historically, many of the region's large and small waterways were filled, creating developable land upon which infrastructure, residences and businesses were constructed. Subsequently, as sea level has risen, these areas have been the first to experience the effects. Water begins to retrace ancient flow paths, flooding neighborhood streets and stormwater outfalls. The outfalls are then less capable of handling rainfall runoff because the pipes must also accommodate rising sea water. This phenomenon exacerbates and prolongs flood events.

Several factors are influencing the rates of sea level rise relative to land in the Hampton Roads region, including an increased volume of water in the oceans from melting ice. Some scientists believe that thermal expansion of a gradually warming ocean increases ocean volume. The rate of sea level rise is relative to the land adjacent to the sea; land subsidence is the downward movement of the earth's crust. The Hampton Roads region is experiencing both regional subsidence (along the east coast of the United States) and local subsidence, exacerbating the effects of storms. Subsidence alone can damage wetland and coastal marsh ecosystems and damage infrastructure, but when combined with sea level rise, the effects can be even more devastating.

Local subsidence is believed to be the result of settlement or compaction of subsurface layers resulting from groundwater withdrawals and glacial isostatic rebound (USGS, *Land Subsidence and Relative Sea-Level Rise in the Southern Chesapeake Bay Region*, 2013). Groundwater withdrawals in the region, primarily seen near the pumping centers of Franklin and West Point, decrease pressure and therefore water levels in the aquifer system. As a result, the aquifer system compacts and the land surface subsides. Borehole extensometers, like the one in Franklin, Virginia measure compaction or expansion of aquifer thickness. Scientists also use surface monitoring data such as that from tidal stations, geodetic surveying and remote sensing in an effort to determine how much land subsidence can be attributed to aquifer compaction. **Figure 4.6** illustrates the spatial extent of changes in groundwater level in the Hampton Roads region that are thought to contribute to land subsidence.

FIGURE 4.6: GROUNDWATER LEVEL DECREASES FROM 1900 TO 2008

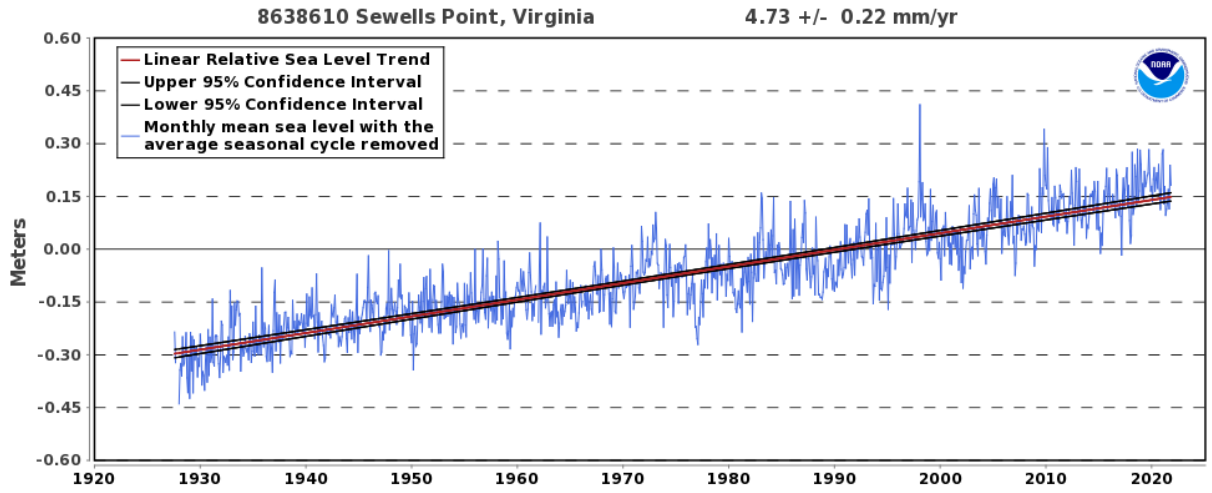


Source: USGS, Land Subsidence and Relative Sea-Level Rise in the Southern Chesapeake Bay Region, 2013

NOAA has compiled data from regional tide gauges to document the rates of sea level rise. There are four local stations with data pertinent to the region, and the rates of sea level rise range from 1.23 feet to 1.98 feet per 100 years.

At Sewell's Point, Naval Station Norfolk, the local NOAA tide station with the longest period of record, the mean sea level trend is 4.73 millimeters/year with a 95% confidence interval of +/- 0.22 mm per year, based on monthly mean sea level data from 1927 to 2020 (**Figure 4.7**). This rate is equivalent to a change of 1.55 feet in 100 years. The plot shows the monthly mean sea level without the regular seasonal fluctuations due to coastal ocean temperatures, salinities, winds, atmospheric pressures, and ocean currents. The long-term linear trend is also shown, including its 95 percent confidence interval.

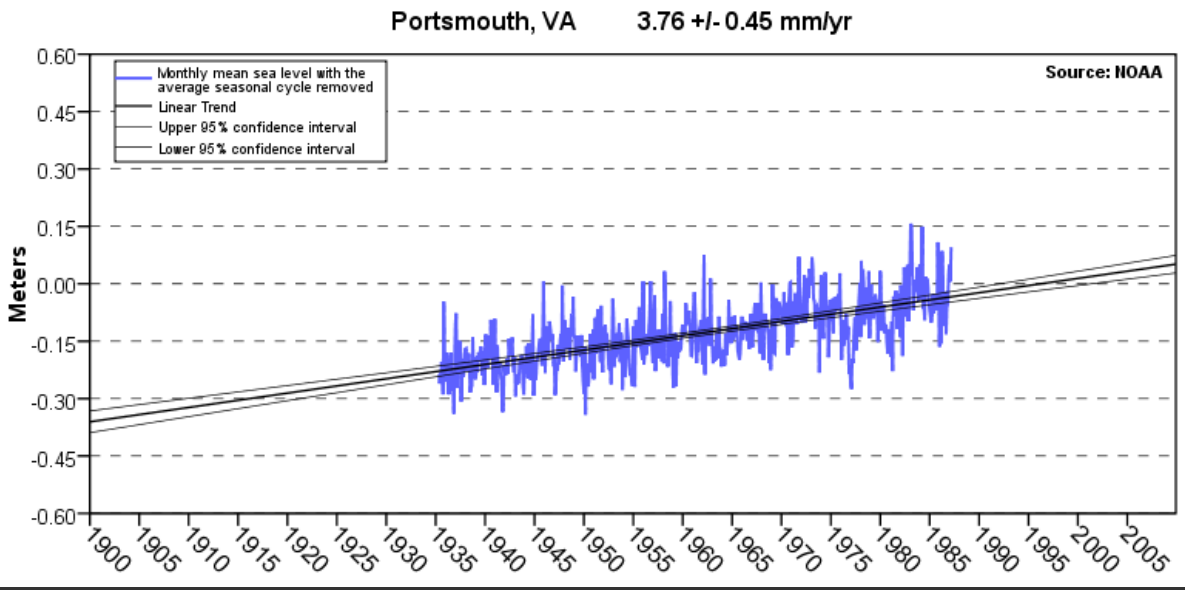
FIGURE 4.7: MEAN SEA LEVEL TREND, SEWELLS POINT, VIRGINIA



Source: NOAA, 2021

At Downtown Portsmouth, the mean sea level trend is 3.76 millimeters/year with a 95% confidence interval of +/- 0.45 mm/year based on monthly mean sea level data from 1935 to 1987 (**Figure 4.8**). This rate is equivalent to a change of 1.23 feet in 100 years.

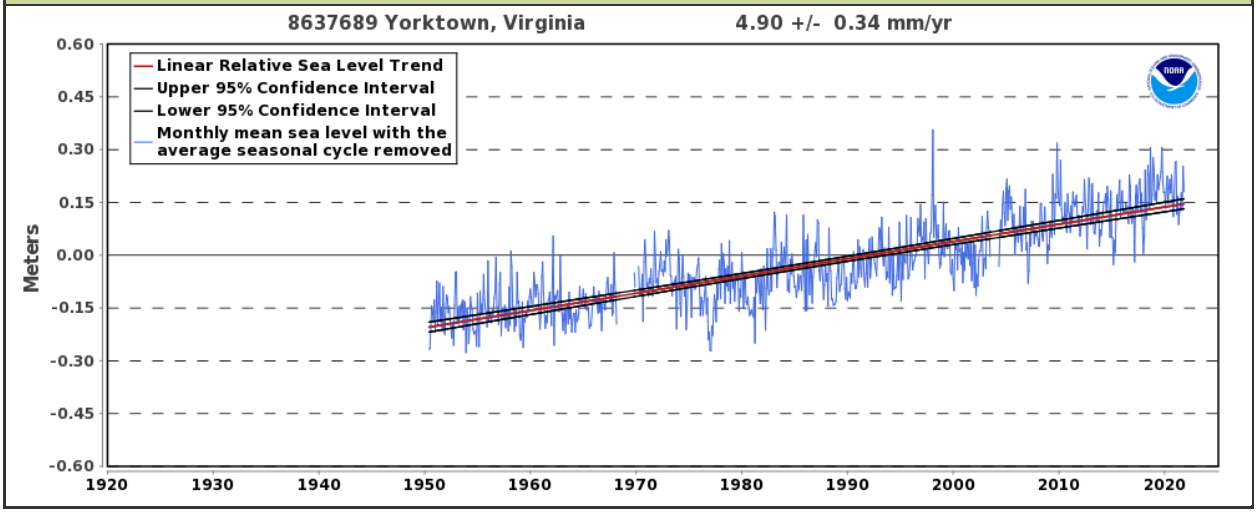
FIGURE 4.8: MEAN SEA LEVEL TREND, PORTSMOUTH, VIRGINIA



Source: NOAA, 2021

At Yorktown, Virginia, as shown in **Figure 4.9**, the mean sea level trend is 4.90 millimeters/year with a 95-percent confidence interval of +/- 0.34 mm/yr based on monthly mean sea level data from 1950 to 2020, which is equivalent to an increase of 1.61 feet in 100 years.

FIGURE 4.9: MEAN SEA LEVEL TREND, YORKTOWN, VIRGINIA



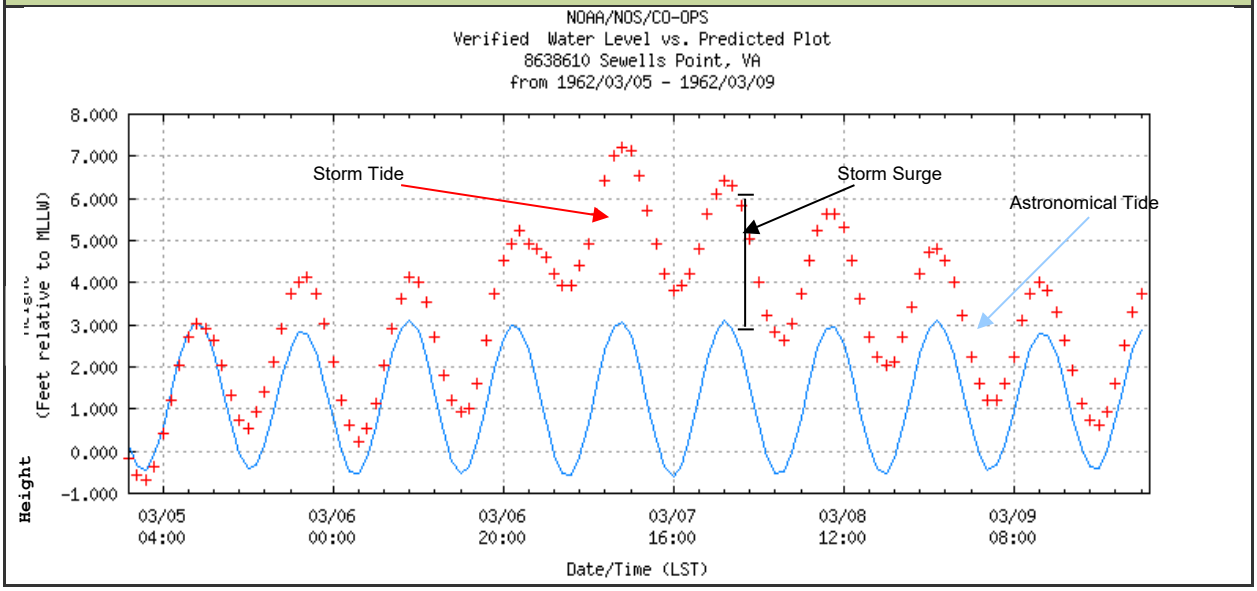
Source: NOAA, 2021

SIGNIFICANT HISTORICAL EVENTS

Unlike wildfires, earthquakes or coastal storms, the impacts of sea level rise are not felt or recorded in a matter of hours or days, but instead are slowly observed, recorded, and experienced over decades and centuries. However, scientists at VIMS have gathered data from several historical storms and made careful comparisons in an effort to highlight the historical impact of sea level rise locally.

The **Ash Wednesday Storm of 1962** produced a peak storm tide of approximately 7.2 feet MLLW at Sewell's Point (see **Figure 4.10**). If that same storm were to occur at mean high tide in 2030, using the sea level rise rates calculated above for Sewell's Point, the astronomical tide would be approximately one foot higher. Since the storm tide is obtained by adding the storm surge to the astronomical tide, the same storm could then produce a storm tide of over 8 feet MLLW. By comparison, Hurricane Isabel in 2003 produced a storm tide of 7.887 feet MLLW and caused an immense amount of damage.

FIGURE 4.10: ASTRONOMICAL AND STORM TIDES FOR 1962 STORM



Source: NOAA, 2008

Similarly, Boon (undated) concluded that sea level rise contributed to the similarity of two storms, the **August 1933 hurricane** and **Hurricane Isabel** in 2003. The storms had comparable peak storm tides of 8.018 feet MLLW (1933) and 7.887 feet MLLW (2003), and both peaks occurred very shortly before or after astronomical high tide, yet the 1933 storm occurred during spring tides and Isabel during neap tides. As a result, the storm surge in the 1933 storm was much higher and, all things being equal, the data would not have shown the storm surge that it did for Isabel had it not been for the constant adjustment of MLLW to account for as much as 1.35 feet of sea level rise between August, 1933 and September, 2003 (**Table 4.5**).

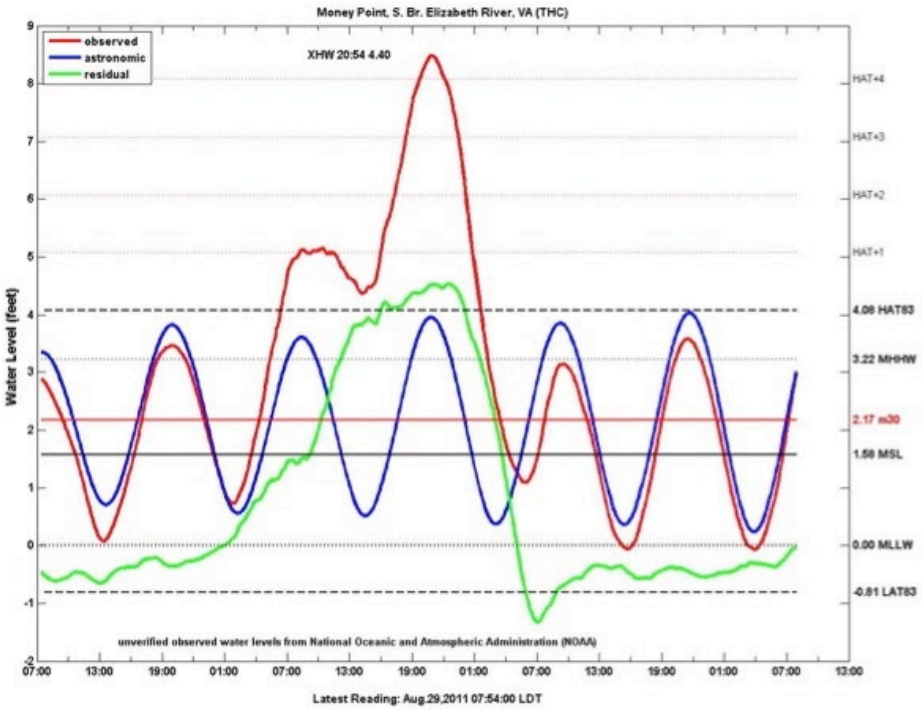
TABLE 4.5: AUGUST 1933 HURRICANE AND HURRICANE ISABEL (BOON, UNDATED)

STORM	STORM TIDE (HEIGHT IN FEET ABOVE MLLW)	STORM SURGE (HEIGHT IN FEET ABOVE NORMAL)	MEAN WATER LEVEL (HEIGHT IN FEET ABOVE MLLW)
August 1933	8.018	5.84	0.95
Isabel – September 2003	7.887	4.76	2.30
1933 -2003	0.131	1.08	-1.35

A mere tropical depression, **Ernesto** struck Hampton Roads on September 1, 2006. At Sewells Point, the storm surge reached a peak of about four feet above monthly mean sea level for the lunar month, but occurred at low tide. Boon (*Ernesto: Anatomy of a Storm Tide,* undated) concludes that if the peak storm surge had occurred at high tide, the storm tide peak would have reached seven feet MLLW, or just 0.9 feet below Isabel's peak storm tide.

Scientists have also focused on data from Money Point, Virginia, on the southern branch of the Elizabeth River near Portsmouth. In *Sea Level Rise and Coastal Infrastructure: Prediction, Risks and Solutions*, Bilal M. Ayyub and Michael S. Kearney observe that during the extratropical storm event which occurred in mid-November 2009, the maximum extratidal storm tide height of 4.69 feet at Money Point exceeded the extratidal height of 4.43 feet observed there during Hurricane Isabel. Again, during Hurricane Irene in 2011, the VIMS Tidewatch tool showed that Money Point experienced the highest water levels in the area, at 4.4 feet above highest astronomical tide. **Figure 4.11** shows observed water levels (red), predicted astronomic tide (blue), and the storm surge (green).

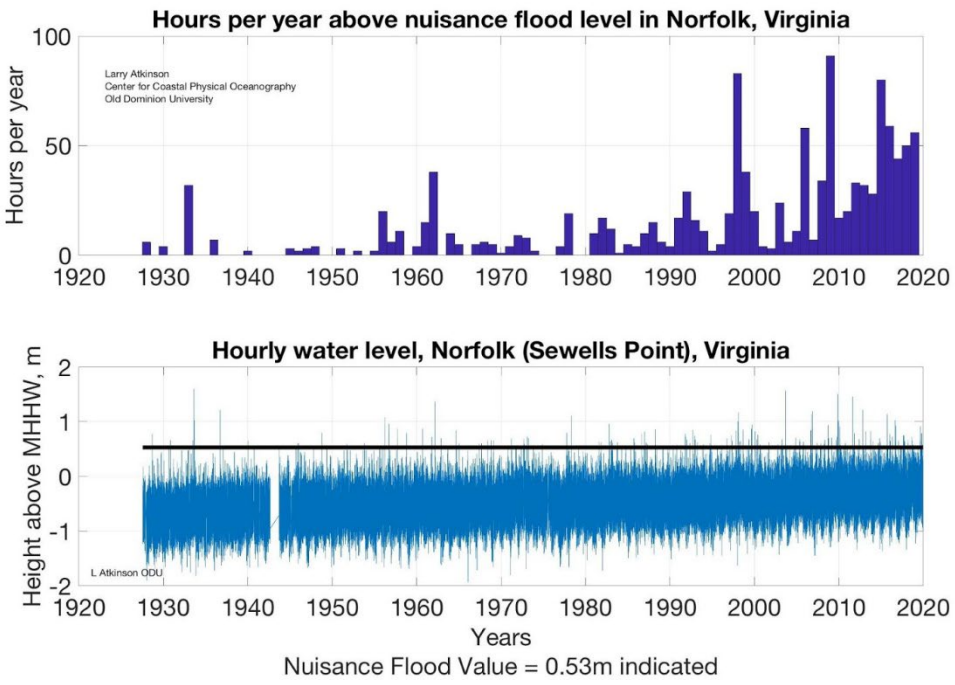
FIGURE 4.11: HURRICANE IRENE, TIDEWATCH DATA FOR MONEY POINT, VA



Source: Virginia Institute of Marine Science, 2011

The impacts of sea level rise are being felt on an almost daily basis in many parts of Hampton Roads. Dr. Larry Atkinson at the Old Dominion University Center for Coastal Physical Oceanography, compiled **Figure 4.12** which graphically shows the increasing problem of nuisance flooding in Norfolk. Nuisance flooding, sometimes referred to as "sunny day flooding" is a water level value determined by the NWS in collaboration with regional emergency managers. Regionally, that level is 0.53 meters (1.7 feet) above Mean Higher High Water: the horizontal black line in the lower panel of Figure 4.12. The upper panel shows there are occasional years with abnormally high hours of flooding. These are typical during a major hurricane or northeasters with long durations in the area. There is a slow, steady increase from about 2005. Based on this plot some exposed parts of Hampton Roads can expect at least 40 to 50 hours of nuisance flooding per year in the coming years. The lower panel shows the hourly water level since 1927.

FIGURE 4.12: NUISANCE FLOODING IN NORFOLK

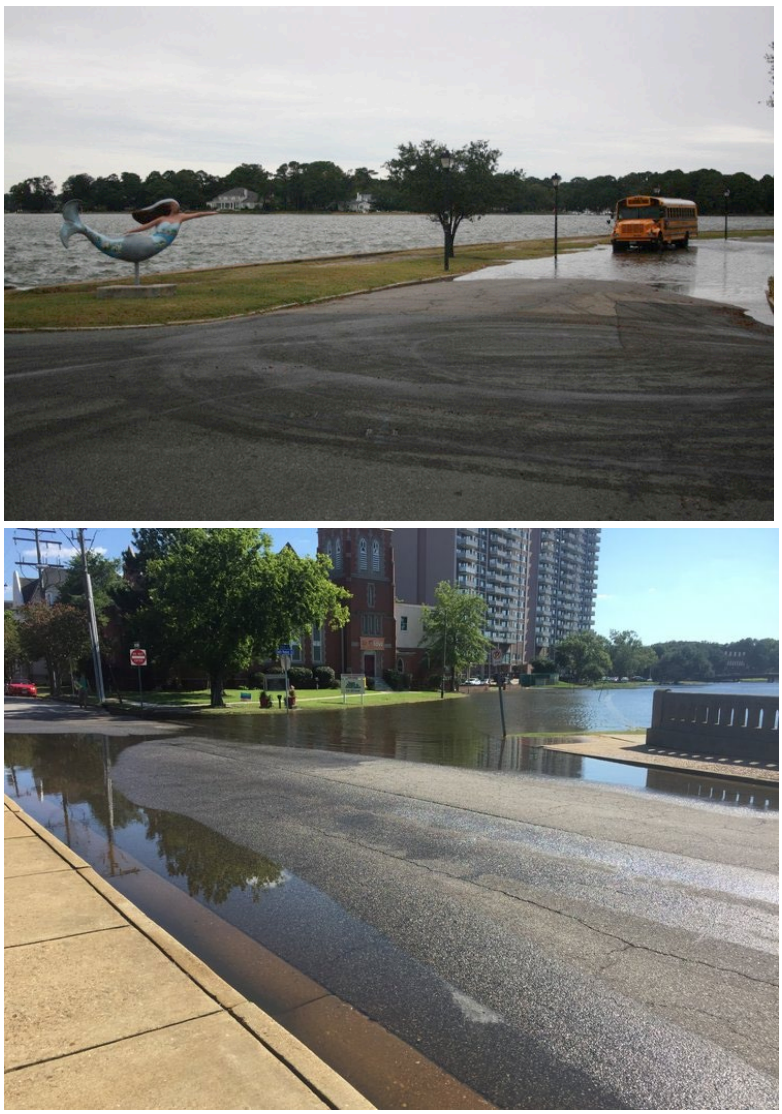


Source: L. Atkinson Online Blog, Old Dominion University, March 2020

The impacts of sea level rise are similar to the effects of flooding outlined above, but the frequency and severity of flooding can be expected to continue to increase, which has longer-term effects.

As nuisance flooding increases, Hampton Roads' population is becoming more accustomed to driving through salt-water flooded roads, cleaning out flooded buildings, and working through the impacts of each minor flood. But the longer-term economic impacts discussed above for flooding are slowly becoming more apparent. More communities must commit to long-term capital expenditures on flood mitigation and infrastructure rather than new investments in economic development, for example. More property owners must spend their wages on flood insurance, flood repair, and flood mitigation rather than on tangible goods. And the real estate market suffers when structures are subject to repetitive flooding with increasing frequency. Even nuisance flooding of crawl spaces or garages detracts from the ability of a house in a repetitive flood loss area to accrue value in the long-term. Days out of school for students locally are increasing annually due to flooding, and the impact on students and parents is sobering from an economic standpoint.

Impacts on the environment are apparent as shoreline erosion from more frequent shoreline inundation contributes to loss of trees, wetland grasses and other valuable habitats of the intertidal zone. Damage to these sensitive features is important because it could affect the important local seafood industry which relies on the intertidal zone as a fish and shellfish nursery, and because of the difficulty of recreating these habitats elsewhere. Also, eroded shorelines are more vulnerable to damage from severe flood events in the future.

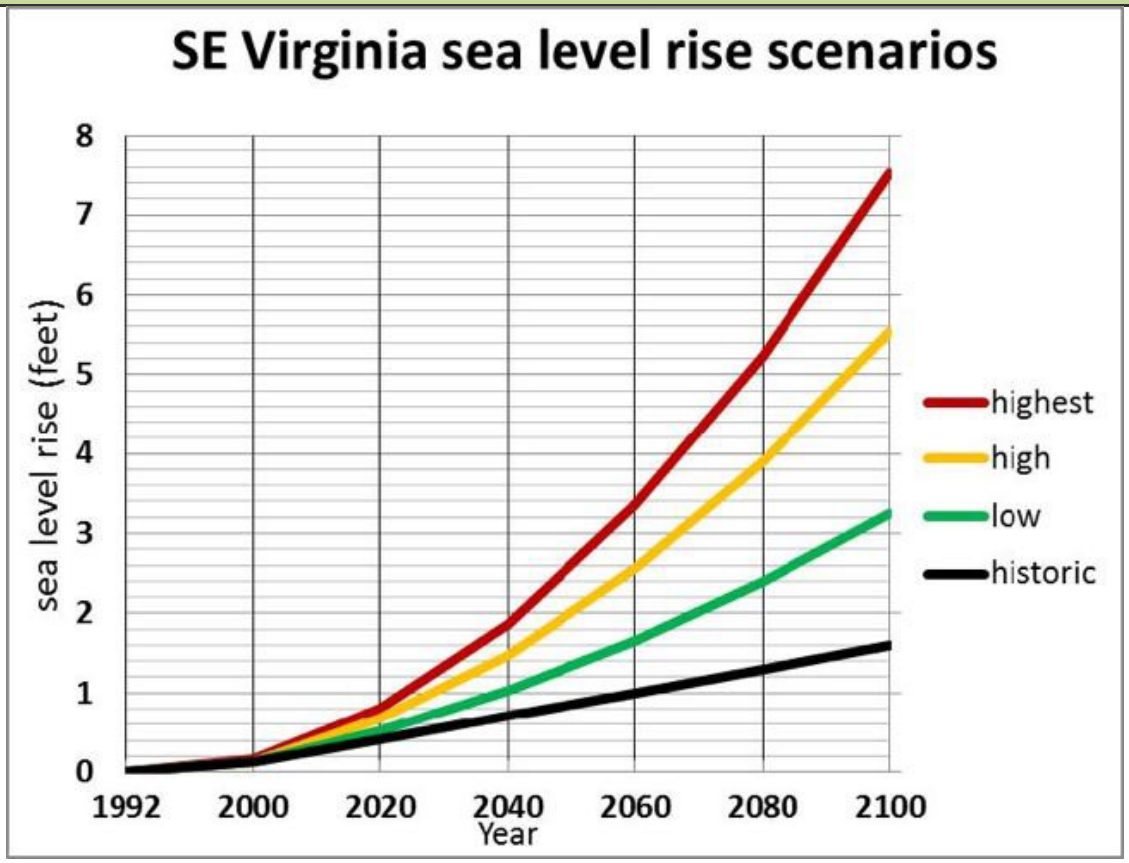


Nuisance flooding in Norfolk.
Source: Wetlands Watch

PROBABILITY OF FUTURE OCCURRENCE

In a report to the Virginia General Assembly in 2013 entitled *Recurrent Flooding Study for Tidewater Virginia*, VIMS presented four scenarios of sea level rise. Each scenario, as shown in **Figure 4.13** represents a possible trajectory for sea level rise in the region. The lowest, historic scenario is based on observed rates of rise and does not account for any acceleration. The low scenario incorporates some acceleration using assumptions about future greenhouse gas emission. The high scenario is based on the upper end of projections from semi-empirical models using statistical relationships in global observations of sea level and air temperature. And the highest scenario is based on consequences of global warming, ice-sheet loss and glacial melting. Each scenario was customized for conditions in southeastern Virginia, including using estimates for subsidence. The report concludes that regional planners should anticipate a 1.5-foot rise in sea level above the 1992 datum within the next 20 to 50 years (2033-2063). According to the VIMS report, “sea level rise will make it easier for the current patterns of weather events to generate damaging flood events in the future. Increases in storm intensity and/or frequency will only aggravate that circumstance.”

FIGURE 4.13: SOUTHEAST VIRGINIA SEA LEVEL RISE SCENARIOS

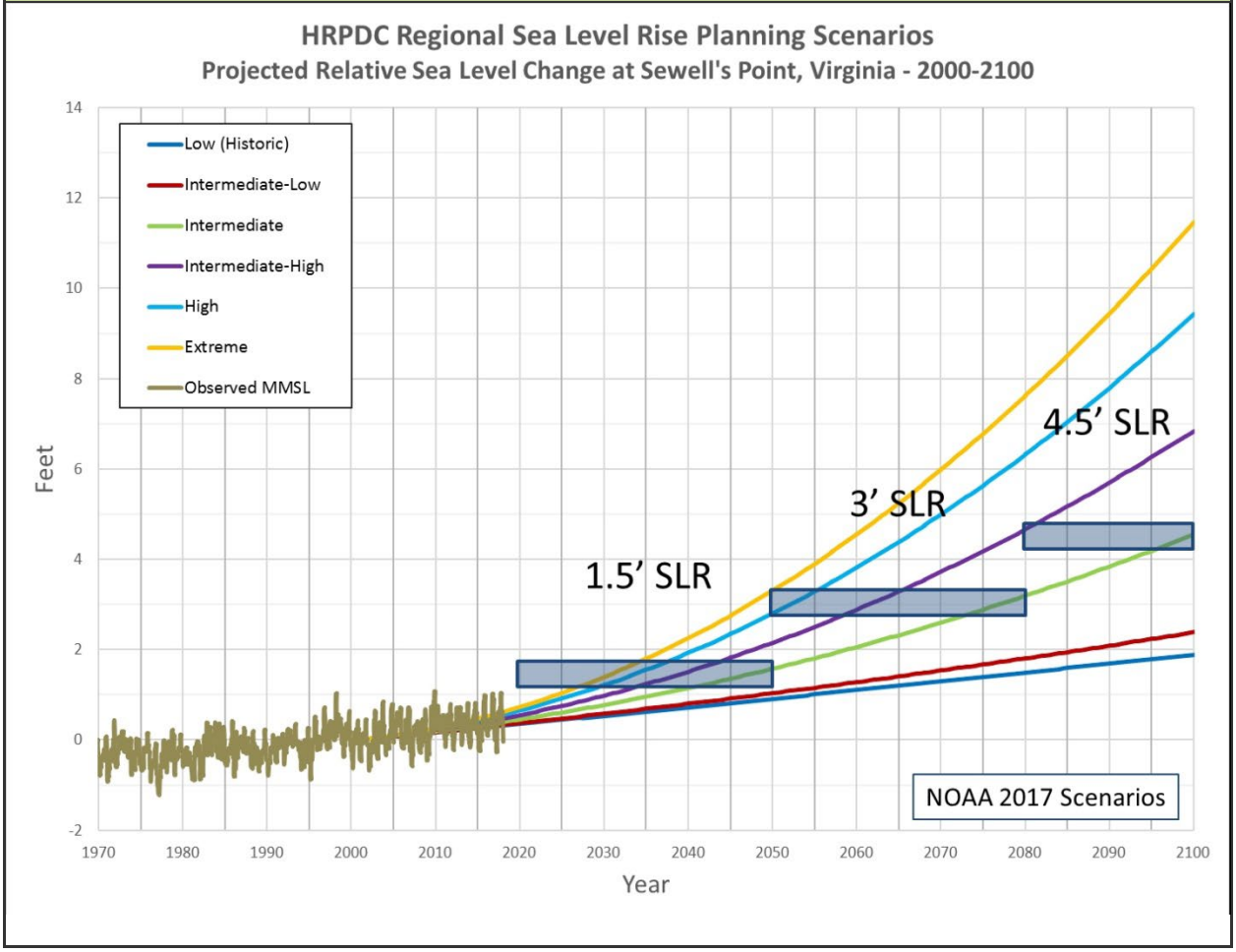


Source: VIMS, Recurrent Flooding Study for Tidewater Virginia, 2013 HRPDC web site, accessed May 19, 2021.

Following issuance of the 2013 study by VIMS and subsequent discussion, on October 18, 2018, the HRPDC approved and adopted a resolution encouraging local governments within the region to consider adopting policies that incorporate sea level rise into planning and engineering decisions. The approved Sea Level Rise Planning Policy and Approach incorporates and expounds on the concepts in the 2013 report and adds three unique time-based planning horizons. The policy recommends the following relative sea level rise scenarios as depicted in **Figure 4.14**:

- 1.5 ft above current mean higher high water (MHHW) for near-term (2018-2050);
- 3 ft above current mean higher high water (MHHW) for mid-term (2050-2080); and
- 4.5 ft above current mean higher high water (MHHW) for long-term (2080-2100).

FIGURE 4.14: SOUTHEAST VIRGINIA SEA LEVEL RISE SCENARIOS



Source: HRPDC web site, accessed May 19, 2021.

The rationale behind this important resolution of agreement is that sea level rise is projected to be significant for Hampton Roads. Factoring it into planning and design decisions will reduce risk and damage from flooding and storm surge. Significant advances in climate modeling and analysis of observed trends support development of new sea level rise projections at the local level that are improvements above previously recommended projections. A regional consensus on values and approaches for sea level rise planning can, therefore, provide support for local efforts, assist with regional coordination, and encourage state and federal agencies to adopt similar standards.

The document also recommends selecting appropriate sea level rise curves and designs based on the risk tolerance and costs associated with individual projects. HRPDC staff is working to develop more specific implementation recommendations for categories of projects and policies.

TROPICAL/COASTAL STORM

BACKGROUND

Hurricane Isabel approaches North Carolina and Virginia in September of 2003. Photo source: NASA

Hurricanes and tropical storms are characterized by closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere and with a diameter averaging 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a mechanism to transport built-up heat from the tropics toward the poles. In this way, they are critical to the earth's atmospheric heat and moisture balance. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes. Coastal areas are particularly vulnerable to storm surge, wind-driven waves, and tidal flooding which can prove more destructive than cyclone wind[2].

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth, and the absence of wind shear in the lowest 50,000 feet of the atmosphere. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through November. The peak of the Atlantic hurricane season is September 10th. The Atlantic Ocean averages about 10 storms annually, of which six reach hurricane status (NASA Earth Observatory online at: http://earthobservatory.nasa.gov).

As a hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour (mph), the system is designated a tropical storm, given a name, and is monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 mph the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Hurricane Wind Scale which rates hurricane intensity on a scale of one to five, with five being the most intense. The wind scale, recently revised to remove storm surge ranges, flooding impact and central pressure statements, is shown in **Table 4.6**.

[2] For purposes of this risk assessment, coastal flood hazards associated with hurricanes and tropical storm events are included under the "flood" hazard.

TABLE 4.6: SAFFIR-SIMPSON HURRICANE WIND SCALE		
CATEGORY	MAXIMUM SUSTAINED WIND SPEED (mph)	DAMAGE SUMMARY
1	74–95	Very dangerous winds will produce some damage.
2	96–110	Extremely dangerous winds will cause extensive damage.
3	111–129	Devastating damage will occur
4	130–156	Catastrophic damage will occur.
5	157 +	Catastrophic damage will occur.

Source: National Hurricane Center

Categories 3, 4, and 5 are classified as "major" hurricanes, and while hurricanes within this range comprise only 20% of total tropical cyclones making landfall, they account for over 70 percent of the damage in the United States. **Table 4.7** describes the damage that could be expected for each hurricane category.

TABLE 4.7: HURRICANE DAMAGE CLASSIFICATIONS		
STORM CATEGORY	DAMAGE LEVEL	DESCRIPTION OF DAMAGES
1	MINIMAL	Well-constructed frame homes could have damage to roofs, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	MODERATE	Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3	EXTENSIVE	Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4	EXTREME	Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	CATASTROPHIC	A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Hurricane Center web site, 2015

Storm surge is a large dome of water often 50 to 100 miles wide and rising anywhere from four to twenty feet. The storm surge arrives ahead of the storm's actual landfall and the more intense the hurricane is, the sooner the surge arrives. Water rise can be very rapid, posing a serious threat to those who have not yet evacuated flood-prone areas. A storm surge is a wave that has outrun its generating source and become a long period swell. The surge is always highest in the right-front quadrant of the direction in which the hurricane is moving. As the storm approaches shore, the greatest storm surge will be to the north of the hurricane eye. Such a surge of high water topped by waves driven by hurricane force winds can be devastating to coastal regions, causing severe beach erosion and property damage.

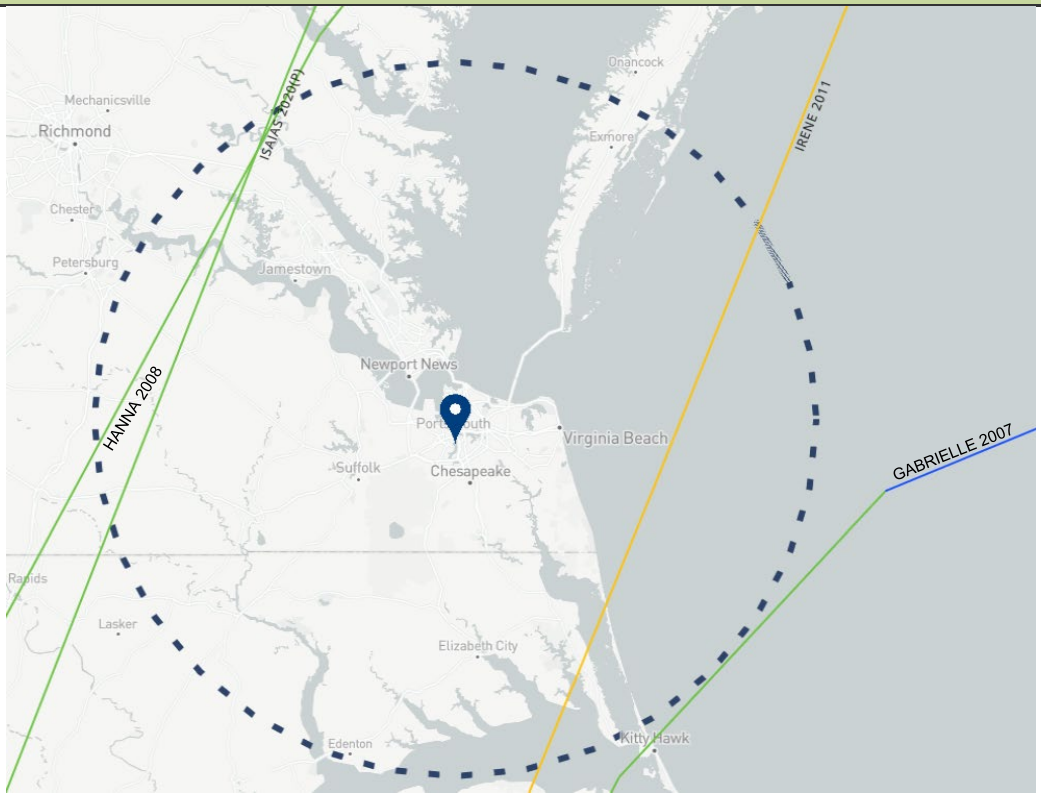
Storm surge heights and associated waves are dependent upon the shape of the continental shelf (narrow or wide) and the depth of the ocean bottom (bathymetry). A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water close to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. Damage during hurricanes may also result from spawned tornadoes and inland flooding associated with heavy rainfall that usually accompanies these storms. For the purposes of this report, the storm surge impacts in the region are discussed under the Flooding hazard.

LOCATION AND SPATIAL EXTENT

Hampton Roads is in an area that can expect to experience hurricane damage in any given year. Since the mid-1800s, numerous tropical cyclones have affected Virginia, causing the deaths of over 225 people and costing the Commonwealth more than a billion dollars in damages.

A total of 76 significant storms have passed within 75 miles of Hampton Roads since 1851 (**Figures 4.15 and 4.16**). Two Category 3 hurricanes passed within 75 miles of the region (unnamed storms in 1879 and 1899), eight were Category 2 hurricanes, 16 were Category 1 hurricanes and 50 were tropical storms. Tropical and extratropical depressions are not mapped in these figures.

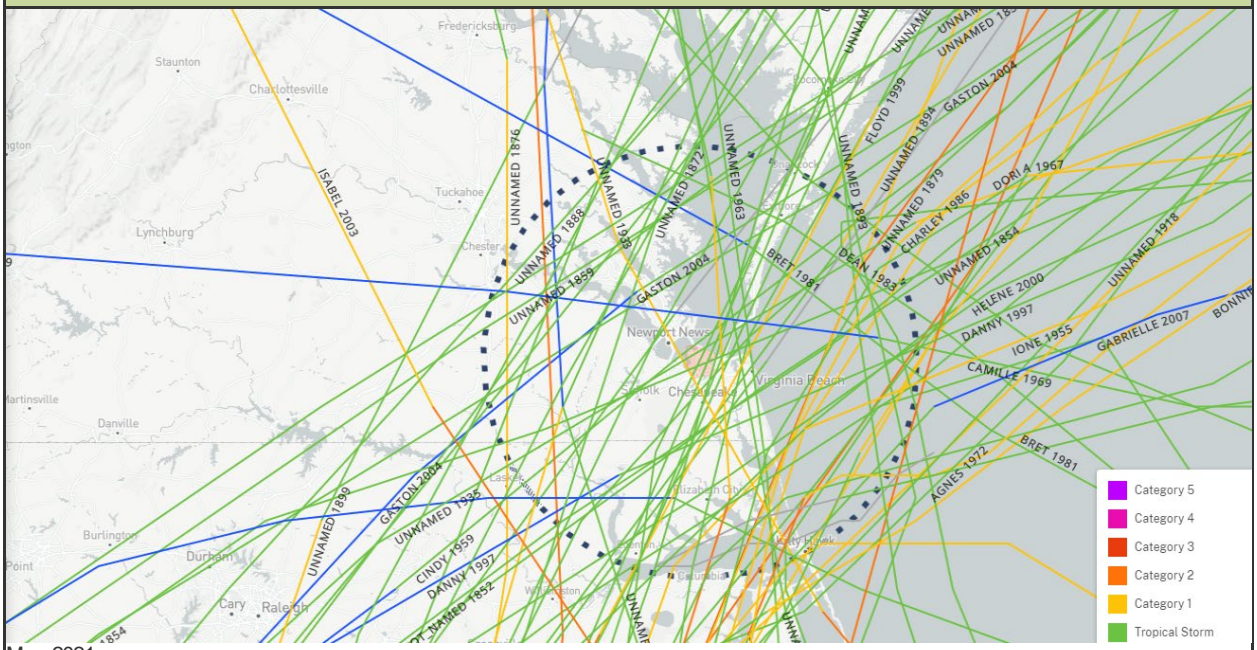
FIGURE 4.15: HISTORICAL STORM TRACKS WITHIN 75 MILES OF HAMPTON ROADS SINCE 2005



May, 2021

Source: NOAA Historical Hurricane Tracks, May 2021. Extratropical storms and Tropical Depressions at the time they passed within the radius are not included.

FIGURE 4.16: HISTORICAL STORM TRACKS WITHIN 75 MILES OF HAMPTON ROADS, 1851-2005



Source: NOAA Historical Hurricane Tracks, May, 2021

In Hampton Roads, the negative impacts of wind from the Category 1 and 2 hurricane events the area has experienced are consistent with the damage described in Table 4.7. Wind damage in the region from events in recent memory has been marked by a large number of downed trees, damage to roofs, siding and signs, power outages of typically less than a week as a result of downed power lines and trees across lines, and wind-blown debris damage and accumulation. Downed trees can temporarily block roadways, impeding transportation; however, these blockages are typically repaired swiftly by Virginia Department of Transportation (VDOT) and local roadway maintenance crews. Business interruptions resulting from power outages are commonplace and many restaurants and cold storage facilities can be negatively impacted, especially by prolonged outages. Commodities such as ice and gas are in high demand to power both home and business generators. Since wind and flood events typically occur simultaneously, the combined impacts are more devastating in flood-prone areas. Roof damage from wind can subsequently result in rain damage to structures, as well. Combined storm surge and wind impacts to shorefront areas at Virginia Beach, Norfolk, and Hampton may make some homes and businesses uninhabitable for days to weeks at a time.

SIGNIFICANT HISTORICAL EVENTS

The NWS began keeping weather records on January 1, 1871. Prior to that, information on past hurricanes and tropical storms to impact the Hampton Roads region were taken from ships logs, accounts from local citizens, newspapers, and other sources. There are several historical references to major storms that affected coastal Virginia in the 1600's and 1700's. Some of these storms were strong enough to alter land masses, including the widening of the Lynnhaven River (September 6, 1667) and formation of Willoughby Spit (October 19, 1749). These reports also indicate severe flooding caused by these storms (12-15 feet of flooding in some cases).

Better records have been kept since 1871. One of the first storms to be well documented was a hurricane in **October 1878** that resulted in Cobb and Smith Islands on the Eastern Shore being completely submerged.

One of the worst storms to impact the region occurred in August 1933 when a hurricane known as the **Chesapeake-Potomac Hurricane of 1933** passed just west of the Hampton Roads area. The storm made landfall in northeastern North Carolina and moved northwest. This hurricane produced the record high tide for the area which exists today, at a level of 9.69 feet above MLLW. The highest sustained wind was 88 mph at the Naval Air Station (NAS). Less than a month later, another hurricane struck the area with winds again clocked at 88 mph at NAS, but tides only rose to 8.3 feet above MLLW.

Another unnamed storm occurred in **September of 1944** creating the fastest one-minute wind speed to ever be recorded in the area of 134 mph at Cape Henry. Gusts were estimated to be 150 mph. The local NWS office recorded 72 mph winds with gusts to 90 mph.

Although the center of circulation for **Hurricane Hazel** in 1954 did not pass within 75 miles of the region, wind speeds of 78 mph were recorded at Norfolk Airport with gusts up to 100 mph and an unofficial reading of 130 mph was also reported in Hampton.

In 1960, **Hurricane Donna** passed through the region with a fastest one-minute wind speed of 73 mph at Norfolk Airport, 80 mph at Cape Henry and estimated 138 mph at Chesapeake Light Ship. Lowest pressure of 28.65 inches holds the area record for a tropical storm. Three deaths were documented in association with this hurricane.

On August 27, 1998, **Hurricane Bonnie** tracked over the region after passing over the northern Outer Banks. Winds speeds were sustained at 46 mph with gusts to 64 mph at Norfolk International Airport. Four to seven inches of rain combined with near hurricane force winds knocked out power to 320,000 customers across Virginia. Highest tide was recorded at 6.0 feet above MLLW. This was the most significant storm to impact the region since Hurricane Donna in 1960.

On September 6, 1999, downgraded **Hurricane Floyd** passed directly over Virginia Beach on a track similar to Hurricane Donna in 1960. Wind speeds were recorded at 31 mph with gusts to 46 mph. Rainfall amounts of 12-18 inches were recorded in portions of eastern Virginia, causing extensive flooding in the Southside Hampton Roads region.

In the 1990s, several storms had a less direct path over Hampton Roads, but nonetheless impacted the weather severely. In 1996, **Hurricanes Bertha and Fran** impacted the region, followed by **Hurricane Danny** in 1997, **Hurricane Bonnie** in 1998, and **Hurricanes Dennis, Floyd, and Irene** in 1999. Although each of these storms was downgraded by the time they reached Hampton Roads, they each created problems for the region when they passed through, and two resulted in Federal Disaster declarations (Bonnie and Floyd) for the region. **Tropical storms Helene** in 2000 and **Kyle** occurred in 2002, and of course, **Hurricane Isabel** caused $1.6 billion damage in the region in 2003, and claimed 33 lives (*The Virginian Pilot,* 9/4/06). During Isabel, wind speeds of 54 mph with gusts to 75 mph in Norfolk and significant beach erosion were reported.

Of the five storms that have passed through the region since the original Hazard Mitigation Plans were developed (Alberta, Ernesto, Barry, Gabrielle, Hanna and Irene), Hanna initially appeared to forecasters to have the worst characteristics. **Tropical Storm Hanna** tracked up the Mid-Atlantic coast on September 6, 2008, with maximum sustained winds around 50 mph. Hanna originally made landfall near the border of North and South Carolina around 3:20 am on the 6th. The storm tracked across eastern North Carolina during the early afternoon hours before turning northeast across southeastern Virginia later in the afternoon. Hanna eventually tracked across the Chesapeake Bay and into Delaware during the evening hours. With the track of Hanna being to the east, the strongest winds were also confined to the east of Hampton Roads. The highest sustained wind of 55 mph with a peak gust of 68 mph was recorded at the 3rd Island Bay Bridge Tunnel. Minimum pressure of 991 MB was recorded at the 3rd Island Bay Bridge Tunnel. Coastal storm tides of two feet or less above astronomical tide levels were common, with only minor beach erosion reported. Near the coast, as well as inland, tropical storm winds knocked down numerous trees and power lines, as well as caused minor structural damage. No fatalities or injuries were attributed to the winds.

Contrary to expectations and forecasts, however, **Ernesto** in early September 2006 proved very damaging because of coastal flooding. State officials blamed Ernesto for six deaths across Virginia and an estimated $33 million in statewide damage (*The Virginian Pilot,* 9/4/06). Additional discussion of the regional flood-related impacts from Ernesto is shown in Table 4.2.

Hurricane Irene, in late August 2011, first struck the U.S. as a Category 1 hurricane in eastern North Carolina, then moved northward along the Mid-Atlantic Coast. Wind damage in coastal North Carolina, Virginia, and Maryland was moderate, with considerable damage resulting from falling trees and power lines. Irene made its final landfall as a tropical storm in the New York City area and dropped torrential rainfall in the Northeast that caused widespread flooding. Irene was the first hurricane to hit the U.S. since Ike in September 2008. Irene's landfall in eastern North Carolina and path northward were accurately predicted more than four days in advance by NOAA's National Hurricane Center, which used information from weather satellites, hurricane models, aircraft observations, and other data.

Flooding at the "Triple Decker Bridge" resulting from Hurricane Sandy.

Photo credit: City of Chesapeake

Hurricane Sandy, in October 2012, was again expected to bring extreme hurricane conditions to southeastern Virginia. Fortunately, the storm track veered away from the Virginia coast and spared the region much of the devastation wrought in the northeast. Some areas of Virginia were included in the Presidentially-Declared Disaster for the storm, but Hampton Roads saw little more than flooding in low-lying areas and limited wind damage, and therefore was not among declared communities.

After landfall along the northwestern coast of Florida on June 7, 2013, **Tropical Storm Andrea** moved northeastward with additional acceleration across northeastern Florida and southeastern Georgia, with the center passing over Savannah, Georgia. During this time, the storm maintained an intensity of 40 knots, with the strongest winds occurring mainly over water to the east and southeast of the center. As the cyclone moved into South Carolina, it started to merge with a baroclinic zone, which caused Andrea to become extratropical over northeastern South Carolina. The center of the post-tropical cyclone moved rapidly across eastern North Carolina and southeastern Virginia, over the Atlantic near the New Jersey coast, and across eastern Long Island to eastern Massachusetts. One traffic incident related to the storm appears to have caused one death in Virginia, but the location of the accident was not reported in the National Hurricane Center Tropical Cyclone Report on the storm.

August 4, 2020 – The center of **Tropical Storm Isaias** tracked north just inland of the Middle Atlantic Coast from late Monday night, August 3rd through Tuesday morning, August 4th. The tropical storm produced tropical storm force winds and associated wind damage across portions of eastern Virginia. Tropical storm winds downed and uprooted several trees and power lines, produced significant structural damage, and caused power outages across the county. Wind gust of 67 mph was measured at NTU. Wind gust of 59 mph was measured at Virginia Beach. Property damage of $2.8 million was reported.

Table 4.8 shows the historical storm tracks within 75 miles of Hampton Roads since 1851 that are the basis for **Figures 4.15 and 4.16**. While Tropical Storm Arthur in 2014 does not appear to have tracked within the search radius used for **Table 4.9** and **Figure 4.16**, the storm nonetheless produced tropical storm force winds and locally heavy rainfall across portions of southeast Virginia from late Thursday night, July 3rd into midday Friday, July 4th. Rain bands associated with Arthur produced generally one to two inches of rainfall across portions of the Virginia Beach. Back Bay reported 1.30 inches of rain. A wind gust of 47 knots was measured at Oceana NAS, and a wind gust of 43 knots was measured at Lynnhaven. The gusts caused

minor structural damage which was reported to total $5,000. Norfolk International Airport reported 1.46 inches of rain. A wind gust of 38 knots was measured at Norfolk NAS.

Three additional tropical storms caused damage in the study area over the past five years that deserve mention, despite the fact that their storm tracks did not fall within the parameters outlined for Figure 4.16 or Table 4.8:

September 2, 2016 - **Tropical Storm Hermine** moving northeast along the Southeast Coast then off the Mid Atlantic Coast produced tropical storm force winds, minor to moderate coastal flooding, and locally heavy rainfall across portions of Hampton Roads, the Middle Peninsula, and the Virginia Eastern Shore from Friday afternoon, September 2nd into Saturday night, September 3rd. Rain bands produced generally 2 to 4 inches of rainfall across the county. Norfolk reported 4.15 inches of rain. Norfolk South reported 3.77 inches of rain. Norfolk International Airport reported 2.68 inches of rain. The highest sustained wind of 39 knots with a peak wind gust of 48 knots was measured at Norfolk International Airport. Wind gust of 45 knots was measured at NAS Norfolk. Tropical storm wind gusts caused minor tree and structural damage. Coastal storm tides of 2 to 3.5 feet above astronomical tide levels were common, with only minor beach erosion reported. The maximum storm tide reached 6.16 feet MLLW at Sewells Point, which resulted in moderate coastal flooding Saturday morning into Saturday afternoon. Damages tallied $35,000 across the region.

September 5, 2019 - **Hurricane Dorian** tracking northeast along the North Carolina coast and just off the Virginia coast produced tropical storm winds and associated wind damage across portions of southeast Virginia. Tropical storm winds downed and uprooted several trees and power lines, produced minor structural damage, and caused power outages across the county. Wind gust of 55 mph was measured at Naval Auxiliary Landing Field Fentress in Chesapeake. Power poles were broken in some areas, and shingles were blown off the roof of a house. Damages of $340,000 were reported.

Damages attributed to Post Tropical Cyclone Michael in October of 2016 were attributed primarily to Flooding as described in the section above.

TABLE 4.8: HISTORICAL STORM TRACKS WITHIN 75 MILES OF HAMPTON ROADS (SINCE 1851)

DATE OF OCCURRENCE	STORM NAME	WIND SPEED (mph)	STORM CATEGORY AT LANDFALL
8/25/1851	UNNAMED	45	TROPICAL STORM
9/10/1854	UNNAMED	45	TROPICAL STORM
8/20/1856	UNNAMED	60	TROPICAL STORM
9/17/1859	UNNAMED	60	TROPICAL STORM
9/27/1861	UNNAMED	70	TROPICAL STORM
11/2/1861	UNNAMED	80	CATEGORY 1 HURRICANE
9/18/1863	UNNAMED	70	TROPICAL STORM
10/26/1872	UNNAMED	45	TROPICAL STORM
9/29/1874	UNNAMED	70	TROPICAL STORM
9/17/1876	UNNAMED	90	CATEGORY 1 HURRICANE
10/23/1878	UNNAMED	105	CATEGORY 2 HURRICANE
8/18/1879	UNNAMED	115	CATEGORY 3 HURRICANE
9/9/1880	UNNAMED	80	CATEGORY 1 HURRICANE
9/10/1881	UNNAMED	70	TROPICAL STORM
9/11/1882	UNNAMED	45	TROPICAL STORM
9/23/1882	UNNAMED	45	TROPICAL STORM
9/12/1883	UNNAMED	45	TROPICAL STORM
8/26/1885	UNNAMED	80	CATEGORY 1 HURRICANE
7/2/1886	UNNAMED	40	TROPICAL STORM
9/11/1888	UNNAMED	40	TROPICAL STORM
10/12/1888	UNNAMED	60	TROPICAL STORM
9/25/1889	UNNAMED	45	TROPICAL STORM
6/17/1893	UNNAMED	65	TROPICAL STORM
10/23/1893	UNNAMED	50	TROPICAL STORM

TABLE 4.8: HISTORICAL STORM TRACKS WITHIN 75 MILES OF HAMPTON ROADS (SINCE 1851)

DATE OF OCCURRENCE	STORM NAME	WIND SPEED (mph)	STORM CATEGORY AT LANDFALL
9/29/1894	UNNAMED	85	CATEGORY 1 HURRICANE
10/10/1894	UNNAMED	75	CATEGORY 1 HURRICANE
9/23/1897	UNNAMED	70	TROPICAL STORM
10/26/1897	UNNAMED	60	TROPICAL STORM
8/18/1899	UNNAMED	120	CATEGORY 3 HURRICANE
10/31/1899	UNNAMED	65	TROPICAL STORM
7/11/1901	UNNAMED	80	CATEGORY 1 HURRICANE
6/16/1902	UNNAMED	40	TROPICAL STORM
9/15/1904	UNNAMED	65	TROPICAL STORM
9/1/1908	UNNAMED	50	TROPICAL STORM
8/25/1918	UNNAMED	40	TROPICAL STORM
12/3/1925	UNNAMED	45	TROPICAL STORM
9/19/1928	UNNAMED	45	TROPICAL STORM
8/23/1933	UNNAMED	80	CATEGORY 1 HURRICANE
9/16/1933	UNNAMED	90	CATEGORY 1 HURRICANE
9/6/1935	UNNAMED	75	CATEGORY 1 HURRICANE
9/18/1936	UNNAMED	100	CATEGORY 2 HURRICANE
8/2/1944	UNNAMED	50	TROPICAL STORM
9/14/1944	UNNAMED	105	CATEGORY 2 HURRICANE
10/20/1944	UNNAMED	40	TROPICAL STORM
6/26/1945	UNNAMED	50	TROPICAL STORM
7/7/1946	UNNAMED	65	TROPICAL STORM
8/14/1953	BARBARA	105	CATEGORY 2 HURRICANE
8/31/1954	CAROL	100	CATEGORY 2 HURRICANE
8/12/1955	CONNIE	80	CATEGORY 1 HURRICANE
9/20/1955	IONE	70	TROPICAL STORM
7/10/1959	CINDY	40	TROPICAL STORM
7/30/1960	BRENDA	50	TROPICAL STORM
9/12/1960	DONNA	105	CATEGORY 2 HURRICANE
9/14/1961	UNNAMED	40	TROPICAL STORM
9/1/1964	CLEO	45	TROPICAL STORM
9/17/1967	DORIA	40	TROPICAL STORM
8/28/1971	DORIA	65	TROPICAL STORM
6/22/1972	AGNES	50	TROPICAL STORM
7/1/1981	BRET	60	TROPICAL STORM
9/30/1983	DEAN	65	TROPICAL STORM
9/14/1984	DIANA	60	TROPICAL STORM
9/27/1985	GLORIA	105	CATEGORY 2 HURRICANE
8/18/1986	CHARLEY	80	CATEGORY 1 HURRICANE
9/25/1992	DANIELLE	65	TROPICAL STORM
7/13/1996	BERTHA	75	CATEGORY 1 HURRICANE
7/24/1997	DANNY	45	TROPICAL STORM
8/28/1998	BONNIE	85	CATEGORY 1 HURRICANE
9/16/1999	FLOYD	80	CATEGORY 1 HURRICANE
9/24/2000	HELENE	45	TROPICAL STORM
10/12/2002	KYLE	45	TROPICAL STORM
9/18/2003	ISABEL	100	CATEGORY 2 HURRICANE
8/14/2004	CHARLEY	40	TROPICAL STORM
9/10/2007	GABRIELLE	40	TROPICAL STORM
9/06/2008	HANNA	70	TROPICAL STORM
8/28/2011	IRENE	75	CATEGORY 1 HURRICANE
8/4/2020	ISAIAS	69	TROPICAL STORM

Source: NOAA Historical Hurricane Tracks, May 2021

PROBABILITY OF FUTURE OCCURRENCES

It is likely that the region will be impacted by hurricanes and tropical storms in the future. Direct impacts from hurricanes category 3 and 4 intensity are rare in Hampton Roads due to 1) historical tracks remaining offshore or impacting land before reaching Hampton Roads; and 2) cooler Atlantic Ocean water temperatures north of Cape Hatteras, which diminish a storm's ability to maintain intensity, or intensify. A Category 5 hurricane is considered implausible in Hampton Roads due to the cooler water temperatures mentioned above. The effects of smaller hurricanes (Categories 1 and 2 with wind speeds from 74-110 mph) and tropical storms (sustained wind speeds of at least 39 mph and torrential rains) will be frequent, as storms making landfall along the North Carolina and Virginia coastlines could impact the region in any given year.

LANDSLIDE/COASTAL EROSION

BACKGROUND

Erosion is the gradual breakdown and movement of land due to both physical and chemical processes of water, wind, and general meteorological conditions. Natural, or geologic, erosion has occurred since the Earth's formation and continues at a very slow and uniform rate each year. Major storms such as hurricanes and tropical storms may cause more sudden, rapid erosion by combining heavy rainfall, high winds, heavy surf and storm surge to significantly impact riverbanks and the shoreline.

As it relates to natural hazards that threaten property damage, there are two types of erosion: riverine erosion and coastal erosion. The primary concern of both riverine and coastal erosion is the gradual removal of rock, vegetation and other sediment materials from riverbanks, stream beds and shorelines that result in soil instability and possible damages to property and infrastructure.

The average annual erosion rate on the Atlantic coast is roughly 2 to 3 feet per year; however, erosion rates vary greatly from location to location and year to year. A study by The Heinz Center (2000), *Evaluation of Erosion Hazards*, states that over the next 60 years, erosion may claim one out of four houses within 500 feet of the U.S. shoreline. It also states that nationwide, erosion may be responsible for approximately $500 million in property loss to coastal property owners per year, including both damage to structures and loss of land. To the homeowners living within areas subject to coastal erosion, the risk posed by erosion is comparable to the risk from flooding and other natural hazard events.

In Hampton Roads, shoreline, or coastal, erosion poses the most significant threat, and is a long-term hazard that undermines waterfront homes, businesses, public facilities and infrastructure along shorelines, even rendering structures uninhabitable or unusable. Shoreline erosion is driven by a number of natural influences such as sea level rise and land subsidence, large storms such as tropical storms, nor'easters and hurricanes, storm surge, flooding and powerful ocean waves. While coastal flooding in the region is typically a short term event, shoreline erosion in Hampton Roads may best be described as a relatively slow natural process occurring over the long term, with occasional major impacts wrought by coastal storm and flooding hazards. Manmade influences such as coastal development and some shoreline stabilization projects can exacerbate shoreline erosion, even when initially intended to minimize immediate erosive effects. Many older shoreline stabilization features in Hampton Roads are vulnerable to the effects of shoreline erosion and their failure can cause subsequent catastrophic failure of parking lots, port facilities, marinas, parks, garages, roads and other waterfront features. The features are not typically critical to the life, health and safety of residents, but nonetheless are costly and time-consuming to repair for both public and private entities. While not as sudden as other hazard events discussed in this plan, shoreline erosion influences the stability and condition of coastal property and beaches when other short-term hazard events occur. For example, erosive forces may undermine tree roots and revetments along a shoreline, exacerbating the effects of flooding and sea level rise.

In Hampton Roads' more vulnerable Atlantic Ocean and Chesapeake Bay shorelines, the same large waves that are capable of causing severe shoreline erosion often attract onlookers, tourists and surfers drawn to the waves' magnitude and power. Locally, fatalities then result when these people are unexpectedly caught up in the surf and strong offshore currents, or rip currents, hindering their return to shore.

A landslide is the downslope transport of a mass of soil and rock material and refers to a number of different varieties of ground movement landforms and processes. The primary driving force for a landslide is gravity, but other factors may contribute to the failure of a slope. Landslides are usually triggered by heavy rainfall, rapid snow melt, oversteepening of slopes by stream incision, or earthquakes, while certain man-made changes to the land, such as slope modification or drainage alteration, can greatly increase the likelihood of landslides. Sometimes a landslide may move slowly down a slope, but often the movement can occur

without warning and be extremely fast. Soil creep and slumping cause property damage gradually, whereas rockslides and debris flows can sweep away people and property instantaneously. In the United States, landslides annually cause up to $2 billion in damages and take between twenty-five and fifty lives.[3]

Landslides occur in many manifestations and are usually classified according to the type of material involved and the mode of downslope movement. The material can range from loose earth to blocks of solid rock. These materials may then move downslope by falling, sliding or flowing. The following are some of the more important types of mass movement:

Rockfalls entail large blocks of bedrock breaking off a cliff face and tumbling downslope;

Rockslides occur when a detached section of bedrock slides down an inclined surface, frequently along a bedding plane;

Earthslides involve masses of soil moving down a slip face, usually on top of the bedrock;

Creep is the slow, continuous, imperceptible downslope movement of soil and rock particles;

Rotational slides or slumps result from the rotation of a cohesive unit of soil or rock down a slip surface, leaving a curved scarp; and

Debris flows develop on steep slopes as a result of heavy rainfall that saturates the soil, which under the extra weight and lubrication breaks loose and becomes a slurry that takes everything with it, including large trees and houses. Channeled debris flows can reach speeds approaching a hundred miles an hour and strike without warning.

Landslides are most common in the mountainous terrain of Virginia because of the presence of steep slopes and highly fractured bedrock over shallow soils. The lower-relief areas of the Piedmont and Coastal Plain also have landslides, but they are often smaller and generated by human disturbance, such as making an oversteepened road cut. The most disastrous landslide events have been associated with heavy rainfall along the steep slopes of the Blue Ridge Mountains and the Appalachians. Areas that are prone to mass movement include areas where landslides have occurred in the past; steep slopes with an angle greater than 30 degrees; and oversteepened cuts and fills, particularly due to home and road building. Research in North Carolina has revealed that about fifty-six percent of recent landslides happened on slopes that had been altered in some way by development.

Landslides are capable of destroying buildings, rupturing utility and other lifelines, while blocking transportation routes. Urban development can increase the damages caused by a landslide. Damages sustained by roads and highways during a landslide can result in long-term loss of use of certain transportation routes and contribute to increased traffic and emergency response times in the affected region. The soil movement that occurs during a landslide can destabilize structural supports for pipelines potentially resulting in pipeline ruptures and decreased or loss of service in a region.

The severity of a landslide is dependent on many factors including the slope and width of the area involved, the speed of the earth movement, and any structures or infrastructure directly in the path of the slide. Impacts of a landslide can range from a minor inconvenience to a life-threatening situation when automobiles and buildings are involved.

LOCATION AND SPATIAL EXTENT

Shoreline erosion is a significant concern in the Hampton Roads region. According to VIMS, the Atlantic and Chesapeake Bay coasts in the region are very dynamic in terms of shoreline change and sediment transport processes. VIMS and other agencies occasionally perform studies to determine long-term shoreline change patterns for various locations across the region. However, these studies are largely

[3]Virginia Department of Energy, 2021

intended to track shoreline and dune evolution through natural and manmade alterations, and are not designed to determine erosion rates or areas of coastal erosion. While FEMA does not map erosion hazard areas, FIRMs produced by the agency do indicate the highest risk areas for coastal flooding with significant wave action (termed V zones, velocity zones, or coastal high hazard areas)[4]. For purposes of this plan, areas identified as coastal high hazard zones on the FIRM are also assumed to be at risk of shoreline, or coastal, erosion.

Another factor in accurately determining specific shoreline erosion hazard areas is the continuous implementation of shoreline reinforcement or nourishment projects completed by federal, state and local government agencies. Typically, areas of high concern with regard to long term erosion are addressed through shoreline hardening or stabilization projects, such as seawalls, breakwaters and beach sand replenishment. For example, in 2002, the Virginia Beach Erosion Control and Hurricane Protection Project protected more than six miles from the imminent hazards of shoreline erosion through sand replenishment. Many other projects have been completed in the region and still others are pending approval and/or funding[5].

This photo, taken while the Virginia Beach Erosion Control and Hurricane Protection Project was underway, shows the significant difference between the unimproved area and the area of the widened beach berm already completed.

Source: City of Virginia Beach

HISTORICAL OCCURENCES

Shoreline erosion events typically occur in conjunction with hurricanes, tropical storms and nor'easters, so the list of "Ocean and Lake Surf" events provided from the NCEI database is not considered comprehensive (**Table 4.9**). Some of the damages listed duplicate damages shown for coastal flooding events and/or may apply to areas outside of the study area for this plan; however, the descriptive details indicate the nature of shoreline erosion damage (and fatalities) associated with this select group of events in Hampton Roads.

[4] For more information on FEMA V-zones, refer to the Flood hazard discussion within this section.
[5] In order to counter effects of coastal erosion, Virginia Beach's shoreline has been renourished annually since 1951.

TABLE 4.9: OCEAN AND LAKE SURF EVENTS (1993 - 2020)

LOCATION	DATE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
Virginia Beach	8/31/1993	Heavy Surf	1/0	$0	A 15-year-old boy drowned, presumably caught in a strong undertow, as Hurricane Emily was approaching the North Carolina coast.
Isle of Wight, Norfolk, Suffolk, Virginia Beach, Portsmouth	11/17/1994	Coastal Flooding	0/0	$655,000	Strong easterly flow between Hurricane Gordon, a category 1 storm meandering 150 miles south of Cape Hatteras, and a strong anticyclone over New England, caused significant coastal flooding and damage in Sandbridge. The worst flooding occurred on the 18th, when tides were running 4 feet above normal. The heaviest damage occurred along 14th Street, where 100 feet of the fishing pier washed away. Several homes suffered minor damage, with two requiring extra work to remain in place. A 1000-foot stretch of road and several protective steel bulkheads were damaged. Seas, which were as high as 18 feet 60 miles east of the Virginia Capes, and 7 feet near the mouth of the Chesapeake Bay, forced the Naval Carrier George Washington to remain 2 miles offshore Thursday night through Friday morning. The above-normal tides caused other minor flooding in Tidewater. The Nansemond River overflowed its banks in Suffolk, causing minor flooding. High tides on the James and Pagan Rivers, caused several roads to be under water in eastern Isle of Wight County on the 17th.
Isle of Wight, Norfolk, Suffolk, Virginia Beach	12/23/1994	Coastal Flooding	0/0	$65,000	A double-structured storm system produced minor coastal flooding in the Tidewater region on the 23rd. The effects were much less than expected as the main storm moved well east of the mid-Atlantic before curling northwest into Long Island. The secondary low pressure area was significantly weaker, but still produced northeast winds of 35 to 45 mph around Tidewater. High tides of 1 to 3 feet above normal caused most of the flooding. In the Sandbridge section of Virginia Beach, a beachfront home collapsed into the sea. The combination of pounding surf and wind from flow around Hurricane Gordon in late November and this event finished off the home. In addition, a few more bulkheads were flattened. Several roads in the Tidewater area had minor flooding, including Rescue Road in Smithfield (Isle of Wight Co).
Virginia Beach	8/13/1995	Rip Current	1/0	$0	Vacationer from New York drowned after venturing too far into severe rip current conditions.

TABLE 4.9: OCEAN AND LAKE SURF EVENTS (1993 - 2020)					
LOCATION	DATE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
Norfolk, Virginia Beach, Newport News, York County, Poquoson	4/24/1997	Coastal Flooding	0/0	$0	Moderate coastal flooding occurred across portions of the Hampton Roads area during the time of high tide April 23rd and continued into April 24th. The areas most seriously affected included the Willoughby Spit, Ghent, and downtown sections of Norfolk, the Old-Town section of Portsmouth, and Sandbridge at Virginia Beach. Tides peaked at 5.8 feet above Mean Lower Low Water (MLLW) at Sewells Point in Norfolk. Based on reports received from downtown Norfolk and the Grandview section of Hampton, tides were somewhat higher in the estuaries (Lafayette River, the Hague, the Harris and Back Rivers) draining into the Elizabeth River and Hampton Roads.
Norfolk, Virginia Beach, Portsmouth	6/3/1997	Coastal Flooding	0/0	$0	Minor to moderate flooding occurred across portions of Hampton Roads during high tide the evening of June 3rd. In Virginia Beach, officials reported part of a new boardwalk washed away and several lifeguard stands lost. Crawford Parkway in downtown Portsmouth was reported flooded and in downtown Norfolk, several streets were reported under water.
Norfolk, Virginia Beach, Portsmouth, Newport News, Poquoson	10/19/1997	Coastal Flooding	0/0	$0	Minor to moderate flooding occurred across portions of Hampton Roads during high tide Sunday, October 19th. Some minor flooding was reported in low-lying areas of Norfolk, with water in a few homes and a few streets closed. Minor flooding was also reported in downtown Portsmouth and in the Sandbridge and Sandfiddler areas of Virginia Beach. Tides peaked between 5.2 and 5.8 feet above MLLW at Sewells Point in Norfolk. Minor coastal flooding was reported in portions of Newport News and York county.
Norfolk, Virginia Beach, York County, Poquoson, Newport News	1/27/1998	Coastal Flooding	0/0	$1,500,000	A Nor'easter battered eastern Virginia on January 27th and 28th. Slow movement of the storm combined with the highest astronomical tides of the month resulted in an extended period of gale to storm force onshore winds which drove tides to 6.44 feet above MLLW at Sewells Point. Tide levels resulted in moderate coastal flooding throughout Hampton Roads. One house collapsed into the Atlantic Ocean at Sandbridge. Another home sustained severe damage. The rainfall combined with the gale and storm force winds resulted in scattered tree limbs downed across much of eastern Virginia. In addition, there were widely scattered power outages.

TABLE 4.9: OCEAN AND LAKE SURF EVENTS (1993 - 2020)

LOCATION	DATE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
Norfolk, Virginia Beach, York County, Poquoson, Newport News	2/4/1998	Coastal Flooding	0/0	$75,000,000	A Nor'easter battered eastern Virginia from February 3rd through the 5th. The slow movement of the storm resulted in an extended period of gale to storm force onshore winds which drove tides to 7.0 feet above MLLW at Sewells Point. Tide levels resulted in moderate to severe coastal flooding throughout Hampton Roads. Norfolk, Virginia Beach and Hampton reported some structural damage to buildings along the bay and coast, as well as significant beach erosion. Norfolk reported main roads and intersections under 3 feet of water or greater with many roads impassable. North facing areas in Willoughby and Ocean View suffered the greatest damage. In the Chick's Beach area of Virginia Beach, 4 condominiums were undermined by the tidal flooding, and residents of those buildings had to be evacuated. Twenty-nine house fires were also reported in Norfolk as a result of flood water shorting out furnaces. The rainfall combined with the gale and storm force winds resulted in some trees downed across much of eastern Virginia. In addition, there were widely scattered power outages.
Hampton	9/18/2003	Coastal Flooding, Heavy Surf			Hurricane Isabel caused historic flooding and severe erosion in the region. In Hampton, the coastal flooding, heavy surf and wave action breached the barrier beach at Factory Point.
Virginia Beach	1/29/2005	Heavy Surf	1/1	$0	A small boat with 2 men on board was heading out of Rudee Inlet. They made it through the first set of breakers then stopped the boat. A wave overtook them and flipped the boat. One man climbed onto and stayed with the overturned boat and was rescued. He was treated for mild hypothermia and later released. The other man died of hypothermia.
York County, Poquoson	9/1/2006	Coastal Flood	0/0	$1,900,000	Tides of 4 to 5 feet above normal combined with 6 to 8 foot waves caused significant damage to homes, piers, bulkheads, boats, and marinas across portions of the Virginia Peninsula and Middle Peninsula near the Chesapeake Bay and adjacent tributaries.
Norfolk, York County, Hampton	10/6/2006	Coastal Flood	0/0	$200,000	Strong onshore winds resulted in major coastal flooding during times of high tide. Tidal departures were 2.5 to 3.5 above normal during the event. A strong low pressure system off the North Carolina coast coupled with an upper level cutoff low to dump intense rainfall across portions of southeast Virginia. Rainfall amounts in excess of 10 inches resulted in numerous road closures and moderate to major river flooding from late Friday, October 6th through Saturday, October 7th. Up to 28,000 Dominion Virginia Power customers lost power during the event.

TABLE 4.9: OCEAN AND LAKE SURF EVENTS (1993 - 2020)

LOCATION	DATE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
Norfolk, Chesapeake York County, Hampton	11/22 and 11/23/2006	Coastal Flood	0/0	$145,000	Strong onshore winds caused moderate coastal flooding during times of high tide. Tidal departures were about 3 feet above normal during the event. An intense low pressure system off the North Carolina coast combined with an upper level cutoff low to provide very strong winds, heavy rains, and moderate coastal flooding across portions of eastern and southeast Virginia from late November 21st into afternoon November 23rd.
Virginia Beach	5/23/2009	Rip Current	1/0	$0	A man body boarding was caught up in a rip current and pulled offshore. Officials performed CPR, but it failed to revive the man and he died.
Isle of Wight, Chesapeake, Newport News, York County, Hampton	11/12/2009	Coastal Flood	0/0	$16,200,000	An intense Nor'easter produced moderate to severe coastal flooding across much of eastern and southeast Virginia and the Virginia Eastern Shore. The peak tide height at Money Point was 8.59 feet above MLLW, which was 6.17 feet above the astronomical tide. That tide height was 0.3 feet higher than the previous record storm tide measured at this location during Hurricane Isabel in September 2003.
Norfolk, Virginia Beach, York County, Chesapeake	12/19/2009	Coastal Flood	0/0	$30,000	A strong coastal low pressure area produced moderate to severe coastal flooding across much of eastern and southeast Virginia. The peak tide height at Money Point was 6.77 feet above MLLW. Several streets, homes and businesses were flooded in low lying areas close or directly exposed to the Chesapeake Bay. The peak tide height at Yorktown was 5.32 feet above MLLW. Several streets, homes and businesses were flooded in low lying areas of the county close or directly exposed to the Chesapeake Bay.
Virginia Beach	8/25/2011	Rip Current	1/0	-	A surfer who got caught in a rip current drowned in Virginia Beach.
Virginia Beach	6/16/2012	Rip Current	1/0	-	A man was caught up in a rip current and drowned in Virginia Beach.
Chesapeake, James City County, Newport News, York County, Norfolk, Isle of Wight, Virginia Beach, Suffolk, Hampton	10/28/2012	Coastal Flood	0/0	$2,060,000	Tropical Cyclone Sandy moving northward well off the Mid Atlantic Coast then northwest into extreme southern New Jersey produced very strong northeast winds followed by very strong west or northwest winds. The very strong winds caused moderate to severe coastal flooding across portions of eastern and southeast Virginia. Water levels reached 3.5 feet to around 4.5 feet above normal adjacent to the Chesapeake Bay resulting in moderate to severe coastal flooding. Flooding of streets due to the combination of rain and storm surge was widespread during the height of the storm. However, water levels were lower than Irene in 2011.

TABLE 4.9: OCEAN AND LAKE SURF EVENTS (1993 - 2020)

LOCATION	DATE	TYPE OF EVENT	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
Chesapeake, James City County, Newport News, York County, Norfolk, Isle of Wight, Virginia Beach, Suffolk, Hampton, Poquoson	10/2-3/2015	Coastal Flood	0/0	$1,000,000 (Norfolk)	Anomalously strong/nearly stationary high pressure over New England produced strong onshore winds over the Mid-Atlantic. The strength and duration of the onshore winds produced moderate coastal flooding along the Atlantic Coast and Chesapeake Bay. A tidal departure of 3 to 4 feet resulted in moderate flooding along the Chesapeake Bay.
Virginia Beach	7/9/2019	Rip Current	1/0	-	A 35 year old male drown after being caught in a rip current while trying to save a child at False Cape State Park.
Norfolk, Virginia Beach, York County, Surry County	9/6/2019	Coastal Flood	0/0	-	Very strong northeast to north winds associated with Hurricane Dorian produced tidal anomalies between 2.5 and 3.5 feet over the southern Chesapeake Bay. This caused moderate coastal flooding over portions of Hampton Roads.
York County, James City County, Surry County	10/11/2019	Coastal Flood	0/0	-	The combination of low pressure sitting off the New Jersey coast and strong high pressure over southeast Canada resulted in persistent north or northeast winds over the region. Persistent winds and high waves produced tidal anomalies between 2 and 3 feet above normal high water levels.
Virginia Beach, Norfolk	11/17/2019	Coastal Flood	0/0	-	The combination of high pressure over northern New England and low pressure just off the Middle Atlantic Coast resulted in very strong northeast to north winds over the southern Chesapeake Bay, which caused minor to moderate coastal flooding.
James City County	5/19/2020	Coastal Flood	0/0	-	Combination of strong high pressure over New England and low pressure over southeast U.S. produced a persistent northeast or east wind into James River, which caused minor to moderate coastal flooding at Jamestown tidal gauge and some locations in the county. Minor to moderate tidal flooding occurred along James River. Jamestown reached 4.72 feet MLLW.
Virginia Beach	8/4/2020	Coastal Flood	0/0	-	The center of Tropical Storm Isaias tracked north just inland of the Middle Atlantic Coast from August 3-4. Winds caused moderate (perhaps some locally major) tidal/coastal flooding across portions of SE Virginia, including portions of Virginia Beach adjacent to Back Bay.
Totals			**7/1**	**$98,755,000**	

Source: NCEI, 2021

Analysis of the landslide hazard history in the Hampton Roads study area is limited by the availability of data and reporting of incidents; however, scientists at the Virginia Department of Energy (Virginia Energy) maintain a statewide database of incidents reported to the department since 2004. That database does not contain any historical incidents in the Hampton Roads region, although one incident in New Kent County is on the border with James City County, along the Chickahominy River. The Claytor landslide, as it was termed, was reported by the homeowner who reported movement started during Hurricane Irene (2011). Headscarp is 5 feet from porch steps, two 10-foot sections of seawall at base of slope have been either toppled or covered by sediment from previous landslides. This is a series of concave erosional scarps along the riverbank. Additional reports of landslides along the James River in Surry County, especially after Hurricane Isabel (2003), have been made to county officials, but additional details were not available.

While details are preliminary, State geologists suggest that evidence shows in the Richmond-Crater and Virginia Peninsula regions, there is a higher incidence of landslide initiation near the contact between the Eastover and the Yorktown Formations, two pervasive geological units in the Virginia Coastal Plain. Slopes can be further destabilized due to excess runoff from development, including stormwater drains and gutters.

PROBABILITY OF FUTURE OCCURENCES

Shoreline erosion over the long-term and short term will likely continue to occur in the Hampton Roads region. Shoreline erosion will be more immediate and severe during hurricanes, tropical storms and nor'easters.

TORNADO

BACKGROUND

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the NWS, tornado wind speeds normally range from 40 to more than 200 mph. The most violent tornadoes (EF5) have rotating winds of 200 mph or more and are capable of causing extreme destruction and turning normally harmless objects into deadly missiles.

Each year, an average of over 1,200 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries (NOAA, 2002 and 2014). They are more likely to occur during the spring and early summer months of March through June and can occur at any time of day, but are likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and tens of miles long.

Waterspouts are weak tornadoes that form over warm water and are most common along the Gulf Coast and southeastern states. Waterspouts occasionally move inland, becoming tornadoes that cause damage and injury. However, most waterspouts dissipate over the open water causing threats only to marine and boating interests. Typically, a waterspout is weak and short-lived, and because they are so common, most go unreported unless they cause damage.

The destruction caused by tornadoes ranges from light to devastating depending upon the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damages to structures of light or wood-framed construction such as residential homes (particularly mobile homes), and tend to remain localized in impact. The traditional Fujita Scale for tornadoes, introduced in 1971, was developed to measure tornado strength and associated damages. Starting in February of 2007, an “enhanced” Fujita (EF) Scale was implemented, with somewhat lower wind speeds at the higher F-numbers, and more thoroughly-refined structural damage indicator definitions. **Table 4.10** provides a summary of the EF Scale. Assigning an EF Scale rating to a tornado involves the following steps:

- Conduct an aerial and ground survey over the entire length of the damage path;
- Locate and identify damage indicators in the damage path;
- Consider the wind speeds of all damage indicators and assign an EF Scale category for the highest wind speed consistent with wind speeds from the other damage indicators;
- Record the basis for assigning an EF scale rating to a tornado event; and
- Record other pertinent data related to the tornado event.

TABLE 4.10: ENHANCED FUJITA (EF) SCALE FOR TORNADOES	
EF RATING	3 SECOND GUST (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	over 200

Source: NWS Storm Prediction Center

In Virginia, tornadoes primarily occur from April through September, although tornadoes have been observed in every month. Low-intensity tornadoes occur most frequently; tornadoes rated EF2 or higher are very rare in Virginia, although EF2, EF3, and a few EF4 storms have been observed. According to the *2018 Commonwealth of Virginia Hazard Mitigation Plan*, Virginia ranks 28th in terms of the number of tornado touchdowns reported between 1950 and 2006.

Tornadoes are high-impact, low-probability hazards. The net impact of a tornado depends on the storm intensity and the vulnerability of development in its path. Because the path of each tornado is unique to each event, general descriptions of impacts in Hampton Roads can be drawn from the impacts of previous storms (see also **Table 4.11** below). Communities rarely activate Emergency Operation Centers before tornadoes due to the short warning times, but after extreme events with catastrophic damage that displace a large number of residents, such activation may become necessary.

In Hampton Roads, a high intensity tornado, while unlikely, could be expected to impact almost everything within the storm's path: homes, especially those constructed prior to the use of building codes; infrastructure, especially above-ground power lines in the commercial zones and bridges throughout the region; cars and personal property; landscape elements such as trees, fences and shrubs; and even human lives. Downed trees can block roadways, impeding traffic and blocking access and egress if any of the region's thoroughfares are impacted. Manufactured homes are particularly vulnerable to damage in the event of tornadoes, as well, particularly if they were placed outside of flood zones and before building codes were in effect requiring foundation tie-downs.

Tornadoes associated with tropical cyclones are somewhat more predictable. These tornadoes occur frequently in September and October when the incidence of tropical storm systems is greatest. They usually form around the perimeter of the storm, and most often to the right and ahead of the storm path or the storm center as it comes ashore. These tornadoes commonly occur as part of large outbreaks and generally move in an easterly direction. Tracking and prior notification by the National Weather Service and local news media helps save lives locally.

Most tornado strikes in the region have been EF0 or EF1 and the effects were somewhat less than as described above for severe storms. Critical damage to structures in the tornado's path is common, with indiscriminate damage to public-and privately-owned structures, some infrastructure, and downed trees that make transportation difficult. In areas adjacent to the path, minor damage, especially to roofs and windows from trees and flying debris, can also be expected. While downed trees may block transportation routes and result in power outages for some customers, these impacts are typically cleared within a few days.

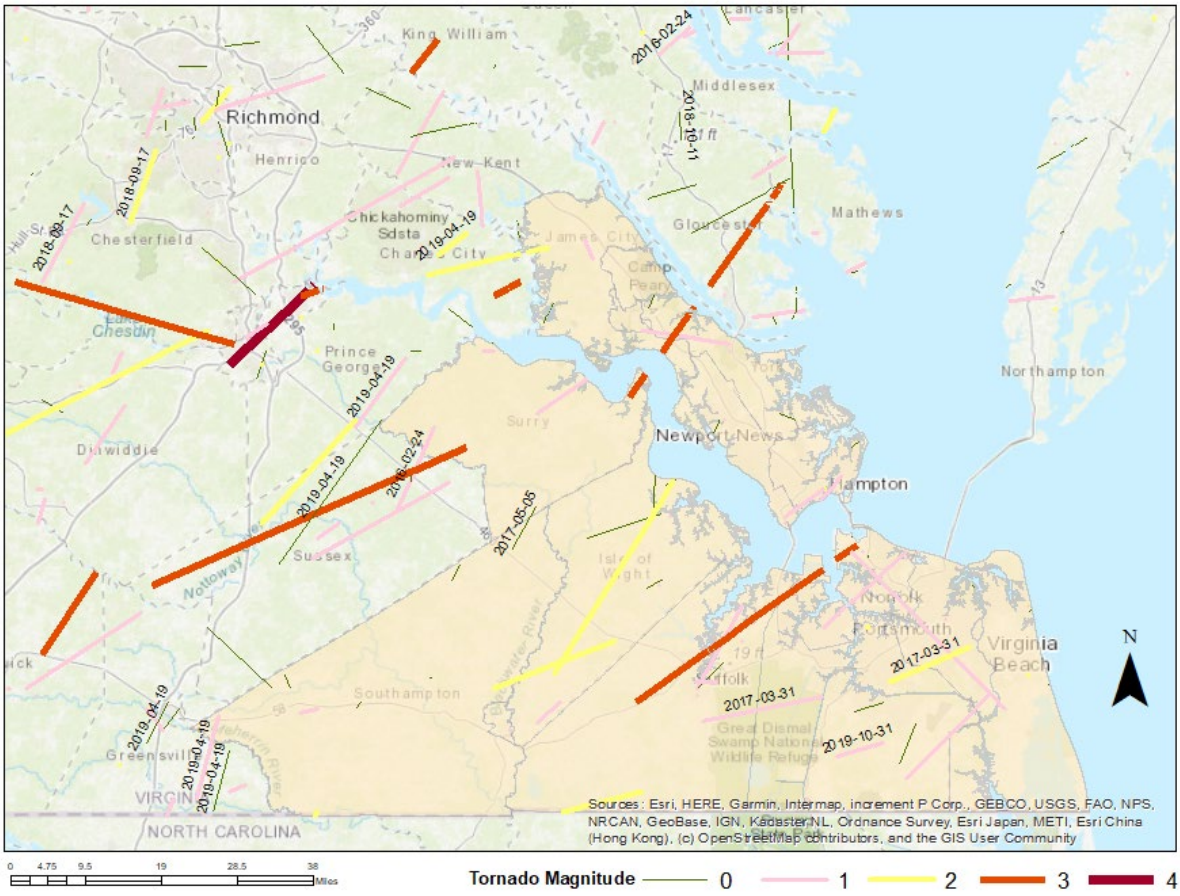
LOCATION AND SPATIAL EXTENT

Tornadoes typically impact a relatively small area; however, it is impossible to predict where in the planning area a tornado may strike. Vulnerability of individual structures is based largely on building construction materials and standards, availability of safe rooms and advanced warning system capabilities. In cases

involving intense tornadoes, the best defense against injury or death is a properly engineered safe room or tornado shelter, neither of which is standard practice in the region. Likewise, advanced warning system capabilities are limited to Reverse 911, Emergency Alert System warnings and NWS weather radio broadcasts.

Figure 4.17 illustrates the approximate location where confirmed tornadoes have touched down in and near the Hampton Roads region since 1950. The most recent tornadoes, between 2016 and 2019, are additionally notated with the date of their occurrence.

FIGURE 4.17: HISTORIC TORNADO TOUCHDOWNS AND TRACKS: 1950-2020



October, 2021

Source: NCEI, 2021

SIGNIFICANT HISTORICAL EVENTS

Hampton Roads has experienced 47 days with reported damaging tornadoes since 1995. The tornadoes occurring since 1995 had strengths up to EF3. Damage estimates for these tornadoes exceed $63.09 million. **Table 4.11** lists historical tornadoes that touched down in the study area (NCEI web site). Beginning with the Suffolk tornado in 2008, the magnitude rating switched to Enhanced Fujita Scale.

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021

LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
ISLE OF WIGHT	7/12/1996	F1	0	$25,000	Small tornado damaged 10-15 homes and several trees in Moorfield subdivision of Smithfield.
YORK	7/12/1996	F1	0	$15,000	Tornado cut a 2-mile-long path across part of Naval Weapons Station Yorktown. Numerous trees, homes and cars were damaged.
HAMPTON	9/4/1996	F0	0	$1,000	Weather personnel at Langley Air Force Base observed a small tornado about 1/2 mile north-northwest of their building. Minor damage to a few vehicles and tops of trees occurred.
CHESAPEAKE	7/24/1997	F1	0	$400,000	Tornado had a track of approximately 1 mile and was an estimated 50 yards in width.
NORFOLK	7/24/1997	F1	0	$400,000	Tornado path started in south Norfolk just south of Poindexter Street on Guerriere Street. The tornado then continued north-northeast into the Berkley Avenue Industrial Park before crossing into the southern portion of Norfolk and lifting after causing damage on Roseclair and Joyce Streets. One business, a car wash was destroyed, and six sustained major roof damage. One home was damaged in Chesapeake, with damage to a couple of additional structures in the Roseclair and Joyce Street areas of Norfolk.
NORFOLK	7/24/1997	F0	0	$100,000	Tornado first touched down west of Route 460 between Liberty Street and Indian River Road. The tornado tracked north-northeast across Indian River Road and across the eastern branch of the Elizabeth River before lifting east of Harbor Park and south of I-264. Minor damage to several structures, mostly residential.
CHESAPEAKE	4/9/1998	F0	0	$25,000	Tornado with speeds of 60-70mph in Chesapeake. Damage was seen just south of intersection of Dominion Boulevard and Great Bridge Boulevard. Several trees were downed/topped in the Riverwalk Subdivision. Damage to a couple of homes as a result of trees falling on them. Tornado moved east-northeast to just northwest of intersection of Volvo Parkway and Kempsville Road. Several trees were downed/topped in this area as well, with a couple of homes damaged by falling trees/limbs. Tornado appeared to remain just above ground, with all structural damage resulting from falling trees/limbs.
HAMPTON	9/4/1999	F2	0/6	$7,720,000	Tornado touchdown in the city of Hampton. Extensive structural damage in a 3 block area. Three apartment complexes and an assisted living facility condemned. Two

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					additional apartment complexes partially condemned. Many roofs were lifted off buildings and as many as 800 vehicles were reported damaged. This tornado formed in area ahead of tropical storm Dennis.
VIRGINIA BEACH	7/24/2000	F0	0	$20,000	A waterspout that formed over Back Bay came ashore at Campbell Landing Road and destroyed 20' x 30' foot outbuilding before dissipating. Many trees were blown down; camper shells and lawn furniture were tossed across neighborhood.
SUFFOLK	5/21/2001	F0	0	$25,000	Tornado occurred in 5000 block of Manning Road. Several small outbuildings destroyed including 30' wooden shed.
SUFFOLK	6/1/2001	F1	0	$15,000	Tornado touched down near Jackson Road. Tornado became a funnel cloud and then touched down again just south of Sleepy Hole Road and passed through Sleepy Hole Golf Club. Tornado continued north northeast through Chatham Woods with extensive damage along Burning Tree Lane.
NEWPORT NEWS	8/11/2001	F0	0	$50,000	Weak tornado damaged a couple of mobile homes and produced minor damage at townhouse complex near Fort Eustis.
SUFFOLK	2/22/2003	F0	0	$25,000	Several 50-60 foot trees were pushed over into houses. Numerous tree trunks were twisted and tops sheared off.
SOUTHAMPTON	5/9/2003	F0	0	$10,000	Damage to trees and outbuildings, and minor damage to home by a tornado in northwest Southampton County.
YORK	8/7/2003	F1	0	$20,000	Tornado damage occurred near Victory Boulevard and Running Man Trail, with about a dozen trees down. Damage to 4 houses from trees snapping off and falling on the homes.
VIRGINIA BEACH	8/8/2003	F0	0	$5,000	Tornado briefly touched down with minor damage reported at Salem Crossing Shopping Center.
NORFOLK	9/18/2003	F0	0	-	Brief tornado occurred in association with Isabel. No damage reported.
SOUTHAMPTON COUNTY	6/25/2004	F1	0	$2,000	F1 tornado downed numerous large trees in a swamp.
SUFFOLK	6/25/2004	F1	0	$2,000	F1 tornado downed numerous trees near intersection of Route 660 and Route 668.
SUFFOLK	6/25/2004	F0	0	$2,000	F0 tornado damage to trees on Cypress Chapel Road in Whaleyville.
CHESAPEAKE	8/14/2004	F0	0	$5,000	Tornado associated with Tropical Storm Charley damaged a fence and downed trees.
JAMES CITY COUNTY	8/30/2004	F0	0	$5,000	F0 tornado downed or damaged several trees.
JAMES CITY COUNTY	8/30/2004	F0	0	$5,000	F0 tornado downed or damaged several trees near Drummonds Field Subdivision and the James River.
POQUOSON	8/30/2004	F0	0	$5,000	F0 tornado downed trees on River Road and Wythe Creek Road.
HAMPTON	8/30/2004	F0	0	$5,000	F0 tornado damaged a shed and trees on Hall Road.
YORK COUNTY	8/30/2004	F0	0	$10,000	F0 tornado downed trees and damaged roofs at Pinewood Drive and Highway 134.

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
YORK COUNTY	8/30/2004	F0	0	$10,000	F0 tornado blew roof off of garage and damaged trees.
SOUTHAMPTON	7/2/2005	F0	0	-	F0 tornado touched down near Freemans Pond Road then crossed Route 460.
SOUTHAMPTON	7/8/2005	F1	0	$2,000	F1 tornado caused damage near Old Belfield Road.
VIRGINIA BEACH	7/14/2005	F0	0	$2,000	Brief tornado touchdown caused minor damage to golf practice facility and downed tree limbs near Dam Neck Road and Holland Road.
JAMES CITY	1/11/2006	F1	0/2	$20,000	F1 tornado caused intermittent damage at Jamestown Beach Campground and Foxfield subdivision. One trailer and pop-up camper were destroyed at campground and caused minor injuries to two occupants. Two townhomes suffered minor roof and siding damage in subdivision.
PORTSMOUTH	8/11/2006	F0	0	-	Waterspout near the mouth of the James River came on shore near Churchland High School. No damage or injuries were reported.
HAMPTON	8/11/2006	F0	0	-	Waterspout near mouth of the James River came on shore just south of Beach Road in Grandview section of Hampton.
SUFFOLK	4/28/2008	EF3	0/200	$30,000,000	A tornado touched down with damage first noted about 2 miles northeast of Lummis. The tornado crossed Route 58, downing trees as it moved northeast. The tornado strengthened just south of the intersection of Route 10 and Route 58, where it damaged several homes and an elementary school as well as downing numerous trees. The intense tornado crossed Route 58 again and then Route 10 before hitting the Freedom Plaza shopping center where it destroyed a strip mall and tossed around numerous cars. One car was impaled into a building adjacent to the strip mall. Thereafter, the tornado moved into 2 subdivisions east and northeast of Obici Hospital. Many homes were damaged with at least a dozen completely destroyed. The tornado then continued into Driver where it damaged a number of homes and businesses and downed numerous trees. The tornado then appeared to lift just north of Driver, although amateur video and pictures suggested that the tornado maintained close contact with the ground as it tracked northeast across northern portions of Portsmouth to the Norfolk Naval Air Station.
SOUTHAMPTON COUNTY	4/28/2008	EF0	0	$5,000	A brief tornado touched down about a half mile east of Capron off Highway 58 near Douglas Drive. Several trees were downed or snapped off.
PORTSMOUTH	4/28/2008	EF1	0	$60,000	The tornado moved from northeast Suffolk across northern portions of Portsmouth. The tornado maintained close contact with the ground and downed several trees and produced some structural damage. While in Suffolk, the tornado was rated as EF3, but in Portsmouth it was rated as EF1.

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
NORFOLK	4/28/2008	EF1	0	$100,000	The tornado maintained close contact with the ground as it moved from northern Portsmouth to the Norfolk Naval Air Station. The tornado damaged vehicles and a building at Pier 2, and numerous trees were blown down or snapped off. The tornado remained rated as EF1 from northern Portsmouth to the Norfolk Naval Air Station.
JAMES CITY COUNTY	4/28/2008	EF0	0	$200,000	A brief tornado touched down in James City county about 6 miles northwest of Jamestown. Several trees were uprooted or snapped off, and there was some minor damage to homes in the area.
ISLE OF WIGHT	4/28/2008	EF1	0	$184,000	A tornado touched down near Carrsville in southern Isle of Wight county. The tornado damaged eleven homes and six agricultural buildings along Harvest Drive and Eleys Lane.
FRANKLIN	9/26/2008	EF0	0	-	Brief tornado touchdown in an open field near S.P. Morton Elementary School. No damage reported.
ISLE OF WIGHT	4/20/2009	EF0	0	$5,000	EF0 tornado tracked along nearly 8-mile track from near Raynor east-northeast to approximately one mile northwest of Smithfield.
CHESAPEAKE	5/4/2009	EF0	0	$10,000	EF0 tornado touched down in Great Bridge section south of Cedar Road between Shillelagh Road and Battlefield Boulevard.
SOUTHAMPTON COUNTY	10/27/2010	EF0	0	$50,000	An EF0 tornado destroyed a carport, overturned a shed and downed several trees. Debris was scattered toward northeast about 100 yards.
SOUTHAMPTON COUNTY	4/16/2011	EF1	0	$30,000	Brief tornado touched down in southwest Southampton County. Numerous trees were snapped off and a few structures were damaged. The most significant damage was to a farm equipment shelter and a roof on a home.
JAMES CITY COUNTY	4/16/2011	EF3	0	$50,000	Tornado tracked from Surry County into Kingsmill section of James City County. Tornado tracked from James City County into York County.
YORK COUNTY	4/16/2011	EF3	0	$15,000	The tornado mainly affected the Yorktown Naval Weapons Station.
ISLE OF WIGHT COUNTY	4/16/2011	EF2	0	$300,000	Tornado damage was along a nearly continuous 20-mile damage path from east of Walters to just southwest of Smithfield. More than 2 dozen homes were damaged. Farm equipment was picked up and tossed around on several farms.
VIRGINIA BEACH	8/27/2011	EF0	0	$150,000	Weak tornado (EF0) severely damaged a home on Sandpiper Road. Minor damage to one other home.
HAMPTON	6/1/2012	EF1	0	$1,000,000	Tornado began on James River just east of Monitor Merrimac Bridge Tunnel. Its track went over Chesapeake Avenue, through downtown Hampton to Hampton Yacht Club before moving across Mercury Boulevard, then dissipating over the Chesapeake Bay.
ISLE OF WIGHT	1/11/2014	EF0	0	$40,000	The tornado touched down on Bob White Road just north of Woodland Drive, then continued northeast about 2 miles nearly paralleling Woodland Drive before lifting

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					near Quaker Road in Isle of Wight. The tornado touched down just north of Route 10, then continued northeast into Mogarts Beach area. Tornado was on the ground about 1.4 miles before dissipating over James River.
HAMPTON	1/11/2014	EF0	0	$100,000	Tornado touched down near Routten Road and Cabell Lane where around 50 trees were snapped and homes had 10 to 20 percent of their roof shingles blown off. The tornado traveled east northeast damaging the roof of Fox Hill Central Methodist Church and completely ripping roof off of the City of Hampton school maintenance compound on Windmill Point Road. Tornado moved to Canal Road snapping trees, damaging residential rooftops and blowing out windows of a car. Tornado continued on to completely destroy the Fox Hill Athletic Association Building on Grundland Drive, before ending at the Grandview Nature Preserve.
VIRGINIA BEACH	7/4/2014	EF0	0	$25,000	A brief EF-0 tornado associated with a squall from Hurricane Arthur touched down near Lynnwood in Virginia Beach. Numerous trees were snapped and uprooted along Lynndale Road and Kline Drive.
NORFOLK	7/4/2014	EF0	0	$5,000	Tornado touched down near the Forest Lawn Cemetery in Norfolk.
VIRGINIA BEACH	7/10/2014	EF0	0/10	$300,000	A weak tornado caused significant damage to a home from the roof being blown off. There was also damage to several other structures including a school gymnasium. A large pool window was blown out.
SURRY COUNTY	2/24/2016	EF1	0	$15,000	Tornado tracked from Sussex County into Surry County before lifting. Several trees were down, but no structural damage was observed.
SUFFOLK	3/31/2017	EF1	0	$200,000	An EF1 tornado touched down along and just west of White Marsh Road, about 2 miles southeast of downtown Suffolk. A number of trees were downed or snapped off, and one outbuilding was destroyed and its' debris damaged the adjacent house. Tornado crossed White Marsh Road, where it entered the Great Dismal Swamp, and was no longer visible. The tornado then tracked eastward into the Deep Creek area of Chesapeake.
CHESAPEAKE	3/31/2017	EF1	0	$50,000	Tornado tracked from the Great Dismal Swamp in Suffolk eastward to the Deep Creek section of Chesapeake. There was minor tornado damage on the east edge of the Dismal Swamp in the Deep Creek section.
CHESAPEAKE	3/31/2017	EF2	0	$3,900,000	EF0 tornado first touched down on Green Tree Road in Chesapeake causing damage to three warehouses. The tornado then quickly lifted off the ground and continued east. The tornado touched down again just east of Kempsville Road along Kemp Bridge Lane as an EF0 rapidly intensifying to EF1. On the east side of Kemp Bridge

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					Lane, several homes lost sections of their roofs and outer walls were removed. Winds were approximately 97 mph. The tornado intensified as it moved east destroying an empty mobile home and severely damaged a metal storage building. The tornado strengthened to an EF2 before striking Real Life Christian Church on Centerville Turnpike. The church, a large metal constructed building, was destroyed by the tornado as the sanctuary was completely demolished. The tornado weakened some as it continued to travel east and then northeast across Stumpy Lake. The tornado then tracked northeast into Virginia Beach.
VIRGINIA BEACH	3/31/2017	EF2	0	$4,000,000	Tornado emerged from Stumpy Lake along Elbow Road as an EF0 causing some significant damage to siding and shingles to homes just north of Elbow Road. The tornado crossed Round Hill Drive, and then Elbow Road itself as it re-intensified to an EF1. The tornado crossed Elbow Road as an EF1 causing significant damage to oak trees which fell trapping a car under numerous trees. Tornado continued as a weak EF1 to Salem Road causing some significant roof damage to homes. It briefly weakened as it moved northeast causing damage to siding and shingles along Starwood Arch, Antelope Place, Salem Lake Boulevard and Morning View Drive. Tornado intensified, crossed Centennial Circle damaging homes along Daiquiri Lane and Darrow Street. By the time the tornado crossed Rock Lake Loop, it had intensified back to EF1 intensity causing some severe roof damage to homes from Rip Rap Court to River Rock Arch. This is where the tornado reached its widest point, up to 350 yards wide, causing damage to around 100 homes in this area alone. Several homes in this area were damaged beyond repair as winds reached to 110 mph (high end EF1). The tornado continued northeast destroying the clubhouse and press box at the Lansdowne High School ball field. Several sets of bleachers were tossed well over 200 yards. The tornado weakened as it crossed Princess Anne Road and Tidewater Community College. The tornado moved across Rosemont Drive as an EF0 damaging numerous homes along Light Horse Loop and Storm Bird Loop. The last visible damage from the tornado was across Buckner Boulevard near the east end of Purebread Drive.
CHESAPEAKE	4/6/2017	EF0	0	$100,000	Touched down near Delia Drive where it destroyed an RV and stripped siding off a house. It moved north northeast and severely damaged a concession stand, a small barn and an outbuilding at Hickory Ridge Farm on Battlefield Boulevard. The tornado proceeded to cross Battlefield Boulevard then crossed Head of the River

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					Road where it reached its strongest point with an estimated wind speed of up to 80 mph. Numerous pine trees were snapped, blocking the road and taking down power lines. The tornado then crossed Beaverdam Road maintaining intensity near 75 mph. The tornado weakened as it crossed Land of Promise Road, but was still strong enough to down a pine tree into a house.
SOUTHAMPTON COUNTY	5/5/2017	EF0	0	$4,000	First touched down just north of Route 460 along Crumpler Toad just north of Ivor. The tornado continued north northeast, crossing adjacent Warrique Road and Aberdeen Road. The survey team found several trees uprooted along this route, with chunks of asphalt from nearby road construction found to be scattered in the field. The tornado continued north northeast into Surry County.
SURRY COUNTY	5/5/2017	EF0	0	$2,000	Uprooted several trees near and along Aberdeen Road before lifting just east of Walls Bridge Road.
JAMES CITY COUNTY	10/11/2018	EF1	0	$150,000	Touched down on the northern side of the Colonial Heritage Club just south of Norge. Tracked northwest toward Toano and downed several trees. One tree went through a house on Arthur Hill Road. A roof was blown off a house near Candle Station before the tornado lifted just to the east of Toano.
SOUTHAMPTON COUNTY	4/19/2019	EF1	0	$5,000	Tracked through Greensville County and into extreme southwest Southampton County. Tornado caused damage to several trees.
ISLE OF WIGHT COUNTY	4/19/2019	EF0	0	$15,000	Touched down near Mill Swamp Road and Wrens Mill Road in northern Isle of Wight County. The tornado tracked northward crossing King`s Landing Lane before continuing into the James River. Numerous trees, including large oak trees, were snapped or uprooted along the tornado path. One tree was downed on a house.
YORK COUNTY	4/19/2019	EF0	0	$150,000	Touched down near Colonial Parkway immediately east of the interchange with Queens Drive. The tornado tracked north northeast producing substantial tree damage, power line damage, and some home damage along Queens Drive. The tornado likely lifted north of Queens Lake.
NEWPORT NEWS	4/19/2019	EF0	0	$50,000	Likely touched down as a waterspout over Warwick River. The tornado tracked northeast through Sanford, Carriage Hill, and Denbigh. It produced mainly tree damage, particularly near Sanford Elementary, and destroyed a small shed. Tornado lifted before reaching Route 60 near Denbigh Village Center.
SUFFOLK	5/11/2019	EF1	0	$350,000	Touched down just east of Main Street in downtown Suffolk and quickly moved off to the east intersecting Route 58 twice before heading into the Great Dismal Swamp after moving through the Wilson Pines area. Numerous trees were snapped off or uprooted. At least 14 homes and 6

TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	DATE OF OCCURRENCE	MAGNITUDE	DEATHS/ INJURIES	PROPERTY DAMAGE	DETAILS
					business were damaged with shingles torn off roofs, windows blown in, an air conditioner ripped from a roof, and at least one home had the roof impaled by a tree.
CHESAPEAKE	10/31/2019	EF1	0	$35,000	EF1 touched down near Benefit Road. It moved rapidly to the east northeast, producing mainly EF0 damage with numerous trees uprooted or large branches snapped off. The most widespread and significant damage of EF1 category occurred near or along Dewald Road where several large hardwood trees were uprooted and a camper was destroyed. Some roof, shingle, and spouting damage to homes was also observed. The tornado then lifted prior to reaching Route 168.
SOUTHAMPTON COUNTY	8/4/2020	EF2	0	$8,000,000	TS Isaias - Path of storm damage consistent with an EF2 tornado. Damage began near Southampton Power Station off General Thomas Highway and ended 4 miles north of Sebrell near Farmers Bridge Road. It first touched down in a wooded area and caused numerous trees to be snapped about 6 miles southeast of Courtland. The tornado then moved northeast and into Courtland, where it caused damage to numerous homes and businesses along Highway 58, including lifting the second story roof off a hotel building. Several vehicles were also overturned. The tornado then continued to travel northeast where more trees were snapped or uprooted. The tornado finally lifted just north of Sebrell near Farmers Bridge Road.
SUFFOLK	8/4/2020	EF1	0	$4,000,000	TS Isaias - Path of storm damage consistent with an EF2 tornado. The damage began near the Southampton Power Station off General Thomas Highway and ended 4 miles north of Sebrell near Farmers Bridge Road. The tornado first touched down in a wooded area and caused numerous trees to be snapped about 6 miles southeast of Courtland. The tornado then moved northeast and into Courtland, where it caused damage to numerous homes and businesses along Highway 58, including lifting the second story roof off a hotel building. Several vehicles were also overturned. The tornado then continued to travel northeast where more trees were snapped or uprooted. The tornado finally lifted just north of Sebrell near Farmers Bridge Road.
SUFFOLK	8/4/2020	EF0	0	$10,000	TS Isaias - Damage began west of Great Dismal Swamp and ended 3.5 miles southeast of Windsor just north of Highway 460. Damage was limited to snapped or uprooted trees along the path.
JAMES CITY COUNTY	8/4/2020	EF1	0	$100,000	TS Isaias - Tornado came onshore near River Oaks Road and Cypress Isle in Governor's Land producing tree damage. It intensified to 85-90 mph near the intersection of River Oaks Road and

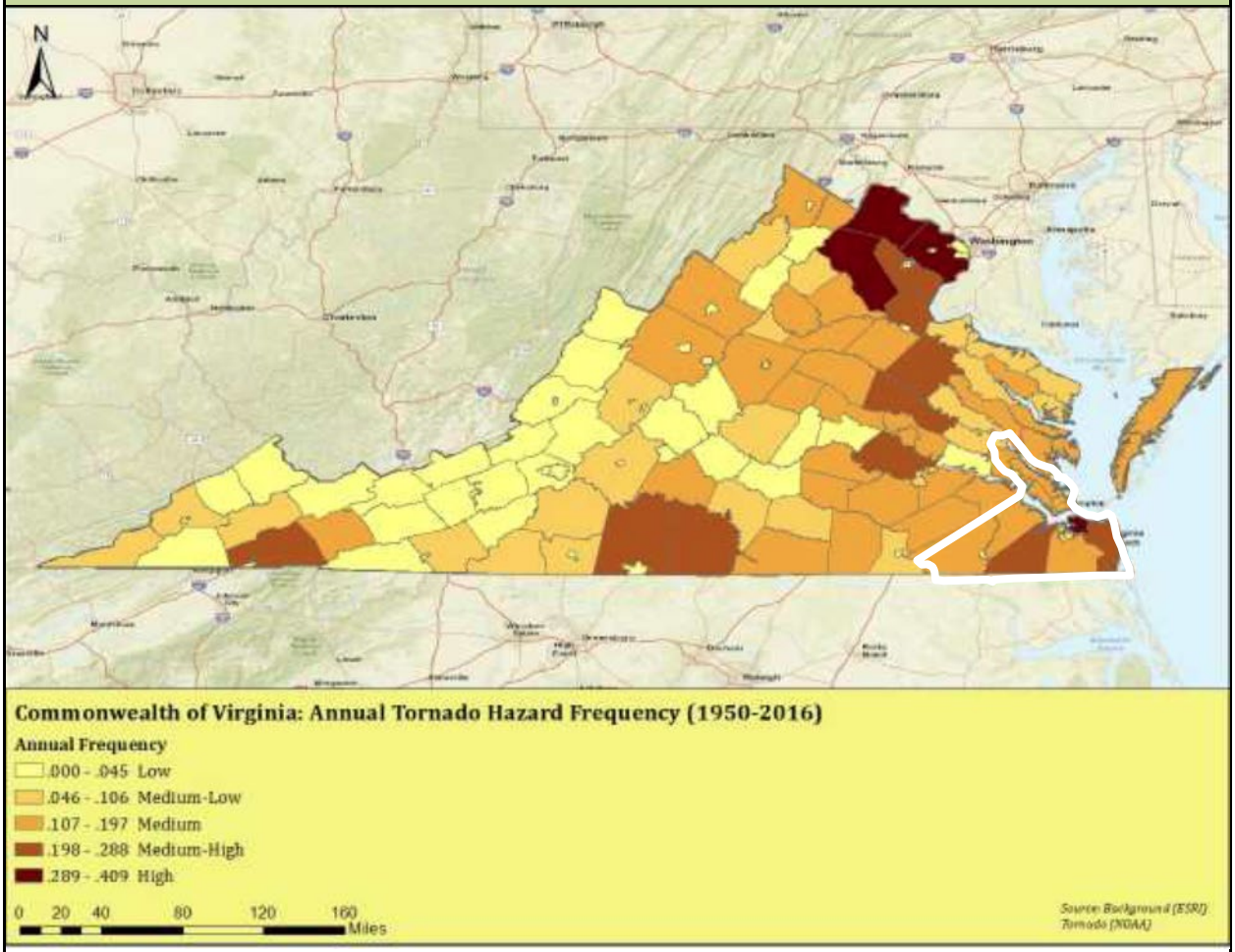
TABLE 4.11: TORNADOES IN HAMPTON ROADS, 1995 THROUGH 2021					
LOCATION	**DATE OF OCCURRENCE**	**MAGNITUDE**	**DEATHS/ INJURIES**	**PROPERTY DAMAGE**	**DETAILS**
					Barrets Pointe, where numerous trees were snapped, shingles were blown off roofs, a garage door caved in and a brick gable collapsed. The tornado continued across two fairways of the golf course and entered an area of woods, snapping trees and limbs, before lifting along River Ridge Drive.
SOUTHAMPTON COUNTY	9/29/2020	EF0	0	$50,000	The tornado touched down one half mile west of Black Creek Road. It briefly tracked to the east northeast before lifting just northwest of Burdette. The tornado snapped and uprooted several trees along Black Creek Road. Three outbuildings were damaged and a large tree fell on a home.
ISLE OF WIGHT COUNTY	9/29/2020	EF0	0	$20,000	The tornado touched down near the intersection of Five Forks Road and Blue Ridge Trail. The tornado traveled northeast for several miles before lifting near Orbit Road. The tornado snapped or uprooted numerous trees along its path and a carport was destroyed.
SUFFOLK	12/24/2020	EF1	0	$100,000	Damage began on the south side of Corinth Chapel Road and ended just west of the intersection of Corinth Chapel Road and Gates Road. Tornado caused significant damage to at least one home, uprooted and snapped off several large trees, and flipped over a large pickup truck.
SUFFOLK	12/24/2020	EF1	0	$225,000	Damage began on the south side of Dutch Road and ended along Lummis Road just north of the intersection with Box Elder Road. Tornado caused significant damage to at least six homes along Dutch Road, with shingles torn off roofs, and also damage to large trailer. Several large trees were uprooted along the damage path.
TOTAL			**0/218**	**$63.09 million**	

Source: NCEI, May 2021

PROBABILITY OF FUTURE OCCURRENCES

Figure 4.18 presents the results of a tornado frequency analysis performed as part of the *2018 Commonwealth of Virginia Hazard Mitigation Plan*. The analysis suggests that relative to the entire Commonwealth of Virginia, the region is considered to be “Medium” to “High” in terms of tornado frequency. The State plan emphasizes that historical data may contain meteorological biases that should be considered when viewing the results of the probability analysis shown in Figure 4.18. Increased population and advanced technology have likely led to the vastly higher numbers of low intensity tornadoes reported in recent decades, and more tornadoes are reported in areas of higher population because people are more likely to see and report the resultant damage. This map is also specific to Virginia, and “high frequency” in the Commonwealth is still relatively low frequency in parts of the Midwest and southern United States.

FIGURE 4.18: HISTORICAL TORNADO HAZARD FREQUENCY

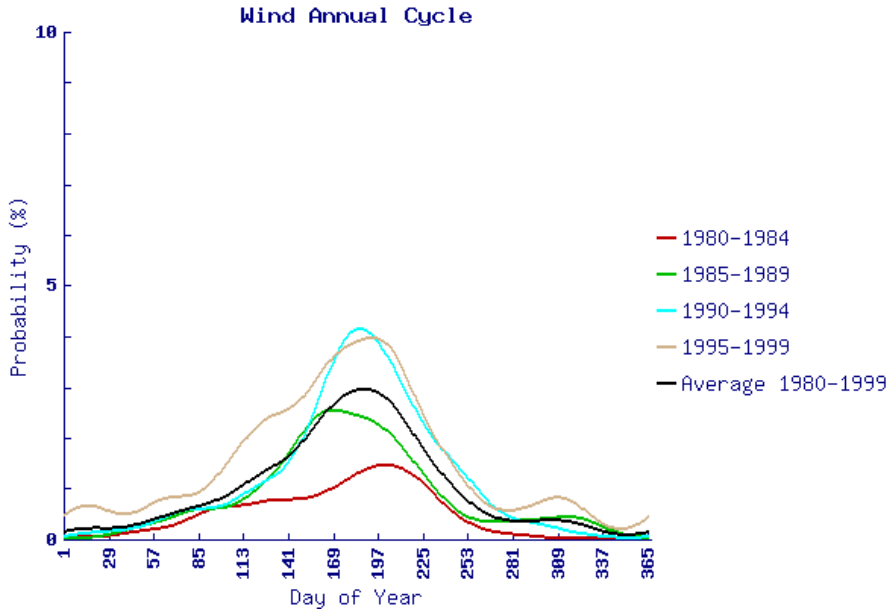


2018

Source: 2018 Commonwealth of Virginia Hazard Mitigation Plan

A tornado wind event could occur in Hampton Roads at any time of the year, but is most likely to occur from April to August, with peak probability in June, as can be seen in the Wind Annual Cycle for the region (**Figure 4.19**) below.

FIGURE 4.19: ANNUAL WIND CYCLE



Source: National Severe Storm Labs

WINTER STORMS

BACKGROUND

A winter storm can range from a moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Some winter storms may be large enough to affect several states, while others may affect only a single community. Many winter storms are accompanied by low temperatures and heavy and/or blowing snow, which can severely impair visibility.

In Hampton Roads, winter storms typically include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Sleet—raindrops that freeze into ice pellets before reaching the ground—usually bounce when hitting a surface and do not stick to objects; however, sleet can accumulate like snow and cause a hazard to motorists. Freezing rain is rain that falls onto a surface with a temperature below freezing, forming a glaze of ice. Even small accumulations of ice can cause a significant hazard, especially on roads, power lines and trees. Ice storms have also occurred in the region, when freezing rain falls and freezes immediately upon impact.

A VDOT snowplow plows I-64 East.
Source: Photo by Tom Saunders, VDOT

Communications and power in the region can be disrupted for days, and even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Perhaps one of the most common impacts of winter storms in the region is vehicle accidents and stranded, disabled vehicles. Unaccustomed to driving in snow and ice much of the year, drivers attempt to drive at normal speeds despite deteriorated road conditions. Lacking the large fleets of snowplows of some counties and municipalities further north, the region's secondary roads are not cleared as often or as quickly, and roads may remain unplowed or untreated for many days. This impacts persons with disabilities and others who may become housebound by severe winter storms. Most of the airports in the region also shut down for some time until the runways can be cleared.

Recent winter storms in the region have caused severe economic disruption with lengthy school and business closures, damage to vehicles and reduced community services for extended periods. In agricultural portions of the study area such as Southampton County, freezing temperatures may affect agricultural production, depending on when the event occurs relative to the growing periods of certain crops. Nor'easters often cause winter storms in the region, so the impacts of coastal flooding and shoreline erosion are also associated with winter storm events.

NCEI is now producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two-thirds of the United States. The RSI is a regional snowfall impact scale that uses the area of snowfall, the amount of snowfall, and the number of people living within a snowstorm. Since the index uses population information, it attempts to quantify the societal impacts of a snowstorm. RSI has been calculated for large snowstorms back to 1900 and therefore the index puts a particular event into a century scale historical perspective (**Table 4.12**). A Category 5 snowstorm is a very rare event while Category 0 and 1 snowstorms are quite typical.

TABLE 4.12: REGIONAL SNOWFALL INDEX (RSI)			
CATEGORY	**RSI RAW SCORE**	**APPROXIMATE PERCENT OF STORMS**	**DESCRIPTION**
5	>18	1%	Extreme
4	10-18	2%	Crippling
3	6-10	5%	Major
2	3-6	13%	Significant
1	1-3	25%	Notable

Source: NCEI, 2021

RSI is calculated for specific regions. Only the snowfall within a particular region is used to calculate the index for that region. The Hampton Roads study area is within the Southeast study region for the RSI. The RSI differs from other indices because it includes population, which ties the index to societal impacts. Currently, the index uses population based on the 2000 Census.

Where available, the RSI value for specific storms is provided in the History section below.

SIGNIFICANT HISTORICAL EVENTS

According to the NCEI, Hampton Roads has experienced 23 significant winter storm events including snow and ice storms, since 1995 (**Table 4.13**). These events account for $20.15 million in reported property damages for the affected areas. The region received presidential disaster declarations from major winter storms in 1996 (the Blizzard of ’96) and 2000. Some of the most significant winter storms to impact the region in the twentieth century are discussed below.

On **January 30-31, 1966**, a blizzard struck Virginia and the Northeast U.S. It was the second snowstorm to hit Virginia in a week. The first storm dumped nine inches in Norfolk. With fresh snow on the ground, arctic air settled in and temperatures dropped into the teens. The second storm dumped one to two feet of snow over a large part of the state. Intense winds and drifting snow continued and kept roads closed for several days after the storm. Temperatures dropped into the single digits with some falling below zero. Wind chill temperatures were dangerously low.

The **winter of 1976-1977** was the coldest winter on the East Coast of the past century. Storms across the state dropped a few more inches every few days to keep a fresh coating on the streets that were just clearing from the previous storms. The average temperature for the month of January in Norfolk was 29.2°F which was 12° below normal. The prolonged cold wave caused oil and natural gas shortages and President Carter asked people to turn thermostats down to conserve energy. The major elements of this winter were the cold temperatures. There was little snowfall associated with this winter in the region.

The “**Presidents Day Storm**” of February 1979 dropped seven inches on snow on Norfolk on February 18-19 and 13 inches of snow were recorded for the entire month. The following winter, 20 inches fell in Virginia Beach and a foot of snow fell in Norfolk in a storm that hit the region in February. On March 1, another foot of snow fell in Norfolk and the total snowfall amount of 41.9 inches for Norfolk was the snowiest winter ever recorded in eastern Virginia.

The “**Superstorm of March ’93**,” was also known as “**The Storm of the Century**” for the eastern United States, due to its large area of impact, all the way from Florida and Alabama through New England. Impacts in the Southside Hampton Roads region were not as severe, but this storm still caused major disruption across a large portion of the country.

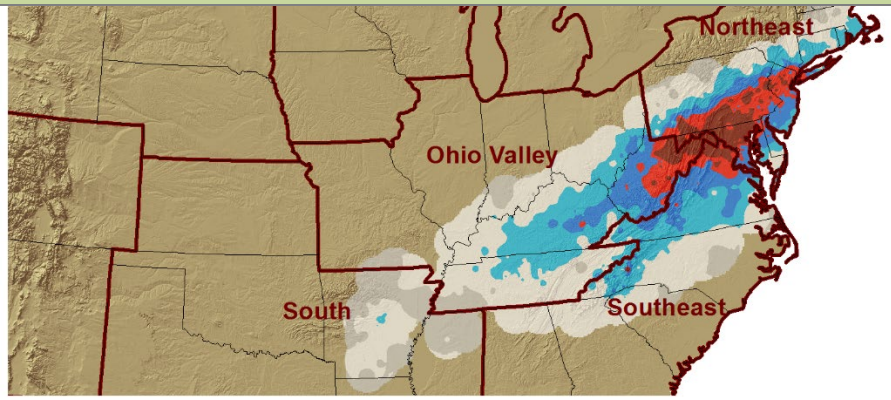
The "**1996 Blizzard**" from January 6 to January 13, 1996 affected much of the eastern seaboard. In Virginia, the winter storm left up to 36 inches of snow in portions of the state. In the Southside Hampton Roads region, most of the communities saw at least a foot of snow between January 6 and January 12.

A major ice storm at the end of **December 1998** resulted in approximately 400,000 customers being without power during the maximum outage period. Some customers were without power for about ten days during the holidays. Many accidents occurred due to slippery road conditions, especially bridges and overpasses and holiday travel. Many secondary roads were impassable due to fallen tree limbs or whole trees.

The **winter of 2010** was a memorable one for residents of Hampton Roads. The NWS winter climate data for 2010-2011 at Norfolk, indicate an average temperature of 38.9 degrees, or 3.2 degrees lower than the normal of 42.1 degrees. Total snowfall was 21.8 inches, which is remarkable when compared to the normal of 7.1 inches for an average winter. December 2010 was the 2nd-snowiest on record, at 17.8 inches, because most snow fell before January 1. There was 13.4 inches of snow for December 26, which is the fourth-biggest daily snowfall on record.[6] The December 26 winter storm created havoc on the roadways. Between midnight and 10 pm December 26, State Police recorded 421 traffic crashes, 296 disabled vehicles and 1,159 total calls for service in Hampton Roads, Eastern Shore, Williamsburg, Franklin and Emporia. The RSI ranking for the December, 2010 winter storm was a Category 2.

The **January 22-24, 2016 Winter Storm** was historic in its proportions across the northeastern United States and even in some parts of Virginia, with at least one reported death in Henry County, Virginia. From northern Virginia and into the panhandles of West Virginia and Maryland, and northeastward to the New York City area, historic amounts of snow fell, much of it blowing and drifting in the high winds. Power outages, storm damage and injuries were extreme in some areas. However, in Hampton Roads the storm's snowfall totals were merely noteworthy and not crippling, with the highest totals of 7.5 inches in James City County and 4 to 7 inches in Surry County. **Figure 4.20** shows the Regional Snowfall Index categories for the storm and how the categories varied across the various regions used in the indexing tool.

FIGURE 4.20: REGIONAL SNOWFALL INDEX, JANUARY 22-24, 2016



Region	RSI	Category
Northeast	20.138	5
Southeast	13.776	4
Ohio Valley	9.959	3
South	0.382	0

2016

Source: NOAA, 2021

Similarly, the snowstorm of **December 8-9, 2018** saw snowfall totals of almost two feet in parts of southwestern Virginia, but the accumulated snowfall in Hampton Roads ranged from virtually none in Virginia Beach and Chesapeake to 8.8 inches in Toano on the upper Virginia Peninsula.

[6] Source: *The Daily Press,* 3/11/2011, and NWS).

TABLE 4.13: WINTER STORM AND NOR'EASTER ACTIVITY (1995 - 2021)				
DATE OF OCCURRENCE	TYPE OF EVENT	PROPERTY DAMAGE	DETAILS	RSI CATEGORY
1/6/1996	Winter Storm	$25,000	No description available.	5
2/2/1996	Winter Storm	$0	A winter storm tracked northeast from the Gulf Coast states to off the Virginia coast. It spread a mixture of snow, sleet and some freezing rain from the lower Chesapeake Bay southwest into south central Virginia. Snow developed on the back side of the storm with snow accumulations across Tidewater ranging from 4 to 8 inches.	2
2/16/1996	Winter Storm	$0	A storm tracked northeast from western South Carolina Thursday night to off the North Carolina coast Friday morning. Then it moved off north and spread heavy snow across Virginia.	
3/7/1996	Winter Storm	$0	A low pressure area developed over the Carolinas and then tracked off Virginia coast. It spread light snow across central and eastern Virginia.	
12/23/1998	Ice Storm	$20,000,000	A major ice storm affected central and eastern Virginia from Wednesday into Friday. A prolonged period of freezing rain and some sleet resulted in ice accumulations of one half inch to one inch in many locations. The heavy ice accumulations on trees and power lines caused widespread power outages across the region. Approximately 400,000 customers were without power during the maximum outage period. Some customers were without power for about ten days. Many accidents occurred due to slippery road conditions, especially bridges and overpasses. Many secondary roads were impassable due to fallen tree limbs or whole trees.	
1/19/2000	Winter Storm	$0	Two to three inches of snow fell overnight as an area of low pressure passed south of the region. The highest amounts were measured along a line from Caroline county in the north, through the City of Richmond, then along the southern shore of the James River to near the Newport News area. Snow briefly fell heavily after midnight, creating hazardous driving conditions.	1
1/25/2000	Winter Storm	$70,000	A significant winter storm dropped 8 to 12 inches of snow across portions of eastern Virginia. There was blowing and drifting of snow from winds which gusted over 40 mph at times. The snow mixed with sleet and freezing rain occasionally during the late morning hours. In Isle of Wight County, strong winds pushed the Pagan River onto South Church Street. Isle of Wight County snowfall totaled 7 to 8 inches. Winds gusting over 50 mph created some blowing snow in the late afternoon and evening hours. Eighty-four automobile accidents were reported during the storm in Virginia Beach alone. Portions of Interstate 264 were closed. Moderate beach erosion was experienced, especially in the Sandbridge area. Blowing sand closed portions of Sandfiddler Road. The U.S. Coast Guard rescued four crew members of a vessel four miles west of Cape Charles when their craft was caught in dangerously rough seas.	3
12/3/2000	Winter Storm	$50,000	A winter storm struck parts of extreme southern and southeastern Virginia. The storm affected a relatively small area, but the areas that had snow received some hefty totals. Windsor reported 4 inches of snowfall. Local law enforcement agencies reported scores of accidents, several of which involved injuries. Schools were closed the following day in Suffolk, Franklin and Isle of Wight County.	

TABLE 4.13: WINTER STORM AND NOR'EASTER ACTIVITY (1995 - 2021)				
DATE OF OCCURRENCE	TYPE OF EVENT	PROPERTY DAMAGE	DETAILS	RSI CATEGORY
2/22/2001	Winter Storm	$0	A winter storm produced 1 to 4 inches of snow across south central and eastern Virginia. Local law enforcement agencies reported numerous accidents, some of which involved injuries. Many schools were dismissed early on the day of the storm, and several schools in the area were either closed or had a delayed opening the following day due to slippery road conditions.	
1/2/2002	Winter Storm	$0	A winter storm produced 8 to as much as 12 inches of snow across south central and southeast Virginia. Local law enforcement agencies reported numerous accidents. Most schools in the area were closed Thursday and Friday due to very slippery road conditions.	
12/4/2002	Winter Storm	$0	A winter storm produced 1 to 4 inches of snow along with 1/4 to 1/2 inch of ice from south central Virginia northeast through the middle peninsula and Virginia northern neck. Numerous trees and power lines were reported down due to ice accumulations, resulting in scattered power outages. Local law enforcement agencies also reported numerous accidents. Some schools in the area were closed Thursday due to slippery road conditions.	
1/16/2003	Winter Storm	$0	A winter storm produced 4 to 8 inches of snow across portions of central and eastern Virginia. Local law enforcement agencies reported numerous accidents. Most schools in the area were closed Friday due to very slippery road conditions.	
2/15/2003	Winter Storm	$0	A winter storm produced 1 to 3 inches of snow, along with sleet and 1/4 to 1/2 inch of ice accumulation, across central and eastern Virginia. Local law enforcement agencies reported numerous accidents. Most schools in the area were closed Monday due to very slippery road conditions.	3
1/9/2004	Winter Storm	$0	Two to as much as five inches of snow fell across portions of central, south central, and southeast Virginia. The snow produced very slippery roadways, which resulted in several accidents.	
1/25/2004	Winter Storm	$0	Two to as much as four inches of snow and sleet fell across portions of eastern and southeast Virginia. The snow and sleet produced very slippery roadways, which resulted in numerous accidents and school closings for a few days.	
2/15/2004	Winter Storm	$0	One to three inches of snow fell across portions of south central and southeast Virginia. The snow produced very slippery roadways, which resulted in several accidents and school closings for a few days.	
12/26/2004	Winter Storm	$0	A winter storm produced a narrow band of six to as much as fourteen inches of snow across the Virginia Eastern Shore, Hampton Roads, and interior southeast Virginia. The snow caused very hazardous driving conditions, which resulted in numerous accidents. Smithfield in Isle of Wight county reported 12 inches and Isle of Wight reported 11 inches.	
1/30/2010	Winter Storm	$0	Low pressure moving off the coastal Carolinas produced between five and fifteen inches of snow across central and eastern Virginia from Friday night, January 29th, into Saturday night January 30th.	2
12/25/2010	Winter Storm	$0	Low pressure moving north just off the Mid Atlantic Coast produced between five and sixteen inches of snow across central and eastern Virginia from Saturday afternoon, December 25th, into Sunday evening December 26th. Snowfall amounts were generally between nine and fourteen inches across the region. Chesapeake reported 13.0 inches of snow.	2

TABLE 4.13: WINTER STORM AND NOR'EASTER ACTIVITY (1995 - 2021)				
DATE OF OCCURRENCE	TYPE OF EVENT	PROPERTY DAMAGE	DETAILS	RSI CATEGORY
1/21/2014	Winter Storm	$0	Coastal low pressure intensifying off the Mid Atlantic Coast produced a widespread two to five inches of snowfall from the Virginia Piedmont to the Virginia Eastern Shore.	
1/28/2014	Winter Storm	$0	Coastal low pressure intensifying off the Mid Atlantic Coast produced widespread snowfall ranging from two to ten inches of snowfall from the Virginia Piedmont to the Virginia Eastern Shore. Highest snowfall amounts were over southeast Virginia.	1
2/16/2015	Winter Storm	$0	Low pressure moving from the Southern Plains east northeast and off the Mid Atlantic Coast produced between four inches and nine inches of snow across central, south central and eastern Virginia from Monday afternoon, February 16th through early Tuesday morning, February 17th.	1
2/26/2015	Winter Storm	$0	Intensifying low pressure tracking from the Gulf of Mexico northeast and off the southeast and Mid Atlantic coast produced between three inches and nine inches of snow across eastern and southeast Virginia from late Wednesday night, February 25th into midday Thursday, February 26th.	
1/22/2016	Winter Storm	$0	Strong Low Pressure moving from the Southeast United States northeast and off the Mid Atlantic Coast produced between two and seven inches of snow and strong winds across the Virginia Eastern Shore, Middle Peninsula, and Interior Southeast Virginia. Sedley reported 5.0 inches of snow. City of Franklin reported 5.0 inches of snow. Courtland reported 4.0 inches of snow. Lightfoot had 7.5 inches of snow.	4
1/3/2018	Winter Storm	$0	Strong low pressure tracking northward just off the East Coast produced between three inches and fourteen inches of snow across Eastern Virginia. Snowfall totals ranged between four inches and nine inches across the county. Newport News reported 7.5 inches of snow. Fort Eustis reported 5.0 inches of snow.	1
1/17/2018	Winter Storm	$0	Low pressure tracking from the southeast United States northeast and off the Mid Atlantic Coast produced between two inches and seven inches of snow across south central and southeast Virginia. Snowfall totals ranged between two inches and three inches across the county. Bowers Hill reported 3.1 inches of snow.	
12/9/2018	Winter Storm	$0	Low pressure tracking northeast just off the southeast and Mid Atlantic coasts produced snowfall totals between three inches and fourteen inches across central, south central, and eastern Virginia. Snowfall totals generally ranged between four inches and nine inches across the county. Toano reported 8.8 inches of snow. Five Forks reported 6.5 inches of snow. Norge reported 6.0 inches of snow.	3
2/20/2020	Winter Storm	$0	Low pressure tracking from the Gulf Coast States east northeast and off the Southeast Coast produced snowfall totals between two inches and five inches across south central and southeast Virginia. Snowfall totals ranged from two inches to five inches across the county. Downtown Suffolk reported 4.0 inches of snow.	
28 Events		**$20,145,000**		

Source: NCEI, May, 2021

PROBABILITY OF FUTURE OCCURRENCES

Winter storms remain a likely occurrence for the region. While storms will be more likely to produce small amounts of snow, sleet or freezing rain, larger storms, though less frequent in occurrence, could also impact the region.

Historical evidence indicates that the region has been impacted by varying degrees of snow storms and ice storms over the last century. In terms of receiving measurable snowfall, the NCEI estimates that there is between 83.3 and 89.8 percent probability that the Southside Hampton Roads region will receive measurable snowfall in any given year, **Table 4.14**.

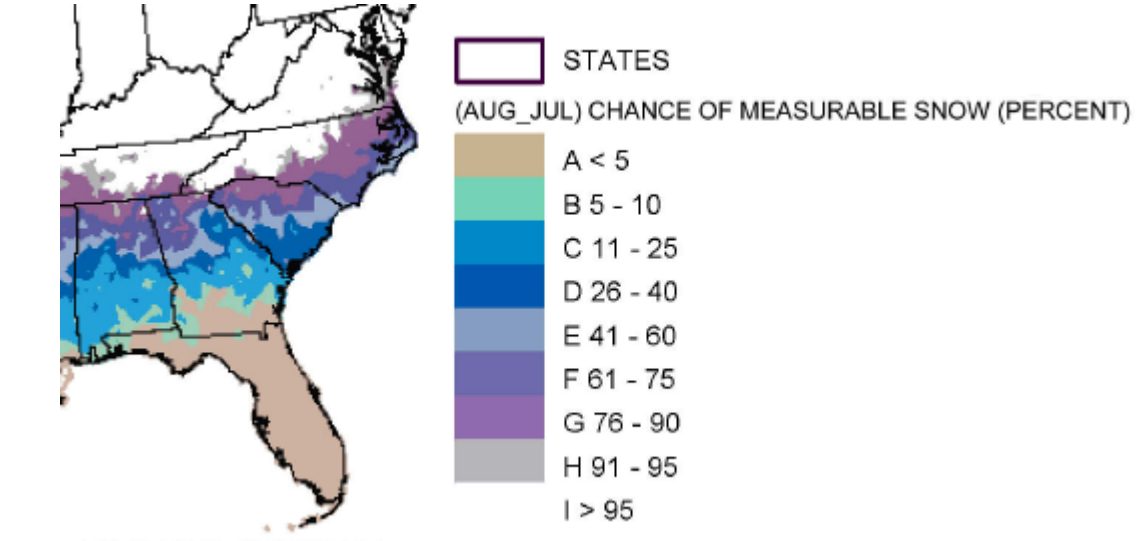
TABLE 4.14: PROBABILITY OF RECEIVING A MEASURABLE SNOWFALL

JURISDICTION	ANNUAL PROBABILITY	WINTER PROBABILITY	SPRING PROBABILITY	FALL PROBABILITY
Isle of Wight	83.3%	94.1%	25.0%	4.0%
Norfolk	89.8%	88.7%	36.4%	5.5%
Suffolk	No data	90.0%	63.6%	29.1%
Virginia Beach	84.0%	85.7%	23.5%	2.7%

Source: NOAA, (formerly) National Climatic Data Center, Snow Climatology Page, 2011

Figure 4.21 provides graphic evidence that the chance of snow annually is close to or equal to 100 percent in the rest of the study area.

FIGURE 4.21: CHANCE OF MEASURABLE SNOWFALL IN SOUTHEAST UNITED STATES (%)



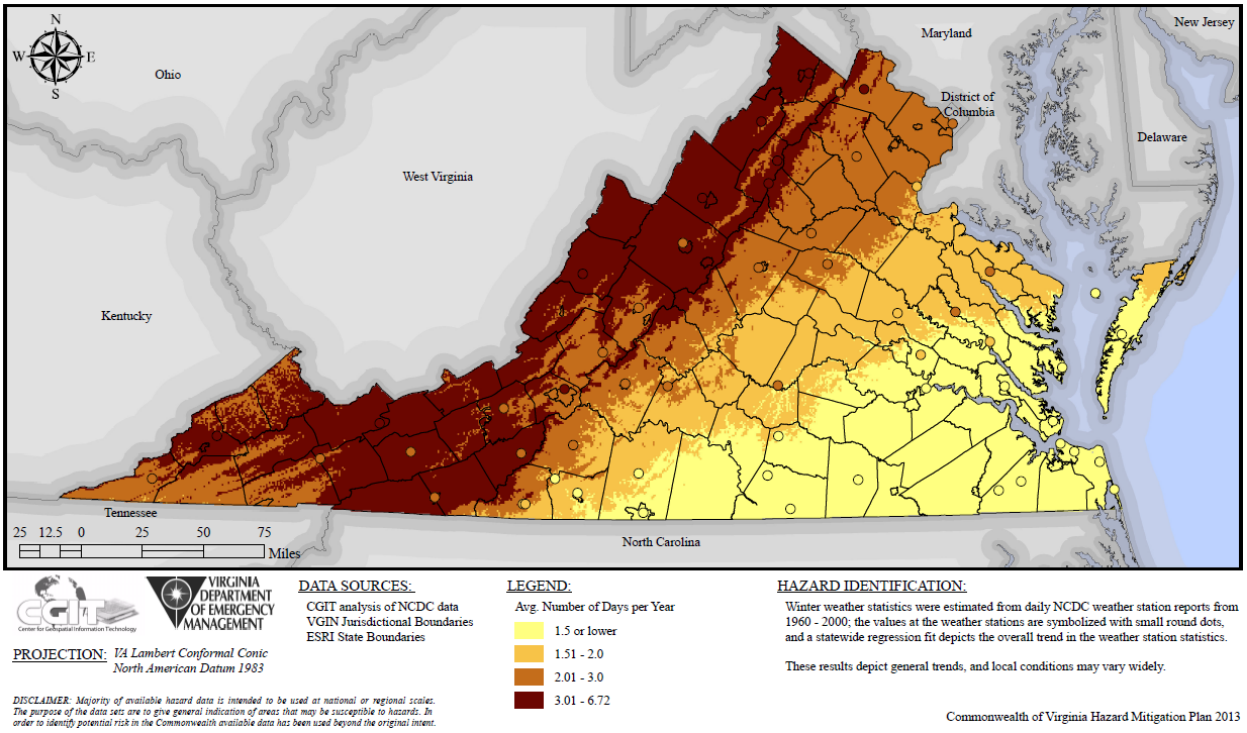
Source: NC State University, Climate Education web page: http://climate.ncsu.edu/edu/k12/.SEPrecip

Figure 4.22 indicates the average number of days the region will experience three or more days with at least three inches of snow. Data produced for the *2013 Commonwealth of Virginia Hazard Mitigation Plan* indicate the following frequency characteristics about winter storm characteristics for the region:

- 1.5 or fewer days per year with at least three inches of snow;
- 0.5 or fewer days per year with at least six inches of snow; and,

- three or fewer days per year entirely at or below 32°F.

FIGURE 4.22: AVERAGE NUMBER OF DAYS WITH AT LEAST THREE INCHES OF SNOW



2013

Source: 2013 Commonwealth of Virginia Hazard Mitigation Plan

EARTHQUAKE

An earthquake is the motion or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Naturally occurring earthquakes result from crustal strain, volcanism, landslides or the collapse of caverns but can also be triggered by mine blasts or collapse or nuclear testing. Earthquakes can affect hundreds of thousands of square miles; cause damage to property measured in the tens of billions of dollars; result in loss of life and injury to hundreds of thousands of persons; and disrupt the social and economic functioning of the affected area.

Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, site and regional geology.

Earthquakes are caused by the sudden release of accumulated energy, resulting in the rupture of rocks along fault planes in the Earth's lithosphere. The areas of greatest tectonic activity occur at the boundaries of the Earth's slowly moving tectonic plates, as these locations are subjected to the greatest strain from plates traveling in various directions and speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength, a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake.

Impacts from earthquakes can be severe and cause significant damage. Ground shaking can lead to the collapse of buildings and bridges, and disrupt utilities and critical lifelines. Death, injuries, and extensive property damage are possible from earthquakes. Some secondary hazards caused by earthquakes may include fire, hazardous material release, landslides, flash flooding, avalanches, tsunamis, and dam failure.

Smaller earthquakes occur much more frequently than larger earthquakes. These smaller earthquakes are generally not felt by people and cause little or no damage. Very large earthquakes can cause tremendous damage and may be followed by a series of aftershocks occurring in the region for weeks after the event. Aftershocks generally have a smaller magnitude than the main shock, but may still be powerful enough to cause additional damage.

Earthquakes are measured in terms of their magnitude or intensity. Magnitude is the amount of energy that is released by an earthquake. There are a number of ways that magnitude can be measured but probably the most familiar is the Richter scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of seismic wave amplitude (see **Table 4.15**). Each unit increase in magnitude on the Richter scale corresponds to a 10-fold increase in wave amplitude, or a 32-fold increase in energy. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. The scale levels are typically described using Roman numerals, with a I corresponding to imperceptible (instrumental) events, IV corresponding to moderate (felt by people awake), to XII for catastrophic (total destruction).

Even though the original calculations developed by Richter to estimate earthquake magnitude have gone out of favor, newer formulae still retain the familiar Richter reporting methodology as shown in **Table 4.15**. Currently, the moment magnitude scale (MMS) is the primary reporting method used by the U.S. Geological Survey.[7]

[7] Source: https://energy.virginia.gov/geology/Earthquakes.shtml&sa=D&source=docs&ust=1641771610295397&usg=AOvVaw1u1SLzk6WWF7rtbguUKSjV

TABLE 4.15: RICHTER SCALE	
RICHTER MAGNITUDES	**EARTHQUAKE EFFECTS**
Less than 3.5	Generally not felt, but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0-7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: United States Geological Survey

The effect of an earthquake on people and structures on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally, total destruction. Although numerous intensity scales have been developed in the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli Intensity Scale. It was developed in 1931 by American seismologists Harry Wood and Frank Neumann. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals as shown in **Table 4.16**. The scale does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects.[8] The lower numbers of the intensity scale indicate the manner in which people perceive the earthquake. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

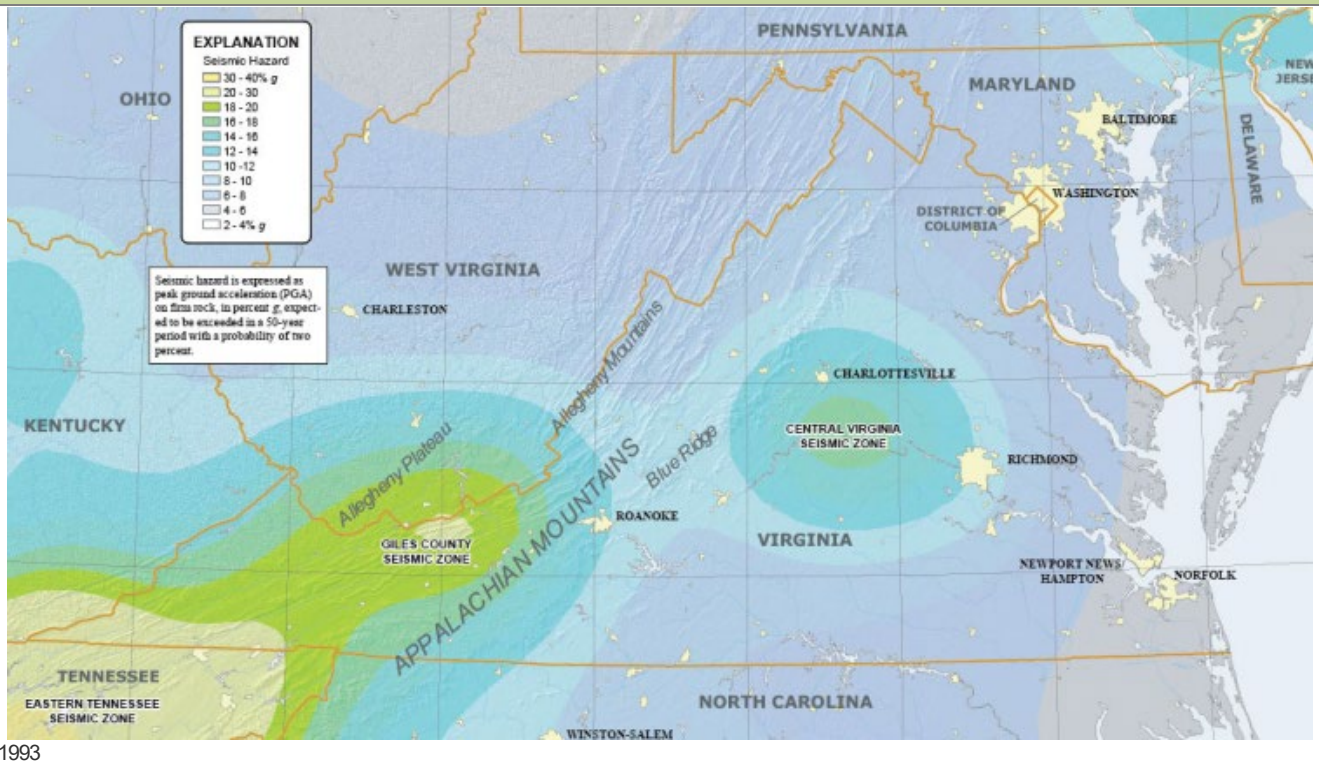
[8] Source: USGS online at: www.usgs.gov/natural-hazards/earthquake-hazards/science/modified-mercalli-intensity-scale?qt-science_center_objects=0#qt-science_center_objects

TABLE 4.16: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES			
SCALE	**INTENSITY**	**DESCRIPTION OF EFFECTS**	**CORRESPONDING RICHTER SCALE MAGNITUDE**
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	<4.2
III	Slight	Felt by people resting; like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves	<5.4
VII	Very Strong	Mild Alarm; walls crack; plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>8.1

Source: United States Geological Survey

Hampton Roads is in an area that could feel the effects of earthquakes in the Central Virginia Seismic Zone (see **Figure 4.23**), an area of frequent, yet very weak, earthquake activity located to the southwest of Charlottesville, at the New Madrid Fault in Missouri and at the Charleston Fault in South Carolina. During the last 200 years, both the New Madrid Fault and the Charleston Fault have generated earthquakes measuring greater than 8 on the Richter scale.

FIGURE 4.23: CENTRAL VIRGINIA SEISMIC ZONE



1993

Source: USGS

Earthquakes in the central and eastern U.S., although less frequent than in the western U.S., are typically felt over a much broader region. East of the Rockies, an earthquake can be felt over an area as much as ten times larger than a similar magnitude earthquake on the west coast. A magnitude 4.0 eastern U.S. earthquake typically can be felt at many places as far as 60 miles from where it occurred, and it infrequently causes damage near its source.[9] A magnitude 5.5 eastern U.S. earthquake usually can be felt as far as 300 miles from where it occurred, and sometimes causes damage out to 25 miles.

Earthquakes everywhere occur on faults within bedrock, usually several miles deep. Most bedrock beneath central Virginia was assembled as continents collided to form a supercontinent about 500-300 million years ago, raising the Appalachian Mountains. Most of the rest of the bedrock formed when the supercontinent rifted apart about 200 million years ago to form what are now the northeastern U.S., the Atlantic Ocean, and Europe.[10]

At well-studied plate boundaries like the San Andreas fault system in California, often scientists can determine the name of the specific fault that is responsible for an earthquake. In contrast, east of the Rocky Mountains this is rarely the case. The Central Virginia Seismic Zone is far from the nearest plate boundaries, which are in the center of the Atlantic Ocean. The seismic zone is laced with known faults but numerous smaller or deeply buried faults remain undetected. Even the known faults are poorly located at earthquake depths. Accordingly, few, if any, earthquakes in the seismic zone can be linked to named faults. It is difficult to determine if a known fault is still active and could slip and cause an earthquake. As in most other areas

[9] Source: www.magma.geos.vt.edu/vtso/cvsz.html
[10] Source: www.magma.geos.vt.edu/vtso/cvsz.html

east of the Rockies, the best guide to earthquake hazards in the seismic zone is the earthquakes themselves.[11]

Earthquake activity in Virginia has generally been, with a few exceptions, low-magnitude but persistent. The first documented earthquake in Virginia took place in 1774 near Petersburg.[12] Historical data is supportive of the low risk assessment. Since 1774, there have been only three confirmed earthquake epicenters within 65 miles of Hampton Roads, one on the Delmarva Peninsula and two in the Hampton Roads area. Only minor structural damage as a result of these earthquakes has been reported in the region. Impacts of a severe, unlikely earthquake centered in Hampton Roads are unknown based on the historical record, but could be generalized from damage experienced in Louisa County during the August 2011 quake described below. Damage to local structures would likely be severe because buildings in the region are not typically designed to withstand high magnitude quakes. Underground infrastructure damage is also expected to be severe and could cause long-term power, water and sewer service interruptions in the region. Likewise, damage to bridges, tunnels and roads could disrupt transportation routes for much of the population.

On Tuesday afternoon, August 23, 2011, an earthquake with a moment magnitude of 5.8 occurred about 7 miles southwest of Mineral, Virginia, which is near Lake Anna in Louisa County. The earthquake was widely felt, with felt reports received from people as far away as Detroit, Atlanta, Boston, Toronto, and Montreal. Dozens of aftershocks up to magnitude 4.5 have been recorded, including a magnitude 4.2 aftershock approximately six hours after the main shock and a magnitude 4.5 aftershock about a day and a half later. The *Washington Post* reported that the two Dominion Virginia Power nuclear plants in North Anna, Va., 10 miles from the epicenter, shut down automatically when the quake hit. They lost power from the grid and switched to four diesel generators. Damage was greatest in Louisa County and several minor injuries occurred. Structural damage to buildings was significant in cities throughout central and eastern Virginia and Washington D.C., including damage to the Washington Monument and the Washington National Cathedral. Officials at Fort Monroe, in Hampton, Virginia, also reported some minor structural damage as a result of the quake.

The *Daily Press* and *Virginian-Pilot* newspapers reported a minor, but relatively rare, earthquake with its epicenter on the Peninsula August 3, 1995. According to the *Virginian-Pilot*, the quake measured 2.6 on the Richter scale. The Virginia Tech Seismological Observatory detected the quake with instrumentation in Goochland County west of Richmond, and in Blacksburg. The quake was centered under the York River near York River State Park. According to the *Daily Press*, people at Camp Peary in York County reported feeling the quake.

The Virginia Tech Seismological Observatory provides additional information on more recent events in Virginia, including a magnitude 4.0 shock that occurred on August 17, 1984. The epicenter was approximately 15 miles to the southeast of Charlottesville. The quake was felt from Washington, DC to the North Carolina border and from Staunton to Norfolk.

A magnitude 3.2 earthquake occurred Saturday, September 22, 2001, with the epicenter near Shadwell, just east of Charlottesville. The focal depth was within a few kilometers of the surface, and this produced a strong acoustic signal that local officials attributed to an aircraft in transonic flight. In fact, such explosive sounds are frequently associated with shallow earthquakes in eastern North America. Unlike the situation in California, the rocks in the upper few kilometers of the Earth's crust in the east are extremely efficient transmitters of high frequency seismic energy, and a proportion of this energy is converted to ordinary sound waves when the seismic waves reach the Earth's surface.

The USGS Earthquake Mapping Tool, online at https://earthquake.usgs177.gov/earthquakes/, does not indicate or show any earthquakes since 1774 with epicenters in the Hampton Roads area.

[11] Source: www.magma.geos.vt.edu/vtso/cvsz.html
[12] Source: www.energy.virginia.gov/geology/Earthquakes.shtml

Earthquakes of significant magnitude are unlikely occurrences for Hampton Roads, though the proximity of the region to the Charleston Fault could increase the possibility of feeling some impact of a large earthquake if it were to occur along that fault line.

WILDFIRES

BACKGROUND

A wildfire is any fire occurring in a wildland area (i.e., grassland, forest, brush land) except for fire under prescription.[13] Wildfires are part of the natural management of the Earth's ecosystems, but may also be caused by natural or human factors. Over 80% of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning.

There are three classes of wildland fires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildland fires are usually signaled by dense smoke that fills the area for miles around.

A 2008 fire sparked by logging equipment in the Great Dismal Swamp National Wildlife Refuge lasted 121 days and cost more than $10 million. It was the longest and most expensive wildfire in Virginia history.
Photo Source: U.S. Fish and Wildlife Service

Fire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural disasters (such as hurricanes, tornadoes and lightning) increase the probability of wildfires by producing fuel in both urban and rural settings. Forest damage from hurricanes and tornadoes may block interior access roads and fire breaks, pull down overhead power lines, or damage pavement and underground utilities.

The impacts of wildfire in the Hampton Roads region are both economic and environmental. From an economic perspective, fires destroy most homes, businesses and infrastructure in their path. The population displacement and subsequent rebuilding consumes valuable resources of private and public entities. Communities in the region spend significant capital funds both fighting wildfires and training staff, and preparing equipment and infrastructure to fight wildfire. Wildfire also endangers the lives and safety of firefighters and citizens. Loss of life is a possible impact of severe wildfire in the region, although the lack of mountainous terrain makes escape somewhat easier.

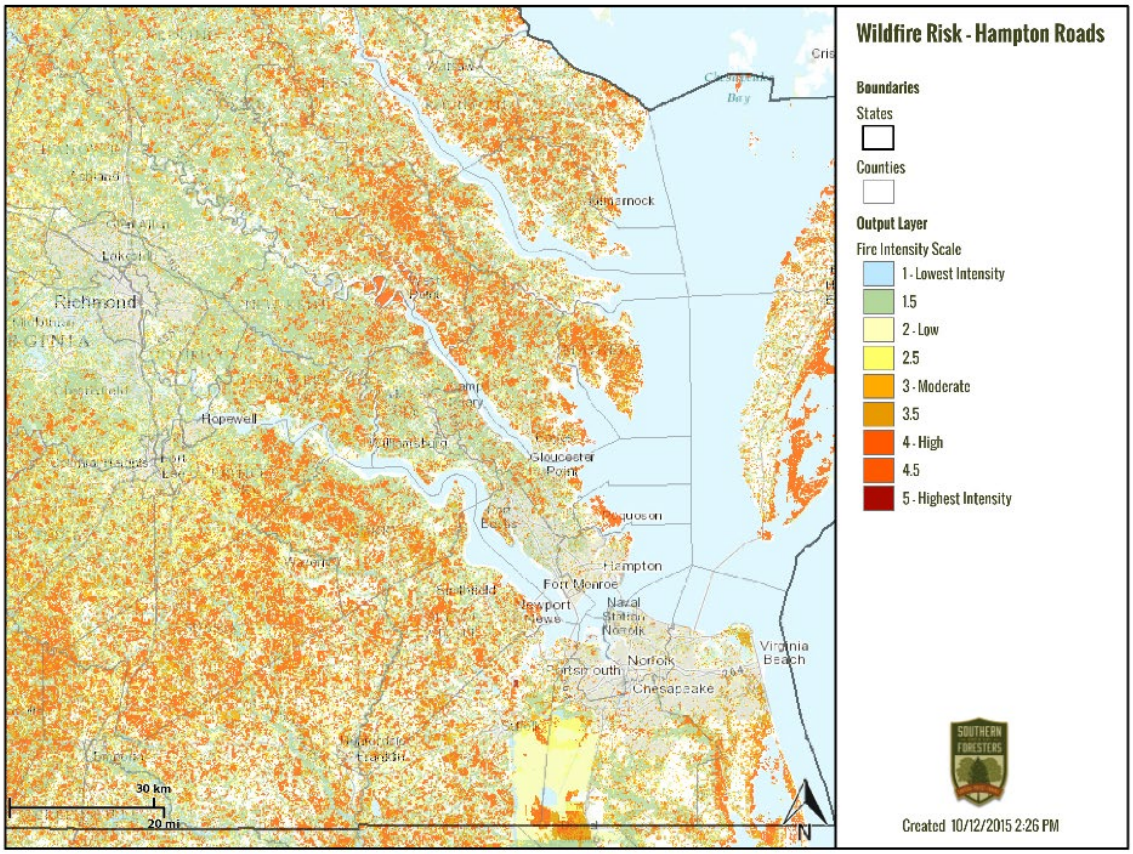
The region's air, water and soil environments are all altered by wildfire, and even wildfire in adjacent regions. Dense smoke and the fine particles and gases inside the smoke pose a risk to human health. Smoke irritates the eyes and respiratory system and can cause bronchitis or aggravate heart or lung disease even for residents hundreds of miles downwind. Wildfires raise the temperature of forest soils and potentially wipe away organic value of the soil. And although soils do eventually recover, the impact on watersheds in the interim can be detrimental to the region's water bodies. Burned organic matter in soils may negatively affect infiltration and percolation making soil surfaces water repellant. If water is unable to infiltrate, runoff quantity increases and infiltration to groundwater decreases. Both of these factors may negatively impact water quality downstream.

[13] Prescription burning, or "controlled burn," undertaken by land management agencies is the process of igniting fires under selected conditions, in accordance with strict parameters.

LOCATION AND SPATIAL EXTENT

In July 2003, the Virginia Department of Forestry (VDOF) released a GIS-based wildfire risk assessment for the Commonwealth of Virginia. The data are now part of the Southern Foresters web site at www.southernwildfirerisk.com that serves as a portal for data from several southern states. While this assessment of wildfire risk is not recommended for site-specific determinations of wildfire vulnerability, the data were used in this plan as an indicator of general hazard exposure within the region, as shown in **Figure 4.24**. Risk assessment designation involved several inputs, including slope, aspect, land cover, distance to railroads, distance to roads, population density, and historical fire occurrence. Potential wildfire risk areas are presented in two categories indicating the relative level of threat to the area as high or moderate. Areas without a high or moderate designation are considered to be at low risk of wildfire.

FIGURE 4.24: WILDFIRE THREAT



Source: Southern Foresters, 2013

Aerial imagery indicates that the areas classified as high wildfire threat are lightly developed wooded areas, including some marshland and other forms of undeveloped land. The moderate wildfire threat areas include both undeveloped and developed land.

SIGNIFICANT HISTORICAL EVENTS

According to VDOF records, the agency responded to 190 events between 2010 and 2020, the most recent year for which data were available. These data were compiled from completed VDOF fire reports, and do not reflect every brush and woods fire occurrence in the region for this time period. Many more fires are likely to have occurred during this timeframe that local fire departments responded to and were able to contain quickly and efficiently. Because the documented events required state-level assistance from VDOF, they are considered significant events for the purposes of this plan. Only minor property damages have been recorded as resulting from wildfire events. **Table 4.17** shows damages from wildfire events in the region between 2002 and 2020. In the period between 2010 and 2020, the fire that caused the most property damage occurred on July 9, 2018 in Southampton County as a result of equipment malfunction. Damages totaled $250,000, but only .5 acre was burned. In that same time period, there were six wildfires that burned 50 acres or more and property damages from those fires combined totaled just $50,250. Sixteen wildfires in that time period were caused by lightning.

TABLE 4.17: HAMPTON ROADS WILDFIRE OCCURRENCES (2002-2020)

YEAR	FREQUENCY	ACRES DAMAGED	COST OF DAMAGE ($)	VALUE OF RESOURCES PROTECTED ($)
2002	72	592	$89,800	$4,718,200
2003	9	42	$1,600	$0
2004	19	26	$50	$500,000
2005	19	130	$750	$1,370,000
2006	41	298	$69,950	$7,315,000
2007	40	188	$600	$1,950,000
2008	31	141	$500	$0
2009	12	47	not provided	not provided
2010	40	381	$33,450	not provided
2011	18	199	$11,000	not provided
2012	12	91	$9,200	not provided
2013	13	31	$15,900	not provided
2014	17	61	$1,200	not provided
2015	18	146	$49,900	not provided
2016	10	78	$1,700	not provided
2017	21	60	$34,100	not provided
2018	19	149	$278,950	not provided
2019	10	21	$60,600	not provided
2020	12	77	$4,300	not provided
TOTALS	**433**	**2758**	**$663,550**	**n/a**

Source: VDOF, 2021

GREAT DISMAL SWAMP FIRE THREAT AND HISTORY

On the western edge of the City of Chesapeake's border lies the Great Dismal Swamp Wildlife Refuge, 111,000 acres of complete uninterrupted wilderness and swamp owned and managed by the U.S. Fish and Wildlife Service. While the City has very limited development in close proximity to the Refuge borders and does not actively manage fire or fire threats on federal lands, there are several unique factors which could present a large wildfire risk to the cities of Chesapeake and Suffolk:

- Limited road access means many thousands of acres are completely inaccessible for normal fire apparatuses. Most of the refuge is only accessible by canal.
- Dangerous soil conditions for fires. The soils within the refuge are primarily peat soils. Peat forms when plant material, usually in marshy areas, is inhibited from decaying fully by acidic and anaerobic conditions. Peat has high carbon content and can burn under low moisture conditions.

Once ignited by the presence of a heat source (e.g., a wildfire penetrating the subsurface), it smolders. These smoldering fires can burn undetected for very long periods of time (months, years and even centuries), propagating in a creeping fashion through the underground peat layer.

In 1923 a lightning strike within the Refuge ignited a fire that burn uncontrolled for three years. This fire became known as "The Great Conflagration" and burned over 150 square miles of the refuge. Yellow peat smoke filled the air around Hampton, Newport News, and Norfolk during this period. Since the mid-1940s, fire prevention and suppression techniques have reduced both the number and magnitude of fires within the refuge and adjacent areas. However, several notable fires during this period are summarized in **Table 4.18**.

On August 4, 2011, lighting struck and ignited much of the dead trees and brush that remained from the 2008 fire. Aided by a drought that had dried plants and the soil, the Lateral West fire steadily grew. This fire produced dense smoke as the peat soil burned (**Figure 4.25**). Shortly after the fire started, Hurricane Irene dumped 12 inches of rain in 24 hours, but that did not put out the fire which burned for another two and a half months.

FIGURE 4.25: GREAT DISMAL SWAMP LATERAL WEST FIRE, 2011

Source: NASA Satellite, 2011

An active fire management program is housed on the refuge. Seasonal activities include the planning and implementation of controlled burns, and wildfire suppression. The zone program conducts burns nine months a year, and averages 35 burn days a year. Burns are conducted in a wide range of habitat types, including marsh, grasslands, pocosins, and upland pine and hardwood forest.

TABLE 4.18: GREAT DISMAL SWAMP NOTABLE FIRES	
YEAR/FIRE NAME	**BRIEF DESCRIPTION**
1923-1926 Great Conflagration	Consumed nearly 100,000 acres; it was sparked by logging debris. (*Virginian Pilot* online)
1955 Easter Sunday Fire	Started along the railroad within the northern part of the current refuge and burned nearly 150 square miles, reaching the Portsmouth city line.
1967 South of Feeder Ditch	Someone burning debris ignited this fire that burned 1,350 acres.
1988 April Fools Fire	Escaped prescribed fire burned 640 acres along the state boundary south of Lake Drummond.
1993 Clay Hill Road Fire	Lightning caused fire that burned 150 acres of pine stands near the refuge's western boundary in Suffolk.
1993 Portsmouth Ditch Fire	Fire of unknown origin burned 75 acres adjacent the refuge in Chesapeake.
2004 Corapeake Road Fire	Lightning caused fire started on NC State Natural Area land and spilled over onto the refuge burning 286 acres.
2006 West Drummond Fire	Lightning strike caused fire that burned 535 acres of maple/gum stand north of Interior Ditch.
2008 South One Fire	The South One Fire was started when logging equipment working in fallen Atlantic White Cedar and logging slash caught fire. The fire grew to 4,884 acres before being contained three months later. The fire burned through slash on the surface of the ground and crept deep into the organic peat soils where it continued to smolder and spread ultimately igniting additional vegetation on the surface. The fire cost more than 10 million dollars to suppress.
2011 Lateral West Fire	Largest fire in recent history sparked by lightning on August 4. Burned for 111 days and consumed 6,300 acres.

Source: U.S. Fish & Wildlife Service, 2014

The 2008 South One Fire burns in the distance. Photo source: Salter's Creek Consulting, Inc.

Today, lightning is the cause of most wildfires at Great Dismal Swamp National Wildlife Refuge. A typical summer afternoon thunderstorm can often result in hundreds of lightning strikes on the refuge. Most of the time, the strikes do not create a wildfire, but surface and ground fires occur on average 2.6 times each year. In the spring, early season lightning events provide the best chance for large fire growth under dry, windy conditions. In the summer months, more frequent lightning brings more starts, but less chance of large fire growth due to higher humidity and greenness of vegetation.

PROBABILITY OF FUTURE OCCURRENCES

Wildfires remain a highly likely occurrence for the region, though most will likely continue to occur in less urban areas and be small in size before being contained and suppressed. Wildfire at Great Dismal Swamp National Wildlife Refuge is similarly a highly likely occurrence.

DROUGHT

BACKGROUND

Drought is a natural climatic condition caused by an extended period of limited rainfall beyond that which occurs naturally in a broad geographic area. High temperatures, high winds and low humidity can worsen drought conditions, and make areas more susceptible to wildfire. Human demands and actions can also hasten drought-related impacts.

A USGS streamflow gaging station at the Ogeechee River near Eden, Georgia in July 2000 illustrates the drought conditions that can severely affect water supplies, agriculture, stream water quality, recreation, navigation and forest resources.

Photo source: USGS

Droughts are frequently classified as one of the following four types: meteorological, agricultural, hydrological or socio-economic. Meteorological droughts are typically defined by the level of "dryness" when compared to an average or normal amount of precipitation over a given period of time. Agricultural droughts relate common characteristics of drought to their specific agricultural-related impacts. Emphasis tends to be placed on factors such as soil water deficits, water needs based on differing stages of crop development, and water reservoir levels. Hydrological drought is directly related to the effect of precipitation shortfalls on surface and groundwater supplies. Human factors, particularly changes in land use, can alter the hydrologic characteristics of a basin. Socio-economic drought is the result of water shortages that limit the ability to supply water-dependent products in the marketplace.

In Hampton Roads, droughts can have economic, environmental and social impacts. Economic impacts include loss of income for farmers dependent on crop harvests, especially in the western portion of the region, irrigation costs for farms and gardens, higher costs of feed and water for farm animals, and impacts to farm supply businesses such as tractor sales. Wildfire resulting from drought can impact timberland. Water utilities may have additional costs to treat and provide limited water supplies, and food prices in general may be driven higher. Environmental impacts in the region may include loss or destruction of fish and wildlife habitat, and lack of food or drinking water for wild animals and resultant disease in those populations, migration of wildlife, and poor soil quality which may lead to soil erosion. Social impacts may result from changes in lifestyle associated with chronic drought and associated water restrictions. Severe drought often causes anxiety or depression about economic effects of drought in farming communities, health problems related to poor water quality and fewer recreational activities if drought continues and water supplies are curtailed.

The drought severity classification table (**Table 4.19**), shows the ranges for Palmer Drought Severity Index (PDSI) for each dryness level. Other indicators are also used, such as USGS weekly streamflow data and a standardized precipitation index. Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months.

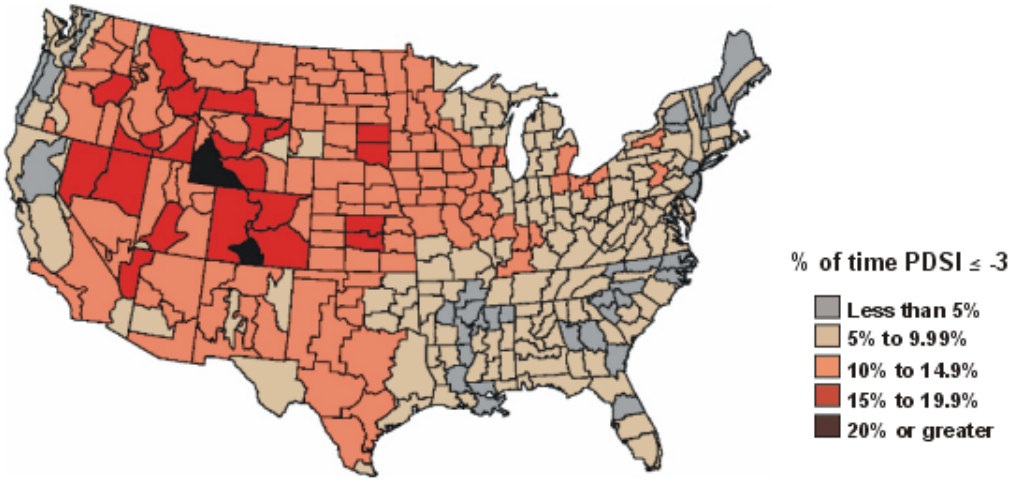
TABLE 4.19: DROUGHT CLASSIFICATION

Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)
D0	Abnormally Dry	Going into drought: • short-term dryness slowing planting, growth of crops or pastures Coming out of drought: • some lingering water deficits • pastures or crops not fully recovered	-1.0 to -1.9
D1	Moderate Drought	• Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested	-2.0 to -2.9
D2	Severe Drought	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed	-3.0 to -3.9
D3	Extreme Drought	• Major crop/pasture losses • Widespread water shortages or restrictions	-4.0 to -4.9
D4	Exceptional Drought	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less

Source: National Drought Mitigation Center

Figure 4.26 shows the PDSI summary map for the United States from 1895 to 1995. PDSI drought classifications are based on observed drought conditions and range from -0.5 (incipient dry spell) to -4.0 (extreme drought). As can be seen, the Eastern United States has historically not seen as many significant long-term droughts as the Central and Western regions of the country.

FIGURE 4.26: PALMER DROUGHT SEVERITY INDEX, 1895-1995, PERCENT OF TIME IN SEVERE AND EXTREME DROUGHT



Source: National Drought Mitigation Center

LOCATION AND SPATIAL EXTENT

Drought typically impacts a large area that cannot be confined to geographic boundaries; however, some regions of the United States are more susceptible to drought conditions than others. According to Figure 4.26, Virginia is in a zone representing 5 percent to 9.99 percent of the time with PDSI less than or equal to -3 (-3 indicating severe drought conditions), meaning that drought conditions are a relatively low to moderate risk for the Hampton Roads region. The region would be uniformly exposed to this hazard and the spatial extent of that impact could potentially be large. However, drought conditions typically do not cause significant damage to the built environment. Agricultural areas in Chesapeake, Isle of Wight County, James City County, York County and Southampton County are more likely to be impacted by drought, especially in the early stages. As water restrictions are put in place as a result of acute water shortages, impacts on urban consumers increase (use restrictions, drinking water supply effects and saltwater intrusion).

SIGNIFICANT HISTORICAL EVENTS

The drought of record for Virginia occurred in 1931 when the statewide average rainfall amount was 7.64 inches compared to an average mean rainfall amount of 17.89. This was during this period that also saw the Great Dust Bowl that helped lead to the Great Depression.

Since 1993, the NCEI has recorded only 2 instances of drought to impact the Southside Hampton Roads region (**Table 4.20**). Though instances are recorded on a monthly basis by the NCEI, events are usually part of ongoing drought conditions that last several months or years.

TABLE 4.20: OCCURRENCES OF DROUGHT, 1993 THROUGH 2016

LOCATION	DATE OF OCCURRENCE	DETAILS
17 jurisdictions, including Isle of Wight	10/31/1993	Unusually dry weather during the summer and early fall led to many communities in southeastern Virginia to place water conservation measures into effect in October 1993.
20 jurisdictions, including Isle of Wight, James City County, Williamsburg, and Suffolk	9/1/1997	A very dry period from May through September resulted in drought-like conditions across much of central and eastern Virginia. Monthly rainfall departures from normal for Norfolk included: -2.21 inches in May, -2.73 inches in June, -3.05 inches in August, and -1.93 inches in September. This caused significant crop damage throughout much of the area which was estimated to be around $63.8 million. Damages reported in the study area were $9.2 million.
Hampton Roads	10/1/2000	Although not technically a drought, much of eastern Virginia experienced extremely dry conditions during the month of October. Norfolk International Airport also received only .01 inches of precipitation during the month. This was the driest month ever recorded at Norfolk. A very wet summer prevented a more hazardous fire situation than would normally be experienced under such dry conditions. However, several small brush fires were reported over the region. Crops also were able to withstand the lack of rainfall due to a very wet summertime. No damages reported.

Source: NCEI

In addition to this official drought record, periods of drought-like conditions are also known to have impacted the region in 1997, 2002, 2003, 2005, 2007, 2008, and 2010. Water restrictions have been put into place as far back as 1997 and shallow wells have lost water in the region. Additional historical accounts were available for the most recent droughts in 2002, 2007, 2008 and 2010.

August, 2002: Drought

During the summer of 2002, Virginia experienced significant drought impacts due to precipitation deficits that dated to 1999 in most areas of the Commonwealth. While this drought did not reach the level of severity of the drought of record (1930-1932), increases in water demands when compared to the 1930's resulted in significant impacts to all sectors of Virginia's economy and society. The intensity of these drought impacts peaked in late August 2002. Wildfire indices were at levels previously unrecorded in Virginia, the vast majority of Virginia agricultural counties had applied for Federal drought disaster designation, stream flows reached periods of record lows, and thousands of individual private wells failed. During the third week of August several public water supply systems across the Commonwealth were on the brink of failure. Several large municipal systems, such as Charlottesville and Portsmouth, had less than sixty days of water supply capacity remaining in reservoirs. Several smaller rural systems that rely primarily on withdrawals from free-flowing streams, such as the towns of Farmville and Orange, had at most a few days of water supply available and were forced to severely curtail usage.

According to Commonwealth of Virginia records, a declaration of a State of Emergency Due to Extreme Drought Conditions was executed by the Governor of Virginia on August 30, 2002. The Executive Order was to be effective from August 30, 2002 through June 30, 2003. The 2002 drought resulted in several changes to the way Virginia predicts and responds to drought. In 2005, Isle of Wight County sought federal disaster drought aid because of drought conditions effecting crop production.

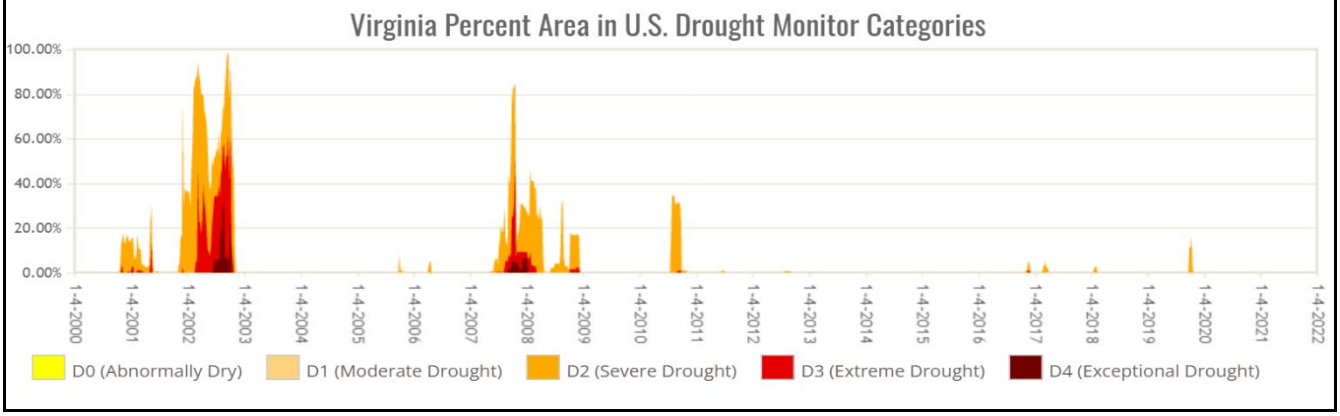
September, 2007: Drought
A statewide drought in late summer, early fall 2007 came very close to setting a 130-year statewide low precipitation record. Late October rainfall was helpful, but impacts to livestock, peanuts, hay and cotton were experienced and many crop insurance claims were made in Southeast Virginia.

Summer, 2008: Hydrologic Drought
Low stream flow in summer 2008 resulted in severe hydrologic drought.

Summer, 2010: Drought
Below average rainfall across much of the state resulted in 67 localities requesting the Governor's assistance in obtaining a Federal disaster designation due to drought. Crop yields were well below average with particular emphasis on corn and soybeans.

Figure 4.27 provides a time series of U.S. Drought Monitor Categories since 2000 for the Commonwealth of Virginia, highlighting times when Virginia was in Extreme, Severe or Exceptional drought categories.

FIGURE 4.27: VIRGINIA DROUGHT HISTORY, 2000 - 2021



Source: National Drought Mitigation Center, 2021

PROBABILITY OF FUTURE OCCURRENCES

Based on current and seasonal outlook drought maps available through the National Drought Mitigation Center, Hampton Roads is not currently in an area of abnormally dry conditions as of October 2021. Based on past events, the Hampton Roads region could possibly experience recurring drought conditions when precipitation falls below normal for extended periods of time.

EXTREME HEAT

BACKGROUND

A heat wave is defined as a prolonged period of excessive heat, often combined with excessive humidity. Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. A heat wave combined with a drought is particularly dangerous.

Extreme heat combined with high relative humidity slows evaporation, limiting the body's ability to efficiently cool itself. Overexposure may result in heat exhaustion or stroke, which could lead to death. The Centers for Disease Control and Prevention state that excessive heat exposure caused 8,015 deaths in the United States between 1979 and 1999.

In Hampton Roads, humid conditions resulting from maritime air masses may also add to the discomfort of high temperatures. Health risks to residents in the region exposed to extreme heat include dehydration, heat cramps, fainting, heat exhaustion and heat stroke. According to the NWS, heat is the leading weather-related killer in the United States, although no deaths have been reported for the historical events described below. The elderly and those with medical conditions such as diabetes are most at-risk, along with those who work outdoors in hot, humid weather.

The impact of excessive heat is most prevalent in urban areas, where urban heat-island effects prevent inner-city buildings from releasing heat built up during the daylight hours. Secondary impacts of excessive heat are severe strain on the electrical power system and potential brownouts or blackouts.

LOCATION AND SPATIAL EXTENT

For excessive heat, the NWS uses heat index thresholds as criteria for the issuance of heat advisories and excessive heat warnings. NWS heat advisory bulletins inform citizens of forecasted extreme heat conditions. The bulletins are based on projected or observed heat index values and include:

- Excessive Heat Outlook when there is a potential for an excessive heat event within three to seven days.
- Excessive Heat Watch when conditions are favorable for an excessive heat event within 12 to 48 hours but some uncertainty exists regarding occurrence and timing.
- Excessive Heat Warning/Advisory when an excessive heat event is expected within 36 hours.

These products are usually issued when confidence is high that the event will occur. A warning implies that conditions could pose a threat to life or property, while an advisory is issued for less serious conditions that may cause discomfort or inconvenience, but could still lead to threat to life and property if caution is not taken.

Extreme heat typically impacts a large area that is normally not confined to any geographic boundaries, although urban heat island effects can exacerbate effects in urbanized areas. Hampton Roads is uniformly exposed to this hazard and the spatial extent of that impact is potentially large. Extreme heat typically does not cause significant damage to the built environment, with the exception of road buckling. Summertime temperatures in Hampton Roads region can easily climb into the high 90 to low 100 degree Fahrenheit range with high humidity rates. Coastal areas may experience slightly (1 to 2 degrees) lower temperatures at some times as a result of late day sea breezes or lower water temperatures, depending on the season.

SIGNIFICANT HISTORICAL EVENTS

While temperature extremes occur fairly frequently in the region, the NCEI has only recorded three extreme temperature events recorded that have impacted the region as shown below. The committee acknowledges that there have been other, unrecorded extreme heat events during the period since 1950; however, records on these events are not available from the communities and were not reported through the NCEI or NWS.

August 1-31, 1995: Heat Wave
There were 22 injuries and $100 property damage associated with this heat wave that gripped the region.

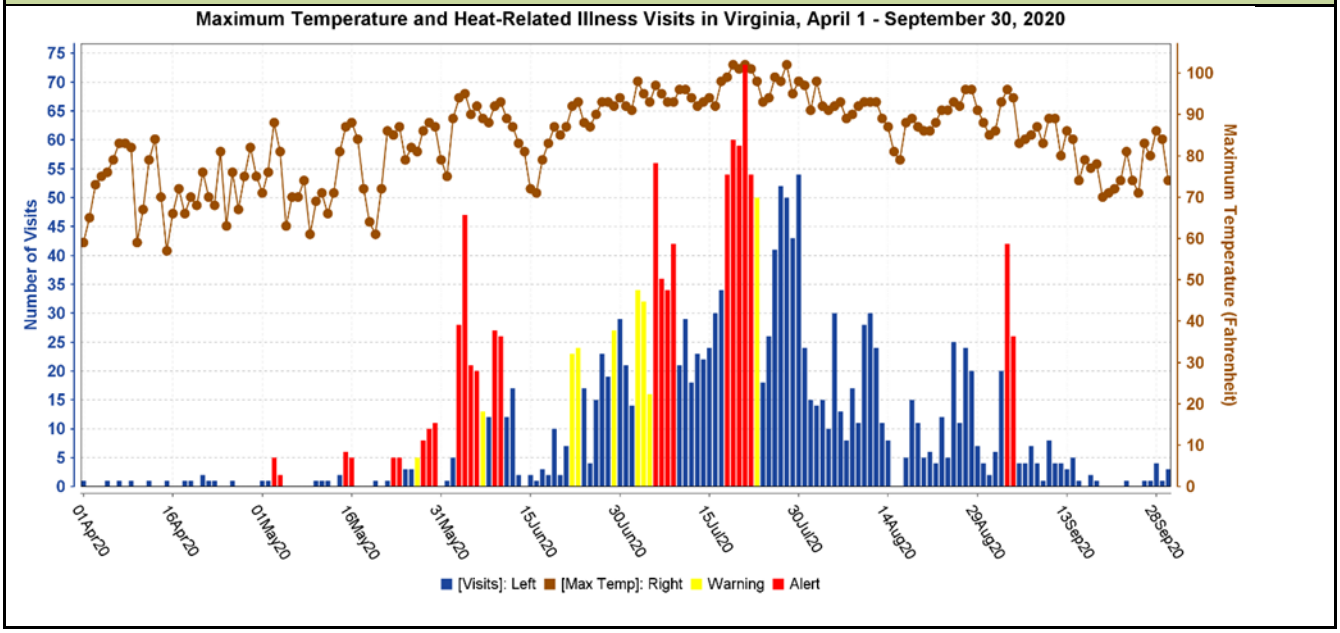
May 18−21, 1996: Extreme Heat
An early-season, four-day heat wave produced record or near record high temperatures across central and eastern Virginia. High temperatures were in the 80s and low 90s across the region on May 18. Then, on May 19, May 20 and May 21, high temperatures were in the 90s throughout the area. May 20 was the hottest of the four days as readings climbed into the mid- to upper-90s. Norfolk International Airport set a record with 98 degrees. The heat wave was responsible for numerous reports of heat exhaustion and forced many non-air conditioned schools to close or have early dismissals. There were no reported property damages, fatalities, or injuries.

The NWS reported that the summer of 2010 (June - August) had an average temperature of 81.1 degrees Fahrenheit, ranking it as the warmest on record. Previously, the warmest summer on record had averaged 80.0 degrees Fahrenheit in 1994.

July 21–23, 2011: Excessive Heat
An extended period of excessive heat and humidity occurred across most of central and eastern Virginia from July 21st to July 23rd. High temperatures ranged from 96 to 103 degrees during the afternoons, with heat index values ranging from 110 to 119. Overnight lows only fell into the lower 70s to lower 80s.

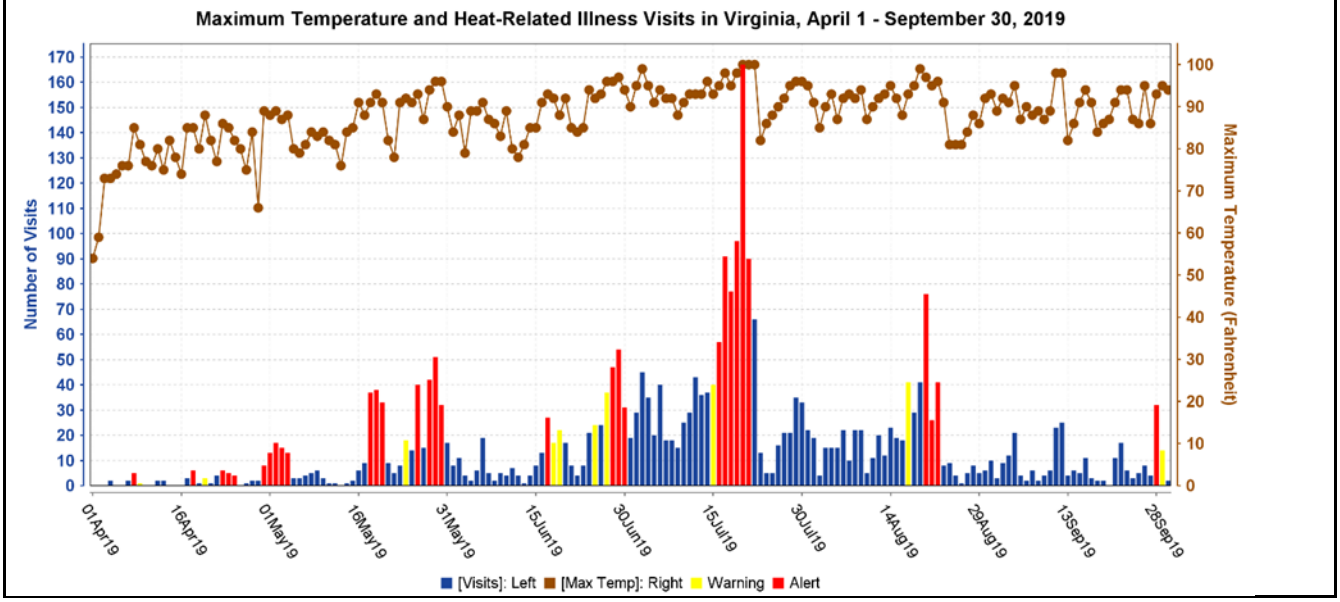
The VDH receives data on visits to emergency departments and urgent care centers in Virginia for purposes of public health surveillance. These data are analyzed through a syndromic surveillance system, known as ESSENCE, to monitor the health of the community and identify emerging trends of public health concern. In response to extreme heat, the Office of Epidemiology, Division of Surveillance and Investigation conducts surveillance for heat-related illness. While these data are not readily available by jurisdiction, the statewide data provide insights about significant extreme heat dates, the maximum temperatures and the number of hospital visits for heat-related illness, **Figures 4.28 through 4.32.**

FIGURE 4.28: MAXIMUM TEMPERATURE AND HEAT-RELATED ILLNESS VISITS IN VIRGINIA, 2020



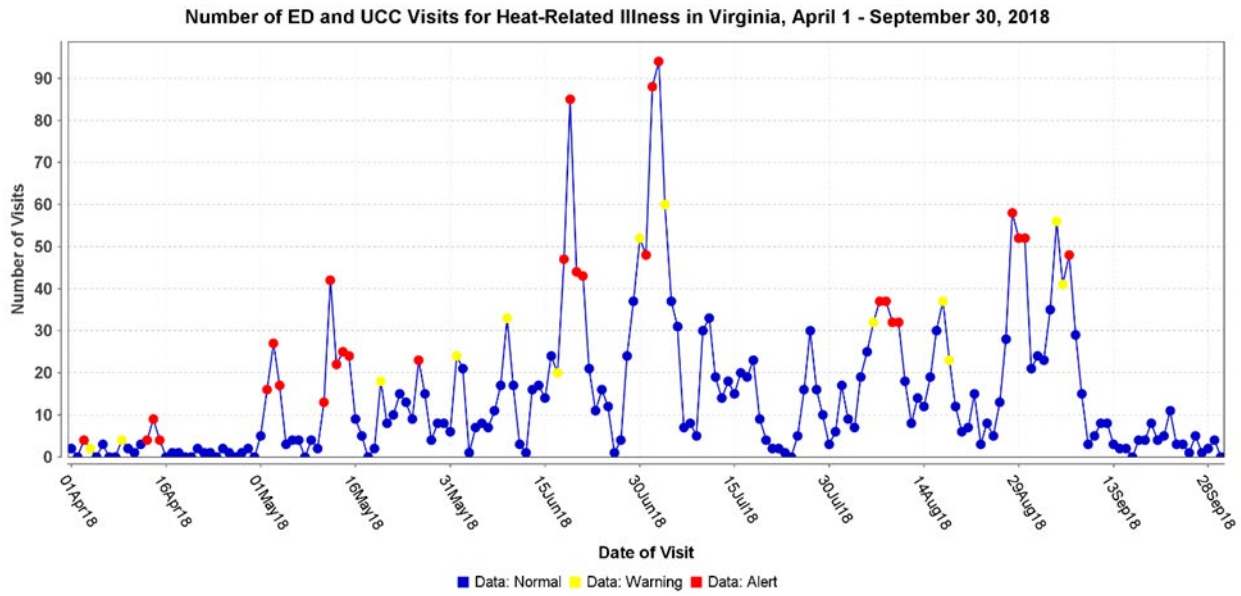
Source: VDH, accessed online 2021 https://www.vdh.virginia.gov/surveillance-and-investigation/syndromic-surveillance/weather-surveillance/.

FIGURE 4.29: MAXIMUM TEMPERATURE AND HEAT-RELATED ILLNESS VISITS IN VIRGINIA, 2019



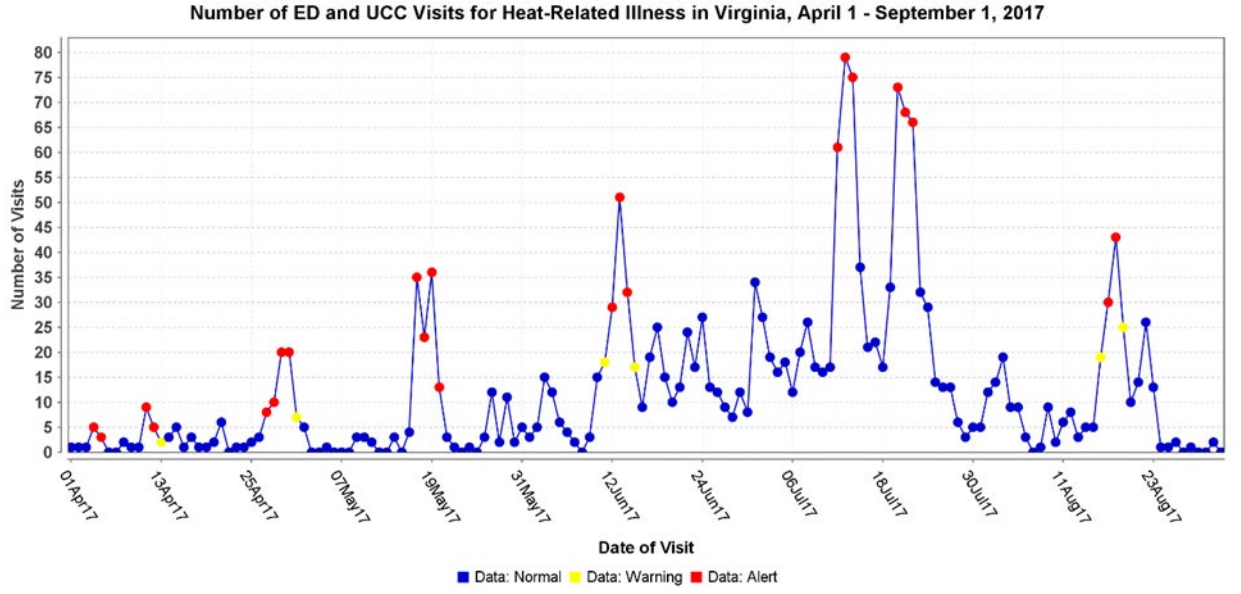
Source: VDH, accessed online 2021 https://www.vdh.virginia.gov/surveillance-and-investigation/syndromic-surveillance/weather-surveillance/.

FIGURE 4.30: MAXIMUM TEMPERATURE AND HEAT-RELATED ILLNESS VISITS IN VIRGINIA, 2018



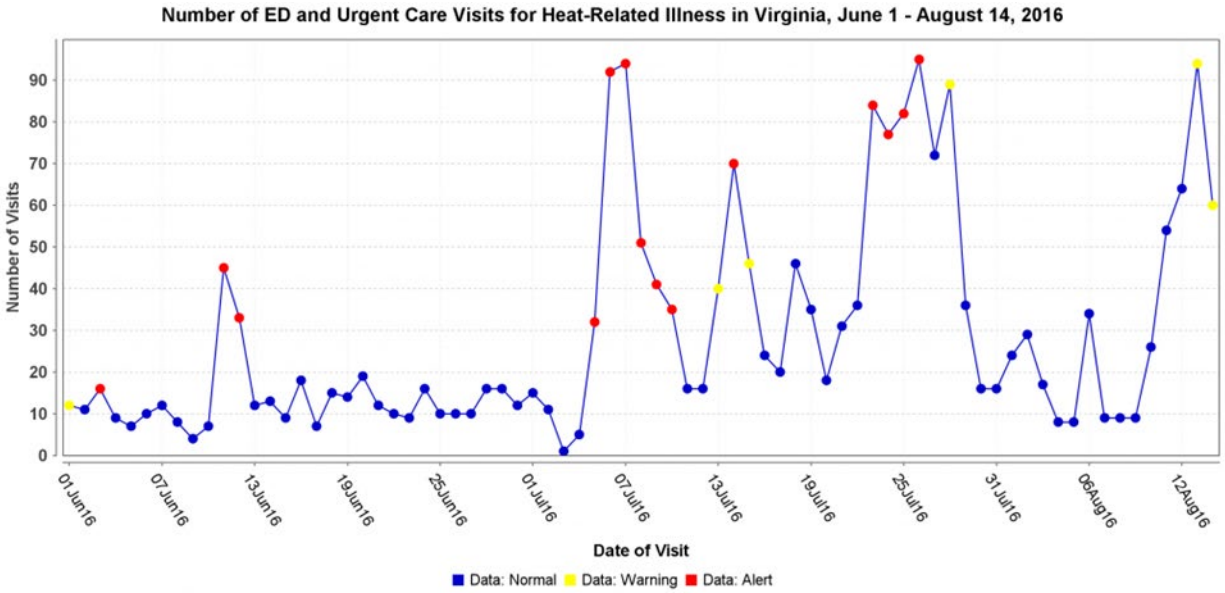
Source: VDH, accessed online https://www.vdh.virginia.gov/surveillance-and-investigation/syndromic-surveillance/weather-surveillance/.

FIGURE 4.31: MAXIMUM TEMPERATURE AND HEAT-RELATED ILLNESS VISITS IN VIRGINIA, 2017



Source: VDH, accessed online https://www.vdh.virginia.gov/surveillance-and-investigation/syndromic-surveillance/weather-surveillance/.

FIGURE 4.32: MAXIMUM TEMPERATURE AND HEAT-RELATED ILLNESS VISITS IN VIRGINIA, 2016



Source: VDH, accessed online https://www.vdh.virginia.gov/surveillance-and-investigation/syndromic-surveillance/weather-surveillance/.

PROBABILITY OF FUTURE OCCURRENCES

It is highly likely that the Hampton Roads region will experience periods of extreme heat in the future.

HAZARDOUS MATERIAL INCIDENTS

BACKGROUND

Hazardous material (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation-related accidents in the air, by rail, on the Nation's highways and on the water. Approximately 6,774 HAZMAT events occur each year, 5,517 of which are highway incidents, 991 are railroad incidents and 266 are due to other causes (FEMA, 1997). In essence, HAZMAT incidents consist of solid, liquid and/or gaseous contaminants that are released from fixed or mobile containers, whether by accident or by design, as with a terrorist attack. A HAZMAT incident can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from a release, and contaminants can be extended beyond the initial area by persons, vehicles, water, wind and wildlife.

City of Portsmouth Hazardous Materials Response Team.
Photo source: City of Portsmouth

HAZMAT incidents can also occur as a result of, or in tandem with natural hazard events, such as floods, hurricanes, tornadoes and earthquakes, which can also hinder response efforts. In the case of Hurricane Floyd in September 1999, communities in Eastern North Carolina were faced with flooded junkyards, disturbed cemeteries, deceased livestock, floating propane tanks, uncontrolled fertilizer spills and a variety of other environmental pollutants that caused widespread toxicological concerns.

Hazardous material incidents can include the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment of a hazardous material, but exclude: (1) any release which results in exposure to poisons solely within the workplace; (2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine; (3) release of source, byproduct, or special nuclear material from a nuclear incident; and (4) the normal application of fertilizer.

Hazardous material incidents may include chemical agents, or compounds with unique chemical properties that can produce lethal or damaging effects in humans, animals and plants. Chemical agents can exist as solids, liquids or gases depending on temperature and pressure. Most chemical agents are liquid and can be introduced into an unprotected population relatively easily using aerosol generators, explosive devices, breaking containers or other forms of covert dissemination. Dispersed as an aerosol, chemical agents have their greatest potential for inflicting mass casualties. Chemical agents can have an immediate effect or a delayed effect of several hours to several days, and are broadly categorized as lethal or incapacitating. Fortunately, the compounds are difficult to deliver in lethal concentrations, difficult to produce, and dissipate rapidly outdoors.

Shippers are relying more heavily on other types of transportation to move hazardous materials. The Department of Transportation reported that the use of trucks and water carriers had climbed sharply between 1997 and 2002. The volume of hazardous materials shipped by trucks increased 21 percent to 1.16 billion tons by 2002, while the amount carried by rail rose 7 percent to 109 million tons. During that period, the volume of hazardous material moving by water climbed 36 percent to 228 million tons, according to the department's Bureau of Transportation Statistics. Between 2002 and 2007, truck and rail shipments of hazardous materials again increased by 3 percent and 19 percent, respectively; but, water shipment volume decreased by 34 percent to 150 million tons, which is below the 1997 volume carried by water. Data for 2017 indicate that hazardous materials shipments of over 2.9 trillion tons were transported, in order

of highest to lowest volume, by truck (61%), by rail (3%), and by water (<1%). For comparison purposes, the Port of Virginia reports that in 2019, their cargo was moved 65% by truck, 34% by rail and 3% by barge.

In Hampton Roads, the negative impacts of hazardous materials incidents are dependent on the nature of the materials involved. While each chemical transported locally has unique qualities, there are generally three types of impacts: 1) economic, 2) environmental and 3) life/safety impacts to residents and first responders.

Economic impacts are likely greatest from potential large-scale incidents involving the port of Hampton Roads. Incidents that may result in port closure are unlikely, but even an event that blocks the port or a portion of the port for some period of time would have dire impacts on the port's ability to move commodities in or out of the entire region by train, ship or truck. Large spills or large fires have consequently high costs associated with response, control and cleanup. While local governments may only absorb some of those costs, economic costs to other industries would occur. Local emergency planners are especially aware of flammable crude oil transports in the York County portion of the planning area. Recent derailments involving this commodity, such as the one in Lynchburg in 2015, are high profile events as they often involve large spills and large fires.

Lesser, but still significant, economic impacts from HAZMAT incidents in the region could include the costs of litigation to resolve large spills, traffic control problems and lost time and wages for travelers impacted by roadway spills or incidents, as well as the impacts of corrosives such as sodium hydroxide on bridge and roadway infrastructure. In cases where evacuations are necessary to protect human life and safety, lost wages can be significant. For example, a natural gas leak in a downtown business district could result in evacuation of downtown businesses and shut down transportation routes. Derailment of a single train carrying hazardous materials shuts down the rail line to other trains for a long period of time, as well, which has economic consequences for numerous carriers, suppliers and buyers.

As intermodal transportation from overseas increases through the region, shipping through the port is growing and that increases highway traffic and rail traffic. The potential economic costs of hazardous materials incidents are, consequently, increasing in the region.

There are potential impacts to the health and safety of residents and travelers through Hampton Roads, as well. Response personnel are trained to respond in a variety of situations, but can nonetheless be exposed to harmful vapors or come into contact with hazardous chemicals. There is a potential for large-scale evacuations of businesses and residents if raw chemicals are released into the air or water under certain conditions that could endanger human health.

Environmental impacts of highest concern in Hampton Roads include the results of spills of petroleum products into the region's waterways. The region's emergency managers have contingency plans in place with the U.S. Coast Guard and others, and conduct regular training and exercises to prevent and then control further damage or secondary damage from fire or contaminant(s) spreading to sensitive environmental areas and critical infrastructure. However, a spill could still impact water quality, aquatic life and valuable wetlands along the shoreline. There is also a potential for hazardous materials incidents along roadways or railroads to impact groundwater with subsequent well water impacts for residents. Local emergency managers also noted the region's valuable migratory bird corridors, which could potentially be impacted by airborne contaminants, and the occurrence of illegal dumping which contributes hazardous materials to waterways, floodplains, wetlands, and forests without the benefit of appropriate response and cleanup.

LOCATION AND SPATIAL EXTENT

The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) was created to increase public awareness of the existence of hazardous materials in the community. The Act is a freestanding title in the Superfund Amendments and Reauthorization Act of 1986 (SARA), and requires certain facility owners/operators to routinely report the presence, quantity, and releases of hazardous materials at their facility. The Act also provides an avenue in which this information can be disseminated to the public, as

well as requiring state and local governments to undertake planning measures to respond to emergencies involving those materials.

As a result, each community in Hampton Roads has identified a Local Emergency Planning Committee (LEPC) to take on the responsibilities of hazardous materials planning. These plans reside with the Emergency Coordinator of the community and provide detailed outlines of hazardous materials response and identification. Key components of the plans include the following that address the location and spatial extent of hazardous materials within the community:

- Identification of routes that are used for transportation of extremely hazardous materials, types of hazardous materials and facility locations of the materials; and,
- Identification of critical facilities which have additional risk due to proximity of transportation routes or fixed facilities.

HISTORICAL OCCURRENCES

The Federal Railroad Administration, Office of Safety Analysis, maintains accident reports for railroad accidents with damages greater than $8,500. In Hampton Roads, there have been 24 accidents involving hazardous material cars since 1998. The worst accident was in Suffolk in 2006, when one rail car suffered $18,212 of damage and 7 people had to be evacuated. Of the 24 accidents in the past decade, 6 rail cars carrying hazardous materials were damaged, and there was no record of hazardous materials being released.

There have been 596 documented HAZMAT events in Hampton Roads since 1998 (**Appendix I**), based on information from the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Safety Incidents Report Database. There were no fatalities, and 15 injuries associated with these events, and a total of $1,238,922 damage. The worst event was in 2013 in Norfolk, when 4,500 gallons of ferric chloride spilled on the highway, causing $340,000 damages.

PROBABILITY OF FUTURE OCCURRENCES

Future occurrences of HAZMAT incidents, accidents or issues within Hampton Roads are considered to be highly likely.

PANDEMIC FLU OR COMMUNICABLE DISEASE

An influenza pandemic is an epidemic of an influenza virus that spreads on a worldwide scale and infects a large proportion of the human population. In contrast to the regular seasonal epidemics of influenza, these pandemics occur irregularly. Pandemics can cause high levels of mortality.

Influenza pandemics occur when a new strain of influenza virus is transmitted to humans from another animal species. Species that are thought to be important in the emergence of new human strains are pigs, chickens, and ducks. These novel strains are unaffected by any immunity people may have to older strains of human influenza and can therefore spread extremely rapidly and infect very large numbers of people.

The Centers for Disease Control and Prevention (CDC) uses a Pandemic Intervals Framework to describe the progression of an influenza pandemic, as shown in **Table 4.21**. This framework is used to guide influenza pandemic planning and provides recommendations for risk assessment, decision-making, and action in the United States. These intervals provide a common method to describe pandemic activity which can inform public health actions. The duration of each pandemic interval might vary depending on the characteristics of the virus and the public health response.

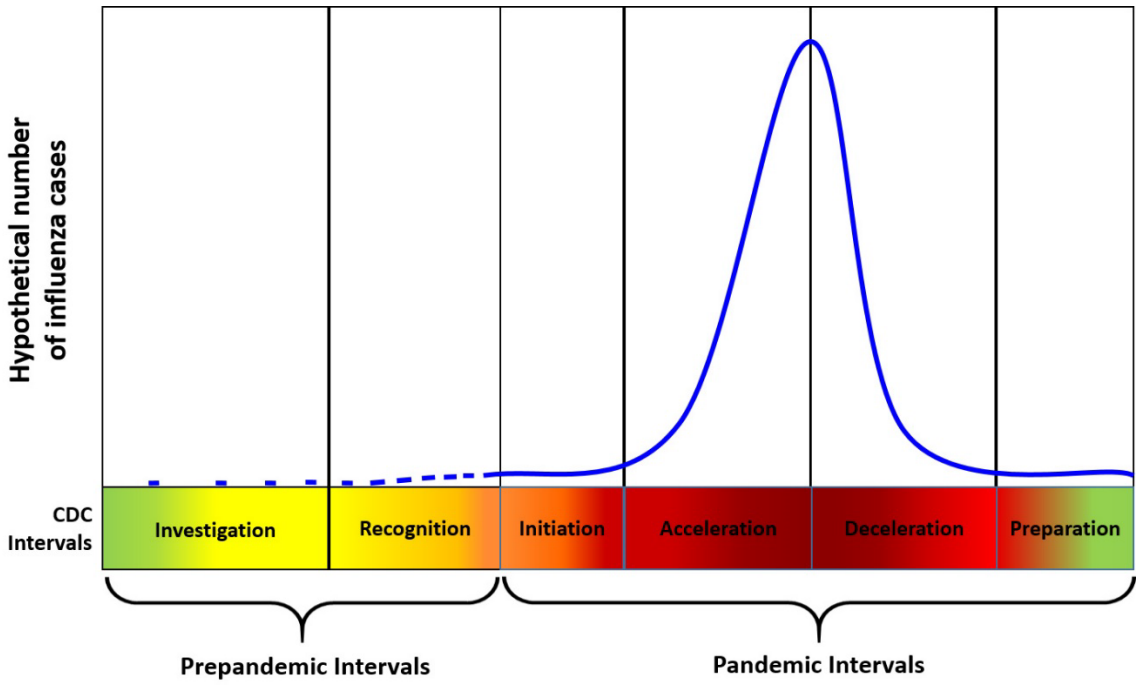
TABLE 4.21: CDC PANDEMIC INTERVALS FRAMEWORK

Interval	Description
1) Investigation of cases of novel influenza A virus infection in humans	When novel influenza A viruses are identified in people, public health actions focus on targeted monitoring and investigation. This can trigger a risk assessment of that virus
2) Recognition of increased potential for ongoing transmission of a novel influenza A virus	When increasing numbers of human cases of novel influenza A illness are identified and the virus has the potential to spread from person-to-person, public health actions focus on control of the outbreak, including treatment of sick persons.
3) Initiation of a pandemic wave	A pandemic occurs when people are easily infected with a novel influenza A virus that has the ability to spread in a sustained manner from person-to-person.
4) Acceleration of a pandemic wave	The acceleration (or "speeding up") is the upward epidemiological curve as the new virus infects susceptible people. Public health actions at this time may focus on the use of appropriate non-pharmaceutical interventions in the community (e.g., school and child-care facility closures, social distancing), as well the use of medications (e.g., antivirals) and vaccines, if available. These actions combined can reduce the spread of the disease, and prevent illness or death.
5) Deceleration of a pandemic wave	The deceleration (or "slowing down") happens when pandemic influenza cases consistently decrease in the United States. Public health actions include continued vaccination, monitoring of pandemic influenza A virus circulation and illness, and reducing the use of non-pharmaceutical interventions in the community (e.g., school closures).
6) Preparation for future pandemic waves	When pandemic influenza has subsided, public health actions include continued monitoring of pandemic influenza A virus activity and preparing for potential additional waves of infection. It is possible that a 2nd pandemic wave could have higher severity than the initial wave. An influenza pandemic is declared ended when enough data shows that the influenza virus, worldwide, is similar to a seasonal influenza virus in how it spreads and the severity of the illness it can cause.

Source: CDC 2021, accessed online at: https://www.cdc.gov/flu/pandemic-resources/national-strategy/intervals-framework.html

Figure 4.33 provides a graphical illustration of the intervals for a hypothetical virus pandemic.

FIGURE 4.33: PANDEMIC INTERVAL FRAMEWORK



Source: CDC 2021, accessed online at: https://www.cdc.gov/flu/pandemic-resources/national-strategy/intervals-framework.html

Communicable diseases are illnesses spread by bacteria or viruses that are spread from one person to another through contact with bodily fluids, blood products, contaminated surfaces, insect bites or through the air. Examples include HIV, hepatitis A, B, and C, Salmonella, measles, and blood-borne illnesses. Mitigation of spread may include testing, vaccination, and educating the public on methods of transmission.

LOCATION AND SPATIAL EXTENT

A pandemic is characterized by human-to-human spread of the virus over a very wide area, crossing international boundaries and affecting a large number of people. While many countries may not be affected early on in a pandemic, the CDC collaborates with the World Health Organization (WHO) and other international agencies to monitor and assess influenza viruses and illness. These organizations send strong signals to the public when research indicates a pandemic is imminent in their country, region, state or locality, and that the time to finalize the communication and implementation of planned mitigation measures is short.

Previous pandemics have been characterized by waves of activity spread over months and separated by oceans. Once the level of disease activity drops, a critical communications task is balancing this information with the possibility of another wave. Pandemic waves can be separated by months and an immediate "at-ease" signal may be premature. Pandemic waves can also be specific to a country or a subregion or state within a country, making local messaging a critical component in controlling the spread of the virus.

In our modern global economy that is focused on international trade and shipping, business and leisure travel to other countries can help spread an early-phase pandemic across the globe far more quickly than

in past centuries. While quarantines and travel restrictions may help restrict the spread in later intervals, the damage wrought by virus carriers early on is irreversible.

In the Eastern Virginia Health District, the VDH indicates that Hepatitis B and C, Salmonella and Campylobacteriosis are the most commonly reported communicable diseases during the period 2013 to 2018, the most recent data available. **Table 4.22** summarizes the VDH data for the region during this period. Hepatitis B and C are viruses that cause an infection that attacks the liver and leads to inflammation. The infection is spread by blood products such as unclean needles, and most people have no symptoms. Campylobacteriosis is an infection by the Campylobacter bacterium, a common bacterial infection of humans, often a foodborne illness. The bacteria produce an inflammatory diarrhea or dysentery syndrome, mostly including cramps, fever and pain. Salmonella bacteria have a similar food-related source and cause upset stomach, diarrhea, fever, and pain and cramping in the belly.

TABLE 4.22: COMMUNICABLE DISEASE IN VIRGINIA'S EASTERN HEALTH DISTRICT

Year	Top Four Diseases	Number of Cases
2013	Campylobacteriosis	119
	Hepatitis B, chronic	291
	Hepatitis C, chronic	1295
	Salmonellosis	266
2014	Campylobacteriosis	104
	Hepatitis B, chronic	285
	Hepatitis C, chronic	1486
	Salmonellosis	268
2015	Campylobacteriosis	194
	Hepatitis B, chronic	332
	Hepatitis C, chronic	1764
	Salmonellosis	279
2016	Campylobacteriosis	222
	Hepatitis B, chronic	309
	Hepatitis C, chronic	2643
	Salmonellosis	267
2017	Campylobacteriosis	209
	Hepatitis B, chronic	371
	Hepatitis C, chronic	2751
	Salmonellosis	284
2018	Campylobacteriosis	226
	Hepatitis B, chronic	387
	Hepatitis C, chronic	2424
	Salmonellosis	302

Source: VDH, October 2021, accessed at: https://www.vdh.virginia.gov/data/communicable-diseases/

SIGNIFICANT HISTORICAL EVENTS

Flu pandemics have occurred throughout history. There have been about three influenza pandemics in each century for the last 300 years. Since 1918, five significant events stand out, each with different characteristics.

1918 – 1919: H1N1 Pandemic
Illness from the 1918 flu pandemic, also known as the Spanish flu, came on quickly. Some people felt fine in the morning but died by nightfall. People who caught the Spanish Flu but did not die from it often died from complications caused by bacteria, such as pneumonia. Approximately 20% to 40% of the worldwide population became ill, and an estimated 50 million people died, including early 675,000 people in the United States. Unlike earlier pandemics and seasonal flu outbreaks, the 1918 pandemic flu saw high mortality rates among healthy adults. In fact, the illness and mortality rates were highest among adults 20 to 50 years old. The reasons for this remain unknown.

1957 – 1958: H2N2 Pandemic
In February 1957, a new flu virus was identified in the Far East. Immunity to this strain was rare in people younger than 65. A pandemic was predicted. To prepare, health officials closely monitored flu outbreaks. Vaccine production began in late May 1957 and was available in limited supply by August 1957.
In the summer of 1957, the virus came to the United States quietly with a series of small outbreaks. When children returned to school in the fall, they spread the disease in classrooms and brought it home to their families. Infection rates peaked among school children, young adults, and pregnant women in October 1957. By December 1957, the worst seemed to be over. However, a dangerous "second wave" of illness came in January and February of 1958. Most influenza–and pneumonia–related deaths occurred between September 1957 and March 1958. Although the 1957 pandemic was not as devastating as the 1918 pandemic, about 69,800 people in the United States died. The elderly had the highest rates of death.

1968 – 1969: H3N2 Pandemic
In early 1968, a new flu virus was detected in Hong Kong. The first cases in the United States were detected as early as September 1968. Illness was not widespread in the United States until December 1968. Deaths from this virus peaked in December 1968 and January 1969. Those over the age of 65 were most likely to die. The number of deaths between September 1968 and March 1969 was 33,800, making it the mildest flu pandemic in the 20th century. The same virus returned in 1970 and 1972.
Several reasons may explain why fewer people in the United States died as a result of this virus:

- The virus was similar in some ways to the 1957 pandemic flu virus. This might have provided some immunity.
- The virus hit in December of 1968, when school children were on vacation. This caused a decline in flu cases because children were not at school to infect one another. This also prevented it from spreading into their homes.
- Improved medical care and antibiotics that are more effective for secondary bacterial infections were available for those who became ill.

2009 – 2010: H1N1 Pandemic
In the spring of 2009, a new flu virus spread quickly across the United States and the world. The first U.S. case of H1N1 (swine flu) was diagnosed on April 15, 2009. By April 21, the CDC was working to develop a vaccine for this new virus. On April 26, the U.S. government declared H1N1 a public health emergency. By June, 18,000 cases of H1N1 had been reported in the United States. A total of 74 countries were affected by the pandemic. H1N1 vaccine supply was limited in the beginning. People at the highest risk of complications got the vaccine first.

By November 2009, 48 states had reported cases of H1N1, mostly in young people. That same month, over 61 million vaccine doses were ready. Reports of flu activity began to decline in parts of the country,

which gave the medical community a chance to vaccinate more people. An estimated 80 million people were vaccinated against H1N1, which minimized the impact of the illness. The CDC estimates that 43 million to 89 million people had H1N1 between April 2009 and April 2010. They estimate between 8,870 and 18,300 H1N1 related deaths. On August 10, 2010 the WHO declared an end to the global H1N1 flu pandemic.

March 2020 - 2021: SARS-CoV-2 or COVID-19

In early 2020, a novel, infectious respiratory disease began to spread worldwide and eventually impacted all aspects of life throughout the world for over a year. Scientists determined that COVID-19 spread by droplets or aerosols from the nose and mouth when an infected person coughed, sneezed or exhaled. Airborne transmission also happened in indoor spaces without good ventilation, especially with infected people breathing heavily, like when singing or exercising. Infected people were able to spread the disease before having symptoms or feeling sick, and asymptomatic people could also spread the disease without ever exhibiting a single symptom. Several variants circulated globally as the virus mutated over time. In the case of COVID-19, the variants were determined to be more contagious.

Symptoms of COVID-19 could appear 2 to 14 days after exposure and included fever, cough, shortness of breath, chills, headache, muscle pain, sore throat, fatigue, congestion, or loss of taste or smell. Other less common symptoms included gastrointestinal symptoms like nausea, vomiting, or diarrhea. Even after recovering from the virus, many people experienced lingering symptoms such as fatigue, cough or joint pain. The elderly, those living in group settings (*e.g.,* nursing homes, jails) and people of any age with serious underlying medical conditions such as lung disease or diabetes, were at highest risk for developing complications from COVID-19. Fully effective and dependable treatments for the virus were limited.

Mitigation of COVID-19 depended on wearing protective masks, distancing from others who were able to transmit disease, washing hands to prevent disease spread, contact tracing to warn those who may have had exposure, and rapid development of testing measures to determine COVID-positive populations. Despite public health campaigns to prevent spread, the disease sickened millions and killed over 884,000 in the United States alone by February 2022.[14] The virus also impacted the Hampton Roads region as shown in **Table 4.23**.

[14] CDC web site, February, 2022, accessed online at: https://covid.cdc.gov/covid-data-tracker/#datatracker-home

TABLE 4.23: COVID-19 CUMULATIVE RATES PER 100,000 BY VIRGINIA LOCALITIES				
SUBREGION	**JURISDICTION**	**CASE RATE**	**HOSPITALIZATION RATE**	**FATALITY RATE**
Peninsula	Hampton	19,315	675	194
	Newport News	19,323	577	182
	Poquoson	18,063	392	196
	Williamsburg	10,322	550	85
	James City County	17,743	450	129
	York County	13,270	247	127
Southside	Norfolk	16,450	812	159
	Portsmouth	20,937	1,151	276
	Suffolk	19,116	1,051	275
	Virginia Beach	18,980	833	145
	Chesapeake	19,246	611	158
Western Tidewater	Isle of Wight County	18,465	811	247
	Franklin	30,525	1,060	549
	Southampton County	17,912	584	425
	Surry County	15,865	846	219

Source: VDH web site, February 2022 accessed online at: /www.vdh.virginia.gov/coronavirus/covid-19-in-virginia/

In addition to the pandemic history described above, several pandemic flu threats have occurred that did not prove as dangerous as the events described above. When the 1976 swine flu was identified at Fort Dix, New Jersey it was called the "killer flu." Experts were concerned because they thought the virus was similar to the 1918 Spanish flu. To prevent a major pandemic, the United States launched a vaccination campaign. In fact, the virus—later named "swine flu"—never moved outside the Fort Dix area. Later, research on the virus showed that it would not have been as deadly as the 1918 flu if it had spread.
In 1997, at least a few hundred people caught H5N1 (avian flu) in Hong Kong. Like the 1918 pandemic, most severe illness affected young adults. Eighteen people were hospitalized. Six of those people died. This avian flu was unlike other viruses because it passed directly from chickens to people. Avian flu viruses usually spread from chickens to pigs before passing to humans. To prevent the virus from spreading, all chickens in Hong Kong—approximately 1.5 million— were slaughtered. Because this flu did not spread easily from person to person, no human infections were found after the chickens were killed.

PROBABILITY OF FUTURE OCCURRENCES

Based on historical experience and the fact that at the time of this planning process an ongoing pandemic threatens public health, the region is expected to experience waves of pandemic flu and communicable disease outbreak in the future.

RADON EXPOSURE

Radon is a colorless, odorless naturally-occurring gas that forms by the radioactive decay of uranium, thorium, or radium, found in certain types of rocks, soil, and groundwater. Radon is found naturally in the atmosphere in trace amounts, where it disperses rapidly and is generally not a health issue. Radon exposure becomes dangerous in confined areas, where the gas can accumulate, and the inert gas can be inhaled into the lungs where it adheres to lung tissue.

Under the earth's surface, radon may be transported as a soil gas or dissolved in ground water. It can enter a building via cracks in solid floors, construction joints, cracks in walls, gaps in suspended floors, gaps around service pipes and drains, cavities inside walls or through the water supply. Well water used for bathing or washing can potentially carry radon, especially if faucets are aerated. Due to less ventilation, radon concentrations in buildings are typically higher in the winter. Any home, school or workplace may have a radon problem, whether it is new or old, well-sealed or drafty, or with or without a basement. The U.S. Environmental Protection Agency (EPA) estimates that nearly one out of every 15 homes in the U.S. is estimated to have elevated annual average levels of indoor radon,[15] and that nearly one in five schoolrooms has a short-term radon level above the actionable level.[16]

The concentration of radon in buildings is highly variable and is based on the underlying rocks or sediments, weather and construction methods. The amount of radon emitted by a particular soil is controlled by the underlying rock type, the concentration of uranium, thorium, or radium in the rock or sediment, and the permeability of the rock, sediment and soil. [17]

The EPA recommends taking action to reduce radon in homes, schools or other buildings that have a radon level at or above 4 picocuries per liter (pCi/L) of air (a "picocurie" is a common unit for measuring the amount of radioactivity). That level of risk is more than 10 times the average outdoor level, more than receiving the equivalent radiation of 200 chest x-rays per year, and almost five times the average non-smoker's risk. A radon level of 40 pCi/L is more than the risk of a 2 pack-a-day smoker.

IMPACTS

The EPA indicates that radon is estimated to cause about 21,000 lung cancer deaths per year in the United States.[18] When a person breathes in radon, radioactive particles from radon gas can get trapped in the lungs, emitting radiation. Over time, these radioactive particles increase the risk of lung cancer. People who smoke and are exposed to radon are at a greater risk of developing lung cancer. Damage may be undetected for years before health problems appear.
The chances of getting lung cancer from radon depend primarily on:

- How much radon is in one's home–the location where you spend most of your time (e.g., the main living and sleeping areas);
- The amount of time spent in the home;
- Whether one is a smoker or has ever smoked;
- Whether one burns wood, coal, or other substances that add particles to the indoor air; and
- Combinations of these factors that multiply the impacts.

Lung cancer may start with a nagging cough, shortness of breath or wheezing. Other symptoms such as coughing up blood, chest pain or weight loss may also present. There are no medical tests to test the

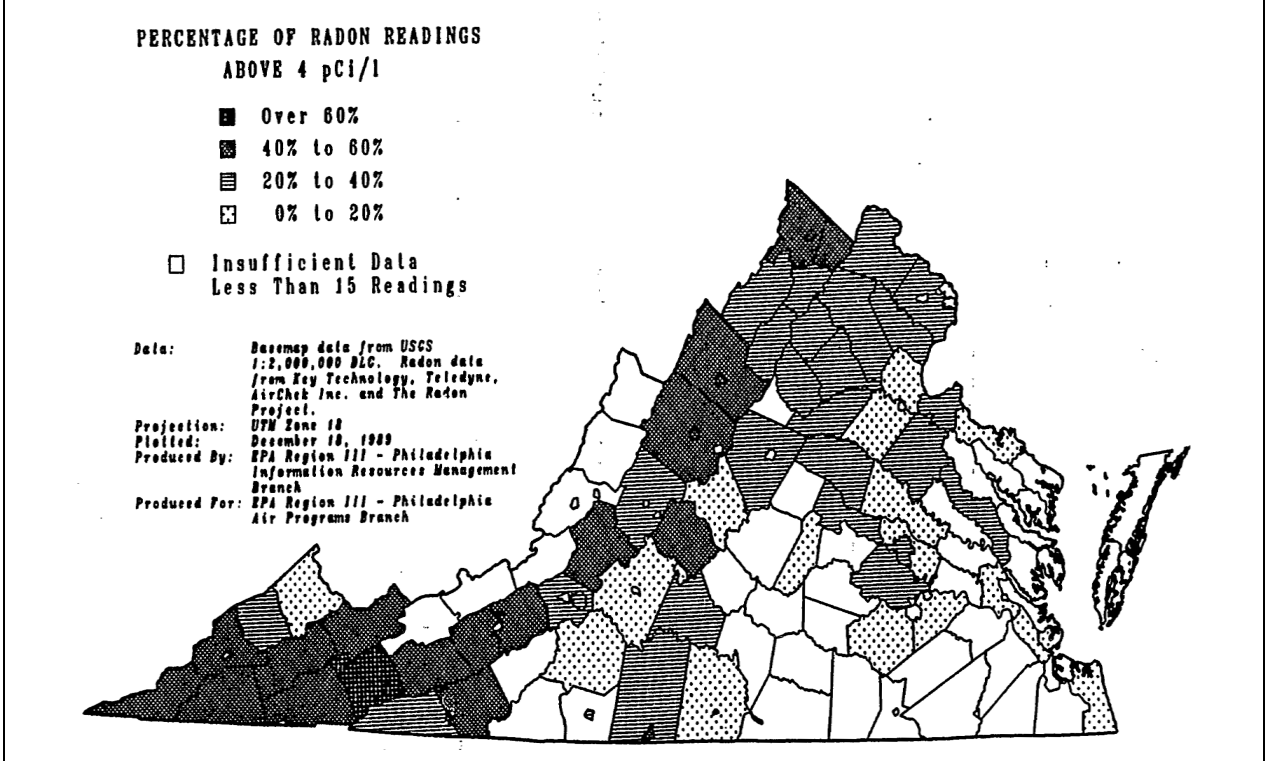
[15] *EPA's Map of Radon Zones, Virginia.* Radon Division, Office of Radiation and Indoor Air, September, 1993.
[16] EPA Radon in Schools, accessed 4/23/21 online at: https://www.epa.gov/radon/radon-schools
[17] Born, Rebecca Skye. *Radon in Yorktown Formation Sediments and Petersburg Granite, Eastern Virginia.* Undergraduate Thesis, College of William & Mary, April 1994.
[18] EPA, *A Citizen's Guide to Radon: The Guide to Protecting Yourself and Your Family from Radon,* EPA 402/K-12/002, 2016.

body for radon exposure, but doctors can check for signs of lung cancer and homes can be easily tested for radon levels.

SIGNIFICANT HISTORICAL EVENTS

Radon exposure from ground sources happens over a long period of time, often remaining undetected, thus historical "events" are rarely quantifiable. Section 307 and 209 of the 1988 Indoor Radon Abatement Act directed the EPA to identify areas of the United States that have the potential to produce elevated levels of radon. As part of this study, two data sources were analyzed in Virginia: 1) indoor radon data from 1,156 random homes were sampled in the winter of 1991-1992 (results shown in **Table 4.24**); and 2) non-random commercial data compiled by EPA Region 3 were examined as shown in **Figure 4.34**.

FIGURE 4.34: VENDOR SCREENING, INDOOR RADON DATA FOR VIRGINIA



Source: EPA's Map of Radon Zones, Virginia. Radon Division, Office of Radiation and Indoor Air, September, 1993.

TABLE 4.24: SCREENING INDOOR RADON DATA

	EPA 1991-1992, Residential				Alpha Energy Laboratories January 2001 to June 2020			
Jurisdiction	**Number of Tests**	**Mean (pCi/L)**	**% >4 pCi/L**	**%>20 pCi/L**	**Number of Tests**	**Mean (pCi/L)**	**% >4 pCi/L**	**%>10 pCi/L**
Hampton	7	0.3	0	0	38	1.97	10.5	5.2
Newport News	13	0.7	0	0	153	1.32	3.9	0
Poquoson	1	0.4	0	0	6	1.00	0	0
Williamsburg	1	1.0	0	0	30	2.29	10.0	3.3
James City County	1	1.0	0	0	614	3.59	27.0	5.2
York County	3	0.6	0	0	55	1.32	1.8	1.8
Norfolk	14	0.8	0	0	136	1.24	1.5	1.5
Portsmouth	6	0.4	0	0	35	0.97	0	0
Suffolk	3	0.1	0	0	58	0.99	0	0
Virginia Beach	39	0.5	3	0	236	1.22	2.1	1.3
Chesapeake	23	0.3	0	0	106	0.96	0.9	0
Isle of Wight County	1	0.9	0	0	20	1.56	10.0	0
Franklin	No data	No data	No data	No data	6	0.83	0	0
Southampton County	2	0.5	0	0	14	0.99	0	0
Surry County	1	0.6	0	0	5	1.00	0	0

Source: EPA's Map of Radon Zones, Virginia. Radon Division, Office of Radiation and Indoor Air, September, 1993.

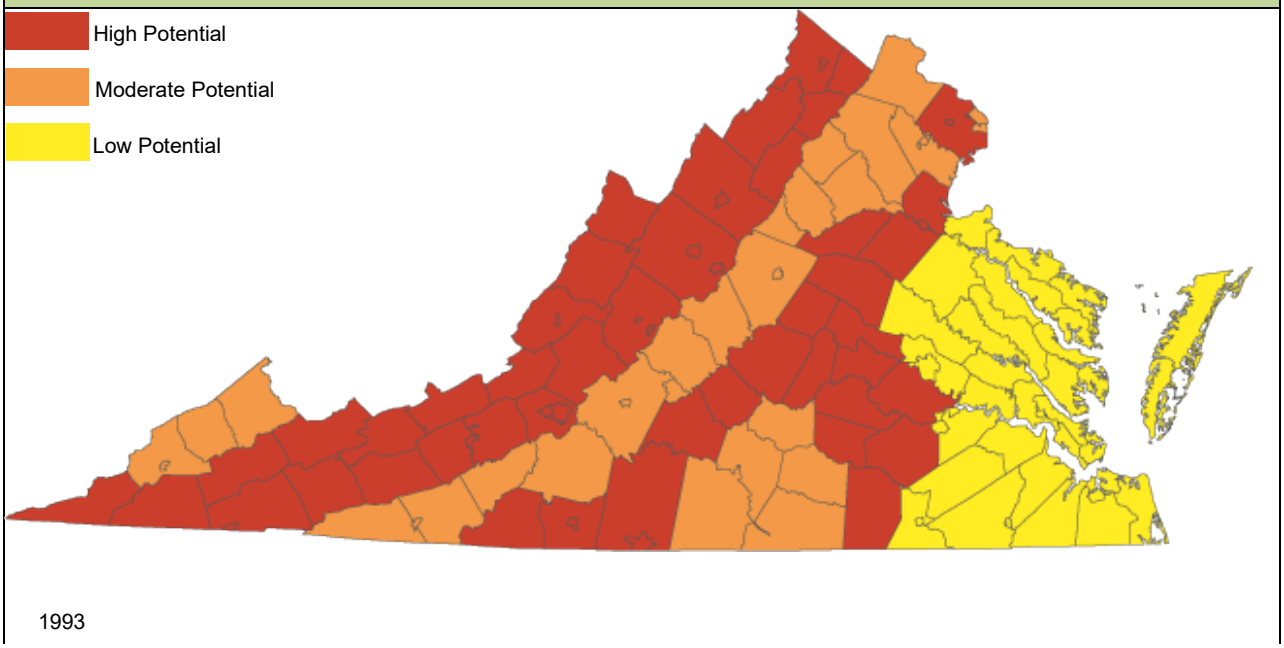
Source: Non-random test results by private business, accessed 2021 online: https://getresults.doctorhomeair.com/fmi/webd/Alpha_ResultsInArea

LOCATION AND SPATIAL EXTENT

The types and distribution of lithologic units and other geologic features in an assessment area are of primary importance in determining radon potential. Rock types that are most likely to cause indoor radon problems include carbonaceous black shales, glauconite bearing sandstones, certain kinds of fluvial sandstones and fluvial sediments, phosphorites, chalk, karst-producing carbonate rocks, certain kinds of glacial deposits, bauxite, uranium-rich granitic rocks, metamorphic rocks of granitic composition, silica-rich volcanic rocks, many sheared or faulted rocks, some coals, and certain kinds of contact metamorphosed rocks. Rock types least likely to cause radon problems include marine quartz sands, non carbonaceous shales and siltstones, certain kinds of clays, silica-poor metamorphic and igneous rocks, and basalts. Uranium and radium are commonly found in heavy minerals, iron-oxide coatings on rock and soil grains, and organic materials in soils and sediments. Less common are uranium associated with phosphate and carbonate complexes in rocks and soils, and uranium minerals.

Figure 4.35 provides the EPA's map of Radon Zones for Virginia, released in 1993. The map is based on an assessment of five factors that are known to be important indicators of radon potential: indoor radon measurements, geology, aerial radioactivity, soil parameters and foundation types.

FIGURE 4.35: U.S. EPA MAP OF RADON ZONES IN VIRGINIA

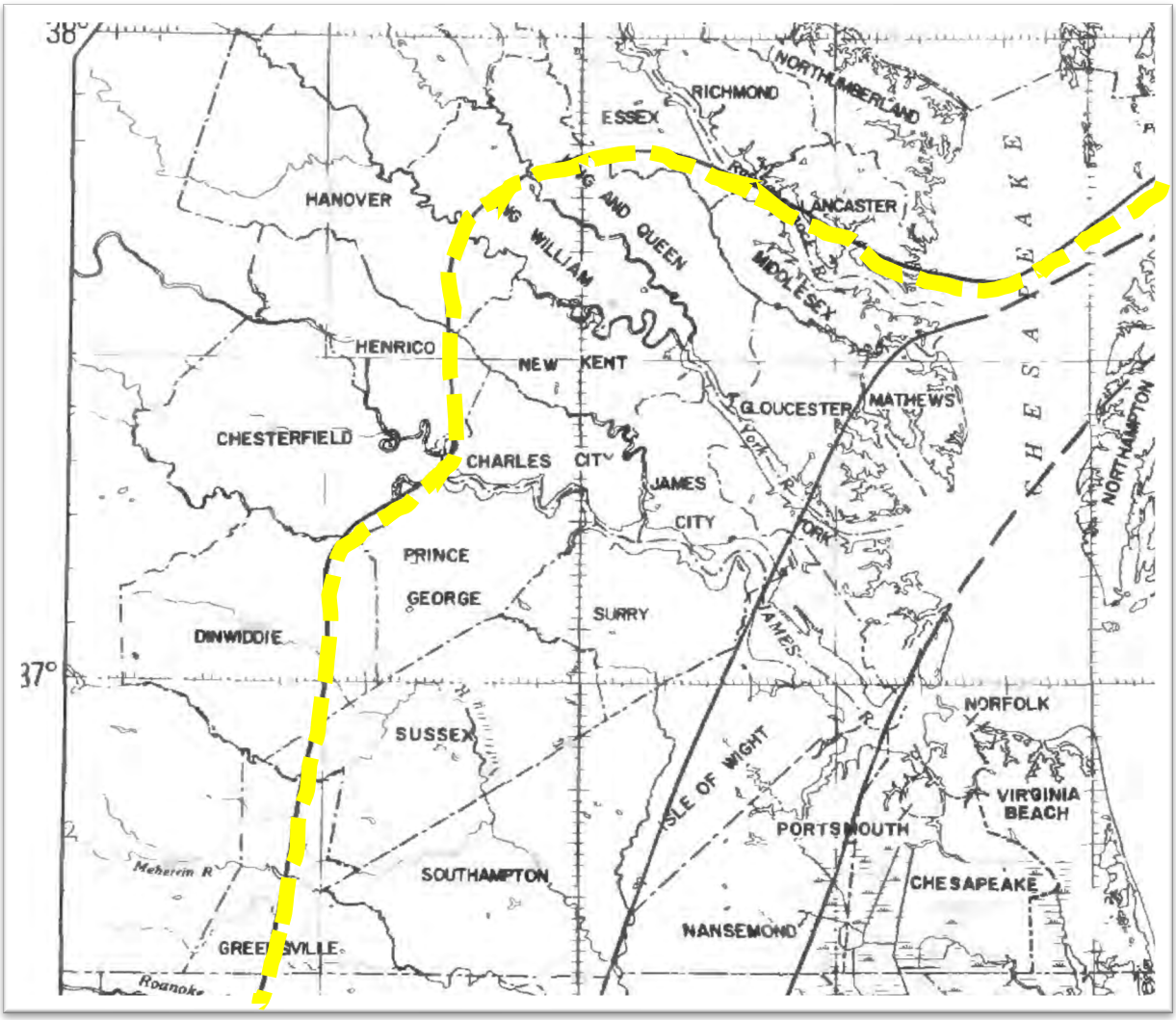


Source: Virginia Department of Energy, as modified from US EPA's Map of Radon Zones, Virginia. Radon Division, Office of Radiation and Indoor Air, September, 1993.

The Coastal Plain of Virginia (see Figure 3.2), includes all of the communities in Hampton Roads and is ranked low in geologic radon potential. In general, the upper Tertiary to Quaternary-aged sediments of the Coastal Plain have low radon potential. However, recent studies of radon potential in the sediments and marine fossils of the Yorktown Formation, a 4 to 5 million-year-old widespread geological unit in the Coastal Plain, could be a source for elevated levels of indoor radon. The Yorktown Formation is a marine unit, meaning the sediments that it is made of were once deposited underwater when sea-level was much higher than it is today (see **Figure 4.36**). It is characterized by shelly, sometimes diatomaceous, locally phosphatic, quartz sand, silt and clay.[19] As a marine unit, it holds whale bones, in particular, that are mixed into the sand/clays. The bones that accumulate in the Yorktown Formation are perhaps able to enrich themselves under certain geochemical conditions with heavy metals that might be in the water. And the high permeability of the sediments allows for radon movement and dispersion. These hypotheses are part of ongoing research at the College of William and Mary.[20] Future updates to this plan should include results of such research, particularly if the findings point to changes in the relative vulnerability presented in Figure 4.35 above.

[19] *US EPA's Map of Radon Zones, Virginia.* Radon Division, Office of Radiation and Indoor Air, September, 1993.
[20] Email exchanges with Anne Witt, Geohazards Specialist, Virginia Department of Mines, Minerals and Energy, Spring 2021.

FIGURE 4.36: WESTERNMOST EXTENT OF THE YORKTOWN FORMATION (YELLOW LINE)



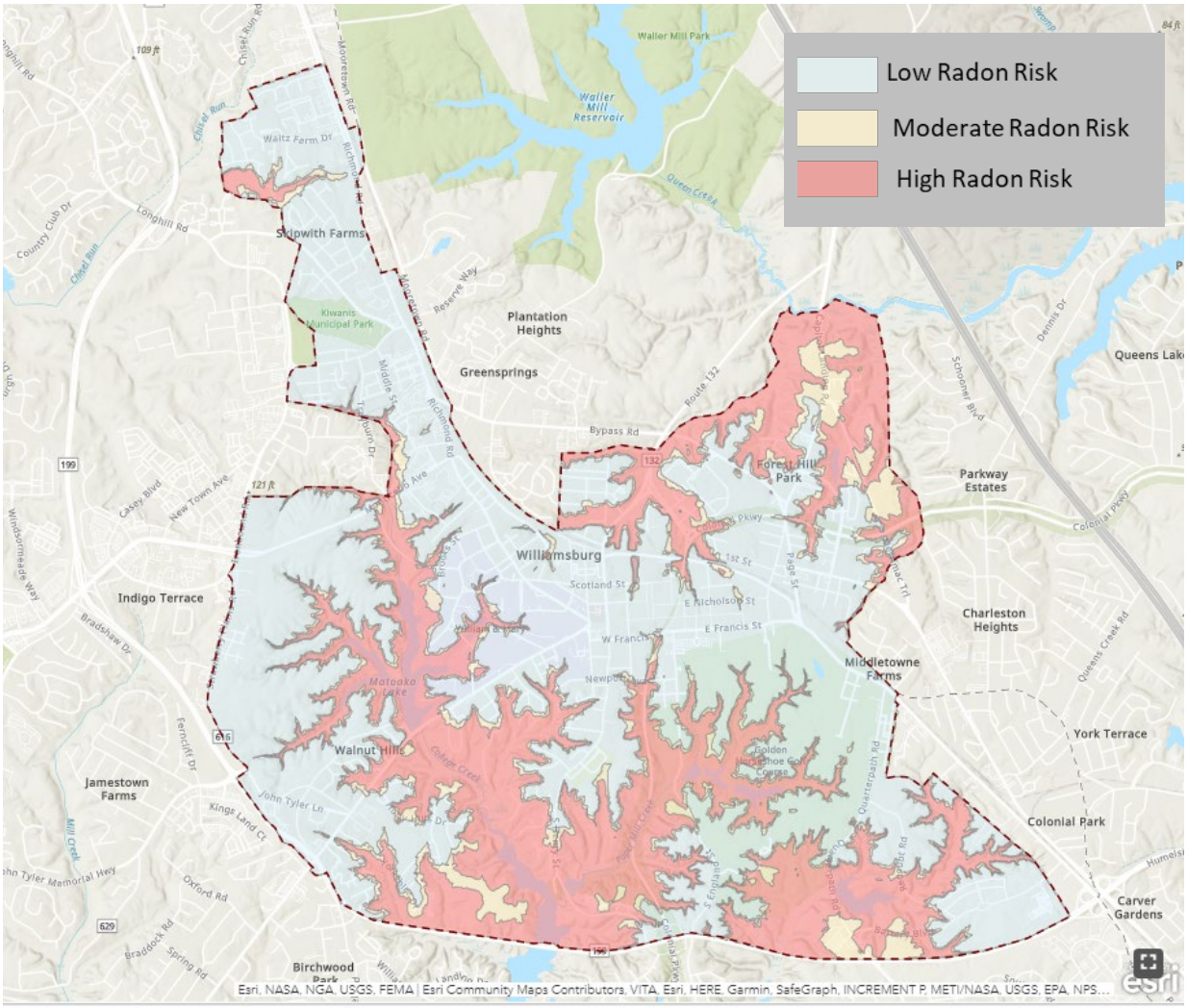
1980

Source: Ward, Lauck W. and Blake W. Blackwelder. Stratigraphic Revision of Upper Miocene and Lower Pliocene Beds of the Chesapeake Group, Middle Atlantic Coastal Plain. Geological Survey Bulletin 1482-D, U.S. Department of the Interior, 1980.

Further analysis by researchers in the Department of Geology at William & Mary has led to the creation of a more detailed map of Williamsburg and the relative radon risk for that community. According to their research, homes built within and slightly above Yorktown sediments may have higher radon levels. In Williamsburg, homes built on ground with adjacent elevations less than 58 feet are predicted to have the highest risk.[21] **Figure 4.37** shows the relative radon risk in Williamsburg.

[21] Berquist, Rick, Jim Kaste, Dorian Miller. ArcGIS Storymap online at: https://storymaps.arcgis.com/stories/10f6d3d7c0014a1087fe3ef14f306520

FIGURE 4.37: RADON RISK IN WILLIAMSBURG



2021

Source: Berquist, Rick, Jim Kaste, Dorian Miller. ArcGIS Storymap online at: https://storymaps.arcgis.com/stories/10f6d3d7c0014a1087fe3ef14f306520

In 1994, an undergraduate student at the College of William & Mary studied radon emittance from the Yorktown Formation[22]. The Yorktown Formation was selected for her study as a possible source of radon because the fossilized bones in the sediments contain uranium-238, a radioactive element that decays to form radon gas. The researcher installed alpha-track radon detectors to determine concentrations of the gas being emitted as a decay product at two sites in the College Woods neighborhood. While the purpose of the study was statistical analysis of the results against previous tests of radon in the Yorktown Formation, the student found that the radon concentrations remained high and are statistically equivalent to other research.

[22] Born, Rebecca Skye. *Radon in Yorktown Formation Sediments and Petersburg Granite, Eastern Virginia.* Undergraduate Thesis, College of William & Mary, April 1994.

VULNERABILITY ASSESSMENT

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2022 UPDATE

Each of the hazards was reviewed and updated to reflect both the revised information obtained for the updated *Hazard Identification and Analysis* section and the most recent modeling and data collection, primarily for flood. Discussion of vulnerability to Sea Level Rise and Land Subsidence has been updated using the region's most well-regarded sources. All hazard names were edited to provide consistency with the *Hazard Identification and Analysis*. Tables were updated to include new data, where available. The hazards were reranked according to new feedback from the committee and to reflect the new color-coded, matrix-based ranking system that graphically demonstrates likelihood versus consequence. The tables at the end of the section regarding Conclusions on Hazard Risk were all updated. Figures were updated to reflect current conditions. In addition, each hazard was assessed for two new components of risk: social vulnerability and the impacts of climate change.

INTRODUCTION

The *Vulnerability Assessment* section builds on the information provided in the *Hazard Identification and Analysis* section by identifying community assets and development trends in the region, then assessing the potential impact and amount of damage (loss of life and/or property) that could be caused by each hazard event addressed in the risk assessment. The primary objective of this level of vulnerability assessment is to prioritize hazards of concern to the region, adding to the foundation for mitigation strategy and policy development. Consistent with the preceding sections, the following hazards are addressed in this assessment:

- FLOODING
- FLOODING DUE TO IMPOUNDMENT FAILURE/HIGH HAZARD DAM
- SEA LEVEL RISE AND LAND SUBSIDENCE
- TROPICAL/COASTAL STORM
- LANDSLIDE/COASTAL EROSION
- TORNADO
- WINTER STORM
- EARTHQUAKE
- WILDFIRE
- DROUGHT
- EXTREME HEAT
- HAZARDOUS MATERIALS INCIDENT
- PANDEMIC FLU OR COMMUNICABLE DISEASE
- RADON EXPOSURE

To complete the vulnerability assessment, best available data were collected from a variety of sources, including local, state and federal agencies, and multiple analyses were applied through qualitative and quantitative means (further described below). Additional work will be done on an ongoing basis to enhance, expand, and further improve the accuracy of the baseline results, and it is expected that this vulnerability assessment will continue to be refined through future plan updates as new data and loss estimation methods become available.

The findings presented in this section with regard to vulnerability were developed using best available data, and the methods applied have resulted in an approximation of risk. These estimates should be used to understand relative hazard risk and the potential losses that may be incurred; however, uncertainties are inherent in any loss estimation methodology, arising from incomplete knowledge concerning specific hazards and their effect on the built environment, as well as incomplete data sets and from approximations and simplifications that are necessary in order to provide a meaningful analysis. Further, most data sets contain relatively short periods of record which increases the uncertainty of any statistically-based analysis.

METHODOLOGIES USED

Two distinct risk assessment methodologies were used in the formation of this vulnerability assessment. The first consists of a ***quantitative*** analysis that relies upon best available data and technology, while the second approach consists of a somewhat ***qualitative*** analysis that relies on the local knowledge and rational decision making skills of local officials. Upon completion, the methods are combined to create a

"hybrid" approach for assessing hazard vulnerability for the region that allows for some degree of quality control and assurance. The methodologies are briefly described and introduced here and are further illustrated throughout this section.

QUANTITATIVE METHODOLOGY

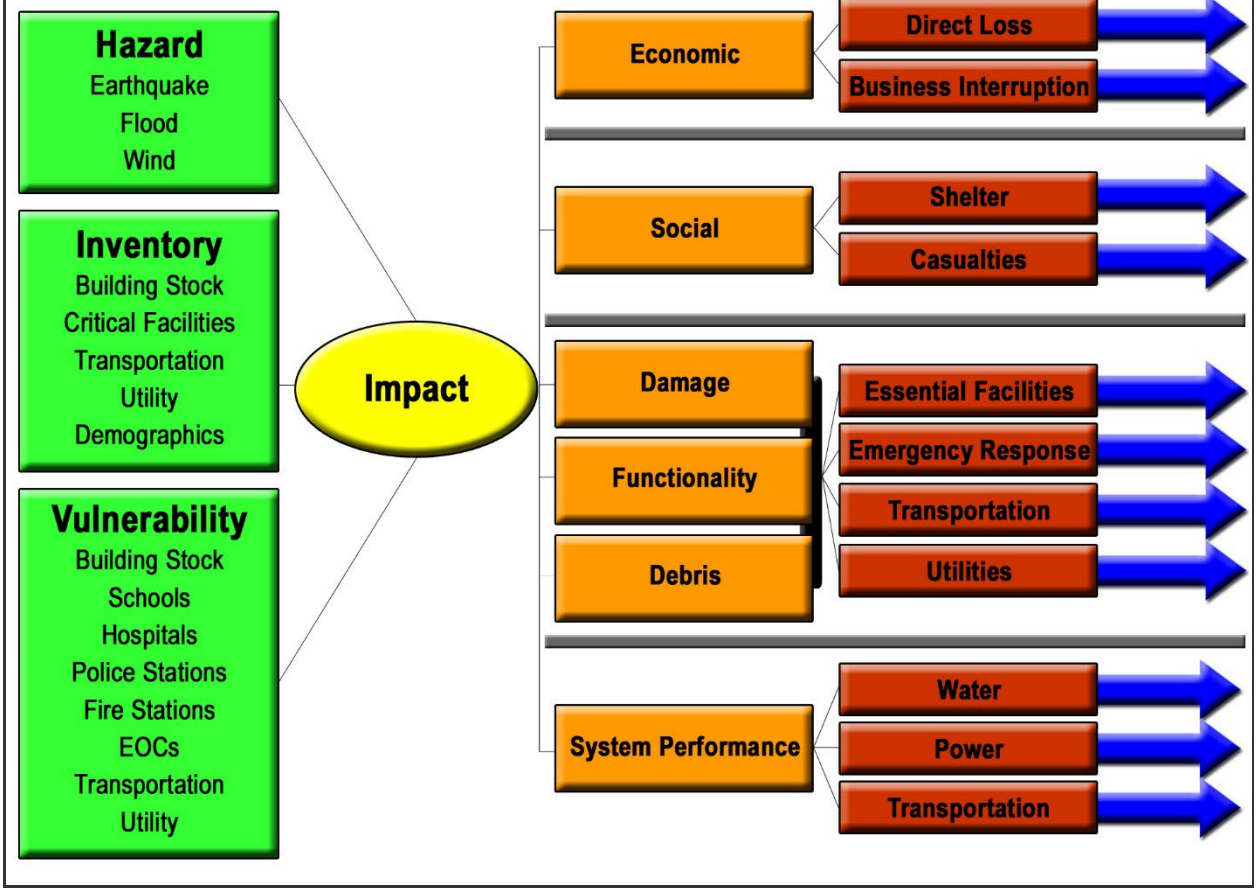
The quantitative assessment involved the use of the most recent version of Hazards U.S. Multi-Hazard (Hazus) software, a geographic information system (GIS)-based loss estimation tool available from FEMA, along with a statistical risk assessment methodology for hazards outside the scope of Hazus. For the flood hazard, the quantitative assessment incorporates a detailed GIS-based approach. When combined, the results of these vulnerability studies are used to form an assessment of potential hazard losses (in dollars) along with the identification of specific community assets that are deemed at-risk.

Explanation of Hazus and Statistical Risk Assessment Methodology

Hazus is FEMA's standardized loss estimation software package, built on an integrated GIS platform using a national inventory of baseline geographic data (including information on the region's general building stock and dollar exposure). Originally designed for the analysis of earthquake risks, FEMA expanded the program in 2003 to allow for the analysis of multiple hazards: namely the flood and wind (hurricane wind) hazards. By providing estimates on potential losses, Hazus facilitates quantitative comparisons between hazards and assists in the prioritization of hazard mitigation activities.

Hazus uses a statistical approach and mathematical modeling of risk to predict a hazard's frequency of occurrence and estimated impacts based on recorded or historic damage information. The Hazus risk assessment methodology is parametric, in that distinct hazard and inventory parameters—such as wind speed and building type—were modeled using the Hazus software to determine the impact on the built environment. **Figure 5.1** shows a conceptual model of Hazus methodology. More information on Hazus loss estimation methodology is available through FEMA at www.fema.gov/hazus.

FIGURE 5.1: CONCEPTUAL MODEL OF HAZUS METHODOLOGY



Source: FEMA

This risk assessment used Hazus to produce regional profiles and estimated losses for three of the hazards addressed in this section: flooding, tropical/coastal storm winds, and earthquake. For each of these hazards, Hazus was used to generate probabilistic "worst case scenario" events to show the extent of potential damages. Both earthquake and wind were modeled using Hazus Level 1 and flood was modeled using Hazus Level 2.

Explanation of GIS-based (Non-HAZUSMH) Risk Assessment Methodology

For hazards outside the scope of Hazus, a statistical risk assessment methodology was designed and in previous plans, this method was applied to generate potential loss estimates. The approach was based on the same principles as Hazus, but did not rely on readily available automated software. Historical data were compiled for each hazard to relate occurrence patterns with existing hazard models. Statistical evaluations were then applied to generate annualized losses.

The use of the statistical risk assessment methodology was used in previous plans to provide a determination of estimated annualized loss[1] for several hazards. However, in recent years, the historical data from which these conclusions were made have become less reliable. For example, damages for wildfire were not reported for two recent reporting periods, and the communities reviewing the historical damage data from the NCEI expressed concern that the damages were severely underestimated. Until

[1] By annualizing estimated losses, the historic patterns of frequent smaller events are coupled with infrequent but larger events to provide a balanced presentation of the long-term risk.

more reliable historical damage data can be provided, planners determined that a qualitative methodology for examining historical losses and making conclusions about future risk was needed as shown below to supplement the quantitative analysis.

Despite the shortcomings of certain historical data, this analysis included collection of and updates to relevant GIS data from local, state and national sources. These sources include each community's GIS department, FEMA, VDOF, and NOAA. Once all data were acquired, GIS was used to demonstrate and spatially analyze risks to people, public buildings and infrastructure. Primary data layers included geo-referenced point locations for public buildings, critical facilities, and infrastructure elements. Using these data layers, risk was assessed and described by determining the parcels and/or point locations that intersected with the delineated hazard areas.

QUALITATIVE METHODOLOGY

The qualitative assessment relies less on technology and more on historical and anecdotal data, community input, and professional judgment regarding expected hazard impacts. The group used a scoring matrix to summarize risk by placing each hazard in a color-coded graph that ranks hazards individually by consequence on the y-axis and likelihood on the x-axis. Risk level ranking was based on historical and anecdotal data, as well as input from committee members. This ranking was done collaboratively in Workshop #1 for each hazard; results are found at the end of this section.

While the quantitative assessment focuses on using best available data, computer models and GIS technology, this qualitative ranking system relies more on historical data, local knowledge, and the general consensus of the planning committee. The results allow identified hazards to be ranked against one another.

SOCIAL VULNERABILITY ANALYSIS

The National Risk Index (NRI) is a relatively new dataset and online application from FEMA that identifies communities most at risk to various natural hazards. For each of the 18 natural hazards explored in the NRI, risk is calculated by multiplying each hazard's expected annual losses by social vulnerability (a consequence enhancing component of risk that measures the susceptibility of social groups to the adverse impacts of natural hazards) and dividing by community resilience (a consequence reduction component of risk that measures the ability of a community to plan for, absorb, recover from and adapt to the impacts of hazards). In other words:

Risk = Expected Annual Loss x Social Vulnerability x (1/Community Resilience)

In the risk equation, each component is represented by a unitless index score that depicts a community's score relative to all other communities at the same level. The Risk Index score is a unitless index and represents a community's relative risk in comparison to all other communities at the same level. All calculations are performed separately at two levels—County and Census tract—so scores are relative only within their level. It must be stressed that scores are relative, representing a community's relative position among all other communities for a given component and level. Scores are not absolute measurements and should be expected to change over time either by their own changing measurements or changes in other communities.

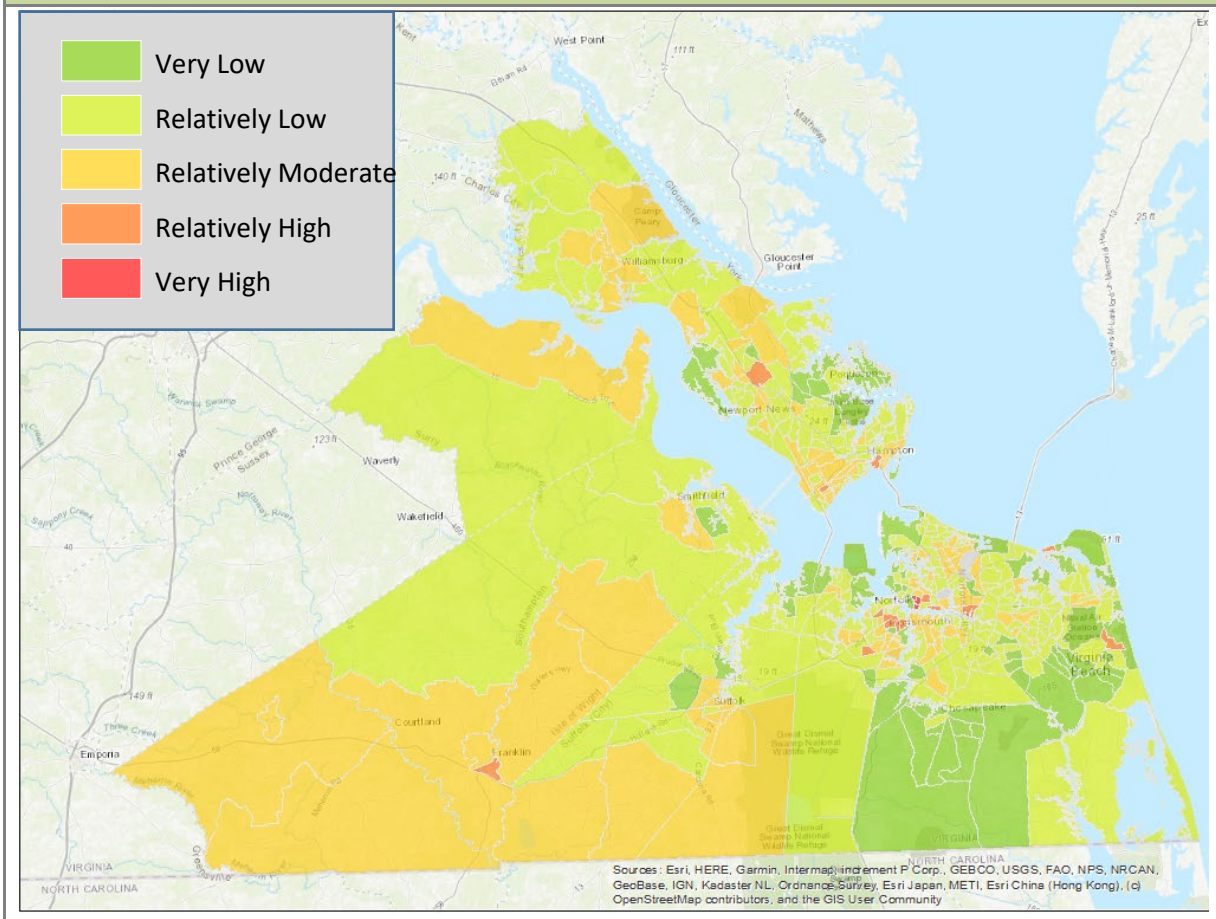
For every score, there is also a qualitative rating that describes the nature of a community's score in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Because all ratings are relative, there are no specific numeric values that determine the rating. For example, a community's Risk Index score for a single hazard could be 8.9 with a rating of "Relatively Low," but its Social Vulnerability score may be 11.3 with a rating of "Very Low." The rating is intended to classify a community for a specific component in relation to all other communities at the same level.

Source data for the social vulnerability component are derived from the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI) Social Vulnerability Index (SoVI). SoVI is a location-specific assessment of social vulnerability that utilizes 29 socioeconomic variables that contribute to a community's reduced ability to prepare for, respond to, and recover from hazards:

Median gross rent for renter-occupied housing units
Median age
Median dollar value of owner-occupied housing units
Per capita income
Average number of people per household
% population under 5 years or age 65 and over
% civilian labor force unemployed
% population over 25 with <12 years of education
% children living in married couple families
% female
% female participation in the labor force
% households receiving Social Security benefits
% unoccupied housing units
% families with female-headed households with no spouse present
% population speaking English as second language (with limited English proficiency)
% Asian population
% African American (Black) population
% Hispanic population
% population living in mobile homes
% Native American population
% housing units with no car available
% population living in nursing facilities
% persons living in poverty
% renter-occupied housing units
% families earning more than $200,000 income per year
% employment in service occupations
% employment in extractive industries (e.g., farming)
% population without health insurance (County SoVI only)
Community hospitals per capita (County SoVI only)

Figure 5.2 maps the foundational social vulnerability using the factors above, without analysis of resilience or loss data for a particular hazard. This map is used to interpret social vulnerability for hazards not specifically addressed in the NRI such as Flooding Due to Impoundment Failure/High Hazard Dam. The map data are also used to rate mitigation actions for those hazards. This plan uses the full NRI dataset to produce maps of relative social vulnerability to several of the prominent natural hazards, including: flooding, tropical/coastal storms, and tornadoes.

FIGURE 5.2: RELATIVE SOCIAL VULNERABILITY IN THE STUDY AREA



2021

Source: FEMA and SoVI, 2021

SUMMARY

Using both the qualitative and quantitative analyses to evaluate the hazards that impact the region provided planning committee members with a dual-faceted review of the hazards. This allowed officials to recognize those hazards that may potentially be costly, but also to plan and prepare for hazards that may not cause much monetary damage, but could put a strain on the local resources needed to recover.

All conclusions of the vulnerability assessment completed for the region are presented in "Conclusions on Hazard Risk" at the end of this section. Qualitative findings for each hazard are detailed in the hazard-by-hazard vulnerability assessment that follows, beginning with an overview of general asset inventory and exposure data for each jurisdiction.

OVERVIEW OF VULNERABILITY

GENERAL ASSET INVENTORY

The total dollar exposure of buildings within the study area is estimated to be over $204 billion. This figure is based on an estimated 560,000 buildings located throughout the region based on the HAZUS default inventory (**Table 5.1**). The data provide an estimate of the aggregated replacement value for the region's assets and indicate that at least 60 percent of the structures are of wood construction.

TABLE 5.1: EXPOSURE OF THE BUILT ENVIRONMENT

SUBREGION	COMMUNITY	BUILDING INVENTORY BY TYPE OF CONSTRUCTION			
		WOOD	MANUFACTURED HOMES	MASONRY, CONCRETE, STEEL	TOTAL
Peninsula	Hampton	$9,758,587,000	$40,526,000	$6,003,186,000	$15,802,299,000
	Newport News	$12,425,313,000	$109,107,000	$8,710,073,000	$21,244,493,000
	Poquoson	$1,220,563,000	$8,625,000	$527,619,000	$1,756,807,000
	Williamsburg	$975,728,000	$0	$1,044,932,000	$2,020,660,000
	James City County	$7,292,959,000	$71,375,000	$3,881,678,000	$11,246,012,000
	York County	$6,449,455,000	$18,669,000	$3,220,222,000	$9,688,346,000
Southside	Norfolk	$14,517,438,000	$33,010,000	$14,710,171,000	$29,260,619,000
	Portsmouth	$6,019,526,000	$16,861,000	$3,927,817,000	$9,964,204,000
	Suffolk	$6,570,498,000	$55,335,000	$3,526,244,000	$10,152,077,000
	Virginia Beach	$36,520,390,000	$89,026,000	$20,584,308,000	$57,193,724,000
	Chesapeake	$17,861,554,000	$106,931,000	$9,915,247,000	$27,883,732,000
Western Tidewater	Isle of Wight County	$2,857,414,000	$95,999,000	$1,611,477,000	$4,564,890,000
	Franklin	$525,235,000	$0	$422,564,000	$947,799,000
	Southampton County	$1,138,139,000	$57,923,000	$687,433,000	$1,883,495,000
	Surry County	$509,304,000	$26,917,000	$259,858,000	$796,079,000
TOTAL		**$124,642,103,000**	**$730,304,000**	**$79,032,829,000**	**$204,405,236,000**

Source: Hazus

ESSENTIAL FACILITIES

There is no universally accepted definition of what constitutes essential facilities and infrastructure, nor is one associated with FEMA and DMA 2000 planning requirements. However, for purposes of this Plan, essential facilities and infrastructure are identified as "*those facilities or systems whose incapacity or destruction would present an immediate threat to life, public health, and safety or have a debilitating effect on the economic security of the region*." The data source for this update was Hazus, which provides a consistent set of facility types across the study area, and is publicly accessible. This typically includes the following facilities and systems based on their high relative importance for the delivery of vital services, the protection of special populations, and other important functions in the region:

- Emergency Operations Center (EOC)
- Hospital and medical care facilities
- Police stations and fire stations
- Public schools designated as shelters
- Hazardous materials facilities
- Water (and wastewater) facilities
- Energy facilities (electric, oil and natural gas)
- Communication facilities

Table 5.2 shows the results of an overlay analysis of the essential facilities that are located in the 100-year floodplain, 500-year floodplain, and the Storm Surge Zone for a Category 3 hurricane. Many of these facilities are addressed in the Mitigation Action Plan, through targeted mitigation actions, or more generalized actions calling for additional study and analysis of the building plans and future vulnerability of these facilities.

TABLE 5.2: CRITICAL FACILITIES LOCATED IN HAZARD AREAS

SUBREGION	COMMUNITY	FLOOD WAY	100-YEAR FLOODPLAIN	500-YEAR FLOODPLAIN	STORM SURGE ZONE
Peninsula	Hampton		4 fire (inc. 2 LAFB), 5 schools	EOC, 3 fire (inc. 1 FMA), 1 police, 8 schools	17 hazmat, 2 EOCs, 14 fire (inc. LAFB & FMA), 3 medical, 6 police, 54 schools (inc. LAFB)
	Newport News		2 hazmat, 1 fire (Eustis)	2 medical, 1 school	16 hazmat, 4 fire (inc. Eustis), 2 medical, 2 police, 17 schools
	Poquoson		EOC, 1 fire, 1 police, 1 school	1 fire, 1 school	EOC, 2 fire, 1 police, 4 schools
	York County		1 fire		28 hazmat, 2 fire, 1 school
Southside	Norfolk		10 hazmat, 2 fire, 6 schools	4 fire, 2 medical, 4 police, 14 schools	30 hazmat, EOC, 20 fire, 8 medical, 9 police, 103 schools
	Portsmouth		EOC, 14 hazmat, 2 fire, 2 police	1 hazmat, 1 fire, 1 medical, 4 schools	15 hazmat, EOC, 9 fire, 2 medical, 2 police, 39 schools
	Suffolk				9 hazmat, 1 fire, 1 medical, 8 schools
	Virginia Beach		2 fire	4 schools	3 hazmat, EOC, 21 fire (inc. Ft Story), 1 medical, 4 police, 117 schools
	Chesapeake		29 hazmat, 3 fire, 4 schools	4 hazmat, 5 schools	59 hazmat, EOC, 10 fire, 5 police, 52 schools
	Franklin	22 hazmat	34 hazmat, 1 fire		
	Southampton County	EOC, 1 police			
	Town of Courtland		EOC, 1 police	4 hazmat, 1 police, 1 school	
REGION TOTAL		**24**	**129**	**68**	**537**

FLOODING

The vulnerability assessment for the flood hazard includes the findings of the qualitative assessment conducted, an overview of NFIP statistics, repetitive loss properties (as defined and identified by the NFIP), estimates of potential losses, and future vulnerability.

As described in detail in the *Hazard Identification and Analysis* section, the NCEI has records for 87 significant flood events in the past 25 years (1995 to 2020) for the region, amounting to approximately $190 million in reported property damage. Also discussed in the *Hazard Identification and Analysis* are historic storms such as Hurricanes Isabel, Floyd and the 1933 hurricane that each caused notable flooding in the region. Historically, Hampton Roads is vulnerable to the flood hazard and flood events, which occur on a frequent basis.

NFIP STATISTICS AND REPETITIVE LOSS PROPERTIES

Table 5.3 provides basic background information regarding the communities in the study area that participate in the NFIP. As shown in Table 5.3, the communities in the Hampton Roads region joined the NFIP throughout the 1970s, 1980s and into the 1990s. In order to join the NFIP, each participating jurisdiction is required to adopt and enforce its own floodplain management ordinance. As a result, structures built after joining the NFIP are assumed to be less vulnerable to flood hazards than those built prior to joining, assuming other environmental conditions remain constant.

The towns of Capron, Dendron and Newsoms do not participate in the NFIP. The Town of Capron, in Southampton County, is located approximately 2 miles from the nearest SFHA of Three Creek. The southern and eastern parts of the Town of Dendron in Surry County are mapped SFHA; however, the town was suspended from the NFIP in December, 1992. Upon closer examination in the VFRIS, there do not appear to be any structures in the SFHA of Dendron. Although a very small portion of Newsoms is mapped in the SFHA, town leadership has chosen not to participate in the NFIP despite numerous entreaties from State officials since the original Flood Hazard Boundary Map for the area was issued in 1977. Using VFRIS, there appears to be one structure in the SFHA of Darden Mill Run, near Old Chapel Road.

TABLE 5.3: NFIP DATA FOR PARTICIPATING COMMUNITIES

SUBREGION	COMMUNITY	NFIP ENTRY DATE	CURRENT EFFECTIVE FIRM DATE
Peninsula	Hampton	1/15/1971	5/16/16
	Newport News	5/2/1977	12/9/2014
	Poquoson	5/16/1977	12/16/2014
	Williamsburg	11/20/1981	12/16/15
	James City County	2/6/1991	12/16/2015
	York County	12/16/1988	1/16/2015
Southside	Norfolk	8/1/1979	12/17/17
	Portsmouth	7/2/1971	8/3/2015
	Suffolk	11/16/1990	8/3/2015
	Virginia Beach	4/23/1971	1/16/2015
	Chesapeake	2/2/1977	12/16/2014
Western Tidewater	Isle of Wight County	8/19/1991	12/2/2015
	Smithfield	12/5/1990	12/2/2015
	Windsor	8/1/1990	12/2/15
	Franklin	8/15/1980	9/4/2002
	Southampton County	12/15/1982	9/4/2002
	Boykins	4/1/1982	9/4/2002
	Branchville	3/30/1979	9/4/2002
	Courtland	7/5/1982	9/4/2002
	Ivor	11/4/2002	No special flood hazard area identified
	Surry County	11/02/1990	05/04/2015
	Claremont	10/16/1990	05/04/2015

Source: NFIP Community Status Book, May 19, 2021

Table 5.4 provides more detailed information on the number of flood insurance policies and the value of those policies for NFIP-participating communities in the study area, as well as the change in policy number and coverage since 2015.

TABLE 5.4: NFIP POLICY DATA FOR PARTICIPATING COMMUNITIES

SUBREGION	COMMUNITY	POLICIES IN FORCE 2015	POLICIES IN FORCE 2021 (PERCENT CHANGE)	INSURANCE IN FORCE 2015	INSURANCE IN FORCE 2021 (PERCENT CHANGE)	TOTAL CLAIMS 1978-2021	TOTAL CLAIM PAYMENTS 1978-2021
Peninsula	Hampton	11,076	9,972 (-10%)	$2,752,401,900	$2,646,416,900 (-4%)	5,775	$74,750,291
	Newport News	2,515	1,853 (-26%)	$627,732,100	$518,802,300 (-17%)	1,026	$23,139,496
	Poquoson	3,310	3,168 (-4%)	$877,069,600	$886,785,200 (1%)	4,217	$71,678,445
	Williamsburg	47	41 (-13%)	$11,971,100	$12,761,400 (7%)	18	$118,850
	James City County	1,006	960 (-5%)	$275,598,300	$282,972,600 (3%)	359	$6,310,238
	York County	3,394	3,134 (-8%)	$980,284,400	$945,982,400 (-3%)	1,567	$33,851,809
Southside	Norfolk	12,324	11,804 (-4%)	$3,203,123,000	$3,282,155,900 (2%)	5,962	$68,344,791
	Portsmouth	3,618	3,935 (9%)	$884,828,100	$999,844,500 (13%)	1,704	$19,769,707
	Suffolk	943	1,002 (6%)	$280,794,800	$316,318,300 (13%)	223	$5,069,727
	Virginia Beach	24,200	23,636 (-2%)	$6,453,533,800	$6,776,920,000 (5%)	6,182	$103,426,658
	Chesapeake	8,841	8,714 (-1%)	$2,383,084,100	$2,511,538,200 (5%)	2,570	$27,028,316
Western Tidewater	Isle of Wight County	397	323 (-19%)	$116,904,100	$100,242,300 (-14%)	149	$4,724,311
	Smithfield	108	85 (-21%)	$32,979,900	$26,319,200 (-20%)	42	$608,217
	Windsor	6	6 (0%)	$1,204,000	$1,715,000 (42%)	0	$0
	Franklin	148	106 (-28%)	$39,465,400	$31,938,100 (-19%)	103	$5,312,419
	Southampton County	127	126 (-1%)	$26,582,600	$27,916,700 (5%)	78	$2,974,777
	Boykins	7	6 (-14%)	$1,901,500	$1,723,800 (-9%)	0	$0
	Branchville	0	0 (0%)	$0	$0 (0%)	0	$0
	Courtland	20	23 (15%)	$5,822,600	$7,828, 800 (34%)	5	$39,366
	Ivor	1	0 (-100%)	$350,000	$0 (-100%)	0	$0
	Surry County	25	27 (8%)	$7,135,400	$7,651,000 (7%)	45	$1,488,980
	Claremont	16	18 (13%)	$4,319,800	$4,279,900 (-1)%	38	$1,273,693

Source: NFIP data dated April 30, 2015 and April 13, 2021.

Reducing the number of repetitive loss (RL) properties insured by the NFIP is a nationwide emphasis of FEMA. The NFIP defines an RL as any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978.[2] A repetitive loss property may or may not be currently insured by the NFIP. Per NFIP data provided by the Virginia Department of Conservation and Recreation in June 2015 and some additional data provided by FEMA for some communities, a total of 4,832 RL properties as defined by the NFIP have been identified within the study area communities. These properties have experienced a total of $148 million individual insured losses for the structure and contents combined. The average payment for each qualifying claim was $10,900. In 2015, there were 4,408 residential properties (98 percent) and 106 non-residential properties on the list; that ratio is presumed to be applicable now but the data were not available to verify.

The NFIP also designates severe repetitive losses (SRL) in a community. As defined by the Flood Insurance Reform Act of 2004, SRLs are 1- to 4-family residences that have had four or more claims of more than $5,000 or at least two claims that cumulatively exceed the building's value. The Act created new funding mechanisms to help mitigate flood damage for these properties. The study area communities have 502 SRL properties identified by the NFIP, with a total of 1,621 losses. Total payments for these 502 properties were over $39 million. **Table 5.5a** provides summary details for the communities with regard to each community's repetitive losses. The number of residential versus commercial repetitive loss properties is similar to those ratios in the previous hazard mitigation plan.

TABLE 5.5a: NFIP REPETITIVE LOSS PROPERTIES

REGION	COMMUNITY	REPETITIVE FLOOD LOSSES			
		NUMBER OF PROPERTIES	VALUE OF LOSSES	NUMBER OF LOSSES	AVERAGE PAYMENT PER CLAIM
Peninsula	Hampton (2015)	936	$48,166,174	2,541	$18,956
		SEVERE REPETITIVE FLOOD LOSSES			
		70	$10,407,881	365	$28,515
	Newport News (2015)	121	$13,037,268	294	$44,344
		SEVERE REPETITIVE FLOOD LOSSES			
		3	$189,943	11	$17,268
	Poquoson (2021)	795	Not provided	2,466	Not provided
		SEVERE REPETITIVE FLOOD LOSSES			
		204	Not provided	Not provided	Not provided
	Williamsburg (2015)	4*	$104,271	9	$11,586
	James City County	35	$2,345,563	95	$24,690
		SEVERE REPETITIVE FLOOD LOSSES			
		2	$146,768	8	$18,346
	York County (2015)	236	$15,330,549	560	$27,376
		SEVERE REPETITIVE FLOOD LOSSES			
		11	$1,772,861	50	$35,457
Southside	Norfolk (2020)	942	$32,321,814	2,217	$14,440
		SEVERE REPETITIVE FLOOD LOSSES			
		95	$11,988,043	533	$22,949
	Portsmouth (2015)	229	$10,009,951	631	$15,864
		SEVERE REPETITIVE FLOOD LOSSES			
		16	$2,070,120	86	$24,071

[2] The FEMA Hazard Mitigation Assistance Program defines RL as having incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and, at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

TABLE 5.5a: NFIP REPETITIVE LOSS PROPERTIES					
REGION	COMMUNITY	REPETITIVE FLOOD LOSSES			
		NUMBER OF PROPERTIES	VALUE OF LOSSES	NUMBER OF LOSSES	AVERAGE PAYMENT PER CLAIM
	Suffolk (2015)	17	$2,285,818	50	$45,716
	Virginia Beach (2015)	574	$34,205,856	1,768	$19,347
		SEVERE REPETITIVE FLOOD LOSSES			
		62	$8,673,919	361	$24,027
	Chesapeake (2015)	395	$19,611,525	1,214	$16,154
		SEVERE REPETITIVE FLOOD LOSSES			
		37	$3,523,288	199	$17,705
Western Tidewater	Isle of Wight County (2015)	23	$1,584,416	60	$26,407
	Smithfield (2015)	3	$71,418	7	$10,203
	Franklin (2015)	6	$686,165	12	$57,180
	Southampton County (2015)	9	$557,595	19	$29,347
	Surry County (2021)	5	$578,071	14	$41,291
		SEVERE REPETITIVE FLOOD LOSSES			
		2	$297,572	8	$34,947
Totals		4,832	$148,165,583	13,578	$626,186

** Williamsburg officials have conducted additional research into these data and contend the data do not represent a pattern of repetitive overland flooding.*
Sources: FEMA and NFIP

In May 2022, FEMA provided additional data regarding repetitive losses in the study area. These data are not reflected in the planning process or the repetitive loss area mapping below, but may prove useful for the region's communities in future repetitive loss planning. The data are shown in **Table 5.5b**.

TABLE 5.5b: 2022 NFIP REPETITIVE FLOOD LOSSES			
SUBREGION	**COMMUNITY**	**REPETITIVE FLOOD LOSS PROPERTIES**	**SEVERE REPETITIVE FLOOD LOSS PROPERTIES**
Peninsula	Hampton	956	109
	Newport News	129	10
	Poquoson	983	50
	Williamsburg	3	0
	James City County	37	4
	York County	245	15
Southside	Norfolk	977	125
	Portsmouth	255	27
	Suffolk	24	3
	Virginia Beach	676	128
	Chesapeake	420	78
Western Tidewater	Isle of Wight County	23	5
	Smithfield	6	1
	Windsor	0	0
	Franklin	7	1
	Southampton County	8	2
	Boykins	0	0
	Branchville	0	0
	Capron	0	0
	Courtland	0	0
	Ivor	0	0
	Newsoms	0	0
	Surry County	6	2
	Claremont	4	3
	Dendron	0	0
Total		4,759	563

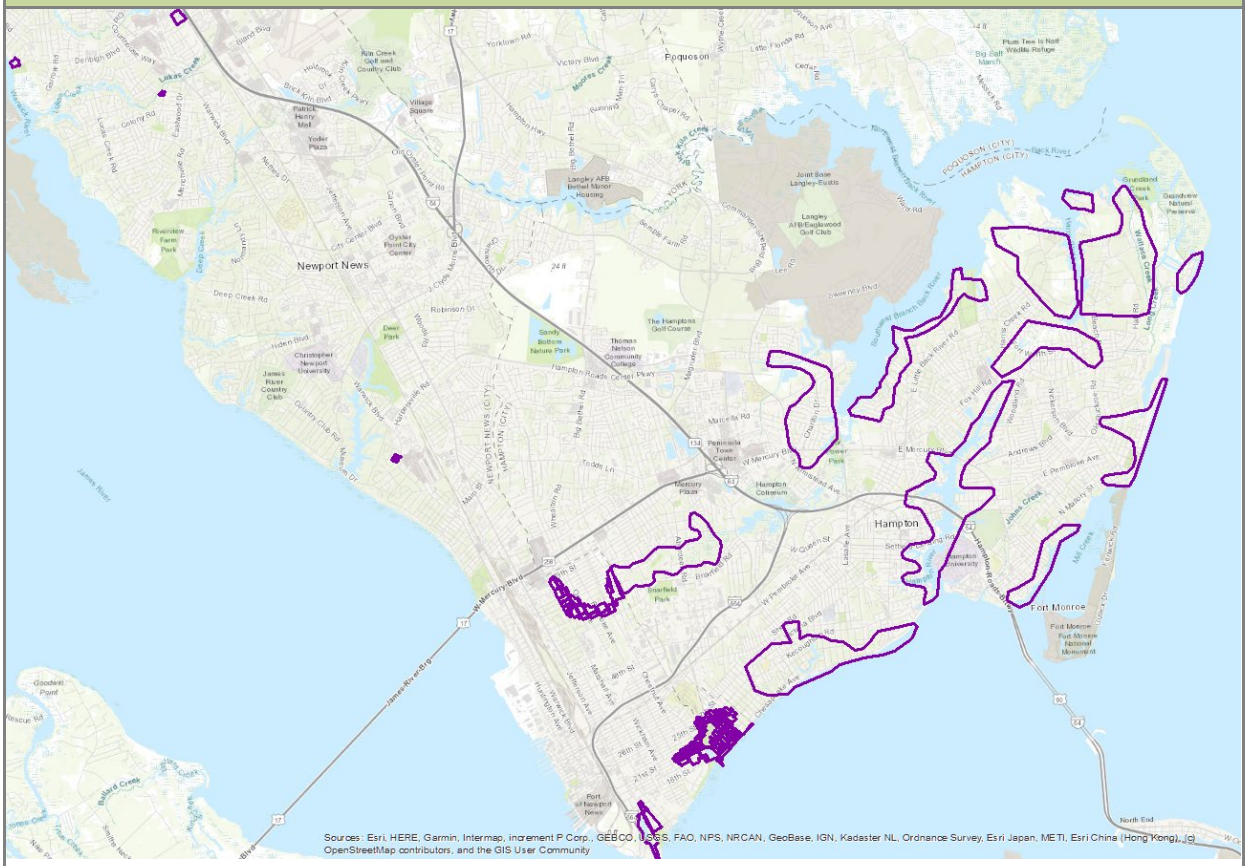
Figures 5.3 through 5.11 contain maps of the region's repetitive loss areas. Each designated area was identified by referencing maps of all historical NFIP flood claims, NFIP RL lists, the SRL list, a Digital Elevation Model (DEM)-based depth grid of the 100-year floodplain, and the HAZUS results regarding predicted flood damages from a 100-year flood for individual structures. As shown in Table 5.5, there are 4,514 properties on FEMA's repetitive loss list and an additional 55,179 parcels identified as being within those repetitive loss areas. Other structures near the ones listed by the NFIP may have been uninsured during the floods, may have had single flood insurance claims, or may have had multiple claims under different policies that the claims system did not recognize as being the same repetitively flooded address. **Table 5.6** provides additional detail regarding the repetitive loss areas identified for each community.

TABLE 5.6: REPETITIVE FLOOD LOSS AREA DETAILS

REGION	COMMUNITY	REPETITIVE FLOOD LOSS AREAS		
		NUMBER OF RL AREAS	NUMBER OF PROPERTIES OR BUILDINGS	SOURCES OF FLOODING
Peninsula	Hampton	12	7,736	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Newmarket Creek overflows banks during coastal storms and heavy rains. Wind driven storm tides drive water into smaller tributaries and flood low-lying areas. Along Chesapeake Bay, wind and wave velocity, coastal flooding and overwash during coastal storms causes damage.
	Newport News	8	1,662	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Newmarket Creek overflows banks during coastal storms and heavy rains. Wind driven storm tides drive water into smaller tributaries and flood low-lying areas. Along James River, wind and wave velocity, coastal flooding and overwash during coastal storms causes damage.
	Poquoson	1	4,810	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms.
	James City County	10	643	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Stormwater drainage from heavy rains cause flooding in some riverine watersheds.
	York County	20	1,681	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms.
Southside	Norfolk	114	8,764	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Stormwater drainage from heavy rains cause flooding in some riverine watersheds. Tidal inundation of stormwater system increases flooding in some neighborhoods.
	Portsmouth	25 maps	1,974	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Stormwater drainage from heavy rains cause flooding in some riverine watersheds. Tidal inundation of stormwater system increases flooding in some neighborhoods. Seawall damaged.
	Suffolk	12	81	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms.

TABLE 5.6: REPETITIVE FLOOD LOSS AREA DETAILS				
REGION	COMMUNITY	REPETITIVE FLOOD LOSS AREAS		
		NUMBER OF RL AREAS	NUMBER OF PROPERTIES OR BUILDINGS	SOURCES OF FLOODING
	Virginia Beach	156	3,888	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Stormwater drainage from heavy rains cause flooding in some riverine watersheds. Tidal inundation of stormwater system increases flooding in some neighborhoods.
	Chesapeake	62	3,869	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms. Flat terrain hinders stormwater
Western Tidewater	Isle of Wight County	13	151	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms.
	Smithfield	1	45	Low-lying land along the banks of tidal rivers and creeks are regularly inundated by nor'easters and tropical storms.
	Franklin	2	462	Blackwater River overflows its banks and tributary banks as a result of heavy rain in the upper parts of the watershed causing severe flooding in the downtown area.
	Southampton County	4	74	The Blackwater and Nottoway River systems overflow their banks as a result of heavy rain in the watershed, causing pockets of flooding especially where tributaries flow into main rivers.
	Surry County	4	89	Low-lying land along the banks of the James River cause much of the repetitive flooding near Pleasant Point and the Jamestown-Scotland Ferry Terminal. A low-lying area near Claremont is outside the SFHA, but experiences urban flooding when infrastructure cannot carry stormwater away from structures. Another area near Dendron experiences flooding within and beyond the SFHA of the nearby Cypress Swamp.
Totals		419	39,098	

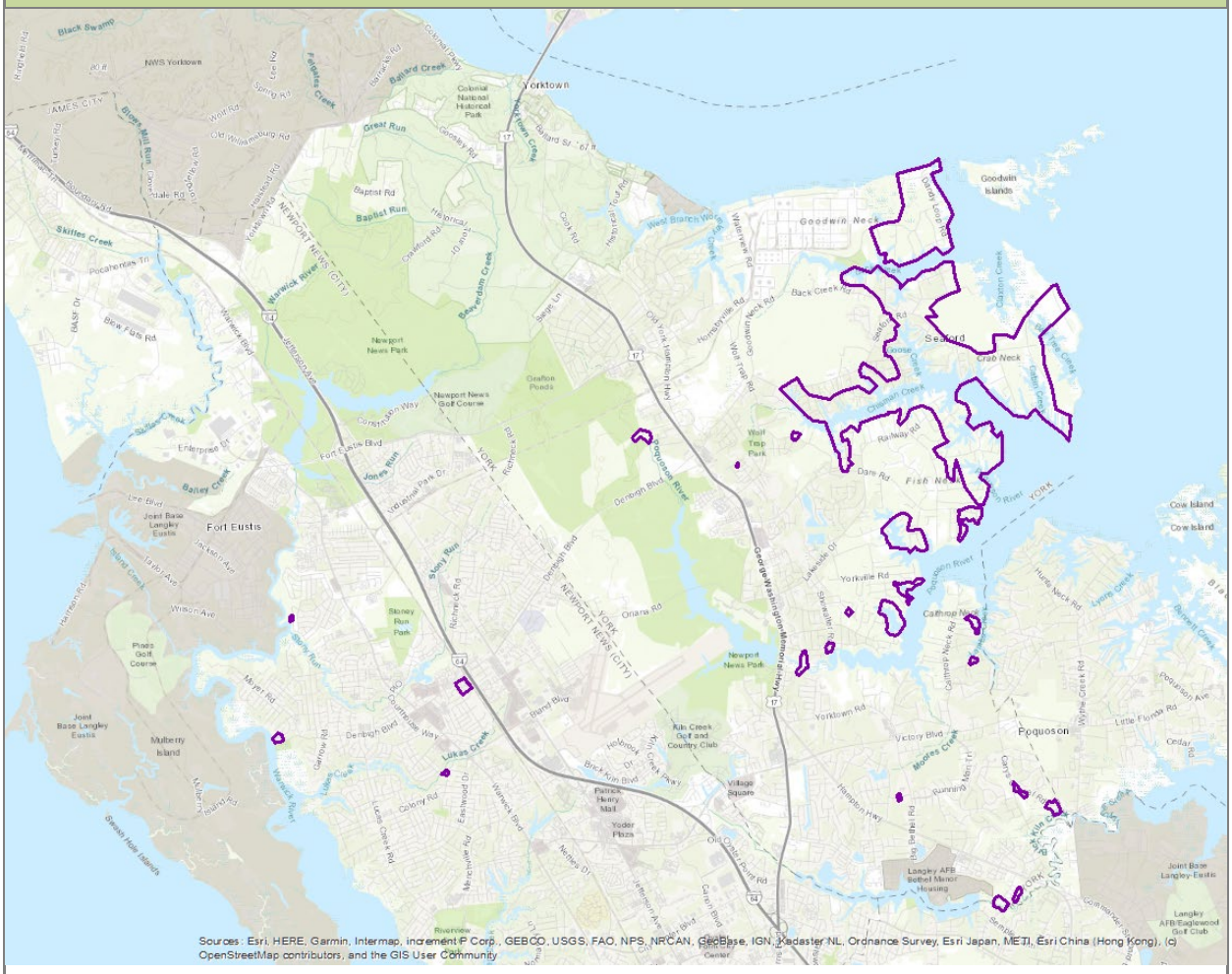
FIGURE 5.3: NFIP REPETITIVE FLOOD LOSS AREAS, LOWER PENINSULA



2021

**Poquoson designated entire SFHA as repetitive loss area. See Figure 4.1.*

FIGURE 5.4: NFIP REPETITIVE FLOOD LOSS AREAS, MIDDLE PENINSULA



Repetitive Loss Areas

2021

FIGURE 5.5: NFIP REPETITIVE FLOOD LOSS AREAS, UPPER PENINSULA

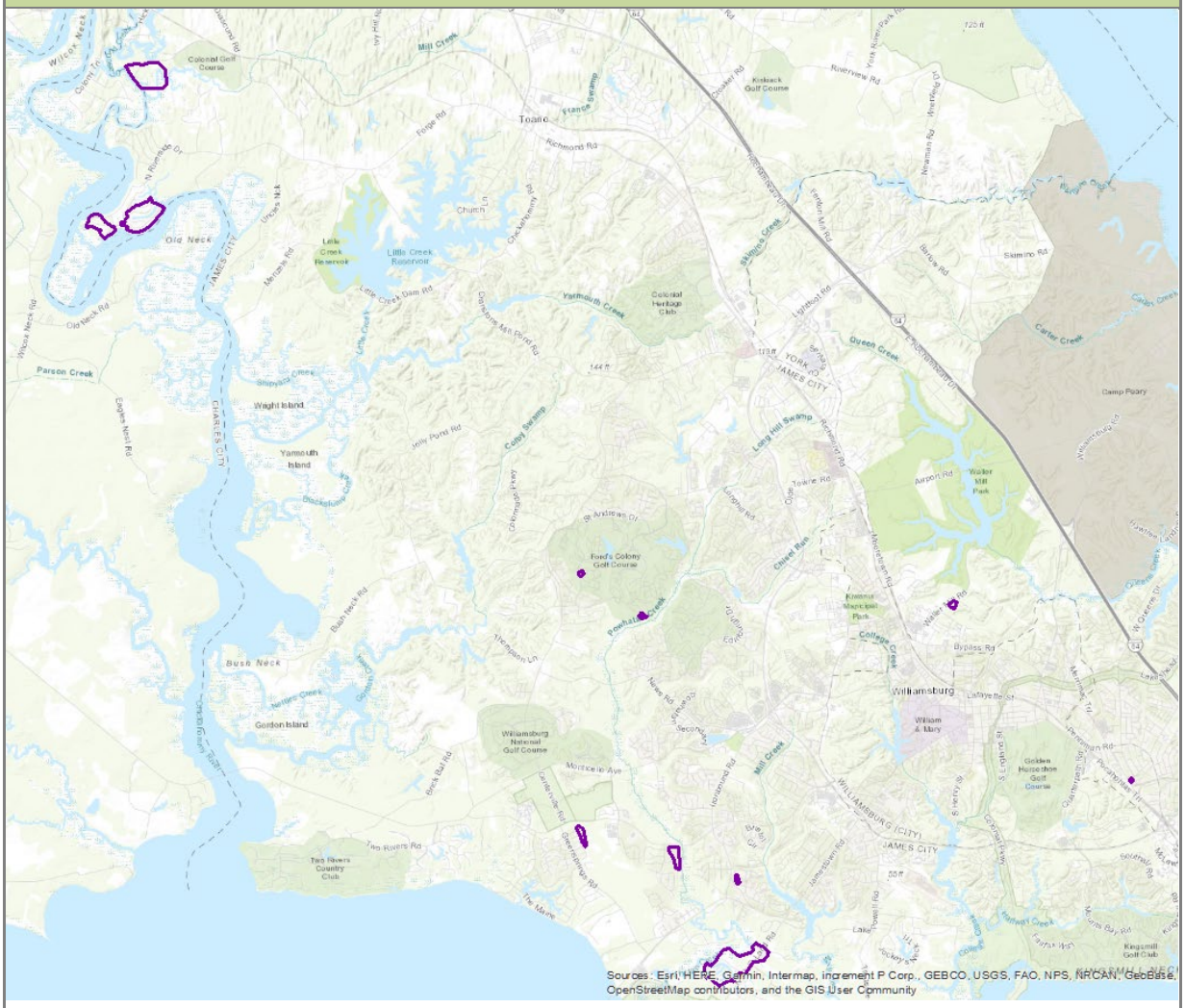
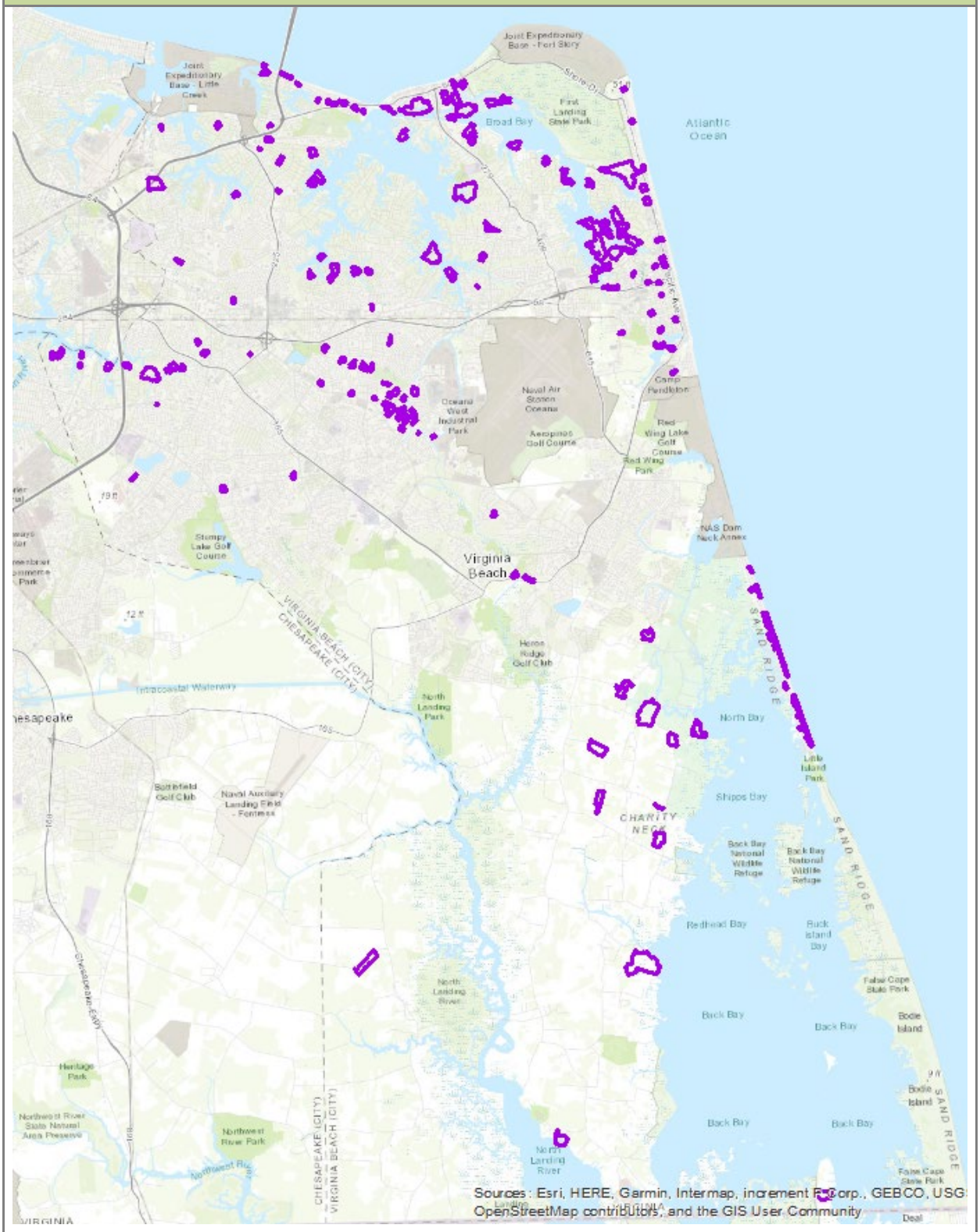


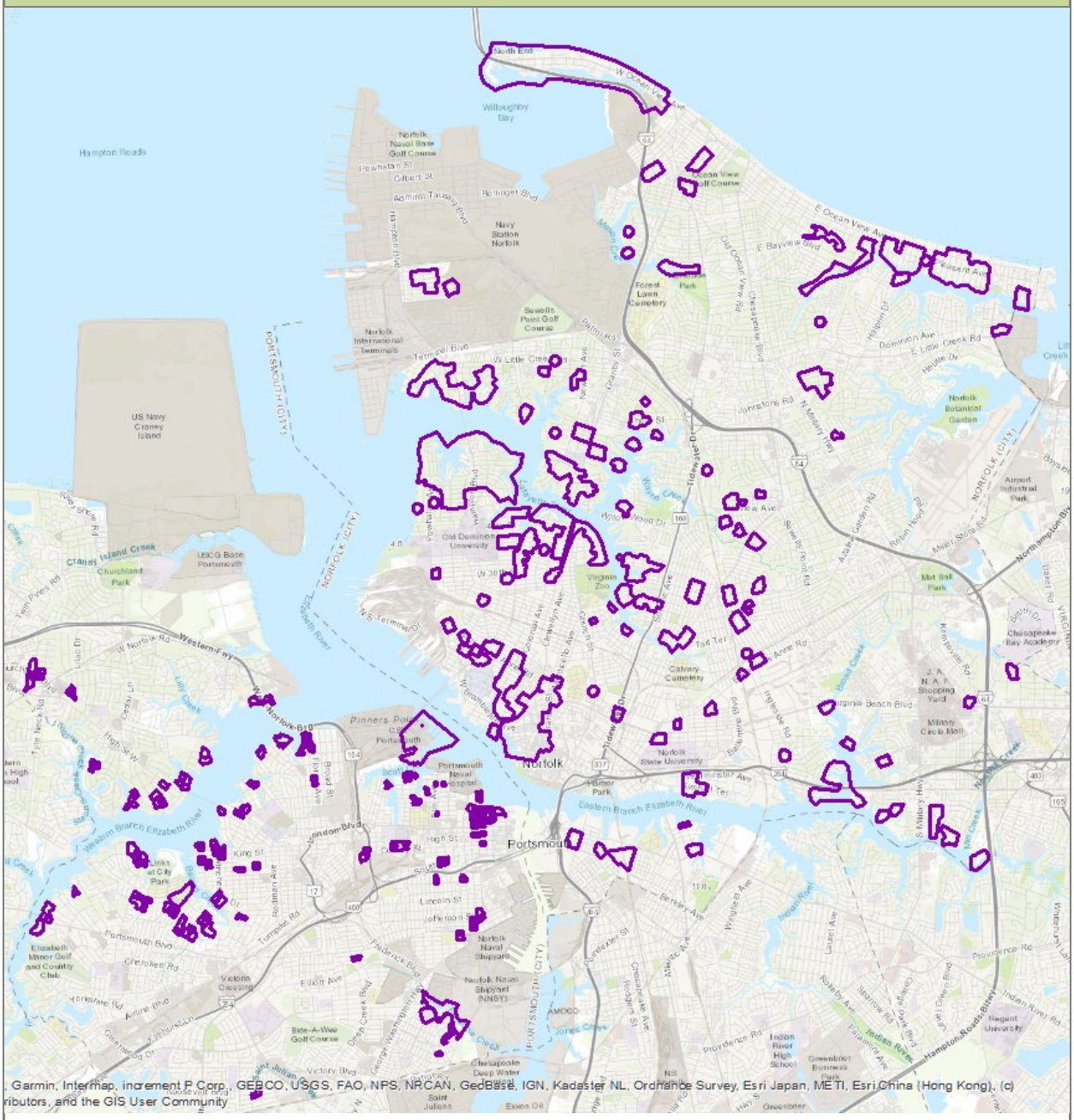
FIGURE 5.6: NFIP REPETITIVE FLOOD LOSS AREAS, VIRGINIA BEACH



Repetitive Loss Areas

2021

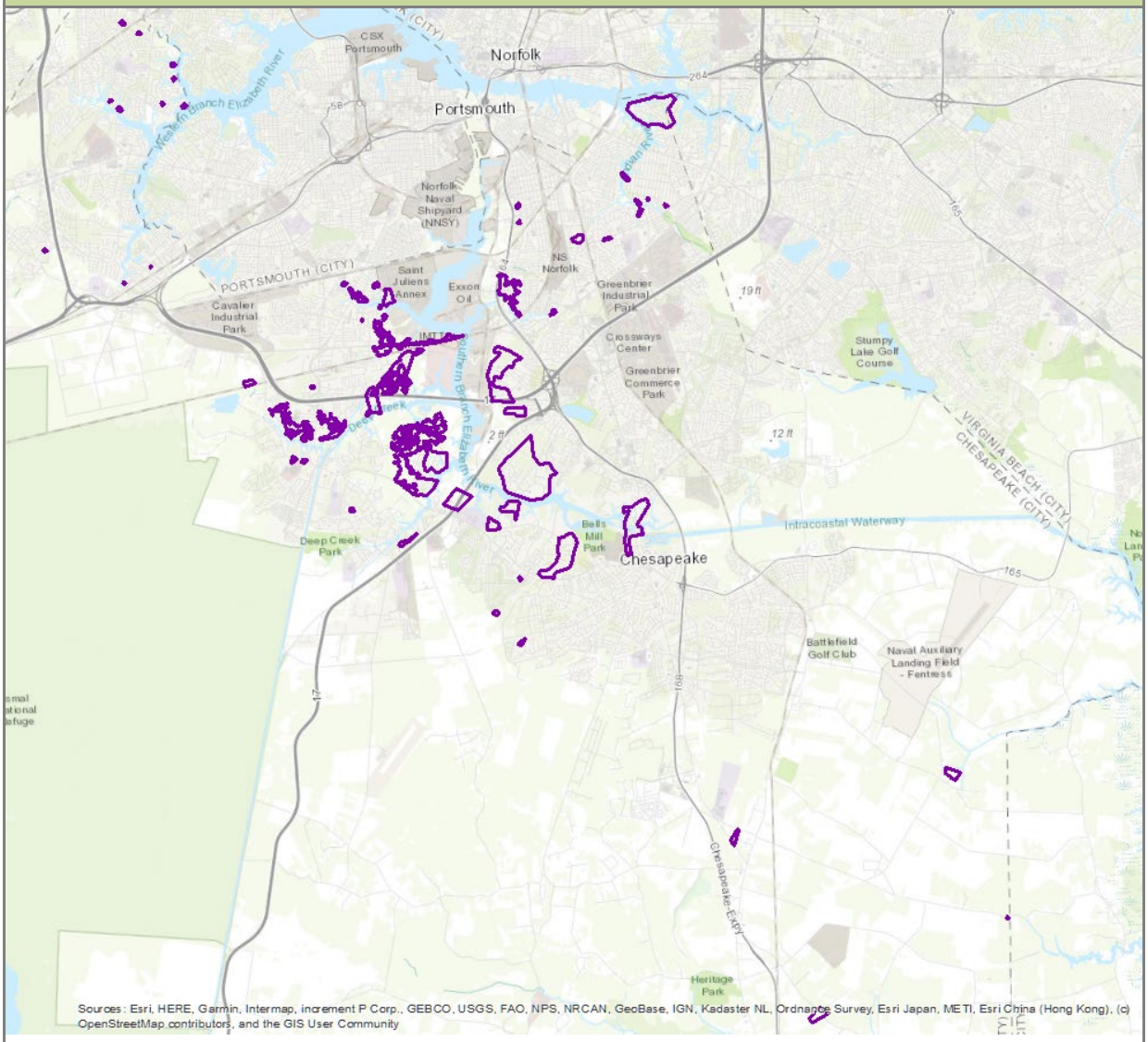
FIGURE 5.7: NFIP REPETITIVE FLOOD LOSS AREAS, NORFOLK, PORTSMOUTH



Repetitive Loss Areas

2021

FIGURE 5.8: NFIP REPETITIVE FLOOD LOSS AREAS, CHESAPEAKE



2021

FIGURE 5.9: NFIP REPETITIVE FLOOD LOSS AREAS, SUFFOLK

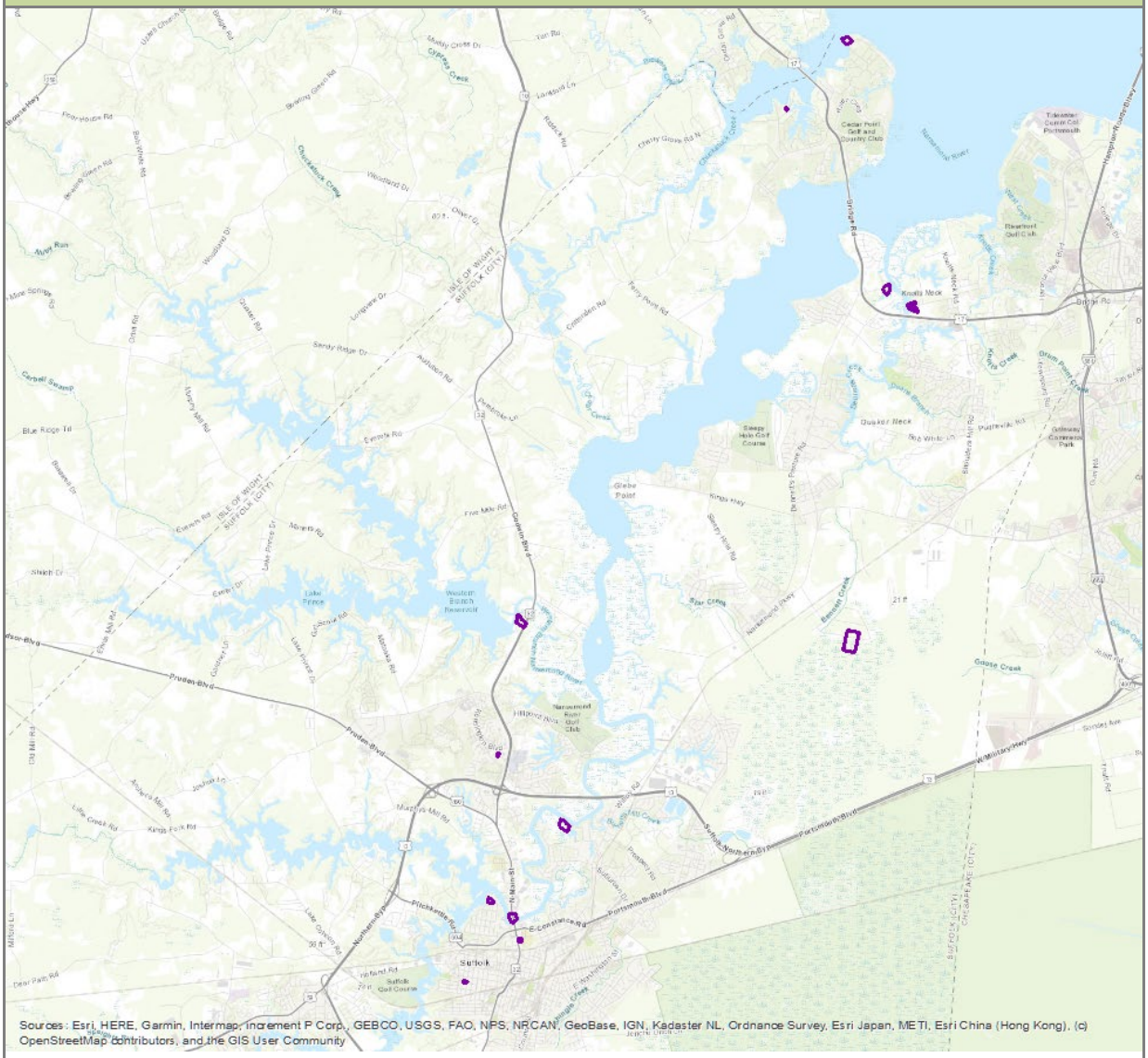


FIGURE 5.10: NFIP REPETITIVE FLOOD LOSS AREAS, ISLE OF WIGHT, SMITHFIELD, SOUTHAMPTON COUNTY, FRANKLIN

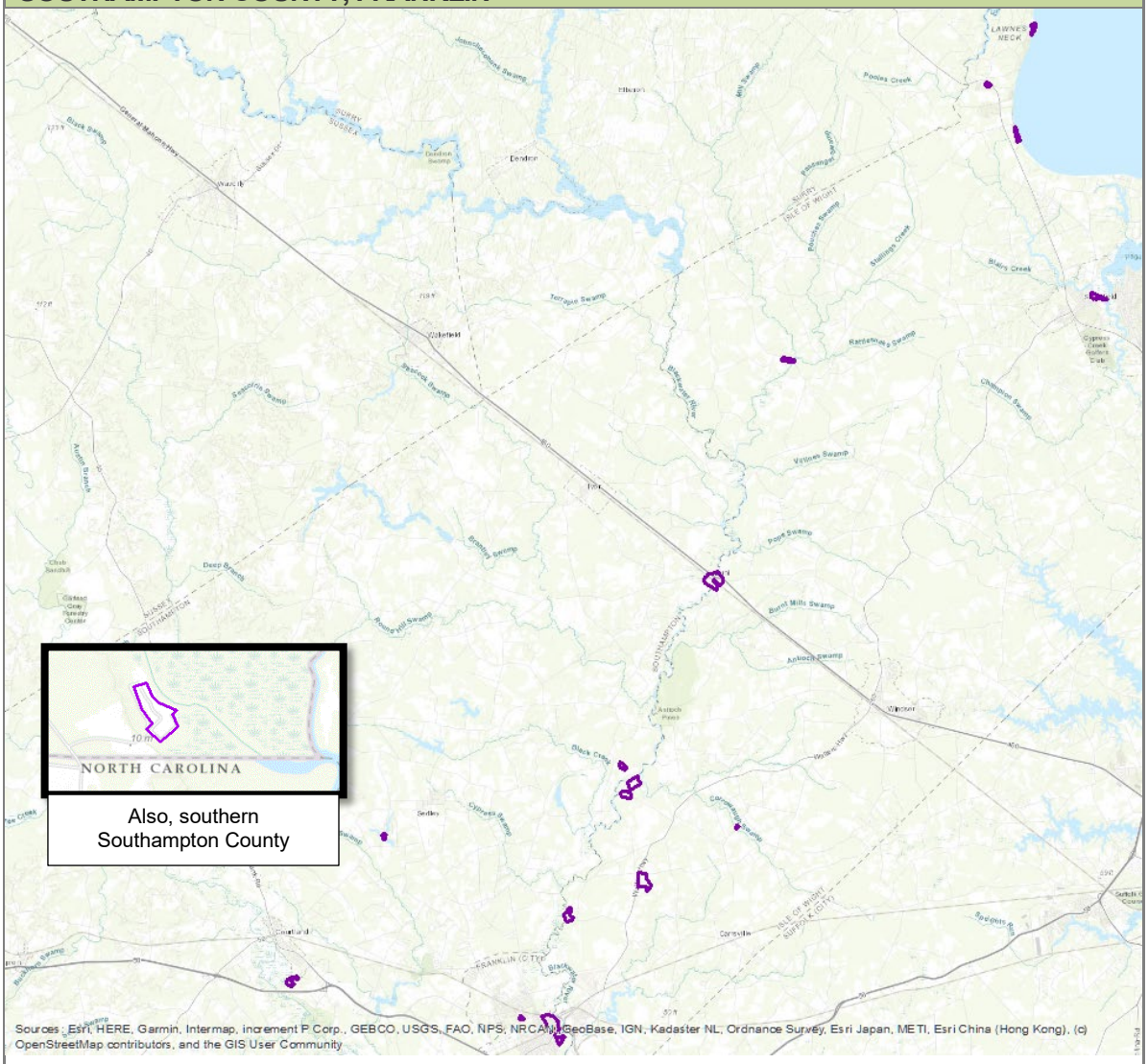
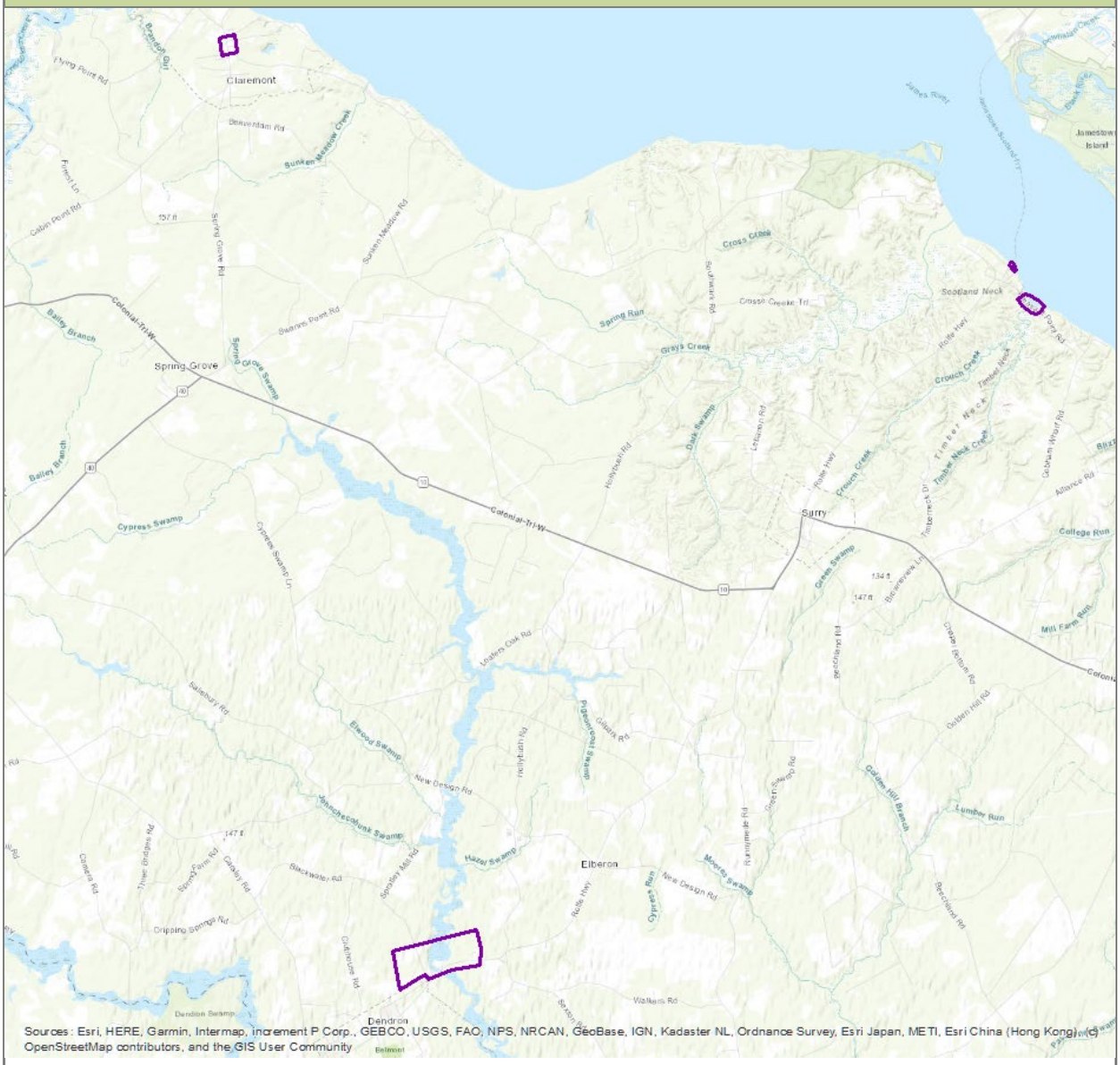


FIGURE 5.11: NFIP REPETITIVE FLOOD LOSS AREAS, SURRY COUNTY



ESTIMATES OF POTENTIAL LOSSES

For the updated flood vulnerability analysis, participating communities were asked to share as much information as possible about individual structures in their communities, including:

- Elevation Certificate data or lowest floor elevation;
- address;
- year built;
- number of stories;
- building cost;
- content cost;
- building type;
- square footage;
- construction class;

- foundation type; and/or
- occupancy/use code.

A majority of the communities in this Plan had flood hazard vulnerability assessments performed at the individual structure level (Level 2 Hazus analysis) using flood depth raster data generated external to Hazus. Due to the nature of the FEMA FIRMs level of detail, Franklin and Southampton County were modeled using Hazus Flood Level 1 analysis, which generated flood depth rasters internal to Hazus making use of 30 meter digital elevation data from the USGS. Williamsburg was not modeled because previous studies had found no single family residential structures in the SFHA. For all of the other communities in the study area, an individual structure level analysis, also known as a User-Defined Facilities (UDF) analysis within Hazus Level 2, was performed for flood hazards as shown on the FIRM, including coastal and riverine flooding.

The following highlights the data source and processing methodology for each of the input datasets required by Hazus for the UDF analysis:

User Defined Facilities (Building Data, including First Floor Elevations)
HRPDC provided Hazus UDF building data for 11 of the 12 cities and counties where the UDF analysis was performed. These data were only for single family residential structures (RES1 specific occupancy type in Hazus), which typically make up 70-90% of all structures in the mapped floodplain. The City of Virginia Beach directly provided UDF building data for all structure types.

These UDF datasets had been previously developed based on approaches documented in the following three HRPDC reports:

Phase 1 Report: Developing First Floor Elevation Data for Coastal Resilience Planning in Hampton Roads, February 2019 (available at https://www.hrpdcva.gov/library/view/932/developing-first-floor-elevation-data-for-coastal-resilience-planning-in-hampton-roads)

Phase 2 Report: Applying First Floor Elevation Data to Flooding Vulnerability Assessments in Hampton Roads, February 2020 (available at https://www.hrpdcva.gov/library/view/1124/applying-first-floor-elevation-data-to-flooding-vulnerability-assessments-in-hampton-roads)

Phase 3 Report: A Regional Approach to Applying First Floor Elevation Data to Coastal Flooding Vulnerability Assessments in Hampton Roads, November 2020 (available at https://www.hrpdcva.gov/library/view/1386/a-regional-approach-to-applying-first-floor-elevation-data-to-coastal-flooding-vulnerability-assessments-in-hampton-roads)

These reports detail the data sources and approaches used to establish structure location and characteristic data, such as square footage and number of stories, from local assessor's parcel data. These reports also give a detailed description of how first floor elevations were derived for the structures, using a mix of actual surveyed first floor elevations from completed FEMA Elevation Certificates and modeling approaches to assign typical height above grade of first floors based on structure characteristics such as foundation types.

Flood Hazard Data and Depth Rasters
Geospatial analysts obtained the most recent effective Digital Flood Insurance Rate Map databases from the FEMA Map Service Center for the region. This included newly developed flood depth rasters (required inputs for Hazus flood UDF analysis) for the 100-year frequency flood event in all 12 cities and counties modeled using UDF analysis.

While this single flood depth raster allowed loss modeling for the 100-year event, HRPDC was interested in exploring ways to estimate average annual damages (AAD), as well. Estimating AAD requires having flood rasters for at least four additional flood frequency events (such as the 10-year, 25-year, 50-year, and 500-year events). The existing Flood Insurance Studies (FIS) in each of the communities includes multi-return period information that provides most or all of these additional return periods. Therefore, four

additional flood depth rasters were derived for the 12 cities and counties modeled with UDF analysis using the following approach:

1. The flood profiles and transect tables of each city and county were reviewed and an "average" flood profile was selected for each jurisdiction, represented as a specific category of FEMA Probability of Elevation or PELV Curve values. PELV Curves for flood A zones range from A1 to A30 and flood V zones range from V1 to V30, where each curve represents a specific offset between the 10-year and 100-year elevation. For example, the A5 curve represents a flood profile with 2.5 feet between the 10-year and 100-year flood elevation. Each curve has a best-fit line to derive the relative flood elevation offsets to any other return periods, including the 25-year, 50-year, and 500-year required for the Hazus AAD calculations.
2. Once the PELV curve was established for each jurisdiction, new flood depth rasters were derived by subtracting the offset value for that return period from the official FEMA 100-year flood depth raster. For example, for a jurisdiction assigned the A5 PELV curve, the 10-year flood depth raster was estimated by subtracting 2.5 feet from each raster cell in the 100-year flood depth raster. This resulted in some raster cells with zero or negative values, which Hazus ignores in the flood UDF analysis.
3. The following shows the PELV Curve assumptions for the jurisdictions modeled using this approach:
    - Chesapeake, Norfolk, Portsmouth, Virginia Beach - A4 (2 foot offset between 10-year and 100-year)
    - Isle of Wight County, James City County, Newport News, Poquoson, Suffolk, Surry County - A5 (2.5 foot offset between 10-year and 100-year)
    - Hampton, York County - A7 (3.5 foot offset between 10-year and 100-year)

Using the five flood depth rasters and UDF building data listed above, a building level flood vulnerability analysis was conducted for each flood-prone community. Because of the large number of analyses that needed to be conducted (5 return periods for 12 jurisdictions), the newly developed Hazus FAST Tool was used. The FAST Tool uses a Python script-based approach to automate running a Hazus flood UDF analysis with the simple selection of an input UDF database and the selection of one or more flood depth rasters. The FAST tool outputs a text file with the analysis results for each structure determining the building and content damage percentage and dollar losses for each structure.

One final set of refinements was needed after running the FAST tool for the five return periods in each community. The HRPDC detailed structure data only included lowest floors and other characteristics for single-family residential structures. In order to estimate losses for all structure types, a companion Hazus Level 1 analysis was conducted for each of the 11 jurisdictions with only RES1 data using the 100-year FEMA flood depth raster as an input. The aggregated loss estimates from these Level 1 analyses were used to develop multiplication factors to apply to the building and contents losses in each community to account for non-residential structures. In addition, the final AAD value was derived using the standard Hazus calculation for the five return periods modeled.

Table 5.7a provides a detailed listing of the number of residential structures expected to be damaged by flooding (coastal storm surge and riverine flooding), and the total dollar losses predicted for all structures for the 100-year event, and Average Annual Damages.

TABLE 5.7A: HAZUS FLOOD DAMAGE VULNERABILITY RESULTS						
SUBREGION	**COMMUNITY**	**NUMBER OF SINGLE FAMILY RESIDENTIAL BUILDINGS DAMAGED (100-YR EVENT)**	**TOTAL ALL BUILDING TYPE LOSSES (100-YR EVENT)**	**TOTAL CONTENT LOSSES (100-YR EVENT)**	**TOTAL LOSSES (100-YR EVENT)**	**AVERAGE ANNUAL DAMAGES**
Peninsula	Hampton	4,012	$93,763,321	$70,335,791	$164,099,112	$6,813,410
	Newport News	435	$6,045,697	$4,586,632	$10,632,329	$486,054
	Poquoson	1,405	$43,631,875	$31,715,660	$75,347,535	$3,715,393
	Williamsburg	Not modeled; there are no single family residential structures in mapped floodplain				
	James City County	64	$1,762,201	$1,000,658	$2,762,858	$156,374
	York County	266	$4,716,520	$3,376,412	$8,092,932	$687,866
Southside	Norfolk	2684	$163,342,598	$177,157,526	$340,500,124	$19,264,918
	Portsmouth	658	$8,197,586	$8,921,847	$17,119,433	$982,084
	Suffolk	40	$1,997,698	$1,421,059	$3,418,757	$190,613
	Virginia Beach	2322	$149,052,336	$65,543,442	$214,595,778	$9,524,586
	Chesapeake	1382	$17,411,115	$14,887,712	$32,298,827	$1,795,921
Western Tidewater	Isle of Wight County	47	$3,278,669	$2,844,448	$6,123,118	$410,568
	Franklin*	NA*	$109,000	$91,000	$200,000	$11,000
	Southampton County*	NA*	$854,000	$929,000	$1,783,000	$111,446
	Surry County	23	$1,052,801	$906,209	$1,959,011	$111,192
Totals		**13,338**	**$495,215,418**	**$383,717,396**	**$878,932,814**	**$44,261,424**

*Modeled using Hazus Level 1 Flood analysis
Source: Hazus

In an effort to ensure that this plan reflects the latest analyses available for the region, the planning team also examined the results of the *Virginia Coastal Resilience Master Plan – Phase One, December 2021.* Although this plan was released after the planning process for this plan was substantially complete, the team felt it was important to include the results of the later coastal study as a companion to the Hazus results for all flood types. Using a separate methodology as explained in detail in the new document's Appendix C, the *Virginia Coastal Resilience Master Plan – Phase One, December 2021*, showsaverage annual loss results that provide additional insights regarding the impacts of coastal flooding in Hampton Roads. The analysis in the *Coastal Resilience Master Plan* does not address riverine flooding not caused by storm surge.

TABLE 5.7B: COASTAL STORM SURGE IMPACTS, 2020						
SUBREGION	COMMUNITY	EXPOSED POPULATION	AAL RESIDENTIAL	AAL COMMERCIAL	AAL AGRICULTURAL	# PUBLIC STRUCTURES IMPACTED, 100-YEAR FLOOD
Peninsula	Hampton	6,849	$25,279,708	$6,750,368	$30,295	135
	Newport News	350	$1,551,702	$276,989	-	137
	Poquoson	1,114	$26,598,367	$1,259,621	-	25
	Williamsburg	-	-	-	-	-
	James City County	80	$2,001,233	$178,023	$17,550	1
	York County	868	$11,034,534	$1,051,836	$67,686	79
Southside	Norfolk	9,458	$89,208,351	$86,403,233	-	143
	Portsmouth	4,615	$9,336,570	$3,283,350	-	218
	Suffolk	194	$983,209	$605,126	$2,237	5
	Virginia Beach	10,906	$40,107,944	$20,975,453	$426,353	120
	Chesapeake	5,145	$24,316,555	$9,135,644	$55,650	209
Western Tidewater	Isle of Wight County	60	$ 637,785	$1,191,561	$6,791	-
	Franklin	-	-	-	-	-
	Southampton County	10	$38,625	$23,932	-	-
	Surry County	-	$1,550,375	$46,113	$32,335	-
Totals		39,649	$232,644,958	$131,181,249	$638,897	1,072

Source: Virginia Coastal Resilience Master Plan – Phase One, December 2021

Vulnerability to stormwater flooding caused by precipitation and/or stormwater management infrastructure issues was not directly evaluated due to insufficient and inconsistent data across the study area. Although some municipalities have made progress in evaluating this specific type of flooding and have started collecting data to reflect historic occurrences and future vulnerabilities, data are not available to express quantitative risk in a meaningful way for the whole region.

Clearly, much of the Hampton Roads region is susceptible to costly damage resulting from flood events and Figure 4.1 indicates where the flood risk is highest. The lower Peninsula (Hampton and Poquoson) and developed areas of Southside (Norfolk, Virginia Beach, Chesapeake and Portsmouth) have the highest numbers of repetitive losses and highest predicted number of structures expected to be damaged in a 100-year flood event based on the HAZUS data. Hampton, Poquoson, Norfolk and Chesapeake all have more than 1,000 structures that are highly vulnerable to the 100-year flood event, and these areas are likely the most vulnerable in the region. York County has fewer structures susceptible, but the value of those structures is higher, so the vulnerability is consequently higher. The repetitive flood loss areas shown in Figures 5.3 through 5.11 indicate where within each community the flood damage has historically been highest and can be expected to continue into the future without large-scale mitigation measures to reduce flood vulnerability.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

Future vulnerability will be determined, in part, by local officials. Flood hazard and SLOSH maps are available to indicate what areas of the region are most vulnerable to these hazards. These planning tools are used to help guide development away from hazardous areas. Local officials are responsible for

enforcing local floodplain management regulations, flood damage prevention ordinances, and other forms of development policies that restrict new development in flood hazard areas. Additional discussion of actions these communities have taken to reduce future flood vulnerability is provided in Section 6, the Capability Assessment.

In its June 2021 report entitled *The Impact of Climate Change on Virginia's Coastal Areas*, the Virginia Academy of Science, Engineering, and Medicine (VASEM), laid out the consequences of climate change for Virginians. VASEM is a nonprofit organization consisting of members of the National Academies of Science, Engineering, and Medicine who reside or work in Virginia as well as other Virginians who are leaders in these fields. The most immediate consequence of climate change is sea level rise, caused primarily by melting ice and glaciers and thermal expansion. Additional consequences related to flooding include more recurrent flooding (higher frequency of occurrence for damaging floods), extreme rainfall and inundation of septic systems. The report projects that, particularly in urban areas, recurrent flooding will have a disproportional impact on racial and ethnic minorities, the poor, the elderly, renters, non-native English speakers, and those with mobility challenges. Exposure to a growing number of flood-prone facilities regulated for toxic and hazardous substances as sea levels rise is another concern, particularly on the James River, between Richmond and Hampton Roads. Impacts in rural areas are more likely to be centered around soil quality, such as water-logged soils in flood-prone areas, increased salinity due to saltwater intrusion and septic system failures that affect public health.[3]

Increased levels of precipitation from storm events sometimes overwhelm existing municipal stormwater management systems in the Hampton Roads region, which can result in roadway flooding, safety and access concerns, and issues with water quality and treatment capacity. As sea levels rise, the ability of the existing stormwater management systems to collect, convey, treat, and discharge flow will be further reduced by higher water levels at outfall locations.
The average annual number of days with heavy precipitation is expected to increase in the future as a result of climate change. This increased precipitation will have an impact on the frequency of regional flooding, especially riverine flooding, but may also impact coastal flooding unless municipal stormwater systems are redesigned. Heavy precipitation events can easily overwhelm existing infrastructure, causing failure of stormwater culverts, bridge scour, and overland flooding affecting areas and structures that do not normally flood. Increased heavy precipitation can impact dams and, over time, influence flood frequency curves that are used for a variety of insurance, building safety and planning purposes.

According to 2022 data from the Mid-Atlantic Regional Integrated Sciences and Assessments (MARISA)[4], under a moderate emissions scenario, Portsmouth can expect that for the period 2066 to 2095, the average number of days per year with rainfall greater than 1 inch will be 9.5 days, which is 20% more than in the period between 1976 and 2005. The same percentage increase is expected across the region. On the other hand, the number of days with rainfall greater than 3 inches is 0.4, 56% more than in 1976-2005 for Portsmouth. The predictions for days with this severe rainfall are not uniform across the region and range from a low of 35-percent increase in parts of Virginia Beach, to an 84-percent increase in western Isle of Wight County.

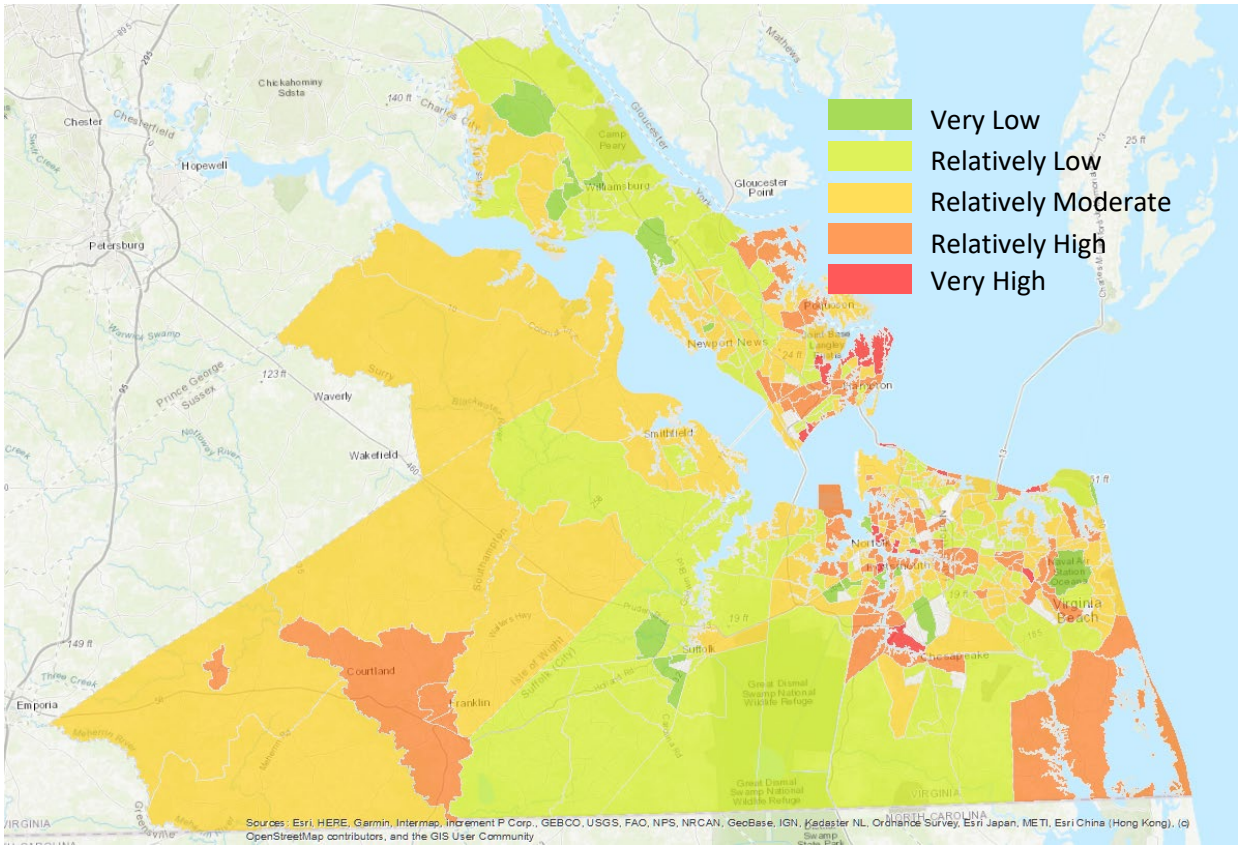
SOCIAL VULNERABILITY

Social vulnerability to both coastal and riverine flood (combined) for the Hampton Roads region is represented in **Figure 5.12**, categorized by Census tract. The map shows the NRI rating for flood risk is highest in the Franklin/Southampton County area, the lower Peninsula, Census tracts bordering the Elizabeth River in Portsmouth and Norfolk, and portions of central and southern Virginia Beach.

[3] *The Impact of Climate Change on Virginia's Coastal Areas*, the Virginia Academy of Science, Engineering, and Medicine, June 2021. Available online at: http://www.vasem.org/wp-content/uploads/2021/08/VASEM_VirginiasCoastalAreasReport_FINAL.pdf

[4] Mid-Atlantic Regional Integrated Sciences and Assessments: https://public.tableau.com/views/Climate_summary_rainfall_20181112_PUBS/3b?:embed=y&:toolbar=n&:embed_code_version=3&:loadOrderID=0&:display_count=y&:origin=viz_share_link

FIGURE 5.12: RIVERINE FLOODING, NRI RISK RATING



2021

Source: National Risk Index, 2021

FLOODING DUE TO IMPOUNDMENT FAILURE/HIGH HAZARD DAM

ESTIMATES OF POTENTIAL LOSSES

Table 4.4 summarizes possible impacts to downstream structures and infrastructure in the event of dam failure. In the downstream inundation areas for all of Hampton Roads high hazard potential dams, the following impacts are possible:

2,798 homes;
136 roadways;
8 businesses;
3 schools;
4 parks;
4 utilities;
6 railroad segments; and,
9 downstream dams.

Potential damages from inundation of these structures and infrastructure have not been further quantified, but is an area of expected future study in the region.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

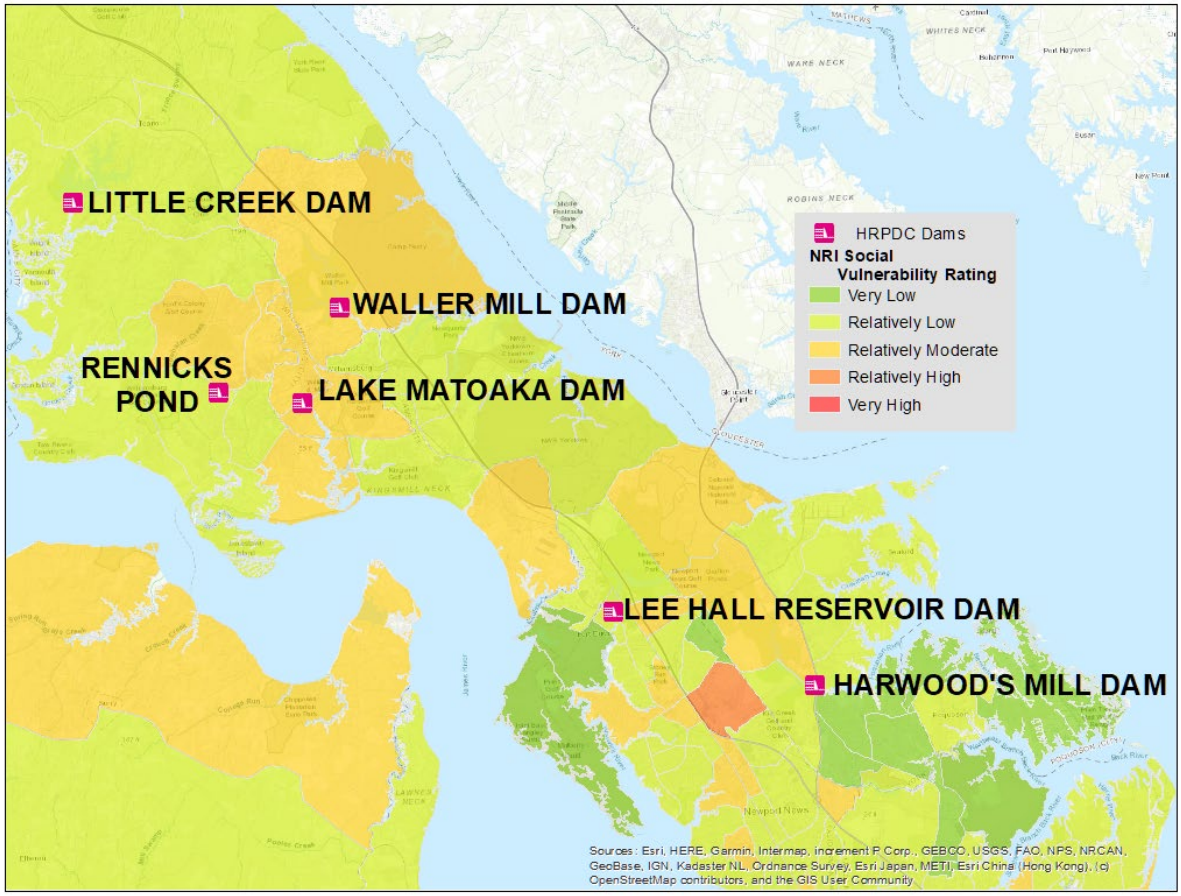
Based on historical experience and the fact that the dams in the study area are aging, precipitation patterns are increasingly more frequent and severe as a result of climate change, and the dams are categorized as High Hazard, there is a moderate probability of a future event involving a dam or levee failure in the study area. As climate change alters precipitation patterns, including frequency and quantity, the adequacy, safety and protection levels of all dams (not just high hazard potential dams) will need continuous evaluation.

SOCIAL VULNERABILITY

The locations of the study area high hazard potential dams were overlaid on the foundational social vulnerability map from the NRI. The analysis, as shown in **Figures 5.13 and 5.14**, indicates that 7 dams are located in areas of Relatively Moderate social vulnerability (no dams were in areas of Very High or Relatively High social vulnerability): Waller Mill Dam, Lake Matoaka Dam, Harwood's Mill Dam, B-1 Pond Dam, B-2 Pond Dam, ASB Pond Dam and C-Pond Dam. All other dams are in Relatively Low or Very Low areas of social vulnerability.

According to DCR, social vulnerability is a factor in assessing grant applications prepared by dam owners in Hampton Roads. Project engineers are also responsible for addressing impacts on historical and cultural impacts in accordance with state and federal regulations.

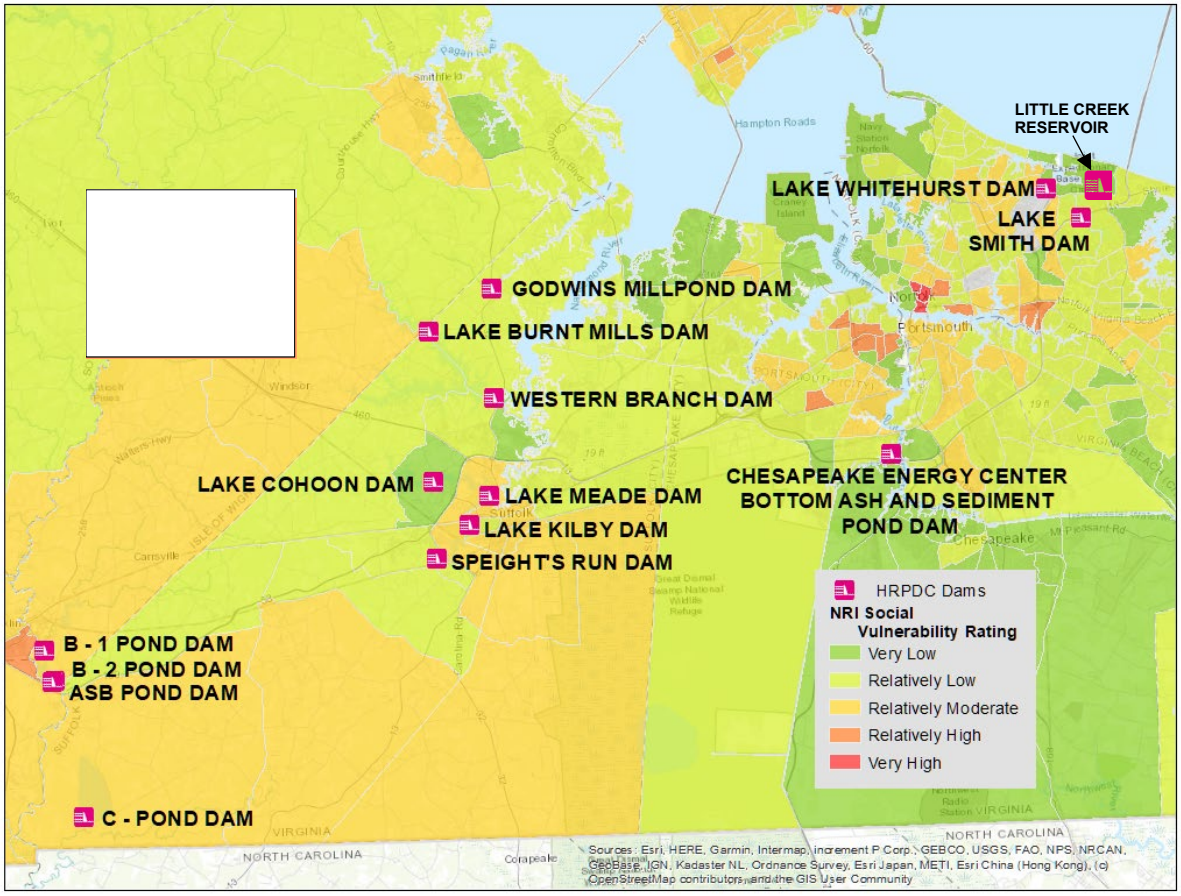
FIGURE 5.13: HIGH HAZARD POTENTIAL DAMS, PENINSULA



2021

Source: DCR, 2021

FIGURE 5.14: HIGH HAZARD POTENTIAL DAMS, SOUTHSIDE



2021

Source: DCR, 2021

SEA LEVEL RISE AND LAND SUBSIDENCE

Historical evidence shows that much of the Hampton Roads region is already experiencing some degree of sea level rise and land subsidence. As discussed in the *Hazard Identification and Analysis* section, data from Sewells Point at the Norfolk Naval Base indicate that sea level in the past 93 years has risen at a rate of approximately 4.73 millimeters per year and sea level rise at that rate is expected to continue and possibly accelerate. Vulnerability to sea level rise can be looked at in terms of economic losses resulting from future flood event damages, and by examining expectations for future land use and development patterns and highlighting what infrastructure and real estate will potentially be affected by rising tides. In both cases, this analysis assumes somewhat static conditions with regard to flood mitigation capabilities. A changing regulatory climate, development pressure, large-scale mitigation or resiliency projects, and changes in economic conditions or financial capabilities, for example, could dramatically affect the impact of sea level rise in the region. Additionally, HRSD's SWIFT program is an innovative water treatment project in eastern Virginia that is taking highly treated water that would otherwise be discharged into the region's waterways, and putting it through additional rounds of advanced water treatment. The SWIFT water is then added to the Potomac Aquifer and helping to slow or even revers the sinking of land due to groundwater withdrawals.

HRPDC has compiled a list of sea level rise viewing tools, some of which include data to help visualize the various types of risk posed by sea level rise and land subsidence:
Vulnerable Infrastructure - Buildings, roads, and critical facilities;
Societal Exposure - Demographic data summaries and socially vulnerable communities; or
Environmental Change - Marsh migration and shoreline condition.

ONLINE TOOLS	SEA LEVEL RISE SCENARIOS	INFRASTRUCTURE IMPACTS	SOCIETAL IMPACTS	ENVIRONMENTAL IMPACTS
ADAPT VIRGINIA INTERACTIVE MAP	Low, intermediate, and extreme scenarios for 2020-2100	✓	✓	✓
CCRFR SEA LEVEL RISE TOOL	NOAA Intermediate High Scenario for 2040, 2060, and 2080	✓	✗	✗
CLIMATE CENTRAL'S COASTAL RISK SCREENING TOOL	Map sea level rise by year (2030-2100) or water level.	✗	✗	✗
CLIMATE CENTRAL'S SURGING SEAS RISK FINDER	Map by water level for a specific city. Summary fact sheets and graphs available.	✓	✓	✗
NOAA COASTAL FLOOD EXPOSURE MAPPER	Map by water level. User can save and export maps.	✓	✓	✓
NOAA'S SEA LEVEL RISE VIEWER	Map by water level or local scenarios (2020-2100).	✗	✓	✓

Adapt Virginia Interactive Map (Virginia only)

CCRFR Sea Level Rise Tool (Virginia only)

Climate Central's Coastal Risk Screening Tool

Climate Central's Surging Seas Risk Finder

NOAA Coastal Flood Exposure Mapper

NOAA Sea Level Rise Viewer

ESTIMATES OF POTENTIAL LOSSES

Detailed economic loss estimates for long-term sea level rise and land subsidence are difficult to develop because the response of individual property owners and governmental entities to sea level rise is inherently unpredictable and variable over both time and space. Regional experience over the past 50 years indicates that shoreline protection measures will be reinforced to protect threatened structures, hindering the ability of wetlands and shorelines to adjust naturally as the water level rises. Therefore, models based on permanent inundation of developed areas, and which assume inundation means destruction of the built environment, can dramatically overstate losses.

In 2020, the City of Virginia Beach conducted a detailed analysis of annual average flood-related losses for current conditions, 1.5 feet of sea level rise in the 2040s, and 3 feet of sea level rise in the 2070s primarily using lowest floor elevations, HAZUS and depth-damage curves. Average annual losses today are estimated to be $26 million, and expected to be $77 million in the 2040s. In the 2070s, that loss estimate balloons to 12 times current conditions, at $329 million average annual losses.[5] Applying these ratios to Hampton Roads has some relevance due to similarities in the flood risks and growth patterns faced by the coastal communities, especially on the lower Peninsula and Southside areas. The current estimate of average annual flood losses in Hampton Roads as a result of this study is $44.2 million, which would translate into $130.8 million by the 2040s, and over $558.6 million annually by the 2070s. This is the average annual damage figure chosen as a basis for this plan analysis.

Different methodologies have produced additional predictions of the annualized flood damages in the future caused by sea level rise. The *Virginia Coastal Resilience Plan, Phase I, 2021*, estimates that statewide between 2020 and 2080, "the number of residential, public, and commercial buildings exposed to an extreme coastal flood is projected to increase by almost 150% from 140,000 to 340,000, while annualized flood damages increase by 1,300% from $0.4 to $5.1 billion."[6]

Another methodology for estimating average annual losses expected from sea level rise was supported by FEMA many years ago. The agency issued a report to Congress documenting the estimated impact of relative sea level rise on the Flood Insurance Rate Maps, *Projected Impact of Relative Sea Level Rise on the National Flood Insurance Program*, FEMA, October 1991, http://papers.risingsea.net/Flood-Insurance.html. The agency estimates that existing development in the coastal zone would experience a 36% to 58% increase in annual damages for a 1-foot rise in sea level by 2100, and a 102% to 200% increase resulting from a 3-foot rise by 2100. Applying these [albeit outdated] ratios to the current average annual flood losses, the result is $60-70 million from 1 foot sea level rise, increasing to $89-133 million with the expected 3-foot increase.

[5] *Coastal Flooding and Economic Loss Analysis: City of Virginia Beach, Virginia*. March 30, 2020. Available online at: https://www.vbgov.com/government/departments/public-works/comp-sea-level-rise/Documents/20200330_FloodRiskAnalysis_Final_(2).pdf

[6] *Virginia Coastal Resilience Master Plan, Phase One,* December 2021. Summary available online at: https://www.dcr.virginia.gov/crmp/plan.

The lack of detailed elevation information for the existing pre-FIRM and post-FIRM building inventory in much of Hampton Roads further hinders efforts to calculate detailed future average annual flood damages using increasing 100-year flood elevations, especially outside of the current SFHA. For example, calculations of sea level rise losses may be supported by the argument that areas below a certain elevation will be permanently inundated and evacuated. The FEMA study assumes that the current elevation distribution of post-FIRM construction relative to the 100-year flood elevation holds steady for future construction, when in fact many communities in the region have already implemented and are enforcing freeboard requirements, and many base flood elevations recently changed as a result of a restudy of coastal areas. The obsolescence of buildings is not accounted for in the FEMA predictions; presumably, the number of pre-FIRM and post-FIRM buildings built to outmoded floodplain management standards should decline with time. Replacement structures must be in compliance with NFIP regulations in effect at the time of their construction, and are thus better protected from flood (and wind) damage. Some communities, such as Hampton, are also adopting requirements for freeboard outside of the SFHA.

Recent research in other regions is estimating the negative impact from flooding and sea level rise on gross domestic product. In other words, this research is attempting to estimate overall impacts to the economy rather than just accumulating damage or losses to affected structures, families and businesses. There may be applications for this research in the Hampton Roads region in the future.

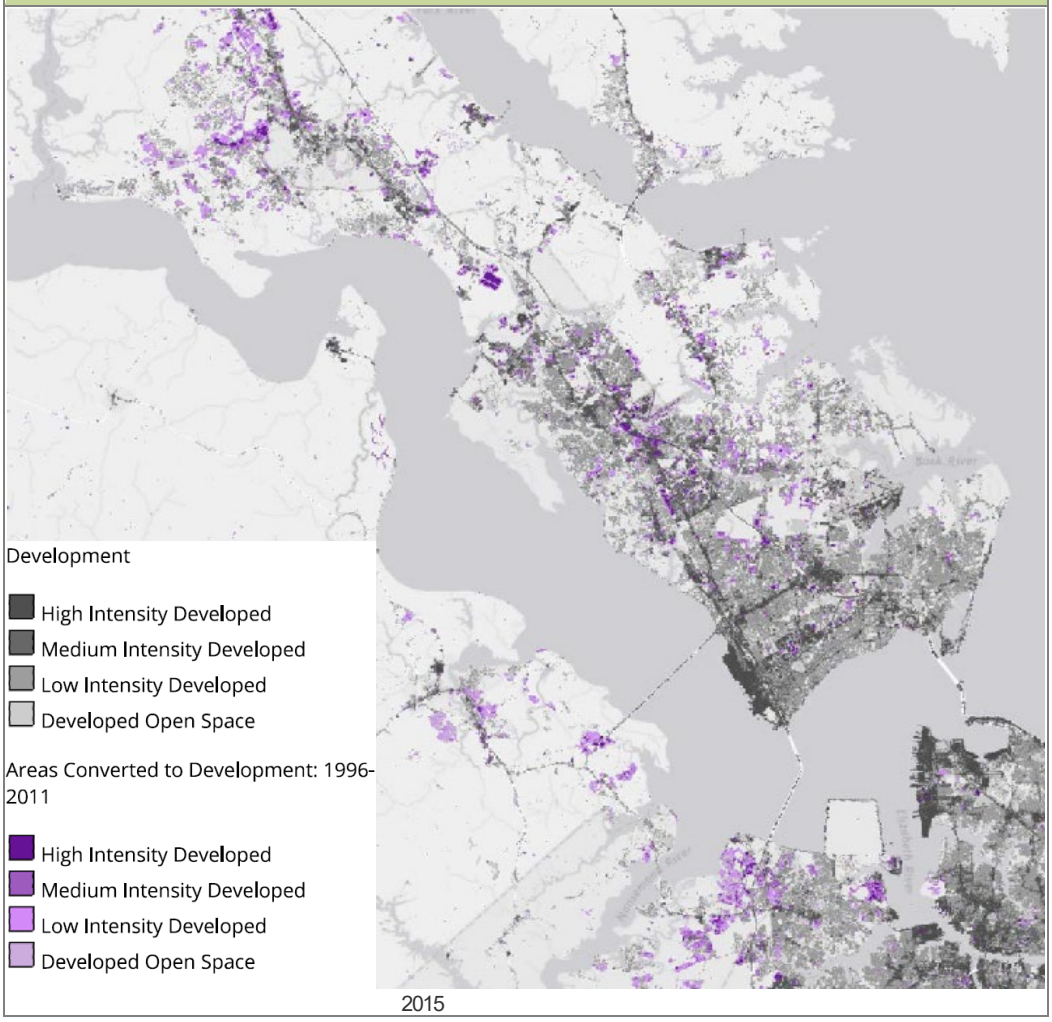
Communities in need of more detailed annualized estimates for the economic impacts of sea level rise in future scenarios, to include impacts to infrastructure and individual structures, must address three primary data needs:

1. Lowest floor elevations for all structures in and near the existing SFHA;
2. HAZUS Level 2 or Level 3 analysis for multi-frequency flood events and flood depths, with various scenarios for sea level rise, to provide sufficient results for annualization; and,
3. The functional, physical or economic obsolescence of existing development, and the variable requirements for flood-safe design for new construction.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

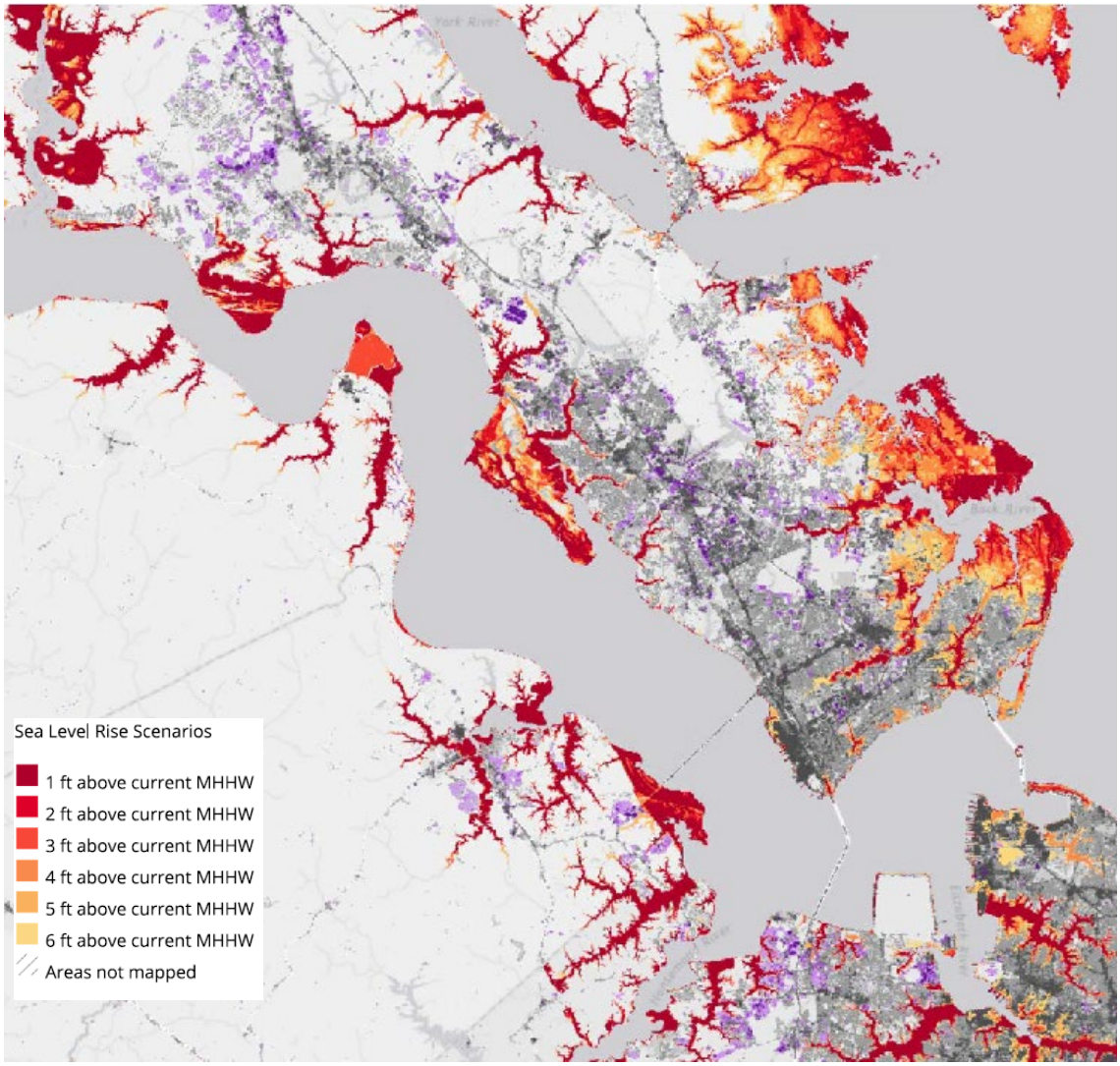
The NOAA Coastal Flood Exposure Mapper tool (http://www.coast.noaa.gov/floodexposure/#/map) uses recent land cover data to show where areas being developed may be impacted by varying levels of sea level rise. This tool can help provide planners with information needed to focus sea level rise mitigation efforts geographically. Summary maps are shown for each Hampton Roads subregion in **Figures 5.15 through 5.20**.

FIGURE 5.15: DEVELOPMENT PATTERNS, PENINSULA



Source: NOAA Coastal Flood Exposure Mapper

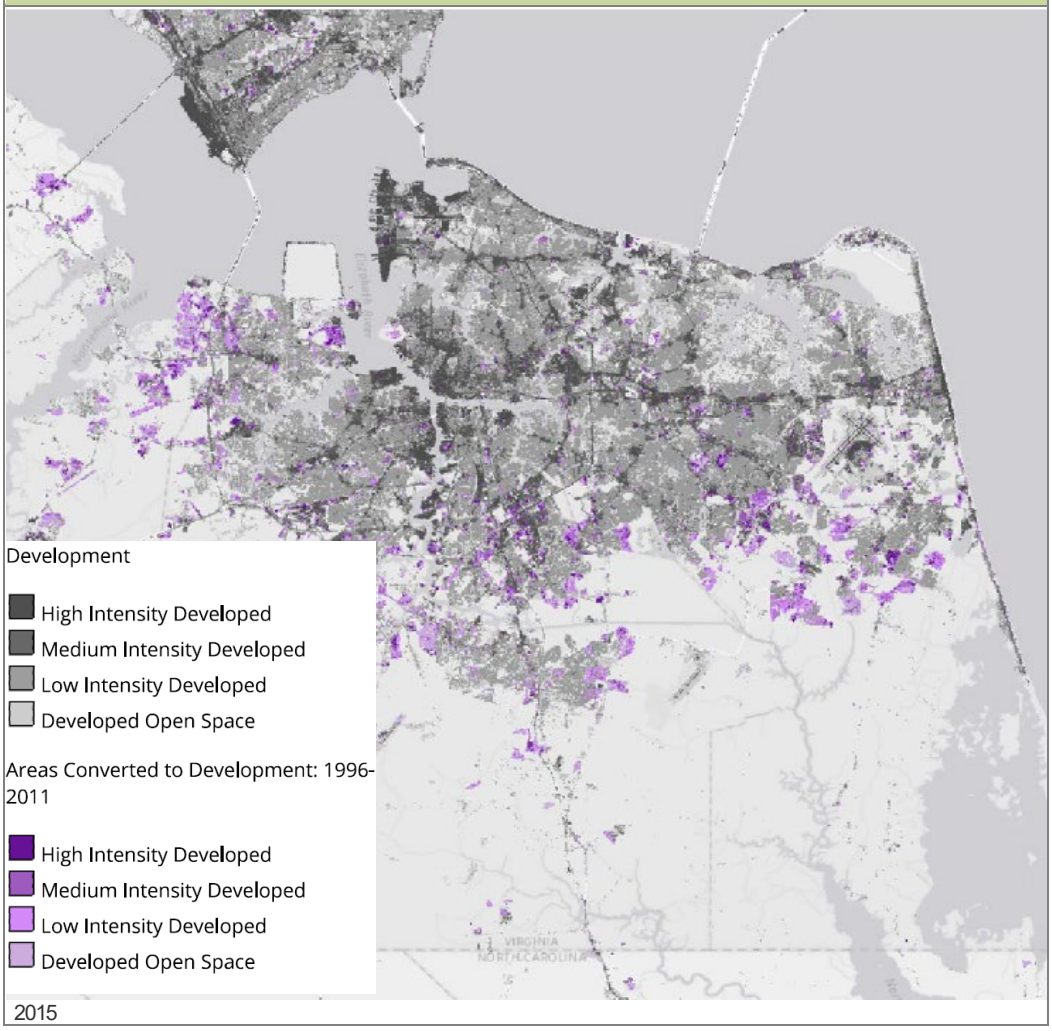
FIGURE 5.16: SEA LEVEL RISE SCENARIOS, PENINSULA



2015

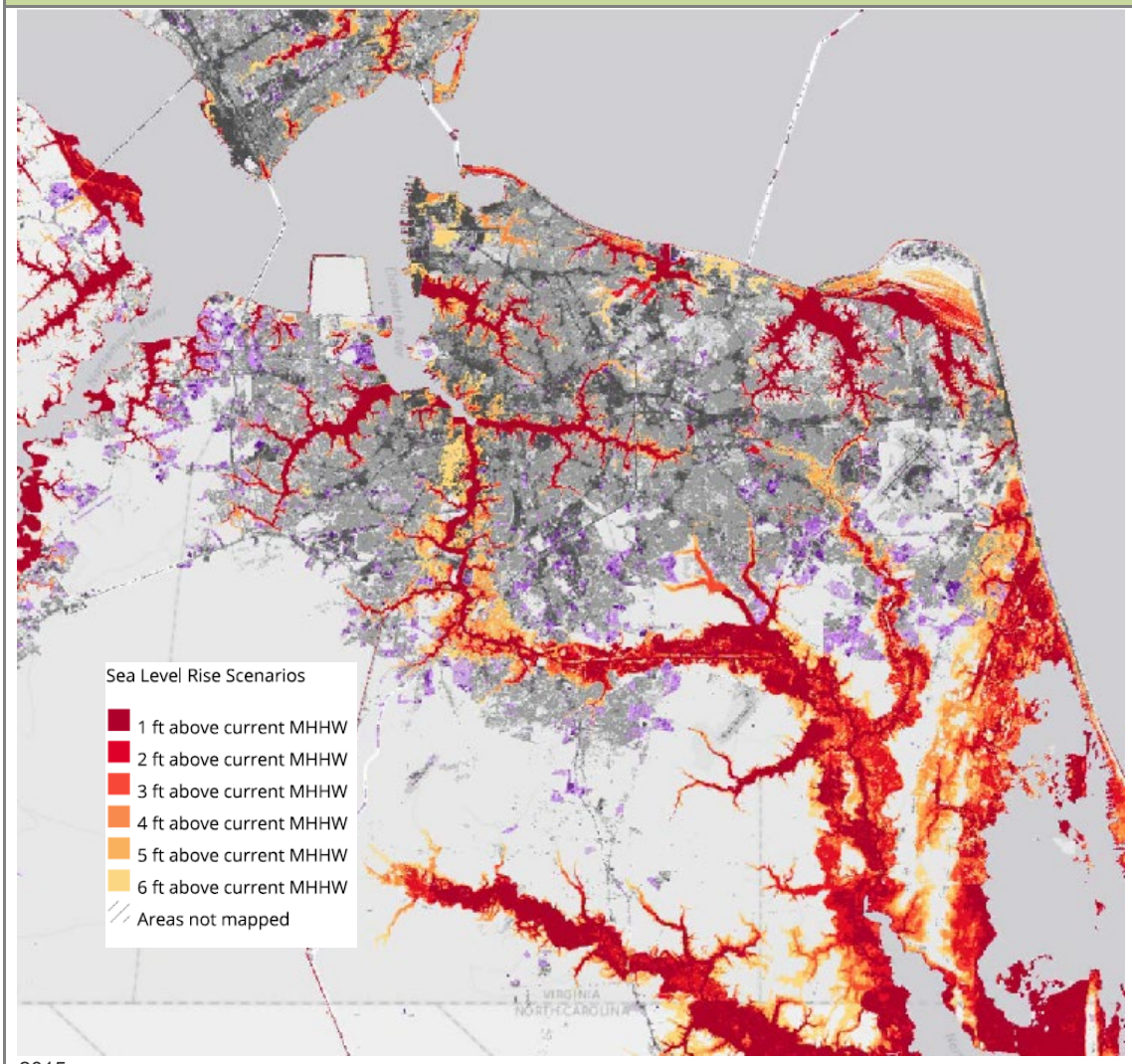
Source: NOAA Coastal Flood Exposure Mapper

FIGURE 5.17: DEVELOPMENT PATTERNS, SOUTHSIDE



Source: NOAA Coastal Flood Exposure Mapper

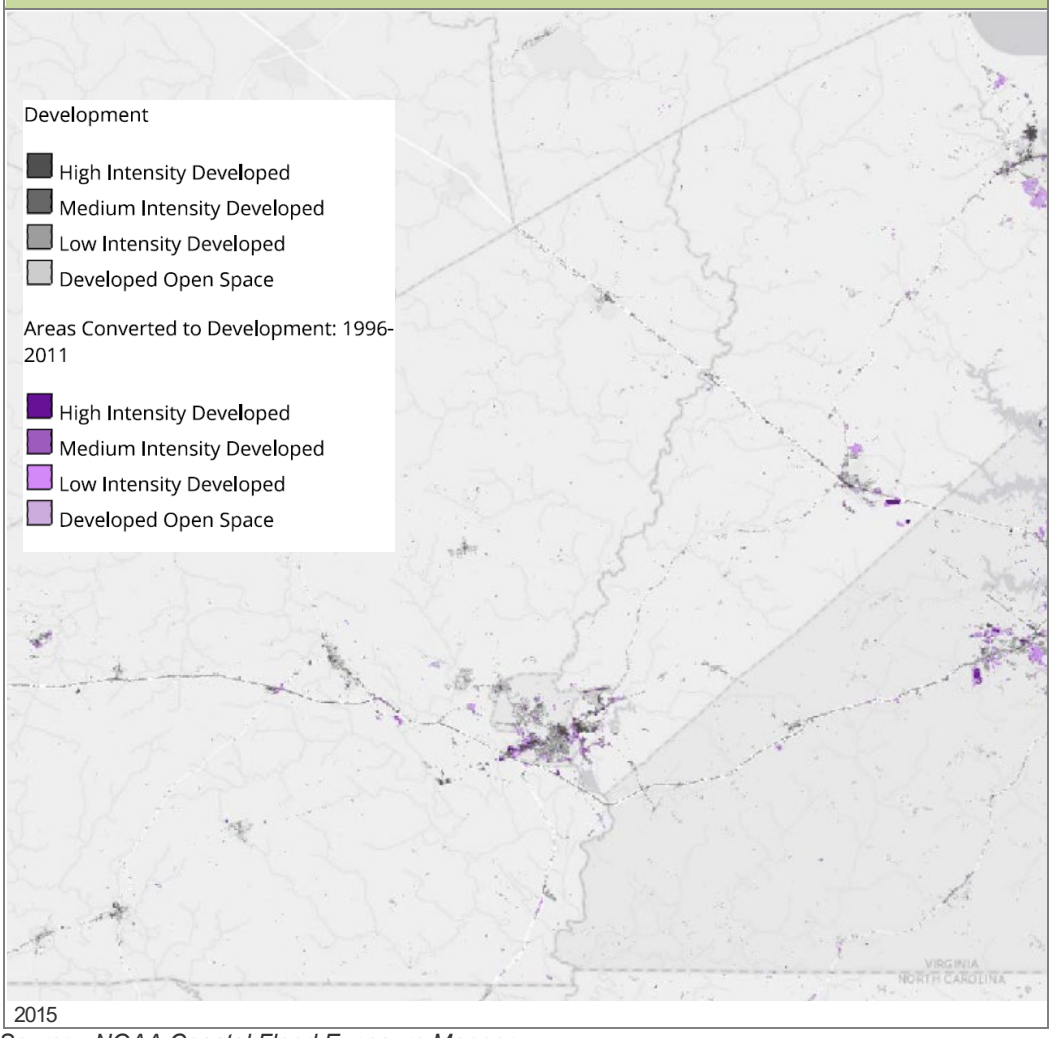
FIGURE 5.18: SEA LEVEL RISE SCENARIOS, SOUTHSIDE



2015

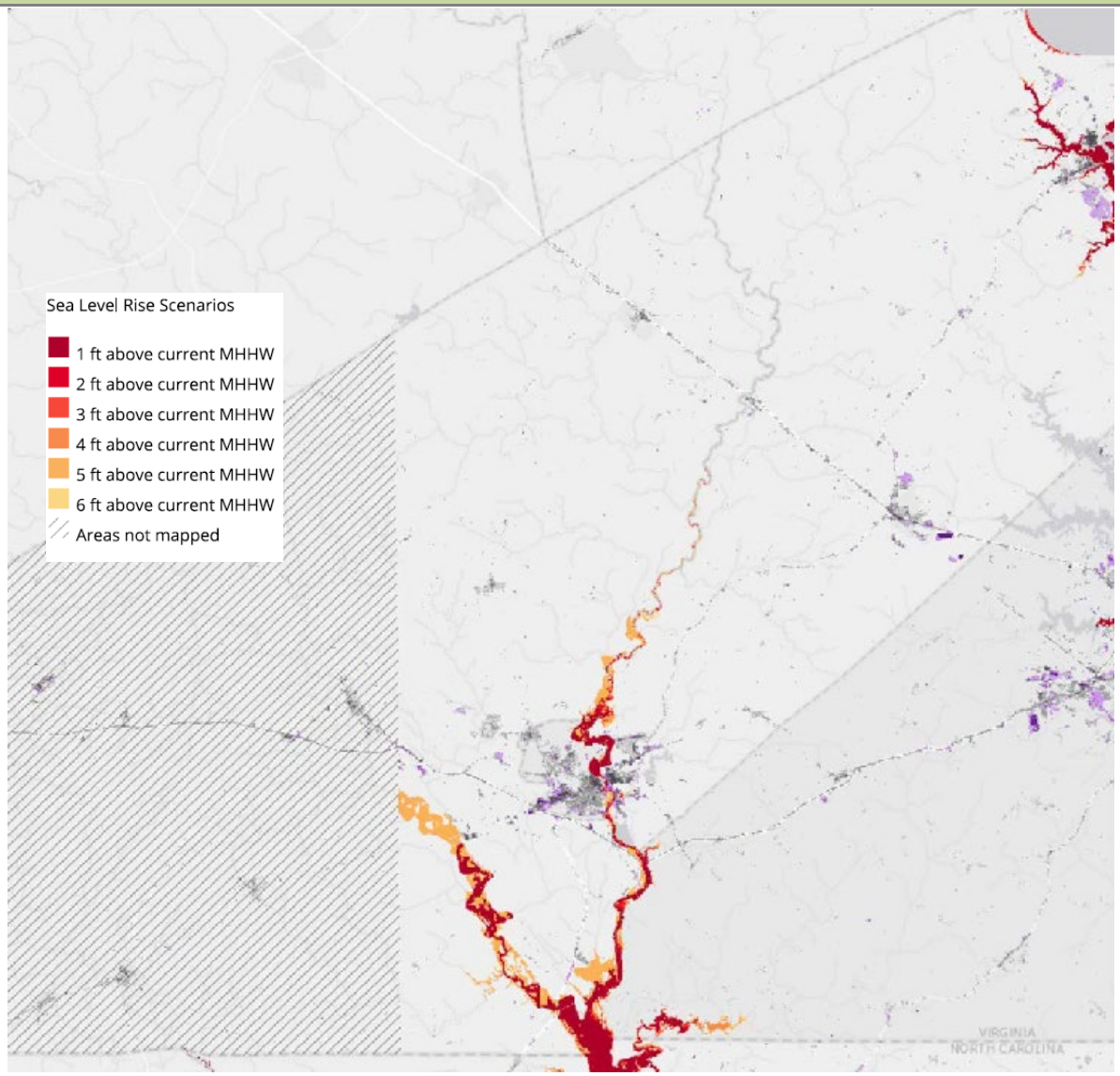
Source: NOAA Coastal Flood Exposure Mapper

FIGURE 5.19: DEVELOPMENT PATTERNS, WESTERN TIDEWATER



Source: NOAA Coastal Flood Exposure Mapper

FIGURE 5.20: SEA LEVEL RISE SCENARIOS, WESTERN TIDEWATER



Source: NOAA Coastal Flood Exposure Mapper

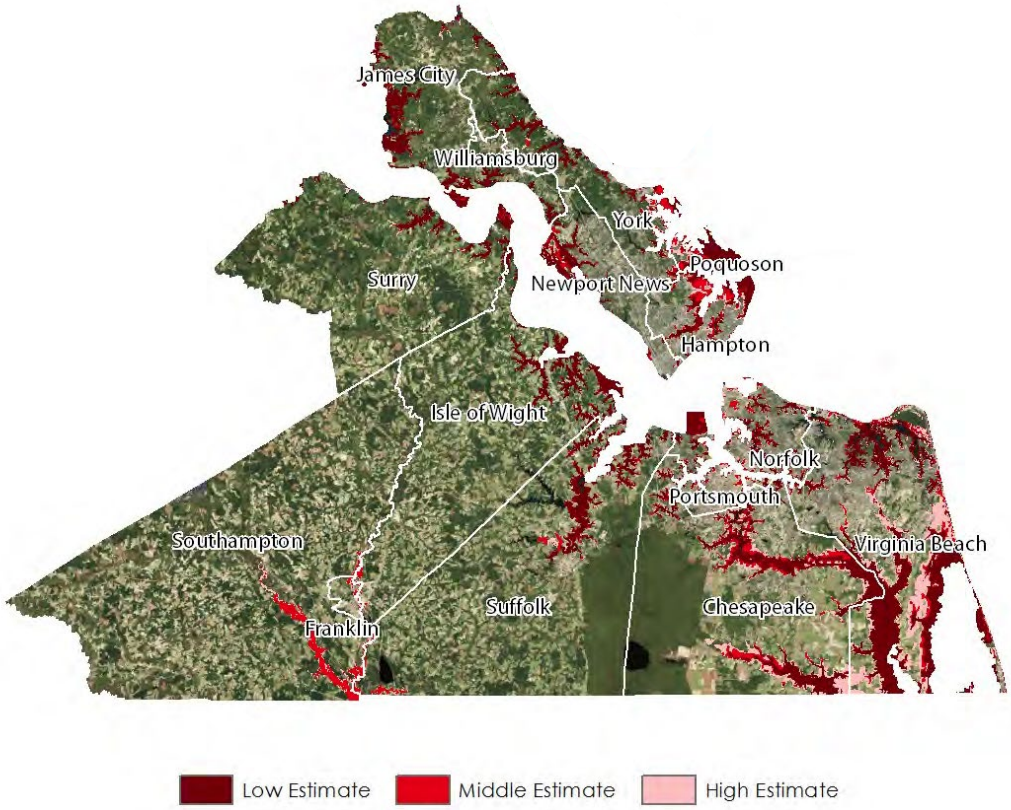
In a 2012 report entitled *Climate Change in Hampton Roads, Phase III: Sea Level Rise in Hampton Roads, Virginia,* HRPDC compiled maps and data to document those areas of the region that are exposed to one meter of sea level rise above spring high tide **(Figure 5.21)**. **Table 5.8** summarizes the report's findings, which highlight over $8.7 billion of vulnerability or exposure in the built environment. Norfolk, Virginia Beach and Chesapeake are the Hampton Roads communities with the highest population exposed to sea level rise. Hampton is fourth on the list and even has a larger number of housing units exposed than Chesapeake. Poquoson is a smaller community, but with a very high percentage of its land area and population exposed, the City must deal with the increasing vulnerability as frequency of damaging flooding increases. The exposure to sea level rise is lowest in the western part of the study area, including Southampton County and Franklin, where sea level rise may cause some moderate changes in river levels, but is not expected to have the dramatic impacts on homes, roads and businesses that it will in the eastern portion of the study area.

TABLE 5.8: EXPOSURE TO ONE METER SEA LEVEL RISE ABOVE SPRING HIGH TIDE (MIDDLE ESTIMATE)

SUBREGION	COMMUNITY	LAND AREA (square miles)	POPULATION	HOUSING UNITS	ROADS (total miles)	BUSINESSES
Peninsula	Hampton	12.6	14,066	6,011	97.0	263
	Newport News	9.5	4,321	1,896	8.3	28
	Poquoson	11.8	6,770	2,597	38.7	115
	Williamsburg	0.2	275	137	0.1	0
	James City County	14.9	1,796	835	4.5	12
	York County	11.0	5,483	2,195	34.6	64
Southside	Norfolk	6.5	24,715	8,955	75.5	532
	Portsmouth	7.0	4,655	2,089	17.5	127
	Suffolk	14.4	4,691	1,715	4.7	21
	Virginia Beach	58.0	21,160	10,051	66.9	389
	Chesapeake	32.4	15,983	5,731	65.2	380
Western Tidewater	Isle of Wight County	13.4	3,046	1,263	2.0	16
	Franklin	0.6	74	33	0.1	0
	Southampton County	7.8	149	64	2.0	1
	Surry County	5.4	107	59	1.3	0
TOTALS		**206**	**107,291**	**43,631**	**418**	**1,948**

Source: *Climate Change in Hampton Roads, Phase III: Sea Level Rise in Hampton Roads, Virginia.* HRPDC, July 2012.

FIGURE 5.21: AREAS EXPOSED TO ONE METER OF SEA LEVEL RISE ABOVE SPRING HIGH TIDE



Disclaimer: This map is for informational purposes only. Areas depicted as vulnerable are based on estimates only and should not be construed as being in imminent danger of inundation. The analysis depicted does not account for flood protection or control infrastructure. This map should not be used in place of official FEMA flood insurance rate maps. Users agree to hold harmless and blameless the Hampton Roads Planning District Commission and its representatives and its agents for any liability associated with the use of this map.

2012

Source: Climate Change in Hampton Roads, Phase III: Sea Level Rise in Hampton Roads, Virginia. HRPDC, July 2012.

SOCIAL VULNERABILITY

The National Risk Index does not include a risk or vulnerability analysis specific to sea level rise or land subsidence. In 2018, Virginia Beach conducted a very detailed analysis of socially vulnerable demographic groups using 2010 Census data, population projections, population distribution, as well as current and future 100-year floodplains, to more accurately assess the number of people at risk under current and future sea level rise scenarios. The conclusion was that the elderly population of Virginia Beach experiences a marginally disproportionate risk to coastal flood hazards, and that for every 1.5 feet of sea level rise, the percentage of people at risk to coastal flooding will double from present conditions. Currently, 6.5% of the population is at risk; with 1.5 feet of sea level rise, 12.5% of the population will be at risk; and with 3 feet of sea level rise, approximately 26-percent of the population will be at risk. Other demographic groups were not shown to have a disproportionate risk to coastal flood hazards.[7] The detailed study methodology used in Virginia Beach represents a possible methodology for additional study of social vulnerability to sea level

[7] *Demographic and Population Vulnerability Analysis: City of Virginia Beach, Virginia*, September 13, 2018. Accessed online at: https://www.vbgov.com/government/departments/public-works/comp-sea-level-rise/Documents/new%20PWCN-15-0014_WO12B_SocialVulnerability_Final_20180913.pdf

rise in all of Hampton Roads. Study of patterns of flood insurance coverage and other mitigation techniques could be incorporated into the analysis. The Virginia Beach results and conclusions may not necessarily apply broadly across the region due to variation in development patterns and population change; however, the disproportionate impact on the elderly compared to other vulnerable groups included in the analysis (people of color, children under five years old, institutionalized people, people with limited English proficiency, people with limited income, and people with disabilities) is noteworthy for mitigation planning purposes.

TROPICAL/COASTAL STORM

Historical evidence shows that Hampton Roads is vulnerable to damaging storm-force winds, whether associated with coastal storms like nor'easters, or tropical storms such as hurricanes. As discussed in detail in the *Hazard Identification and Analysis* section, 76 hurricanes and tropical storms have passed within 75 miles of the region since 1851. This equates to a 45-percent annual chance that a storm will similarly impact the region.

ESTIMATES OF POTENTIAL LOSSES

Detailed loss estimates for the wind damage associated with the tropical storm hazard were developed based on probabilistic scenarios using Hazus (Level 1 analysis). **Table 5.9** shows estimates of potential building damage for the 100-year return period, and annualized total losses. In summary, the region may be susceptible to an estimated total of approximately $1.65 billion in building damages from a 100-year wind event.

TABLE 5.9: ESTIMATES OF POTENTIAL BUILDING DAMAGE – WIND ONLY

SUBREGION	COMMUNITY	BUILDING DAMAGE	CONTENTS & INVENTORY DAMAGE	TOTAL*	ANNUALIZED TOTAL LOSSES
Peninsula	Hampton	$91,781,000	$42,021,000	$138,514,000	$7,265,000
	Newport News	$53,985,000	$10,663,000	$68,841,000	$5,035,000
	Poquoson	$9,575,000	$3,971,000	$13,874,000	$670,000
	Williamsburg	$1,366,000	$392,000	$1,766,000	$236,000
	James City County	$10,477,000	$3,944,000	$14,428,000	$1,841,000
	York County	$35,966,000	$18,024,000	$55,067,000	$2,997,000
Southside	Norfolk	$168,291,000	$28,515,000	$213,399,000	$10,494,000
	Portsmouth	$48,722,000	$8,960,000	$61,573,000	$3,824,000
	Suffolk	$23,969,000	$6,293,000	$31,191,000	$3,031,000
	Virginia Beach	$579,495,000	$190,242,000	$815,974,000	$37,078,000
	Chesapeake	$160,748,000	$55,549,000	$224,879,000	$12,459,000
Western Tidewater	Isle of Wight County	$8,008,000	$2,592,000	$10,789,000	$1,174,000
	Franklin	$381,000	$110,000	$491,000	$207,000
	Southampton County	$650,000	$268,000	$919,000	$437,000
	Surry County	$332,000	$142,000	$474,000	$165,000
Totals		**$1,193,746,000**	**$371,686,000**	**$1,652,179,000**	**$86,913,000**

* Also includes income losses from relocation, lost wages, and lost rental income.
Source: Hazus

Based on the data in Table 5.9, Virginia Beach, Chesapeake and Norfolk have the highest annualized total losses from wind associated with a 100-year wind event. These communities are also the most vulnerable for flood, so these 3 communities are considered the most vulnerable to the combined wind and flooding effects of Tropical Storms. Hampton and Newport News are also very vulnerable to wind effects from the 100-year wind event. Franklin, Williamsburg, Surry County and Southampton County are significantly further inland and are less likely to experience the devastating impacts of the remainder of Hampton Roads. Franklin has annualized wind-related damages of only $207,000; a small portion of the $37 million calculated for Virginia Beach.

Hazus was also used to produce building damage estimates based on percentage of damage (by damage state) for the 100-year return period (**Table 5.10**).

TABLE 5.10: NUMBER OF BUILDINGS DAMAGED, BY DAMAGE STATE[8], 100-YEAR WIND EVENT

OCCUPANCY TYPE	MINOR	MODERATE	SEVERE	DESTRUCTION
Residential	29,180	3,407	70	68
Commercial	1,214	204	20	0
Industrial	307	45	8	0
Other	287	36	5	1
TOTAL	**30,988**	**3,692**	**103**	**69**

Source: Hazus

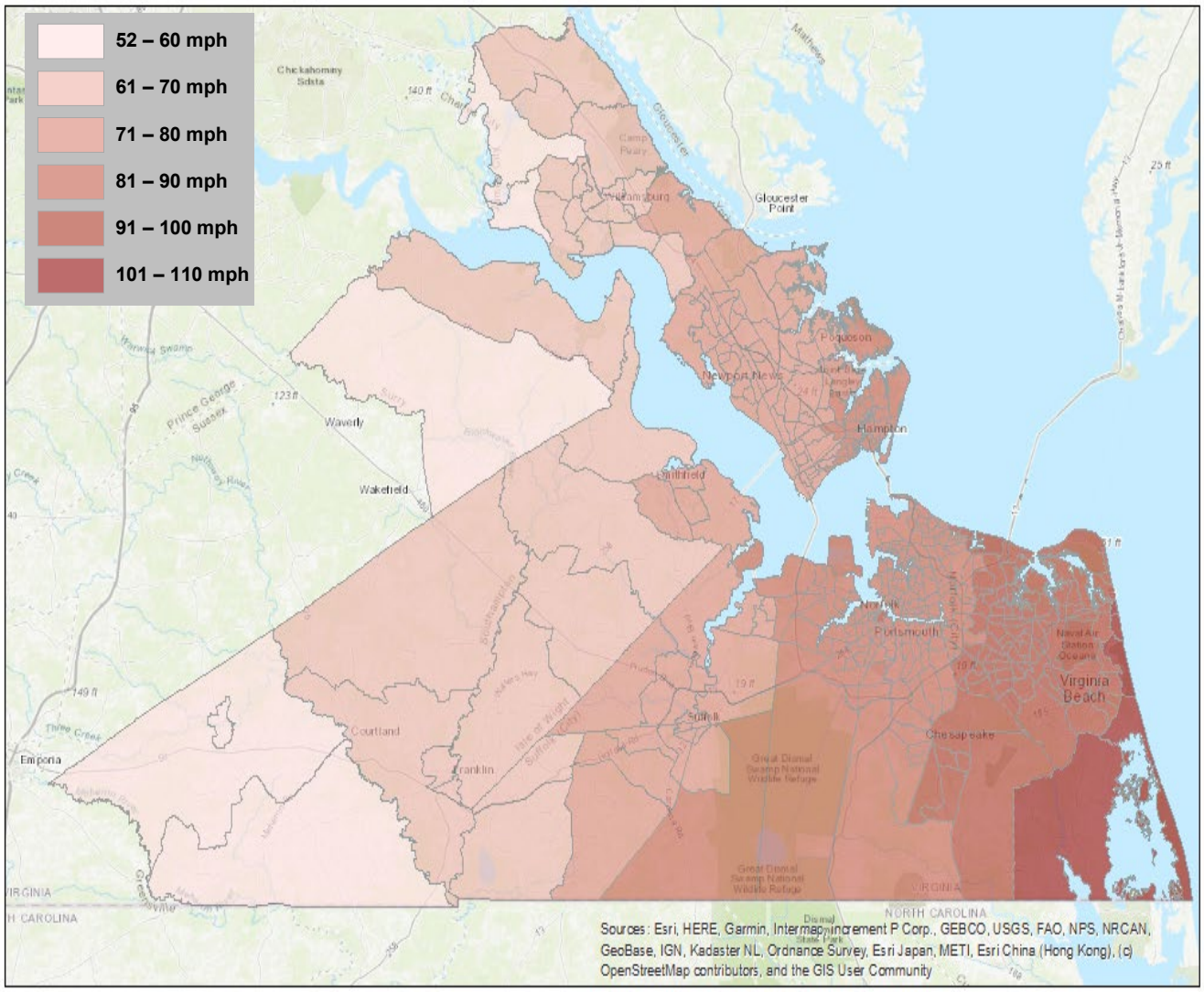
FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

The type of building construction has a significant impact on potential damages from high wind events in the future, as type of construction is also a key factor in determining the life of a structure. Basic building types in declining order of wind vulnerability are manufactured, non-engineered wood, non-engineered masonry, lightly engineered and fully engineered buildings. According to the HAZUS study, the primary construction type in the study area is wood framed (61 percent), varying from single story to multiple stories, although some masonry and steel properties are present as well. With the prevalence of non-engineered, wood-framed structures throughout the Hampton Roads region, a majority of structures in the area could be classified as having a high level of vulnerability to damages due to a high wind event in the future. Using HAZUS, an analysis of the damage caused by a 100-year frequency wind event indicates that 22,632 wood-framed structures would have minor, moderate, severe or destruction damage, while 10,346 masonry structures would have minor, moderate, severe or destruction damage.
All future structures built in the Hampton Roads region will likely be exposed to hurricane and tropical storm-force winds and may also experience damage not accounted for in the loss estimates presented in this section, with the highest vulnerability in structures near the Atlantic coast as shown in **Figure 5.22**, which show vulnerability to 100-year peak gusts by Census tract for the region. The State's Uniform Statewide Building Code continues to reduce vulnerability of newly constructed buildings to the wind hazard.

The VASEM 2021 report concludes that the research on climate change impacts in the study region is conflicted regarding increased frequency of Atlantic Coast hurricanes. However, the report indicates consensus among the researchers that there will be an increase in average cyclone intensity, precipitation rates, and the number of strong storms. Strong storms combined with sea level rise are particularly alarming for the eastern region of the study area. Even in rural areas in the western portion of the study area, increasing storm intensity can damage crops and soil in addition to vulnerable agricultural structures.

[8] For detailed definitions of the four damage states, please refer to the HAZUS-MH User Manual for the Hurricane Model.

FIGURE 5.22: 100-YEAR RETURN PERIOD PEAK GUST (MPH) BY CENSUS TRACT



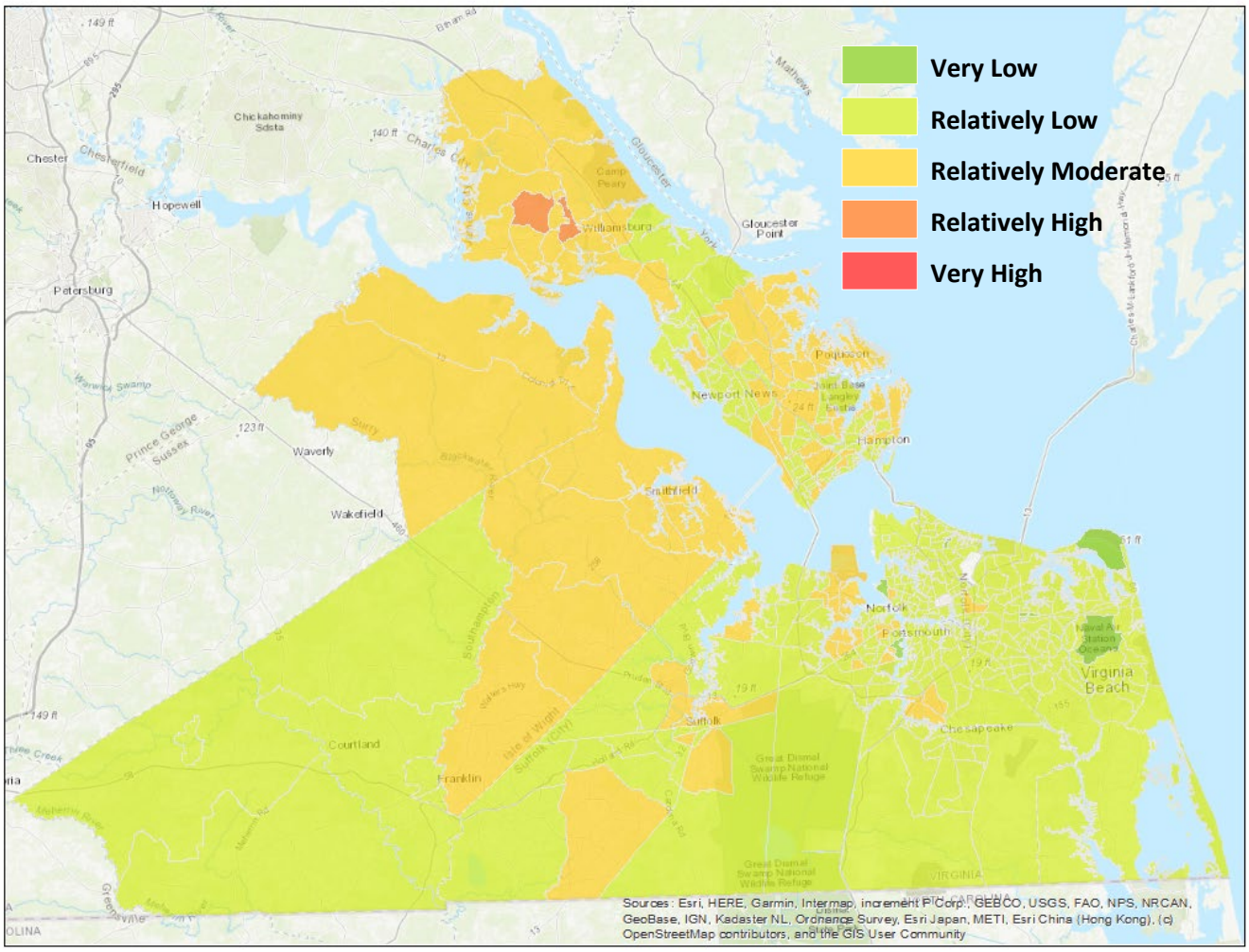
2021

Source: Hazus

SOCIAL VULNERABILITY

The NRI hurricane risk ratings by Census tract, which include a factor for social vulnerability, are shown in **Figure 5.23**. Most of the southern portion of the study area is shown as having low risk, while much of the Peninsula, Surry County and Isle of Wight County have relatively moderate risk. The Williamsburg area is shown as having relatively high social vulnerability to hurricane. This rating seems out of sync with local experience, and may be a result of the lower reported occurrences of hurricane damage in the NCEI database. When compared to the NRI hurricane risk ratings for North Carolina tracts just south of the state line, the Virginia ratings are remarkably lower.

FIGURE 5.23: NATIONAL RISK INDEX, HURRICANE RISK RATING



2021

Source: National Risk Index, 2021

LANDSLIDE/COASTAL EROSION

As documented in the *Hazard Identification and Analysis* section, the Hampton Roads region is vulnerable to the long term effects of both landslide and coastal erosion. Coastal erosion remains a significant hazard of concern that must continue to be addressed through sustained shoreline management practices. To date, existing strategies for shoreline hardening and the implementation of numerous replenishment projects have been successful in minimizing major coastal erosion losses within parts of the planning region.

ESTIMATES OF POTENTIAL LOSSES

It is difficult to determine the amount of property or the number of structures that are vulnerable to the erosion or landslide hazard. The jurisdictions in the region have demonstrated, through past projects such as the Virginia Beach Erosion Control and Hurricane Protection Project that they are willing to take on projects to protect coastal residences and commercial buildings in the hazard zone. Landslides are a much less frequent historical occurrence and are typically addressed by the landowner with little government involvement.

The Comprehensive Coastal Inventory Program (CCI) at VIMS has created a GIS shoreline database to develop revised Shoreline Situation Reports (SSR) for cities and counties in the region. SSRs were developed by VIMS in the 1970s, and are available online at: http://ccrm.vims.edu/gis_data_maps/index.html. These reports have been the foundation for shoreline management planning in the region for more than 30 years. CCI has developed new protocols for collecting, disseminating, and reporting data relevant to shoreline management issues today. New SSRs are currently available online at: http://ccrm.vims.edu/gis_data_maps/shoreline_inventories/. Southampton County and Franklin are not included in the Chesapeake Bay Shoreline Inventory project.

The data inventory developed for the new SSRs is based on a three-tiered shoreline assessment approach. In most cases this assessment characterizes conditions that can be observed from high resolution imagery. A small boat navigating along the shoreline was used to verify the remotely sensed data and collect features that could not be ascertained from the imagery. The three tiered shoreline assessment approach divides the shore zone into three regions: 1) the immediate riparian zone, evaluated for land use; 2) the bank, evaluated for height, stability, cover and natural protection; and 3) the shoreline, describing the presence of shoreline structures for shore protection and recreational purposes. Final prepared maps are available online at the site noted above. Although the maps alone do not indicate potential loss from erosion, they provide areas for future study and indicate where shoreline structure protection is currently in place to protect against coastal erosion.

Figure 5.24 provides a sample of the maps available in the SSR for the City of Hampton.

The Atlantic Ocean shorelines in Virginia Beach and Norfolk are the most vulnerable areas of Hampton Roads with regard to coastal erosion. The fetch for tropical storms and nor'easters is sufficient to create wind-driven waves that cause significant damage on a regular basis. The Chesapeake Bay shorelines of Hampton, Poquoson and Norfolk are also susceptible to wind-driven wave action that causes coastal shoreline erosion. The James River and York River are deep and wide enough to cause some shoreline erosion in Suffolk, Isle of Wight County, Newport News, York County, Surry County and James City County. Riverine erosion in Franklin and Southampton County, while not as dangerous to people and homes, creates limited vulnerability to infrastructure and the built environment.

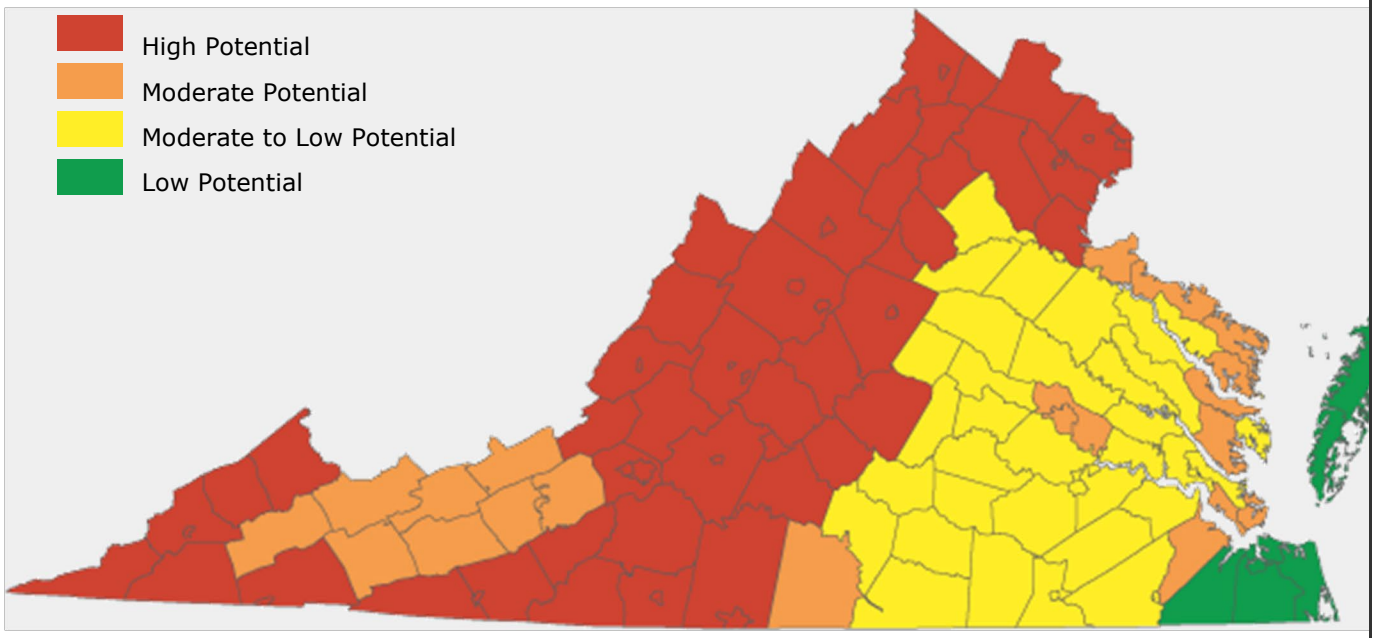
FIGURE 5.24: BANK CONDITIONS, HAMPTON RIVER

2021

Source: VIMS CCI

Landslide events in the region are considered a moderate- to low-probability event, with very localized impacts when and where they occur. Virginia Department of Energy provided the map in **Figure 5.25** that shows counties in Virginia and related susceptibility to landslides. Because damages are rarely quantified or are extremely limited in nature, average annual damages from landslides are not very useful. Occurrence intervals are similarly flawed because of the short period of record. Figure 5.25, however, indicates that the region's highest relative vulnerability is in in Isle of Wight, Newport News, Hampton, and Poquoson, perhaps due to the unconsolidated soils in the area.

FIGURE 5.25: SUSCEPTIBILITY TO LANDSLIDES BY VIRGINIA COUNTY/CITY



2021

Source: Virginia Department of Energy

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

Generally speaking, future vulnerability to both landslide and coastal erosion will depend greatly on appropriate local site planning and permitting, as well as each community's approach to sea level rise and associated flooding problems. Planned mapping regarding landslide risk, if appropriately shared with local land use planners and incorporated into site planning and stormwater regulations, may reduce the incidence of landslides that affect structures in the future.

The Commonwealth's Stormwater Management program and enabling statutes help to manage future land use, and reduce stream channel erosion, water pollution, depletion of groundwater resources and more frequent localized flooding to protect property value and natural resources throughout the region. While waves are the primary force in determining the prevailing shoreline processes in the short-term of months or individual storms, sea level rise is the primary driver of shoreline change over the long-term. Documented sea level rise in the study area is expected to accelerate and will continue to impact shoreline morphology in the future.

Current building code requirements restrict fill materials used to fill a building site prior to new construction. But homes built on debris fill, or on oversteepened slopes (such as along a river bluff) may be more vulnerable to landslides in the future, especially on or near slopes near the contact between the Yorktown and Eastover convergence. The Virginia Department of Energy is interested in identifying at-risk areas in the region.

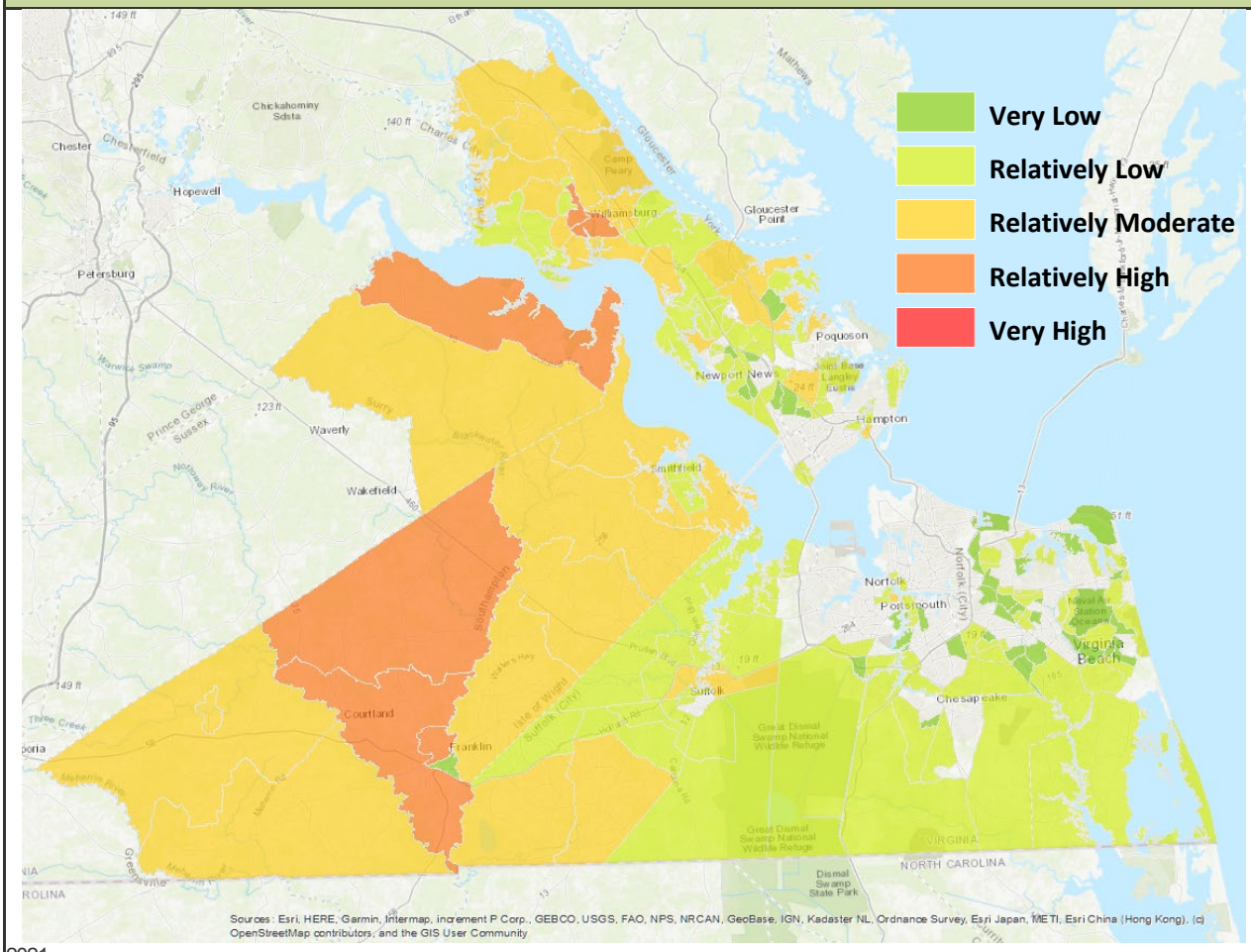
Climate change has the potential to worsen the risk associated with landslides in the study area. Precipitation patterns are expected to become more intense, prolonged and frequent as a result of a warming climate. There is a risk that these precipitation events could destabilize fragile slopes in the region, leading to more frequent and damaging landslides.

SOCIAL VULNERABILITY

Any measurement of social vulnerability to shoreline or coastal erosion requires considerably more knowledge about the location of vulnerable structures in each locality. Mitigation Action MH-4 in the *2018 Commonwealth of Virginia Hazard Mitigation Plan* proposes VDEM involvement in assisting localities, state agencies, and PDCs with identification of vulnerable structures and application for funding to implement soil stabilization projects to reduce risk to structures or infrastructure from erosion. Future revisions to the plan may be able to more precisely define socially vulnerable areas of the study region for shoreline or coastal erosion using information developed under this or a similar effort.

The region's NRI risk ratings for landslide are shown in **Figure 5.26**. The USGS Landslide Hazard Map was used as an input for hazard susceptibility, creating a raster that classified all of the conterminous United States as having either "some" or "negligible" landslide susceptibility based on slope and relief. This method may not adequately capture the unique geological conditions that are suspected as contributors to landslides in the study region. Nevertheless, the vulnerability shown in Figure 5.26 is a starting point for discussions regarding factors that could affect a household's vulnerability to landslide.

FIGURE 5.26: NATIONAL RISK INDEX RATING, LANDSLIDE



2021

Source: NRI, 2021

TORNADO

Historical evidence shows that the Hampton Roads region is vulnerable to tornado activity, which is often associated with other severe weather events such as thunderstorm or tropical cyclone activity.

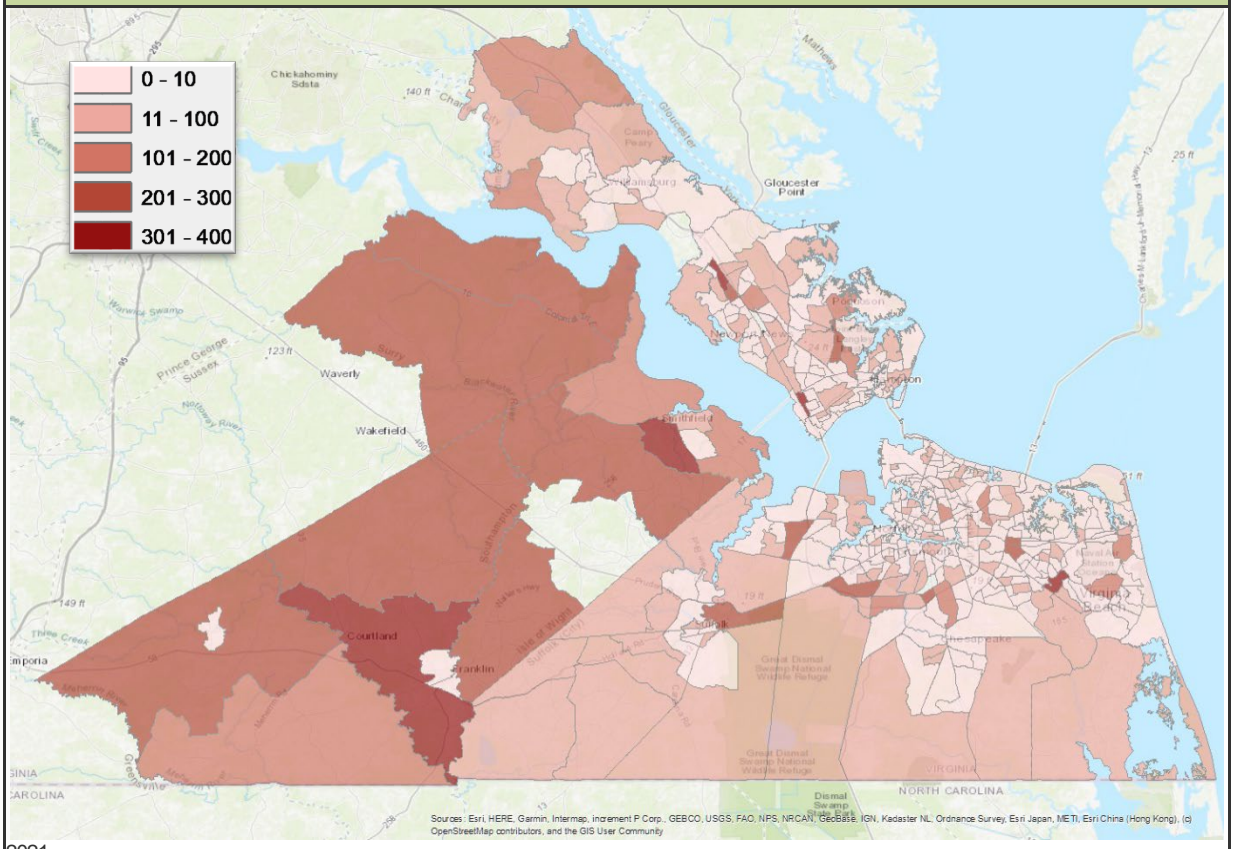
ESTIMATES OF POTENTIAL LOSSES

Because it cannot be predicted where a tornado may strike, it is not possible to map geographic boundaries for this hazard or produce detailed loss estimates. Therefore, the total dollar exposure figure of $204 billion for all buildings and contents within the region is considered to be exposed and could potentially be impacted on some level by the tornado hazard.

Low-intensity tornadoes may not completely destroy a well-constructed building, although even the most well-constructed buildings are vulnerable to the effects of a more intense (F2 or higher) tornado. The statewide building code provides a reasonable level of protection for newly constructed buildings, while structures built before the code went into effect are most vulnerable to damage.

Because manufactured homes are particularly vulnerable to damage from tornadoes, HAZUS was used to show geographic concentrations of manufactured homes in the study area. **Figure 5.27** is a map showing the number of manufactured homes by Census tract from the 2010 Census data generated by HAZUS.

FIGURE 5.27: NUMBER OF MANUFACTURED HOMES BY CENSUS TRACT



2021

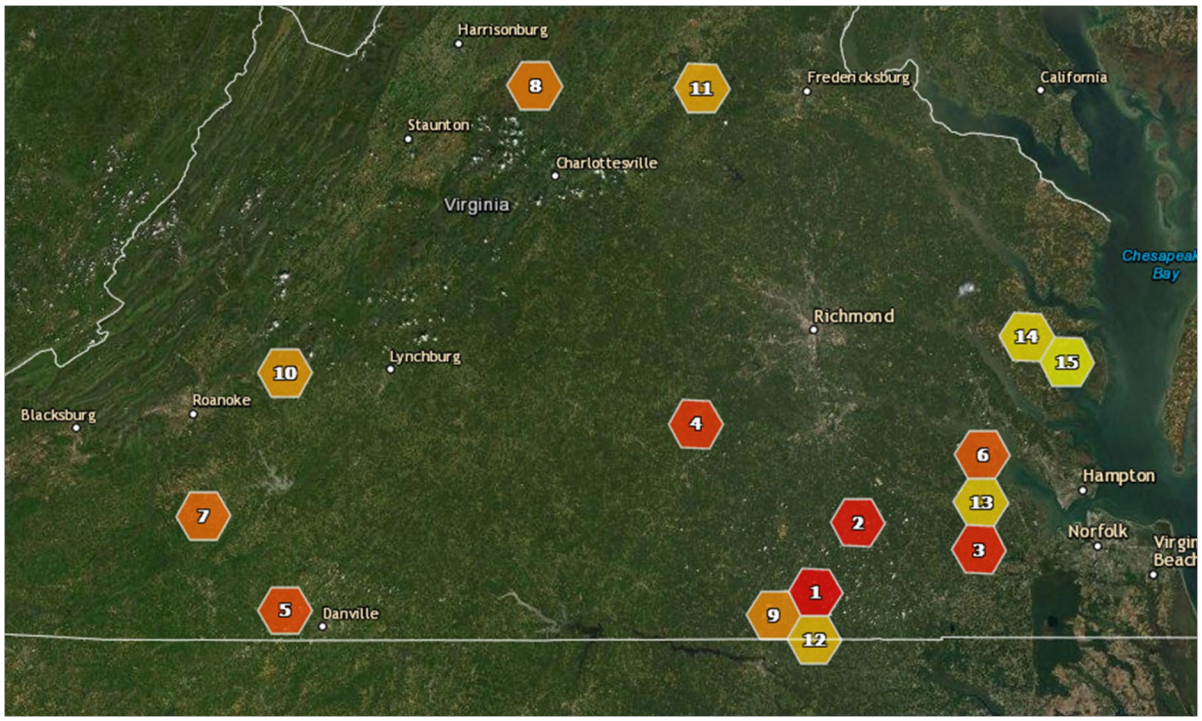
Source: Hazus and 2010 U.S. Census

Based on historic property damages for the 26-year period between 1995 and 2021 as shown in *Section 4, Hazard Identification and Risk Analysis*, there were 77 tornado events with an annualized loss estimate of $24.3 million and annual probability of 3.0% percent.

While Figure 4.18, Historical Tornado Hazard Frequency, and Figure 5.27, Number of Manufactured Homes by Census Tract, are useful for seeing where tornadoes have historically struck and where they could potentially damage a specific type of structure, the figures do not show measured differences in vulnerability among study area communities. Because tornadoes are driven by larger scale air masses and storm systems and these storm systems affect the Hampton Roads region uniformly, the region's vulnerability to tornadoes is quite uniform. The population concentrations in the urbanized areas of the Peninsula and Southside Hampton Roads may experience more damage as a result of a similar event in the more rural areas of Southampton County or Isle of Wight County, for example, but the vulnerability to tornado strike is uniform throughout the study area.

Researchers at Old Dominion University who have been researching spatial variability and trends in tornado occurrence in the Commonwealth, overlaid areas of increased tornado activity with the highest percentage of manufactured homes in the state, based on data from the 2014-2018 American Community Survey. Based on their analysis, there are several areas that have experienced an increased trend in number of tornadoes since 1950, and which have a high concentration of mobile homes, including specific areas in: Surry County and Isle of Wight County. **Figure 5.28** from the ODU study shows these areas in more detail.

FIGURE 5.28: VIRGINIA TORNADO MOBILE HOME RISK INDEX



Source: Old Dominion University web page, accessed online 2021 at: https://odu-gis.maps.arcgis.com/apps/Cascade/index.html?appid=723e660c2c09447fa8a57d3186dc8d2a

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

All future structures built in Hampton Roads are likely to be exposed to the tornado hazard. The link between changing climate and tornado severity and frequency is currently unclear. One problem is that long-term trends are difficult to determine, as records only go back to the 1950s. Another issue is that as population centers have grown and shifted over time, the reporting of tornadoes has been inconsistent.

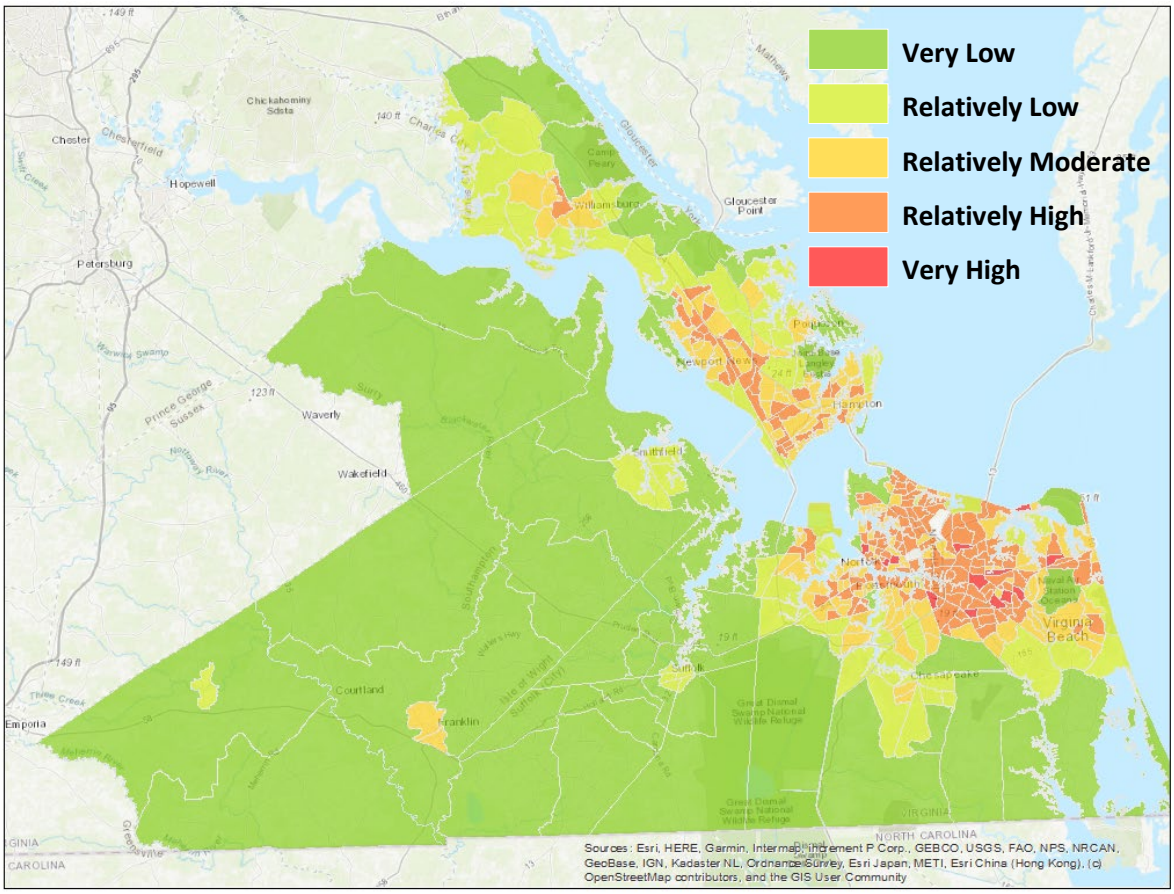
Also, improved observation technology (such a Doppler radar) allows for detection of events that was not possible in earlier years.

Researchers are working to better understand how the fundamental elements required for tornado formation – atmospheric instability and wind shear – interacts with changing climate conditions. Researchers expect that a warmer, wetter climate will allow for more frequent atmospheric instability. However, it is also possible that a warmer climate will dampen the probability of wind shear. Recent trends observed in the Midwest are inconclusive. A changing climate change could also shift the traditional timing or expected locations for tornadoes and have less impact on the total number of tornado occurrences.

SOCIAL VULNERABILITY

The NRI risk ratings for tornadoes are shown in **Figure 5.29** by Census tract. Despite the higher numbers of manufactured homes in the rural, southwestern portions of the study area, the damage history and built infrastructure exposure in the urbanized areas of the lower Peninsula and Southside are likely culprits in the rating disparity.

FIGURE 5.29: NATIONAL RISK INDEX RATING, TORNADO



2021

Source: National Risk Index, 2021

WINTER STORM

Historical evidence shows that the Hampton Roads region is vulnerable to winter storm activity and the wind-related impacts of nor'easters, including heavy snow, ice, extreme cold, freezing rain, and sleet.

ESTIMATES OF POTENTIAL LOSSES

Because winter storms typically affect large areas beyond county and municipal boundaries, it is not possible to map geographic locations at specific risk from this hazard or produce detailed loss estimates. Therefore, the total dollar exposure figure of $204 billion for all buildings and contents within the region is considered to be exposed and could potentially be impacted by the winter storm hazard. Based on historic property damages for the past 25 years (1996 to 2021), an annualized loss estimate of $805,800 and annual probability of 112% was generated for the winter storm hazard. Potential losses may be inflated by factors such as the costs associated with the removal of snow from roadways, debris clean-up, indirect losses from power outages, and the tendency of the NCEI data to combine metropolitan regional damages. Per the data in Table 4.13, no damages were reported for any of the NCEI database storms noted since the previous plan. Failure to report damages can significantly skew the data results.

Structures built prior to Virginia's statewide building code are somewhat more vulnerable to damage from severe winter storms where snow and ice may accumulate on rooftops, especially if snow loads were not accounted for in the original structure design. Because manufactured or mobile homes are also very susceptible to damage of roof collapse or additional damage due to their design features, HAZUS was used to show geographic concentrations of manufactured homes in the study area. **Figure 5.27** is a map showing manufactured homes by Census tract from the 2010 Census data generated by HAZUS.

Due to the consistency in the study area's basic geographic characteristics, winter storms can be expected to affect Hampton Roads' communities in a similar way. However, warm ocean currents offshore of Virginia Beach can occasionally diminish the effects of winter storms on the communities adjacent to larger bodies of water, including Virginia Beach, Norfolk, Hampton, and Poquoson. Temperature differences of a few degrees in these eastern communities can cause faster melting of snow and ice, and may result in a "snow line" that bisects the study area into areas of snow versus areas of rain associated with eastward moving systems. Such differences can result in dramatically different storm impacts in the study area.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

Winter storms remain a likely occurrence for the region. Because of the geographic location, all future structures built in Hampton Roads are likely to be exposed to the winter storm hazard and may experience damage. The *2018 Commonwealth of Virginia Hazard Mitigation Plan* suggests that the southern and southeastern portions of the state are likely to receive significant winter weather approximately once a decade. Local zoning and comprehensive plans are not focused on winter storm planning in the study area, although Emergency Operations Plans typically contain appropriate response actions.

As the earth's climate changes, heavy seasonal snow years have begun to occur with greater frequency. According to NCEI, the frequency of extreme snowstorms in the eastern US has increased over the past century, with approximately twice as many extreme snowstorms occurring in the last half of the 20th century as in the first half. Conditions that influence snowstorm severity including warmer ocean surface temperatures in the Atlantic. These increased temperatures can lead to exceptionally high amounts of moisture feeding into a storm and contribute to storm intensification.

Global ocean surface temperatures have increased at a rate of +.18 degrees Fahrenheit each decade since 1950. Natural variability can affect surface ocean temperatures, but as global surface temperatures increase, the temperature is higher at any time than it would have been if the climate were not changing.

Some research has shown that increasing ocean surface temperature and reductions in Arctic sea ice may produce atmospheric circulation patterns that are favorable for winter storm development in the eastern United States. Notably, a greater prevalence of high pressure blocking patterns over the North Atlantic that result in cold outbreaks in the eastern U.S., along with slow moving systems can further exacerbate the longevity and severity of a snowstorm.

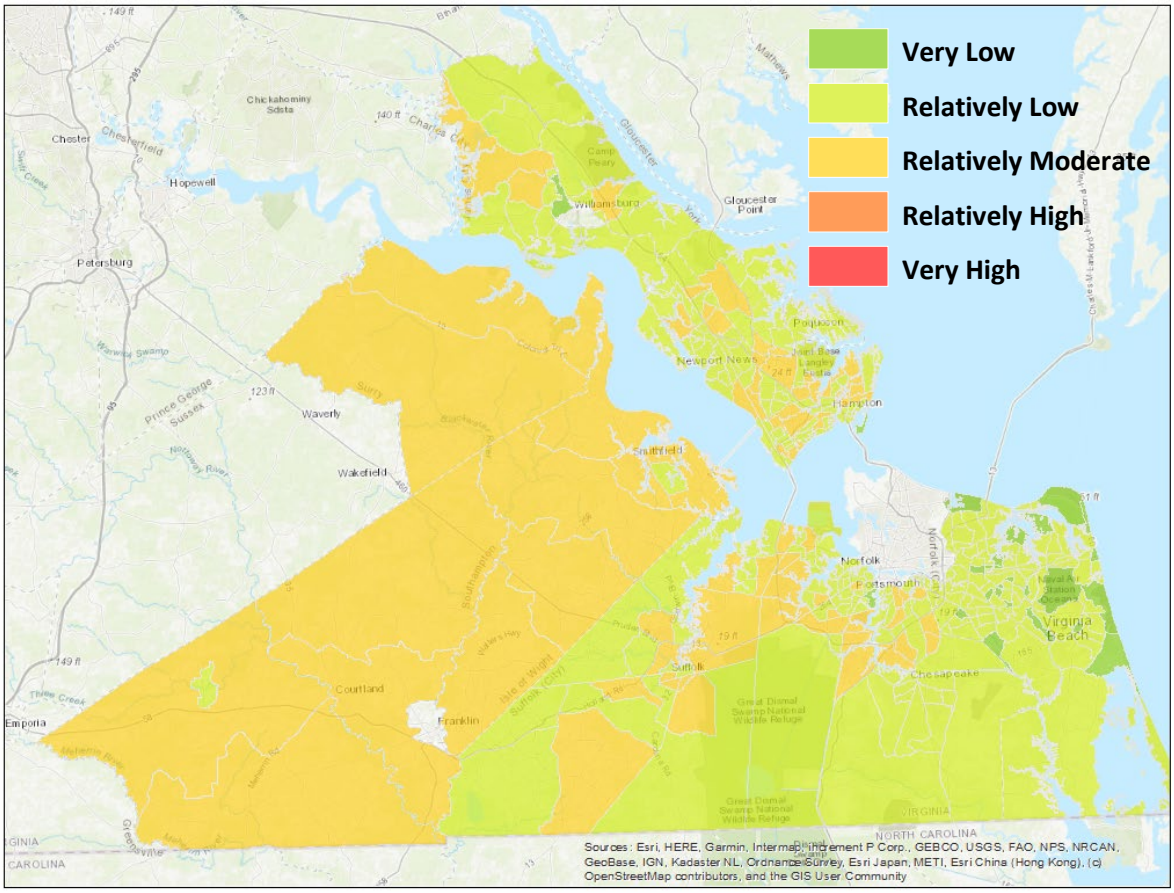
Studies have shown that natural variability associated with El Nino conditions has a strong relationship and influence on the incidence of severe snowstorms in the eastern U.S. An analysis of 100 storms in six regions east of the Rocky Mountains found that severe snowstorms are approximately twice as likely to occur in the eastern U.S. – north and south – during years when a moderate to strong El Nino is present as compared to years when more neutral conditions are present.

SOCIAL VULNERABILITY

The NRI risk ratings for winter weather are shown in **Figure 5.30** by Census tract. Most of the more populous regions of Hampton Roads are rated as Relatively Low, with some moderate areas found in Isle of Wight, Surry and Southampton counties, and portions of Suffolk. Technical documentation for the NRI indicates that the Iowa Environmental Mesonet data were used for tallying the number of historical occurrences; however, the historic loss ratios were derived from NCEI data which show relatively low dollar value losses for the region. Only four events in the past 25 years have associated damages in the NCEI database.

Severe winter weather can be problematic for socially vulnerable populations, especially people living in substandard housing or without alternative arrangements when power goes down. Transportation impacts are especially severe when vulnerable people rely on public transportation and those routes are interrupted by snow or ice accumulation. Populations with medical disabilities, many who require power to run oxygen supplies for example, are also vulnerable, as are elderly people who have less ability to adjust their living arrangements when winter storms affect the region.

FIGURE 5.30: NATIONAL RISK INDEX RATING, WINTER STORM



2021

Source: NRI 2021

EARTHQUAKE

The annual probability of an earthquake epicenter within 65 miles of Hampton Roads is estimated at less than 1% based on historical data. While the probability of an earthquake occurrence is relatively low, moderate losses, should a significant earthquake event occur, are possible.

ESTIMATES OF POTENTIAL LOSSES

Table 5.11 provides generalized building damage estimates by jurisdiction for the 1,000-year return period based on probabilistic scenarios using Hazus.

TABLE 5.11: ESTIMATES OF POTENTIAL BUILDING DAMAGE – EARTHQUAKE WITH 1,000-YEAR RETURN PERIOD

SUBREGION	COMMUNITY	BUILDING DAMAGE	NON-STRUCTURAL, CONTENTS & INVENTORY DAMAGE	TOTAL*
Peninsula	Hampton	$5,837,000	$14,560,000	$27,791,000
	Newport News	$7,525,000	$19,330,000	$37,344,000
	Poquoson	$643,000	$1,496,000	$2,695,000
	Williamsburg	$732,000	$2,019,000	$4,036,000
	James City County	$4,401,000	$11,077,000	$19,876,000
	York County	$3,446,000	$8,297,000	$15,185,000
Southside	Norfolk	$9,116,000	$21,526,000	$43,354,000
	Portsmouth	$2,851,000	$6,197,000	$13,391,000
	Suffolk	$3,451,000	$7,805,000	$14,954,000
	Virginia Beach	$16,885,000	$36,962,000	$73,951,000
	Chesapeake	$9,320,000	$20,815,000	$40,140,000
Western Tidewater	Isle of Wight County	$1,689,000	$3,932,000	$7,364,000
	Franklin	$325,000	$827,000	$1,701,000
	Southampton County	$825,000	$1,943,000	$3,676,000
	Surry County	$342,000	$843,000	$1,577,000
Totals		**$67,387,000**	**$15,7928,000**	**$307,034,000**

* Also includes income losses from relocation, lost wages, and lost rental income.
Source: Hazus

Hazus (Level 1 analysis) was also used to produce building damage estimates based on percentage of damage (by damage state) for the 1,000-year return period (**Table 5.12**). According to the Hazus model assumptions, there should be no building damage from the 100-year earthquake event.

TABLE 5.12: ESTIMATES OF POTENTIAL BUILDINGS DAMAGED BY DAMAGE STATE[9]– EARTHQUAKE WITH 1,000-YEAR RETURN PERIOD			
SLIGHT	MODERATE	EXTENSIVE	COMPLETE
11,994	3,487	428	39

Source: Hazus

Due to the relative consistency in the topography, geographic characteristics and soils of the study area, earthquakes are expected to affect the Hampton Roads region communities in a similar manner, with damages proportional to the inventory of structures and infrastructure.

Average Annual Losses from earthquake in Hampton Roads total an estimated $1.1 million, with Norfolk and Virginia Beach having the highest annual loss estimates. Average annual losses are equal to or less than $10,000 per year in Poquoson, Franklin, and Surry County.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

All future structures built in Hampton Roads will be vulnerable to seismic events to a limited degree, and may also experience damage not accounted for in the estimated losses presented in this section.

While scientists have observed some correlation between climate change on rising temperatures, melting glaciers and isostatic rebound, a causal connection to subsequent earthquakes is less documented, especially for the eastern United States. Earthquakes and weather have a few possible correlations that are still under investigation and should be considered more theoretical than scientific:

1. glacier melt and isostatic rebound causing earthquakes;
2. changing surface stress loads from increased surface water causing microseismicity or tiny earthquakes with magnitudes less than zero, and changes in water quantity stored in large dams inducing seismicity;
3. longer duration droughts and/or groundwater withdrawals that change stress loads on the Earth's crust causing earthquakes; and,
4. injection wells that lubricate faults and induce seismicity.[10]

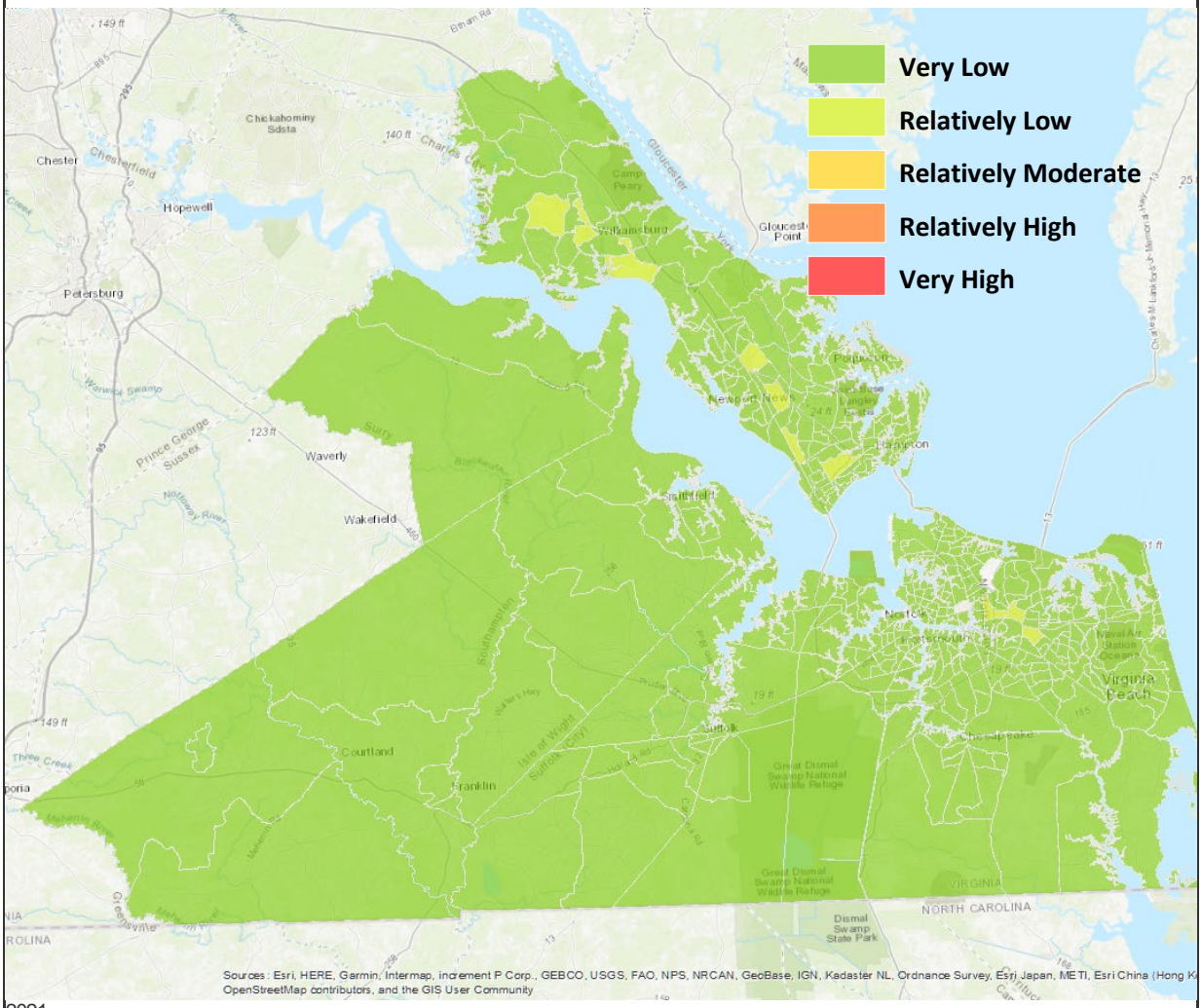
SOCIAL VULNERABILITY

The NRI risk ratings for earthquake are shown in **Figure 5.31** by Census tract. The map reflects the history of earthquakes in Virginia, with few damages and very low risk throughout the Hampton Roads region.

[9] For more detailed description of the four damage states, please refer to the *HAZUS-MH User Manual* for the Earthquake Model.

[10] Buis, Alan. NASA: Global Climate Change: Vital Signs of the Planet. *Can Climate Affect Earthquakes, or are the Connections Shaky?* Feature dated October 29, 2019, accessed online at: https://climate.nasa.gov/news/2926/can-climate-affect-earthquakes-or-are-the-connections-shaky/

FIGURE 5.31: NATIONAL RISK INDEX RATING, EARTHQUAKE



2021

Source: NRI 2021

WILDFIRE

Historical data indicate that the Hampton Roads region of Virginia is vulnerable to wildfire, particularly in the western portion of the study area. Figure 4.24 provides a graphical overview of wildfire vulnerability in the region.

ESTIMATES OF POTENTIAL LOSSES

As shown in the *Hazard Identification and Analysis* section, VDOF documented an average of 24 wildfire events per year between 2002 and 2020, with total property damages of $663,550 reported for the 433 events between 2002 and 2020. Average losses for state-response wildfires in the region are, therefore, estimated to be $36,860 each year.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

In cities and counties throughout the U.S., population concentration increase has resulted in rapid development in the outlying metropolitan areas and in rural areas, both of which are areas already occupied by dense forests. Wildfire risk can increase when new developments are built in close proximity to large and dense stands of forest. Wildland Urban Interface (WUI) risk is not limited to new developments in large natural areas. Occasionally, forest and brushlands can grow up over time and engulf previously developed areas. Regardless of how the risk arises, the WUI creates an environment in which fire can move readily between structural and vegetative fuels. Expansion of the WUI over time has increased the likelihood that wildfires will threaten structures and people.

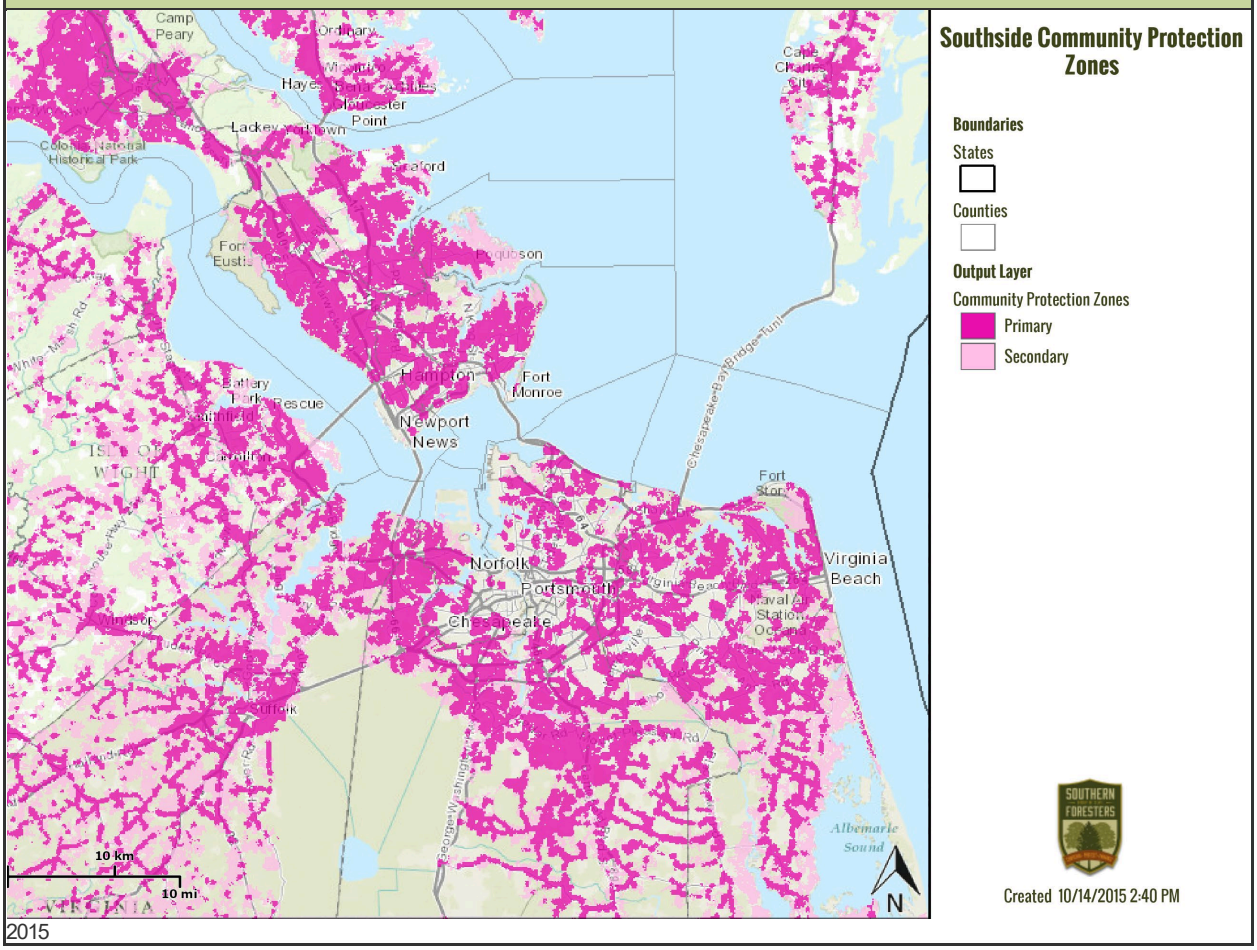
The Southern Group of State Foresters has created an online portal for wildfire risk assessment at http://www.southernwildfirerisk.com/map/index/public. The portal provides mapping to help determine future vulnerability to WUI fire in Hampton Roads and to provide planners a sense of where fire mitigation should be focused for the best reduction in vulnerability. Community Protection Zones (CPZs) with both primary and secondary levels of importance are depicted in **Figures 5.32 through 5.34**. The zones are based on an analysis of the “Where People Live” housing density data and surrounding fire behavior potential. Primary CPZs reflect areas with a predefined housing density appropriate to the region. Rate of Spread data is used to determine the areas of concern around populated areas that are within a 2-hour fire spread distance. This is referred to as the Secondary CPZ.

The online portal for wildfire risk assessment also allows users to highlight a neighborhood or street and determine the wildfire characteristics of that area, such as the Wildfire Urban Interface Risk Index, the wildfire ignition density and the fire intensity scale.

The CPZs in the Hampton Roads area, where wildfire vulnerability is highest, are clustered in the lower Peninsula (Hampton, Newport News and Poquoson), James City County, Suffolk, and north Chesapeake. There are sporadic pockets of vulnerability scattered through Surry County, eastern Isle of Wight County, parts of Virginia Beach, Norfolk and Portsmouth that make these areas perhaps slightly less vulnerable. The Great Dismal Swamp is not mapped as part of this effort as it is Federal land, but there is also high risk of wildfire in that region actively managed by the Great Dismal Swamp Fire Program.

The region is expected to continue to incur wildfires, particularly during extended periods of dry and windy weather. The region’s zoning ordinances do not generally guide new development away from the Wildland Urban Interface, but the wildfire threat is not as severe as in the western United States.

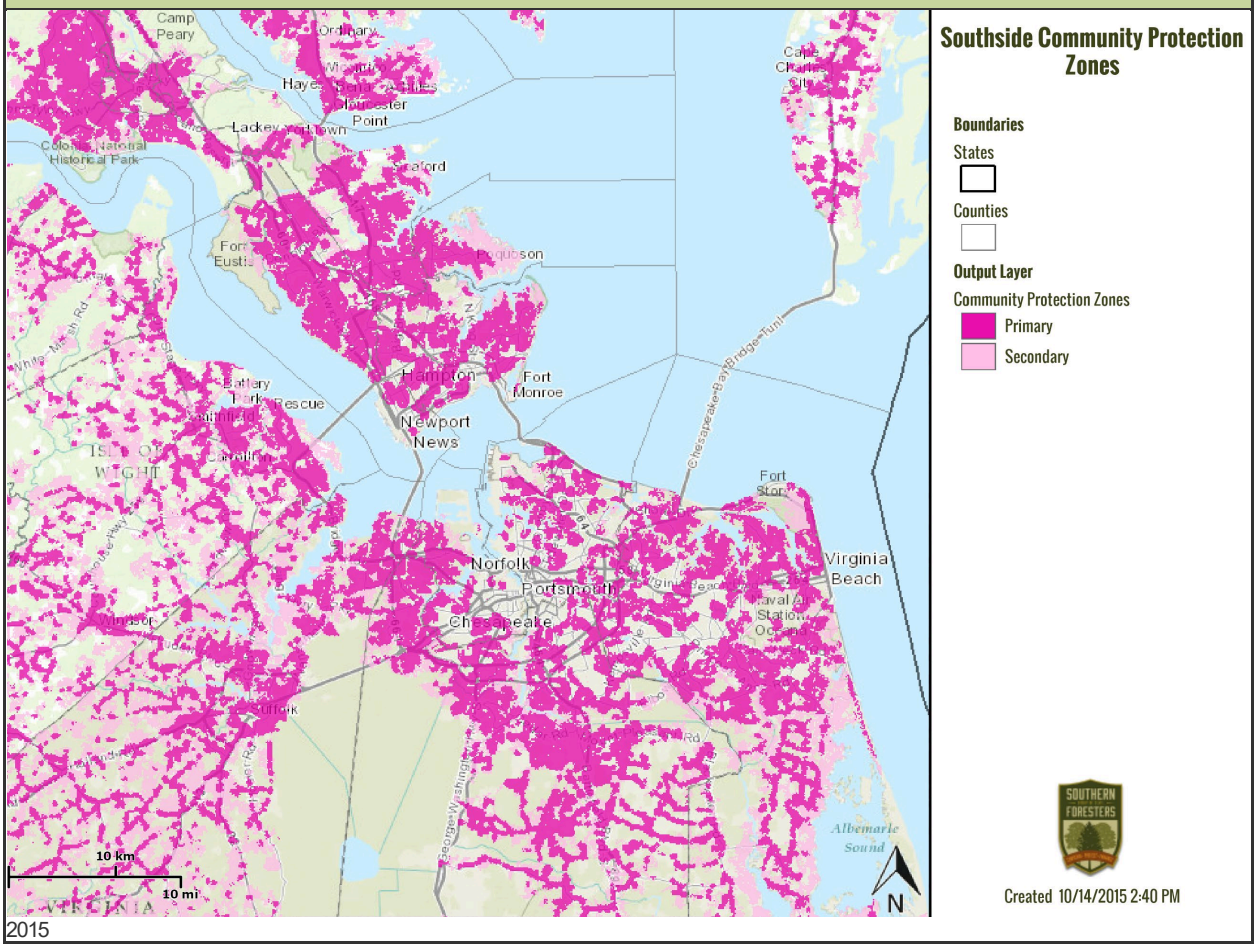
FIGURE 5.32: COMMUNITY PROTECTION ZONES FOR WILDFIRE, PENINSULA



2015

Source: Southern Group of State Foresters

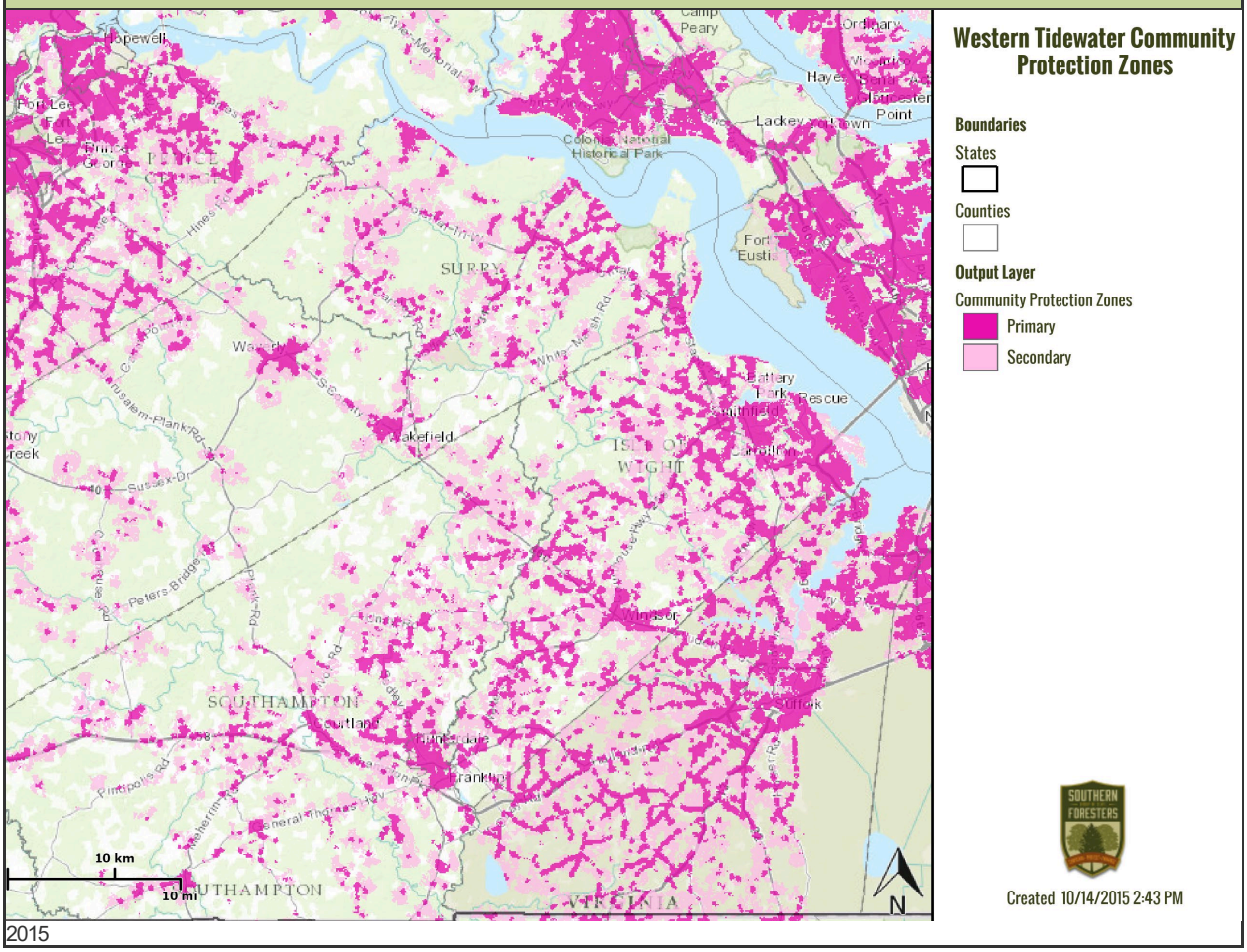
FIGURE 5.33: COMMUNITY PROTECTION ZONES FOR WILDFIRE, SOUTHSIDE



2015

Source: Southern Group of State Foresters

FIGURE 5.34: COMMUNITY PROTECTION ZONES FOR WILDFIRE, WESTERN TIDEWATER



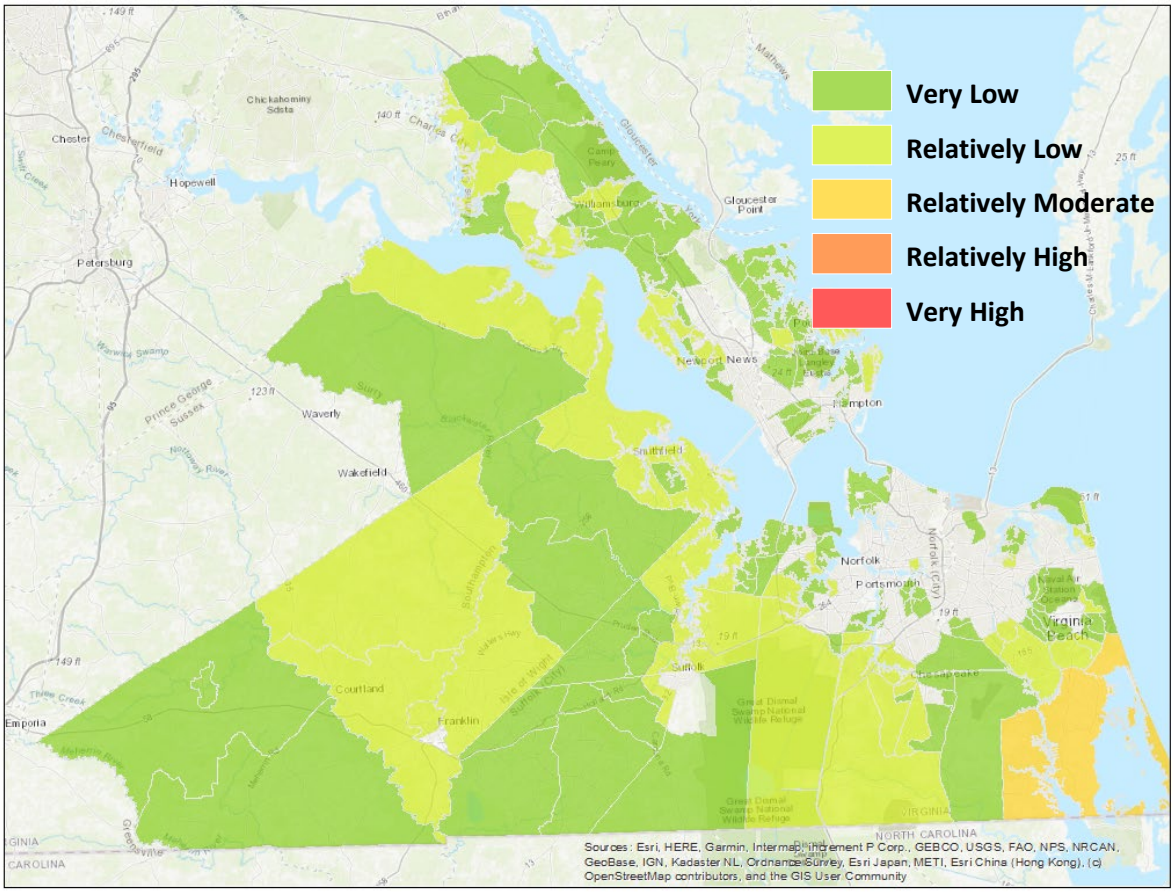
Source: Southern Group of State Foresters

Climate change increases the risk of the hot, dry weather that is likely to fuel wildfires. Also, because climate change is also a factor in higher intensity windstorms, there is a likelihood of increased fuel for wildfire when downed trees from storms are not removed. For site specific information on historic wildfire ignition density, property owners and planners can visit: www.southernwildfirerisk.com.

SOCIAL VULNERABILITY

The NRI risk ratings for wildfire are shown in **Figure 5.35**. The risk ratings are relative to the rest of the United States and the damage history upon which the ratings are built is simply not as substantial as many parts of the country. Although most of the region is rated low, there is one pocket of relatively moderate risk in the southeastern part of Virginia Beach.

FIGURE 5.35: NATIONAL RISK INDEX RATING, WILDFIRE



2021

Source: NRI 2021

DROUGHT

Droughts can impact natural systems and the ability of cities, towns and neighborhoods to function effectively. Specific impacts may include a reduction in the production of food grains and other crops, the size and quality of livestock and fish, available forage for livestock and wildlife, and the availability of water supplies needed by communities and industry. As evidenced by previous occurrences, the Hampton Roads region is vulnerable to the drought hazard.

ESTIMATES OF POTENTIAL LOSSES

While drought impacts agricultural, recreational, and manufacturing industries, estimating losses to the built environment is difficult because drought causes little documented physical damage to the built environment. In 2006, this plan included an annualized drought loss estimate of $2,215,839 for Isle of Wight County, Suffolk and Virginia Beach; however, the methodology regarding how this loss estimate was developed is not clear. Annualized damages appear to have been based on changes in total harvested cropland; however, losses in harvested cropland or the market value of crops cannot be attributed entirely to drought or other weather-related conditions, especially in rural parts of the planning area that are rapidly developing. Data on drought damages from the NCEI are incomplete and, when available, apply to a very large area including jurisdictions outside of the planning region. As a result, the estimation of annualized damages due to drought has been discontinued in plan updates.

Table 5.13 provides a time series of data regarding the total harvested cropland, irrigated land, market value of crops, and percent of non-irrigated land from 2002, 2007 and 2012. Due to a lack of agricultural information, data for many of the cities and towns are not provided.

TABLE 5.13: AGRICULTURAL DATA RELATED TO DROUGHT VULNERABILITY

JURISDICTION	2002 TOTAL HARVESTED CROPLAND (acres)	2007 TOTAL HARVESTED CROPLAND (acres)	2012 TOTAL HARVESTED CROPLAND (acres)	2017 TOTAL HARVESTED CROPLAND (acres)
James City County	5,258	2,367	2,698	318
York County	211	Withheld	Withheld	55
Suffolk	53,954	51,203	49,693	56,270
Virginia Beach	21,609	20,258	20,814	16,476
Chesapeake	53,188	41,391	36,269	31,592
Isle of Wight County	49,373	48,230	47,868	48,833
Southampton County	83,449	79,449	87,902	91,803
Surry County	35,265	26,526	30,238	23,844
TOTAL	**302,307**	**269,424**	**275,482**	**269,191**

Source: U.S. Department of Agriculture Census

The geography of the study area makes the Hampton Roads region uniformly vulnerable to the effects of drought. However, the impacts would vary across the region based on land use, with impacts to agriculture and the agricultural economy primarily in Surry and Southampton counties, as well as James City County, York County, Suffolk, Virginia Beach, Chesapeake, and Isle of Wight County. Social impacts to water utility customers in the cities of Hampton Roads would be more likely during a chronic, prolonged drought that results in water restrictions.

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

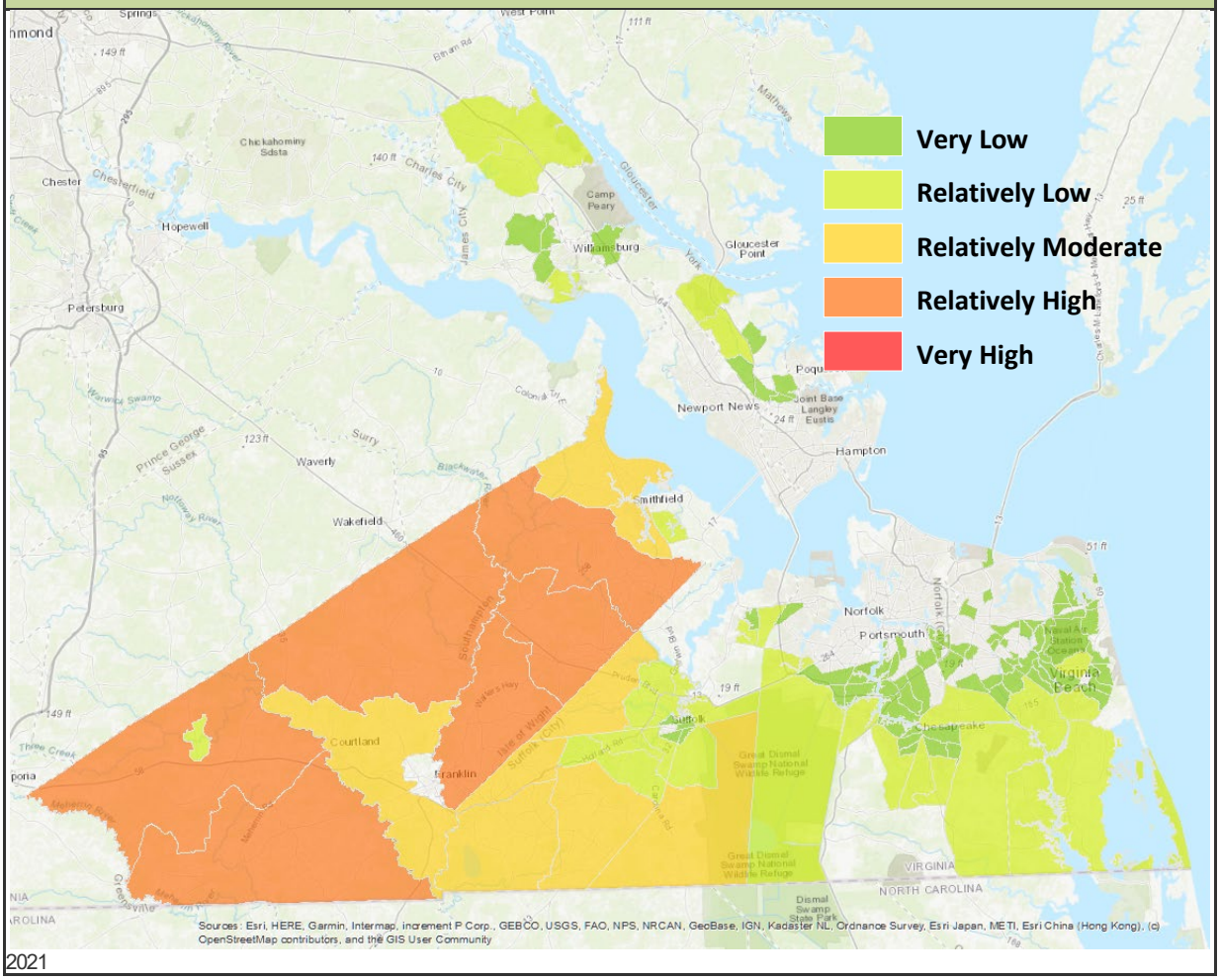
According to the USDA Agriculture Census data from 2002 through 2017, the total harvested cropland in Hampton Roads farming communities decreased 11-percent from 2002 to 2007, and then increased and held somewhat steady. This is consistent with the area's largest farming county, Southampton County, which experienced a decrease of 4-percent in the first period and an increase of 10-percent in the middle period, but has now increased to pre-2002 levels. These rates may be indicative of past and future changes in land use which may be peripherally related to long-term drought conditions, although the long period between data collection and relatively short period of record makes it difficult to draw useful conclusions.

The VASEM 2021 report predicts that as this century comes to a close, agriculture will be impacted by climate change with more intense precipitation and also longer periods of drought. The cumulative effect will particularly be bad for crops near the warm end of their geographic range.

SOCIAL VULNERABILITY

The NRI risk ratings for drought are shown in **Figure 5.36**. Historical occurrence data were taken from the University of Nebraska-Lincoln National Drought Mitigation Center, U.S. Drought Monitor. The period of record was January 2000 to December 2017. Large portions of Southampton County and Suffolk appear to be the most socially vulnerable to the impacts of drought.

FIGURE 5.36: NATIONAL RISK INDEX RATING, DROUGHT



2021

Source: NRI 2021

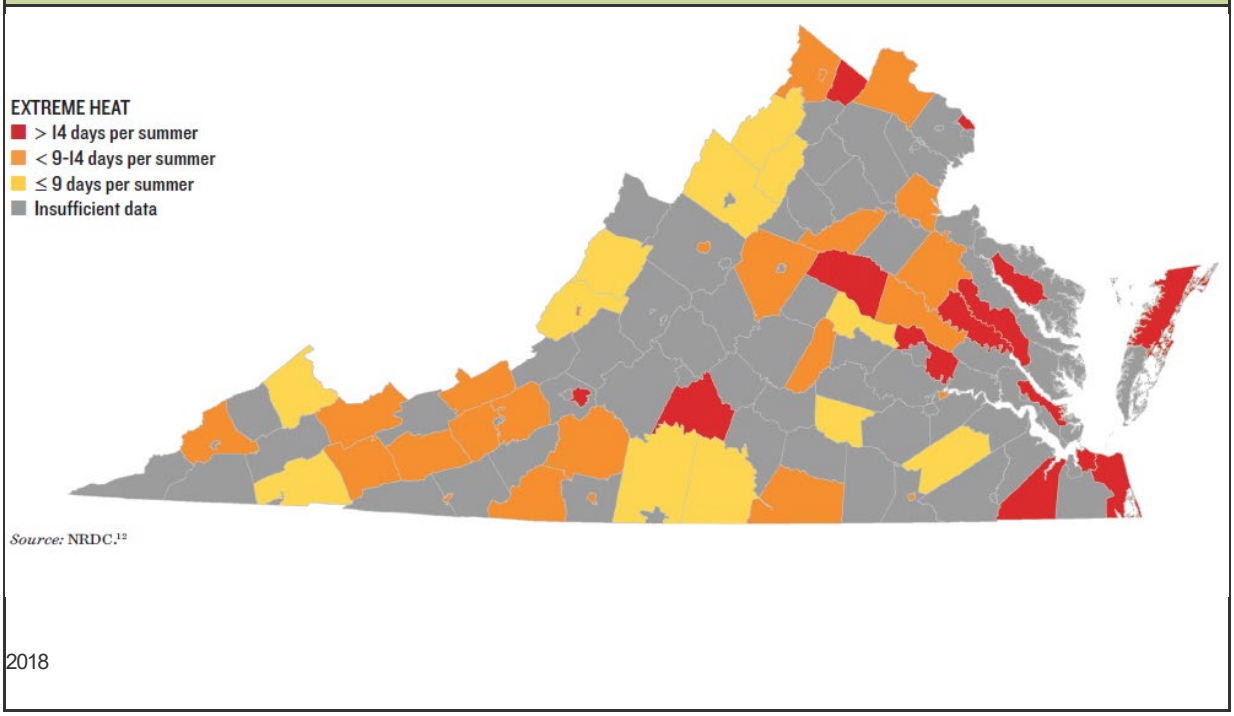
EXTREME HEAT

ESTIMATE OF POTENTIAL LOSSES

Based on the previous historical occurrences, annualized losses to the built environment are considered to be negligible (less than $1,000). Loss of human life or health impacts are a greater concern with extreme heat than is property damage, although extreme heat can exacerbate droughts, contribute to conditions that fuel wildfire, and cause road pavement to buckle.

An examination of vulnerability to extreme heat by jurisdiction necessitates the use of data other than NCEI data, which are incomplete. **Figure 5.37** shows the average number of extreme summer heat days per year in Virginia, by county, between 2007 and 2016, from an NRDC report on *Climate Change and Health in Virginia*. While the data are insufficient in much of the study area, a definite exposure to extreme heat for Virginia Beach, Suffolk and York County is evident.

FIGURE 5.37: AVERAGE NUMBER OF EXTREME SUMMER HEAT DAYS PER YEAR IN VIRGINIA

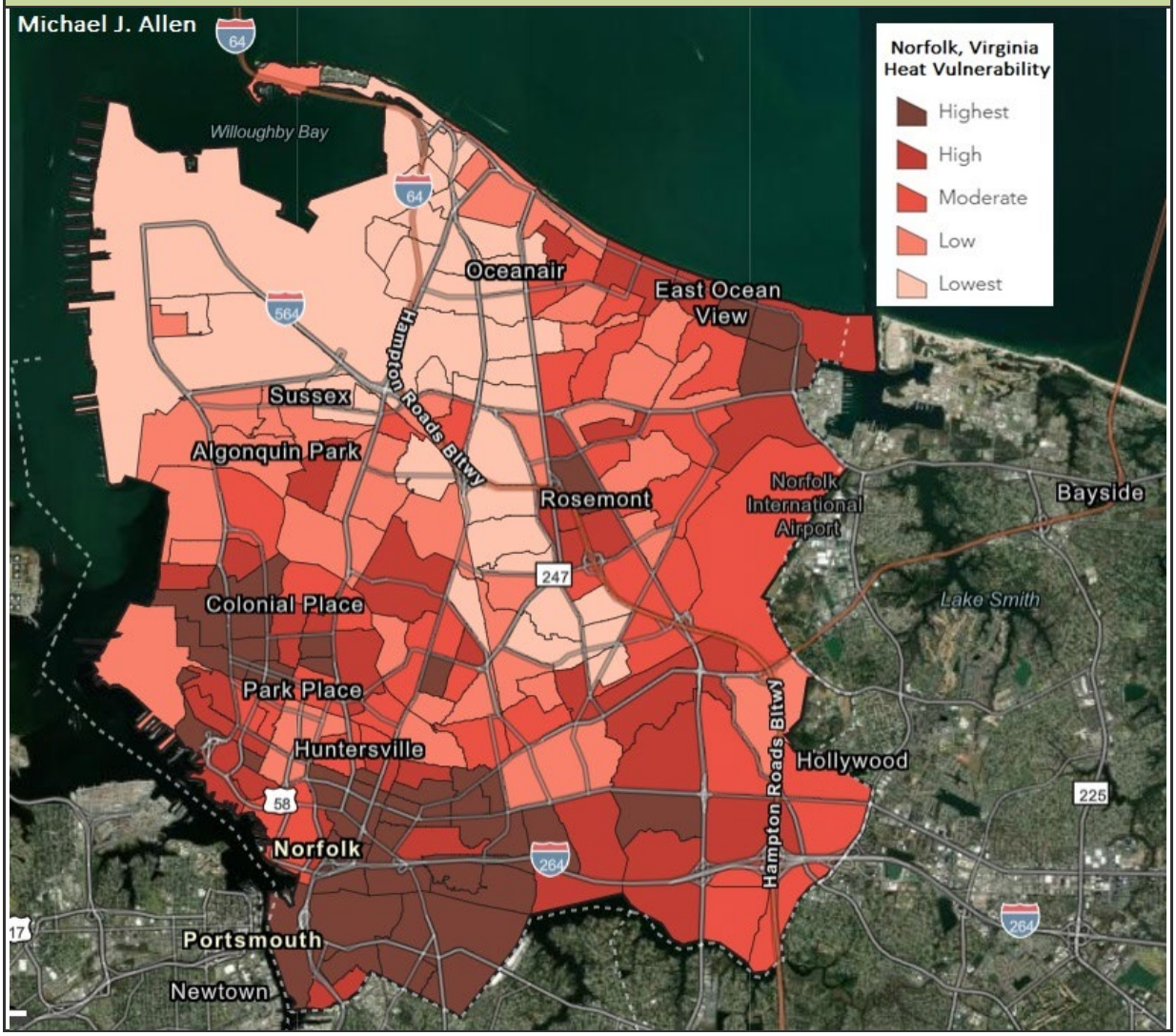


Source: NRDC: Climate Change and Health in Virginia, Issue Brief, April 2018. Accessed online: https://www.nrdc.org/sites/default/files/climate-change-health-impacts-virginia-ib.pdf

A heat mapping project in Norfolk in July, 2019, provides some insights to variability in risk to extreme heat for that particular city. By combining data on single day temperatures, land cover and poverty, researchers put together a far more detailed heat vulnerability map (**Figure 5.38**) that may be useful for future planning and research efforts on the geographic variability in risk to this hazard.[11] Land cover and tree cover at a neighborhood scale are important factors in determining vulnerability.

[11] Allen, Michael. *Norfolk Heat Vulnerability Story Map, 2021* accessed online at: https://storymaps.arcgis.com/stories/7cde13a422504a0682ec9c2deb18c4b6

FIGURE 5.38: NORFOLK HEAT VULNERABILITY



Source: Michael Allen, *Norfolk Heat Vulnerability Story Map* accessed 2021 online at: https://storymaps.arcgis.com/stories/7cde13a422504a0682ec9c2deb18c4b6

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

The risk of heat-related illnesses and deaths in Virginia will grow as climate change fuels more intense and frequent heat waves. While long-term trends at individual sites in Hampton Roads, such as airports, are useful for observing regional temperature change, students at Virginia Wesleyan in Virginia Beach are part of a statewide effort to more accurately map and distinguish urban heat islands and their evolving impact, similar to the Norfolk effort described above. On the hottest days of the year, students drive along predetermined routes at three different times of day to capture temperature and humidity data using sensors attached to car windows. The data will help link city planning decisions past and future, such as where trees and green spaces are required, to real results on the ground.

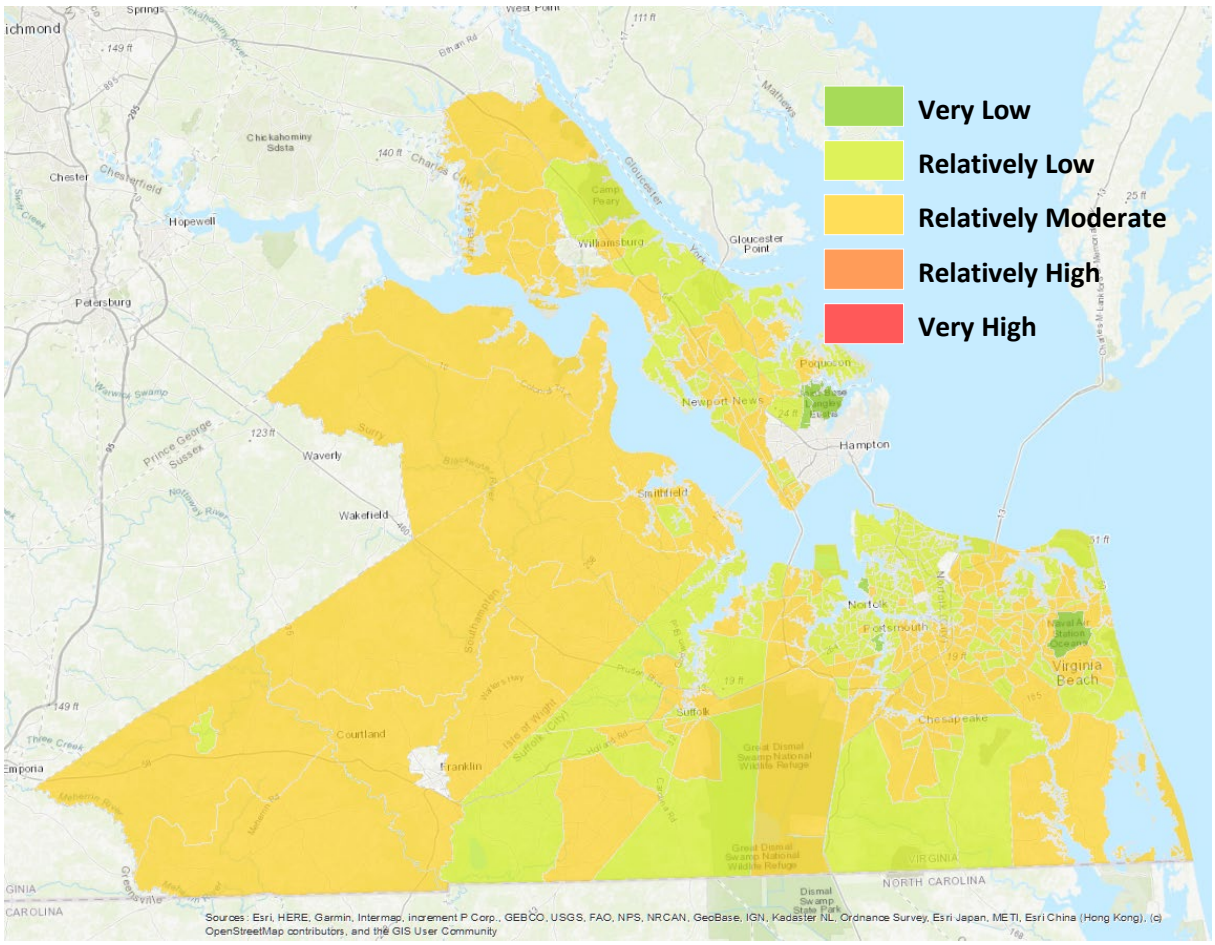
All future structures built in the Hampton Roads region will be exposed to extreme heat. Information gleaned from research such as the mapping in Norfolk and Virginia Beach will help inform future planning regulations and design guidelines, including passive cooling solutions for buildings and neighborhoods, that can improve energy efficiency, cooling and health outcomes from extreme heat events. Examples include

cool roofs and reflective cool walls for buildings, cool corridors in neighborhoods where trees and concrete rather than asphalt prevent heat buildup, and positioning buildings to shade common pedestrian routes.

SOCIAL VULNERABILITY

The main concern in periods of extreme heat is the potential public health impact, such as heat exhaustion or heat stroke. Individuals of concern include those living in residences without air conditioning, or in areas where electric service is unavailable due to system-wide blackouts. The elderly, small children, the chronically ill, livestock and pets are most vulnerable to extreme heat. **Figure 5.39** shows the relative risk from heat waves based on the National Risk Index data.

FIGURE 5.39: NATIONAL RISK INDEX RATING, HEAT WAVE



2021

Source: NRI 2021

HAZARDOUS MATERIALS INCIDENTS

ESTIMATES OF POTENTIAL LOSSES

Based on information provided in the *Hazard Identification and Analysis* section, the Hampton Roads region experiences an average of 26 hazardous materials incidents per year with only minor damages (generally less than $10,000 per year) reported. **Table 5.14** shows hazardous materials incidents from 1998 to 2021 in Hampton Roads region (according to the U.S. Department of Transportation) that contribute to an annualized loss estimate of $67,500 from highway incidents.

TABLE 5.14: ANNUALIZED LOSSES FOR HAZARDOUS MATERIALS INCIDENTS

SUBREGION	COMMUNITY	NUMBER OF EVENTS	PROPERTY DAMAGE	AVERAGE ANNUAL NUMBER OF EVENTS	ANNUALIZED LOSS
Peninsula	Hampton	26	$9,454	1.13	$411
	Newport News	44	$5,058	1.91	$220
	Poquoson	0	$0	0.00	$0
	Williamsburg	3	$6,845	0.13	$298
	James City County	0	$0	0.00	$0
	York County	2	$0	0.09	$0
Southside	Norfolk	118	$425,847	5.13	$18,515
	Portsmouth	52	$148,234	2.26	$6,445
	Suffolk	15	$343,678	0.65	$14,943
	Virginia Beach	210	$78,807	9.13	$3,426
	Chesapeake	113	$292,360	4.91	$12,711
Western Tidewater	Isle of Wight County	0	$0	0.00	$0
	Franklin	8	$3,688	0.35	$160
	Southampton County	2	$10,706	0.09	$465
	Surry County	2	$7,550	0.09	$328

U.S. Department of Transportation, 2021

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

Future land use and zoning of structural development as discussed in previous subsections are expected to have less impact on future vulnerability than mitigation. Protection of human life through administration of proper emergency notification and evacuation planning with regard to potential hazardous material incidents are critical elements in reducing real-time vulnerability before, during and after events.

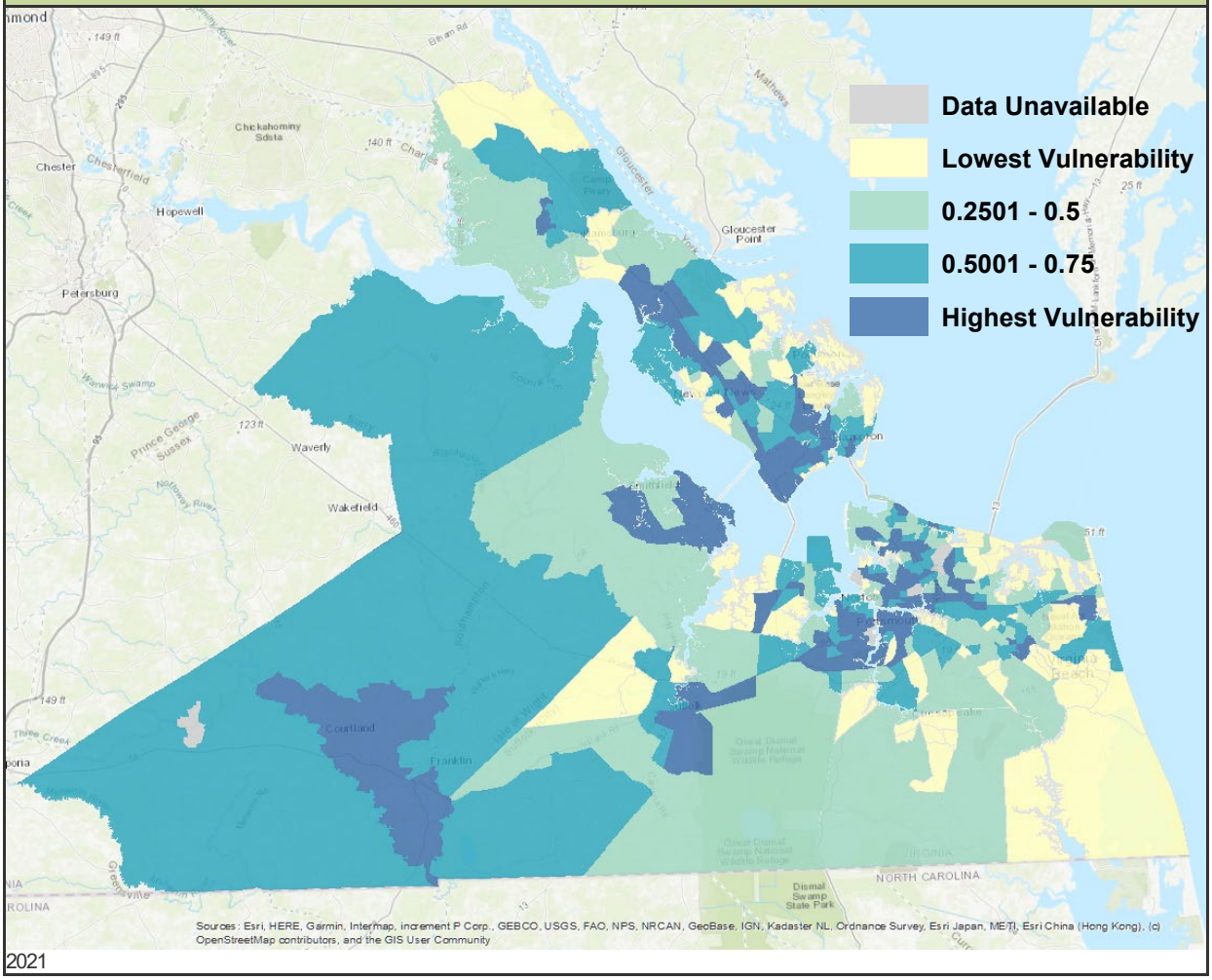
Climate change impacts are limited with hazardous materials incidents. Higher frequency of extreme weather events such as winter storms or tropical storms may increase the overall number of rail and highway accidents, which could naturally lead to an increase in events involving hazardous materials. Extreme heat and wildfire events brought about by higher temperatures could conceivably increase incidents involving flammable materials.

SOCIAL VULNERABILITY

The CDC Agency for Toxic Substances and Disease Registry (ATSDR) created a Social Vulnerability Index geared toward preparing for and responding to exposure to dangerous chemicals (and other natural hazards, as well). This index is better suited to examining the social vulnerability related to hazardous materials incidents, although many of the inputs are the same as the NRI. Overall vulnerability for this index is based on: socioeconomic status (below poverty, unemployed, income, no high school diploma); household composition and disability (aged 65 or older, aged 17 or younger, civilian with disability, single-parent households); minority status and language; and housing type and transportation (multi-unit structures, mobile homes, crowding, no vehicle, group quarters).

The ATSDR map provided in **Figure 5.40** shows the highest social vulnerability to hazardous materials incidents, is in the east end of Newport News, eastern Surry County, a corridor in Southampton County, and pockets in Suffolk, Chesapeake, Portsmouth, Norfolk and Virginia Beach.

FIGURE 5.40: CENTERS FOR DISEASE AND PREVENTION, SOCIAL VULNERABILITY INDEX



Source: CDC/ATSDR Social Vulnerability Index 2018 Database, Virginia.

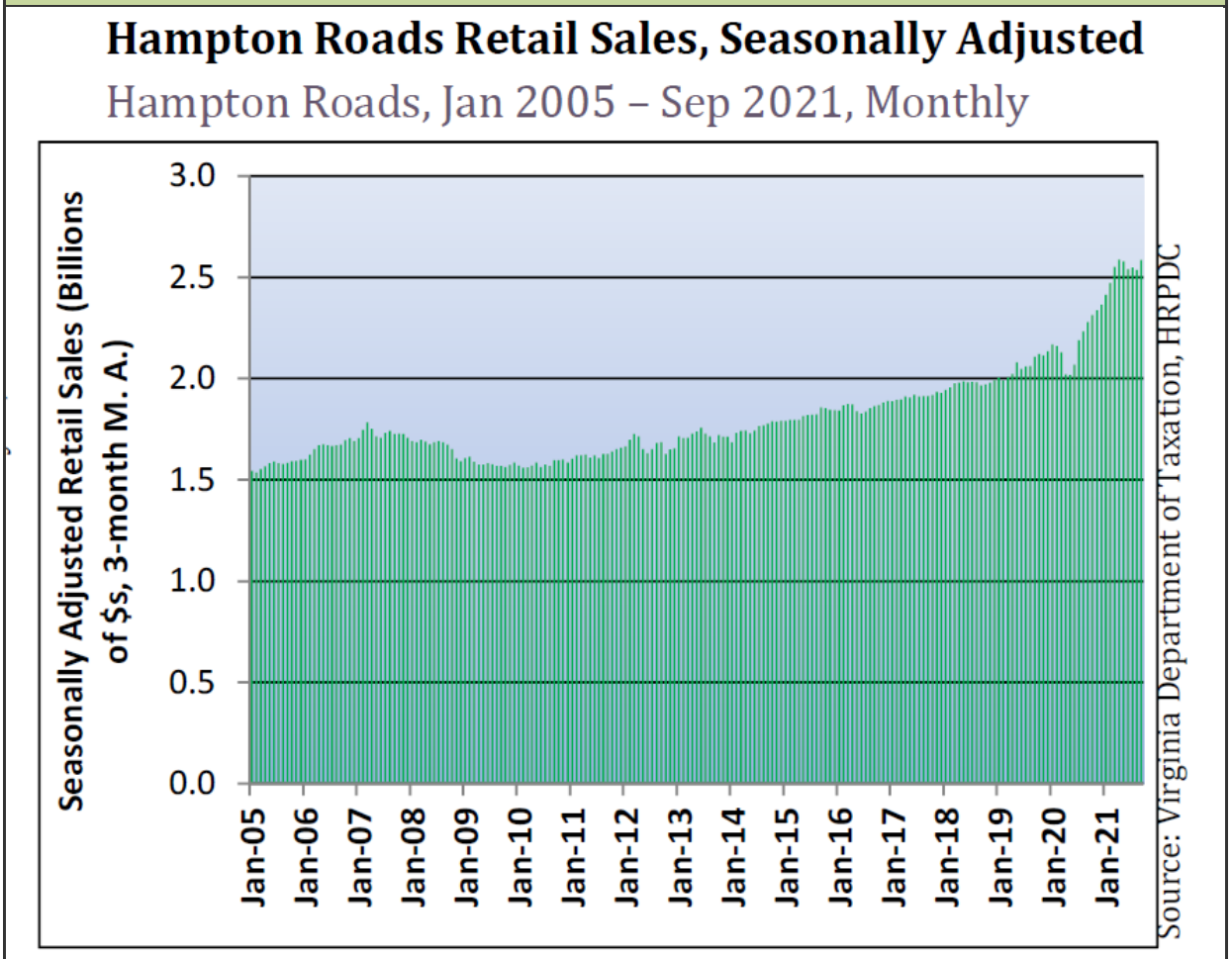
PANDEMIC FLU OR COMMUNICABLE DISEASE

ESTIMATES OF POTENTIAL LOSSES

An outbreak of widespread disease burdens local medical facilities in terms of capacity for treatment, the region's health departments, emergency responders and other essential workers with additional staff responsibilities, but would not be expected to damage the built environment or community infrastructure in any significant way. Experience with COVID-19 has shown that economic impacts and job losses may affect almost every aspect of the economy, and the number of people remaining at home for work and schooling can dramatically impact the demand for childcare services and other support service industries. These impacts are expected to be temporary, unique to COVID-19, and may be further ameliorated by Federal stimulus dollars distributed as a result of a public health disaster, and eviction prohibitions issued at various government levels.

HRPDC has monitored how COVID-19 has impacted local transportation volume, employment, unemployment claims, retail sales, home prices and rent rates, and other economic indicators throughout the pandemic. A full writeup is prepared each month in the *Hampton Roads Economic Monthly*, gaging various metrics of the economy; these reports are available at: https://www.hrpdcva.gov/departments/economics. **Figures 5.41** through **5.43** graphically show the most recent impacts to Hampton Roads retail sales, unemployment rate and the number of homes sold, representing just a snapshot of the potential losses and the local recovery. Additional analysis once conditions return to a more normal, pre-pandemic status may be able to quantify the losses due to pandemic.

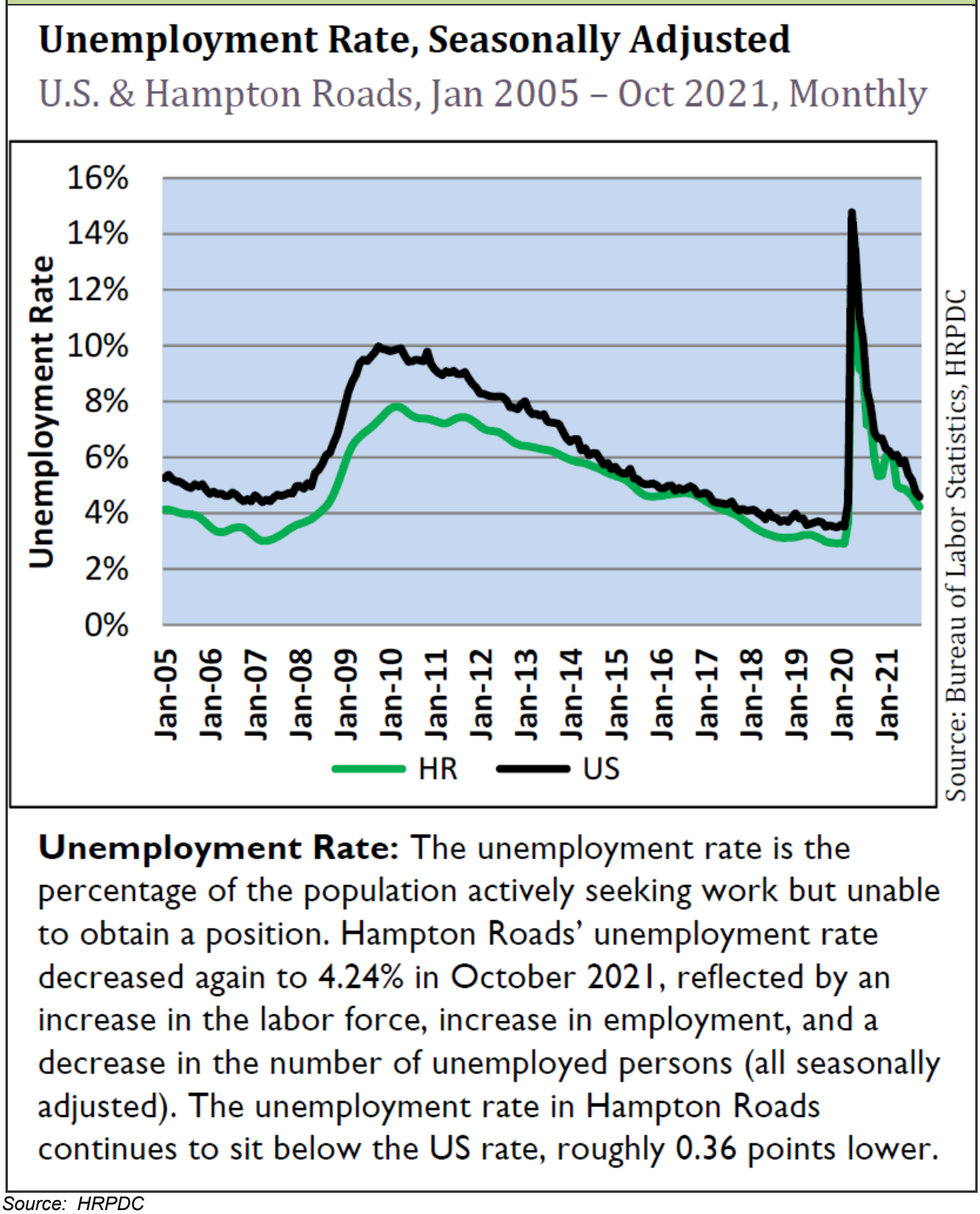
FIGURE 5.41: HAMPTON ROADS RETAIL SALES



Retail Sales: Retail sales in Hampton Roads, as measured by the 1% local option sales tax, serve as an indicator for consumption in the region. When seasonally adjusted and averaged over 3 months, September shows an increase in retail sales after several months of declines. Unadjusted, Sept 2021 posted a 19% increase from September 2020 (when the rise in retail sales was in full swing after the initial shock of the pandemic wore off), and a nearly 30% increase from Sept 2019. In other words, retails sales are continuing to rise long-term as consumers are still spending more on goods than pre-pandemic.

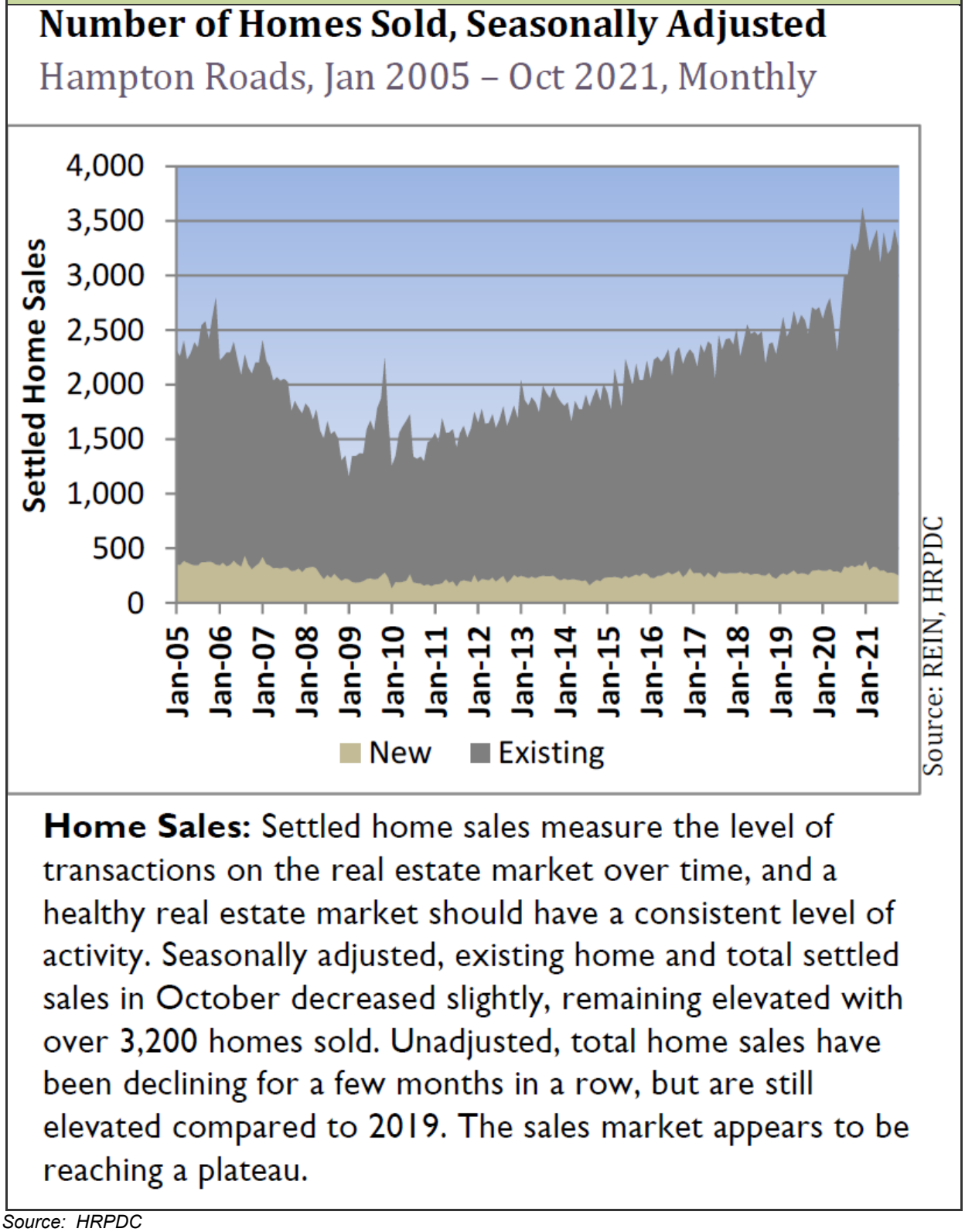
Source: HRPDC

FIGURE 5.42: HAMPTON ROADS UNEMPLOYMENT RATE



Source: HRPDC

FIGURE 5.43: HAMPTON ROADS NUMBER OF HOMES SOLD



Source: HRPDC

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

Future land use is expected to have less impact on future vulnerability to pandemic flu or communicable disease than the protection of public health through dissemination of proper individual protection measures, emergency notification with regard to flu or disease outbreak and effective vaccines.

Many causes of climate change also increase risk of pandemic, including deforestation, loss of habitat and loss of species. Warming temperatures and increasingly severe rainfall patterns make conditions better for Lyme disease, waterborne diseases and mosquito-borne diseases.

SOCIAL VULNERABILITY

Analysis of the impacts of COVID-19 on populations of varying economic, social and ethnic backgrounds is ongoing at the time of this study. Understanding how the virus spread requires examination of the specific geographic circumstances of where people are *required* to travel. Social isolation was quickly recognized as a critical element in managing the spread, but isolation is not an option for many essential workers who are critical to the healthcare system, food supply chain and transportation systems. There are clear divides in the region's communities regarding who can work from home and who is required to go out in public. COVID-19 clearly did not affect everyone equally. The Virginia Center for Inclusive Communities (https://inclusiveva.org/covid19/) noted the following disparities:

- older adults were more susceptible to the virus itself, leading to large numbers of socially isolated seniors;
- school closures led to food insecurity, disparities in technology and internet access, and a need for special services for students with disabilities and students learning English;
- persons with pre-existing conditions but less access to high quality, preventive healthcare were more susceptible to the virus;
- small businesses with existing banking relationships had better access to State and Federal financial assistance, especially during the early part of 2020;
- inequities related to transportation access impacted how the virus affected individuals;
- and violence against intimate partners, Asians, Islamics and others increased during the pandemic.

Fortunately, as of February 2021, at least seven different vaccines were being administered to the most vulnerable populations throughout the world. Three primary vaccines were being used in Virginia, and by January 31, 2022, over 6.7 million Virginians had received at least one dose, 5.87 million were fully vaccinated, and over 2.4 million had also received a third booster dose.[12]

As COVID-19 demonstrated, the nature and characteristics of a virus, such as how it is transmitted and who is most likely to suffer from severe symptoms, affects the populations most likely to be impacted. Social vulnerability can be influenced by financial health, physical health, mental health and other aspects of where and how a person lives. Similarly, access to virus testing, healthcare for those who contract the virus, and access to medications and vaccinations are all components in an assessment of social vulnerability to each virus and such assessment is difficult to manage while resources are committed to managing an ongoing virus. Communication and outreach to socially vulnerable groups is a key mitigation measure for lessening the impact of viruses that unequally impact demographic groups.

[12] Virginia Department of Health COVID-19 Vaccine Dashboard accessed online at: https://www.vdh.virginia.gov/coronavirus/covid-19-vaccine-summary/

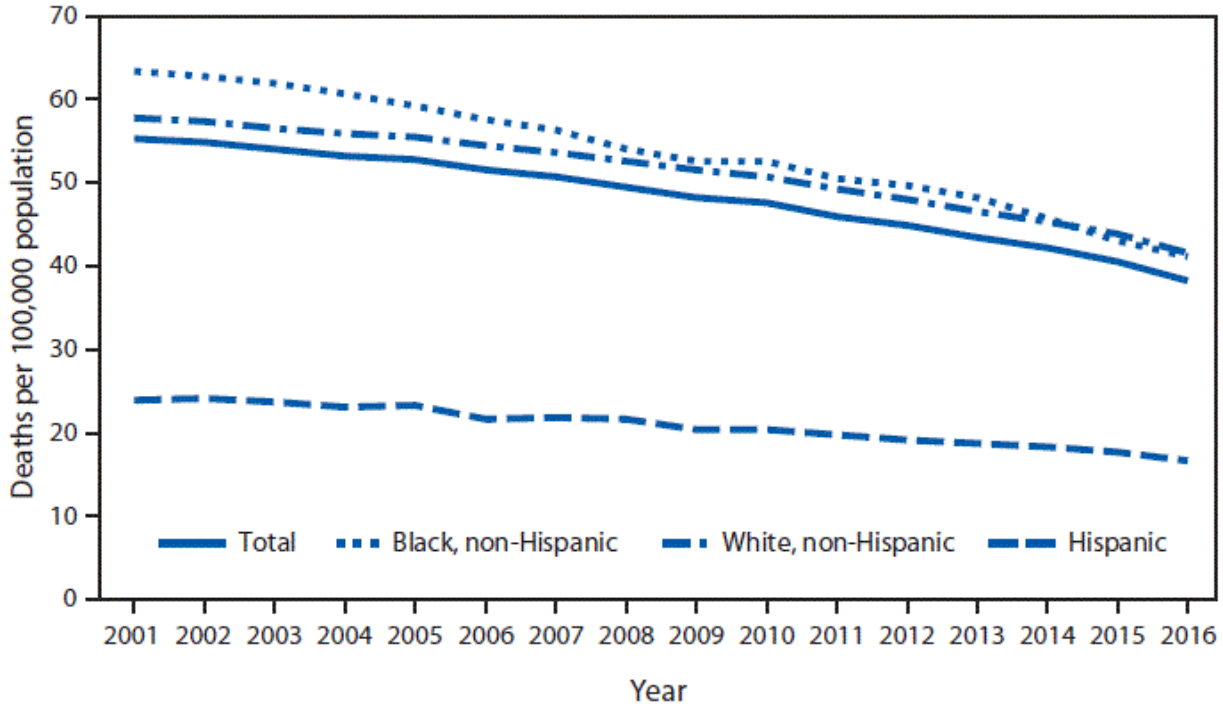
RADON EXPOSURE

ESTIMATES OF POTENTIAL LOSSES

Radon testing in Virginia has been sporadic and not necessarily reported to any single data repository. Thus, the only way to know if any structure or group of structures has a radon problem is to test. Testing of residential structures is easy and inexpensive. Low-cost test kits are available through the mail and at home improvement stores. Qualified testers can also do long-term residential testing and set up systems for testing larger non-residential buildings. Mitigation or treatment of structures with high radon concentrations is also possible, relatively inexpensive and can be very effective if done properly. Testing is most important for structures in the red or orange zones indicated in Figure 4.35, and especially important for structures in which inhabitants spend their time in parts of the structure below ground or in contact with the ground. Future updates to this plan may include identification of specific structure types, for example structures with basements, in any higher radon potential areas to further define vulnerability, especially if the EPA's 1993 map of radon zones is updated based on more testing or other new scientific information.

Unlike many other hazards in this plan, structures are not physically damaged by radon exposure; instead, human lives are directly at risk. CDC QuickStats show that death rates from lung cancer declined between 2001 and 2016. While this stand-alone graph does not attribute the decline in lung cancer deaths to a specific cause, nor does it show the percentage of deaths attributed to radon exposure, the death rates by race/ethnicity provide evidence that there are racial/ethnic disparities in death from lung cancer (see **Figure 5.44**). During this period, the lung cancer death rates for the total population (deaths per 100,000 population) declined from 55.3 to 38.3, as well as for each racial/ethnic group shown. The death rate for the non-Hispanic Black population decreased from 63.3 to 41.2, for the non-Hispanic white population from 57.7 to 41.5, and for the Hispanic population from 23.9 to 16.6. Throughout this period, the Hispanic population had the lowest death rate.

FIGURE 5.44: AGE-ADJUSTED DEATH RATES FROM LUNG CANCER, BY RACE/ETHNICITY, UNITED STATES, 2001-2016



* Deaths per 100,000 population age-adjusted to the 2000 U.S. standard population.

Source: Centers for Disease Control and Prevention, accessed online 4/22/22 at: https://www.cdc.gov/mmwr/volumes/67/wr/mm6730a8.htm

FUTURE VULNERABILITY, LAND USE AND CLIMATE CHANGE IMPACTS

According to Memorial Sloan Kettering Cancer Center, major scientific organizations believe that radon contributes to approximately 12% of lung cancers annually in the United States. It is the second leading cause of lung cancer. With 5,820 new cases of lung and bronchus cancer expected in Virginia in 2021, this translates into approximately 700 of those new cases being caused by radon exposure.

Radon levels are very localized and additional testing is needed to verify EPA zones for the study area. There are no federal or state laws that require radon testing prior to a real estate transaction, but some contracts do include radon testing or mitigation contingency clauses, typically at the request of the buyer.

Virginia Code at Section 15.2-2280 gives all red zone (Zone 1) counties and cities the option of requiring passive radon resistant construction features; however, there are no Zone 1 communities in the study area for this plan.

In 1993 the Virginia General Assembly passed legislation that requires all schools in the Commonwealth to be tested for radon after July 1, 1994, and includes any new school buildings and additions built after that date. Each school is required to maintain files of their radon test results.

In the early 1990s the Virginia Department of Education purchased long-term radon test kits that were used to test all Virginia public school K-12 classrooms that were in contact with the ground at that time. Long-term tests are generally more accurate than short term tests because they sample anywhere from 90 to 365 days. Short term tests usually sample for only 2 to 7 days. Since radon levels can fluctuate over time, the longer the test duration, the more accurate the results will be. The EPA school testing protocol recommends testing during the heating season which runs roughly from late October through the end of March. A VDH review of the original testing data from the long-term tests done at that time indicated that some of these test results were not valid or usable due to:

- School classrooms not being identified on the test report;
- Testing periods that were outside of the preferred heating season; and
- Improper testing of unoccupied areas such as boiler and storage rooms.

In general, radon test results for the vast majority of school classrooms in Virginia are below the EPA action level of 4.0 pCi/L for indoor air. For the few classrooms that have shown elevated radon levels, the problem was usually solved by making adjustments to the school's HVAC system. However, in some cases the HVAC adjustments did not work and a radon mitigation system was installed to reduce the radon to acceptable levels. Future updates to this plan may include evaluation of school data for study area schools, as available. Calls to VDH regarding availability of the data for the purposes of this plan were not returned.

With regard to future climate change, changes in the environment and human behavior may alter the risks associated with radon for individual buildings. According to the EPA, the primary factors that influence radon entry into buildings include: 1) radon content of the soil; 2) pressure differential between the interior of a structure and the soil; 3) air exchange rate for the building; 4) moisture content surrounding the structure; and 5) presence and size of entry pathways. Climate change can affect these same factors and, therefore, may cause direct or indirect changes in indoor air quality within a structure. In addition, certain changing human behavioral factors driven by climate change may further impact air quality. Examples of how climate change may impact indoor air quality include:

- Increased Air Conditioning and Decreased Fan Usage: air conditioning used as a result of rising temperatures contributes to "closed house conditions" and reduced stratification of radon between floors;

- Activity Patterns and Spatial Radon Variation: rising outdoor temperatures may result in increased use of basements where radon concentrations are generally higher;

- Weatherization and Energy Efficiency: although undetermined, tightening structures for energy efficiency may increase radon concentrations for structures with indoor radon sources;

- Weather-Related Influences: increased wind can change pressure differentials between structure levels and the outside, and increased precipitation rates or totals may change hydrologic conditions causing a rise in the water table and force vapors from the vadose zone, or unsaturated zone, into a less dense media, such as a basement.

- High Density Housing: concrete construction used in high density housing (constructed to reduce greenhouse emissions) may be an increasing source of elevated radon exposure for some occupants.

SOCIAL VULNERABILITY

The CDC ATSDR created a Social Vulnerability Index geared toward preparing for and responding to exposure to dangerous chemicals (and other natural hazards, as well). This index is better suited to examining the social vulnerability related to hazardous materials incidents, although many of the inputs are the same as the NRI. Overall vulnerability for this index is based on: socioeconomic status (below poverty, unemployed, income, no high school diploma); household composition and disability (aged 65 or older,

aged 17 or younger, civilian with disability, single-parent households); minority status and language; and housing type and transportation (multi-unit structures, mobile homes, crowding, no vehicle, group quarters).

The ATSDR map provided above in **Figure 5.40** shows the highest social vulnerability to radon exposure, is in the east end of Newport News, eastern Surry County, a corridor in Southampton County, and pockets in Suffolk, Chesapeake, Portsmouth, Norfolk and Virginia Beach. Perhaps once more information is collected regarding the underlying geology of the region and the relationship to radon, this map can be further refined in the future to more accurately isolate the social vulnerability to radon. Structure-specific data regarding age and existence of basements could also be incorporated to further enhance the analysis.

CONCLUSIONS ON HAZARD RISK

The risk and vulnerability assessment performed for the Hampton Roads region provides significant findings that allow committee members to prioritize hazard risks and proposed hazard mitigation strategies and actions. Prior to assigning conclusive risk levels for each hazard, the committee reviewed the results of the assessments shown in the following tables.

Damages and frequency information from the risk and vulnerability assessments are summarized in **Table 5.15**. This table provides a quantitative assessment of existing data for the hazards, recognizing that some hazards are not readily assessed, nor are the assessments truly comparable.

TABLE 5.15: SUMMARY OF QUANTITATIVE ASSESSMENT

HAZARD	AVERAGE ANNUAL ESTIMATED LOSSES
Sea Level Rise and Land Subsidence	$130.8 million by 2040
Tropical/Coastal Storm	$86,913,000
Flooding	$44,261,400
Tornado	$24,265,000
Earthquake	$1,119,000
Winter Storm	$805,000
Hazardous Materials Incident	$67,500
Wildfire	$36,900
Extreme Heat	Negligible*
Flooding Due to Impoundment/High Hazard Dam	Not quantified
Landslide/Coastal Erosion	Not quantified
Radon Exposure	Not quantified
Pandemic Flu or Communicable Disease	Not quantified
Drought	Not quantified

*Extreme heat event impacts are believed underreported by NCEI data.

Risk level ranking was based on historical and anecdotal data, as well as input from committee members. This ranking was done collaboratively in Workshop #1 for each hazard, using the matrix shown in **Figure 5.45**. Each hazard was discussed and analyzed based on the participants' knowledge about consequences and likelihood. This risk scoring approach is a simplified method for estimating risk that is easy to understand, based on a method developed for the Australian Institute for Disaster Resilience (AIDR)[13]. Scores from likelihood and consequence are then multiplied to provide a risk score, as shown in **Table 5.16**. Flooding and Impoundment Failure/High Hazard Dam were grouped for simplicity's sake.

[13] AIDR. (2015). *Handbook 10: National Emergency Risk Assessment Guidelines*. 2nd Edition. Australian Institute for Disaster Resilience, Australian Government Attorney-General's Department.

FIGURE 5.45: AIDR RISK RANKING FOR EACH HAZARD

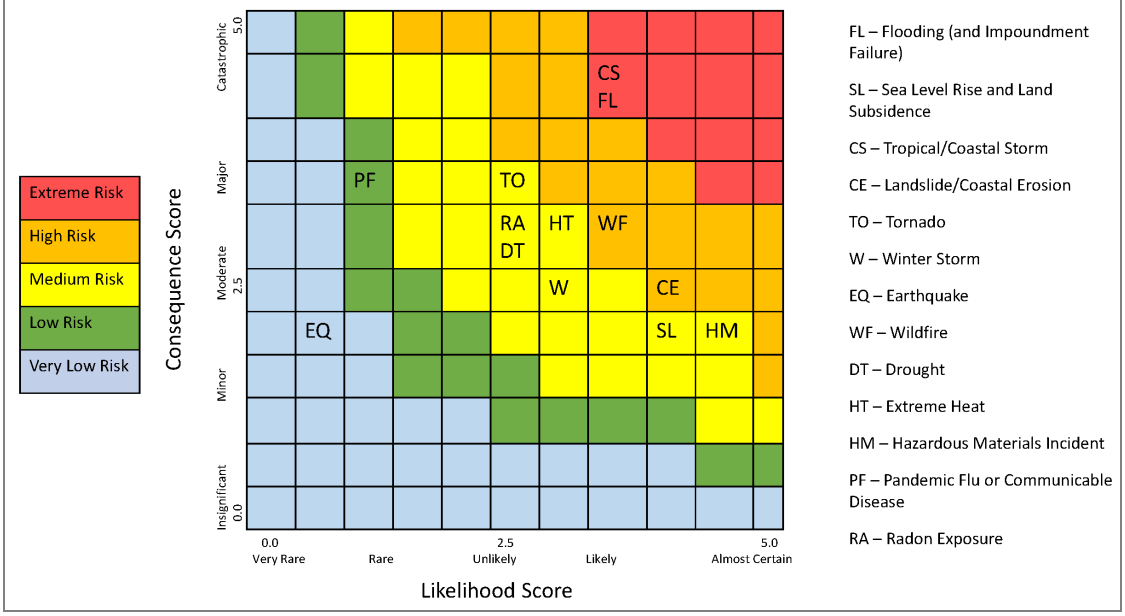


TABLE 5.16: AIDR RISK SCORES FOR EACH HAZARD

Hazard	Risk Score	Risk Description
Flooding	15.75	Extreme
Coastal/Tropical Storm	15.75	Extreme
Wildfire	10.5	High
Landslide/Coastal Erosion	10	High
Hazardous Materials Incident	9	Medium
Tornado	8.75	Medium
Extreme Heat	9	Medium
Sea Level Rise	8	Medium
Radon Exposure	7.5	Medium
Drought	7.5	Medium
Winter Storm	7.5	Medium
Pandemic Flu or Communicable Disease	3.5	Low
Earthquake	1	Very Low

The conclusions drawn from the assessments, combined with an examination of the rankings in the 2017 plan, as well as final determinations and discussion with committee members, were inserted into three categories for a final summary of hazard risk for the region based on High, Moderate, Low, or Negligible designations (**Table 5.17**). Although some hazards are classified as posing Low or Negligible risk and the impacts to infrastructure are limited, their occurrence and damages are still possible in the region.

TABLE 5.17: CONCLUSIONS ON HAZARD RISK FOR HAMPTON ROADS	
CRITICAL HAZARD - HIGH RISK	FLOODING TROPICAL/COASTAL STORM SEA LEVEL RISE AND LAND SUBSIDENCE
CRITICAL HAZARD - MODERATE RISK	WINTER STORM TORNADO HAZARDOUS MATERIALS INCIDENT
NONCRITICAL HAZARD - LOW RISK	EARTHQUAKE WILDFIRE FLOODING DUE TO IMPOUNDMENT FAILURE/HIGH HAZARD DAM PANDEMIC FLU/COMMUNICABLE DISEASE RADON EXPOSURE
NEGLIGIBLE	EXTREME HEAT LANDSLIDE/SHORELINE EROSION DROUGHT

CAPABILITY ASSESSMENT

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2022 UPDATE

Section 6 was updated to combine capabilities of all communities based on the existing plans and updated information collected from interviews, phone calls, and committee work during the update process. The following major changes were incorporated:

1) All tables were updated to reflect new information;
2) Mitigation actions completed by communities and their methods of integrating hazard mitigation principles across plans and departments was updated and summarized;
3) Surry County and towns were appended to the section where necessary, and,
4) A brief section detailing regional capabilities and the Commonwealth's resiliency efforts was updated.

INTRODUCTION

This section of the Plan discusses the capability of Hampton Roads communities with regard to hazard mitigation activities, and consists of the following four subsections:

- WHAT IS A CAPABILITY ASSESSMENT?
- CONDUCTING THE CAPABILITY ASSESSMENT
- CAPABILITY ASSESSMENT FINDINGS
- INTEGRATING MITIGATION INTO COMMUNITY LIFE

WHAT IS A CAPABILITY ASSESSMENT?

The purpose of conducting a capability assessment is to confirm that the community's resulting mitigation strategy is based on the principles found in (or missing from) existing authorities, policies, programs, and resources, and based on the community's ability to expand and improve these existing tools. This planning process strives to establish goals, objectives, and actions that are feasible, based on an understanding of the organizational capacity of the departments tasked with their implementation. A capability assessment helps to determine which mitigation actions are practical and likely to be

implemented over time given a local government's planning and regulatory framework, level of administrative and technical support, level of fiscal resources, and current political climate.

Careful examination of local capabilities helps detect existing gaps, shortfalls, or weaknesses within ongoing government activities that could hinder proposed mitigation activities or exacerbate hazard vulnerability. A capability assessment highlights positive mitigation measures already in place or being implemented at the local and regional levels, which should continue to be supported and enhanced through future mitigation efforts.

CONDUCTING THE CAPABILITY ASSESSMENT

In order to inventory and analyze Hampton Roads' community capabilities, the planning committee and consultant requested information on a variety of "capability indicators" such as existing local plans, policies, programs, or ordinances that may reduce, or in some circumstances, increase the community's hazard vulnerability. The matrix of capability indicators has been built by the consultant over several years of gathering capability information, and on review of numerous documents relating to factors that impact community capability. Other indicators included information related to each community's fiscal, administrative and technical capabilities such as access to local budgetary and personnel resources necessary to implement mitigation measures. Identified gaps, weaknesses, or conflicts can be recast as opportunities to implement specific mitigation actions.

For the 2022 update, the planning committee was asked to review and provide feedback on: the existing plan's capability assessment, and a presentation at the second meeting of the planning subcommittee. The presentation included information on possible new mitigation actions, and other relevant regional and state capabilities. This section has been updated based on feedback from these reviews and discussions during the Committee meetings as well as in person meetings conducted with many of the communities toward the end of the planning process.

CAPABILITY ASSESSMENT FINDINGS

PLANNING AND REGULATORY CAPABILITY

Planning and regulatory capability is based on the implementation of plans, ordinances and programs that demonstrate each local jurisdiction's commitment to guiding and managing growth, including reconstruction following a disaster. Examples include emergency response, mitigation and recovery planning, comprehensive land use planning, transportation planning, and capital improvements planning. Additional examples include the enforcement of zoning or subdivision ordinances and building codes. These planning initiatives present significant opportunities to integrate hazard mitigation principles and practices into the local decision making process.

This assessment is designed to provide a general overview of the key planning and regulatory tools in place or under development in Hampton Roads, along with their potential effect on hazard loss reduction. This information will help identify opportunities to address existing gaps, weaknesses or conflicts in the hazard mitigation strategy.

Table 6.1 provides a summary of the relevant local plans, ordinances, and programs already in place or under development. A checkmark (✓) indicates that the item is currently in place and being implemented. A "C" indicates that the item is in place for a town but is maintained and administered by the County.

TABLE 6.1: RELEVANT PLANS, ORDINANCES, AND PROGRAMS

COMMUNITY	Hazard Mitigation Plan	Comprehensive Land Use Plan	Floodplain Management Plan	Open Space Management Plan	Stormwater Management Program	Emergency Operations Plan	SARA Title III Plan	Radiological Emergency Plan	Continuity of Operations Plan	Evacuation Plan	Disaster Recovery Plan	Capital Improvements Plan	Economic Development Program	Historic Preservation Plan	Flood Damage Prevention Ordinance (feet freeboard)	Zoning Ordinance	Subdivision Ordinance	Unified Development Ordinance	Post-disaster Redevelopment Plan	Building and Fire Code	NFIP	NFIP Community Rating System
PENINSULA																						
Hampton	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓		✓(3)	✓	✓			✓	✓	✓
Newport News	✓	✓		✓	✓	✓	✓	✓		✓		✓	✓	✓	✓(2)	✓	✓			✓	✓	✓
Poquoson	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓			✓(3)	✓	✓			✓	✓	✓
Williamsburg	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓			✓	✓	
James City County	✓	✓			✓	✓	✓	✓	✓	✓		✓			✓(2)	✓	✓			✓	✓	✓
York County	✓	✓			✓	✓	✓	✓	✓	✓		✓			✓(3)	✓	✓			✓	✓	✓
SOUTHSIDE																						
Norfolk	✓	✓			✓	✓	✓	✓		✓		✓		✓	✓(3)	✓	✓			✓	✓	✓
Portsmouth	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓(3)	✓	✓			✓	✓	✓
Suffolk	✓	✓		✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓			✓	✓	
Virginia Beach	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓(2)	✓	✓			✓	✓	✓
Chesapeake	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓(1.5)	✓	✓			✓	✓	✓
WESTERN TIDEWATER																						
Isle of Wight County	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓(1.5)	✓	✓			✓	✓	
Smithfield	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
Windsor	✓	✓			✓		✓	✓		✓		✓			✓	✓	✓			✓	✓	
Franklin	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓(2)	✓	✓		✓	✓	✓	✓
Southampton County	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓			✓(1.5)	✓	✓			✓	✓	
Boykins	✓	✓			✓	C	C	C	C	✓			✓		✓	✓	✓			✓	✓	
Branchville	✓	✓			✓	C	C	C	C	✓			✓		✓	✓	✓			✓	✓	
Capron	✓	✓			✓	C	C	C	C	✓			✓			✓	✓			✓		
Courtland	✓	✓			✓	C	C	C	C	✓			✓		✓	✓	✓			✓	✓	
Ivor	✓	✓			✓	C	C	C	C	✓			✓		✓	✓	✓			✓	✓	
Newsoms	✓	✓			✓	C	C	C	C	✓			✓			✓	✓			✓		
Surry County	✓	✓			✓	✓		✓		✓		✓	✓	✓	✓	✓	✓			✓	✓	
Claremont	✓	✓			✓	C		C		✓					✓	✓	✓			✓	✓	
Dendron	✓	✓			✓	C		C		✓						✓	✓			✓		

Emergency Management

Hazard mitigation is one of four primary phases of emergency management. The three other phases include preparedness, response, and recovery. Each phase is interconnected with hazard mitigation as **Figure 6.1** suggests. Opportunities to reduce potential losses through mitigation practices are ideally implemented before a disaster strikes. Examples include the acquisition or elevation of flood-prone structures or the enforcement of regulatory policies that limit or prevent construction in known hazard areas. The post-disaster environment provides an important "window of opportunity" to implement hazard mitigation projects and policies. During this time period, federal disaster assistance, such as the Hazard Mitigation Grant Program (HMGP), may be available. In addition, elected officials and disaster victims may be more willing to implement mitigation measures in order to avoid similar events in the future.

FIGURE 6.1: FOUR PHASES OF EMERGENCY MANAGEMENT

Source: Federal Emergency Management Agency

Planning for each phase is a critical part of a comprehensive emergency management program and key to the successful implementation of hazard mitigation actions.

Hazard Mitigation Plan: A hazard mitigation plan represents a community's blueprint for how it intends to reduce the impact of natural and human-caused hazards on people and the built environment. The essential elements of a hazard mitigation plan include a risk assessment, capability assessment and mitigation strategy.

Disaster Recovery Plan: A disaster recovery plan guides the physical, social, environmental, and economic recovery and reconstruction process following a disaster. In many instances, hazard mitigation principles and practices are incorporated into local disaster recovery plans with the intent of capitalizing

on opportunities to break the cycle of repetitive disaster losses. Disaster recovery plans can also lead to the preparation of disaster redevelopment policies and ordinances to be enacted following a hazard event.

Emergency Operations Plan: An emergency operations plan outlines responsibilities and the means by which resources are deployed during and following an emergency or disaster.

- Virginia Department of Emergency Management (VDEM) assists local governments with plan development and revisions by offering the following services:
  - Issuing update notification at both 1 year and 6 months;
  - Conducting a plan review, as requested;
  - Facilitating plan review meetings; and,
  - Developing plan templates through collaboration with local partners.
- In December 2015, VDEM released *2015 Report on the Status of Emergency Response Plans and Preparedness Efforts in the Commonwealth*. According to the report, 98-percent of Virginia localities have current local emergency operations plans. Virginia was accredited for the third time in a row by the Emergency Management Assessment Program. Recommendations from the report included implementing statewide disaster planning software to digitize all EOPs to increase efficiency and coordination between agencies and localities and using common operating picture tools to provide situational awareness to state leaders in real-time.
- Emergency Managers for each city and county were included in preparation of the MAP because their knowledge of their jurisdiction's EOP and its strengths and weaknesses is a valuable component of this planning process.

Continuity of Operations Plan (COOP): A continuity of operations plan establishes a clear chain of command, line of succession, and plans for backup or alternate emergency facilities in case of an extreme emergency or disaster. Many Emergency Managers in communities without comprehensive COOPs for all internal agencies were interested in supplementing their existing EOP or existing COOP with additional planning and this insight was included in the MAP planning process.

Radiological Emergency Plan: A radiological emergency plan delineates roles and responsibilities for assigned personnel and the means to deploy resources in the event of a radiological accident.

- The Virginia plan for radiological emergencies is available online at: https://www.nrc.gov/docs/ML0834/ML083470907.pdf.

SARA Title III Emergency Response Plan: A SARA Title III Emergency Response Plan outlines the procedures to be followed in the event of a chemical emergency such as the accidental release of toxic substances. These plans are required by federal law under Title III of the Superfund Amendments and Re-authorization Act (SARA), and the Emergency Planning and Community Right-to-Know Act (EPCRA).

General Planning

The implementation of hazard mitigation activities involves departments and individuals in a broad range of professions. Stakeholders may include local planners, public works officials, economic development specialists, and others. Concurrent local planning efforts can complement hazard mitigation goals even though they are not designed as such.

Comprehensive Land Use Plan: A comprehensive land use plan establishes the overall vision for what a community wants to be and serves as a guide to future governmental decision making. Typically, a comprehensive plan is comprised of demographic conditions, land use patterns, transportation elements and proposed community facilities. Given the broad nature of the plan and its regulatory standing in many communities, the integration of hazard mitigation measures into the comprehensive plan can serve as a far reaching, long-term risk reduction tool.

- Virginia law requires that all communities have a comprehensive land use plan and that it be updated every five years.
- As indicated in Sections 2 and 3, the comprehensive plans for each of the counties and cities involved in this planning process were relied upon for three planning stages: 1) updating the community profile; 2) comprehensive plan goals and objectives were reviewed during the updating of this plan's goals and objectives; and 3) each comprehensive plan was reviewed by the consultant prior to the in-person meetings to identify mitigation plan conflicts or areas of potential integration/coordination. This process helps make sure that the comprehensive plans and the hazard mitigation plan are in parallel.

Capital Improvements Plan (CIP): A capital improvements plan guides the scheduling of spending on public improvements. A capital improvements plan can serve as an important mechanism to guide future development away from identified hazard areas, or to fix infrastructure problems that contribute to hazard-related damage. Limiting public investment in hazardous areas is one of the most effective long-term mitigation actions available to local governments. Jurisdictions with CIPs were able to pull projects from the CIP that reflect the goals and objectives of mitigation planning, and vice versa. CIPs often include more detail on projects costs, allowing the hazard mitigation plan actions to be described in more detail. In this way, the community CIPs and hazard mitigation plan share similar projects.

Historic Preservation Plan: A historic preservation plan is intended to preserve historic structures or districts within a community. An often overlooked aspect of the historic preservation plan is the assessment of buildings and sites located in areas subject to natural hazards to include the identification of the most effective way to reduce future damages. This may involve retrofitting or relocation techniques that account for the need to protect buildings that do not meet current building standards or are within a historic district that cannot be easily relocated out of harm's way.

Zoning Ordinances: Zoning represents the primary means by which land use is controlled by local governments. As part of a community's police power, zoning is used to protect the public health, safety and welfare. Since zoning regulations enable municipal governments to limit the type and density of development, it can serve as a powerful tool when applied in identified hazard areas.

- The Virginia General Assembly enacted the Chesapeake Bay Preservation Act in 1988, requiring local governments statewide to include water quality protection measures in their zoning and subdivision ordinances and in their comprehensive plans. Although the Act was developed with the intent of improving water quality throughout Virginia, the regulations have the additional benefit of controlling or restricting development in floodplain areas. The CBPA Overlay District consists of three components: Resource Protection Area (RPA) that includes a 100 foot RPA buffer, a Resource Management Area (RMA), and the Intensely Developed Areas (IDA). The lands that make up Chesapeake Bay Preservation Areas are those that have the potential to impact floodplains and water quality most directly. Generally, there are two main types of land features: those that protect and benefit water quality (RPAs); and those that, without proper management, have the potential to damage water quality (RMAs). Areas with intensive waterfront industrial land uses and activities are categorized as IDAs.
- Floodplain management ordinances in Virginia communities are commonly administered as zoning overlay districts in the community zoning ordinance.
- Zoning ordinance floodplain management overlay district regulations were reviewed by the consultant prior to in person meetings with the jurisdictions. The review helped identify areas of potential improvement to the ordinances.

Subdivision Ordinances: A subdivision ordinance regulates development of housing, commercial, industrial or other uses, including associated public infrastructure, as land is subdivided into buildable lots. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development. For the 2017 update to this plan, the consultant reviewed subdivision ordinances and recommended potential areas of improvement related to hazard mitigation.

Building Codes, Permitting and Inspections: Building codes regulate design and construction standards. Permits are issued and work is inspected on new construction and building alterations. Permitting and inspection processes both before and after a disaster can affect the level of hazard risk faced by a community.

- Under Virginia Law the Department of Housing and Community Development (DHCD) has authority to promulgate building regulations and a regulatory process for development and adoption of a statewide mandatory mini/maxi construction code that all 167 units of local government (counties and incorporated cities) must adopt and implement. The Virginia Uniform Statewide Building Code (USBC) is administered by the Virginia Board of Housing and Community Development and regulates construction and maintenance of buildings and structures. Effective July 1, 2021, Virginia adopted the 2018 I-codes as referenced in the Virginia Construction Code Part 1, the 2018 Statewide Fire Prevention Code; and the 2017 National Electrical Code. Implementation for state colleges and universities is the responsibility of the Virginia General Services Department. The State Fire Marshal within DHCD is responsible for statewide implementation of the Fire Code unless localities elect to adopt this code at the local level. Localities can and do adopt the Property Maintenance Code, which is within the scope of the statewide code. Enforcement of the USBC is the responsibility of the local government's building inspections department. Many of the towns in the study area rely upon the county building department for code-related functions.
- The consultant for this plan update reviewed Appendix F of the International Codes related to radon control. This appendix was discussed with the communities for this update to determine if any communities were interested in enforcing Appendix F in view of the HIRA information regarding Radon Exposure risk.

Resiliency Planning: In 2021, the Commonwealth worked with 2,000 stakeholders to build the *Coastal Resilience Master Plan*. This plan documents which land is exposed to coastal flooding hazards now and into the future, as well as the impacts of future flooding scenarios on coastal Virginia's community resources and manmade and natural infrastructure.

The Master Plan concluded that between 2020 and 2080:

- the number of residents living in homes exposed to extreme coastal flooding is projected to grow from approximately 360,000 to 943,000, an increase of 160%;
- the number of residential, public, and commercial buildings exposed to an extreme coastal flood is projected to increase by almost 150%, from 140,000 to 340,000, while annualized flood damages increase by 1,300% from $0.4 to $5.1 billion;
- the number of miles of roadways exposed to chronic coastal flooding is projected to increase from 1,000 to nearly 3,800 miles, an increase of nearly 280%; and
- an estimated 170,000 acres, or 89%, of existing tidal wetlands and 3,800 acres, or 38%, of existing dunes and beaches may be permanently inundated, effectively lost to open water.

The Commonwealth intends to develop successive updates of the Master Plan on at least a five-year cycle, managed by the Department of Conservation and Recreation in consultation with the Chief Resilience Officer, the Special Assistant to the Governor for Coastal Adaptation and Protection, and the Technical Advisory Committee.

The next phase of the Master Plan anticipated by 2024, will aim to address recommendations of the Technical Advisory Committee to broaden the analysis of natural hazards by including rainfall-driven, riverine, and compound flooding, expand and improve the inventory of resilience projects by continuing to add efforts and working with project owners to better understand the benefits of projects, and extend this critical work beyond the coastal region to encompass statewide resilience needs.

Projects identified in the Master Plan must go through a specified resiliency planning process to be funded through the Community Flood Preparedness Fund (CFPF), also launched in 2021. Many communities in Hampton Roads have begun the planning process, and consequently, those communities were able to incorporate many of their projects into the hazard mitigation plan, as well. CFPF is a

statewide program maintained by the Department of Conservation and Recreation that fills pressing needs by prioritizing low-income communities and provides a permanent funding stream to finance flooding resilience projects, studies, and capacity building initiatives. The Regional Greenhouse Gas Initiative (RGGI) is an initiative made up of eleven states that aims to reduce greenhouse gas emissions. RGGI holds carbon dioxide auctions, which will fund the Virginia CFPF.

Radon Exposure Remediation:
The Code of Virginia requires that Radon testers and mitigators be currently certified by either the National Radon Proficiency Program or the National Radon Safety Board. The program is administered by Virginia Department of Health, Office of Radiological Health, Indoor Radon Program.

- In 1993 the Virginia General Assembly passed legislation that requires all schools in the Commonwealth to be tested for radon after July 1, 1994, and also any new school buildings or additions built after that date. Each school is required to maintain files of their radon test results.
- Upon request, the Department's Radon Coordinator can present a course on radon for real estate transactions in Virginia. This information was reviewed and incorporated into the HIRA and the public meeting presentations on radon provided during this update process.
- The department has a limited supply of radon test devices that are distributed annually, free upon request.

Floodplain Management

The NFIP contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary but is promoted by FEMA as a crucial means to implement and sustain an effective hazard mitigation program.

In order to join the NFIP, a community must adopt flood damage prevention ordinance development standards in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings be protected from damage by the 100-year flood, and that new floodplain development does not aggravate existing flood problems or increase damage to other properties.

Another key service provided by the NFIP is the identification of flood hazard areas. FIRMs are used to assess flood hazard risk, regulate construction practices, and set flood insurance rates. FIRMs are an important source of information to educate residents, government officials, and the private sector about the likelihood of flooding in their community.

Detailed information on each community's NFIP participation history and current map status is provided in Sections 5 and 6; **Table 5.3** summarizes NFIP participation for Hampton Roads communities, along with general NFIP policy data, while **Tables 5.4** and **5.5** provide the repetitive flood losses; and **Table 6.1** provides information on freeboard requirements. Each of the communities that participates in the NFIP has designated a floodplain manager in their floodplain management ordinance and each community in the NFIP has created a very specific Mitigation Action in the Mitigation Action Plan in Section 7 that addresses actions they will consider in the near-term to address their commitment to continuing their participation in the NFIP. Noteworthy accomplishments in floodplain management are also found at the end of this section, broken out by community. **Table 6.2** provides additional summary information on how the NFIP is managed in each of the participating communities in Hampton Roads and notes specific actions or programs of interest in each community, especially with regard to their flood ordinances.

Effective January 1, 2022, a new flood disclosure requirement of Virginia Code Section 55.1-708.2, requires that an owner of residential real property who knows that the dwelling unit is a repetitive risk loss structure must disclose such fact to the purchaser. A "repetitive risk loss structure" is defined as a property for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program within any rolling 10-year period since 1978. The law further requires that the owner of a property subject to the disclosure requirement must provide notification to the purchaser of any disclosure before the ratification of a contract.

TABLE 6.2: NFIP MANAGEMENT IN PARTICIPATING COMMUNITIES

SUBREGION	COMMUNITY	Designated Floodplain Manager/Agency	CFM on Staff?	Notes on Floodplain Management Ordinance and Administration
Peninsula	Hampton	Zoning Administrator	Yes	The city last updated their ordinance in 2016 and included 3 feet of freeboard in the SFHA and 1.5 feet of freeboard outside the SFHA. Most ordinance administration is by Community Development or Public Works. ECs are maintained in digital format.
	Newport News	City Manager	Yes	Ordinance was updated in 2014 and requires 2 feet freeboard. Codes Compliance maintains ECs and performs inspections of floodplain construction. City recently joined the CRS.
	Poquoson	Building Official	Yes	Last updated in 2014, the city's ordinance has many higher standards, including coastal A Zone, and freeboard of 3 feet. The ordinance is administered by the Building Official within the Permit Office.
	Williamsburg	Zoning Administrator	No	The city last updated their ordinance in 2015, adopting the State's model ordinance, with 2 feet of freeboard for nonresidential structures and 18 inches for residential structures. The narrow floodplains of Williamsburg do not lend themselves to development pressure.
	James City County	Zoning Administrator	Yes	The ordinance was last updated in 2018 and includes 2 feet of freeboard, and many prohibited uses in the SFHA. It also has higher standards for fill. Community Development office administers the ordinance. Ordinance addresses accessory structures.
	York County	Chief of Stormwater Programs	Yes	The ordinance requires 3 feet of freeboard for residential structures and an additional foot of freeboard for structures in the Coastal A Zone.
Southside	Norfolk	Floodplain Administrator (Planning)	Yes	Revisions to ordinance approved 2020 with several higher standards, including 3 feet freeboard, and coastal A zone regulation to V Zone standards. City has robust flood mitigation program, CRS program and ordinance administration system through city Planning, Building Safety and the Development Services Center.
	Portsmouth	Environmental Manager	Yes	Last updated in 2015, the ordinance requires 3 feet freeboard and V Zones requirements for Coastal A Zone structures. Zoning-related inquiries and information regarding floodplains is handled by the Department of Neighborhood Advancement. The city has a robust flood mitigation program and CRS program.
	Suffolk	Director of Planning and Community Development	No	The floodplain management ordinance was updated in 2015. Flood damage is tied to the assessor's record for properties. High water mark data are collected along the Nansemond River at North Main Street. The city does not maintain ECs digitally.
	Virginia Beach	Public Works Director	Yes	The city ordinance requires 2 feet of freeboard. The ordinance was last updated in 2020. A

TABLE 6.2: NFIP MANAGEMENT IN PARTICIPATING COMMUNITIES

SUBREGION	COMMUNITY	Designated Floodplain Manager/Agency	CFM on Staff?	Notes on Floodplain Management Ordinance and Administration
				major rewrite in 2013 had several higher standards, including compensatory fill in specified areas, and no new residential structures on lots created after October 23, 2001. 38% of the SFHA is protected as open space. Lowest floor data for new structures is recorded in online permit record and EC are attached to Certificate of Occupancy. City has a Southern Rivers watershed buffer and the CBPA buffers which help protect natural and beneficial functions of floodplains.
	Chesapeake	Director of Development and Permits	Yes	Ordinance was updated in 2014 and includes 1.5 feet of freeboard. The city maintains ECs digitally.
Western Tidewater	Isle of Wight County	Director of Planning and Zoning	Yes	The County has freeboard of 1.5 feet required in their 2015 ordinance, has no freeboard outside the SFHA.
	Smithfield	Planning & Zoning Administrator	No	2015 ordinance has 1.5 feet freeboard and is administered by Planning, Engineering & Public Works.
	Windsor	Planning and Zoning	No	Ordinance does not require freeboard and is administered by Planning and Zoning Department.
	Franklin	Zoning Administrator	Yes	The city updated ordinance in 2016; requires freeboard of 2 feet. City routinely considers higher standards and the impact when updating ordinance. The Comprehensive Plan promotes a greenway along the Blackwater River and zoning protects open space along the river. The city recently joined the CRS. Online maintenance of ECs is under development. The Downtown area has an older Flood Recovery Plan.
	Southampton County	Director of Community Development	Yes	The County adopted State Model Floodplain Ordinance and included 1.5 feet of freeboard. Residential structures are required to have large, front-yard-type, setbacks along waterfront, rather than smaller rear yard setbacks. Comprehensive Plan encourages conservation easements/ag and forestal districts and reforestation of clear-cut properties plus environmental goals to protect waterways and wetlands. Nottoway and Blackwater Rivers are part of State Scenic River program, limiting development that visually impacts rivers, thereby helping limit development in the floodplain.
	Boykins	Mayor	No	Ordinance requirements administered by town staff, as required.
	Branchville	Unknown	No	Ordinance requirements administered by town staff, as required.
	Courtland	Mayor	No	Ordinance requirements administered by town staff, as required.

TABLE 6.2: NFIP MANAGEMENT IN PARTICIPATING COMMUNITIES				
SUBREGION	COMMUNITY	Designated Floodplain Manager/Agency	CFM on Staff?	Notes on Floodplain Management Ordinance and Administration
	Ivor	Clerk	No	Ordinance requirements administered by town staff, as required.
	Surry County	Planning & Community Development Director	No	Ordinance was updated in 2015. Unclear on freeboard as ordinance contains template language: "recommend for > 1 foot".
	Claremont	Information not provided	No	Ordinance not available online and not provided by Town.

An additional indicator of floodplain management capability is participation in the CRS. The CRS is an incentive program that encourages communities to undertake defined flood mitigation activities that go above and beyond the minimum requirements of the NFIP, adding extra local measures to provide protection from flooding. The creditable CRS mitigation activities are assigned a range of point values. As points are accumulated and identified thresholds are reached, communities can apply for an improved CRS class rating. Class ratings, which run from 10 to 1, are tied to flood insurance premium reductions as shown in **Table 6.3**. As class ratings improve (decrease), the percent reduction in flood insurance premiums for NFIP policy holders in that community increases. Every 500 points accumulated is equal to a 5% reduction in flood insurance premiums in the SFHA; premium discounts are typically limited to 5% outside the SFHA.

TABLE 6.3: CRS PREMIUM DISCOUNTS, BY CLASS	
CRS CLASS	PREMIUM REDUCTION
1	45 percent
2	40 percent
3	35 percent
4	30 percent
5	25 percent
6	20 percent
7	15 percent
8	10 percent
9	5 percent
10	0 percent

Source: Federal Emergency Management Agency

Community participation in the CRS is voluntary. Any community that is in full compliance with the rules and regulations of the NFIP may apply to FEMA for a CRS classification better than class 10.

- As of January 2022, there were ten communities in the study area participating in the Community Rating System: Hampton (Class 7); Newport News (Class 7); James City County (Class 5); Norfolk (Class 5); Poquoson (Class 8); Portsmouth (Class 7); Chesapeake (Class 7); York County (Class 7); Virginia Beach (Class 7); and Franklin (Class 9). Successful participation in the CRS shows continued compliance with the NFIP on the part of these communities. Newport News and Franklin are the most recent communities to join CRS and their premium discounts will begin in Spring 2021. Virginia Beach joined in 2019.

Floodplain Management Plan: A floodplain management plan (or a flood mitigation plan) provides a framework for the identification and implementation of corrective and preventative measures specifically designed to reduce the impacts of floods.

- The City of Portsmouth is the only community in the study area that has adopted a separate floodplain management plan, but the community has decided to use the hazard mitigation planning process to develop and enact flood mitigation activities in the future rather than maintaining both documents separately.

Open Space Management Plan: An open space management plan is designed to preserve, protect and restore largely undeveloped lands, and to expand or connect areas in the public domain, including parks, greenways and other outdoor recreation areas. Open space management practices are consistent with the goals of reducing hazard losses, such as the preservation of wetlands or other flood-prone areas in their natural state.

Stormwater Management Plan: A stormwater management plan is designed to address flooding associated with stormwater runoff. The stormwater management plan is typically focused on design and construction measures that are intended to reduce the impact of frequent urban nuisance flooding.

- Virginia Department of Environmental Quality (VDEQ) is the lead agency for developing and implementing statewide stormwater management and nonpoint source pollution control programs to protect the Commonwealth's water quality and quantity. Currently, three laws apply to land disturbance activity in Virginia: the Stormwater Management Act (§ 62.1-44.15:24 et seq.), Erosion and Sediment Control Law (§ 62.1-44.15:51 et seq.), and Chesapeake Bay Preservation Act (§ 62.1-44.15:67 et seq.). These laws evolved at different times, have been administered by different agencies throughout the years, and created three distinct regulatory programs with varying requirements. At the request of the Chairs of the Virginia House and Senate Natural Resources committees, DEQ pulled together a group of stakeholders to consider ways to streamline and possibly combine these programs. The goal is to make the requirements clearer, more consistent and more “user-friendly”, while continuing to ensure the protection of the Commonwealth’s water quality. The Department asked representatives of all affected constituencies to take part in this important effort – including local governments, the development community, environmental organizations, agriculture, and others.
- Local governments in Virginia are required to administer the stormwater management and erosion and sediment control laws and regulations promulgated by the State through local ordinances. Surry County’s program is administered directly by DEQ.
- As part of this update, the contractor reviewed the City of Virginia Beach’s Stormwater ordinance to understand the higher standards that the City has incorporated above and beyond the State minimum requirements.

Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability is evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability associated with the implementation and success of proposed mitigation activities. Technical capability is evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using GIS to assess community hazard vulnerability.

Staff interviews were used to capture information on administrative and technical capability through the identification of available staff, and available personnel resources, whether through consultants or collaborators with community government. **Table 6.4** provides a summary of the results. A checkmark (✓) indicates that local staff members are tasked with the services listed.

TABLE 6.4: RELEVANT STAFF / PERSONNEL RESOURCES

COMMUNITY	Planners with knowledge of land development and land management practices	Engineers or professionals trained in construction practices related to buildings and/or infrastructure	Planners or engineers with an understanding of natural and/or human-caused hazards	Emergency manager	Floodplain manager	Land surveyors	Scientist familiar with the hazards of the community	Staff with education or expertise to assess the community vulnerability to hazards	Personnel skilled in Geographic Information Systems and/or HAZUS	Resource development staff or grant writers
PENINSULA										
Hampton	✓	✓	✓	✓	✓			✓	✓	✓
Newport News	✓	✓	✓	✓	✓			✓	✓	✓
Poquoson	✓	✓	✓	✓	✓		✓			✓
Williamsburg	✓	✓	✓	✓	✓			✓	✓	✓
James City County	✓	✓	✓	✓	✓			✓	✓	
York County	✓	✓	✓	✓	✓				✓	
SOUTHSIDE										
Norfolk	✓	✓	✓	✓	✓				✓	✓
Portsmouth	✓	✓	✓	✓	✓	✓		✓	✓	✓
Suffolk	✓	✓	✓	✓				✓	✓	✓
Virginia Beach	✓	✓	✓	✓	✓	✓		✓	✓	
Chesapeake	✓	✓	✓	✓	✓	✓			✓	✓
Franklin	✓	✓	✓	✓	✓			✓	✓	

TABLE 6.4: RELEVANT STAFF / PERSONNEL RESOURCES										
COMMUNITY	Planners with knowledge of land development and land management practices	Engineers or professionals trained in construction practices related to buildings and/or infrastructure	Planners or engineers with an understanding of natural and/or human-caused hazards	Emergency manager	Floodplain manager	Land surveyors	Scientist familiar with the hazards of the community	Staff with education or expertise to assess the community vulnerability to hazards	Personnel skilled in Geographic Information Systems and/or HAZUS	Resource development staff or grant writers
WESTERN TIDEWATER										
Isle of Wight County	✓	✓	✓	✓					✓	
Smithfield	✓	✓	✓	✓					✓	
Windsor										
Southampton County	✓	✓	✓	✓	✓			✓	✓	✓
Boykins		✓								
Branchville										
Capron										
Courtland	✓	✓								
Ivor										
Newsoms										
Surry County	✓	✓	✓	✓	✓		✓	✓	✓	✓
Claremont					✓					
Dendron										

Fiscal Capability

The ability of a local government to take action is often closely associated with the amount of money available to implement policies and projects. This may take the form of grant funding or locally-based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project such as the acquisition of flood-prone homes, which can require a substantial commitment from local, state and federal funding sources.

Staff interviews were used to capture information on fiscal capability through the identification of locally available financial resources. **Table 6.5** provides a summary of the results. A checkmark (✓) indicates that the listed fiscal resource is locally available for hazard mitigation purposes.

TABLE 6.5: FISCAL CAPABILITY

COMMUNITY	Capital Improvement Programming	Community Development Block Grants	Special Purpose Taxes	Gas / Electric Utility Fees	Water / Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation Bonds	Partnering Arrangements or Intergovernmental Agreements
PENINSULA									
Hampton	✓	✓	✓	✓		✓		✓	✓
Newport News	✓	✓			✓	✓			✓
Poquoson	✓	✓				✓		✓	✓
Williamsburg	✓	✓		✓	✓			✓	✓
James City County	✓	✓							✓
York County	✓	✓							✓
SOUTHSIDE									
Norfolk	✓	✓		✓	✓	✓			✓
Portsmouth	✓	✓			✓	✓		✓	✓
Suffolk	✓	✓	✓	✓	✓		✓	✓	✓
Virginia Beach	✓	✓	✓		✓	✓	✓	✓	✓
Chesapeake	✓	✓			✓	✓	✓	✓	✓
WESTERN TIDEWATER									
Isle of Wight County	✓	✓		✓	✓			✓	✓
Smithfield	✓	✓			✓		✓		✓
Windsor	✓	✓					✓		✓
Franklin	✓	✓	✓	✓	✓				✓
Southampton County	✓	✓		✓	✓			✓	✓
Boykins		✓						✓	✓
Branchville		✓						✓	✓
Capron		✓			✓			✓	✓
Courtland		✓			✓			✓	✓
Ivor		✓			✓			✓	✓
Newsoms		✓						✓	✓
Surry County	✓	✓			✓				✓
Claremont		✓			✓				✓
Dendron		✓							✓

Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to reduce the impact of hazards. The adoption of hazard mitigation measures may be seen as an impediment to growth and economic development, which may adversely impact other hazard-related initiatives. Mitigation may not generate the same level of interest among local officials when compared with competing priorities.

Self-Assessment of Capabilities

In addition to the inventory and analysis of specific local capabilities, communities should self-assess their capability to implement hazard mitigation activities. Officials were encouraged to consider the barriers to implementing proposed mitigation strategies in addition to the mechanisms that could enhance or further such strategies. The committee classified each of the capabilities as either “limited,” “moderate” or “high.”

Table 6.6 summarizes the results of the self-assessment process. An “L” indicates limited capability; an “M” indicates moderate capability; and an “H” indicates high capability.

TABLE 6.6: SELF ASSESSMENT OF LOCAL CAPABILITY					
COMMUNITY	Planning and Regulatory Capability	Administrative and Technical Capability	Fiscal Capability	Political Capability	Overall Capability
PENINSULA					
Hampton	H	H	M	M	M
Newport News	H	H	M	H	H
Poquoson	H	H	M	M	H
Williamsburg	H	H	H	H	H
James City County	H	H	M	H	H
York County	H	H	M	H	H
SOUTHSIDE					
Norfolk	M	H	M	H	M
Portsmouth	M	M	L	M	M
Suffolk	M	H	M	L	M
Virginia Beach	M	H	M	L	M
Chesapeake	H	H	M	M	H
WESTERN TIDEWATER					
Isle of Wight County	H	M	M	M	M
Smithfield	L	L	L	M	L
Windsor	L	L	L	L	L
Franklin	M	M	L	M	M
Southampton County	M	M	L	M	M
Boykins	L	L	L	M	L
Branchville	L	L	L	M	L
Capron	L	L	L	M	L
Courtland	M	M	L	M	M
Ivor	L	L	L	M	L
Newsoms	L	L	L	M	L
Surry County	M	M	M	M	M
Claremont	L	L	L	L	L
Dendron	L	L	L	L	L

INTEGRATING MITIGATION MEASURES INTO COMMUNITY LIFE

The success of future mitigation efforts in a community can be gauged to some extent by its past efforts. Previously implemented mitigation measures indicate that there is and continues to be a desire to reduce the effects of natural hazards in the region. The success of these projects can be influential in building local government support for new mitigation efforts. Additional capability toward realizing mitigation goals is built through the integration of mitigation strategies into other local planning and administrative tasks.

While the notes below are not an exhaustive list of all mitigation actions taken in the region, they do provide a summary of very recent mitigation measures undertaken by communities in Hampton Roads and in part describe how many of the communities have integrated their mitigation strategies into other planning mechanisms. Additionally, as called for in the *National Mitigation Framework*, the aspects of leadership, collaboration, partnership building, and education/skill building have been shown in the following summary notes whenever possible.

Regional Activities

- In 2015, HRPDC prepared grant application for hazard mitigation plan update that combined 7 existing plans into 1 large regional plan. Updated plan streamlined the list of hazards to align more closely with the State Hazard Mitigation Plan. The PDC also conducted two Joint Land Use Studies described below for each participating city, in partnership with the U.S. Navy, Portsmouth, Chesapeake, Norfolk and Virginia Beach.
- The All-Hazards Advisory Committee (AHAC) was formed in 2015 to bring together mitigation practitioners from each of the HRPDC communities. This group is helping the PDC administer the mitigation planning contract among other tasks.
- Coastal Virginia CRS Users' Group meets every other month to review best practices of other communities and stay up to date on floodplain management and CRS issues. Consulting hazard mitigation planners for the HRPDC updated the group on how to create and update mitigation capability analyses at spring 2015 meeting.
- Each community's comprehensive plan, local and state resilience plans, and the State Hazard Mitigation Plan were used and will continue to be used to carefully update the goals and objectives in the HMP to align with existing plan goals at the State and regional levels.
- Most communities in the region include mitigation planning committee members who are also involved in the comprehensive planning process. This helps ensure consistency across planning documents. Since there are 15 comprehensive plans to consider during this HMP update, it is expected that common themes can be found that will help focus the HMP goals and objectives.
- VDEM procured Crisis Track for each of Virginia's counties and independent cities in 2017. The primary objective was to provide all localities with the capability to quickly complete, document, and report the outcomes of local damage assessments in a manner that allowed VDEM to see real-time data of the disaster consequences. This real-time data will help VDEM to be better prepared to support any unmet needs and assist VDEM in more quickly processing requests for Federal Assistance when needed. Crisis Track uses local government GIS data, such as address points and tax parcel layers, to locate and valuate every structure in the Commonwealth. When an incident occurs, local emergency managers use Crisis Track to identify all infrastructure in an area of concern and send pre-populated damage assessment forms to each damage assessment team's mobile device. As teams complete the damage assessment forms, Crisis Track calculates damage costs using tax assessment values and summarizes results for each county. Most of the communities in the study area have pre-populated and tested Crisis Track, and several have already implemented the software for incident assessment.
- HRPDC developed a regional Elevation Certificate database with information from 10 Hampton Roads local governments, to include over 2000 data points. The data from Hampton and Chesapeake were then used to evaluate statistical approaches for estimating building first floor

elevations regionally in support of local and regional vulnerability assessments under various flooding scenarios.[1]

City of Hampton

- The city's Fire Department Public Educator has added more hazards to their 4th grade fire presentation.
- The 2011 Hazard Mitigation Plan, especially HIRA information, was integrated into city's 2014 Emergency Operations Plan update.
- Hampton and Newport News applied for and received a hazard mitigation grant to add a generator to Hines Middle School, which is one of the shelters in the city's MOU with Newport News.
- Hampton received a State Homeland Security Grant in 2014 to add specialized items for sheltering children, such as highchairs and pack and plays.
- As a result of a previous HMP action to evaluate/review options for more effective public warning systems to upgrading/replace existing reverse 911 system, in 2013 Hampton switched to Everbridge which provides more options for alerting the public. This system is also integrated with the system being used by VDEM.
- HMP action to educate elected officials and residents on the importance of the NFIP has resulted in a multi-agency effort to provide flood insurance brochures at all outreach events. The importance of flood insurance is in the city's general presentation that is given to the public on emergency management.
- A high priority action in the HMP was to support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation and flood proofing of non-residential projects where feasible using FEMA hazard mitigation grant programs where appropriate. The city has hired new staff to implement grants and has completed several home elevation projects.
- The city has implemented a revolving loan fund for residential elevation projects. The revolving loan program is up and running. It is the only program of its kind, in Virginia, for residents to apply for low-interest loans to help with qualifying mitigation projects. This project is supported by the Office of Emergency Management, Hampton Redevelopment and Housing Authority, and Old Point National Bank.
- Mitigation action to provide NOAA weather radios to high risk populations was funded and completed with weather radios provided to residents that live in mobile homes in Hampton in April 2015.
- HMP mitigation action to evaluate the relocation of Hampton City Schools Maintenance Building was implemented by chance when the building was destroyed by a tornado that hit Hampton on January 11, 2014. The building was not rebuilt.
- The city plans to improve CRS Class 7 rating to a Class 6 using inputs and capabilities across many city departments.
- City currently has a Newmarket Creek mitigation project in design phase with the USACE, in addition to other projects in design phase: North Armistead Avenue Road Raining, Oakland-Old Point Area Drainage Improvements, Phoebus Area Drainage Improvements at Hygeia, North and Sherwood Street. These projects rely on CIP funding and stormwater fee funds.
- The city announced in December 2021 that they will receive more than $9 million in grants to deal with sea level rise and extreme weather as part of an ongoing statewide effort by the Virginia CFPF. The grants, announced last week by Gov. Ralph Northam, will be directed at four specific projects in Hampton: $3,841,555 for Lake Hampton and North Armistead Avenue; $3,008,500 for the Big Bethel Blueway (Albany Drive at Big Bethel Road); $2,022,143 for the Sunset Creek Urban Channel Naturalization Project; and $291,850 for the Billy Woods Canal. The four Hampton grants were among 30 applications from 22 local government organizations to receive grants made possible with funding from the RGGI.

[1] *Developing First Floor Elevation Data for Coastal Resilience Planning in Hampton Roads*, February 2019. Available online at: https://www.hrpdcva.gov/library/view/932/wr19_01-developing-first-floor-elevation-data-for-coastal-resilience-planning-in-hampton-roads.

- As part of the city's Resilient Hampton initiative, the city hired a Resiliency Officer and has worked in multiple phases to implement the living with water approach across the city. Throughout this effort, the Initiative has approached the work at multiple scales, from looking at policy and process changes that influence resiliency across the city, to supporting plans and projects designed to create benefits for a whole neighborhood, to identifying opportunities to support individual homeowners to increase their resilience. The city issued a General Obligation Bond in 2019 and an Environmental Impact Bond in 2020 to help fund identified projects. Phase I (citywide) planning is complete, while Phase II (watershed level) plans are underway.

City of Newport News

- The Comprehensive Plan update process during the summer of 2015 examined goals, objectives, and actions from the previous HMP. This hazard mitigation planning effort drew mitigation actions from the latest comprehensive plan. Many of the same planning team members are continually involved in both plan updates.
- The emphasis on floodplain management through ordinance administration in the HMP resulted in flood ordinance changes in 2014 that included adoption of freeboard.
- Certified Floodplain Managers, a professional certification program administered by the Association of State Floodplain Managers, increased in number across at least 2 departments and they participate in hazard mitigation planning on a regular basis.
- The City Watch program was expanded to include post-disaster messages as a result of a careful capability analysis.
- The city formed a Generator Committee to address needs in the city identified during hazard mitigation capability review.
- A mitigation action in a previous hazard mitigation plan recommended developing a natural hazards school curriculum. Existing Fire Department programs were expanded to address this need.
- The previous HMP identified City Line apartments as a high hazard area and some retrofits were made to the complex's HVAC system. Additional flood protection measures for this and an adjacent housing complex are being pursued in conjunction with the City of Hampton, U.S. Department of Housing and Urban Development and other State and Federal agency partners.
- Six mitigation actions from the 2017 plan were removed because they have been completed. Projects used a combination of state, Federal and CIP funds.
- The city currently has a Class 7 CRS rating but plans to use the capabilities across several city departments to improve their rating. The city is negotiating a contract that will provide master planning services for water resources, including CRS, stormwater management, floodplain management and resilience planning by a single contractor over the next few years.
- The city's Flood Assistance Program has had measurable benefits using primarily acquisition to mitigate an average of 2 structures per year since 1999. Eighty properties comprising 15.2 acres have been purchased. In some cases, the Newport News Green Foundation gets involved in preserving, transforming and promoting the resultant green spaces created as a result of mitigation projects.
- Many of the city's new and ongoing mitigation actions are tied closely to projects already approved for CIP funding or the Stormwater Fund.

City of Poquoson

- In partnership with Hampton, the two cities hired a shared grants administrator specifically to pursue funding for mitigation actions identified for sea level rise and flood mitigation.
- The city continues to elevate repetitively flooded structures using Federal funding mechanisms, and plans to pursue CFPF funding, as well.
- Many projects to protect critical infrastructure are completed or ongoing. Poquoson has protected almost every pump station, fire station, and several schools over the past decade through demo/rebuild, elevation, generator-installation and other retrofits.
- The city continues to use various measures to collect existing Elevation Certificates from property owners and is investigating methods for putting that information online for public accessibility.

- Poquoson has ongoing partnerships with nearby NASA for drone data collection and with Langley Motor Speedway for car storage prior to predicted flood events.
- The Wythe Creek Road to Hampton elevation project will begin construction in spring 2022. The Victoria Boulevard widening project is still in the planning stages. Cooperation with adjacent York County and Hampton remains critical to getting these projects to completion. City has agreement with York County for road clearance to aid evacuation of Poquoson and York County residents.
- Poquoson does not have a large staff of city employees, but representatives from various departments, including Finance and the City Manager's office, are always deeply involved in mitigation planning meetings and document reviews, which results in bringing flood mitigation to the forefront of other planning efforts such as the comprehensive plan and capital planning.
- City coordinates with Virginia Marine Resources Commission for help enforcing the "No Wake Zones" instituted to help protect flooded structures from further flooding when floodwaters remain high.

City of Williamsburg

- The city has and maintains StormReady designation.
- City staff coordinate mitigation planning and emergency preparedness efforts with both Colonial Williamsburg and the College of William and Mary to ensure coordinated response to a variety of hazard incidents. This high level coordination has led to inclusion of mitigation actions in this plan regarding the high hazard potential dam on campus, the tree maintenance program Colonial Williamsburg uses to protect visitors and historic resources and the development of elements for the Continuity of Operations Plan for the city. The team is also assessing large assembly planning and coordinating command and control efforts especially if a secondary hazard event impacts a large assembly and evacuation is needed.
- The stormwater program has started a series of inter-departmental training sessions to help other city staff who are out in neighborhoods to recognize problems associated with drainage maintenance, including waste dumping, improper use of drains and proper notification of problems. Drainage system maintenance is a medium priority action in the HMP and this innovative method for addressing maintenance problems has been well-received in by the Fire Department.
- Shelter generator maintenance program called for in previous HMPs has been implemented through the CIP, with a regular maintenance budget and real-time monitoring software included.
- Strengthening the GIS capability was a medium priority in the last two HMPs. The city has now hired GIS staff and hazard-related GIS data gathering has been accomplished, including verification of hydrant locations and identification/mapping of critical structures and infrastructure.
- Several hazards are identified and addressed through recommendations in the city's comprehensive plan. Those data and recommendations were reviewed to identify potential mitigation actions for this planning effort.
- The city has a development review process for circulating proposed developments that includes hazard-related reviews by various departments.
- Williamsburg is working with the Local Emergency Planning Committee on the Peninsula to obtain a grant for a commodity flow study in light of the railroad that traverses the city.
- During the pandemic, city officials partnered with the school system, the Health Department, Colonial Williamsburg, William & Mary, James City County and York County regarding clinics for testing, vaccination and supply distribution.

James City County

- Repetitive flood loss data is reviewed annually as part of the County's participation in the CRS, or when the data is made available. This action is included in the Hazard Mitigation Plan but is also part of the County's plan to address flood mitigation through the CRS. The county has maintained a Class 5 CRS rating for several years, which requires inputs across many departments and stakeholders.
- Both the County and Busch Gardens, a theme park in the county, received StormReady designation through NOAA.

- The county is considering expanding their existing pre-disaster debris management plan across several departments and beyond public properties. Public outreach elements are being considered, as well.
- The County is participating in the regional "Flood Fluent" initiative.
- Several mitigation actions in this version of the plan are derived from the "Environment" section of the county's most recent comprehensive plan. This practice reinforces the importance of mitigation planning and spreads the responsibility for implementation across various departments, with funding considered through capital spending.

York County

- A mitigation action in the Hazard Mitigation Plan suggests evaluating sustainability and safety of critical facilities. The county's ongoing plan for generator replacement is now tied to the CIP. The county's new Sheriff's Office incorporated resilient design measures such as a generator.
- York County, Newport News and Newport News Waterworks work jointly on forest management at the Waterworks-owned property. Fire trails are regularly maintained.
- Part of staff responsibilities include making information/speakers available to business for contingency planning as needed, or as requested. This is a mitigation action identified in the Hazard Mitigation Plan and reflected in day-to-day operations.
- The County adopted 3 feet of freeboard for structures built or substantially improved in flood hazard areas. Freeboard was recommended as an action in the hazard mitigation plan.
- Comprehensive Plan adopted in 2013 echoes several of the hazards included in the previous hazard mitigation plan and proposes Implementation Strategies to address them in great detail. The shoreline erosion strategies will continue to be referenced, or included directly, in the 2017 update to the Hazard Mitigation Plan.

City of Norfolk

- Updated Comprehensive Plan was adopted March 26, 2013 and was recognized as an example of content and metrics to include in a comprehensive plan. The plan was also recognized for its inclusion of sea level rise, flooding and mitigation actions as part of the metrics.
- As a result of a previous mitigation action plan strategy to expand existing notification systems, several city departments have come together to expand the city's ability to notify the public. Sources include real-time updates the web page, email distribution lists, Facebook and Twitter.
- The city continues to update the flooding awareness webpage, accessible from the homepage. A cross-departmental Flood Awareness Committee was formed, and also provides quarterly updates to citizens as well as to the professional community regarding the city's progress on flood mitigation as well as providing an opportunity for dialogue for all interested stakeholders. The city has a Coastal Resiliency Manager dedicated to managing resilience projects, coordinating the CRS participation, coordinating grants and emergency managers, and presenting information to public and private boards and commissions across the spectrum of city government and civic organizations.
- The city is part of the Rockefeller Foundation RE.invest Initiative which explores ways the private sector can be engaged to enhance flood protection in some older areas of Norfolk with a history of flooding.
- The city is recognized as part of the initial cohort of the 100 Resilient Cities. Also funded by the Rockefeller Foundation, the program provides access to a worldwide network and knowledge base that will be able to identify additional strategies to help the city be more resilient to physical, social, and economic threats.
- As a result of a previous mitigation action plan strategy, Norfolk and Norfolk Public Schools have funded and are in the design phase of multiple school replacements throughout Norfolk. These new facilities will replace older facilities that do not meet current requirements for stormwater management and, in some cases, elevation for flood protection. New structures will meet these requirements and provide safer emergency shelters in times of need.
- Public Works has completed improvements to Brambleton Avenue that provide better access and egress to Sentara Norfolk General Hospital and Eastern Virginia Medical College during storm and flooding events.

- After a storm or flooding event occurs, properties that have received damage are mapped using GIS as part of the damage assessment reporting. Damage assessment training is provided each spring for staff that inspect properties after events.
- RISE, a Norfolk-based nonprofit funded through the Virginia Department of Housing and Community Development, accelerates innovation and business growth around solutions to coastal communities' critical resilience challenges. RISE and FloodMapp launched a novel (and award-winning) forecast flooding technology with Waze, the navigation app. FloodMapp's innovative solution allows Waze to be the only traffic app to offer drivers real-time, street level alerts about flooded roads. FloodMapp is piloting the program in the City of Norfolk where Waze users will be the first in the world to test the new feature. FloodMapp's groundbreaking forecast technology mixes tidal, riverine and rainfall data to create a rapid, real-time flood inundation model. The information is automatically layered with Norfolk's citywide road network and sent to Waze in real time. Drivers receive pop-up icons and audio alerts to warn them about flooded streets along their route and help them avoid property and life-threatening hazards. Drivers can confirm flooding in the app, which helps validate FloodMapp's technology and makes future Waze alerts more accurate. The information will also be used for an automatic rerouting feature, which is now under development.
- Revisions to the Zoning Ordinance were approved and implemented on January 1, 2014. These revisions allow for development to be more resilient to flood damage. Changes helped lower the city's CRS classification and further reduce flood insurance premiums for property owners in the city. The city now has a Class 5 CRS rating thanks to participation across several city departments.
- The city has acquired Everbridge, calling it Norfolk Alert, to alert property owners in flood-prone areas of need for evacuation or other short-term actions ahead of, during or after events.
- The city's GIS department development a tool termed the Tidal Inundation Tracking Application for Norfolk (TITAN) that shows potential flooding based on current tide projections or other hypothetical scenarios.
- HRPDC and the U.S. Navy worked together with City of Virginia Beach and City of Norfolk on an intergovernmental Joint Land Use Study presented to the public in 2019. More frequent flooding is affecting military operations and access to military facilities. This study focused on identifying specific conditions, including recurrent flooding, coastal storms, and erosion, outside of the military footprint that have the potential to impact Navy operations in Hampton Roads. Two recommendations that stand out for local planners are the wastewater treatment plant vulnerability assessment, and Terminal Boulevard rail and roadway grade separation project.
- Norfolk was awarded a $112 million federal grant from the National Disaster Resilience Competition for the Ohio Creek Watershed Project. Goals were multi-objective and show how flood hazard mitigation can feed into creating economic opportunity, advancing community interconnectivity, and deconcentrating poverty. Expected completion in 2023. Project addressed flooding in two residential, predominantly African American neighborhoods with civic leagues and a strong community identity: Historic Chesterfield Heights with over 400 houses on the Historic National Register; and Grandy Village, which includes a public housing community with more than 300 units.

City of Portsmouth

- In addition to HMP, Portsmouth has the 2015 Floodplain Management Plan. Plans are slightly redundant but serve different purposes.
- Flood Information Pamphlets are distributed by several city departments, including recently to all rental units as inspections are completed, and at the public counters in Planning and Inspections. Originally developed for CRS and repetitive loss mailings, pamphlets have an expanded purpose and audience in recent years.
- Staff created a "flood speakers bureau" for Civic Leagues and has attended several civic/neighborhood meetings to speak.
- Floodplain Management function was transferred to the Department of Neighborhood Advancement in August 2013. New web page was created in 2014.

- Staff training on the NFIP is a priority in the HMP. Staff provided training to City Council and Planning Commission on Biggert-Waters 2012 and other NFIP legislative changes to increase knowledge and allow integration of NFIP information in city planning strategies.
- Identifying and funding drainage improvements and protecting water/sewer infrastructure from flooding is a high priority in the HMP and FMP. Work has been coordinated between several departments and an outside engineering firm and funded through capital improvements planning. New stormwater lines are being replaced with larger lines and outfalls are getting flood gates. New and retrofitted pump stations can be quickly connected to generators or auxiliary pump connections. The city's seawall has also been substantially replaced, a high priority item in both the HMP and the FMP.
- GIS is being used to map flood-prone properties that store hazardous materials as identified by the Fire Department. This inter-departmental use of funds was a priority in the FMP. This action increases the city's ability to identify capability gaps with regard to fire and flood as compounding hazards.
- While not complete, an interdepartmental effort to help homes for persons with disabilities develop emergency operations plans is underway. This priority of the FMP will tie together several existing plans for flood, emergency operations and outreach/warning.
- HRPDC and the U.S. Navy worked together with City of Chesapeake and City of Portsmouth on an intergovernmental Joint Land Use Study (JLUS) presented to the public in 2021. Navy facilities in Portsmouth and Chesapeake face several impacts from the surrounding communities, including transportation impacts (such as congestion, existing and planned capital improvements, facility access, gate security, and rail operations), stormwater management, waterway management, land use conflicts, and residential, commercial, and industrial encroachment impacts. Nuisance and storm surge flooding can have major impacts on Navy operations by obstructing access and damaging local infrastructure on which military facilities rely. This study identifies specific conditions and develops mutually beneficial recommendations to address these issues. The JLUS effectively implemented Mitigation Action 16 from the 2017 HMP by "creating dialog between governmental and nongovernmental stakeholders to encourage incorporation of mitigation strategies into projects and policies".
- Portsmouth has rewritten their Zoning Ordinance to capture recommendations of the Comprehensive Plan, which contains hazard-related elements regarding CRS, CIP-funded drainage improvement projects, geographic information on flood exposure, development of a COOP, and a long list of resilience recommendations such as adding a Resilience Officer (completed), transfer/purchase of development rights in floodprone areas, developing a guide for resilient building retrofits, and positioning cool buildings/shelters for access by socially vulnerable populations.

City of Suffolk

- Information from the 2011 HMP was incorporated into the 2015 Revision of the City of Suffolk Emergency Operations Plan and into the 2015 revision to the City of Suffolk Hazardous Materials Response Plan.
- Flood hazard risk and vulnerability information was considered for the city's 2035 Comprehensive Plan and the recent FIRM updates.
- As a result of a previous mitigation action plan strategy, a FIRM viewer and a Hurricane Surge Viewer are in place on the city's Emergency Management website in the "Flooding" tab. A PDF document also resides there for users who are not comfortable with mapping programs.
- Suffolk OEM answers email and phone requests for address-specific flood data. Personalized maps can either be generated in the office or during community outreach events.
- Hurricane/tropical storm/flood safety talks are delivered upon request to church, civic and community groups.
- Hurricane/flooding preparedness brochures are placed at local libraries, the visitor's center and other public buildings around the city.
- Many of the hazard mitigation plan recommended actions will be incorporated into the city's resilience planning effort related to CFPF grants.

City of Virginia Beach

- The 2015 Comprehensive Plan update references the hazard mitigation plan update process; new upcoming rewrite will incorporate city's resiliency initiatives. The Sustainability Plan references the Hazard Mitigation Plan content in the appendices, echoes the goals and objectives of the Hazard Mitigation Plan, and contains a flood component to address the interrelationship of flood mitigation and sustainability.
- The ComIT Data Center relocation mitigation action is near completion using city funds.
- The city changed floodplain management ordinance to adopt two feet of freeboard for structures built or substantially improved in flood hazard areas.
- City is aggressively tackling enforcement issues in floodplains.
- City is integrating floodplain management more widely into other community actions such as the preliminary development review process which includes flood mitigation recommendations early in the process and formation of the City Manager's Sea Level Rise/Flooding Work Group.
- Although the Hazard Mitigation Plan is not referenced per se in the annual CIP, projects are included that reflect mitigation actions from the plan on a regular basis. One example was the relocation and rebuilding of the city's Animal Control Facility. Another example is the complete replacement of the public safety communication hardware and the 6-year spending/replacement plan that is reflected in each CIP.
- Public information, particularly regarding floodplain management, has been redesigned on the city's web site and the site references and includes information from the HIRA in the Hazard Mitigation Plan.
- CERT curriculum was revised to include damage assessment and storm preparation advice as a result of mitigation actions and hazard information included in the Hazard Mitigation Plan.
- The city's Urban Forestry Management Plan, a component of the Comprehensive Plan, was published in 2014 and includes strategies for better management of dunes and landscaping in V Zones. The plan is expressly tied to the Sustainability Plan, the city's stormwater management regulations, the Strategic Growth Area Plans, and the Outdoors Plan, and includes a reference to Sea Level Rise as a threat to tree cover in the city.
- HRPDC and the U.S. Navy worked together with City of Virginia Beach and City of Norfolk on an intergovernmental Joint Land Use Study presented to the public in 2019. More frequent flooding is affecting military operations and access to military facilities. This study focused on identifying specific conditions, including recurrent flooding, coastal storms, and erosion, outside of the military footprint that have the potential to impact Navy operations in Hampton Roads.
- The city is implementing a long-term comprehensive program for addressing rising sea levels and recurrent flooding risk entitled *Sea Level Wise*. The strategy has four phases: Impact Assessment, Adaptation Research, Strategy Development and Implementation. The *Sea Level Wise* program has been key in identifying projects and planning efforts related to state funding through CFPF. Similar to the HMP mitigation action categories, adaptation for Virginia Beach involves a series of natural mitigations (nature based solutions), engineered defenses (structural flood protection measures), adapted structures (siting/design/retrofit measures), and prepared communities (educational services and financial planning tools). The program also includes a series of watershed-based strategies for precisely targeting flood-related challenges and suggesting opportunities. Data gathering for this effort included collection of lowest floor elevations of many of the city's flood-prone existing structures; data that were used for the Hazus modeling summarized in Section 5 of this plan.
- City passed a bond referendum in 2021 to speed up funding of flood prevention infrastructure in the CIP. Money is administered by Department of Public Works.
- A High Priority mitigation action in the 2017 HMP was to join the CRS. That initiative has been successful thanks to the participation of numerous departments. Virginia Beach currently has 11 certified floodplain managers across numerous departments, in recognition of the role that flood vulnerability plays in everyday administration of city business.
- In summer 2020, the city revised and strengthened stormwater management requirements for new site plans to include calculation of future conditions (precipitation, flooding and sea level rise). Public Works promulgated design standards for residential structures as well as nonresidential.

- The city's new Historic Resources Plan is currently being finalized. This effort has guidance for structure modifications, including guidance for flood-prone historic structures.
- Amazon Web Services awarded Virginia Beach the 2017 City on a Cloud Innovation Challenge for StormSense. This program, in partnership with VIMS, enhances the capability of the city and neighboring communities to predict coastal flooding in ways that are replicable, scalable, and measurable. The project applies data science and artificial intelligence to: create historic, current and future data analysis platforms; address flood-related issues caused by coastal storms; and empower citizens to better manage their real-time and future flood risk. Available online at: https://stormsensedev.vbgov.com/

City of Chesapeake

- Chesapeake recently attained a Class 7 rating in the CRS program (improved from Class 8), qualifying most Chesapeake SFHA property owners for a 15 percent discount in flood insurance premiums, due to its continued vigilance in floodplain management, hazard mitigation planning, open space policies, public outreach in flood issues, and acquisition, demolition and elevation of severe repetitive flood loss properties through various grant programs.
- The city has expanded its ability to notify the public of potential flood hazards by using Everbridge, which is a part of Chesapeake Alert. Additionally, Emergency Management has coordinated with Public Information offices and Public Works to provide the public with real-time updates via its city webpage, Facebook and Twitter.
- Chesapeake provides continued information on flood-related issues, including the NFIP, via the city's home web page and the Emergency Management web page.
- Chesapeake has obtained and continues to apply for FEMA grants for acquiring repetitive flood loss homes and has committed CIP funds to mitigate flooding. City has acquired at least $7,515,092.00 in FMA grant funds over the past twelve years to acquire and demolish 25 and elevate five severe repetitive loss structures. Five of 7 applications are in the process of being processed from a 2018 FMA Grant. Two applications were submitted for houses in 2019 and 3 applications were submitted for houses in 2020. Additionally, stormwater flood protection reduction projects are scheduled for numerous subdivisions in the SFHA.
- Chesapeake begins its hazard mitigation planning through the Natural Event Mitigation Advisory Committee (NEMAC). NEMAC is a citizen/city staff advisory committee appointed by City Council to advise it on all hazards and report yearly on progress in mitigation and resiliency. NEMAC's 8 citizens (who form the quorum) is supported by 9 city department representatives, with each department representing a part of mitigation problems and solutions. NEMAC normally meets 6 times a year to plan for hazards, to make recommendations for improvements in the hazard mitigation plan to increase resiliency, and to provide oversight on accomplishing the actions recommended therein. One particular resiliency improvement overseen by the NEMAC was providing guidance to include sea level rise and land subsidence in the city's standalone 2014 hazard mitigation plan as a critical hazard.
- In 2022, the city will begin a resiliency planning project for the industrial waterfront, a mitigation action that will help protect valuable waterfront businesses for the long-term.
- City built new Public Safety building that serves as the city's EOC. The building can withstand a Category 3 hurricane, a magnitude 4 earthquake as it's the only systematically safe non-DOD building on the East Coast and has multiple redundancy infrastructure built into the building. City Jail project to install a generator to run the HVAC and Kitchen of the building is in current CIP. The city has applied for a grant to outfit the city's Community Centers with generators using FEMA Pre-Disaster Mitigation funds. Chesapeake has applied for PDM funds for mitigation purposes to install generators at Public Utilities Pump Stations. These generators will ensure there is not flooding due to lack of power to pump water.
- City uses CIP funds to outfit all community centers and the conference center with generators and completed the work on two new Fire Stations. Sta #10 in Bowers Hill & Sta #7 in Southern Chesapeake are now open. Sta #10 serves both as a Fire Station and Logics Center for the department, increasing the city's ability to prepare, respond and mitigate following a disaster. Sta #7 is dual use facility, as a Fire Station and a newly added Police Precinct.

- The city will implement planning measures to pursue CFPF funding in the coming planning period. Mitigation projects will align with priorities set by the NEMAC in the hazard mitigation plan.
- HRPDC and the U.S. Navy worked together with City of Chesapeake and City of Portsmouth on an intergovernmental Joint Land Use Study presented to the public in 2021. Navy facilities in Portsmouth and Chesapeake face several impacts from the surrounding communities, including transportation impacts (such as congestion, existing and planned capital improvements, facility access, gate security, and rail operations), stormwater management, waterway management, land use conflicts, and residential, commercial, and industrial encroachment impacts. Nuisance and storm surge flooding can have major impacts on Navy operations by obstructing access and damaging local infrastructure on which military facilities rely. This study identifies specific conditions and develops mutually beneficial recommendations to address these issues.

Isle of Wight County

- Comprehensive Plan updates in the region have included resource conservation areas. Sea level rise continues to be a consideration for future planning efforts. Previous plan mitigation action related to development of a sea level rise adaptation strategy has been reevaluated and removed as a mitigation action because county officials felt that existing zoning measure adequately address new development and vulnerable lands.
- Stormwater drainage in floodprone areas has been identified as a local hazard and related action to implement a drainage plan is being acted upon through implementation of a stormwater master plan in development.
- Flooding of access roads identified as a problem in the HIRA. VDOT owns and maintains all roadways in the county. County has recently added a transportation planner/VDOT liaison to staff to help with coordination of issues like this. Similarly, an extra fueling station for county vehicles was needed and has been installed in conjunction with the new volunteer rescue squad building. The most recent comprehensive plan includes a section devoted to transportation planning.
- The County has increased GIS capabilities in recent years, which will benefit various land use and hazard-planning efforts.
- Several new mitigation actions in this 2022 updated plan reflect similar strategies identified in the most recent comprehensive plan, such as preparation of a green infrastructure network plan.

City of Franklin

- City has successfully enrolled in the CRS as recommended in the 2017 hazard mitigation plan. Planners aspire to improve their rating and increase savings to policyholders.
- Having made Elevation Certificates widely available in the community, city planners see the next logical step to be installing high water marks in downtown buildings to visually remind owners and visitors of the flood risk.
- City is reviewing and considering updates to the Flood Recovery Plan identified in previous versions of this plan.
- The city's 2015 Comprehensive Plan included recommendations regarding HMGP funding for flood proofing nonresidential buildings downtown and elevating floodprone residential buildings downtown.
- American Rescue Plan Act (ARPA) funding made available following the COVID-19 pandemic has been used to address other flood hazard vulnerabilities in the city and radio system and citywide wireless network upgrades. They are working with Dominion to raise electrical panels and other equipment, possibly including the substation.
- The city uses Virginia Department of Forestry materials to distribute to the public to help reduce the prevalence of hazardous trees, as recommended in the 2017 hazard mitigation plan.

Southampton County

- The County has implemented the necessary shelter retrofits and improvements to Southampton County High School, including a new roof and a generator at the substation dedicated to the high school. Emergency operations will be amended accordingly.
- One additional staff member is working to become CFMs in calendar year 2022.

- The County's Comprehensive Plan is undergoing revision one chapter at a time. The new document will include hazard-related impacts.
- The County is helping Newsoms implement their drainage area plan, as called for in the 2017 hazard mitigation plan.
- County Courthouse renovations are underway with considerable flood protection measures included.
- Tree preservation and landscaping requirements are included in a proposed solar ordinance that the County is considering in winter 2021, as called for in previous mitigation plan.
- County has considered participation in the CRS, but after reviewing location of most insured structures in the County, has determined that the program is likely not cost effective.
- The County has implemented many of the ordinance revisions called for in the previous comprehensive plan, which also relate to hazard mitigation, such as smart growth principles such as clustering, and building streets to State standards.
- County has implemented a comprehensive plan recommendation calling for removal and disposal of junk vehicles, dilapidated structures, litter, hazardous materials and debris.

Town of Boykins

- An acquisition project on Spring Garden Street is complete with the exception of 1 vacant home. Boykins Volunteer Fire Department acquired and cleared the remaining structures.
- Identified as a problem flooding area in the HIRA, the town has done what they can to clean out Tarrara Creek. Private property owners have removed beaver dams and other impediments.
- The mayor is going to put a flyer on each door in town reminding people to sign up for the county's reverse 911. He'll mention it at town council meetings and put it on the town's updated website, which he will ask the county to link to from the county site.
- The town has a new web site and Boykins Fire-Rescue has a Facebook page to post hazard-related warnings for community members, such as that shown in **Figure 6.2**.

FIGURE 6.2: BOYKINS FIRE-RESCUE FACEBOOK WARNING, WINTER STORM

Source: Boykins Facebook page, 2022

Town of Newsoms

- Drainage improvements to eliminate standing water in yards and drainage ditches as identified in a 2011 stormwater study were targeted as a high priority in the previous HMP. Town procured a grant in 2012 to evaluate storm drainage and recommend improvements. Preliminary engineering report was completed. Town applied for Community Development Block Grant (CDBG) and, as part of the application, also completed a preliminary housing assessment in 2013. The grant was denied, but the Town has sought additional funding sources and has a Virginia Department of Housing and Community Development grant underway that includes stormwater improvements and other initiatives.

Surry County

- The County's Director of Planning is considering putting together an official administrative design review committee for all development to include hazard review.
- County has a Post-Disaster Debris Management Plan.
- The County recently updated their Radiological Emergency Plan in August 2021. Regular exercises with VDEM maintain currency of the plan, which is especially important given the location of Surry Power Station with the county.

- Surry County Department of Economic Development regularly connects businesses to various agencies and tools that provide business resilience planning assistance.
- Public Information Officer regularly uses social media and the county's web site to disseminate hazard- and mitigation-related information.
- The County's Economic Development Plan is contained within the Comprehensive Plan. Both documents were reviewed for potential mitigation actions under this planning effort.

In summary, much of the work of integrating hazard mitigation into other planning mechanisms has already happened since the adoption of the first hazard mitigation plans. The process is ongoing in Hampton Roads communities as leaders identify new ways to incorporate hazard mitigation priorities into the life of their community. Table 6.7 summarizes how individual communities expect to continue integrating hazard mitigation actions into other planning tools, regulations and activities beyond those activities listed above. Check marks indicate which planning mechanisms are targeted for existing or future coordination and integration with that community's mitigation action plan. None of the communities participating in the NFIP are considering a change in status at this time.

TABLE 6.7: INTEGRATION OF HAZARD MITIGATION ACTIONS INTO OTHER PLANNING MECHANISMS

COMMUNITY	Regulations	Administrative & Technical Procedures	Fiscal Planning (CIP, grants, budgeting)	Land Use Planning (comprehensive, resilience, transportation)	Other (public information, activities, etc)
PENINSULA					
Hampton	✓	✓	✓	✓	✓
Newport News	✓	✓	✓	✓	✓
Poquoson	✓	✓	✓	✓	✓
Williamsburg	✓	✓	✓	✓	✓
James City County	✓	✓	✓	✓	✓
York County	✓	✓	✓	✓	✓
SOUTHSIDE					
Norfolk	✓	✓	✓	✓	✓
Portsmouth	✓	✓	✓	✓	✓
Suffolk	✓	✓	✓	✓	✓
Virginia Beach	✓	✓	✓	✓	✓
Chesapeake	✓	✓	✓	✓	✓
WESTERN TIDEWATER					
Isle of Wight County	✓	✓	✓	✓	✓
Smithfield	✓	✓	✓	✓	✓
Windsor	✓	✓			
Franklin	✓	✓	✓	✓	✓
Southampton County	✓	✓	✓	✓	✓
Boykins	✓	✓	✓	✓	

TABLE 6.7: INTEGRATION OF HAZARD MITIGATION ACTIONS INTO OTHER PLANNING MECHANISMS					
COMMUNITY	Regulations	Administrative & Technical Procedures	Fiscal Planning (CIP, grants, budgeting)	Land Use Planning (comprehensive, resilience, transportation)	Other (public information, activities, etc)
Branchville	✓	✓	✓	✓	
Capron	✓			✓	
Courtland	✓	✓	✓	✓	
Ivor	✓	✓	✓	✓	
Newsoms	✓		✓	✓	
Surry County	✓	✓	✓	✓	✓
Claremont	✓	✓	✓	✓	
Dendron	✓			✓	

Regional Capabilities

The communities of Southside Hampton Roads are part of HRPDC, one of 21 Planning District Commissions in the Commonwealth of Virginia. HRPDC is a regional organization representing the area's sixteen local governments. Planning District Commissions are voluntary associations and were created in 1969 pursuant to the Virginia Area Development Act and a regionally executed Charter Agreement. The HRPDC was formed in 1990 by the merger of the Southeastern Virginia Planning District Commission and the Peninsula Planning District Commission.

The purpose of planning district commissions, as set out in the Code of Virginia, Section 15.2-4207, is "…to encourage and facilitate local government cooperation and state-local cooperation in addressing on a regional basis, problems of greater than local significance." The HRPDC mission is to:

- Serve as a forum for local and elected officials and chief administrators to deliberate and decide issues of regional importance;
- Provide the local governments and citizens of Hampton Roads credible and timely planning, research and analysis on matters of mutual concern; and
- Provide leadership and offer strategies and support services to other public and private, local and regional agencies, in their efforts to improve the region's quality of life.

The HRPDC serves as a resource of technical expertise to its member local governments. It provides assistance on local and regional issues pertaining to Economics, Physical and Environmental Planning, Emergency Management, and Transportation. For example, the commission staff is currently working on cataloging GIS data for the region and improving compatibility of the data on a regional basis.

Additional regional capabilities exist with regard to the management of coastal zone resources in the Commonwealth. A permit must be obtained from the Virginia Marine Resources Commission (VMRC) to build, dump or otherwise trespass upon or over, encroach upon, take or use any material from the beds of the bays, ocean, rivers, streams or creeks within the jurisdiction of Virginia. The permitting process is

designed to reduce the unnecessary filling of submerged land, to minimize obstructions or hazards to navigation and to avoid conflicts with other uses of state-owned submerged lands or state waters.

In addition, the VMRC is responsible for managing and regulating the use of Virginia's tidal wetlands in conjunction with Virginia's local wetlands boards. Under Virginia law, tidal wetlands include both vegetated and non-vegetated intertidal areas. Vegetated wetlands include all the land lying between and contiguous to mean low water and an elevation above mean low water equal to a factor 1.5 times the mean tidal range at the site and upon which is growing at least one of the botanical species specified in the Virginia Wetlands Act. Non-vegetated wetlands include all the land lying contiguous to mean low water and between mean low water and mean high water at the site.

Technical assistance and advice on dredging and filling operations that involve subaqueous bottoms and wetlands, all aspects of the marine environment, marine science and marine affairs is available from the VIMS. The institute provides technical assistance, often at no cost, to businesses whose development plans have impacts on marine resources.

The Virginia Coastal Zone Management Program (CZM Program) was established in 1986 to protect and manage Virginia's "coastal zone." The CZM Program is part of a national coastal zone management program, a voluntary partnership between the National Oceanic and Atmospheric Administration, National Ocean Service Office of Ocean and Coastal Resource Management, and U.S. coastal states and territories authorized by the federal Coastal Zone Management Act. The Virginia program was established through an Executive Order, which is renewed by each new governor. The program is not a single centralized agency or entity, but a network of state agencies and local governments which administer the following enforceable laws, regulations and policies that protect our coastal resources:

- Tidal and Nontidal Wetlands;
- Fisheries;
- Subaqueous Lands;
- Dunes and Beaches;
- Point Source Air Pollution;
- Point Source Water Pollution;
- Nonpoint Source Water Pollution;
- Shoreline Sanitation; and
- Coastal Lands.

The geographic areas of particular concern for the CZM Program include:

- spawning/nursery/feeding grounds;
- coastal primary sand dunes;
- barrier islands;
- significant wildlife habitat areas;
- significant public recreation areas;
- significant sand and gravel resource deposits;
- underwater historic resources;
- highly erodible/high hazard areas; and
- waterfront development areas.

Currently, some of the projects that the CZM Program is pursuing that have applications with regard to hazard capabilities include: adapting to climate change, special area management planning, coastal land conservation, shoreline management, and public access.

A local nonprofit organization and mitigation planning stakeholder, Wetlands Watch, has provided regional (and statewide) leadership in the natural resource management arena, especially with regard to sea level rise and related threats to tidal wetlands, wildlife and fish habitats, and the economy of coastal Virginia. Wetlands Watch works to raise awareness, engage and educate all stakeholders and decision-

makers about existing and potential sea level rise impacts, incorporate this threat into regional and local land-use plans and decisions, and develop and implement sea level rise adaptation plans. The group's impact can be seen through the number of new CRS communities in the region, an initiative they promote by creating useful tools and forums for interested communities, and through the evolution of the *Coastal Resilience Master Plan,* among other things.

MITIGATION STRATEGY

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2022 UPDATE

Section 7 was updated to reflect the Committee's work to update the Goals and Objectives. The following major changes were incorporated:

1) All tables were added or updated to reflect new information, including the new goals and objectives;
2) Mitigation actions were reviewed, completed actions were deleted; and, new mitigation actions were revised and added as directed by Committee members; and
3) Mitigation actions were modified to include a ranking for social vulnerability.

INTRODUCTION

This section of the Plan provides the "blueprint" for Hampton Roads to become less vulnerable to natural hazards. It is based on the general consensus of the Committee along with the findings and conclusions

of the Capability Assessment and Risk Assessment. The Mitigation Strategy section consists of the following four subsections:

- MITIGATION GOALS
- IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES
- SELECTION OF MITIGATION TECHNIQUES
- MITIGATION ACTION PLAN

The intent of the Mitigation Strategy is to provide participating communities with the goals that will serve as the guiding principles for future mitigation policy and project administration, along with a list of proposed actions available to meet those goals and reduce the impact of natural hazards. It is designed to be comprehensive and strategic in nature.

The development of the strategy included a thorough review of all natural hazards and identified policies and projects intended to not only reduce the future impacts of hazards, but also to assist the region in achieving compatible economic, environmental, and social goals. The development of this section is also intended to be strategic, in that all policies and projects are linked to established priorities assigned to specific departments responsible for their implementation and assigned target completion deadlines. Funding sources are identified when possible, that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements that are achieved through the implementation of more specific, action-oriented tasks listed in the Mitigation Action Plan. These actions include both hazard mitigation policies (such as the regulation of land in known hazard areas), and hazard mitigation projects that seek to address specifically targeted at-risk properties (such as the acquisition and relocation of flood-prone structures). Additional mitigation measures are then considered over time as new mitigation opportunities are identified, new data become available, technology improves, and mitigation funding becomes available.

The last step in designing the Mitigation Strategy is the creation of a set of jurisdictionally specific Mitigation Action Plans (MAPs). The MAPs represent the key outcome of the mitigation planning process. MAPs include a prioritized list of proposed hazard mitigation actions (policies and projects), including accompanying information such as those agencies or individuals assigned responsibility for their implementation, potential funding sources, and an estimated target date for completion. The MAPs provide those individuals or agencies responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring progress over time. The collection of actions listed in the MAP also serves as a synopsis of activities for local decision makers.

In preparing the Mitigation Action Plans, committee members considered their overall hazard risk and capability to mitigate natural hazards, in addition to the mitigation goals. The prioritization of mitigation actions was based on the following five factors: (1) effect on overall risk to life and property; (2) ease of implementation; (3) political and community support; (4) a general economic cost/benefit review; and (5) funding availability. A separate ranking for impact on socially vulnerable populations is also included. This High, Moderate or Low impact rating is based on the NRI vulnerability information provided in Section 5. Where projects were identified in a specific location and/or tied to reducing vulnerability from a single hazard, the hazard-specific ranking for that Census tract or hazard was used. Projects geared toward reducing risk community-wide, such as general outreach, were ranked based on the relative NRI social vulnerability of that community versus the percent of counties/cities with lower social vulnerability in Virginia (Low - less than 40% of other counties/cities have lower social vulnerability; Moderate – 41-75%; High –75-100%). In cases where an action was specifically geared toward socially vulnerable populations within a community, the impact was rated High.

MITIGATION GOALS

The goals of the Hampton Roads Hazard Mitigation Plan were crafted as part of Workshop #3, a facilitated discussion and brainstorming session with committee members (see Section 2: *Planning Process*). As part of the 2022 update, the planning consultant reviewed the goals and objectives of the previous plan as well as pertinent goals and objectives from Virginia Beach's *Sea Level Wise: Adaptation Strategy*, Norfolk's *Coastal Resilience Strategy Report*, Hampton's *Living with Water Hampton: A Holistic Approach to Addressing Sea Level Rise and Resiliency*, Virginia's *Coastal Resilience Master Planning Framework,* and the 2018 *Commonwealth of Virginia Hazard Mitigation Plan.* In this way, the committee was able to incorporate some important regional resilience goals and work to find common ground in statewide, regional and local mitigation programming.

The groups reassessed each goal word for word, reprioritized the list, and edited overall for brevity. The original document ("2017 Plan Goals and Objectives") and updated ("2022 Goals and Objectives") goals with strikethrough and underline are provided in **Table 7.1** below, with notes about the discussion leading to the changes. Each of the following goal statements represent a broad target to achieve through implementation of specific *Mitigation Action Plans*.

TABLE 7.1: UPDATED GOALS AND OBJECTIVES

2017 PLAN GOALS AND OBJECTIVES	2022 GOALS AND OBJECTIVES
Goal 1: Increase community resiliency by reducing vulnerability to hazards. *Objective 1.1: Reduce damage to repetitively flooded properties* *Objective 1.2: Protect existing and future development* *Objective 1.3: Protect critical facilities/infrastructure* *Objective 1.4: Maintain government services throughout hazard events* *Objective 1.5: Reduce hazard-related impacts on daily routines* *Objective 1.6: Preserve and enhance benefits of natural areas*	**Goal 1: Increase community resiliency by reducing vulnerability to hazards.** *Objective 1.1: Reduce damage to all repetitively flooded properties, not just NFIP-insured structures* *Objective 1.2: Protect existing and future development* *Objective 1.3: Protect critical facilities/infrastructure, including High Hazard Potential Dams* *Objective 1.4: Maintain diverse, equitable and inclusive government functions and services throughout the duration of hazard events* *Objective 1.5: Reduce hazard-related impacts on daily routines* *Objective 1.6: Preserve and enhance benefits of natural areas* **Why the Change?** High Hazard Potential Dams were added to clarify that a high priority goal and objective of the plan is to reduce long-term vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public. Changes to Objective 1.4 express the explicit focus communities are making to ensure that the functions of government touch *all* citizens before, during and after hazard events.
Goal 2: Educate the public about hazard vulnerabilities and ways to reduce risk *Objective 2.1: Encourage property owners to assume responsibility for reducing vulnerability*	**Goal 2: Educate the public about hazard vulnerabilities and ways to reduce risk** *Objective 2.1: Encourage citizens and businesses ~~property owners~~ to assume responsibility for reducing vulnerability* *Objective 2.2: Ensure that information and hazard education opportunities are available to all elements of the communities* *Objective 2.3: Pursue public/private partnerships that help facilitate access to hazard-related educational opportunities and gather feedback from citizens* **Why the Change?** The committee felt Objective 2.1 should be expanded to include all citizens, not just property owners. Renters, for example, need hazard education to protect their personal property and businesses, as well. Objective 2.2 was added to document community goals to work toward a whole-community effort with regard to hazard education. Objective 2.3 focuses on the importance of involving other stakeholders in hazard outreach.
Goal 3: Strengthen and develop partnerships for mitigating hazard impacts *Objective 3.1: Integrate mitigation concepts into local and regional government plans, policies and actions* *Objective 3.2: Improve and standardize hazard data collection and mapping* *Objective 3.3: Leverage shared resources in pursuit of funding for hazard mitigation projects* *Objective 3.4: Develop partnerships among local, regional, national, and international organizations*	**Goal 3: Strengthen and develop partnerships for mitigating hazard impacts** *Objective 3.1: Integrate mitigation concepts into local and regional government plans, policies and actions* *Objective 3.2: Improve and standardize hazard data collection and mapping* *Objective 3.3: Leverage shared resources in pursuit of funding for hazard mitigation projects* *Objective 3.4: Develop partnerships among private, local, regional, national, and international organizations* **Why the Change?** Objective 3.4 was changed to emphasize the importance of private funding sources – a change that has come about in the past 5 years.

IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

44 CFR Requirement
Part 201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In formulating Hampton Roads' *Mitigation Strategy*, a wide range of activities was considered in order to help achieve the goals and address specific hazard concerns. At the third workshop, committee members considered six broad categories of mitigation techniques. Committee discussions regarding each category are summarized beneath each category, including notes on the appropriateness and applicability of each as it applies to Hampton Roads.

1. Prevention

Preventative activities are intended to reduce the impact of future hazard events, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are constructed. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance
- Capital improvements programming
- Shoreline/riverine setbacks

Committee Discussion: Prevention activities have been implemented in the past in Hampton Roads, are ongoing, and will continue to be included in this and future mitigation action plans. Many communities will mitigate flood damage through planning and zoning actions, such as amendments to their floodplain management ordinances which are viewed as very effective mitigation tools locally. Most communities in the region are continually updating zoning ordinances, especially for flood zones. The statewide building code is viewed as a rather static mitigation tool; it has components that mitigate especially for wind and flood, but is not a product that local governments exert a great deal of influence upon regularly. Appendix F of the building code could be adopted by communities concerned about protecting future construction from the impacts of radon exposure.

Open space preservation strategies are contained in most of the regional comprehensive plans, including Newport News. In York County and several other communities, open space preservation is also addressed in subdivision regulations. Franklin has taken action to promote cluster development outside of flood hazard areas and create conservation and recreation districts along riverbanks. Several communities, including Hampton, Newport News and Southampton County, have integrated information from their existing hazard mitigation plans into Comprehensive Plan revisions.

Stormwater management regulations and drainage system maintenance rules promulgated at the state level are viewed as quite robust and not in need of additional local action at this time, although Virginia Beach has adopted more stringent regulations to require use of future precipitation levels; in addition, VDOT performs much of the drainage system maintenance in the Wester Tidewater region. Similarly, the state's Chesapeake Bay Act regulations governing shoreline setbacks are enforced locally. Capital

improvements programming is seen as a useful tool in the implementation of high priority mitigation activities across the participating communities.

2. Property Protection

Property protection measures involve the modification of existing buildings and structures or the removal of the structures from hazardous locations. Examples include:

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (i.e., windproofing, floodproofing, seismic design)
- Safe rooms, shutters, shatter-resistant glass
- Insurance

Committee Discussion: Property protection measures have been implemented in the past in the region and across the state, and are ongoing primarily through HMGP projects. These measures will continue to be included in this and future mitigation action plans. Acquisition is preferred over elevation for Isle of Wight County. Relocation of flood-prone structures is not a high priority in the Western Tidewater region, and is not a preferred alternative in the more built-out municipalities on the Peninsula and Southside. Building elevation projects, critical facilities protection, and floodproofing/retrofitting are popular alternatives with the region's emergency managers, and many communities continually seek ways to increase insurance coverage for vulnerable property owners.

The Community Rating System and related activities encompass and highlight several property protection measures ongoing in the participating communities. The committee decided to continue acquisition, relocation, and elevation measures for repetitively flooded properties, including critical facilities retrofits, in the Mitigation Action Plan, but did not act on any measures specifically for safe rooms or shatter-resistant glass as tornadoes are not a high risk critical hazard. Some communities in Western Tidewater have had discussions about providing safe rooms in designated areas, but no action was taken for this plan.

Existing building code requirements are seen as sufficient with regard to wind and tornado protection; however, hurricane shutters and shatter-resistant glass may be an option for critical facility or emergency shelter retrofits as necessary. Lobbying to ensure critical infrastructure partners are required to have generator power backup, as well as wind protection design elements, was brought up as both a preventive and property protection measure. Many of the study area communities have installed or are considering installation of back-up generators for specific critical facilities, and this will be reflected in the MAP.

With regard to insurance, some communities in Western Tidewater have produced community flyers regarding the importance of having insurance coverage on structures, and the counties participate in the Virginia Association of Counties Group Self-Insurance Risk Pool, a member-owned program that provides equitable rates with stable prices for long-term budgeting purposes. The City of Norfolk recently completed a detailed Program for Public Information and Flood Insurance Coverage Improvement Plan to address areas of the City that are under-insured for flood.

3. Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Natural areas could include floodplains, wetlands, steep slopes, barrier islands and sand dunes. Parks, recreation or conservation agencies and organizations often implement these measures. Examples include:

- Land acquisition
- Floodplain protection
- Watershed management

- Beach and dune preservation
- Riparian buffers
- Forest and vegetation management (i.e., fire resistant landscaping, fuel breaks)
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization
- Historic properties and archaeological site preservation

Committee Discussion: Natural resource protection measures remain commonly-used throughout the coastal Virginia region. Many state programs discussed in Section 6, such as the Chesapeake Bay Act, are established natural resource protection measures that are not expected to be weakened in the near- or long-term. The most important of these measures in relation to Hampton Road's critical hazards are floodplain protection, erosion and sediment control, wetland preservation, and watershed management. Several communities in Western Tidewater discussed the fact that they did a lot of land acquisition after Isabel and Floyd and feel like that measure is no longer a high priority under consideration, and others indicated the cost of flood-prone land acquisition is often prohibitive for their local governments.

Several rivers in the study area are designated scenic rivers and that designation has positively impacted watershed management efforts. Forest and vegetation management were discussed and determined to be low priority items at this time, although changes in risk or vulnerability for wildfire may change this thinking in the future. Beach and dune preservation is another state-promulgated program that requires permitting for impacts.

Several communities decided to continue floodplain protection measures and land acquisition in the Mitigation Action Plan, but did not act specifically on other natural resource protection measures as those are considered to be sufficiently addressed through state regulations. Invasive species control is an important habitat preservation technique used, especially in Isle of Wight County within a 200-acre park containing both wetlands and floodplains. York County has a rare and endangered species overlay in the zoning ordinance, as well as an overlay zone for protection of historic or significant archaeological sites. Slope stabilization is not seen as a particularly high priority need in the study area, although individual projects have been implemented in the past, such as a bridge replacement in Franklin and cliff stabilization at a park along the James River at Fort Boykins. Smithfield recently spent $3 million on historic property preservation on the Pagan River to protect a valuable historic asset; additional projects may be under consideration but were not believed to be tied to hazard mitigation at this time.

4. Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the hazard itself through construction. These projects are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Dams/levees/dikes/floodwalls/seawalls
- Diversions/detention/retention
- Channel modification
- Beach nourishment
- Storm sewers

Committee Discussion: New large-scale reservoirs are not under consideration at this time in the region. Dam regulations at the state level are considered sufficient and communities are not considering additional regulation; however, physical upgrades to existing dams are necessary and some are currently underway, including raising and strengthening of the Newport News Waterworks reservoir. Virginia DCR provided input on additional dam maintenance, retrofit and repair projects that are necessary in the region in the coming years. "Dutch Dialogues", or conversations with Dutch engineers

regarding successful flood mitigation techniques overseas, including structures, have resonated with several Hampton Roads communities as they explore ways to protect their built environment from sea level rise. Examples under consideration include green streets and other infrastructure that help manage stormwater so that rising seas and stormwater can be managed effectively. In Newport News, Norfolk and Portsmouth, deteriorating seawalls are under consideration for replacement with increased levels of protection. Virginia Beach, Norfolk and Hampton have ongoing beach nourishment programs to provide flood protection and recreation amenities, and this will be reflected in MAP actions for those communities.

Other structural protection measures are in place and must be maintained by the communities or private owners. Channel modifications, diversions, and detention/retention, such as tide gates, backflow preventers and stream restoration, have been effective in reducing flood hazards in some areas of the region and will remain viable mitigation actions in the future, especially for reducing the compounding effects of increased precipitation, floods and sea level rise. Stream restoration was recently included as a BMP in the State's BMP clearinghouse and some committee members believe that this may result in this method being considered and possibly used more in the future.

Isle of Wight County is implementing some watershed management measures through installation of larger BMPs. Dry hydrants, and smoke testing of sanitary sewers, and the stormwater management preventive maintenance schedule are potential structural projects, with dry hydrants particularly important in wildfire control in the western parts of the study area. High value structural projects are being considered for some study area communities.

5. Emergency Services

Although not typically considered a "mitigation" technique, emergency services can minimize the impacts of a hazard event on people and property. These actions are often taken prior to, during, or in response to an emergency or disaster. Examples include:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

Committee Discussion: Traditional riverine warning systems are inappropriate for some of the region's flood hazards, but a system of citizen and institutional tidal gauge monitoring provides limited input to community emergency planners for specific watersheds in the region. Hampton and Newport News have flood gauges with alerts along Newmarket Creek. Flood warning systems in Southampton County and Franklin are implemented and effective and Isle of Wight County has switched to a more robust system. Several communities have recently implemented Everbridge unified critical communications software to deliver messages to targeted audiences, and most communities have some form of reverse 911. Leveraging the various communities' flood warning systems to create a more regional approach would aid the citizens who live and commute through multiple jurisdictions. Regional cooperation on this front could benefit citizens and visitors to the region and may result in savings to communities by reducing the need to invest in so many systems.

Evacuation planning is aided at the regional and state levels, but local planners use many tools to continually manage and improve the program; several are now considering more use of sheltering in place, the use of central evacuation locations or evacuating more targeted groups rather than automatically going to mass evacuations. Evacuation and sheltering plans for vulnerable populations are a high priority for the region's emergency planners at this time, and Western Tidewater planners continue to work with NC officials regarding Outer Banks evacuation routes that traverse the region.

Sandbagging for flood protection is generally considered helpful, but local governments are not involved in helping property owners sandbag, with the exception of Franklin and Virginia Beach. In Franklin, a new rule allows downtown business owners to get sand and bags from the City. Virginia Beach does provide sandbagging opportunities when necessitated based on storm impacts. Sandbagging is not provided for

any and every storm in Virginia Beach, but is most likely available in response to a hurricane. Individual property owners may decide to sandbag for protection, but this is not an action committee members want to include in the MAP, as longer-term retrofit protection methods are deemed preferable. Adding generator electrical circuits to support jail operations during power outages was discussed and included in the MAP for Chesapeake. This activity is both an Emergency Services action and a Property Protection measure. Some communities, such as Poquoson, Newport News, and York County, have installed shutters for wind protection on Emergency Operations Centers; Hampton is building a new EOC outside the SFHA. Committee members in Western Tidewater discussed battery backups for stoplights, but indicated that in their region, such a measure would require assistance and cooperation with VDOT to implement.

6. Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures used to educate and inform the public include:

- Outreach projects
- Speaker series/demonstration events
- Hazard mapping
- Real estate disclosure
- Library materials
- School children educational programs
- Hazard expositions
- Inter-governmental coordination

Committee Discussion: Public education and outreach activities are a particular focus of emergency planners in the region and are ongoing, particularly through existing web sites and several CRS-related activities. Speaker series and demonstration events, such as hurricane awareness events, are supported by several of the local governments throughout the year, but may not rise to the importance of being included in the MAP for each of these communities. For example, Hampton participates in the Home Expo and Emergency Preparedness Day annually, and York County has a Safety Town Program each summer. Norfolk has a speaker series on stormwater concepts for schoolchildren. The groups considered ways to improve upon these programs in the MAP moving forward, including working with the State Department of Education to integrate mitigation lessons in the Virginia Standards of Learning. This is potentially a mitigation action for future State Hazard Mitigation Plan updates.

FEMA, working with the U.S. Army Corps of Engineers, has revised many of the Flood Insurance Rate Maps for the region as ongoing coastal studies are completed. Additional hazard mapping was discussed and some communities have worked with HRPDC to gather more structure lowest floor elevations in flood prone areas. Real estate disclosure, particularly for flood risk and radon risk, is guided by current State regulations and not influenced by local government. Library materials, school programs, and open houses are included in the MAP for many communities.

Committee members discussed train-the-trainer opportunities in conjunction with the City's Community Emergency Response Team (CERT) and the Tidewater Builders Association and several decided to add this as an action or to append it to existing actions despite the altered functions of CERTs during the COVID-19 disaster. The HRPDC supports several efforts at inter-governmental coordination, including the Hampton Roads All Hazards Advisory Committee (AHAC) and HR Green. There is also a local CRS User's Group that is very active among CRS and CRS-interested communities in the study area.

SELECTION OF MITIGATION TECHNIQUES

In order to determine the most appropriate mitigation techniques, committee members reviewed and considered the findings of the *Capability Assessment* and *Risk Assessment*. Other considerations included each mitigation action's effect on overall risk reduction, its ease of implementation, its degree of political and community support, its general cost-effectiveness and funding availability.

FEMA guidance for meeting the planning requirements of the Disaster Mitigation Act of 2000 also specifies that local governments should prioritize their mitigation actions based on the level of risk a hazard poses to the lives and property of a given jurisdiction. A Mitigation Technique Matrix (**Table 7.2**) shows that those hazards posing the greatest threat are addressed by the updated MAP.

The matrix provides the committee with the opportunity to cross-reference each of the priority hazards (as determined through the *Risk Assessment*) with the comprehensive range of available mitigation techniques, including prevention, property protection, natural resource protection, structural projects, emergency services, and public education and awareness. The *Mitigation Action Plan* includes an array of actions targeting multiple hazards, not just those classified as either high or moderate risk.

As part of the 2022 update, the committee reviewed several documents to assist with the development of new mitigation actions and the assessment of existing actions. Review documents included: 1) a spreadsheet of each community's capabilities and any mitigation program gaps subsequently identified; 2) each community's Comprehensive Plan and Resilience Plans (if available), specifically components that may be compatible with mitigation goals, or that may be appropriate as mitigation actions; 3) contractor review of local floodplain management regulations; 4) the mitigation action items from the existing plans with 2022 status information; and 5) several recommended publications, including FEMA Publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*, January 2013, FEMA's *Mitigation Best Practices* and *Mitigation Action Portfolio* web site, and resilience design guidelines for Miami Beach, Boston and New York City.

TABLE 7.2: MITIGATION TECHNIQUE MATRIX						
MITIGATION TECHNIQUE	HIGH RISK HAZARDS			MODERATE RISK HAZARDS		
	Flooding	Tropical/Coastal Storm	Sea Level Rise and Land Subsidence	Winter Storm	Tornado	Hazardous Materials Incident
PREVENTION	✓	✓	✓	✓	✓	✓
PROPERTY PROTECTION	✓	✓	✓	✓	✓	
NATURAL RESOURCE PROTECTION	✓		✓			✓
STRUCTURAL PROJECTS	✓	✓	✓	✓	✓	
EMERGENCY SERVICES	✓	✓		✓	✓	✓
PUBLIC EDUCATION AND AWARENESS	✓	✓	✓	✓	✓	✓

MITIGATION ACTION PLAN

The mitigation actions proposed for local adoption are listed in the MAP on the pages that follow. They will be implemented according to the plan maintenance procedures established for the *Hampton Roads Hazard Mitigation Plan* (see Section 8: Plan Maintenance Procedures). The action items have been designed to achieve the mitigation goals and priorities established by the committee.

Each proposed mitigation action has been identified as an effective measure to reduce hazard risk in Hampton Roads. Each action is described with available background information such as the location of the project and general cost benefit information.

Other information provided includes data on cost estimates and potential funding sources to implement the action should funding be required (not all proposed actions are contingent upon funding). Most importantly, implementation mechanisms are provided for each action, including the designation of a lead agency or department responsible for carrying the action out, as well as a timeframe for its completion. These implementation mechanisms ensure that the *Hampton Roads Hazard Mitigation Plan* remains a functional document that can be monitored for progress over time. Proposed actions are not listed in exact priority order though each has been assigned a priority level of “high,” “moderate” or “low” as described in the previous section.

Table 7.3 describes the key elements of the Mitigation Action Plan, and **Table 7.4** lists the additional considerations that were evaluated for each proposed action once selected for inclusion in the Mitigation Action Plan. This includes social, technical, administrative, political, legal, economic, and environmental considerations collectively known as "STAPLEE" evaluation criteria.

As part of the plan update process, the committee reviewed the list of recommended actions included in their respective existing plans to determine if the actions should be deleted because they are completed, deferred, cancelled, or continued, and made recommendations regarding modified and new actions. Summary results of this review are included in **Appendix F**.

TABLE 7.3: KEY ELEMENTS OF THE MITIGATION ACTION PLAN	
Proposed Action	Identifies a specific action that, if accomplished, will reduce vulnerability and risk in the impact area. Actions may be in the form of local policies (i.e., regulatory or incentive-based measures), programs or structural mitigation projects and should be consistent with any pre-identified mitigation goals and objectives.
Site and Location	Provides details with regard to the physical location or geographic extent of the proposed action, such as the location of a specific structure to be mitigated, whether a program will be Citywide, countywide or regional, etc.
Cost Benefit	Provides a brief synopsis of how the proposed action will reduce damages for one or more hazards.
Hazard(s) Addressed	Lists the hazard(s) the proposed action is designed to mitigate for.
Goal(s) Addressed	Indicates the Plan's established mitigation goal(s) the proposed action is designed to help achieve.
Priority	Indicates whether the action is a "high" priority, "moderate" priority, or "low" priority based on the established prioritization criteria.
Impact on Socially Vulnerable Populations	Indicates whether the action has a "high" impact, "moderate" impact , or "low" impact based on the established ranking criteria.
Estimated Cost	Indicates what the total cost will be to accomplish this action. This amount will be an estimate until actual final dollar amounts can be determined.
Potential Funding Sources	If applicable, indicates how the cost to complete the action will be funded. For example, funds may be provided from existing operating budgets or general funds, a previously established contingency fund, or a cost-sharing federal or state grant program.
Lead Agency/Department Responsible	Identifies the local agency, department or organization that is best suited to implement the proposed action.
Implementation Schedule	Indicates when the action will begin and when it is estimated to be completed. Some actions will require only a minimal amount of time, while others may require a long-term or continuous effort.

TABLE 7.4: ADDITIONAL CONSIDERATIONS (STAPLEE EVALUATION)	
Socially Acceptable	Is the proposed action socially acceptable to the community? Is the action compatible with present and future community values? Are there equity issues involved that would mean that one segment of the community is adversely affected?
Technically Feasible	Will the proposed action serve as a long term solution? Will it create any negative secondary impacts? Are there any foreseeable problems or technical constraints that could limit its effectiveness?
Administratively Possible	Does the community have the capability to implement the proposed action? Is there someone available to coordinate and sustain the effort?
Politically Acceptable	Is there political support to implement the proposed action? Is there enough public support to ensure the success of the action?
Legal	Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for the action? Are there any potential legal consequences of the action?
Economically Sound	What are the costs and benefits of the proposed action? Does the cost seem reasonable for the size of the problem and the estimated benefits? Are there funding sources available to help offset costs of the action? Is the action compatible with other economic goals of the community?
Environmentally Sound	How will the action impact the environment? Will the action require any environmental regulatory approvals? Is the action consistent with other environmental goals of the community?

The following is a list of current funding sources and their acronyms as may be indicated in the mitigation actions. Additional acronyms used throughout this plan are interpreted in Appendix G. The pool of potential funding mechanisms is changing very rapidly as a result of COVID and other Federal and state legislative priorities at the time of this update.

Key to Potential Funding Source Acronyms:

DHS U.S. Department of Homeland Security
- **BRIC –** Building Resilient Infrastructure and Communities
- **HMGP –** Hazard Mitigation Grant Program
- **FMA –** Flood Mitigation Assistance Program
- **HHPD –** Rehabilitation of High Hazard Potential Dams (HHPD) grant program

ARPA American Rescue Plan Act

USACE U.S. Army Corps of Engineers
- **SFCP** – Small Flood Control Projects
- **FPMS** – Flood Plain Management Services Program
- **CAP** – Continuing Authorities Program

DOI U.S. Department of the Interior
- **LWCF –** Land and Water Conservation Fund Grants

EDA U.S. Economic Development Administration
- **DMTA –** Disaster Mitigation and Technical Assistance Grants

EPA U.S. Environmental Protection Agency
- **CWA –** Clean Water Act Section 319 Grants

HUD U.S. Department of Housing and Urban Development
- **CDBG –** Community Development Block Grant Program

USDA U.S. Department of Agriculture
- **EWP –** Emergency Watershed Protection
- **WPFP –** Watershed Protection and Flood Prevention
- **WSP –** Watershed Surveys and Planning

Virginia
- **CFPF – Virginia Community Flood Preparedness Fund**

Table 7.5 provides a matrix indicating that each critical and noncritical hazard affecting communities is addressed in the Mitigation Action Plan.

TABLE 7.5: MITIGATION ACTIONS FOR CRITICAL AND NON-CRITICAL HAZARDS

	Flooding	Tropical/Coastal Storm	Sea Level Rise and Land Subsidence	Tornado	Winter Storm	Hazardous Materials Incident	Landslide/Coastal Erosion	Earthquake	Wildfire	Radon Exposure	Flooding Due to Impoundment Failure	Pandemic Flu or Communicable Disease
Regional Actions	M*	2, 3	M	2	2	2	2	2, 3	2	2,4	2	2
Hampton	M	M	M	M	M	M	M	M	M	M	M	M
Newport News	M	M	M	3	3	3	M	3, 5	3, 8	3	3, 10	3
Poquoson	M	M	M	M	M	M	M	M	M	4	n/a	4, 10
Williamsburg	M	M	M	M	M	M	M	M	M	M	M	M
James City County	M	M	M	M	M	M	6, 9	M	M	1,7	M	1,7
York County	M	M	M	M	M	M	M	M	M	M	M	M
Norfolk	M	M	M	M	M	3	M	M	3	3,5	M	3,5
Portsmouth	M	M	M	M	M	M	M	M	M	M	n/a	M
Suffolk	M	M	M	M	M	M	2,4	M	M	2	2,8	2
Virginia Beach	M	M	M	M	M	M	M	M	M	6,20	M	M
Chesapeake	M	M	M	M	M	M	M	M	M	M	M	M
Isle of Wight County	M	M	M	M	M	M	M	M	M	5,8	5,8	5,8
Smithfield	M	M	M	M	M	8	M	M	6, 8	8	n/a	8
Windsor	M	3	1	3	3	3	1	3	3	3	n/a	3
Franklin	M	M	M	M	M	M	5,11	M	M	12, 13	n/a	12
Southampton County	M	M	17	M	M	M	M	M	M	M	n/a	10,11
Boykins	M	2,4	3,4	3,4	2,4	3,4	3,4	3,4	M	3,4	n/a	3,4
Branchville	M	M	M	M	M	M	1,3	M	M	1,3	n/a	1,3
Capron	1	1	1	1	1	1	1	1	1	1	n/a	1
Courtland	M	M	M	M	M	M	1,4	3,4	M	2,4	n/a	2,4
Ivor	4,3	3	3,4	3	3,4	3	3	3	M	3	n/a	3
Newsoms	M	1	M	1,2	1,5	1,2	1	1	1,2	1,2	n/a	1,2
Surry County	M	M	M	M	M	M	M	M	M	M	n/a	M
Claremont	M	M	M	M	M	2,5	M	M	M	M	n/a	2,5
Dendron	1	1	1	1	1	1	1	1	1	1	n/a	1

**M = 3 or more actions address this hazard*

REGIONAL STRATEGIES

REGIONAL MITIGATION ACTION 1	
Use existing or create new Elevation Certificates to collect lowest floor elevation data for flood-prone structures in the region, focusing initially on repetitive loss areas in each community.	
BACKGROUND INFORMATION	
Site and Location:	Hampton Roads region, particularly repetitive flood loss areas as identified in Section 5 of this plan
Cost Benefit:	Lowest floor elevation data for pre-FIRM structures are critical information for developing robust cost-benefit analyses of mitigation options for flood-prone structures. The data are necessary in order to prioritize and fund mitigation projects, especially through Federal and state grant processes.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 3, Objectives 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/Low; Hampton, Newport News, Norfolk and Portsmouth have Moderate NRI flood risk – all other communities have Low
Estimated Cost:	Estimated $30/structure, based on similar project in eastern North Carolina
Potential Funding Sources:	USACE: FPMS; DHS: BRIC and HMGP; Virginia CFPF
Lead Agency/Department Responsible:	AHAC
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Significant progress made in recent years by gathering archived Elevation Certificates from building records.	

REGIONAL MITIGATION ACTION 2	
Use AHAC structure and HRPDC resources to develop additional regional mitigation strategies and initiate annual workshop on mitigation project funding.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Hampton Roads study area
Cost Benefit:	Through AHAC organizational structure, VDEM and HRPDC can provide no-cost assistance to the communities to help satisfy reporting requirements, make progress on mitigation actions, and apply for mitigation grant funding.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All Hazards
Goal(s) Addressed:	Goal 3, Objectives 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Travel costs and staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	AHAC/HRPDC, partner with Wetlands Watch, HR Green
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	
Proposed workshop agenda: 1. HRPDC and VDEM to provide update on funds available, details on how to apply, and what projects are eligible; 2. HRPDC update on regional mitigation actions and progress; 3. Break into community-based work groups to provide report on status of each mitigation action (modified, complete, not started and why).	

REGIONAL MITIGATION ACTION 3	
Analyze and update the platform, availability, and accuracy of HAZUS input data and output results for the purposes of conducting future, more detailed vulnerability analyses.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Hampton Roads study area
Cost Benefit:	Some of the data used to update HAZUS in this study were not intended for the purposes of flood vulnerability analyses. Particularly, the assessor databases from communities are for tax purposes and the data are incomplete.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm and Earthquake
Goal(s) Addressed:	Goal 1, Goal 3; Objective 3.2, 3.3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/Low; Hampton, Newport News, Norfolk and Portsmouth have Moderate NRI flood risk – all other communities have Low
Estimated Cost:	$60,000
Potential Funding Sources:	USACE, HMGP, HMGP 5% Initiative, BRIC
Lead Agency/Department Responsible:	HRPDC
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
The PDC has established a platform, but as data and computing needs change, platforms requires ongoing analysis. Some progress has been made and the PDC continues to investigate workshare arrangements with VDEM, CRS Task Force, VFMA/ASFPM and the Silver Jackets.	

REGIONAL MITIGATION ACTION 4	
Use commercially available radon test kits to determine radon levels in structures. Evaluate radon data against known geological formations in the region to determine geographic variability in vulnerability. End product will be a refined map of radon zones.	
BACKGROUND INFORMATION	
Site and Location:	Hampton Roads, particularly areas of suspected high radon concentration over the western extent of the Yorktown Formation.
Cost Benefit:	Radon exposure has a high cost; it is a known cause of lung cancer, especially in smokers. Radon tests are inexpensive (<$50) and structural mitigation is inexpensive. The results of additional testing and map refinement will provide local and state officials with additional tools to advise homeowners when testing is advised, resulting in mitigation of lung cancer. Leaders at the local, regional and State level will gain valuable information to determine if a change in capabilities is warranted (*e.g.*, building code requirements, real estate transaction disclosures).
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Radon Exposure
Goal(s) Addressed:	Goal 1, Objective 1.2, 1.3, 1.5; Goal 2, Objective 2.1, 2.2, 2.3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate – Franklin has very high NRI social vulnerability; Hampton, Newport News, Portsmouth and Williamsburg have relatively moderate social vulnerability; all other communities have low or relatively low
Estimated Cost:	Estimated $30/structure, plus mapping costs
Potential Funding Sources:	EPA, DHS: HMGP, BRIC
Lead Agency/Department Responsible:	HRPDC, College of William & Mary
Implementation Schedule:	Begin project within 2 years of plan adoption; project may extend beyond 2027 planning horizon
ADDITIONAL COMMENTS	

REGIONAL MITIGATION ACTION 5	
Partner with VDEM to review repetitive flood loss data from FEMA on a regular basis, update repetitive flood loss area polygons and shapefiles, and analyze data for patterns, errors and mitigation opportunities.	
BACKGROUND INFORMATION	
Site and Location:	Throughout HRPDC jurisdictions
Cost Benefit:	Implementing this action at the State level would reduce the burden on communities by centralizing the process. Using state GIS capabilities would ensure consistency across the Commonwealth and help make this data available beyond just CRS participating communities.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	DHS; Virginia CFPF
Lead Agency/Department Responsible:	VDEM, HRPDC, all Hampton Roads flood-prone communities, particularly those participating in the CRS
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
VDEM GIS staff can assist with ranking RL polygons by more detailed social vulnerability measure than NRI.	

REGIONAL MITIGATION ACTION 6	
Address high and significant hazard dam safety in the region, to include: • **Investigate and conduct risk assessments on dams using risk prioritization methodology;** • **Conduct alternatives analyses to identify preferred plans for dam rehabilitations and the estimated costs for design and construction;** • **Repair, removal, or any other structural or nonstructural measures to rehabilitate an eligible high hazard potential dam, including development of conceptual, preliminary, and final design plans;** • **Conduct additional inundation studies, and use dam inundation data and flood depths to determine if retrofits to affected critical facilities may be necessary.**	
BACKGROUND INFORMATION	
Site and Location:	Throughout HRPDC jurisdictions. Harwood's Mill Dam in York County, Little Creek Dam in James City County and Godwin's Millpond Dam in Suffolk are of particular concern because they are high hazard dams in poor condition. See Figures 5.13 and 5.14 for dam locations.
Cost Benefit:	Local engineering expertise and regional knowledge may prove effective in supplementing existing, limited state resources for inspecting and rating dams. Dam inundation planning is similarly impacted.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.3; Goal 3, Objective 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low/Moderate
Estimated Cost:	TBD
Potential Funding Sources:	FEMA: HHPD; ARPA; Virginia CFPF
Lead Agency/Department Responsible:	Virginia DCR, HRPDC, affected communities
Implementation Schedule:	Continuously over next 5 years

ADDITIONAL COMMENTS
HRPDC and its localities work to act as local sponsors of HHPD projects and determine whether specific structural or non-structural measures are needed to meet state standards. In more complex situations, dam owners are advised to undertake alternatives analysis to ensure a cost effective solution is implemented that also meets state and federal environmental requirements.

REGIONAL MITIGATION ACTION 7	
Provide regional leadership regarding the new NFIP's new Risk Rating 2.0 system and renewal policy planning, to include assistance with: **1) Evaluation of rating accuracy and "minus-rated" policies;** **2) Messaging and outreach to homeowners;** **3) Elevation Certificate correction; and** **4) Mitigation assistance for property protection.**	
BACKGROUND INFORMATION	
Site and Location:	Throughout HRPDC jurisdictions
Cost Benefit:	The PDC has contacts and the ability to assemble and then disseminate information at a more cost-effective price point than if each locality on its own.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	FEMA: HMGP, BRIC
Lead Agency/Department Responsible:	HRPDC AHAC, Virginia DCR
Implementation Schedule:	Over the next 2 years
ADDITIONAL COMMENTS	

REGIONAL MITIGATION ACTION 8	
Strengthen existing and create new regional transportation networks and hubs for evacuation and sheltering. The purposes and needs for evacuation and sheltering are evolving, and communities are moving away from traditional, large shelters to house large populations toward a more targeted approach that tries to anticipate disaster-related needs more specifically. Educating the public about these changes is an important component to this type of regional planning.	
BACKGROUND INFORMATION	
Site and Location:	Throughout HRPDC jurisdictions
Cost Benefit:	Evacuation and sheltering costs, in particular, can be impacted by how many people are evacuated and how they are moved to shelters. The services available at shelters is impacted, as well. Regional approaches to evacuation can save valuable time and money.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All hazards
Goal(s) Addressed:	Goal 1: Objectives 1.4, 1.5; Goal 2; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – evacuation of socially vulnerable populations will be a focus of the planning effort
Estimated Cost:	TBD
Potential Funding Sources:	FEMA
Lead Agency/Department Responsible:	HRPDC AHAC; Stakeholders (e.g., hospital systems, universities, military bases, American Red Cross, social service agencies, transportation partners)
Implementation Schedule:	Immediately upon adoption
ADDITIONAL COMMENTS	

REGIONAL MITIGATION ACTION 9	
Work with private companies to advance continuity of operations, including but not limited to power, gas, and water service restoration. Mitigation actions may include implementation of system redundancies, mutual aid agreements or other partnerships to address critical capability gaps. Physical retrofits may increase resilience of critical infrastructure, such as burying power lines and provision of dependable backup power to water and wastewater treatment facilities.	
BACKGROUND INFORMATION	
Site and Location:	Throughout HRPDC jurisdictions
Cost Benefit:	Damages are reduced when critical lifelines are returned to service promptly after a disaster. By creating partnerships between private utility providers, the region can expect a faster return to full operations, thereby reducing losses to business and property owners.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All hazards
Goal(s) Addressed:	Goal 1, Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	ARPA, FEMA
Lead Agency/Department Responsible:	Dominion, HRPDC AHAC
Implementation Schedule:	Within 4 years of plan adoption
ADDITIONAL COMMENTS	

HAMPTON

HAMPTON MITIGATION ACTION 1	
Maintain participation in National Flood Insurance Program and Community Rating System, with goal of obtaining Class 6 CRS rating. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The NFIP and related flood mapping and development regulations have proven benefits nationwide. CRS benefits accrue through increased insurance coverage, improved hazard awareness and reduced flood insurance premiums; a Class 6 rating equates to a 20% flood insurance premium savings for most flood-prone property owners. New construction and future development are protected from current flood conditions through existing standards that meet or exceed NFIP minimum requirements.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, and Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5
Priority (High, Moderate, Low):	High
Estimated Cost:	Staff time
Impact on Socially Vulnerable Populations:	High – All 13 repetitive flood loss areas contain areas of very high or relatively high NRI flood risk, which includes analysis of social vulnerability
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Emergency Management, Public Works and Community Development
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	

HAMPTON MITIGATION ACTION 2	
Acquire, elevate, relocate, retrofit or floodproof structures in flood prone areas. This action includes acquisition/demolition of repetitive and severe repetitive losses from trustee sales/tax sales.	
BACKGROUND INFORMATION	
Site and Location:	Flood prone areas Citywide
Cost Benefit:	Retrofit measures that address flooded structures, particularly those designated as repetitive loss or severe repetitive loss by the NFIP, have quantifiable benefits. The City has collected elevation data and will continue collection as part of this action in order to more easily make cost-benefit analyses of at risk structures. City acquisition of repetitively flooded trustee sales is a cost-effective way to remove severely flood-prone structures from the real estate market and prevent resale without mitigation. These properties can be purchased inexpensively. Treasurer's Office can provide list of tax sales on regular basis.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, and Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.5, 1.6
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – All 13 repetitive flood loss areas contain areas of very high or relatively high NRI flood risk, which includes analysis of social vulnerability
Estimated Cost:	Cost will be based on specific flood protection measures chosen. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; USACE: SFCP, FPMS; HUD: CDBG; USDA: WPFP; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management, Community Development, Treasurer's Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Locally funded projects may be creditable under the Community Rating System.	

HAMPTON MITIGATION ACTION 3	
Provide flood, wind and heat protection and dry access/egress for critical facilities and infrastructure. Retrofits may include, but are not limited to: elevate and harden communication sites, provide generator backup or prewire evacuation shelters for quick hook-ups, and upgrade sewer pump stations.	
BACKGROUND INFORMATION	
Site and Location:	Critical facilities Citywide
Cost Benefit:	Benefits of mitigating damage to critical facilities are realized by all citizens through the city's ability to maintain the highest operational capabilities post-disaster. Benefits are based on reduced response times, and longevity of critical infrastructure.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Extreme Heat
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Cost will be based on specific protection measures chosen for each facility. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; Stafford Act Section 406 - post-disaster mitigation funds under Public Assistance for damaged public facilities
Lead Agency/Department Responsible:	Emergency Management, Public Works, Hampton City Schools
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
New 911/EOC is nearing construction out of the SFHA, on Big Bethel Road.	

HAMPTON MITIGATION ACTION 4	
Adopt and implement holistic water plans to mitigate flooding on a watershed level.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Identify and prioritize impactful and implementable projects, policies, and programs to reduce flooding impacts, spur flood-safe redevelopment and add value to affected neighborhoods.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Approximately $250,000 per water plan, or $1 million in total for remaining plans
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative; Virginia CFPF
Lead Agency/Department Responsible:	Community Development, Public Works
Implementation Schedule:	Ongoing; planning complete in approximately 5 years
ADDITIONAL COMMENTS	
Planning is led by the Resilient Hampton Initiative, and is based on the idea of living with water. The focus is on flood mitigation, economic growth, mobility and access, green infrastructure, natural resources, and revitalization of flood-prone areas. Plans aim to coordinate a variety of goals while mitigating flooding impacts, working together with the community to identify assets, approaches, and projects.	

HAMPTON MITIGATION ACTION 5	
Maximize use of social media before, during and after hazard events.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Minimal cost to reach larger audience more effectively
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Drought, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 2; Objective 2.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$200,000 annually, including staff time
Potential Funding Sources:	n/a
Lead Agency/Department Responsible:	Marketing Department, Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
The prominence of social media points to a need to refine activity on Twitter, Facebook, Instagram and other programs. Need to be pro-active and targeted in messages. Identify specific messages, links. Other information that we will need to spread and the most effective methods, may include short videos, maps, links, photos, and infographics. In 2021, Hampton won an award for Top 10 Digital City for its size range. Efforts to reach a broad group of citizens are working and should continue.	

HAMPTON MITIGATION ACTION 6	
Develop a Resilient Hampton Education Plan, which may include a CRS Plan for Public Information. **Prepare public outreach materials and conduct outreach to educate elected officials and residents on methods of mitigating flood damage, the importance of maintaining flood insurance coverage, the City's floodplain management efforts, and the benefits of the City's CRS participation.** **Expand capacity building and training for various groups and neighborhood-serving organizations to include communication about mitigation, building code requirements, and response.**	
BACKGROUND INFORMATION	
Site and Location:	Citywide, with particular emphasis on vulnerable neighborhoods with less access to social or broadcast media
Cost Benefit:	Local residents are better able to address and then communicate the needs of their specific neighborhoods. Using community members to transmit information to neighbors can expand capacity of City staff to communicate, mitigate and respond more effectively.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Extreme Heat
Goal(s) Addressed:	Goal 2, Objective 2.1; Goal 3, Objectives 3.1, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$5,000 to $50,000
Potential Funding Sources:	General Fund – Neighborhood Education Programs; HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management, Community Development, Marketing, Public Works
Implementation Schedule:	Ongoing; incorporate into upcoming Resilient Hampton education plan
ADDITIONAL COMMENTS	
Also considering partnerships with neighboring localities to share training opportunities for interested citizens. Make sure homeowners have flood insurance coverage. Flood insurance coverage has been shown to reduce response needs and help Hampton's citizens return to normalcy more quickly after flooding.	

HAMPTON MITIGATION ACTION 7	
Improve stormwater management capacity of existing system, to include improving drainage system maintenance using increased sediment and debris clearance, and ongoing analysis of the current system's status of functionality.	
BACKGROUND INFORMATION	
Site and Location:	Drainageways citywide. Engineering studies have specifically identified Mill Creek Terrace, Mary Peake and Riverdale as particular areas of concern.
Cost Benefit:	The City's network of structures, channels and underground pipes that carry stormwater help reduce flooding, especially during high frequency events. Maintenance and retrofits are required to keep the system functioning effectively, especially as sea level rises.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.4, 1.5, 1.6
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$22.1 million (see additional information below)
Potential Funding Sources:	Stormwater Utility Fee; Bond Funding; ARPA; IIJA
Lead Agency/Department Responsible:	Public Works Engineering
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Hampton's MS4 permit has requirements for this activity and the city is required to increase debris and sediment removal for each 5-year permit. Pochin Place was completed December 2020, cost $762,183, the total cost for the remaining mitigation efforts in the Mill Creek Watershed are $2,361,000, Mary Peake Watershed $10,561,699 and the Riverdale Watershed is $10,561,699. The total cost is estimated at $22,120,109.	

HAMPTON MITIGATION ACTION 8	
Coordinate with owners of post-FIRM structures that are NFIP "minus-rated" to help property owners determine reason for rating and implementing solutions. Identify funding sources to help identify and fund retrofits.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone locations citywide
Cost Benefit:	Minus-ratings are typically related to flood vents and are straightforward, low cost retrofits. Assistance from City staff and/or private insurers could help owners reduce flood insurance premiums while gaining flood resilience.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5; Goal 2, Objective 2.1, 2.3; Goal 3, Objective 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time. Some private companies that offer flood insurance often provide this service to homeowners free of charge.
Potential Funding Sources:	HMGP 5% Initiative; Hampton's flood mitigation fund provides low-cost loans for mitigation
Lead Agency/Department Responsible:	Community Development, Emergency Management, Public Works
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	

HAMPTON MITIGATION ACTION 9	
Conduct repetitive loss area analyses of repetitive flood loss areas, partnering with HRPDC and VDEM where relevant. Include outreach to homeowners regarding potential mitigation options.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood loss areas Citywide (see Section 5 for maps)
Cost Benefit:	Analyses benefit property owners by identifying potential mitigation actions, making the repetitively flooded areas better known to elected officials and the public, and possibly garnering CRS points to contribute to reducing flood insurance premiums.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – All 13 repetitive flood loss areas contain areas of very high or relatively high NRI flood risk, which includes analysis of social vulnerability
Estimated Cost:	$100,000
Potential Funding Sources:	Grant funding through Emergency Management; see also Regional Action #5
Lead Agency/Department Responsible:	Community Development, Public Works/Engineering and Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

HAMPTON MITIGATION ACTION 10	
Continue to build resiliency into the city's approach to social, economic and physical challenges. Incorporate resilience strategies into City plans (community plan, capital improvement plan, master plans, etc.). Develop a tool to evaluate how City decisions align with resiliency goals.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	As the historic patterns of natural hazards shift with the impacts of climate change, addressing hazards and their impacts on citizens is increasingly the work of all City departments. Disseminating responsibility for addressing resilience to relevant staff through education and training, and updating guidelines and creating tools, is more cost effective than hiring additional resources to address hazards. Approaching resiliency from a whole-community standpoint in plans helps to reduce counterproductive measures, conflicting projects, and redundancy in operation, thus saving taxpayer funds in the long-term.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1; Goal 3, Objectives 3.1, 3.3 and 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	CIP
Lead Agency/Department Responsible:	City Manager's Office and Community Development Resiliency Officer
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

HAMPTON MITIGATION ACTION 11	
Maintain storm-resistant public beaches.	
BACKGROUND INFORMATION	
Site and Location:	Atlantic Ocean/Chesapeake Bay shoreline
Cost Benefit:	Maintaining the existing beach profile provides flood protection and wave protection to waterfront structures.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.6
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$7,000,000 as proposed for 2022
Potential Funding Sources:	ARPA
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

HAMPTON MITIGATION ACTION 12	
Ensure safe ramp access is provided for rapid extraction of City-owned boats prior to Tropical/Coastal storm.	
BACKGROUND INFORMATION	
Site and Location:	Hampton River and Back River
Cost Benefit:	Emergency Services has invested considerable resources in rescue boats. The ability to extract these boats protects assets from storm damage or loss.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Landslide/Coastal Erosion, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Undetermined
Potential Funding Sources:	
Lead Agency/Department Responsible:	Public Safety and Community Development
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
As various City departments examined options for redevelopment at the Sunset Boat Ramp in 2021, Emergency Management highlighted the importance of the public ramp for this purpose.	

HAMPTON MITIGATION ACTION 13	
Develop, finalize and implement Disaster Recovery Plan.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	A plan for disaster recovery minimizes the negative impacts of hazard events on City functions, citizens and businesses, and may even identify opportunities for safer redevelopment.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	DHS, VDEM
Lead Agency/Department Responsible:	Emergency Management, Community Development
Implementation Schedule:	Ongoing, with plan expected to be finalized in 2022 or 2023.
ADDITIONAL COMMENTS	
Disaster recovery can be short-term or long-term depending on the nature of the event itself. The City is developing a Disaster Recovery Plan to set out expectations for managing multiple hazard events and the related recovery processes, to include setting up a Storm Response Center, assigning roles and responsibilities to the recovery team members, collecting and backing up data, restoring/continuing City and private utility operations, and testing and maintaining critical facilities. Major disasters may also require longer-term recovery plans that address Community Development and resiliency issues to minimize hazardous redevelopment practices.	

HAMPTON MITIGATION ACTION 14	
Develop a plan to collect surveyed high water mark data following flood events.	
BACKGROUND INFORMATION	
Site and Location:	Citywide floodplains
Cost Benefit:	Collection of high water mark data allows better calculation of a storm's frequency, thus improving cost benefit analyses for future mitigation projects.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	High – All 13 repetitive flood loss areas contain areas of very high or relatively high NRI flood risk, which includes analysis of social vulnerability
Estimated Cost:	Staff time, Post-disaster surveys could be used to collect high water mark elevations at approximately $500/structure (for a large number of surveys at once)
Potential Funding Sources:	USACE: FPMS; VDEM: HMGP, HMGP 5% Initiative, USGS
Lead Agency/Department Responsible:	Public Works, Emergency Management
Implementation Schedule:	Set up any necessary post-disaster contracts within 2 years of plan adoption
ADDITIONAL COMMENTS	
Structural inventories with elevations, high water marks, and flood frequency data help prepare accurate cost-benefit analyses for a large number of structures rapidly, which is especially useful in a post-disaster scenario.	

HAMPTON MITIGATION ACTION 15	
Provide business resiliency planning services to the City's business owners, particularly Virginia Department of Minority Business Enterprise (DMBE)-certified SWaM businesses that may have access to fewer resources than larger establishments. Workshops and outreach would identify businesses interested in further planning, with more detailed assistance then provided to assist businesses with details regarding risk and vulnerability assessment, preparedness, continuity of operations planning and adaptation/recovery. Help businesses identify specific mitigation projects and sources of funding to reduce vulnerability and increase resiliency.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Businesses that are prepared for disasters unique to their location are more likely to remain operational or to resume operations quickly post-disaster, thus making the business' services available to residents more quickly. Pre-disaster planning costs reduce post-disaster damages for the business, the customers, and the City.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.4, 1.5; Goal 2, Objectives 2.1, 2.2, 2.3; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	Medium
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined based on business community interest
Potential Funding Sources:	DHS: BRIC, HMGP; Virginia CFPF; EDA DMTA; Commonwealth Center for Recurrent Flooding Resiliency (CCRFR)
Lead Agency/Department Responsible:	Economic Development, CCRFR
Implementation Schedule:	Within 3 years of plan adoption
ADDITIONAL COMMENTS	
The CCRFR has prepared the Coastal Virginia Small Business Self-Assessment and Guide available at: https://www.floodingresiliency.org/coastal-virginia-small-business-resilience-self-assessment-and-guide/ which could be useful for beginning this action.	

HAMPTON MITIGATION ACTION 16	
Implement structural and nature-based flood control projects in flood prone areas, such as tide gates, berms, constructed wetlands, roadway elevations, etc. This action includes projects identified by the *Resilient Hampton* Initiative plans.	
BACKGROUND INFORMATION	
Site and Location:	Flood prone areas Citywide
Cost Benefit:	Multi-objective projects have benefits across the spectrum, including flood protection benefits, and benefits that accrue from natural and beneficial functions of floodplains and wetlands.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, and Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Cost will be based on specific flood protection measures chosen.
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; USACE: SFCP, FPMS; HUD: CDBG; USDA: WPFP; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management, Community Development, Treasurer's Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

NEWPORT NEWS

NEWPORT NEWS MITIGATION ACTION 1	
Maintain participation in National Flood Insurance Program. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements. Improve floodplain management program and CRS rating.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The NFIP and related flood mapping and development regulations have proven benefits nationwide. CRS benefits accrue through increased insurance coverage, improved hazard awareness and reduced flood insurance premiums. New construction and future development are protected from floods through existing standards that meet or exceed NFIP minimum requirements.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, and Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Emergency Management/Engineering
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	
The city is currently a class 7 in the CRS program.	

NEWPORT NEWS MITIGATION ACTION 2	
Acquire, elevate, relocate, retrofit or floodproof structures in flood prone areas. Flood protection may include small structural flood control projects, such as tide gates, or backflow preventers. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Flood loss areas Citywide
Cost Benefit:	Retrofit measures that address flooded structures, particularly those designated as repetitive loss or severe repetitive loss by the NFIP, have quantifiable benefits. The City's Flood Assistance Program has had measurable benefits using primarily acquisition to mitigate an estimated 2 structures per year since 1999. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, and Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2 and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – Salter's Creek and Newmarket Creek repetitive flood loss areas contain areas of very high or relatively high NRI flood risk, which includes analysis of social vulnerability. The other 6 repetitive flood loss areas affect moderate to low risk areas.
Estimated Cost:	Estimated $750,000 per year through various channels and sources
Potential Funding Sources:	CIP; DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; USACE: SFCP, FPMS; HUD: CDBG; USDA: WPFP; Virginia CFPF. Flood Assistance Program has primarily used City funds.
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
80 properties comprising 15.2 acres have been purchased.	

NEWPORT NEWS MITIGATION ACTION 3	
Protect critical facilities and infrastructure, including access/egress. Retrofits may include, but are not limited to: upgrades or relocation of the 911/EOC/311 facilities and wind vulnerability of building, components and equipment; floodproofing or elevating pump stations; retrofitting remaining pump stations with generators or quick-connect hookups.	
BACKGROUND INFORMATION	
Site and Location:	Critical facilities Citywide. Pump stations #2, #53 and #99 have been identified as high priority locations for non-structural mitigation measures.
Cost Benefit:	Benefits of mitigating flood damage to critical facilities are realized by all citizens through the city's ability to maintain the highest operational capabilities post-disaster. Benefits are based on reduced response times, and longevity of critical infrastructure. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.4s
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Cost will be based on specific flood protection measures chosen for each building.
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; Stafford Act Section 406 - post-disaster mitigation funds under Public Assistance for damaged public facilities
Lead Agency/Department Responsible:	Emergency Management, Facilities Engineering
Implementation Schedule:	Long-term, 3 to 7 years
ADDITIONAL COMMENTS	
Wind retrofits should ensure EOC is protected with winds up to 120mph.	

NEWPORT NEWS MITIGATION ACTION 4	
Construct new access road to Pump Station 49 on Warwick Boulevard.	
BACKGROUND INFORMATION	
Site and Location:	Pump Station 49, Warwick Blvd – new access road from Old Courthouse Way
Cost Benefit:	Existing access drive is below the 100-year flood elevation and has been flooded by the adjacent Stoney Run Creek during significant storm events. This flooding prevents access to the station including the delivery of fuel needed to run the station emergency power generator. Finished floor elevation of the station is above the 100-year flood elevation and it is not considered susceptible to flooding. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$300,000, includes acquisition of undeveloped commercial property
Potential Funding Sources:	DHS: HMGP, BRIC; Virginia CFPF
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Within 5 to 7 years
ADDITIONAL COMMENTS	
Other alternatives considered but rejected include: 1) raise existing service road (would require undesirable impacts to Stoney Run); and 2) new access road from Warwick Blvd (steep grade issues would limit access).	

NEWPORT NEWS MITIGATION ACTION 5	
Drainage improvements on Chelsea Place, to include increased flow through the drainage outfall from the apartments and diversion of some of the flow from Edgemoor Drive to a new outfall.	
BACKGROUND INFORMATION	
Site and Location:	Chelsea Place Apartments, Warwick Blvd
Cost Benefit:	Existing drainage system drains to a channel along the CSX right-of-way, then through a small culvert to a drainage channel along Warwick Blvd. The culvert under the railroad is undersized and causes flooding in the parking lot of the apartments. The flooding enters at least 15 ground floor apartments rendering them unrentable and has resulted in the loss of multiple vehicles.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1,1, 1,2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$750,000
Potential Funding Sources:	Stormwater Management Fund
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Construction estimated to begin late 2022
ADDITIONAL COMMENTS	
Project delayed by CSX close to agreement for crossing. Design is being updated.	

NEWPORT NEWS MITIGATION ACTION 6	
Provide various watershed and flood warning improvements to reduce danger to lives and property from flooding along Newmarket Creek. This action may include Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Newmarket Creek watershed
Cost Benefit:	Several alternatives considered. Combination of computer modeling improvements, early warning/detection systems and drainage improvements considered most beneficial for multi-objective management of the watershed. Benefits include: 1) upgrades to current watershed models to pinpoint drainage improvements; 2) detection systems to alert City officials to pre-determined water levels in drainage system to initiate procedures for warning/evacuating residents; 3) drainage improvements (quality and quantity controls) to improve lifespan of the system, reduce nuisance flooding, and provide credit for pollutant reduction; 4) measures may provide sufficient flood mitigation/protection to result in removal of repetitive flood loss properties from the City's inventory and may provide points under CRS.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 3, Objectives 3.3, 3.4
Impact on Socially Vulnerable Populations:	High – Newmarket Creek repetitive flood loss area contains areas of relatively high NRI flood risk, which includes analysis of social vulnerability.
Priority (High, Moderate, Low):	High
Estimated Cost:	Computer model upgrade = $152,000 Projects pending watershed model & analysis in 2023 Early Warning/Detection systems = $200,000 Drainage Improvements – pipe installations= $7,350,000 Drainage Improvements – channel upgrades = $3,725,000 Drainage Improvements – BMP installations = $6,683,000
Potential Funding Sources:	DHS: FMA, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	
Implementation Schedule:	5 to 10 years; sensors have been installed
ADDITIONAL COMMENTS	
Other alternatives considered include: raise elevation of all houses within 100-year floodplain; purchase properties and relocate residents in 100-year floodplain; build structures (levees, floodwalls, gates/pumps) to protect properties; provide detection systems within watershed to alert to high water levels within major drainage channels; modify current City programs to streamline application process for homeowners; assist in redeveloping areas of the watershed (commercial/businesses, recreational areas, and residential neighborhoods).	

NEWPORT NEWS MITIGATION ACTION 7	
Improve drainage system maintenance, including increased sediment and debris clearance.	
BACKGROUND INFORMATION	
Site and Location:	Drainageways citywide.
Cost Benefit:	The City's network of structures, channels and underground pipes that carry stormwater help reduce flooding, especially during high frequency events. Maintenance is required to keep the system functioning effectively.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$2,275,500
Potential Funding Sources:	Stormwater User Fee, Capital Improvement Program
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing as part of 5-year CIP updated annually. New projects continually identified.
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 8	
Continue Forest Management Program to mitigate wildfire hazards and promote forest health.	
BACKGROUND INFORMATION	
Site and Location:	Program is primarily focused on Waterworks land holdings near the utility's reservoirs.
Cost Benefit:	This ongoing program reduces the number of fires, and works to control pine beetle infestations. Forest thinning is a primary control mechanism. This is one of many programs the utility implements related to hazard mitigation.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Drought
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Net cost is low because costs are offset by selling the timber
Potential Funding Sources:	Waterworks Enterprise Fund
Lead Agency/Department Responsible:	Newport News Waterworks
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 9	
Prepare public outreach materials. Educate elected officials and residents on the importance of the NFIP and the City's floodplain management efforts, maintaining flood insurance coverage, and methods for mitigating flood damage. City's comprehensive master floodplain management planning will include developing educational, outreach and more accessible materials and tools.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Citywide
Cost Benefit:	Making sure homeowners have flood insurance coverage has been shown to reduce response needs and help Newport News' citizens return to normalcy more quickly after flooding.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5; Goal 2, Objective 2.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – Salter's Creek and Newmarket Creek repetitive flood loss areas contain areas of very high or relatively high NRI flood risk, which includes analysis of social vulnerability. The other 6 repetitive flood loss areas affect moderate to low risk areas.
Estimated Cost:	<$5,000 per year
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
While this action is ongoing, it is important to retain in the hazard mitigation plan to ensure continued funding is secured annually.	

NEWPORT NEWS MITIGATION ACTION 10	
Rehabilitation and improvement of Harwood's Mill Dam which impounds Harwood's Mill Reservoir to provide water for Harwood's Mill Water Treatment Plant. The planned improvement project consists of the demolition of the existing outlet works and principal spillway chute and construction of a new principal spillway floor slab, training walls, intake structure and flume, access bridge, concrete crest wall and the rehabilitation of the existing spillway weir.	
BACKGROUND INFORMATION	
Site and Location:	Yorktown, Virginia – Route 17
Cost Benefit:	Repairs are needed to bring project into compliant with State regulations. Project avoids damages which could result from a compromised spillway.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding Due to Impoundment Failure/High Hazard Dam
Goal(s) Addressed:	Goal 1: Objectives 1.2, 1.3, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – Downstream of the dam are areas of relatively moderate to relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	$12,800,000
Potential Funding Sources:	CIP
Lead Agency/Department Responsible:	Facilities Engineering
Implementation Schedule:	February 2022 – December 2023
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 11	
Stormwater Master Planning: the City will develop three separate, yet inter-dependent master plans for citywide stormwater management, floodplain management, and resilience & climate change management.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The City's current Stormwater and Floodplain management plans are out of date and no longer viable for addressing current or future flooding problems. Last year the state issued new requirements for addressing climate change.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$5,500,000
Potential Funding Sources:	Capital Improvement Plan, CFPF
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Planning to begin 2022 and will last 3 years
ADDITIONAL COMMENTS	
Newport News does not have a comprehensive City specific plan for addressing climate change and resilience. The combined master planning will include an assessment of the existing state of several components of the City's stormwater management; public engagement; general inventory, documentation, and evaluation of infrastructure; analysis of ordinances and design manuals; greenway corridor planning and conceptual plan development with capital planning, cost estimating, and financial planning. Planning will also provide data on where structures lie in the City with regard to future flooding and sea level rise so that regulations governing future development can based on more detailed vulnerability.	

NEWPORT NEWS MITIGATION ACTION 12	
Improve the Lions Bridge Dam which impounds Mariners' Lake to bring the dam into compliance with current state dam safety standards.	
BACKGROUND INFORMATION	
Site and Location:	100 Museum Drive
Cost Benefit:	The current Lions Bridge Dam was built in 1937 before dam safety regulations. The current dam is considered a significant hazard dam because greater than 400 vehicles per day travel on the roadway across the dam. The dam will be armored to safely withstand overtopping during the half probable maximum flood.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.5, 1.6
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$11,000,000
Potential Funding Sources:	Capital Improvement Plan, Lake Maury Fund
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Design will be completed Spring 2022, construction will begin late 2022
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 13	
Nicewood Area Drainage Improvements. Evaluation of existing storm system and implementation of recommended improvements to address flooding.	
BACKGROUND INFORMATION	
Site and Location:	Area around the intersection of Malden Lane and Maryle Court to Nicewood Park in the Runnymeade Subdivision
Cost Benefit:	Citizens within the area of the intersection of Malden Lane and Maryle Court and the outfalling storm system to Nicewood Park experience frequent flooding during significant rain events. The existing storm drainage system is inadequate. The project will reduce the risk of flooding and damages to approximately 70 homes and approximately 2200 linear feet of roadway.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low – the area has very low NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	$2,100,000
Potential Funding Sources:	Stormwater user Fee, Capital Improvement Program
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Design will begin 2022
ADDITIONAL COMMENTS	
The project includes funding for a detailed model of the storm system to determine what improvements are required, along with funds for the design and construction of a new system once improvements are identified.	

NEWPORT NEWS MITIGATION ACTION 14	
Marshall Ridley. Redevelopment of a large area of outdated apartments with no existing stormwater management system in place. The new development will include multiple BMPs and a regional stormwater management facility.	
BACKGROUND INFORMATION	
Site and Location:	Between Jefferson Avenue and Ivy Avenue, between 12th Street and 18th Street
Cost Benefit:	The area currently does not have any stormwater management, so all stormwater outfalls directly into Seafood Industrial Park Small Boat Harbor without detention or water quality treatment. The new development will provide treatment and serve as a regional BMP for approximately 30 acres. Provide improved drainage on public right-of-way to alleviate nuisance flooding; upgrade to City's drainage system for another 50 years, reduce maintenance costs for repairs, and provide a new storm system that meets current design standards.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – the area has very high or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	$6,000,000
Potential Funding Sources:	Stormwater user Fee, Capital Improvement Program
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Design 2021, Construction 2022
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 15	
Governors Drive Stream Restoration & BMP, including restoration of Flaxmill Creek to alleviate erosion and protect a major HRSD force main.	
BACKGROUND INFORMATION	
Site and Location:	Flaxmill Creek between Governors Drive and Riverview Farm Park.
Cost Benefit:	The existing drainage channel at the rear of residential properties is experiencing erosion and has deteriorated to a point where it is unstable.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm; Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Stormwater Fees, Capital Improvement Plan, & State Local Assistance Fund (SLAF)
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Design 2022, Construction 2024
ADDITIONAL COMMENTS	
The project will include providing a stable and constant cross-section with applicable natural and stone armaments for conducting stormwater runoff from a 10-year storm event. This channel conducts stormwater runoff from several public right-of-ways such as Lucas Creek Rd, Menchville Rd, and roads within Denbigh Plantation.	

NEWPORT NEWS MITIGATION ACTION 16	
Analyze and improve drainage/stormwater system along Stoney Run.	
BACKGROUND INFORMATION	
Site and Location:	Northern portion of the Stoney Run Watershed
Cost Benefit:	Several neighborhoods (Colony Pines, Windsor Great Park, and surrounding areas), totaling approximately 900 acres, within the northern portion of the Stoney Run watershed experience repeated issues frequent flooding during high intensity storm events. Most of the storm system was designed and constructed under a 5-year design storm requirement, and current regulations require storm systems be designed to handle a 10-year storm event. A detailed analysis will determine potential modifications and additions to the stormwater system, including the stormwater management facilities. Funding is included to design and implement identified modifications and additions necessary to improve the drainage system and maintain the efficient conveyance of runoff while meeting regulatory requirements for water quantity and quality.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$8,500,000
Potential Funding Sources:	Stormwater Fees, Capital Improvement Plan, SLAF, CFPF
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Computer Model Analysis 2021, Construction within 5 – 10 years
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 17	
Salters Creek Analysis and Drainage Improvements. Develop computer model analysis and implement identified drainage projects. Reduce flooding throughout the Salters Creek watershed by improving the capacity of the existing drainage system, providing additional storage, and ensuring compliance with stormwater regulations.	
BACKGROUND INFORMATION	
Site and Location:	Salters Creek Watershed
Cost Benefit:	The Salters Creek watershed in the Southeast Community is approximately 1,236 acres and is extremely low-lying. As a result, the surrounding area experiences issues with drainage and frequent flooding from storms and high tides. A detailed computer model analysis will be performed to determine potential modifications and additions to the stormwater system. Funding is also included for the design and construction of identified improvements. The project will result in implementing improvements necessary to maintain the efficient conveyance of runoff during storm and high tidal events.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – Salter's Creek repetitive flood loss area contains areas of very high or relatively high flood risk, which includes analysis of social vulnerability.
Estimated Cost:	$7,200,000
Potential Funding Sources:	Stormwater Fees, Capital Improvement Plan, SLAF, CFPF
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Design 2021, Construction 3-7 years
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 18	
James River Shoreline Stabilization. Stabilize 720 linear feet of shoreline on the James River to address severe erosion and failure of the steep slope along River Rd, and protect existing utilities and the road.	
BACKGROUND INFORMATION	
Site and Location:	James River along River Rd from 9304 to 9508 River Road
Cost Benefit:	The project provides restoration and stabilization of 720 feet of shoreline adjacent to River Road to reduce erosion of the existing embankments, prevent loss of shoreline, and protect the City's roadway and underground utilities. The improvements will be a combination of stone riprap sills and a vegetative slope along with a living shoreline.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Landslide/Coastal Erosion, Flooding, Sea Level Rise, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$3,400,000
Potential Funding Sources:	CAP funding, Stormwater Fees, CIP
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Design 2022
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 19	
Christopher Shores Drainage Improvements. Address repeated flooding in the Christopher Shores subdivision by installing larger storm pipes and additional pipes and inlets to alleviate flooding during tidal events.	
BACKGROUND INFORMATION	
Site and Location:	Christopher Shores subdivision
Cost Benefit:	The project consists of construction of a new storm drain system and outfalls to replace an existing system that is outdated and does not conform to present City standards. This project will alleviate ongoing flooding issues caused by rainfall events, storm surges, and tidal action of Hampton Roads within the existing closed drainage systems in approximately 66 acres of the Christopher Shores area of the Southeast Community. Street flooding is an issue for residents especially when it hampers their ability to evacuate the area when major storm events are predicted.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$5,600,000
Potential Funding Sources:	Stormwater Fees, CIP
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Construction 2022
ADDITIONAL COMMENTS	

NEWPORT NEWS MITIGATION ACTION 20	
Deep Creek Shoreline Stabilization. Stabilize the shoreline at Menchville Marina on Deep Creek.	
BACKGROUND INFORMATION	
Site and Location:	Menchville Marina, 494 South Menchville Road
Cost Benefit:	Restore and stabilize approximately 300 LF of shoreline along Deep Creek at the Menchville Marina. Existing conditions include old wooden posts and nuisance vegetation, as well as erosion problems.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low – the area has low NRI Coastal Flood Risk
Estimated Cost:	$600,000
Potential Funding Sources:	Stormwater Fees, CIP
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Construction 2022
ADDITIONAL COMMENTS	

POQUOSON

POQUOSON MITIGATION ACTION 1
Continue participating in the National Flood Insurance Program and the Community Rating System, with a goal of becoming a Class 7 community. Continue enforcement of standards in existing floodplain management ordinance that meet and exceed NFIP minimum requirements. Encourage additional staff to become Certified Floodplain Managers. **Study feasibility of implementing additional floodplain management ordinance changes, including:** **1. Changes to the definition of "substantial improvement" that would require accumulation of costs of improvements and repairs of buildings, based on issued building permits, over a set time period; and,** **2. Coastal A Zone regulations that apply coastal high hazard area requirements in areas delineated by FEMA as subject to wave heights between 3 feet and 1.5 feet high.**

BACKGROUND INFORMATION	
Site and Location:	Special Flood Hazard Areas of Poquoson
Cost Benefit:	Additional measures to manage floodplains can further reduce flood response needs in the long-term, and reduce flood insurance premiums through CRS rating changes in the near-term. The NFIP and related flood mapping and development regulations have proven benefits nationwide.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	Travel costs and staff time
Potential Funding Sources:	Existing budgets; HMGP 5% Initiative
Lead Agency/Department Responsible:	Building Inspections
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS

POQUOSON MITIGATION ACTION 2	
Elevate, relocate, acquire, retrofit or floodproof structures in hurricane prone areas. Flood protection may include minor localized flood reduction projects, as well. Wind retrofit measures are also included and may be appropriate for some structures, especially publicly-owned structures. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Citywide, and Citywide for wind retrofits
Cost Benefit:	Retrofit measures that address flood- and wind-prone structures, particularly those designated as repetitive loss or severe repetitive loss by the NFIP, have quantifiable benefits by reducing future damages to the structures. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	In multiple $250,000 phases as grant money becomes available. Individual structure costs vary.
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; USDA; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management and Building Inspections
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

POQUOSON MITIGATION ACTION 3	
Implement the Shoreline Management Plan developed by Virginia Institute of Marine Science, as conditions warrant.	
BACKGROUND INFORMATION	
Site and Location:	Shorelines Citywide
Cost Benefit:	Implementation is not costly and could be absorbed by existing department budgets. Materials to share with property owners and training for staff (and interested property owners) are available from VIMS at very low cost. Adding links from the City web page to the VIMS toolbox is low cost but would provide valuable information to property owners.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.6; Goal 2, Objective 2.1; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	Staff time only
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Planning Department, Permitting, and Engineering
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Currently, Virginia's Shoreline Erosion Advisory Service is not funded. Property owners need guidance on best management shoreline protection methods from reliable sources and not necessarily just from shoreline repair contractors. The *Poquoson Comprehensive Plan 2008-2028*, Environmental Management Element, Shoreline Sub-Element, states as its second goal, "Develop a shoreline management plan to ensure property shoreline protection and create a framework for incentive[s] based on programs to encourage less intrusive means of shoreline protection." While permitting incentives were considered that might encourage living shorelines, City staff determined that permit fees and review times are already as low as possible.	

POQUOSON MITIGATION ACTION 4	
Continue to increase flood and wind protection and flood access/egress for critical facilities and infrastructure. Elevate new critical facilities, retrofit existing facilities as necessary, and elevate roads to provide access to elevated critical facilities. Retrofits may include but are not limited to: installation of emergency backup power, elevation of structure or components, relocation or retrofit of building components, and installation of tidal/flap valves on drainage structures. Coordinate with public utilities to protect or retrofit transformers, critical infrastructure and overhead power lines.	
BACKGROUND INFORMATION	
Site and Location:	Critical facilities Citywide.
Cost Benefit:	Benefits of mitigating flood damage to critical facilities are realized by all citizens through the city's ability to maintain the highest operational capabilities post-disaster. Flooding of roads prevents access to elevated critical facilities. Benefits are based on reduced response times, and longevity of critical infrastructure. Elevation of roads could reduce evacuation times once flooding begins, and protect roadbeds from erosion associated with sea level rise in the future.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	Cost will be based on measures chosen for each building
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; Stafford Act Section 406 - post-disaster mitigation funds under Public Assistance for damaged public facilities; Virginia CFPF
Lead Agency/Department Responsible:	Public Works/Engineering, Fire Department, Police Department, Public Utilities
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Some vital infrastructure such as storm sewer and sanitary sewer are subject to flooding, and possibly vulnerable to sea level rise in the future.	

POQUOSON MITIGATION ACTION 5	
Collect and share hazard-related data in GIS-compatible format, including but not limited to: **1) add tide gauges for flood prediction and collect high water marks and calculate flood frequency for all coastal storms;** **2) continue to collect Elevation Certificates for each structure in the 100-year floodplain and post online for property owner use;** **3) use sidescan LIDAR to collect additional data regarding structure elevations Citywide;** **4) incorporate new software for the assessor's database that includes flood elevation data;** **5) use drone-produced real-time storm surge/tidal conditions mapping developed in conjunction with NASA and ODU; and,** **6) inventory and prioritize low-lying secondary roads and intersections critical to evacuation.**	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Collection of elevation information and retention of Elevation Certificates can reduce surveying costs for property owners and buyers in the future. The partnership with NASA for real-time mapping has been a very successful and low-cost venture.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion, Winter Storm, Hazardous Materials Incident
Goal(s) Addressed:	Goal 3, Objectives 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	Staff time Post-disaster surveys could be used to collect structure elevations at approximately $300/structure (for a large number of structures at once)
Potential Funding Sources:	NASA and ODU; HRPDC, USACE: FPMS; DHS: HMGP, HMGP 5% Initiative; USGS; Virginia CFPF
Lead Agency/Department Responsible:	Engineering, Building Inspections, Emergency Management
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
The City Building Inspector continues to compile and digitize a collection of Elevation Certificates for existing structures, elevated/mitigated structures and new structures, and he maintains pertinent data from the forms in a digital format. City has collected high water marks after recent floods and anticipates doing so again in the future. City notifies residents on low-lowing roads of evacuation needs early via CodeRed, posts digital signage and advises them to move personal property early in the evacuation process.

POQUOSON MITIGATION ACTION 6	
Review and update Pre-Disaster Debris Management Plan.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Pre-disaster debris management reduces damage to structures and infrastructure from flood and wind. Also, regular clean-up requirements can reduce the costs of post-disaster debris clean-up. City could also have access to the additional 5-percent cost incentive from FEMA's Public Assistance money.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5, 1.6; Goal 2, Objective 2.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing capital budgets; HMGP, BRIC or FMA (with very clearly articulated benefits for flood damage reduction); Virginia CFPF
Lead Agency/Department Responsible:	Public Works, Solid Waste
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
City recently purchased two new tractors for pre-event debris clearance.	

POQUOSON MITIGATION ACTION 7	
Coordinate with public utilities, and use City resources to trim trees in the public right-of-way.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Benefits include reduced debris clean-up costs and increased utility service reliability.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tropical/Coastal Storm, Tornadoes, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$100,000, including contributions from utility providers
Potential Funding Sources:	Existing capital budgets, HMGP. In some cases, utilities may be eligible for some FEMA grant monies, as well.
Lead Agency/Department Responsible:	Public Works, utility providers; City has agreement with York County for keeping roadways clear to accommodate evacuations
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

POQUOSON MITIGATION ACTION 8	
Eliminate barriers to the orderly evacuation of citizens: **1) Elevate and widen the causeway to Hampton (Wythe Creek Road);** **2) Widen Victory Boulevard;** **3) Continue car evacuation agreement with Langley Motor Speedway to allow citizens to park cars there prior to expected flooding; and,** **4) Address low-lying roadways/intersections identified in Mitigation Action #5, including use of temporary flood barriers for critical resident evacuation routes and first responder access/egress.**	
BACKGROUND INFORMATION	
Site and Location:	Wythe Creek Road and Victory Boulevard
Cost Benefit:	These two roadways are considered critical infrastructure for the evacuation and protection of citizens in Poquoson. Wythe Creek Road floods regularly at high tide, cutting off the route and requiring all citizens to evacuate via Victory Boulevard. Providing a no-cost alternative for parking vehicles out of harm's way encourages people to consider the advantages and consequences of evacuating cars and people.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence, Wildfire, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objective 1.5; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost to Poquoson:	Wythe Creek Road - $19.8 million Victory Boulevard - $22.7 million
Potential Funding Sources:	VDOT, Hampton, York County and other partners; Virginia CFPF
Lead Agency/Department Responsible:	Engineering and City Manager's Office
Implementation Schedule:	Wythe Creek Road is scheduled for construction in 2022; Victory Boulevard widening is in the planning stages.
ADDITIONAL COMMENTS	
The City also has emergency access roads which are normally closed but which can be linked together in case of evacuation or emergency.	

POQUOSON MITIGATION ACTION 9	
Support and maintain decal system for re-entry to the City following a disaster. Use social networking to strengthen the system.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Benefits accrue to: 1. property owners through reduced secondary damage (*e.g.,* from car wakes on flooded streets); and, 2. Police operating budgets through reduced traffic management costs, better response times and more efficient use of staff following a disaster.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornadoes, Earthquake
Goal(s) Addressed:	Goal 1, Objectives 1.4, 1.5; Goal 2; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$2,500 annually
Potential Funding Sources:	Capital budget; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	City Manager's Office; Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Gawkers and sightseers from outside Poquoson are not cognizant of the added damage and inconvenience their visits can inflict. A low-cost decal system was put in place in 2010, and together with police presence at key entry points to the City, officials can now control re-entry.	

POQUOSON MITIGATION ACTION 10	
Support and maintain Code Red, the City's Reverse 911 system. Prepare messages to release to citizens before and after a natural hazard event.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Other methods of notifying citizens require massive amounts of staff time which exceed budgetary restraints. Code Red quickly and efficiently uses existing infrastructure to notify property owners of appropriate pre- and post-disaster mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Hazardous Materials Incident, Drought, Extreme Heat, Pandemic Flu or Communicable Disease
Goal(s) Addressed:	Goal 1, Objectives 1.4, 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$10,000 to $15,000
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
While the Code Red system is already functioning, an opportunity to use the system to urge property owners to take mitigative actions exists. Identification of persons with disabilities has been built into the dispatch notifications.	

POQUOSON MITIGATION ACTION 11	
Protect flood-prone natural resources as a buffer against sea level rise, including, but not limited to: **1) Protect in perpetuity the 69 acres of natural land at the end of Poquoson Avenue donated to the City;** **2) Provide additional access points for the City's Blueway system, a series of canoe and kayak water trails in and around the City and Plum Tree Island; and,** **3) Provide opportunities for retail and residential development on land that is less prone to flooding and sea level rise, such as the Big Woods area.**	
BACKGROUND INFORMATION	
Site and Location:	Eastern portion of the City, especially undeveloped portions along the water.
Cost Benefit:	Just as damages from sea level rise are not easily quantifiable, the benefits of adjusting to sea level rise are also more abstract. These measures are relatively low in cost compared to the damages that flooding will continue to inflict in Poquoson if no adjustments are made.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.6
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/High – the area has relatively moderate or relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	1) Existing budgets for legal and real estate costs. 2) Access points on the Blueway may incur costs to the city as additional sites are identified. Costs would be dependent on site amenities. 3) Staff time
Potential Funding Sources:	Existing budgets; DCR: VRTF, L&WCF, VCWRLF; Virginia CFPF
Lead Agency/Department Responsible:	Parks, City Manager's Office, Planning
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
A long-term plan of gradual adjustment begins with small steps. This action highlights the opportunity to identify additional ways to protect flood-prone areas with multiple benefits for citizens in the long- and short-term. While zoning regulations may protect land in the short-term, zoning can be altered by future officials. CRS points may be available for sub-action #1, especially for the recently protected 6 acres set aside for parks.

POQUOSON MITIGATION ACTION 12	
Continue to participate in coalition with Virginia Tech and others using drones for storm/event damage assessment and wildland fire management.	
BACKGROUND INFORMATION	
Site and Location:	Eastern portion of the City, primarily
Cost Benefit:	This low-cost method of assessing damage after a storm or to assess wildfire potential in undeveloped areas has benefits for the reduction of spreading wildfire risk and the management of post-flood redevelopment.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Tropical/Coastal Storm, Wildfire, Tornado, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 3, Objectives 3.1, 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets; DCR: VRTF, L&WCF, VCWRLF; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	City Manager's Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
The City has drones and trained drone operators available to implement this action.	

WILLIAMSBURG

WILLIAMSBURG MITIGATION ACTION 1	
Maintain and improve drainage system maintenance, including increased sediment and debris clearance. Purchase additional equipment for pre-storm debris clearance. Explore turf options for parking lots, streetscapes and underground retention where feasible, particularly in Colonial Williamsburg.	
BACKGROUND INFORMATION	
Site and Location:	Drainageways citywide.
Cost Benefit:	The City's network of structures, channels and underground pipes that carry stormwater help reduce flooding, especially during high frequency events. Maintenance is required to keep the system functioning effectively.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objective 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$40,000
Potential Funding Sources:	Existing Budget and CIP
Lead Agency/Department Responsible:	Public Works, Colonial Williamsburg, College of William & Mary
Implementation Schedule:	This is a continuous activity of the City's Public Works Department.
ADDITIONAL COMMENTS	
Smoke testing on sewer system is part of the action. Cross training on stormwater management problem detection with other departments is critical for maintenance in Williamsburg and will continue.	

WILLIAMSBURG MITIGATION ACTION 2	
Continue participating in the National Flood Insurance Program. Review and update floodplain management ordinance to include current resilience standards. Continue enforcement of standards in existing floodplain management ordinance that meet and exceed NFIP minimum requirements.	
BACKGROUND INFORMATION	
Site and Location:	Special Flood Hazard Areas of Williamsburg
Cost Benefit:	The NFIP and related flood mapping and development regulations have proven benefits nationwide.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.6
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Designated Floodplain Manager
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

WILLIAMSBURG MITIGATION ACTION 3	
Maintain StormReady designation through the National Weather Service.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	StormReady helps arm communities with the communication and safety skills needed to save lives and property--before, during and after the event. StormReady helps community leaders and emergency managers strengthen local safety programs.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Extreme Heat
Goal(s) Addressed:	Goal 1, Goal 2, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	<$2,000 annually
Potential Funding Sources:	Local funds
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

WILLIAMSBURG MITIGATION ACTION 4	
Continue Colonial Williamsburg Tree Maintenance Program. Expand in-house crew.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Seasonal inspections and trimming reduce storm damage from trees, particularly in the historic area, and increase guest safety.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Tornado, Tropical/Coastal Storm, Wildfire, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5, 1.6
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	<$5,000 annually
Potential Funding Sources:	Private – CWF
Lead Agency/Department Responsible:	CWF Landscape crew with City assistance; College of William & Mary
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
This action will be coordinated with the Fire Department to make sure fire equipment access is maintained, as well. Choice of species and wind resistance is especially important when selecting trees for the colonial area and the College of William & Mary. Goals of this program include guest safety, building preservation, scouting with 24-hour phone line, and overall tree risk assessment. Pre-storm checklists and procedures begin each hurricane season and are increased one week prior to potential storm landfall. The Colonial Williamsburg Arboretum is a Level 2 Certified Arboretum comprised of 18th-century tree and woody shrub varieties. The collection features 25 period species of oak trees and more than 30 historic gardens. The Arboretum is home to 20 Virginia state champion trees and two national champion trees.	

WILLIAMSBURG MITIGATION ACTION 5	
Continue shelter generator maintenance and monitoring program. Assess need for and uses of additional shelter at William & Mary Tennis Center.	
BACKGROUND INFORMATION	
Site and Location:	Shelters citywide
Cost Benefit:	The maintenance and daily monitoring of shelter generators helps ensure that these facilities operate at full capacity when needed.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objective 1.3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$4,000 annually
Potential Funding Sources:	Local funds; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Generator status is continually monitored through a computer system accessed by Fire Department personnel.	

WILLIAMSBURG MITIGATION ACTION 6	
Strengthen GIS digital mapping program. Efforts include, but are not limited to, constant data updates with regard to water/sewer/SWM utilities, improved geodata and cloud use with data migration to a portal for use by public and by practitioners in the field. Additional hazard data to be added may include radon exposure in conjunction with William & Mary researchers.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The City's ongoing efforts to increase databases related to hazards is reflected in this plan. Additional databases help staff and planners recognize and plan for various hazards, persons with disabilities, evacuations and response.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Hazardous Materials Incident, Landslide/Coastal Erosion, Radon Exposure
Goal(s) Addressed:	Goal 1; Goal 2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local funds; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	IT, William & Mary
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
New layers are continually added to the system. Staff training on use of the map data is included in the cost estimate. City maintains handheld GPS unit for data collection. The City's goals with regard to GIS are to leverage hazard data for public safety purposes and to create a data driven, efficient system of City administration.	

WILLIAMSBURG MITIGATION ACTION 7	
Expand capacity/training for CERT groups and neighborhood-serving organizations to include communication about mitigation and response.	
BACKGROUND INFORMATION	
Site and Location:	Citywide, with particular emphasis on vulnerable neighborhoods with less access to social or broadcast media
Cost Benefit:	Local residents are better able to address or communicate the needs of their specific neighborhoods. CERT members can expand capacity of City staff to communicate, mitigate and respond more effectively.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Drought, Extreme Heat, Hazardous Materials Incident, Landslide/Coastal Erosion, Radon Exposure, Pandemic Flu or Communicable Disease
Goal(s) Addressed:	Goal 1; Goal 2, Objective 2.1; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HSGP/CCP grants, local funding; DHS: HMGP 5% Initiative, BRIC
Lead Agency/Department Responsible:	Emergency Management, partnering with James City County Emergency Management and College of William & Mary
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
CERT team is very active in Williamsburg and training is provided to members at least 2 times per year. They participate in 1 exercise per year and refresher training is also provided. During COVID, CERT remained active with monthly radio reports and other training and outreach.	

WILLIAMSBURG MITIGATION ACTION 8	
Expand social media and use of Everbridge mass notification system for pre- and post-disaster information distribution; partner with CERT for assistance.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Getting information to citizens before, during and after disaster events is critical to reducing damage, reducing panic and creating a resilient citizen base that responds positively to government messages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Drought, Extreme Heat, Hazardous Materials Incident, Flooding Due to Impoundment Failure/High Hazard Dam, Pandemic Flu or Communicable Disease
Goal(s) Addressed:	Goal 2; Goal 3, Objectives 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$10,500 annually
Potential Funding Sources:	Locality funding, VDEM Radiological funding DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Communications Specialist, Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
In recent years, the role of the City's Public Information Officer has expanded. The prominence of social media points to a need to refine activity on Twitter, Facebook, Instagram and other programs. Need to be pro-active and targeted in messages. Identify specific messages, links. Identify other information that City can disseminate and the most effective methods, such as short videos, maps, links, photos, and infographics.	

WILLIAMSBURG MITIGATION ACTION 9	
Per the *William & Mary Hazard Mitigation Plan* (2014), implement mitigation projects to protect historical and critical infrastructure at the College of William & Mary: **1) dry or wet floodproof vulnerable basements;** **2) implement corrective actions necessary to ensure compliance of Lake Matoaka Dam with state dam safety regulations;** **3) weatherize buildings to reduce damage associated with water infiltration through roofs and windows;** **4) continue rooftop inspection program, looking for signs of wear or damage;** **5) elevate building mechanical systems above potential areas of flooding and standing water; and,** **6) Identify areas affected by the City's drainage system and collaborate on means of improvement to improve stormwater flow.**	
BACKGROUND INFORMATION	
Site and Location:	Campuswide; the *William & Mary Hazard Mitigation Plan* (2014) identifies priority buildings.
Cost Benefit:	Partnerships with the College benefit citizens, students and staff by reducing need for emergency response and protecting all who live in the City.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake
Goal(s) Addressed:	Goal 1; Goal 3: Objectives 3.1, 3.2, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Costs to be developed as individual projects are developed
Potential Funding Sources:	DHS: BRIC, HMGP
Lead Agency/Department Responsible:	College of William & Mary
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
The Lake Matoaka Dam project significantly reduces the potential for dam failure. Components include: installing articulated block armor along the backside of the dam to protect the earthen structure from failure during a storm where the roadway is overtopped. Brick-faced training walls on both sides will channel the water from the overtopping flood to the armored section where it then flows across the downstream face to the discharge channel of College Creek. The block will be covered with topsoil and grass so will not be visible. Currently, in the event of a storm event that results in flow overtopping the dam, the dam will likely fail resulting in the loss of Jamestown Road which will adversely impacts the ability of emergency responders to reach citizens of Williamsburg and William and Mary students. Also, dam failure will sever the utilities under the road (electric power, communications, water and sewer) which will result in loss of service. Dating back several years the grounds department has been doing 2 to 3 stormwater mitigation projects per year. Furthermore, many of the newly installed planting beds are infiltration beds. Examples include the ADA ramp planting beds at T-Hall and the planting bed behind Blow Hall. These are above and beyond the requirements of the MS4 plan. The outfall and BMP facility renovations each year are done to either upgrade or correct the deficiencies with these structures. We also regrade gravel roads to mitigate storm water erosion in these areas. This past summer (2021) the road/path off Compton road was regraded due to severe erosion and the tripping hazard it posed to the students and staff using the path. Project is in the planning stage to raise the stormwater pipe under Yates Drive to correct a blockage on the north side of Yates Hall.

WILLIAMSBURG MITIGATION ACTION 10	
Prepare elements of Continuity of Operations Plan (COOP) to address cyber security, utility continuity and redundancies, and communications.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Plans that reduce the impacts of ongoing disasters save taxpayer dollars by bringing businesses back online sooner and providing normal services to citizens in need.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	CIP, DHS/VDEM
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	

WILLIAMSBURG MITIGATION ACTION 11	
Address command and control coordination for large assembly hazard events.	
BACKGROUND INFORMATION	
Site and Location:	Areas where large assemblies are permitted, such as the Grand Illumination each December, especially those near the railroad tracks.
Cost Benefit:	Organized command and control reduces loss of life and property associated with large gatherings.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Earthquake, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1: Objective 1.5; Goal 3: Objectives 3.1, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	DHS/VDEM
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	

JAMES CITY COUNTY

JAMES CITY COUNTY MITIGATION ACTION 1	
Protect critical facilities, including refuges, while increasing potential refuge capacity and/or protected areas. Protection measures may include emergency generators or other power sources, wind or flood retrofits, elevation, relocation, or reconstruction.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	The purpose of this action is to maintain citizen safety, and continuity of county operations during a disaster event. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objective 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	To be determined based on corrective actions selected
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, EMPG
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Continuing
ADDITIONAL COMMENTS	

JAMES CITY COUNTY MITIGATION ACTION 2	
Mitigate flooding problems identified in the flood studies performed for Powhatan Creek watershed. Measures may include, but are not limited to improvements to road crossings by increasing flow capacity, or installing over-topping protection, and stream restoration.	
BACKGROUND INFORMATION	
Site and Location:	Powhatan Creek watershed
Cost Benefit:	Lower cost improvements to roadways are expected to provide significant benefits in this area.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate - NRI Coastal Flood Risk
Estimated Cost:	$6,000,000
Potential Funding Sources:	VDOT, Federal Transportation Administration, DHS
Lead Agency/Department Responsible:	General Services Stormwater
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

JAMES CITY COUNTY MITIGATION ACTION 3	
Conduct annual meeting with VDOT and utilities to identify hazard areas and potential projects to mitigate those areas.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Keeping roads and utilities operational during high frequency events and maximizing their operability during disasters is a countywide priority.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Winter Storm, Tropical/Coastal Storm, Tornado, Earthquake, Hazardous Materials Incident, Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.3, 1.4, 1.5; Goal 3, Objective 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	

JAMES CITY COUNTY MITIGATION ACTION 4	
Elevate, acquire, relocate, retrofit or floodproof structures in flood-prone areas. Flood protection may include minor localized flood reduction projects, as well. Wind retrofit measures are also included and may be appropriate for some structures, especially publicly-owned structures. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Countywide, and Countywide for wind retrofits. Particular focus on Chickahominy Haven and Powhatan Shores, as well as repetitive flood loss areas throughout the County.
Cost Benefit:	Retrofit measures that address flood- and wind-prone structures, particularly those designated as repetitive loss or severe repetitive loss by the NFIP, have quantifiable benefits by reducing future damages to the structures. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/Low – three repetitive flood loss areas on Chickahominy River have relatively moderate NRI flood risk as do the 5 along Powhatan Creek. The areas near Lake Powell and James Terrace have low NRI flood risk.
Estimated Cost:	Historically, approximately $90,000 per structure. However, this may change based on funding availability.
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; USDA and 5% initiative funds; Virginia CFPF
Lead Agency/Department Responsible:	Community Housing
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

JAMES CITY COUNTY MITIGATION ACTION 5	
Continue strengthening the County's Floodplain Management Program with the following actions: **1) Review floodplain ordinance regularly for appropriateness of higher standards and necessary updates;** **2) Provide specialized training and support for Certified Floodplain Manager (CFM) certification for floodplain plan reviewers, inspectors and permit processors;** **3) Continue to assess repetitive loss data annually for loss accuracy, geographic accuracy, and determination whether structure(s) on property have been mitigated and if so, by what means. Provide corrections as necessary using FEMA AW-501;** **4) Maintain current CRS Class 5 rating or better; and,** **5) Building Safety and Permits plans examiners to provide information and resources to help builders and owners evaluate hydrostatic (flood) vent options. Materials to be available on department's website. Request FEMA QuickGuide for Virginia from DCR.**	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Countywide
Cost Benefit:	The NFIP has a proven record of reducing annual flood damages through floodplain regulations that guide design of flood-prone properties.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Winter Storm, Tropical/Coastal Storm; Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/Low – three repetitive flood loss areas on Chickahominy River have relatively moderate NRI flood risk as do the 5 along Powhatan Creek. The areas near Lake Powell and James Terrace have low NRI flood risk.
Estimated Cost:	Staff time
Potential Funding Sources:	Virginia CFPF; Virginia NFIP Community Assistance Program State Support Services Element
Lead Agency/Department Responsible:	Community Development/General Services , Emergency Management, Virginia DCR
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

JAMES CITY COUNTY MITIGATION ACTION 6	
Continue outreach efforts through "Flood Fluent" web site, hurricane and winter weather preparedness activities through FEMA and NOAA, and the social media outreach activities of Emergency Management.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Benefits derive from reduced flood insurance premiums and increased public knowledge as a result of this initiative. The approach reduces long-term costs by: 1) minimizing need to repeat messages; 2) involving outreach/marketing professionals from within County government; 3) investigating regional partnerships that could result in additional cost savings through cost sharing; 4) using existing programs and resources to maximum advantage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise, Tropical/Coastal Storm, Winter Storm, Landslide/Coastal Erosion, Tornado, Earthquake, Wildfire, Drought, Extreme Heat and Hazardous Materials Incident, Flooding Due to Impoundment Failure/High Hazard Dam
Goal(s) Addressed:	Goal 2,; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Less than $7,500 annually
Potential Funding Sources:	Existing budgets and staff time; DHS: PDM, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management (lead)
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
Audiences include, but are not limited to: property owners, new residents, tourists, businesses, County officials, pet owners, and schoolchildren. Stakeholders may include: various County departments, HRPDC, Peninsula Housing and Builders Association, Parent Teacher Associations, VDEM, DEQ, and DCR. Potential outreach needs include: flood risk awareness, focus on repetitive loss property owners in outreach efforts, contingency planning for businesses, response guidance with emphasis on community resiliency, publicizing the County's mitigation efforts, informing property owners of long-term and short-term property protection measures (*e.g.,* protecting vinyl siding windows from wind damage, flood vent demos and displays), creating a dedicated web site/social media sites for floodplain management permitting process, early preparation of post-disaster permitting and redevelopment materials such as press releases, videos, brochures, forms, and fees. Use questionnaires on social media to garner feedback.

JAMES CITY COUNTY MITIGATION ACTION 7	
Conduct annual Hazard Mitigation Workshop to update and share hazard mitigation information, discuss potential projects. Invite relevant County departments, non-profit agencies and other stakeholders. Develop annual Hazard Mitigation Potential Project List with ready packages for submittal as funding becomes available.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Ready packages for submittal will: • allow the County to increase focus on hazard mitigation opportunities; • closely track hazard mitigation efforts, implementation, and successes; and, • maximize opportunities to move forward with specific mitigation actions identified over time.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 3, Objectives 3.1., 3.3; Goal 4, Objectives 4.1, 4.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Emergency Management, Finance, Community Development/General Services , VDEM, Silver Jackets, VFMA
Implementation Schedule:	Immediately
ADDITIONAL COMMENTS	

JAMES CITY COUNTY MITIGATION ACTION 8	
Implement regulations and procedures to ensure that site development projects, including those initiated by the County, are consistent with the protection of environmentally sensitive areas and the maintenance of the County's overall environmental quality so that development projects do not exacerbate current or future flooding in flood prone areas.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Protecting new development from increasing current or future flooding may increase development costs in the near-term but reduces response and repair costs in the future.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.3, 1.6
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	TBD on project-specific basis
Potential Funding Sources:	DHS: BRIC; Virginia CFPF
Lead Agency/Department Responsible:	All
Implementation Schedule:	Within 3 years of plan adoption
ADDITIONAL COMMENTS	
This action is also included in the County's Comprehensive Plan, *2045: Our County, Our Shared Future.*	

JAMES CITY COUNTY MITIGATION ACTION 9	
Finalize, fund and implement the County's Flood Resiliency Plan and associated projects, which are adopted herein by reference. Projects are expected to include shoreline erosion and stream restoration projects among others. Three watershed management plans are also expected to begin in the near future (2 are updates and 1 is new), which will prioritize stream restoration needs and outline priorities for CIP funding.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Flood resiliency planning will take into account future conditions for precipitation and flooding in an effort to reduce not just short term average annual flood damages, but also long-term damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/Low – three repetitive flood loss areas on Chickahominy River have relatively moderate NRI flood risk as do the 5 along Powhatan Creek. The areas near Lake Powell and James Terrace have low NRI flood risk.
Estimated Cost:	Staff time for Resiliency Plan; detailed project costs to be determined in planning process
Potential Funding Sources:	CIP; Virginia CFPF; DHS: BRIC, FMA, HMGP; USACE: SFCP, FPMS
Lead Agency/Department Responsible:	Community Development/General Services
Implementation Schedule:	Within 1 year of plan adoption
ADDITIONAL COMMENTS	

YORK COUNTY

YORK COUNTY MITIGATION ACTION 1	
Continue outreach efforts using the following steps: **1. Assess County's public information needs** **2. Formulate multi-hazard messages** **3. Identify outreach projects to convey the messages** **4. Examine other public information initiatives** **5. Implement**	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	The organized nature of the approach reduces long-term costs by: 1) minimizing need to repeat messages; 2) investigating regional partnerships that could result in additional cost savings through cost sharing; 3) using existing programs and resources to maximum advantage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm, Landslide/Coastal Erosion, Tornado, Earthquake, Wildfire, Drought, Extreme Heat and Hazardous Materials Incident, Flooding Due to Impoundment Failure/High Hazard Dam, Radon Exposure, Pandemic Flu or Communicable Disease
Goal(s) Addressed:	Goal 2, Objective 2.1; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Less than $7,500
Potential Funding Sources:	Existing budgets and staff time
Lead Agency/Department Responsible:	Emergency Management, Development Services
Implementation Schedule:	Within 2 years of plan adoption

ADDITIONAL COMMENTS
Audiences include: property owners, elected officials, businesses, County officials, pet owners, and schoolchildren. Stakeholders may include: various County departments, HRPDC, Peninsula Housing and Builders Association, Parent Teacher Associations, VDEM, DEQ, DCR, and American Red Cross. Potential outreach needs include: content and method of public service announcements, flood risk awareness, focus on repetitive loss property owners in outreach efforts, contingency planning for businesses, publicizing the County's mitigation efforts, informing property owners of long-term and short-term property protection measures (*e.g.,* protecting vinyl siding windows from wind damage), creating a dedicated web site/social media sites for floodplain management permitting process, increasing property owner awareness of flood zone location and flood insurance availability, awareness of the flood hazard in general, and information about the Letter of Map Amendment process regarding the FEMA FIRM, early preparation of post-disaster permitting and redevelopment materials such as press releases, videos, brochures, forms, and fees. Use questionnaires on social media to garner feedback.

YORK COUNTY MITIGATION ACTION 2	
Continue strengthening the County's Floodplain Management Program with the following actions: **1) Review and update floodplain ordinance regularly and continue to provide annual Floodplain Management Report;** **2) Consider regulating land outside 100-year floodplain but subject to future flooding as a result of sea level rise;** **3) Continue participating in the Community Rating System;** **4) Collect lowest floor elevation data for flood-prone structures;** **5) Continue specialized training and support for Certified Floodplain Manager (CFM) certification for floodplain plan reviewers, inspectors and permit processors; and,** **6) Continue to assess repetitive flood loss data annually for loss accuracy, geographic accuracy, and determination whether structure(s) on property have been mitigated and if so, by what means. Provide corrections as necessary using FEMA AW-501.**	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Countywide
Cost Benefit:	The NFIP has a proven record of reducing annual flood damages through floodplain regulations that guide design of flood-prone properties.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Winter Storm, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.4; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – The majority of the county's repetitive loss areas have relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Public Works and Development Services
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 3	
Retrofit or floodproof structures in flood-prone areas; projects may include elevation, acquisition, relocation and minor localized flood reduction projects. Wind retrofit measures are also included and may be appropriate for some structures, especially publicly-owned structures. This action includes Mitigation Reconstruction projects. Tie mitigation efforts to outreach efforts listed in action #1 and encourage property owners to perform minor retrofits on their own.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Countywide, and Countywide for wind retrofits.
Cost Benefit:	Retrofit measures that address flood- and wind-prone structures, particularly those designated as repetitive loss or severe repetitive loss by the NFIP, have quantifiable benefits by reducing future damages to the structures. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the county's repetitive loss areas have relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	In multiple phases as grant money becomes available. Individual structure costs vary.
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; USDA; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management, Public Works, Planning
Implementation Schedule:	Ongoing as opportunities are identified
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 4	
Develop public outreach materials to educate citizens about the wildland fire hazard and the wildland/urban interface.	
BACKGROUND INFORMATION	
Site and Location:	Wildfire urban interface zones countywide
Cost Benefit:	Knowledge of wildfire hazards can be helpful in encouraging homeowners to mitigate the hazard themselves. Low-cost measures are available to responsibly mitigate the wildfire hazard, especially during high risk times.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Goal(s) Addressed:	Goal 2, Objective 2.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Department of Fire and Life Safety
Implementation Schedule:	Within 5 years of plan adoption
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 5	
Maintain program for continued assessment and mitigation of identified stormwater "choke points"; ensure roads remain flood free for evacuation of low-lying areas.	
BACKGROUND INFORMATION	
Site and Location:	Countywide; especially ensuring access/egress to the Seaford and Back Creek Road areas.
Cost Benefit:	Pre-disaster assessment and action to alleviate choke points can reduce flooding damage and improve the stormwater system's ability to perform as designed.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	This program is absorbed into staff time spent on stormwater program and thus is not budgeted separately.
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 6	
Evaluate critical facilities for safety and sustainability during emergencies. Take appropriate corrective actions, which may include but are not limited to: providing backup power sources, wind retrofits and flood retrofits.	
BACKGROUND INFORMATION	
Site and Location:	Countywide to include generators to boost effectiveness of York High School and construction of a new Sheriff's Office with generator power
Cost Benefit:	Critical facility operation protects the public, maintains governmental operations and furthers community sustainability.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Department of Fire and Life Safety
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 7	
Continue support of the Newport News Department of Public Utilities (Waterworks) forest management program to mitigate wildfire hazards and promote the health of forests within the reservoir watersheds.	
BACKGROUND INFORMATION	
Site and Location:	Waterworks reservoir watersheds in the County
Cost Benefit:	This ongoing program reduces the number of fires, and works to control pine beetle infestations. Forest thinning is a primary control mechanism. This is one of many programs the utility implements related to hazard mitigation. Additional benefits from environmental or ecosystem benefits may be included in the benefits cost analysis.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Winter Storm
Goal(s) Addressed:	Goal 1, Objective 1.3; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Waterworks Enterprise Fund, existing budgets; DHS: HMGP
Lead Agency/Department Responsible:	Department of Fire and Life Safety
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 8	
Manage shoreline erosion through the following actions: **1. Request and share VIMS staff recommendations for shoreline erosion control permit applications with Wetlands Board citizen members; and,** **2. Continue to include shoreline erosion control element in the Comprehensive Plan.**	
BACKGROUND INFORMATION	
Site and Location:	Shorelines countywide
Cost Benefit:	
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.6; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Moderate – NRI Hurricane Risk
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Development Services Department, Planning Division, Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 9	
Increase knowledge of hazardous materials storage areas to reduce impacts from overlapping hazard events through the following: **1) Create and maintain geodatabase of known storage locations of hazardous materials;** **2) Add hazmat data to dispatch system so that first responders can better visualize sites during response;** **3) Use data layer to build better response capabilities; and** **4) Analyze data in conjunction with other hazard layers (flood, sea level rise, wildfire, etc.) to identify problem areas and possible retrofits to reduce risk.**	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Database provides critical information for hazard planning, especially when hazards overlap. For example, knowing the location of hazardous materials in the floodplain can be a critical element in floodplain management planning.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials Incident, Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm, Earthquake, Wildfire
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$5,000 to $10,000
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Fire and Life Safety, Information Technology (GIS), PLEPC
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
County has hazard point layers that requires continual update and maintenance. Peninsula LEPC is working to establish this capability throughout the Peninsula region.	

YORK COUNTY MITIGATION ACTION 10	
Install and maintain high water marks signs and gauges in flood-prone areas.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas countywide
Cost Benefit:	Drivers who are aware of the extent of high water on roads can avoid unsafe travel, avoiding damage to humans, rescue personnel, and vehicles.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 2; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – The majority of the county's repetitive loss areas have relatively high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	Estimated $200 per sign post, installed
Potential Funding Sources:	HRPDC; VDOT; DHS: BRIC, HMGP, HMGP 5% Initiative; Virginia CFPF; USACE: FPMS
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 5 years of plan adoption
ADDITIONAL COMMENTS	
High water signs and markers have been strategically placed in low-lying areas of York County. They are regularly inspected and maintained - especially during the approach of significant storms. York County has investigated tidal gauges/sensors through VIMS and the City of Newport News. County is currently relying on the gauge near the USCG Base (Yorktown).	

YORK COUNTY MITIGATION ACTION 11	
Consider expanding existing Pre-Disaster Debris Management Plan to refocus beyond stormwater management on public property and to include public outreach and hazardous materials facilities. Remove existing trees and debris that pose hazard during natural disaster.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Pre-disaster debris management reduces damage to structures and infrastructure from flood, wind and possibly snow. Also, regular clean-up requirements can reduce the costs of post-disaster debris clean-up. County could also have access to the additional 5-percent cost incentive from FEMA's Public Assistance money.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 2; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing capital budgets; HMGP, HMGP 5% Initiative, BRIC or FMA (with very clearly articulated benefits for flood damage reduction); Virginia CFPF
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 3 years of plan adoption
ADDITIONAL COMMENTS	
Prior to any significant storm, Public Works inspects and cleans every ditch within the County. Any hazards or debris found in the ROW are removed. The County does not enter private property to remove existing hazards without a Right of Entry Permit. This action is only done on an as needed basis (for example, it was done following Hurricane Isabel in 2003). Consider adding language that encourages citizens to perform pre-storm inspections and take action on their own to reduce risk.	

YORK COUNTY MITIGATION ACTION 12	
Align existing Disaster Recovery Plan with regional expectations. As Hampton Roads region develops a regional plan, continually monitor progress to ensure York County has all necessary components up to date.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Recovery plans reduce vulnerability after an event by helping to ensure that "return to normalcy" is coupled with mitigation strategies to address long-term vulnerability.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1; Goal 2: Objective 2.3; Goal 3: Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	Low/Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	DHS: BRIC, HMGP; Virginia CFPF
Lead Agency/Department Responsible:	Planning Division, Emergency Management
Implementation Schedule:	Within 5 years of plan adoption and in accordance with regional plan schedule
ADDITIONAL COMMENTS	

YORK COUNTY MITIGATION ACTION 13	
Review and consider adoption of International Residential Code Appendix F, Radon Control Methods. This appendix to the Virginia USBC contains provisions intended to mitigate the transfer of radon gases from the soil into dwelling units.	
BACKGROUND INFORMATION	
Site and Location:	Countywide, although measures could be targeted to high radon concentrations areas of the County if future data collection and mapping provides improved data
Cost Benefit:	Mitigation measures to resist radon entry into new construction and prepare the building for post-construction radon mitigation (if necessary) require minimum cost at the time of construction.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Radon Exposure
Goal(s) Addressed:	Goal 1: Objectives 1.2, 1.5; Goal 3: Objective 3.1
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Building Regulation
Implementation Schedule:	Within 5 to 7 years after plan adoption
ADDITIONAL COMMENTS	
See requirements at: https://codes.iccsafe.org/content/IRC2018/appendix-f-radon-control-methods	

YORK COUNTY MITIGATION ACTION 14	
Modify County Comprehensive Plan (Charting the Course to 2035) to account for hazard mitigation and flood resiliency.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Cost is minimal to incorporate hazard mitigation plan elements, such as actions, goals and objectives, into an accompanying plan for the county's future. Plan integration helps reduce conflict and re-emphasize important concepts in the mitigation planning arena.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	All
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Minimal
Potential Funding Sources:	CIP, Virginia CFPF
Lead Agency/Department Responsible:	Planning Division
Implementation Schedule:	In conjunction with next scheduled Comp Plan update
ADDITIONAL COMMENTS	

NORFOLK

NORFOLK MITIGATION ACTION 1	
Maintain and protect the City's beaches and shorelines using structural means.	
BACKGROUND INFORMATION	
Site and Location:	Chesapeake Bay, Willoughby Bay, Elizabeth River, Lafayette River, Pretty Lake shorelines
Cost Benefit:	Increased frequency and severity of flooding in Norfolk is expected to dramatically increase flood damages in coming years. Without well-planned protection measures, Norfolk's shoreline is particularly vulnerable to erosion resulting from floods and sea level rise. FEMA will now fund hazard mitigation projects that include sea level rise estimates for calculating benefits.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Landslide/Coastal Erosion, Tropical/Coastal Storm Surge
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3; Goal 3, Objectives 3.1, 3.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High –The majority of the census tracts along the shoreline have relatively high or very high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	$300,000,000 (5-year expenditure)
Potential Funding Sources:	USACE, General funds, CIP, CFPF, Municipal Bonds, Special Service District Assessments, DHS: HMGP, BRIC
Lead Agency/Department Responsible:	Office of Resilience, Public Works
Implementation Schedule:	Ongoing
COMMENTS	
Multiple activities are covered under this effort, including breakwater and other structural features, beach surveys and source identification, and environmental permitting. Following completion of the recent USACE beach nourishment project, periodic renourishment is required on the average of once every nine years in order to maintain the integrity of the flood and storm protection. Norfolk completes biennial dune surveys and wave gauge monitoring as part of its maintenance commitment to the USACE. In January 2022, Norfolk was awarded up to $249.3M for Coastal Storm Risk Management; $134M needed from nonfederal sponsor. See Norfolk Action 2 for related nonstructural CSRM projection measures.	

NORFOLK MITIGATION ACTION 2	
Maintain and protect the City's beaches and shorelines using natural shoreline protection measures.	
BACKGROUND INFORMATION	
Site and Location:	Chesapeake Bay, Willoughby Bay, Elizabeth River, Lafayette River, Pretty Lake shorelines
Cost Benefit:	Increased frequency and severity of flooding in Norfolk is expected to dramatically increase flood damages in coming years. Natural protection measures help the shoreline adjust to sea level rise with less intervention. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Landslide/Coastal Erosion, Tropical/Coastal Storm Surge
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.6; Goal 3, Objectives 3.1, 3.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High –The majority of the census tracts along the shoreline have relatively high or very high NRI flood risk, which includes analysis of social vulnerability.
Estimated Cost:	$50,000,000
Potential Funding Sources:	USACE, General funds, CIP, CFPF, Municipal Bonds, Special Service District Assessments, DHS: HMGP, BRIC
Lead Agency/Department Responsible:	Office of Resilience, Public Works
Implementation Schedule:	Ongoing
COMMENTS	
Multiple activities are covered under this effort, including shoreline restoration, and dune planting and stabilization and environmental permitting. Features include Natural and Nature Based Features (NNBFs). The first segment of the Coastal Storm Risk Management project with the USACE calls for 7,200 lf new living shorelines (+3,800 lf mitigated), and 5,250 lf of oyster reefs.	

NORFOLK MITIGATION ACTION 3
Provide educational engagement and improve communications to residents to increase awareness of vulnerability to multiple hazards. Focus on hurricanes, sea level rise, flooding, nuisance flooding and severe repetitive flood losses. **Provide engagement that increases citizens' ability to take mitigative actions prior to disaster event. Focus on hurricane preparedness and flood mitigation.**

BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Public education can have numerous intangible benefits from the public safety peace of mind. It can result in preventing or lessening damage caused by disasters and can save lives. Teaching citizens how to protect their lives and property themselves has tangible benefits to property owners and the City by reducing the need to for disaster response and increasing community resiliency.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All Hazards
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.4, 1.5: Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Operating Budget, DHS: HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Preparedness & Response, Chief Resilience Officer, Planning, Public Works, Chief Marketing Officer
Implementation Schedule:	Ongoing

COMMENTS
Outreach to floodplain residents and repetitively flooded areas is a part of the community's CRS program and will continue. This action is also part of the City's Strategy for Continued Compliance with the NFIP.

NORFOLK MITIGATION ACTION 4
Continue to implement capital improvements that improve stormwater management and control flooding, especially for undersized and out-of-date drainage systems and patterns.

BACKGROUND INFORMATION	
Site and Location:	Citywide. Projects mitigate flooding and run-off problems throughout the City. New projects will be chosen as opportunities to improve city TMDL requirements and stormwater capacity are identified.
Cost Benefit:	Annual damage occurs to homes and businesses in vulnerable areas due to poor drainage. FEMA will now fund hazard mitigation projects that include sea level rise estimates.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Approx. $19,000,000 per year
Potential Funding Sources:	General funds, CIP, DHS: HMGP & BRIC, Private funds; Virginia CFPF
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing

COMMENTS
Hazard Mitigation Grants should be considered as a potential funding source and used as a basis for property protection. Existing consultant's study has identified multiple flood mitigation measures. Additional projects will be identified throughout city that will improve drainage capacity as well as improve water quality. The new Watershed Master Plan recently awarded by the Virginia CFPF will update the 2012 Citywide Drainage Master Plan with additional criteria within the prioritization formula to include Social Vulnerability Index as a priority input. Projects and designs should be prepared for future applications of funds when they become available.

NORFOLK MITIGATION ACTION 5	
Identify and improve critical facilities and infrastructure to minimize flood and wind damage, specifically targeting schools, EOC and emergency shelters. Action may also include placing utility lines underground or preemptive traffic systems for emergency vehicles. **Purchase and install generators or other continuous power sources for critical facilities and infrastructure. This action may include, but is not limited to pump stations, EOC, shelters, underpasses and important traffic signals.** **Include critical public facility generator requirements and required connection materials in the USACE Emergency Power Facility Assessment Tool (EPFAT).**	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Critical facilities are located within the floodplain due to built environment of the City. Providing protected utilities and backups are necessary to properly aid in protecting and serving citizens. Maintaining a functioning EOC is vital to response and recovery efforts Citywide from a large variety of possible hazards. Damage occurs yearly with damaged equipment and vehicles stuck in underpasses. During Hurricane Isabel, City lost +90 percent of traffic signal operations for various time periods. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	DHS: HMGP, BRIC, Virginia CFPF; ARPA
Lead Agency/Department Responsible:	Public Works, Emergency Preparedness & Response, Public Utilities
Implementation Schedule:	Ongoing

COMMENTS
This action may include multiple projects including, upgrading of utilities and emergency connections, as well as improving transportation access to buildings and flood protection of facilities.

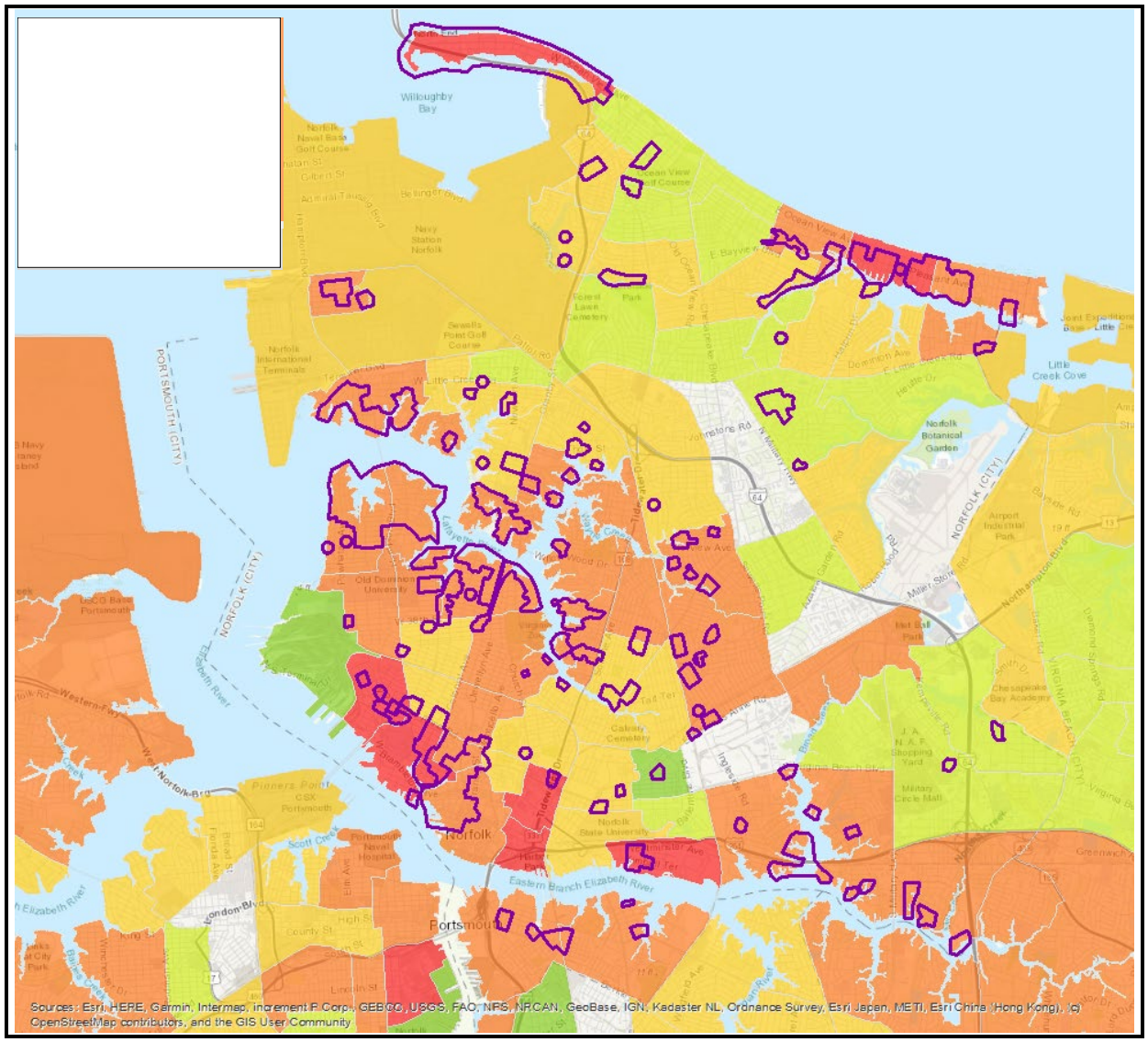
NORFOLK MITIGATION ACTION 6
Protect flood-prone structures through the following ongoing actions: **1) Incorporate CDC's Social Vulnerability Index tools to align actions with the City's commitment to being a diverse, equitable and inclusive city;** **2) Give highest priority to protection of "severe repetitive losses" as defined by the National Flood Insurance Program (NFIP), including verifying the location of all repetitive losses, verifying location and need for mitigation;** **3) Second highest priority to mitigation of historic resources, or meeting the Secretary of the Interior's standards for eligibility as a historic resource. Historic resources should be protected in place, or relocated; raised not razed;** **4) Prepare Repetitive Loss Area Analyses for CRS credit under CRS Activity 512(b);** **5) Elevate, acquire, relocate or otherwise retrofit structures. This action includes Mitigation Reconstruction projects for non-historic resources, ground floor conversion projects and basement fill projects.** **6) Target potential properties or clusters of properties on low elevations near wetlands for purchase and conversion to public open space;**

BACKGROUND INFORMATION	
Site and Location:	Floodplains throughout the City, particularly those with high social vulnerability
Cost Benefit:	Repetitive losses and severe repetitive losses drain public funds for disaster response and require repeated expenditures on the part of property owners. Mitigation actions that fix the problems long-term are cost effective when average annual damages exceed average annual costs of retrofitting, elevating or acquiring the structure. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Very High – Norfolk has 114 repetitive flood loss areas; 87 of them (or 76%) are located

	in areas designated as having Relatively High or Very High NRI flood risk. See map excerpt below for additional detail.
Estimated Cost:	$5,000 to $300,000 per structure.
Potential Funding Sources:	DHS: HMGP, FMA, BRIC, FMA; USACE: FPMS; Virginia CFPF
Lead Agency/Department Responsible:	City Planning
Implementation Schedule:	Ongoing

COMMENTS
Structures insured through the NFIP are often eligible for more grant funds than uninsured structures. The repetitive flood loss areas provided in Section 5 of this plan will help identify areas of the City to be addressed through this action. Measures should include parcel scale, neighborhood scale, and watershed scale protection measures. Parcel scale measures include rain barrels, pervious pavers, and rain gardens amongst other best practices.


Willoughby Bay
Norfolk Naval Base Golf Course
Navy Station Norfolk
Sewells Point Golf Course
Forest Lawn Cemetery
Norfolk International Terminals
PORTSMOUTH (CITY)
NORFOLK (CITY)
Little Creek Cove
Norfolk Botanical Garden
Airport Industrial Park
Old Dominion University
Elizabeth River
Western Fwy
West Norfolk Brg
Pinners Point
CSX Portsmouth
Portsmouth Naval Hospital
Scott Creek
London Blvd
Norfolk
Portsmouth
Eastern Branch Elizabeth River
Norfolk State University
Calvary Cemetery
Military Circle Mall
Chesapeake Bay Academy
VIRGINIA BEACH (CITY)
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

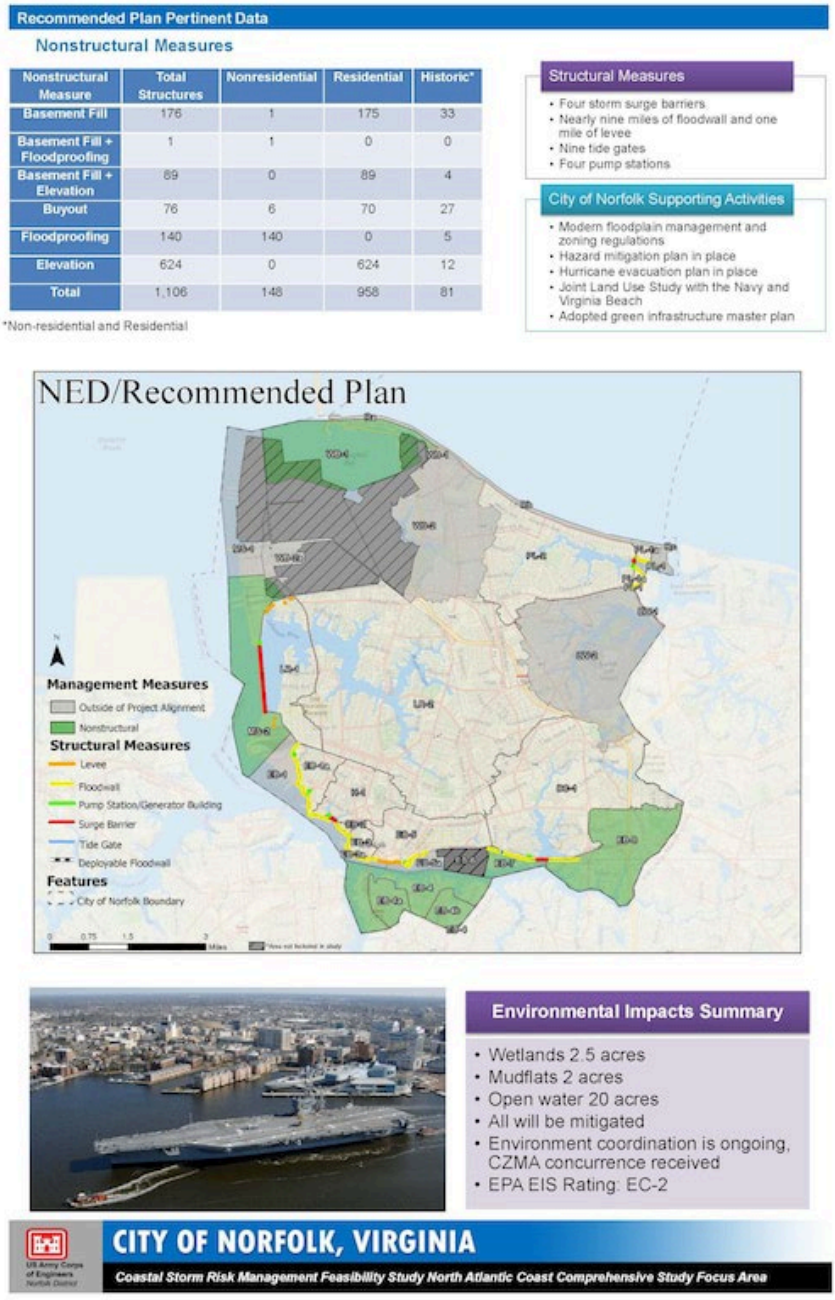
NORFOLK MITIGATION ACTION 7	
Implement a full rollout of Crisis Track to improve post-event damage assessment procedures so that damages, event frequencies, and other data are more readily available for mitigation planning and fully integrated into VDEM and FEMA's SDE Tool.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Crisis Track will allow easier processing of post-disaster permits and assessments, increasing reliance on the system and integration with VDEM systems for assessing damage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquakes, Flooding Due to Impoundment Failure/High Hazard Dam
Goal(s) Addressed:	Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	HMGP, HMGP 5% Initiative, City funds, VDEM
Lead Agency/Department Responsible:	Information Technology, Emergency Preparedness & Response, Finance, City Planning, Neighborhood Services
Implementation Schedule:	Ongoing
COMMENTS	
Create and implement a post-incident data collection plan which would organize city staff, volunteers and damage assessment teams. Include pre-approved documents and procedures with regard to substantial damage/improvement and personnel to conduct inspections/determinations.	

NORFOLK MITIGATION ACTION 8	
Implement actions to improve Community Rating System (CRS) classification to at least a Class 4 with a 30 percent discount on most flood insurance policies.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The City's Class 5 rating currently results in flood insurance premium savings of 25%. The dollars saved go back into property owners' pockets to spend in the local economy. Implementing additional activities creditable under CRS is expected to increase the number of policies Citywide, thus decreasing reliance on City and federal resources after a flood. Many of the measures suggested by CRS activities are non-structural in nature and help reduce the flood vulnerability of new and substantially improved construction.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objective 1.2; Goal 2, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Staff time; Virginia CFPF
Lead Agency/Department Responsible:	Planning & Community Dev.; Public Works
Implementation Schedule:	Within 3 years
COMMENTS	
Lobby for changes to State stormwater requirements to obtain CRS Watershed Management Plan credit.	

NORFOLK MITIGATION ACTION 9	
Assess and protect historic resources and structures from flooding and sea level rise. Measures should include short-, medium- and long-term solutions.	
BACKGROUND INFORMATION	
Site and Location:	Historic structures and areas throughout the City
Cost Benefit:	Historic structures throughout the city are located in flood prone areas. Value of historic resources are more than just the value of the structure which adds value to normal mitigation methods.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – All of the City's historic districts with one exception are in areas of Very High or Relatively High NRI Flood Risk. (Ballentine Place is rated Moderate.)
Estimated Cost:	Staff time/consultant fees estimated at $50,000 to resurvey existing historic areas with new surveys estimated at $75,000
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; Virginia CFPF; NPS, VDHR, Preservation Virginia
Lead Agency/Department Responsible:	City Planning, Chief Resilience Officer
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Initial methods should include updating surveys of listed historic areas and structures. Other neighborhoods should be reviewed and determined if the structures and integrity of the neighborhood have been preserved to allow for additional surveys. Different methods should be explored to preserve and protect structures, including generation of FEMA approved guidance for protection of these structures and areas that differ from current allowed practices for residential and non-residential structures.	

NORFOLK MITIGATION ACTION 10	
Identify and implement resilient strategies throughout the city to provide better watershed, neighborhood and parcel specific flood protection and mitigation. Perform feasibility study for coastal storm risk protection for Norfolk southside neighborhoods based on future sea level rise and flood conditions. Other projects include, but are not limited to recommendations of the Joint Land Use Study in conjunction with the City of Virginia Beach and the U.S. Navy, as well as the Norfolk Coastal Storm Risk Management solutions.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Resilient strategies range from small to larger scale projects. Ability to provide protection to properties at risk with innovative measures are necessary to protect entire city.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Variable based on individual projects.
Estimated Cost:	+$60,000,000
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC, ACOE, City CIP, HUD; USACE; Virginia CFPF; OLDCC through DoD MIR Review; ARPA
Lead Agency/Department Responsible:	Chief Resilience Officer, Public Works, City Planning, Emergency Preparedness and Response
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Methods should include hard infrastructure and green infrastructure. Multiple methods can be joined together to provide better protection to the properties and all citizens. JLUS recommendations include: Willoughby Bay Shoreline Floodwall Willoughby Spit Floodplain Management Strategy Pretty Lake Storm Surge Barrier Norview Avenue Drainage Study Resilient Underpass Pump Station Study Lafayette River Annex Vulnerability Study Mason Creek Flood Mitigation Strategy Wastewater Treatment Plant Vulnerability Assessment Terminal Boulevard Rail and Roadway Grade Separation (new rail underpass)	

Norfolk Coastal Storm Risk Management solutions are shown in the diagram below.



NORFOLK MITIGATION ACTION 11	
Explore partnership with NASA to use Interferometric Synthetic Aperture Radar (InSAR) to study changes in the rate of localized subsidence and possible links to relative sea level rise.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	InSAR makes high-density measurements over large areas by using radar signals from Earth-orbiting satellites to measure changes in land-surface altitude at high degrees of measurement resolution and spatial detail. It is often less expensive than obtaining sparse point measurements from labor-intensive spirit-leveling and GPS surveys, and can provide millions of data points in a region about 10,000 square kilometers.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding; Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 3: Objectives 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Virginia CFPF; National Science Foundation; ODU ICAR
Lead Agency/Department Responsible:	Office of Resilience, NASA
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	

NORFOLK MITIGATION ACTION 12	
Update the City's Combined Coastal and Precipitation Flooding Master Plan to meet the minimum CRS requirements for a Watershed Master Plan	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The CRS watershed master will provide Norfolk with a tool it can use to make decisions that will reduce the increased flooding from development on a watershed-wide basis and incorporate future conditions to inform CIP investment decisions and land development policy that addresses existing flood problems.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Tropical/Coastal Storm Surge
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.6; Goal 2, Objective 2.1; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$350,000
Potential Funding Sources:	General funds, CIP, Virginia CFPF
Lead Agency/Department Responsible:	Office of Resilience, Public Works, Planning
Implementation Schedule:	Ongoing
COMMENTS	
The City of Norfolk was awarded a $315,000 grant from the Virginia CFPF for this effort. Norfolk will provide $35,000 and solicit a consultant to facilitate development of the watershed master plan, incorporating future conditions and including social vulnerability as a factor within the prioritization formulae.	

NORFOLK MITIGATION ACTION 13	
Obtain direct technical assistance to incorporate green infrastructure, social vulnerability, and environmental justice into Benefit-Cost Analysis/Ratio (BCA/R) calculations for structural/hybrid flood protection measures for the Southside communities of Berkley and Campostella.	
BACKGROUND INFORMATION	
Site and Location:	Southside communities of Berkley and Campostella
Cost Benefit:	The BCR methodology used for the CSRM feasibility study does not account for the decades of redlining and disinvestment that has plagued the Southside and depressed BCR inputs such as property assessments. The Southside has "Very High Social Vulnerability," with low access to transportation, making the population difficult to evacuate. Southside is a "disadvantaged community" (EO 14008) and is surrounding by heavy industry which will bring environmental toxins and life-threatening debris into the community in the event that only nonstructural flood protection measures are provided.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Tropical/Coastal Storm Surge, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5, 1.6; Goal 3, Objectives 3.2, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$100,000 - $250,000
Potential Funding Sources:	BRIC, General funds, CIP, Virginia CFPF
Lead Agency/Department Responsible:	Office of Resilience
Implementation Schedule:	Ongoing
COMMENTS	
The Southside community is historic, with large portions listed on the National Register of Historic Places.	

NORFOLK MITIGATION ACTION 14	
Increase number of real-time flood inundation storm sensors installed throughout the City and made available for public API integration within Norfolk Open GIS Data portal.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Storm sensors optimization within a real-time continuous-simulation model will allow City staff and the public to refine the inputs necessary to inform high-tech outputs such as a refined Digital Elevation Model for Norfolk, real-time STORM Dashboard map, flooded street re-router for Waze GPS app, tailwater conditions for urban coastally-influenced stormwater systems.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Sea Level Rise and Land Subsidence, Flooding, Tropical/Coastal Storm Surge
Goal(s) Addressed:	Goal 1, Objectives 1.5; Goal 3, Objectives 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$250,000 - $750,000
Potential Funding Sources:	General funds, CIP, Virginia CFPF, HRPDC
Lead Agency/Department Responsible:	Office of Resilience, Public Works, EOC
Implementation Schedule:	Ongoing
COMMENTS	
The City of Norfolk was awarded a $315,000 grant from the Virginia CFPF for this and related efforts. The HRPDC was the recipient of a grant to install multiple storm sensors throughout Hampton Roads, including five in Norfolk.	

PORTSMOUTH

PORTSMOUTH MITIGATION ACTION 1	
Develop a post-disaster continuity of operations plan to assist in more rapid recovery after a disaster.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	By identifying post-disaster processes for almost all City department functions across an array of hazard events, and putting these processes on paper, the plan would aid staff and temporary staff in keeping processes running smoothly and not contributing to additional conflicts.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.4, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Staff time, DHS planning grants, HMGP 5% Initiative; ARPA
Lead Agency/Department Responsible:	Emergency Management, Planning, Permits & Inspections, Engineering, Public Works
Implementation Schedule:	Phase II is being planned and awaiting funding
ADDITIONAL COMMENTS	
Identifying post-disaster processes/functions for all departments could feed into a recovery plan for future disasters.	

PORTSMOUTH MITIGATION ACTION 2	
Designate non-flood-prone pickup points within the city evacuation zones to assist citizens who must rely on alternative or public transportation to evacuate.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	As seen with Hurricane Katrina, the evacuation of large numbers of residents after a hazard event has already commenced adds layers of difficulty and danger. Promoting and providing safe pickup points will reduce hazards to citizens.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.4, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	Staff time for identification of population centers and publicizing the pickup points
Potential Funding Sources:	City budgets
Lead Agency/Department Responsible:	Emergency Management, Planning
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
Locations have been established for hurricane evacuation, along with agreement with HRT to help in an event. More robust analysis is needed to refine pickup points and also determine points of distribution during an emergency.	

PORTSMOUTH MITIGATION ACTION 3	
Hurricane/flood outreach/education to residents and businesses. Determine new and best way(s) to get information to the most vulnerable and least connected residents.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Protection of personal property and lives.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 2, Objective 2.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	$20,000
Potential Funding Sources:	City budgets; use free FEMA materials when available; HMGP 5% Initiative; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management, Planning
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Flyers have been used in the past, primarily on topic of flooding with some information on hurricanes. These are sent out to those in the flood zones. Fire Dept sends out notifications on social media through City Marketing department.	

PORTSMOUTH MITIGATION ACTION 4	
Identify sources and evaluate use of available data to pinpoint the location of persons with disabilities for mitigation, evacuation, response, recovery.	
BACKGROUND INFORMATION	
Site and Location:	Citywide areas of high social vulnerability
Cost Benefit:	Protection of persons with disabilities before, during and after hazard events has broad benefits for protecting lives and property.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.4, 1.5; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined as projects are identified.
Potential Funding Sources:	City budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Planning, GIS
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
City contractor will review available data sources on vulnerability indices as potential addendum to this plan. Certain data is difficult to obtain because of privacy concerns (e.g. health department raw data).	

PORTSMOUTH MITIGATION ACTION 5	
Implement additional flood monitoring stations to track real-time water levels in targeted areas to support response efforts. Leverage regional efforts to determine best technology, including cost effectiveness analysis.	
BACKGROUND INFORMATION	
Site and Location:	Olde Towne/ Downtown, Paradise Creek/ Cradock
Cost Benefit:	Enable real-time assessment of flood levels which will allow more responsive warnings and alerts to be broadcast.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	$80,000 plus $10,000 annual maintenance
Potential Funding Sources:	USGS, FEMA, State, City budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Planning, Emergency Management, HRPDC
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	
System in place to collect and report data. Still in process of improving functionality of software.	

PORTSMOUTH MITIGATION ACTION 6	
Systematically track and map areas that sustain non-tidal flooding and "sunny day" flooding, with focus on currently flooded streets and areas susceptible to future flooding. Allow community to sign up for notifications when streets flood and pair floodwater sensors with rain gauge data to improve prediction capability. Expand number of sensors.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Tracking where flooding actually occurs will allow mitigation action and projects to be directed to those areas. Flooded roads reduce functionality of transportation system, hampering commerce and emergency response.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	Staff time
Potential Funding Sources:	City CIP budget
Lead Agency/Department Responsible:	Engineering, Planning, Emergency Management, Public Works, GIS; DHS: HMGP 5% Initiative; Virginia CFPF
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Desired expansion of existing sensors should focus on accuracy and cost effectiveness.	

PORTSMOUTH MITIGATION ACTION 7	
Protect City's critical infrastructure: 1) implement Citywide drainage improvement projects; 2) elevate city emergency generators above the base flood elevation plus 2 feet freeboard; 3) retrofit/elevate/relocate existing facilities to provide future flood protection.	
BACKGROUND INFORMATION	
Site and Location:	Citywide. Specific examples include Old Town Stormwater Pump Station, new pump station being planned, and Frederick Boulevard corridor upgrades.
Cost Benefit:	Frequent flooding in these areas damages cars, structures and contents. Damages to city infrastructure will also be reduced.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	$500,000,000
Potential Funding Sources:	City CIP budget, stormwater funds, FEMA, State; DHS: HMGP
Lead Agency/Department Responsible:	Engineering, Public Works
Implementation Schedule:	Long term; as funding becomes available
ADDITIONAL COMMENTS	
Long-term program. Several projects (e.g. Street drainage, sea-wall, pump station etc.) have been initiated.	

PORTSMOUTH MITIGATION ACTION 8	
Implement action items from 2015 Floodplain Management Plan and Repetitive Flood Loss Plan.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Each action has separate costs and benefits identified in Plan. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Goal 2, Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	As shown in the plan
Potential Funding Sources:	City budgets, DHS: BRIC, HMGP, Severe Repetitive Loss, stormwater funds; Virginia CFPF
Lead Agency/Department Responsible:	Planning, Emergency Management
Implementation Schedule:	Ongoing. Some long-term as funding available
ADDITIONAL COMMENTS	
Not planning to update the 2015 plan as City as largely transitioned to regional hazard mitigation plan for this role and future Plan/Strategies to be developed.	

PORTSMOUTH MITIGATION ACTION 9	
Mitigate flood-prone and repetitive flood loss structures. Mitigation measures may include acquisition, relocation, elevation, or other retrofit measures to provide flood protection. This action includes Mitigation Reconstruction projects. Develop a guide or adapt an existing manual that advises residents/property owners how they can retrofit their buildings for increased sustainability and resiliency.	
BACKGROUND INFORMATION	
Site and Location:	Within the City's flood zones
Cost Benefit:	Benefits for individual structures are based on the average annual damages, which is based on the structure's lowest floor elevation and frequency of flooding. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	$10,000 to $200,000 per structure (paid by citizen or through grant funds obtained by citizen)
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; Virginia CFPF
Lead Agency/Department Responsible:	Planning, Emergency Management
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
At this time, City does not desire to pay for mitigation of individual structures. City intends to provide options, knowledge/technical support, resources and information to support residents in individual efforts.	

PORTSMOUTH MITIGATION ACTION 10	
Determine whether Repetitive Flood Loss properties have been mitigated.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood loss areas throughout the City
Cost Benefit:	Repetitively flooded structures strain local and federal resources after disasters, and detract from the fiscal solvency of the NFIP. The NFIP focuses mitigation efforts and funds on properties listed as repetitive losses; therefore, checking the accuracy of the list is a necessity for the NFIP, States and, through this action, local governments.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	Staff time estimated at $50 per structure x 220 structures = $11,000
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC
Lead Agency/Department Responsible:	Planning
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
City is continuing to track homeowner efforts via permitting process. FEMA has not made any additional data available on RL/SRL properties.	

PORTSMOUTH MITIGATION ACTION 11	
Advocate for improved and increased grants for mitigation activities from State and Federal sources.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The current processes are long and cumbersome. More streamlined processes and access to mitigation funds will aid in the mitigation of flooded properties and areas.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 3, Objectives 3.1, 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	City budgets
Lead Agency/Department Responsible:	Planning, Emergency Management, Permits & Inspections, Engineering
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
City would prefer HMGP funds benefit citizens directly for improvements on private property and to provide additional avenues for mitigation efforts.	

PORTSMOUTH MITIGATION ACTION 12	
Review and revise City's series of procedures and pre-approved messages to ensure that Code sections do not conflict and do not hamper recovery efforts and that permitting is streamlined and efficient. Leverage technology to facilitate prompt permit processing during or after an event using mobile and electronic means.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Ensuring that processes are in place prior to a disaster event will speed recovery and increase the community's resilience.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm, Wildfire, Earthquake
Goal(s) Addressed:	Goal 1; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	City budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Planning, Permits & Inspections, Engineering, Public Works, Emergency Management
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	

PORTSMOUTH MITIGATION ACTION 13	
Review existing plans to ensure that they integrate mitigation concepts. Ensure that future plans integrate mitigation concepts detailed in the Hazard Mitigation Plan.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Ensuring that plans incorporate mitigation concepts and strategies will aid the City's resilience.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	City budgets
Lead Agency/Department Responsible:	Planning, Permits & Inspections, Engineering, Public Works, Emergency Management
Implementation Schedule:	Ongoing as new plans are developed
ADDITIONAL COMMENTS	
Build One Portsmouth Comp Plan adopted was successful implementation of this concept.	

PORTSMOUTH MITIGATION ACTION 14	
Implement green infrastructure for flood and stormwater abatement.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Green infrastructure can be a cost-effective approach for improving water quality and can provide multiple environmental, economic, and community benefits. Under HMGP grants, additional benefits from environmental or ecosystem benefits may be included in the benefits cost analysis.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.6
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	To be determined
Potential Funding Sources:	City CIP budget, stormwater funds, FEMA, EPA, State; DHS: HMGP, BRIC; Virginia CFPF
Lead Agency/Department Responsible:	Planning, Engineering, Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Some projects are being initiated (*e.g.* Court Street Improvements). Future projects are prioritizing the use of green infrastructure.	

PORTSMOUTH MITIGATION ACTION 15	
Replace the Seawall.	
BACKGROUND INFORMATION	
Site and Location:	Downtown
Cost Benefit:	The Portsmouth waterfront seawall and bulkhead is a major element of the downtown waterfront. It is aging and in need of replacement to ensure safety of citizens and visitors. It is impacted daily by pedestrian and vessel use, weather and the waters of the river.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$20,000,000
Potential Funding Sources:	City CIP budget, stormwater funds, FEMA, State
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Significant components of the seawall have been replaced; project is approximately 75% complete.	

PORTSMOUTH MITIGATION ACTION 16	
Create dialogs with other governmental (e.g. HRT, HRSD, Port of Virginia) and non-governmental (e.g. Dominion Virginia Power, Verizon, etc) stakeholders to encourage and coordinate incorporation of mitigation strategies into projects and policies that affect Portsmouth's citizens and visitors.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Ensuring that our partner organizations incorporate mitigation concepts and strategies into their projects and policies will aid the City's resilience.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Hazardous Materials Incident
Goal(s) Addressed:	Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	City budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Planning, Engineering, Emergency Management
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Coordination is ongoing as the City leverages regional meetings to promote mutually beneficial projects. As an example, Dominion has undergounded assets due to high wind assessment in the Churchland area. The recently completed regional Joint Land Use Study with the City of Chesapeake and the U.S. Navy is another example.	

PORTSMOUTH MITIGATION ACTION 17	
Develop inventory of first floor elevations (and possibly Elevation Certificates) of structures in flood zones in low- to moderate-income housing areas.	
BACKGROUND INFORMATION	
Site and Location:	Citywide low to moderate areas
Cost Benefit:	In order to assess any potential mitigation actions, first floor elevations (at a minimum) will be needed. Assisting low to moderate income homeowners to obtain this information will allow these structures to be protected from future flooding.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – The majority of the City's repetitive flood loss areas Very High or Relatively High NRI flood risk.
Estimated Cost:	To be determined
Potential Funding Sources:	USACE, FEMA, HUD; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Planning
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	
City and corporate partners are initiating a new project to provide accurate data collection for a large number of structures in a short timeframe.	

PORTSMOUTH MITIGATION ACTION 18	
Continue implementing City's Heat Injury Prevention Plan and position cool buildings for easiest access by high vulnerability populations and neighborhoods.	
BACKGROUND INFORMATION	
Site and Location:	High vulnerability areas citywide
Cost Benefit:	This low cost plan, when implemented, prevents heat injuries by making existing City buildings available to people without access to air conditioning.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Tropical/Coastal Storm (and associated power outages)
Goal(s) Addressed:	Goal 1: Objectives 1.4, 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Facility operating costs and minimal staff time to prepare outreach
Potential Funding Sources:	Facility operating costs/utilities
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SUFFOLK

SUFFOLK MITIGATION ACTION 1	
Protect repetitively flooded infrastructure and structures through elevation, acquisition, relocation, retrofits or repurposing. Other structural means are included, as appropriate, for protecting critical infrastructure. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Throughout the City
Cost Benefit:	In rural areas of the city, roads flood each time there is a significant rainfall. In the urban downtown, commercial structures flood frequently. FEMA now funds hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	$10,000 to $200,000 per structure; infrastructure protection costs to be determined
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management and Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SUFFOLK MITIGATION ACTION 2	
Provide emergency power to critical infrastructure, critical facilities and critical roadway intersections during extended power outages. Increase emergency generator capabilities at school facilities used as shelters to meet ADA functional needs requirements.	
BACKGROUND INFORMATION	
Site and Location:	Throughout the City
Cost Benefit:	Maintaining basic city functions in the aftermath of both major and minor events is important for the safety of citizens and the environment. Emergency power is mandatory at the shelters to address access and medical equipment that requires electricity. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Existing Budgets; DHS: HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Public Utilities, Public Works, Facility Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
City Hall, Public Works Operations, and Public Works Operations Yards at Whaleyville, Holland and Chuckatuck all have emergency backup generators installed and functional. 36 traffic signals have backup gas generators and 22 signals have battery only backup. New requirement mandates any new signal built or rehabilitated must have a permanent backup generator.	

SUFFOLK MITIGATION ACTION 3	
Provide hurricane and flood outreach and education materials to residents within the City to make flood protection information available to property and business owners and renters.	
BACKGROUND INFORMATION	
Site and Location:	Throughout City floodplains, with materials available at public libraries, recreation centers and City Hall
Cost Benefit:	Protection of personal property and lives
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$2500
Potential Funding Sources:	Existing budgets; use free FEMA materials; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	

SUFFOLK MITIGATION ACTION 4	
Continue to implement capital improvements that improve stormwater management and control flooding, especially for undersized and out-of-date drainage systems and patterns. This action includes all initiatives identified in the 2022 Resilience Plan.	
BACKGROUND INFORMATION	
Site and Location:	City-wide. Projects mitigate flooding and run-off problems throughout the City, including drainage projects previously identified and planned such as Oldetown Drainage Project and Oakland Drainage Project
Cost Benefit:	Annual damage occurs to homes and business in vulnerable areas due to poor drainage. Additional green infrastructure values from environmental or ecosystem benefits should be included in the benefits cost analysis.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	Estimated $1,000,000 annually, but variable based on several factors
Potential Funding Sources:	General funds, DHS: BRIC, HMGP, Private funds; Virginia CFPF
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing

COMMENTS
Hazard Mitigation Grants should be considered as a potential funding source and used as a basis for property protection.

SUFFOLK MITIGATION ACTION 5	
Develop a Resilience Plan that incorporates a stormwater drainage plan to address issues in flood-prone areas; prioritize and implement plan recommendations. This action includes all initiatives identified in the 2022 Resilience Plan.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Flooding as a result of stormwater accumulation can exacerbate coastal flooding, contributing to flood damages of cars, structures, roads and other infrastructure. Nuisance flooding can result in businesses closed down. Additional green infrastructure values from environmental or ecosystem benefits should be included in the benefits cost analysis.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	$250,000 to $3,000,000
Potential Funding Sources:	General funds; Virginia CFPF
Lead Agency/Department Responsible:	Planning and Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SUFFOLK MITIGATION ACTION 6	
Continue strengthening the City's Floodplain Management Program with the following actions: **1) Reviewing and adopting State Model Floodplain Ordinance, including 1 foot freeboard elevation requirement;** **2) Incorporating floodplain requirements into permit process with information in the online FAQs, BFE required on the building permit application (as required by NFIP), creating and posting online standardized forms for substantial improvement/damage determination;** **3) Providing specialized training and support Certified Floodplain Manager (CFM) certification for applicable City staff;** **4) Preparing educational materials in the permit office on the value of flood insurance, freeboard and NFIP compliance; and,** **5) Continuing participation in the Severe Repetitive Loss program.**	
BACKGROUND INFORMATION	
Site and Location:	Floodplains throughout the City
Cost Benefit:	• The NFIP has a proven record of reducing annual flood damages through floodplain regulations that guide design of flood-prone properties. • Freeboard - More stringent measures for flood prone structures have a very small upfront cost that is recovered within approximately 10 years through lower flood insurance costs. The reduction in average annual damages with just 1 foot of freeboard is substantial.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5; Goal 2; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	Staff time
Potential Funding Sources:	Negligible
Lead Agency/Department Responsible:	Planning (lead) and Public Works
Implementation Schedule:	Within 4 years
ADDITIONAL COMMENTS	

SUFFOLK MITIGATION ACTION 7	
Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood loss areas throughout the City
Cost Benefit:	Repetitively flooded structures strain local and federal resources after disasters, and detract from the fiscal solvency of the NFIP. The NFIP focuses mitigation efforts and funds on properties listed as repetitive losses; therefore, checking the accuracy of the list is a necessity for the NFIP, States and, through this action, local governments.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding and Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objective 1.1; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	Staff time estimated at $100 per structure x 13 structures = $650
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; VDEM
Lead Agency/Department Responsible:	Planning
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
An initial attempt to contact property owners by mail will be followed up by phone calls, and site visits as necessary. Receipt of data from FEMA or State officials is problematic.	

SUFFOLK MITIGATION ACTION 8	
Retrofit Primary Shelters in the City to conform to the Ultimate Design Wind Speed for Risk Category 3 structures as referenced in the current edition of the Uniform Statewide Building Code, Part 1 (USBC).	
BACKGROUND INFORMATION	
Site and Location:	Citywide locations
Cost Benefit:	According to the Suffolk Public Schools Director of Facilities, none of the schools in the City designated as shelters are engineered to withstand winds greater than 90 mph. A Category 2 or greater hurricane would result in residents having to take shelter outside the City. Transportation costs for such an evacuation would be staggering.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Hazardous Materials Incident, Extreme Heat
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	To be determined
Potential Funding Sources:	Capital budgets; DHS
Lead Agency/Department Responsible:	Capital Programs Director and Public Schools Director of Facilities and Planning
Implementation Schedule:	5 to 7 years
ADDITIONAL COMMENTS	
Hurricane shutters may provide a partial solution for some structures at a lower cost than complete retrofits.	

SUFFOLK MITIGATION ACTION 9	
Install markers indicating the flood water depth along streets or roads subject to tidal, riverine or urban flooding.	
BACKGROUND INFORMATION	
Site and Location:	Flood prone areas citywide; City is developing a program to prioritize the installation of these signs starting with the arterial and collector highways and priority routes within the City's urbanized area.
Cost Benefit:	Elevated water levels in recent weather events have caused damage and down time to emergency vehicles while responding to calls for assistance. These markers can also be useful during droughts to indicate low water levels.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Drought
Goal(s) Addressed:	Goal 1, Objective 1.5; Goal 2
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	<$10,000
Potential Funding Sources:	Public Works annual operating budget; DHS: BRIC, HMGP 5% Initiative; Virginia CFPF
Lead Agency/Department Responsible:	Traffic Engineering, Emergency Management
Implementation Schedule:	3 to 5 years
ADDITIONAL COMMENTS	
Other alternatives considered included developing a policy regarding emergency vehicle operations on flooded streets or roads; however, flood depth markers would have added benefits by alerting a broader audience of citizens and commuters regarding areas with unsafe water levels for driving. Savings of up to $5,000 per City vehicle in repairs could be realized.	

SUFFOLK MITIGATION ACTION 10	
Retrofit the East Suffolk Recreation Center with an emergency generator to support shelter operations for that section of the City.	
BACKGROUND INFORMATION	
Site and Location:	East Suffolk
Cost Benefit:	When school is in session, using a school as a shelter is a conflict. The Recreation Center is a potential alternative. Also, this center would add a second ADA-compatible shelter to the City's shelter inventory, increasing accessibility for persons with disabilities.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low/Moderate - Repetitive flood loss areas at Bennetts Creek Ln, Yeates Drive and Bracey Drive have relatively moderate NRI flood risk, which includes analysis of social vulnerability. All other repetitive loss areas are rated Low.
Estimated Cost:	$7500
Potential Funding Sources:	Capital Budget (for generator), Mitigation Grant (for quick-connect); DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Capital Programs and Facilities, Department of Parks and Recreation
Implementation Schedule:	5 to 7 years
ADDITIONAL COMMENTS	

SUFFOLK MITIGATION ACTION 11	
Work with the owner to rehabilitate Godwin's Millpond Dam.	
BACKGROUND INFORMATION	
Site and Location:	6145 Godwin Boulevard, Suffolk
Cost Benefit:	Potential impacts of dam failure include: 1 roadway (Route 10 for .04 miles downstream), 1 home, and 3 businesses. The dam impounds 165.00 acre-feet at normal pool.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding due to Impoundment Failure/High Hazard Dam, Flooding
Goal(s) Addressed:	Goal 1, Objective 1.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Relatively Low
Estimated Cost:	To be determined based on additional inspection and analysis of retrofits needed.
Potential Funding Sources:	FEMA: HHPD; owner resources; CIP
Lead Agency/Department Responsible:	Fire & Rescue
Implementation Schedule:	3 to 5 years
ADDITIONAL COMMENTS	
Godwin's Millpond Dam was assessed "poor" in 2018 by DCR. The high hazard potential earthen dam is located along Chuckatuck Creek and has a drainage area of 6.87 square miles.	

VIRGINIA BEACH

VIRGINIA BEACH MITIGATION ACTION 1	
Relocate the ComIT Data Center.	
BACKGROUND INFORMATION	
Site and Location:	ComIT Data Center, Building 2, 2405 Courthouse Drive
Cost Benefit:	There have historically been marginal flooding problems in Building 2 that included: 1) Flooding from a leak in the fire sprinkler system on 1st floor. 2) Flooding from leaks in the roof's drainage system. 3) Water backup on the Data Center sub-floor, due to the drainage system, which has occurred on multiple occasions. 4) In 2004, there were two occasions of flooding due to equipment failure in Building 1 where damage and loss of service was avoided only because on-site staff discovered the flood before water reached the Data Center. 5) During Hurricane Isabel, it was necessary to shut down all computer systems in Data Center and physically move equipment to 2nd floor. Moving equipment carries associated risks and at least two servers were corrupted during process.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: HMGP, FMA, BRIC, RFC; Existing budgets
Lead Agency/Department Responsible:	ComIT
Implementation Schedule:	Within 1.5 years
ADDITIONAL COMMENTS	
In recent years, the importance of data management to overall City operations has increased the priority of this action. Project is nearing completion. Building 2 construction is in progress. The COMIT Data Center is relocating from the basement of Building 2 to the third floor of Building 2. This work is part of the Building 1, 2 & 11 Phase I Renovation which began in February 2021. The third floor and IT pathways are estimated to be completed in the first quarter of calendar 2022. Installation and turn up of IT equipment is estimated to be complete by the third quarter of calendar year 2022 or sooner.	

VIRGINIA BEACH MITIGATION ACTION 2	
Strengthen the City's Floodplain Management Program with the following actions: **1) Continue participating in the National Flood Insurance Program. Continue enforcement of standards in existing floodplain management ordinance that meet and exceed NFIP minimum requirements;** **2) Incorporate floodplain management tools/regulations into existing development review procedures;** **3) Continue participation in the Community Rating System in order to reduce property owner premiums for flood insurance;** **4) Provide specialized training and support Certified Floodplain Manager (CFM) certification for floodplain plan reviewers, inspectors and permit processors;** **5) Prepare educational materials in the permit office on the value of flood insurance, freeboard and NFIP compliance;** **6) Participate in the Severe Repetitive Loss program to mitigate flood-prone structures; and,** **7) Consider changes to floodplain management ordinance to regulate repetitive flood losses and increase ICC availability, limit the size of enclosures beneath elevated structures in coastal high hazard areas, map and regulate a future conditions 100-year floodplain, and regulate Coastal A Zones to Zone V standards.**	
BACKGROUND INFORMATION	
Site and Location:	Floodplains throughout the City
Cost Benefit:	• The NFIP has a proven record of reducing annual flood damages through floodplain regulations that guide design of flood-prone properties. • The large number of flood-prone properties and repetitive flood losses in Virginia Beach merits additional investigation to determine what measures have been taken by property owners to protect structures and what additional measures may have measurable benefits.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objective 1.2; Goal 2, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – Most of the City's repetitive flood loss areas are in NRI Relatively Moderate, Relatively High or Very High Flood Risk areas. Exceptions are areas behind Brandon Middle School, near Paca Lane/Newtown Road, Thalia Shores, and Thoroughgood neighborhoods.
Estimated Cost:	Staff time
Potential Funding Sources:	DHS: HMGP, FMA, BRIC; Virginia CFPF
Lead Agency/Department Responsible:	Planning and Public Works
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS

-The City officially entered the CRS program as a Class 7 on May 1, 2019.

- There are currently 8 CFMs within the Planning and Community Development Department and 3 CFMs employed within other City departments. Additionally, one of our CFMs serves as a board member of the Virginia Floodplain Management Association. In 2021, the Planning and Community Development Department sent 5,000 annual NFIP letters to homeowners near and within identified repetitive flooding areas.

- Annual floodplain and flood insurance information is available in the permits office as well as numerous other public offices.

- The Office of Emergency Management applies for and manages elevation and acquisition projects for the severe repetitive loss program and continues to identify structures for future mitigation. Currently, OEM is performing elevations of 2 FEMA grants and acquisitions on 1 FEMA grant. Additionally, the City received an FY19 FMA grant award in November 2022 to elevate 6 residences.

VIRGINIA BEACH MITIGATION ACTION 3	
Create coalition of business owners, including some who have implemented mitigation actions in the past, to promote the value of hazard protection and help identify and implement retrofit/elevation/acquisition projects in the business community.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The hardening of businesses supports their ability to recover from potential disasters, thereby helping sustain citizens' way of life in the aftermath of a hazard event.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Active Threat, Civil Unrest, Cyber Infrastructure Attack, Power Outage, Structure Fire, Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion, Winter Storm
Goal(s) Addressed:	Goal 1, Objective 1.1; Goal 2, Objective 2.1; Goal 3
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Minimal
Potential Funding Sources:	Existing Budgets; DHS: BRIC, HMGP 5% Initiative; Private funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	
Two members of the Virginia Beach Emergency Management Office participated in the Resilient Enterprise Solutions (RES) Home Raising Academy, launched in Hampton Roads in 2020. Various commerce sectors participated in the Home Raising Academy including local government, construction, and real estate. The training curriculum included an introduction to the NFIP, Flood Maps, Elevation Certificates, Outreach, Proactive Selling, Financing & Insurance, and Home Elevation.	

VIRGINIA BEACH MITIGATION ACTION 4	
Better define what is considered a critical facility and update the City's critical facility list annually. Provide emergency power to critical infrastructure, critical facilities, pump stations and critical roadway intersections during extended power outages. Emergency power and quick connect wiring is needed for critical intersections. Generator capability is needed at multiple school facilities used as shelters.	
BACKGROUND INFORMATION	
Site and Location:	Critical Intersections identified by Police Department and Public Works Building 18: Human Resources (Has a partial building generator that supports the IT function). Various Stormwater Pump stations Various Sewer Pump stations Various Public Schools: Those designated as shelters, focusing on the high schools as the top priority.
Cost Benefit:	Maintaining basic city functions in the aftermath of both major and minor events is important for the safety of citizens and the environment. Emergency power is mandatory at the shelters to address access and medical equipment that requires electricity.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Active Threat, Civil Unrest, Complex Coordinated Terrorist Attack, Cyber Infrastructure Attack, Power Outage, Structure Fire, Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Extreme Heat
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$3,500,000
Potential Funding Sources:	Existing Budgets; DHS: HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Public Utilities, Public Works, Sheriff, Emergency Management
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
Generator projects at the Central Plant and EMS Headquarters have been completed. Central Plant Generator- $5.3 million project cost. Work substantially completed June 23, 2021. This included the instillation of 2 (n+1) generators for 100% back-up power of the Municipal Center central heat/cooling plant. This will enable uninterrupted heat and air conditioning to be provided to City Hall, Operations Buildings, School Administration Building, the Police Department (VB Police Head Quarters and 1st Precinct), the Correctional Center, and the Juvenile Detention Center. The Correctional Center Buildings (7A, 7B, and &C) all have whole building generator back-up. Building 21: Fire Administration has a partial building generator for emergency lighting. EMS HQ Generator- $472,000 project cost. Work substantially completed July 13, 2020. The project provided for whole building generator power for the backup emergency communications (911/311) center and backup emergency operations center (EOC) at the EMS Headquarters Building located at 4160 Virginia Beach Boulevard.

VIRGINIA BEACH MITIGATION ACTION 5	
Design or retrofit public safety facilities vulnerable to wind damage and/or flooding.	
BACKGROUND INFORMATION	
Site and Location:	Three EMS volunteer facilities are vulnerable to flooding or wind damage. EMS Rescue 1 is vulnerable to flooding. EMS Rescue 8 and 14 are vulnerable to wind load hazards. EMS Headquarters is not designed for wind load hazard.
Cost Benefit:	EMS Rescue 1, 8, and 14 are volunteer owned public safety facilities built on city land through long term lease agreements and offer critical life-safety operations. EMS Headquarters is a city owned building that houses the backup emergency communications (911 / 311) center and the backup emergency operations center (EOC) along with EMS Administration and Training. Vulnerability to flooding and wind damage could threaten the availability of this capability during a flood or high wind event.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Active Threat, Civil Unrest, Complex Coordinated Terrorist Attack, Cyber Infrastructure Attack, Power Outage, Structure Fire, Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Project dependent
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: HMGP, Virginia CFPF
Lead Agency/Department Responsible:	Public Works and Public Safety Departments
Implementation Schedule:	Long-term, over a 15-year period

ADDITIONAL COMMENTS
The city has conducted formal analyses of critical facilities and HMGP grants were obtained to harden some facilities. As HMGP funds become available through the State, additional grant requests should be prepared and ready to submit for “shovel-ready” projects. Older public safety facilities are incorporating retrofits as repairs are scheduled. New facilities are built to current standards with freeboard making them more resistant to flooding. All are designed to sustain up to 117mph winds.

VIRGINIA BEACH MITIGATION ACTION 6	
Provide educational outreach to residents to increase awareness of vulnerability to multiple hazards and preventative actions that can be taken. Focus on hurricane preparedness, sea level rise and flooding.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	By training community leaders in how to protect hazard-prone properties, the City spreads information on the value of retrofitting directly to those in need at low cost.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All Hazards
Goal(s) Addressed:	Goal 2, Objective 2.1; Goal 3, Objective 3.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$30,000
Potential Funding Sources:	DHS: HMGP, HMGP 5% Initiative; Operating Budget; FEMA materials available free
Lead Agency/Department Responsible:	Emergency Management and Communications
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
The city has multiple programs and strategies for the dissemination of emergency preparedness information, but it is currently coming out of multiple offices and this will assist in streamlining the information. This action is part of Virginia Beach's strategy for continued compliance with the NFIP.	

VIRGINIA BEACH MITIGATION ACTION 7	
Replace, as necessary, and maintain the existing regional interoperable communications system.	
BACKGROUND INFORMATION	
Site and Location:	Citywide and Southside Hampton Roads region
Cost Benefit:	Modern interoperable communications systems support preparedness, response and recovery activities for all hazards.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Active Threat, Civil Unrest, Complex Coordinated Terrorist Attack, Cyber Infrastructure Attack, Power Outage, Structure Fire, Transportation Hazard-Incident, Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 2; Goal 3, Objectives 3.1, 3.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$10,000,000
Potential Funding Sources:	DHS: HMGP, others; CIP
Lead Agency/Department Responsible:	ComIT
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
The city has modernized much of its communication systems to include interoperability of city systems, as well as regional systems. New systems require maintenance and replacement on a regular basis.	

VIRGINIA BEACH MITIGATION ACTION 8	
Protect Atlantic Ocean and Chesapeake Bay shorelines from storm damage. Continue work with the Army Corps of Engineers and other federal agencies to ensure ongoing maintenance of the Hurricane Protection Project and other maintained beaches within the city.	
BACKGROUND INFORMATION	
Site and Location:	Atlantic Ocean and Chesapeake Bay shorelines, particularly Resort Area and Sandbridge
Cost Benefit:	Severe and frequent shoreline erosion in this economically valuable area merits structural protection on an ongoing basis. Multiple project reports contain detailed information on the costs and benefits of these projects. City continues to provide beach replenishment as funds and projects allow, which continues to provide ongoing storm protection to $3 billion worth of homes and businesses from Rudee Inlet to Fort Story.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence, Winter Storm; Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 3, Objectives 3.1, 3.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High
Estimated Cost:	Estimated $14,000,000 every ten years
Potential Funding Sources:	COE, CIP, Special Tax District, TGIF, SSD, TIF
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
In addition to maintaining existing “engineered beaches”, the City should seek additional beaches or shorelines to be considered for structural hardening. The City’s beach restoration program currently focuses on six key areas: Ocean Park Beach Restoration, Cape Henry Beach Restoration, Chesapeake Beach Replenishment, Resort Beach, Sandbridge Beach, and Croatan Beach.	

VIRGINIA BEACH MITIGATION ACTION 9	
Maintain a dam inventory and monitor the condition of dams within the City making improvements when needed. Develop a dam safety plan to address protection, preparedness, response, and rebuilding for high hazard dams and areas in dam inundation zones.	
BACKGROUND INFORMATION	
Site and Location:	Area downstream from dams in Virginia Beach
Cost Benefit:	Infrastructure in dam inundation zones is susceptible to flooding but may not be protected from flooding should a dam failure or breech occur.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.4, 1.5, 1.6; Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Project location dependent
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, FMA, RFC, HMGP, HMGP 5% Initiative, HHPD
Lead Agency/Department Responsible:	Public Works and Public Utilities
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Virginia DCR is increasingly involved in this action and recent regulatory changes have affected which dams are regulated.	

VIRGINIA BEACH MITIGATION ACTION 10	
Improve and/or update alert, warning and notification capabilities. Potential capabilities include: **1) Utilizing the City's CRM registration portal and additional support services;** **2) Maintenance and addition of sensor installations for data collection as part of the VB StormSense Network to enhance Alexa voice assisted AI and intelligent predictive visualization platform.**	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Low cost hazard notification through the use of cellular phones and computers can now reach large segments of the population quickly. Notifying residents of low-lying flood-prone areas before flooding occurs helps reduce flood damages to cars, structures, and possessions. Traffic problems associated with evacuations, frequent flooding and other hazard events can cause secondary economic disasters and major disruptions to citizens' lives in Hampton Roads.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Landslide/Coastal Erosion, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	DHS: HMGP, HMGP 5% Initiative; Private funds; CFPF
Lead Agency/Department Responsible:	Emergency Management, IT, Communications
Implementation Schedule:	Improvements within 4 years; Ongoing Warning and Notification

ADDITIONAL COMMENTS
Action focuses on keeping up with new types of social media and the most modern methods of communicating with citizens in the event of a disaster. This action includes identification and real-time mapping of frequently flooded roads and will incorporate special planning regarding evacuation routes for persons with disabilities (nursing homes, assisted living facilities, hospitals). VB StormSense sensor network was established within a 3-year period and currently provides real-time water levels from 50 sensors in Virginia Beach at 6-minute intervals, including 10 USGS sensors. The data is currently used by Public Works in addition to 10 USGS Sensors for road closures and street-level flooding. Several sensors have flood levels of Action, Minor, Moderate and Major stages assigned. National Weather Service (NWS) at Wakefield is planning to add a few sensors to their Advanced Hydrologic Predication Service (AHPS). The data is currently accessed internally through mapping applications using mobile devices in near real-time. The system also provides real-time data through Alexa skill. The applications are planned for release in the first quarter of 2022. A subscription service for citizens is in development that will be connected with RAVE alerting system. A predictive visualization system is in early stages of development to support the mitigation goals. In 2019, the City entered into a partnership with WAZE for traffic notification to citizens for road closures due to natural hazards. In 2022 and beyond, Google/Waze is planning to provide the technical capabilities for CVB and their partners in our region to develop and implement communication of safety message templates to all drivers that use the Waze app within a partners geographical boundary. The messages will appear in the language that the user sets their Waze app to display. Qualified partners, such as CVB, may select one safety message to post quarterly in a partner's geographical area. The message will appear in the app when the vehicle is stopped for more than 10 seconds and automatically disappears with the first movement of the vehicle. Waze users may see the message twice per quarter. Waze will share the number of impressions made from the campaign on a monthly basis. Waze will be sharing more information with CVB and their partners about how to participate once they have the results and best practices to share from their launch partners (VDOT, Miami-Dade, LA County DPW, Penn Turnpike, and Mass DOT). - release date TBA. The City also obtained the RAVE alerting system in 2019 which has the ability to create a Smart 911 profile for a caller. The City is currently in the process of training staff on the RAVE alerting system and drafting an updated public alert and warning notification plan.

VIRGINIA BEACH MITIGATION ACTION 11	
Retrofit existing stormwater management system throughout the City into state-of-the-art facilities to minimize flooding after heavy storms while also addressing water quality objectives.	
BACKGROUND INFORMATION	
Site and Location:	Citywide. Over the last year, City commenced or completed actual stormwater and drainage improvement projects in 8 neighborhoods to retrofit aging undersized infrastructure and/or based on analysis by citywide master stormwater modeling in certain watersheds. Capital improvement program projects associated with these neighborhoods include: - Aragona Drainage Improvements - Ashville Park Drainage Improvements - Chubb Lake/Bradford Lake - College Park and Level Green Drainage Improvements - Eastern Shore Drive Drainage - Southern Canal/Lead Ditch - Windsor Woods Drainage
Cost Benefit:	Frequent flooding in the City is a result of numerous factors. Updating stormwater management facilities will help reduce both nuisance flooding of yards, roads and intersections, and more severe flooding that affects structures.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/High – Most of the City's repetitive flood loss areas are in NRI Relatively Moderate, Relatively High or Very High Flood Risk areas.
Estimated Cost:	To be determined
Potential Funding Sources:	Stormwater Management Program; DHS: BRIC, HMGP; Virginia CFPF
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
City currently has 36 active projects and programs in the Flood Control Section of the Stormwater Capital Improvement Program (CIP).	

VIRGINIA BEACH MITIGATION ACTION 12	
Mitigate incursion of storm surge and tidal inundation of low-lying areas. Investigate coastal barrier technologies and tidal stream diversion techniques.	
BACKGROUND INFORMATION	
Site and Location:	Shorelines and tidal tributaries Citywide
Cost Benefit:	Costs and benefits of various projects are continuously updated and compared. Projects are prioritized based on those that provide the greatest benefits to existing structures and infrastructure. Possible projects may include, but are not limited to: tide gates, check valves, or road/bridge/structure elevation. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/High – Most of the City's repetitive flood loss areas are in NRI Relatively Moderate, Relatively High or Very High Flood Risk areas.
Estimated Cost:	To be determined
Potential Funding Sources:	Stormwater Management Program; DHS: HMGP
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Ongoing and Long Term
ADDITIONAL COMMENTS	
Nor'easters, hurricanes and tropical storms, and some severe thunderstorms produce heavy precipitation in low-lying areas, creating runoff that cannot flow into tidal bodies at high tide. As sea level rises over the long-term, areas affected by this problem are expected to increase. The City of Virginia Beach is developing plans to address both repetitive flooding and projected increases in flooding caused by sea level rise through the City's Comprehensive Sea Level Rise and Recurrent Flooding Response Plan. The plan is an effort between local government and various stakeholders (corporate and individual) to collect, sort, interpret, and understand the data behind how sea level rise is affecting our City and how we should best respond.	

VIRGINIA BEACH MITIGATION ACTION 13	
Elevate, acquire, relocate or retrofit structures in flood prone areas that have suffered repetitive flood damage. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Within the City's flood-prone areas
Cost Benefit:	Benefits for individual structures are based on the average annual damages, which is based on the structure's lowest floor elevation and frequency of flooding. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2, 1.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – Most of the City's repetitive flood loss areas are in NRI Relatively Moderate, Relatively High or Very High Flood Risk areas.
Estimated Cost:	$50,000 to $300,000 per structure
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; Virginia CFPF
Lead Agency/Department Responsible:	Planning, Emergency Management
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	
16 residences are in the process of being elevated with FMA funding at the time of this plan. Additionally, the City received an FY19 FMA grant award in November 2022 to elevate 6 residences.	

VIRGINIA BEACH MITIGATION ACTION 14	
Acquire open space in strategic locations that can provide management benefits for multiple mitigation objectives. Objectives may include but are not limited to: flood control, water quality, public access to waterways, preserving or creating tree canopy, and preserving unique ecological and cultural heritage sites. Incorporation of the Parcel Level Mitigation Program for these projects.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Benefits from open space acquisition can occur in several categories for a single project. A flood-prone area can be set aside for recreation and flood control, for example.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion, Winter Storm
Goal(s) Addressed:	Goal 1, Objective 1.6; Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Project dependent
Estimated Cost:	TBD
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; USACE; USDA, Agricultural Extension
Lead Agency/Department Responsible:	Agriculture; Parks and Recreation; Public Works; Emergency Management
Implementation Schedule:	Long-term, 5 to 10 years

ADDITIONAL COMMENTS

The Agriculture Reserve Program continues to assist the AG farmers/landowners with the option of preserving their AG land versus selling off for house development options. During Fiscal Year 2021 there were 379.58 acres added to the program. This included acquiring 22 development rights on a total of 6 parcels in the southern watersheds. There is now a cumulative total of 10,366.32 acres and 898 development rights captured in the Agricultural Reserve Program. In addition, there were recent changes to the City's ARP ordinance. These changes allow Virginia Beach to target other sensitive and valuable farmland for not only agriculture and forest land protection but also other valuable green infrastructure functions.

Parks and Recreation: No new land acquisition of open space has occurred. The city is attempting to acquire a small piece of non-developable property from a shopping center owner to create water access for a kayak launch as well as provide for bank stabilization and outfall for new stormwater quality facility in the Kempsville section of the city.

The 2019 FMA Acquisition grant application included 3 properties that will be demolished and returned to open space, incorporated into an existing city park. The grant was awarded in October 2020 and the acquisition project initiated shortly after.

VIRGINIA BEACH MITIGATION ACTION 15	
Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means. Prepare Repetitive Loss Area Analyses for CRS credit.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood loss areas throughout the City
Cost Benefit:	Repetitively flooded structures strain local and federal resources after disasters and detract from the fiscal solvency of the NFIP. The NFIP focuses mitigation efforts and funds on properties listed as repetitive losses; therefore, checking the accuracy of the list is a necessity for the NFIP, States and, through this action, local governments.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding (Storm Surge)
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – Most of the City's repetitive flood loss areas are in NRI Relatively Moderate, Relatively High or Very High Flood Risk areas.
Estimated Cost:	Staff time estimated at $50 per structure x 500 structures = $25,000
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; VDEM; HRPDC
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Through the CRS process each rep loss property was mapped and evaluated for mitigation in 2018.	

VIRGINIA BEACH MITIGATION ACTION 16	
Develop a local hurricane evacuation framework/plan and identify communication networks for evacuation messaging.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The state evacuation plan does not take all local factors into account and may not be sufficient for some residents of Virginia Beach. Local planning will facilitate evacuation when needed and better focus evacuation messaging to reduce confusion, speed evacuation and reduce the number of people in danger.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm, Earthquake, Wildfire, Hazard Materials Incident
Goal(s) Addressed:	Goal 1: Objectives 1.4, 1.5; Goal 2: Objectives 2.1, 2.2; Goal 3: Objective 3.1, 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – neighborhoods most in need of evacuation are areas of NRI high hurricane risk, which includes analysis of social vulnerability
Estimated Cost:	Staff time
Potential Funding Sources:	DHS/VDEM; HRPDC
Lead Agency/Department Responsible:	Emergency Management, Communications Office
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	
While evacuation planning typically focuses on hurricanes and coastal storms, the procedures may be used in other emergencies.	

VIRGINIA BEACH MITIGATION ACTION 17	
Promote and sustain local programs such as the Parcel Level Mitigation Program (PLMP) to provide flood protective actions such as acquisition, flood vents, relocating utilities, elevation etc. to vulnerable flood areas. Utilize grant funding to expand capabilities of PLMP when appropriate and eligible.	
BACKGROUND INFORMATION	
Site and Location:	Flood prone areas Citywide, especially high social vulnerability repetitive flood loss areas
Cost Benefit:	Flood protective actions reduce long-term repair and recovery costs.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Flooding due to Impoundment Failure/High Hazard Dam
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.4, 1.5; Goal 2: Objectives 2.1, 2.2, 2.3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/High – Most of the City's repetitive flood loss areas are in NRI Relatively Moderate, Relatively High or Very High Flood Risk areas.
Estimated Cost:	Cost vary based on each structure's needs. Acquisition and elevation are more costly than small retrofits such as relocating utilities or installing flood vents.
Potential Funding Sources:	Virginia CFPF; DHS: HMGP, BRIC; USACE: FPMS
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 5 years of plan adoption
ADDITIONAL COMMENTS	

VIRGINIA BEACH MITIGATION ACTION 18	
Monitor and enhance the City's cybersecurity capabilities to protect the City from cybersecurity threats especially during or immediately after a disaster or emergency.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Major cities' operational reliance on cyber technology increases the importance that the technology remains operational during or after a disaster. Disaster-related or disaster-concurrent outages can rapidly increase the costs of damage and the time needed to return to normal operations. Attempted cyberattacks can also increase following a natural disaster.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Cyber Infrastructure Attack, Active Threat, Complex Coordinated Terrorist Attack, Explosives, Radiological Attack, Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, , Hazardous Materials Incident, Pandemic Flu or Communicable Disease, , Extreme Heat
Goal(s) Addressed:	Goal 1: Objectives 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	TBD
Potential Funding Sources:	DHS
Lead Agency/Department Responsible:	IT (Cybersecurity)
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

VIRGINIA BEACH MITIGATION ACTION 19	
Facilitate discussions with agencies responsible for providing local transportation to encourage them to evaluate, improve, and/or establish local and regional transportation plans to address the transportation needs of vulnerable populations such as the elderly, college and university students, those with disabilities, visitors, etc. in the event of an evacuation.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The state evacuation plan does not take all local factors into account and may not be sufficient for some residents of Virginia Beach with limited transportation options. Local planning will facilitate evacuation when needed and provide transport options to speed evacuation and reduce the number of people in danger.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm, Earthquake, Wildfire, Hazard Materials Incident, Civil Unrest, Power Outage, Water Utility Disruption / Contamination.
Goal(s) Addressed:	Goal 1: Objectives 1.4, 1.5; Goal 2: Objectives 2.1, 2.2; Goal 3: Objective 3.1, 3.2, 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Staff time
Potential Funding Sources:	DHS/VDEM; HRPDC
Lead Agency/Department Responsible:	Planning (Transportation), Emergency Management
Implementation Schedule:	Within 5 years of plan adoption
ADDITIONAL COMMENTS	
Hampton Roads Transit (HRT) is responsible for providing local public transportation within Virginia Beach. Virginia Beach does not have control over HRT's operation requirements.	

VIRGINIA BEACH MITIGATION ACTION 20	
Review all City rules, regulations, policies, procedures, ordinances and plans to ensure a consistent approach that aligns with hazard mitigation goals, objectives and actions.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Cost is negligible but speaking about hazards with a consistent message informs citizens, and continually reinforces the City's stance on important issues for staff and elected officials.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	All
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	n/a
Potential Funding Sources:	n/a
Lead Agency/Department Responsible:	Planning, Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Many new programs and initiatives over the past 5 years have been implemented across many departments. Public Works stormwater management and erosion and sediment control regulations, CRS goals, floodplain management ordinance revisions, all require similar starting points. The City has made a lot of progress on each of these, but additional review will help with consistency. *Sea Level Wise* calls for ensuring that flood mitigation practices identified in a future Flood Mitigation Plan are incorporated into future Comprehensive Plan and this hazard mitigation plan.	

VIRGINIA BEACH MITIGATION ACTION 21	
Implement the action items and projects outlined in *Sea Level Wise*, particularly the following high priority items*:* **1) identify regional flood risk reduction projects that could be pursued with neighboring jurisdictions, such as the City of Norfolk;** **2) increase freeboard to 3 feet or to a future design flood elevation;** **3) require mechanical and electrical systems to be elevated to design flood elevation (with freeboard);** **4) expand height allowance for buildings outside the SFHA, where property owners want to elevated structures to reduce flood risk;** **5) (paraphrased and combined) include sea level rise and future flooding considerations in designing adequate drainage controls, and in development of subdivision/site plans; and,** **6) develop informational materials on how to renovate historic properties to enhance flood resilience consistent with historic preservation requirements.**	
BACKGROUND INFORMATION	
Site and Location:	Areas subject to future flooding citywide
Cost Benefit:	All of these elements will reduce future flood damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.3, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	n/a
Lead Agency/Department Responsible:	Planning, Emergency Management, Public Works
Implementation Schedule:	Within 4 years of plan adoption
ADDITIONAL COMMENTS	

CHESAPEAKE

CHESAPEAKE MITIGATION ACTION 1	
Maintain participation in National Flood Insurance Program and Community Rating System. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements. Consider updates to 2013 floodplain management ordinance to include protection of areas outside the current SFHA subject to future flooding as sea level rises, and additional restrictions on rehabilitation of existing structures in the SFHA such as freeboard and substantial damage requirements. Goal to become CRS Class 6 community.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The NFIP and related flood mapping and development regulations have proven benefits nationwide. Elevating structures to 1.5 feet above the BFE has a benefit cost ratio of 6:1, according to FEMA (*2008 Supplement to the 2006 Evaluation of the National Flood Insurance Program's Building Standards)*. CRS benefits accrue through increased insurance coverage, improved hazard awareness and reduced flood insurance premiums. New construction and future development are protected from floods through existing standards that meet or exceed NFIP minimum requirements.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storms
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2, Goal 2, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – most of the repetitive flood loss areas have very high or relatively high NRI flood risk, especially the largest area southwest of Battlefield Commons
Estimated Cost:	Travel costs and staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	
Chesapeake is a CRS Class 7 community.	

CHESAPEAKE MITIGATION ACTION 2	
Acquire, elevate, relocate, retrofit or floodproof structures in flood prone areas. Flood protection may include minor localized flood reduction projects, as well. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Flood loss areas Citywide
Cost Benefit:	Retrofit measures that address flooded structures, particularly those designated as repetitive loss or severe repetitive loss by the NFIP, have quantifiable benefits. The City is proposing to collect elevation data as part of this action in order to more easily make cost-benefit analyses of these structures. Under new guidance, FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – most of the repetitive flood loss areas have very high or relatively high NRI flood risk, especially the largest area southwest of Battlefield Commons
Estimated Cost:	In multiple $750,000 phases as grant money becomes available.
Potential Funding Sources:	City CIP; DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; USACE: SFCP, FPMS; HUD: CDBG; USDA: WPFP; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS

The City of Chesapeake Office of Emergency Management continues to apply for grants for Acquisitions. 5 of the 7 applications are being processed from the 2018 FMA Grant. 2 applications were submitted for houses in 2019 and 3 applications were submitted for houses in 2020. Additionally, stormwater flood protection reduction projects are scheduled for numerous subdivisions in the SFHA.

There are 3,869 structures identified as being within repetitive flood loss areas. Locally funded projects may be creditable under the Community Rating System.

Detailed activities to support this overall mitigation action include:

1. Coordinate with the City Surveyor in Public Works Department to complete Elevation Certificates for structures when doing other survey work in repetitive flood loss areas.
2. Use pictometry to further refine repetitive flood loss area identification and to collect approximate first floor elevation information for structures in those areas.
3. Use Public Works Department expertise to identify retrofit measures for flood-prone structures. This may be creditable under CRS.
4. Regularly crosscheck real estate market with repetitive flood loss list. Purchase of empty structures may be possible at lower cost.

CHESAPEAKE MITIGATION ACTION 3	
Conduct detailed vulnerability review: cross reference locations of existing manufactured homes and manufactured home parks relative to repetitive flood loss areas and new FEMA 100-year floodplains. Review their vulnerability to flood and wind hazards. Implement measures to retrofit, relocate, or acquire vulnerable units. This action may include Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas Citywide
Cost Benefit:	While the value of manufactured homes is quite low, the costs to elevate or retrofit them to protect from flood and wind can be low, as well. The costs to determine locations and review vulnerability are minimal versus the cost of additional hazard damage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	TBD
Estimated Cost:	Staff time for analysis; approx. $150,000 for retrofit measures such as elevation assistance and tie-downs
Potential Funding Sources:	Virginia CFPF; DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; USACE: SFCP, FPMS; HUD: CDBG; USDA: EWP, WPFP, WSP
Lead Agency/Department Responsible:	Emergency Management, with support from GIS and Engineering Division
Implementation Schedule:	within 2 years of plan adoption
ADDITIONAL COMMENTS	
Manufactured homes and their occupants are particularly vulnerable to wind and flood hazards. The cost of minor retrofits can have exponential benefits in reducing the risk to lives. Procedures are in place for prohibiting new manufactured homes in SFHA; this action addresses existing structures.	

CHESAPEAKE MITIGATION ACTION 4	
Protect critical facilities from damage. Measures may include installation of emergency backup power, elevation of structure or components, relocation or retrofit of building components.	
BACKGROUND INFORMATION	
Site and Location:	Critical facilities Citywide
Cost Benefit:	Benefits of mitigating flood damage to critical facilities are realized by all citizens by maintaining operational capabilities post-disaster.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High for Jail High for Fire Station #2 Medium for Schools Low for other Critical Facilities
Impact on Socially Vulnerable Populations:	
Estimated Cost:	TBD
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; USACE; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management, with GIS and Public Works Engineering Division
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
New Public Safety building/EOC can withstand Category 3 hurricane or earthquake and has multiple redundancy infrastructure built into the building. All community centers and conference center outfitted with generators. The city has also completed the work on two new Fire Stations, Sta #10 in Bowers Hill & Sta #7 in Southern Chesapeake. Sta #10 serves both as a Fire Station and Logics Center for the department, increasing the city's ability to prepare, respond and mitigate following a disaster. Sta #7 is dual use facility, as a Fire Station and a newly added Police Precinct.

CHESAPEAKE MITIGATION ACTION 5	
Flow test and inspect existing City-owned and grant-funded dry hydrants annually to help maintain operability.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Chesapeake has determined that maintaining the highest level of operability for the existing system is more feasible than installing new hydrants.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.2, 1.3, 1.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Existing Budgets
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Ongoing per annual maintenance schedule
ADDITIONAL COMMENTS	
Installation of additional hydrants has proven challenging. This alternative presents a reasonable cost-effective method for maintaining capacity to fight wildfire. There are currently 56 dry hydrants in Chesapeake, mainly in the southern part of the City. This project is overseen by a Captain in the Fire Department who is assisted by a Supervisor in Public Utilities. Hydrants are regular schedule of maintenance and testing. This is not only done for operational purposes, but for training purposes of field forces, especially new recruits in the field.	

CHESAPEAKE MITIGATION ACTION 6	
Seek and use additional revenue sources and local matching funds for mitigation planning and projects.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Local funding sources for mitigation projects can further the benefits of available federal funding. Untapped and unusual funding sources likewise reduce the burden of mitigation on Chesapeake citizens.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 3, Objectives 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	DHS: BRIC; Virginia CFPF; American Rescue Plan Act; USACE
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
NEMAC submits recommendations annually to City Council regarding the status of current mitigation projects and this plan, programmatic problems, an inventory of new potential mitigation projects and unmet needs. City Council evaluates those needs against internal funding sources. NEMAC aggressively pursues and seeks public and private grants to support mitigation activities, and enlists a number of other stakeholders in this process. Related resources may address multiple objectives, such as environmental issues, preparedness, sustainability, and blight reduction. NEMAC is prepared to pursue special appropriations and grants that are available after a disaster. City has obtained and continues to apply for FEMA grants for acquiring repetitive flood loss homes and has committed Capital Improvement Funds to mitigate flooding. City has applied for PDM funds for mitigation purposes to install generators at Public Utilities Pump Stations. City uses emergency management grant funds to enhance its Alert and Everbridge system to warn citizens of flooding issues, along with other potential disasters.	

CHESAPEAKE MITIGATION ACTION 7	
Continue to implement a Pre-Disaster Homeowner Tree Preventive Maintenance and Hazard Awareness Program.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	A low-cost effort can bring many benefits to individual property owners and significantly reduce response costs after a disaster. Benefits accrue to the City through reduced response needs, to homeowners through reduced damages, and through reduced vulnerability wildfire.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Tropical/Coastal Storm, Winter Storms, Wildfires
Goal(s) Addressed:	Goal 2, Objective 2.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Approximately $7,500
Potential Funding Sources:	USDA, Soil and Water Conservation District, Va. Tech Agricultural Extension; DOI - LWCF; Virginia CFPF
Lead Agency/Department Responsible:	Parks and Recreation Department, Emergency Management, Development and Permits
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
This program expands on existing programs in the City that focus on the value of trees, particularly healthy old-growth trees, and how to properly care for trees to prevent them from causing additional damage during wind events. Chesapeake has been designated as a “Tree City USA” for over 27 years, protects trees in the Chesapeake Bay Preservation Area, and has a “What is a Tree?” program for schoolchildren in conjunction with the Agriculture Department. The Chesapeake Arboretum is active in tree resource management and will be approached about participating. A “Prune in June” campaign may be considered as a possible focus for this mitigation action. City to hire Urban Forester/City Arborist in 2022. Messaging has gone out to homeowners regarding what to do following a storm on how to care for damaged trees. Public Communications routinely sends messaging regarding pre-storm maintenance. City works with Garden Clubs and the VT Cooperative Extension to craft and disseminate important information.	

CHESAPEAKE MITIGATION ACTION 8	
Improve stormwater management infrastructure. Implement preventive maintenance schedule and system upgrades. Projects typically include replacement and upgrade of existing facilities, enlarging pipes/ ditches to provide for increased capacity and construction of stormwater management facilities/BMPs to provide flood control and water quality compliance. Provide replacement schedule for stormwater management and inspection equipment and vehicles, including purchases of plows for new trucks to assist with dual purpose of snow removal.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Maintaining and improving the stormwater system provides Citywide benefits from both high and low frequency flood events. The preventive maintenance schedule is a relatively new activity that will help sustain the highest level of operability for the existing system. Equipment replacement prevents downtime, purchases can be more cost effective than repair expenses on depreciated equipment, and new equipment provides for potential for use in other natural event responses (such as Winter Storms).
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Winter Storm
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate/High – most of the repetitive flood loss areas have very high or relatively high NRI flood risk, especially the largest area southwest of Battlefield Commons
Estimated Cost:	$1.8 million
Potential Funding Sources:	Approved and proposed budgets and stormwater utility fees; Virginia CFPF
Lead Agency/Department Responsible:	Public Works/Engineering/Operations
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
While NEMAC recognizes these activities are already ongoing, their importance to maintaining a functioning and effective stormwater system during flood events is critical to hazard management in Chesapeake. Engineering has Master Drainage Plan that identifies watersheds and completed watershed studies identifying system deficiencies and required improvements. Department maintains list of funded and unfunded projects Unfunded projects list is reviewed and updated regularly to ensure flooding and poor drainage areas citywide are addressed. Public Works schedules and provides for regular maintenance and repairs to ensure the existing stormwater system is functioning as intended.

CHESAPEAKE MITIGATION ACTION 9	
Part I. Maximize training and educational opportunities for NEMAC, City staff, elected officials, CERT members and citizen/neighborhood/civic league leaders regarding hazard mitigation, disaster preparedness and the relationship of mitigation to reduced recovery needs. Use modern social media forums such as NextDoor. Provide samples of retrofitting tools and examples of products. **Part II. Accommodate training and related support for at least two staff in the Department of Development and Permits to receive and maintain Certified Floodplain Manager (CFM) certification through the ASFPM.**	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Many training opportunities are already available through FEMA, VDEM, and other agencies. Costs to provide or make arrangements for the training in Chesapeake are minimal versus the benefits of a well-informed citizenry and highly trained floodplain management staff.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2, Objective 2.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Less than $12,000 over five years
Potential Funding Sources:	Existing budgets, staff time; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management Department of Development and Permits
Implementation Schedule:	Ongoing as opportunities arise
ADDITIONAL COMMENTS	
City Staff in OEM and Development & Permits have taken classes on Floodplain Management. OEM staff have taken classes on CRS. OEM continues to oversee NEMAC. City CERT Coordinator continues to train citizens on Disaster Preparedness and being Response Ready. Citizens are taught how to mitigate before, during, and after a disaster, and not be a burden on emergency resources. The CERT Coordinator and members of CERT conduct outreach initiatives, and since COVID slowed down the ability for CERT to meet, members worked with various groups to provide online training on disaster preparedness. Two Development & Permits personnel and two Office of Emergency Management personnel have attended EMI Floodplain Management Courses. D&P personnel will continue toward CFM certification. OEM and D&P personnel will continue to take classes in NFIP & CRS. OEM and D&P actively take part in CRS / Wetlands Watch Workgroup Meetings	

CHESAPEAKE MITIGATION ACTION 10	
Conduct Hazardous Environmental Action Team (HEAT) program to oversee industrial facilities, particularly hazardous facilities, to discuss hazards and mitigation alternatives.	
BACKGROUND INFORMATION	
Site and Location:	Industrial facilities Citywide
Cost Benefit:	Reduces the likelihood of compounding incidents, thereby reducing response costs.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Winter Storm, Wildfire, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objective 1.2, 1.3, 1.4
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$8,000
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
HEAT Team is tasked with preventing and investigating environmental crimes such as illegal dumping of chemicals and waste, illegal transportation and/or storage of hazmat, chemical releases into atmosphere and waterways, burial of hazmat, and failure to report chemical releases. Team members serve on LEPC and help review emergency plans, hazmat management plans, and TIER II reports that are submitted. Team works closely with Emergency Management Office, DEQ, EPA and USCG. Program reduces illegal handling, storage and discharge of hazmat. Members are committed to educating residents and businesses on negative impacts to the environment of illegal dumping and polluting.	

CHESAPEAKE MITIGATION ACTION 11	
Support and maintain City's new Reverse-911 system. Prepare messages to release to citizens before and after a natural hazard event.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Other methods of notifying citizens require massive amounts of staff time which exceeds budgetary restraints. Reverse 911 quickly and efficiently uses existing infrastructure to notify property owners of appropriate pre- and post-disaster mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$7,500
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
The City continues to subscribe to Everbridge (Chesapeake Alert) with enhanced features to allow additional public outreach. Messages have been developed and pre-approved for alerting citizens to potential flooding, and a weather alert component has been incorporated in partnership with NWS, Wakefield. OEM and 911 Dispatch have more trained IPAWS Users, which will allow the City to broadcast WEA messages should an incident occur and notifications are needed quickly.	

CHESAPEAKE MITIGATION ACTION 12	
Prevent sanitary sewer inflows to the system during flood events. Smoke test public and private sanitary sewer infrastructure to determine priorities.	
Site and Location:	Sewer infrastructure Citywide
Cost Benefit:	The consequences and costs of sanitary sewer inflows during a flood event are high for reasons related to human health and damage to infrastructure. Smoke tests are a low-cost alternative to televising all sanitary sewer lines and allow more detailed (and costly) methods to be used only where problems are identified during smoke tests.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$525,000, annually
Potential Funding Sources:	Existing capital budgets
Lead Agency/Department Responsible:	Public Utilities
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Over 10% of the system is checked annually.	

CHESAPEAKE MITIGATION ACTION 13	
Continue lease agreement and maintenance of facilities along the Dismal Swamp Canal Trail to accommodate recreational use of the floodplain.	
BACKGROUND INFORMATION	
Site and Location:	Along the Dismal Swamp Canal
Cost Benefit:	Recreational use of this vast floodplain area is the highest and best use, especially in light of projected sea level rise. Facilities to make this area accessible and enjoyed by so many residents of Hampton Roads and northeast North Carolina are low cost.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Winter Storm, Tropical/Coastal Storm, Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.6; Goal 3, Objective 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$400,000
Potential Funding Sources:	VDOT, USACE and others, as deemed appropriate
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
The Dismal Swamp Canal Trail is a former section of Virginia State Route 17, now a multi-use trail open to bicycling, walking, running, horseback riding, and boating. The north trailhead is located at the intersection of Dominion Blvd. and Old Rt. 17 in Chesapeake, and runs south 8.5 miles, adjacent to the Dismal Swamp Canal. This multipurpose-linear nature trail threads through some of the most uniquely historical and ecologically-significant habitats in the United States. The Dismal Swamp Canal Trail is an historic, environmental and outdoor recreation delight open to walkers, hikers, boaters, bicyclists, and horse owners. Trail improvements have been completed, including paved parking areas and two separate restroom facilities. Trail was recently fully repaved in 2020. The City continues to lease and maintain facilities adjacent to and on the Dismal Swamp Canal Trail. As a sign of the City's commitment to sharing the story of the Dismal Swamp, they have secured funding and designed a Historic Village concept on Glencoe Street (and near the Superintendent's House). The concept includes the move and restoration of a historic schoolhouse previously located on Benefit Road, addition of a Visitor Center and additional structures to share the history of Indigenous communities in the region, maroon communities in the Swamp, the Underground Railroad and its relationship to the Swamp, and the story of the canal with regard to regional trade. Future plans include full restoration of the Superintendent's House in conjunction with the USACE.

CHESAPEAKE MITIGATION ACTION 14	
Continue outreach efforts through a strategically-developed plan to inform and educate citizens before, during and after disasters. Develop pre-approved letters and notification system for structure significantly damaged after any disaster, particularly flood-prone structures with stringent repair requirements.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	The organized nature of the approach reduces long-term costs by: 1) minimizing need to repeat messages; 2) involving outreach/marketing professionals from within City government; 3) investigating regional partnerships that could result in additional cost savings through cost sharing; 4) using existing programs and resources to maximum advantage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All, but primarily Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm
Goal(s) Addressed:	Goal 1, Goal 2, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Less than $7,500
Potential Funding Sources:	Existing budgets and staff time; DHS: BRIC, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Emergency Management (lead) Planning & Development Public Communications
Implementation Schedule:	Ongoing

ADDITIONAL COMMENTS
The departments of Public Communications, IT, OEM, Police, and Fire meet as a Workgroup that focuses on messaging to the citizens and public before, during, and after a disaster. Boilerplate messaging is constantly reviewed and updated and can be redefined based on the incident or disaster. Last year the Workgroup worked with VDEM to adjust the “Know Your Zone” color coding to make more sense regarding the zones that were more likely to flood. The Workgroup created direct messaging that goes out strategically at the start of hurricane season. The state provided some basic messaging and key points that the Workgroup enhanced and made Chesapeake specific. The Public Communications and Information Technology departments, routinely tracks website hits, “likes”, shared posts, retweets, etc. to gauge the effectiveness of the campaign and the overall success of the Workgroup.

CHESAPEAKE MITIGATION ACTION 15	
Acquire open space in strategic locations that can provide multi-objective management benefits. Objectives may include but are not limited to: flood control, water quality, public access to waterways, preserving or creating tree canopy, and preserving unique ecological and cultural heritage sites. Acquire repetitive flood loss properties up for sale for via trustee sale.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Benefits from open space acquisition can occur in several categories for a single project. A flood-prone area can be set aside for recreation and flood control, for example.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion, Winter Storm, Tornado, Winter Storm, Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.6; Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate/High – most of the repetitive flood loss areas have very high or relatively high NRI flood risk, especially the largest area southwest of Battlefield Commons
Estimated Cost:	TBD
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; USACE; USDA, Va. Tech Agricultural Extension, DOI – LWCF; Virginia CFPF
Lead Agency/Department Responsible:	Planning & Development; Parks, Recreation and Tourism
Implementation Schedule:	Long-term, 5 to 10 years
ADDITIONAL COMMENTS	
Projects may tie in with the recently adopted Green Sea Blueway and Greenway Plan. Since 2017, the City has acquired Cornland School, a cultural heritage site, and completed task of moving it out of flood-prone location, and is in the process of elevating the school. City is acquiring Newton Neck parcel adjacent to Dominion Boulevard Veterans Bridge and putting it under conservation easement. The park site is adjacent to many flood-prone neighborhoods. Future park design will include flood prevention measures. Parks, Recreation and Tourism is acquiring several FEMA properties, including adjacent to Costa Avenue. Design for Blue Heron Landing Park in Indian River planning area is complete. New design boasts significantly more pervious area than before, along with a significant increase of trees, shrubs, and improved landscaping.	

CHESAPEAKE MITIGATION ACTION 16	
Identify, create database, and plan uses for data regarding vulnerable populations. Uses may include targeted outreach, emergency notification and specialized evacuation planning. Study high social vulnerability repetitive flood loss areas to identify opportunities to support property owners and renters with recommended property-specific flood damage reduction tools and methods.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Outreach and early notification of events to vulnerable populations aids in evacuation, re-entry, sustainability and community resiliency.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$10,000
Potential Funding Sources:	DHS: UASI, BRIC, HMGP, HMGP 5% Initiative; Virginia CFPF
Lead Agency/Department Responsible:	Emergency Management (lead) Public Communications
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
City continues to work with state Shelter Coordinator to update databases of those with functional needs. The City now has a MIH (Mobile Integrated Health Coordinator), who is also creating a database of vulnerable populations. MIH Team regularly checks on citizens that have medical issues but do not need constant medical oversight. City has databases of those in modular home parks, in high risk areas near chemical facilities, and in repetitive flood areas. These groups can easily be notified using Everbridge should an incident occur. Messaging can also be sent should general information need to go out to the public in these areas.	

ISLE OF WIGHT COUNTY

ISLE OF WIGHT COUNTY MITIGATION ACTION 1	
Acquire, elevate, relocate or retrofit structures in coastal high hazard areas and other flood prone areas that have suffered repetitive flood damage. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Within the VE and AE flood zones along the James River and associated tributaries in Isle of Wight County
Cost Benefit:	Just 17 structures alone in the VE zone suffered damages in 1999 during Hurricane Floyd ($62,000), and 2003 from Hurricane Isabel ($476,483). One structure was recently acquired. FEMA will now fund hazard mitigation projects that include sea level rise estimates.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate – All repetitive flood loss areas are located in NRI relatively moderate flood risk areas, with the exception of an area near Jones Town Driver and Annisons Lane
Estimated Cost:	$3,400,000 (approximately $200,000/property) per phase. Up to 5 phases are planned. One recent acquisition cost $135,000.
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; Virginia CFPF
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Ongoing – County has ongoing process to assess needs
ADDITIONAL COMMENTS	
There are 16 properties with structures located in the VE flood zone that are targeted for participation. The project will have to be performed in phases as grant funds are made available. Acquisition and demolition of structures represent land use changes that the County may be able to claim as credits under new Chesapeake Bay Total Maximum Daily Load (TMDL) requirements. Careful tracking of these projects can also contribute significant points to the Community Rating System classification (see Mitigation Action 2).	

ISLE OF WIGHT COUNTY MITIGATION ACTION 2	
Strengthen floodplain management program through the following: **1) Continue participation in the National Flood Insurance Program and the Community Rating System;** **2) Conduct annual outreach to flood prone property owners;** **3) Review all existing environmental ordinances, such as the CBPA, Floodplain and Stormwater Management Ordinances, to ensure they include the best practicable protection measures, including guiding new development away from flood hazard areas; and** **4) Require new development in Coastal A Zones to meet Zone V standards for design and construction.**	
BACKGROUND INFORMATION	
Site and Location:	Countywide, Isle of Wight County
Cost Benefit:	Participation in the CRS at a Class 9 rating would result in 5% premium savings on most flood insurance policies. A Class 8 rating saves property owners 20% on premiums in the SFHA.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate – All repetitive flood loss areas are located in NRI relatively moderate flood risk areas, with the exception of an area near Jones Town Driver and Annisons Lane
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
This action is part of the County's Strategy for Continued Compliance with the NFIP, and echoes policies and actions recommended in the Comprehensive Plan.	

ISLE OF WIGHT COUNTY MITIGATION ACTION 3	
Develop and maintain a stormwater drainage plan to address issues in flood-prone areas; prioritize and implement plan recommendations.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Flooding as a result of stormwater accumulation can exacerbate coastal flooding, contributing to flood damages of cars, structures, roads and other infrastructure. Nuisance flooding can result in businesses closed down.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate – All repetitive flood loss areas are located in NRI relatively moderate flood risk areas, with the exception of an area near Jones Town Driver and Annisons Lane
Estimated Cost:	$250,000 to $3,000,000
Potential Funding Sources:	General funds; DHS: HMGP
Lead Agency/Department Responsible:	Utility Services
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

ISLE OF WIGHT COUNTY MITIGATION ACTION 4	
Implement countywide Transportation Plan adopted in 2010 as part of the County Comprehensive Plan; include coordination with the Virginia Department of Transportation to address safety along all evacuation routes, including culvert redesigns and other installations to alleviate flooding.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Safe evacuation routes are mandatory for citizen protection during hazard events.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm
Goal(s) Addressed:	Goal 1, Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate – All repetitive flood loss areas are located in NRI relatively moderate flood risk areas, with the exception of an area near Jones Town Driver and Annisons Lane
Estimated Cost:	Planning is underway; individual project costs to be determined through planning efforts
Potential Funding Sources:	General funds, VDOT and Federal assistance
Lead Agency/Department Responsible:	Planning and Public Works/Utility Services, VDOT, HRPDC
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
U.S. 460 is a priority for the County. County added a transportation planner/VDOT liaison to staff.	

ISLE OF WIGHT COUNTY MITIGATION ACTION 5	
Replace, as necessary, and maintain the existing regional interoperable communications system.	
BACKGROUND INFORMATION	
Site and Location:	Countywide and Southside Hampton Roads region
Cost Benefit:	Modern interoperable communications systems support preparedness, response and recovery activities for all hazards.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All Hazards
Goal(s) Addressed:	Goal 1; Goal 3, Objectives 3.1, 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$10 million to $14 million
Potential Funding Sources:	DHS: HMGP, HMGP 5 % Initiative, others; CIP
Lead Agency/Department Responsible:	Emergency Services
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Replacement is needed and scheduled for near future.	

ISLE OF WIGHT COUNTY MITIGATION ACTION 6	
Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood loss areas throughout the County
Cost Benefit:	Repetitively flooded structures strain local and federal resources after disasters, and detract from the fiscal solvency of the NFIP. The NFIP focuses mitigation efforts and funds on properties listed as repetitive losses; therefore, checking the accuracy of the list is a necessity for the NFIP, States and, through this action, local governments.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate – All repetitive flood loss areas are located in NRI relatively moderate flood risk areas, with the exception of an area near Jones Town Driver and Annisons Lane
Estimated Cost:	Staff time estimated at $50 per structure x 18 structures = $900
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Within 2 years of plan adoption and in conjunction with CRS initial application
ADDITIONAL COMMENTS	
An initial attempt to contact property owners by mail will be followed up by phone calls, and site visits as necessary.	

ISLE OF WIGHT COUNTY MITIGATION ACTION 7	
Identify and address multiple hazards along high traffic evacuation routes throughout county, to include removal of utility poles and burying utility lines.	
BACKGROUND INFORMATION	
Site and Location:	High hazard areas for flood, and other areas of community importance (intersections, evacuation routes, critical facilities, and critical businesses)
Cost Benefit:	Overhead utilities are at risk of failure from several types of hazard events. By burying these lines underground, the vulnerability is dramatically reduced.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Winter Storm, Tropical/Coastal Storm, Tornado, Earthquake, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.2; Goal 3, Objectives 3.3, 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	To be determined
Potential Funding Sources:	CIP, Private Funds
Lead Agency/Department Responsible:	Public Works, VDOT, HRPDC
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Burying electrical power lines must be reviewed with Dominion Virginia Power for potential opportunities within the community. Much of Hampton Roads evacuates through Isle of Wight County; therefore, safe, evacuation routes are a high priority for the region as well. New development is required to have underground power lines. VDOT maintains road ROWs and regularly conducts tree trimming.	

ISLE OF WIGHT COUNTY MITIGATION ACTION 8	
Continue use of social media before, during and after hazard events.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Minimal cost to reach larger audience more effectively
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2; Objective 2.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Minimal cost/staff time
Potential Funding Sources:	DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Public Information
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
The prominence of social media points to a need to refine activity on Twitter, Facebook, Instagram and other programs. Need to be pro-active and targeted in messages. Identify specific messages, links. Other information that we will need to spread and the most effective methods, such as short videos, maps, links, photos, and infographics.	

ISLE OF WIGHT COUNTY MITIGATION ACTION 9	
Obtain StormReady designation through NOAA.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	StormReady helps arm communities with the communication and safety skills needed to save lives and property--before, during and after the event. StormReady helps community leaders and emergency managers strengthen local safety programs.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Wildfire
Goal(s) Addressed:	Goal 1, Goal 2, Goal 3
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

ISLE OF WIGHT MITIGATION ACTION 10	
Continue developing a post-disaster continuity of operations plan to assist in more rapid recovery after a disaster.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	By identifying post-disaster processes for almost all County department functions and putting these processes on paper, the plan would aid staff and temporary staff in keeping processes running smoothly and not contributing to additional conflicts.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Landslide/Coastal Erosion, Winter Storm, Earthquake, Wildfire, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objectives 1.4, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Staff time, DHS planning grants
Lead Agency/Department Responsible:	Emergency Management, Planning, Permits & Inspections, Engineering, Public Works
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
The County has made progress refining procedures, but there is more work to do to finalize the plan.	

ISLE OF WIGHT MITIGATION ACTION 11	
Formalize a Green Infrastructure Network Plan to preserve the County's large undisturbed forests, preserve scenic landscapes, provide habitat, reduce stormwater runoff, maintain air quality and moderate temperature. Include a riparian buffer protection strategy for those areas in the Blackwater River Watershed which are not protected by CBPA.	
BACKGROUND INFORMATION	
Site and Location:	Watersheds countywide
Cost Benefit:	Protecting land prior to development is critical for long-term protection of land and water resources.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.6
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	Virginia CFPF
Lead Agency/Department Responsible:	Community Development
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	
These actions are also in the County's Comprehensive Plan.	

SMITHFIELD

SMITHFIELD MITIGATION ACTION 1	
Provide training for member(s) of Town staff to become Certified Floodplain Manager (CFM) through the Association of State Floodplain Managers (ASFPM).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Cost Benefit:	Training related to implementation of floodplain management regulations, permitting, reading Flood Insurance Rate Maps, and other topics will help Town staff properly administer floodplain management regulations, thereby protecting future development from flood damage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objective 1.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	<$1,000 for conference attendance, test taking, and ASFPM membership
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Planning and Engineering
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
This action is part of the Town's Strategy for Continued Compliance with the NFIP.	

SMITHFIELD MITIGATION ACTION 2	
Review information required on the Zoning Permit Application to ensure continued compliance with the NFIP.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Cost Benefit:	Identification of floodplain zones during the Zoning Permit review process provides this hazard information to developers and property owners early in the construction process to help ensure compliance with floodplain management regulations.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objective 1.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Planning and Engineering
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
The NFIP requires that applicants for a floodplain permit provide certain flood hazard information (e.g., Base Flood Elevation, flood zone, Flood Insurance Rate Map identifying information) on the permit application. Coordination with the County, which administers the building permit, may be required. This action is part of the community's Strategy for Continued Compliance with the NFIP.	

SMITHFIELD MITIGATION ACTION 3	
Identify strategic locations throughout town to remove utility poles and bury utility lines.	
BACKGROUND INFORMATION	
Site and Location:	High hazard areas for flood, and other areas of community importance (intersections, critical facilities, and critical businesses)
Cost Benefit:	Overhead utilities are at risk of failure from several types of hazard events. By burying these lines underground, the vulnerability is dramatically reduced.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Winter Storms, Tropical/Coastal Storm, Tornado, Earthquake, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	CIP, Private Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Long-term, over a 10-year period
ADDITIONAL COMMENTS	
Burying electrical power lines must be reviewed with Dominion Virginia Power for potential opportunities within the community.	

SMITHFIELD MITIGATION ACTION 4	
Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood losses
Cost Benefit:	Repetitively flooded structures strain local and federal resources after disasters, and detract from the fiscal solvency of the NFIP. The NFIP focuses mitigation efforts and funds on properties listed as repetitive losses; therefore, checking the accuracy of the list is a necessity for the NFIP, States and, through this action, local governments.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
An initial attempt to contact property owners by mail will be followed up by phone calls, and site visits as necessary.	

SMITHFIELD MITIGATION ACTION 5	
Waterworks Dam/Smithfield Lake - Examine options to either bring dam into compliance with state regulations at a cost of more than $1.5 million, or decommission dam which may cost less, or as much as two times that, depending on the type of environmental restoration chosen for the lakebed.	
BACKGROUND INFORMATION	
Site and Location:	Waterworks Dam is on the west side of Smithfield.
Cost Benefit:	Actions are mandated regardless of cost.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Winter Storm, Earthquake, Flooding Due to Impoundment Failure
Goal(s) Addressed:	Goal 1, Objective 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$250,000 for the study. Mitigation action costs to be determined by study.
Potential Funding Sources:	DEQ, DCR, Town funds
Lead Agency/Department Responsible:	Town Engineer
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
On October 7, 2007, excessive rainfall caused the dam to be topped, resulting in dam erosion and damage to the roadway running along the top of the dam. In 2010, heavy rains weakened the structure. Repair project was put out for bids in October 2017. In 2020, the town was informed they needed to repair the dam to get another operating permit.	

SMITHFIELD MITIGATION ACTION 6	
Increase fuel storage at reverse osmosis water plant, allowing for extended operations during emergency situations.	
BACKGROUND INFORMATION	
Site and Location:	Town's water plant
Cost Benefit:	Due to size of the generator, the most cost effective option is to increase fuel capacity rather convert to natural gas.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Estimated $100,000, depending on the size of the tank and ability to locate additional fuel storage
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative; Town funds
Lead Agency/Department Responsible:	Plant Manager
Implementation Schedule:	3 to 5 years
ADDITIONAL COMMENTS	
Currently, the generator at the plant has a 48-hour run time. The town also has the ability to store around 48 hours of water supply in tanks, giving the town a 4-day supply depending on usage.	

SMITHFIELD MITIGATION ACTION 7	
Purchase variable message roadway signs, primarily for traffic control during flood events.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone roadways throughout the Town
Cost Benefit:	Signs will reduce damage by rerouting traffic around flooded areas, and increase availability of public safety staff for more important tasks. Signs will have other uses beyond traffic control for floods, improving the department's ability to get information out to the public and motorists.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm
Goal(s) Addressed:	Goal 1, Objective 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$13,000 per sign
Potential Funding Sources:	Highway budget, VDOT; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Town Engineer
Implementation Schedule:	Purchase 1 sign per year for the next 5 years
ADDITIONAL COMMENTS	
Several roadways flood during even higher frequency events, so being able to reroute traffic around these roadways becomes even more critical during major storm events.	

SMITHFIELD MITIGATION ACTION 8	
Change generators at critical facilities from diesel to natural gas.	
BACKGROUND INFORMATION	
Site and Location:	Critical facilities throughout the town, including but not limited to: Public Works Maintenance Building, Police Department, and Sewer Pump Stations
Cost Benefit:	Recovery from major disasters requires continuity of operations for the town, to the extent possible.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined based on availability of natural gas and whether individual generators can be converted or will have to be replaced.
Potential Funding Sources:	DHS: UASI, BRIC, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Begin work immediately, starting with the oldest and most critical systems
ADDITIONAL COMMENTS	
Delivery of fuel during disasters is problematic and the town wants to improve ability to maintain continuity of operations.	

WINDSOR

WINDSOR MITIGATION ACTION 1	
Provide training for member of Town staff to become a Certified Floodplain Manager (CFM) through the Association of State Floodplain Managers (ASFPM).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Cost Benefit:	Training related to implementation of floodplain management regulations, permitting, reading Flood Insurance Rate Maps, and other topics will help Town staff properly administer floodplain management regulations, thereby protecting future development from flood damage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objective 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	<$1,000 for conference attendance, test taking, and ASFPM membership
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
This action is part of the community's Strategy for Continued Compliance with the NFIP.	

WINDSOR MITIGATION ACTION 2	
Review information required on the Zoning Permit Application to ensure continued compliance with the NFIP.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Cost Benefit:	Identification of floodplain zones during the Zoning Permit review process provides this hazard information to developers and property owners early in the construction process to help ensure compliance with floodplain management regulations.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objective 1.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Town Manager
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
The NFIP requires that applicants for a floodplain permit provide certain flood hazard information (e.g., Base Flood Elevation, flood zone, Flood Insurance Rate Map identifying information) on the permit application. Coordination with the County, which administers the building permit, may be required. This action is part of the community's Strategy for Continued Compliance with the NFIP.	

FRANKLIN

FRANKLIN MITIGATION ACTION 1	
Use existing stormwater and drainage studies to prioritize and implement recommended improvements. Evaluate use of stormwater fee to fund future projects.	
BACKGROUND INFORMATION	
Site and Location:	Citywide, with particular emphasis on Broad Street ditch, the Armory Drive ditch/ROW, and High Street north of the hospital.
Cost Benefit:	Stormwater drainage minimizes road closures, reduces damage to structures.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	City is currently completing a planning document that outlines recommended improvements and cost estimates for each.
Potential Funding Sources:	ARPA; DHS: BRIC, HMGP, FMA
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 2 to 3 years
ADDITIONAL COMMENTS	

FRANKLIN MITIGATION ACTION 2	
Maintain participation in the National Flood Insurance Program and the Community Rating System (CRS) and explore options for improving rating (currently a Class 9). Partner with Virginia DCR floodplain managers to update Appendix D of the Zoning Ordinance Floodplain Regulations.	
BACKGROUND INFORMATION	
Site and Location:	Flood insurance policyholders in the 100-year floodplain would be the primary beneficiaries. Standard X-Zone policyholders would also benefit up to a maximum 10 percent discount.
Cost Benefit:	Although there are numerous benefits to participation in CRS, the most quantifiable is the premium discounts to flood insurance policyholders. By reducing the amount residents pay in flood insurance premiums, this money is returned to the community and can be spent locally. Furthermore, many CRS communities experience a dramatic increase in the number of policies due to their outreach, which results in a reduction in uninsured losses after a flood. Then, Increased Cost of Compliance funds available to policyholders after a flood can be a valuable mitigation tool.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Goal 2, Goal 3
Priority (High, Moderate, Low):	Medium
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	There is no cost for submitting a CRS application, other than staff time. Additional hours are required for annual reviews and cycle applications every 5 years. FEMA/ISO will provide application assistance.
Potential Funding Sources:	Existing budgets.
Lead Agency/Department Responsible:	Community Development
Implementation Schedule:	Within 1 to 2 years
ADDITIONAL COMMENTS	
CRS provides a structured incentive program to address flood hazards by rewarding policyholders with premium discounts, enhancing public safety, reducing damage to property and public infrastructure, avoiding economic disruption and losses, reducing human suffering, protecting the environment, and increasing the flood insurance policy base.	

FRANKLIN MITIGATION ACTION 3	
Compile elevation and flood damage data, including but not limited to: **1) Ensure all flood-prone businesses have based flood elevations posted inside;** **2) Link gauge data and high water mark data in a digital environment to facilitate evacuation, notification and other community flood awareness elements;** **3) Continue to participate in the river gaging program (entered 5 year contract in 2020);** **4) Maintain completed FEMA Elevation Certificates in a publicly-accessible format.**	
BACKGROUND INFORMATION	
Site and Location:	Throughout City's flood hazard areas.
Cost Benefit:	Data will support analysis of costs and benefits of flood mitigation measures, particularly for repetitively flooded structures. Benefits accrue through reduced staff time in preparing mitigation grant applications, and improved accuracy of cost-benefit analyses and evacuation plans.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2; Goal 2; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Staff time; approximately 100 hours.
Potential Funding Sources:	USACE: FPMS (high water marks, structure elevations), HRPDC: LIDAR DHS: HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Fire and Rescue, Department of Tourism, Community Development
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Gathering data to create an accurate cost-benefit analysis can be a particularly daunting part of the grant application process. By compiling data on historic floods and detailed damages in a single location/document, the City will support flood mitigation projects, both structural and nonstructural. Detailed elevation data in the Downtown Business District will assist in both evacuation planning and mitigation prioritization.	

FRANKLIN MITIGATION ACTION 4	
Work with the Department of Tourism and property owners to identify and implement wet and dry floodproofing projects to protect structures from future flood events. Floodproofing projects should be viewed from a holistic perspective while considering available technology and the building's age. Current floodplain management ordinance regulates floodproofing and residential elevations. Identify projects by providing flood audits to business owners. Mitigation projects may include acquisition, elevation, mitigation reconstruction projects, and retrofitting.	
BACKGROUND INFORMATION	
Site and Location:	Downtown Franklin
Cost Benefit:	Initial flood audits conducted by a structural engineer, together with detailed first floor elevations, will aid in prioritizing mitigation projects to ensure that implemented projects maximize the reduction in average annual flood damages and reduce economic strain on businesses and the City.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$2,500 to $10,000 per structure
Potential Funding Sources:	DHS: HMGP, RFC ACE: FPMS HRPDC SBA loans
Lead Agency/Department Responsible:	Community Development
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
Investigate the potential for "peer-to-peer" mentoring with other communities that have implemented historic downtown flood mitigation projects. Potential communities in the region with successful downtown flood mitigation projects include Grundy and Staunton, Virginia and Belhaven, North Carolina. The HRPDC can assist.	

FRANKLIN MITIGATION ACTION 5	
Conduct community disaster awareness campaign through the City's email newsletter to interested citizens, social media platforms through City of Franklin, Franklin Fire & Rescue and Franklin Police pages, and the cable Public, Education and Government (PEG) Channel. Address mitigation actions for multiple hazards, including purchase of flood insurance.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	For low cost, the City can distribute information on a variety of hazards to interested citizens on a regular basis. Benefits accrue when citizens aware of hazards begin to take actions to protect lives and property.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Drought, Extreme Heat, Hazardous Materials Incident, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	Moderate/Low
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Minimal costs for staff time. Materials are available from FEMA and other agencies for free.
Potential Funding Sources:	Existing budgets. DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Fire and Rescue, American Red Cross
Implementation Schedule:	Within one year.
ADDITIONAL COMMENTS	

FRANKLIN MITIGATION ACTION 6	
Increase protection and access/egress for critical facilities and infrastructure, primarily as a result of flooding. Elevate or floodproof new critical facilities; retrofit, relocate or repurpose existing facilities, or develop alternative options with close localities, and protect existing power line infrastructure. Mitigation projects may include acquisition, elevation, mitigation reconstruction projects, or retrofitting.	
BACKGROUND INFORMATION	
Site and Location:	Citywide, with particular emphasis on: 1. Evaluating relocation of main fire station out of the Special Flood Hazard Area (100-year floodplain); 2. Regionally, along power line right-of-ways; and, 3. Wastewater treatment plant mitigation or relocation.
Cost Benefit:	Benefits are reduced response times, longevity of critical infrastructure and reduced downtime for utilities after a disaster. The fire station was constructed in 1979 and was flooded in 1999 and 2006. The wastewater treatment plant was built in the 1950s and is also located in the Special Flood Hazard Area and is subject to regular inundation. Recently completed Franklin Southampton shared Water/Sewer Study outlines costs and benefits of various alternatives.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Winter Storm
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Relocation of Fire Station estimated at +$9 million. Relocation or Mitigation of Wastewater Treatment Plan estimated at +$70 million
Potential Funding Sources:	ARPA; DHS: BRIC, HMGP, FMA; ACE: FCW, SFCP Dominion
Lead Agency/Department Responsible:	Fire Station – Franklin Fire & Rescue Public Works, with Franklin Power & Light, and Dominion
Implementation Schedule:	Within 1 to 2 years
ADDITIONAL COMMENTS	
Existing power lines in the floodway and floodplain are current issues of concern. Some power lines are outside of the City but provide power to the City and there is concern that power outages during floods could be extensive. The City is actively raising electrical panels and other equipment to higher locations, and is evaluating raising the substation. The City should move forward with identification of available, non-flood-prone sites for a new Fire Station.	

FRANKLIN MITIGATION ACTION 7	
Reduce the prevalence of hazardous trees by: **1) Conducting routine inspection and tree-trimming maintenance conducted by Public Works on a yearly basis; and** **2) coordinating with the Beautification Committee to prepare and distribute guidelines for property owners on how to properly care for aging trees, especially at the onset of hurricane season. Use PEG channel for distribution.**	
BACKGROUND INFORMATION	
Site and Location:	Franklin is a designated "Tree City USA" and the Beautification Committee administers an ordinance regulating tree pruning on publicly owned property.
Cost Benefit:	Benefits accrue through reduced damages to people, structures and vehicles. Reduced power outages get the City back to full operability faster.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tropical/Coastal Storm, Winter Storm, Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.2, 1.5; Goal 2
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	VDOF Urban and Community Forestry Assistance, VDOT Transportation Enhancement Grants
Lead Agency/Department Responsible:	Public Works tree trimming team
Implementation Schedule:	within 1 year
ADDITIONAL COMMENTS	
Tree failure has been identified by citizens as a significant hazard concern. During high wind events, trees that have not been properly pruned represent a hazard to people, structures, power lines, and vehicles. City continuously share Department of Forestry guidelines with the public.	

FRANKLIN MITIGATION ACTION 8	
Coordinate with CSX to regulate and manage the amount, types and times of hazardous materials transport through Franklin, and in preparing for potential hazardous material incidents.	
BACKGROUND INFORMATION	
Site and Location:	CSX rail lines
Cost Benefit:	Through the low-cost exchange of transport information with the railroads, Franklin officials can maximize preparedness, and reduce potential damage from an incident occurring during peak travel times or special events.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.5; Goal 3, Objective 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Minimal
Potential Funding Sources:	n/a
Lead Agency/Department Responsible:	Fire and Rescue
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Currently, staff are working with CSX to determine what hazardous materials travel through Franklin. The nearby Town of Boykins in Southampton County has passed an ordinance prohibiting overnight or longer-term parking of hazardous materials rail cars within town limits.	

FRANKLIN MITIGATION ACTION 9	
Continue upgrades to radio system to increase interoperability between departments and neighboring communities.	
BACKGROUND INFORMATION	
Site and Location:	Citywide and Neighboring Agencies
Cost Benefit:	Improved response capability builds community sustainability and increases citizen confidence in City services.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objective 1.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$1.6 million
Potential Funding Sources:	ARPC; DHS: BRIC, HMGP, HSGP
Lead Agency/Department Responsible:	Police; Fire and Rescue
Implementation Schedule:	Within 2 to 3 years
ADDITIONAL COMMENTS	
Franklin is working on this action currently using ARPA funds. Goal is to connect departments on local and regional levels.	

FRANKLIN MITIGATION ACTION 10	
Expand offside capabilities to city departments and citizens. Install citywide wireless network that will allow users to have access to computer network in a mobile environment. Provide signage for residents/travelers on how to connect to network.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Improves response capability, thereby reducing damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objective 1.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$330,196
Potential Funding Sources:	ARPA; DHS: BRIC, HMGP, HMGP 5% Initiative, HSGP
Lead Agency/Department Responsible:	Police
Implementation Schedule:	2 years
ADDITIONAL COMMENTS	
Install a citywide wireless network that will allow emergency responders to access internet, street level maps of city, HAZMAT information, pre-fire plans, and VCIN/NCIC for law enforcement. Interoperable communications of information exchanged via secure instant messaging. Allows interoperability of outside agencies responding to an incident within the City of Franklin. Several systems have been tested in recent years, but none found adequate for designated purposes.	

FRANKLIN MITIGATION ACTION 11	
Upgrade existing GIS system to incorporate wetlands, NFIP flood maps and other risk information into the site plan review process for new development. Incorporate risk from tidal surge and rising sea levels on rivers and consider how floodplains will change over time.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	A very low cost mitigation action with the benefit of raising awareness of flood hazards at a time when the (readily available) information can be used in the development process to protect new structures and infrastructure.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 3, Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Community Development, Clerk's Office, Revenue Office
Implementation Schedule:	Immediately
ADDITIONAL COMMENTS	
Currently, staff are working with Clerk's Office, Revenue Office and GeoDecisions on overall GIS use/system. Currently have a wetlands test layer.	

FRANKLIN MITIGATION ACTION 12	
Help businesses develop multi-disaster recovery plans.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Disaster recovery plans minimize or eliminate disruptions to the local economy and may reduce the need for insurance claims or business assistance after events.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$30,000
Potential Funding Sources:	DHS: HSGP
Lead Agency/Department Responsible:	Community Development, with Chamber of Commerce, Franklin Southampton Economic Development and Department of Tourism, HRPDC
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
Businesses with disaster recovery plans in place will reduce or eliminate the impact of future disasters on themselves and Franklin's local economy. The identification of potential hazard mitigation measures (i.e., building retrofits/elevation, secondary storage facilities, backup systems) should be encouraged. Staff are currently working with agencies and departments listed above to identify additional strategies and methods to include economic relief, recovery and incentives to bring in new businesses. Relocation of Community Development is also under consideration to provide continuity of permitting operations.	

FRANKLIN MITIGATION ACTION 13	
Identify and repair or demolish unsafe, unsanitary or hazardous housing and other structures, including those in repetitive flood loss areas. Mitigation projects may include acquisition, relocation, elevation, mitigation reconstruction projects, and/or retrofitting.	
BACKGROUND INFORMATION	
Site and Location:	Citywide
Cost Benefit:	Unsafe housing increases the potential for loss of life and property due to several hazards. By identifying housing vulnerable to natural hazards and prioritizing those structures for repair or demolition, average annual damages due to hazards can be reduced.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Winter Storm, Tornado, Hazardous Materials Incident, Wildfire, Radon Exposure
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3; Goal 2, Objective 2.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Costs vary based on structure needs. Generally, costs for demolition start at about $10,000 per structure, while rehabilitation and elevation together start at approximately $100,000 per structure.
Potential Funding Sources:	ARPA; HUD: CDBG DHS: BRIC, FMA, HMGP, RFC (CDBG funds may be applied as a non-Federal match to DHS grant funds)
Lead Agency/Department Responsible:	Community Development & Franklin Fire
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	
Community has an ongoing housing needs assessment that must be partnered with this initiative. City is planning action in the near future using ARPA and CDBG funds.	

FRANKLIN MITIGATION ACTION 14	
Verify the geographic location of identified NFIP repetitive loss structures, and determine if those properties have been mitigated and, if so, by what means.	
BACKGROUND INFORMATION	
Site and Location:	Repetitive flood loss areas throughout the City
Cost Benefit:	Repetitively flooded structures strain local and federal resources after disasters, and detract from the fiscal solvency of the NFIP. The NFIP focuses mitigation efforts and funds on properties listed as repetitive losses; therefore, checking the accuracy of the list is a necessity for the NFIP, States and, through this action, local governments.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Costs are being reevaluated.
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC
Lead Agency/Department Responsible:	Planning
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
An initial attempt to contact property owners by mail will be followed up by phone calls, and site visits as necessary.	

SOUTHAMPTON COUNTY

SOUTHAMPTON COUNTY MITIGATION ACTION 1	
Protect existing and future critical facilities from damage due to flooding, tropical storm, earthquake and tornado. Projects may include: **1) Modify floodplain management ordinance to require new public safety buildings be located outside 500-year floodplain and that a detailed flood study be conducted to determine limits of the 100- and 500-year floodplains for proposed public safety buildings near approximate A Zone floodplain;** **2) continue mapping water and sewer lines countywide, including the towns, in order to identify problems and retrofit/upgrade needs in order to protect utilities from damage and provide continuity of operations during disaster;** **3) Retrofit new Sheriff's Office and EOC to protect from flooding, including access and egress; and,** **4) Ensure retrofitted Courthouse is protected from flooding.**	
BACKGROUND INFORMATION	
Site and Location:	To be determined
Cost Benefit:	The current EOC is subject to flooding which can hinder response efforts during flood events. Benefits accrue by increasing response capabilities and reducing average annual flood damages and predicted downtime for critical public safety structures and lifelines.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding; Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Tornado, Earthquake
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – repetitive flood loss areas in the county are NRI relatively high or very high flood risk
Estimated Cost:	Staff time
Potential Funding Sources:	Existing budgets; DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	County Administrator's Office
Implementation Schedule:	Within 3 years
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 2	
Consider amendment to subdivision ordinance that requires solicitation to the Virginia Department of Forestry for wildfire mitigation comments on proposed major subdivisions in the County.	
BACKGROUND INFORMATION	
Site and Location:	To be determined
Cost Benefit:	During the site plan review process, comments regarding smart wildfire avoidance techniques, such as defensible space, can be incorporated into the project design.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Goal(s) Addressed:	Goal 1; Goal 3, Objective 3.4
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	Staff time
Potential Funding Sources:	VDOF
Lead Agency/Department Responsible:	Community Development
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 3	
Protect repetitively flooded structures, including the County courthouse, from flood damage. Modifications could include floodproofing retrofits, elevation of structure and/or critical components, acquisition, relocation or repurposing the structure. This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Average annual flood damages would be reduced through mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – repetitive flood loss areas in the county are NRI relatively high or very high flood risk
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; HSGP
Lead Agency/Department Responsible:	County Administrator's Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 4	
Complete five remaining countywide drainage studies that prioritize drainage maintenance requirements and stormwater management projects to minimize flooding problems. Implement recommendations.	
BACKGROUND INFORMATION	
Site and Location:	One study proposed for each County planning area (Newsoms has been completed)
Cost Benefit:	The exact nature of flooding problems merits additional study before the costs and benefits of individual flood mitigation projects can be calculated with accuracy, and in order to determine which drainage maintenance projects maximize benefits from reduced flooding. Much of the County has only been studied to show approximate A Zone floodplains.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – repetitive flood loss areas in the county are NRI relatively high or very high flood risk
Estimated Cost:	$250,000
Potential Funding Sources:	DHS: BRIC, HMGP, HSGP; USDA: WPFP
Lead Agency/Department Responsible:	County Administrator's Office
Implementation Schedule:	Within 5 years of plan adoption
ADDITIONAL COMMENTS	
Many storm drainage ditches were constructed in the 1930's and are not maintained.	

SOUTHAMPTON COUNTY MITIGATION ACTION 5	
Institute web-based educational program to provide multi-hazard structural protection techniques to property owners. Include information on responsible tree pruning.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost benefit:	Low-cost protection measures help citizens help themselves.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Radon Exposure
Goal(s) Addressed:	Goal 2, Objectives 2.1, 2.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Approximately $2,500 annually
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative; American Red Cross; FEMA materials available at no charge
Lead Agency/Department Responsible:	Community Development
Implementation Schedule:	Within 1 year
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified, specifically related to driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages.	

SOUTHAMPTON COUNTY MITIGATION ACTION 6	
Verify the geographic location of all NFIP repetitive losses, and make inquiries as to whether the properties have been mitigated, and if so, by what means.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Average annual flood damages are reduced through mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1; Goal 3, Objective 3.2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High – repetitive flood loss areas in the county are NRI relatively high or very high flood risk
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, FMA, RFC; HSGP
Lead Agency/Department Responsible:	Community Development; HRPDC, VDEM
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 7	
Maintain Certified Floodplain Manager (CFM) certification and training for two County employees.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Training related to implementation of floodplain management regulations, permitting, reading Flood Insurance Rate Maps, and other topics will help staff properly administer floodplain management regulations, thereby protecting future development from flood damage.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	High.
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$1,000 per person
Potential Funding Sources:	Department training funds
Lead Agency/Department Responsible:	Department of Community Development
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 8	
Enact tree preservation or landscape ordinance for new construction in all zoning designations.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Tree protection and landscape requirements mitigate effects of erosion and can contribute to stormwater management for new construction by requiring greater pervious areas and retention of existing landscaped areas.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Landslide/Coastal Erosion, Winter Storm, Wildfire
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.5, 1.6, Goal 3, Objective 3.1
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time only
Potential Funding Sources:	DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	County Administrator/Public Works Department/Community Development Department
Implementation Schedule:	within 3 years of plan adoption
ADDITIONAL COMMENTS	
County is adopting new zoning designation with landscaping requirements. Tree preservation and landscaping are also addressed in proposed solar energy ordinance now under consideration.	

SOUTHAMPTON COUNTY MITIGATION ACTION 9	
Encourage Litter Control Council and citizen groups to become more involved in roadside clean-ups to keep roadside ditches clear of debris.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Citizen involvement in ditch maintenance reduces costs to VDOT for ditch maintenance.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Landslide/Coastal Erosion, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.5, 1.6, Goal 2, Objective 2.1; Goal 3, Objective 3.3
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	<$5,000
Potential Funding Sources:	Grants for Litter Control Council
Lead Agency/Department Responsible:	Public Works (staff liaison to Litter Control Council)
Implementation Schedule:	Over the next 5 to 7 years
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 10	
Increase use of Reverse 911 by citizens. Registration for the service is required and is currently advertised primarily on county web site.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	Reverse 911 has a cost to the County, but increased users are needed to make the system as cost-effective as possible.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.4, 1.5, Goal 2, Objective 2.1, Goal 3, Objective 3.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	<$2,500
Potential Funding Sources:	To be determined.
Lead Agency/Department Responsible:	Sheriff's Office
Implementation Schedule:	Within 2 years of plan adoption
ADDITIONAL COMMENTS	
Sheriff's Office has plans in place for advertisement.	

SOUTHAMPTON COUNTY MITIGATION ACTION 11	
Include hazard mitigation priorities in budget preparation discussions and other County functions, such as comprehensive land use planning.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Cost Benefit:	The process for funding other mitigation actions included in this plan must begin with countywide budget priorities. There is no cost to including a discussion of the hazards and vulnerability to which the county is exposed, but the benefits accrue as mitigation actions get implemented.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3, 1.4, 1.5; Goal 3, Objectives 3.1, 3.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Director/Coordinator of Emergency Management
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	
Funds for mitigation efforts are necessary. Some costs are minimal (e.g., direct mail, web updates), some are expensive (e.g., structural mitigation, relocation of critical facilities). It is important for all County staff to look at hazard mitigation as a set of on-going actions rather than as a hard copy plan on the bookshelf. County Comprehensive Plan is currently undergoing revision and hazard mitigation-related goals and objectives will be incorporated.	

SOUTHAMPTON COUNTY MITIGATION ACTION 12	
Implement drainage plan for Newsoms area. The plan was created through a DHCD grant that is currently funded and underway until early 2023. Seek additional funding sources.	
BACKGROUND INFORMATION	
Site and Location:	Newsoms
Cost Benefit:	Drainage study and plan are completed and provide steps necessary to fix drainage problems and repair damaged homes.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 2, Objective 2.1; Goal 3, Objectives 3.1, 3.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$50,000 - $500,000, per plan, which was broken into several geographic areas, so phased implementation is feasible.
Potential Funding Sources:	DHS: HMGP
Lead Agency/Department Responsible:	Director/Coordinator of Emergency Management
Implementation Schedule:	Annually
ADDITIONAL COMMENTS	
Three more phases of the plan are anticipated.	

SOUTHAMPTON COUNTY MITIGATION ACTION 13	
Develop long-term housing plan, including consideration of adopting the Property Maintenance Section of the USBC to address existing housing deficiencies. Long-term plan should include housing for displaced populations in the incorporated and unincorporated parts of Southampton County in the event of a disaster.	
BACKGROUND INFORMATION	
Site and Location:	Countywide, with particular focus on flood-prone and socially vulnerable population centers in the towns.
Cost Benefit:	Disaster resilience is only achieved when the hardest hit citizens can return to a new normal, safe from repeat events. By focusing on population centers and identifying future housing needs for socially vulnerable populations, the County will reduce future costs and uncertainty in a post-disaster scenario.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Hazardous Materials Incident, Radon Exposure
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 14, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High/Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Virginia CFPF; DHS: BRIC, HMGP; HUD: CDBG; Virginia Department of Housing and Community Development; HRPDC
Lead Agency/Department Responsible:	Sheriff's Office, Community Development, Social Services
Implementation Schedule:	Within 3 years of plan adoption
ADDITIONAL COMMENTS	

SOUTHAMPTON COUNTY MITIGATION ACTION 14	
Conduct additional watershed mapping for the Blackwater and Nottaway Rivers, similar to the recently completed effort on the Meherrin River.	
BACKGROUND INFORMATION	
Site and Location:	Blackwater and Nottaway River watersheds
Cost Benefit:	Better mapping facilitates better regulation of stormwater and other development-related impacts in the watersheds.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 3: Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – repetitive flood loss areas in the county are NRI relatively high or very high flood risk
Estimated Cost:	TBD
Potential Funding Sources:	USACE, Silver Jackets, County General Fund
Lead Agency/Department Responsible:	Community Development
Implementation Schedule:	Within 5 years of plan adoption
ADDITIONAL COMMENTS	

SURRY COUNTY

SURRY COUNTY MITIGATION ACTION 1	
Increase staff resources for emergency management.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Benefit Cost:	Insufficient staffing increases the demands on existing staff and can be problematic in program administration during disasters.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1: Objectives 1.2, 1..3, 1.4, 1.5; Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$60,000 to $80,000 per position
Potential Funding Sources:	County Budget and Staffing Plan; DHS
Lead Agency/Department Responsible:	Emergency Services
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SURRY COUNTY MITIGATION ACTION 2	
Establish signage notifications for additional high water marks along creeks and rivers in floodprone areas.	
BACKGROUND INFORMATION	
Site and Location:	To be determined.
Benefit Cost:	Signage that notifies drivers about how high the water is helps reduce water rescues and save lives.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding; Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1: Objective 1.5; Goal 2; Goal 3: Objectives 3.3, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – northern Census tract with 3 repetitive flood loss areas Low – southern Census tract with 1 repetitive flood loss area
Estimated Cost:	<$5000
Potential Funding Sources:	Staff, VDOT
Lead Agency/Department Responsible:	Emergency Services
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SURRY COUNTY MITIGATION ACTION 3	
Protect critical facilities and infrastructure. Measures may include retrofitting of existing buildings and facilities as shelters, stormwater management or drainage improvements, elevation or relocation of structures or facilities out of hazard-prone locations. Continue to install the necessary electrical hook-up, wiring, and switches to allow readily-accessible connections to emergency generators at key critical public facilities.	
BACKGROUND INFORMATION	
Site and Location:	County facilities throughout the County
Benefit Cost:	Continuity of operations after a hazard event is dependent upon operational utilities, shelters, communications and medical services.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1: Objectives 1.2, 1.3, 1.5; Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	CIP, DHS: HMGP; Virginia CFPF
Lead Agency/Department Responsible:	Public Safety
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SURRY COUNTY MITIGATION ACTION 4	
Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes. Use social media to quickly and effectively inform the public.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Benefit Cost:	Damage from hazard events is reduced when citizens are prepared and knowledgeable about mitigation techniques to protect their lives and property, and preparedness techniques for staying safe when events happen.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time; less than $2500 annually
Potential Funding Sources:	DHS materials; CIP
Lead Agency/Department Responsible:	Public Safety
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SURRY COUNTY MITIGATION ACTION 5	
As part of continuing participation in the NFIP and a new application to the Community Rating System, request list of NFIP repetitive flood losses to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501. Update flood ordinance to clarify freeboard requirement.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Benefit Cost:	Community Rating System participation may reduce flood insurance premiums throughout the County.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1: Objective 1.1; Goal 3: Objective 3.2
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	High – northern Census tract with 3 repetitive flood loss areas Low – southern Census tract with 1 repetitive flood loss area
Estimated Cost:	Staff time investment in CRS application is significant.
Potential Funding Sources:	VDEM
Lead Agency/Department Responsible:	Department of Planning and Zoning
Implementation Schedule:	within 2 years of plan adoption
ADDITIONAL COMMENTS	
Discussions with VDEM and the regional PDC's may transfer some of the repetitive flood loss monitoring to VDEM in the future.	

SURRY COUNTY MITIGATION ACTION 6	
Improve GIS and 911 capabilities with better data collection, integration and functionality.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Benefit Cost:	Emergency Management and hazard response functionality are improved with high level data integration and geographic/spatial data.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Extreme Heat, Hazardous Materials Incident, Pandemic Flu or Communicable Disease
Goal(s) Addressed:	Goal 3: Objectives 3.2, 3.4
Priority (High, Moderate, Low):	Low
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Public Safety Answering Points (PSAP) Operations Grant
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

SURRY COUNTY MITIGATION ACTION 7	
Protect public and private property through a variety of measures, including but not limited to: acquisition, elevation or relocation of structures from hazard prone areas, retrofitting of existing buildings, and minor structural flood control projects.	
BACKGROUND INFORMATION	
Site and Location:	Countywide
Benefit Cost:	Protecting structures in hazard-prone locations, particularly floodplains, has been shown to reduce future damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Flooding Due to Impoundment Failure/High Hazard Dam, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion, Tornado, Earthquake, Winter Storm, Wildfire, Radon Exposure
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 2: Objective 2.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High – northern Census tract with 3 repetitive flood loss areas Low – southern Census tract with 1 repetitive flood loss area
Estimated Cost:	TBD
Potential Funding Sources:	DHS: HMGP, BRIC, FMA; Virginia CFPF; USACE: FPMS, SFCP
Lead Agency/Department Responsible:	Public Safety; Planning and Zoning
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF CLAREMONT

TOWN OF CLAREMONT MITIGATION ACTION 1	
Protect public and private property through a variety of measures, including but not limited to: acquisition, elevation or relocation of structures from hazard prone areas, retrofitting of existing buildings, and minor structural flood control projects.	
BACKGROUND INFORMATION	
Site and Location:	Throughout the Town
Benefit Cost:	Protecting structures in hazard-prone locations, particularly floodplains, has been shown to reduce future damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Tropical/Coastal Storm, Landslide/Coastal Erosion, Tornado, Earthquake, Winter Storm, Wildfire, Radon Exposure
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 2: Objective 2.1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	TBD
Potential Funding Sources:	DHS: HMGP, BRIC, FMA; Virginia CFPF; USACE: FPMS, SFCP
Lead Agency/Department Responsible:	Mayor
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF CLAREMONT MITIGATION ACTION 2	
Protect critical facilities and infrastructure. Measures may include retrofitting of existing buildings and facilities as shelters, stormwater management or drainage improvements, elevation or relocation of structures or facilities out of hazard-prone locations.	
BACKGROUND INFORMATION	
Site and Location:	Throughout the Town
Benefit Cost:	Continuity of operations after a hazard event is dependent upon operational utilities, shelters, communications and medical services.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1: Objectives 1.2, 1.3, 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	DHS: HMGP; Virginia CFPF; USACE: FPMS
Lead Agency/Department Responsible:	Mayor
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF CLAREMONT MITIGATION ACTION 3	
Continue to work with VDOT to develop an alternative ingress/egress to Claremont Beach.	
BACKGROUND INFORMATION	
Site and Location:	Claremont Beach
Benefit Cost:	
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	TBD
Potential Funding Sources:	Virginia CFPF; DHS: HMGP
Lead Agency/Department Responsible:	Mayor
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF CLAREMONT MITIGATION ACTION 4	
Review NFIP repetitive loss and severe repetitive loss property list to ensure accuracy. Verify location of each property and determine if that property has been mitigated and by what means.	
BACKGROUND INFORMATION	
Site and Location:	Throughout the Town
Benefit Cost:	
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding; Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1: Objective 1.1, 1.2; Goal 3: Objective 3.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Approximately 5 hours staff time
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Mayor
Implementation Schedule:	within 1 year of data receipt
ADDITIONAL COMMENTS	

TOWN OF CLAREMONT MITIGATION ACTION 5	
Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	
BACKGROUND INFORMATION	
Site and Location:	Throughout the Town
Benefit Cost:	Prepared and knowledgeable citizens can help reduce damage from events and protect their own property.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.4, 1.5; Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Minimal, as many materials are readily available from American Red Cross, FEMA and other entities
Potential Funding Sources:	Existing budgets
Lead Agency/Department Responsible:	Mayor
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF DENDRON

TOWN OF DENDRON MITIGATION ACTION 1	
Protect public and private property through a variety of measures, including but not limited to: acquisition, elevation or relocation of structures from hazard prone areas, retrofitting of existing buildings, and minor structural flood control projects. **Distribute materials that teach residents about mitigation measures for protection of their own lives and property from a wide range of hazards.**	
BACKGROUND INFORMATION	
Site and Location:	Throughout the Town
Benefit Cost:	Protecting structures in hazard-prone locations, particularly floodplains, has been shown to reduce future damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1: Objectives 1.1, 1.2, 1.3, 1.4, 1.5; Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Low
Estimated Cost:	TBD
Potential Funding Sources:	DHS: HMGP, BRIC, FMA; Virginia CFPF; USACE: FPMS, SFCP
Lead Agency/Department Responsible:	Mayor
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

PLAN MAINTENANCE PROCEDURES

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2022 UPDATE

Section 8 was updated to modify the scope and to include all 25 communities participating in this planning process.

INTRODUCTION

This section discusses how the *Mitigation Strategy* will be implemented by the communities and how the overall Hazard Mitigation Plan will be evaluated and enhanced over time. This section also discusses how the public and participating stakeholders will continue to be involved in the hazard mitigation planning process in the future. This section consists of the following three subsections:

- IMPLEMENTATION
- MONITORING, EVALUATION AND ENHANCEMENT
- CONTINUED PUBLIC INVOLVEMENT

IMPLEMENTATION

44 CFR Requirement
Part 201.6(c)(4)(i): The plan will include a plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating and updating the mitigation plan within a five-year cycle.

In addition to the assignment of a lead department or agency, an implementation time period has been established for each mitigation action in order to assess whether actions are being implemented in a timely fashion. Each community will seek funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in each *Mitigation Action Plan*.

44 CFR Requirement
Part 201.6(c)(4)(ii): The plan maintenance process will include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Emergency Management officials in each community will be responsible for determining additional implementation procedures beyond those listed within the *Mitigation Action Plan*. This includes further integrating the Hazard Mitigation Plan into other local planning documents such as comprehensive, resilience or capital improvement plans, when appropriate. The members of the planning committees for each community remain charged with ensuring that the goals and strategies of new and updated local planning documents (such as Comprehensive Plans and Zoning Ordinances) are consistent with the goals and actions of the Hazard Mitigation Plan, and that those planning documents will not contribute to an increased level of hazard vulnerability in the region.

Opportunities to integrate the requirements of this Plan into other local planning mechanisms will continue to be identified through future meetings of each community's mitigation planning committee and through the five-year review process described in this section.

Each community will integrate the tenets of this mitigation plan into relevant local government decision making processes or mechanisms. The primary means for integrating mitigation strategies into other local planning documents will be accomplished through the revision, update, and implementation of the Mitigation Action Plan that requires specific planning and administrative tasks (i.e., plan amendments, ordinance revisions, capital improvement projects). In addition, each community will incorporate existing planning processes and programs addressing the impacts of climate change, resiliency programs, flooding and sea level rise hazard mitigation into this document by reference.

MONITORING, EVALUATION AND ENHANCEMENT

Periodic revisions and updates to the Plan are required to ensure that the goals of the Plan are kept current, taking into account potential changes in hazard vulnerability and mitigation priorities. In addition, revisions may be necessary to ensure that the Plan is in full compliance with changing federal, state and local regulations. Periodic evaluation of the Plan will also ensure that specific mitigation actions are being reviewed and carried out according to the *Mitigation Action Plan*.

The Hazard Mitigation Planning Working Group will continue to meet at least annually and following any disaster events warranting a re-examination of the mitigation actions, thus continuously updating the Plan to reflect changing conditions and needs within the communities. An annual report on the Plan will be developed and presented to elected officials through HRPDC in order to report progress on the actions identified in the Plan and to provide information on the latest legislative requirements. The report may also highlight proposed additions or improvements to the Plan. The report will be released to the media and made available to the public via appropriate methods, such as the HRPDC web site.

Each community has designated a lead person and agency responsible for the monitoring, evaluation and enhancements to the plan. Those position titles and agencies are shown in Tables 2.2a and 2.2b as rows marked with an asterisk. The individuals are the primary contacts moving forward with plan implementation.

ANNUAL PROGRESS REPORTS

Each community's hazard mitigation planning committee will be responsible for producing an annual progress report to evaluate the Plan's overall effectiveness. As part of the contract for preparing this

plan, the contractor is providing a mitigation action plan spreadsheet in Appendix F that lists all mitigation actions for each community and the region. Updating this spreadsheet with status information will allow periodic progress checkups that can feed into the annual progress reports.

FIVE-YEAR PLAN REVIEW

At a minimum, the Plan will be reviewed and must be updated every five years by the hazard mitigation planning committees as required by DMA 2000. The purpose of the review and update is to determine whether there have been any significant changes that may, in turn, necessitate changes in the types of mitigation actions proposed. New development in identified hazard areas, an increased exposure to hazards, the increase or decrease in capability to address hazards, and changes to federal or state legislation are examples of factors that may affect the content of the Plan.

The plan review provides community officials with an opportunity to evaluate those actions that have been successful and to explore the possibility of documenting potential losses avoided due to the implementation of specific mitigation measures. The plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented. Each community will be responsible for reconvening and conducting the five-year review, although it is expected that the HRPDC will again lead the effort to update the plan in five years. During the five-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals and actions address current and expected conditions?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Has the committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the community, agencies and other partners participate in the plan implementation process as proposed?

Following the five-year review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and plan amendment process outlined in this section. Upon completion of the review and update process, the Plan will be submitted to the VDEM State Hazard Mitigation Officer for review and approval. The State Hazard Mitigation Officer will submit the Plan amendments to FEMA for final review as required by DMA 2000.

DISASTER DECLARATION

Following a state or federal disaster declaration, the hazard mitigation planning committee will reconvene and the Plan will be revised as necessary to reflect lessons learned or to address specific circumstances arising from the event. Community committees may find it necessary to convene following localized emergencies and disasters, or when pursuing funding for a specific mitigation project, in order to determine if administrative changes to the Plan are warranted.

REPORTING PROCEDURES

The results of the five-year review will be summarized by the committee in a report that will include an evaluation of the effectiveness of the Plan and any required or recommended changes or amendments. The report will also include a brief progress report for each mitigation action, including the identification of delays or obstacles to their completion along with recommended strategies to overcome them. Any necessary revisions to the Plan must follow the plan amendment process outlined herein.

PLAN AMENDMENT PROCESS

Upon initiation of the amendment process, the community(ies) will forward information on the proposed change(s) to interested parties, including affected municipal departments. Information will also be forwarded to the VDEM. This information will be disseminated in order to seek input on the proposed amendment(s) for not less than a 5-day review and comment period.

At the end of the 5-day review and comment period, the proposed amendment(s) and all comments will be forwarded to HRPDC for final consideration. The committee, or the AHAC in temporary stead of convening the entire Steering Committee, will review the proposed amendments along with the comments received from other parties, and if acceptable, the committee will submit a recommendation for the approval and adoption of changes to the Plan.

IMPORTANT: Minor revisions to the plan may be approved by each community's Chief Administrative Officer, while substantial amendments and addendums must be approved by the community's elected governing body.

In determining whether to recommend approval or denial of a Plan amendment request, the following factors will be considered by the committee:

- There are errors, inaccuracies or omissions made in the identification of issues/needs in the Plan;
- New issues/needs have been identified which are not adequately addressed in the Plan;
- There has been a change in data or assumptions from those upon which the Plan is based.

Upon receiving the recommendation from the committee and prior to adoption of the Plan, each community's governing body will hold a public hearing. The governing body will review the recommendation from the committee (including the factors listed above) and any oral or written comments received at public hearing(s). Following that review, the governing body will take one of the following actions:

- Adopt the proposed amendments as presented;
- Adopt the proposed amendments with modifications;
- Refer the amendments request back to the committee for further revision; or
- Defer the amendment request back to the committee for further consideration and/or additional hearings.

CONTINUED PUBLIC INVOLVEMENT

44 CFR Requirement
Part 201.6(c)(4)(iii): The plan maintenance process will include a discussion on how the community will continue public participation in the plan maintenance process.

Public participation is an integral component of the mitigation planning process. As described above, significant changes or amendments to the Plan will require a public hearing prior to any adoption procedures.

Other efforts to involve the public in the maintenance, evaluation and revision process will be made. These efforts differ by community based on each community's individual needs, public response and whether the community has been recently affected by a hazard event. Examples of how communities in Hampton Roads already engage the public during the interim planning period, or of how they may choose to approach this task in the future, include:

- Advertise meetings of the committee in local newspapers, public bulletin boards, web sites, social media and City buildings. Designating a diverse community mitigation committee through official resolution of the governing board, and then scheduling regular meetings of the committee and advertising those meetings aggressively has worked well for some communities.
- Designate willing citizens and private sector representatives as official members of the planning committee. While real estate, financial and construction industry leaders are natural partners in mitigation planning, look beyond these to include business leaders, large employers, and representatives of local military installations and transportation hubs, such as the Port of Virginia. Cultural institutions, like Jamestown-Yorktown Foundation, are an important component in the economy of Hampton Roads and their collections are vulnerable to many of the hazards discussed in the plan. Neighborhood groups, civic leagues and other citizen groups are a valuable source of mitigation ideas for specific areas.
- Engage elected officials and planning commission members in the process, beyond simply providing updates or reports. Elected officials have a responsibility to protect the health, safety and welfare of their constituents and their support is critical to successful implementation of the Mitigation Action Plan in every Hampton Roads community.
- Use local media to update the public about any maintenance or periodic review activities taking place. The media have moved beyond traditional print and televised media and their social media presence can be valuable in disseminating information about upcoming meetings or activities. Local non-profits can also be invaluable in spreading the word about mitigation planning meetings open to the public.
- Use questionnaires, open houses, fairs and other community events to obtain ongoing public comments on the Plan and its implementation. Many local emergency managers effectively use community events to inform and advise the public on preparedness and evacuation, but the venues can also be valuable for informing the citizenry about the components of effective mitigation, how their community is implementing their Mitigation Action Plan and gathering information from the public to inform the next plan revision.
- Use community web sites, social media and list-servs to advertise any maintenance or periodic review activities taking place. Periodic surveys on social media can be a fun way to raise awareness.
- Hold area-specific meetings on a regular basis to solicit feedback from neighbors. Such meetings, held in public venues, can be used to distribute literature, educate citizens on

mitigation actions they can implement on their own, and solicit input on how the mitigation process can be more effective for their area or neighborhood.

- Integrate mitigation action plans, goals and objectives, and other plan elements into other community planning objectives. When a community's comprehensive or resiliency planning process includes similar team members and incorporates or references pieces of the hazard mitigation plan, the public gains familiarity with the links between the plans and the ways in which the efforts complement each other.
- Maintain hard copies of the Plan in public libraries, on the web, or other appropriate venues. While many citizens are engaged in community affairs through computer technology, keeping hard copies of the plan in public venues with a business card or other contact information for providing feedback or answering questions is an old-fashioned but necessary way of reaching a much larger segment of citizens.

Table 8.1 provides summary feedback from individual community's committee leaders indicating how they anticipate their community will include the public in the 5-year period following adoption.

TABLE 8.1: INCLUDING THE PUBLIC DURING PLAN IMPLEMENTATION PERIOD

SUBREGION	COMMUNITY	Advertise committee meetings	Designate citizens, private sector reps as members of committee	Use local media to update public on maintenance activities	Use questionnaires, open houses to obtain public comment	Use web sites to advertise maintenance activities	Maintain copies of the plan in libraries, on the web, or other venues	Other
Peninsula	Hampton	✓	✓	✓	✓	✓	✓	annual update to Council
	Newport News	✓	✓	✓	✓	✓	✓	
	Poquoson	✓	✓	✓	✓	✓	✓	
	Williamsburg	✓		✓		✓	✓	
	James City County	✓	✓	✓	✓	✓	✓	
	York County				✓		✓	
Southside	Norfolk				✓	✓	✓	annual update to Council
	Portsmouth	✓		✓	✓	✓	✓	
	Suffolk						✓	
	Virginia Beach	✓		✓		✓	✓	
	Chesapeake		✓	✓	✓	✓	✓	
Western Tidewater	Isle of Wight County	✓		✓	✓	✓	✓	
	Smithfield	✓		✓			✓	
	Franklin	✓		✓		✓	✓	
	Southampton County				✓	✓	✓	
	Surry County	✓		✓		✓	✓	

OPPORTUNITIES FOR IMPROVEMENT

The 2022 plan update process represents the second time that the FEMA-recommended mitigation planning process in the Hampton Roads region has been addressed on such a large regional basis. Some previous plans were regional in nature but covered a smaller geographic area with many shared traits. As such, several opportunities for improving the plan and planning process are outlined below in **Table 8.2**, primarily as suggestions or strategies that may enhance the planning process effectiveness for either individual communities in the coming 5-year period of implementation, or for future updates of the entire plan.

TABLE 8.2: OPPORTUNITIES FOR IMPROVEMENT

Mitigation Planning Step	Opportunities
Phase I: Organize Resources Step 1. Get Organized Step 2. Plan for Public Involvement Step 3. Coordinate with Other Departments & Agencies	1. Continue to distribute Memorandum of Intent to Participate for all communities in the early stages of the planning process. 2. Engage public information officers, resiliency officers, equity officers, web site managers and other community communications specialists from each community throughout the process. 3. Ensure representatives from small communities are drawn into the planning process with multiple opportunities for comment and participation. 4. The survey in the 2022 update process was issued immediately prior to another regional survey going out with similar questions. This shortened time period for response, unfortunately. Such conflicts are hard to foresee in such a large study area. 5. The regional planning authority should continue to ask and rely on communities to reach out to large businesses, military installations, educational and medical institutions, neighborhood associations, non-profits, utilities and other groups to spur their involvement in the process, but communities need to provide documentation of these “asks” that is then included in the plan.
Phase II: Assess Risk Step 4. Identify the Hazards Step 5. Assess the Risks	1. Virtual meetings limited the feedback received after presentation of HIRA to the committee. 2. Distributing small elements of the assessment to the committee for review may increase participation and feedback. 3. Provide more detailed assessment/review of the dam safety data and help communities focus mitigation action plan on dam reconstruction/repair/removal.
Phase III: Develop Mitigation Plan Step 6: Review Mitigation Alternatives Step 7: Draft an Action Plan Step 8: Set Planning Goals	1. Provide a review form for each community to document their review and approval of each plan section. 2. “Office Hours” with consultant worked well for developing each community action plan but did not include all stakeholders. Reassess this approach once COVID restrictions are lifted.

APPENDIX A – CROSSWALK

This Appendix provides a copy of the FEMA Region III, Local Hazard Mitigation Plan Review Crosswalk. This crosswalk documents which sections of the Plan contain the FEMA hazard mitigation planning requirements.

LOCAL MITIGATION PLAN REVIEW TOOL +HHPD

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: **HAMPTON ROADS, VIRGINIA**	**Title of Plan:** **HAMPTON ROADS HAZARD MITIGATION PLAN**	**Date of Plan:** **APRIL 2022 (EXPECTED)**
Local Point of Contact: **JOHN SADLER**	**Address:** **HRPDC** **THE REGIONAL BUILDING** **723 WOODLAKE DRIVE** **CHESAPEAKE VA 23320**	
Title: **EMERGENCY MANAGEMENT ADMINISTRATOR**		
Agency: **HAMPTON ROADS PLANNING DISTRICT COMMISSION**		
Phone Number: 757-420-8300	**E-Mail: jsadler@hrpdcva.gov**	

State Reviewer:	**Title:**	**Date:**
Chris Bruce **T.J. Rippon**	**VDEM Region 5 Planner** **VDEM Region 5 – Olson Group Consultant**	**March 31, 2022** **March 25, 2022**

FEMA Reviewer:	**Title:**	**Date:**
Shannon Burke **Joshua Norris** (Reviewed based on the FY21 HHPD eligibility requirements)	Community Planner Hazard Mitigation Planner, MD FIT	April 18, 2022, May 17, 2022 April, 28,2022
Date Received in FEMA Region 4	First Submission: 4/19/2022; Second Submission: 5/17/2022	
Plan Not Approved	May 18, 2022	
Plan Approvable Pending Adoption		
Plan Approved		

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Page 2.2, 2:13	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Page 2.11-2.12	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Pages 2.9-2.11	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Pages 2.6-2.8 Page 7.9	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Pages 8.4-8.5	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Pages 8.1-8.4 Page 8.7	X	

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A: REQUIRED REVISIONS The plan is marked as, "Draft." FEMA will need a copy of the Approval Pending Adoption" version prior to final approval. A1. Participation in the plan by the Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Clermont and Dendron are unclear. The plan mentions Community-Specific Working Group Meetings, which are defined as consultant-facilitated brief, in-person meetings at the community level to discuss their final Mitigation Action Plan. (Page 2:11). Please include the dates, locations, and attendees of these meetings. The plan does not include a discussion of how the risk and vulnerability assessment were communicated to these communities in the facilitated meetings. Please include a discussion that how unique risks were communicated in these meetings. *Although the Planning Team and the PDC staff made multiple overtures to involve the towns in the plan, their participation is simply not demonstrated in the plan, which is required by the regulations.* **Addressed.**			
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Section 4	X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Section 4, with each hazard subsection	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Section 4 Section 5	X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Page 5.8 Pages 5.9-5.14	X	
ELEMENT B: REQUIRED REVISIONS B3. The first three and a half pages replicate the 2017 plan, making the methodology difficult to discern. There is conflict between the hybrid methodology discussed on page 5:2 and the narrative on the Explanation of Potential Losses (page 5:24), where Level 1 Hazus data is used. For plans that receive FEMA funding, Hazus Level 2 analysis is required. Please run Hazus 2 for relevant hazards, using 2020 Census data along with other community supplied data. The plan indicates that some communities were performed at Level 2 but does not indicate which. Further, the plan does not assess riverine or stormwater flooding and the states that each hazard was assessed for the impacts of climate change but does not discuss how precipitation trends may affect flooding in the future. Note that Census data alone does not give specific output that is meaningful, and the plan mentions that the assessor's data used (among other community supplied data) was not sufficient for the vulnerability assessment. **Addressed.** Please include dates on maps. **Addressed.** B4.			

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
-Update Table 5.5, p. 5:12-5:13 with current Severe Repetitive Loss data. The table, "NFIP Repetitive Loss Properties" includes out of date information for several communities—number of properties, value of losses, number of losses, average payment per claim. Some data hasn't been provided and some data is from 2015. The absence of this data brings in to question the accuracy of the NFIP Repetitive Loss Study Area maps, which are not required. *Since the Severe Repetitive Loss and Repetitive Loss data have been provided by FEMA (4/29/22), current data must be integrated into the plan. It is not necessary to update the maps.* **Addressed.**			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Page 6.3 Page 6.13 Page 6.15-6.17	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Pages 4.6-4.9 Pages 5.9-5.10 Pages 6.7-6.8 Pages 6.9-6.12	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Section 7	X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Page 7.2-7.9 Pages 7.24-288	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Pages 7.10-7.12 Page 7.14 Pages 7.15-7.23	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Pages 8.1-8.2	X	
ELEMENT C: RECOMMENDED REVISIONS C1. Consider adding one or more mitigation actions for the Town of Capron, which only has one action, which is public education.			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Page 3.14-3.18 Page 3.24-3.26 Page 5.1-5.83 Page 6.7	X	

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Page 6.1 Pages 6.18-6.30 Appendix F	X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Page 7.3	X	
ELEMENT D: REQUIRED REVISIONS D1. - This element refers to changes in demographics, both positive and negative, and current development patterns and development pressures into the future. The Hampton Roads 2040 Socioeconomic Forecast prepared by the Hampton Roads Transportation Planning Organization in October 2013 was used to show development trends from 2009 to 2040. More current information is available. Update 2013 data to **2019** Transportation Analysis Zone Allocation data (Hampton Roads 2045 Socioeconomic Forecast and Transportation Analysis Zone Allocation Long Range Transportation Plan) to meet this element. It is available online. **Addressed.**			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Appendix B - blank		
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Appendix B - blank		
ELEMENT E: REQUIRED REVISIONS			
ALL DAM RISKS - ELIGIBLE HIGH HAZARD POTENTIAL DAMS			
HHPD1. Did Element A4 (planning process) describe the incorporation of existing plans, studies, reports, and technical information for eligible high hazard potential dams?	Section 2, p. 2:7 – 2:8 Section 4, p. 4:27 and Table 4.4 Section 5, p. 5:29 Appendix H	X	
HHPD2. Did Element B3 (risk assessment) address eligible high hazard potential dams in the risk assessment?	Section 4, p. 4:27 and Table 4.4 Section 5, p. 5:29	X	
HHPD3. Did Element C3 (mitigation goals) include mitigation goals to reduce long-term vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public?	Section 7, p. 7:3, Goal 1, Objective 1.3	X	
HHPD4. Did Elements C4-C5 (mitigation actions) prioritize mitigation actions to reduce vulnerabilities from eligible high hazard potential dams?	Section 7: Page 7.20 Page 7.49 Page 7.51 Page 7.82 Page 7.165 Page 7.216	X	

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met

RECOMMENDED REVISIONS (Required to Meet HHPD/All Dam Risk Requirements)

HHPD2: The plan does not provide a summary description of all dam risk, which consists of incremental, non-breach, and residual risk. To meet this requirement, please add narrative describing incremental, non-breach, and residual risk with respect to at least Hampton Roads PDC 23 eligible high hazard potential dams. If insufficient information is available to describe non-breach and residual risk in PDC 23, please add language explaining this limitation and include the definition of the three all dam risk component concepts. Pertinent definitions and example language that would address this revision are included below.

Definitions:

Incremental Risk: The risk (likelihood and consequences) to the pool area and downstream floodplainoccupants that can be attributed to the presence of the dam should the dam breach prior or subsequent to overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach. The consequences typically are due to downstream inundation, but loss of the pool can result in significant consequences in the pool area upstream of the dam.

Non-Breach Risk: The risk in the reservoir pool area and affected downstream floodplain due to 'normal' dam operation of the dam (e.g., large spillway flows within the design capacity that exceedchannel capacity) or 'overtopping of the dam without breaching' scenarios.

Residual Risk: The risk that remains after all mitigation actions and risk reduction actions have been completed. With respect to dams, FEMA defines residual risk as "risk remaining at any time" (FEMA, 2015, p A-2). It is the risk that remains after decisions related to a specific dam safety issue are madeand prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue.

Source: "Rehabilitation of High Hazard Potential Dams Grant Program Guidance," June 2020

Example Language:

Note: Though the requested text edits are in blue for easy identification, please maintain the plan's established formatting (do not make the text blue in the plan itself).

At this time, insufficient information is available to conduct a substantive analysis of incremental, non-breach and residual risk relative to the Hampton Roads PDC's high hazard potential dams. However, it is acknowledged that incremental risk is "the risk (likelihood and consequences) to the pool area anddownstream floodplain occupants that can be attributed to the presence of the dam should the dambreach prior or subsequent to overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach;" non-breach risk is "the risk in the reservoir pool area and affected downstream floodplain due to 'normal' dam operation of the dam (e.g., large spillway flows within the design capacity that exceed channel capacity) or 'overtopping of the dam without breaching' scenarios;" and residual risk) is "the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue" (FEMA, 2020 Rehabilitation of High Hazard Potential Dams Grant Program Guidance)

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met

HHPD2: Though Appendix D includes an assortment of dam-related data, this information is not explained or contextualized in the plan (ideally within the "Flooding Due to Impoundment Failure/High Hazard Dam" portion of Section 5). To meet this requirement, add at least narrative to the HMP describing the risks and vulnerabilities to and from eligible HHPDs including:

- Potential significant economic, environmental, or social impacts as well as multijurisdictional impacts from a dam incident.
- Methodology and/or assumptions for risk data and inundation modeling
- Documentation of limitations and the approach to address deficiencies
    - Example: The first page of the Flooding Due to Impoundment Failure/High Hazard Dam section states the limitation that "[p]otential damages from inundation of these structures and infrastructure have not been further quantified but is an area of expected future study in the region." However, no mitigation action or approach to address this deficiency is explicitly described in the plan. To address this component (bullet) of this HHPD2 required revision, consider adding a mitigation action that explicitly addresses the aforementioned limitation.

Addressed.

RECOMMENDED REVISIONS (Not Required to Meet HHPD/All Dam Risk Requirements)

HHPD1: Add narrative to the HMP describing explicitly how the Virginia state dam safety agency (Virginia Department of Conservation and Recreation)—such as Mark Kilgore, a VADCR Dam Safety Engineer and member of this plan's Hazard Mitigation Planning Steering Committee—coordinated with the jurisdiction and/or other local dam owners throughout the planning process.

HHPD1: Incorporate additional dam-related data into the plan, such as the potential impacts to institutions and critical infrastructure/facilities/community lifelines, EAPs, HEC-RAS, DSS-WISEHCOM, DSS-WISE Lite, FLO-2D, or more detailed studies. The resource detailed below can be leveraged to help address this recommendation.

> *The US Army Corps of Engineers National Inventory of Dams (NID) has updated its database (of 90,000 dams nationwide) and associated website to include dam-specific risk information and inundation maps for USACE dams. The dam-related data is publicly available and went live in November 2021. Consider reviewing the USACE dam analyses that have been added to the NID, to inform the refinement of your Hazard Mitigation Plan's dam risk analyses. The new NID includes an advanced map viewer that allows local dam data layers (in GeoJSON or Zip Shapefile formats) to be imported and overlayed against USACE data (and additional layers included in the new NID map viewer tool such as FEMA's National Flood Hazard Layer). For more information, please refer to the recorded 10/26/2021 "National Inventory of Dams Update and Public Release of USACE Inundation Maps" Silver Jackets webinar which is available here: https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/7418.*

HHPD4: To help inform the development and refinement of HHPD mitigation actions, eligible activities from the FEMA FY21 HHPD grant funding opportunity are included below. Consider incorporating additional mitigation actions using language from the eligible activities below for specific HHPDs within the Hampton Roads PDC.

Eligible FY21 Rehabilitation of HHPD Grant Program Activities

- Repair, removal, or any other structural or nonstructural measures to rehabilitate an

1. REGULATION CHECKLIST **Regulation** (44 CFR § 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met

eligible high hazard potential dam.
• Planning Activities such as:
  ○ Alternatives analysis to identify a preferred plan for dam rehabilitation and the estimated cost for design and construction
  ○ Investigations and risk assessments that further define the dam risk using a risk prioritization methodology defined in section H.14 of the FY21 HHPD NOFO.
• Design Activities such as:
  ○ Work to develop conceptual, preliminary, or final design plans and specifications for dam rehabilitation projects that have been planned using an alternative evaluation process that complies with National Environmental Policy Act (NEPA) requirements.
 	
Source: Fiscal Year (FY) 2021 Rehabilitation of High Hazard Potential Dams (HHPD) Notice of Funding Opportunity (NOFO)
 	
HHPD2: The maps (figures 5.13 and 5.14) overlaying National Risk Index (NRI) social vulnerability information against HHPD location information provide a sound foundation for further analysis of dam risk. Update the HHPD specific maps in Appendix H to include dam inundation zones, social vulnerability, critical infrastructure, historic and cultural assets, and other assets information, and include narrative in the main text of the plan that summarizes the significance of this analysis (for instance in terms of community lifeline impacts). Moreover, consider using 2020 census data and dam inundation zone information to depict dam-specific population at risk (PAR) information for all dams in the Hampton Roads PDC (at least the HHPDs).			

ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

INSTRUCTIONS:

The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improving
2. Resources for Implementing Your Improved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by Element.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the plan implementation and maintenance process. Information on other possible sources of assistance including,

but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

- Excellent that the HRPDC used a "Whole Community Approach" at the "Feedback Forum" by using existing resources in the community—Public Information Officers and the HRPDC's Administrator of the Office of Community Affairs and Civil Rights. Would be interesting to see the level of participation it resulted in
- Excellent that elected officials were kept informed through presentations at official meetings
- Participation in the public meetings was impressive and the hard work is evident. In addition to large group attendance, there was a very good response rate for the survey.
- The team used a variety of participatory tools to obtain feedback on the mitigation plan. For example, polling used in the public meeting is a good participatory tool and offers attendees who might not normally contribute an opportunity to do so, as is evidenced in the plan.
- There is good participation by neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests
- Consider providing more information about Figure 5.2: "Relative Social Vulnerability in the Study Area" to describe areas that have High or Relatively High Social Vulnerability since the map scale covers the entire region, making it difficult to distinguish those areas. It is recommended to create larger scale maps to better indicate location for flooding and coastal erosion/landslides. At the current scale, floodplains and hazardous areas are impossible to discern.
- Suggestion that the plan preparers define vulnerable populations with the community and gather data to determine their location in the risk assessment using HAZUS, US Census data, or other metadata.
- Excellent that Objective 1.4 has been expanded to specify that diverse, equitable and inclusive government services, as well as government functions, should be maintained throughout the duration of hazard events, not just during the event itself. Equity has become an important goal of FEMA as well.
- It's excellent that the HRPDC approved and adopted a resolution encouraging local governments within the region to consider adopting policies that incorporate sea level rise into planning and engineering decisions based on climate modeling to reduce risk and damage from flooding and storm surge. The next plan should discuss the implementation recommendations for categories of projects and policies and provide an update on which communities adopted these engineering and planning policies.
- The Risk and Vulnerability Assessment needs to be reviewed for readability and consistency

- The Capability Assessment includes an excellent "Integration Measures into Community Life" list for each participating community. There are countless examples of integration of mitigation into numerous programs, plans, and processes, in multiple communities, demonstrating a strong commitment to disaster risk reduction. The list also discusses current and future efforts.
- Describe the systems or processes in place whereby local plans, ordinances, and programs are in place for a town but managed by the county
- Each community participating in the plan has a Comprehensive Land Use Plan, but it is not described. Describe the CLUP, provide the year and how that impacts the community's capability in the update.
- Kudos to the City of Hampton and the Resilient Hampton initiative. In addition to a General Obligation Bond and an Environmental Impact Bond, the City hired a Resiliency Officer and is implementing a living with water approach to disaster risk reduction.
- Newport News completed six mitigation actions from 2017. Kudos!
- The City of Williamsburg identified excellent plan integration tactics. Firstly, they identified a hazard-based development review process for circulating proposed developments through various departments and discussed integration of the HMP and the City of Williamsburg's hazards addressed in their comprehensive plan.

B. Resources for Implementing Your Approved Plan

Consider utilizing the following resources to bolster future hazard mitigation plan updates and advance community mitigation goals.
-FEMA: Local Mitigation Planning Handbook Task 3: Create an Outreach Strategy
- FEMA: National Risk Index (NRI) for Natural Hazards
- FEMA: Resilience Analysis and Planning Tool (RAPT)
- FEMA: Region 3 Conducting Annual Hazard Mitigation Plan Reviews Resource
- FEMA: Region 3 High Hazard Potential Dams State and Local Mitigation Planning Tips Resource
- FEMA: Region 3 Checking In On The NFIP Resource
- FEMA: Guides to Expanding Mitigation
- Resilient Nation Partnership Network, NOAA, & FEMA: Building Alliances for Equitable Resilience Resource (April 2021)
- FEMA: Protect Your Home from Flooding, Low-Cost Project You Can Do Yourself Resource
- FEMA: "How Community Lifelines and Infrastructure Planning are Essential to Mitigation Plans" Blog Post (October 2019)
- PAS Memo, American Planning Association/DHS, Building Resilience Through Plan Integration, Jan/Feb 2021

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N) *=HHPD					
							A. Planning Process*	B. Hazard Identification & Risk Assessment*	C. Mitigation Strategy*	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1	Hampton	City	Mary Bunting, City Manager	8th Floor, City Hall 22 Lincoln St. Hampton, VA 23669	mbunting@hampton.gov	757-727-6392			X	X		
2	Newport News	City	Cynthia D. Rohlf, City Manager	City Hall 2400 Washington Ave. Newport News, VA 23607	rohlfcd@nnva.gov	757-926-8411			X	X		
3	Poquoson	City	J. Rnadall Wheeler, City Manager	500 City Hall Avenue Poquoson, VA 23662	randy.wheeler@poquoson-va.gov	757-868-3000			X	X		

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N) *=HHPD					
							A. Planning Process*	B. Hazard Identification & Risk Assessment*	C. Mitigation Strategy*	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
4	James City	County	Scott Stevens, County Administrator	101 Mounts Bay Rd, Bldg D, Williamsburg VA 23185	Scott.stevens@jamescitycountyva.gov	757-253-6602			X	X		
5	York	County	Neil Morgan, County Administrator	224 Ballard Street Yorktown, VA 23690	neil.morgan@yorkcounty.gov	757-890-3320			X	X		
6	Norfolk	City	Larry "Chip" Filer, City Manager	810 Union St, Ste 1101, Norfolk VA 23510	city.manager@norfolk.gov	757-664-4242			X	X		
7	Portsmouth	City	Angel L. Jones, City Manager	801 Crawford Street Portsmouth, VA 23704	baldwinb@portsmouthva.gov	757-393-8641			X	X		
8	Virginia Beach	City	Patrick A. Duhaney, City Manager	2401 Courthouse Dr, Virginia Beach VA 23456	CMOffice@vbgov.com	757-385-4242			X	X		
9	Chesapeake	City	Christopher M. Price, City Manager	306 Cedar Road – Sixth Floor, Chesapeake, VA 23322	citymanager@cityofchesapeake.net	757-382-2489			X	X		

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N) *=HHPD					
							A. Planning Process*	B. Hazard Identification & Risk Assessment*	C. Mitigation Strategy*	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
10	Isle of Wight	County	Randy R. Keaton, County Administrator	PO Box 80, 17090 Monument Cir, Isle of Wight, VA 23397	admn@isleofwightus.net	757-365-6204			X	X		
11	Franklin	City	Amanada C. Jarratt, City Manager	207 West 2nd Ave, Franklin Va 23851	ajarratt@franklinva.com	757-562-8561			X	X		
12	Williamsburg	City	Andrew O. Trivette, City Manager	401 Lafayette Street Williamsburg, VA 23185	citymanager@williamsburgva.gov	757-220-6100			X	X		
13	Suffolk	City	Albert S. Moor, II, City Manager	442 W Washington St, Suffolks VA 23434	citymanager@suffolkva.us	757-514-4000			X	X		
14	Smithfield	Town	Michael R. Stallings, Jr., Town Manager	911 South Church St Smithfield, VA 23430	mstallings@smithfieldva.gov	757-365-4200			X	X		
15	Windsor	Town	William G. Saunders IV, Town Manager	8 East Windsor Boulevard P.O. Box 307 Windsor, VA 23487	wsaunders@windsor-va.gov	757-242-4288			X	X		

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N) *=HHPD					
							A. Planning Process*	B. Hazard Identification & Risk Assessment*	C. Mitigation Strategy*	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
16	Southampton	County	Michael W. Johnson, County Administrator	P.O. Box 400 Courtland, VA 23837	mjohnson@southamptoncounty.org	(757) 653-3015			X	X		
23	Surry	County	Melissa Rollins, County Administrator	45 School Street Surry, VA 23883	mrollins@surrycountyva.gov	757-294-5271			X	X		
24	Claremont	Town	George Lee Edwards, Mayor	4115 Spring Grove Avenue, Claremont, VA 23899	townclaremont@aol.com	757-866-8427	X		X			
25	Dendron	Town	Wallace E. Faison, Jr., Mayor	2855 Rolfe Highway, Dendron VA 23839	satcinc@yahoo.com	757-635-7166	X		X			

APPENDIX B – RESOLUTIONS

This Appendix provides copies of the resolutions of adoption for this plan, as well as the final approval letter from FEMA Region III.

22-R-049

A RESOLUTION ADOPTING THE UPDATED 2022 HAMPTON ROADS HAZARD MITIGATION PLAN.

WHEREAS, the Council of the City of Chesapeake, Virginia recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Chesapeake participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "2022 Hampton Roads Hazard Mitigation Plan" and approved it contingent upon this official adoption of the participating governments and entities.

NOW, THEREFORE, BE IT RESOLVED, that the Council of the City of Chesapeake, Virginia adopts the "2022 Hampton Roads Hazard Mitigation Plan" as an official plan; and

BE IT FURTHER RESOLVED, the City of Chesapeake will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

City Attorney's Office
City of Chesapeake
Municipal Center
306 Cedar Road
Chesapeake, Virginia
23322
(757) 382-6586
Fax: (757) 382-8749

ADOPTED by the Council of the City of Chesapeake, Virginia, this 12th day of July, 2022.

APPROVED:

Mayor

ATTEST:

Clerk of the Council

APPROVED AS TO FORM:

Assistant City Attorney

City Attorney's Office
City of Chesapeake
Municipal Center
306 Cedar Road
Chesapeake, Virginia
23322
(757) 382-6586
Fax: (757) 382-8749

Adopting the Updated 2022 Hampton Roads Hazard Mitigation Plan

Whereas, *the Council of the Town of Claremont, Virginia recognizes the threat that natural hazards pose to people and property within our community; and*

Whereas*, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

Whereas*, an adopted Hazard Mitigation Plan is required as condition of future funding for mitigation under multiple FEMA pre-and post-disaster mitigation grant programs; and*

Whereas*, the Town of Claremont participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and*

Whereas*, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the* ***"2022 Hampton Roads Hazard Mitigation Plan"*** *and approved it contingent upon this official adoption of the participating governments and entities;*

Now, therefore, be it resolved*, that the Council of the Town of Claremont, Virginia adopts the* ***"2022 Hampton Roads Mitigation Plan"*** *as an official plan; and*

Be it further resolved, *the Town of Claremont will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Agency, Region III officials to enable the Plan's final approval.*

Passed: October 5, 2022

Certifying Official

Adopting the Updated 2022 Hampton Roads Hazard Mitigation Plan

Whereas, *the Council of the Town of Dendron, Virginia recognizes the threat that natural hazards pose to people and property within our community; and*

Whereas, *undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

Whereas, *an adopted Hazard Mitigation Plan is required as condition of future funding for mitigation under multiple FEMA pre-and post-disaster mitigation grant programs; and*

Whereas, *the Town of Dendron participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and*

Whereas, *the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region Ill officials have reviewed the* **"2022 Hampton Roads Hazard Mitigation Plan"** *and approved it contingent upon this official adoption of the participating governments and entities;*

Now, therefore, be it resolved, *that the Council of the Town of Dendron, Virginia adopts the* **"2022 Hampton Roads Mitigation Plan"** *as an official plan; and*

Be it further resolved, *the Town of Dendron will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Agency, Region Ill officials to enable the Plan's final approval.*

William E Tam mayor

Certifying Official

Nov. 7 2022

Adopting the Updated 2022 Hampton Roads Hazard Mitigation Plan
Resolution #2022-17

WHEREAS, the City Council of the City of Franklin, Virginia recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Franklin participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "**2022 Hampton Roads Hazard Mitigation Plan"** and approved it contingent upon this official adoption of the participating governments and entities;

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Franklin, Virginia adopts the "**2022 Hampton Roads Hazard Mitigation Plan"** as an official plan; and

BE IT FURTHER RESOLVED, the City of Franklin will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

Signed this 27th day of June 2022.

Frank Rabil, Mayor
City of Franklin, Virginia

City of Hampton

22 Lincoln Street
Hampton, VA 23669
www.hampton.gov

Notice of Action

City Council Legislative Session

Mayor Donnie R. Tuck
Vice Mayor Jimmy Gray
Councilmember Chris L. Bowman
Councilmember Eleanor Weston Brown
Councilmember Steven L. Brown
Councilmember Michelle T. Ferebee
Councilmember Billy Hobbs

STAFF: Mary Bunting, City Manager
Cheran Cordell Ivery, City Attorney
Katherine K. Glass, CMC, Clerk of Council

Wednesday, August 10, 2022 **6:30 PM** **Council Chambers**

CALL TO ORDER/ROLL CALL

Mayor Tuck called the meeting to order at 6:30 p.m. All members of the City Council were present with the exception of Councilman Hobbs who is traveling.

Present: 6 - Councilmember Chris L. Bowman,Councilmember Eleanor Weston Brown,Councilmember Steven L. Brown,Councilmember Michelle T. Ferebee,Vice Mayor Jimmy Gray and Mayor Donnie R. Tuck

Excused: 1 - Councilmember Billy Hobbs

INVOCATION - Councilman Steven L. Brown

Councilman Brown gave the invocation.

PLEDGE OF ALLEGIANCE TO FLAG

Mayor Tuck invited Boy Scouts from Troop 151 to lead the Pledge of Allegiance. Jackson Hudson, Thomas Minter, and Jace Mitchell were accompanied by their Scout leader Brad Minter. They are working on their Citizenship in the Community badge.

MAYOR'S COMMENTS

22-0236 Motion to Amend the Agenda to Take Items #9 (22-0181) and #10 (22-0183) Out of Order.

At the Mayor's invitation, Larry Cumming, attorney for the

applicant explained the request for a deferral.

A motion was made by Councilmember Steven Brown and seconded by Councilmember Eleanor Weston Brown, that this Motion be approved. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

9. 22-0181 Rezoning Application by Westview Landing, LLC. to Rezone +37.86 Acres at 10 Doris Carlson Dr [LRSN: 5000040], 51 Battle Rd [LRSN: 5000041], 30 Singleton Dr [LRSN: 5000042, portion], and 60 Battle Rd B [LRSN: 5001596] from One Family Residential (R-11) District to Multifamily Residential (MD-3) District with Proffered Conditions for Multifamily Development

A motion was made by Councilmember Steven Brown and seconded by Councilmember Chris Bowman, that this Resolution be deferred to the City Council Legislative Session, due back on 9/14/2022. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

10. 22-0183 Use Permit Application by Westview Landing, LLC. for Construction of Multifamily Dwellings within the Multifamily Residential (MD-3) District at 10 Doris Carlson Dr [LRSN: 5000040], 51 Battle Rd [LRSN: 5000041], 30 Singleton Dr [LRSN: 5000042, portion], and 60 Battle Rd B [LRSN: 5001596]

A motion was made by Councilmember Bowman and seconded by Councilmember Weston Brown,that this Use Permits be deferred to the City Council Legislative Session, due back on 9/14/2022. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

CONSENT AGENDA

Approval of the Consent Agenda

Motion made by Councilmember Weston Brown, seconded by Councilmember Brown, to approve the Consent Agenda. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

1. 22-0227 Resolution to Amend the Fiscal Year 2023 Council Approved Budget to Accept and Appropriate the 2023 Virginia Homeless Solutions Program Grant Awarded by the Virginia Department of Housing and Community Development.

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

2. 22-0228 Resolution to Amend the Fiscal Year 2023 Council Approved Budget to Accept and Appropriate the 2023 Children's Services Act Annual Allocation Awarded by the Virginia Department of Education

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

3. 22-0232 Resolution to Amend the Fiscal Year 2023 Council Approved Budget to Accept and Appropriate the 2023 Foster Grandparent Program Grant Amendment Awarded by the Corporation for National and Community Services (CNCS)

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

4. 22-0229 Re-adoption of the City of Hampton, Virginia's Emergency

Operations Plan (EOP)

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

5. 22-0225 Review and Approval of the Hampton-Newport News Community Services Board FY22-23 Performance Contract with the Department of Behavioral Health and Development Services

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

6. 22-0226 Resolution to Approve an Encroachment Agreement Pursuant to Hampton City Code § 34-86 Between the City of Hampton and Quality Carpenters, Inc. to Allow an Encroachment into the City's Property for Installation of Water, Sewer and Other City Approved Utility Connections and for Ingress/Egress within and across City Property

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

7. 22-0230 Approval of the minutes from the work session of July 13, 2022.

Item approved.

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

PRESENTATIONS, PROCLAMATIONS, AWARDS

Mayor Tuck recognized Delegate A. C. Cordoza who was attending the meeting.

PUBLIC HEARINGS

Rezonings

8. 22-0184 Rezoning Application by Michel Properties, LLC to Rezone +0.865 acres at 53 Wythe Creek Road [LRSN: 6001176] from Limited Manufacturing (M-1) District to Light Manufacturing (M-2) District with Proffered Conditions for Light Vehicle Repair

Presented by Donald Whipple, Chief Planner.

The Mayor opened the public hearing. The applicant, Frank Michel. Another individual, Danny Bradbury, spoke about his car repair business in the area. The Mayor closed the public hearing.

The Mayor, City Manager and City Attorney provided some comments on this item.

A motion was made by Councilmember Chris Bowman and seconded by Councilmember Steven Brown, that this Rezoning Application be denied. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

Use Permits

Resolutions

11. 22-0231 Comprehensive Plan Amendment for the adoption of the 2022 Hampton Roads Hazard Mitigation Plan by reference into the Hampton Community Plan(2006, as amended), replacing the current 2017 Hampton Roads Hazard Mitigation Plan

Presented by Mike Hayes, Planning & Zoning Administration Division Manager.

The Mayor opened the public hearing. There were no speakers on the item so the Mayor closed the public hearing.

A motion was made by Councilmember Steven Brown and seconded by Councilmember Michelle Ferebee, that this Resolution be approved. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

PUBLIC COMMENT

Craig Knopp spoke about a cleanup at the Hampton Coliseum this Friday. He also spoke about his concern about Delegates to the General Assembly receiving a per diem during Covid when they were working from home. He intends to ask about if this occurs with local officials. He also talked about children's volunteer opportunities.

Chris Matthews spoke about volunteering in Hampton and talking with others about volunteering. He spoke of a need for additional skate parks in Hampton.

Lakesha Kirkendall spoke about an alley near 306 Hollywood Avenue which is unkempt and where there is also a dumping issue.

Ursula Barkers, Aaron Weaver, and Joan Weaver spoke on future plans for the property which was formerly the Virginia School for the Deaf and Blind.

Nikia Miller spoke about leadership and referenced a situation she has been speaking on concerning her daughter. She also spoke about the relationship between Hampton City Schools, the School Board and the City Council.

Andrew Stith spoke about the use of solar power on buildings and on charges for ambulance services.

Mayor Tuck referred Ms. Kirkendall to Jason Mitchell, the Director of Public Works.

The City Manager, Mary Bunting, indicated that when the supply chain allows, the City intends to add solar panels to City Hall. It is sometimes not cost effective to do smaller buildings. She also indicated that most of the time insurance covers ambulance fees except for a small co-pay. Citizens can request a waiver from that co-pay if needed. She also shared that the Virginia School property application isn't currently before the City Council and explained the timeline for the Virginia School properties. She will work with Mr. Knopp on volunteer opportunities and she indicated that the old San Souci property in Buckroe isn't appropriate for a skate park. She shared that the Parks and Recreation Master Plan is being worked on now.

GENERAL ITEMS

Appointments

12. 22-0130 Consideration of Appointments to the Citizens' Unity Commission (CUC)

A motion was made by Councilmember Steven Brown to Dr. Kathreen Tadrous, Rev. Gretchen O. Nelson, and Walter V. Dickerson to serve first full terms expiring on August 31, 2026; to reappoint Jennifer W. Evans and Dr. Tameka Lett to second terms which will expire on June 30, 2026; and to appoint Phyllis H. Porter to serve the remainder of an unexpired term until June 30, 2023.

The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

13. 22-0219 Consideration of an Appointment to the Animal Control Advisory Committee

A motion was made by Councilmember Steven Brown to appoint Bianca Brooks to fill the unexpired portion of a term until May 20, 2025. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

14. 22-0221 Consideration of Appointments to the Board of Zoning Appeals

A motion was made by Councilmember Steven Brown to recommend appointment of Robie Tuck and Kevin Davis as alternates to the Board of Zoning Appeals. The motion carried by the following vote:

Aye: 6 - Councilmember Bowman, Councilmember Weston Brown, Councilmember Brown, Councilmember Ferebee, Vice Mayor Gray and Mayor Tuck

REPORTS BY CITY MANAGER, CITY COUNCIL, STAFF, COMMITTEES

There were no reports.

MISCELLANEOUS NEW BUSINESS

There were no items of new business.

ADJOURNMENT

The Mayor reminded everyone that City Council is on the summer schedule so there will not be a second meeting in August. The meeting adjourned at 7:52 p.m.

Contact Info:
Clerk of Council, 757-727-6315, council@hampton.gov

2022-45

RESOLUTION TO ADOPT THE UPDATED 2022 HAMPTON ROADS HAZARD MITIGATION PLAN

WHERAS, the Board of Supervisors of the County of Isle of Wight, Virginia recognizes the threat that natural hazards pose to people and property within our community; and,

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and,

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and,

WHEREAS, Isle of Wight County participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and,

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "**2022 Hampton Roads Hazard Mitigation Plan**" and approved it contingent upon this official adoption of the participating governments and entities.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of the County of Isle of Wight, Virginia adopts the "**2022 Hampton Roads Hazard Mitigation Plan**" as an official plan.

BE IT FURTHER RESOLVED that Isle of Wight County will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

Adopted this 16th day of June, 2022.

Rudolph Jefferson

Rudolph Jefferson, Chairman

Carey Mills Storm

Carey Mills Storm, Clerk

Approved as to Form:

Robert W. Jones Jr., County Attorney

RESOLUTION

HAMPTON ROADS HAZARD MITIGATION PLAN ADOPTION

WHEREAS, the James City County Board of Supervisors is seeking the Federal Emergency Management Agency (FEMA) approval of a Hazard Mitigation Plan that recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-disaster and post-disaster mitigation grant programs; and

WHEREAS, James City County fully participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III Officials have reviewed the "2022 Hampton Roads Hazard Mitigation Plan" and approved it contingent upon the official adoption of the participating governments and entities.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby adopts the "2022 Hampton Roads Hazard Mitigation Plan" as an official plan; and

BE IT FURTHER RESOLVED that the James City County Fire Department will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III Officials to enable the Plan's final approval.

John J. McGlennon
Chairman, Board of Supervisors

ATTEST:

Teresa J. Saeed
Deputy Clerk to the Board

	VOTES			
	AYE	NAY	ABSTAIN	ABSENT
ICENHOUR	✓			
HIPPLE	✓			
LARSON	✓			
SADLER	✓			
MCGLENNON	✓			

Adopted by the Board of Supervisors of James City County, Virginia, this 28th day of June, 2022.

HRHazMitPln22-res

rag4494

RESOLUTION NO. 13574-22

A RESOLUTION ADOPTING THE 2022 HAMPTON ROADS HAZARD MITIGATION PLAN.

WHEREAS, the City of Newport News recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Counties of York and James City and the Cities of Hampton, Newport News and Williamsburg partnered to develop a hazard mitigation plan for the peninsula which was adopted in 2006; and

WHEREAS, the Peninsula Hazard Mitigation Plan was updated in 2011; and

WHEREAS, as part of the 2017 update process, six separate hazard mitigation plans, including the Peninsula Hazard Mitigation Plan, were combined into a single Hampton Roads Hazard Mitigation Plan; and

WHEREAS, the City of Newport News fully participated in the FEMA-prescribed mitigation planning process to update the Hazard Mitigation Plan for 2022; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Regional III officials have reviewed the 2022 Hampton Roads Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governments and entities.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Newport News, Virginia:

1. That it hereby adopts the 2022 Hampton Roads Hazard Mitigation Plan as an official plan.

2. That a copy of the 2022 Hampton Roads Hazard Mitigation Plan shall be maintained in the Office of the City Clerk.

3. That a copy of this resolution shall be submitted to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to nable the Plan's final approval.

4. That this resolution shall be in effect on and after the date of its adoption, September 27, 2022.

RESOLUTION NO. 13574-22

PASSED BY THE COUNCIL OF THE CITY OF NEWPORT NEWS ON SEPTEMBER 27, 2022

Mabel Washington Jenkins,
MMC City Clerk

McKinley L. Price,
DDS Mayor

A true copy, teste:

City Clerk

#3781 RES

Form and Correctness Approved: BAP Contents Approved:

By: Margaret A. Kelly
Office of the City Attorney

By: Jim Redick
DEPT. Emergency Preparedness & Resp

NORFOLK, VIRGINIA

C-1 RESOLUTION NO. 1,869

A RESOLUTION APPROVING AND ADOPTING AN UPDATED PLAN ADDRESSING HAZARD MITIGATION ACTIONS TO PROTECT PEOPLE AND PROPERTY KNOWN AS THE "2022 HAMPTON ROADS HAZARD MITIGATION PLAN".

- - -

WHEREAS, the City of Norfolk has authority under its Charter to do all things whatsoever necessary or expedient to promote or maintain the general welfare, comfort, education, morals, peace, government, health, trade, commerce or industries of the City or its inhabitants;

WHEREAS, the City of Norfolk recognizes the threat that natural hazards pose to people and property within our community;

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences;

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs;

WHEREAS, the City of Norfolk fully participated in the FEMA-prescribed mitigation planning process to prepare and update the Hampton Roads Hazard Mitigation Plan for 2022, the result of which is referred to herein as the “2022 Hampton Roads Hazard Mitigation Plan” and a complete copy of which is on file with the City’s Department of Emergency Preparedness and Response, including all appendixes; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management, Region III officials have reviewed the “2022 Hampton Roads Hazard Mitigation Plan” and approved it contingent upon official adoption by the participating governments and entities; now, therefore,

BE IT RESOLVED by the Council of the City of Norfolk:

Section 1:- That the Norfolk City Council hereby approves and adopts the “2022 Hampton Roads Hazard Mitigation Plan” as an official Plan of the City of Norfolk.

Section 2:- That the City Manager is hereby authorized and directed to do all things necessary and proper to carry out the “2022 Hampton Roads Hazard Mitigation Plan”; to submit a certified copy of this resolution to the Virginia Department of Emergency Management and the Federal Emergency Management Agency, Region III officials in furtherance of the Plan’s final approval; and to keep a complete copy of the “2022 Hampton Roads Hazard Mitigation Plan”, including all appendixes, on file with the City.

Section 3:- That this resolution shall be in effect from and after its date of adoption.

Adopted by Council July 12, 2022
Effective July 12, 2022

TRUE COPY
TESTE:

RICHARD ALLAN BULL

BY:

RESOLUTION NO. 5204

RESOLUTION ADOPTING THE 2022 HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

WHEREAS, the City of Poquoson, Virginia recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Poquoson, Virginia fully participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the **"2022 Hampton Roads Hazard Mitigation Plan Update"** and approved it contingent upon this official adoption of the participating governments and entities.

NOW, THEREFORE, BE IT RESOLVED, by the Council of the City of Poquoson, Virginia adopts the **"2022 Hampton Roads Hazard Mitigation Plan"** as an official plan; and

BE IT FURTHER RESOLVED, the City of Poquoson, Virginia will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

Section 1: That the **"2022 Hampton Roads Hazard Mitigation Plan"** is hereby adopted as an official regional plan.

Section 2: That this resolution shall become effective immediately upon its adoption.

ATTESTE:

Kimberly Healy, City Clerk

ADOPTED: June 13, 2022

Gordon C. Helsel, Jr., Mayor

The foregoing resolution was adopted by the affirmative roll call vote of a majority of the members in attendance, the ayes and nays recorded in the minutes of the meeting as shown below:

Councilman Hux
Councilman Southall
Councilman Green
Councilwoman Andrews
Vice Mayor Freeman

Mayor Helsel

A RESOLUTION ADOPTING THE 2022 HAMPTON ROADS HAZARD MITIGATION PLAN TO REDUCE DAMAGE AND SAVE LIVES IN THE EVENT OF A NATURAL DISASTER IN THE REGION.

WHEREAS, the City of Portsmouth, Virginia recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, by Resolution R-17-09 adopted on February 28, 2017, City Council adopted the 2017 Hazard Mitigation Plan, which was an update of the 2011 Hazard Mitigation Plan; and

WHEREAS, the 2022 Hampton Roads Hazard Mitigation Plan updates the 2017 Plan and is the result of a two year long FEMA-prescribed regional planning process which involved representatives from Portsmouth and 24 other localities; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the 2022 Hampton Roads Hazard Mitigation Plan and approved it contingent upon its official adoption by participating governments and entities;

NOW THEREFORE BE IT RESOLVED by the Council of the City of Portsmouth, Virginia, that it hereby adopts the "2022 Hampton Roads Hazard Mitigation Plan" as an official plan.

BE IT FURTHER RESOLVED that the City Manager is authorized to submit this Resolution to the Virginia Department of Emergency Management and to Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

ADOPTED by the Council of the City of Portsmouth, Virginia at a meeting held on September 27, 2022.

Teste:

City Clerk Chief Deputy

Resolution # 72022

Adopting the Updated 2022 Hampton Roads Hazard Mitigation Plan

***Whereas**, the Town Council of the Town of Smithfield, Virginia recognizes the threat that natural hazards pose to people and property within our community; and*

***Whereas,** undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

***Whereas,** an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

***Whereas,** the Town of Smithfield participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and*

***Whereas,** the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "**2022 Hampton Roads Hazard Mitigation Plan"** and approved it contingent upon this official adoption of the participating governments and entities;*

***Now, therefore, be it resolved,** that the Town Council of the Town of Smithfield, Virginia adopts the "**2022 Hampton Roads Hazard Mitigation Plan"** as an official plan; and*

***Be it further resolved,** the Town of Smithfield will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.*

Passed: July 5th 2022 *(date)*

Certifying Official

SOUTHAMPTON COUNTY BOARD OF SUPERVISORS

Resolution # 0622-11B

Adopting the Updated 2022 Hampton Roads Hazard Mitigation Plan

***Whereas**, the Board of Supervisors of Southampton County, Virginia recognizes the threat that natural hazards pose to people and property within our community; and*

***Whereas,** undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

***Whereas,** an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

***Whereas,** Southampton County participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and*

***Whereas,** the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "**2022 Hampton Roads Hazard Mitigation Plan**" and approved it contingent upon this official adoption of the participating governments and entities;*

***Now, therefore, be it resolved,** that the Board of Supervisors of Southampton County, Virginia adopts the "**2022 Hampton Roads Hazard Mitigation Plan**" as an official plan; and*

***Be it further resolved,** that Southampton County will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.*

Adopted this 28th day of June, 2022.

A COPY TESTE:

Brian S. Thrower, Clerk

RESOLUTION NUMBER 22-R-027

RESOLUTION ADOPTING THE "2022 HAMPTON ROADS HAZARD MITIGATION PLAN"

WHEREAS, the City of Suffolk recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Suffolk fully participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "2022 Hampton Roads Hazard Mitigation Plan" and approved it contingent upon this official adoption of the participating governments and entities.

NOW, THEREFORE, BE IT RESOLVED, by the Council of the City of Suffolk, Virginia, that it hereby adopts the "2022 Hampton Roads Hazard Mitigation Plan" as an official plan, in substantially the same form as the document on file in the City Clerk's office.

BE IT FURTHER RESOLVED, the City of Suffolk shall submit this adopted Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

READ AND ADOPTED: JUNE 15, 2022

TESTE: Erika S. Dawley

Erika S. Dawley, MMC, City Clerk

AT A REGULAR MEETING OF THE SURRY COUNTY BOARD OF SUPERVISORS HELD IN THE GENERAL DISTRICT COURTROOM OF THE GOVERNMENT CENTER ON JULY 7, 2022, AT 7:00 P.M.

PRESENT:	**VOTE:**
The Honorable Judy S. Lyttle, Chair	Aye
The Honorable Robert Elliott	Aye
The Honorable Michael H. Drewry	Aye
The Honorable Timothy Calhoun	Aye
The Honorable Janet Monahan	Aye

RESOLUTION 2022-16

ADOPTING THE UPDATED 2022 HAMPTON ROADS HAZARD MITIGATION PLAN

WHEREAS, the Board of Supervisors of Surry County, Virginia recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Surry County Department of Emergency Services participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "**2022 Hampton Roads Hazard Mitigation Plan**" and approved it contingent upon this official adoption of the participating governments and entities,

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors of Surry County, Virginia adopts the "**2022 Hampton Roads Hazard Mitigation Plan**" as an official plan; and

BE IT FURTHER RESOLVED, Surry County will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

ATTEST:

Melissa D. Rollins

Melissa Rollins, County Administrator/Clerk
Board of Supervisors

7/8/22

Date

RES-04166

A RESOLUTION ADOPTING THE UPDATED 2022 HAMPTON ROADS HAZARD MITIGATION PLAN

WHEREAS, the City Council of the City of Virginia Beach, Virginia recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the City of Virginia Beach participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "2022 Hampton Roads Hazard Mitigation Plan" and approved it contingent upon this official adoption of the participating governments and entities;

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Virginia Beach, Virginia adopts the "2022 Hampton Roads Hazard Mitigation Plan" as an official plan; and

BE IT FURTHER RESOLVED, the City of Virginia Beach will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.

Adopted by the Council of the City of Virginia Beach, Virginia this 7th day of June, 2022.

APPROVED AS TO CONTENT:

Office of Emergency Management

APPROVED AS TO LEGAL SUFFICIENCY:

City Attorney's Office

CA15846
R-1
May 27, 2022

RESOLUTION #22-16
HAMPTON ROADS HAZARD MITIGATION PLAN

WHEREAS, the City of Williamsburg recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre– and post-disaster mitigation grant programs; and

WHEREAS, the City of Williamsburg fully participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "2022 Hampton Roads Hazard Mitigation Plan" and approved it contingent upon this official adoption of the participating governments and entities.

THEREFORE, **BE IT RESOLVED,** that the City Council of Williamsburg adopts the "2022 Hampton Roads Hazard Mitigation Plan" as an official plan; and

FURTHER, BE IT RESOLVED, that the Adopted Resolution will be submitted to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III, to enable the Plan's final approval.

Adopted: July 14, 2022

Douglas G. Pons, Mayor

Attest: Sandi R. Filicko
Sandi Filicko, City Council Clerk

Resolution # 22-23-01

Adopting the Updated 2022 Hampton Roads Hazard Mitigation Plan

***Whereas**, the Town Council of the Town of Windsor, Virginia recognizes the threat that natural hazards pose to people and property within our community; and*

***Whereas,** undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

***Whereas,** an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

***Whereas,** the Town of Windsor participated in the FEMA-prescribed mitigation planning process to prepare this Hazard Mitigation Plan; and*

***Whereas,** the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials have reviewed the "**2022 Hampton Roads Hazard Mitigation Plan**" and approved it contingent upon this official adoption of the participating governments and entities;*

***Now, therefore, be it resolved,** that the Town Council of the Town of Windsor, Virginia adopts the "**2022 Hampton Roads Hazard Mitigation Plan**" as an official plan; and*

***Be it further resolved,** the Town of Windsor will submit this Adoption Resolution to the Virginia Department of Emergency Management and Federal Emergency Management Agency, Region III officials to enable the Plan's final approval.*

Passed: July 12, 2022 (date)

Jerry Whitehead
Certifying Official

R22-128

BOARD OF SUPERVISORS
COUNTY OF YORK
YORKTOWN, VIRGINIA

Resolution

At a regular meeting of the York County Board of Supervisors held in York Hall, Yorktown, Virginia, on the 2nd day of August, 2022:

Present	Vote
Sheila S. Noll, Chairman	Yea
Walter C. Zaremba	Yea
W. Chad Green	Yea
G. Stephen Roane, Jr.	Yea

Absent

Thomas G. Shepperd, Jr., Vice Chairman

On motion of Mr. Green, which carried 4:0, the following resolution was adopted:

A RESOLUTION ADOPTING THE 2022 HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

WHEREAS, the York County Board of Supervisors recognizes the threat that natural hazards pose to people and property within our County; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, County agencies and staff participated in the FEMA-prescribed mitigation planning process to prepare the Hazard Mitigation Plan; and

WHEREAS, the Virginia Department of Emergency Management and the Federal Emergency Management Agency (FEMA), Region III officials have reviewed the "2022 Hampton Roads Hazard Mitigation Plan Update" and approved it contingent upon the official adoption by the participating governments; and

NOW, THEREFORE, BE IT RESOLVED by the York County Board of Supervisors this 2nd day of August, 2022, that the "2022 Hampton Roads Hazard Mitigation Plan," be and it is hereby adopted.

BE IT FURTHER RESOLVED that the County Administrator and his designee(s) are authorized to maintain and revise the "Hazard Mitigation Plan" as necessitated and/or required by the Commonwealth of Virginia and/or the Federal Government and to promulgate the changes, as necessary.

A Copy Teste:

Heather L. Schott, MMC
Deputy Clerk

PLACEHOLDER FOR FINAL FEMA REGION III APPROVAL LETTER

APPENDIX C - HMPC MEETINGS

This section of the Plan includes the Hazard Mitigation Planning Committee and Public Meeting advertisements, minutes, notes, and attendance sheets collected during the process of updating this Plan.

Hampton Roads
Hazard Mitigation Plan Update

Kickoff Meeting Minutes

Thursday, February 25, 2021 at 3:30pm
Via Zoom

AGENDA

- Sign into the Google form for tracking Local Cost-Share
- Consultant's role in planning process
- Project schedule
- Activating the committees
- Preliminary examination of the list of hazards
- Resolving data needs
- Homework

MEETING NOTES

- Newport News is in the final stages of CRS application submittal; Heather Brown is the contact and should be added to the PDC's contact list.
- The lists of hazards in the previous plan and the 2018 State Hazard Mitigation Plan were reviewed and discussed.
    - "Communicable or infectious disease" should be added, not "Pandemic".
    - Landslide hazard does exist in some areas; Leigh will examine in conjunction with Coastal Erosion to determine if separate hazard identification is necessary.
    - The group prefers to separate out "dam failure" as a separate hazard, rather than to include with "Flooding"
    - "Extreme Cold" may need to be examined apart from "Winter Storm" in light of the 2021 Texas disaster. Leigh will examine the history data and see if they support a separate hazard.
    - The group was reminded that every new hazard will need accompanying mitigation actions.
- Surry County and York County requested additional information on the Community Rating System program. Leigh to send information to Danielle at the PDC for forwarding.

ATTENDEES

Email invitations were issued by HRPDC to each participating community. The PDC will maintain a copy of the Zoom recording of the meeting and has made it available to participating community leaders. The PowerPoint is available on the project's Microsoft Teams board and upon request. The following people attended the Kickoff Meeting or have watched the meeting video as of 3/8/21:

- Bobby Gelormine, Chesapeake
- Vernie Francis, Franklin
- George Glazner, Newport News
- Michael Bryant, Poquoson
- David Topczynski, Portsmouth
- Richard Stephens, Suffolk
- Danielle Progen, Virginia Beach
- Whitney McNamara, Virginia Beach
- David Eagle, Williamsburg
- Larry Snyder, Williamsburg
- Sara Ruch, James City County
- Michael Johnson, Southampton County
- Ray Phelps, Surry County
- Sean Segerblom, York County
- Steve Kopczynski, York County
- Brett Major, Gloucester County

Hampton Roads
Hazard Mitigation Plan Update

Public Meeting #1 Minutes

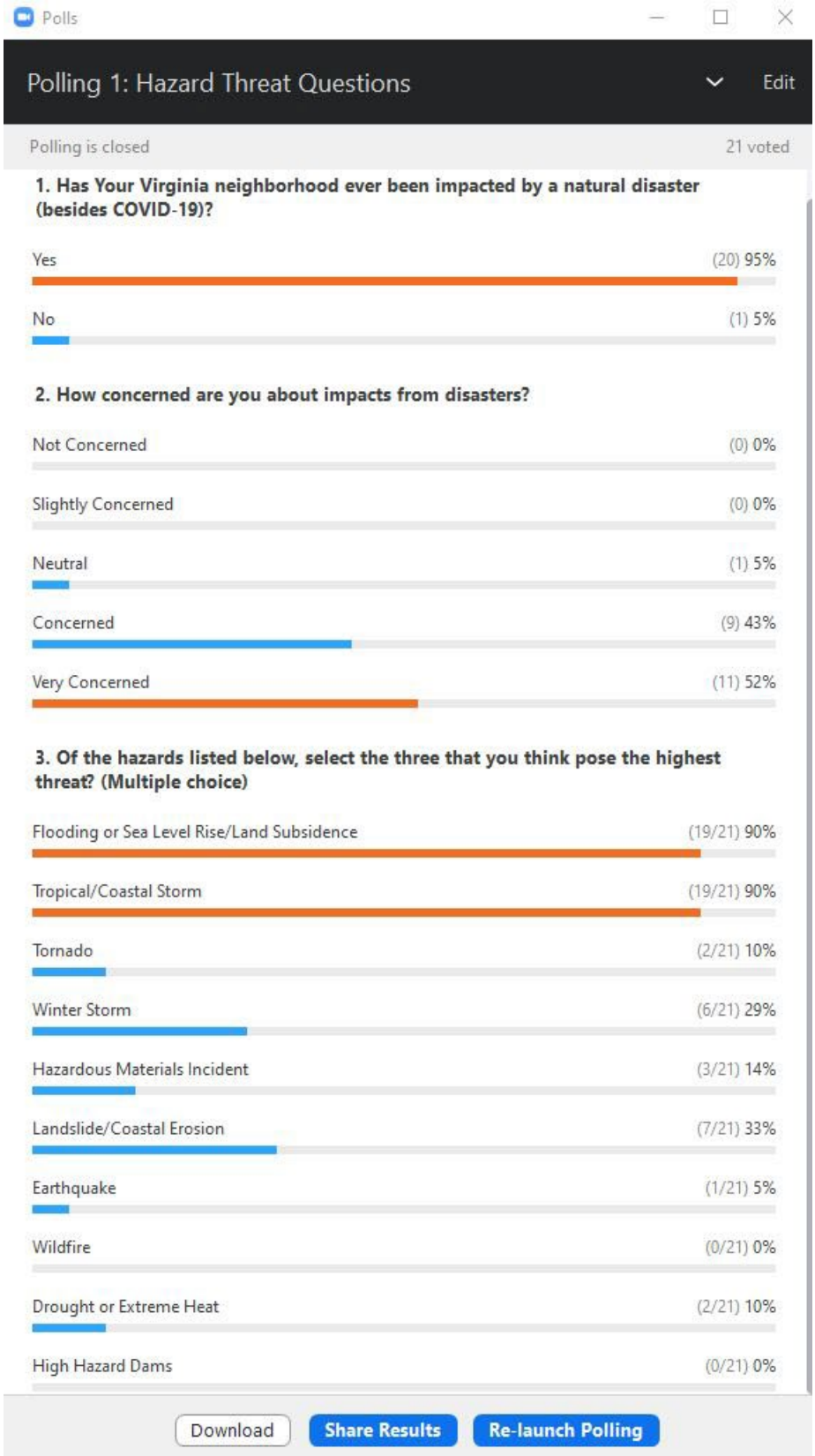
April 20, 2021 – Virtual Meeting via Zoom

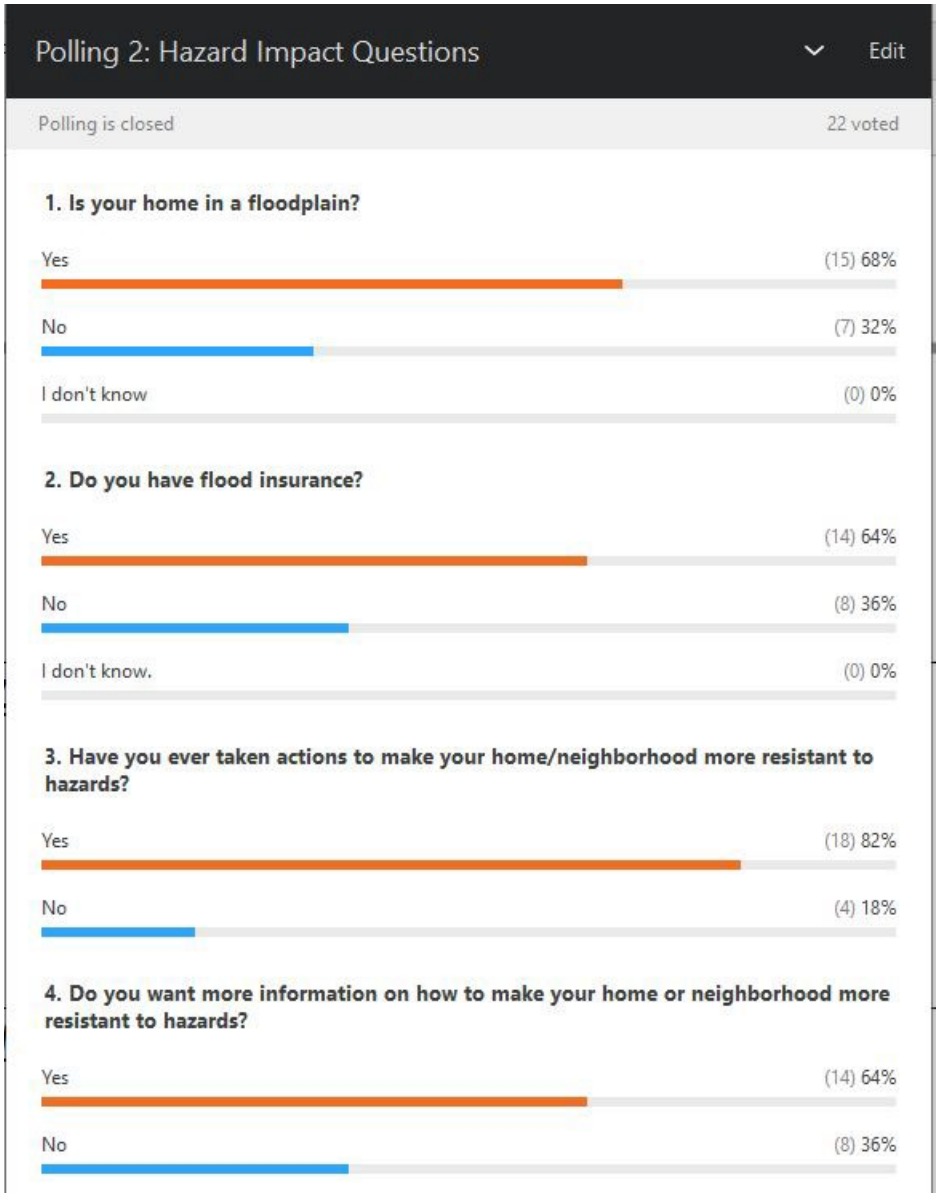
AGENDA

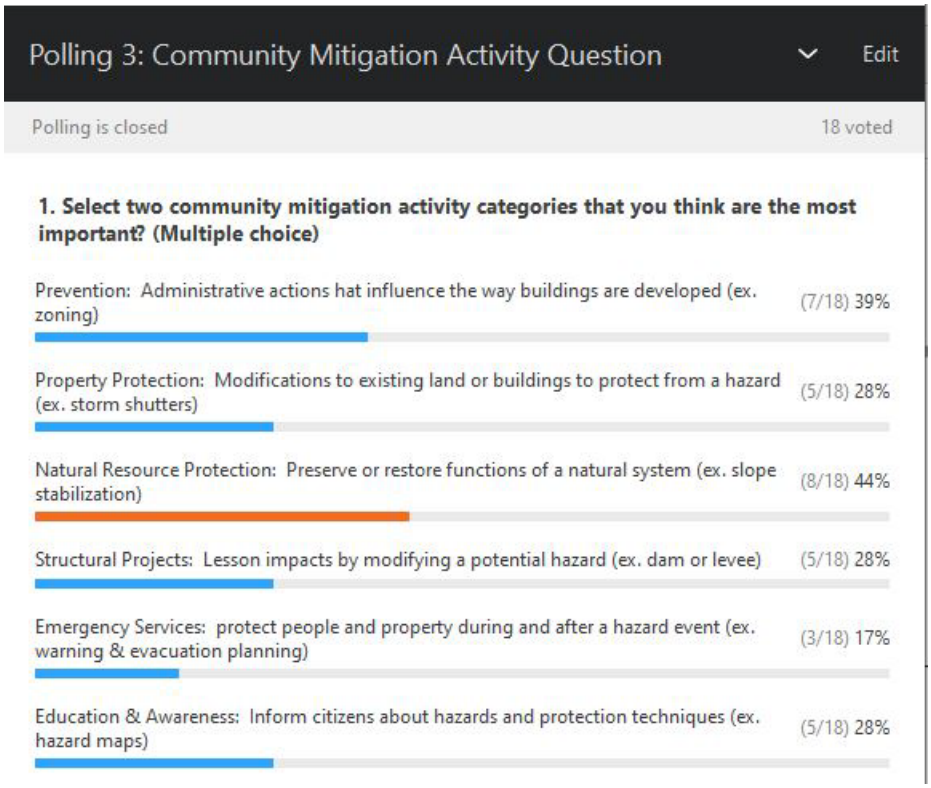
- Introductions
- Plan Background Information
- Terminology
- Discussion of Natural Hazards in 2017 Plan, New Hazards for 2021
- Flood Risk Assessment
- Project Timeline
- Questions for Participants
- Survey Information
- General Discussion

MEETING NOTES

- The group generally discussed heat stress and vulnerable populations; inquired whether health departments might have database for extreme heat hospitalizations (subsequent research indicates there is a VDH database which will be summarized in HIRA)
- A participant asked if organized or managed retreat [from vulnerable coastlines] might be considered as a flood mitigation alternative for more communities besides Isle of Wight County
- Group discussed the importance of wetlands restoration for flood mitigation versus slope control, but discussion also turned to flood mitigation alternatives that might involve elevating mechanical equipment and installing better hydrostatic venting
- Discussion ensued about importance of providing real-time hazard information to citizens
- Several participants mentioned how important it is to involve community Public Information Officers in mitigation planning and hazard training
- Three polls taken during the meeting, and the written Q&A session at the end are summarized as follows:


Polls
Polling 1: Hazard Threat Questions
Edit
Polling is closed
21 voted
1. Has Your Virginia neighborhood ever been impacted by a natural disaster (besides COVID-19)?
Yes (20) 95%
No (1) 5%
2. How concerned are you about impacts from disasters?
Not Concerned (0) 0%
Slightly Concerned (0) 0%
Neutral (1) 5%
Concerned (9) 43%
Very Concerned (11) 52%
3. Of the hazards listed below, select the three that you think pose the highest threat? (Multiple choice)
Flooding or Sea Level Rise/Land Subsidence (19/21) 90%
Tropical/Coastal Storm (19/21) 90%
Tornado (2/21) 10%
Winter Storm (6/21) 29%
Hazardous Materials Incident (3/21) 14%
Landslide/Coastal Erosion (7/21) 33%
Earthquake (1/21) 5%
Wildfire (0/21) 0%
Drought or Extreme Heat (2/21) 10%
High Hazard Dams (0/21) 0%
Download
Share Results
Re-launch Polling


Polling 2: Hazard Impact Questions
Edit
Polling is closed
22 voted
1. Is your home in a floodplain?
Yes
(15) 68%
No
(7) 32%
I don't know
(0) 0%
2. Do you have flood insurance?
Yes
(14) 64%
No
(8) 36%
I don't know.
(0) 0%
3. Have you ever taken actions to make your home/neighborhood more resistant to hazards?
Yes
(18) 82%
No
(4) 18%
4. Do you want more information on how to make your home or neighborhood more resistant to hazards?
Yes
(14) 64%
No
(8) 36%



1 "Thank you for this opportunity to connect. Please add my email address on your list. My home flooded during Hurricane Matthew in 2016. My front yard flood when there is three consecutive days in the summertime. Before the purchase of my home

I was given a report that my area had the potential to flood once in a lifetime. I have a physical disability. My home is accessible to my needs of my physical disability. It took 4 years to get this unique home loan. There is only ten other loans like it in the entire country. It took time and a substantial amount of money to make modifications to make my home accessible. If and when my home floods again

it would leave me in financial ruins. Currently i'm in contact with FEMA on the national and local level for property eligibility for mitigation grant funding. According to FEMA and my home's Elevation Certificate

my home was built not to elevation standards I do have flood insurance

its coverage is partial. Virginia Beach's flood zone maps have not been updated sin" Ivy K

its coverage is partial. Virginia Beach's flood zone maps have not been updated since 2015. Virginia Beach has begun flood projects. Is there anything I can do to speed plans up for my area?" Ivy K

2 "I do have flood insurance

3 "The 2017 plan rated ""extreme Heat"" as a negligible risk item. Was this based on data from health departments and emergency rooms or was this a general observation. Will this be factually evaluated in the 2022 plan?"

4 Is an organized retreat of some neightborhoods accounted for in the mitigation plan? How is this addressed?

5 Like parts of ghent

the potentiall adverse effect on adjacent properties needs to be considered before it is designed." James Haluska

6 "Concerning structural projects

7 "How can we improve real time information from local

state and federal agencies during an ongoing event?" Kent Lewis

8 New resident Kent Lewis

9 "Many times there are no local weather folks or NWS broadcasters on the air while an event is ongoing. Seems like EOCs or county emergency management folks could have a PIO sending out info" Kent Lewis

10 "Through a variety of platforms	facebook	twitter	etc…" Kent Lewis	
11 "Chesapeake does have text alerts like lighting	flooding. Evacuation" Judy Hinch			
12 I think the newspaper had a misprint in the digital version today about his meeting and the survey hrpdsva.org instead of gov. But maybe ORG works too. Judy Hinch				
13 https://www.weather.gov/akq/SewellsPoint is a good site I use to give model projections of water levels at Sewell's Point. James Haluska				
14 Where is a good place for folks with Incident Command and SAR experience to volunteer? Kent Lewis				
15 "More of a comment: I'd like to see the new plan provide a hazard assessment that includes less frequent floods (10-year	25-year	50-year). I'd also like to see a description of hazard impacts that includes the public health hazards associated with floodwaters/mold/mildew. I'd also like to see the action plan address post-disaster mitigation policies and procedures... or at least a reference to where these reside. Thanks." Matthew Simons		
16 What is the approximate date for the second public Information meeting? Markiella Moore				
17 "i was wondering	since i need a personal care attendant	and PCAs are not provided at shelters	but they are at medical shelters	do medical shelters keep an updated list of their locations online?" Ivy K
18 What are your Top 3 Most Wanted items? And is there a portal for citizens to submit identified hazards or hazard mitigation recommendations? Kent Lewis				
19 No your ongoing planning Kent Lewis				
20 Like community awareness Kent Lewis				
21 Yes Kent Lewis				

ATTENDEES

Kyle Spencer, Norfolk
Paul Bagli, Norfolk
Sean Segerblom, York Co
Karen Medina
Karen Reynes, Norfolk
Annette Hare
Ivy Kennedy, Va Beach
Kent Lewis
Kent Henkel, York Co
James Haluska, Chesapeake
Ron Segerblom
Kathi Angle, Newport News
Liz Scheessele, Norfolk
Tracy Hanger, Hampton
James Chapman, Hampton
Tristian Barnes, Norfolk
John Cooke, VDH
Vic Nicholls, Chesapeake
Heather Brown, Newport News
Ben McFarlane, HRPDC
Judy Hinch
Matthew Simons, Norfolk
Jessica Whitehad, ODU
Brian Donegan, Norfolk
Markielle Moore
Jalesha Smith, Norfolk
Leigh Chapman, Salter's Creek Consulting
Noelle Slater, AECOM
Danielle Spach, HRPDC
John Sadler, HRPDC

INVITEES

Email invitations were issued to each of the individuals shown on the following email invite. In addition, each primary contact for the communities forwarded the message and made additional phone calls to their staff and interested persons. Additional advertisements by individual communities on file with the HRPDC and will be included in the appendices of the final 2022 Hazard Mitigation Plan.

From: Danielle Spach <DSpach@hrpdcva.gov>
Sent: Tuesday, April 13, 2021 1:47 PM
To: Robert Gelormine; Braidwood, Robb; Francis, Vernie W.; Donald Goodwin; 'Walker, Hui-Shan'; Glazner, George; Brown, Heather; Bott, Louis; Redick, Jim; Spencer, Kyle; Bryant, Mike; Young, John; Topczynski, David; 'Stephens, Richard'; 'Progen, Danielle'; Whitney K. McNamara; Eagle, David; Snyder, Larry; Humphries, Pat; Ruch, Sara; Johnson, Michael W.; Phelps, Ray; mayor@townofboykinsva.com; harold.futrell@vadoc.virginia.gov; kitchenswelding1@cs.com; townclaremont@aol.com; satcinc53@yahoo.com; office@townofivor.com; Stallings, Michael; townofsurry@aol.com; Segerblom, Sean; Kopczynski, Stephen; Bresee, Harrison; Simons, Matthew; Barnes, Tristian
Cc: Chapman, Leigh; Slater, Noelle; John Sadler
Subject: RE: HMP Public Meeting 1 and Public Survey
Attachments: FINAL_Hampton Roads HMP Public Meeting #1 public notice.docx

Importance: High

Good Afternoon Hampton Roads Hazard Mitigation Planning Committee Members,

The attached public notice for the first public meeting posted on the HRPDC and HRTPO websites this morning. It is similar to the one I sent out as a template last week but includes the full registration link in case members of the community are viewing a print version of the notice. The updated public notice is also posted on the Microsoft Teams site.

As a reminder, please remember to post documentation of your public notice to either the Microsoft Teams site under the "Public Participation Documentation" folder or by emailing myself or John Sadler (Jsadler@hrpdcva.gov)

Please let me know if you have any questions.

Sincerely,

Danielle Spach
All Hazards Emergency Planner
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300
Fax: 757-523-4881

From: Danielle Spach
Sent: Thursday, April 08, 2021 10:24 AM
To: 'Robert Gelormine' <argelormine@cityofchesapeake.net>; Braidwood, Robb <rbraidwood@cityofchesapeake.net>; Francis, Vernie W. <vfrancis@franklinva.com>; 'Donald Goodwin' <dgoodwin@franklinva.com>; 'Walker, Hui-Shan' <hui-shan.walker@hampton.gov>; Glazner, George <gglazner@nnva.gov>; Brown, Heather <brownhl@nnvagov>; Bott, Louis <LBott@nnva.gov>; Redick, Jim <james.redick@norfolk.gov>; Spencer, Kyle <Kyle.Spencer@norfolk.gov>; Bryant, Mike <Michael.Bryant@poquoson-va.gov>; Young, John <John.Young@poquoson-va.gov>; Topczynski, David <topczynskid@portsmouthva.gov>; 'Stephens, Richard' <rstephens@suffolkva.us>; 'Progen, Danielle' <dprogen@vbgov.com>; 'Whitney K. McNamara' <WMcNamar@vbgov.com>; Eagle, David <deagle@williamsburgva.gov>; Snyder, Larry <lsnyder@williamsburgva.gov>; Humphries, Pat <phumphries@isleofwightus.net>; Ruch, Sara <Sara.Ruch@jamescitycountyva.gov>; Johnson, Michael W. <mjohnson@southamptoncounty.org>; Phelps, Ray <rphelps@surrycountyva.gov>; 'mayor@townofboykinsva.com' <mayor@townofboykinsva.com>; 'harold.futrell@vadoc.virginia.gov' <harold.futrell@vadoc.virginia.gov>; 'kitchenswelding1@cs.com' <kitchenswelding1@cs.com>; 'townclaremont@aol.com' <townclaremont@aol.com>; 'satcinc53@yahoo.com' <satcinc53@yahoo.com>; 'office@townofivor.com' <office@townofivor.com>; Stallings, Michael <mstallings@smithfieldva.gov>; 'townofsurry@aol.com' <townofsurry@aol.com>; Segerblom, Sean <segerbls@yorkcounty.gov>; Kopczynski, Stephen <kopczyns@yorkcounty.gov>; 'Bresee, Harrison' <harrison.bresee@vdem.virginia.gov>
Cc: Chapman, Leigh <leigh.morgan2@verizon.net>; Slater, Noelle <noelle.slater@aecom.com>; John Sadler (jsadler@hrpdcva.gov) <jsadler@hrpdcva.gov>
Subject: HMP Public Meeting 1 and Public Survey
Importance: High

Good Morning Hampton Roads Hazard Mitigation Planning Committee Members,

I posted information for the first public meeting for the Hazard Mitigation Plan Update on the Microsoft Teams site earlier this week but wanted to send an email highlighting the information for your reference. If you are not part of the Microsoft Teams site or are having issues accessing the information please let me know. The first Public Meeting will occur virtually on **April 20, 2021 from 6:00pm to 8:00pm via Zoom.** This meeting will give members of the public an opportunity to discuss hazard related concerns within their community. Those interested in attending can register for the virtual meeting by visiting https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg

All localities participating in the Hampton Roads Hazard Mitigation Plan must follow their locality's normal procedures for posting public meeting notices. This is a requirement for the plan to be approved. In addition, the HRPDC will also put out a public notice for the meeting. A sample public notice and outreach flyer are attached for your reference and as an example. Please provide documentation of where you posted your public notice for Public Meeting 1. Examples include a screenshot of a website, picture of a flyer, etc. Please do the following when submitting documentation:

1) Name the file as "Locality"_Public Meeting 1 Documentation (Ex. Virginia Beach_Public Meeting 1 Documentation). If you upload multiple files please add a number to the file name (Ex. Virginia Beach_Public Meeting 1 Documentation 1 and Virginia Beach_Public Meeting 1 Documentation 2)
2) Post the file within the "Public Participation Documentation" folder on the 2022 Hampton Roads HMP Microsoft Teams Site
3) If you have trouble reaching the Microsoft Teams Site then please email the documentation to Danielle Spach (DSpach@hrpdcva.gov) or John Sadler (JSadler@hrpdcva.gov)

Separate from the first public meeting, there is also a public survey available that gives the public an opportunity to provide input on the type of hazards they are most concerned about within their community. The survey is now open and can be accessed using this

link: https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZtrQAAAAAAAAAAAAO__dKuUnBUQUtCNklZS1RTSzRaUFQwVUg3QVU1QVFGRS4u.

Please let me know if you have any questions. Thank you all for your participation and engagement.

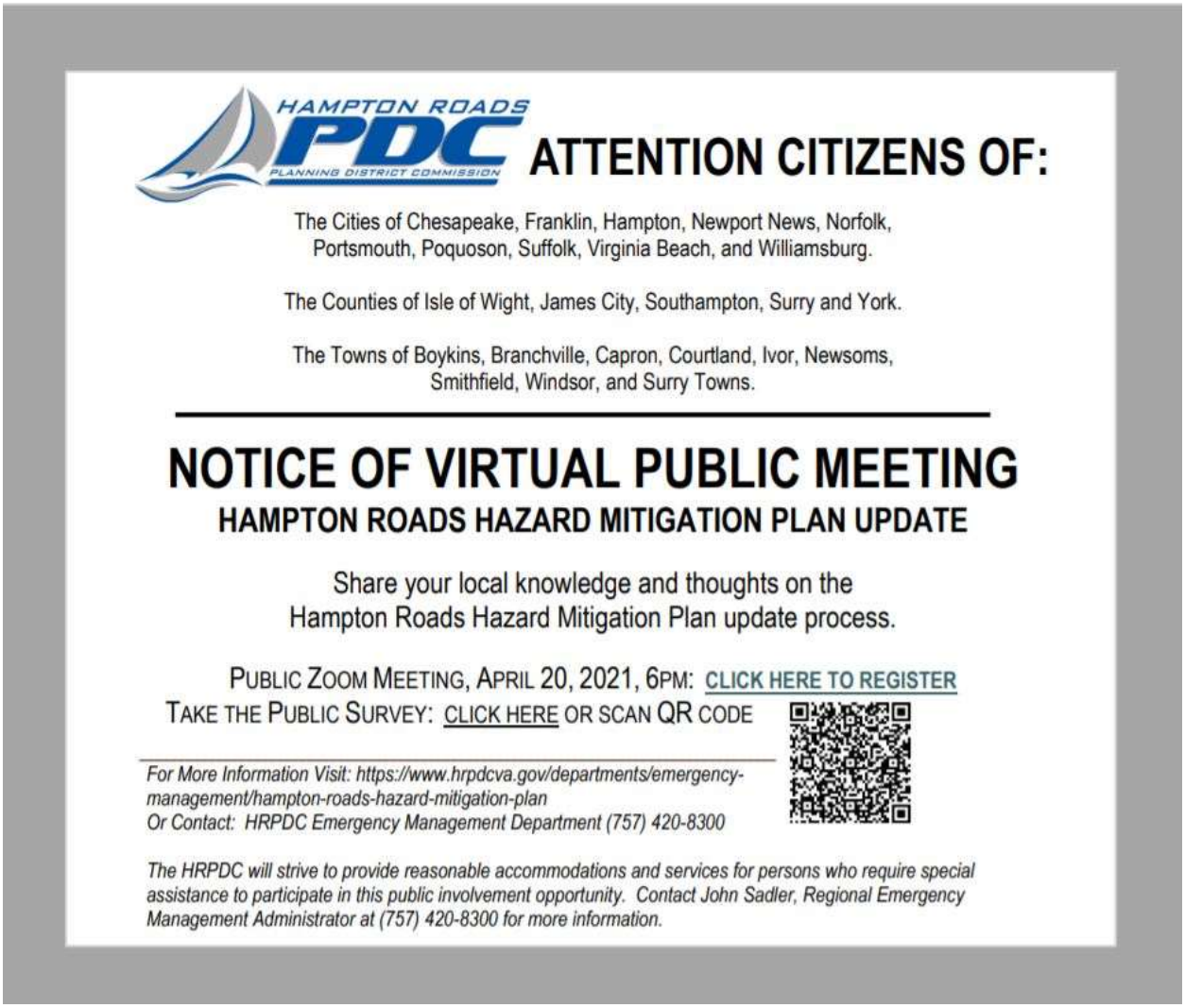
Sincerely,

Danielle Spach
All Hazards Emergency Planner
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300
Fax: 757-523-4881

HRPDC and HRTPO Website Posting of Public Notice for Public Meeting 1

Below is the public notice that the HRPDC used to notify members of the community of the first public meeting for the 2022 Hampton Roads Hazard Mitigation Plan. The public notice could be accessed through various pages on both the HRPDC and the HRTPO websites. Documentation of where the public notice was available is also below.

PUBLIC MEETING 1 PUBLIC NOTICE



HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Surry Towns.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

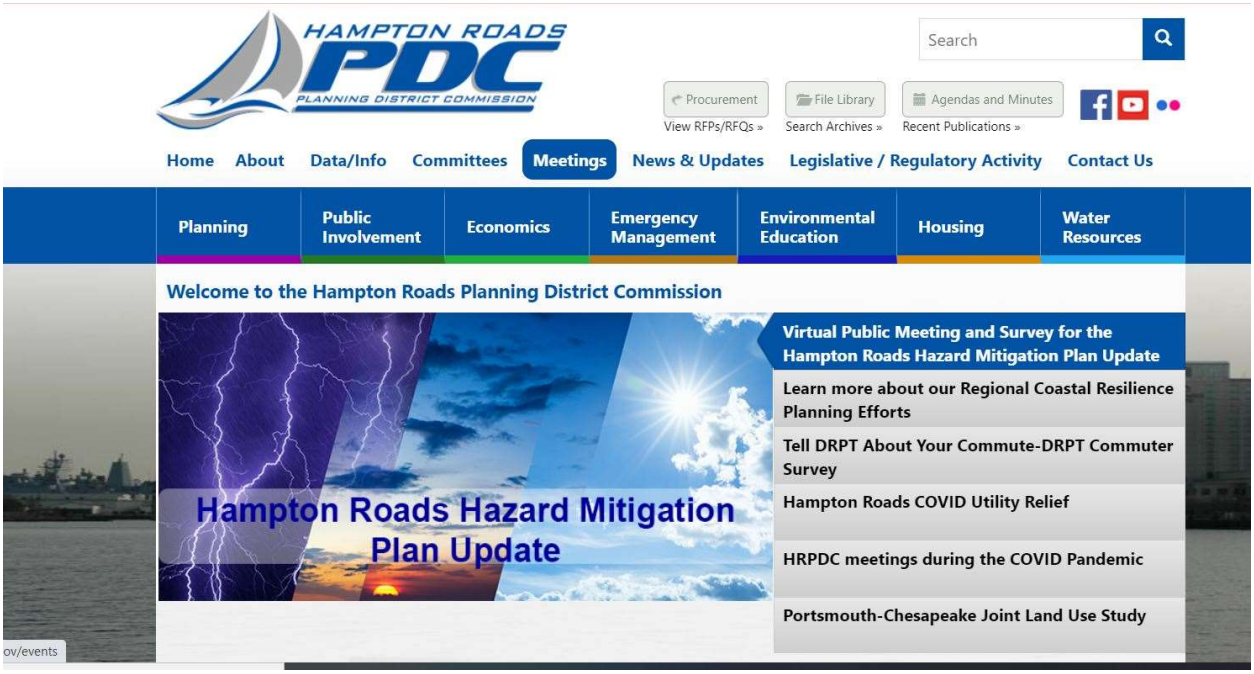
PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER

TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan
Or Contact: HRPDC Emergency Management Department (757) 420-8300

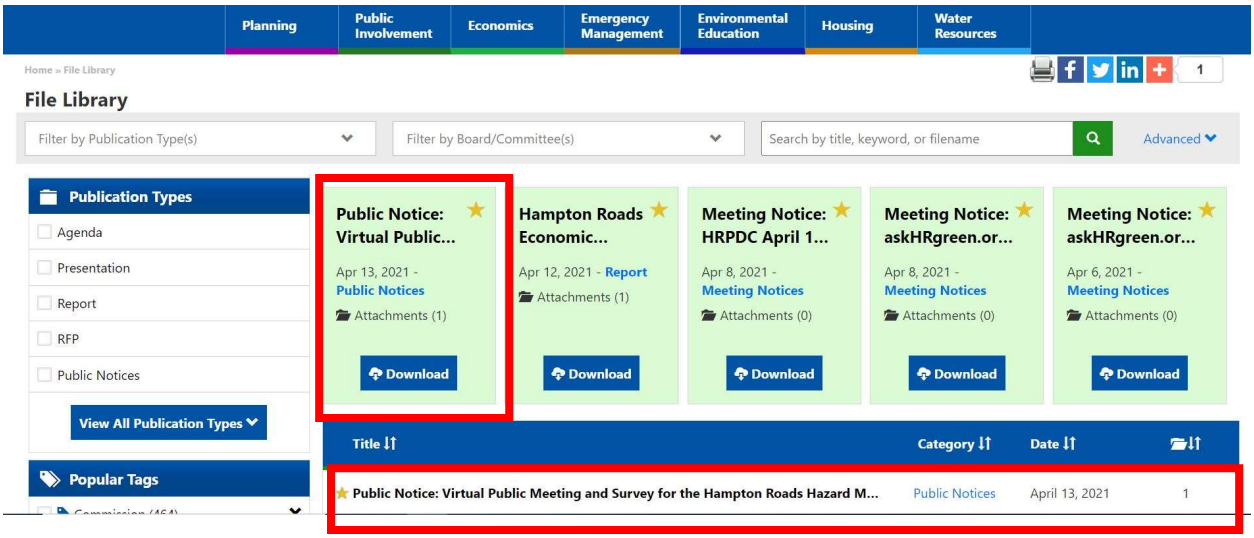
The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator at (757) 420-8300 for more information.

HRPDC MAIN WEBPAGE
(Posted on 4/13/2021)



HRPTO MAIN WEBPAGE
(Posted on 4/13/2021)

HRPDC FILE LIBRARY WEBPAGE
(Posted on 4/13/2021)

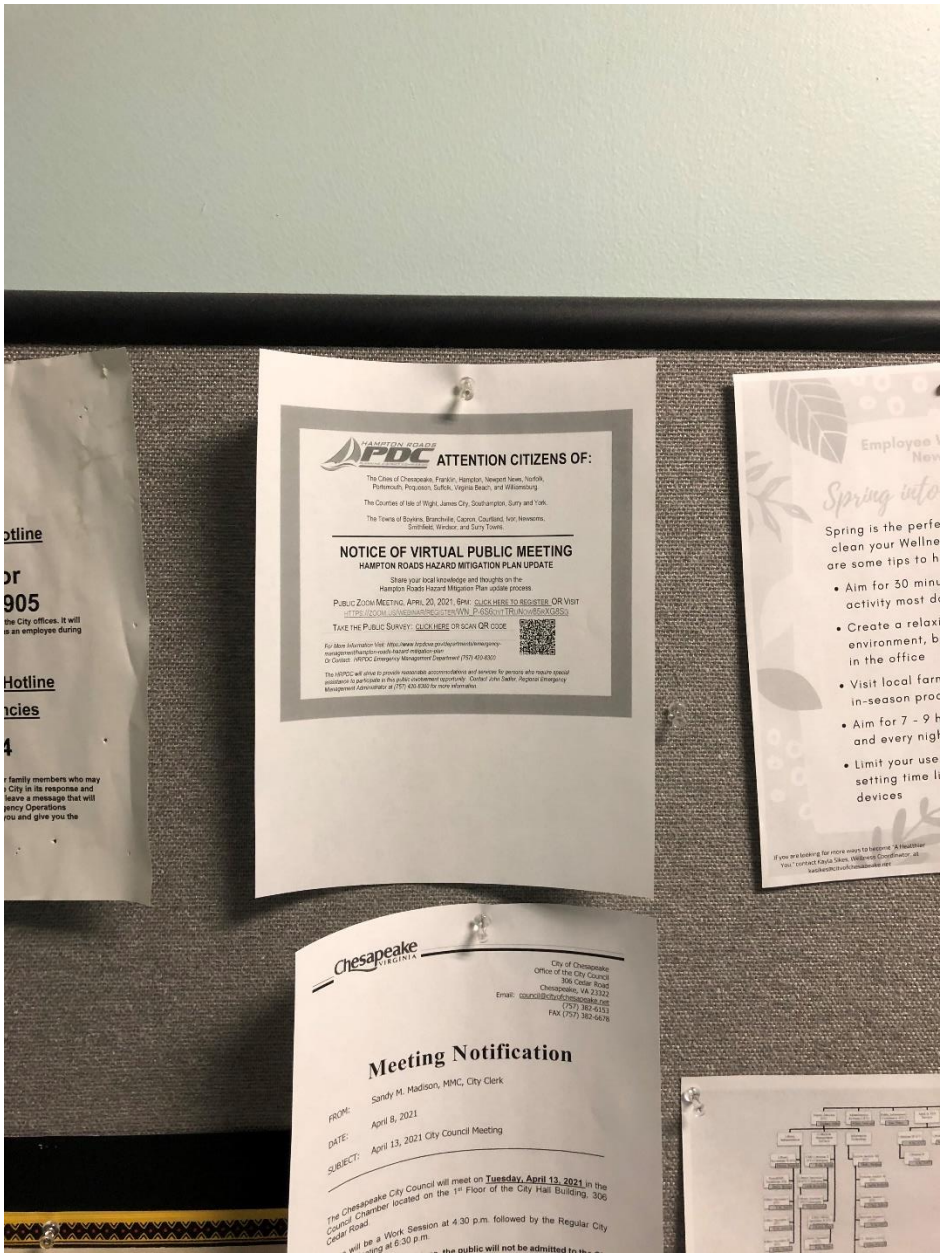


HRTPO PUBLIC NOTICE WEBPAGE
(Posted on 4/13/2021)

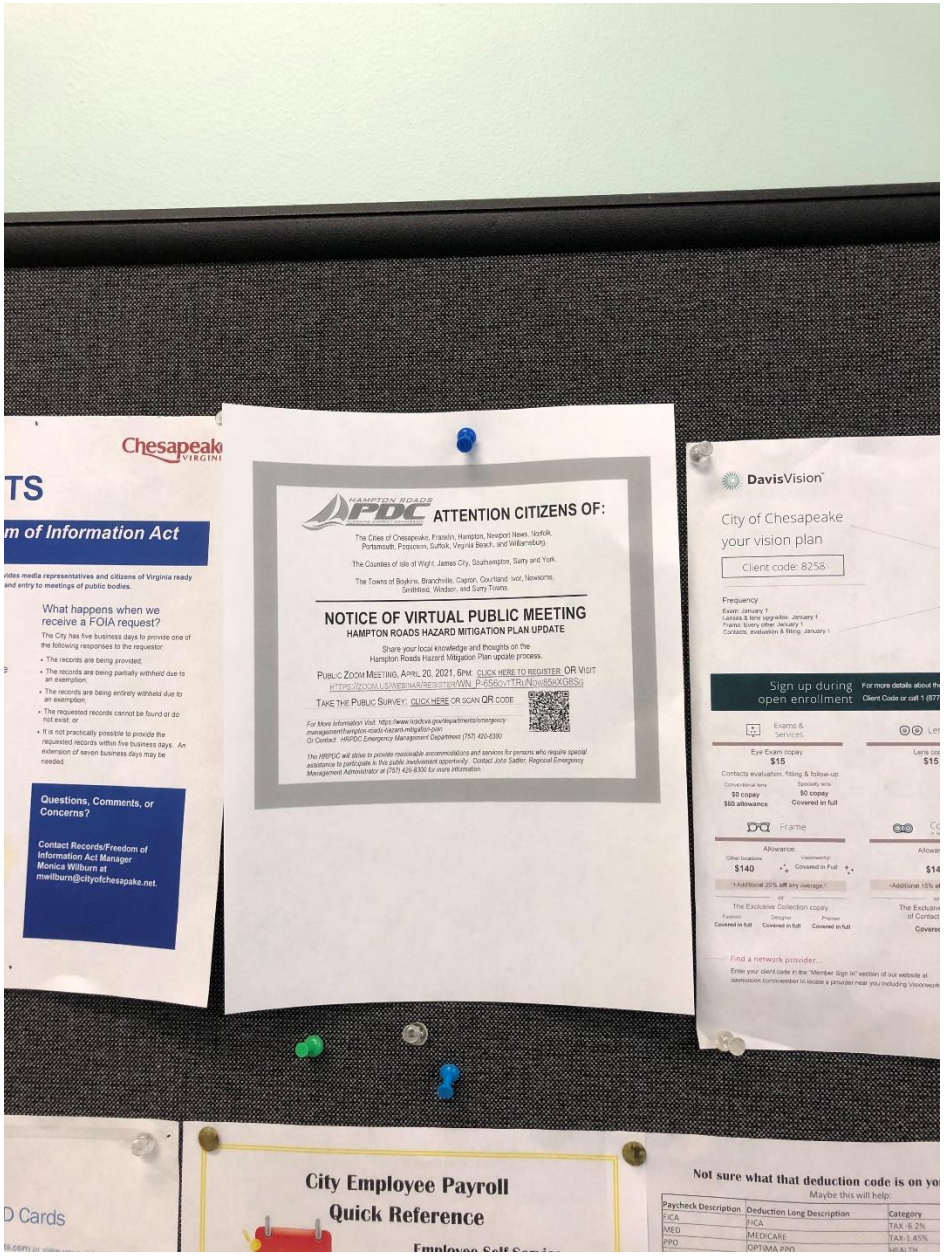
CITY OF CHESAPEAKE PUBLIC NOTICE DOCUMENTATION

The below pictures are from various locations around the city as well social media posts and website that the Public Notice Information is posted for citizens awareness and engagement

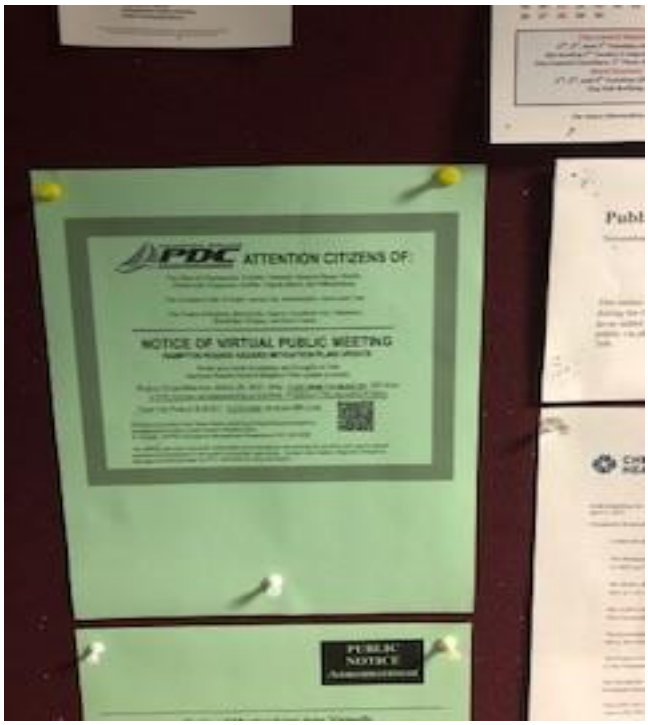
CENTRAL LIBRARY – ADMIN OFFICE



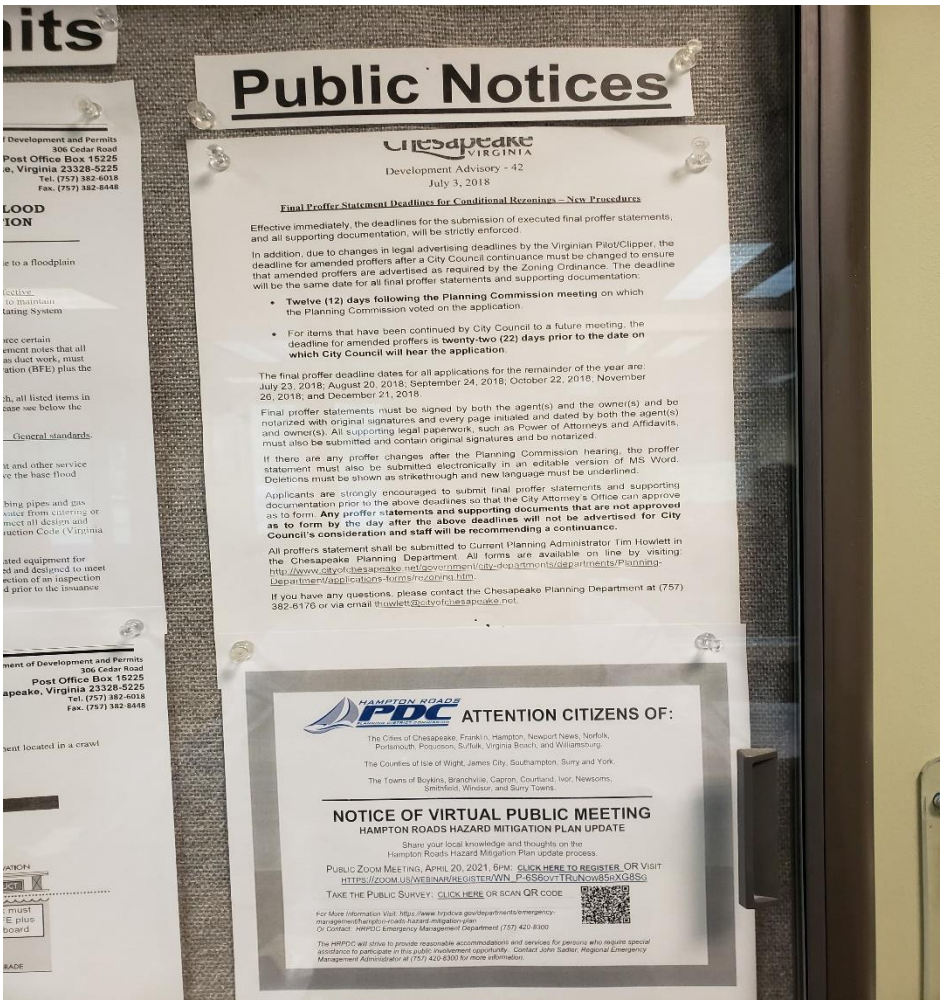
CENTRAL LIBRARY – PUBLIC SPACE



CITY CLERKS OFFICE – PUBLIC SPACE



DEVELOPMENT & PERMITS – WAITING AREA / PUBLIC SPACE

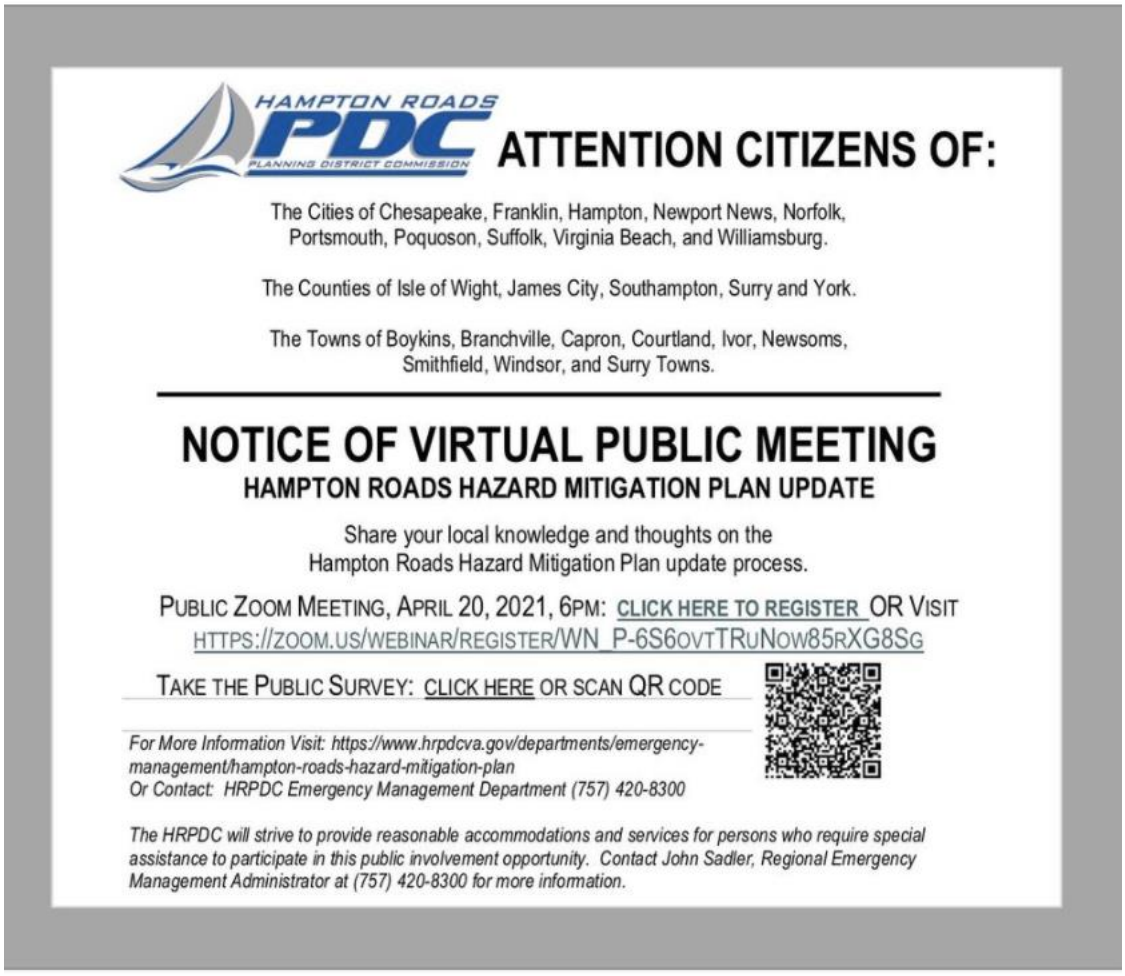


CITY OF CHESAPEAKE FACEBOOK POST

City of Chesapeake Government
5m ·

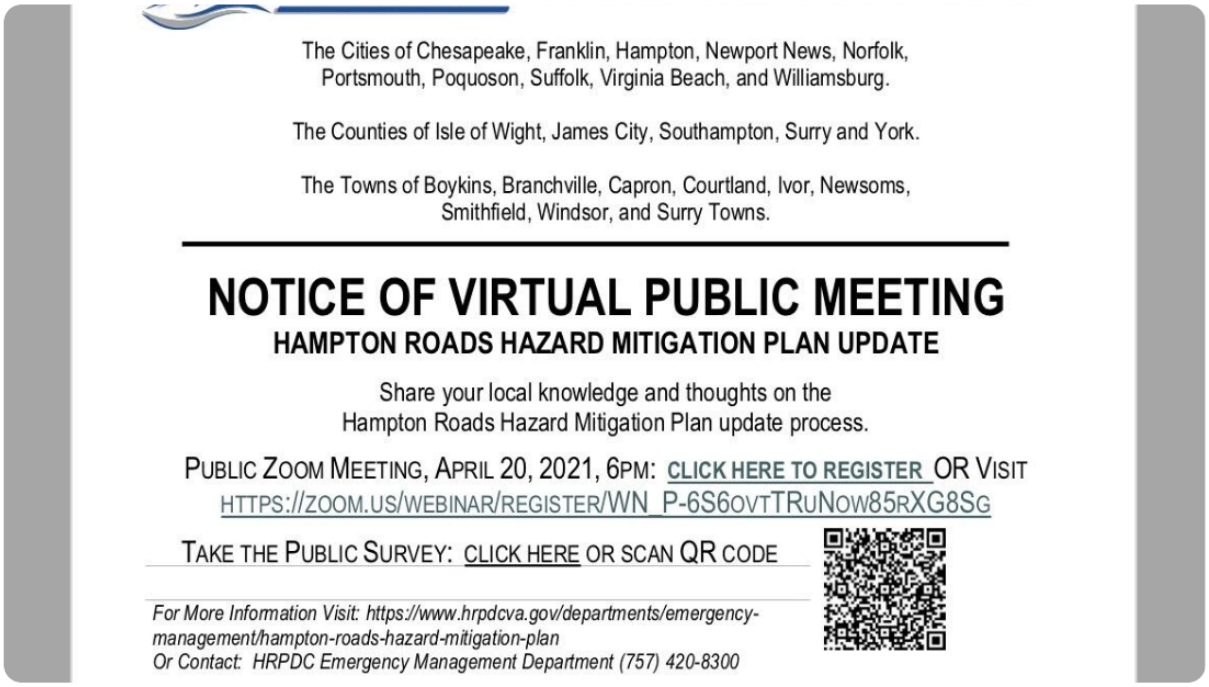
The Hampton Roads Planning District Commission wants your knowledge and thoughts on the Hazard Mitigation Plan, a process to make the region less vulnerable to natural disasters and manmade hazards. Join the virtual meeting on Tuesday, April 20, at 6 p.m. to learn more and take the survey to share your thoughts.

To register for the meeting, visit bit.ly/3tmIqJ1. To access the survey, visit bit.ly/3e8ykVY.



CITY OF CHESAPEAKE NEXTDOOR POST

City of Chesapeake
Social Media Coordinator Jane Gregorski • Just now



The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Surry Towns.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER OR VISIT HTTPS://ZOOM.US/WEBINAR/REGISTER/WN_P-6S6OVTTRUNOW85RXG8SG

TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan
Or Contact: HRPDC Emergency Management Department (757) 420-8300

Virtual Public Meeting - Hampton Roads Hazard Mitigation Plan. The Hampton Roads Planning District Commission wants your knowledge and thoughts on the Hazard Mitigation Plan, a process to make the region less vulnerable to natural disasters and manmade hazards. Join the virtual meeting on Tuesday, April 20, at 6 p.m. to learn more and take the survey to share your thoughts.

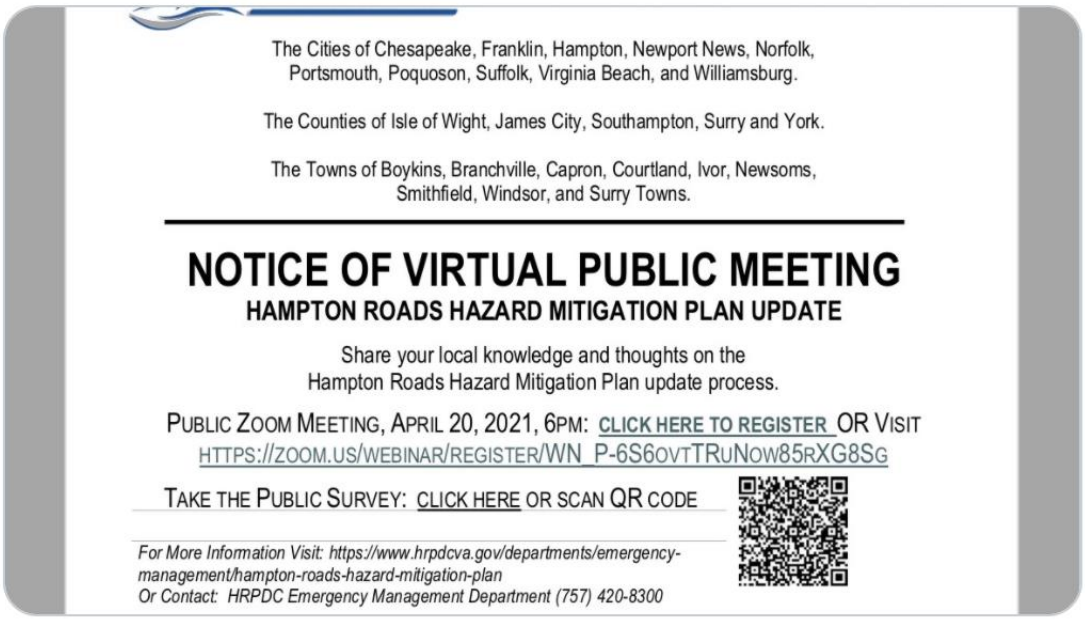
To register for the meeting, visit bit.ly/3tmlqJ1. To access the survey, visit bit.ly/3e8ykVY.

Posted to **Subscribers of City of Chesapeake**

CITY OF CHESAPEAKE TWITTER POST

City of Chesapeake @AboutChesapeake · 5m

The Hampton Roads Planning District Commission wants your thoughts on the Hazard Mitigation Plan, a process to make the region less vulnerable to natural disasters & manmade hazards. Join the virtual meeting on April 20 at 6 pm to learn more and take the survey.



1 1

City of Chesapeake @AboutChesapeake · 5m

To register for the meeting, visit bit.ly/3tmlqJ1. To access the survey, visit bit.ly/3e8ykVY.

CITY OF CHESAPEAKE WEBSITE INFORMATION

News & Announcements

2022 Hampton Roads Hazard Mitigation Plan Update

April 14, 2021

For more information on the 2022 Hampton Roads Hazard Mitigation Plan Update please see the attached document. Read More

Laurel Street Public Hearing #2

March 19, 2021

Please click the link for more informaiton on the Laurel Street Public Hearing #2 Read More

COVID Vaccine Call Center Information

February 9, 2021

COVID Vaccine Call Center Information Read More

2021 Bay Recycling Calendar

January 5, 2021

2021 Bay Recycling Calendar Read More

Hazard Mitigation Plan Outreach

April 14, 2021

Please see the attached flyer for more information on the Hazard Mitigation Plan Outreach. Read More

Western Tidewater Home Consortium Annual Action Plan

February 11, 2021

Western Tidewater Home Consortium Annual Action Plan Read More

Citizens Letter for EMS Subscription Plan

January 11, 2021

An overview of the new EMS Subscription Plan provided to you by Franklin Fire and Rescue. EMS Subscription application also provided. Read More

Amnesty Weeks 2021

January 5, 2021

Amnesty Weeks 2021 Read More


TRESPASSING
AFTER
BUSINESS
HOURS
VIOLATORS WILL BE PROSECUTED
PROPERTY UNDER VIDEO SURVEILLANCE
THIS BULLETIN
BOARD IS FOR
TOWN USE
ONLY
SMILE FOR THE CAMERA!!!
Quartet
Need to Get Vaccinated?
Town of Claremont
PER ORDER OF THE GOVERNOR
NO MORE THAN 10 PEOPLE IN THIS
BUILDING AT ONE TIME
MASKS ARE MANDATORY
Public will be allowed in building 10 minutes
before meeting time.
This will ensure all Council members are
present and accounted for.
PDC
ATTENTION CITIZENS OF
NOTICE OF VIRTUAL PUBLIC MEETING

City Council Legal Notices of Public Hearings or Meetings All Archives

Regional Hazard Mitigation Plan virtual hearing
Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process. PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM

Two or more Council members may attend virtual meeting
Two or more Council members may attend virtual meeting Thursday, June 25

Council plans public hearing on July 8 at City Hall
City Council plans a public hearing on July 8 at 6:30 p.m in Council Chambers at 22 Lincoln St. to consider a granting of easements and a substantial amendment to the Citizen Participation Plan for the Housing and Hurban Development entitlement programs.

Council plans public hearings on June 10
City Council will hold public hearing on June 10 to consider Hampton's Consolidated plan. Rezoning requests, use requests, and disposition of city-owned property are also on the Council agenda.

Joint meeting of City Council and HRHA board on Jan. 22
There will be a special joint meeting of the Hampton City Council and Hampton Redevelopment and Housing Authority Board of Commissioners on Wednesday, Jan. 22, at 10 a.m. in the Community Development Conference Room at City Hall.

Public Hearings for Jan. 22, 2020, meeting

Council members may attend Community Center meeting
Two or more Council meetings may attend community center meeting.

Two or more Council members may attend HU site visit
Two or more Council members may attend site visit of Hampton University Severe Weather Research Center Wednesday, Oct. 9.

James City County

hazard mitigation

Posts You've Seen

Most Recent

Tagged Location

Date Posted

James City County
April 20, 2021 ·

Don’t miss the virtual public hearing tonight – April 20 – at 6 p.m. and share your input on the Hampton Roads Hazard Mitigation Plan Update. A Hazard Mitigation Plan is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property.

The meeting will be held on Zoom:
https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg

You can also share your input by completing an online survey:
https://forms.office.com/Pages/Response ... See more

3 Comments

Like Comment Share

James City County
April 13, 2021 ·

of life and property.

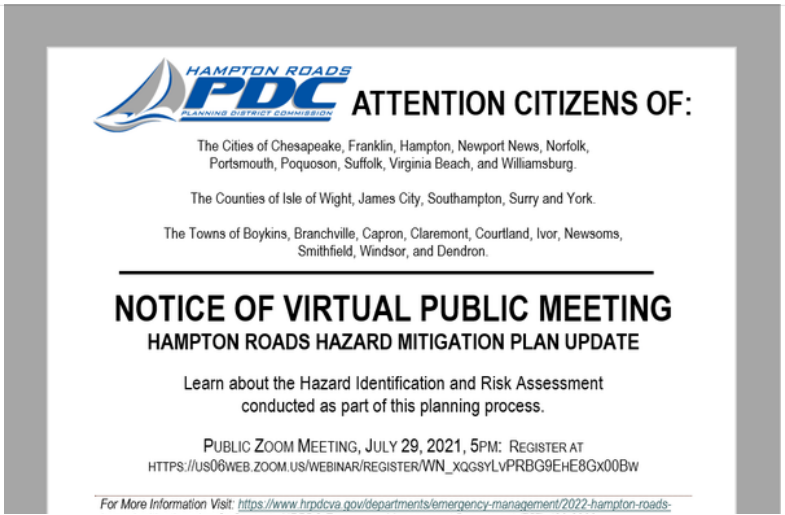
The planning committee has initially identified the following hazards for inclusion in the Hampton Roads Hazard Mitigation Plan:
• Flooding
• Sea Level Rise... **See more**

Like Comment Share

James City County
July 20, 2021 ·

Mark your calendars for the virtual public meeting on the Hampton Roads Hazard Mitigation Plan Update – July 29, 5 p.m. To register, visit
https://us06web.zoom.us/.../reg.../WN_xqgsyLvPRBG9EhE8Gx00Bw

For more information, visit https://www.hrpdcva.gov/.../2022-hampton-roads-hazard...


HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

NOTICE OF VIRTUAL PUBLIC MEETING
HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Hazard Identification and Risk Assessment conducted as part of this planning process.

PUBLIC ZOOM MEETING, JULY 29, 2021, 5PM: REGISTER AT HTTPS://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN_XQGSYLVPRBG9EHE8GX00BW

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-

Event Details

Return to Previous

View Map

Public Meeting - Hampton Roads Hazard Mitigation Plan

Tuesday, April 20, 2021

Newport News is partnering with other cities, counties and towns throughout Hampton Roads, as well as the Hampton Roads Planning District Commission, to update the Hampton Roads Disaster Mitigation Plan. The existing plan has been in place since 2017 and an updated version will be adopted in 2022. The community is invited to participate in a virtual Public Meeting on Tuesday, April 20 at 6 p.m. Register online and then join the meeting to share your concerns and ideas on the process.

Date:	April 20, 2021
Time:	6:00 PM - 8:00 PM
Location:	Virtual event
Address:	Newport News, VA 23607
Link:	https://zoom.us/webinar/register/WN_6S6ovtTRuNow85rXG8Sg

Calendar

View All

Tue Apr. 20

Public Meeting - Hampton Roads Hazard Mitigation Plan

Wed Apr. 21

COVID-19 Vaccine Clinic

Wed Apr. 21

Planning Commission Meeting

Thu Apr. 22

Youth Mental Health Panel

City of Newport News, VA - Government
Published by Hootsuite · Yesterday at 6:35 PM ·

A Hazard Mitigation Plan identifies hazards and highlights strategies to reduce loss of life and property. Attend a virtual Public Meeting on the Hampton Roads Hazard Mitigation Plan on Tuesday, April 20 at 6 p.m. Register at http://ow.ly/AKir50EqNTo.

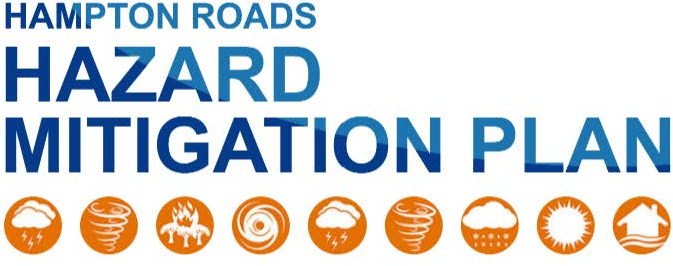
441
People Reached

9
Engagements

Boost Post

City of Newport News, VA - Government
Published by Hootsuite · 1h ·

We need to hear from you! Newport News and other municipalities are working with the Hampton Roads Planning District Commission to update the region's Hazard Mitigation Plan. Complete a survey to share your opinion on hazards and concerns.
http://ow.ly/SLbA50EqO9F



168
People Reached

2
Engagements

Boost Post

Mon 4/12/2021 12:03 PM

51-NN-Now

Newport News Now 4-12-21

To Bowman, Sarah S.

Region Updating Hampton Roads Hazard Mitigation Plan

HAZARD MITIGATION ACTION PLAN

A community must plan for every type of disaster before it occurs. An important part of the planning process includes a Hazard Mitigation Plan, which identifies hazards and highlights strategies to reduce loss of life and property. Hampton Roads has a Regional Hazard Mitigation Plan that is updated every five years. This ensures localities are prepared to work together to respond and recover and also makes each community in the region eligible for federal funding following a disaster event.

Newport News is partnering with other cities, counties and towns throughout Hampton Roads, as well as the Hampton Roads Planning District Commission, to update the Hampton Roads Disaster Mitigation Plan. The existing plan has been in place since 2017 and an updated version will be adopted in 2022. The community is invited to participate in a virtual Public Meeting on Tuesday, April 20 at 6 p.m. Register online and then join the meeting to share your knowledge and ideas on the process.

The group is also asking residents to respond to a public survey to provide input on the type of hazards you are most concerned about within our community. Please respond to the online survey. If you have questions about the survey or would like to learn about additional ways you can participate in plan development, please contact the HRPDC at 757-420-8300. For more information on the Hampton Roads Hazard Mitigation Plan, visit the HRPDC website.

City of Newport News @CityofNN · Apr 17

A Hazard Mitigation Plan identifies hazards and highlights strategies to reduce loss of life and property. Attend a virtual Public Meeting on the Hampton Roads Hazard Mitigation Plan on Tuesday, April 20 at 6 p.m. Register at ow.ly/vUPb50EqNTn.

City of Newport News @CityofNN · 1h

We need to hear from you! Newport News and other municipalities are working with the Hampton Roads Planning District Commission to update the region's Hazard Mitigation Plan. Complete a survey to share your opinion on hazards and concerns. ow.ly/DQMn50EqO9E

City of Norfolk Government
Published by Andrew Cooper · 21h ·

Storms? Flooding? What are the hazards that worry you and how do you think the region should solve them? The Hampton Roads Planning District Commission is updating the Hampton Roads Hazard Mitigation Plan and they want to hear from you.
Sign up for a virtual public meeting on April 20 from 6p-8p. Register online https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg

or take the survey and give your feedback!
https://forms.office.com/Pages/ResponsePage.aspx..... See More

ZOOM.US

Welcome! You are invited to join a webinar: 2022 Hampton Roads Hazard Mitigation Plan Public Participation...

City Spotlight

Norfolk Boards and Commissions
Norfolk Boards and Commissions are currently accepting applications.

Read more...

2022 Hampton Roads Hazard Mitigation Plan

We Want to Hear From You!
Storms? Flooding? What are the hazards that worry you? The Hampton Roads Planning District Commission is updating the region's plan and they want to hear from you.

Read more...

Ready to get your COVID-19 vaccine?
No appointment necessary at the Military Circle Mall FEMA-supported vaccination clinic.

Additional Info...

Start date | End date | Search | Show Past Events | Select a Calendar

Event Details

Return to Previous

Download Agenda | View Map

Hampton Roads Hazard Mitigation Plan Public Comment Needed

Tuesday, April 20, 2021

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process. PUBLIC ZOOM MEETING, APRIL 20, 2021, 6pm - Click here to register https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg Get more information and follow the planning process at https://www.hrpdcva.gov. The website contains announcements for upcoming meetings, minutes and presentations from past planning meetings, information on the identified hazards, draft planning documents for review, a public survey, and more. Take the survey. A public outreach survey is available online here: https://bit.ly/3wVUnYI Please complete the survey as soon as possible to ensure that your opinion is captured!

Date:	April 20, 2021
Time:	6:00 PM - 8:00 PM
Location:	ZOOM (Online)
Address:	Norfolk, VA 23510
Link:	Registration

View all calendars is the default. Choose Select a Calendar to view a specific calendar.

Back to top

Search Facebook

City of Poquoson government

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This is the official Facebook page for the City of Poquoson government.

3,169 people like this

3,455 people follow this

919 people checked in here

http://www.poquoson-va.gov/

(757) 868-3000

Closed Now
8:30 AM - 4:30 PM

Government Organization

Suggest Edits

Is this another name for the same Page?

City of Poquoson government
2h ·

CI.POQUOSON.VA.US

Poquoson, VA

Notice of Virtual Public Meeting - Hampton Roads Hazard Mitigati...

Like Comment Share

POQUOSON NEWS

NOTICE OF VIRTUAL PUBLIC MEETING - HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Additional Info...

CONVENIENCE SITE REMINDER

Reminder tomorrow April 17th is Convenience Site at City Hall. Per Code of Virginia 46.2-1156 Construction, Maintenance and loading must prevent escape of contents. Be reminded that prior to leaving your home you must secure all contents in the load.

Additional Info...

UPDATED VACCINE APPOINTMENTS AVAILABLE

Upcoming Covid-19 vaccination clinics have open slots and are allowing anyone 18 and older to schedule an appointment.

Read on...

OPERATION VACCINATE THE PENINSULA MOVES TO PHASE 2

Effective Wednesday, April 14, the Virginia Department of Health's Peninsula and Hampton Health Districts will move into Phase 2 COVID-19 vaccinations.

Read on...

POQUOSON Virginia

Helpful Links

- Library
- Parks & Recreation
- Poquoson Seafood Festival
- Poquoson GIS

FAQs

- Where do I find information on employment opportunities?
- How do I apply to serve on a board or commission?
- When are my garbage & recycling pickup days?
- How do I signup for Code Red alerts?

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, Surry and Dendron

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NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

SHARE YOUR LOCAL KNOWLEDGE AND THOUGHTS ON THE HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE PROCESS.

PUBLIC ZOOM MEETING, **APRIL 20, 2021, 6 PM**: **CLICK HERE TO REGISTER**

TAKE THE PUBLIC SURVEY: CLICK HERE

OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator at (757) 420-8300 for more information.

2022 Hampton Roads Hazard Mitigation Plan Update Process

Hazard Mitigation Planning

A Hazard Mitigation Plan is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. This planning process is structured around the four phases of the Disaster Mitigation Act of 2000, which the region's planning consultant has aligned with the ten steps of the Community Rating System (CRS). Having an adopted Hazard Mitigation Plan that is updated every five years helps ensure each community in the region is eligible for federal disaster funding following a disaster event.

The Community Rating System (CRS)

The CRS is a national program developed by the Federal Emergency Management Agency (FEMA) to encourage communities to reduce their risk to flood-related hazards. The CRS rewards the efforts communities take that go above and beyond the minimum requirements of the National Flood Insurance Program (NFIP) by providing discounts on flood insurance premiums.

Hazards Addressed by the Hampton Roads Hazard Mitigation Plan

The planning committee has initially identified the following hazards for inclusion in the Hampton Roads Hazard Mitigation Plan:

- Flooding
- Sea Level Rise
- Tropical Storm
- Shoreline Erosion
- Dam Failure
- Tornado
- Winter Storm
- Earthquake
- Wildfire
- Drought
- Extreme Heat
- Hazardous Materials

Citizen Involvement

Citizen participation is an important component of mitigation planning. The planning team needs your input on the types of hazards that are your priority concern, and your opinion on ways to lessen their impact.

Phase 1
1. Organize Planning Team
2. Plan for Public Involvement
3. Coordinate with Other Agencies

Phase 2
4. Identify the Hazards
5. Estimate Losses

Phase 3
6. Identify Goals & Objectives
7. Develop Potential Mitigation Actions
8. Draft the Mitigation Plan

Phase 4
9. Adopt the Plan
10. Implement and Maintain the Plan

- Visit the web site. Get more information and follow the planning process at https://www.hrpdcva.gov. The website contains announcements for upcoming meetings, minutes and presentations from past planning meetings, information on the identified hazards, draft planning documents for review, a public survey, and more.
- Take the survey. A public outreach survey is available online here. Please complete the survey as soon as possible to ensure that your opinion is captured! If you would like a hard copy, please use the email below.
- Send us information or comments. If you have information to share for inclusion in the plan, please contact John Sadler at JSadler@hrpdcva.gov.
- The draft plan will be made available for public review on the web site prior to being submitted to FEMA.

To Take the Public Survey: click here

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, Surry and Dendron

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NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

SHARE YOUR LOCAL KNOWLEDGE AND THOUGHTS ON THE HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE PROCESS.

PUBLIC ZOOM MEETING, **APRIL 20, 2021, 6 PM**: **CLICK HERE TO REGISTER**

TAKE THE PUBLIC SURVEY: CLICK HERE

OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

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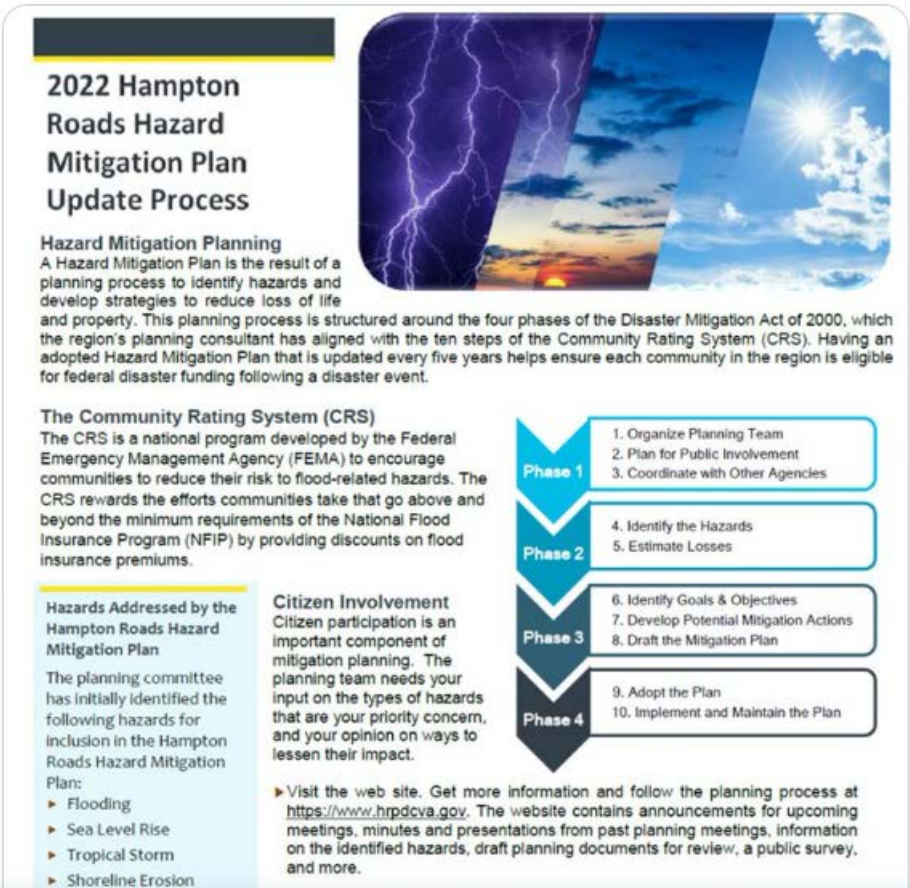
- Take the survey. A public outreach survey is available online here. Please complete the survey as soon as possible to ensure that your opinion is captured! If you would like a hard copy, please use the email below.
- Send us information or comments. If you have information to share for inclusion in the plan, please contact John Sadler at JSadler@hrpdcva.gov.
- The draft plan will be made available for public review on the web site prior to being submitted to FEMA.

To Take the Public Survey: click here

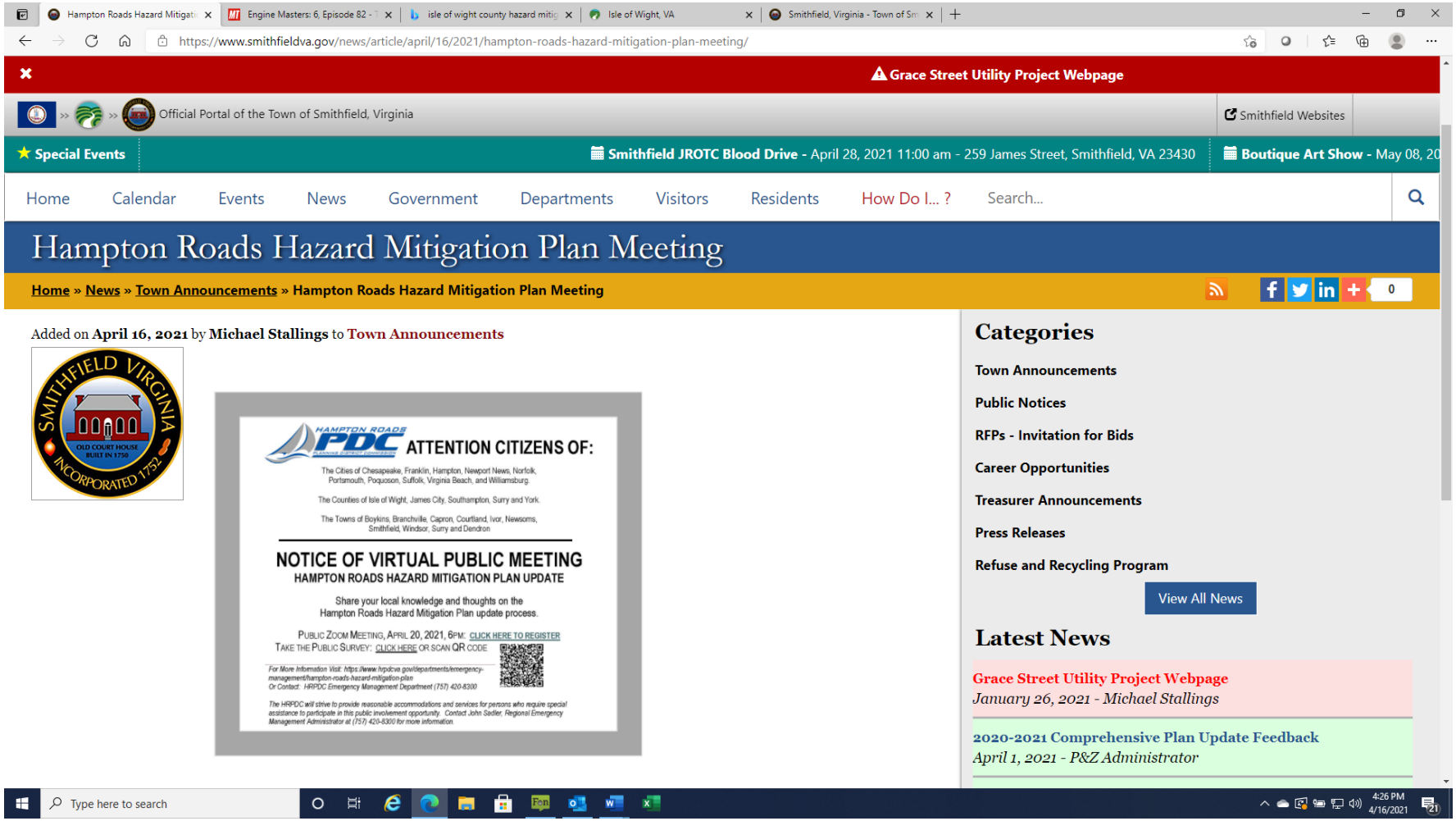
City of Portsmouth
@cityofPortsVA

Virtual Public Meeting Hampton Roads Hazard Mitigation Plan Update. Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan Update Process. Public Zoom Meeting, APRIL 20, 2021, 6 PM. Register here zoom.us/webinar/regist.... Find more details here . . .



Town of Smithfield

Public Notice of Hazard Mitigation Plan Meeting posted on Town Website.



GEOGRAPHIC INFO - GIS

$ BILL PAY $

- Employment Information
- Request for Proposals
- Invitation for Bids
- Voluntary Agricultural-Forestal District
- Capital Improvement Plan 2014-2021
- Comprehensive Plan 2015-2025
- Solid Waste Brochure (site hours & accepted items)
- Delinquent Lists for Personal Property & Real Estate
- PETA's Low-Cost Spay/Neuter Mobile Clinics Calendar
- Resources for Seniors Ages 65+
- 2021 Recycling (Blue

Latest News LATEST NEWS

Notice Of Virtual Public Meeting -
Hampton Roads Hazard Mitigation Plan Update

Info To Join Virtual Budget Work Session
Wednesday, April 21, 2021

Initial Draft Budget FY2021-22

Public Notice For The June 8, 2021 Democratic Party Primary Election In Southampton County

Notice Of Primary Election - June 8, 2021

Covid Vaccine Information For Southampton County

Statewide Risk-Limiting Audit Of Nov 3, 2020 Election Results

APRIL 2021

S	M	T	W	T	F	S
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

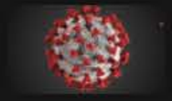
Wed, Apr 21st, 2021
BOS Budget Workshop
6:30 PM

Tue, Apr 27th, 2021
Board of Supervisors Meeting
6:00 PM

Thu, May 13th, 2021
Planning Commission Meeting
7:30 PM

All Events

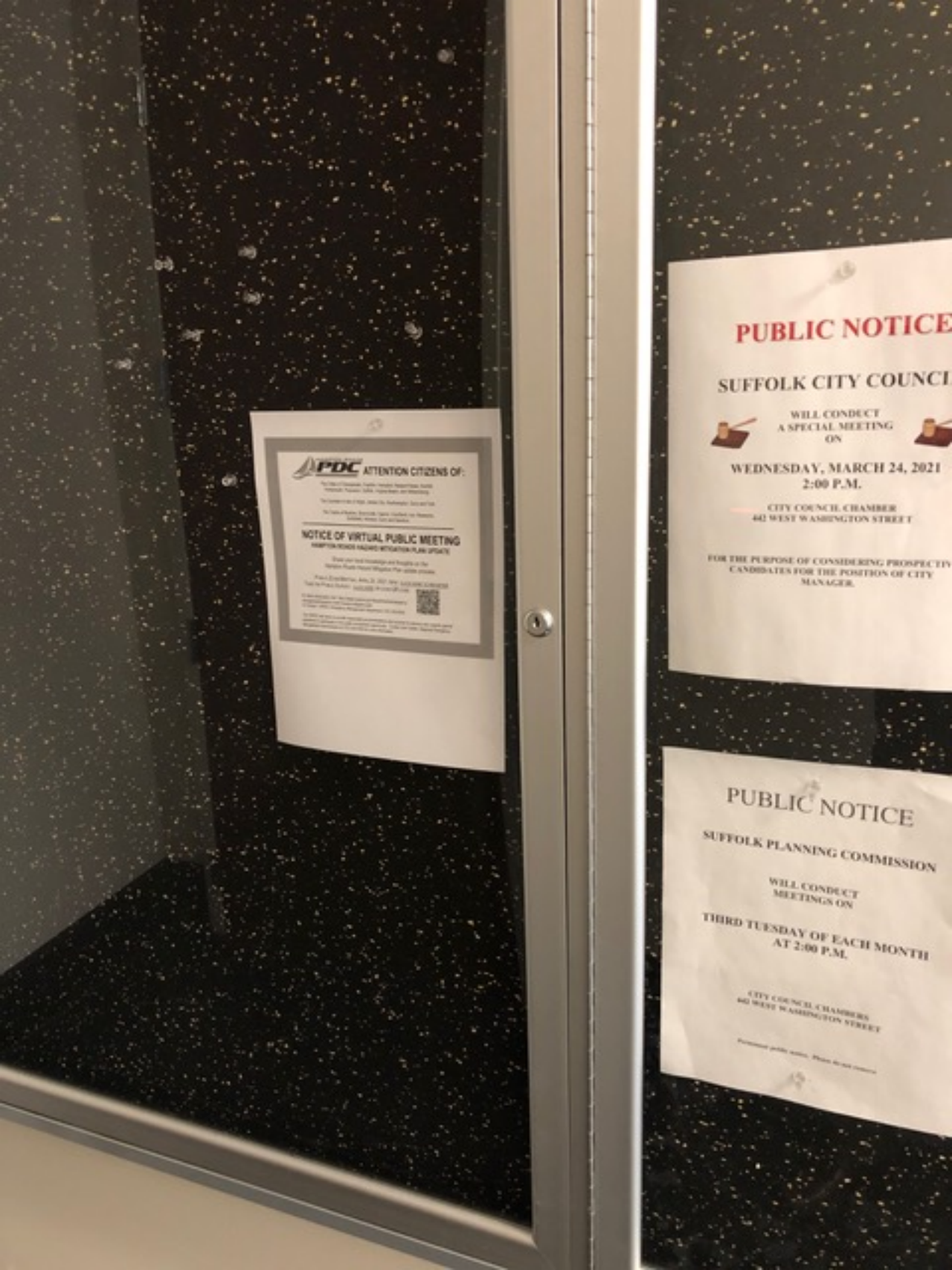
COVID-19 VIRUS INFO ×



Amended Declaration of Local Emergency

County Operational Updates

More Info Under COVID-19 Tab


PDC ATTENTION CITIZENS OF:
NOTICE OF VIRTUAL PUBLIC MEETING
PUBLIC NOTICE
SUFFOLK CITY COUNCI
WILL CONDUCT
A SPECIAL MEETING
ON
WEDNESDAY, MARCH 24, 2021
2:00 P.M.
CITY COUNCIL CHAMBER
442 WEST WASHINGTON STREET
FOR THE PURPOSE OF CONSIDERING PROSPECTIV
CANDIDATES FOR THE POSITION OF CITY
MANAGER.
PUBLIC NOTICE
SUFFOLK PLANNING COMMISSION
WILL CONDUCT
MEETINGS ON
THIRD TUESDAY OF EACH MONTH
AT 2:00 P.M.
CITY COUNCIL CHAMBERS
442 WEST WASHINGTON STREET

HAMPTON ROADS PDC
PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, Surry and Dendron

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NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER

TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan

Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator at (757) 420-8300 for more information.

HAMPTON ROADS PDC
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Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER OR VISIT HTTPS://ZOOM.US/WEBINAR/REGISTER/WN_P-6S6OVTTRUNOW85RXG8SG

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Lobby is
Please call

PUBLIC MEETING NO

PUBLIC VIRTUAL MEETING NOTICE
CITY OF VIRGINIA BEACH
Deferred Compensation Boards

On March 12, 2020, Governor Northam declared a state of emergency due to COVID-19. Because of the catastrophic nature of the declared emergency, it is impracticable and unsafe to assemble a quorum of the Deferred Compensation Board in a single location. In accordance with Virginia Code § 2.2-3708.2, Virginia Code § 15.2-1413 and the City's Continuity of Government Ordinance adopted on September 15, 2020, and Chapter 1289 of the 2020 Acts of Assembly as amended, I hereby call for a **MEETING BY ELECTRONIC COMMUNICATION MEANS** of the Deferred Compensation Board.

Six or more members of the
Deferred Compensation Board
will be meeting on
Friday, April 16, 2021
2 p.m.
OPEN TO THE PUBLIC
Register and join the meeting using the link below

https://vbgov.webex.com/vbgov/j.php?MTID=m6fbbde20de9e14efad09e0c3034f3910

You may contact the City Liaison for the Deferred Compensation Board , Jessa Johnson at 757-385-8898.

VIRGINIA BEACH

BAYFRONT ADVISORY COMMISSION
2101 MAIN STREET, SUITE 710
VIRGINIA BEACH, VIRGINIA 23451
PHONE (757) 385-2908
FAX (757) 385-5607

BAYFRONT ADVISORY COMMISSION
April 15, 2021, 3:30 p.m.
VIRTUAL WEBEX MEETING

APPROVAL OF MINUTES
Review and Approval of Minutes from 3/18/2021

CHAIRMAN'S REPORT
Welcome Guests and Introductions – Phil Davenport, Chair

STAFF REPORTS & UPDATES

COMMITTEE REPORTS & UPDATES
Design – Bob Magoon, Joe Bovee (volunteer)
Communications – Vacant
Public Safety, Transit, Parking & Pedestrian Access – Charles Malbon

PRESENTATIONS

1. **Beach Building Group, Inc., 2332 Pleasure House Road - Conditional Change of Zoning** (R-7.5 Residential District to Conditional A-18 Apartment District)
2. **Martin Bay Apartments - Conditional Change of Zoning** (B-2 and PDH-1 Districts to Conditional B-4 Mixed Use District) **Conditional Use Permit** (Multi-Family Dwellings)

OLD BUSINESS

NEW BUSINESS

COMMUNITY REPORTS & UPDATES

ADJOURN

If you wish to make comments virtually during the meeting, please follow the **two-step process** below:

1. Register online for the Virtual Meeting at https://vbgov.webex.com/vbgov/onstage/g.php?MTID=e0fe0c7688d3096fd1439870de1784289f3
2. Register with Mark Shea by calling 757-385-2908 or via email at MEShea@vbgov.com by noon (12:00 p.m.) on April 15, 2021.

Virginia Beach
COMMUNITY DEVELOPMENT CORPORATION
Building & Preserving Communities since 1985

SPECIAL MEETING OF THE VBCDC BOARD OF DIRECTORS
BY ELECTRONIC COMMUNICATION MEANS MEETING NOTICE

April 12, 2021

On March 12, 2020, Governor Northam declared a state of emergency due to COVID-19. Because of the catastrophic nature of the declared emergency, it is impracticable or unsafe to assemble a quorum of the Virginia Beach Community Development Corporation (VBCDC) Board of Directors in a single location; and the purpose of meeting is to discuss or transact the business required or necessary to continue operations.

In accordance with the Virginia Beach City Code 2-21, the Virginia General Assembly Budget Amendment XII, and Virginia Code § 2.2-3708.2(A)(3), and by the authority vested in Frank McKinney as President of VBCDC's Board of Directors, a **SPECIAL MEETING BY ELECTRONIC COMMUNICATION MEANS** of the VBCDC **BOARD OF DIRECTORS,** will be held on Saturday, **April 17, 2021 at 8:30 A.M.**

In accordance with Virginia Code § 2.2-3708.2(A)(3), this **SPECIAL MEETING BY ELECTRONIC COMMUNICATION MEANS,** will be held **virtually** with Board Members participating via video/audio conference. Citizens should call 757-500-2740 if you experience any interruption in the telephonic or video broadcast of the meeting. Citizens should register in advance using the following registration link: https://attendee.gotowebinar.com/register/2482736111187247120.

After registering, you will receive a confirmation email containing information about joining the meeting. For questions or assistance registering, please call 757-500-2740 or email to sdirector@vbcdc.org.

Sincerely,
Frank McKinney
President, VBCDC Board of Directors

Cc: VBCDC Board of Directors
Jessica Guglielmo, President and CEO, VBCDC
Ashley Jarvis, Manager of Board Relations, VBCDC
Amanda Barnes, City Clerk, City of Virginia Beach
FOIA Officer, City of Virginia Beach

Advertising Advisory Committee
Second Thursday at 11:00 a.m.
Convention & Visitors Bureau Boardroom
2101 Parks Avenue, Suite 500
Call for more information: 385-4700

Agriculture Advisory Commission
Second Monday at 7:00 p.m. (Jan., Apr., Jul, Oct)
Municipal Center, Bldg. 14
Call for more information: 385-5775

Animal Control Unit Advisory Board
Wednesday at 6:30 p.m.
(Feb. 6th, May 8th, Sept. 11th, & Nov. 6th, 2019)
Animal Care and Adoption Center
341 S. Birdneck Road
Call for more information: 385-4444

Arts & Humanities
First Thursday at 5:00
(No meeting Jan, Apr, J
(Executive Committee
Sandler Center for t
201 Market Street,
Call for more infor

Bayfront Advis
Drive Advisory Co
3rd Thursday at 5
Ocean Park Volu
3769 E. Sandba
Call for more
Subcommittee

Bikeways & Trails Advisory Committee
Third Monday at 3:30 p.m.
(no meeting Feb, Apr, Jul, Dec)
Parks & Rec Administration Building
2154 Landstown Road, Room 101
Call for more information: 385-1115

Board of Zoning Appeals
First Wednesday at 2:00 p.m.
Municipal Center, Bldg. 1 - Council Chambers
(Training/Lunch: 12:00 - 1:00)
(Informal: 1:00, Bldg. 1 - Room 234)
Call for more information: 385-8074
(Van Trip - 9:00, Parking Lot at the Convention Center
(West side parking lot)

Chesapeake Bay Preservation Board
First Monday at 10:00 a.m.; Informal @ 9:00
Municipal Center, Bldg. 1 - Council Chambers
(Call for more information: 385-4621)

Community Services Board
Last Thursday, 8:30-10:30 a.m. (No meetings in
July and December)
August and November Meeting - Third Thurs
3432 Virginia Beach Blvd., Conf. Room 339
Call for more information: 385-3202

Executive Committee
Third Thursday, 4:00-5:00 p.m.
3432 Virginia Beach Blvd., Room 339

Advocacy/Education Committees
As needed immediately following CS

Developmental Services (Every othe
Second Thursday, every other mon
9:00-10:30 a.m. (no December me
297 Independence Blvd., Suite 4

Mental Health Substance Abuse
Second Thursday, every other m
12:00-1:30 p.m. (no December
297 Independence Blvd., Suite

Historic Preservation Com
1st Wednesday at 5:00 p.m.
Convention Center, 1000 19th St
Call for more information: 3858

Executive Committee
Third Wednesday at 12:00
2875 Sabre St, Suite 500

Student Leaders Com
Second Wednesday at 5
Convention Center, 10

Historical Review B
Third Wednesday at 4:00
875 Sabre Street, Suite
Call for more informa

Housing Advisor
Third Monday at 3:0
Strategic Growth Ar
525 Main Street, S

Hampton Roads Hazard Mitigation Planning Committee Meeting

Virtual
Tuesday, April 20, 2021
6:00 – 8:00 p.m.

This meeting will give members of the public an opportunity to discuss hazard related concerns within their community. Those interested in attending can register for the virtual meeting by visiting https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg

For questions, please contact Danielle Progen, Emergency Management Coordinator (385-8466)

Planning and Community Development Design Standards and Review Guidelines Public Meeting

VIRTUAL

Thursday, April 15, 2021
6:30 p.m.

Members of the public wishing to attend the meeting may do so via WebEx and may use this link to access the meeting: https://vbgov.webex.com/vbgov/onstage/g.php?MTID=e122f19d0ae1cdd3e8230aefff8c57fe4

Members of the public wishing to speak on any agenda item may do so by registering in advance. They may register by calling Mark Reed, Historic Preservation Planner at 757-385-8573 up to 30 minutes prior to the start of the meeting. They should also register for the meeting at the above link.

Advertising Advisory Committee

Virtual
Thursday, April 15th, 2021
11:00 a.m.

WEBEX Meeting Link:
https://vbgov.webex.com/vbgov/j.php?MTID=me9bb4f23a4dcb26eb5102351e7b7ec5a

Meeting Number: 157 894 4845
Password: BVspxPhj265

For additional questions, please contact Asia White 385-6674

ELECTORAL BOARD
City of Virginia Beach
P.O. BOX 4247
VIRGINIA BEACH, VIRGINIA 23454-0247

PUBLIC NOTICE

The City of Virginia Beach
Electoral Board
will hold a meeting on

Wednesday, April 14, 2021
1:00 p.m.
at
Voter Registration & Elections
located in
Building 14 at the Municipal Center

Historic Preservation Commission Student Leaders Committee

Virtual Meeting
Wednesday, April 14, 2021
5:00 p.m.

Members of the public wishing to attend the meeting may do so via WebEx and may use this link to access the meeting: https://vbgov.webex.com/vbgov/onstage/g.php?MTID=ee8263feea2b69523dc8512811f0da5de

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For more information, call 385-8573

Virginia Beach Mayor's Committee for Persons with Disabilities

Virtual Meeting
Thursday, April 15, 2021
3:45 – 5:00 p.m.

Webex
https://vbgov.webex.com/vbgov/j.php?MTID=mae72e9b7aeb4ecece5328473c2ccf0ede
Meeting number: 180 521 8011
Password: beach

Join by phone
+1-415-655-0003 US Toll
Access code: 180 521 8011

For more information contact Amy Benabou 385-2665

adopted on September 15, 2020, and Chapter 1289 of ...
hereby call for a ***MEETING BY ELECTRONIC COMMUNICATION MEANS*** *of the Deferred Compensation Board..*

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Friday, April 16, 2021
2 p.m.
OPEN TO THE PUBLIC
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https://vbgov.webex.com/vbgov/j.php?MTID=m6fbbde20de9e14efad09e0c3034f3910

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Design – Bob Magoon, Joe Bovee (volunteer)
Communications – Vacant
Public Safety, Transit, Parking & Pedestrian Access – Charles Malbon

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NEW BUSINESS

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   289f3
2. Register with Mark Shea by calling 757-385-2908 or via email at
   by noon (12:00 p.m.) on April 15, 2021.

Hampton Roads Hazard Mitigation Planning Committee Meeting

Virtual

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6:00 – 8:00 p.m.

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For questions, please contact Danielle Progen, Emergency Management Coordinator (385-8466)

Planning and Community Development
Design Standards and Review Guidelines Public Meeting

VIRTUAL

Thursday, April 15, 2021
6:30 p.m.

Adve

Coronavirus Information

For information about Coronavirus, visit our emergency site (https://emergency.vbgov.com/coronavirus) at https://emergency.vbgov.com/coronavirus (https://emergency.vbgov.com/coronavirus).

Join Virtual Public Meeting April 20 for Hampton Roads Hazard Mitigation Plan Update

Public survey option available to help prioritize various hazard types

Friday, April 09, 2021

The first public meeting for the 2022 Hampton Roads Hazard Mitigation Plan will take place April 20, 2021 from 6 to 8 p.m. online via Zoom. Residents will have an opportunity to discuss hazard-related concerns within the community and share thoughts on the Hampton Roads Hazard Mitigation Plan update process.

A Hazard Mitigation Plan is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. This planning process is structured around the four phases of the Disaster Mitigation Act of 2000, which the region's planning consultant has aligned with the 10 steps of the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS). Having an adopted Hazard Mitigation Plan that is updated every five years helps ensure each community in the region is eligible for federal disaster funding following a disaster event.

The planning committee has initially identified 13 types of hazards for inclusion in the plan to include flooding, sea level rise, tropical storm, shoreline erosion and communicable disease. Citizen participation in the public meeting will allow the planning team to understand what types of hazards are of most concern to residents and what hazards to prioritize.

Register for the Meeting
Members of the public can register to participate in the public meeting here (https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg) or by visiting https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg (https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg).

Take the Public Participation Survey
The public participation survey gives members of the public an opportunity to provide input on the type of hazards they are most concerned about within their community. This information will help inform various parts of the planning process, including mitigation actions as planning teams move forward. Take the survey here (https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZtrQAAAAAAAAAAAAO__dKuUnBUQUtCNklZS1RTSzRaUFQwVUg3QVU1QVFGRS4u).

For more information regarding 2022 Hampton Roads Hazard Mitigation Plan, the FEMA Community Rating System program and to follow the planning process, visit https://www.hrpdcva.gov (https://www.hrpdcva.gov/).

###

CONTACT INFORMATION

Julie Hill

(757) 385-4436 (tel:7573854436)

jhill@vbgov.com (mailto:jhill@vbgov.com)

Search

View News by Category

About the City (/about)

Summary of Work-Related Injuries and Illnesses

Number of Cases

(G) Number of cases	(H) Total number of cases with days away from work	(I) Total number of cases with job transfer or restriction	(J) Total number of other recordable cases
0	0	0	0

Number of Days

(K) Total number of days away from work	(L) Total number of days of job transfer or restriction
0	0

Injury and Illness Types

(M) Total number of	
(1) Injuries	0
(2) Skin disorders	0
(3) Respiratory conditions	0
(4) Poisonings	0
(5) Hearing loss	0
(6) All other illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Establishment information

Your establishment name

Street

City

Industry description (e.g., Manufacture of wood furniture)

Standard Industrial Classification (SIC), if known (e.g. 3715)

OR

North American Industrial Classification (NAICS), if known (e.g. 336212)

Employment information (If you don't have these figures, see the Worksheet on the back of this page to estimate.)

Annual average number of employees

Total hours worked by all employees last year

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Adam Hicks HR Director

Title

757 220-6105 2-22-2018

Phone Date

HAMPTON ROADS PDC

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg

The Counties of Isle of Wight, James City, Southampton, Surry and York

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Surry Towns

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER OR VISIT HTTPS://ZOOM.US/WEBINAR/REGISTER/WN_P-6S6CvrTRuNow85aXG8Sg

TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan
Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require assistance to participate in this public involvement opportunity. Contact John Sadler, HRPDC Emergency Management Administrator at (757) 420-8300 for more information.

AGENDA

City of Williamsburg
Architectural Review Board
Tuesday, April 13, 2021

Pursuant to City of Williamsburg Ordinance #20-02, due to the COVID-19 Pandemic emergency, the Williamsburg Architectural Review Board meeting will be held **electronically** on Tuesday, **April 13, 2021**, at **2:30 p.m.**

The call-in number is **650-242-4929**, meeting ID number is **149 735 1685**

When invited by the Chairman, speakers should state their name and address before making brief comments.

OPEN FORUM

REGULAR AGENDA ITEMS

SIGNS

A. S-21-011 Baymont by Wyndham/505 York Street - Monument

B. S-21-012 This n That/2229 Richmond Road - Monument

C. S-21-013 Abundant Life Partners/1001 Richmond Road - Monument

ARCHITECTURAL PRESERVATION DISTRICT

A. A-21-009 The Hitchens Building/441 Prince George St - Exterior Change – Railing Replacement

B. A-21-019 The Hitchens Building LLC/441 Prince George Street - Exterior Changes - Fence

C. A-21-020 Rivkin/116 Chandler Court - Exterior Change - Front Door

D. A-21-022 BDV Colonial Owner LLC/1260 Richmond Road - Exterior Change - New Façade

E. A-21-023 Morrison/807 Richmond Road – Accessory Structure – Garage

CONCEPTUAL REVIEW

A. A-21-021 City of Williamsburg/440 N Boundary Street - New Construction - Fire Station

NEW BUSINESS
None

OTHER

A. Minutes from March 23, 2021

The Board will view the sites individually before the meeting.
During the COVID-19 State of Emergency, the Architectural Review Board will hold virtual meetings.

The Architectural Review Board invites public comment on any subject during "Open Forum."

To participate in the meeting, citizens are encouraged to email comments to VirtualARB@williamsburgva.gov by 1:00 p.m. on April 13, 2021.

To speak at the meeting, use the information below to call in and access the live meeting. You will remain muted until the Open Forum section and will then be called upon to speak in the order that you arrived in the meeting. Please direct all comments to the Chair. When invited by the Chair to speak, speakers should state their name and address before making brief comments. Please ensure that you are not watching the meeting via the internet or television unless they are muted.
https://www.williamsburgva.gov/783/Virtual-ARB

HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Surry Towns.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER OR VISIT HTTPS://ZOOM.US/WEBINAR/REGISTER/WN_P-6S6OVTTRUNOW85RXG8SG

TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan
Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator at (757) 420-8300 for more information.

December 7, 2021 – Regular Meeting
East Room
6:00 p.m.

December 21, 2021 – Regular Meeting
Board Room
6:00 p.m.

Effective: 1/6/
Listing will be

AFFIDAVIT OF POSTING

This meeting has been properly noticed and posted at the following locations:

City of Hampton, 22 Lincoln St., Hampton, VA 23669
James City County, 101 Mounts Bay Rd., Bldg. C, Williamsburg, VA 23185
City of Newport News, 2400 Washington Avenue, Newport News, VA 23607
City of Poquoson, 500 City Hall Ave., Poquoson, VA 23662
York County, 224 Ballard St., York, VA 23690
City of Williamsburg, 401 Lafayette St., Williamsburg, VA 23185

HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, Surry and Dendron

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER
TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan
Or Contact: HRPDC Emergency Management Department (757) 420-8300

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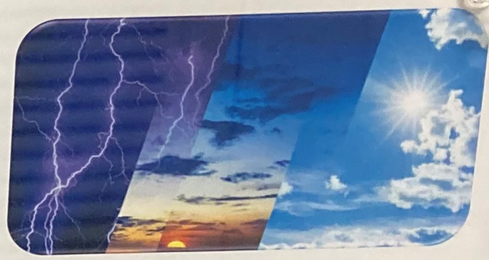
2022 Hampton Roads Hazard Mitigation Plan Update Process



Hazard Mitigation Planning

A Hazard Mitigation Plan is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. This planning process is structured around the four phases of the Disaster Mitigation Act of 2000, which the region's planning consultant has aligned with the ten steps of the Community Rating System (CRS). Having an adopted Hazard Mitigation Plan that is updated every five years helps ensure each community in the region is eligible for federal disaster funding following a disaster event.

The Community Rating System (CRS)

The CRS is a national program developed by the Federal Emergency Management Agency (FEMA) to encourage communities to reduce their risk to flood-related hazards. The CRS rewards the efforts communities take that go above and beyond the minimum requirements of the National Flood Insurance Program (NFIP) by providing discounts on flood insurance premiums.

Phase 1
1. Organize Planning Team
2. Plan for Public Involvement
3. Coordinate with Other Agencies

Phase 2
4. Identify the Hazards
5. Estimate Losses

Phase 3
6. Identify Goals & Objectives
7. Develop Potential Mitigation Actions
8. Draft the Mitigation Plan

Phase 4
9. Adopt the Plan
10. Implement and Maintain the Plan

Hazards Addressed by the Hampton Roads Hazard Mitigation Plan

The planning committee has initially identified the following hazards for inclusion in the Hampton Roads Hazard Mitigation Plan:

- Flooding
- Sea Level Rise
- Tropical Storm
- Shoreline Erosion
- Dam Failure
- Tornado
- Winter Storm
- Earthquake
- Wildfire
- Drought
- Extreme Heat
- Hazardous Materials Incident
- Communicable Disease

Citizen Involvement

Citizen participation is an important component of mitigation planning. The planning team needs your input on the types of hazards that are your priority concern, and your opinion on ways to lessen their impact.

- Visit the web site. Get more information and follow the planning process at https://www.hrpdcva.gov. The website contains announcements for upcoming meetings, minutes and presentations from past planning meetings, information on the identified hazards, draft planning documents for review, a public survey, and more.
- Take the survey. A public outreach survey is available online here. Please complete the survey as soon as possible to ensure that your opinion is captured! If you would like a hard copy, please use the email below.
- Send us information or comments. If you have information to share for inclusion in the plan, please contact _____ at _____. The draft plan will be made available for public review on the web site prior to being submitted to FEMA.

County Administrator
Neil A. Morgan

Deputy County Administrator
Mark L. Bellamy, Jr.

Deputy County Administrator
Vivian A. Calkins-McGettigan

April 12, 2021

Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, Virginia 23320

To Whom It May Concern:

On April 12, 2021, the flyer concerning the public's ability to participate in the 2022 Hampton Roads Hazard Mitigation Plan was posted in the County Administration Building located at 224 Ballard Street, Yorktown. A screenshot of the posting is attached to this letter.

If I can be of any further assistance to you, please do not hesitate to contact me.

Sincerely,

Heather L. Schott, CMC
Legislative Assistant

Attachment

224 Ballard Street • P.O. Box 532 • Yorktown, Virginia 23690-0532 • (757) 890-3320
Fax: (757) 890-4000 •TDD (757) 890-3621 • Email: ctyadm@yorkcounty.gov
A Hampton Roads Community

Hampton Roads
Hazard Mitigation Plan Update

Workshop #1 Minutes

July 27, 2021, 9:30am – Virtual Meeting via Zoom

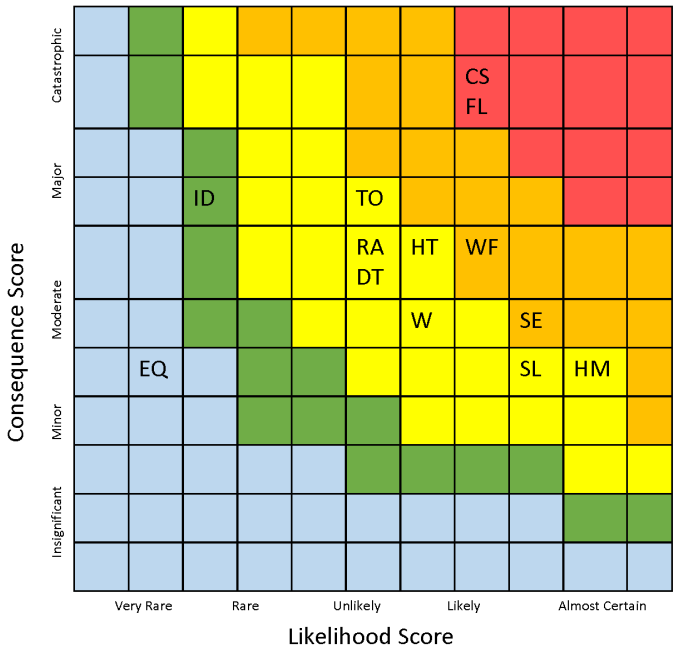
AGENDA

- Introductions
- Review of Plan Components, Planning Process & Hazards in Plan
- Exposure of Built Environment
- Flooding
    - Impacts
    - Recent Events
    - Flood Risk Assessment
    - Social Vulnerability to Flood
- Sea Level Rise
- High Hazard Dams
- Tropical Storms
- Tornadoes
- Pandemic Flu/Communicable Disease
- Shoreline Erosion
- Radon Exposure
- Ranking the Hazards Exercise

MEETING NOTES

- Early meeting focus was on flood analysis and the hybrid analysis conducted using HAZUS; Shane Parson led the discussion and answered questions.
- HAZUS essential facilities used for the Critical Facilities analysis did not include water/wastewater facilities or lines. Whitney Katchmark will help address this with additional data to consultant.
- Participants discussed frustration with obtaining repetitive flood loss data and the inability to know flood insurance coverage happening in private flood insurance market.
- Group discussed what to call Infectious Disease/Pandemic Flu, and settled on “Infectious Diseases”.
- Surry County wants to continue to include landslides.
- Several participants indicated Extreme Heat and Winter Storm should be moved up in the risk assessment.
- Final ranking of hazards:

Re-ranking the Hazards for 2022



HM – Hazardous Materials Incident

DT – Drought

WF –Wildfire

EQ – Earthquake

SE - Shoreline Erosion

FL - Flooding

ID – Infectious Disease

W – Winter Storm

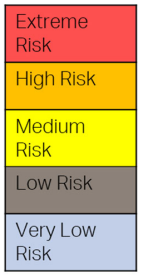
HT – Extreme Heat

CS – Coastal/Tropical Storm

TO - Tornado

RA - Radon Exposure

SL – Sea Level Rise



aecom.com

ATTENDEES

Name	Agency
Lucy Stoll	Chesapeake
Michael Barber	Chesapeake
David Jurgens	Chesapeake / HR Directors of Utilities
Carlee Smith	Franklin
Verny Francis	Franklin
Hui-shan Walker	Hampton
Tracy Hanger	Hampton
Will Drewery	Isle of Wight
Caroline Dunlap	James City County
Mike Woolson	James City County
Heather Brown	Newport News
Nicole DelValle	Newport News
Daniel Hudson	Norfolk
Jalesha Smith	Norfolk
Jim Redick	Norfolk
Matthew Simons	Norfolk
Scott Mahone	Norfolk
Tristian Barnes	Norfolk
Ken Somerset	Poquoson
Mike Bryant	Poquoson
Joseph Rubino	Portsmouth
Michael Stallings	Smithfield
Beth Lewis	Southampton County
Richard Stephens	Suffolk

Ray Phelps	Surry County
Danielle Spach	Virginia Beach
Marissa Jones	Virginia Beach
Whitney McNamara	Virginia Beach
Larry Snyder	Williamsburg
Kent Henkel	York County
Sean Segerblom	York County
Susan Kassel	York County
Amy Parker	York County
Gail Whittaker	York County
Shane Parson	AECOM
Noelle Slater	AECOM
Aubrie McClendon	American Red Cross
Bill Egerton	American Red Cross
Ed Barnette	American Red Cross
Lisa Mike	American Red Cross
John Millspaugh	Arcadis
Markiella Moore	Chesapeake Natural Event Mitigation Advisory Committee
Judith Carlene Hinch	Chesapeake NEMAC
Judy Shuck	Eastern Virginia Healthcare Coalition
Mari Radford	FEMA Region III
Renee Hupp	FEMA Region III
Rob Starr	Fort Eustis
John Hutcheson	Fort Monroe
Ben McFarlane	Hampton Roads Planning District Commission
Anas Malkawi	Hampton Roads Sanitation District
Leigh Ann Erdman-Hampton	Hampton Veterans Affairs Medical Center
John Sadler	HRPDC
Whitney Katchmark	HRPDC
David Luke	Jefferson Labs
Eric Seymour	National Weather Service
Perla Santillan	Office of the Chief Medical Examiner
Michael Player	Peninsulas EMS Council
Steve Pincus	Peninsulas EMS Council
Leigh Chapman	Salters Creek
Lewis Bush	Sentara Leigh Hospital
David Long	Tidewater EMS Council
Debbie Coon	Towne Bank
Debbie Wright	Towne Bank
Ron Greene	Towne Bank
Alex Gurchinoff Schlebach	US Army Corps of Engineers
Gregg Williams	US Army Corps of Engineers
Paul Moye	US Army Corps of Engineers
Robert Angrisani	US Army Corps of Engineers
Steve Harrison	US Coast Guard
USACE EOC	USACE

John Cooke	VDH Office of Emergency Preparedness
Gary Lupton, Sr.	Virginia 1st
Elaina Dariah	Virginia 211
Bruce Sterling	Virginia Department of Emergency Management
Harrison Breseee	Virginia Department of Emergency Management
Anne Witt	Virginia Dept of Mines, Minerals and Energy
John Hisghman	Virginia Dept. of Forestry
Allen Evans	Virginia Dept. of Military Affairs
Pamela Mason	Virginia Institute of Marine Science
Ross Weaver	Wetlands Watch
Kenton Towner	William and Mary
Jim Kaste	William and Mary (Geology)
17572952030	no ID
18045840762	no ID
Shad	no ID

INVITEES

Email invitations were issued to each of the individuals shown on the following email invite. In addition, each primary contact for the communities forwarded the message and made additional phone calls to their staff and interested persons. Additional advertisements by individual communities are on file with the HRPDC and will be included in the appendices of the final 2022 Hazard Mitigation Plan. Stakeholders were also invited directly by the PDC, including:

PLANRVA
Crater PDC
Va Dept of Mines, Minerals and Energy
USACE
Va Dept of Environmental Quality
Va Dept of Conservation and Recreation
Va Dept of Forestry
Va Institute of Marine Science
Port of Virginia
Cox Communications
Hampton Roads Sanitation District
Sentara
Fort Monroe Authority
William & Mary
Old Dominion University
Va Dept of Health
Dominion Energy

Leigh.morgan.chapman@gmail.com

Subject: FW: Hampton Roads Hazard Mitigation Plan Update, Workshop #1
Location: https://us02web.zoom.us/j/86185630384?pwd=bDlaTDB5NDRJMG1OV3AxdFJpcWxxdz09

Start: Tue 7/27/2021 9:30 AM
End: Tue 7/27/2021 12:00 PM

Recurrence: (none)

Meeting Status: Accepted

Organizer: John Sadler

Candice,

Would you mind forwarding this invite out the non-locality HREMC members?

Thanks,
John

-----Original Appointment-----
From: John Sadler
Sent: Friday, July 2, 2021 12:11 PM
To: John Sadler; Humphries, Pat; lbott@nnva.gov; tristian.barnes@norfolk.gov; john.young@poquoson-va.gov; Francis, Vernie W.; 'Goodwin, Donald'; Slater, Noelle; shane.parson@aecom.com; Danielle R. Spach; mayor@townofboykinsva.com; Larry Snyder; kyle.spencer@norfolk.gov; brownhl@nnva.gov; wmcnamar@vbgov.com; rstephens@suffolkva.us; harold.futrell@vadoc.virginia.gov; Robert Gelormine; mstallings@smithfieldva.gov; segerbls@yorkcounty.gov; office@townofivor.com; Ashe, Chief Ryan; Bond, Steven; DelValle, Nicole; Elliott, Chief Edmund; Howell, Alonzo; Johnson, Jeff; Lowe, Lynette; Mangubat, Nestor; Redick, Jim; Topczynski, David; Anderson, Lisa; Bresee, Harrison; Brown, Curtis; Gabriel, George; Hill, Larry; Hoernig, Jared; Hudson, Daniel; King, Jack; Lawsure, Kaleen; Lee, Cheryl ; Long, Paul; Mason, Leslie; Neal, Stacie; Northon, John; Russell, Brian; Santillán, Perla; Simpson, Cheryl; Sommer, Tammy Waldroup; Sutton, Erin; Botts, Linda; Burket, Bill; Calambro, Daina; Cooke, John; Davis, Wayne; Dotolo, Lawrence; Evans, Allen; Ezell, Barry; Garrett, Lieutenant J R; Hackett, Stephanie; Hall, Terry; Heckler, Mark ; Jones, Daniel; Jurgens, David; Long, David; Mahone, Scott; Malkawi, Anas; Mooney, Robert ; NOAA; Orrock, Jeff; Pierce, Brian; Pincus, Stephen; Player, Michael; Reich, Ruth; See, Jennifer; Shuck, Judith; Sterling, Bruce; Turner, Chip; White, Sylvia D.; Braidwood, Robb; Bryant, Mike; Drewery, Will; Eagle, David; Glazner, George; Goldsmith, Michael; Johnson, Michael W.; Kopczynski, Stephen; Major, Brett; Phelps, Ray; Progen, Danielle; Rubino, Joe; Ruch, Sara; Spicer, Brian; Walker, Hui-Shan; Ben McFarlane; Cynthia Mulkey; Keith Cannady; Krista Lauro; Rob Case; Whitney Katchmark; leigh.morgan.chapman@gmail.com
Cc: Glazner, George T.; Simons, Matthew; Parker, Amy; Henkel, Kenton; Bott, Louis J.; Whittaker, Gail; Caroline Dunlap; Michael Woolson; Kim Finnerty; Sam Sawan; Niss, Robyn; Patrick Hughes; Lucy E. Stoll; Carlee R. Smith
Subject: Hampton Roads Hazard Mitigation Plan Update, Workshop #1
When: Tuesday, July 27, 2021 9:30 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: https://us02web.zoom.us/j/86185630384?pwd=bDlaTDB5NDRJMG1OV3AxdFJpcWxxdz09

PLEASE FORWARD THIS INVITE TO ANYONE YOU BELIEVE SHOULD ATTEND

Prior to the Public Meeting on the Hazard Mitigation Plan Update that I sent information about earlier this week, we will be having Planning Committee Workshop #1 on July 27, beginning at 9:30. Leigh Chapman has promised me she'll try to

get through it all by 11:30. At this meeting, we will go over the updated Hazard Identification and Risk Assessment in order to review and absorb it prior to the Public Meeting. I hope you will all mark your calendars and plan to attend. Additional meeting info is below.

I have attached information from the first Public Meeting that we had back in April, as well as the public survey results. Leigh indicated she finds the .pdf file easiest to absorb, but some of you may prefer to dive deeper into the data using the Excel spreadsheet. The Q&A doc is from the questions asked at the meeting, as are the Chat.txt document and the polls results. All of this is data that you, as a Committee member, should review to inform yourself about inputs from citizens in your community.

I would ask that you inform any interested stakeholders about this workshop, as well. These could be people that you work with in any capacity, such as neighborhood associations, professional associations, or CERT members. Could be citizens, environmental groups, representatives of large corporations in your jurisdiction, or hospital system representatives. Could be Federal or state agency representatives, higher education administrators, or the American Red Cross. If they choose to participate as Committee members, we'd welcome their input!

Thank you for your input and we look forward to virtually seeing you all on July 27th at 9:30, and again on July 29th at 5pm for the Public Meeting.

Join Zoom Meeting
https://us02web.zoom.us/j/86185630384?pwd=bDlaTDB5NDRJMG1OV3AxdFJpcWxxdz09

Meeting ID: 861 8563 0384
Passcode: 522540
One tap mobile
+19292056099,,86185630384#,,,,*522540# US (New York)
+13017158592,,86185630384#,,,,*522540# US (Washington DC)

Dial by your location
- +1 929 205 6099 US (New York)
- +1 301 715 8592 US (Washington DC)
- +1 312 626 6799 US (Chicago)
- +1 669 900 6833 US (San Jose)
- +1 253 215 8782 US (Tacoma)
- +1 346 248 7799 US (Houston)

Meeting ID: 861 8563 0384
Passcode: 522540
Find your local number: https://us02web.zoom.us/u/keyiGrzK0F

Hampton Roads
Hazard Mitigation Plan Update

Public Meeting #2 Minutes

July 29, 2021, 5pm – Webinar via Zoom

AGENDA

- Introductions
- Review of Plan Components, Planning Process & Hazards in Plan
- Exposure of Built Environment
- Flooding
    - Impacts
    - Recent Events
    - Flood Risk Assessment
    - Social Vulnerability to Flood
- Sea Level Rise
- High Hazard Dams
- Tropical Storms
- Tornadoes
- Pandemic Flu/Infectious Disease
- Radon Exposure
- Ranking the Hazards – work by Committee

MEETING NOTES

- Early meeting focus was on flood analysis and the hybrid analysis conducted using HAZUS.
- Participants discussed inability to know flood insurance coverage happening in private flood insurance market.
- Presentation of ranking of hazards by the committee was well-received.

ATTENDEES

Host: John Sadler, HRPDC

Panelists:

Shane Parson, AECOM
Noelle Slater, AECOM
Kelly Stoll, AECOM
Leigh Chapman, Salter's Creek Consulting

Attendees:

M	Moore	Chesapeake
Judith	Hinch	Chesapeake
P	Hall	Hampton
George	Curran	Hampton
Ms	Wade	Hampton
Leon	Kimball	Hampton
Tracy	Hanger	Hampton

Robin	Mabie	Hampton
Alan	Castanien	Hampton
Christopher	Williams	Newport News
Carolyn	Poissant	Newport News
George	Glazner	Newport News
Heather	Brown	Newport News
Karen	Self	Newport News
Matthew	Simons	Norfolk
Liz	Scheessele	Norfolk
Tristian	Barnes	Norfolk
David	Barthol	Norfolk
Daniel	Hudson	Norfolk
William	Delmar	Norfolk
Ryan	Mccune	Phoebus
Pat	Burns	Portsmouth
Richard	Stephens	Suffolk
Carolyn	White	Suffolk
Jalesha	Smith	Suffolk/Norfolk
Stephen	Johnston	Virginia Beach
Ashley	Gordon	Virginia Beach
David	Long	Virginia Beach
Caroline	Dunlap	Williamsburg
Sean	Segerblom	York County
Pamela	Brandy	
Kelly	Hengler	

INVITEES

Email invitations were issued to each of the individuals shown on the following email invite. In addition, each primary contact for the communities forwarded the message and made additional phone calls to their staff and interested persons. The PDC also advertised the meeting as shown in the news and social media clippings below. Additional advertisements by individual communities are on file with the HRPDC and will be included in the appendices of the final 2022 Hazard Mitigation Plan.

Leigh.morgan.chapman@gmail.com

From: John Sadler <jsadler@hrpdcva.gov>
Sent: Friday, July 9, 2021 12:03 PM
To: Humphries, Pat; lbott@nnva.gov; tristian.barnes@norfolk.gov; john.young@poquoson-va.gov; Francis, Vernie W.; 'Goodwin, Donald'; Slater, Noelle; shane.parson@aecom.com; Danielle R. Spach; mayor@townofboykinsva.com; Larry Snyder; kyle.spencer@norfolk.gov; brownhl@nnva.gov; wmcnamar@vbgov.com; rstephens@suffolkva.us; harold.futrell@vadoc.virginia.gov; Robert Gelormine; mstallings@smithfieldva.gov; segerbls@yorkcounty.gov; office@townofivor.com; Ashe, Chief Ryan; Bond, Steven; DelValle, Nicole; Elliott, Chief Edmund; Howell, Alonzo; Johnson, Jeff; Lowe, Lynette; Mangubat, Nestor; 'Redick, Jim'; 'Topczynski, David'; 'Anderson, Lisa'; 'Bresee, Harrison'; 'Brown, Curtis'; 'Gabriel, George'; 'Hill, Larry'; 'Hoernig, Jared'; 'Hudson, Daniel'; 'King, Jack'; 'Lawsure, Kaleen'; 'Lee, Cheryl '; 'Long, Paul'; 'Mason, Leslie'; 'Neal, Stacie'; 'Northon, John'; 'Russell, Brian'; 'Santillán, Perla'; 'Simpson, Cheryl'; 'Sommer, Tammy Waldroup'; 'Sutton, Erin'; Botts, Linda; Burket, Bill; Calambro, Daina; Cooke, John; Davis, Wayne; Dotolo, Lawrence; Evans, Allen; Ezell, Barry; Garrett, Lieutenant J R; Hackett, Stephanie; 'Hall, Terry'; 'Heckler, Mark '; 'Jones, Daniel'; 'Jurgens, David'; 'Long, David'; 'Mahone, Scott'; 'Malkawi, Anas'; 'Mooney, Robert '; 'NOAA'; 'Orrock, Jeff'; 'Pierce, Brian'; 'Pincus, Stephen'; 'Player, Michael'; 'Reich, Ruth'; 'See, Jennifer'; 'Shuck, Judith'; 'Sterling, Bruce'; 'Turner, Chip'; 'White, Sylvia D.'; 'Braidwood, Robb'; 'Bryant, Mike'; 'Drewery, Will'; 'Eagle, David'; 'Glazner, George'; 'Goldsmith, Michael'; 'Johnson, Michael W.'; 'Kopczynski, Stephen'; 'Major, Brett'; 'Phelps, Ray'; 'Progen, Danielle'; 'Rubino, Joe'; 'Ruch, Sara'; 'Spicer, Brian'; 'Walker, Hui-Shan'; Ben McFarlane; Cynthia Mulkey; Keith Cannady; Krista Lauro; Rob Case; Whitney Katchmark; Glazner, George T.; Simons, Matthew; Parker, Amy; Henkel, Kenton; Bott, Louis J.; Whittaker, Gail; Caroline Dunlap; Michael Woolson; Kim Finnerty; Sam Sawan; Niss, Robyn; Patrick Hughes; Lucy E. Stoll
Cc: 'leigh.morgan.chapman@gmail.com'; Slater, Noelle
Subject: Hazard Mitigation Plan Reminders
Attachments: Flyer.pdf

Importance: High

AHAC and Hazard Mitigation Working Group,

Just a few reminders regarding the Hazard Mitigation Plan:

1. **Please document all time spent on the Hazard Mitigation Plan**. We are currently very short on meeting the match for this grant. In-kind contributions are documented at the link below. You can document work completed at an earlier date.

   https://docs.google.com/forms/d/e/1FAIpQLSf-e56e0mCFtfrpMh6GA4DjDDBCleduxOzMF0T3j5r44G_TzQ/viewform

2. The 2nd Public Meeting is scheduled for July 29, 5:00pm. The Flyer is attached. **Please advertise this meeting locally and upload documentation of the advertisement to MS Team or email to me**.

3. A Hazard Mitigation workshop has been scheduled for July 27, 9:30am to go over the updated Hazard Identification and Risk Assessment. You should have already received a calendar invite for the workshop. If not, please let me know. **Please forward the invite to interested stakeholders (or give me their email and I will do so).** This can be people you work with in any capacity, such as neighborhood associations, professional associations, or CERT members. Could be citizens, environmental groups, representatives of large corporations in your jurisdiction, or hospital system representatives. Could be Federal or state agency representatives, higher education administrators, or the American Red Cross. If they choose to participate we'd welcome their input!

Regards,

John Sadler
Regional Emergency Management Administrator
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300
Cell: 757-724-4636

CLASSIFIEDS

REQUEST FOR PROPOSALS

THE CITY OF NORFOLK
PUBLIC WORKS

REQUEST FOR PROPOSALS DEPARTMENT OF PUBLIC WORKS, DEPARTMENT OF TRANSIT #19093

Title: St. Paul's Redevelopment Phase I
Closing Date/Time: August 27, 2021 @ 4:00 p.m.

All proposals shall be electronically submitted through the City's electronic bid service provider website: https://secure.procurenow.com/portal/norfolk/projects/10613

PUBLIC MEETING

HAMPTON ROADS PDC

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

NOTICE OF VIRTUAL PUBLIC MEETING
HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Hazard Identification and Risk Assessment conducted as part of this planning process.

PUBLIC ZOOM MEETING, JULY 29, 2021, 5PM. REGISTER AT HTTPS://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN_XGSOYLVPRBSQBEVEBGV3GW

For More Information Visit: https://www.hrpdc.org/Hampton-Roads-Hazard-Mitigation-Plan-Update-2021-Version-Coordinator-Hazard-Mitigation-Grant Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

GOSPEL FEST FEATURES TOP ARTISTS

By Randy Singleton
Community Correspondent
New Journal & Guide

CHESAPEAKE

Rev. Dr. Brenda Boone-Smith & Higher Praise Community Choir held a Fourth of July Drive-In Gospel Fest Concert on Sunday at The Hope Center in Chesapeake. The event featured some of the top gospel artists and musicians in Hampton Roads and the Mid-Atlantic region.

Gospel vocalists Amelia Sears Goodman and Linda Porter kicked off the event. The Word Singers of Norfolk and Elder Ronald Harper & the Harmonizing Echoes of Chesapeake continued the worship and praise with renditions of their most popular songs in the Hampton Roads area.

The concert's headliners featured Frankie Davis and the Legendary Soul Stirrers, Chicago, ILL; Rev. Thomas Spann & the Brooklyn Allstars, Brooklyn, NYC; and Rev. Luther Barnes & the Sunset Jubilaires of Rocky Mount, NC.

A National Gold Album Award was presented to Rev. Luther Barnes & the Sunset Jubilaires for their excellence in the performance of gospel music. The award was given by Mr. Andrew Steinberg, President of the National Gold Album Awards of Santa Monica, California through Mrs. Doris Hemphill, who works with Mr. Steinberg in honoring artists through their record companies. Mrs. Hemphill worked for the American Broadcasting Company, Channel 7 for 18 years until the company transferred to NYC and she worked for 20th Century Fox Studio Motion Pictures for 20 years. Some of the movies made in Mrs. Hemphill's employ included The Titanic, Denzel Washington, Eddie Murphy, Forrest Gump, Arnold Schwarzenegger, Beverly Hills Cop, Sidney Poitier, Rambo, & several others.

Last year's Black History concert, which is typically held in February, was cancelled due to the pandemic. Rev. Brenda Boone-Smith's, sister, Amelia Sears Goodman and Brother Donald L. Eason acknowledged the passing of loved ones due to COVID-19, with special recognition given to the recent passing of Rev. William T. Smith, the husband of Rev. Brenda Boone-Smith and local gospel concert promoter Bishop Robert Hurdle.

The Concert Promoter, Rev. Dr. Brenda Boone-Smith and WPCE radio host Brother Donald L. Eason presented Rev. Luther Barnes & the Sunset Jubilaires with the Gold Album award.


Dr. Brenda Boone-Smith


Photo: Randy Singleton
Rev. Luther Barnes wins Gold Album award.

CORRECTION:
First Lady Series
July 8-14, 2021

Mrs. Cynthia P. Doxey, wife of Rev. Clyde Doxey, is the proud and beloved First Lady of New Covenant Fellowship Baptist Church of Chesapeake. Our article's headline contained a spelling error of her name.

We apologize, First Lady!


Rev. Clyde and First Lady Cynthia P. Doxey

LOCAL NEWS

Public input needed for 2022 Hampton Roads Hazard Mitigation Plan

The Hampton Roads Planning District Commission's mitigation plan addresses threats to the area and helps it in federal grant applications.

Planning District Commission Needs Input for Hazard Mitig…

Author: **Angelo Vargas**
Published: **6:01 PM EDT July 8, 2021**
Updated: **6:01 PM EDT July 8, 2021**

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"The purpose of the plan is to, obviously, is to save lives and properties. We want to document and have a thorough understanding of the risks facing Hampton Roads and how we can mitigate those threats and risks," said HRPDC Regional Emergency Management Administrator John Sandler.

Sandler said the plan is updated every five years. New information is added based on the timing of a natural disaster.

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“Nobody wants to be surprised or not know what to do when the storm is coming, so identifying those strategies to mitigate the risk for an event such as Tropical Storm Elsa is going to be an intricate part of that hazard mitigation plan," said Sandler.

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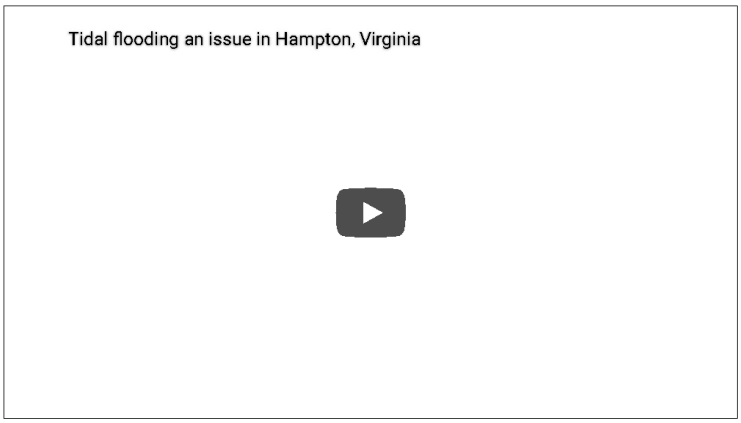


Related Articles

134 mph, 120 mph: Virginia State Police issues citations for major speeding in Chesapeake, Virginia Beach

131 mph in a 55 mph zone: Virginia State Police shares picture of reckless driving ticket issued in Norfolk on social media

VIRGINIA

John Sadler

From: NEWS <news@hrpdcva.gov>
Sent: Friday, July 9, 2021 10:20 AM
To: Danielle Spach
Subject: HRPDC-HRTPO E-Update July 2021

E-UPDATE July 2021

Hampton Roads Economic Monthly:
School's out! But who was "IN" for 2020?

Now that school's out for summer in Hampton Roads, we dug into the Virginia Department of Education's Fall enrollment data to understand the impact COVID-19 may have had on students in the region.

Many states, including Virginia, reported declines in public school enrollment for the Fall of 2020. From 2019 to 2020, Fall enrollment overall in Hampton Roads declined by over 4.5%, while public school enrollment in the same time period in Virginia declined by nearly 3.5%. Overall Fall public school enrollment in Hampton Roads has been declining for the past 15 years at roughly 0.5% per year, so a slight decline would not have been out of the ordinary, but this was over eight times the 15-year average annual rate of decline. Other states in the Southeast experienced similar declines in enrollment, with North Carolina experiencing 4% decline, Maryland at 3%, South Carolina at 2.6%, and the District of Columbia showed a 1% decline in enrollment during 2020.

Figure 1: YoY percent change in total public school enrollment in Hampton Roads. Source: Virginia Department of Education, HRPDC

Regional Transportation Plan Adopted

As the federally designated Metropolitan Planning Organization for Hampton Roads, the Hampton Roads Transportation Planning Organization (HRTPO) is required to develop and maintain a Long-Range Transportation Plan (LRTP), which serves as the region's transportation blueprint. On June 17, 2021, the HRTPO adopted the 2045 LRTP to help guide multimodal transportation investments for the region over the next twenty-four years.

Hampton Roads 2045 Rural Long-Range Transportation Plan Kickoff

With the recent adoption of the Hampton Roads 2045 Long-Range Transportation Plan (LRTP) for the metropolitan areas of the region, the Hampton Roads Transportation Planning Organization (HRTPO) is kicking off the update to the rural version of the LRTP. Over the next couple of months, HRTPO staff will be collaborating with rural area stakeholders and the public on developing the Rural Long-Range Transportation Plan (RLRTP) for the horizon year of 2045 that specifically covers the City of Franklin and Southampton County.

An Abundance of Gratitude for Our Region's Water Professionals

On June 30th, we recognized Hampton Roads' essential water workers for Annual Drinking Water and Wastewater Professionals Appreciation Day in Virginia. These regional water and wastewater employees kept the taps flowing and commodes going throughout a global pandemic.

July Map of the Month – Be Prepared! Historic Hurricanes in Hampton Roads & Getting Ready for 2021 Hurricane Season

Dozens of storms have impacted Hampton Roads over the years and the region is always a potential target. This month's *map* depicts the paths of hurricanes and tropical storms which have passed through or near Hampton Roads between 1851 and 2020.

Public Comment Opportunity

HRTPO FY 2021-2024 Transportation Improvement Program: Proposed Amendments

Second Virtual Public Meeting for the Hampton Roads Hazard Mitigation Plan Update - 5:00pm, July 29 2021

HRPDC/HRTPO In the News

New Initiative to Remind Residents to Keep Regional Waterways Clean (*WY Daily*)

Know Your Flood Risk (*The Hampton Roads Show*)

Opinion: Cheers to Hampton Roads' invaluable water workers (*Virginian-Pilot* and *Daily Press*)

From Our Partners!

DRPT Virginia Commuter Survey-Tell DRPT About Your Commute

The Virginia Department of Transportation (VDOT) in partnership with the Department of Rail and Public Transportation (DRPT) is collecting data associated with travel to and from work in response to COVID-19 in Virginia. The COVID-19 pandemic has changed the way people are traveling, including, to and from work. The purpose of the recurring Virginia Commuter Surveys is to understand how commutes are changing and identify opportunities to improve commuting during and after this pandemic.

Hampton Roads COVID-19 Impact Planning Hub

Visit the COVID-19 Impact Planning Hub to get the latest information on COVID-19 in Hampton Roads.

Upcoming Meetings

RFP/RFQ Opportunities

On Behalf of the Southside Network Authority

Request for Proposal #SNA-RFP-2021-02: The Hampton Roads Planning District Commission, on behalf of the Southside Network Authority (the Authority), is soliciting for Qualifications and Conceptual Proposals for the Southside Hampton Roads Regional Fiber Connectivity Ring. Interested parties should refer to the full request for proposal (RFP) posted below. Submit by 2:00 P.M. Eastern Daylight Time on **Tuesday, August 24, 2021**.

KENDALL L. MILLER
Administrator, Office of Community Affairs and Civil Rights

JOE TURNER
Communications and Web Manager

ROBERT COFIELD
Graphic and Web Designer

Phone: 757.420.8300
Fax: 757.523.4881
TTY: 757.390.2578

HRPDC Website

HRTPO Website

Join Mailing List

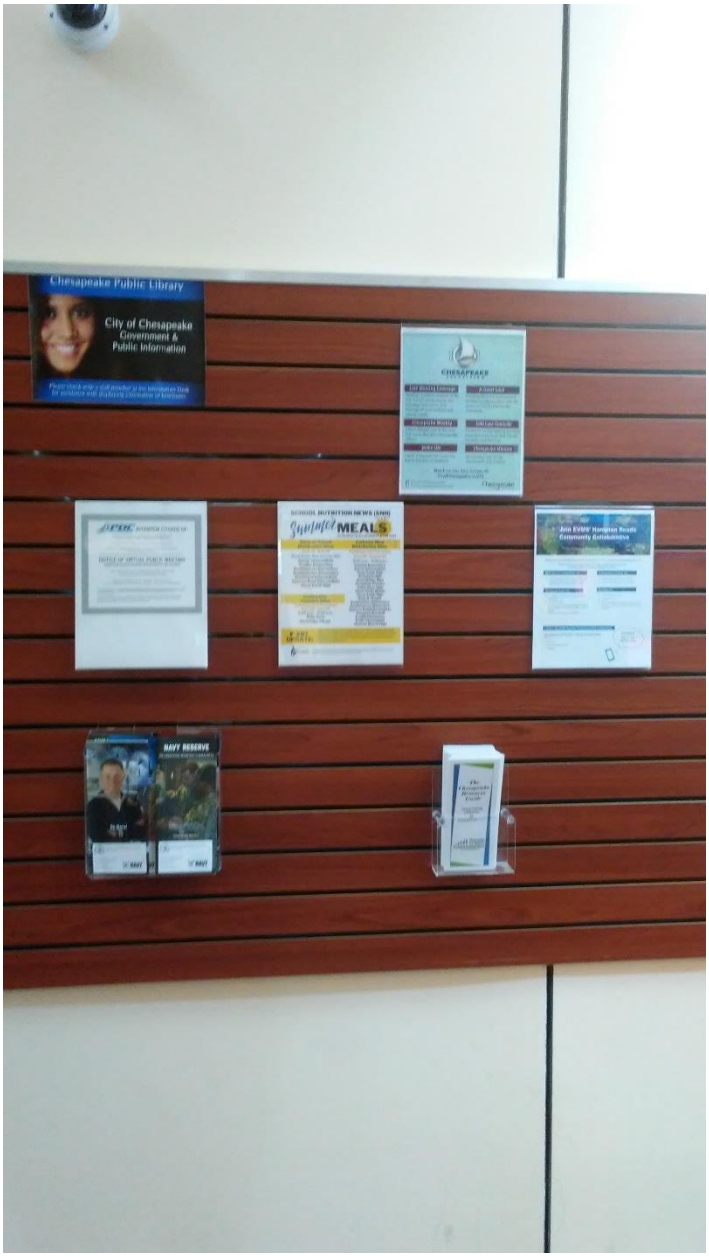
The Hampton Roads Planning District Commission (HRPDC) and Hampton Roads Transportation Planning Organization (HRTPO) fully comply with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination statutes and regulations in all programs and activities. HRPDC's website, ***www.hrpdcva.gov***, and HRTPO's website, ***www.hrtpo.org***, may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. HRPDC public meetings are always held in ADA-accessible facilities and in transit-accessible locations when possible. Auxiliary services can be provided to individuals who submit a request at least seven days prior to a meeting. Requests made within seven days will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by HRPDC under Title VI has a right to file a formal complaint. Any such complaint may be in writing and filed with HRPDC's Title VI Administrator and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on HRPDC's Title VI program, or to obtain a Title VI Complaint Form, please call *(757) 420-8300* or email: ***kmiller@hrpdcva.gov***.

CITY OF CHESAPEAKE PUBLIC NOTICE DOCUMENTATION

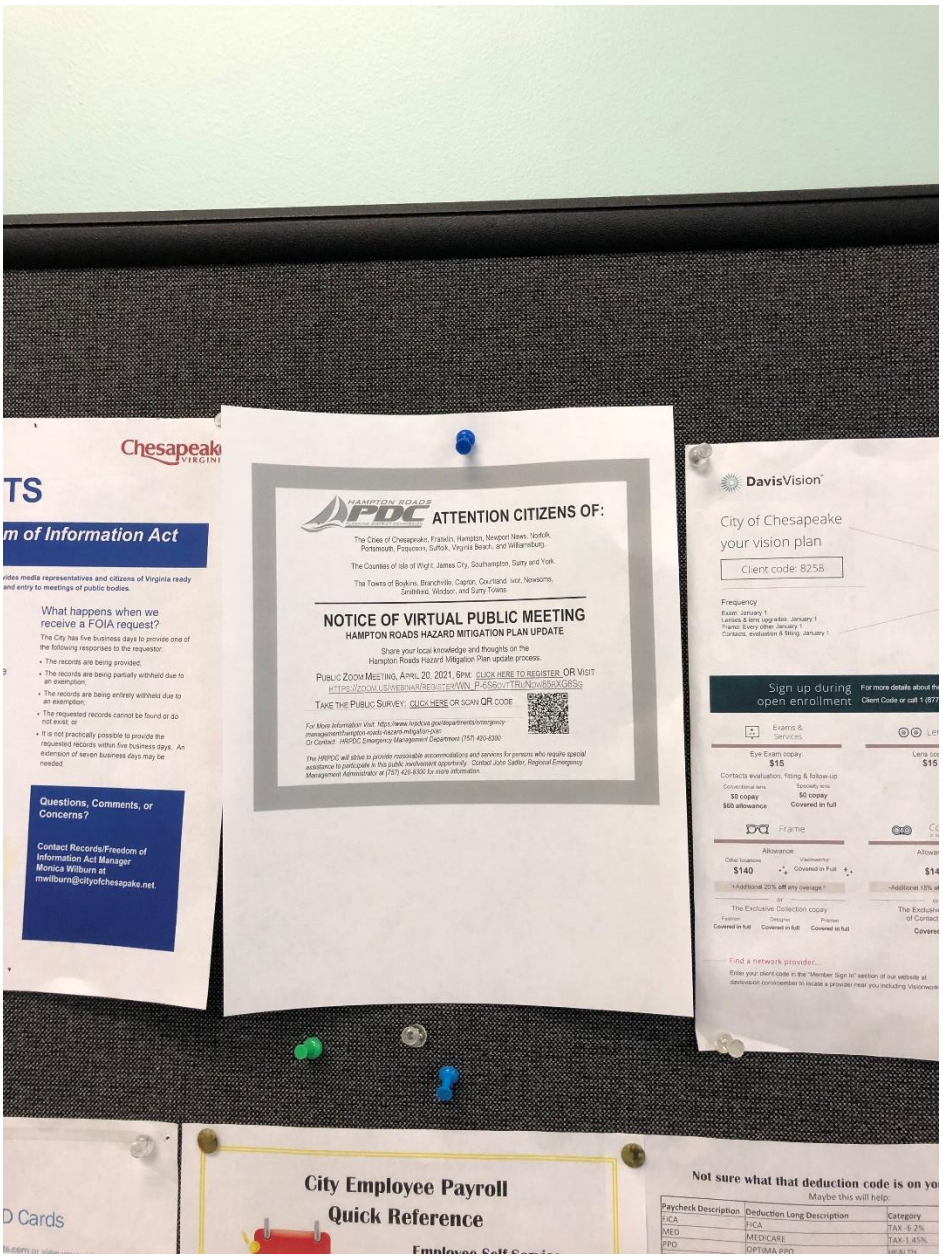
Hazard Mitigation Plan Workshop Meeting #2

The below pictures are from various locations around the city as well social media posts and website that the Public Notice Information is posted for citizens awareness and engagement

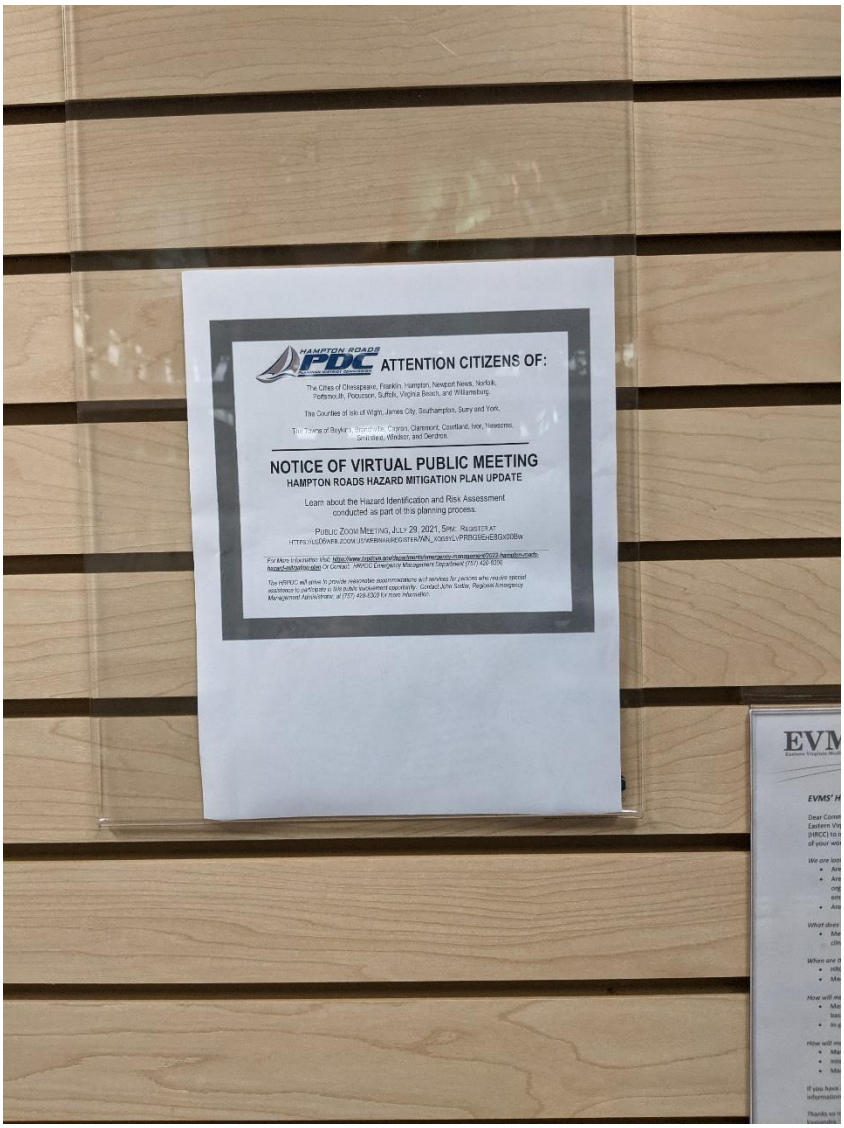
GREENBRIER LIBRARY – GUEST FOYER



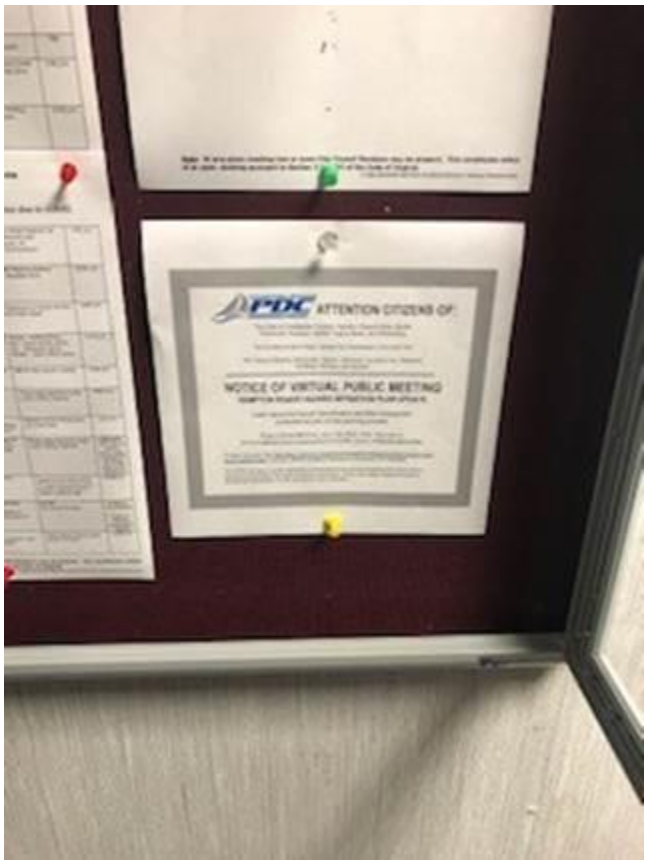
CENTRAL LIBRARY – PUBLIC SPACE



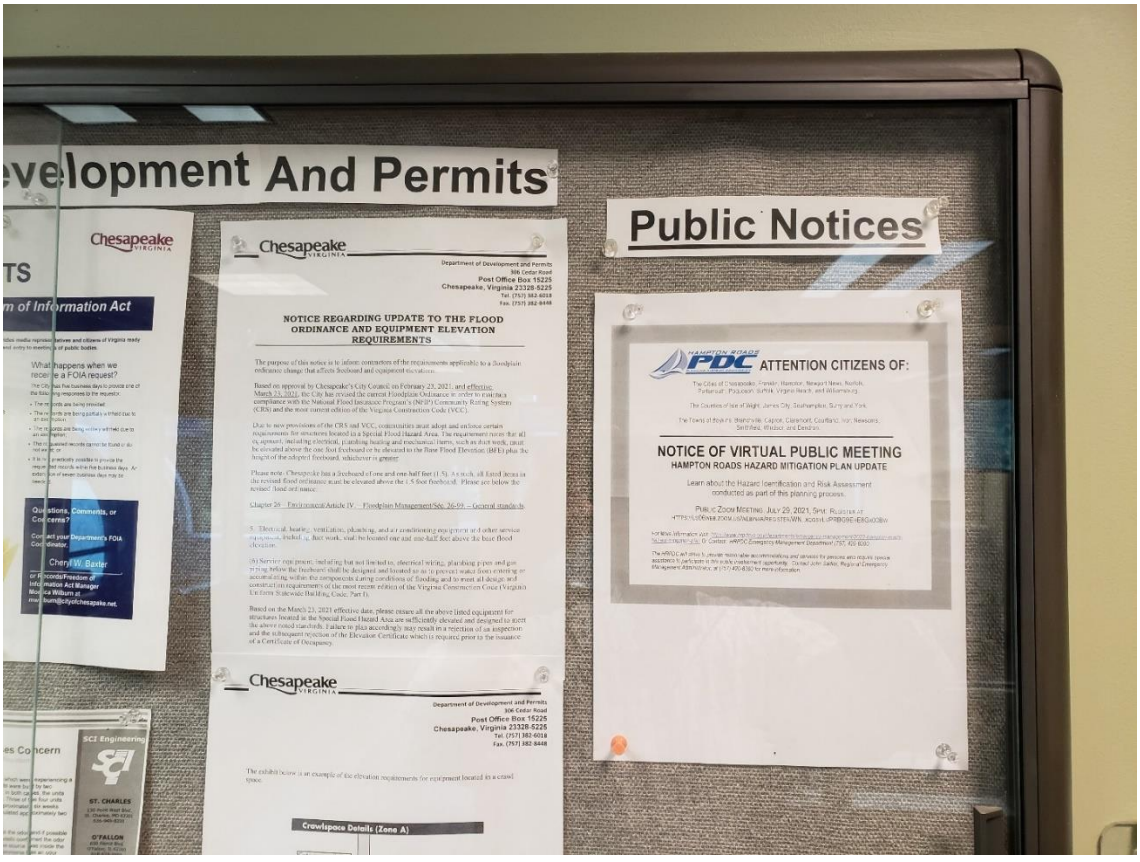
RUSSELL MEMORIAL LIBRARY – GUEST FOYER



CITY CLERKS OFFICE – PUBLIC SPACE



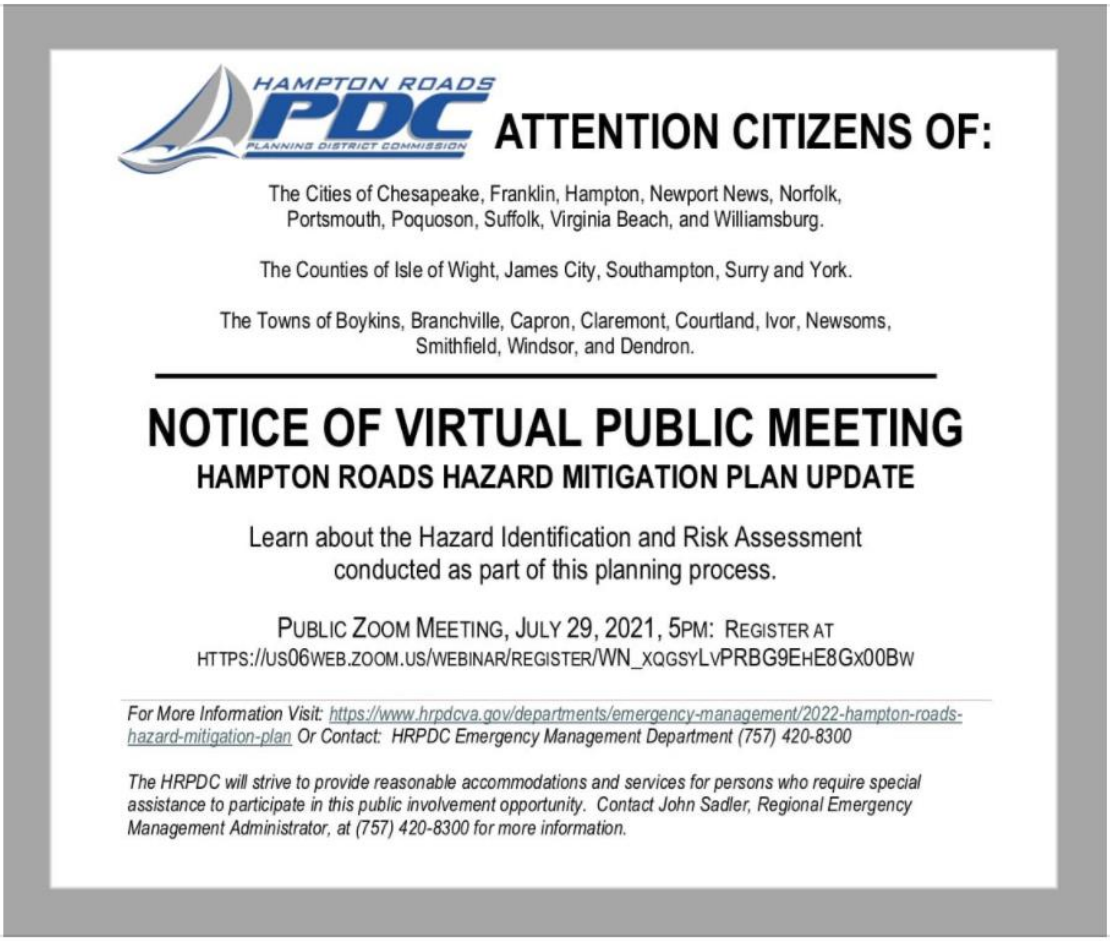
DEVELOPMENT & PERMITS – WAITING AREA / PUBLIC SPACE



CITY OF CHESAPEAKE FACEBOOK POST

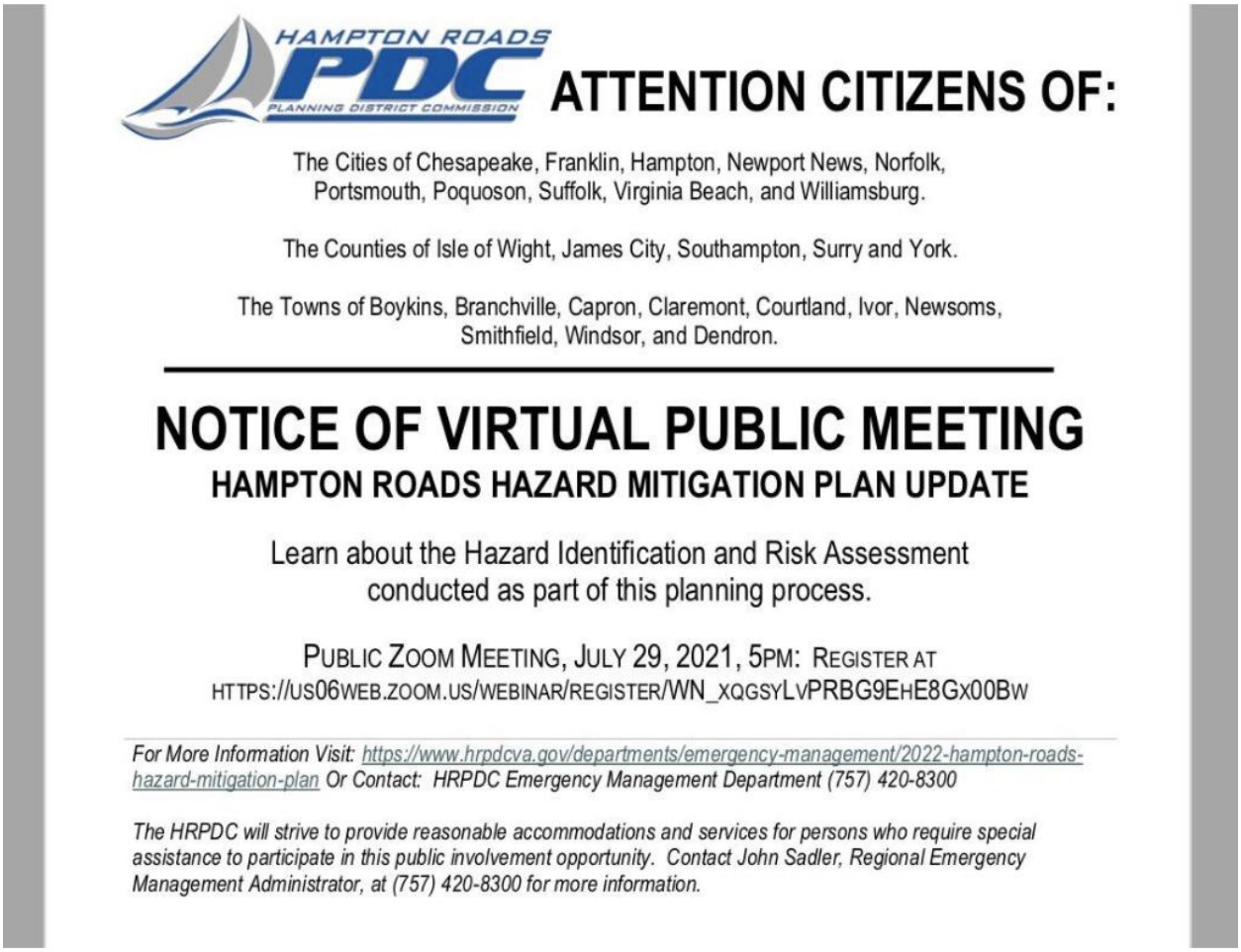
City of Chesapeake Government
Published by Jane Gregorski · Just now ·

The Hampton Roads Planning District Commission (HRPDC) is hosting a second virtual public meeting on Thursday, July 29, at 5 p.m. to provide updates on the Hampton Roads Hazards Mitigation Plan and the Hazard Identification and Risk Assessment. Sign up to attend: https://bit.ly/3wEv8sp. For more information about the Hampton Roads Hazards Mitigation Plan, visit https://bit.ly/3xwzQJU.



CITY OF CHESAPEAKE NEXTDOOR POST

City of Chesapeake
Social Media Coordinator Jane Gregorski • 1 min ago



HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

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NOTICE OF VIRTUAL PUBLIC MEETING

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Learn about the Hazard Identification and Risk Assessment conducted as part of this planning process.

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Posted to **Subscribers of City of Chesapeake**

CITY OF CHESAPEAKE TWITTER POST

City of Chesapeake
@AboutChesapeake

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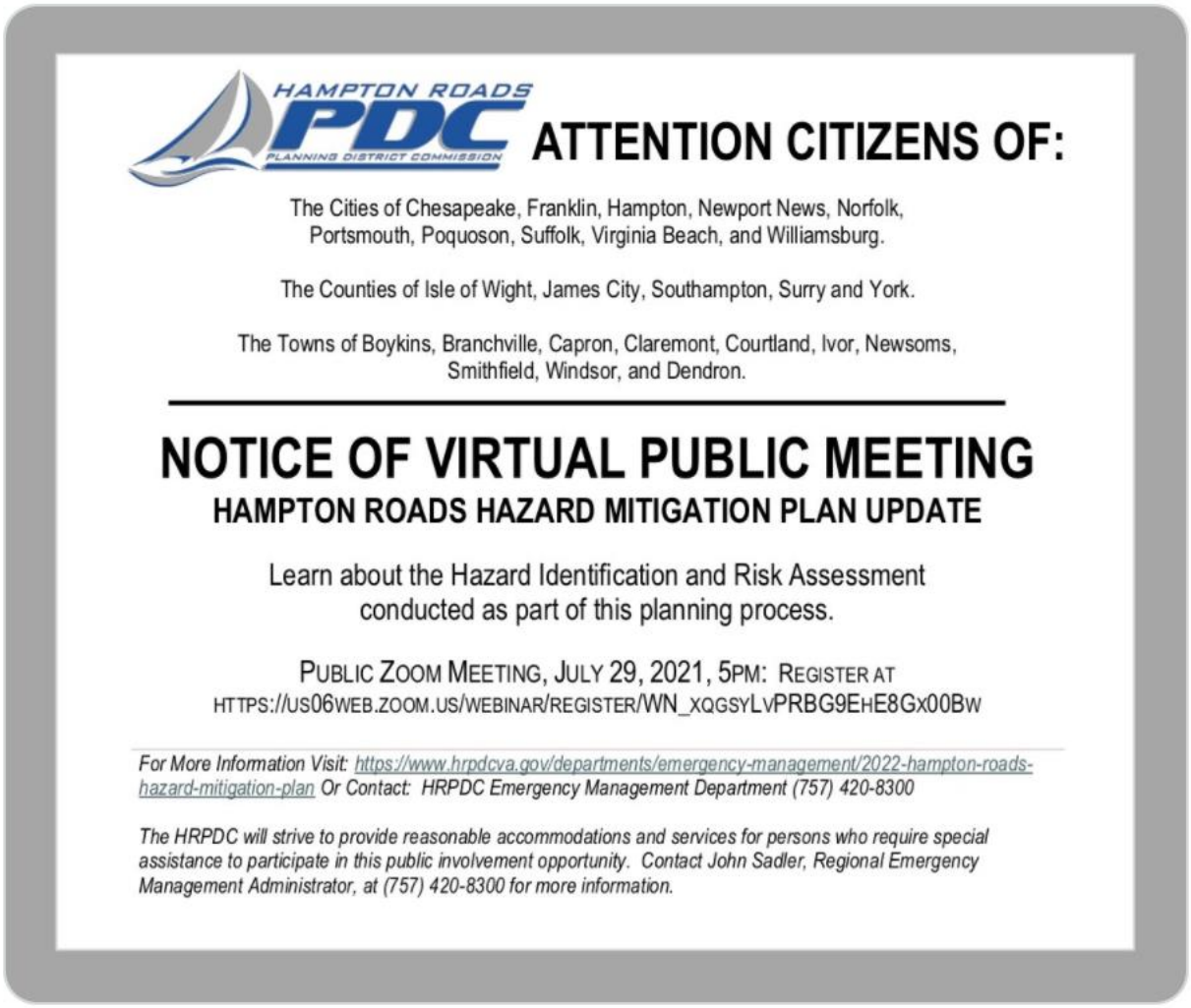

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12:00 PM · Jul 9, 2021 · Twitter Web App

CITY OF CHESAPEAKE WEBSITE INFORMATION

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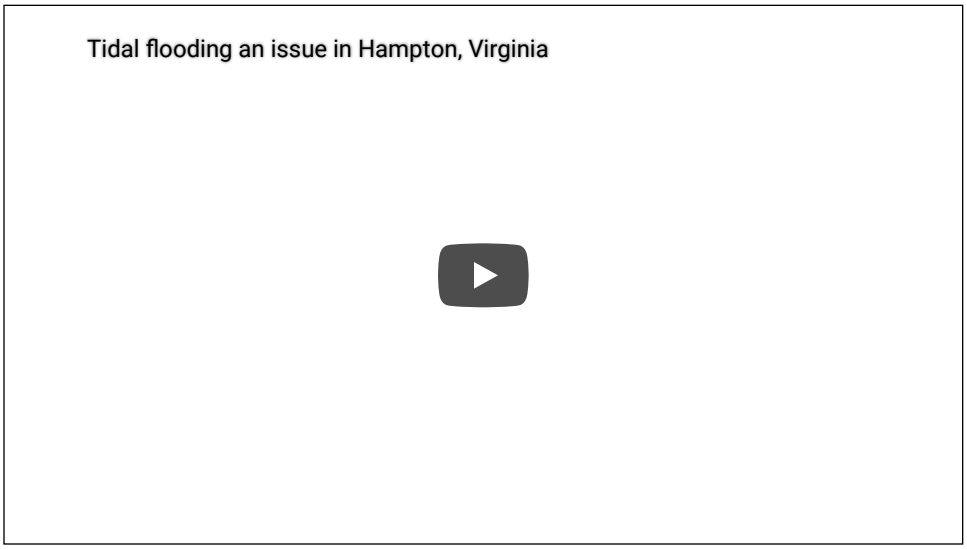

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134 mph, 120 mph: Virginia State Police issues citations for major speeding in Chesapeake, Virginia Beach

131 mph in a 55 mph zone: Virginia State Police shares picture of reckless driving ticket issued in Norfolk on social media

VIRGINIA

Dominion Energy works on restoring power outages in Tropical Storm Elsa's wake

Power crews loaded trucks and made final preparations ahead of the storm.

Dominion Energy prepares for Tropical Storm Elsa

Author: **Alex Littlehales (WVEC)**
Published: **6:55 PM EDT July 8, 2021**
Updated: **12:09 AM EDT July 9, 2021**

VIRGINIA BEACH, Va. — A day like Thursday is when training matters most.

“Our water, chainsaws, and our materials: this is the Super Bowl for us," Dominion Energy lineman Aaron Liles told 13News Now Thursday.

As Tropical Storm Elsa brings rain and wind through Southeastern Virginia, Dominion Energy prepares for what could be a long day of restoring power in the commonwealth.

“Crews tonight working might be working 22 to 23 hours straight. I’ve pulled 27 hours, 30 hours, something like that," Liles said, who noted that people often may not realize how long of days power crews work when storm systems move through an area.

Officials with Dominion Energy told 13News Now they are forecasting seven more storms than the 30-year average of 14 named storms in the Atlantic.

“People think we flip a switch and the lights come on," Liles said.

As of 12 a.m. Friday, Dominion reports 10,792 customers without power in Southeastern Virginia:

- Chesapeake - 513
- Hampton - 4,678

- Isle Of Wight - 876
- James City - 758
- Newport News - 1,840
- Norfolk - 31
- Poquoson City - 1
- Portsmouth - 592
- Suffolk - 371
- Surry - 3
- Virginia Beach - 299
- Williamsburg - 305
- York - 525

Additionally, on the Middle Peninsula, 1,846 customers are without power in Gloucester and 251 are without power in Mathews.

For the latest information on outages in the Hampton Roads area, you can see Dominion Energy's outage map that tracks them in real-time.

You can also click here to report an outage to Dominion.

Tropical Storm Elsa in Hampton Roads and northeast North Carolina

1/13

Credit: Cat Foley

Goodbye Red Bud Tree: Gloucester Point, Va. Credit: Cat Foley

Related Articles

80 people from Norfolk's temporary homeless shelter relocated to Scope to ride out the storm

South wind could bring minor flooding to Pungo

Oceanfront washout from Tropical Storm Elsa

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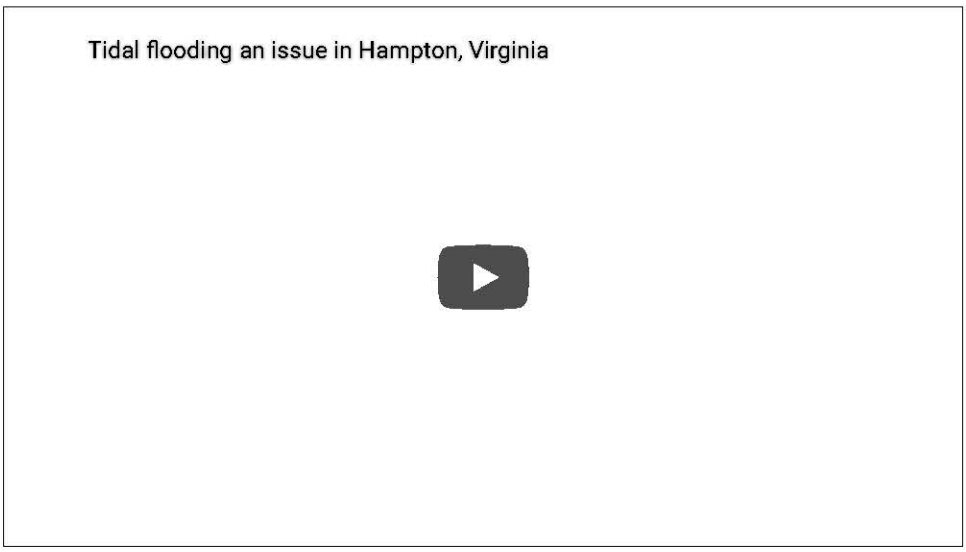

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131 mph in a 55 mph zone: Virginia State Police shares picture of reckless driving ticket issued in Norfolk on social media

VIRGINIA

Dominion Energy works on restoring power outages in Tropical Storm Elsa's wake

Power crews loaded trucks and made final preparations ahead of the storm.

Dominion Energy prepares for Tropical Storm Elsa

Author: **Alex Littlehales (WVEC)**
Published: **6:55 PM EDT** July 8, 2021
Updated: **12:09 AM EDT** July 9, 2021

VIRGINIA BEACH, Va. — A day like Thursday is when training matters most.

“Our water, chainsaws, and our materials: this is the Super Bowl for us," Dominion Energy lineman Aaron Liles told 13News Now Thursday.

As Tropical Storm Elsa brings rain and wind through Southeastern Virginia, Dominion Energy prepares for what could be a long day of restoring power in the commonwealth.

“Crews tonight working might be working 22 to 23 hours straight. I’ve pulled 27 hours, 30 hours, something like that," Liles said, who noted that people often may not realize how long of days power crews work when storm systems move through an area.

Officials with Dominion Energy told 13News Now they are forecasting seven more storms than the 30-year average of 14 named storms in the Atlantic.

“People think we flip a switch and the lights come on," Liles said.

As of 12 a.m. Friday, Dominion reports 10,792 customers without power in Southeastern Virginia:

- Chesapeake - 513
- Hampton - 4,678

- Isle Of Wight - 876
- James City - 758
- Newport News - 1,840
- Norfolk - 31
- Poquoson City - 1
- Portsmouth - 592
- Suffolk - 371
- Surry - 3
- Virginia Beach - 299
- Williamsburg - 305
- York - 525

Additionally, on the Middle Peninsula, 1,846 customers are without power in Gloucester and 251 are without power in Mathews.

For the latest information on outages in the Hampton Roads area, you can see Dominion Energy's outage map that tracks them in real-time.

You can also click here to report an outage to Dominion.

Tropical Storm Elsa in Hampton Roads and northeast North Carolina

1/13

Credit: Cat Foley

Goodbye Red Bud Tree: Gloucester Point, Va. Credit: Cat Foley

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August 4, 2021

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July 14, 2021

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July 13, 2021

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2020 Real Estate Delinquent Tax Report

June 23, 2021

John Sadler

From: HRPDC <news@hrpdcva.ccsend.com> on behalf of HRPDC <em@hrpdcva.gov>
Sent: Thursday, July 8, 2021 10:11 AM
To: John Sadler
Subject: Join us for our Second Public Zoom Meeting

Hampton Roads Hazard Mitigation Plan Update
Virtual Public Meeting #2
5:00pm
July 29, 2021

Join us Virtually via Zoom

Learn about the Hazard Identification and Risk Assessment conducted as part of this planning process.

PUBLIC ZOOM MEETING
JULY 29, 2021, 5PM

REGISTER AT
https://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN_XQGSYLVPRBG9EHE8GX00BW

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan

Or Contact: HRPDC Emergency Management Department (757) 420-8300

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James City County
@JamesCityCounty

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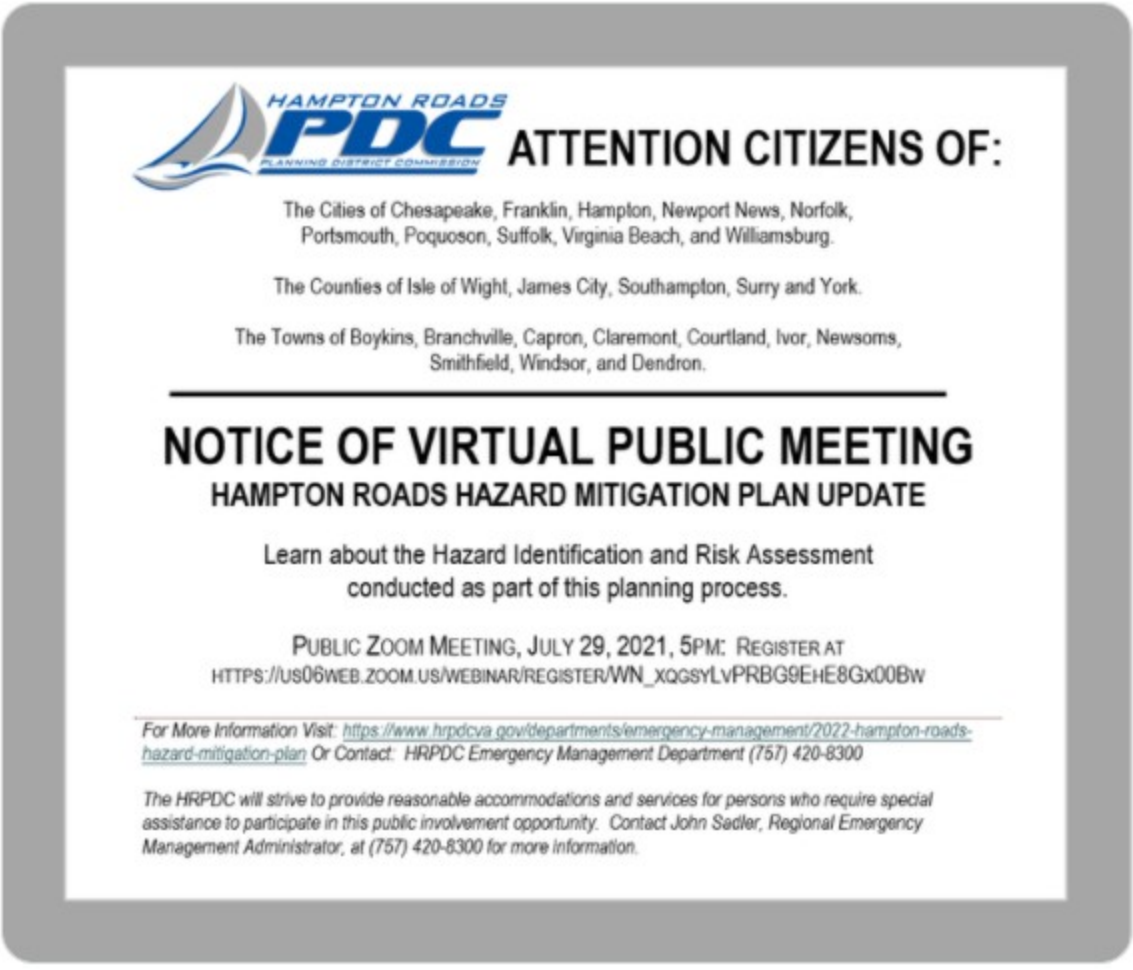
For more information, visit hrpdcva.gov/departments/em...



HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

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James City County
Published by Renee Dallman · 3m ·

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CLASSIFIEDS

REQUEST FOR PROPOSALS

THE CITY OF NORFOLK
PUBLIC WORKS

REQUEST FOR PROPOSALS DEPARTMENT OF PUBLIC WORKS, DEPARTMENT OF TRANSIT #19093

Title: St. Paul's Redevelopment Phase I
Closing Date/Time: August 27, 2021 @ 4:00 p.m.

All proposals shall be electronically submitted through the City's electronic bid service provider website: https://secure.procurenow.com/portal/norfolk/projects/10613

PUBLIC MEETING

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GOSPEL FEST FEATURES TOP ARTISTS

By Randy Singleton
Community Correspondent
New Journal & Guide

CHESAPEAKE

Rev. Dr. Brenda Boone-Smith & Higher Praise Community Choir held a Fourth of July Drive-In Gospel Fest Concert on Sunday at The Hope Center in Chesapeake. The event featured some of the top gospel artists and musicians in Hampton Roads and the Mid-Atlantic region.

Gospel vocalists Amelia Sears Goodman and Linda Porter kicked off the event. The Word Singers of Norfolk and Elder Ronald Harper & the Harmonizing Echoes of Chesapeake continued the worship and praise with renditions of their most popular songs in the Hampton Roads area.

The concert's headliners featured Frankie Davis and the Legendary Soul Stirrers, Chicago, ILL; Rev. Thomas Spann & the Brooklyn Allstars, Brooklyn, NYC; and Rev. Luther Barnes & the Sunset Jubilaires of Rocky Mount, NC.

A National Gold Album Award was presented to Rev. Luther Barnes & the Sunset Jubilaires for their excellence in the performance of gospel music. The award was given by Mr. Andrew Steinberg, President of the National Gold Album Awards of Santa Monica, California through Mrs. Doris Hemphill, who works with Mr. Steinberg in honoring artists through their record companies. Mrs. Hemphill worked for the American Broadcasting Company, Channel 7 for 18 years until the company transferred to NYC and she worked for 20th Century Fox Studio Motion Pictures for 20 years. Some of the movies made in Mrs. Hemphill's employ included The Titanic, Denzel Washington, Eddie Murphy, Forrest Gump, Arnold Schwarzenegger, Beverly Hills Cop, Sidney Poitier, Rambo, & several others.

Last year's Black History concert, which is typically held in February, was cancelled due to the pandemic. Rev. Brenda Boone-Smith's, sister, Amelia Sears Goodman and Brother Donald L. Eason acknowledged the passing of loved ones due to COVID-19, with special recognition given to the recent passing of Rev. William T. Smith, the husband of Rev. Brenda Boone-Smith and local gospel concert promoter Bishop Robert Hurdle.

The Concert Promoter, Rev. Dr. Brenda Boone-Smith and WPCE radio host Brother Donald L. Eason presented Rev. Luther Barnes & the Sunset Jubilaires with the Gold Album award.


Dr. Brenda Boone-Smith


Photo: Randy Singleton
Rev. Luther Barnes wins Gold Album award.

CORRECTION:
First Lady Series
July 8-14, 2021

Mrs. Cynthia P. Doxey, wife of Rev. Clyde Doxey, is the proud and beloved First Lady of New Covenant Fellowship Baptist Church of Chesapeake. Our article's headline contained a spelling error of her name.

We apologize, First Lady!


Rev. Clyde and First Lady Cynthia P. Doxey

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Photo: Randy Singleton

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Rev. Clyde and First Lady Cynthia P. Doxey

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The 2nd Hampton Roads Hazard Mitigation Plan Public Meeting

Thursday, July 29, 2021

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Date:	July 29, 2021
Time:	5:00 PM - 7:00 PM
Address:	Norfolk, VA 23510
Link:	Registration

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July 8 at 2:20 PM ·

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City Spot

2022 Hampton Roads Hazard Mitigation Plan

Hazard Mitigation Plan Public Meeting

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Published by Andrew Cooper · July 8 at 2:20 PM ·

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John Sadler

From: NEWS <news@hrpdcva.gov>
Sent: Friday, July 9, 2021 10:20 AM
To: Danielle Spach
Subject: HRPDC-HRTPO E-Update July 2021

E-UPDATE July 2021

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School's out! But who was "IN" for 2020?

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Many states, including Virginia, reported declines in public school enrollment for the Fall of 2020. From 2019 to 2020, Fall enrollment overall in Hampton Roads declined by over 4.5%, while public school enrollment in the same time period in Virginia declined by nearly 3.5%. Overall Fall public school enrollment in Hampton Roads has been declining for the past 15 years at roughly 0.5% per year, so a slight decline would not have been out of the ordinary, but this was over eight times the 15-year average annual rate of decline. Other states in the Southeast experienced similar declines in enrollment, with North Carolina experiencing 4% decline, Maryland at 3%, South Carolina at 2.6%, and the District of Columbia showed a 1% decline in enrollment during 2020.

Figure 1: YoY percent change in total public school enrollment in Hampton Roads. Source: Virginia Department of Education, HRPDC

Regional Transportation Plan Adopted

As the federally designated Metropolitan Planning Organization for Hampton Roads, the Hampton Roads Transportation Planning Organization (HRTPO) is required to develop and maintain a Long-Range Transportation Plan (LRTP), which serves as the region's transportation blueprint. On June 17, 2021, the HRTPO adopted the 2045 LRTP to help guide multimodal transportation investments for the region over the next twenty-four years.

Hampton Roads 2045 Rural Long-Range Transportation Plan Kickoff

With the recent adoption of the Hampton Roads 2045 Long-Range Transportation Plan (LRTP) for the metropolitan areas of the region, the Hampton Roads Transportation Planning Organization (HRTPO) is kicking off the update to the rural version of the LRTP. Over the next couple of months, HRTPO staff will be collaborating with rural area stakeholders and the public on developing the Rural Long-Range Transportation Plan (RLRTP) for the horizon year of 2045 that specifically covers the City of Franklin and Southampton County.

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From Our Partners!

DRPT Virginia Commuter Survey-Tell DRPT About Your Commute

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Hampton Roads COVID-19 Impact Planning Hub

Visit the COVID-19 Impact Planning Hub to get the latest information on COVID-19 in Hampton Roads.

Upcoming Meetings

RFP/RFQ Opportunities

On Behalf of the Southside Network Authority

Request for Proposal #SNA-RFP-2021-02: The Hampton Roads Planning District Commission, on behalf of the Southside Network Authority (the Authority), is soliciting for Qualifications and Conceptual Proposals for the Southside Hampton Roads Regional Fiber Connectivity Ring. Interested parties should refer to the full request for proposal (RFP) posted below. Submit by 2:00 P.M. Eastern Daylight Time on **Tuesday, August 24, 2021**.

KENDALL L. MILLER
Administrator, Office of Community Affairs and Civil Rights

JOE TURNER
Communications and Web Manager

ROBERT COFIELD
Graphic and Web Designer

Phone: 757.420.8300
Fax: 757.523.4881
TTY: 757.390.2578

HRPDC Website

HRTPO Website

Join Mailing List

The Hampton Roads Planning District Commission (HRPDC) and Hampton Roads Transportation Planning Organization (HRTPO) fully comply with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination statutes and regulations in all programs and activities. HRPDC's website, ***www.hrpdcva.gov***, and HRTPO's website, ***www.hrtpo.org***, may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. HRPDC public meetings are always held in ADA-accessible facilities and in transit-accessible locations when possible. Auxiliary services can be provided to individuals who submit a request at least seven days prior to a meeting. Requests made within seven days will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by HRPDC under Title VI has a right to file a formal complaint. Any such complaint may be in writing and filed with HRPDC's Title VI Administrator and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on HRPDC's Title VI program, or to obtain a Title VI Complaint Form, please call *(757) 420-8300* or email: ***kmiller@hrpdcva.gov***.

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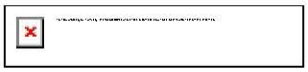

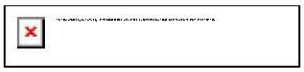

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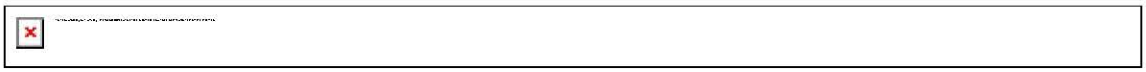
On Behalf of the Southside Network Authority

Request for Proposal #SNA-RFP-2021-02: The Hampton Roads Planning District Commission, on behalf of the Southside Network Authority (the Authority), is soliciting for Qualifications and Conceptual Proposals for the Southside Hampton Roads Regional Fiber Connectivity Ring. Interested parties should refer to the full request for proposal (RFP) posted below. Submit by 2:00 P.M. Eastern Daylight Time on **Tuesday, August 24, 2021**.



KENDALL L. MILLER
Administrator, Office of Community Affairs and Civil Rights

JOE TURNER
Communications and Web Manager

ROBERT COFIELD
Graphic and Web Designer

Phone: 757.420.8300
Fax: 757.523.4881
TTY: 757.390.2578

HRPDC Website

HRTPO Website

Join Mailing List

The Hampton Roads Planning District Commission (HRPDC) and Hampton Roads Transportation Planning Organization (HRTPO) fully comply with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination statutes and regulations in all programs and activities. HRPDC's website, ***www.hrpdcva.gov***, and HRTPO's website, ***www.hrtpo.org***, may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. HRPDC public meetings are always held in ADA-accessible facilities and in transit-accessible locations when possible. Auxiliary services can be provided to individuals who submit a request at least seven days prior to a meeting. Requests made within seven days will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by HRPDC under Title VI has a right to file a formal complaint. Any such complaint may be in writing and filed with HRPDC's Title VI Administrator and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on HRPDC's Title VI program, or to obtain a Title VI Complaint Form, please call *(757) 420-8300* or email: ***kmiller@hrpdcva.gov***.

Hampton Roads Planning District | print screen shortcut - Google Search

hrpdcva.gov

HRPDCVA.gov

Federal Websites | State Websites | Regional Websites | Local Gov Websites

Welcome to the Hampton Roads Planning District Commission

Second Virtual Public Meeting for the Hampton Roads Hazard Mitigation Plan Update

Learn more about our Regional Coastal Resilience Planning Efforts

Hampton Roads COVID Utility Relief

Be Storm Ready

Are You Flood Fluent?

Public Notices | Data/Info | Committees | Meetings | Legislative/Regulatory | Contact Us

1:44 PM
7/7/2021

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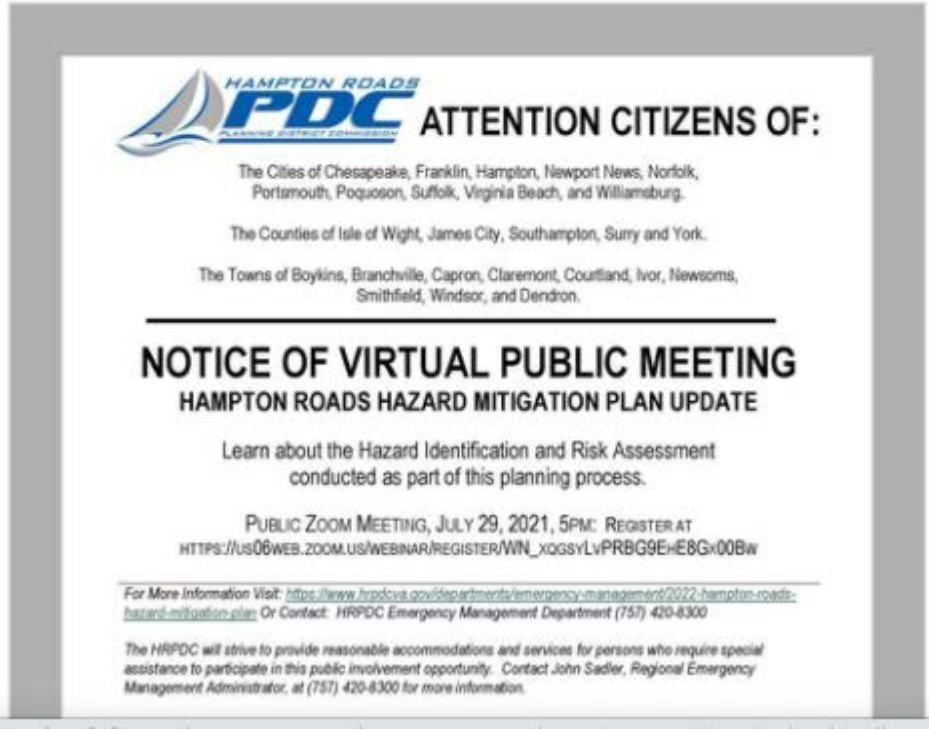
1:44 PM
7/7/2021

Peninsulas EMS Council
Published by Steve Pincus · Yesterday at 8:17 AM ·

There will be a virtual public zoom meeting on the Hampton Roads Hazard Mitigation Plan Update on July 29, 2021 at 5 p.m. Members of the public may register at:

HTTPS://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN_XQGSYLVPRBG9EHE8GX00BW



FW: Portsmouth Health Survey| Hampton Roads Hazard Mitigation Plan Meeting

Rubino, Joseph <rubinoj@portsmouthva.gov>

Fri 7/23/2021 2:23 PM

To: John Sadler <jsadler@hrpdcva.gov>

This was posted by our PIO.

Respectfully,

Captain Joseph M. Rubino
Interim Deputy Coordinator of Emergency Management
Office of Emergency Management
Portsmouth Fire, Rescue and Emergency Services
(757) 393-8338 ext. 279 (office)
(757) 560-6220 (cell)

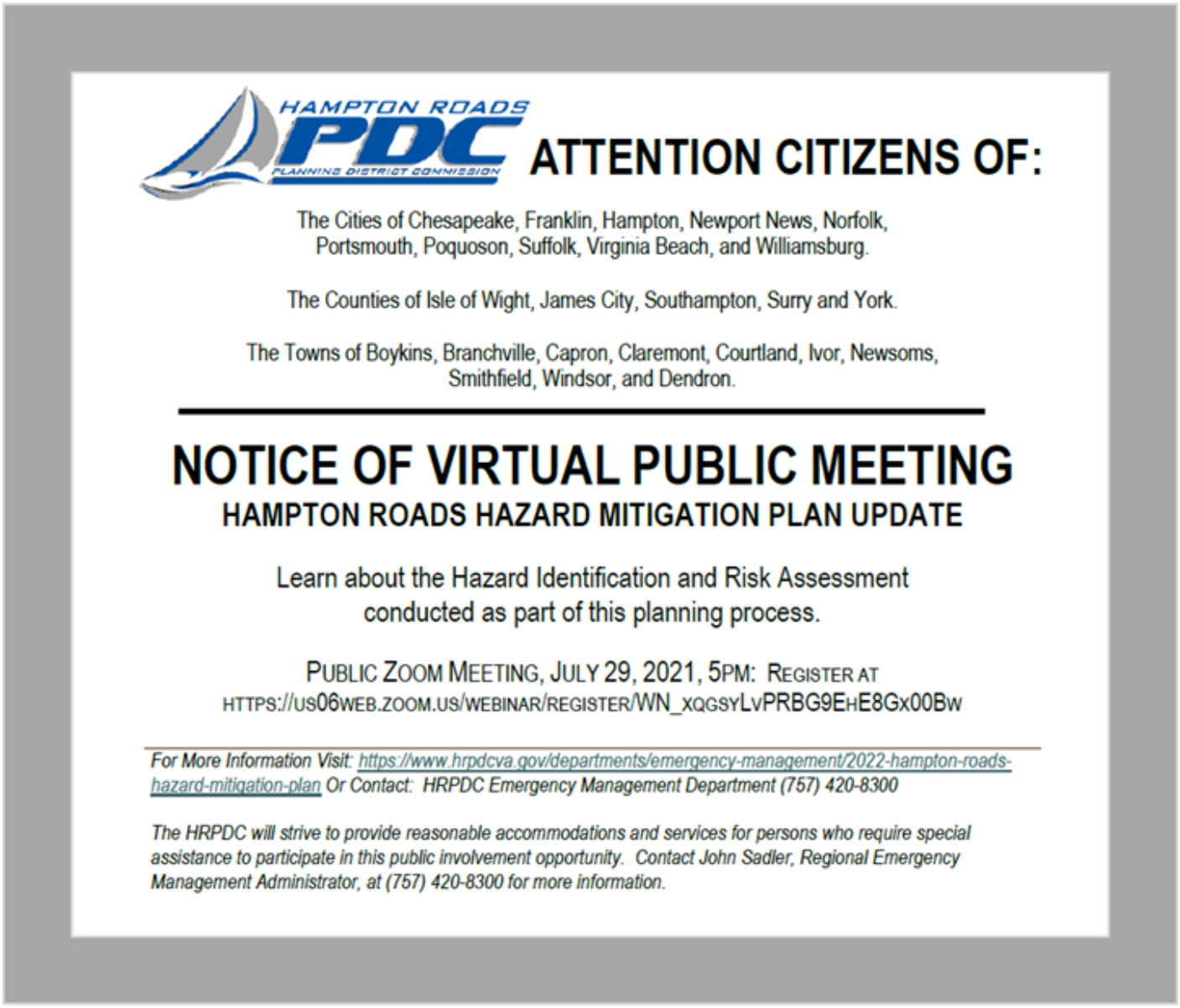
From: Woodson, Dana <woodsond@portsmouthva.gov>
Sent: Tuesday, July 20, 2021 4:43 PM
To: Woodson, Dana <woodsond@portsmouthva.gov>
Subject: Portsmouth Health Survey| Hampton Roads Hazard Mitigation Plan Meeting

Portsmouth Community Health Survey 2021

The Portsmouth Health Department needs your help. Share your opinions by completing the short Community Health Survey 2021 in less than 10 minutes.

Why is this so important?
Your responses will help your local health department provide services, programs, and education specific to the needs of Portsmouth.

You can participate in 1 of 2 ways:
1. Scan the QR code and complete the survey
2. Click this link
https://survey123.arcgis.com/…/cc34c92dccb542d2a5d2cfa01a31…
Thank you for sharing your opinions with the Portsmouth Health Department.



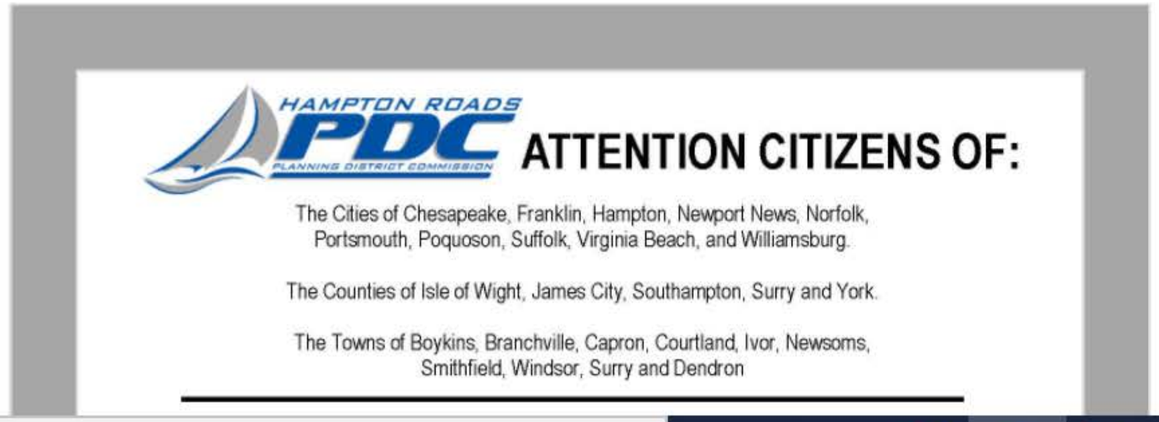
ZOOM MEETING LINK:

HTTPS://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN_XQGSYLVPRBG9EHE8GX00BW

Hampton Roads Hazard Mitigation Plan Meeting

When: July 29, 2021 06:00 PM until 07:00 PM Eastern Time Zone

Event Details:



PUBLIC NOTICE

THE AGRICULTURAL ADVISORY COMMITTEE

WILL CONDUCT MEETINGS ON

APRIL 1ST, APRIL 22ND, JULY 22nd, OCTOBER 28TH AT 6:00 P.M.

CITY COUNCIL CHAMBER
442 WEST WASHINGTON STREET

Permanent public notice. Please do not remove

HAMPTON ROADS PDC

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg

The Counties of Isle of Wight, James City, Southampton, Surry and York

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Hazard Identification and Risk Assessment conducted as part of this planning process.

PUBLIC ZOOM MEETING JULY 29, 2021, 5PM. REGISTER AT: HTTPS://US02WEB.ZOOM.US/WEBINAR/REGISTER/WN_KX6XHCJPRBGBE4ENXD3BW

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management-department/hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Seiler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

PUBLIC NOTICE

SUFFOLK COMMUNITY POLICY AND MANAGEMENT TEAM (CPMT) WILL CONDUCT REGULAR MEETINGS ON THIRD WEDNESDAYS OF EACH MONTH AT 9:00 AM

SUFFOLK HEALTH & HUMAN SERVICES BUILDING, THIRD FLOOR
135 HALL AVENUE
SUFFOLK,VA 23434

Permanent public notice. Please do not remove

PUBLIC NOTICE

SUFFOLK WETLANDS BOARD

WILL CONDUCT MEETINGS ON

THIRD THURSDAY OF EACH MONTH AT 6:00 P.M.

CITY COUNCIL CHAMBERS
442 WEST WASHINGTON STREET

PUBLIC NOTICE

SUFFOLK HUMAN SERVICES ADVISORY BOARD

WILL CONDUCT REGULAR MEETINGS ON THE

SECOND WEDNESDAY OF EVERY OTHER MONTH AT 4:00 P.M.

NEXT MEETING DATES:

February 10, 2021	October 13, 2021
April 14, 2021	December 8, 2021
June 9, 2021	[redacted]
August 11, 2021	

SUFFOLK HEALTH & HUMAN SERVICES BLDG.
135 HALL AVENUE, SUITE B
THIRD FLOOR CONFERENCE ROOM

PUBLIC NOTICE

FINANCE COMMITTEE

WILL CONDUCT A MEETING

1ST WEDNESDAY OF THE 2ND MONTH FOLLOWING THE END OF THE 1ST QUARTER OF EACH FISCAL YEAR
CITY COUNCIL CONFERENCE ROOM
442 W. WASHINGTON ST
SUFFOLK, VA 23434

MEETING DATES

January 20, 2021
May 12, 2021
August 5, 2021
November 18, 2021

PUBLIC NOTICE

SUFFOLK PLANNING COMMISSION

WILL CONDUCT MEETINGS ON

THIRD TUESDAY OF EACH MONTH AT 2:00 P.M.

CITY COUNCIL CHAMBERS
442 WEST WASHINGTON STREET

Permanent public notice. Please do not remove

PUBLIC NOTICE

SUFFOLK BOARD OF ZONING APPEALS

WILL CONDUCT MEETINGS ON

SECOND TUESDAY OF EACH MONTH AT 2:00 P.M.

CITY COUNCIL CHAMBERS
442 WEST WASHINGTON STREET

Permanent public notice. Please do not remove

Public Notice

Suffolk Library Advisory Board

will conduct regular meetings on Tuesdays at 2:00pm

Learn more about the Library Advisory Board at suffolkva.us/boards

SUFFOLK

HAMPTON ROADS PDC
PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Surry Towns.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Share your local knowledge and thoughts on the Hampton Roads Hazard Mitigation Plan update process.

PUBLIC ZOOM MEETING, APRIL 20, 2021, 6PM: CLICK HERE TO REGISTER OR VISIT HTTPS://ZOOM.US/WEBINAR/REGISTER/WN_P-6S6OVTTRUNOW85RXG8SG

TAKE THE PUBLIC SURVEY: CLICK HERE OR SCAN QR CODE

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/hampton-roads-hazard-mitigation-plan
Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator at (757) 420-8300 for more information.

Lobby is
Please call

PUBLIC MEETING NO

PUBLIC VIRTUAL MEETING NOTICE
CITY OF VIRGINIA BEACH
Deferred Compensation Boards

On March 12, 2020, Governor Northam declared a state of emergency due to COVID-19. Because of the catastrophic nature of the declared emergency, it is impracticable and unsafe to assemble a quorum of the Deferred Compensation Board in a single location. In accordance with Virginia Code § 2.2-3708.2, Virginia Code § 15.2-1413 and the City's Continuity of Government Ordinance adopted on September 15, 2020, and Chapter 1289 of the 2020 Acts of Assembly as amended, I hereby call for a **MEETING BY ELECTRONIC COMMUNICATION MEANS** of the Deferred Compensation Board.

Six or more members of the
Deferred Compensation Board
will be meeting on
Friday, April 16, 2021
2 p.m.
OPEN TO THE PUBLIC
Register and join the meeting using the link below

https://vbgov.webex.com/vbgov/j.php?MTID=m6fbbde20de9e14efad09e0c3034f3910

You may contact the City Liaison for the Deferred Compensation Board , Jessa Johnson at 757-385-8898.

VIRGINIA BEACH

BAYFRONT ADVISORY COMMISSION
2101 MAIN STREET, SUITE 710
VIRGINIA BEACH, VIRGINIA 23451
PHONE (757) 385-2908
FAX (757) 385-5607

BAYFRONT ADVISORY COMMISSION
April 15, 2021, 3:30 p.m.
VIRTUAL WEBEX MEETING

APPROVAL OF MINUTES
Review and Approval of Minutes from 3/18/2021

CHAIRMAN'S REPORT
Welcome Guests and Introductions – Phil Davenport, Chair

STAFF REPORTS & UPDATES

COMMITTEE REPORTS & UPDATES
Design – Bob Magoon, Joe Bovee (volunteer)
Communications – Vacant
Public Safety, Transit, Parking & Pedestrian Access – Charles Malbon

PRESENTATIONS

1. **Beach Building Group, Inc., 2332 Pleasure House Road - Conditional Change of Zoning** (R-7.5 Residential District to Conditional A-18 Apartment District)
2. **Martin Bay Apartments - Conditional Change of Zoning** (B-2 and PDH-1 Districts to Conditional B-4 Mixed Use District) **Conditional Use Permit** (Multi-Family Dwellings)

OLD BUSINESS

NEW BUSINESS

COMMUNITY REPORTS & UPDATES

ADJOURN

If you wish to make comments virtually during the meeting, please follow the **two-step process** below:

1. Register online for the Virtual Meeting at https://vbgov.webex.com/vbgov/onstage/g.php?MTID=e0fe0c7688d3096fd1439870de1784289f3
2. Register with Mark Shea by calling 757-385-2908 or via email at MEShea@vbgov.com by noon (12:00 p.m.) on April 15, 2021.

Virginia Beach
COMMUNITY DEVELOPMENT CORPORATION
Building & Preserving Communities since 1985

SPECIAL MEETING OF THE VBCDC BOARD OF DIRECTORS
BY ELECTRONIC COMMUNICATION MEANS MEETING NOTICE

April 12, 2021

On March 12, 2020, Governor Northam declared a state of emergency due to COVID-19. Because of the catastrophic nature of the declared emergency, it is impracticable or unsafe to assemble a quorum of the Virginia Beach Community Development Corporation (VBCDC) Board of Directors in a single location; and the purpose of meeting is to discuss or transact the business required or necessary to continue operations.

In accordance with the Virginia Beach City Code 2-21, the Virginia General Assembly Budget Amendment XII, and Virginia Code § 2.2-3708.2(A)(3), and by the authority vested in Frank McKinney as President of VBCDC's Board of Directors, a **SPECIAL MEETING BY ELECTRONIC COMMUNICATION MEANS** of the VBCDC **BOARD OF DIRECTORS,** will be held on Saturday, **April 17, 2021 at 8:30 A.M.**

In accordance with Virginia Code § 2.2-3708.2(A)(3), this **SPECIAL MEETING BY ELECTRONIC COMMUNICATION MEANS,** will be held **virtually** with Board Members participating via video/audio conference. Citizens should call 757-500-2740 if you experience any interruption in the telephonic or video broadcast of the meeting. Citizens should register in advance using the following registration link: https://attendee.gotowebinar.com/register/2482736111187247120.

After registering, you will receive a confirmation email containing information about joining the meeting. For questions or assistance registering, please call 757-500-2740 or email to sdirector@vbcdc.org.

Sincerely,
Frank McKinney
President, VBCDC Board of Directors

Cc: VBCDC Board of Directors
Jessica Guglielmo, President and CEO, VBCDC
Ashley Jarvis, Manager of Board Relations, VBCDC
Amanda Barnes, City Clerk, City of Virginia Beach
FOIA Officer, City of Virginia Beach

Advertising Advisory Committee
Second Thursday at 11:00 a.m.
Convention & Visitors Bureau Boardroom
2101 Parks Avenue, Suite 500
Call for more information: 385-4700

Agriculture Advisory Commission
Second Monday at 7:00 p.m. (Jan., Apr., Jul, Oct)
Municipal Center, Bldg. 14
Call for more information: 385-5775

Animal Control Unit Advisory Board
Wednesday at 6:30 p.m.
(Feb. 6th, May 8th, Sept. 11th, & Nov. 6th, 2019)
Animal Care and Adoption Center
341 S. Birdneck Road
Call for more information: 385-4444

Arts & Humanities
First Thursday at 5:00
(No meeting Jan, Apr, J
(Executive Committee
Sandler Center for t
201 Market Street,
Call for more infor

Bayfront Advis
Drive Advisory Co
3rd Thursday at 5
Ocean Park Volu
3769 E. Sandba
Call for more
Subcommittee

Bikeways & Trails Advisory Committee
Third Monday at 3:30 p.m.
(no meeting Feb, Apr, Jul, Dec)
Parks & Rec Administration Building
2154 Landstown Road, Room 101
Call for more information: 385-1115

Board of Zoning Appeals
First Wednesday at 2:00 p.m.
Municipal Center, Bldg. 1 - Council Chambers
(Training/Lunch: 12:00 - 1:00)
(Informal: 1:00, Bldg. 1 - Room 234)
Call for more information: 385-8074
(Van Trip - 9:00, Parking Lot at the Convention Center
(West side parking lot)

Chesapeake Bay Preservation Board
First Monday at 10:00 a.m.; Informal @ 9:00
Municipal Center, Bldg. 1 - Council Chambers
(Call for more information: 385-4621)

Community Services Board
Last Thursday, 8:30-10:30 a.m. (No meetings in
July and December)
August and November Meeting - Third Thurs
3432 Virginia Beach Blvd., Conf. Room 339
Call for more information: 385-3202

Executive Committee
Third Thursday, 4:00-5:00 p.m.
3432 Virginia Beach Blvd., Room 339

Advocacy/Education Committees
As needed immediately following CS

Developmental Services (Every othe
Second Thursday, every other mon
9:00-10:30 a.m. (no December me
297 Independence Blvd., Suite 4

Mental Health Substance Abuse
Second Thursday, every other m
12:00-1:30 p.m. (no December
297 Independence Blvd., Suite

Historic Preservation Com
1st Wednesday at 5:00 p.m.
Convention Center, 1000 19th St
Call for more information: 3858

Executive Committee
Third Wednesday at 12:00
2875 Sabre St, Suite 500

Student Leaders Com
Second Wednesday at 5
Convention Center, 10

Historical Review B
Third Wednesday at 4:00
875 Sabre Street, Suite
Call for more informa

Housing Advisor
Third Monday at 3:0
Strategic Growth Ar
525 Main Street, S

Hampton Roads Hazard Mitigation Planning Committee Meeting

Virtual
Tuesday, April 20, 2021
6:00 – 8:00 p.m.

This meeting will give members of the public an opportunity to discuss hazard related concerns within their community. Those interested in attending can register for the virtual meeting by visiting https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg

For questions, please contact Danielle Progen, Emergency Management Coordinator (385-8466)

Planning and Community Development Design Standards and Review Guidelines Public Meeting

VIRTUAL

Thursday, April 15, 2021
6:30 p.m.

Members of the public wishing to attend the meeting may do so via WebEx and may use this link to access the meeting: https://vbgov.webex.com/vbgov/onstage/g.php?MTID=e122f19d0ae1cdd3e8230aefff8c57fe4

Members of the public wishing to speak on any agenda item may do so by registering in advance. They may register by calling Mark Reed, Historic Preservation Planner at 757-385-8573 up to 30 minutes prior to the start of the meeting. They should also register for the meeting at the above link.

Advertising Advisory Committee

Virtual
Thursday, April 15th, 2021
11:00 a.m.

WEBEX Meeting Link:
https://vbgov.webex.com/vbgov/j.php?MTID=me9bb4f23a4dcb26eb5102351e7b7ec5a

Meeting Number: 157 894 4845
Password: BVspxPhj265

For additional questions, please contact Asia White 385-6674

ELECTORAL BOARD
City of Virginia Beach
P.O. BOX 4247
VIRGINIA BEACH, VIRGINIA 23454-0247

PUBLIC NOTICE

The City of Virginia Beach
Electoral Board
will hold a meeting on

Wednesday, April 14, 2021
1:00 p.m.
at
Voter Registration & Elections
located in
Building 14 at the Municipal Center

Historic Preservation Commission Student Leaders Committee

Virtual Meeting
Wednesday, April 14, 2021
5:00 p.m.

Members of the public wishing to attend the meeting may do so via WebEx and may use this link to access the meeting: https://vbgov.webex.com/vbgov/onstage/g.php?MTID=ee8263feea2b69523dc8512811f0da5de

Members of the public wishing to speak on any agenda item may do so by registering in advance. They may register by calling Mark Reed, Historic Preservation Planner at 757-385-8573 up to 30 minutes prior to the start of the meeting. They should also register for the meeting at the above link.

For more information, call 385-8573

Virginia Beach Mayor's Committee for Persons with Disabilities

Virtual Meeting
Thursday, April 15, 2021
3:45 – 5:00 p.m.

Webex
https://vbgov.webex.com/vbgov/j.php?MTID=mae72e9b7aeb4ecece5328473c2ccf0ede
Meeting number: 180 521 8011
Password: beach

Join by phone
+1-415-655-0003 US Toll
Access code: 180 521 8011

For more information contact Amy Benabou 385-2665

adopted on September 15, 2020, and Chapter 1289 of ...
hereby call for a ***MEETING BY ELECTRONIC COMMUNICATION MEANS*** *of the Deferred Compensation Board..*

Six or more members of the
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will be meeting on
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2 p.m.
OPEN TO THE PUBLIC
Register and join the meeting using the link below

https://vbgov.webex.com/vbgov/j.php?MTID=m6fbbde20de9e14efad09e0c3034f3910

You may contact the City Liaison for the Deferred Compensation Board , Jessa Johnson at 757-385-8898.

COMMITTEE REPORTS & UPDATES
Design – Bob Magoon, Joe Bovee (volunteer)
Communications – Vacant
Public Safety, Transit, Parking & Pedestrian Access – Charles Malbon

PRESENTATIONS

1. **Beach Building Group, Inc., 2332 Pleasure House Road - Condition**
   Zoning (R-7.5 Residential District to Conditional A-18 Apartment Distri
2. **Marlin Bay Apartments - Conditional Change of Zoning** (B-2 and P
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NEW BUSINESS

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   https://vbgov.webex.com/vbgov/onstage/g.php?MTID=e0fe0c76f8
   289f3
2. Register with Mark Shea by calling 757-385-2908 or via email at
   by noon (12:00 p.m.) on April 15, 2021.

Hampton Roads Hazard Mitigation Planning Committee Meeting

Virtual

Tuesday, April 20, 2021
6:00 – 8:00 p.m.

This meeting will give members of the public an opportunity to discuss hazard related concerns within their community. Those interested in attending can register for the virtual meeting by visiting https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg

For questions, please contact Danielle Progen, Emergency Management Coordinator (385-8466)

Planning and Community Development
Design Standards and Review Guidelines Public Meeting

VIRTUAL

Thursday, April 15, 2021
6:30 p.m.

Adve

Coronavirus Information

For information about Coronavirus, visit our emergency site (https://emergency.vbgov.com/coronavirus) at https://emergency.vbgov.com/coronavirus (https://emergency.vbgov.com/coronavirus).

Join Virtual Public Meeting April 20 for Hampton Roads Hazard Mitigation Plan Update

Public survey option available to help prioritize various hazard types

Friday, April 09, 2021

The first public meeting for the 2022 Hampton Roads Hazard Mitigation Plan will take place April 20, 2021 from 6 to 8 p.m. online via Zoom. Residents will have an opportunity to discuss hazard-related concerns within the community and share thoughts on the Hampton Roads Hazard Mitigation Plan update process.

A Hazard Mitigation Plan is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. This planning process is structured around the four phases of the Disaster Mitigation Act of 2000, which the region's planning consultant has aligned with the 10 steps of the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS). Having an adopted Hazard Mitigation Plan that is updated every five years helps ensure each community in the region is eligible for federal disaster funding following a disaster event.

The planning committee has initially identified 13 types of hazards for inclusion in the plan to include flooding, sea level rise, tropical storm, shoreline erosion and communicable disease. Citizen participation in the public meeting will allow the planning team to understand what types of hazards are of most concern to residents and what hazards to prioritize.

Register for the Meeting
Members of the public can register to participate in the public meeting here (https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg) or by visiting https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg (https://zoom.us/webinar/register/WN_P-6S6ovtTRuNow85rXG8Sg).

Take the Public Participation Survey
The public participation survey gives members of the public an opportunity to provide input on the type of hazards they are most concerned about within their community. This information will help inform various parts of the planning process, including mitigation actions as planning teams move forward. Take the survey here (https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZtrQAAAAAAAAAAAAO__dKuUnBUQUtCNklZS1RTSzRaUFQwVUg3QVU1QVFGRS4u).

For more information regarding 2022 Hampton Roads Hazard Mitigation Plan, the FEMA Community Rating System program and to follow the planning process, visit https://www.hrpdcva.gov (https://www.hrpdcva.gov/).

###

CONTACT INFORMATION

Julie Hill

(757) 385-4436 (tel:7573854436)

jhill@vbgov.com (mailto:jhill@vbgov.com)

Search

View News by Category

About the City (/about)

County Administrator
Neil A. Morgan

Deputy County Administrator
Mark L. Bellamy, Jr.

June 30, 2021

Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, Virginia 23320

To Whom It May Concern:

On June 30, 2021, the flyer concerning the public's ability to participate in the Hampton Roads Hazard Mitigation Plan update was posted in the County Administration building located at 224 Ballard Street, Yorktown. A screenshot of the posting is attached to this letter.

If I can be of any further assistance to you, please do not hesitate to contact me.

Sincerely,

Heather L. Schott, CMC
Legislative Assistant/Deputy Clerk

Attachment

HAMPTON ROADS PDC
PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

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HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Hazard Identification and Risk Assessment conducted as part of this planning process.

PUBLIC ZOOM MEETING, JULY 29, 2021, 5PM: REGISTER AT
HTTPS://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN_XQGSYLVPRBG9EHE8GX00BW

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

Hampton Roads
Hazard Mitigation Plan Update

Workshop #2 Minutes

September 28, 2021, 10:00 am – Virtual Meeting via Zoom

AGENDA

- Introductions
- Review of Planning Process
- Brainstorming about Goals & Objectives
- Examining the Plan's Existing Goals & Objectives
- Examining Capabilities
- Next Steps & Schedule

MEETING NOTES

- Objective 1.4 should be expanded to specify that diverse, equitable and inclusive government services, as well as government functions, should be maintained throughout the duration of hazard events, not just during the event itself.
- The group determined that the FEMA comments for High Hazard Potential Dams necessitates adding ", including High Hazard Potential Dams" to Objective 1.3
- Objective 2.1 was changed to specify citizens, not just property owners, should take responsibility for reducing vulnerability.
- Objective 2.2 was added to ensure hazard education is provided across all elements of the communities, a concept taken from Hampton's *Living with Water* effort.
- Objective 2.3 was added to expand the partnership concept from Goal 3 into the education focus of Goal 2. Objective 2.3 focuses on using partnerships to facilitate access to educational and citizens feedback opportunities.
- Objective 3.4 was expanded to include private organizations in partnership development.
- The group generally appeared to prefer a hybrid approach for Workshop #3 and the development of new and revised mitigation actions for 2022.

ATTENDEES

Danielle	Progen	Virginia Beach
James	Haluska	jdhaluska@gmail.com
Harrison	Bresee	Va DEM
Paul	Long	Thomas Nelson Community College
Steve	Pincus	Virginia EMS
Amy	Parker	York County
Ray	Phelps	Surry County
Michael	Player	Virginia EMS
Marissa	Jones	Virginia Beach
David	Jurgens	City of Chesapeake
Christina	Johnson	Jefferson Labs
Whitney Katchmark		Hampton Roads PDC
Louis	Bott	City of Newport News

Larry	Snyder, Jr.	City of Williamsburg
Riana Rich		
Matthew	Simons	City of Norfolk
Anas	Malkawi	Hampton Roads Sanitation District
Brian	Spicer	City of Suffolk
David	Luke	U.S. Department of Energy
Daniel	Hudson	City Norfolk
Carolyn	Malloy	Virginia EMS
Ana	Elezovic	City of Chesapeake
Heather	Brown	City of Newport News
Fire & Life Safety, Sean Segerblom		York County
William	Saunders	Town of Windsor
David	Long	Virginia EMS
Jim	Kaste	William & Mary
Lucy	Stoll	City of Chesapeake
Judith	Shuck	Virginia EMS
PJ	Scully	City of Virginia Beach
Sara	Ruch	James City County
John	Millspaugh	Arcadis
Ed Barnette		American Red Cross
John	Sadler	Hampton Roads Planning District Commission
Patrick	Hughes	City of Chesapeake
Richard	Stephens	City of Suffolk
Renee	Hupp	FEMA
George	Glazner	City of Newport News
Judith	Hinch	
Michael	Woolson	James City County
Markiella	Moore	Chesapeake NEMAC
Mohammad	Shar	City of Hampton
Alex	Gurchinoff Schlebach	U.S. Army Corps of Engineers
Tristian	Barnes	City of Norfolk
Katie	Moody	Plan RVA
Kenton	Towner	William & Mary
William	Egerton	American Red Cross
Danielle	Spach	City of Virginia Beach
Gail	Whittaker	York County
Whitney	McNamara	City of Virginia Beach
Jeff	Merritt	
Mark	Heckler	City of Chesapeake
Jay	Ruffa	Crater Planning District Commission
Beth	Lewis	Southampton County
Benjamin	McFarlane	Hampton Roads Planning District Commission
Carlee	Smith	City of Franklin
Heather	Stanton	City of Chesapeake
Will	Drewery	Isle of Wight County

Bobby	Gelormine	City of Chesapeake
Scott	Smith	City of Hampton
Hui-Shan	Walker	City of Hampton
Rick	Berquist	William & Mary
Elaina	Dariah	theplanningcouncil.org
Michael	Teener	James City County
Nikki-NN DEM		City of Newport News
Tamara	Bullock	City of Hampton
Carolyn	Heaps	City of Hampton
Leigh Ann	Erdman	U.S. Dept of Veterans Affairs
Cashayla	Rodgers	City of Hampton
Tracy	Hanger	City of Hampton
Robert	Angrisani	U.S. Army Corps of Engineers
Ross	Weaver	Wetlands Watch
Kent	Henkel	York County
Jalesha	Smith	City of Norfolk
Kaleen	Lawsure	Old Dominion University
Kyle	Spencer	City of Norfolk

INVITEES

Email invitations were issued to each of the individuals shown on the following email invite. In addition, each primary contact for the communities forwarded the message and made additional phone calls to their staff and interested persons. Additional advertisements by individual communities are on file with the HRPDC and will be included in the appendices of the final 2022 Hazard Mitigation Plan. Stakeholders were also invited directly by the PDC, including:

PLANRVA
Crater PDC
Va Dept of Mines, Minerals and Energy
USACE
Va Dept of Environmental Quality
Va Dept of Conservation and Recreation
Va Dept of Forestry
Va Institute of Marine Science
Port of Virginia
Cox Communications
Hampton Roads Sanitation District
Sentara
Fort Monroe Authority
William & Mary
Old Dominion University
Va Dept of Health
Dominion Energy

Leigh.morgan.chapman@gmail.com

Subject: Hampton Roads Hazard Mitigation Plan Update - Workshop #2
Location: https://us02web.zoom.us/j/81131741938?pwd=eDBmMkRqeFdiRFBsQUNsWElmWU5hdz09

Start: Tue 9/28/2021 10:30 AM
End: Tue 9/28/2021 12:00 PM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: John Sadler

From: John Sadler <jsadler@hrpdcva.gov>
Sent: Thursday, September 9, 2021 4:11 PM
To: John Sadler; Slater, Noelle; Parson, Shane; aubrie.mcclendon2@redcross.org; u2pilot@verizon.net; lisa.mike@redcross.org; william.egerton@redcross.org; john.millspaugh@arcadis.com; mayor; boykins@townofboykinsva.com; harold.futrell; kitchenswelding1@cs.com; eelliott@cityofchesapeake.net; kfinnerty@cityofchesapeake.net; lstoll@cityofchesapeake.net; mbarber@cityofchesapeake.net; phughes@cityofchesapeake.net; rbraidwood; Robert Gelormine; sawan@cityofchesapeake.net; judy.hinch@cox.net; markiella@verizon.net; tammy.waldroup@cnu.edu; townclaremont@aol.com; jeff.merritt@cox.com; jessie.lacks@cox.com; kyle.martin@cox.com; jruffa@craterpdc.org; satcinc53@yahoo.com; sylvia.d.white@dominionenergy.com; jshuck@vaems.org; bpierce@vaems.org; dlong@vaems.org; mplayer@vaems.org; spincus@vaems.org; mari.radford@fema.dhs.gov; renee.hupp@fema.dhs.gov; robert.c.starr2.civ@mail.mil; jhutcheson@fmauthority.com; crsmith@franklinva.com; dgoodwin; Vernie Francis; bamajor@gloucesterva.info; Heaps, Carolyn; hwalker@hampton.gov; sbond@hampton.gov; tracy.hanger@hampton.gov; Ben McFarlane; John Sadler; Whitney Katchmark; amalkawi@hrsd.com; jsee@hrsd.com; Rob Case; vsmiley@hrtransit.org; lgdotolo@aol.com; hackett@vaems.org; phumphries; wdrewery@isleofwightus.net; office; michael.woolson@jamescitycountyva.gov; ryan.ashe@jamescitycountyva.gov; sara.ruch; david.luke@science.doe.gov; cjohnson@jlab.org; robyn.niss@kimley-horn.com; jgarrett@cityofchesapeake.net; mheckler@cityofchesapeake.net; eric.seymour@noaa.gov; jeff.orrock@noaa.gov; ruth.reich@navy.mil; gglazner@nnva.gov; Heather L. Brown; johnsonjs@nnva.gov; bottlj@nnva.gov; ndelvalle@nnva.gov; daniel.hudson@norfolk.gov; jalesha.smith@norfolk.gov; james.redick; Spencer, Kyle; matthew.simons@norfolk.gov; michael.goldsmith@norfolk.gov; scott.mahone@norfolk.gov; Barnes, Tristian; jhoernig@odu.edu; lmason@odu.edu; edariah@theplanningcouncil.org; KMoody@planrva.org; SStewart@planrva.org; john.young; kenneth.somerset@poquoson-va.gov; Michael.Bryant; rubinoj@portsmouthva.gov; mangubatn@portsmouthva.gov; djurgens@cityofchesapeake.net; mark.rath@rivhs.com; leigh.morgan.chapman@gmail.com; lrbush@sentara.com; ahowell@smithfieldva.gov; mstallings; blewis@southamptoncounty.org; llowe@southamptoncounty.org; mjohnson; bspicer@suffolkva.us; rstephens; rphelps; longp@tncc.edu; debbie.coon@townebank.net; debbie.wright@townebank.net; ronnie.greene@townebank.net; alex.j.gurchinoff.schlebach@usace.army.mil; greggory.g.williams@usace.army.mil; paul.b.moye@usace.army.mil; robert.s.angrisani@usace.army.mil; stephen.j.harrison@uscg.mil; leighann.erdman@va.gov; brian.russell@vdem.virginia.gov; bruce.sterling@vdem.virginia.gov; Bresee, Harrison (VDEM); john.hisghman@dof.virginia.gov; larry.hill@vdh.virginia.gov; john.cooke@vdh.virginia.gov; perla.santillan@vdh.virginia.gov; anne.witt@dmme.virginia.gov; gluptonsr@gmail.com; Danielle C. Progen; dtopczynski@vbgov.com; marajones@vbgov.com; Danielle R. Spach; Whitney K. McNamara; mason@vims.edu; jkibler@southernco.com; bezell@odu.edu; klawsure@odu.edu; ross.weaver@wetlandswatch.org; jmkaste@wm.edu; katowner@wm.edu; deagle; lsnyder; wsaunders@windsor-va.gov; aparker@yorkcounty.gov; whittgl@yorkcounty.gov; henkel@yorkcounty.gov; Sean Segerblom; kopczyns; susan.kassel@yorkcounty.gov

Subject: Hampton Roads Hazard Mitigation Plan Update - Workshop #2
When: Tuesday, September 28, 2021 10:30 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: https://us02web.zoom.us/j/81131741938?pwd=eDBmMkRqeFdiRFBsQUNsWElmWU5hdz09

At this meeting, we will focus on updating and revising the existing plan's goals and objectives. Keeping in mind each community's changes in capabilities, we will walk through the existing goals and make sure they match the ever-changing landscape of hazard mitigation in Hampton Roads. CRS communities need to send at least 2 representatives (hopefully the same 2!), and all communities and stakeholders need to plan on having representation at the meeting. We recommend you work through the attached capability worksheet with your community staff prior to this meeting.

Feel free to forward to anyone in you agency you believe would be interested.

Join Zoom Meeting
https://us02web.zoom.us/j/81131741938?pwd=eDBmMkRqeFdiRFBsQUNsWElmWU5hdz09

Meeting ID: 811 3174 1938
Passcode: 929758
One tap mobile
+16468769923,,81131741938#,,,,*929758# US (New York)
+13017158592,,81131741938#,,,,*929758# US (Washington DC)

Dial by your location
- +1 646 876 9923 US (New York)
- +1 301 715 8592 US (Washington DC)
- +1 312 626 6799 US (Chicago)
- +1 408 638 0968 US (San Jose)
- +1 669 900 6833 US (San Jose)
- +1 253 215 8782 US (Tacoma)
- +1 346 248 7799 US (Houston)

Meeting ID: 811 3174 1938
Passcode: 929758
Find your local number: https://us02web.zoom.us/u/kIjKaOrjY

Hampton Roads
Hazard Mitigation Plan Update

Workshop #3 Minutes

November 9, 2021, 1:00 pm – Virtual Meeting via Zoom

AGENDA

- Introductions
- Review of Planning Process
- Discussion of Prevention Mitigation Strategies
- Discussion of Property Protection Mitigation Strategies
- Discussion of Natural Resource Protection Mitigation Strategies
- Discussion of Structural Project Mitigation Strategies
- Discussion of Emergency Services Mitigation Strategies
- Discussion of Public Education & Awareness Mitigation Strategies
- STAPLEE Evaluation Review
- Existing and Proposed Regional Mitigation Actions
- Suggested Reading Materials
- Next Steps & Schedule

MEETING NOTES

- The group reviewed various types of mitigation strategies and discussed examples of each type, with many examples from around the region.
- The STAPLEE evaluation process for reviewing individual mitigation actions was reviewed.
- A long discussion on mitigation actions from the 2017 plan resulted in changes to those actions. Action 1 was modified to remove sidescan LIDAR and replaced with desire to collect lowest floor elevations by collecting existing or creating new Elevation Certificates. Action 2 was edited to reflect desire to use AHAC and HRPDC to develop additional regional mitigation strategies and host annual workshop on funding. Action 3 was edited to refocus on HAZUS input and output data. Group decided to remove Action 4 because a Commodity Flow Study has been identified as a capability gap in the regional THIRA and has been referred to the LEPC for completion.
- The group discussed addition of several new regional mitigation actions regarding: NFIP repetitive flood loss data analysis at the state or regional level and preparation of repetitive flood loss area analyses; use of radon test kits to test structures; verifying status of significant hazard dams region-wide, and strengthening/creating transportation networks for evacuation; and partnering with private companies on critical lifeline continuity.

ATTENDEES

Amy	Parker	York County
Ray	Phelps	Surry County
Vernie	Francis	Franklin
Natalie	Rountree	Franklin
Larry	Snyder	Williamsburg
Don	Clayton	US Coast Guard
Matthew	Simons	Norfolk
Chris	Bruce	VDEM

Anas	Malkawi	HRSD
Daniel	Hudson	Norfolk
Ana	Elezovic	Chesapeake
Heather	Brown	Newport News
William	Saunders	Windsor
Lucy	Stoll	Chesapeake
Judith	Shuck	Eastern VA Healthcare Coalition
Riana	Rich	HRPDC
John	Millspaugh	Portsmouth Consultant
John	Sadler	HRPDC
George	Glazner	Newport News
Judy	Hinch	ODU
Michael	Woolson	James City County
M.	Moore	Chesapeake NEMAC
Mark	Heckler	Hampton Roads Chiefs of Police
	Gurchinoff	
Alex	Schlebach	USACE
Hannah	Sabo	Hampton
Sean	Segerblom	York County
Tristian	Barnes	Norfolk
Katie	Moody	PlanRVA
Danielle	Spach	Virginia Beach
Gail	Whittaker	York County
Whitney	McNamara	Virginia Beach
Jim	Redick	Norfolk
Mike	Bryant	Poquoson
Angela	King	Hampton
Beth	Lewis	Southampton County
greggory	williams	USACE
Benjamin	McFarlane	HRPDC
Carlee	Smith	Franklin
Bobby	Gelormine	Chesapeake
kenneth	somerset	Poquoson
Riana	Rich	HRPDC
Hui-Shan	Walker	Hampton
Michael	Teener	James City County
Carolyn	Heaps	Hampton
Leigh		
Ann	Erdman	U.S. Dept of Veterans Affairs
Tracy	Hanger	Hampton
Robert	Angrisani	USACE
Kent	Henkel	York County
Jalesha	Smith	Norfolk
Kaleen	Lawsure	ODU
Kyle	Spencer	Norfolk

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Va Dept of Forestry
Va Institute of Marine Science
Port of Virginia
Cox Communications
Hampton Roads Sanitation District
Sentara
Fort Monroe Authority
William & Mary
Old Dominion University
Va Dept of Health
Dominion Energy

Leigh.morgan.chapman@gmail.com

From: John Sadler <jsadler@hrpdcva.gov>
Sent: Friday, November 5, 2021 10:08 AM
To: 'leigh.morgan.chapman@gmail.com'
Subject: Invite List - Workshop 3

Flag Status: Flagged

'noelle.slater@aecom.com'; 'Parson, Shane'; 'aubrie.mcclendon2@redcross.org'; 'u2pilot@verizon.net'; 'lisa.mike@redcross.org'; 'william.egerton@redcross.org'; 'john.millspaugh@arcadis.com'; 'mayor@townofboykinsva.com'; 'boykins@townofboykinsva.com'; 'harold.futrell@vadoc.virginia.gov'; 'kitchenswelding1@cs.com'; 'eelliott@cityofchesapeake.net'; 'kfinnerty@cityofchesapeake.net'; 'lstoll@cityofchesapeake.net'; 'mbarber@cityofchesapeake.net'; 'phughes@cityofchesapeake.net'; 'rbraidwood@cityofchesapeake.net'; 'Robert Gelormine'; 'sawan@cityofchesapeake.net'; 'judy.hinch@cox.net'; 'markiella@verizon.net'; 'tammy.waldroup@cnu.edu'; 'townclaremont@aol.com'; 'townclaremont@aol.com'; 'jeff.merritt@cox.com'; 'jessie.lacks@cox.com'; 'kyle.martin@cox.com'; 'jruffa@craterpdc.org'; 'satcinc53@yahoo.com'; 'sylvia.d.white@dominionenergy.com'; 'jshuck@vaems.org'; 'bpierce@vaems.org'; 'dlong@vaems.org'; 'mplayer@vaems.org'; 'spincus@vaems.org'; 'mari.radford@fema.dhs.gov'; 'renee.hupp@fema.dhs.gov'; 'robert.c.starr2.civ@mail.mil'; 'jhutcheson@fmauthority.com'; 'crsmith@franklinva.com'; 'dgoodwin@franklinva.com'; 'vfrancis@franklinva.com'; 'jwenner@gloucesterva.info'; 'carolyn.heaps@hampton.gov'; 'hwalker@hampton.gov'; 'sbond@hampton.gov'; 'tracy.hanger@hampton.gov'; 'Ben McFarlane' bmcfarlane@hrpdcva.gov; John Sadler jsadler@hrpdcva.gov; 'Whitney KATCHMARK' wkatchmark@hrpdcva.gov; 'amalkawi@hrsd.com'; 'jsee@hrsd.com'; Rob Case rcase@hrtpo.org; 'vsmiley@hrtransit.org'; 'lgdotolo@aol.com'; 'hackett@vaems.org'; 'phumphries@isleofwightus.net'; 'wdrewery@isleofwightus.net'; 'office@townofivor.com'; 'michael.woolson@jamescitycountyva.gov'; 'ryan.ashe@jamescitycountyva.gov'; 'sara.ruch@jamescitycountyva.gov'; 'michael.teener@jamescitycountyva.gov'; 'david.luke@science.doe.gov'; 'cjohnson@jlab.org'; 'robyn.niss@kimley-horn.com'; 'jgarrett@cityofchesapeake.net'; 'mheckler@cityofchesapeake.net'; 'eric.seymour@noaa.gov'; 'jeff.orrock@noaa.gov'; 'ruth.reich@navy.mil'; 'gglazner@nnva.gov'; 'brownhl@nnva.gov'; 'johnsonjs@nnva.gov'; 'bottlj@nnva.gov'; 'ndelvalle@nnva.gov'; 'daniel.hudson@norfolk.gov'; 'jalesha.smith@norfolk.gov'; 'james.redick@norfolk.gov'; 'kyle.spencer@norfolk.gov'; 'matthew.simons@norfolk.gov'; 'michael.goldsmith@norfolk.gov'; 'scott.mahone@norfolk.gov'; 'tristian.barnes@norfolk.gov'; 'jhoernig@odu.edu'; 'lmason@odu.edu'; 'edariah@theplanningcouncil.org'; 'KMoody@planrva.org'; 'SStewart@planrva.org'; 'john.young@poquoson-va.gov'; 'kenneth.somerset@poquoson-va.gov'; 'michael.bryant@poquoson-va.gov'; 'rubinoj@portsmouthva.gov'; 'mangubatn@portsmouthva.gov'; 'djurgens@cityofchesapeake.net'; 'mark.rath@rivhs.com'; 'leigh.morgan.chapman@gmail.com'; 'lrbush@sentara.com'; 'ahowell@smithfieldva.gov'; 'mstallings@smithfieldva.gov'; 'blewis@southamptoncounty.org'; 'llowe@southamptoncounty.org'; 'mjohnson@southamptoncounty.org'; 'bspicer@suffolkva.us'; 'rstephens@suffolkva.us'; 'rphelps@surrycountyva.gov'; 'longp@tncc.edu'; 'debbie.coon@townebank.net'; 'debbie.wright@townebank.net'; 'ronnie.greene@townebank.net'; 'alex.j.gurchinoff.schlebach@usace.army.mil'; 'greggory.g.williams@usace.army.mil'; 'paul.b.moye@usace.army.mil'; 'robert.s.angrisani@usace.army.mil'; 'stephen.j.harrison@uscg.mil'; 'leighann.erdman@va.gov'; 'brian.russell@vdem.virginia.gov'; 'bruce.sterling@vdem.virginia.gov'; 'harrison.bresee@vdem.virginia.gov'; 'john.hisghman@dof.virginia.gov'; 'larry.hill@vdh.virginia.gov'; 'john.cooke@vdh.virginia.gov'; 'perla.santillan@vdh.virginia.gov'; 'anne.witt@dmme.virginia.gov'; 'gluptonsr@gmail.com'; 'dprogen@vbgov.com'; 'dtopczynski@vbgov.com'; 'marajones@vbgov.com'; 'drspach@vbgov.com'; 'wmcnamar@vbgov.com'; 'pscully@vbgov.com'; 'mason@vims.edu'; 'jkibler@southernco.com'; 'bezell@odu.edu'; 'klawsure@odu.edu'; 'ross.weaver@wetlandswatch.org'; 'jmkaste@wm.edu'; 'katowner@wm.edu'; 'deagle@williamsburgva.gov'; 'lsnyder@williamsburgva.gov'; 'wsaunders@windsor-va.gov'; 'aparker@yorkcounty.gov'; 'whittgl@yorkcounty.gov'; 'henkel@yorkcounty.gov'; 'segerbls@yorkcounty.gov'; 'kopczyns@yorkcounty.gov'; 'susan.kassel@yorkcounty.gov'; Ben

McFarlane bmcfarlane@hrpdcva.gov; Cynthia Mulkey cmulkey@hrpdcva.gov; Keith Cannady kcannady@hrpdcva.gov; Krista Lauro Klauro@hrpdcva.gov; Riana Rich rrich@hrpdcva.gov; Whitney Katchmark wkatchmark@hrpdcva.gov; 'Botts, Linda' linda.botts@dss.virginia.gov; 'Burket, Bill' bburket@portofvirginia.com; 'Calambro, Daina' Daina.Calambro@vsp.virginia.gov; 'Davis, Wayne' wayne.davis@hampton.gov; 'Hall, Terry' hallt@yorkcounty.gov; 'Jones, Daniel' jonesd@portsmouthva.gov; Malloy, Carolyn cmalloy@vaems.org; 'Mooney, Robert ' robert.mooney@hq.dhs.gov; 'NOAA' akq.meetings@noaa.gov; 'Turner, Chip' chip.turner@vsp.virginia.gov; 'Brown, Curtis' curtis.brown@vdem.virginia.gov; Bruce, Chris chris.bruce@vdem.virginia.gov; Evans, Allen chief100@outlook.com; 'Foley, Lisa' lisa.foley@vdem.virginia.gov; 'Gabriel, George' GGabriel@WBBINC.COM; 'Gelormine, Bobby' argelormine@cityofchesapeake.net; 'King, Jack' jack.king@vdem.virginia.gov; 'Lee, Cheryl ' cheryl.lee@vdem.virginia.gov; 'Neal, Stacie' stacie.neal@vdem.virginia.gov; 'Northon, John' john.northon@vdem.virginia.gov; 'Simpson, Cheryl' csimpson@endependence.org; 'Sutton, Erin' erin.sutton@vdem.virginia.gov

John Sadler
Regional Emergency Management Administrator
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300
Cell: 757-724-4636

Leigh.morgan.chapman@gmail.com

From: John Sadler <jsadler@hrpdcva.gov>
Sent: Wednesday, November 3, 2021 10:11 AM
Subject: Hazard Mitigation Plan Workshop 3 and Office Hours

Flag Status: Flagged

Hampton Roads Hazard Mitigation Plan Update Stakeholders,

The last set of meetings on the Hampton Roads Hazard Mitigation Plan 2022 Update will take place beginning Tuesday, November 9 with a short virtual Zoom meeting to go over mitigation action planning in general terms, and to discuss regional mitigation actions. We will follow up with a series of in-person "office hours" with Leigh to finalize each community's mitigation actions. We feel that this is a COVID-safe and efficient way to execute the necessary meetings and give you all some one-on-one time with our consultant. Please plan for your community's delegation to wear masks and social distance at these in person meetings. Stakeholders, you are welcome to attend office hours as much or as little as you would like to provide input regarding individual community mitigation actions. CRS communities are reminded that they need to send at least 2 people to the Zoom meeting and to your selected office hours slot. If you absolutely cannot make any of the office hours slots work, please let Leigh know and we'll work out a solution.

Tuesday, November 9 – 1:00pm – Workshop #3 Zoom meeting
Register in advance for this meeting:
https://us02web.zoom.us/meeting/register/tZEtf-6vpjspGtUXu2KuHMz2Z7WEPSwANg6I
After registering, you will receive a confirmation email containing information about joining the meeting.

November 16, 19 and 30 – 8:00 to 4:00 – Office Hours with Leigh Chapman
Please follow this link to sign up for your community's desired time slot and location: https://docs.google.com/spreadsheets/d/1xnU1aNmZBecLF1i1m3pRCmQ7ENTxR30WSXLfWpPwDGs/edit?usp=sharing
11/16 – Hampton EOC/Fire Station 11, 1304 Big Bethel Road, Hampton
11/19 – Isle of Wight County Board of Supervisors Board Room, County Courthouse Complex on Route 258
11/30 – Hampton Roads Planning District Commission Boardroom, 723 Woodlake Drive, Chesapeake

John Sadler
Regional Emergency Management Administrator
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300
Cell: 757-724-4636

Leigh.morgan.chapman@gmail.com

From: John Sadler <jsadler@hrpdcva.gov>
Sent: Monday, November 8, 2021 11:57 AM
To: John Sadler
Subject: RE: Hazard Mitigation Plan Workshop 3 and Office Hours

All,

Just a reminder about the hazard mitigation plan workshop tomorrow and subsequent office hours. Registration links are in the below email.

Also, we are still short of meeting our match for the grant. Please document time spent working on the plan at this link: https://docs.google.com/forms/d/e/1FAIpQLSf-e56e0mCFtfrpMh6GA4DjDDBCleduxOzMF0T3j5r44G_TzQ/viewform

Regards,
John

From: John Sadler
Sent: Wednesday, November 3, 2021 10:11 AM
Subject: Hazard Mitigation Plan Workshop 3 and Office Hours

Hampton Roads Hazard Mitigation Plan Update Stakeholders,

The last set of meetings on the Hampton Roads Hazard Mitigation Plan 2022 Update will take place beginning Tuesday, November 9 with a short virtual Zoom meeting to go over mitigation action planning in general terms, and to discuss regional mitigation actions. We will follow up with a series of in-person "office hours" with Leigh to finalize each community's mitigation actions. We feel that this is a COVID-safe and efficient way to execute the necessary meetings and give you all some one-on-one time with our consultant. Please plan for your community's delegation to wear masks and social distance at these in person meetings. Stakeholders, you are welcome to attend office hours as much or as little as you would like to provide input regarding individual community mitigation actions. CRS communities are reminded that they need to send at least 2 people to the Zoom meeting and to your selected office hours slot. If you absolutely cannot make any of the office hours slots work, please let Leigh know and we'll work out a solution.

Tuesday, November 9 – 1:00pm – Workshop #3 Zoom meeting
Register in advance for this meeting:
https://us02web.zoom.us/meeting/register/tZEtf-6vpjspGtUXu2KuHMz2Z7WEPSwANg6I
After registering, you will receive a confirmation email containing information about joining the meeting.

November 16, 19 and 30 – 8:00 to 4:00 – Office Hours with Leigh Chapman
Please follow this link to sign up for your community's desired time slot and location: https://docs.google.com/spreadsheets/d/1xnU1aNmZBecLF1i1m3pRCmQ7ENTxR30WSXLfWpPwDGs/edit?usp=sharing
11/16 – Hampton EOC/Fire Station 11, 1304 Big Bethel Road, Hampton
11/19 – Isle of Wight County Board of Supervisors Board Room, County Courthouse Complex on Route 258
11/30 – Hampton Roads Planning District Commission Boardroom, 723 Woodlake Drive, Chesapeake

John Sadler
Regional Emergency Management Administrator

Hampton Roads
Hazard Mitigation Plan Update

Public Meeting #3 Minutes

March 2, 2022, 6pm – Webinar via Zoom

AGENDA

- Introductions
- Planning Process Review
- HIRA Highlights
- Review of Goal-Setting and Capability Assessment
- Types of Mitigation Strategies
- Impacts on Socially Vulnerable Populations
- Mitigation Action Plan Highlights
    - Regional Actions
    - Actions in Communities of Meeting Participants
    - Other Relevant Mitigation Actions
- Next Steps and Schedule

MEETING NOTES

- Meeting participants were given ample time to ask questions
- Table of Contents for Adobe formatted document was discussed
- Virginia Beach resident asked about Citizen Flood Protection Board
- Norfolk resident asked about Harbor's Edge and Riverwalk buildings in downtown
- Virginia Beach resident asked about the City's outreach efforts specifically
- Citizen asked how the is incorporated into future planning and development efforts; Ms. Chapman outlined several methods of ensuring plan implementation with regard to other community efforts related to mitigation
- ODU Risk Communication specialists offered assistance and guidance

ATTENDEES

Host: John Sadler, HRPDC; Leigh Chapman, Salter's Creek Consulting, Inc., Noelle Slater, AECOM

Attendees:

First Name	Last Name	Community
Robert	Anderson	
Tristian	Barnes	Norfolk
Nancy	Beach	
Lynne	Boucher	
LAWRENCE	BROWN	
Heather	Brown	Va Dept of Health
Carolyn	Cox	
DIANE	DAVIDSON	
Stephen	Davis	Portsmouth
Theresa	Edwards	

Bill	Egerton	American Red Cross
Ana	Elezovic	Chesapeake
Barry	Ezell	ODU VMASC
Vernie	Francis III	Franklin
Bobby	Gelormine	Chesapeake
George	Glazner	Newport News
Olga	Gonzalez Nichols	
Kathie S.	Green	
Ron	Greene	
Ellen	Griffith	
James	Haluska	Chesapeake
Anna	Hammond	Hampton
Tracy	Hanger	Hampton
Cindy	Hartman	
Greta	Hawkins	Hampton
Carolyn	Heaps	Hampton
Kent	Henkel	York County
Judy	Hinch	Chesapeake NEMAC
Christopher	Hosman	
Jim	Reddick	Norfolk
Daniel	Hudson	Norfolk
Clarice	Hughes	
Joyce	Jenkins	
William	Jennings	Virginia Beach
Sharla	Jennings	
Ivy	Kennedy	Virginia Beach
Velva	L. Goodman	
Beth	Lewis	Southampton County
Roberto	Lovick	
Robin	Mabie	Hampton
Sherrill	Mason	Chesapeake
Melody	Maynard	Hampton, Buckroe Beach, Sierra Club
Benjamin	McFarlane	HRPDC
Don	Mertz	
Margie	Mitchell	
Michael	Monteith	Peninsula Community Foundation
Markiella	Moore	Chesapeake
Wonda	Morton	
Ramona	Nazareth	
Vic	Nicholls	Chesapeake
Brian	Pacansky	
Amy	Parker	York County
Gwen	Pointer	Hampton
Regan	Prince	Southampton County
Judith	Providence	

Riana	Rich	HRPDC
Jenny	Roberts-Axelrod	
Tammy	Rowan	
John	Sadler	HRPDC
Donna	Sayegh	
Sean	Segerblom	York County
Kate	Sharrow	
Matt	Simons	Norfolk
Noelle	Slater	AECOM
RAYMOND	SMITH	
Sara	Snowden	Hampton
Danielle	Spach	Virginia Beach
Kyle	Spencer	Norfolk
Michael	Teener	James City County
LYNN	VANCE	
Hui-Shan	Walker	Hampton
Jessica	Whitehead	ODU ICAR and Norfolk resident
Danny	Williams	
Thomas	Witt	
Adrian	Wood	
Scott	Woodruff	
Christine	Woods	
Mara	Yoko	

INVITEES

Email invitations were issued to each of the individuals shown on the following email invite. In addition, each primary contact for the communities forwarded the message and made additional phone calls to their staff and interested persons. The PDC and communities also advertised the meeting as shown in the news and social media clippings below.

noelle.slater@aecom.com; Parson, Shane; aubrie.mcclendon2@redcross.org; u2pilot@verizon.net; lisa.mike@redcross.org; william.egerton@redcross.org; john.millspaugh@arcadis.com; mayor@townofboykinsva.com; boykins@townofboykinsva.com; harold.futrell@vadoc.virginia.gov; kitchenswelding1@cs.com; eelliott@cityofchesapeake.net; kfinnerty@cityofchesapeake.net; lstoll@cityofchesapeake.net; mbarber@cityofchesapeake.net; phughes@cityofchesapeake.net; rbraidwood@cityofchesapeake.net; Robert Gelormine; sawan@cityofchesapeake.net; judy.hinch@cox.net; markiella@verizon.net; tammy.waldroup@cnu.edu; townclaremont@aol.com; townclaremont@aol.com; jeff.merritt@cox.com; jessie.lacks@cox.com; kyle.martin@cox.com; jruffa@craterpdc.org; satcinc53@yahoo.com; sylvia.d.white@dominionenergy.com; jshuck@vaems.org; bpierce@vaems.org; dlong@vaems.org; mplayer@vaems.org; spincus@vaems.org; mari.radford@fema.dhs.gov; renee.hupp@fema.dhs.gov; robert.c.starr2.civ@mail.mil; jhutcheson@fmauthority.com; crsmith@franklinva.com; dgoodwin@franklinva.com; vfrancis@franklinva.com; jwenner@gloucesterva.info; carolyn.heaps@hampton.gov; hwalker@hampton.gov; sbond@hampton.gov; tracy.hanger@hampton.gov; Ben McFarlane <bmcfarlane@hrpdcva.gov>; John Sadler <jsadler@hrpdcva.gov>; Whitney KATCHMARK <wkatchmark@hrpdcva.gov>; amalkawi@hrsd.com; jsee@hrsd.com; Rob Case <rcase@hrtpo.org>; vsmiley@hrtransit.org; lgdotolo@aol.com; hackett@vaems.org; phumphries@isleofwightus.net; wdrewery@isleofwightus.net; office@townofivor.com; michael.woolson@jamescitycountyva.gov; ryan.ashe@jamescitycountyva.gov; sara.ruch@jamescitycountyva.gov; michael.teener@jamescitycountyva.gov; david.luke@science.doe.gov; cjohnson@jlab.org; robyn.niss@kimley-horn.com; jgarrett@cityofchesapeake.net; mheckler@cityofchesapeake.net; eric.seymour@noaa.gov; jeff.orrock@noaa.gov; ruth.reich@navy.mil; gglazner@nnva.gov; brownhl@nnva.gov; johnsonjs@nnva.gov; bottlj@nnva.gov; ndelvalle@nnva.gov; daniel.hudson@norfolk.gov; jalesha.smith@norfolk.gov; james.redick@norfolk.gov; kyle.spencer@norfolk.gov; matthew.simons@norfolk.gov; michael.goldsmith@norfolk.gov; scott.mahone@norfolk.gov; tristian.barnes@norfolk.gov; jhoernig@odu.edu; lmason@odu.edu; edariah@theplanningcouncil.org; KMoody@planrva.org; SStewart@planrva.org; john.young@poquoson-va.gov; kenneth.somerset@poquoson-va.gov; michael.bryant@poquoson-va.gov; rubinoj@portsmouthva.gov; mangubatn@portsmouthva.gov; djurgens@cityofchesapeake.net; mark.rath@rivhs.com; leigh.morgan.chapman@gmail.com; lrbush@sentara.com; ahowell@smithfieldva.gov; mstallings@smithfieldva.gov; blewis@southamptoncounty.org; llowe@southamptoncounty.org; mjohnson@southamptoncounty.org; bspicer@suffolkva.us; rstephens@suffolkva.us; rphelps@surrycountyva.gov; longp@tncc.edu; debbie.coon@townebank.net; debbie.wright@townebank.net; ronnie.greene@townebank.net; alex.j.gurchinoff.schlebach@usace.army.mil; greggory.g.williams@usace.army.mil; paul.b.moye@usace.army.mil; robert.s.angrisani@usace.army.mil; stephen.j.harrison@uscg.mil; leighann.erdman@va.gov; brian.russell@vdem.virginia.gov; chris.bruce@vdem.virginia.gov; harrison.bresee@vdem.virginia.gov; john.hisghman@dof.virginia.gov; larry.hill@vdh.virginia.gov; john.cooke@vdh.virginia.gov; perla.santillan@vdh.virginia.gov; anne.witt@dmme.virginia.gov; gluptonsr@gmail.com; dprogen@vbgov.com; dtopczynski@vbgov.com; marajones@vbgov.com; drspach@vbgov.com; wmcnamar@vbgov.com; pscully@vbgov.com; mason@vims.edu; jkibler@southernco.com; bezell@odu.edu; klawsure@odu.edu; ross.weaver@wetlandswatch.org; jmkaste@wm.edu; katowner@wm.edu; deagle@williamsburgva.gov; lsnyder@williamsburgva.gov; wsaunders@windsor-va.gov; aparker@yorkcounty.gov; whittgl@yorkcounty.gov;

henkel@yorkcounty.gov; segerbls@yorkcounty.gov; kopczyns@yorkcounty.gov; susan.kassel@yorkcounty.gov; boykins@townofboykinsva.com; townofcourtland@verizon.net; office@townofivor.com; vanclockandwatch@gmail.com; Anderson, Lisa <lisa.anderson@vdem.virginia.gov>; Evans, Allen <chief100@outlook.com>; Gabriel, George <GGabriel@WBBINC.COM>; Gelormine, Bobby <argelormine@cityofchesapeake.net>; King, Jack <jack.king@vdem.virginia.gov>; Lee, Catherine <catherine.lee@vdem.virginia.gov>; Lee, Cheryl <cheryl.lee@vdem.virginia.gov>; Neal, Stacie <stacie.neal@vdem.virginia.gov>; Northon, John <john.northon@vdem.virginia.gov>; Simpson, Cheryl <csimpson@endependence.org>; Sterling, Bruce <Bruce.Sterling@vdem.virginia.gov>; Sutton, Erin <erin.sutton@vdem.virginia.gov>; Botts, Linda <linda.botts@dss.virginia.gov>; Burket, Bill <bburket@portofvirginia.com>; Calambro, Daina <Daina.Calambro@vsp.virginia.gov>; Davis, Wayne <wayne.davis@hampton.gov>; Hall, Terry <hallt@yorkcounty.gov>; Jones, Daniel <jonesd@portsmouthva.gov>; Malloy, Carolyn <cmalloy@vaems.org>; Mooney, Robert <robert.mooney@hq.dhs.gov>; NOAA <akq.meetings@noaa.gov>; Turner, Chip <chip.turner@vsp.virginia.gov>; Davis, Stephen <daviss@portsmouthva.gov>; Francis, Vernie <vwfrancisjr@shso.org>; Cynthia Mulkey <cmulkey@hrpdcva.gov>; John Sadler <jsadler@hrpdcva.gov>; Keith Cannady <kcannady@hrpdcva.gov>; Krista Lauro <Klauro@hrpdcva.gov>; Riana Rich <rrich@hrpdcva.gov>; Whitney Katchmark <wkatchmark@hrpdcva.gov>; Arena, Maria <Maria.Arena@fema.dhs.gov>; Aronen, Christopher <christopher.aronen@fema.dhs.gov>; Bilder, Michael <michael.bilder@fema.dhs.gov>; Brewer, Daniel <daniel.brewer@fema.dhs.gov>; Crosby, Craig <Craig.Crosby2@fema.dhs.gov>; Leon, Lorenzo <lorenzo.leon@fema.dhs.gov>; Lomento, Judith <judith.lomento@fema.dhs.gov>; O'Hanlon, Mark <mark.ohanlon@fema.dhs.gov>; Tierney, Mary Ann <maryann.tierney@fema.dhs.gov>; Wolslayer, Kelly <Kelly.Wolslayer@fema.dhs.gov>

Leigh.morgan.chapman@gmail.com

From: John Sadler <jsadler@hrpdcva.gov>
Sent: Thursday, February 24, 2022 11:00 AM
Subject: RE: HR Hazard Mitigation Plan Public Review and Meeting

All,

Just a reminder about the public meeting next week (**March 2, 2022 at 6:00pm**). If you have not already done so, please upload your advertisement documentation to the teams site.

Thanks,
John

From: John Sadler
Sent: Tuesday, February 8, 2022 12:09 PM
Subject: HR Hazard Mitigation Plan Public Review and Meeting
Importance: High

AHAC and Hampton Roads HMP Update Stakeholders,

The draft 2022 HR Hazard Mitigation Plan has been posted to the HRPDC website for public review:
https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan

We will be holding our final public meeting on **March 2, 2022 at 6:00pm** virtually via zoom. Registration is required at https://us02web.zoom.us/meeting/register/tZApdOigpzwrE9bQqArTY8w8OkdYh1YjO4y0.

Please ensure the following actions are taken within your locality:

1. Publicly advertise the public meeting and that the plan is available for review through March 9 (flyer is attached)
2. Ensure appropriate staff are registered and will attend the public meeting.
3. Document and upload public advertising to the Teams/SharePoint Site
4. Document time spent on the plan here: https://forms.gle/mdP8b1QvkkT8ydV29

Regards,

John Sadler
Regional Emergency Management Administrator
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300

John Sadler

From: HRPDC <news@hrpdcva.ccsend.com> on behalf of HRPDC <em+hrpdcva.gov@ccsend.com>
Sent: Tuesday, February 8, 2022 1:01 PM
To: John Sadler
Subject: Join us for our Third Public Zoom Meeting-DRAFT Plan Available for Public Review and Comment

Hampton Roads Hazard Mitigation Plan Update
Virtual Public Meeting #3
6:00pm
March 2, 2022

Attention Citizens of:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Mitigation Action Plan prepared as part of this planning process.
Final draft available for review through March 9, 2022 at:
https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan.

Final Public Zoom Meeting, March 2, 2022, 6pm: Register at
https://us02web.zoom.us/meeting/register/tZApdOigpzwrE9bQgArTY8w8OkdYh1YjO4y0

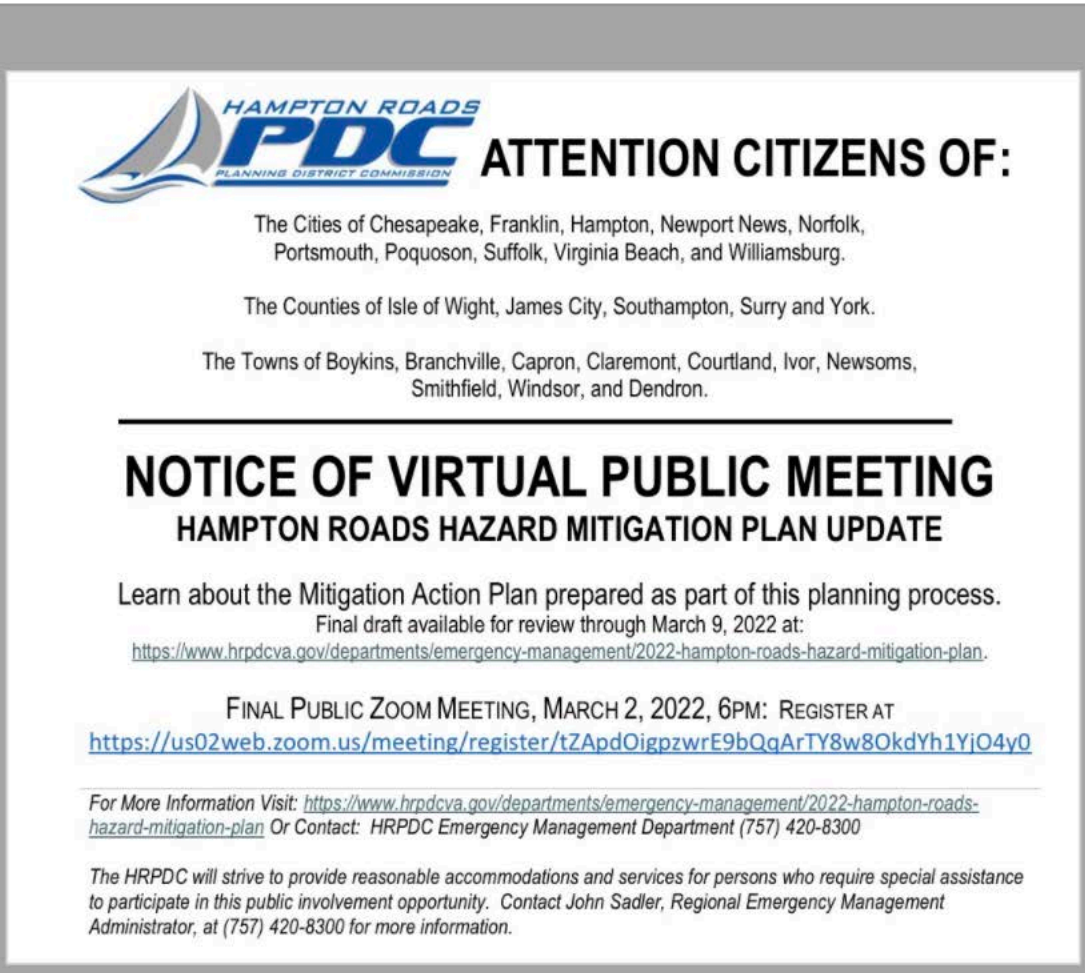
For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

City of Chesapeake Government

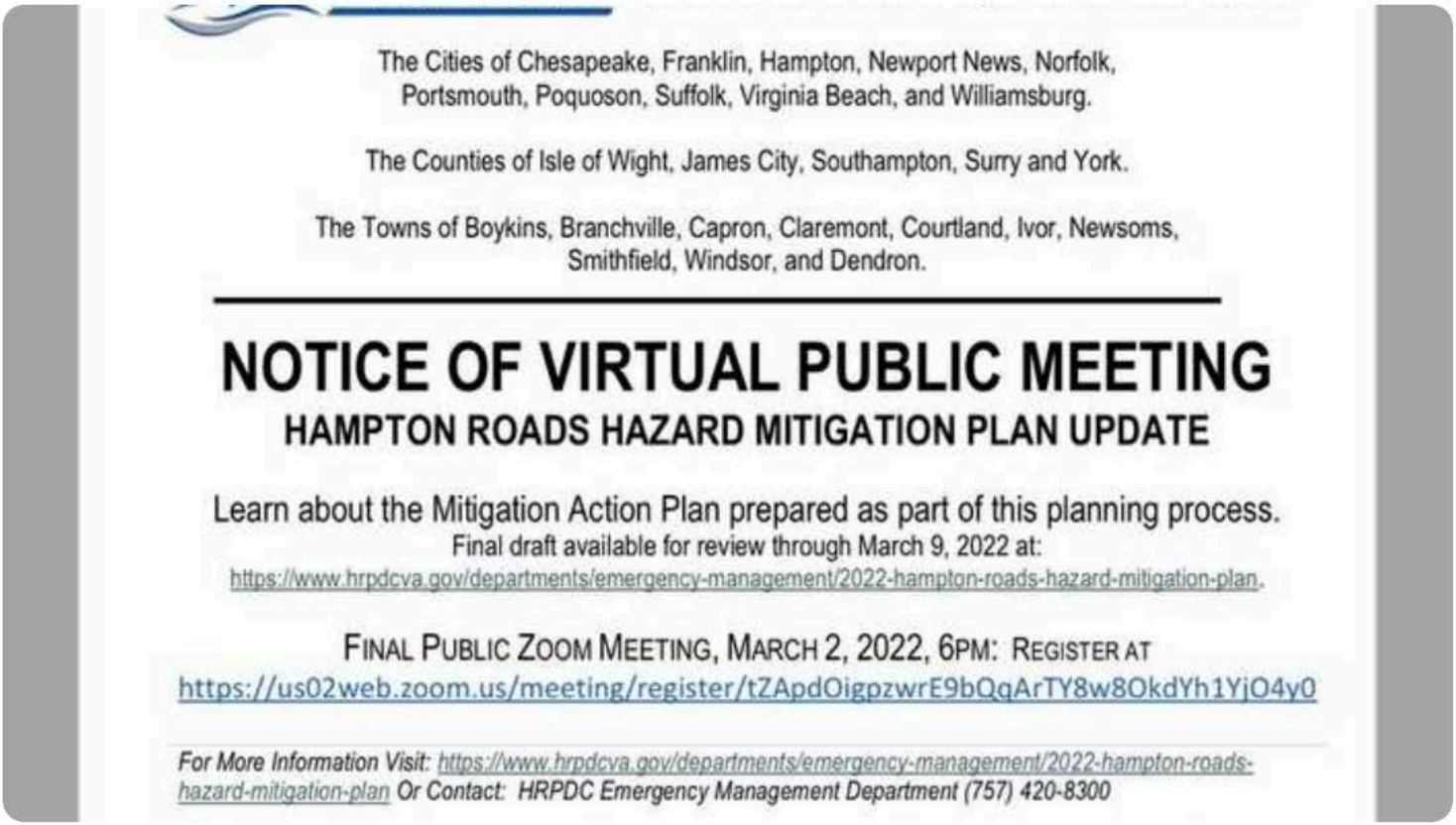
Published by Jane Castellow · Yesterday at 4:51 PM ·

The Hampton Roads Planning District Commission (HRPDC) is hosting a third virtual public meeting on Wednesday, March 2, at 6:00 p.m. to provide updates on the Hampton Roads Hazard Mitigation Plan. Sign up to attend: https://bit.ly/3sZDryV. To view the final draft of the Hampton Roads Hazard Mitigation Plan, visit https://bit.ly/3xwzQJU.



City of Chesapeake

Public Communications Coordinator Jane Gregorski • 1 day ago



Virtual Public Meeting: Hampton Roads Hazard Mitigation Plan. The Hampton Roads Planning District Commission (HRPDC) is hosting a third virtual public meeting on Wednesday, March 2, at 6:00 p.m. to provide updates on the Hampton Roads Hazard Mitigation Plan. Sign up to attend: https://bit.ly/3sZDryV. To view the final draft of the Hampton Roads Hazard Mitigation Plan, visit https://bit.ly/3xwzQJU.

Welcome! You are invited to join a meeting: Public Meeting #3 ...

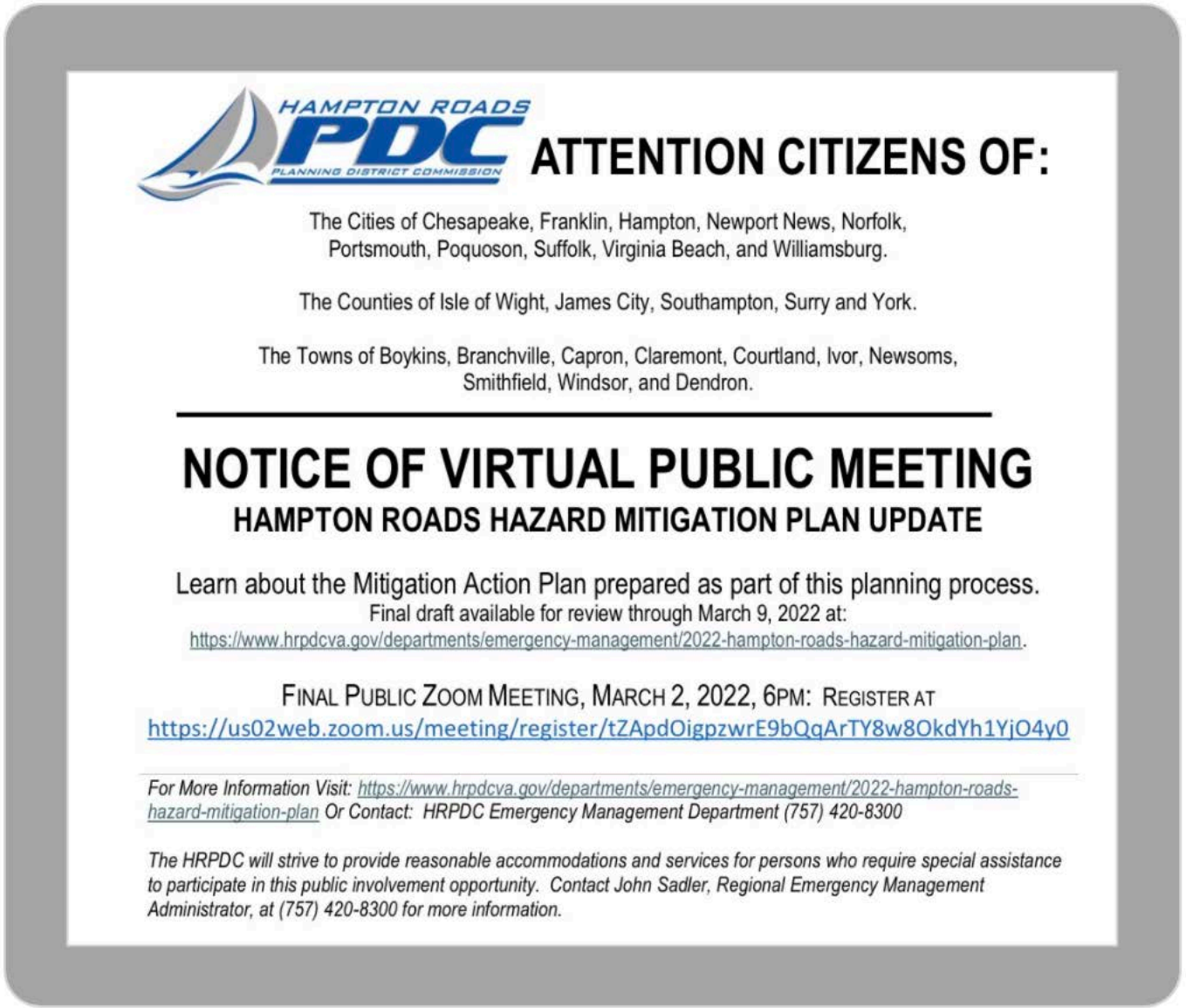
us02web.zoom.us

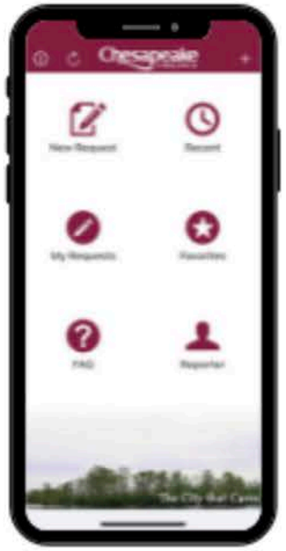
Posted to **Subscribers of City of Chesapeake**

1 · 1,563 Impressions

City of Chesapeake @AboutChesapeake · Feb 23

The Hampton Roads Planning District Commission is hosting a virtual public meeting on March 2 at 6 p.m. to provide updates on the Hampton Roads Hazard Mitigation Plan. Sign up to attend: bit.ly/3sZDryV. View the final draft of the plan: bit.ly/3xwzQJU.





Download our app to request City services!

Download on the App Store

GET IT ON Google Play

At Your Fingertips

- Personal and Business Property Tax Assessments
- DMV Select
- Bulk Trash and Recycling
  - *Suspended until Further Notice
- Real Estate Assessments
- City Council
- City Council Meeting Agendas & Video
- Planning Commission
- Budget

Spotlight | Newsroom | Calendar | Notices | Roads

Elbow Rd Project Information Meeting: A public meeting for the upcoming Elbow Rd Widening Phase II and the Elbow Rd Bridge Replacement projects will take place on Thursday, February 24 from 4:30 – 6:30 p.m. at the Central Library large meeting room. You can also attend virtually at any time online. Comments will be accepted until March 10, 2022. For information and virtual meeting comments on each project: Bridge Replacement and Widening Phase II.

Virtual Public Meeting: The Hampton Roads Planning District Commission is hosting a virtual public meeting on Wednesday, March 2, at 6:00 p.m. to provide updates on the Hampton Roads Hazard Mitigation Plan. Sign up online to attend.

News & Announcements

Hampton Roads Hazard Mitigation Plan

February 24, 2022

For more information on the hazard mitigation public meeting, please see the attached flyer. Read more Read More

Spring Fest Vendor Application

February 11, 2022

The City of Franklin is thrilled to announce the first annual Spring Fest! We plan to kick off the spring season with a new event, and Spring Fest is officially set for Saturday, April 23, 2022! Please find more information and the link to the... Read More

Hampt Plan S

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Hampton

Rent Relief Program Flyer

August 6, 2021

For more information on the Rent Relief Program please see the attached document. Read More

Rent R

August 6,

For a list

documen

Rent Relief Program Tip Sheet

August 6, 2021

For tips on applying to the Rent Relief Program please see the attached document. Read More

Attent

July 29, 20

Attention

Hazard Mitigation Flyer

July 14, 2021

For more information on the Hazard Mitigation public meeting please see the attached flyer. Read More

Econo

July 13, 20

For more

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2020 Real Estate Delinquent Tax Report

June 23, 2021

Please see the attached report for public information regarding the delinquent taxes for the year 2020. Read More

2020 R

June 23, 2

Please se

property

John Sadler

From: Walker, Hui-Shan <hui-shan.walker@hampton.gov>
Sent: Wednesday, February 16, 2022 3:29 PM
To: John Sadler; leigh.morgan.chapman
Cc: McCormick, Robin
Subject: FW: Public meeting will update region's disaster plan

Please see our initial advertising to the public below. I will share the public notice once it goes out. Thanks, Hui-Shan

---

From: City of Hampton eNews [mailto:marketing@hampton.gov]
Sent: Wednesday, February 16, 2022 2:24 PM
To: Walker, Hui-Shan <hui-shan.walker@hampton.gov>
Subject: Public meeting will update region's disaster plan

If you have a question about city services and programs, or need to report a problem, call the city's Citizen Contact Center at 3-1-1 or 727-8311.

View this email in your browser [mailchi.mp]

[hampton.us2.list-manage.com]

TOP NEWS

Virtual public meeting will update disaster plan

Officials from Hampton and other cities will host a virtual public meeting to update residents on the plan to safeguard the region against natural disasters. Registration is now being accepted for the meeting, which is scheduled for Wednesday, March 2, at 6 p.m. Residents can read the Hampton Roads Disaster Mitigation Plan online [hampton.us2.list-manage.com]and will be encouraged to offer input. To register for the meeting, click here [hampton.us2.list-manage.com]. For more details on the meeting, click here [hampton.us2.list-

manage.com].

Free program explores history and food

Fort Monroe will host a free virtual event on Friday evening that combines history and modern cooking. Chef Eric Smith, culinary director of the Richmond-based Underground Kitchen program [hampton.us2.list-manage.com], will kick off the second season of Fort Monroe's "Evolution of Freedom, The Food" at 6 p.m. Friday. During the program, Smith will prepare three of his signature dishes while discussing the influence of African culture on contemporary American cuisine. Those attending the free event will be able to ask questions and learn more about Smith's background and the Underground Kitchen. To register for the virtual program, click here [hampton.us2.list-manage.com].

Printmaking class Saturday at visual arts center

The Charles H. Taylor Visual Arts Center will offer a three-hour class in print-making on Saturday with instructor Eloise Shelton-Mayo. The workshop, which starts at 10:30 a.m., is open to beginners and more experienced painters and will allow them to create multiple prints with layers of exciting color, texture and contrast with the use of acrylic paints and a gelatin plate. The class is part of an ongoing series of courses and workshops offered by instructors at the center, open to the general public but with discounts for members of the Hampton Arts League. The Charles H. Taylor Visual Arts Center is located at 4205 Victoria Blvd. For more details and to register, click

here [hampton.us2.list-manage.com].

In case you missed it

Register to interview for teaching jobs

Hampton City Schools is now accepting pre-registration for a teacher recruitment fair with virtual job interviews on March 1-3. Qualified candidates will be eligible for jobs starting either immediately or in August. Starting salaries are $49,000-$51,600. The interviews will be done virtually from 8 a.m.-6 p.m. on each of the three days. To register for an interview, click here [hampton.us2.list-manage.com] or go to this site [hampton.us2.list-manage.com] and scan the QR code on the recruitment fair link.

Ticket discount for ballet show Thursday at American Theatre

Hampton Arts is offering a $10 discount on tickets to see Les Ballets Trockadero de Monte Carlo at The American Theatre on Thursday night. "The Trocks" are an all-male ballet company that combines graceful dancing with a clever wit that puts a fresh spin on "Swan Lake," "Giselle" and other favorites. The troupe is a longtime favorite at The American Theatre in Phoebus. Thursday's show begins at 8 p.m. To get discounted tickets, click here [hampton.us2.list-manage.com] and enter the code "TROCKS" at the purchase site.

22 Lincoln Street
Hampton, Virginia 23669

John Sadler

From: Walker, Hui-Shan <hui-shan.walker@hampton.gov>
Sent: Wednesday, February 16, 2022 3:29 PM
To: John Sadler; leigh.morgan.chapman
Cc: McCormick, Robin
Subject: FW: Public meeting will update region's disaster plan

Please see our initial advertising to the public below. I will share the public notice once it goes out. Thanks, Hui-Shan

---

From: City of Hampton eNews [mailto:marketing@hampton.gov]
Sent: Wednesday, February 16, 2022 2:24 PM
To: Walker, Hui-Shan <hui-shan.walker@hampton.gov>
Subject: Public meeting will update region's disaster plan

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View this email in your browser [mailchi.mp]

[hampton.us2.list-manage.com]

TOP NEWS

Virtual public meeting will update disaster plan

Officials from Hampton and other cities will host a virtual public meeting to update residents on the plan to safeguard the region against natural disasters. Registration is now being accepted for the meeting, which is scheduled for Wednesday, March 2, at 6 p.m. Residents can read the Hampton Roads Disaster Mitigation Plan online [hampton.us2.list-manage.com]and will be encouraged to offer input. To register for the meeting, click here [hampton.us2.list-manage.com]. For more details on the meeting, click here [hampton.us2.list-

manage.com].

Free program explores history and food

Fort Monroe will host a free virtual event on Friday evening that combines history and modern cooking. Chef Eric Smith, culinary director of the Richmond-based Underground Kitchen program [hampton.us2.list-manage.com], will kick off the second season of Fort Monroe's "Evolution of Freedom, The Food" at 6 p.m. Friday. During the program, Smith will prepare three of his signature dishes while discussing the influence of African culture on contemporary American cuisine. Those attending the free event will be able to ask questions and learn more about Smith's background and the Underground Kitchen. To register for the virtual program, click here [hampton.us2.list-manage.com].

Printmaking class Saturday at visual arts center

The Charles H. Taylor Visual Arts Center will offer a three-hour class in print-making on Saturday with instructor Eloise Shelton-Mayo. The workshop, which starts at 10:30 a.m., is open to beginners and more experienced painters and will allow them to create multiple prints with layers of exciting color, texture and contrast with the use of acrylic paints and a gelatin plate. The class is part of an ongoing series of courses and workshops offered by instructors at the center, open to the general public but with discounts for members of the Hampton Arts League. The Charles H. Taylor Visual Arts Center is located at 4205 Victoria Blvd. For more details and to register, click

here [hampton.us2.list-manage.com].

In case you missed it

Register to interview for teaching jobs

Hampton City Schools is now accepting pre-registration for a teacher recruitment fair with virtual job interviews on March 1-3. Qualified candidates will be eligible for jobs starting either immediately or in August. Starting salaries are $49,000-$51,600. The interviews will be done virtually from 8 a.m.-6 p.m. on each of the three days. To register for an interview, click here [hampton.us2.list-manage.com] or go to this site [hampton.us2.list-manage.com] and scan the QR code on the recruitment fair link.

Ticket discount for ballet show Thursday at American Theatre

Hampton Arts is offering a $10 discount on tickets to see Les Ballets Trockadero de Monte Carlo at The American Theatre on Thursday night. "The Trocks" are an all-male ballet company that combines graceful dancing with a clever wit that puts a fresh spin on "Swan Lake," "Giselle" and other favorites. The troupe is a longtime favorite at The American Theatre in Phoebus. Thursday's show begins at 8 p.m. To get discounted tickets, click here [hampton.us2.list-manage.com] and enter the code "TROCKS" at the purchase site.

22 Lincoln Street
Hampton, Virginia 23669

noelle.slater@aecom.com; Parson, Shane; aubrie.mcclendon2@redcross.org; u2pilot@verizon.net; lisa.mike@redcross.org; william.egerton@redcross.org; john.millspaugh@arcadis.com; mayor@townofboykinsva.com; boykins@townofboykinsva.com; harold.futrell@vadoc.virginia.gov; kitchenswelding1@cs.com; eelliott@cityofchesapeake.net; kfinnerty@cityofchesapeake.net; lstoll@cityofchesapeake.net; mbarber@cityofchesapeake.net; phughes@cityofchesapeake.net; rbraidwood@cityofchesapeake.net; Robert Gelormine; sawan@cityofchesapeake.net; judy.hinch@cox.net; markiella@verizon.net; tammy.waldroup@cnu.edu; townclaremont@aol.com; townclaremont@aol.com; jeff.merritt@cox.com; jessie.lacks@cox.com; kyle.martin@cox.com; jruffa@craterpdc.org; satcinc53@yahoo.com; sylvia.d.white@dominionenergy.com; jshuck@vaems.org; bpierce@vaems.org; dlong@vaems.org; mplayer@vaems.org; spincus@vaems.org; mari.radford@fema.dhs.gov; renee.hupp@fema.dhs.gov; robert.c.starr2.civ@mail.mil; jhutcheson@fmauthority.com; crsmith@franklinva.com; dgoodwin@franklinva.com; vfrancis@franklinva.com; jwenner@gloucesterva.info; carolyn.heaps@hampton.gov; hwalker@hampton.gov; sbond@hampton.gov; tracy.hanger@hampton.gov; Ben McFarlane <bmcfarlane@hrpdcva.gov>; John Sadler <jsadler@hrpdcva.gov>; Whitney KATCHMARK <wkatchmark@hrpdcva.gov>; amalkawi@hrsd.com; jsee@hrsd.com; Rob Case <rcase@hrtpo.org>; vsmiley@hrtransit.org; lgdotolo@aol.com; hackett@vaems.org; phumphries@isleofwightus.net; wdrewery@isleofwightus.net; office@townofivor.com; michael.woolson@jamescitycountyva.gov; ryan.ashe@jamescitycountyva.gov; sara.ruch@jamescitycountyva.gov; michael.teener@jamescitycountyva.gov; david.luke@science.doe.gov; cjohnson@jlab.org; robyn.niss@kimley-horn.com; jgarrett@cityofchesapeake.net; mheckler@cityofchesapeake.net; eric.seymour@noaa.gov; jeff.orrock@noaa.gov; ruth.reich@navy.mil; gglazner@nnva.gov; brownhl@nnva.gov; johnsonjs@nnva.gov; bottlj@nnva.gov; ndelvalle@nnva.gov; daniel.hudson@norfolk.gov; jalesha.smith@norfolk.gov; james.redick@norfolk.gov; kyle.spencer@norfolk.gov; matthew.simons@norfolk.gov; michael.goldsmith@norfolk.gov; scott.mahone@norfolk.gov; tristian.barnes@norfolk.gov; jhoernig@odu.edu; lmason@odu.edu; edariah@theplanningcouncil.org; KMoody@planrva.org; SStewart@planrva.org; john.young@poquoson-va.gov; kenneth.somerset@poquoson-va.gov; michael.bryant@poquoson-va.gov; rubinoj@portsmouthva.gov; mangubatn@portsmouthva.gov; djurgens@cityofchesapeake.net; mark.rath@rivhs.com; leigh.morgan.chapman@gmail.com; lrbush@sentara.com; ahowell@smithfieldva.gov; mstallings@smithfieldva.gov; blewis@southamptoncounty.org; llowe@southamptoncounty.org; mjohnson@southamptoncounty.org; bspicer@suffolkva.us; rstephens@suffolkva.us; rphelps@surrycountyva.gov; longp@tncc.edu; debbie.coon@townebank.net; debbie.wright@townebank.net; ronnie.greene@townebank.net; alex.j.gurchinoff.schlebach@usace.army.mil; greggory.g.williams@usace.army.mil; paul.b.moye@usace.army.mil; robert.s.angrisani@usace.army.mil; stephen.j.harrison@uscg.mil; leighann.erdman@va.gov; brian.russell@vdem.virginia.gov; chris.bruce@vdem.virginia.gov; harrison.bresee@vdem.virginia.gov; john.hisghman@dof.virginia.gov; larry.hill@vdh.virginia.gov; john.cooke@vdh.virginia.gov; perla.santillan@vdh.virginia.gov; anne.witt@dmme.virginia.gov; gluptonsr@gmail.com; dprogen@vbgov.com; dtopczynski@vbgov.com; marajones@vbgov.com; drspach@vbgov.com; wmcnamar@vbgov.com; pscully@vbgov.com; mason@vims.edu; jkibler@southernco.com; bezell@odu.edu; klawsure@odu.edu; ross.weaver@wetlandswatch.org; jmkaste@wm.edu; katowner@wm.edu; deagle@williamsburgva.gov; lsnyder@williamsburgva.gov; wsaunders@windsor-va.gov; aparker@yorkcounty.gov; whittgl@yorkcounty.gov;

henkel@yorkcounty.gov; segerbls@yorkcounty.gov; kopczyns@yorkcounty.gov; susan.kassel@yorkcounty.gov; boykins@townofboykinsva.com; townofcourtland@verizon.net; office@townofivor.com; vanclockandwatch@gmail.com; Anderson, Lisa <lisa.anderson@vdem.virginia.gov>; Evans, Allen <chief100@outlook.com>; Gabriel, George <GGabriel@WBBINC.COM>; Gelormine, Bobby <argelormine@cityofchesapeake.net>; King, Jack <jack.king@vdem.virginia.gov>; Lee, Catherine <catherine.lee@vdem.virginia.gov>; Lee, Cheryl <cheryl.lee@vdem.virginia.gov>; Neal, Stacie <stacie.neal@vdem.virginia.gov>; Northon, John <john.northon@vdem.virginia.gov>; Simpson, Cheryl <csimpson@endependence.org>; Sterling, Bruce <Bruce.Sterling@vdem.virginia.gov>; Sutton, Erin <erin.sutton@vdem.virginia.gov>; Botts, Linda <linda.botts@dss.virginia.gov>; Burket, Bill <bburket@portofvirginia.com>; Calambro, Daina <Daina.Calambro@vsp.virginia.gov>; Davis, Wayne <wayne.davis@hampton.gov>; Hall, Terry <hallt@yorkcounty.gov>; Jones, Daniel <jonesd@portsmouthva.gov>; Malloy, Carolyn <cmalloy@vaems.org>; Mooney, Robert <robert.mooney@hq.dhs.gov>; NOAA <akq.meetings@noaa.gov>; Turner, Chip <chip.turner@vsp.virginia.gov>; Davis, Stephen <daviss@portsmouthva.gov>; Francis, Vernie <vwfrancisjr@shso.org>; Cynthia Mulkey <cmulkey@hrpdcva.gov>; John Sadler <jsadler@hrpdcva.gov>; Keith Cannady <kcannady@hrpdcva.gov>; Krista Lauro <Klauro@hrpdcva.gov>; Riana Rich <rrich@hrpdcva.gov>; Whitney Katchmark <wkatchmark@hrpdcva.gov>; Arena, Maria <Maria.Arena@fema.dhs.gov>; Aronen, Christopher <christopher.aronen@fema.dhs.gov>; Bilder, Michael <michael.bilder@fema.dhs.gov>; Brewer, Daniel <daniel.brewer@fema.dhs.gov>; Crosby, Craig <Craig.Crosby2@fema.dhs.gov>; Leon, Lorenzo <lorenzo.leon@fema.dhs.gov>; Lomento, Judith <judith.lomento@fema.dhs.gov>; O'Hanlon, Mark <mark.ohanlon@fema.dhs.gov>; Tierney, Mary Ann <maryann.tierney@fema.dhs.gov>; Wolslayer, Kelly <Kelly.Wolslayer@fema.dhs.gov>

John Sadler

From: John Sadler
Sent: Tuesday, February 8, 2022 12:09 PM
Subject: HR Hazard Mitigation Plan Public Review and Meeting
Attachments: Hampton Roads HMP Public Meeting #3 public notice.pdf; Hampton Roads HMP Public Meeting #3 public notice.docx

Importance: High

AHAC and Hampton Roads HMP Update Stakeholders,

The draft 2022 HR Hazard Mitigation Plan has been posted to the HRPDC website for public review: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan

We will be holding our final public meeting on **March 2, 2022 at 6:00pm** virtually via zoom. Registration is required at https://us02web.zoom.us/meeting/register/tZApdOigpzwrE9bQqArTY8w8OkdYh1YjO4y0.

Please ensure the following actions are taken within your locality:

1. Publicly advertise the public meeting and that the plan is available for review through March 9 (flyer is attached)
2. Ensure appropriate staff are registered and will attend the public meeting.
3. Document and upload public advertising to the Teams/SharePoint Site
4. Document time spent on the plan here: https://forms.gle/mdP8b1QvkkT8ydV29

Regards,

John Sadler
Regional Emergency Management Administrator
Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, VA 23320
Phone: 757-420-8300

John Sadler

From: HRPDC <news@hrpdcva.ccsend.com> on behalf of HRPDC <em+hrpdcva.gov@ccsend.com>
Sent: Tuesday, February 8, 2022 1:01 PM
To: John Sadler
Subject: Join us for our Third Public Zoom Meeting-DRAFT Plan Available for Public Review and Comment

Hampton Roads Hazard Mitigation Plan Update
Virtual Public Meeting #3
6:00pm
March 2, 2022

Attention Citizens of:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

NOTICE OF VIRTUAL PUBLIC MEETING
HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Mitigation Action Plan prepared as part of this planning process.
Final draft available for review through March 9, 2022 at:
https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan.

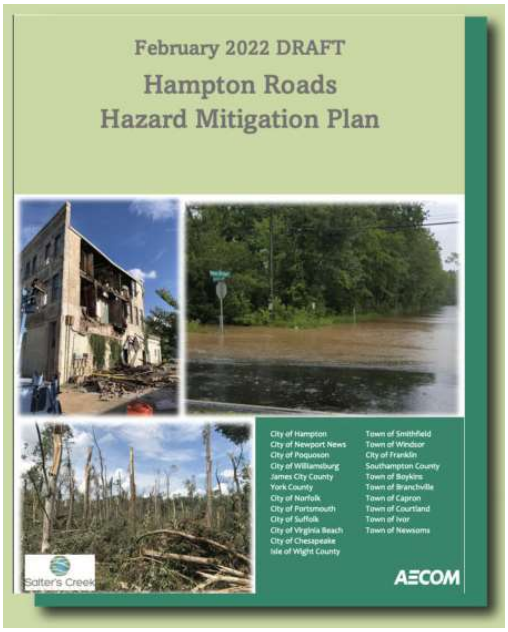
Final Public Zoom Meeting, March 2, 2022, 6pm: Register at
https://us02web.zoom.us/meeting/register/tZApdOigpzwrE9bQqArTY8w8OkdYh1YjO4y0

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

Draft Regional Hazard Mitigation Plan Out for Review; Virtual Meeting Scheduled

February 9, 2022



Hampton Roads is vulnerable to a wide range of hazards that pose threats to human safety, public and private property, the local economy, and the overall quality of life. Recognizing these vulnerabilities, regional stakeholders are in the process of updating the Hampton Roads Regional Hazard Mitigation Plan for 2022. This week the HRPDC released a draft of the updated plan for public review. The plan aims to protect our region by bolstering preparedness and lessening the potential impacts of hazards, thus increasing resiliency. This requires considering current vulnerabilities and assessing projected future patterns.

How do we address these objectives? The plan outlines specific structural measures, such as infrastructural protection, and non-structural measures, such as floodplain management policies, land use, and public awareness, recommended for use within all localities. The general purposes of this initiative are to:

- protect life and property by reducing the potential for future damages and economic losses that result from natural hazards;
- qualify for additional grant funding, in both the pre-disaster and post-disaster environment;
- speed recovery and redevelopment following future disasters;
- integrate existing mitigation documents;
- demonstrate a firm local commitment to hazard mitigation principles; and
- comply with state and federal legislative requirements tied to local hazard mitigation planning

The adoption of these guiding principles must be and will be regularly assessed and updated in order to remain relevant and effective. A full copy of the Hazard Mitigation Plan may be found here. For further information or to voice any questions and/or concerns, a virtual public meeting will be held via zoom on March 2, 2022 at 6:00pm. Please use this link to find the meeting registration page.

John Sadler

From: HRPDC and HRTPO <news+hrpdcva.gov@ccsend.com>
Sent: Friday, February 11, 2022 10:04 AM
To: John Sadler
Subject: HRPDC-HRTPO E-Update February 2022

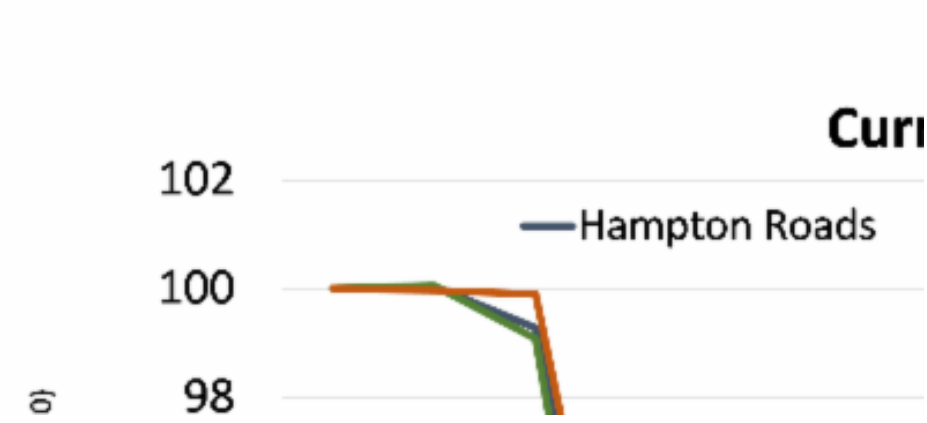
E-UPDATE Feb 2022

Hampton Roads Economic Monthly

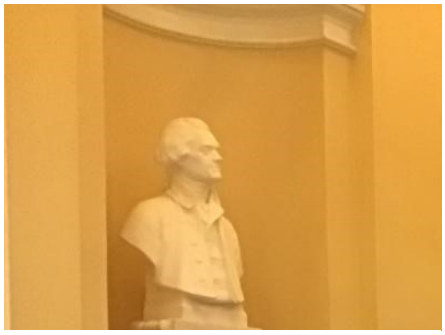
What isn't the unemployment rate telling us?

Currently across the United States economy, unemployment rates are low – sometimes an indicator of a healthy economy where people who want jobs are employed and employers are equally all staffed up. But a quick glance at the headlines tells a different story, as many major employers are struggling to find workers to fill positions. With low unemployment rates and monthly jobs reports in the hundreds of thousands, what isn't this indicator telling us?

READ MORE



First Hampton Roads Transit Advocacy Day at the General Assembly



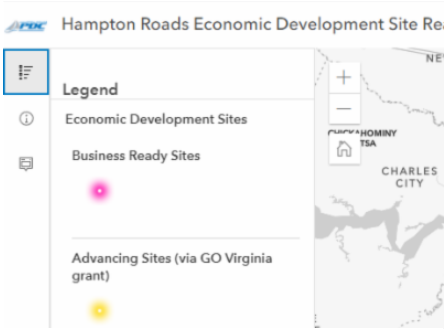
Transit stakeholders, officials, and advocates for a regional transit network in Hampton Roads met in Richmond on February 3, 2022, for the first Hampton Roads Transit Advocacy Day at the General Assembly. The Advocacy Day event was one of the first initiatives of the Regional Transit Advisory Panel (RTAP).

HRTPO Establishes 2022 Regional Roadway Safety and Transit Performance Targets

2022 HRTPO Safety Performance Targets	
Fatalities	125
Fatality Rate (per 100M VMT)	0.85
Serious Injuries	1,498
Serious Injury Rate (per 100M VMT)	10.19
Bike/Ped Fatalities and Serious Injuries Combined	179

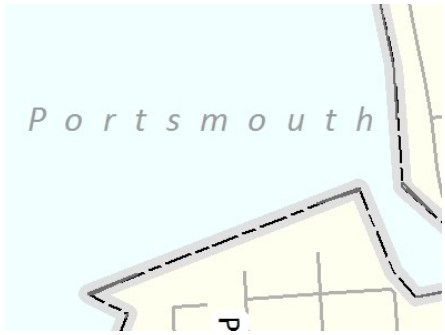
Federal legislation requires Metropolitan Planning Organizations (MPOs) to prepare and use a set of federally-established performance measures and set targets. Each MPO needs to approve regional performance targets in a number of areas including roadway safety, transit, bridge condition, pavement condition, roadway performance, and freight. The HRTPO must approve one-year regional performance targets for 2022 in three of these areas – roadway safety, transit asset management and transit safety.

February Map of the Month – Economic Development Site Readiness in Hampton Roads



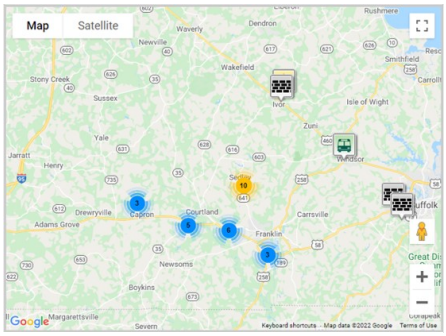
A key economic development strategy is having a portfolio of available sites ready for business expansion. Companies that intend on making new investments and expanding market opportunities prioritize sites that offer low development risk and fast speed to market. Known as "Business Ready," these sites have land use and zoning approval, due diligence completed, and infrastructure in place.

Project of the Month: Westhaven Bicycle Improvements-Portsmouth



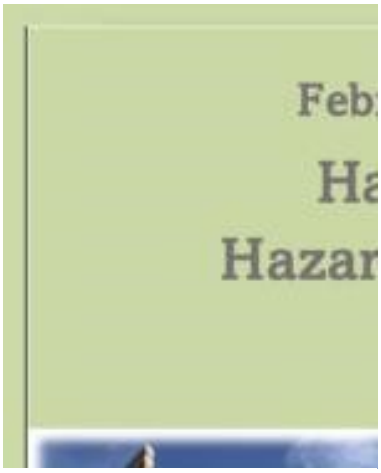
Each month, HRTPO staff will highlight a project that is currently being implemented within the Hampton Roads region. This month, staff is highlighting the Westhaven Bicycle Improvements project located in the City of Portsmouth.

2045 Rural Long-Range Transportation Plan Public Survey Summary



Last summer, Hampton Roads Transportation Planning Organization (HRTPO) staff, in collaboration with rural area stakeholders, began work on the 2045 Rural Long-Range Transportation Plan (RLRTP), a transportation vision plan for the City of Franklin and Southampton County. The RLRTP is part of an ongoing statewide effort to create and maintain regional transportation plans in rural areas that complement those in Virginia's metropolitan and small urban areas.

Draft Regional Hazard Mitigation Plan Out for Review; Virtual Meeting Scheduled



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HRTPO Staff Efforts Highlighted at the Annual Transportation Research Board Meeting in Washington DC

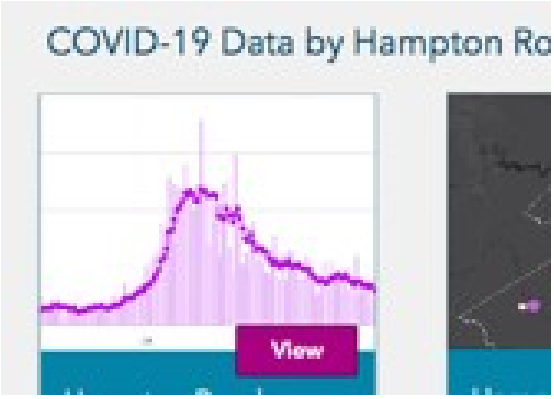
The Transportation Research Board (TRB) facilitates the sharing of information on transportation practice and policy by researchers and practitioners. TRB's Annual Meeting, held every year in Washington DC, is a premier national conference for transportation professionals to exchange ideas, promote technical excellence, and provide expert advice on transportation policy and programs. At this year's 101st TRB Annual Meeting, HRTPO staff was invited to showcase its project prioritization process as well as ridesharing analysis.

Save the Date for the Great American Cleanup, March 25-26

As the COVID-19 pandemic moves into its second year, the *Hampton Roads COVID-19 Impact Planning Hub* continues to provide data and information for the region.

Hampton Roads COVID-19 Impact Planning Hub

Visit the COVID-19 Impact Planning Hub to get the latest information on COVID-19 in Hampton Roads.



HRPDC/HRTPO In the News

Hampton Roads Hazard Mitigation Plan meeting scheduled for March 2 (WAVY, February 9, 2022)

More broadband choices on way for city (Suffolk News Herald, January 26, 2022)

Dozens of bills would change environmental rules in Virginia. Here's what lawmakers have proposed so far. (Virginian-Pilot, January 20, 2022)

Public Comment Opportunities

Level of Traffic Stress Analysis for the City of Hampton Draft Report (Ends February 16, 2022)

Hampton Roads Comprehensive Economic Development Strategy (CEDS): DRAFT Report
(Ends February 28, 2022)

DRAFT 2022 Hampton Roads Hazard Mitigation Plan Public Review Draft/Virtual Public Meeting (Meeting March 2, 2022 6pm; Review Period Ends March 9, 2022

Follow Us on Facebook

HRPDC Facebook Page ***HRTPO Facebook Page***

Upcoming Meetings

JOE TURNER
Communications and Web Manager

ROBERT COFIELD
Graphic and Web Designer

Phone: 757.420.8300
Fax: 757.523.4881
TTY: 757.390.2578

HRPDC Website

HRTPO Website

Join Mailing List

The Hampton Roads Planning District Commission (HRPDC) and Hampton Roads Transportation Planning Organization (HRTPO) fully comply with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination statutes and regulations in all programs and activities. HRPDC's website, ***www.hrpdcva.gov***, and HRTPO's website, ***www.hrtpo.org***, may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. HRPDC public meetings are always held in ADA-accessible facilities and in transit-accessible locations when possible. Auxiliary services can be provided to individuals who submit a request at least seven days prior to a meeting. Requests made within seven days will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by HRPDC under Title VI has a right to file a formal complaint. Any such complaint may be in writing and filed with the HRPDC and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on HRPDC's Title VI program, or to obtain a Title VI Complaint Form, please call *(757) 420-8300* or email: *rcrum@hrpdcva.gov*

HAMPTON ROADS PDC
PLANNING DISTRICT COMMISSION

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Welcome to the Hampton Roads Planning District Commission

2022 DRAFT
Hampton Roads
Hazard Mitigation Plan

DRAFT 2022 Hampton Roads Hazard Mitigation Plan available for Public Review;

Virtual Meeting March 2, 2022

- **Draft Hazard Mitigation Plan Available for Public Review/Virtual Public Meeting Scheduled**
- Public Comment Period Open for the Hampton Roads CEDS: DRAFT Report
- HRPDC Requests Dedicated Funding For Flood Prevention Projects
- Regional COVID-19 Related Data All in One Place
- 2022 Regional Legislative Priorities for the 757

Public Notices | Data/Info | Committees | Meetings | Legislative/Regulatory | Contact Us

Featured Documents

★ Public Notice: HAMPTON ROADS HAZARD MITIGATION PLAN UPDA...
February 8, 2022
Public Notices

★ PUBLIC NOTICE: Hampton Roads

Upcoming Meetings

CAC 3
February 10, 2022 | 12:00 PM - 02:00 PM
Community Advisory Committee

Southside Network Authority
February 11, 2022 | 02:00 PM - 04:00 PM

eNews

First Hampton Roads Transit Advocacy Day at the General...
February 8, 2022
General News

Save the Date for the Great

Public Meeting #3 March 2, 2022 (Downloadable PDF)

Public Notice - Attention citizens of:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk,

Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg,

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms,

Smithfield, Windsor, and Dendron.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Mitigation Action Plan prepared as part of this planning process.

Final draft available for review through March 9, 2022 at:

https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan.

Final Public Zoom Meeting, March 2, 2022, 6pm: Register at

https://us02web.zoom.us/meeting/register/tZApdOigpzwrE9bQqArTY8w8OkdYh1

*For More Information Visit: **https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan** Or Contact: HRPDC Emergency Management Department (757) 420-8300.*

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

Public Meeting #2 July 29, 2021

Presentation

Minutes and Attendance

Campaign to Promote Behaviors to Stop the Spread of COVID-19 in the Region
October 5, 2020

The 2019 Hurricane Season is Underway
June 3, 2019

View All News

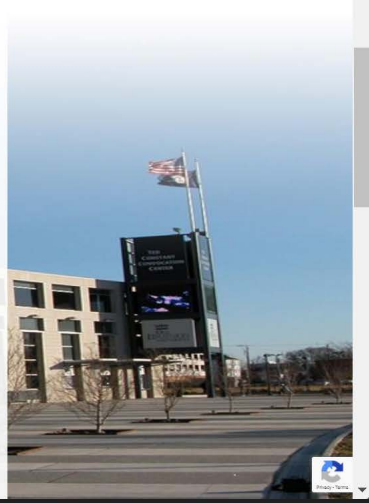
Emergency Management Documents

Public Notice: HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE - Virtual Meeting March 2, 2022
February 8, 2022Public Notices

Second Virtual Public Meeting for the Hampton Roads Hazard Mitigation Plan Update
July 8, 2021Public Notices

Emergency Management Program Update February 2021
February 18, 2021Presentation

View All Documents



K-5 online FLEx program to start

By Sierra Jenkins
Staff Writer

HAMPTON — Online learning didn't work for everyone during the pandemic, but public educators said some students thrived academically.

During the summer of 2020, Kate Maxlow began to brainstorm what would become Hampton City Schools' Future Learning Experience, also known as the FLEx program, which will launch next school year for K-5 students.

"I know that there are lots of kids who in-person is the right thing to do for them, but there are some who truly love this virtual environment as well," said Maxlow, the director of the district's Department of Innovation and Professional Learning.

She saw it in her son, in sixth grade at the time. He liked learning at his own pace. And other parents agreed, she said, saying there were fewer distractions at home and they could help their child get back on track more easily.

Maxlow's team finished the FLEx program in this past October. But during the 2020-21 academic year, the division's staff asked Hampton teachers who are also parents to enroll their kids in the program before Hampton would enroll other Virginia students. "That was another way that we were also looking at how can we help our staff ... our teachers, especially while they were trying to teach," Kellie Goral, the division's executive director of public relations and marketing, said.

Hampton schools will enroll 108 students in its first year — 16 for kindergarten and first grade, 18 in second and third, and 20 for fourth and fifth — and hire one teacher for each grade. The division hopes to expand to other grade levels.

The district received over $1 million in pandemic funding to support the program, Maxlow said. Most will go toward salaries, as well as instructional materials and extracurricular activities.

Hampton will host two informational meetings each month until the end of April, and parents must attend one session to be considered.

If the district has to switch to a lottery system due to a high number of applicants, 70% of students will be from Hampton schools, and the remaining spots can go to children from across the state.

Applications are due April 4 for teachers and May 6 for students.

Parents can also sign their child up for a sample class to see if the online experience would be a good fit. Teachers do not have to work for Hampton schools, nor do they have to live in Virginia, as long as they have a teaching license in the state.

HAMPTON ROADS PDC
PLANNING DISTRICT COMMISSION

ATTENTION CITIZENS OF:

The Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Portsmouth, Poquoson, Suffolk, Virginia Beach, and Williamsburg.

The Counties of Isle of Wight, James City, Southampton, Surry and York.

The Towns of Boykins, Branchville, Capron, Claremont, Courtland, Ivor, Newsoms, Smithfield, Windsor, and Dendron.

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

Learn about the Mitigation Action Plan prepared as part of this planning process.
Final draft available for review through March 9, 2022 at:
https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan.

Final Public Zoom Meeting, March 2, 2022, 6pm: Register at
https://us02web.zoom.us/meeting/register/tZApd0igpzwrE9bQqArTY8w8OkdYh1YjO4y0

For More Information Visit: https://www.hrpdcva.gov/departments/emergency-management/2022-hampton-roads-hazard-mitigation-plan Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact John Sadler, Regional Emergency Management Administrator, at (757) 420-8300 for more information.

PUBLIC NOTICE WILLIAMSBURG PLANNING COMMISSION

The Williamsburg Planning Commission will hold public hearings on Wednesday, March 16, 2022, at 3:30 p.m. in the Council Chambers of the Stryker Center, 412 North Boundary Street, to consider the following:

A. PCR#22-001: Request for a special use permit to construct a new Tidal Wave Auto Spa at 1800 Richmond Road.

B. PCR#22-004: Request of Williamsburg-James City County Public Schools for a special use permit to continue the use of the two existing learning cottages at Matthew Whaley Elementary School through July 2026.

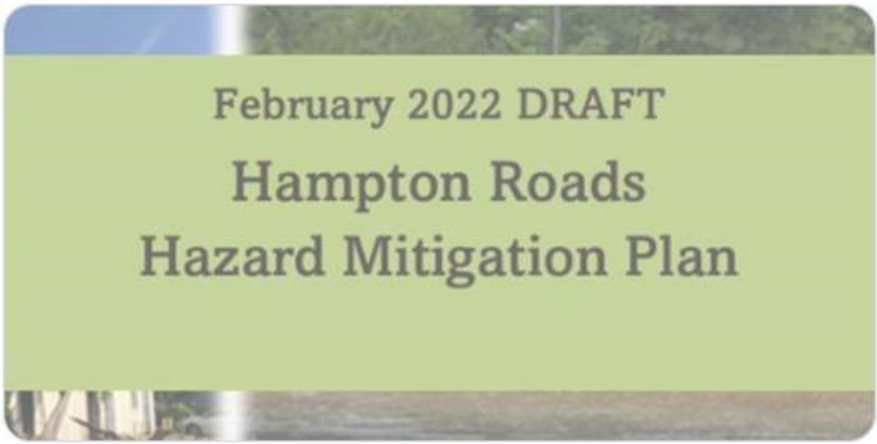
Additional information is available at www.williamsburgva.gov/publicnotice or the Planning Department (757) 220-6130, 401 Lafayette Street. Interested citizens are invited to attend this hearing and present their comments to the Planning Commission.

If you are disabled and need an accommodation to participate in the public hearings, please call the Planning Department at (757) 220-6130, (TTY) 220-6108, no later than noon, Wednesday, March 16, 2022. Masks are required in all public buildings in the City of Williamsburg.

Erin Burke
Interim Planning and Codes Compliance Director

James City County @JamesCityCounty · 3s

The Draft Hampton Roads Hazard Mitigation Update Plan is ready for your review. The draft is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. 1/3



1

James City County @JamesCityCounty · 3s

You can find the draft plan and more information at hrpdcva.gov/departments/em.... The final draft is available for review through March 9, 2022. 2/3

1

James City County @JamesCityCounty · 2s

Want to know more? Attend a virtual public meeting Monday, March 2, 2022 at 6 p.m. Register at us02web.zoom.us/meeting/regist... 3/3

us02web.zoom.us

Welcome! You are invited to join a meeting: Public ...

Welcome! You are invited to join a meeting: Public Meeting #3 - Hampton Roads Hazard Mitigation ...

James City County

Published by Renee Dallman · Just now ·

The Draft Hampton Roads Hazard Mitigation Update Plan is ready for review. The draft is the result of a planning process to identify hazards and develop strategies to reduce loss of life and property. You can find the draft plan and more information at https://www.hrpdcva.gov/.../2022-hampton-roads-hazard.... The final draft is available for review through March 9, 2022.

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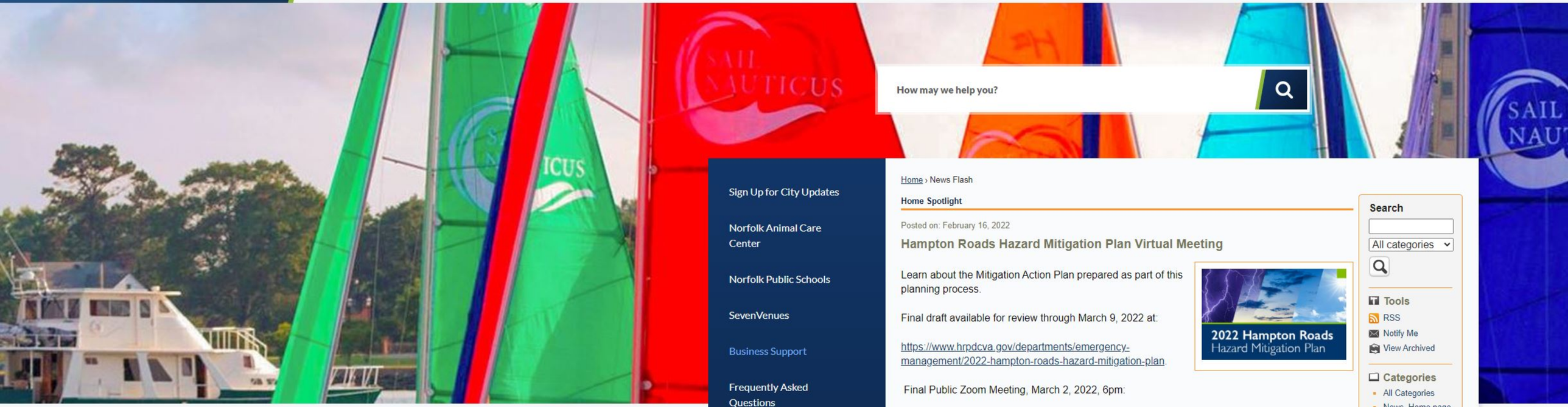

Sign Up for City Updates

Norfolk Animal Care Center

Norfolk Public Schools

SevenVenues

Business Support

Frequently Asked Questions

Home Spotlight

Posted on: February 16, 2022

Hampton Roads Hazard Mitigation Plan Virtual Meeting

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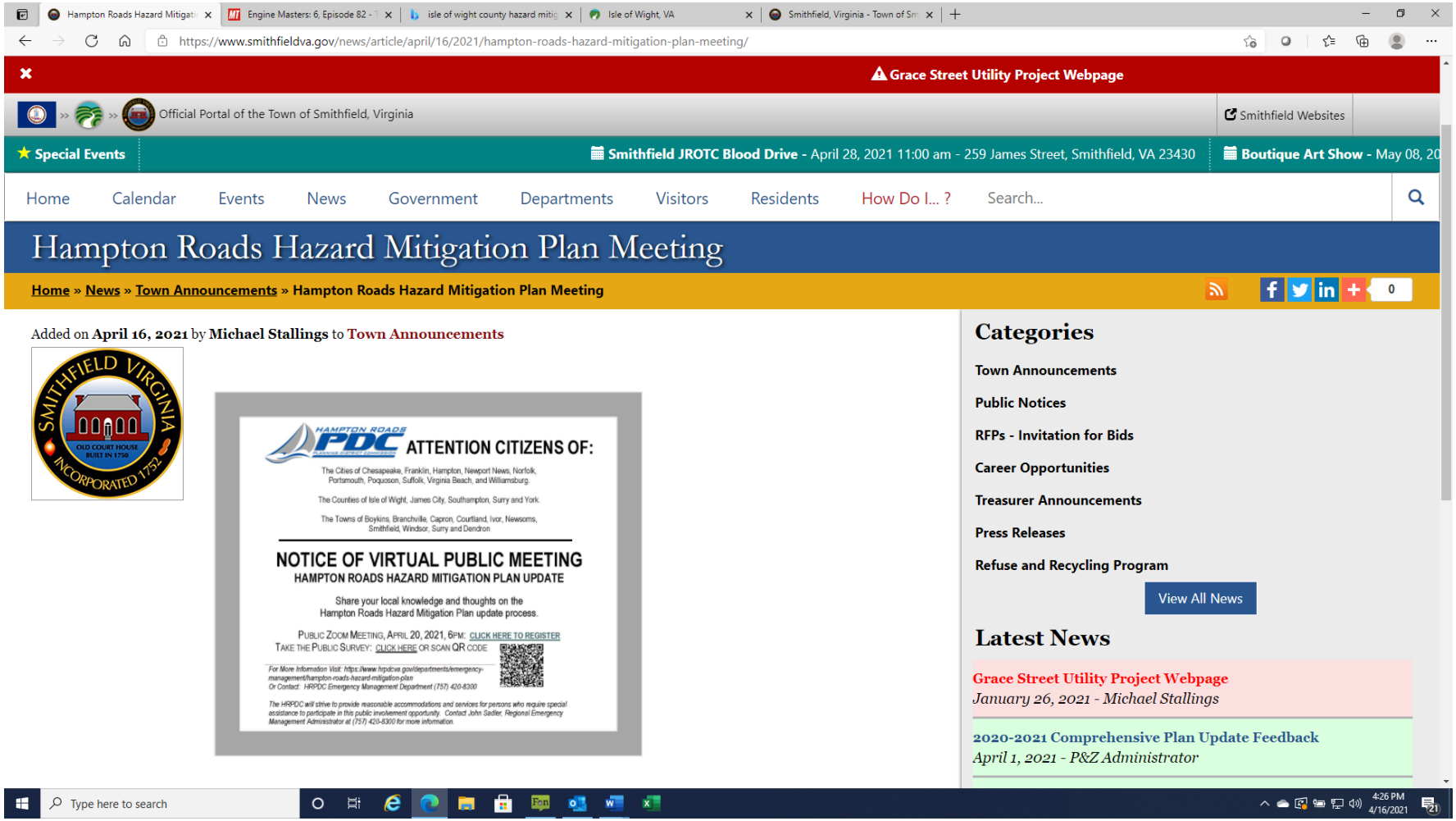
Next ⇒
Mayor's Commission on Social Equity and Economic

Town of Smithfield

Public Notice of Hazard Mitigation Plan Meeting posted on Town Website.



Hampton Roads Hazard Mitigation Plan Meeting

Added on **February 24, 2022** by **Michael Stallings** to **Town Announcements**

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Town Announcements

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Career Opportunities

Treasurer Announcements

Press Releases

Refuse and Recycling Program

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PUBLIC NOTICE
Meeting Calendar

SUFFOLK CLEAN COMMUNITY COMMISSION

2022 Meeting Dates

January 24th (City Council Chambers)
February 28th (City Council Chambers)
March 21st (City Council Chambers)
April 18th
May 16th
June 20th
July 18th
August 15th
September 19th
October 17th
November 21st
December 19th

6:00 P.M.

LOCATION

Council Chambers Conference Room (except when noted next to date)
City Hall
442 West Washington Suffolk, VA 23434

Litter Control Coordinator
littercontrol@suffolkva.us

PUBLIC NOTICE
Meeting Calendar

SUFFOLK LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

2022 Meeting Dates

January 26
February 23
March 30
April 27
May 25
June 29
July 27
August 31
September 28
October 26
November 30
NO DECEMBER MEETING

8:30 A.M.

LOCATION

Due to the COVID-19 pandemic, meetings will be held virtually until further notice. If you wish to attend please contact Richard Stephens at rstephens@suffolkva.us to request information.

HAMPTON ROADS PDC

ATTENTION CITIZENS OF:

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PUBLIC NOTICE

SUFFOLK HUMAN SERVICES
ADVISORY BOARD

WILL CONDUCT
REGULAR MEETINGS
ON THE

SECOND WEDNESDAY OF
EVERY OTHER MONTH AT 4:00 P.M.

NEXT MEETING DATES:

February 9, 2022	October 12, 2022
April 13, 2022	December 14, 2022
June 8, 2022	
August 10, 2022	

SUFFOLK HEALTH & HUMAN SERVICES BLDG.
135 HALL AVENUE, SUITE B
THIRD FLOOR CONFERENCE ROOM

PUBLIC

SUFFOLK EL
BOAR

WILL CONDUCT REGU
MEETINGS ON THE FIR
EACH MONTH AT

VOTER REGISTRATIO
440 MARKET STREET,

Permanent Public Notice. Please do not

PUBLIC NOTIC

SUFFOLK COMMUNITY F
AND MANAGEMENT TEAM
WILL CONDUCT A SPECIAL
ON
WEDNESDAY, FEBRUARY
AT 1:30 PM
WESTERN TIDEWATER COM
SVCS. BD.
7025 HARBOUR VIEW BLVD,
119
SUFFOLK,VA 23435

Permanent public notice. Please do not remove.

ECONOMIC DEVELOPMENT AUTHORITY

Suffolk

PUBLIC NOTICE

THE SUFFOLK
ECONOMIC DEVELOPMENT AUTHOR

WILL MEET
THE SECOND WEDNESDAY
OF EACH MONTH
AT 4:00 P.M.

FOR THE PURPOSE OF
REGULAR MEETINGS

SUFFOLK MUNICIPAL CENTER
442 W. WASHINGTON STREET

CITY COUNCIL CHAMBERS

FOR FURTHER INFORMATION
PLEASE CALL: (757)514-4040

HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

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NEWS CENTER
Events Calendar
City Page Newsletter
VBTV Videos
Community Connect
News Article List

Join Virtual Public Meeting for Hampton Roads Hazard Mitigation Plan Update on March 2

Tuesday, February 08, 2022

The third public meeting for the 2022 Hampton Roads Hazard Mitigation Plan will take place at 6 p.m. on Wednesday, March 2 online via Zoom. Residents will have an opportunity to learn about the region's Mitigation Action Plan and comment on the final draft of the plan. The commenting period will remain open through March 9.

The Hampton Roads Hazard Mitigation Plan is developed and maintained by the Hampton Roads Planning District Commission (HRPDC) with input from City stakeholders. It identifies natural threats that the City of Virginia Beach is vulnerable to such as flooding and tropical storms. Mitigation actions within the Hampton Roads Hazard Mitigation Plan serve as a tenet of the City's strategy to limit the likelihood of damage from these threats.

Register for the Meeting

Members of the public can register to participate in the public meeting by visiting https://us02web.zoom.us/meeting/register/tZApdOigpzwrE9bQqArTY8w8OkdYh1YjO4y0

To view the final draft of the 2022 Hampton Roads Hazard Mitigation Plan and instructions on providing comments, visit www.hrpdcva.gov.

# # #

CONTACT INFORMATION
Danielle Spach
(757) 385-8585
DRSpach@vbgov.com

Search
Search by Date Range
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End
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Third Monday at 5:30 p.m. (Jan – Second Monday)
(no meeting Mar, Jul, Dec)
Parks & Rec Administration Building
2154 Landstown Road, Room 101
Call for more information: 385-1115

Board of Zoning Appeals
First Wednesday at 2:00 p.m.
Municipal Center, Bldg. 1 – Council Chambers
(Training/Lunch: 12:00 – 1:00)
(Informal: 1:00, Bldg. 1 – Room 234)
Call for more information: 385-8274
(Van Trip – 9:00, Parking Lot at the Convention Center
(West side parking lot))

Chesapeake Bay Preservation Board
First Monday at 10:00 a.m.; Informal @ 9:00
Municipal Center, Bldg. 1 – Council Chambers
(Call for more information: 385-4621)

Community Criminal Justice Board
Second Thursday at 3:00 p.m.
Municipal Center, Bldg 1 – Room 234
Call for more information: 385-8261 or 371-6999

Community Police & Management Team
Fourth Monday at 9:00 a.m.
OPA Ofc, 2408 Courthouse Dr
Call for more information: 385-2347

Community Services Board
Last Thursday, 8:30-10:30 a.m. (No meetings in May, July and December)
August and November Meeting – Third Thursday
3432 Virginia Beach Blvd., Conf. Room 339
Call for more information: 385-5202

Executive Committee
Third Thursday, 4:00-5:00 p.m.
3432 Virginia Beach Blvd., Room 339
Advocacy/Education Committee
As needed immediately following CSB board

Green Ribbon Committee, Policy Subcommittee and Education/Incentive Subcommittee
Fourth Thursday at 2:30 p.m. – 4:00 p.m. (until Oct)
Virginia Beach Convention Center, 1000 19th St
Call for more information: 385-1115

Health Services Advisory Board
Second Tuesday at 5:45 p.m. (bi-monthly from Feb)
Virginia Beach Department of Public Health
4452 Corporate Lane, 2nd Floor, Glass Conf. Rm.
Call for more information: 518-2672

Historic Preservation Commission
First Wednesday at 5:00 p.m.
2875 Suburban Street, Ste 500
Call for more information: 385-8573

Executive Committee
Fourth Wednesday at 5:30 p.m.
2875 Suburban St, Suite 500

Student Leaders Committee
Second Wednesday at 5:00 p.m. (Except Apr – Apr 20th)
CVB, 2101 Parks Ave, Ste 500

ELECTORAL BOARD
City of Virginia Beach

BLIC NOTICE

City of Virginia Beach
Electoral Board
ill hold a meeting on

esday, February 9, 2022
11:30 a.m.
at
Registration & Elections
located in
14 at the Municipal Center

PDC

ATTENTION CITIZENS OF:

NOTICE OF VIRTUAL PUBLIC MEETING

HAMPTON ROADS HAZARD MITIGATION PLAN UPDATE

NO SOLICITING

Office Hours

Monday - Friday
8:00AM - 5:00PM

PDC

ATTENTION CITIZENS OF:

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FINAL PUBLIC ZOOM MEETING, MARCH 2, 2022, 6PM. REGISTER AT:

For More Information Visit:

Or Contact: HRPDC Emergency Management Department (757) 420-8300

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact: John Sadler, Regional Emergency Management Administrator at (757) 420-8300 for more information.

VB City of Virginia Beach

PLANNING COMMISSION
SITE VISITS

WHEN: The First Thursday of Each Month at 9:00 AM

WHERE: Meet at the Western parking lot of 2875 Sabre Street, Virginia Beach, VA 23452 then caravan to project sites*

**NOTE: For specific project sites, please contact the Planning Department at 757-385-4621*

The **Student Leaders Committee** of the Virginia Beach Historic Preservation Commission

will meet on **Wednesday, February 9, 2022** at **5:00 p.m.** in the Convention and Visitors Bureau Conference Room Towne Bank building, 2101 Parks Avenue, Suite 500

Members of the public should contact Mark Reed at mreed@vbgov.com 757-385-8571 if you have any questions about the meeting.

A cloth mask or face shield is required for public attendance.

For inquiries about other functions in the Department of Planning and Community Development please call 757-385-4621

VB City of Virginia Beach

Transition Area/Interfacility Traffic Area (TA/ITA)
Citizens' Advisory Committee
Regular Meeting

WHEN: The First Thursday of Each Month at 5:15 PM

WHERE: Municipal Center, 2416 Courthouse Drive Building 19, Room A

VB City of Virginia Beach Planning & Community Development

Zoning & Permits Counters

Effective Nov 15, 2021 until further notice, the Planning Department is closed to walk-in customers on Mondays and Thursdays due to staffing shortages, decrease of in-person permit requests, and to allocate available staff hours toward plan/permit review, the Planning Department.

Modified Hours of Operation
Tues, Wed, Fri - 8:00 am to 4:30 pm
Closed for lunch 12:00 pm to 1:00 pm

The Counter is closed Mondays and Thursdays. Planning services are available by appointment on these days. Please call (757) 385-4621 to be directed to the appropriate team member to schedule an appointment.

NEWS › REGIONAL/NATIONAL

Hampton Roads Planning Commission Release Draft of 2022 Hazard Mitigation Plan

By **Ben Mackin** February 17, 2022 0

The Hampton Roads Planning District Commission has released the draft of the draft of the Hampton Roads Hazard Mitigation Plan. (WYDaily file photo)

HAMPTON ROADS — The Hampton Roads Planning District Commission (HRPDC), which is the regional organization which works to facilitate local government cooperation, has released a draft of its 2022 Hazard Mitigation Plan.

The plan, which is updated every five years, provides guidance and strategies for managing the various potential disasters that impact Hampton Roads throughout the year, including hurricanes, flooding, and sea level rise.

The main objective laid out by the HRPDC is to save lives and property in the event that hazard mitigation plans need to be implemented during a natural disaster. It also provides a detailed analysis on each locality within Hampton Roads such as population, density, history of past disasters and how those have impacted each community.

The process for collecting the data from the 25 participating jurisdictions, including the City of Williamsburg as well as James City and York counties, began in February

citizens as well as assessing any risks that might impact the region.

The draft of the mitigation plan is currently 576 pages long and goes into detail on the statistical likelihood of every possible natural disaster that might hit southeastern Virginia and how it would effect each specific locality.

The draft will be available on the HRPDC website until March 9. The commission will also accept public comment on the plan until it is taken down for revision.

The HRPC will host an informational zoom meeting for citizens on March 2 at 6 p.m. Those who wish to attend should register by clicking here.

To finalize the plan, government agencies such as the Federal Emergency Management Agency and the Virginia Department of Emergency Management, as well as all of the localities involved will have to approve the plan before it is finalized.

County Administrator
Neil A. Morgan

Deputy County Administrator
Mark L. Bellamy, Jr.

Assistant County Administrator
Brian P. Fuller

February 8, 2022

Hampton Roads Planning District Commission
723 Woodlake Drive
Chesapeake, Virginia 23320

To Whom It May Concern:

On February 8, 2022, the flyer concerning the public's ability to participate in the Hampton Roads Hazard Mitigation Plan update was posted in the County Administration building located at 224 Ballard Street, Yorktown.

If I can be of any further assistance to you, please do not hesitate to contact me.

Sincerely,

Heather L. Schott, CMC
Legislative Assistant/Deputy Clerk

HAMPTON ROADS PDC

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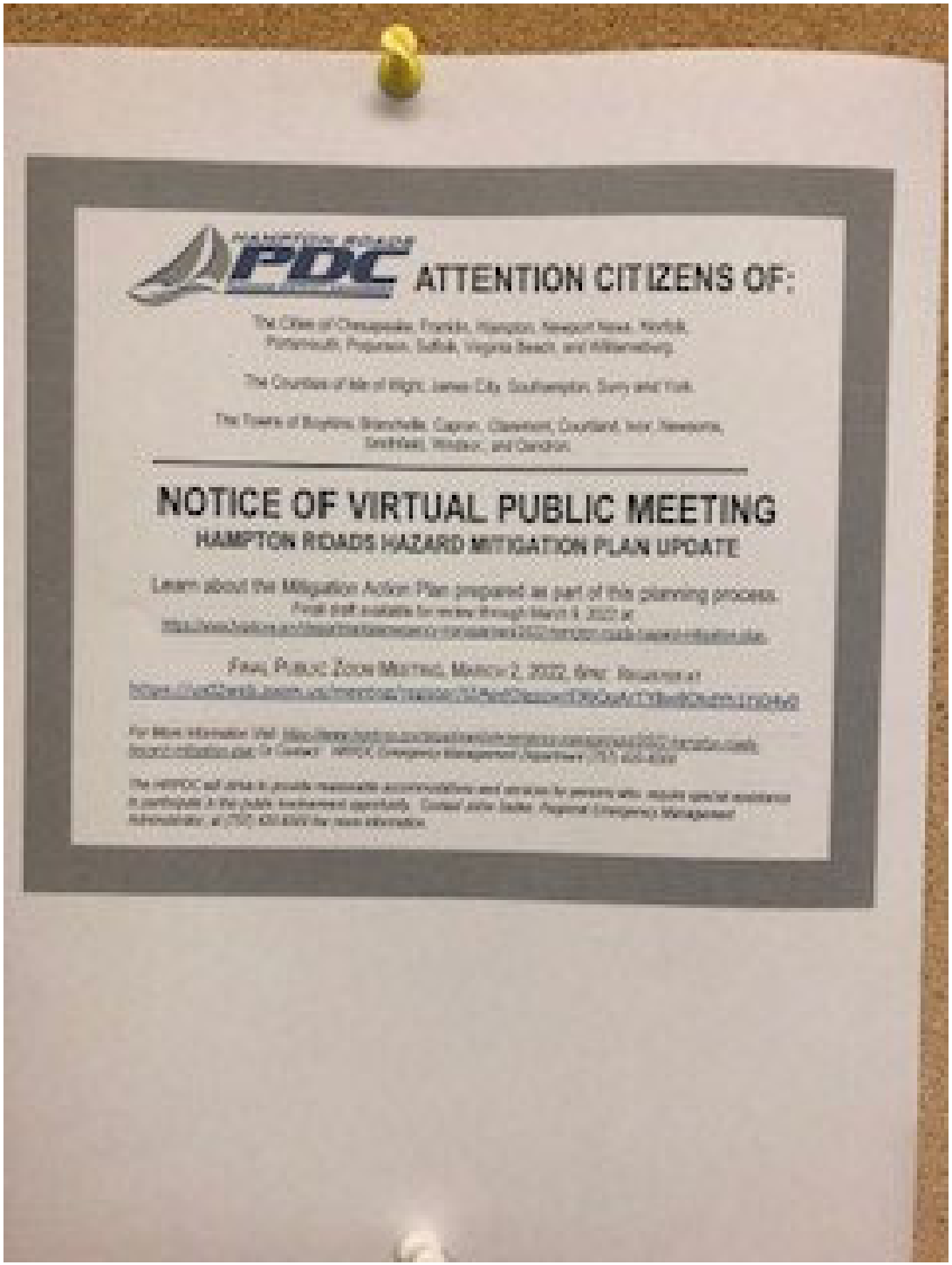

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Final Public Zoom Meeting: March 2, 2022, 6PM. Register at
https://us06web.zoom.us/meeting/register/tZ0kcOGsqDIqGNJ7ZBwMOkdVKcUVZ0Ne0

For More Information Visit https://www.hrpdc.org/Data/Sites/1/documents/plans-reports/2022-hrhmp-public-meeting-notice.pdf or Contact VDEM Emergency Management Department (757) 414-7500

The HRPDC will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact Jackie Geller, Regional Emergency Management Administrator, at (757) 420-8300 for more information

NEWS › REGIONAL/NATIONAL

Hampton Roads Planning Commission Release Draft of 2022 Hazard Mitigation Plan

By **Ben Mackin** February 17, 2022 0

The Hampton Roads Planning District Commission has released the draft of the draft of the Hampton Roads Hazard Mitigation Plan. (WYDaily file photo)

HAMPTON ROADS — The Hampton Roads Planning District Commission (HRPDC), which is the regional organization which works to facilitate local government cooperation, has released a draft of its 2022 Hazard Mitigation Plan.

The plan, which is updated every five years, provides guidance and strategies for managing the various potential disasters that impact Hampton Roads throughout the year, including hurricanes, flooding, and sea level rise.

The main objective laid out by the HRPDC is to save lives and property in the event that hazard mitigation plans need to be implemented during a natural disaster. It also provides a detailed analysis on each locality within Hampton Roads such as population, density, history of past disasters and how those have impacted each community.

The process for collecting the data from the 25 participating jurisdictions, including the City of Williamsburg as well as James City and York counties, began in February

citizens as well as assessing any risks that might impact the region.

The draft of the mitigation plan is currently 576 pages long and goes into detail on the statistical likelihood of every possible natural disaster that might hit southeastern Virginia and how it would effect each specific locality.

The draft will be available on the HRPDC website until March 9. The commission will also accept public comment on the plan until it is taken down for revision.

The HRPC will host an informational zoom meeting for citizens on March 2 at 6 p.m. Those who wish to attend should register by clicking here.

To finalize the plan, government agencies such as the Federal Emergency Management Agency and the Virginia Department of Emergency Management, as well as all of the localities involved will have to approve the plan before it is finalized.

APPENDIX D – SURVEY RESULTS

This Appendix provides a copy of the 2021 Public Participation Survey and a summary of results collected. Open-ended responses were not included in this summary due to the hundreds of lengthy responses. However, the HRPDC maintains a file copy of the survey responses for public review upon request.

Hampton Roads - Public Participation Survey for Hazard Mitigation Planning

We need your help!
Your community is engaged in a planning process to become less vulnerable to natural disasters and manmade hazards, and your participation is important to us. The Hampton Roads Planning District Commission (HRPDC) communities are updating their Hazard Mitigation Plan. This survey lets you share your opinions and participate in the process. Information you provide helps us better understand your hazard concerns and can lead to mitigation activities to lessen the impact of future events.

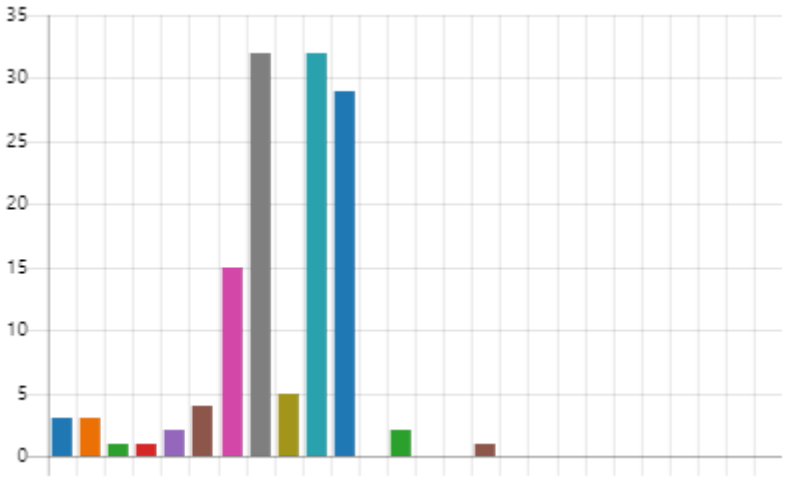
Please complete this survey and either submit it on this platform, or print and send to our planning consultant: Salter's Creek Consulting, 1 Peek Street, Hampton VA 23669. If you have any questions regarding this survey, or would like to learn about more ways you can participate in plan development, contact Ms. Danielle Spach at the HRPDC at 757-420-8300.

Hampton Roads - Public Participation Survey for Hazard Mitigation Planning

130	21:57	Closed
Responses	Average time to complete	Status

1. In what community do you live?

Hampton	3
Newport News	3
Poquoson	1
Williamsburg	1
James City County	2
York County	4
Norfolk	15
Portsmouth	32
Suffolk	5
Virginia Beach	32
Chesapeake	29
Isle of Wight County	0
Smithfield	2
Windsor	0
Franklin	0
Southampton County	1
Boykins	0
Branchville	0
Capron	0
Courtland	0
Ivor	0
Newsoms	0
Surry County	0
Town of Surry	0
Dendron	0
Other	0



2. What is your zip code (optional)?

115

Responses

Latest Responses

"23707"

"23703"

"23703"

3. We recognize that our entire community has recently been impacted by COVID-19. Beyond that, have you ever experienced or been impacted by a natural or manmade disaster?

Yes	87
No	43

4. If you answered "yes", please describe your experience(s). Feel free to describe your experience with COVID-19, as well.

86
Responses

Latest Responses

"Hurricane Isabel, Nor'easters that have heavily impacted Hampton Roads...

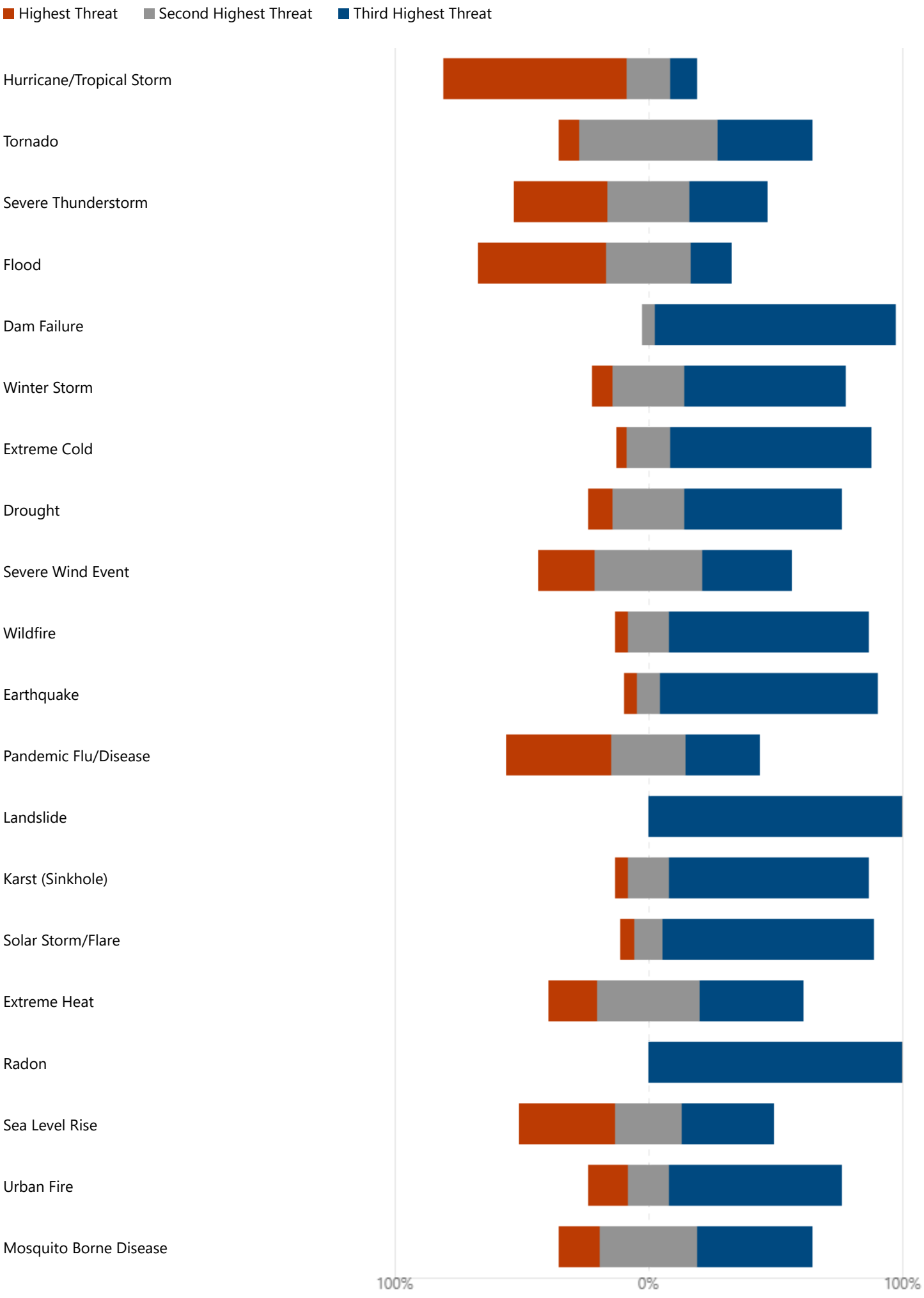
"The city of Portsmouth refuses to maintain the ditches that storm drains ...

5. How concerned are you about the possibility of your community being impacted by a natural hazard or manmade disaster (besides COVID-19)? (1 not very concerned; 3 very concerned)

130
Responses

2.53
Average Number

6. Please select the three hazards that you think pose the highest threats to your community (you cannot change your response, so please choose carefully):



7. Is there another hazard not listed above that you think is a wide-scale threat to your neighborhood in particular?

60
Responses

Latest Responses
"no"

8. Is your home located in a floodplain?

Yes	44
No	72
I don't know	13

9. Do you have flood insurance?

Yes	53
No	75
I don't know	2

10. If you answered "no", why not?

Not located in floodplain	39
Too expensive	15
Not necessary because it neve...	2
Not necessary because my ho...	16
Never really considered it	5

11. Have you ever investigated the potential impact of hazards, other than flooding or pandemic, affecting your neighborhood?

Yes	56
No	73

12. If you answered "yes", please explain.

52

Responses

Latest Responses

13. Have you ever taken any actions to make your home or neighborhood more resistant to hazards?

Yes	84
No	44

14. If you answered "yes", please explain.

86

Responses

Latest Responses

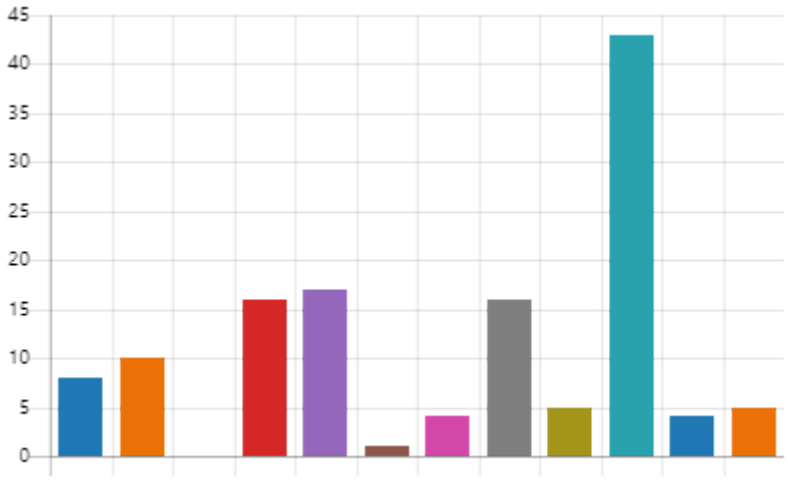
"I have sent numerous e-mails to the city of Portsmouth about the diches ...

15. Are you interested in making your home or neighborhood more resistant to hazards?

Yes	93
No	7
Maybe	28

16. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?

Newspaper	8
Television	10
Radio	0
Web site	16
Social media (Facebook, Insta...	17
Podcast	1
Webinar	4
Mail	16
Public Workshop/meeting	5
Email	43
Phone	4
Other	5



17. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?

110
Responses

Latest Responses

"*N/A*"

"*There should be a maintenance plan in effect to have the ditches cleaned...*

18. Prevention: Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples: planning and zoning, building codes, open space preservation, stormwater management regulations, drainage system maintenance, capital improvements programming, shoreline/riverine setbacks, Chesapeake Bay Act regulations, and floodplain regulations.

125
Responses

1.19
Average Number

19. Property Protection: Actions that involve the modification of existing buildings to protect them from a hazard, or removal from the hazard area. Examples: acquisition, relocation, elevation, critical facilities protection, structural retrofits, storm shutters, and insurance.

125	1.61
Responses	Average Number

20. Natural Resource Protection: Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples: land acquisition, floodplain protection, watershed management, beach and dune preservation, erosion and sediment control, wetland preservation and restoration, habitat preservation, slope stabilization, riparian buffers, and forest management.

126	1.36
Responses	Average Number

21. Structural Projects: Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples: dams, levees, seawalls, detention/retention basins, channel modification, beach nourishment, retaining walls and storm sewers.

124	1.59
Responses	Average Number

22. Emergency Services: Actions that protect people and property during and immediately after a hazard event. Examples: warning systems, evacuation planning, emergency response training, sandbagging for flood protection, and installing temporary shutters for wind protection.

124	1.43
Responses	Average Number

23. Public Education and Awareness: Actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples: outreach projects, speaker series/demos, hazard mapping, real estate disclosure, school education programs, library materials, hazard expos and inter-governmental coordination.

126
Responses

1.47
Average Number

24. Did the examples of activities from any of the previous questions trigger any additional ideas, thoughts or priorities you believe are important for your community's plan to reduce the cost and impact of hazards?

58
Responses

Latest Responses
"*no*"
"*I just wish someone would come out and at least take a look at the probl...*

25. Name (optional):

66
Responses

Latest Responses
"*Christie Saunders*"
"*Terry wayne Gay*"

26. Address (optional):

54
Responses

Latest Responses
"*105 Lynn Drive 23707*"
"*5517 Greenbrook Drive*"

27. An online public meeting will be occurring on April 20, 2021 at 6pm. To receive an invitation to that meeting, or to be updated with the results of this survey and project information, please provide **your email address**:

72
Responses

Latest Responses
"*Too late*"
"*terrywaynegay@gmail.com*"

APPENDIX E - REVIEW COMMENTS

This section of the Plan includes each of the written comments received from public, committee and stakeholder reviewers during the final public review of the plan, as well as a response from the primary consultant addressing each comment in detail.

3/31/22: VDEM Review Comments

1. Multi-jurisdictional Summary Sheet (Section III) is at the bottom of the Plan Review Tool Document – there is considerable contact information missing from the Jurisdictional Representatives' information. This may need to be changed, I am awaiting a response from FEMA. Usually this includes the CAO or CEO of each participating jurisdiction.
   Response: Revised with additional names. We did not include CAO or CEO of each Jurisdiction as they have rarely been our primary point of contact during the planning process.

2. Cover Page – Surry County and the Towns of Claremont and Dendron are not included in the list of planning communities.
   Response: Corrected

3. Page 2.9 – Paragraph 4 has dates unfilled that appear to be events that would have occurred by now. These should be filled in?
   Response: Corrected

4. Element A.1 – partially met – "who was involved in the process for each jurisdiction?"
   a. There is a matrix for the "Steering Committee" on Pages 2.4-2.5 however, this does not identify a person for each jurisdiction and the information on the persons included does not meet requirements.
   b. Town representatives are not included in the matrix for the Steering Committee. If they participated they should be included here. If Towns did not participate directly there should be documentation of how Towns provided input in the plan.
   c. Complete information each of the 25 adopting/participating jurisdictions must include a name, position/title, and the jurisdiction's agency.
      i. ***44 CFR 201.6(c)(1)*** *The plan* ***must*** *identify who represented each jurisdiction. The Plan* ***must*** *provide, at a minimum, the jurisdiction represented and the person's position or title and agency within the jurisdiction.* (A.1 Requirement C)

   Response: Section 2 substantially revised to include new Table 2.2b which provides names, titles and agencies for each of the Working Group team members that participated.

5. Element A.2 – partially met – the plan provides a generalized list of stakeholders invited on Page 2.12 and there are stakeholders that DID respond to invites. There is not a list of ALL entities given the opportunity to be involved in the planning process.
   a. ***44 CFR 201.6(b)(2)*** *The plan* ***must*** *identify all stakeholders involved or given an opportunity to be involved in the planning process.*

   Response: Revised. The list on page 2:16 was modified to indicate specific agencies asked to participate that did not. Fortunately, many of the groups we asked did choose to participate so the list of stakeholders in Table 2.2a is long, but the list of agencies that did *not* participate on page 2:16 is short.

6. Element A.6 – partially met – There is a description for the 5-year plan and each of the three efforts are covered (Monitoring, Evaluating, and Updating). Missing is the requirement that each effort must identify WHO will be responsible for leading the how and when.

a. ***44 CFR 201.6(c)(4)(i)*** *The plan **must** include the title of the individual or name of the department/agency responsible for leading each of these efforts.*

Response: Revised. We updated Tables 2.2a and 2.2b with an asterisk beside each responsible individual and made changes to Section 8 to reflect this indication in Section 2.

7. Element C.2 – partially met – the plan provides thorough information on jurisdictions participating in the NFIP however, there is no information on the 3 participating communities that are not participating in the NFIP (Capron, Dendron, and Newsoms). Each of these towns are contained within a county that participates in the NFIP however, the missing requirement is that each participating community NOT participating in the NFIP must provide an explanation describing the reasons for not participating.
   a. **44 CFR 201.6 (c)(3)(ii)** – *The plan **must** describe each jurisdiction's participation in the NFIP and describe their floodplain management program from continued compliance.*
   b. *Jurisdictions that are currently not participating in the NFIP and where an FHBM or FIRM has been issued may meet this requirement by describing the reasons why the community does not participate.*

   Response: Revised. Section 5, page 5:9 includes a new paragraph describing the NFIP participation status of Capron, Dendron and Newsoms.

8. Element C.6 – partially met – the plan does describe process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms (as noted in quote below from Page 8.2 for one example). However, the regulation calls for a description of "each participating jurisdiction's individual process."
   a. Each community will integrate the tenets of this mitigation plan into relevant local government decision making processes or mechanisms. The primary means for integrating mitigation strategies into other local planning documents will be accomplished through the revision, update, and implementation of the Mitigation Action Plan that requires specific planning and administrative tasks (i.e., plan amendments, ordinance revisions, capital improvement projects). In addition, each community will incorporate existing planning processes and programs addressing the impacts of climate change, resiliency programs, flooding, and sea level rise hazard mitigation into this document by reference.
   b. Per **44 CFR 201.6 (c)(4)(ii)** – *A multi-jurisdictional plan **must** describe each participating jurisdiction's **individual** process for integrating hazard mitigation actions applicable to their community into other planning mechanisms.*
   c. Unless the Mitigation Action Sheets will meet this requirement?

   Response: Revised. A new Table 6:7 was added to summarize how each jurisdiction will continue to integrate their MAP into other planning mechanisms. Please also see Section 6, pages 6:8 through 6:31, which provides significant detail on how each community has already integrated these processes in ways that will continue into the future. This section was updated for this plan with additional detail on how this integration continued in the most recent planning period. In Hampton Roads, the level of integration is already quite high and in many cases, mitigation actions are echoed across numerous planning mechanisms. This integration is also

shown in the description of individual mitigation actions that are also included (or will be included) in resilience or comprehensive plans, for example.

9. B4 RL property Definitions:

   a. The NFIP defines Repetitive Loss as 2 or more claims of at least $1000 over a 10 year rolling period. This is the data that appears in this plan.
   b. The Hazard Mitigation Assistance program defines Repetitive Loss as having incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and, at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

   Response: Revised. A footnote was added on page 5:12 to provide the second definition.

2/7/22: Richard Stephens, Suffolk Fire & Rescue

10. I reached out to our Public Utilities Department last week, but have not heard back. I think adding a mitigation action is appropriate. I will work with the owner to rehabilitate the Godwin's Millpond Dam. Please feel free to contact me with any further questions.

Response: Revised. New mitigation action 11 for Suffolk added to MAP in Section 7.

2/8/22: Matt Simons, Norfolk Office of Resilience

11. I've made all our changes in the [attached doc] – see edits and comments with tracked changes. I've also assembled a few additional Actions for Norfolk based on recent events.

Response: Revised per Mr. Simons' edits.

2/10/11: Bobby Gelormine, Chesapeake Emergency Management

12. MITIGATION ACTION ITEM #4, please remove sentence #2 – City Jail…. and please remove sentence #4 – Chesapeake Facilities…. MITIGATION ACTION ITEM #11, please remove sentence #3 – City has upgraded package…

Response: Revised.

2/28/22: anonymous email

13. 576 PAGES. Are you nuts? How many people have time to read through an encyclopedia for the 6 sentences that apply to them? Sheesh already. You want my feedback? MAKE IT SIMPLE. KEEP IT SIMPLE.

Response: Most of the plan components are required to meet the Federal regulations. Multi-jurisdictional plans are consequently quite lengthy, but typically more cost effective than individual plans for each jurisdiction.

3/1/22: Beth Lewis, Southampton County Planning Director

14. Please look at the chart of page 20. It says Southampton County has 600 square miles, (correct) and 483 housing units per square mile (way incorrect!). The 2016 ACS says the County has 7673

housing units, which seems to be much closer 12.7 housing units per square mile. Can this be amended?

Response: Revised.

3/1/22: Beth Lewis, Southampton County Planning Director

15. The map labeled 5.12 seems to have a few more shades than the legend provides for. The legend has five colors. On the map I see: Grass green, Lime green, Neon-like green, Pea soup green, Goldish green in southern Southampton County, Orange in central Southampton County, Rust in Franklin, Red. Or is that just what my screen looks like?

Response: Revised.

4/29/22: Shannon Burke and Joshua Norris, FEMA – REQUIRED REVISIONS

16. ELEMENT A: REQUIRED REVISIONS

The plan is marked as, "Draft." FEMA will need a copy of the Approval Pending Adoption" version prior to final approval.

Response: Revised. The Cover page and all footers were updated with this title. These changes are not in Track Changes in the 2nd FEMA review draft.

17. A1. Participation in the plan by the Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Clermont and Dendron are unclear. The plan mentions Community-Specific Working Group Meetings, which are defined as consultant-facilitated brief, in-person meetings at the community level to discuss their final Mitigation Action Plan. (Page 2:11). Please include the dates, locations, and attendees of these meetings. The plan does not include a discussion of how the risk and vulnerability assessment were communicated to these communities in the facilitated meetings. Please include a discussion that how unique risks were communicated in these meetings.

Response: Revised. Appended additional explanation on these items to Section 2, subsection entitled "Community-Specific Working Group Meetings".

20. ELEMENT B: REQUIRED REVISIONS

B3.

The first three and a half pages replicate the 2017 plan, making the methodology difficult to discern. There is conflict between the hybrid methodology discussed on page 5:2 and the narrative on the Explanation of Potential Losses (page 5:24), where Level 1 Hazus data is used. For plans that receive FEMA funding, Hazus Level 2 analysis is required. Please run Hazus 2 for relevant hazards, using 2020 Census data along with other community supplied data. The plan indicates that some communities were performed at Level 2 but does not indicate which. Further, the plan does not assess riverine or stormwater flooding and the states that each hazard was assessed for the impacts of climate change but does not discuss how precipitation trends may affect flooding in the future. Note that Census data alone does not give specific output that is meaningful, and the plan mentions that the assessor's data used (among other community supplied data) was not sufficient for the vulnerability assessment.

Response: The methodology descriptions at the beginning and in the flood subsection of Section 5 were reviewed and amended. Several changes were made to clarify the process and to clarify that Hazus Level 2 was used wherever the FEMA FIRM level of detail permitted, and to clarify that riverine flooding sources were also included in the analysis. Discussion added to page 5:29 detailing projections for future precipitation levels and impact on flooding.

21. Please include dates on maps.

Response: Revised.

22. B4. Update Table 5.5, p. 5:12-5:13 with current Severe Repetitive Loss data. The table, "NFIP Repetitive Loss Properties" includes out of date information for several communities—number of properties, value of losses, number of losses, average payment per claim. Some data hasn't been provided and some data is from 2015. The absence of this data brings in to question the accuracy of the NFIP Repetitive Loss Study Area maps, which are not required.

Response: Per FEMA Region III correspondence to the planning team in October 2021, new repetitive flood loss data were not made available for this plan**.** We had to use data from the 2015 plan, as well as any additional data that had been provided to communities directly from FEMA in the intervening years. New RL data are expected to be analyzed as part of the updated State Hazard Mitigation Plan in 2022.

23. Table 5.5 should be renamed, "NFIP Repetitive Loss Properties," because it contains repetitive loss information.

Response: That is the table name. No changes made.

24. Confirm the accuracy of Table 5.6, "Repetitive Loss Area Details." Is the data current?

Response: The table contents are current based on the data as described in comment 22 above.

25. ELEMENT B: RECOMMENDED REVISIONS

The Vulnerability Assessment mentions impoundment failure related to flood, but it is not defined in the plan. Define impoundment failure in both the Hazard Identification Analysis and the Vulnerability Assessment.

Response: Section 4, page 4:32, "Flooding Due to Impoundment Failure/High Hazard Dam", 3rd paragraph provides a description of what an impoundment failure is, and the next paragraph describes factors that can cause impoundment failure, and describes impacts. Additional definitions suggested by FEMA were appended to this section per the response to comment 30 below.

28. The narrative under Figure 4.13 (Page 4:47) seems to refer to Figure 4.14 on the following page, but it reads as if it refers to the 2013 VIM[S] Recurrent Study for Tidewater Virginia.

Response: Revised narrative to clarify the difference between the two figures.

29. ELEMENT D: REQUIRED REVISIONS

D1. This element refers to changes in demographics, both positive and negative, and current development patterns and development pressures into the future. The Hampton Roads 2040 Socioeconomic Forecast prepared by the Hampton Roads Transportation Planning Organization in October 2013 was used to show development trends from 2009 to 2040. More current information is available. Update 2013 data to 2015 Transportation Analysis Zone Allocation data (Hampton Roads 2045 Socioeconomic Forecast and Transportation Analysis Zone Allocation Long Range Transportation Plan) to meet this element. It is available online.

Response: Revised.

30. RECOMMENDED REVISIONS (Required to Meet HHPD/All Dam Risk Requirements)
HHPD2: The plan does not provide a summary description of all dam risk, which consists of incremental, non-breach, and residual risk. To meet this requirement, please add narrative describing incremental, non-breach, and residual risk with respect to at least Hampton Roads PDC 23 eligible high hazard potential dams. If insufficient information is available to describe non-breach and residual risk in PDC 23, please add language explaining this limitation and include the definition of the three all dam risk component concepts. Pertinent definitions and example language that would address this revision are included below.

Definitions:
Incremental Risk: The risk (likelihood and consequences) to the pool area and downstream floodplain occupants that can be attributed to the presence of the dam should the dam breach prior or subsequent to overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach. The consequences typically are due to downstream inundation, but loss of the pool can result in significant consequences in the pool area upstream of the dam.

Non-Breach Risk: The risk in the reservoir pool area and affected downstream floodplain due to 'normal' dam operation of the dam (e.g., large spillway flows within the design capacity that exceed channel capacity) or 'overtopping of the dam without breaching' scenarios.

Residual Risk: The risk that remains after all mitigation actions and risk reduction actions have been completed. With respect to dams, FEMA defines residual risk as "risk remaining at any time" (FEMA, 2015, p A-2). It is the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue.

Source: "Rehabilitation of High Hazard Potential Dams Grant Program Guidance," June 2020

Example Language:
Note: Though the requested text edits are in blue for easy identification, please maintain the plan's established formatting (do not make the text blue in the plan itself).

At this time, insufficient information is available to conduct a substantive analysis of incremental, non-breach and residual risk relative to the Hampton Roads PDC's high hazard potential dams. However, it is acknowledged that incremental risk is "the risk (likelihood and consequences) to the pool area and downstream floodplain occupants that can be attributed to the presence of the dam should the dam breach prior or subsequent to overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach;" non-breach risk is "the risk in the reservoir pool area and affected downstream floodplain due to 'normal' dam operation of the dam (e.g., large spillway flows within the design capacity that exceed channel capacity) or 'overtopping of the dam without breaching' scenarios;" and residual risk) is "the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue" (FEMA, 2020 Rehabilitation of High Hazard Potential Dams Grant Program Guidance)

Response: Revised Section 4 to include definitions.

31. HHPD2: Though Appendix D includes an assortment of dam-related data, this information is not explained or contextualized in the plan (ideally within the "Flooding Due to Impoundment Failure/High Hazard Dam" portion of Section 5). To meet this requirement, add at least narrative to the HMP describing the risks and vulnerabilities to and from eligible HHPDs including:

- Potential significant economic, environmental, or social impacts as well as multijurisdictional impacts from a dam incident.

- Methodology and/or assumptions for risk data and inundation modeling
- Documentation of limitations and the approach to address deficiencies

o Example: The first page of the Flooding Due to Impoundment Failure/High Hazard Dam section states the limitation that "[p]otential damages from inundation of these structures and infrastructure have not been further quantified, but is an area of expected future study in the region." However, no mitigation action or approach to address this deficiency is explicitly described in the plan. To address this component (bullet) of this HHPD2 required revision, consider adding a mitigation action that explicitly addresses the aforementioned limitation.

Response: Revised Section 4 to include this information or highlight where it is already included, such as in Table 4.4. Modified Section 7, Regional Mitigation Action 6, to clarify that conducting additional inundation studies is part of this action, and to use suggested HHPD activity language as provided in the recommended comments. Minor modifications were made to Section 5, as well, under the Flooding Due to Impoundment Failure/High Hazard Dam subsection.

5/18/22: Shannon Burke, FEMA – REQUIRED REVISIONS

32. Although the Planning Team and the PDC staff made multiple overtures to involve the towns in the plan, their participation is simply not demonstrated in the plan, which is required by the regulations.
Not addressed.

Response: Removed the towns from the planning process discussion (Sections 1 and 2) and removed their mitigation actions to an appendix for archival purposes (Section 7).

33. Since the Severe Repetitive Loss and Repetitive Loss data have been provided by FEMA (4/29/22), current data must be integrated into the plan. It is not necessary to update the maps.
Not addressed.

Response: Added new Table 5.5b that includes the new repetitive flood loss data.

APPENDIX F – MITIGATION ACTIONS

This section of the Plan includes each of the mitigation actions for the region and each community in spreadsheet format, as well as information on previous actions which were removed from the plan during this 2022 update.

#	Regional Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Use existing or create new Elevation Certificates to collect lowest floor elevation data for flood-prone structures in the region, focusing initially on repetitive loss areas in each community.	High	AHAC	Ongoing	Retained with minor modifications	HRPDC worked with several communities to gather existing Elevation Certificates for use in flood vulnerability analysis.
2	Use AHAC structure and HRPDC resources to develop additional regional mitigation strategies and initiate annual workshop on mitigation project funding.	Moderate	AHAC/HRPDC, partner with Wetlands Watch, HR Green	Annually	Retained with minor modifications	
3	Analyze and update the platform, availability, and accuracy of HAZUS input data and output results for the purposes of conducting future, more detailed vulnerability analyses.	Moderate	HRPDC	Ongoing	Retained	
~~4~~	~~Conduct Commodity Flow Study for Southside.~~	~~Low~~	~~HRPDC~~	~~Within 5 years of plan adoption~~	Deleted. This study was identified in regional THIRA as a capability gap and will be pursued elsewhere.	
4	Use commercially available radon test kits to determine radon levels in structures. Evaluate radon data against known geological formations in the region to determine geographic variability in vulnerability. End product will be a refined map of radon zones.	Moderate	HRPDC, College of William & Mary	Begin project within 2 years of plan adoption; project may extend beyond 2027 planning horizon	New	
5	Partner with VDEM to review repetitive flood loss data from FEMA on a regular basis, update repetitive flood loss area polygons and shapefiles, and analyze data for patterns, errors and mitigation opportunities.	High	VDEM, HRPDC, all Hampton Roads flood-prone communities, particularly those participating in the CRS	within 2 years	New	

#	Regional Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
6	Address high and significant hazard dam safety in the region, to include: Investigate and conduct risk assessments on dams using risk prioritization methodology; Conduct alternatives analyses to identify preferred plans for dam rehabilitations and the estimated costs for design and construction; Repair, removal, or any other structural or nonstructural measures to rehabilitate an eligible high hazard potential dam, including development of conceptual, preliminary, and final design plans; Conduct additional inundation studies, and use dam inundation data and flood depths to determine if retrofits to affected critical facilities may be necessary.	High	Virginia DCR, HRPDC, affected communities	Continuously over next 5 years	New	
7	Provide regional leadership regarding the new NFIP's new Risk Rating 2.0 system and renewal policy planning, to include assistance with:	Moderate	HRPDC AHAC, Virginia DCR	Over the next 2 years	New	
	1) Evaluation of rating accuracy and "minus-rated" policies;					
	2) Messaging and outreach to homeowners;					
	3) Elevation Certificate correction; and					
	4) Mitigation assistance for property protection.					

#	Regional Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
8	Strengthen existing and create new regional transportation networks and hubs for evacuation and sheltering. The purposes and needs for evacuation and sheltering are evolving, and communities are moving away from traditional, large shelters to house large populations toward a more targeted approach that tries to anticipate disaster-related needs more specifically. Educating the public about these changes is an important component to this type of regional planning.	High	HRPDC AHAC; Stakeholders (e.g., hospital systems, universities, military bases, American Red Cross, social service agencies, transportation partners)	Immediately upon adoption	New	
9	Work with private companies to advance continuity of operations, including but not limited to power, gas, and water service restoration. Mitigation actions may include implementation of system redundancies, mutual aid agreements or other partnerships to address critical capability gaps. Physical retrofits may increase resilience of critical infrastructure, such as burying power lines and provision of dependable backup power to water and wastewater treatment facilities.	Moderate	Dominion, HRPDC AHAC	Within 4 years of plan adoption	New	

#	Newport News Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Maintain participation in National Flood Insurance Program. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements. Improve floodplain management program and CRS rating.	High	Emergency Management	Annually	Retain with minor modifications	The city is currently a class 7 in the CRS program.
2	Acquire, elevate, relocate, retrofit or floodproof structures in flood prone areas. Flood protection may include small structural flood control projects, such as tide gates, or backflow preventers. This action includes Mitigation Reconstruction projects.	High	Engineering	Ongoing	Retain	80 properties comprising 15.2 acres have been purchased.
3	Provide flood access/egress for critical facilities and infrastructure. Retrofits may include, but are not limited to: upgrades or relocation of the 911/EOC/311 facilities and wind vulnerability of building, components and equipment; floodproofing or elevating pump stations; retrofitting remaining pump stations with generators or quick-connect hookups.	High	Emergency Management, Facilities Engineering	Long-term, 3 to 7 years	Retain with minor modifications	
~~4~~	~~Enhance and stabilize shorelines and roadway embankments along Chesapeake Avenue, and reduce the impact and risk of flooding to private and public properties. This action may include Climate Resilient Mitigation Activities (CRMA).~~	~~Low~~	~~Engineering~~	~~Within 3 years of plan adoption~~	~~Delete~~	Project complete.
~~5~~	~~Strengthen the Diascund Dam.~~	~~High~~	~~Facilities Engineering~~	~~Scheduled for completion in 2016~~	~~Delete~~	Project complete.
~~6~~	~~Raise the Lee Hall Reservoir dam.~~	~~High~~	~~Facilities Engineering~~	~~August 2015 to August 2017~~	~~Delete~~	Project complete.
~~7~~	~~Raise the roadway at 27PPthPP Street and Buxton Avenue. This action may include Climate Resilient Mitigation Activities (CRMA).~~	~~Moderate~~	~~Engineering~~	~~Construction to begin mid 2016~~	~~Delete~~	Project complete.
4	Construct new access road to Pump Station 49 on Warwick Boulevard.	Moderate	Engineering	Within 5 to 7 years	Retain	Access remains a problem.

#	Newport News Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
5	Drainage improvements on Chelsea Place, to include increased flow through the drainage outfall from the apartments and diversion of some of the flow from Edgemoor Drive to a new outfall.	Moderate	Engineering	Construction estimated to begin late 2022	Retain with minor modifications	
~~10~~	~~Improve the culvert on Gwynn Circle and Lucas Creek.~~	~~Moderate~~	~~Engineering~~	~~Construction to begin in 2016~~	~~Delete~~	Project complete.
6	Provide various watershed and flood warning improvements to reduce danger to lives and property from flooding along Newmarket Creek. This action may include Mitigation Reconstruction projects.	High		5 to 10 years; sensors have been installed	Retain with minor modifications	
7	Improve drainage system maintenance, including increased sediment and debris clearance.	High	Public Works	Ongoing as part of 5-year CIP updated annually. New projects continually identified.	Retain	
8	Continue Forest Management Program to mitigate wildfire hazards and promote forest health.	High	Newport News Waterworks	Ongoing	Retain	
9	Prepare public outreach materials. Educate elected officials and residents on the importance of the NFIP and the City's floodplain management efforts, maintaining flood insurance coverage, and methods for mitigating flood damage. City's comprehensive master floodplain management planning will include developing educational, outreach and more accessible materials and tools.	High	Emergency Management	Continuous	Retain with modifications	
~~15~~	~~Hampton Avenue Channel Improvements & Constructed Wetlands Project. This action may include Climate Resilient Mitigation Activities (CRMA).~~	~~Moderate~~	~~Engineering~~	~~Construction to begin early 2017~~	~~Delete~~	Project complete.

#	Newport News Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
~~16~~	~~Salters Creek Stream Restoration Project. This project may include Climate Resilient Mitigation Activities (CRMA).~~	~~Moderate~~	~~Engineering~~	~~Construction to begin mid-2017~~	~~Delete~~	Project complete.
10	Rehabilitation and improvement of Harwood's Mill Dam which impounds Harwood's Mill Reservoir to provide water for Harwood's Mill Water Treatment Plant. The planned improvement project consists of the demolition of the existing outlet works and principal spillway chute and construction of a new principal spillway floor slab, training walls, intake structure and flume, access bridge, concrete crest wall and the rehabilitation of the existing spillway weir.	High	Facilities Engineering	Feb 22 - Dec 23	New	
11	Stormwater Master Planning:the City will develop three separate, yet inter-dependent master plans for citywide stormwater management, floodplain management, and resilience & climate change management.	High	Engineering	Planning to begin '22 and will last 3 years	New	
12	**Improve the Lions Bridge Dam which impounds Mariners' Lake to bring the dam into compliance with current state dam safety standards.**	**Moderate**	**Engineering**	**Design will be completed**	**New**	
13	Nicewood Area Drainage Improvements. Evaluation of existing storm system and implementation of recommended improvements to address flooding.	Low	Engineering	Design will begin in 2022	New	
14	Marshall Ridley. Redevelopment of a large area of outdated apartments with no existing stormwater management system in place. The new development will include multiple BMPs and a regional stormwater management facility.	High	Engineering	Design 2021, Construction 2022	New	

#	Newport News Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
15	Governors Drive Stream Restoration & BMP, including restoration of Flaxmill Creek to alleviate erosion and protect a major HRSD force main.	Moderate	Engineering	Design 2022, Construction 2024	New	
16	Analyze and improve drainage/stormwater system along Stoney Run\.	Moderate	Engineering	Computer Model Analysis 2021, Construction within 5 – 10 years	New	
17	Salters Creek Analysis and Drainage Improvements. Develop computer model analysis and implement identified drainage projects. Reduc flooding throughout the Salters Creek watershed by improving the capacity of the existing drainage system, providing additional storage, and ensuring compliance with stormwater regulations.	Moderate	Engineering	Design 2021, Construction 3-7 years	New	
18	James River Shoreline Stabilization. Stabilize 720 linear feet of shoreline on the James River to address severe erosion and failure of the steep slope along River Rd, and protect existing utilities and the road.	Moderate	Engineering	Design 2022	New	
19	Christopher Shores Drainage Improvements. Address repeated flooding in the Christopher Shores subdivision by installing larger storm pipes and additional pipes and inlets to alleviate flooding during tidal events.	Moderate	Engineering	Construction 2022	New	
20	Deep Creek Shoreline Stabilization. Stabilize the shoreline at Menchville Marina on Deep Creek.	Moderate	Engineering	Construction 2022	New	

#	Poquoson Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Continue participating in the National Flood Insurance Program and the Community Rating System, with a goal of becoming a Class 7 community. Continue enforcement of standards in existing floodplain management ordinance that meet and exceed NFIP minimum requirements. Encourage additional staff to become Certified Floodplain Managers. Study feasibility of implementing additional floodplain management ordinance changes, including: a. Changes to the definition of "substantial improvement" that would require accumulation of costs of improvements and repairs of buildings, based on issued building permits, over a set time period; and, b. Coastal A Zone regulations that apply coastal high hazard area requirements in areas delineated by FEMA as subject to wave heights between 3 feet and 1.5 feet high.	High	Building Inspections	Ongoing	Retain with minor modifications	Want to be Class 7. Need to encourage more staff to become CFM.
2	Elevate, relocate, acquire, retrofit or floodproof structures in hurricane prone areas. Flood protection may include minor localized flood reduction projects, as well. Wind retrofit measures are also included and may be appropriate for some structures, especially publicly-owned structures. This action includes Mitigation Reconstruction projects.	High	Emergency Management and Building Inspections	Ongoing	Retain with minor modifications	approximately 10 structures elevated with FMA/HMGP
3	Implement the Shoreline Management Plan developed by Virginia Institute of Marine Science, as conditions warrant.	Moderate	Planning Department, Permitting, and Engineering	Ongoing	Retain	

#	Poquoson Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
4	Continue to increase flood and wind protection and flood access/egress for critical facilities and infrastructure. Elevate new critical facilities, retrofit existing facilities as necessary, and elevate roads to provide access to elevated critical facilities. Retrofits may include but are not limited to: installation of emergency backup power, elevation of structure or components, relocation or retrofit of building components, and installation of tidal/flap valves on drainage structures. Coordinate with public utilities to protect or retrofit transformers, critical infrastructure and overhead power lines.	High	Public Works/Engineering, Fire Department, Police Department, Public Utilities	Ongoing	Retain	Significant progress made. 26 out of 29 wastewater pumps have fixed generators with only 1 left to retrofit; new elevated fire station; new elevated middle school under construction; public works building elevated. City makes ongoing efforts to identify and modify critical facilities in need of additional protection. Tidal/flap valves on drainage structures needed.
5	Collect and share hazard-related data in GIS-compatible format, including but not limited to:	High	Public Works, Solid Waste	Ongoing	Retain with minor modifications & additions	
	1) add tide gages for flood prediction and collect high water marks and calculate flood frequency for all coastal storms;					have high water marks from previous storms - will continue. Need tide gages.
	2) continue to collect Elevation Certificates for each structure in the 100-year floodplain and post online for property owner use;					considering posting ECs online.
	3) use sidescan LIDAR to collect additional data regarding structure elevations Citywide;					
	4) incorporate new software for the assessor's database that includes flood elevation data;					

#	Poquoson Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	5) use drone-produced real-time storm surge/tidal conditions mapping developed in conjunction with NASA and ODU; and,					
	6) inventory and prioritize low-lying secondary roads and intersections critical to evacuation.					
6	Review and update Pre-Disaster Debris Management Plan.	High	Public Works, Solid Waste	Ongoing	Retain with minor modifications	Plan is in place but needs regular review and updating. Purchased 2 new tractors.
7	Coordinate with public utilities, and use City resources to trim trees in the public right-of-way.	High	Public Works, utility providers	Ongoing	Retain	Agreement in place with York County regarding ROWs under their purview needed for evacuation.
8	Eliminate barriers to the orderly evacuation of citizens:	High	Engineering and City Manager's Office	Wythe Creek Road is scheduled for construction in 2022; Victory Boulevard widening is in the planning stages.	Retain with minor modifications	updated timeframes
	1) Elevate and widen the causeway to Hampton (Wythe Creek Road);					
	2) Widen Victory Boulevard;					
	3) Continue car evacuation agreement with Langley Motor Speedway to allow citizens to park cars there prior to expected flooding; and,					agreement is in place
	4) Address low-lying roadways/intersections identified in Mitigation Action #5, including use of temporary flood barriers for critical resident evacuation routes and first responder access/egress.					added use of temporary flood barriers for critical roads
9	Support and maintain decal system for re-entry to the City following a disaster. Use social networking to strengthen the system.	High	City Manager's Office; Emergency Management	Ongoing	Retain	

#	Poquoson Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
10	Support and maintain Code Red, the City's Reverse 911 system. Prepare messages to release to citizens before and after a natural hazard event.	High	Emergency Management	Ongoing	Retain	Special needs identification built into database for dispatch to notify first responders, and for evacuation.
11	Protect flood-prone natural resources as a buffer against sea level rise, including, but not limited to:	Moderate	Parks, City Manager's Office, Planning	Ongoing	Retain	
	a. Protect in perpetuity the 69 acres of natural land at the end of Poquoson Avenue donated to the City;					protected by zoning
	b. Provide additional access points for the City's Blueway system, a series of canoe and kayak water trails in and around the City and Plum Tree Island; and,					still needed
	c. Provide opportunities for retail and residential development on land that is less prone to flooding and sea level rise, such as the Big Woods area.					encouraged by zoning; purchased 6 acres for parks
12	Continue to participate in coalition with Virginia Tech and others using drones for storm/event damage assessment and wildland fire management.	Moderate	City Manager's Office	Ongoing	Retain	City has drones and operators.
~~13~~	~~Continue outreach efforts through a strategically developed Plan for Public Information (PPI) using the following seven steps:~~	~~High~~	~~Building Inspections~~	~~2015 for Steps 1 and 2, 2016 for remainder~~	Delete	City has completed elements they determined necessary.
	~~1. Create a PPI Committee~~					
	~~2. Assess Poquoson's public information needs~~					
	~~3. Formulate multi-hazard messages~~					
	~~4. Identify outreach projects to convey the messages~~					
	~~5. Examine other public information initiatives~~					
	~~6. Prepare the PPI document~~					
	~~7. Implement, monitor and evaluate the program~~					

#	Williamsburg Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Maintain and improve drainage system maintenance, including increased sediment and debris clearance. Purchase additional equipment for pre-storm debris clearance. Explore turf options for parking lots, streetscapes and underground retention where feasible, particularly in Colonial Williamsburg.	Moderate	Public Works	This is a continuous activity of the City's Public Works Department.	Retained with minor modifications	
2	Continue participating in the National Flood Insurance Program. Review and update floodplain management ordinance to include current resilience standards. Continue enforcement of standards in existing floodplain management ordinance that meet and exceed NFIP minimum requirements.	High	Designated Floodplain Manager (currently Rodney Rhodes)	Ongoing	Retained with minor modifications	
3	Maintain StormReady designation through the National Weather Service.	High	Fire Department	Ongoing	Retained	
4	Continue Colonial Williamsburg Tree Maintenance Program. Expand in-house crew.	Moderate	CWF Landscape crew	Ongoing	Retained with minor modifications	
5	Continue shelter generator maintenance and monitoring program. Assess need for and uses of additional shelter at William & Mary Tennis Center.	Moderate	Fire Department	Ongoing	Retained with minor modifications	
6	Strengthen GIS digital mapping program. Efforts include, but are not limited to, constant data updates with regard to water/sewer/SWM utilities, improved geodata and cloud use with data migration to a portal for use by public and by practitioners in the field. Additional hazard data to be added may include radon exposure in conjunction with William & Mary researchers.	Moderate	IT	Ongoing	Retained with minor modifications	

#	Williamsburg Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
7	Expand capacity/training for CERT groups and neighborhood-serving organizations to include communication about mitigation and response.	Moderate	Emergency Management and Human Services	Ongoing	Retained	
~~8~~	~~Expedite damage assessment data collection through an automated software package.~~	~~High~~	~~Codes Compliance, Planning~~	~~3 to 5 years~~	Deleted	Completed. Crisis Track system is being used and tested regularly.
8	Expand social media and use of Everbridge mass notification system for pre- and post-disaster information distribution; partner with CERT for assistance.	High	Communications Specialist, Emergency Management	Ongoing	Retained with minor modifications	
9	Per the William & Mary Hazard Mitigation Plan (2014), implement mitigation projects to protect historical and critical infrastructure at the College of William & Mary:	High	College of William & Mary	Ongoing	New	
	1) dry or wet floodproof vulnerable basements;					
	2) implement corrective actions necessary to ensure compliance of Lake Matoaka Dam with state dam safety regulations;					
	3) weatherize buildings to reduce damage associated with water infiltration through roofs and windows;					
	4) continue rooftop inspection program, looking for signs of wear or damage;					
	5) elevate building mechanical systems above potential areas of flooding and standing water; and,					
	6) Identify areas affected by the City's drainage system and collaborate on means of improvement to improve stormwater flow.					
10	Prepare elements of Continuity of Operations Plan (COOP) to address cyber security, utility continuity and redundancies, and communications.	Moderate	Emergency Management	Within 2 years of plan adoption	New	

#	Williamsburg Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
11	Review and consider adoption of International Residential Code Appendix F, Radon Control Methods. This appendix to the Virginia USBC contains provisions intended to mitigate the transfer of radon gases from the soil into dwelling units.	Low	Codes Compliance	Within 5 to 7 years after plan adoption	New	
12	Address command and control coordination for large assembly hazard events.	Moderate	Emergency Management	Within 2 years of plan adoption	New	

#	James City Co Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Protect critical facilities, including refuges, while increasing potential refuge capacity and/or protected areas. Protection measures may include emergency generators or other power sources, wind or flood retrofits, elevation, relocation, or reconstruction.	High	Emergency Management	Continuing	Retained	
2	Mitigate flooding problems identified in the flood studies performed for Powhatan Creek watershed. Measures may include, but are not limited to improvements to road crossings by increasing flow capacity, or installing over-topping protection.	Moderate	General Services Stormwater	Ongoing	Retained with minor modifications	
3	Conduct annual meeting with VDOT and utilities to identify hazard areas and potential projects to mitigate those areas.	High	Emergency Management	Annually	Retained	
4	Elevate, acquire, relocate, retrofit or floodproof structures in flood-prone areas. Flood protection may include minor localized flood reduction projects, as well. Wind retrofit measures are also included and may be appropriate for some structures, especially publicly-owned structures. This action includes Mitigation Reconstruction projects.	High	Community Housing	Ongoing	Retained	
5	Continue strengthening the County's Floodplain Management Program with the following actions:	High	Community Development/General Services , Emergency Management, Virginia DCR	Ongoing	Retained with modifications	
	1) Review floodplain ordinance regularly for appropriateness of higher standards and necessary updates;					
	2) Provide specialized training and support for Certified Floodplain Manager (CFM) certification for floodplain plan reviewers, inspectors and permit processors;					

#	James City Co Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	3) Continue to assess repetitive loss data annually for loss accuracy, geographic accuracy, and determination whether structure(s) on property have been mitigated and if so, by what means. Provide corrections as necessary using FEMA AW-501;					
	4) Maintain current CRS Class 5 rating or better					this bullet is new
	5) Building Safety and Permits plans examiners to provide information and resources to help builders and owners evaluate hydrostatic (flood) vent options. Materials to be available on department's web site, and hands-on assistance at the permit counter, including an operational vent to show builders and posters in permit office. Request FEMA QuickGuide for Virginia from VDCR.					
6	Continue outreach efforts through "Flood Fluent" web site, hurricane and winter weather preparedness activities through FEMA and NOAA, and the social media outreach activities of Emergency Management.	High	Emergency Management (lead)	Within 2 years of plan adoption	Retained with major modifications	County has decided against a PPI, but still continues to conduct a lot of outreach as needs arise
~~7~~	~~Convene a task force to study/assess the wildland fire hazard and the urban interface. Task force recommendations may include such topics as: additional building code requirements in a mapped "interface zone", outreach or complimentary inspections for homeowners.~~	~~Moderate~~	~~Fire Department, Emergency Management~~	~~Within 5 years of plan adoption~~	Deleted	Hazard risk deemed insufficient to merit this level of action.
~~8~~	~~Obtain StormReady designation through NOAA.~~	~~Moderate~~	~~Emergency Management~~	~~Within 2 years of plan adoption~~	Deleted	Completed

#	James City Co Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
7	Conduct annual Hazard Mitigation Workshop to update and share hazard mitigation information, discuss potential projects. Invite relevant County departments, non-profit agencies and other stakeholders. Develop annual Hazard Mitigation Potential Project List with ready packages for submittal as funding becomes available.	High	Emergency Management, Finance, Community Development/General Services , VDEM, Silver Jackets, VFMA	Immediately	Retained	COVID shifted focus
8	Implement regulations and procedures to ensure that site development projects, including those initiated by the County, are consistent with the protection of environmentally sensitive areas and the maintenance of the County's overall environmental quality so that development projects do not exacerbate current or future flooding in flood prone areas.	High	All	within 3 years of adoption	New	
9	Finalize, fund and implement the County's Flood Resiliency Plan and associated projects, which are adopted herein by reference. Projects are expected to include shoreline erosion and stream restoration projects among others. Three watershed management plans are also expected to begin in the near future, which will prioritize stream restoration needs and outline priorities for CIP funding.	High	Community Development/General Services	within 1 year of adoption	New	

#	York County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Continue outreach efforts using the following steps:	High	Emergency Management, Development Services	Within 2 years of plan adoption	Retain	
	1. Assess County's public information needs					
	2. Formulate multi-hazard messages					
	3. Identify outreach projects to convey the messages					
	4. Examine other public information initiatives					
	5. Implement					
2	Continue strengthening the County's Floodplain Management Program with the following actions:	High	Public Works and Development Services	Ongoing	Retain with minor modifications	
	1) Review and update floodplain ordinance regularly and continue to provide annual Floodplain Management Report;					
	2) Consider regulating land outside 100-year floodplain but subject to future flooding as a result of sea level rise;					
	3) Continue participating in the CRS					
	4) Collect lowest floor elevation data for flood-prone structures;				New	
	5) Continue specialized training and support for Certified Floodplain Manager (CFM) certification for floodplain plan reviewers, inspectors and permit processors; and,					

#	York County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	6) Continue to assess repetitive flood loss data annually for loss accuracy, geographic accuracy, and determination whether structure(s) on property have been mitigated and if so, by what means. Provide corrections as necessary using FEMA AW-501.					
3	Retrofit or floodproof structures in flood-prone areas; projects may include elevation, acquisition, relocation and minor localized flood reduction projects. Wind retrofit measures are also included and may be appropriate for some structures, especially publicly-owned structures. This action includes Mitigation Reconstruction projects. Tie mitigation efforts to outreach efforts listed in action #1 and encourage property owners to perform minor retrofits on their own.	Moderate	Emergency Management	Ongoing	Retain with minor modifications	
4	Develop public outreach materials to educate citizens about the wildland fire hazard and the wildland/urban interface.	Moderate	Department of Fire and Life Safety	Within 5 years of plan adoption	Retain	
5	Maintain program for continued assessment of identified stormwater “choke points” .	Moderate	Public Works	Ongoing	Retain with minor modifications	Public Works has developed and implemented a program to clear and maintain stormwater choke points in advance of approaching storms.
6	Evaluate critical facilities for safety and sustainability during emergencies. Take appropriate corrective actions, which may include but are not limited to: providing backup power sources, wind retrofits and flood retrofits.	Moderate	Department of Fire and Life Safety	Ongoing	Retain	Projects have been completed to install backup generators (power) to crtitcal facilities. Additional projects are being considered to improve York County's capabilities.

#	York County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
7	Continue support of the Newport News Department of Public Utilities (Waterworks) forest management program to mitigate wildfire hazards and promote the health of forests within the reservoir watersheds.	Moderate	Department of Fire and Life Safety	Ongoing	Retain with minor modifications	The coordination and implementation of this mitigation action is done with the City of Newport News. The County supports a regular timber harvest, participates in related training, and supports Newport News' activities to promote the health of forests - within the watershed property.
8	Manage shoreline erosion through the following actions:	Low	Development Services Department, Planning Division, Public Works	Ongoing	Retain	
	a. Request and share VIMS staff recommendations for shoreline erosion control permit applications with Wetlands Board citizen members; and,					
	b. Continue to include shoreline erosion control element in the Comprehensive Plan.					
9	Increase knowledge of hazardous materials storage areas to reduce impacts from overlapping hazard events through the following:	Moderate	Fire and Life Safety, Information Technology (GIS)	Within 5 years of plan adoption	Retain with minor modifications	
	1) Create and maintain geodatabase of known storage locations of hazardous materials;					
	2) Add hazmat data to dispatch system so that first responders can better visualize sites during response;					
	3) Use data layer to build better response capabilities; and					
	4) Analyze data in conjunction with other hazard layers (flood, sea level rise, wildfire, etc.) to identify problem areas and possible retrofits to reduce risk.					

#	York County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
10	Install and maintain high water marks signs and gages in flood-prone areas.	High	Public Works	Within 5 years of plan adoption	Retain with minor modifications	High water signs and markers have been strategically placed in low-lying areas of York County. They are regularly inspected and maintained - especially during the approach of significant storms. York County has investigated tidal guages/sensors through VIMS and the City of Newport News. We are currently relying on the guage near the USCG Base (Yorktown).
11	Consider expanding existing Pre-Disaster Debris Management Plan to refocus beyond stormwater management on public property and to include public outreach and hazardous materials facilities. Remove existing trees and debris that pose hazard during natural disaster.	High	Public Works	Within 3 years of plan adoption	Retain with minor modifications	Pre-disaster mitigation actions are contained within the County's Debris Managment Plan.
12	Align existing Disaster Recovery Plan with regional expectations. As Hampton Roads region develops a regional plan, continually monitor progress to ensure York County has all necessary components up to date.	Low/Moderate	Planning, Emergency Management	Within 5 years of plan adoption and in accordance with regional plan schedule	New	
13	Review and consider adoption of International Residential Code Appendix F, Radon Control Methods. This appendix to the Virginia USBC contains provisions intended to mitigate the transfer of radon gases from the soil into dwelling units.	Low	Building Regulation	within 5 to 7 years of plan adoption	New	See requirements at: https://codes.iccsafe.org/content/IRC2018/appendix-f-radon-control-methods
14	Modify County Comprehensive Plan (Charting the Course to 2035) to account for hazard mitigation and flood resiliency.	Moderate	Planning Division	In conjunction with next scheduled Comp Plan update	New	

#	Norfolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Maintain and protect the City's beaches and shorelines using structural means.	High	Office of Resilience, Public Works	Ongoing	Retained	Multiple activities are covered under this effort, including breakwater and other structural features, beach surveys and source identification, and environmental permitting.
2	Maintain and protect the City's beaches and shorelines using natural shoreline protection measures.	High	Office of Resilience, Public Works	Ongoing	Retained with minor modifications	
3	Provide educational engagement and improve communications to residents to increase awareness of vulnerability to multiple hazards. Focus on hurricanes, sea level rise, flooding, nuisance flooding and severe repetitive flood losses. Provide outreach that increases citizens' ability to take mitigative actions prior to disaster event. Focus on hurricane preparedness and flood mitigation.	High	Emergency Preparedness & Response, Chief Resilience Officer, Planning, Public Works, Chief Marketing Officer	Ongoing	Retained with minor modifications. Combined with previous #4.	
~~4~~	~~Provide outreach that increases citizens' ability to take mitigative actions prior to disaster event. Focus on hurricane preparedness and flood mitigation.~~	~~High~~	~~Emergency Preparedness & Response, Chief Resilience Officer, City Planning~~		Combined with previous #3.	
4	~~Purchase and install generators or other continuous power sources for critical facilities and infrastructure. This action may include, but is not limited to pump stations, EOC, shelters, underpasses and important traffic signals.~~	~~High~~	~~General Services, Public Works & Emergency Preparedness & Response~~		Combine with previous #7.	
	~~Include critical public facility generator requirements and required connection materials in the USACE Emergency Power Facility Assessment Tool (EPFAT).~~				Combine with previous #7.	
4	Continue to implement capital improvements that improve stormwater management and control flooding, especially for undersized and out-of-date drainage systems and patterns.	High	Public Works	Ongoing	Retained	

#	Norfolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
5	Identify and improve critical facilities and infrastructure to minimize flood and wind damage, specifically targeting schools, EOC and emergency shelters. Action may also include placing utility lines underground or preemptive traffic systems for emergency vehicles.	High	City Planning, Public Works, Emergency Planning & Response, Public Utilities	Ongoing	Retained	
6	Protect flood-prone structures through the following ongoing actions:	Very High	City Planning	Ongoing	Retained with modifications	
	a. Incorporate CDC's Social Vulnerability Index tools to align actions with the City's commitment to being a diverse, equitable and inclusive city					
	b. Give highest priority to protection of “severe repetitive losses” as defined by the National Flood Insurance Program (NFIP), including verifying the location of all repetitive losses, verifying location and need for mitigation;					
	c) Second highest priority to mitigation of historic resources, or meeting the Secretary of the Interior’s standards for eligibility as a historic resource. Historic resources should be protected in place, or relocated; raised not razed;					
	d) Prepare Repetitive Loss Area Analyses for CRS credit under CRS Activity 512(b);					
	e. Elevate, acquire, relocate or otherwise retrofit structures. This action includes Mitigation Reconstruction projects for non-historic resources, ground floor conversion projects and basement fill projects					
	d. Target potential properties or clusters of properties on low elevations near wetlands for purchase and conversion to public open space.					

#	Norfolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
7	Implement a full rollout of Crisis Track to improve post-event damage assessment procedures so that damages, event frequencies, and other data are more readily available for mitigation planning and fully integrated into VDEM and FEMA's SDE Tool.	Moderate	Information Technology, Emergency Preparedness & Response, Finance, City Planning, Neighborhood Services	Ongoing	Retained with modifications	
8	Implement actions to improve Community Rating System (CRS) classification to at least a Class 4 with a 30 percent discount on most flood insurance policies.	High	Planning & Community Dev.; Public Works	within 3 years	Retained with modifications	
~~9~~	~~Verify the geographic location of each NFIP repetitive loss property, determine if that property has been mitigated and, if so:~~	~~High~~	~~City Planning~~		Combined with old #8	
	~~- Record what methods were used to mitigate; and~~					
	~~- Collect evidence and submit completed AW-501 (NFIP Repetitive Loss Update Worksheet) to request removal of the property from the repetitive loss database.~~					
~~10~~	~~Implement approved project through the National Disaster Resilience Competition (NDRC) HUD grant. This action may include Climate Resilient Mitigation Activities (CRMA) and Mitigation Reconstruction projects.~~	~~High~~	~~Chief Resilience Officer, Public Works, City Planning, Emergency Preparedness and Response~~		Remove	Project substantially complete.
9	Assess and protect historic resources and structures from flooding and realtive sea level rise. Measures should include short-, medium- and long-term solutions.	High	City Planning, Chief Resilience Officer	Ongoing	Retained with modifications	

#	Norfolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
10	Identify and implement resilient strategies throughout the city to provide better watershed, neighborhood and parcel specific flood protection and mitigation. Perform feasibility study for coastal storm risk protection for Norfolk southside neighborhoods based on future sea level rise and flood conditions. Other projects include, but are not limited to recommendations of the Joint Land Use Study in conjunction with the City of Virginia Beach and the U.S. Navy, as well as the Norfolk Coastal Storm Risk Management solutions.	High	Chief Resilience Officer, Public Works, City Planning, Emergency Preparedness and Response	Ongoing	Retained with modifications	
11	Explore partnership with NASA to use Interferometric Synthetic Aperture Radar (InSAR) to study changes in the rate of localized subsidence and possible links to relative sea level rise.	Moderate	Office of Resilience, NASA	Within 2 years	New	
12	Update the City's Combined Coastal and Precipitation Flooding Master Plan to meet the minimum CRS requirements for a Watershed Master Plan	High	Office of Resilience, Public Works, Planning	Ongoing	New	
13	Obtain direct technical assistance to incorporate green infrastructure, social vulnerability, and environmental justice into Benefit-Cost Analysis/Ratio (BCA/R) calculations for structural/hybrid flood protection measures for the Southside communities of Berkley and Campostella.	High	Office of Resilience	Ongoing	New	
14	Increase number of real-time flood inundation storm sensors installed throughout the City and made available for public API integration within Norfolk Open GIS Data portal.	High	Office of Resilience, Public Works, EPC	Ongoing	New	

#	Portsmouth Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Develop a post-disaster continuity of operations plan to assist in more rapid recovery after a disaster.	High	Emergency Management, Planning, Permits & Inspections, Engineering, Public Works	Phase II is being planned and awaiting funding	Retain	Phase II is being planned to complete this Action Item (Awaiting America Rescue Plan funding). Initiated.
2	Designate non-flood-prone pickup points within the city evacuation zones to assist citizens who must rely on alternative or public transportation to evacuate.	High	Emergency Management, Planning	Within 2 years	Retain	More robust analysis is needed to refine pickup points and also determine points of distribution during an emergency. Locations have been established for hurricane evacuation, along with agreement with HRT to help in an event.
3	Hurricane/flood outreach/education to residents and businesses. Determine new and best way(s) to get information to the most vulnerable and least connected residents.	High	Emergency Management, Planning	Continuous	Retain with modifications	Ongoing efforts to determine new and best way to get information to the most vulnerable/least connected to information. Flyers have been used in the past, primarily on topic of flooding with some information on hurricanes. These are sent out to those in the flood zones. Fire Dept sends out notifications on social media through City Marketing department as well.
4	Identify sources and evaluate use of available data to pinpoint the location of persons with disabilities for mitigation, evacuation, response, recovery.	Moderate	Planning, GIS	Within 2 years	Retain with modifications	Arcadis will review available data sources on vulnerability indices as potential HMP addendum. Certain data is difficult to obtain because of privacy concerns (e.g. health department raw data). Not initiated.

#	Portsmouth Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
5	Implement additional flood monitoring stations to track real-time water levels in targeted areas to support response efforts. Leverage regional efforts to determine best technology, including cost effectiveness analysis.	Moderate	Planning, Emergency Management	Within 5 years	Retain with modifications	Dashboard is currently not working. May need to investigate other software. Leveraging regional efforts on potential best technology, including cost effectiveness. System in place to collect and report data. Still in improvement process.
6	Systematically track and map areas that sustain non-tidal flooding and "sunny day" flooding, with focus on currently flooded streets and areas susceptible to future flooding. Allow community to sign up for notifications when streets flood and pair floodwater sensors with rain gage data to improve prediction capability. Expand number of sensors.	Moderate	Engineering, Planning, Emergency Management, Public Works, GIS; DHS: HMGP 5% Initiative	Continuous	Retain with modifications	USGS has improved data. Over the street area is key. Want community to be able to sign up and get notification if there is street flooding through notification/Waze. Also want to pair them with rain gauge to do predictions. Greenstream has put some tide monitoring as some. They worked privately with ERP and some private owners. Some devices have been installed. Desired expansion with identification of high accurate and cost effective options.
7	Implement Citywide drainage improvement projects.	Moderate	Engineering, Public Works	Long term; as funding becomes available	Retain with modifications	Ongoing. Long-term program. Several projects (e.g. Street drainage, sea-wall, pump station etc.) have been initiated.
8	Implement action items from 2015 Floodplain Management Plan and Repetitive Flood Loss Plan.	Moderate	Planning, Emergency Management	Ongoing. Some long term as funding available	Retain	Not planning to update, have largely transitioned to regional HMP for this role and future Plan/Strategies to be developed. Ongoing. To be accomplished as funds become available.

#	Portsmouth Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
9	Mitigate flood-prone and repetitive flood loss structures. Mitigation measures may include acquisition, relocation, elevation, or other retrofit measures to provide flood protection. This action includes Mitigation Reconstruction projects. Develop a guide or adapt an existing manual that advises residents/property owners how they can retrofit their buildings for increased sustainability and resiliency.	Moderate	Planning, Emergency Management	Continuous	Retain	Program for RL and SRL has been shown to be challenging to implement in neighborhing communities. City does not desire to mitigate individual structures. City intends to provide technical support (information to support residents in individual efforts).
10	Determine whether Repetitive Flood Loss properties have been mitigated.	High	Planning	Continuous	Retain	City is continuing to track homeowner efforts via permitting process. FEMA has not made any additional data available on RL/SRL properties.
11	Advocate for improved and increased grants for mitigation activities from State and Federal sources.	High	Planning, Emergency Management, Permits & Inspections, Engineering	Continuous	Retain	City would prefer FEMA give HMGP money directly to citizens for improvements on private side. Portsmouth has been taking advantage through successful pursuits of recent grant cyccles through FEMA and VDEM.
12	Review and revise City's series of procedures and pre-approved messagesto ensure that Code sections do not conflict and do not hamper recovery efforts and that permitting is streamlined and efficient. Leverage technology to facilitate prompt permit processing during or after an event using mobile and electronic means.	High	Planning, Permits & Inspections, Engineering, Public Works, Emergency Management	Within 5 years	Retain with modifications	Continual review of Zoning ordinances and updates to ensure no conflicts between requirements. City is leveraging technology to issue permits during an event more quickly using mobile and electronic means.
13	Review existing plans to ensure that they integrate mitigation concepts. Ensure that future plans integrate mitigation concepts detailed in the Hazard Mitigation Plan.	High	Planning, Permits & Inspections, Engineering, Public Works, Emergency Management	Within 5 years and as new plans are developed	Retain	Build One Portsmouth Comp Plan adopted was successful implementation of this, ongoing with other plans.

#	Portsmouth Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
14	Implement green infrastructure for flood and stormwater abatement.	Moderate	Planning, Engineering, Public Works	Ongoing	Retain with modifications	Some projects are being initiated (e.g. Court Street Improvements). Future projects are prioritizing the use of green infrastructure.
#	Replace the Seawall.	High	Engineering	4 years	Retain	Signifcant components of the seawall have been replaced. Ongoing.
16	Create dialogs with other governmental (e.g. HRT, HRSD, Port of Virginia) and non-governmental (e.g. Dominion Virginia Power, Verizon, etc) stakeholders to encourage and coordinate incorporation of mitigation strategies into projects and policies that affect Portsmouth's citizens and visitors.	Moderate	Planning, Engineering, Emergency Management	Continuous	Retain with modifications	Leveraging regional meetings to promote mutual benefitting projects. Coordination is on-going. Example - Dominion has undergound assets due to high wind assessment in Churchland.
17	Develop inventory of first floor elevations (and possibly Elevation Certificates) of structures in flood zones in low- to moderate-income housing areas.	Moderate	Planning	Within 5 years	Retain	FEMA funded project + Arcadis Pro Bono project would develop pilot FFE inventory. USACE, HRPDC, RISE have all tried to attempt this but have not provided enough accuracy. Arcadis is initiating another project to attempt this.
18	Continue implementing City's Heat Injury Prevention Plan and position cool buildings for easiest access by high vulnerability populations and neighborhoods.	High	Emergency Management	Ongoing	New	

#	Suffolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Protect repetitively flooded infrastructure and structures through elevation, acquisition, relocation, retrofits or repurposing. Other structural means are included, as appropriate, for protecting critical infrastructure. This action includes Mitigation Reconstruction projects.	Low	Emergency Management and Public Works	Ongoing	Retain	The City has purchased a few properties to mitigate flooding concerns and there are plans for further projects and purchases to mitigate flooding.
2	Provide emergency power to critical infrastructure, critical facilities and critical roadway intersections during extended power outages. Increase emergency generator capabilities at school facilities used as shelters to meet ADA functional needs requirements.	High	Public Utilities, Public Works, Facility Management	Ongoing	Retain	City Hall, PW Operations, and the PW Operations Yards at Whaleyville, Holland, and Chuckatuck all have emergency backup generators installed and functional Currently, 36 traffic signals have back-up natural gas generators installed, and 22 signals have with battery-only backup installed. Additionally, a new mandatory requirement was implemented by the City requiring that any new signal built or signal rehabilitated must have a permanent backup generator
3	Provide hurricane and flood outreach and education materials to residents within the City to make flood protection information available to property and business owners and renters.	High	Emergency Management	Within 2 years	Retain with minor modifications	Instead of focusing on travelers we should focus on the residents of the City of Suffolk. We will provide hurricane and flood outreach and education to all Public Libraries and at City Hall.

#	Suffolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
4	Continue to implement capital improvements that improve stormwater management and control flooding, especially for undersized and out-of-date drainage systems and patterns. This action includes all initiatives identified in the 2022 Resilience Plan.	High	Public Works	Ongoing	Retain with minor modifications	Sadler Pond Improvements was turned into the Route 460 Culvert Replacement Project, which has been completed. Chenango Court-complete, & Pughsville Study - Phase 1 is complete and design and ROW acquistion is underway for Phase 2) Other drainage projects are identified and planned including Oldetown Drainage Project & Oakland Drainage Project.
5	Develop a Resilience Plan that incorporates a stormwater drainage plan to address issues in flood-prone areas; prioritize and implement plan recommendations. This action includes all initiatives identified in the 2022 Resilience Plan.	High	Planning and Public Works	Ongoing	Retain with minor modifications	Change to " The City will be developing a Resilience Plan in 2022 that will identify projects and address issues in floodplone areas in the City."
6	Continue strengthening the City's Floodplain Management Program with the following actions:	High	Planning and Public Works	Within 4 years	Retain with minor modifications	2 PW Staff members will be taking CFM Exam in 2022. Change wording for number 3 to "Providing specialized training and support CFM certification for applicable City staff. PW recognizes that Planning Dept. is lead agency on this
	1) Reviewing and adopting State Model Floodplain Ordinance, including 1 foot freeboard elevation requirement;					
	2) Incorporating floodplain requirements into permit process with information in the online FAQs, BFE required on the building permit application (as required by NFIP), creating and posting online standardized forms for substantial improvement/damage determination;					

#	Suffolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	3) Providing specialized training and support Certified Floodplain Manager (CFM) certification for applicable City staff;					
	4) Preparing educational materials in the permit office on the value of flood insurance, freeboard and NFIP compliance; and,					
	5) Continuing participation in the Severe Repetitive Loss program.					
7	Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means.	High	Planning	Ongoing	Retain	Planning Item. Currently an official list does not exsist. There are plans to identify the properties that may be involved.
8	Retrofit Primary Shelters in the City to conform to the Ultimate Design Wind Speed for Risk Category 3 structures as referenced in the current edition of the Uniform Statewide Building Code, Part 1 (USBC).	Moderate	Capital Programs Director and Public Schools Director of Facilities and Planning	5 to 7 years	Retain	This item has not been completed at this time.
9	Install markers indicating the flood water depth along streets or roads subject to tidal, riverine or urban flooding.	Low	Traffic Engineering, Emergency Management	3 to 5 years	Retain	The City is developing a program to prioritize the installation of these signs starting with the arterial and collector highways and priority routes within our urbanized area.
10	Retrofit the East Suffolk Recreation Center with an emergency generator to support shelter operations for that section of the City.	Moderate	Capital Programs and Facilities, Department of Parks and Recreation	5 to 7 years	Retain	Not yet installed. Email sent to Terry Baronner 10/18; advised that City Manager's office would be responding to this item. The Red Cross has complete shelter surveys for the East Suffolk and Whaleyville Recreation Centers and have entered into an agreement to utilize the facilities as shelters. Whaleyville Recreation Center does have a generator.

#	Suffolk Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
11	Work with the owner to rehabilitate Godwin's Millpond Dam.	High	Fire & Rescue	3 to 5 years	New	Godwin's Millpond Dam was assessed "poor" in 2018 by DCR. The high hazard potential earthen dam is located along Chuckatuck Creek and has a drainage area of 6.87 square miles.

#	Hampton Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Maintain participation in National Flood Insurance Program and Community Rating System, with goal of obtaining Class 6 CRS rating. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements.	High	Emergency Management, Public Works and Community Development	Annually	Retain with minor modifications	
2	Acquire, elevate, relocate, retrofit or floodproof structures in flood prone areas. This action includes acquisition/demolition of repetitive and severe repetitive losses from trustee sales/tax sales.	High	Emergency Management, Community Development, Treasurer's Office	Ongoing	Retained and combined with old #4	
3	Provide flood, wind and heat protection and dry access/egress for critical facilities. Retrofits may include, but are not limited to: elevate and harden communication sites, provide generator backup or prewire evacuation shelters for quick hook-ups, and upgrade sewer pump stations.	High	Emergency Management, Public Works, Hampton City Schools	Ongoing	Retain with minor modifications	New 911/EOC is nearing construction out of the SFHA, on Big Bethel Road.
~~4~~	~~Purchase property from trustee sales/tax sales that are identified as repetitive loss or severe repetitive loss. Demolish flood-prone structures. This action includes Mitigation Reconstruction projects.~~	~~Moderate~~	~~Community Development, Treasurer's Office~~	~~Two years~~	Deleted; see new #2	
~~5~~	~~Implement ordinance to create and enforce no wake zones in flooded areas.~~	~~High~~	~~City Attorney's Office, Police Division~~	~~Hampton successfully lobbied for a bill allowing Virginia municipalities to adopt such an ordinance during 2016 Virginia General Assembly session. Ordinance under consideration immediately.~~	Deleted	Complete; ordinance, signage and enforcement procedures in place.

#	Hampton Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
4	Adopt and implement holistic water plans to mitigate flooding on a watershed level.	High	Community Development, Public Works	Ongoing; planning complete in approximately 5 years	Retain with minor modifications	*Living with Water* plan established citywide approach. Several plans complete, with additional plans underway.
5	Maximize use of social media before, during and after hazard events.	High	Marketing Department, Emergency Management	Ongoing	Retain with minor modifications	In 2021, Hampton won an award for Top 10 Digital City for its size range. Efforts to reach a broad group of citizens are working and should continue.
6	Develop a Resilient Hampton Education Plan, which may include a CRS Plan for Public Information. Prepare public outreach materials and conduct outreach to educate elected officials and residents on methods of mitigating flood damage, the importance of maintaining flood insurance coverage, the City's floodplain management efforts, and the benefits of the City's CRS participation. Expand capacity building and training for various groups and neighborhood-serving organizations to include communication about mitigation, building code requirements, and response.	High	Emergency Management and Community Development, Marketing, Public Works	Ongoing; incorporate into upcoming Resilient Hampton education plan	Retain with minor modifications; combined with old #13.	
7	Improve stormwater management capacity of existing system, to include improving drainage system maintenance using increased sediment and debris clearance, and ongoing analysis of the current system's status of functionality.	High	Public Works Engineering	Ongoing	Retain with minor modifications	
8	Coordinate with owners of post-FIRM structures that are NFIP "minus-rated" to help property owners determine reason for rating and implementing solutions. Identify funding sources to help identify and fund retrofits.	High	Community Development, Emergency Management, Public Works	Within 2 years of plan adoption	Retain with minor modifications	

#	Hampton Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
9	Conduct repetitive loss area analyses of repetitive flood loss areas, partnering with HRPDC and VDEM where relevant. Include outreach to homeowners regarding potential mitigation options.	High	Community Development, Public Works/Engineering and Emergency Management	Ongoing	Retain	
10	Continue to build resiliency into the city's approach to social, economic and physical challenges. Incorporate resilience strategies into City plans (community plan, capital improvement plan, master plans, etc.). Develop a tool to evaluate how City decisions align with resiliency goals.	High	City Manager's Office and Community Development Resiliency Officer	Ongoing	Retain with minor modifications	Resiliency Officer position created and filled.
~~11~~	~~Prepare public outreach materials. Educate elected officials and residents on the importance of the NFIP and the City's floodplain management efforts, maintaining flood insurance coverage, the benefits of City's CRS participation, and methods for mitigating flood damage.~~	~~High~~	~~Emergency Management~~	~~Continuous~~	Combined with new #6	
11	Maintain storm-resistant public beaches.	Moderate	Public Works	Ongoing	Retain with minor modifications	
~~12~~	~~Implement warning system for coastal storms.~~	~~Moderate~~	~~Emergency Management~~	~~Three years~~	Delete	This action was completed.
12	Ensure safe ramp access is provided for rapid extraction of City-owned boats prior to Tropical/Coastal storm.	High	Emergency Management	Ongoing	New	
13	Develop, finalize and implement Disaster Recovery Plan.	High	Emergency Management, Community Development	Ongoing with plan expected to be finalized in 2022 or 2023.	New	
14	Develop a plan to collect surveyed high water mark data following flood events.	Low	Public Works, Emergency Management	Set up post-disaster contract within 2 years of plan adoption	New	

#	Hampton Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
15	Provide business resiliency planning services to the City's business owners, particularly Virginia Department of Minority Business Enterprise (DMBE)-certified SWaM businesses that may have access to fewer resources than larger establishments. Workshops and outreach would identify businesses interested in further planning, with more detailed assistance then provided to assist businesses with details regarding risk and vulnerability assessment, preparedness, continuity of operations planning and adaptation/recovery. Help businesses identify specific mitigation projects and sources of funding to reduce vulnerability and increase resiliency.	Moderate	Economic Development, CCRFR	within 3 years of plan adoption	New	The CCRFR has prepared the Coastal Virginia Small Business Self-Assessment and Guide available at: https://www.floodingresiliency.org/coastal-virginia-small-business-resilience-self-assessment-and-guide/ which could be useful for beginning this action.
16	Implement structural and nature-based flood control projects in flood prone areas, such as tide gates, berms, constructed wetlands, roadway elevations, etc. This action includes projects identified by the *Resilient Hampton* Initiative plans.	Moderate	Emergency Management, Community Development, Treasurer's Office	Ongoing	New	

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Relocate the ComIT Data Center.	High	ComIT	Within 1.5 years	2021: Retained - Might be completed close to when plan adoption is complete. If so, would be deleted.	Building 2 construction is in progress. The COMIT Data Center is relocating from the basement of Building 2 to the third floor of Building 2. This work is part of the Building 1, 2 & 11 Phase I Renovation which began in February 2021. The third floor and IT pathways are estimated to be completed in the first quarter of calendar year 2022. Installation and turn up of IT equiment is estimated to be completed by the third quarter of calendar year 2022 or sooner if possible.
2	Strengthen the City's Floodplain Management Program with the following actions:	High	Planning and Public Works	Within 4 years	Retained with minor modifications.	
	1) Continue participating in the National Flood Insurance Program. Continue enforcement of standards in existing floodplain management ordinance that meet and exceed NFIP minimum requirements;				Retained	Ongoing
	2) Incorporate floodplain management tools/regulations into existing development review procedures;				Retained	Ongoing
	3) Continue participation in the Community Rating System in order to reduce property owner premiums for flood insurance;				Retained	The City officially entered the CRS program as a Class 7 on May 1, 2019.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	4) Provide specialized training and support Certified Floodplain Manager (CFM) certification for floodplain plan reviewers, inspectors and permit processors;				Retained	There are currently 8 CFMs within the Planning and Community Development Department and 3 CFMs employed within other City departments. Additonally, one of our CFMs serve as a board member of the Virginia Floodplain Management Association. In August, The Planning and Community Development Department sent 5,000 annual NFIP letters to homeowners near and within proned repetitive flooding areas.
	5) Prepare educational materials in the permit office on the value of flood insurance, freeboard and NFIP compliance; and,				Retained	Annual floodplain and flood insurance information is available in the permits office as well as numerous other public offices.
	6) Participate in the Severe Repetitive Loss program to mitigate flood-prone structures.				Retained	The Office of Emergency Management applies for and manages elevation and acquisition projects for the severe repetitive loss program and continues to identify structures for future mitigation. Currently, OEM is performing elevations of 2 FEMA grants and acquisitons on 1 FEMA grant. An elevation grant submitted for FY2019 was identified for further review with FEMA in 2020.
	7) Consider changes to floodplain management ordinance to regulate repetitive flood losses and increase ICC availability, limited the size of enclosures beneath elevated structures in coastal high hazard areas, and regulate Coastal A Zones to Zone V standards.				New	

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
3	Create coalition of business owners, including some who have implemented mitigation actions in the past, to promote the value of hazard protection and help identify and implement retrofit/elevation/acquisition projects in the business community.	Low	Emergency Management	Within 5 years	Retained	Two members of the Virginia Beach Emergency Management Office participated in the RES Home Raising Academy. Various sectors participated in the Home Raising Academy including local government, construction, and real estate. The training curriculum included an introduction to the National Flood Insurance Program, Flood Maps, Elevation Certificates, Outreach, Proactive Selling, Financing & Insurance, and Home Elevation.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
4	Better define what is considered a critical facility and update the City's critical facility list annually. Provide emergency power to critical infrastructure, critical facilities, pump stations and critical roadway intersections during extended power outages. Emergency power and quick connect wiring is needed for critical intersections. Generator capability is needed at multiple school facilities used as shelters.	High	Public Utilities, Public Works, Sheriff, Emergency Management	Ongoing	Retained with modifications.	Generator projects at the Central Plant and EMS Headquarters have been completed. Central Plant Generator- $5.3 million project cost. Work substantially completed June 23, 2021. This included the instillation of 2 (n+1) generators for 100% back-up power of the Municipal Center central heat/cooling plant. This will enable uninterrupted heat and air conditioning to be provided to City Hall, Operations Buildings, School Administration Building, the Police Department (VB Police Head Quarters and 1st Precinct), the Correctional Center, and the Juvenile Detention Center. EMS HQ Generator- $472,000 project cost. Work substantially completed July 13, 2020. The project provided for whole building backup/generator power at the EMS Headquarters Building located at 4160 Virginia Beach Boulevard.
5	Design or Retrofit public safety facilities vulnerable to wind damage and/or flooding.	High	Public Works and Public Safety Departments	Long-term, over a 15-year period	Retained.	Older public safety facilities are incorporating retrofits as repairs are scheduled. New facilities are built to current standards with freeboard making them more resistant to flooding. All are desinged to sustain up to 117mph winds.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
6	Provide educational outreach to residents to increase awareness of vulnerability to multiple hazards and preventative actions that can be taken. Focus on hurricane preparedness, sea level rise and flooding.	Moderate	Emergency Management and Communications	Within 2 years	Retained	Ongoing. The Office of Emergency Management as well as many other city departments participate in numerous outreach events each year as well as provide presentations for civic leagues and civic organizations on the topics of hurricane preparedness, flood preparedness, etc. Several of these efforts were put on hold over the past year due to the coronavirus pandemic. The City did hold CERT training in September 2020.
7	Replace, as necessary, and maintain the existing regional interoperable communications system.	High	ComIT	Ongoing	Retained	The same operational processes are beign utilized and there has been no change since the last update
8	Protect Atlantic Ocean and Chesapeake Bay shorelines from storm damage. Continue work with the Army Corps of Engineers and other federal agencies to ensure ongoing maintenance of the Hurricane Protection Project and other maintained beaches within the city.	High	Public Works	Ongoing	Retained.	The City's beach restoration program is currently focused in six key areas: Ocean Park Beach Restoration, Cape Henry Beach Restoration, Resort Beach, Sandbridge Beach, and Croatan Beach.
9	Maintain a dam inventory and monitor the conditons of dams within the City making improvements when needed. Develop a dam safety plan to address protection, preparedness, response, and rebuilding for high hazard dams and areas in dam inundation zones.	Moderate	Public Works and Public Utilities	Ongoing	Updated- added maintain a dam inventory, monitor conditions, and the importance of improvements.	Public Works Operations continues to maintain an inventory of dams, monitor conditions, and provide maintenance when needed.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
~~10~~	~~Install mast arm supports with mechanical dampening systems for traffic signs and signals.~~	~~High~~	~~Public Works~~	~~Ongoing~~	Delete	Mechanical dampening systems are no longer used by the City. The last signal where dampeners were installed was on the Dam Neck Road/Harpers Road intersection. Current design standards increase pole rigidity and load distribution so that mechanical dampers are no longer needed. This technique was most recently completed at the signal near Sandbridge Road and Heritage Park.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
10	Improve and/or update alert, warning and notification capabilities. Potental capabilites incude: 1) utilizing the City's CRM registration portal and additonal support services; 2) Maintenance and addition of sensor installations for data collection as part of the VB StormSense Network to enhance Alexa voice assisted AI and intelligent predictive visualization platform.	Moderate	Emergency Management, IT, Communications	Improvements within 4 years; Ongoing Warning and Notification	Retained with modifications.	In 2019, the City entered into a partnership with WAZE for traffic notification to citizens for road closures due to natural hazards. In 2022 Google/Waze is planning to provide technical capabilities for CVB and partners to implement communication of safety message templates to drivers that use Waze app within a partners geographical boundary. Messages will appear in language that user sets Waze app to. Qualified partners, such as CVB, may select one safety message to post quarterly in a partner's geographical area. Message will appear in app when vehicle is stopped and automatically disappears with first movement of vehicle. Waze users may see message twice per quarter. Waze will share number of impressions made from campaign on monthly basis. City obtained RAVE alerting system in 2019 which has ability to create Smart 911 profile for a calller. City is training staff on RAVE alerting system and drafting updated public alert and warning notificaton plan.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
11	Retrofit existing stormwater management system throughout the City into state- of-the-art facilities to minimize flooding after heavy storms while also addressing water quality objectives.	Moderate	Public Works	Ongoing	Retained with minor modifications.	The City currently has 36 active projects and programs in the Flood Control Section of the Stormwater Capital Improvement Program (CIP). Over the last year, the City commenced or completed actual stormwater and drainage improvement projects in 8 neighborhoods to retrofit aging undersized infrastructure and/or based on analysis by city-wide master stormwater modeling in certain watersheds. Capital improvement program projects associated with these neighborhoods include: - Aragona Drainage Improvements - Ashville Park Drainage Improvements - Chubb Lake/Bradford Lake - College Park and Level Green Drainage Improvements - Eastern Shore Drive Drainage - Southern Canal/Lead Ditch - Windsor Woods Drainage

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
12	Mitigate incursion of storm surge and tidal inundation of low-lying areas. Investigate coastal barrier technologies and tidal stream diversion techniques.	Moderate	Public Works	Ongoing and long-term	Retained	The City of Virginia Beach is developing plans to address both repetitive flooding and projected increases in flooding caused by sea level rise through the City's Comprehensive Sea Level Rise and Recurrent Flooding Response Plan. The plan is an effort between local government and various stakeholders (corporate and individual) to collect, sort, interpret, and understand the data behind how sea level rise is affecting our City and how we should best respond.
13	Elevate, acquire, relocate or retrofit structures in flood prone areas that have suffered repetitive flood damage. This action includes Mitigation Reconstruction projects.	High	Planning, Emergency Management	Within 5 years	Retained with minor modifications.	16 residences were in the process of being elevated with FMA funding. Additionally, there are 6 residences awaiting to be elevated contingent on a FY19 FMA grant award.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
14	Acquire open space in strategic locations that can provide management benefits for multiple mitigation objectives. Objectives may include but are not limited to: flood control, water quality, public access to waterways, preserving or creating tree canopy, and preserving unique ecological and cultural heritage sites. Incorporation of the Parcel Level Mitigation Program for these projects.	Moderate	Agriculture; Parks and Recreation; Public Works; Emergency Management	Long-term, 5 to 10 years	Retained with minor modifications.	Agriculture Reserve Program continues to assist AG farmers/landowners with option of preserving AG land vs selling off for development options. During 2021 there were 379.58 acres added to program, including acquiring 22 development rights on a total of 6 parcels in southern watersheds. There is now cumulative total of 10,366.31 acres and 895 development rights captured in Agricultural Reserve Program. Recent changes to the City's ARP ordinance allow Virginia Beach to target other sensitive and valuable farmland for not only agriculture and forest land protection but also other valuable green infrastructure functions. P& R- No new land acquisition of open space has occurred. The city is attempting to acquire a small piece of non-developable property from a shopping center owner to create water access for a kayak launch as well as provide for bank stabilization and outfall for new stormwater quality facility in the Kempsville section of the city. The 2019 FMA Acquisition grant application included 3 properties that will be demolished and returned to open space, incorporated into an existing city park. Grant was awarded in October 2020 and acquisition project initiated shortly after.
15	Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means. Prepare Repetitive Loss Area Analyses for CRS credit.	High	Emergency Management	Ongoing		Through the CRS process each rep loss property was mapped and evaluated for mitigation in 2018.

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
16	Develop a local hurricane evacuation framework/plan and identify communication networks for evacuation messaging.	High	Emergency Management, Communications Office	within 2 years of plan adoption	New	
17	Promote and sustain local programs such as the Parcel Level Mitigation Program (PLMP) to provide flood protective actions such as acquisiton, flood vents, relocating utilities, elevation etc. to vulnerable flood areas. Utilize grant funding to expand capabilities of PLMP when appropriate and elligible.	Moderate	Emergency Management	Within 5 years	New	
18	Monitor and enhance the City's cybersecurity capabilities to protect the City from cybersecurity threats especially during or immediately after a disaster or emergency.	Moderate	IT (Cybersecurity)	Ongoing	New	
19	Facilitate discussions with agencies responsible for providing local transportation to encourage them to evaluate, improve, and/or establish local and regional transportation plans to address the transportation needs of vulnerable populations such as the elderly, college and university students, those with disabilities, visitors, etc. in the event of an evacuation.	Moderate	Planning (Transportation) and Emergency Management	Within 5 years	New	
20	Review all City rules, regulations, policies, procedures, ordinances and plans to ensure a consistent approach that aligns with hazard mitigation goals, objectives and actions.	Moderate	Planning, Emergency Management	Ongoing	New	
21	Implement the action items and projects outlined in Sea Level Wise, particularly the following high priority items:	High	Planning, Emergency Management, Public Works	Within 4 years	New	
	1) identify regional flood risk reduction projects that could be pursued with neighboring jurisdictions, such as the City of Norfolk;					

#	Virginia Beach Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	2) increase freeboard to 3 feet or to a future design flood elevation;					
	3) require mechanical and electrical systems to be elevated to design flood elevation (with freeboard);					
	4) expand height allowance for buildings outside the SFHA, where property owners want to elevated structures to reduce flood risk;					
	5) (paraphrased and combined) include sea level rise and future flooding considerations in designing adequate drainage controls, and in development of subdivision/site plans; and,					
	6) develop informational materials on how to renovate historic properties to enhance flood resilience consistent with historic preservation requirements.					

#	Chesapeake Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Maintain participation in National Flood Insurance Program and Community Rating System. Continue enforcement of standards in existing ordinance that meet and exceed NFIP minimum requirements. Consider updates to 2013 floodplain management ordinance to include protection of areas outside the current SFHA subject to future flooding as sea level rises, and additional restrictions on rehabilitation of existing structures in the SFHA such as freeboard and substantial damage requirements.	High	Emergency Management	Annually	Retain with minor modifications.	Completed and ongoing; completed the 2020 Verification Visit, and currently completing 2021 recertification. Chesapeake moved from a Class 8 to a Class 7 after the Verification Visit.
2	Acquire, elevate, relocate, retrofit or floodproof structures in flood prone areas. Flood protection may include minor localized flood reduction projects, as well. This action includes Mitigation Reconstruction projects.	High	Emergency Management	ongoing	Retain with minor modifications.	The City of Chesapeake Office of Emergency Management continues to apply for grants for Acquisitions. 5 of the 7 applications are being processed from the 2018 FMA Grant. 2 applications were submitted for houses in 2019 and 3 applications were submitted for houses in 2020. Additionally, stormwater flood protection reduction projects are scheduled for numerous subdivisions in the SFHA.
3	Conduct detailed vulnerability review: cross reference locations of existing manufactured homes and manufactured home parks relative to repetitive flood loss areas and new FEMA 100-year floodplains. Review their vulnerability to flood and wind hazards. Implement measures to retrofit, relocate, or acquire vulnerable units. This action may include Mitigation Reconstruction projects.	Moderate	Emergency Management, with support from GIS and Engineering Division	within 2 years of plan adoption	Retain with minor modifications.	Procedures are in place for protecting new manufactured homes in SFHA; this action addresses existing structures.
4	Protect critical facilities from damage. Measures may include installation of emergency backup power, elevation of structure or components, relocation or retrofit of building components.	Moderate	Emergency Management, with GIS and Public Works Engineering Division	Ongoing	Retain with modifications to reflect progress made	New Public Safety building/EOC can withstand Category 3 hurricane or earthquake and has multiple redundancy infrastructure built into the building. All community centers and conference center outfitted with generators. The city has also completed the work on two new Fire Stations, Sta #10 in Bowers Hill & Sta #7 in Southern Chesapeake. Sta #10 serves both as a Fire Station and Logics Center for the department, increasing the city's ability to prepare, respond and mitigate following a disaster. Sta #7 is dual use facility, as a Fire Station and a newly added Police Precinct.

#	Chesapeake Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
5	Flow test and inspect existing City-owned and grant-funded dry hydrants annually to help maintain operability.	High	Fire Department	Ongoing per annual maintenance schedule	Retain	Continues on a regular, annual maintenance schedule. This project is overseen by a Captain in the Fire Department who is assisted by a Supervisor in Public Utilities. Hydrants are regular schedule of maintenance and testing. This is not only done for operational purposes, but for training purposes of field forces, especially new recruits in the field.
6	Seek and use additional revenue sources and local matching funds for mitigation planning and projects.	Moderate	Emergency Management	ongoing		Chesapeake has attained and continues to apply for FEMA grants for acquiring repetitive flood loss homes and has committed Capital Improvement Funds to mitigate flooding. Chesapeake has applied for PDM funds for mitigation purposes to install generators at Public Utilities Pump Stations. These generators will ensure there is not flooding due to lack of power to pump water. The city also it uses its emergency management grant funds to enhance its Alert and Everbridge system to warn citizens of flooding issues, along with other potential disasters that may occur.
7	Continue to implement a Pre-Disaster Homeowner Tree Preventive Maintenance and Hazard Awareness Program.	Moderate	Parks and Recreation Department, Emergency Management, Development and Permits	ongoing	Retain with minor modifications to reflect progress made.	City to hire Urban Forester/City Arborist in 2022. Messaging has gone out to homeowners regarding what to do following a storm on how to care for damaged trees. Public Communications routinely sends messaging regarding pre-storm maintenance. City works with Garden Clubs and the VT Cooperative Extension to craft and disseminate important information.
8	Improve stormwater management infrastructure. Implement preventive maintenance schedule and system upgrades. Projects typically include replacement and upgrade of existing facilities, enlarging pipes/ ditches to provide for increased capacity and construction of stormwater management facilities/BMPs to provide flood control and water quality compliance. Provide replacement schedule for stormwater management and inspection equipment and vehicles, including purchases of plows for new trucks to assist with dual purpose of snow removal.	High	Public Works	ongoing	Retain with minor modifications to reflect progress made.	Public Works/Engineering has a Master Drainage Plan that identifies all watersheds and completed watershed studies identifying the system deficiencies and required improvements. The department maintains a list of all funded and unfunded projects The unfunded projects list is reviewed and updated on regular basis to ensure that flooding and poor drainage areas citywide are addressed and funding is directed to the highest priorities. Public Works /Operations schedules and provides for regular maintenance and repairs to ensure the existing stormwater system is functioning as intended.

#	Chesapeake Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
9	Part I. Maximize training and educational opportunities for NEMAC, City staff, elected officials, CERT members and citizen/neighborhood/civic league leaders regarding hazard mitigation, disaster preparedness and the relationship of mitigation to reduced recovery needs. Use modern social media forums such as NextDoor. Provide samples of retrofitting tools and examples of products.	Moderate	Emergency Management	Ongoing as opportunities arise	Retain with minor modifications	City Staff in OEM and Development & Permits have taken classes on Floodplain Management. OEM staff have taken classes on CRS. OEM continues to oversee NEMAC. City CERT Coordinator continues to train citizens on Disaster Preparedness and being Response Ready. Citizens are taught how to mitigate before, during, and after a disaster, and not be a burden on emergency resources. The CERT Coordinator and members of CERT conduct outreach initiatives, and since COVID slowed down the ability for CERT to meet, members worked with various groups to provide online training on disaster preparedness.
	Part II. Accommodate training and related support for at least two staff in the Department of Development and Permits to receive and maintain Certified Floodplain Manager (CFM) certification through the ASFPM.		Department of Development and Permits			Two Development & Permits personnel and two Office of Emergency Management personnel have attended EMI Floodplain Management Courses. D&P personnel will continue toward CFM certification. OEM and D&P personnel will continue to take classes in NFIP & CRS. OEM and D&P actively take part in CRS / Wetlands Watch Workgroup Meetings
10	Conduct Hazardous Environmental Action Team (HEAT) program to oversee industrial facilities, particularly hazardous facilities, to discuss hazards and mitigation alternatives.	Low	Emergency Management	Ongoing	Retain with minor modifications	HEAT Team is tasked with preventing and investigating environmental crimes such as illegal dumping of chemicals and waste, illegal transportation and/or storage of hazmat, chemical releases into atmosphere and waterways, burial of hazmat, and failure to report chemical releases. Team members serve on LEPC and help review emergency plans, hazmat management plans, and TIER II reports that are submitted. Team works closely with Emergency Management Office, DEQ, EPA and USCG. Program reduces illegal handling, storage and discharge of hazmat. Members are committed to educating residents and businesses on negative impacts to the environment of illegal dumping and polluting.
11	Support and maintain City's new Reverse-911 system. Prepare messages to release to citizens before and after a natural hazard event.	High	Emergency Management	Ongoing	Retain	The City continues to subscribe to Everbridge (Chesapeake Alert) with enhanced features to allow additional public outreach. Messages have been developed and pre-approved for alerting citizens to potential flooding, and a weather alert component has been incorporated in partnership with NWS, Wakefield. OEM and 911 Dispatch have more trained IPAWS Users, which will allow the City to broadcast WEA messages should an incident occur and notifications are needed quickly.
12	Prevent sanitary sewer inflows to the system during flood events. Smoke test public and private sanitary sewer infrastructure to determine priorities.	High	Public Utilities	Ongoing	Retain	Over 10% of the system is checked annually.

#	Chesapeake Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
13	Continue lease agreement and maintenance of facilities along the Dismal Swamp Canal Trail to accommodate recreational use of the floodplain.	High	Parks and Recreation	Ongoing	Retain	Trail improvements have been completed, including paved parking areas and two separate restroom facilities. Trail was recently fully repaved in 2020. The City continues to lease and maintain facilities adjacent to and on the Dismal Swamp Canal Trail.
14	Continue outreach efforts through a strategically-developed plan to inform and educate citizens before, during and after disasters. Develop pre-approved letters and notification system for structure significantly damaged after any disaster, particularly flood-prone structures with stringent repair requirements.	High	Emergency Management (lead)	Ongoing	Retain with modifications to reflect progress made	The departments of Public Communications, IT, OEM, Police, and Fire still meet as a Workgroup that focuses on messaging to the citizens and public before, during, and after a disaster.
15	Acquire open space in strategic locations that can provide multi-objective management benefits. Objectives may include but are not limited to: flood control, water quality, public access to waterways, preserving or creating tree canopy, and preserving unique ecological and cultural heritage sites. Acquire repetitive flood loss properties up for sale for via trustee sale.	Moderate	Planning & Development; Parks, Recreation and Tourism	Long-term, 5 to 10 years	Retain with minor modifications	Since 2017, the City has acquired Cornland School, a cultural heritage site, and completed task of moving it out of flood-prone location, and is in the process of elevating the school. City is acquiring Newton Neck parcel adjacent to Dominion Boulevard Veterans Bridge and putting it under conservation easement. The park site is adjacent to many flood-prone neighborhoods. Future park design will include flood prevention measures. Parks, Recreation and Tourism is acquiring several FEMA properties, including adjacent to Costa Avenue. Design for Blue Heron Landing Park in Indian River planning area is complete. New design boasts significantly more pervious area than before, along with a significant increase of trees, shrubs, and improved landscaping.

#	Chesapeake Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
16	Identify, create database, and plan uses for data regarding vulnerable populations. Uses may include targeted outreach, emergency notification and specialized evacuation planning. Study high social vulnerability repetitive flood loss areas to identify opportunities to support property owners and renters with recommended property-specific flood damage reduction tools and methods.	Moderate	Emergency Management (lead), Public Communications	Ongoing	Retain	City continues to work with state Shelter Coordinator to update databases of those with functional needs. The City now has a MIH (Mobile Integrated Health Coordinator), who is also creating a database of vulnerable populations. MIH Team regularly checks on citizens that have medical issues but do not need constant medical oversight. City has databases of those in modular home parks, in high risk areas near chemical facilities, and in repetitive flood areas. These groups can easily be notified using Everbridge should an incident occur. Messaging can also be sent should general information need to go out to the public in these areas.

#	Isle of Wight Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Acquire, elevate, relocate or retrofit structures in coastal high hazard areas and other flood prone areas that have suffered repetitive flood damage. This action includes Mitigation Reconstruction projects.	High	Planning and Zoning	Ongoing	Retain	County has ongoing process to assess needs.
2	Strengthen floodplain management program through the following: 1) Continue participation in the National Flood Insurance Program and the Community Rating System; 2) Conduct annual outreach to flood prone property owners; 3) Guide new development away from flood hazard areas; and 4) Require new development in Coastal A Zones to meet Zone V standards for design and construction.	Moderate	Planning and Zoning	Ongoing	Retain with minor modifications	
~~3~~	~~Place the utility power lines, cable and telephone lines to County/Town Facilities and Emergency Shelters underground.~~	~~Low~~	~~Emergency Management and Public Works~~	~~Ongoing~~	Delete	Substantially complete
~~4~~	~~Implement four-phase strategy to guide development in areas most vulnerable to sea level rise:~~	~~Moderate~~	~~Planning and Zoning, County Administration, Economic Development~~	~~Within 15 years~~	Delete	Substantially complete, although not exactly as outlined in previous mitigation action
	~~Create, adopt and distribute zoning maps identifying coastal and shoreline areas most vulnerable to sea level rise;~~					
	~~Identify and protect valued ecosystem features through zoning, subdivision regulations or other existing regulatory tools (*e.g.*, shoreline setbacks, living shorelines, beach nourishment, erosion control);~~					

#	Isle of Wight Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	~~Adopt policies that encourage development investment *outside* of the most vulnerable areas (*e.g.*, tax incentives, fee waivers, County/State/Federal funds for roads, redevelopment or economic development, relocation assistance/planning); and~~					
	~~Begin to armor existing development where relocation is not feasible (*e.g.*, elevation of new bridges, structural flood protection, tide gates).~~					
3	Develop and implement a stormwater drainage plan to address issues in flood-prone areas; prioritize and implement plan recommendations.	High	Utility Services	Ongoing	Retained with minor modifications	
4	Implement countywide Transportation Plan adopted in 2010 as part of the County Comprehensive Plan; include coordination with the Virginia Department of Transportation to address safety along all evacuation routes, including culvert redesigns and other installations to alleviate flooding.	High	Planning and Public Works/Utility Services	Ongoing	Retained with minor modifications	
5	Replace, as necessary, and maintain the existing regional interoperable communications system.	High	Emergency Services	Within one year of mitigation plan adoption	Retain	Replacement of system is necessary and scheduled for the near future.
6	Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means.	High	Planning and Zoning	Within 2 years of plan adoption and in conjunction with CRS initial application	Retain	
7	Identify and address multiple hazards along high traffic evacuation routes throughout the county, to include removal of utility poles and burying utility lines	High	Public Works	Ongoing	Retain	New development is required to have underground power lines. VDOT maintains road ROWs and regularly conducts tree trimming.
8	Continue use of social media before, during and after hazard events.	Moderate	Public Information	Ongoing	Retain	
~~9~~	~~Strengthen GIS digital mapping program.~~	~~Moderate~~	~~IT~~	~~Ongoing~~	Delete	Complete

#	Isle of Wight Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
~~10~~	~~Protect critical facilities, including shelters. Protection measures may include emergency generators or other power sources, wind or flood retrofits, elevation, relocation, or reconstruction. This action includes Mitigation Reconstruction projects.~~	~~High~~	~~Emergency Management and Public Works~~	~~Continuing~~	Delete	Complete; structures are protected
~~11~~	~~Conduct annual meetings with VDOT and utilities to identify hazard areas and potential projects to mitigate those areas.~~	~~High~~	~~Public Works~~	~~Annually~~	Delete	similar to other actions involving VDOT
9	Obtain StormReady designation through NOAA.	Moderate	Emergency Management	Ongoing	Retain	
10	Develop a post-disaster continuity of operations plan to assist in more rapid recovery after a disaster.	High	Emergency Management, Planning, Permits & Inspections, Engineering, Public Works	Within 2 years	Retain	The County has made progress refining procedures, but there is more work to do to finalize the plan.
11	Formalize a Green Infrastructure Network Plan to preserve the County's large undisturbed forests, preserve scenic landscapes, provide habitat, reduce stormwater runoff, maintain air quality and moderate temperature. Include a riparian buffer protection strategy for those areas in the Blackwater River Watershed which are not protected by CBPA.	Moderate	Community Development	Within 2 years	New	These actions are also in the County's Comprehensive Plan.

#	Smithfield Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Provide training for member(s) of Town staff to become Certified Floodplain Manager (CFM) through the Association of State Floodplain Managers (ASFPM).	Moderate	Planning and Engineering	Within 2 years	Retain	
2	Review information required on the Zoning Permit Application to ensure continued compliance with the NFIP.	High	Planning and Engineering	Within 2 years	Retain	
3	Identify strategic locations throughout town to remove utility poles and bury utility lines.	High	Public Works	Long-term, over a 10-year period	Retain	
4	Verify the geographic location of each NFIP repetitive loss property, and determine if that property has been mitigated and, if so, by what means.	High	Planning and Zoning	Ongoing	Retain	
5	Waterworks Dam/Smithfield Lake - Examine options to either bring dam into compliance with state regulations at a cost of more than $1.5 million, or decommission dam which may cost less, or as much as two times that, depending on the type of environmental restoration chosen for the lakebed.	High	Town Engineer	Within 2 years	Retain with major modifications	In 2010, heavy rains weakened the structure. Repair project was put out for bids in October 2017. In 2020, the town was informed they needed to repair the dam to get another operating permit.
6	Increase fuel storage at reverse osmosis water plant, allowing for extended operations during emergency situations.	High	Plant Manager	3 to 5 years	Retain	
7	Purchase variable message roadway signs, primarily for traffic control during flood events.	High	Town Engineer	Purchase 1 sign per year for the next 5 years	Retain	
8	Change generators at critical facilities from diesel to natural gas.	High	Public Works	Begin work immediately, starting with the oldest and most critical systems	Retain	

#	Windsor Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Provide training for members of Town staff to become a Certified Floodplain Manager (CFM) through the Association of State Floodplain Managers (ASFPM).	Moderate	Planning and Zoning	Within 2 years	Retain	
2	Review information required on the Zoning Permit Application to ensure continued compliance with the NFIP.	High	Town Manager	Within 2 years	Retain	
~~3~~	~~Install emergency backup power generator for the Windsor Police Department.~~	~~High~~	~~Town Manager, Police Department~~	~~Install generator before the end of FY 16/17.~~	Deleted; action complete	

#	Franklin Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Use existing stormwater and drainage studies to prioritize and implement recommended improvements. Evaluate use of stormwater fee to fund future projects.	High	Public Works	Within 2 to 3 years	Retain with minor modifications	partial progress, but project is ongoing
2	Maintain participation in the Community Rating System (CRS) and explore options for improving rating (currently a Class 9).	High	Community Development	Within 1 to 2 years	Retain with minor modifications	
3	Compile elevation and flood damage data, including but not limited to:	High	Fire and Rescue, Department of Tourism, Community Development	Ongoing	Retain with major modifications	new gage installed in historic area about 5 years ago
	1) Ensure all flood-prone businesses have based flood elevations posted inside;					
	2) Link gage data and high water mark data in a digital environment to facilitate evacuation, notification and other community flood awareness elements;					
	3) Continue to participate in the river gaging program (entered 5 year contract in 2020);					
	4) Maintain completed FEMA Elevation Certificates in a publicly-accessible format.					

#	Franklin Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
4	Work with the Department of Tourism and property owners to identify and implement wet and dry floodproofing projects to protect structures from future flood events. Floodproofing projects should be viewed from a holistic perspective while considering available technology and the building's age. Current floodplain management ordinance regulates floodproofing and residential elevations. Identify projects by providing flood audits to business owners. Mitigation projects may include acquisition, elevation, mitigation reconstruction projects, and retrofitting.	High	Community Development	Within 2 years	Retain with minor modifications	No projects have been identified to date due to staff turnover and lack of funding.
5	Conduct community disaster awareness campaign through the City's email newsletter to interested citizens, social media platforms through City of Franklin, Franklin Fire & Rescue and Franklin Police pages, and the cable Public, Education and Government (PEG) Channel. Address mitigation actions for multiple hazards, including purchase of flood insurance.	High	Fire and Rescue, American Red Cross	Within one year.	Retain with minor modifications	
6	Increase protection and access/egress for critical facilities and infrastructure, primarily as a result of flooding. Elevate or floodproof new critical facilities; retrofit, relocate or repurpose existing facilities, or develop alternative options with close localities, and protect existing power line infrastructure. Mitigation projects may include acquisition, elevation, mitigation reconstruction projects, or retrofitting.	High	Fire Station – Franklin Fire & Rescue, Public Works, with Franklin Power & Light, and Dominion	Within 1 to 2 years	Retain with minor modifications	
7	Reduce the prevalence of hazardous trees by:	Low	Public Works tree trimming team	within 1 year	Retain with minor modifications	
	Conducting routine inspection and tree-trimming maintenance conducted by Public Works on a yearly basis; and					

#	Franklin Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
	Coordinating with the Beautification Committee to prepare and distribute guidelines for property owners on how to properly care for aging trees, especially at the onset of hurricane season. Use PEG channel for distribution.					
8	Coordinate with CSX to regulate and manage the amount, types and times of hazardous materials transport through Franklin, and in preparing for potential hazardous material incidents.	High	Fire and Rescue	Ongoing	Retain with minor modifications	Currently, staff are working with CSX to determine what hazardous materials travel through Franklin.
9	Continue upgrades to the radio system to increase interoperability between departments and neighboring communities.	Moderate	Police; Fire and Rescue	within 2 to 3 years	Retain with minor modifications	Franklin is working on this action currently using ARPA funds. Goal is to connect departments on local and regional levels.
10	Expand offside capabilities to city departments and citizens. Install citywide wireless network that will allow users to have access to computer network in a mobile environment. Provide signage for residents/travelers on how to connect to network.	High	Police	within 2 years	Retain with minor modifications	
11	Upgrade existing GIS system to incorporate wetlands, NFIP flood maps and other risk information into the site plan review process for new development. Incorporate risk from tidal surge and rising sea levels on rivers and consider how floodplains will change over time.	Moderate	Community Development, Clerk's Office, Revenue Office	Immediately	Retain with minor modifications	Currently, staff are working with Clerk's Office, Revenue Office and GeoDecisions on overall GIS use/system. Currently have a wetlands test layer.
12	Help businesses develop multi-disaster recovery plans.	Moderate	Community Development, with Chamber of Commerce, Franklin Southampton Economic Development and Department of Tourism, HRPDC	Within 2 years	Retain	Staff are currently working with agencies and departments listed above to identify additional strategies and methods to include economic relief, recovery and incentives to bring in new businesses. Relocation of Community Development is also under consideration to provide continuity of permitting operations.

#	Franklin Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
~~13~~	~~Continue evaluating local schools as evacuation shelters and implement recommended upgrades or retrofit projects.~~	~~High~~	~~Fire & Rescue/Community Development~~	~~Within 2 to 3 years~~	Delete	Project completed
~~14~~	~~Require, through job description or other means, that additional staff member(s) of the Community Development Department maintain Certified Floodplain Manager (CFM) designation.~~	~~High~~	~~Community Development~~	~~Ongoing~~	Delete	Project completed
13	Identify and repair or demolish unsafe, unsanitary or hazardous housing and other structures, including those in repetitive flood loss areas. Mitigation projects may include acquisition, relocation, elevation, mitigation reconstruction projects, and/or retrofitting.	High	Community Development & Franklin Fire	Within 2 years	Retain with minor modifications	City is planning action in the near future using ARPA and CDBG funds.
14	Verify the geographic location of identified NFIP repetitive loss structures, and determine if those properties have been mitigated and, if so, by what means.	High	Planning	Ongoing	Retain	

#	Southampton County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
1	Protect existing and future critical facilities from damage due to flooding, tropical storm, earthquake and tornado. Projects may include: Identify suitable sites for new County Emergency Operations Center outside of the floodplain, or retrofit existing EOC. 1) Modify floodplain management ordinance to Rrequire new public safety buildings be located outside 500-year floodplain and that a detailed flood study be conducted to determine limits of the 100- and 500-year floodplains for proposed public safety buildings near approximate A Zone floodplain; 2) continue mapping water and sewer lines countywide, including the towns, in order to identify problems and retrofit/upgrade needs in order to protect utilities from damage and provide continuity of operations during disaster; 3) Retrofit new Sheriff's Office and EOC to protect from flooding, including access and egress; and 4) Ensure retrofitted Courthouse is protected from flooding.	Moderate	County Administrator's Office	Within 3 years	Retained with minor modifications	Work is ongoing on critical facility retrofits.
2	Consider amendment to subdivision ordinance that requires solicitation to the Virginia Department of Forestry for wildfire mitigation comments on proposed major subdivisions in the County.	Low	Community Development	Within 5 years	Retained with minor modifications	
3	Protect repetitively flooded structures, including the County courthouse, from flood damage. Modifications could include floodproofing retrofits, elevation of structure and/or critical components, acquisition, relocation or repurposing the structure. This action includes Mitigation Reconstruction projects.	High	County Administrator's Office	Ongoing	Retain	

#	Southampton County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
4	Complete five remaining countywide drainage studies that prioritize drainage maintenance requirements and stormwater management projects to minimize flooding problems. Implement recommendations.	High	County Administrator's Office	Within 5 years of plan adoption	Retained with minor modifications	
~~5~~	~~Implement necessary shelter retrofits and improvements to Southampton County High School.~~	~~high~~	~~County Administrator's Office~~	~~Within 1 year~~	Delete	Project completed
5	Institute web-based educational program to provide multi-hazard structural protection techniques to property owners. Include information on responsible tree pruning.	High	Community Development	Within 1 year	Retained with minor modifications	
6	Verify the geographic location of all NFIP repetitive losses, and make inquiries as to whether the properties have been mitigated, and if so, by what means.	High	County Administrator's Officeommunity Development; HRPDC, VDEM	Ongoing	Retain	
7	Maintain Certified Floodplain Manager (CFM) certification and training for two County employees.	High	Department of Community Development	Ongoing	Retained with minor modifications	One employee has CFM; another employee is pursuing certification
~~8~~	~~Secure Memorandums of Understanding for floodplain management between Franklin Southampton Community Development Department and towns.~~	~~High~~	~~Community Development staff, with Board of Supervisors and Town Councils~~	~~Within 2 years of plan adoption~~	Delete	The two communities no longer share services.
~~9~~	~~Provide necessary training and certification to all Stormwater Management Program staff.~~	~~High, required by DEQ~~	~~Community Development Department~~	~~Annually~~	Delete	Project completed
~~10~~	~~Put administrative procedures in place to stringently enforce 18-inch freeboard requirement for new and substantially improved structures in the County's FEMA designated Special Flood Hazard Areas.~~	~~High~~	~~Community Development Department~~	~~Upon adoption of freeboard in each community. County adopted freeboard December 21, 2015.~~	Delete	Project completed

#	Southampton County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
8	Enact tree preservation or landscape ordinance for new construction in all zoning designations.	Low	County Administrator/Public Works Department/Community Development Department	within 3 years of plan adoption	Retained with minor modifications	partially complete
9	Encourage Litter Control Council and citizen groups to become more involved in roadside clean-ups to keep roadside ditches clear of debris.	Low	Public Works (staff liaison to Litter Control Council)	Over the next 5 to 7 years	Retain	
10	Increase use of Reverse 911 by citizens. Registration for the service is required and is currently advertised primarily on county web site.	High	Sheriff's Office	Within 2 years of plan adoption	Retain	Sheriff's office has plans in place for advertisement.
~~11~~	~~Incorporate flood mitigation measures when flood-prone public buildings are undergoing non-substantial renovations.~~	~~Moderate~~	~~County Administration, Board of Supervisors~~	~~Long-term over the next 10 years~~	Delete	Project completed
11	Include hazard mitigation priorities in budget preparation discussions and other County functions, such as comprehensive land use planning.	High	Director/Coordinator of Emergency Management	Annually	Retained with minor modifications	County Comprehensive Plan is currently undergoing revision and hazard mitigation-related goals and objectives will be incorporated.
12	Implement drainage plan for Newsoms area. The plan was created through a DHCD grant that is currently funded and underway until early 2023. Seek additional funding sources.	High	Director/Coordinator of Emergency Management	Annually	Retained with minor modifications	Three more phases of the plan are anticipated.
13	Develop long-term housing plan, including consideration of adopting the Property Maintenance Section of the USBC to address existing housing deficiencies. Long-term plan should include housing for displaced populations in the incorporated and unincorporated parts of Southampton County in the event of a disaster.	High	Planning, Sheriff's Office, Community Development, Social Services	Within 3 years of plan adoption	New	

#	Southampton County Mitigation Action	Priority	Lead Agency	Implementation Schedule	2021 Status	Notes
14	Conduct additional watershed mapping for the Blackwater and Nottaway Rivers, similar to the recently completed effort on the Meherrin River.	Moderate	Community Development	Within 5 years of plan adoption	New	

#	Surry County Mitigation Action	Lead Agency	Priority	Implementation Schedule	2021 Status	Notes
1	Increase staff resources for emergency management.	Emergency Services	Moderate	Ongoing	Retain	
2	Establish signage notifications for additional high water marks along creeks and rivers in floodprone areas.	Emergency Services	Moderate	Ongoing	Retain with minor modifications	
~~3~~	~~Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.~~	~~Emergency Services, PDC~~	~~Medium~~	~~Ongoing~~	Delete	State has made statewide tool available to communities for this purpose
3	Protect critical facilities and infrastructure. Measures may include retrofitting of existing buildings and facilities as shelters, stormwater management or drainage improvements, elevation or relocation of structures or facilities out of hazard-prone locations. Continue to install the necessary electrical hook-up, wiring, and switches to allow readily-accessible connections to emergency generators at key critical public facilities.	Public Safety	Moderate	Ongoing	Retain with modifications	
4	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes. Use social media to quickly and effectively inform the public.	Public Safety	Moderate	Ongoing	Retain	
5	As part of continuing participation in the NFIP and a new application to the Community Rating System, request list of NFIP repetitive flood losses to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501. Update flood ordinance to clarify freeboard requirement.	Department of Planning and Zoning	Low	within 2 years of plan a	Retain with modifications	
~~6~~	~~Apply for CRS.~~	~~Public Safety~~	~~Moderate~~	~~Ongoing~~	Delete	Combined with old #6

#	Surry County Mitigation Action	Lead Agency	Priority	Implementation Schedule	2021 Status	Notes
~~7~~	~~Use social media to more effectively inform the public.~~	~~Public Safety~~	~~Moderate~~	~~Ongoing~~	Delete	Added into new #4
8	Improve GIS and 911 capabilities with better data collection, integration and functionality.	Department of Planning and Zoning	Low	Ongoing	Retain with modifications	
9	Protect public and private property through a variety of measures, including but not limited to: acquisition, elevation or relocation of structures from hazard prone areas, retrofitting of existing buildings, and minor structural flood control projects.	Public Safety; Planning and Zoning	Moderate	Ongoing	Retain with major modifications	
~~11~~	~~Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.~~	~~Community did not respond to status update request.~~	~~Communi ty did not respond to status update request.~~	~~Ongoing~~	Delete	This is done throughout the planning process.

APPENDIX G - ACRONYMS

The following list of acronyms may help with interpretation of terms used in this document.

Acronym List

AAD – Average Annual Damages

ACS – American Community Survey

AHAC – All Hazards Advisory Committee

AIDR – Australian Institute for Disaster Resiliency

ARPA – American Rescue Plan Act

ATSDR – Agency for Toxic Substances and Diseases Registry

BFE – Base Flood Elevation

CCI – Comprehensive Coastal Inventory Program

CDBG – Community Development Block Grant Program

CDC – Centers for Disease Control and Prevention

CERT – Community Emergency Response Team

CFM – Certified Floodplain Manager

CFPF – Community Flood Preparedness Fund

CFR - Code of Federal Regulations

CPZ – Community Protection Zone

CRS – Community Rating System

CWA – Clean Water Act Section 319 Grants

CZM – Virginia Coastal Zone Management Program

DEM – Digital Elevation Model

DCR – Virginia Department of Conservation and Recreation

DHS – U.S. Department of Homeland Security

DMA 2000 – Disaster Mitigation Act of 2000

DPW – Department of Public Works

EF – Enhanced Fujita [scale]

EOC - Emergency Operations Center

EPA – U.S. Environmental Protection Agency

EWP – Emergency Watershed Protection

FEMA – Federal Emergency Management Agency

FIRM – Flood Insurance Rate Map

FIS – Flood Insurance Study

FMA – Flood Mitigation Assistance Program

FPMS – Flood Plain Management Services Program

GIS – Geographical Information System

HAZMAT - Hazardous Material(s)

Hazus – Hazards U.S. Multi-Hazard

HHPD – High Hazard Potential Dam

HIRA – Hazard Identification Risk Assessment

HMA – Hazard Mitigation Assistance

HMGP – Hazard Mitigation Grant Program

HRPDC – Hampton-Roads Planning District Commission

HUD – U.S. Department of Housing and Urban Development

IDA – Intensely Developed Area

ISO – Verisk Analytics

LEPC – Local Emergency Planning Committee

LIDAR – Light Detection and Ranging

LiMWA – Limit of Moderate Wave Action

LWCF – Land and Water Conservation Fund Grants

MAP – Mitigation Action Plan

MLLW – Mean Lower Low Water

MMI – Modified Mercalli Intensity

MMS – Moment Magnitude Scale

NAS – Naval Air Station

NCEI – National Centers for Environmental Information

NESIS – Northeast Snowfall Impact Scale

NEMAC – National Event Mitigation Advisory Committee (Chesapeake)

NFIP – National Flood Insurance Program

NRI - National Risk Index

NOAA – National Oceanic Atmospheric Administration

NWS – National Weather Service

ODU – Old Dominion University

pCi/L – picocuries per liter

PDM – Pre-Disaster Mitigation Program

PELV – Probability of Elevation

PDSI – Palmer Drought Severity Index

RFC – Repetitive Flood Claims Program

RL – Repetitive [flood] Loss

RMA – Resource Management Area

RPA – Resource Protection Area

RSI – Regional Snowfall Index

SARA - Superfund Amendments and Reauthorization Act

SFCP – Small Flood Control Projects

SFHA – Special Flood Hazard Area

SLOSH – Sea, Lake and Overland Surges from Hurricanes

SoVI – Social Vulnerability Index

SRL – Severe Repetitive [flood] Loss

SSR – Shoreline Situation Report

STAPLE/E – Social, Technical, Administrative, Political, Legal, Economic and Environmental

TAZ – Transportation Analysis Zones

TBA – Tidewater Builders Association

UDF – User-Defined Facilities

USACE – U.S. Army Corps of Engineers

USBC - Virginia Uniform Statewide Building Code

USDA – United States Department of Agriculture

USGS – United States Geological Survey

VASEM – Virginia Academy of Science, Engineering, and Medicine

VDEM – Virginia Department of Emergency Management

VDEQ – Virginia Department of Environmental Quality

VDH – Virginia Department of Health

VDOF – Virginia Department of Forestry

VDOT – Virginia Department of Transportation

VIMS – Virginia Institute of Marine Science

VMRC – Virginia Marine Resources Commission

WHO – World Health Organization

WNV – West Nile Virus

WPFP – Watershed Protection and Flood Prevention

WSP – Watershed Surveys and Planning

WUI – Wildland Urban Interface

APPENDIX H – DAM SAFETY DATA

This Appendix provides a list of all dams in the study area from the VaDCR database, as well as the VaDCR Dam Safety Data Sheet for each high hazard dam, ordered alphabetically by dam name.

Dam Safety Inventory System Download 01/11/2022

Count of Dam Name County	NID ID	Dam Name	Condition Assessment	Total
City of Chesapeake	**VA550001**	Lake Drummond Dam	Not Rated	1
	VA550002	Chesapeake Energy Center Bottom Ash and Sediment Pond Dam	Satisfactory	1
City of Chesapeake Total				**2**
City of Franklin	**VA620001**	Ray Development Dam	Not Rated	1
City of Franklin Total				**1**
City of Hampton	**VA650001**	Lakehaven Lake	Not Rated	1
	VA650002	Lynnhaven Lake	Not Rated	1
	VA650003	Crystal Lake Dam	Not Rated	1
	VA650004	Coliseum Lake Dam	Not Rated	1
	VA650005	Sandy Bottom Lake Dam	Not Rated	1
City of Hampton Total				**5**
City of Newport News	**VA700001**	Lee Hall Reservoir Dam	Satisfactory	1
	VA700002	Eustis Dam	Not Rated	1
	VA700003	Skiffes Creek Dam	Not Rated	1
	VA700004	Lion's Bridge Dam	Not Rated	1
	VA700005	Sluice Dam	Not Rated	1
	VA700006	Lee Hall Upper Dam	Poor	1
	VA700007	Kerry Lake Dam	Not Rated	1
	VA700008	Villages of Kiln Creek	Not Rated	1
	VA700009	Kiln Creek Golf Resort	Not Rated	1
	VA700010	Kettle Pond	Not Rated	1
	VA700011	Deer Park Lake	Not Rated	1
	VA700012	Boxley Hills Dams (2)	Not Rated	1
	VA700013	Queens Court Dam	Not Rated	1
City of Newport News Total				**13**
City of Norfolk	**VA710001**	Taylor Dam	Not Rated	1
	VA710002	Lake Whitehurst Dam	Fair	1
City of Norfolk Total				**2**
City of Suffolk	**VA800001**	Lake Cohoon Dam	Not Rated	1
	VA800002	Lake Kilby Dam	Not Rated	1
	VA800003	Lake Burnt Mills Dam	Not Rated	1
	VA800004	Lake Prince Dam	Not Rated	1
	VA800005	Rountree South Dam	Not Rated	1
	VA800006	Rountree North Dam	Not Rated	1
	VA800007	Brights Dam	Not Rated	1
	VA800008	Mathews Dam	Not Rated	1
	VA800009	Izaak Walton Dam	Fair	1
	VA800010	Speights Run Dam	Not Rated	1
	VA800011	Western Branch Dam	Not Rated	1
	VA800012	Norfleet Dam	Not Rated	1

City of Suffolk	**VA800013**	Lake Meade Dam	Not Rated	1
	VA800014	Godwins Millpond Dam	Not Rated	1
	VA800015	Ferry Point Dam	Not Rated	1
	VA800016	Godwin - Culpepper Dam	Not Rated	1
	VA800017	C - Pond Dam	Fair	1
	VA800018	D - Pond Dam	Not Rated	1
	VA800019	Governor's Point Dam	Not Rated	1
	VA800020	Sleepy Lake Dam	Satisfactory	1
	VA800021	Lake I Dam	Poor	1
	VA800022	Sadler Pond Dam	Not Rated	1
	VA800023	Lake Kilby Water Treatment Plant Sludge Lagoon Dam	Not Rated	1
City of Suffolk Total				**23**
City of Virginia Beach	**VA810001**	Thoroughgood Dam	Not Rated	1
	VA810002	Kingston Lake Dam	Poor	1
	VA810003	Stumpy Lake Dam	Not Rated	1
	VA810004	Great Neck Lake Dam	Not Rated	1
	VA810005	Lake Smith Dam	Fair	1
	VA810006	Little Creek Reservoir Dam	Not Rated	1
	VA810007	Lake Bradford # 3 Dam	Not Rated	1
	VA810008	Lake Bradford # 4 Dam	Not Rated	1
	VA810009	Point-O-View Lake Dam	Not Rated	1
	VA810010	Turtle Lake Dam	Not Rated	1
	VA810011	Banbury Lake Dam	Not Rated	1
	VA810012	Level Green Pond Dam	Not Rated	1
	VA810013	Sparrow Road Lake Dam	Satisfactory	1
	VA810014	Lake 6 Great Neck Area Dam	Satisfactory	1
	VA810015	Trant Lake Spillway Dam	Satisfactory	1
	VA810016	Laurel Cove Spillway Dam	Not Rated	1
	VA810017	Wolfsnare Lake Dam	Satisfactory	1
	VA810018	Lake 4 Great Neck Area Dam	Not Rated	1
	VA810019	Linlier Lake Dam	Not Rated	1
	VA810020	Virginia Avenue Lake Dam	Not Rated	1
	VA810021	Lake Christine Dam	Not Rated	1
	VA810022	Wishart Cove Dam	Not Rated	1
	VA810023	Sylvan Lake Dam	Not Rated	1
	VA810024	Lake Placid # 1 Dam	Not Rated	1
	VA810025	Lake Placid # 2 Dam	Not Rated	1
	VA810026	Indian Lakes Dam	Not Rated	1
	VA810027	Thoroughgood Lake # 5 Dam	Not Rated	1
	VA810028	Rosemont Forest Dam	Not Rated	1
	VA810029	Great Neck Area Lake # 3 Dam	Not Rated	1
	VA810030	Lake Taylor - Edward Dam	Not Rated	1
	VA810031	Queens Lake Dam	Not Rated	1
	VA810032	Lake Joyce Dam	Not Rated	1
	VA810033	Bluebird Drive Dam	Not Rated	1
	VA810034	Red Mill Farm Pond Dam	Not Rated	1
	VA810035	Salem Court Condominium Spillway Dam	Not Rated	1
	VA810036	Lake Holly Dam	Not Rated	1
	VA810037	Pembroke Meadows Lake Dam	Not Rated	1
	VA810038	Shoreline Lake Dam	Not Rated	1
	VA810039	Point of View # 2 Flume Dam	Not Rated	1

City of Virginia	**VA810040**	Liberty Ridge Spillway Dam	Not Rated	1
	VA810041	Mirror Lake Drive Dam	Not Rated	1
	VA810042	Indian Lakes at Narbonne Court Dam	Not Rated	1
	VA810043	The Lakes Dam	Not Rated	1
	VA810044	Sunstream Park Dam	Not Rated	1
	VA810045	Gateway Christian School Spillway Dam	Not Rated	1
	VA810046	Donation Shores/Saw Pen Point Dam	Not Rated	1
	VA810047	Great Neck Lake # 7 Dam	Not Rated	1
	VA810048	Great Neck Lake # 5 Dam	Not Rated	1
	VA810049	Lake Dowdy Dam	Not Rated	1
	VA810050	Lake James Spillway Dam	Not Rated	1
	VA810051	Artesia Way Spillway Dam	Not Rated	1
	VA810052	Highland Parish Weir # 1 Dam	Not Rated	1
	VA810053	Highland Parish Weir # 2 Dam	Not Rated	1
	VA810054	East Pembroke Lake Dam	Not Rated	1
	VA810055	Lake Archway Dam	Not Rated	1
City of Virginia Beach Total				**55**
City of Williamsburg	**VA830001**	Lake Matoaka Dam	Fair	1
	VA830002	Tutters Neck Pond Dam	Not Rated	1
City of Williamsburg Total				**2**
Isle of Wight County	**VA093001**	Edwards Dam	Not Rated	1
	VA093002	Jenkins Dam	Not Rated	1
	VA093003	Butlers Dam	Not Rated	1
	VA093004	Tormentor Dam	Not Rated	1
	VA093005	Arberdeen Dam	Not Rated	1
	VA093006	Wrenns Dam	Not Rated	1
	VA093007	Echo Dam	Not Rated	1
	VA093008	Rhodes Dam	Not Rated	1
	VA093009	Gail Dam	Not Rated	1
	VA093010	Smithfield Downs Golf Course Dam	Not Rated	1
	VA093011	B - 1 Pond Dam	Fair	1
	VA093012	B - 2 Pond Dam	Fair	1
	VA093013	Alemar Dam	Not Rated	1
	VA093014	Smithfield Lake Dam	Not Rated	1
	VA093016	ASB Pond Dam	Fair	1
	VA093017	Carisbrooke Dam	Not Rated	1
Isle of Wight County Total				**16**
James City County	**VA095001**	Whittaker Lake Dam	Not Rated	1
	VA095002	Horne's Lake Dam	Fair	1
	VA095003	Travis Pond et al Dams	Not Rated	1
	VA095005	Deer Lake Dam	Not Rated	1
	VA095006	Little Creek Dam	Poor	1
	VA095007	Richardson Millpond Dam	Not Rated	1
	VA095008	Barlows Pond Dam	Not Rated	1
	VA095009	Jolly Pond Dam	Poor	1
	VA095011	Lake Pasbehegh Dam	Not Rated	1
	VA095012	Lake Powell Dam	Not Rated	1

James City	**VA095013**	Cranston Mill Pond Dam	Not Rated	1
	VA095014	Taylor Pit Dam	Not Rated	1
	VA095015	Kingsmill Dam	Not Rated	1
	VA095016	Warehams Pond	Not Rated	1
	VA095017	Brewery Road Dam	Fair	1
	VA095018	Warburton Pond Dam	Satisfactory	1
	VA095019	Rennicks Pond Dam	Not Rated	1
	VA095020	Wenger Dam	Not Rated	1
	VA095021	Toano Dam	Not Rated	1
	VA095022	Perry Dam	Not Rated	1
	VA095023	Old Mill Pond Dam	Not Rated	1
	VA095025	Mirror Lakes Dam No. 1 (west)	Fair	1
	VA095026	Massie Farm Pond	Fair	1
	VA095027	Lake Nice Dam	Satisfactory	1
	VA095028	Western Pond	Fair	1
	VA095029	Eastern Pond Dam (PC 106)	Satisfactory	1
	VA095030	Woodstock Pond Dam	Not Rated	1
	VA095031	Mirror Lakes Dam No. 2	Not Rated	1
	VA095032	Kiskiack South Dam	Not Rated	1
	VA095033	Kiskiack North Dam	Not Rated	1
	VA095034	Ajacan Lake BMP Dam	Not Rated	1
	VA095035	Lake Norvell Dam	Not Rated	1
	VA095036	Stieffen Pond Dam	Not Rated	1
	VA095037	Wingfield Lake Dam	Not Rated	1
	VA095038	Cowles Dam	Not Rated	1
	VA095039	Joachim Lake	Not Rated	1
	VA095040	Liberty Crossing	Not Rated	1
	VA095041	Warhill Complex Swamp	Not Rated	1
	VA095044	Meadows Dam	Not Rated	1
	VA095045	Ware Creek Road Dam	Not Rated	1
	VA095046	Beaver Pond SWM	Not Rated	1
	VA095047	High Street SWM	Not Rated	1
	VA095048	Scotts Pond	Not Rated	1
	VA095049	Sharp Dam	Not Rated	1
	VA095050	Dozier Dam	Not Rated	1
	VA095051	Ford Colony Dam #1	Not Rated	1
	VA095052	Ford Colony Dam #2	Not Rated	1
	VA095053	Williamsburg National Dam	Not Rated	1
	VA095054	Kingspoint Dam	Not Rated	1
James City County Total				**49**
Southampton County	**VA175001**	Colgate Darden Dam	Not Rated	1
	VA175002	Rivers Dam	Not Rated	1
	VA175003	Dardens Dam	Not Rated	1
	VA175004	Windbourne Dam	Not Rated	1
	VA175005	McGraphs Dam	Not Rated	1
	VA175006	Princes Dam	Not Rated	1
	VA175007	Whitefield Dam	Not Rated	1
	VA175008	Johnson Dam	Not Rated	1
	VA175009	Claud Dam	Not Rated	1
	VA175010	Camp Dam	Not Rated	1
	VA175011	Cypress Cove Dam	Not Rated	1
	VA175013	Bishop Dam	Not Rated	1

Southampton	**VA175014**	Hicks Ford Road Dam	Not Rated	1
	VA175015	Cedar View/Cobb Branch Dam	Not Rated	1
	VA175016	Boothe Road Dam	Not Rated	1
Southampton County Total				**15**
Surry County	**VA181001**	Sunken Meadow Dam	Not Rated	1
	VA181002	Low Point Dam	Not Rated	1
	VA181003	Adkins Dam	Not Rated	1
	VA181004	Eastover Dam	Not Rated	1
	VA181005	Gray Dam	Not Rated	1
	VA181006	Surry Power Station Dredge Spoils Disposal Pond Dam	Satisfactory	1
	VA181007	Surry Power Station Dredge Material Management Area Perimeter Embankment Dam	Not Rated	1
Surry County Total				**7**
York County	**VA199001**	Harwood's Mill Dam	Poor	1
	VA199002	Lower Big Bethel Dam	Not Rated	1
	VA199003	Waller Mill Dam	Not Rated	1
	VA199004	Cheatham Dam	Not Rated	1
	VA199005	Jones Mill Pond Dam	Not Rated	1
	VA199006	Penniman Dam	Not Rated	1
	VA199007	Beaver Dam	Not Rated	1
	VA199008	Bigler Millpond Dam	Not Rated	1
	VA199009	Powell Dam	Not Rated	1
	VA199010	Skimino Dam	Not Rated	1
	VA199011	Upper Big Bethel Dam	Not Rated	1
	VA199012	Pond #11 Dam	Not Rated	1
	VA199013	Roosevelt Pond Dam	Not Rated	1
	VA199014	Williamsburg Country Club Dam	Not Rated	1
	VA199015	Wormley Pond Dam	Not Rated	1
	VA199016	Queens Lake Dam	Satisfactory	1
	VA199017	Frog Pond Dam	Not Rated	1
	VA199018	Rogers Dam	Not Rated	1
	VA199019	Cheatham Annex Un-named No. 3	Not Rated	1
	VA199020	York Meadows Dam	Not Rated	1
	VA199021	Ferguson Glade	Not Rated	1
	VA199022	Pond #12 Dam	Not Rated	1
	VA199024	York County Dam #2	Not Rated	1
	VA199025	Water Country Dam	Satisfactory	1
York County Total				**24**

Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: ASB Pond Dam

Inventory Number: 093016

Hazard Classification: High

City/County: Isle of Wight County, Southampton County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1901

Dam Owner:
John Ashley
(252) 474-4127(Mobile); (primary)(757) 469-4799(Office)
34040 Union Camp Street
Franklin VA, 23851

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 05/31/2026

Days Since Last Inspection: 118

Inundation Report: 12/17/2013

Type of Dam
Earth (Primary)

Reservoir Purpose
Other (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Franklin

Nearest City Distance: 2.23 Miles

River or Stream: Blackwater River offline - VAHU6 CU70 - Blackwater River - Union Camp Holding Pondond VAHU6 CU70

Technical Basics

Normal Pool Area: 101.30 Acres

Top Surface Area: 107.50 Acres

Normal Pool Capacity: 691.90 Acre-Feet

Top Capacity: 1102.60 Acre-Feet

Normal Pool Elevation: 14.50 Feet

Top Elevation: 18.50 Feet

Normal Pool Height: 12.70 Feet

Top Height: 16.70 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 0.20 Sq. Mi.

6 Hour PMP: 33.90

Time of Concentration:

12 Hour PMP: 38.70

24 Hour PMP: 38.70

Available Spillway Design Flow: .90 PMP

Weighted Curve Number:

IDA Spillway Reduction:

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
1/20/2021	Engineer	Fair
2/13/2020	Engineer	Satisfactory
2/28/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 04/24/2020
Expiration Date: 04/24/2026

Dam Location

Dam Address:
3040 Union Camp Drive
Franklin VA, 23851

E911 Direction to Dam:
Refer to Appendix L in attached emergency plan (EAP - emergency action plan) dated February 2020 (See Attachment section in the DSIS).

EAP Contacts

Dam Operator: Raye Moore
(primary)(757) 569-4793(Office); (757) 635-9159(Mobile)
(primary)raye.moore@ipaper.com
34040 Union Camp Drive
Franklin VA, 23851

Dam Alternate Operator:Charro Gaulden
(334) 415-3697(Mobile); (primary)(757) 569-4793(Office)
(primary)charro.gaulden@ipaper.com
34040 Union Camp Street
Franklin VA, 23851

Rain Gauge Observer: On-duty guard at Mill Guardhouse
(primary)(757) 569-4400(Office)
(primary)unknown@unknown.com
34040 Union Camp Drive
Franklin VA, 23851

Alternate Rain Gauge Observer:Raye Moore
(primary)(757) 569-4400(Office)
(primary)raye.moore@ipaper.com
34040 Union Camp Drive
Franklin VA, 23851

24-Hour Dispatch Center: Jerry Smith
(primary)(757) 653-2100(Office)
(primary)na
22336 Main St
P.O. Box 70
Courtland VA, 23837

Local Government Emergency Services:Josh Wyche
(primary)(757) 653-2100(Office)
(primary)unknown@unknown.com
22336 Main Street
P.O. Box 70
Courtland VA, 23837

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher G. Hall
(primary)(757) 956-3000(Office)
(primary)christopher.hall@vdot.virginia.gov
7511 Burbage Drive
Suffolk VA, 23435

National Weather Service:Eric Seymour
(757) 899-4200(Office); (primary)(757) 899-5734(Mobile)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- Route 189 - 1.96 miles downstream
- US 58 - 0.68 miles downstream
- Pretlow Road - 1.7 miles downstream
- Hemlock Street - 1.1 miles downstream
- Artis Circle - 1.3 miles downstream
- Blackwater Drive - 1.1 miles downstream
- Palm Street - 1 miles downstream

Dams Downstream:

- 55555

Potential Impact Structures (count):

- 52 Homes
- 0 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 0 Parks
- 0 Golf Courses

Dam Number: **093016**

Dam Name: **ASB Pond Dam**

VAHU6: CU70

Municipalities: Isle of Wight County,Southampton County

Region: 3

SWCD: CHOWAN BASIN,PEANUT

VA Senate: 18

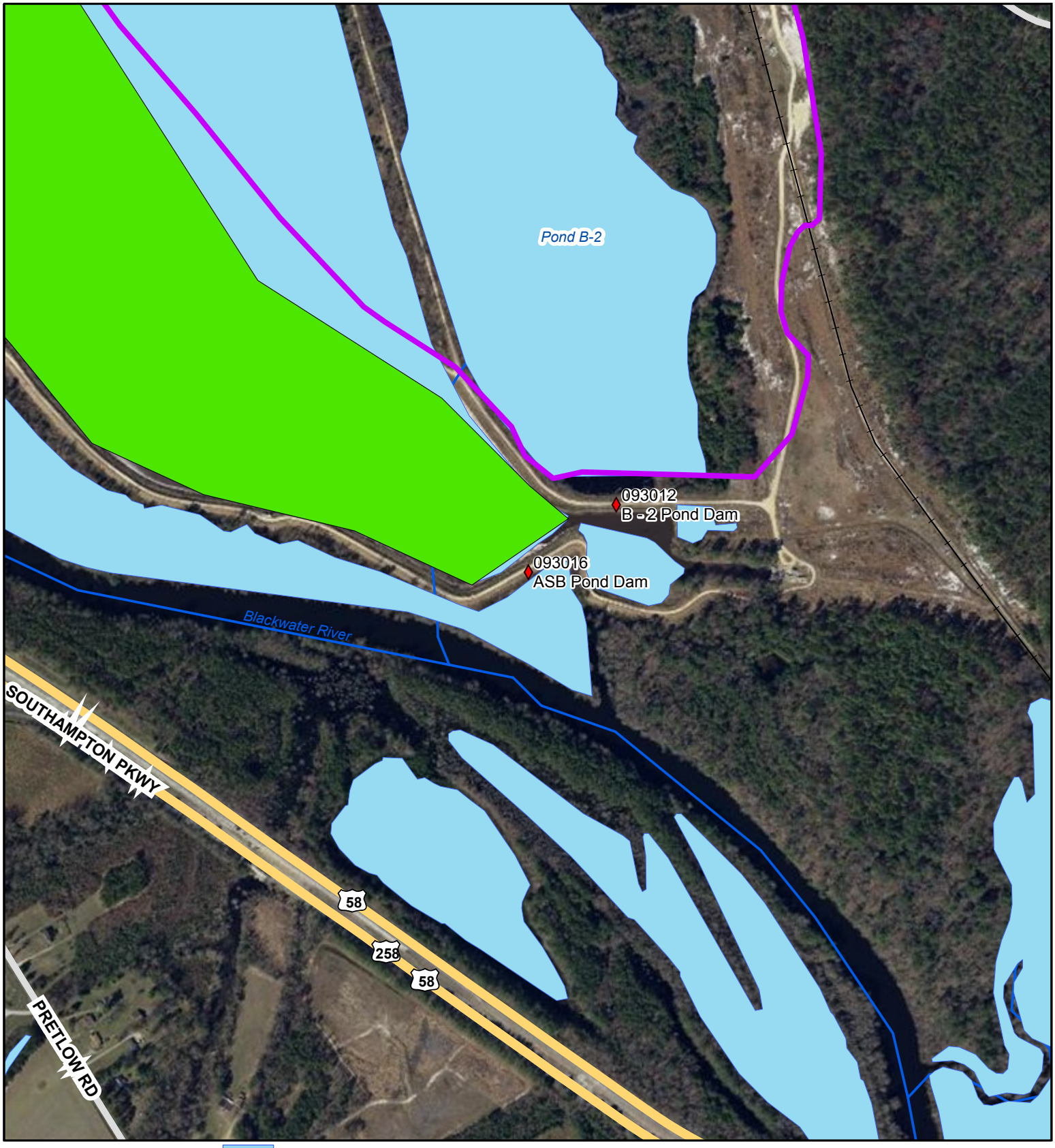
HUC 12: 030102020505

VA House: 75

Watershed Name: Blackwater River-Union Camp Holding Pond

Congressional: 5103,5104

USGS Topo: FRANKLIN



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: B - 1 Pond Dam

Inventory Number: 093011

Hazard Classification: High

City/County: Isle of Wight County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1950

Dam Owner:
John Ashley
(252) 474-4127(Mobile); (primary)(757) 469-4799(Office)
34040 Union Camp Street
Franklin VA, 23851

Size Classification: Small (>=50 - <1000 ac. ft., >=25' and <40')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 03/31/2023

Days Since Last Inspection: 118

Inundation Report: 05/04/2012

Type of Dam
Earth (Primary)

Reservoir Purpose
Other (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: 0.00 Miles

River or Stream: TR-BLACKWATER RIVER OFFSTREAM

Technical Basics

Normal Pool Area: 61.00 Acres

Top Surface Area: 122.20 Acres

Normal Pool Capacity: 177.80 Acre-Feet

Top Capacity: 668.00 Acre-Feet

Normal Pool Elevation: 12.60 Feet

Top Elevation: 18.00 Feet

Normal Pool Height: 7.60 Feet

Top Height: 13.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 0.59 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction: 100.00 YR

Available Spillway Design Flow: 100.00 YR **Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
1/20/2021	Engineer	Satisfactory
2/13/2020	Engineer	Satisfactory
2/28/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 12/17/2013
Expiration Date: 12/17/2019

Dam Location

Dam Address:
34419 Butler Farm Rd
Franklin VA, 23851

E911 Direction to Dam:
Access to the site is provided off of Butler Farm Road, through gated private gravel/dirt roadways leading back to the WWTS Complex. Access to the dam can be made from either of the following paths:
1. Gravel/dirt road leading past the clarifiers, along the combined canal, veering right (before crossing canal) to continue paralleling the combined canal (along south side of NW Inactive ASB) to the dam (west ASB embankment), or
2. Gravel/dirt road leading past the clarifiers, along the combined canal, veering left (crossing the canal) and continuing straight along the east side of the B-2 Pond to the pump station at the south end of the dam, or
3. Gravel/dirt road leading past the clarifiers, along the combined canal, veering left (crossing the canal) and turning immediately to the right paralleling the combined canal and continuing straight along the west side of the B-2 Pond and the east side of the EC Inactive ASB, turning right at road end and continuing straight to the pump station at the south end of the dam, or
4. Gravel/dirt road leading past the clarifiers, along the combined canal, veering left (crossing the canal) and turning immediately to the right paralleling the combined canal, turning right at the northeast corner of the EC Inactive ASB and continuing straight along the north then west side of the EC Inactive ASB and the east side of the ASB, turning right at road end and continuing straight to the pump station at the south end of the dam.

EAP Contacts

Dam Operator: Raye Moore
(757) 569-0107(Home); (primary)(757) 569-4793(Office); (757) 635-9159(Mobile)
(primary)na
34040 Union Camp Dr

Dam Alternate Operator:Jacquelyn Taylor
(primary)(757) 569-4536(Office); (843) 259-9698(Mobile)
(primary)na
34040 Union Camp Dr

Franklin VA, 23851

Rain Gauge Observer: NA NA
(primary)(757) 569-4400(Office)
(primary)na
34040 Union Camp Dr
Franklin VA, 23851

24-Hour Dispatch Center: Jerry Smith
(primary)(757) 653-2100(Office)
(primary)na
22336 Main St
P.O. Box 70
Courtland VA, 23837

Owner's Engineer: Douglas W Carr
(primary)(919) 461-1100(Office)
(primary)doug.carr@aecom.com
1600 Perimeter Park Drive
Suite 400
Morrisville NC, 27560-8421

Transportation Administrator:Joseph Lomax
(primary)(757) 346-3072(Office)
(primary)na
na
Franklin VA, 12345

Franklin VA, 23851

Alternate Rain Gauge Observer:Raye Moore
(757) 569-0107(Home); (primary)(757) 569-4793(Office); (757) 635-9159(Mobile)
(primary)na
34040 Union Camp Dr
Franklin VA, 23851

Local Government Emergency Services:J.B. Stutts
(primary)(757) 653-2100(Office)
(primary)na
22336 Main St
P.O. Box 70
Courtland VA, 23837

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

National Weather Service:Eric Seymour
(primary)(757) 899-4200(Office); (757) 899-5734(Office); (757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- 189 - 99999 miles downstream
- Pretlow Rd - 99999 miles downstream
- Hemlock St - 99999 miles downstream
- Palm St - 99999 miles downstream
- Blackwater Dr - 99999 miles downstream
- Artis Cr - 99999 miles downstream

Dams Downstream:

Potential Impact Structures (count):

- 54 Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **093011**

Dam Name: **B - 1 Pond Dam**

VAHU6: CU69,CU70

Municipalities: Isle of Wight County

Region: 3

SWCD: PEANUT

VA Senate: 18

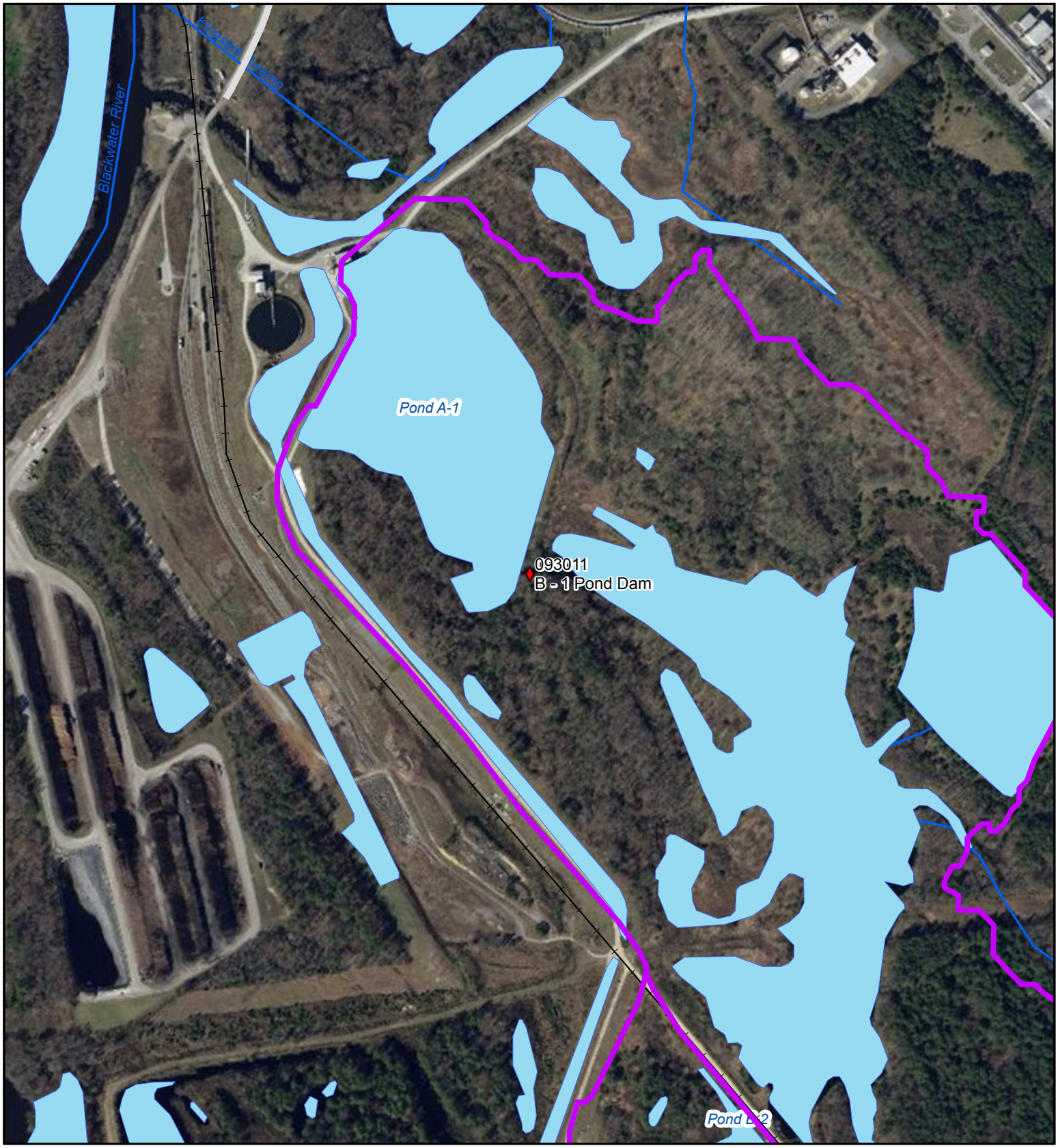
HUC 12: 030102020504,030102020505

VA House: 75

Watershed Name: Blackwater River-Union Camp Holding Pond,Kingsale Sw

Congressional: 5103

USGS Topo: FRANKLIN



Dam Locations | Waterbodies (NHD) | Interstate | State Primary Highway

Streams (NHD) | US Primary Highway | Secondary

N

Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: B - 2 Pond Dam

Inventory Number: 093012

Hazard Classification: High

City/County: Isle of Wight County, Southampton County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1901

Dam Owner:
John Ashley
(252) 474-4127(Mobile); (primary)(757) 469-4799(Office)
34040 Union Camp Street
Franklin VA, 23851

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 03/31/2023

Days Since Last Inspection: 118

Inundation Report: 05/04/2012

Type of Dam
Earth (Primary)

Reservoir Purpose
Other (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Franklin

Nearest City Distance: 2.30 Miles

River or Stream: Blackwater River offline - VAHU6 CU70 Blackwater River - Union Camp Holding PondFSTREAM

Technical Basics

Normal Pool Area: 52.40 Acres

Top Surface Area: 117.30 Acres

Normal Pool Capacity: 650.10 Acre-Feet

Top Capacity: 1667.90 Acre-Feet

Normal Pool Elevation: 6.00 Feet

Top Elevation: 20.30 Feet

Normal Pool Height: 0.00 Feet

Top Height: 15.30 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 0.86 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction: 100.00 YR

Available Spillway Design Flow: 100.00 YR

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
1/20/2021	Engineer	Satisfactory
2/13/2020	Engineer	Satisfactory
2/28/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 12/17/2013
Expiration Date: 12/17/2019

Dam Location

Dam Address:
34419 Butler Farm Rd
Franklin VA, 23851

E911 Direction to Dam:
Access to the site is provided off of Butler Farm Road, through gated private gravel/dirt roadways leading back to the WWTS Complex. Access to the dam can be made from either of the following paths:
1. Gravel/dirt road leading past the clarifiers, along the combined canal, veering right (before crossing canal) to continue paralleling the combined canal (along south side of NW Inactive ASB) to the dam (west ASB embankment), or
2. Gravel/dirt road leading past the clarifiers, along the combined canal, veering left (crossing the canal) and continuing straight along the east side of the B-2 Pond to the pump station at the south end of the dam, or
3. Gravel/dirt road leading past the clarifiers, along the combined canal, veering left (crossing the canal) and turning immediately to the right paralleling the combined canal and continuing straight along the west side of the B-2 Pond and the east side of the EC Inactive ASB, turning right at road end and continuing straight to the pump station at the south end of the dam, or
4. Gravel/dirt road leading past the clarifiers, along the combined canal, veering left (crossing the canal) and turning immediately to the right paralleling the combined canal, turning right at the northeast corner of the EC Inactive ASB and continuing straight along the north then west side of the EC Inactive ASB and the east side of the ASB, turning right at road end and continuing straight to the pump station at the south end of the dam.

EAP Contacts

Dam Operator: Raye Moore
(757) 569-0107(Home); (primary)(757) 569-4793(Office); (757) 635-9159(Mobile)
(primary)na
34040 Union Camp Dr

Dam Alternate Operator:Jacquelyn Taylor
(primary)(757) 569-4536(Office); (843) 259-9698(Mobile)
(primary)na
34040 Union Camp Dr

Franklin VA, 23851

Rain Gauge Observer: NA NA
(primary)(757) 569-4400(Office)
(primary)na
34040 Union Camp Dr
Franklin VA, 23851

24-Hour Dispatch Center: Jerry Smith
(primary)(757) 653-2100(Office)
(primary)na
22336 Main St
P.O. Box 70
Courtland VA, 23837

Owner's Engineer: Douglas W Carr
(primary)(919) 461-1100(Office)
(primary)doug.carr@aecom.com
1600 Perimeter Park Drive
Suite 400
Morrisville NC, 27560-8421

Transportation Administrator:Joseph Lomax
(primary)(757) 346-3072(Office)
(primary)na
na
Franklin VA, 12345

Franklin VA, 23851

Alternate Rain Gauge Observer:Raye Moore
(757) 569-0107(Home); (primary)(757) 569-4793(Office); (757) 635-9159(Mobile)
(primary)na
34040 Union Camp Dr
Franklin VA, 23851

Local Government Emergency Services:J.B. Stutts
(primary)(757) 653-2100(Office)
(primary)na
22336 Main St
P.O. Box 70
Courtland VA, 23837

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

National Weather Service:Eric Seymour
(primary)(757) 899-4200(Office); (757) 899-5734(Office); (757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

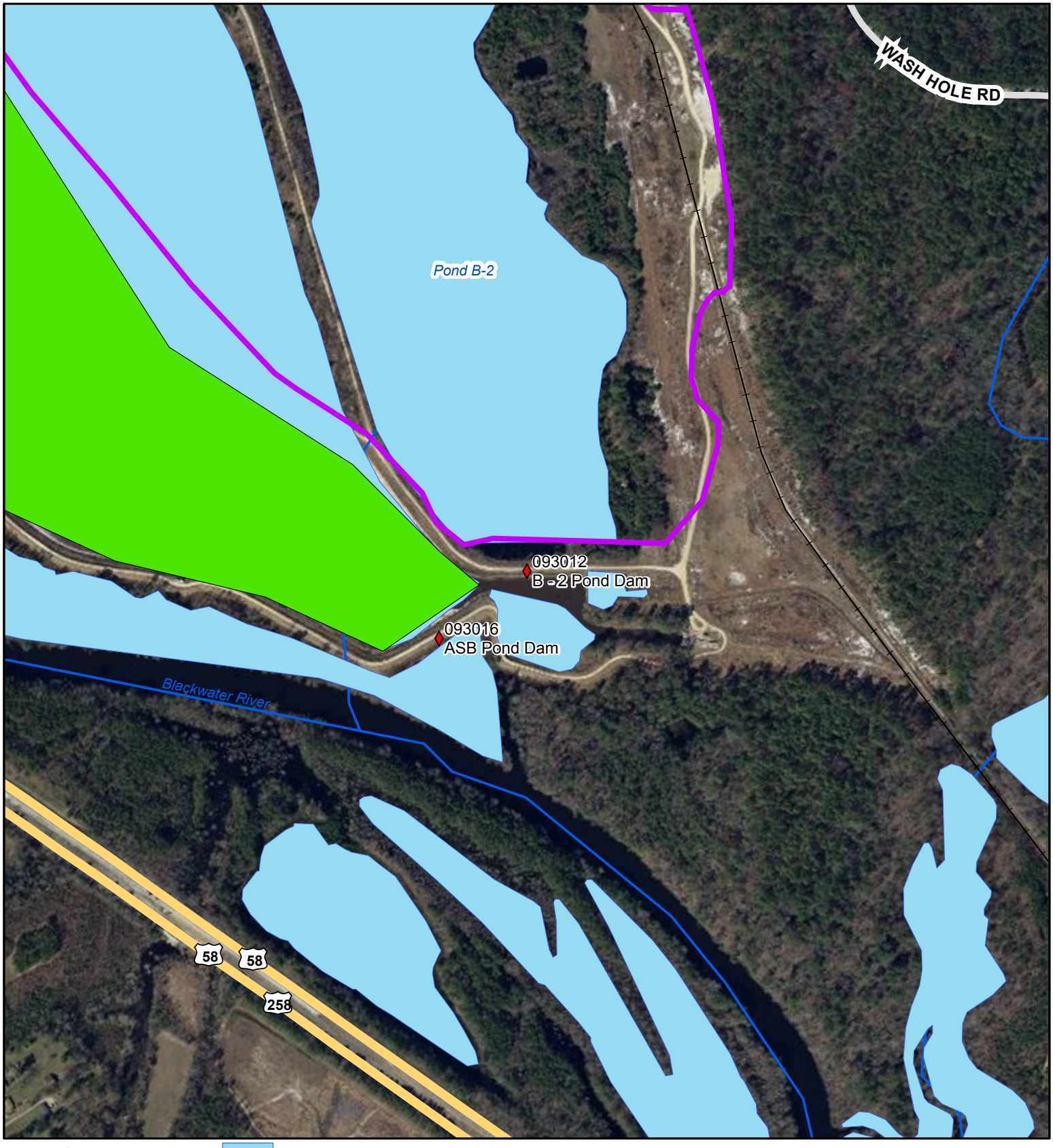
- 189 - 99999 miles downstream
- Pretlow Rd - 99999 miles downstream
- Hemlock St - 99999 miles downstream
- Palm St - 99999 miles downstream
- Blackwater Dr - 99999 miles downstream
- Artis Cr - 99999 miles downstream

Dams Downstream:

Potential Impact Structures (count):

- 54 Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **093012**
Dam Name: **B - 2 Pond Dam**
VAHU6: CU70
Municipalities: Isle of Wight County,Southampton County
Region: 3
SWCD: CHOWAN BASIN,PEANUT
VA Senate: 18
HUC 12: 030102020505
VA House: 75
Watershed Name: Blackwater River-Union Camp Holding Pond
Congressional: 5103,5104
USGS Topo: FRANKLIN



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Chesapeake Energy Center Bottom Ash and Sediment Pond Dam

Inventory Number: 550002

Hazard Classification: High

City/County: City of Chesapeake

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1955

Dam Owner:
Shaikh Z Rahman
(primary)(804) 387-8263(Mobile)
600 East Canal Street
Richmond VA, 23219

Size Classification: Small (>=50 - <1000 ac. ft., >=25' and <40')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 08/15/2028

Days Since Last Inspection: 341

Inundation Report: 08/26/2015

Type of Dam
Earth (Primary)

Reservoir Purpose
Coal Ash Storage (Primary)

Type of Spillway

Type	Width	Outlet Gates
Uncontrolled	3.50	Concrete Spillway - Rectangular
Uncontrolled (Auxiliary)	10.00	Rock Spillway - Trapezoidal

Watershed

Nearest City: Norfolk

Nearest City Distance: 5.90 Miles

River or Stream: Deep Creek - VAHU6 JL53 South Branch Elizabeth River - Deep Creek

Technical Basics

Normal Pool Area: 0.00 Acres

Top Surface Area: 0.00 Acres

Normal Pool Capacity: 3.50 Acre-Feet

Top Capacity: 56.00 Acre-Feet

Normal Pool Elevation: 10.45 Feet

Top Elevation: 20.00 Feet

Normal Pool Height: 0.00 Feet

Top Height: 20.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 6-HR PMP

Drainage Area: 0.06 Sq. Mi.

6 Hour PMP: 33.80

12 Hour PMP: 38.50

24 Hour PMP: 38.50

Available Spillway Design Flow: 1.00 PMF

Time of Concentration:

Weighted Curve Number: 76

IDA Spillway Reduction:

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
6/11/2020	Engineer	Satisfactory
11/18/2019	DCR Site Visit	Not Rated
10/10/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 11/14/2018
Expiration Date: 11/14/2024

Dam Location

Dam Address:
2701 Vepco Street
Chesapeake VA, 23323

E911 Direction to Dam:
Chesapeake Energy Center on Deep Creek and the Southern Branch of the Elizabeth River, City Parcel No. 0260000000090, zoned M2 general industrial, 257.62 acre parcel. This impoundment is a coal combustion residuals (CCR) surface impoundment subject to the provisions of SB1398.

EAP Contacts

Dam Operator: Krystal D Gill
(primary)(757) 419-1005(Mobile); (757) 558-5436(Office)
(primary)krystal.d.gill@dominionenergy.com
2837 S. Military Highway
Chesapeake VA, 23323

Dam Alternate Operator:Gene Lindstrom
(757) 536-2154(Mobile); (primary)(757) 558-5436(Office)
(primary)na
2837 S. Military Highway
Chesapeake VA, 23323

Rain Gauge Observer: Krystal D Gill
(primary)(757) 419-1005(Mobile); (757) 558-5436(Office)
(primary)krystal.d.gill@dominionenergy.com
2837 S. Military Highway
Chesapeake VA, 23323

Alternate Rain Gauge Observer:Gene Lindstrom
(757) 536-2154(Mobile); (primary)(757) 558-5436(Office)
(primary)na
2837 S. Military Highway
Chesapeake VA, 23323

24-Hour Dispatch Center: Unknown Unknown
(primary)(757) 382-6297(Office)
(primary)public@cityofchesapeake.net
304 Albermarle Drive
Chesapeake VA, 23322

Local Government Emergency Services:Robb Braidwood
(757) 382-1775(Office); (primary)(757) 382-1776(Office)
public@cityofchesapeake.net; (primary)rbraidwood@cityofchesapeake.net
2130 S. Military Highway
Chesapeake VA, 23320

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher G Hall
(primary)(757) 925-2500(Office); (888) 723-8400(Office)
(primary)christopher.hall@vdot.virginia.gov
1700 North Main Street
Suffolk VA, 23434

National Weather Service:Eric Seymour
(757) 899-5734(Mobile); (primary)(757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
1009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- 0 - 0 miles downstream

Dams Downstream:

- 000000

Potential Impact Structures (count):

- 0 Homes
- 0 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 0 Parks
- 0 Golf Courses

Dam Number: **550002**

Dam Name: **Chesapeake Energy Center Bottom Ash and Sediment Po**

VAHU6: JL53

Municipalities: City of Chesapeake

Region: 3

SWCD: VIRGINIA DARE

VA Senate: 14,5

HUC 12: 020802080203

VA House: 77,81

Watershed Name: Southern Branch Elizabeth River-Deep Creek

Congressional: 5103,5104

USGS Topo: NORFOLK SOUTH

Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: C - Pond Dam

Inventory Number: 800017

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1962

Dam Owner:
John Ashley
(252) 474-4127(Mobile); (primary)(757) 469-4799(Office)
34040 Union Camp Street
Franklin VA, 23851

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 05/31/2026

Days Since Last Inspection: 117

Inundation Report: 11/04/2013

Type of Dam
Earth (Primary)

Reservoir Purpose
Other (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Franklin

Nearest City Distance: 10.60 Miles

River or Stream: Blackwater River offline - VAHU6 CU70 Blackwater River - Union Camp Holding Pond

Technical Basics

Normal Pool Area: 1601.00 Acres

Top Surface Area: 1614.00 Acres

Normal Pool Capacity: 23370.00 Acre-Feet

Top Capacity: 29800.00 Acre-Feet

Normal Pool Elevation: 51.00 Feet

Top Elevation: 65.00 Feet

Normal Pool Height: 41.00 Feet

Top Height: 52.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 2.55 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction:

Available Spillway Design Flow: 1.00 PMF **Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
1/21/2021	Engineer	Satisfactory
2/13/2020	Engineer	Satisfactory
3/1/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 04/24/2020
Expiration Date: 04/24/2026

Dam Location

Dam Address:
34040 Union Camp Drive
Franklin VA, 23851

E911 Direction to Dam:
Refer to Appendix M in attached emergency plan (EAP - emergency action plan) dated 02/14/2020 (See Attachment section in the DSIS).

EAP Contacts

Dam Operator: Raye Moore
(primary)(757) 569-4793(Office); (757) 635-9159(Mobile)
(primary)raye.moore@ipaper.com
34040 Union Camp Drive
Franklin VA, 23851

Dam Alternate Operator:Charro Gaulden
(334) 415-3697(Mobile); (primary)(757) 569-4793(Office)
(primary)charro.gaulden@ipaper.com
34040 Union Camp Street
Franklin VA, 23851

Rain Gauge Observer: On-Duty Guard at Mill Guardhouse
(primary)(757) 569-4400(Office)
(primary)unknown@unknown.com
3040 Union Camp Dr
Franklin VA, 23851

Alternate Rain Gauge Observer:Raye Moore
(primary)(757) 569-4793(Office)
(primary)raye.moore@ipaper.com
34040 Union Camp Drive
Franklin VA, 23851

24-Hour Dispatch Center: NA NA
(primary)(757) 514-7915(Office)
(primary)unknown@unknown.com
111 Henley Place
Suffolk VA, 23434

Local Government Emergency Services:Richard Stevens
(primary)(757) 514-4536(Office)
(primary)unknown@unknown.com
300 Kings Fork Road
Suffolk VA, 23434

Owner's Engineer: Douglas W Carr
(primary)(919) 461-1100(Office)
(primary)na
1600 Perimeter Park Drive
Suite 400
Morrisville NC, 27560

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher G. Hall
(primary)(757) 956-3000(Office)
(primary)christopher.hall@vdot.virginia.gov
7511 Burbage Drive
Suffolk VA, 23435

National Weather Service:Eric Seymour
(757) 899-2415(Office); (primary)(757) 899-4200(Office); (800) 737-8624(Office)
(primary)eric.seymour@noaa.gov
1009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- US258 - 3.5 miles downstream
- Southampton Parkway/Highway 58 - 4.9 miles downstream
- SR189 South Quay Road - 3.8 miles downstream
- Refer to Section 5.5.2 for Secondary Roadways Impacted in attached EAP dated February 14, 2020 - 99999 miles downstream

Potential Impact Structures (count):

- 287 Homes
- 0 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 0 Parks
- 0 Golf Courses

Dams Downstream:

- 55555

Dam Number: **800017**
Dam Name: **C - Pond Dam**
VAHU6: CU70
Municipalities: City of Suffolk
Region: 3
SWCD: PEANUT
VA Senate: 14
HUC 12: 030102020505
VA House: 64
Watershed Name: Blackwater River-Union Camp Holding Pond
Congressional: 5104
USGS Topo: RIVERDALE

Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Diascund Creek Dam

Inventory Number: 127003

Hazard Classification: High

City/County: James City County, New Kent County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1961

Dam Owner:
Leah O'Neil
(primary)(757) 234-6809(Office); (757) 298-3648(Mobile)
437 Waterworks Way
Newport News VA, 23608

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 03/31/2024

Days Since Last Inspection: 154

Inundation Report: 09/02/2011

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: Miles

River or Stream: DIASCUND CREEK

Technical Basics

Normal Pool Area: 1100.00 Acres

Top Surface Area: 2608.00 Acres

Normal Pool Capacity: 11355.00 Acre-Feet

Top Capacity: 29093.00 Acre-Feet

Normal Pool Elevation: 24.94 Feet

Top Elevation: 33.94 Feet

Normal Pool Height: 26.00 Feet

Top Height: 35.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP:

Drainage Area: 44.08 Sq. Mi.

6 Hour PMP:

Time of Concentration:

12 Hour PMP:

Weighted Curve Number:

24 Hour PMP:

IDA Spillway Reduction:

Available Spillway Design Flow: 1.00 PMF

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
12/15/2020	Engineer	Fair
5/31/2019	Engineer	Fair
10/4/2018	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 08/18/2016
Expiration Date: 08/18/2024

Dam Location

Dam Address:
9550 Diascund Reservoir Rd
Lanexa VA, 23089

E911 Direction to Dam:
The impoundment structure is found about 0.15 west down Diascund Reservoir Rd from the address point provided. The impoundment structure runs is directly adjacent to the road.

EAP Contacts

Dam Operator: Mike Hotaling
(757) 272-3748(Mobile); (primary)(757) 566-1339(Office)
(primary)na
3629 George Washington Memorial Hwy
Yorktown VA, 23693

Dam Alternate Operator:Scott Dewhirst
(757) 879-3324(Mobile); (primary)(757) 926-1150(Office)
(primary)na@na.com
700 Town Center Dr Ste 500
Newport News VA, 23693

Rain Gauge Observer: George Baker
(757) 272-3748(Mobile); (primary)(757) 566-1339(Office)
(primary)na
3629 George Washington Memorial Hwy
Yorktown VA, 23693

Alternate Rain Gauge Observer:Jason Burke
(primary)(757) 272-3752(Mobile)
(primary)na
NA
Na VA, 99999

24-Hour Dispatch Center: James City County Police Dispatch
(757) 564-2140(Office); (primary)(757) 566-0112(Office)
(primary)na
4600 Opportunity Way
Williamsburg VA, 23188

Local Government Emergency Services:Kate Hale
(primary)(757) 564-2140(Office); (757) 566-0112(Office)
(primary)na
3127 Forge Rd
Toano VA, 23168

Owner's Engineer: Jonathan Keeling, PE
(primary)(859) 422-3054(Office)
(primary)Jon.Keeling@stantec.com
3052 Beaumont Centre Cir
Lexington KY, 40513

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:James Utterback
(757) 802-0005(Mobile); (primary)(757) 925-2500(Office); (757) 925-2511(Office)
(primary)james.utterback@vdot.virginia.gov
1700 North Main St
Suffolk VA, 23434

National Weather Service:Eric Seymour
(primary)(757) 899-4200(Office); (757) 899-5734(Office); (757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- Crossover Rd - 0.9 miles downstream
- Diascund Rd - 1.8 miles downstream
- Richmond Rd - 1.8 miles downstream
- Stewarts Rd - 0.8 miles downstream
- Hicks Island Rd - 2.9 miles downstream
- Arlington Island Rd - 3.8 miles downstream
- Forest Lake Rd - 4.2 miles downstream
- River Rd - 5.2 miles downstream
- Carter Rd - 1.8 miles downstream
- Creeks End Rd - 1 miles downstream
- Hubbard Rd - 1.8 miles downstream
- Liberty Church Rd - 0.9 miles downstream
- Liberty View Ln - 1 miles downstream
- Pocahontas Trl - 0.9 miles downstream
- Colony Trl - 2.7 miles downstream
- Tyree Isle Rd - 2.5 miles downstream
- Diascund Pte - 3.1 miles downstream
- Lake Pointe Trl - 4.2 miles downstream
- River Bend Trl - 4.2 miles downstream
- Four Islands Trl - 4.2 miles downstream
- Cove Ct - 5 miles downstream
- Four Islands Trl - 5 miles downstream
- John Smith Trl - 6.2 miles downstream
- Moysonike Ct - 5.2 miles downstream
- Two Rivers Trl - 5.2 miles downstream

Potential Impact Structures (count):

- 208 Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dams Downstream:

Dam Number: **127003**

Dam Name: **Diascund Creek Dam**

VAHU6: JL26,JL27

Municipalities: James City County,New Kent County

Region: 2

SWCD: COLONIAL

VA Senate: 3

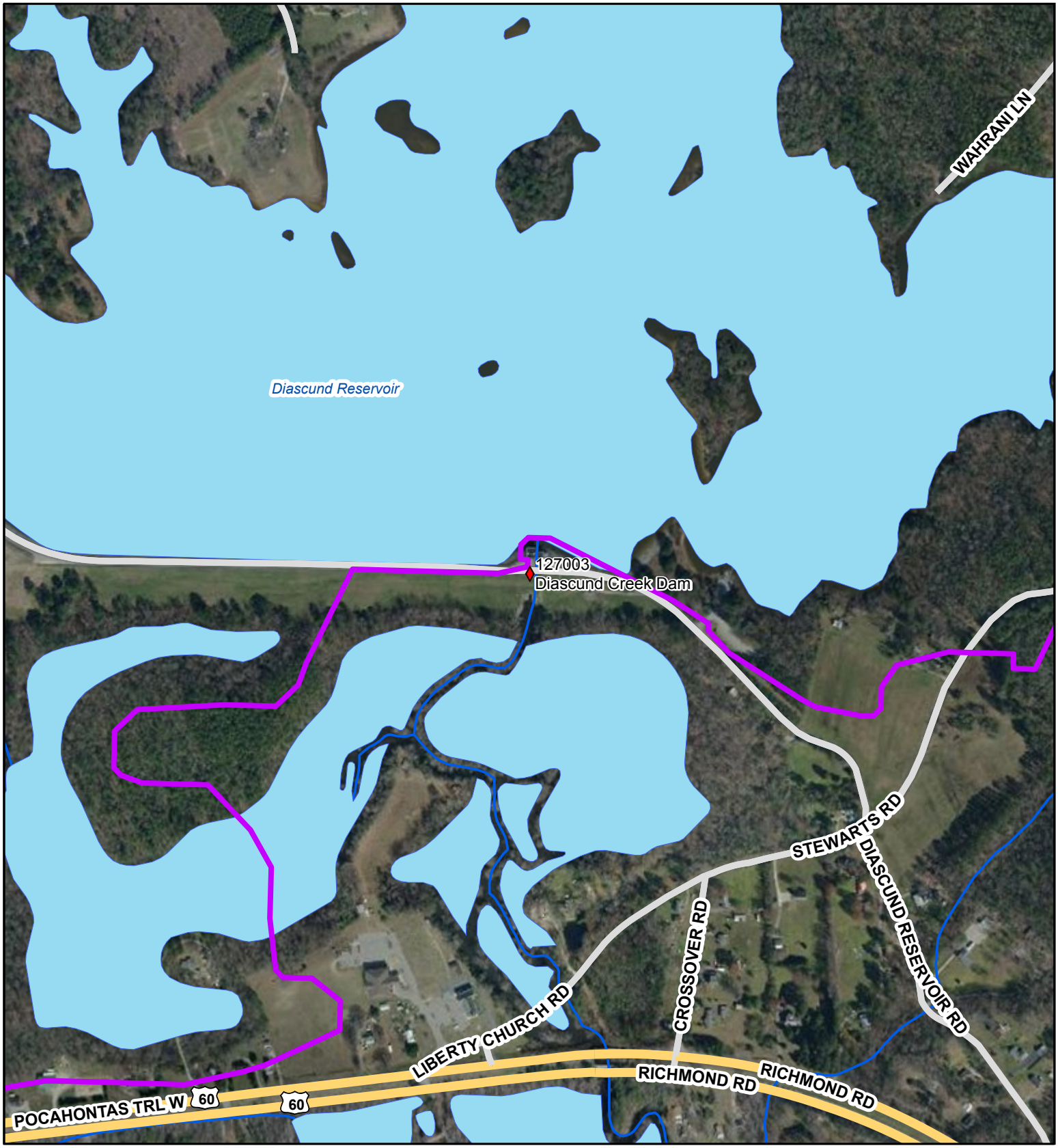
HUC 12: 020802060602,020802060603

VA House: 96,97

Watershed Name: Diascund Creek-Diascund Creek Reservoir,Diascund Cr

Congressional: 5101

USGS Topo: WALKERS



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Godwins Millpond Dam

Inventory Number: 800014

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1960

Dam Owner:
Albert S Moor II
(primary)(757) 514-7023(Office); (757) 651-8476(Mobile)
442 W. Washington Street
Suffolk VA, 23434

Size Classification: Small (>=50 - <1000 ac. ft., >=25' and <40')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 04/30/2023

Days Since Last Inspection: 890

Inundation Report: 05/22/2014

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Secondary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Portsmouth

Nearest City Distance: 14.10 Miles

River or Stream: Chuckatuck Creek - VAHU6 JL42
Chuckatuck Creek

Technical Basics

Normal Pool Area: 22.60 Acres

Top Surface Area: 53.90 Acres

Normal Pool Capacity: 165.00 Acre-Feet

Top Capacity: 214.00 Acre-Feet

Normal Pool Elevation: 14.70 Feet

Top Elevation: 16.00 Feet

Normal Pool Height: 12.70 Feet

Top Height: 14.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 12-HR PMP

Drainage Area: 6.87 Sq. Mi.

6 Hour PMP: 32.10

Time of Concentration:

12 Hour PMP: 36.10

Weighted Curve Number:

24 Hour PMP: 36.10

IDA Spillway Reduction: 320.00 YR

Available Spillway Design Flow: .21 PMF

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
12/10/2018	Engineer	Poor
11/7/2018	DCR Site Visit	Not Rated
10/31/2016	Overtopping	Poor

EAP Quick Reference

Approval Date: 03/14/2013
Expiration Date: 03/14/2019

Dam Location

Dam Address:
6145 Godwin Blvd
Suffolk VA, 23432

E911 Direction to Dam:
City Map No. 10*11A, Account No. 253093600
(60.83 acres)

EAP Contacts

Dam Operator:

Dam Alternate Operator:

Rain Gauge Observer:

Alternate Rain Gauge Observer:

24-Hour Dispatch Center:

Local Government Emergency Services:

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:

Potential Impacts

Roadways Impacted:

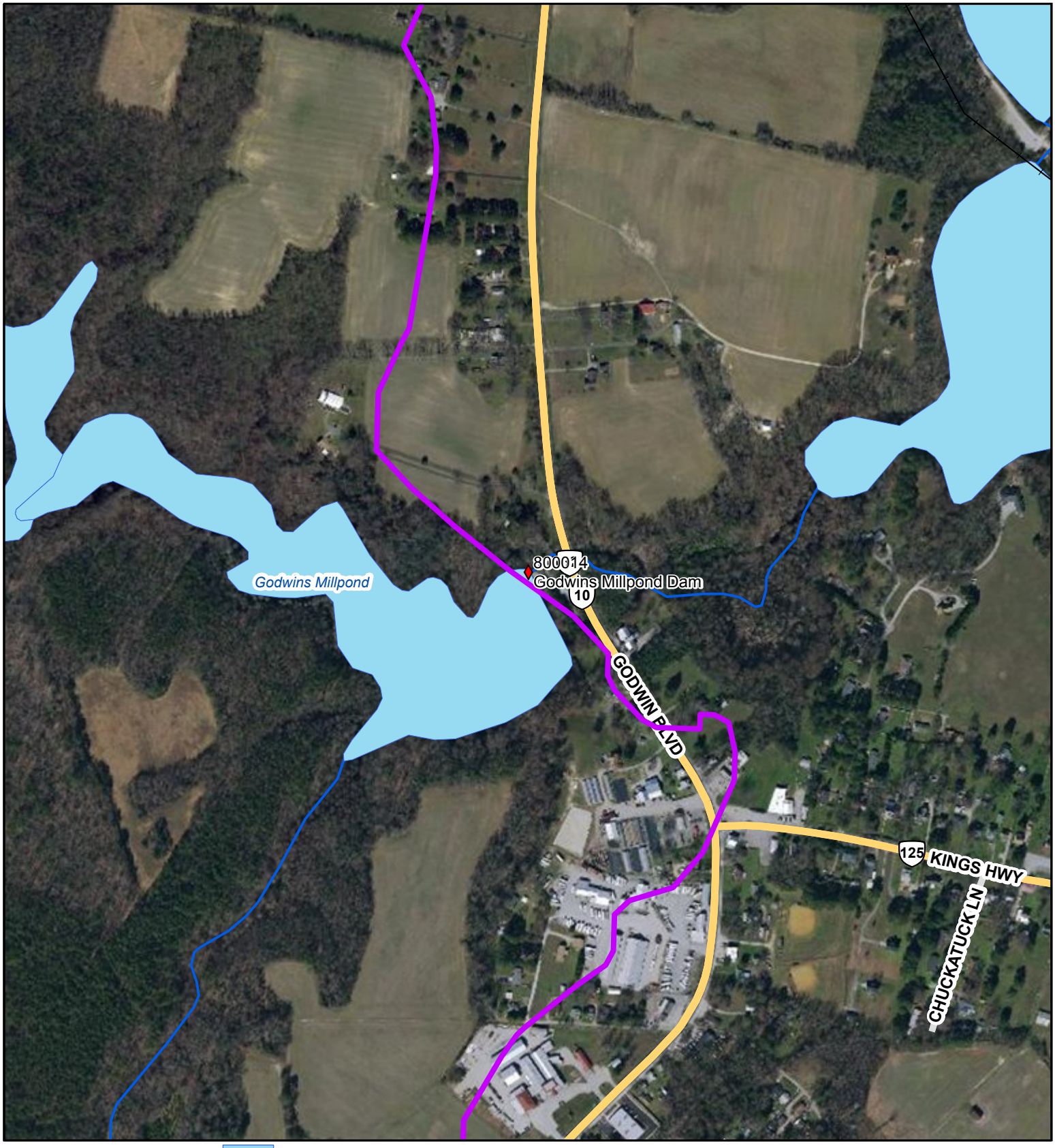
- Route 10 Godwin Blvd - 0.04 miles downstream

Dams Downstream:

Potential Impact Structures (count):

- 1 Homes
- 3 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 0 Parks
- 0 Golf Courses

Dam Number: **800014**
Dam Name: **Godwins Millpond Dam**
VAHU6: JL42
Municipalities: City of Suffolk
Region: 3
SWCD: PEANUT
VA Senate: 18
HUC 12: 020802060905
VA House: 76
Watershed Name: Chuckatuck Creek
Congressional: 5103
USGS Topo: CHUCKATUCK



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Harwood's Mill Dam

Inventory Number: 199001

Hazard Classification: High

City/County: York County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1919

Dam Owner:
Leah O'Neil
(primary)(757) 298-3648(Mobile)
437 Waterworks Way
Newport News VA, 23608

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 01/31/2023

Days Since Last Inspection: 207

Inundation Report: 08/01/2011

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: Miles

River or Stream: POQUOSON RIVER

Technical Basics

Normal Pool Area: 274.00 Acres

Top Surface Area: 544.00 Acres

Normal Pool Capacity: 2696.00 Acre-Feet

Top Capacity: 5845.00 Acre-Feet

Normal Pool Elevation: 20.00 Feet

Top Elevation: 28.00 Feet

Normal Pool Height: 19.00 Feet

Top Height: 27.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 0.00 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction:

Available Spillway Design Flow: .60 PMF **Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
10/23/2020	Owner	Poor
10/10/2019	Engineer	Poor
10/3/2018	Engineer	Fair

EAP Quick Reference

Approval Date: 08/18/2016
Expiration Date: 08/18/2022

Dam Location

Dam Address:
3800 George Washington Memorial Hwy
Yorktown VA, 23692

E911 Direction to Dam:
The impoundment structure is directly across Route 17 from the E911 address point.

EAP Contacts

Dam Operator: Mike Hotaling
(757) 272-3748(Mobile); (primary)(757) 566-1339(Office)
(primary)na
3629 George Washington Memorial Hwy
Yorktown VA, 23693

Dam Alternate Operator:

Rain Gauge Observer: George Baker
(757) 272-3748(Mobile); (primary)(757) 566-1339(Office)
(primary)na
3629 George Washington Memorial Hwy
Yorktown VA, 23693

Alternate Rain Gauge Observer:Jason Burke
(primary)(757) 272-3752(Mobile)
(primary)na
NA
Na VA, 99999

24-Hour Dispatch Center:

Local Government Emergency Services:Stephen Kopczynski
(primary)(757) 890-3600(Office); (757) 890-3621(Office)
(primary)na
301 Goodwin Neck Rd
Yorktown VA, 23692

Owner's Engineer: Robert R Bowers
(primary)(215) 499-0510(Mobile); (484) 804-7200(Office)
(primary)Robert.Bowers@ramboll.com
751 Arbor Way
Suite 200
Blue Bell PA, 19422

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:James Utterback
(757) 802-0005(Mobile); (primary)(757) 925-2500(Office); (757) 925-2511(Office)
(primary)james.utterback@vdot.virginia.gov
1700 North Main St
Suffolk VA, 23434

National Weather Service:Eric Seymour
(primary)(757) 899-4200(Office); (757) 899-5734(Office); (757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

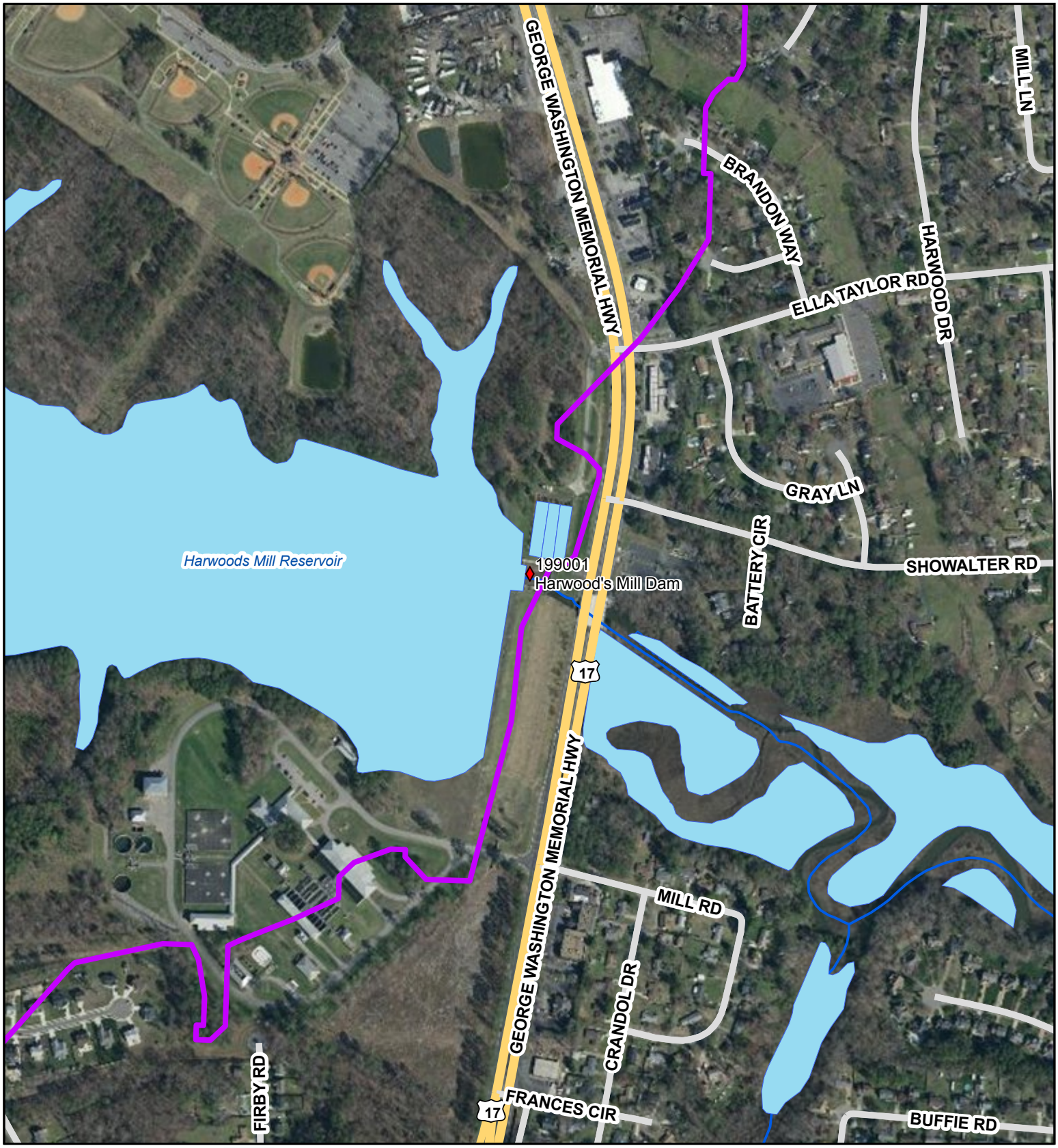
- 17 - 0.0 miles downstream
- Battery Cir - 0.15 miles downstream
- Yorktown Rd - 1.0 miles downstream
- Beecham Dr - 0.8 miles downstream
- Key Cir - 0.8 miles downstream
- Showalter Rd - 1.2 miles downstream
- Hollywood Blvd - 1.1 miles downstream
- Vine Dr - 1.2 miles downstream
- Breezy Point Dr - 1.9 miles downstream
- Granger Cir - 2.2 miles downstream
- Carlton Dr - 2.2 miles downstream
- Ryans Way - 2.3 miles downstream
- Chris Ct - 2.3 miles downstream
- Tide Mill Rd - 2.4 miles downstream
- Moores Creek Dr - 2.4 miles downstream
- Wilson Farm Ln - 2.7 miles downstream
- Massie Ln - 2.7 miles downstream
- Barclay Rd - 2.7 miles downstream
- Shirley Dr - 2.7 miles downstream
- Sylvia Dr - 2.7 miles downstream
- Calthrop Neck Rd - 2.7 miles downstream

Potential Impact Structures (count):

- 172 Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dams Downstream:

Dam Number: **199001**
Dam Name: **Harwood's Mill Dam**
VAHU6: CB21
Municipalities: York County
Region: 2
SWCD: COLONIAL
VA Senate: 2,3
HUC 12: 020801080101
VA House: 91,93
Watershed Name: Lower Chesapeake Bay-Poquoson River
Congressional: 5102
USGS Topo: POQUOSON WEST



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Burnt Mills Dam

Inventory Number: 800003

Hazard Classification: High

City/County: City of Suffolk, Isle of Wight County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1942

Dam Owner:
David S Rosenthal
(757) 328-1787(Mobile); (primary)(757) 441-5774(Office)
6040 Waterworks Rd
Norfolk VA, 23502

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 06/15/2026

Days Since Last Inspection: 650

Inundation Report: 07/01/2013

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates
Uncontrolled	3.50	Outfall Pipe - Circular Ductile Iron
Uncontrolled	56.50	Concrete Spillway - Ogee
None (Auxiliary)	.00	None

Watershed

Nearest City: Suffolk

Nearest City Distance: 7.70 Miles

River or Stream: Western Branch of Nansemond River - VAHU6 JL47 Western Branch Reservoir

Technical Basics

Normal Pool Area: 600.00 Acres

Top Surface Area: 1050.00 Acres

Normal Pool Capacity: 10300.00 Acre-Feet

Top Capacity: 18500.00 Acre-Feet

Normal Pool Elevation: 35.00 Feet

Top Elevation: 46.50 Feet

Normal Pool Height: 35.00 Feet

Top Height: 46.50 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 12-HR PMP	**Drainage Area**: 25.36 Sq. Mi.
6 Hour PMP: 29.70	**Time of Concentration**:
12 Hour PMP: 31.90	**Weighted Curve Number**:
24 Hour PMP: 31.90	**IDA Spillway Reduction**:
Available Spillway Design Flow: 1.00 PMF	**Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
8/7/2019	Engineer	Fair
3/21/2018	Engineer	Fair
10/30/2015	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 09/16/2019
Expiration Date: 09/16/2025

Dam Location

Dam Address:
113 Lockwood Circle
Suffolk VA, 23434

E911 Direction to Dam:
113 Lockwood Circle, Tax Map No. 17*23, Acct No. 2518850000

EAP Contacts

Dam Operator: Chris E Harbin
(primary)(757) 441-5678(Office); (757) 441-5774(Office); (757) 604-3365(Mobile)
(primary)chris.harbin@norfolk.gov
6040 Waterworks Rd
Norfolk VA, 23502

Dam Alternate Operator:David S Rosenthal
(757) 328-1787(Mobile); (primary)(757) 441-5678(Office); (757) 441-5774(Office)
(primary)david.rosenthal@norfolk.gov
6040 Waterworks Road
Norfolk VA, 23502

Rain Gauge Observer: Claude Stone
(primary)(757) 539-9281(Office); (757) 613-2081(Mobile)
(primary)unknown@unknown.com
113 Lockwood Circle
Suffolk VA, 23434

Alternate Rain Gauge Observer:Cheryl Barnett
(primary)(757) 418-1916(Office)
(primary)unknown@unknown.com
401 Monticello Avenue
Norfolk VA, 23510

24-Hour Dispatch Center: na na
(primary)(757) 925-2030(Office)
(primary)na@na.com
300 King FOrk Road
Suffolk VA, 23434

Local Government Emergency Services:Brian Spicer
(primary)(757) 514-4532(Office); (757) 635-9402(Mobile)
(primary)bspicer@suffolkva.us
300 Kings Fork Road
Suffolk VA, 23434

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher G. Hall
(primary)(757) 956-3000(Office)
(primary)christopher.hall@vdot.virginia.gov
7511 Burbage Drive
Suffolk VA, 23435

National Weather Service:Eric Seymour
(757) 899-2415(Office); (primary)(757) 899-4200(Office); (800) 737-8624(Office)
(primary)eric.seymour@noaa.gov
1009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- Godwin Boulevard (US 32) - .56 miles downstream
- Sack Point Road - .6 miles downstream
- Wilroy Road - 3.7 miles downstream
- US 58 - 4.6 miles downstream
- Nansemond Parkway - 6.9 miles downstream
- N Main Street - 7.3 miles downstream
- Portsmouth Boulevard (US 460) - 7.9 miles downstream
- East Washington Street (US 58) - 8.5 miles downstream

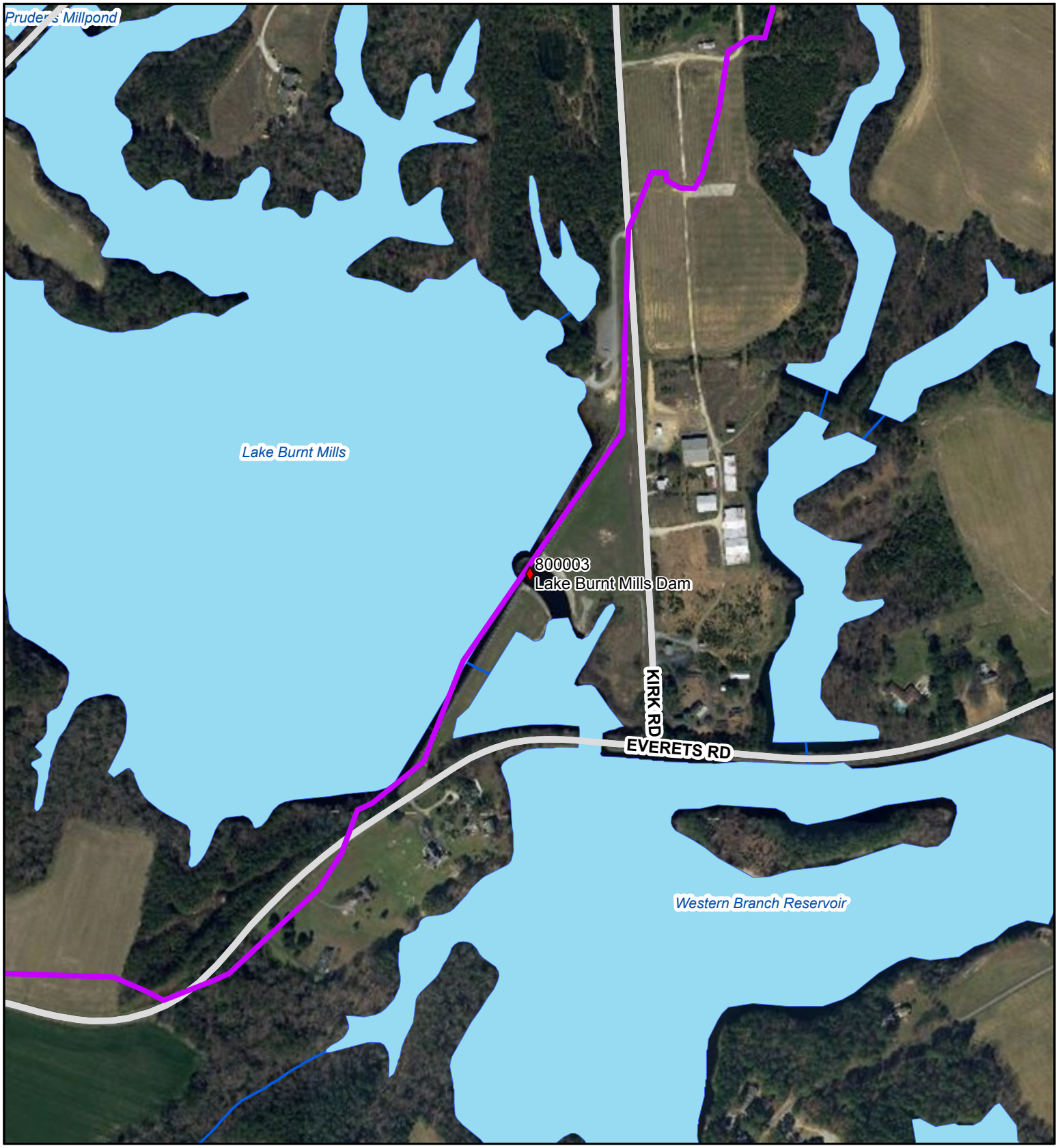
Dams Downstream:

- 800011

Potential Impact Structures (count):

- 310 Homes
- 0 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 0 Parks
- 0 Golf Courses

Dam Number: **800003**
Dam Name: **Lake Burnt Mills Dam**
VAHU6: JL47
Municipalities: City of Suffolk,Isle of Wight County
Region: 3
SWCD: PEANUT
VA Senate: 18
HUC 12: 020802080104
VA House: 64,76
Watershed Name: Western Branch Reservoir
Congressional: 5103
USGS Topo: CHUCKATUCK,WINDSOR



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Cohoon Dam

Inventory Number: 800001

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1919

Dam Owner:
Erin K Trimyer
(primary)(757) 393-8691(Office)
801 Crawford Street
Portsmouth VA, 23704

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 05/31/2022

Days Since Last Inspection: 404

Inundation Report: 04/02/2020

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)

Type of Spillway

Type	Width	Outlet Gates
Uncontrolled	300.00	Concrete Weir Structure
Uncontrolled (Auxiliary)	410.00	Earthen Spillway - Trapezoidal

Watershed

Nearest City:

Nearest City Distance: 0.10 Miles

River or Stream: COHOON CREEK

Technical Basics

Normal Pool Area: 602.00 Acres

Top Surface Area: 1010.00 Acres

Normal Pool Capacity: 6230.00 Acre-Feet

Top Capacity: 9300.00 Acre-Feet

Normal Pool Elevation: 28.50 Feet

Top Elevation: 34.80 Feet

Normal Pool Height: 29.00 Feet

Top Height: 28.80 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 6-HR PMP

Drainage Area: 33.83 Sq. Mi.

6 Hour PMP: 29.90

Time of Concentration:

12 Hour PMP: 32.10

24 Hour PMP: 32.10

Available Spillway Design Flow: .48 PMP

Weighted Curve Number:

IDA Spillway Reduction: .90 PMP

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
4/9/2020	Engineer	Satisfactory
5/1/2019	Engineer	Satisfactory
5/1/2018	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 07/13/2015
Expiration Date: 07/31/2021

Dam Location

Dam Address:
1800 Pitchkettle Rd
Suffolk VA, 23434

E911 Direction to Dam:
Access road to spillway West off Pitchkettle Road. Look for maroon sign saying "Lake Cohoon Sation" inside low chain link fence. Access road directly across from brick residential home at 1800 Pitchkettle Road.

EAP Contacts

Dam Operator: C.B. Umphlette
(757) 235-9478(Mobile); (primary)(757) 539-2201(Office)
(primary)cumphlette@portsmouthhighqualityh2o.org
Lake Kilby WTP
105 Maury Place
Suffolk VA, 23434

Dam Alternate Operator:Bryan Foster
(primary)(757) 393-8691(Office)
(primary)na
P.O.Box 490
Portsmouth VA, 23705

Rain Gauge Observer:

Alternate Rain Gauge Observer:

24-Hour Dispatch Center: NA NA
(primary)(757) 925-1439(Office)
(primary)na
na
Sulffolk VA, 12345

Local Government Emergency Services:Jim Judkins, Jr
(primary)(757) 514-7586(Office); (757) 925-2030(Mobile)
(primary)na
300 Kings Fork Road
Suffolk VA, 23434

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:Eric Seymour
(primary)(757) 899-5734(Office)
(primary)Eric.Seymour@noaa.gov
10009 General Mahone Hwy
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- 604 - 0.15 miles downstream
- 13 - 1.32 miles downstream
- 460 - 4.0 miles downstream
- 604 - 3.7 miles downstream
- 58 - 4.8 miles downstream

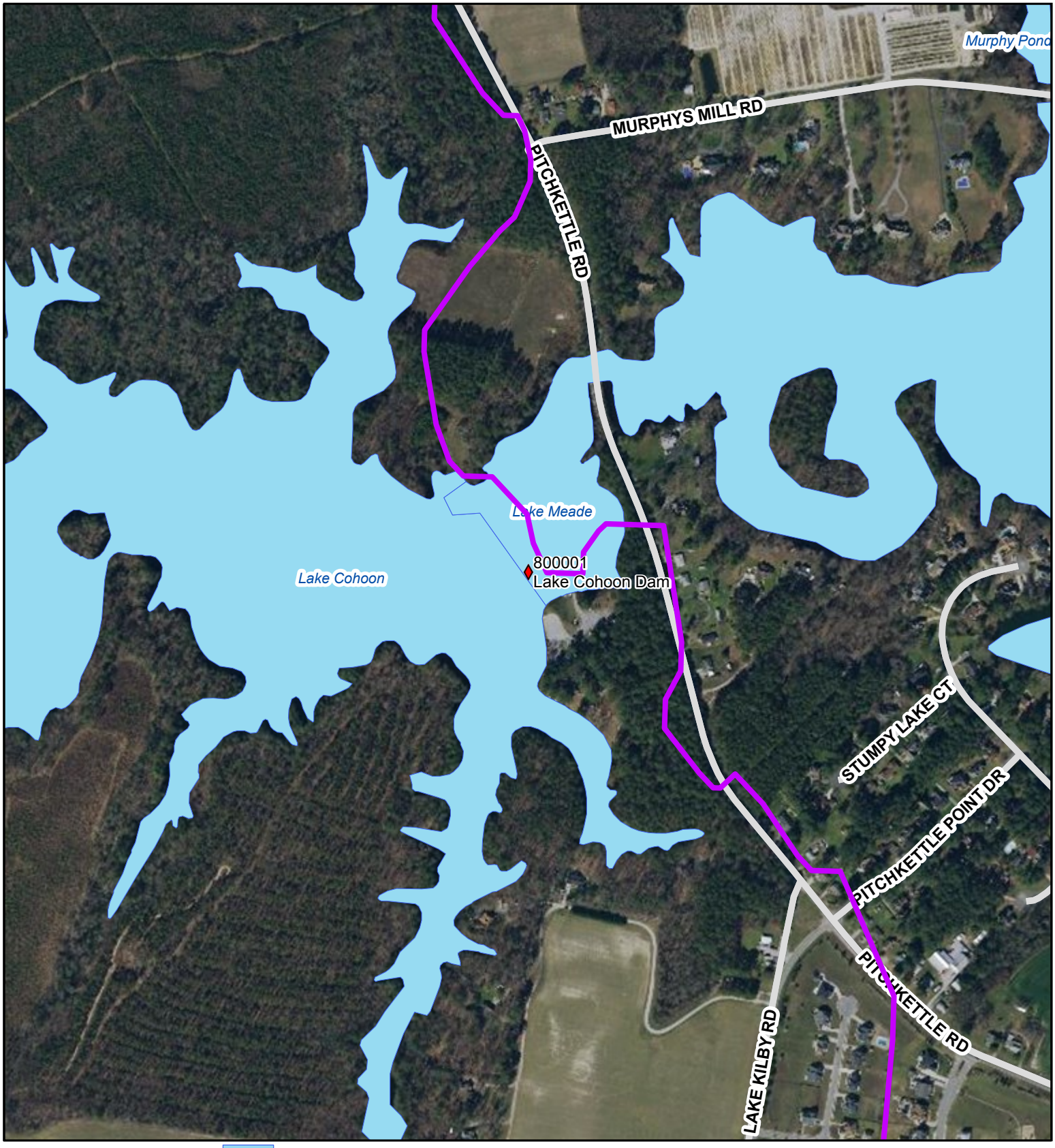
Dams Downstream:

- 800013

Potential Impact Structures (count):

- 39 Homes
- 1 Businesses
- Schools
- Hospitals
- Critical Infrastructure
- 1 Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **800001**
Dam Name: **Lake Cohoon Dam**
VAHU6: JL45
Municipalities: City of Suffolk
Region: 3
SWCD: PEANUT
VA Senate: 14
HUC 12: 020802080102
VA House: 76
Watershed Name: Cohoon Creek
Congressional: 5104
USGS Topo: CHUCKATUCK,WINDSOR



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Kilby Dam

Inventory Number: 800002

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1892

Dam Owner:
Erin K Trimyer
(primary)(757) 393-8691(Office)
801 Crawford Street
Portsmouth VA, 23704

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 05/31/2022

Days Since Last Inspection: 404

Inundation Report: 04/02/2020

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates
Uncontrolled	150.00	Concrete Spillway - Trapezoidal
None (Auxiliary)	.00	None

Watershed

Nearest City:

Nearest City Distance: 0.00 Miles

River or Stream: PITCH KETTLE CREEK

Technical Basics

Normal Pool Area: 191.00 Acres

Top Surface Area: 284.00 Acres

Normal Pool Capacity: 1850.00 Acre-Feet

Top Capacity: 3400.00 Acre-Feet

Normal Pool Elevation: 19.50 Feet

Top Elevation: 25.10 Feet

Normal Pool Height: 0.00 Feet

Top Height: 18.60 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 6-HR PMP

Drainage Area: 22.00 Sq. Mi.

6 Hour PMP: 31.10

12 Hour PMP: 33.70

24 Hour PMP: 33.70

Available Spillway Design Flow: .25 PMP

Time of Concentration: 240.00

Weighted Curve Number:

IDA Spillway Reduction: .90 PMP

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
4/9/2020	Engineer	Satisfactory
12/16/2019	DCR Site Visit	Not Rated
5/1/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 07/13/2015
Expiration Date: 07/31/2021

Dam Location

Dam Address:
1227 Holland Road
Suffolk VA, 23434

E911 Direction to Dam:
US58 West Washington Street, City Tax Map No. 34*35 a 905.32 acre parcel (Account No. 152619000) at 1227 Holland Road, Suffolk VA 23434.

EAP Contacts

Dam Operator:

Dam Alternate Operator:

Rain Gauge Observer:

Alternate Rain Gauge Observer:

24-Hour Dispatch Center:

Local Government Emergency Services:

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:

Potential Impacts

Roadways Impacted:

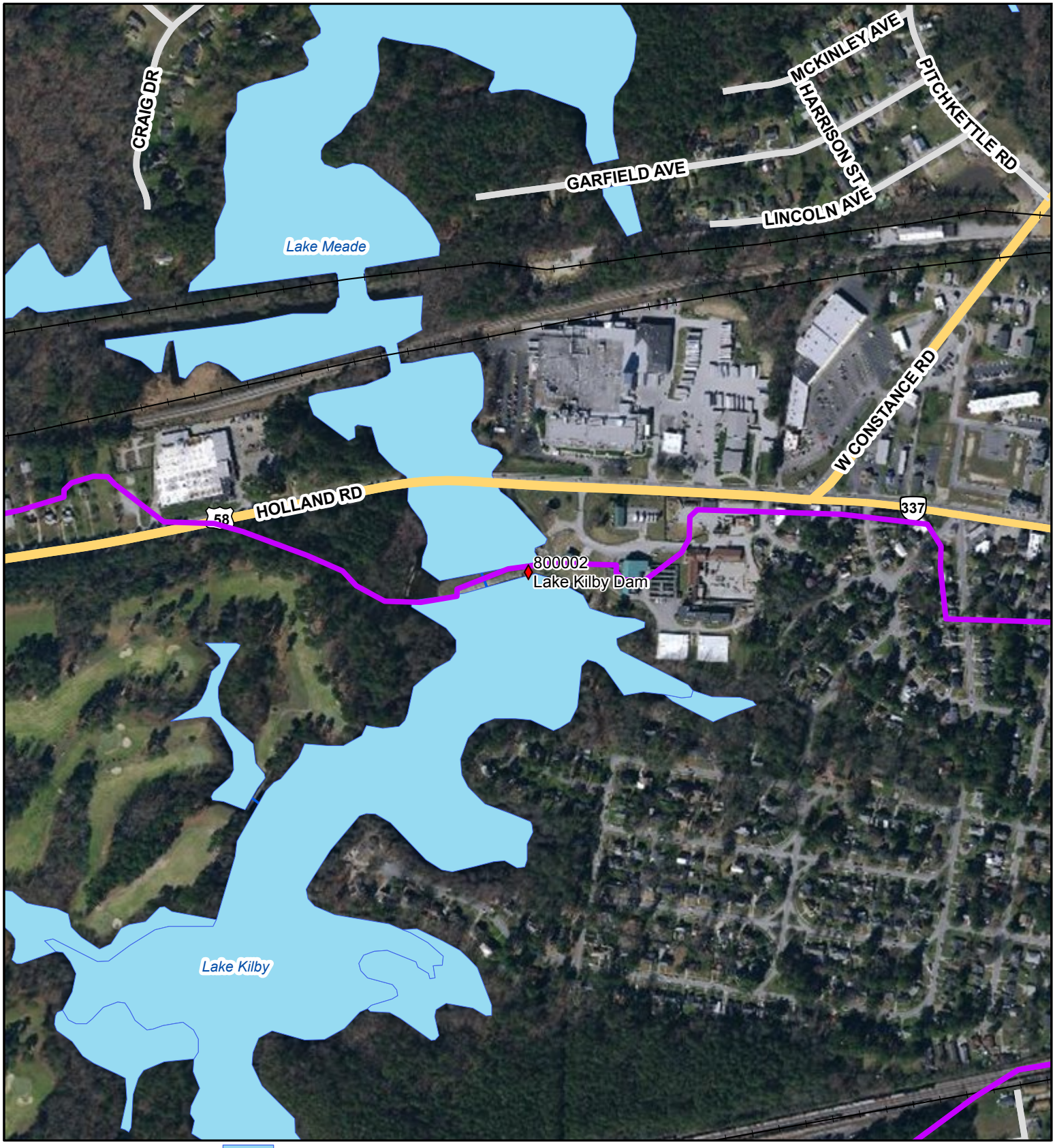
Dams Downstream:

- 800013

Potential Impact Structures (count):

- Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **800002**
Dam Name: **Lake Kilby Dam**
VAHU6: JL44
Municipalities: City of Suffolk
Region: 3
SWCD: PEANUT
VA Senate: 14
HUC 12: 020802080101
VA House: 76
Watershed Name: Lake Kelby-Speights Run
Congressional: 5104
USGS Topo: SUFFOLK



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Matoaka Dam

Inventory Number: 830001

Hazard Classification: High

City/County: City of Williamsburg

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1694

Dam Owner:
Benjamin Mulherin
(primary)(757) 221-1205(Office)
Dept. of Facilities Mgmt
P.O. Box 8795
Williamsburg VA, 23187

Size Classification: Small (>=50 - <1000 ac. ft., >=25' and <40')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 01/31/2019

Days Since Last Inspection: 1762

Inundation Report: 06/06/2011

Type of Dam
Earth (Primary)

Reservoir Purpose
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: 0.00 Miles

River or Stream: COLLEGE CREEK

Technical Basics

Normal Pool Area: 60.00 Acres

Top Surface Area: 86.00 Acres

Normal Pool Capacity: 167.00 Acre-Feet

Top Capacity: 587.00 Acre-Feet

Normal Pool Elevation: 22.70 Feet

Top Elevation: 31.40 Feet

Normal Pool Height: 15.30 Feet

Top Height: 24.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 2.34 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction:

Available Spillway Design Flow: .20 PMF **Required Spillway Design Flow**: 1.00 PMF

Inspections (Last 3 Max)

Date	Type	Condition
7/21/2016	Engineer	Fair
7/30/2015	Owner	Fair
10/6/2009	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 04/30/2008
Expiration Date: 04/30/2014

Dam Location

Dam Address:
950 Jamestown Rd
Williamsburg VA, 51830

E911 Direction to Dam:
The address point provided is the structure immediately southeast (across the street) from the dam.

EAP Contacts

Dam Operator: David Shepard
(primary)(757) 221-1205(Office)
(primary)na
P.O. Box 8795
Williamsburg VA, 23187

Dam Alternate Operator:John McFarlane
(primary)(757) 221-2256(Office); (757) 464-2669(Home)
(primary)na
P.O. Box 8795
Williamsburg VA, 23187

Rain Gauge Observer: John Mattie
(primary)(757) 221-2256(Office); (757) 464-2269(Home)
(primary)na
P.O. Box 8795
Williamsburg VA, 23187

Alternate Rain Gauge Observer:Matt Trowbridge
(primary)(757) 221-1830(Office); (757) 725-4644(Home)
(primary)na
P.O. Box 8795
Williamsburg VA, 23187

24-Hour Dispatch Center: Emergency Services Coordinator
(primary)(757) 220-6220(Office)
(primary)na
412 N Boundary St
Williamsburg VA, 23185

Local Government Emergency Services:Chief T. K. Weiler
(primary)(757) 220-6220(Office)
(primary)na
412 N Boundary St
Williamsburg VA, 23185

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Jim Brewer
(primary)(757) 253-4832(Office)
(primary)na
4451 Ironbound Rd
Williamsburg VA, 23188

National Weather Service:Eric Seymour
(primary)(757) 899-4200(Office); (757) 899-5734(Office); (757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

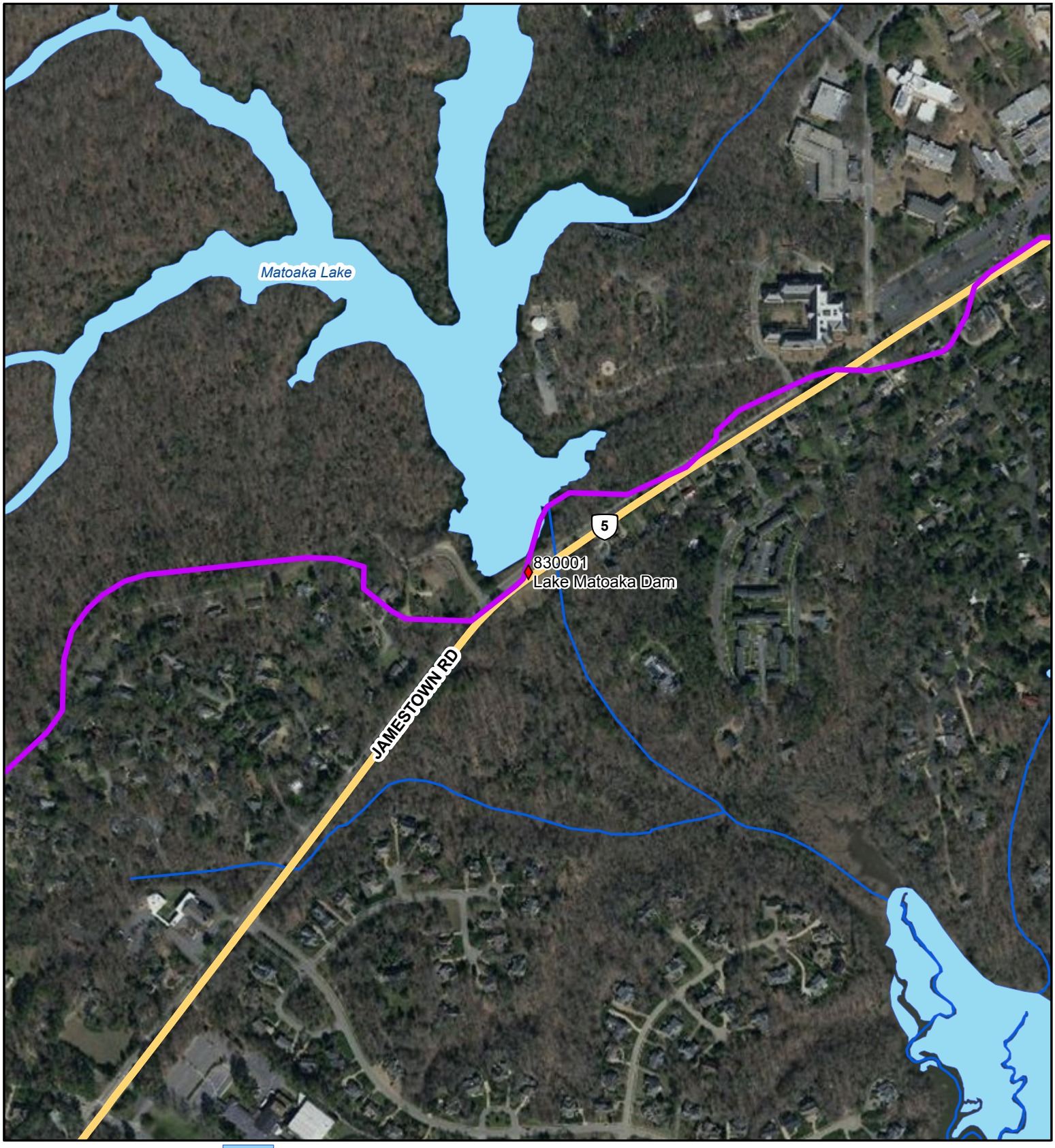
- 199 - 1.33 miles downstream

Dams Downstream:

Potential Impact Structures (count):

- 7 Homes
- 2 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 4 Utilities
- 0 Parks
- 0 Golf Courses

Dam Number: **830001**
Dam Name: **Lake Matoaka Dam**
VAHU6: JL34
Municipalities: City of Williamsburg
Region: 2
SWCD: COLONIAL
VA Senate: 1
HUC 12: 020802060801
VA House: 93
Watershed Name: College Creek
Congressional: 5102
USGS Topo: WILLIAMSBURG



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Meade Dam

Inventory Number: 800013

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1958

Dam Owner:
Erin K Trimyer
(primary)(757) 393-8691(Office)
801 Crawford Street
Portsmouth VA, 23704

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 08/15/2022

Days Since Last Inspection: 404

Inundation Report: 04/02/2020

Type of Dam
Gravity (Primary)

Reservoir Purpose
Water Supply (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Suffolk

Nearest City Distance: 1.30 Miles

River or Stream: Nansemond River - VAHU6 JL48
Nansemond River - Cedar Lake

Technical Basics

Normal Pool Area: 590.00 Acres

Top Surface Area: 680.00 Acres

Normal Pool Capacity: 6445.00 Acre-Feet

Top Capacity: 9281.00 Acre-Feet

Normal Pool Elevation: 12.50 Feet

Top Elevation: 17.50 Feet

Normal Pool Height: 20.00 Feet

Top Height: 25.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 6-HR PMP

Drainage Area: 64.40 Sq. Mi.

6 Hour PMP: 28.20

Time of Concentration:

12 Hour PMP: 30.20

Weighted Curve Number:

24 Hour PMP: 30.20

IDA Spillway Reduction:

Available Spillway Design Flow: .35 PMP **Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
4/9/2020	Engineer	Satisfactory
5/1/2019	Engineer	Satisfactory
5/1/2018	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 08/10/2020
Expiration Date: 08/10/2026

Dam Location

Dam Address:
201 Holly Lawn Parkway
Suffolk VA, 23434

E911 Direction to Dam:
On Nansemond River at City owned Parcel No. 253060000 (768.11 acres). Access dam from south side near 930 E. Riverside Road (Lot 42B), City Parcel 353389000

EAP Contacts

Dam Operator: CB Umphlette
(757) 235-9478(Mobile); (primary)(757) 539-2201(Office)
(primary)cumphlette@portsmouthhighqualityh2o.org
105 Maury Pl
Suffolk VA, 23434

Dam Alternate Operator:City of Portsmouth Plant Operator
(757) 235-9475(Mobile); (757) 235-9477(Mobile); (primary)(757) 539-2201(Office)
(primary)name@portsmouthva.gov
105 Maury Place
Suffolk VA, 23434

Rain Gauge Observer: City of Portsmouth Plant Operator
(757) 235-9475(Mobile); (757) 235-9477(Mobile); (primary)(757) 539-2201(Office)
(primary)name@portsmouthva.gov
105 Maury Place
Suffolk VA, 23434

Alternate Rain Gauge Observer:CB Umphlette
(757) 235-9478(Mobile); (primary)(757) 539-2201(Office)
(primary)cumphlette@portsmouthhighqualityh2o.org
105 Maury Pl
Suffolk VA, 23434

24-Hour Dispatch Center: Suffolk Emergency Management
(primary)(757) 514-4536(Office)
(primary)name@name.com
300 Kings Fork Road
Suffolk VA, 23434

Local Government Emergency Services:Brian Spicer
(primary)(757) 514-4532(Office); (757) 635-9402(Mobile)
(primary)bspicer@suffolkva.us
300 Kings Fork Road
Suffolk VA, 23434

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Suffolk Traffic Engineering
(primary)(757) 514-7603(Office)
(primary)trafficengineering@suffolkva.us

National Weather Service:Eric Seymour
(primary)(757) 899-5734(Office)
(primary)Eric.Seymour@noaa.gov
10009 General Mahone Hwy

800 Carolina Road
Suffolk VA, 23434

Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

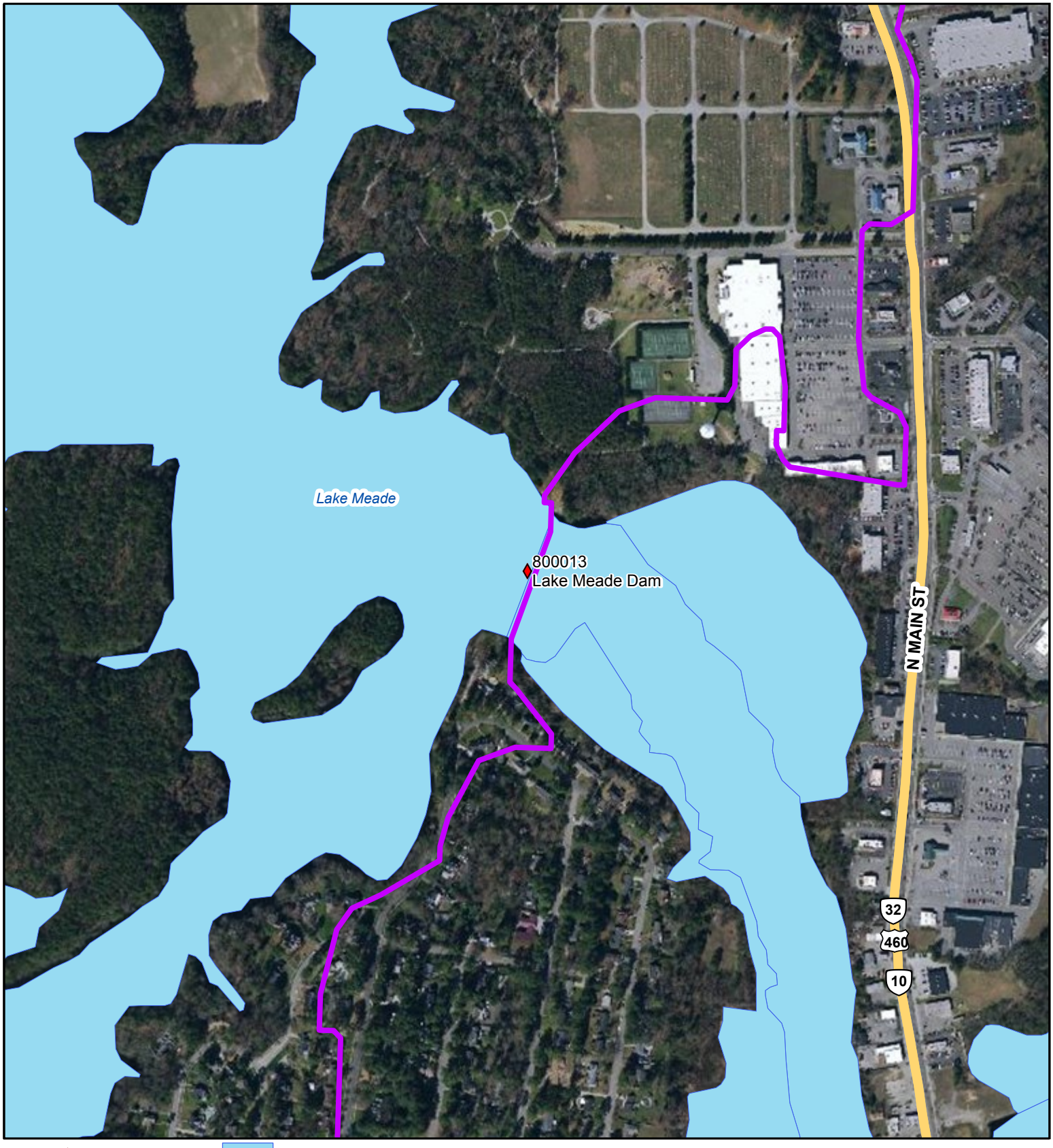
- CHURCH ST - 0.6 miles downstream
- DAY ST - 0.6 miles downstream
- DUMVILLE AVE - 0.1 miles downstream
- DUMVILLE LN - 0.6 miles downstream
- E CONSTANCE RD - 0.6 miles downstream
- E RIVERVIEW DR - 0.0 miles downstream
- ELEY ST - 0.4 miles downstream
- FORT ST - 0.0 miles downstream
- JOHNSON LN - 0.6 miles downstream
- JONES ST - 0.0 miles downstream
- LEXINGTON AVE - 0.6 miles downstream
- MAHAN ST - 0.6 miles downstream
- N MAIN ST - 0.6 miles downstream
- RIVERVIEW CT - 0.6 miles downstream
- W CONSTANCE RD - 0.6 miles downstream
- W RIVERVIEW DR - 0.0 miles downstream
- WESTERN AVE - 0.6 miles downstream

Potential Impact Structures (count):

- 86 Homes
- 29 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 5 Railroads
- 0 Utilities
- 2 Parks
- 0 Golf Courses

Dams Downstream:

Dam Number: **800013**
Dam Name: **Lake Meade Dam**
VAHU6: JL44,JL45,JL48
Municipalities: City of Suffolk
Region: 3
SWCD: PEANUT
VA Senate: 14
HUC 12: 020802080101,020802080102,020802080105
VA House: 76
Watershed Name: Cohoon Creek,Lake Kelby-Speights Run,Nansemond Riv
Congressional: 5104
USGS Topo: SUFFOLK



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Smith Dam

Inventory Number: 810005

Hazard Classification: High

City/County: City of Virginia Beach

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1885

Dam Owner:
Robert Carteris
(primary)(757) 664-6727(Office)
401 Monticello Ave
Norfolk VA, 23510

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 03/31/2023

Days Since Last Inspection: 131

Inundation Report: 12/01/2010

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Secondary)

Type of Spillway

Type	Width	Outlet Gates
Uncontrolled	10.00	Outfall Structure - Rectangular Concrete Box Culvert
Uncontrolled (Auxiliary)	.00	None

Watershed

Nearest City: Norfolk

Nearest City Distance: 7.10 Miles

River or Stream: Direct to Little Creek Reservoir - VAHU6 CB26 Lower Chesapeake Bay - Little Creek

Technical Basics

Normal Pool Area: 193.00 Acres

Top Surface Area: 277.00 Acres

Normal Pool Capacity: 906.00 Acre-Feet

Top Capacity: 1385.00 Acre-Feet

Normal Pool Elevation: 7.16 Feet

Top Elevation: 15.35 Feet

Normal Pool Height: 7.16 Feet

Top Height: 15.35 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 12-HR PMP

6 Hour PMP: 32.60

12 Hour PMP: 36.80

24 Hour PMP: 36.80

Available Spillway Design Flow: .60 PMF

Drainage Area: 5.89 Sq. Mi.

Time of Concentration: 350.00

Weighted Curve Number: 72

IDA Spillway Reduction:

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
1/7/2021	Engineer	Fair
8/5/2019	Engineer	Fair
7/26/2018	DCR Site Visit	Not Rated

EAP Quick Reference

Approval Date: 05/31/2012
Expiration Date: 05/31/2018

Dam Location

Dam Address:
5337 Northampton Boulevard
Virginia Beach VA, 23455

E911 Direction to Dam:
Lake Smith Fishing Station between Shell Road (to west) and Jack Frost Road (to east); GPIN 14696271750000

EAP Contacts

Dam Operator: Chris Harbin
(primary)(757) 441-5678(Office); (757) 604-3365(Mobile)
(primary)chris.harbin@norfolk.gov
6040 Waterworks Road
Norfolk VA, 23502

Dam Alternate Operator:The Garrison
(primary)(757) 646-1205(Mobile)
(primary)the.garrison@norfolk.gov
null
Norfolk VA, 12345

Rain Gauge Observer: David S Rosenthal
(757) 328-1787(Mobile); (primary)(757) 441-5774(Office)
(primary)david.rosenthal@norfolk.gov
6040 Waterworks Rd
Norfolk VA, 23502

Alternate Rain Gauge Observer:

24-Hour Dispatch Center: NA NA
(primary)(757) 385-2703(Office)
(primary)na
3661 East Virginia Beach Blvd
Norfolk VA, 23502

Local Government Emergency Services:Wallace Twigg
(primary)(804) 897-6500(Office)
(primary)wallace.twigg@vdem.virginia.gov
null
Null VA, 12345

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:Eric Seymour
(primary)(757) 899-5734(Office)
(primary)Eric.Seymour@noaa.gov
10009 General Mahone Hwy
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- 13 - .01 miles downstream
- 60 - 1 miles downstream

Dams Downstream:

- 810006

Potential Impact Structures (count):

- 352 Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **810005**

Dam Name: **Lake Smith Dam**

VAHU6: CB26

Municipalities: City of Virginia Beach

Region: 3

SWCD: VIRGINIA DARE

VA Senate: 7

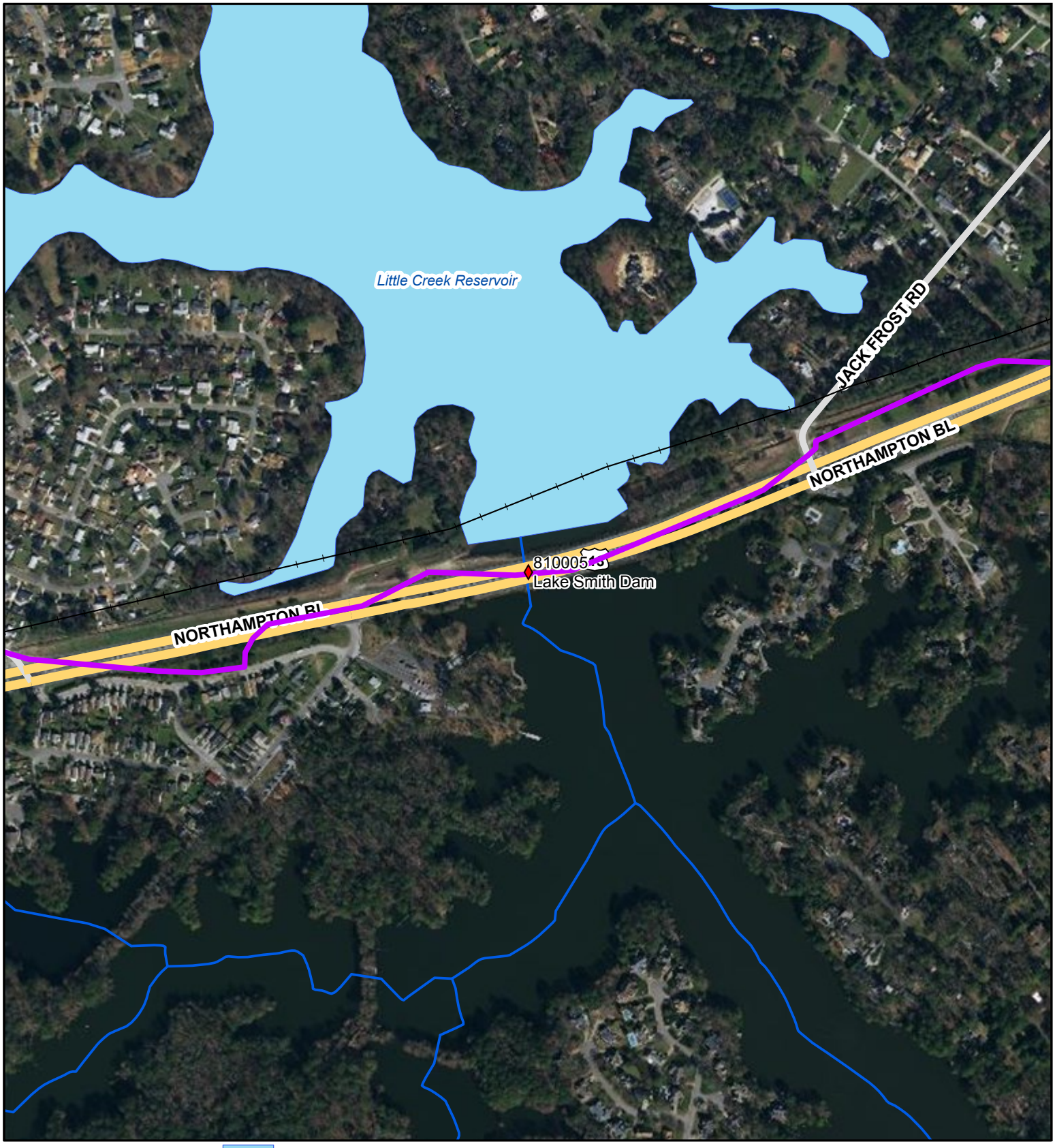
HUC 12: 020801080202

VA House: 83

Watershed Name: Lower Chesapeake Bay-Little Creek

Congressional: 5102

USGS Topo: LITTLE CREEK



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lake Whitehurst Dam

Inventory Number: 710002

Hazard Classification: High

City/County: City of Norfolk, City of Virginia Beach

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1900

Dam Owner:
David S Rosenthal
(757) 328-1787(Mobile); (primary)(757) 441-5774(Office)
6040 Waterworks Road
Norfolk VA, 23502

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type:

Certificate Expiration:

Days Since Last Inspection: 651

Inundation Report: 12/01/2010

Type of Dam
Gravity (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Secondary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Norfolk

Nearest City Distance: 6.90 Miles

River or Stream: Little Creek - VAHU6 CB26 Lower Chesapeake Bay - Little Creek

Technical Basics

Normal Pool Area: 480.00 Acres

Top Surface Area: 415.00 Acres

Normal Pool Capacity: 0.00 Acre-Feet

Top Capacity: 4200.00 Acre-Feet

Normal Pool Elevation: 6.05 Feet

Top Elevation: 11.30 Feet

Normal Pool Height: 0.00 Feet

Top Height: 26.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 6.08 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration: 233.30

12 Hour PMP: 0.00

Weighted Curve Number: 76

24 Hour PMP: 0.00

IDA Spillway Reduction:

Available Spillway Design Flow: .50 PMF

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
8/6/2019	Engineer	Fair
7/26/2018	DCR Site Visit	Not Rated
3/20/2018	Engineer	Fair

EAP Quick Reference

Approval Date: 05/31/2011
Expiration Date: 05/31/2017

Dam Location

Dam Address:
6700 Azalea Garden Road
Norfolk VA, 23518

E911 Direction to Dam:
Dam at US60 Shore Drive at/near Norfolk Botanical Gardens and just west of 5827 Bangor Square, Virginia Beach, VA 23455 (City of Virginia Beach)

EAP Contacts

Dam Operator:

Dam Alternate Operator:

Rain Gauge Observer:

Alternate Rain Gauge Observer:

24-Hour Dispatch Center:

Local Government Emergency Services:

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:

Potential Impacts

Roadways Impacted:

Dams Downstream:

Potential Impact Structures (count):

- Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **710002**

Dam Name: **Lake Whitehurst Dam**

VAHU6: CB26

Municipalities: City of Norfolk,City of Virginia Beach

Region: 3

SWCD: ,VIRGINIA DARE

VA Senate: 6,7

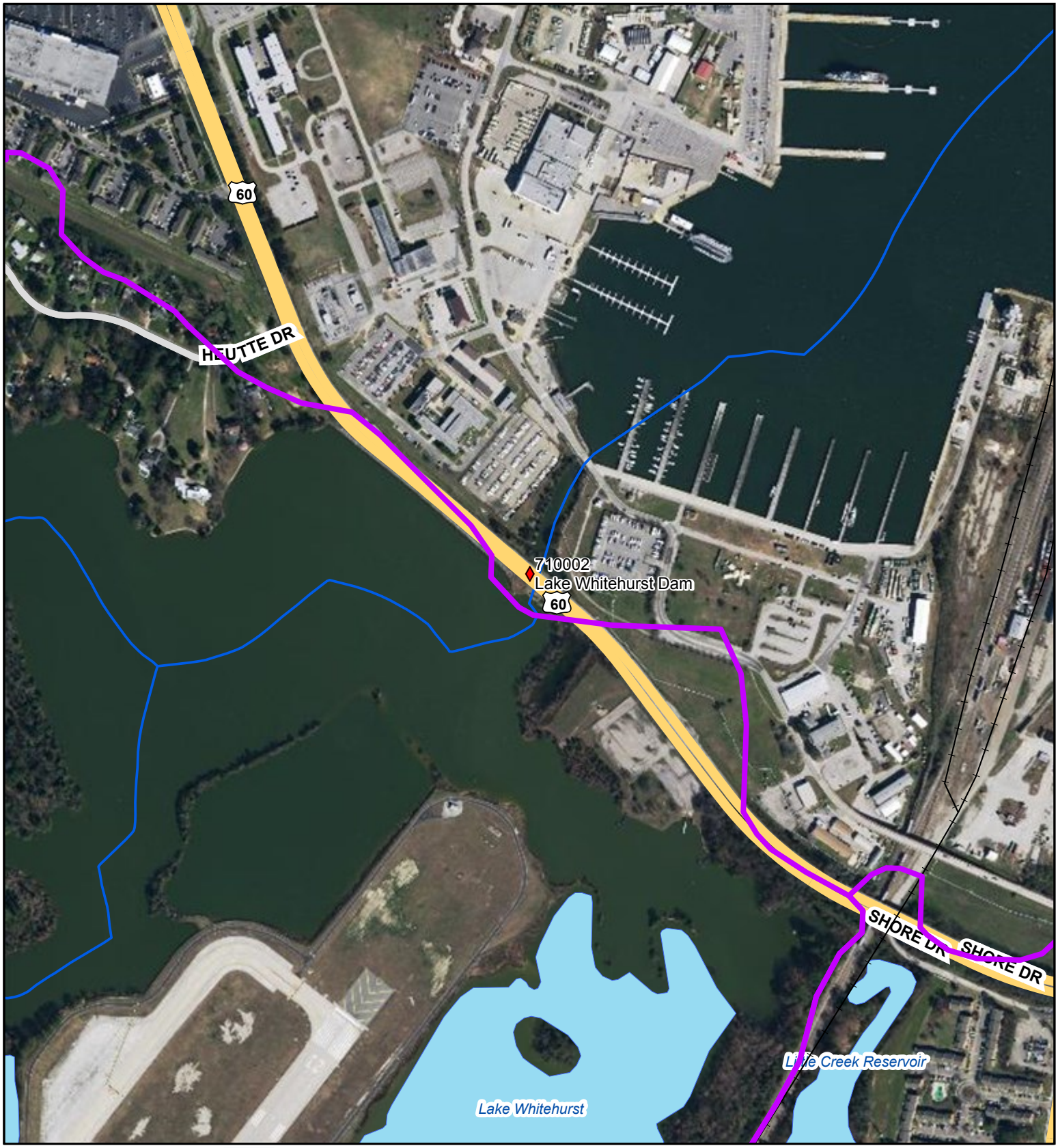
HUC 12: 020801080202

VA House: 83

Watershed Name: Lower Chesapeake Bay-Little Creek

Congressional: 5102

USGS Topo: LITTLE CREEK



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Lee Hall Reservoir Dam

Inventory Number: 700001

Hazard Classification: High

City/County: City of Newport News

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1893

Dam Owner:
Yann Le Gouellec
(757) 647-8316(Mobile); (primary)(757) 926-1146(Office)
700 Town Center Drive, Ste 500
Newport News VA, 23606

Size Classification: Small (>=50 - <1000 ac. ft., >=25' and <40')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 09/30/2025

Days Since Last Inspection: 148

Inundation Report: 03/01/2018

Type of Dam
Gravity (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: 0.10 Miles

River or Stream: WARWICK RIVER

Technical Basics

Normal Pool Area: 390.00 Acres

Top Surface Area: 600.00 Acres

Normal Pool Capacity: 3063.00 Acre-Feet

Top Capacity: 4640.00 Acre-Feet

Normal Pool Elevation: 19.00 Feet

Top Elevation: 22.70 Feet

Normal Pool Height: 17.00 Feet

Top Height: 23.70 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 12-HR PMP

Drainage Area: 15.90 Sq. Mi.

6 Hour PMP: 30.80

Time of Concentration: 2.90

12 Hour PMP: 34.10

Weighted Curve Number:

24 Hour PMP: 34.10

IDA Spillway Reduction:

Available Spillway Design Flow: 1.00 PMF

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
12/21/2020	Engineer	Satisfactory
5/30/2019	Engineer	Satisfactory
6/7/2017	Engineer	Fair

EAP Quick Reference

Approval Date: 01/31/2019
Expiration Date: 03/31/2025

Dam Location

Dam Address:
437 Waterworks Way
Newport News VA, 23608

E911 Direction to Dam:
The impoundment structure can be accessed via a dirt road off of the Newport News water treatment plant. Newport News Waterworks is accessed via Waterworks Way.

EAP Contacts

Dam Operator: Mike Hotaling
(757) 234-6703(Office); (primary)(757) 508-4272(Mobile)
(primary)MHotaling@nnva.gov
3629 George Washington Memorial Hwy
Yorktown VA, 23693

Dam Alternate Operator:Yann Le Gouellec
(primary)(757) 926-1146(Office)
(primary)YLeGouellec@nnva.gov
700 Town Center Drive
Newport News VA, 23606

Rain Gauge Observer: George Baker
(primary)(757) 272-3748(Mobile)
(primary)GeBaker@nnva.gov
3629 George Washington Memorial Hwy
Yorktown VA, 23692

Alternate Rain Gauge Observer:Jason Burke
(primary)(757) 272-3752(Mobile)
(primary)JBurke@nnva.gov
3629 George Washington Memorial Hwy
Yorktown VA, 23692

24-Hour Dispatch Center: Steven Drew
(primary)(757) 247-2500(Office)
(primary)NA@NA.com
9710 Jefferson Avenue
Newport News VA, 23605

Local Government Emergency Services:Chris Born
(primary)(757) 764-5411(Office)
(primary)na
1028 Schultz Place
Fort Eustis VA, 23604

Owner's Engineer: Robert A Kline, Jr.
(717) 756-8316(Mobile); (primary)(717) 886-5443(Office)
(primary)rkline@gfnet.com
207 Senate Ave
Camp Hill PA, 17011

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher G Hall
(757) 333-1626(Office); (757) 925-2500(Office); (primary)(757) 956-3000(Office); (888) 723-8400(Office)
(primary)christopher.hall@vdot.virginia.gov
7511 Burbage Drive
Suffolk VA, 23435

National Weather Service:Jeff Orrock
(primary)(757) 899-4200(Office)
(primary)Jeff.Orrock@noaa.gov
NA
Na VA, 99999

Potential Impacts

Roadways Impacted:

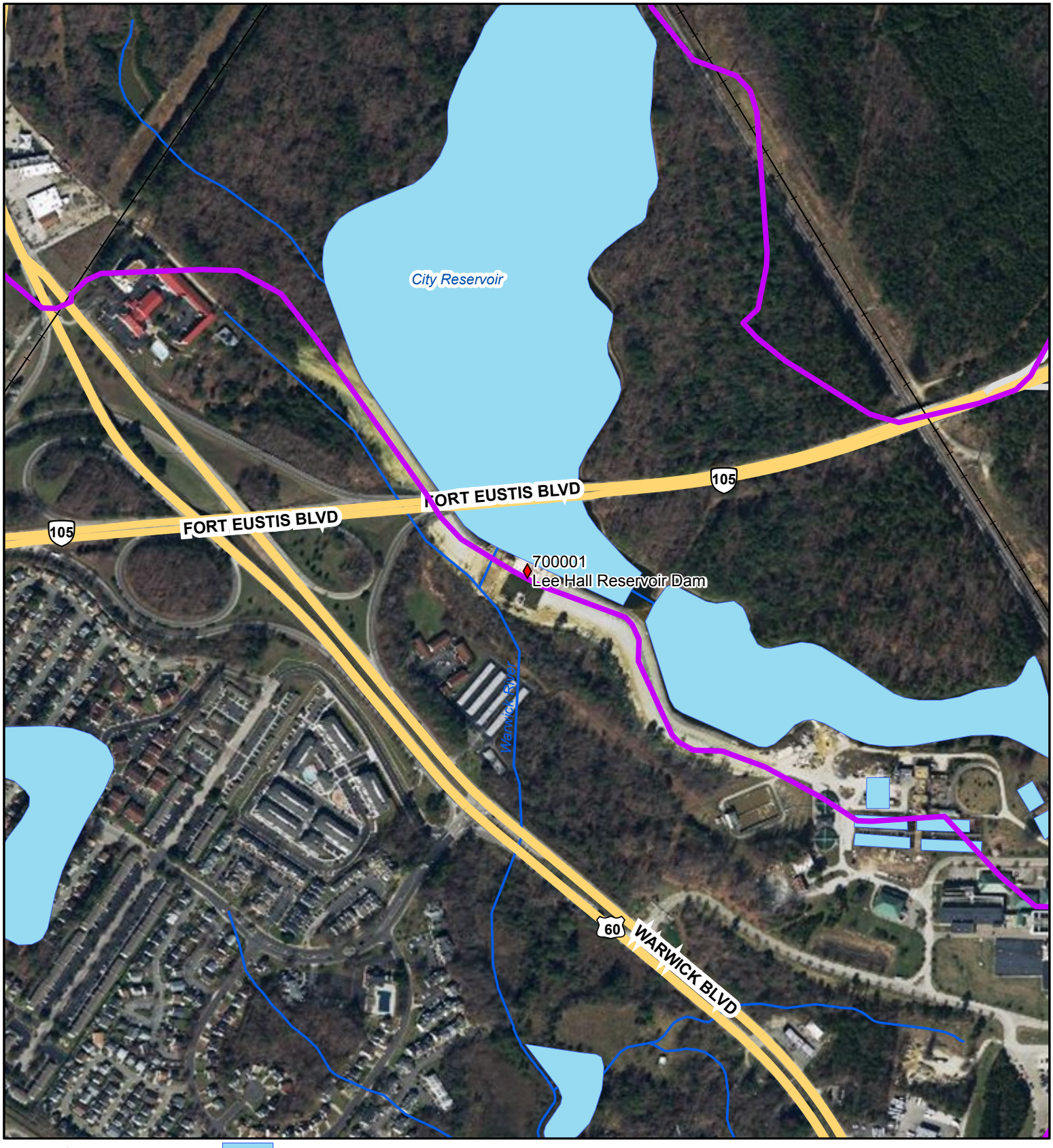
- Warwick Blvd. (U.S. Rte. 60) - 0.15 miles downstream
- Lees Mill Drive - 0.15 miles downstream
- Williamson Park Drive - 0.5 miles downstream
- Reyano Road - 0.5 miles downstream
- Rivers Ridge Circle - 0.3 miles downstream
- Patricia Drive - 0.5 miles downstream
- Judy Drive - 0.5 miles downstream
- Rexford Drive - 1.1 miles downstream
- River Mews Drive - 1.0 miles downstream
- Linda Drive - 2.1 miles downstream
- Colleen Drive - 2.2 miles downstream
- Laramie Court - 2.2 miles downstream
- Bowie Court - 2.3 miles downstream
- Jennifer Place - 2.3 miles downstream
- Ada Terrace - 2.4 miles downstream
- Cherokee Court - 2.4 miles downstream
- Saddler Drive - 2.4 miles downstream
- Thalia Drive - 2.4 miles downstream
- Chinook Court - 2.4 miles downstream
- Curtis Tignor Road - 2.3 miles downstream
- Custer Place - 2.3 miles downstream
- Beechmont Drive - 2.5 miles downstream
- Old Courthouse Way - 3.0 miles downstream
- Lipton Drive - 3.2 miles downstream
- Denbigh Blvd. (VA Route 173) - 3.3 miles downstream
- Gresham Circle - 3.2 miles downstream
- Wilson Avenue (Fort Eustis) - 2.0 miles downstream
- Mulberry Island Road (Fort Eustis) - 2.3 miles downstream

Dams Downstream:

Potential Impact Structures (count):

- 861 Homes
- 1 Businesses
- 3 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 2 Parks
- 0 Golf Courses

Dam Number: **700001**
Dam Name: **Lee Hall Reservoir Dam**
VAHU6: JL38
Municipalities: City of Newport News
Region: 2
SWCD:
VA Senate: 1
HUC 12: 020802060901
VA House: 93,94
Watershed Name: Warwick River
Congressional: 5103
USGS Topo: YORKTOWN



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Little Creek Dam

Inventory Number: 095006

Hazard Classification: High

City/County: James City County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1980

Dam Owner:
Leah O'Neil
(primary)(757) 234-6809(Office); (757) 298-3648(Mobile)
437 Waterworks Way
Newport News VA, 23608

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 07/31/2022

Days Since Last Inspection: 202

Inundation Report: 10/01/2009

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: 0.00 Miles

River or Stream:

Technical Basics

Normal Pool Area: 996.00 Acres

Top Surface Area: 1172.00 Acres

Normal Pool Capacity: 24600.00 Acre-Feet

Top Capacity: 32143.00 Acre-Feet

Normal Pool Elevation: 60.00 Feet

Top Elevation: 67.00 Feet

Normal Pool Height: 60.00 Feet

Top Height: 67.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 4.60 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction:

Available Spillway Design Flow: 1.00 PMF **Required Spillway Design Flow**: 1.00 PMF

Inspections (Last 3 Max)

Date	Type	Condition
10/28/2020	Engineer	Poor
4/3/2019	Engineer	Poor
2/20/2018	Engineer	Poor

EAP Quick Reference

Approval Date: 04/26/2016
Expiration Date: 04/26/2022

Dam Location

Dam Address:
2301 LITTLE CREEK DAM Rd
Toano VA, 23168

E911 Direction to Dam:
Little Creek Dam Rd. traverses dam crest

EAP Contacts

Dam Operator: Kofi Boateng
(primary)(757) 234-6703(Office); (757) 508-4272(Mobile)
(primary)na@na.com
700 Town Center Dr. Ste 500
Newport News VA, 23606

Dam Alternate Operator:Mike Hotaling
(primary)(757) 234-6703(Office); (757) 508-4272(Mobile)
(primary)na
3629 George Washington Memorial Hwy,
Yorktown VA, 23693

Rain Gauge Observer: George Baker
(757) 508-4272(Mobile); (primary)(757) 566-1339(Office)
(primary)na
null
Newport News VA, 23606

Alternate Rain Gauge Observer:Jason Burke
(primary)(757) 272-3752(Mobile)
(primary)na
null
Newport News VA, 23606

24-Hour Dispatch Center: James City County Police Dispatch
(757) 564-2140(Office); (primary)(757) 566-0112(Home)
(primary)na
4600 Opportunity Way
Williamsburg VA, 23188

Local Government Emergency Services:Robert Alley III
(primary)(757) 247-2500(Office)
(primary)na
2400 Washington Ave
Newport News VA, 23602

Owner's Engineer: Rachael Bisnett, PE
(primary)(641) 230-1577(Mobile)
(primary)rachael.bisnett@stantec.com
2127 Ayrsley Town Blvd., Suite 300
Charlotte NC, 28273

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:James Utterback
(757) 802-0005(Mobile); (primary)(757) 925-2500(Office); (757) 925-2511(Office)
(primary)james.utterback@vdot.virginia.gov
1700 North Main St
Suffolk VA, 23434

National Weather Service:

Potential Impacts

Roadways Impacted:

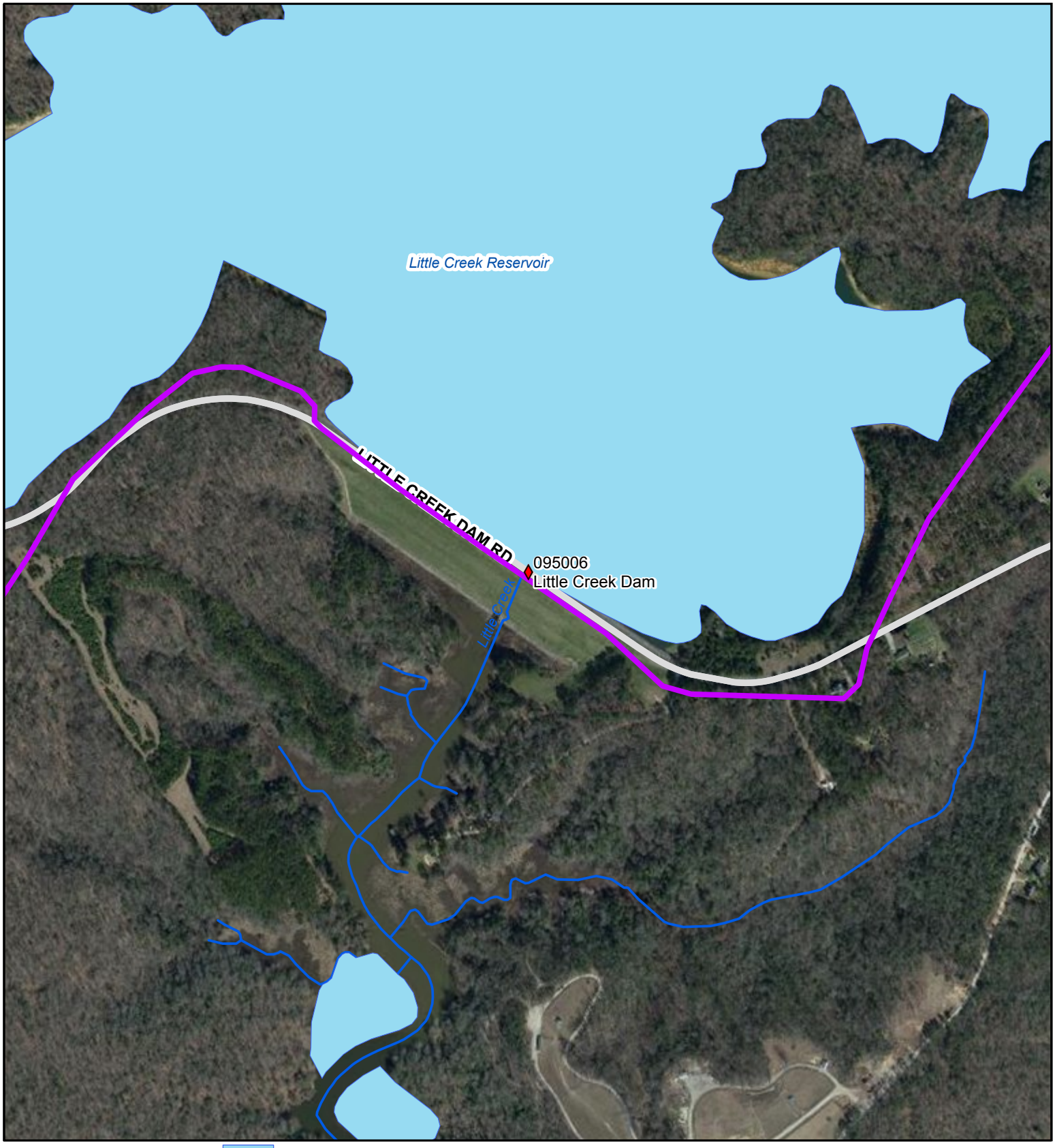
- 631 - 0 miles downstream
- 632 - 2.8 miles downstream

Dams Downstream:

Potential Impact Structures (count):

- 2 Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **095006**
Dam Name: **Little Creek Dam**
VAHU6: JL28
Municipalities: James City County
Region: 2
SWCD: COLONIAL
VA Senate: 3
HUC 12: 020802060604
VA House: 96
Watershed Name: Chickahominy River-Yarmouth Creek
Congressional: 5101
USGS Topo: NORGE



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Little Creek Reservoir Dam

Inventory Number: 810006

Hazard Classification: High

City/County: City of Virginia Beach

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1899

Dam Owner:
David S Rosenthal
(757) 328-1787(Mobile); (757) 441-5678(Office); (primary)(757) 441-5774(Office)
6040 Waterwoks Road
Norfolk VA, 23502

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type:

Certificate Expiration:

Days Since Last Inspection: 651

Inundation Report: 12/01/2010

Type of Dam
Earth (Primary)

Reservoir Purpose
Recreation (Secondary)
Flood Control or storm water management (Secondary)
Water Supply (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City: Norfolk

Nearest City Distance: 8.20 Miles

River or Stream: Little Creek - VAHU6 CB26 Lower Chesapeake Bay - Little Creek

Technical Basics

Normal Pool Area: 192.00 Acres

Top Surface Area: 296.00 Acres

Normal Pool Capacity: 1242.00 Acre-Feet

Top Capacity: 1819.00 Acre-Feet

Normal Pool Elevation: 6.05 Feet

Top Elevation: 8.00 Feet

Normal Pool Height: 5.65 Feet

Top Height: 7.60 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 7.20 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration: 183.30

12 Hour PMP: 0.00

24 Hour PMP: 0.00

Available Spillway Design Flow: 100.00 YR

Weighted Curve Number: 69

IDA Spillway Reduction:

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
8/6/2019	Engineer	Fair
7/26/2018	DCR Site Visit	Not Rated
3/20/2018	Engineer	Fair

EAP Quick Reference

Approval Date: 05/31/2011
Expiration Date: 05/31/2017

Dam Location

Dam Address:
Near 565 Lake Shores Road
Virginia Beach VA, 23455

E911 Direction to Dam:
US60 Shore Drive; GPIN 1469500740000

EAP Contacts

Dam Operator:

Dam Alternate Operator:

Rain Gauge Observer:

Alternate Rain Gauge Observer:

24-Hour Dispatch Center:

Local Government Emergency Services:

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:

Potential Impacts

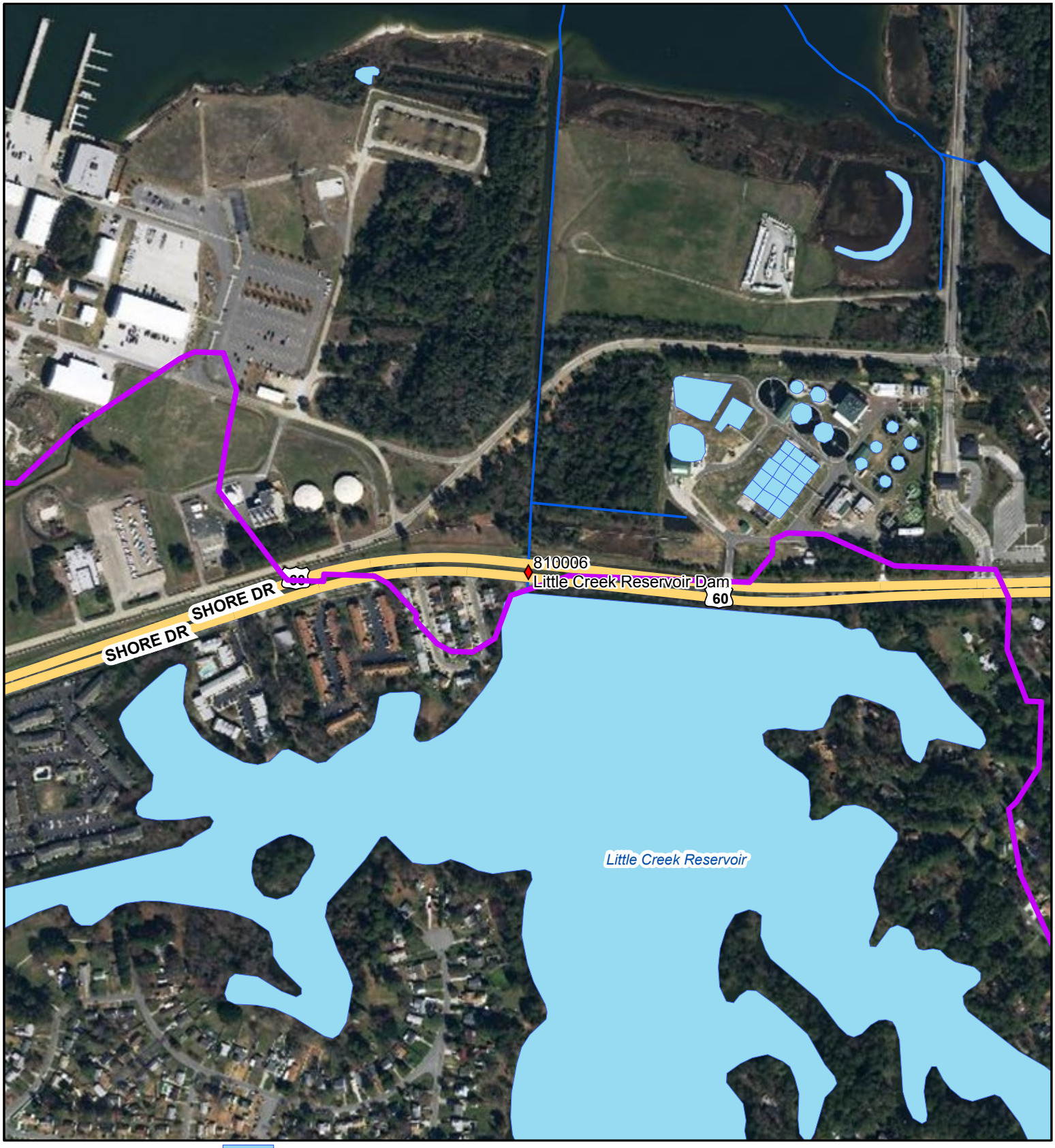
Roadways Impacted:

Dams Downstream:

Potential Impact Structures (count):

- Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **810006**
Dam Name: **Little Creek Reservoir Dam**
VAHU6: CB26
Municipalities: City of Virginia Beach
Region: 3
SWCD: VIRGINIA DARE
VA Senate: 7
HUC 12: 020801080202
VA House: 83
Watershed Name: Lower Chesapeake Bay-Little Creek
Congressional: 5102
USGS Topo: LITTLE CREEK



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Speights Run Dam

Inventory Number: 800010

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1957

Dam Owner:
Erin K Trimyer
(primary)(757) 393-8691(Office)
P.O. Box 490
Portsmouth VA, 23705

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 05/31/2022

Days Since Last Inspection: 404

Inundation Report: 04/02/2020

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: 0.00 Miles

River or Stream: SPEIGHTS RUN

Technical Basics

Normal Pool Area: 197.00 Acres

Top Surface Area: 474.00 Acres

Normal Pool Capacity: 479.00 Acre-Feet

Top Capacity: 4000.00 Acre-Feet

Normal Pool Elevation: 0.00 Feet

Top Elevation: 41.70 Feet

Normal Pool Height: 18.00 Feet

Top Height: 25.70 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 6-HR PMP

Drainage Area: 12.81 Sq. Mi.

6 Hour PMP: 32.10

Time of Concentration:

12 Hour PMP: 35.60

Weighted Curve Number:

24 Hour PMP: 35.60

IDA Spillway Reduction: .90 PMP

Available Spillway Design Flow: .30 PMP **Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
4/9/2020	Engineer	Satisfactory
5/1/2019	Engineer	Satisfactory
5/1/2018	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 07/13/2015
Expiration Date: 07/31/2021

Dam Location

Dam Address:
Near 508 Turlington Road
Suffolk VA, 23434

E911 Direction to Dam:
City Map No. 33*74 a 346.80 parcel (Account No. 152618000)

EAP Contacts

Dam Operator:

Dam Alternate Operator:

Rain Gauge Observer:

Alternate Rain Gauge Observer:

24-Hour Dispatch Center:

Local Government Emergency Services:

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:

National Weather Service:

Potential Impacts

Roadways Impacted:

Dams Downstream:

- 800002
- 800013

Potential Impact Structures (count):

- Homes
- Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **800010**

Dam Name: **Speights Run Dam**

VAHU6: JL44

Municipalities: City of Suffolk

Region: 3

SWCD: PEANUT

VA Senate: 14

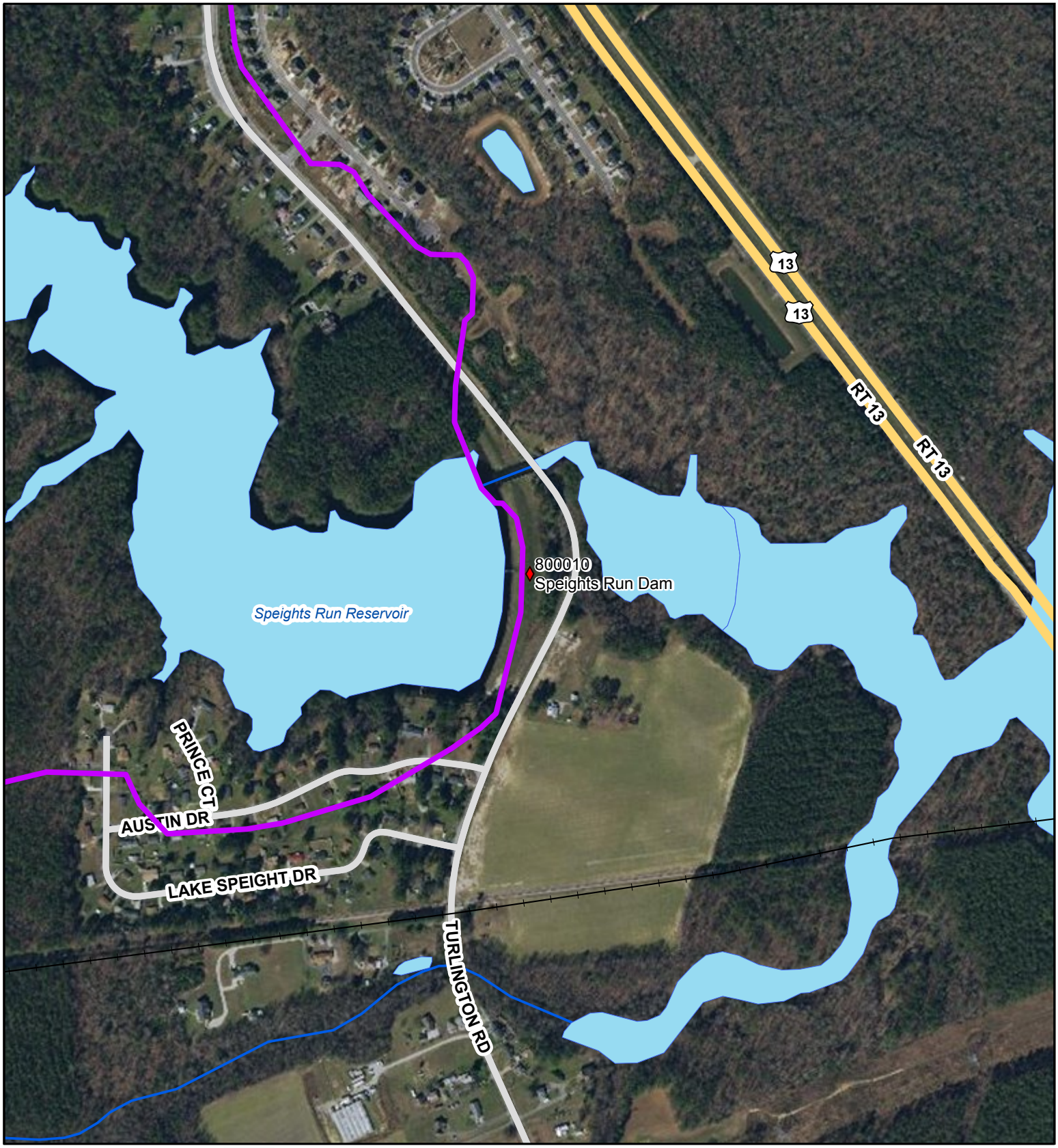
HUC 12: 020802080101

VA House: 76

Watershed Name: Lake Kelby-Speights Run

Congressional: 5104

USGS Topo: BUCKHORN,SUFFOLK



Dam Locations | Waterbodies (NHD) | Interstate | State Primary Highway

Streams (NHD) | US Primary Highway | Secondary

N

Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Waller Mill Dam

Inventory Number: 199003

Hazard Classification: High

City/County: York County

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1965

Dam Owner:
Daniel Clayton
(primary)(757) 220-6140(Office)
401 Lafayette Street
Williamsburg VA, 23185

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Conditional 2 Year Certificate

Certificate Expiration: 01/31/2023

Days Since Last Inspection: 320

Inundation Report: 08/28/2012

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates

Watershed

Nearest City:

Nearest City Distance: Miles

River or Stream: QUEENS CREEK

Technical Basics

Normal Pool Area: 351.00 Acres

Top Surface Area: 519.00 Acres

Normal Pool Capacity: 4603.00 Acre-Feet

Top Capacity: 7274.00 Acre-Feet

Normal Pool Elevation: 37.00 Feet

Top Elevation: 43.00 Feet

Normal Pool Height: 34.00 Feet

Top Height: 40.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: Unknown

Drainage Area: 6.87 Sq. Mi.

6 Hour PMP: 0.00

Time of Concentration:

12 Hour PMP: 0.00

Weighted Curve Number:

24 Hour PMP: 0.00

IDA Spillway Reduction:

Available Spillway Design Flow: 100.00 YR **Required Spillway Design Flow**: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
7/2/2020	Engineer	Fair
12/20/2019	Owner	Fair
7/13/2018	Engineer	Fair

EAP Quick Reference

Approval Date: 08/25/2005
Expiration Date: 08/25/2011

Dam Location

Dam Address:
618 Waller Mill Rd
Williamsburg VA, 23185

E911 Direction to Dam:
The impoundment structure is about a quarter mile east down the Waller Mill Rd from the listed address point.

EAP Contacts

Dam Operator: Joe Wenger
(primary)(757) 220-6140(Office); (757) 566-3808(Home)
(primary)jwenger@williamsburg.va.gov
618 Waller Mill Rd
Williamsburg VA, 23185

Dam Alternate Operator:Jon Kellum
(primary)(757) 220-6145(Office)
(primary)na
NA
Na VA, 99999

Rain Gauge Observer: Joe Wenger
(primary)(757) 220-6140(Office); (757) 566-3808(Home)
(primary)jwenger@williamsburg.va.gov
618 Waller Mill Rd
Williamsburg VA, 23185

Alternate Rain Gauge Observer:Jon Kellum
(primary)(757) 220-6145(Office)
(primary)na
NA
Na VA, 99999

24-Hour Dispatch Center: York County Fire and Safety Dispatch Center
(primary)(757) 890-3600(Office); (757) 890-3621(Office)
(primary)na
301 Goodwin Neck Rd
Yorktown VA, 23692

Local Government Emergency Services:Stephen Kopczynski
(primary)(757) 890-3600(Office); (757) 890-3621(Office)
(primary)na
301 Goodwin Neck Rd
Yorktown VA, 23692

Owner's Engineer: Kelly D Cole
(primary)(434) 455-3211(Office); (434) 947-1901(Office)
(primary)kcole@wileywilson.com
127 Nationwide Drive
Lynchburg VA, 24502

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher Carroll
(primary)(757) 253-5138(Office)
(primary)c.carroll@vdot.virginia.gov
NA
Na VA, 99999

National Weather Service:Eric Seymour
(primary)(757) 899-4200(Office); (757) 899-5734(Office); (757) 899-6401(Office)
(primary)eric.seymour@noaa.gov
10009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- 132 - 0.9 miles downstream
- 64 - 1.9 miles downstream
- 143 - 1.2 miles downstream

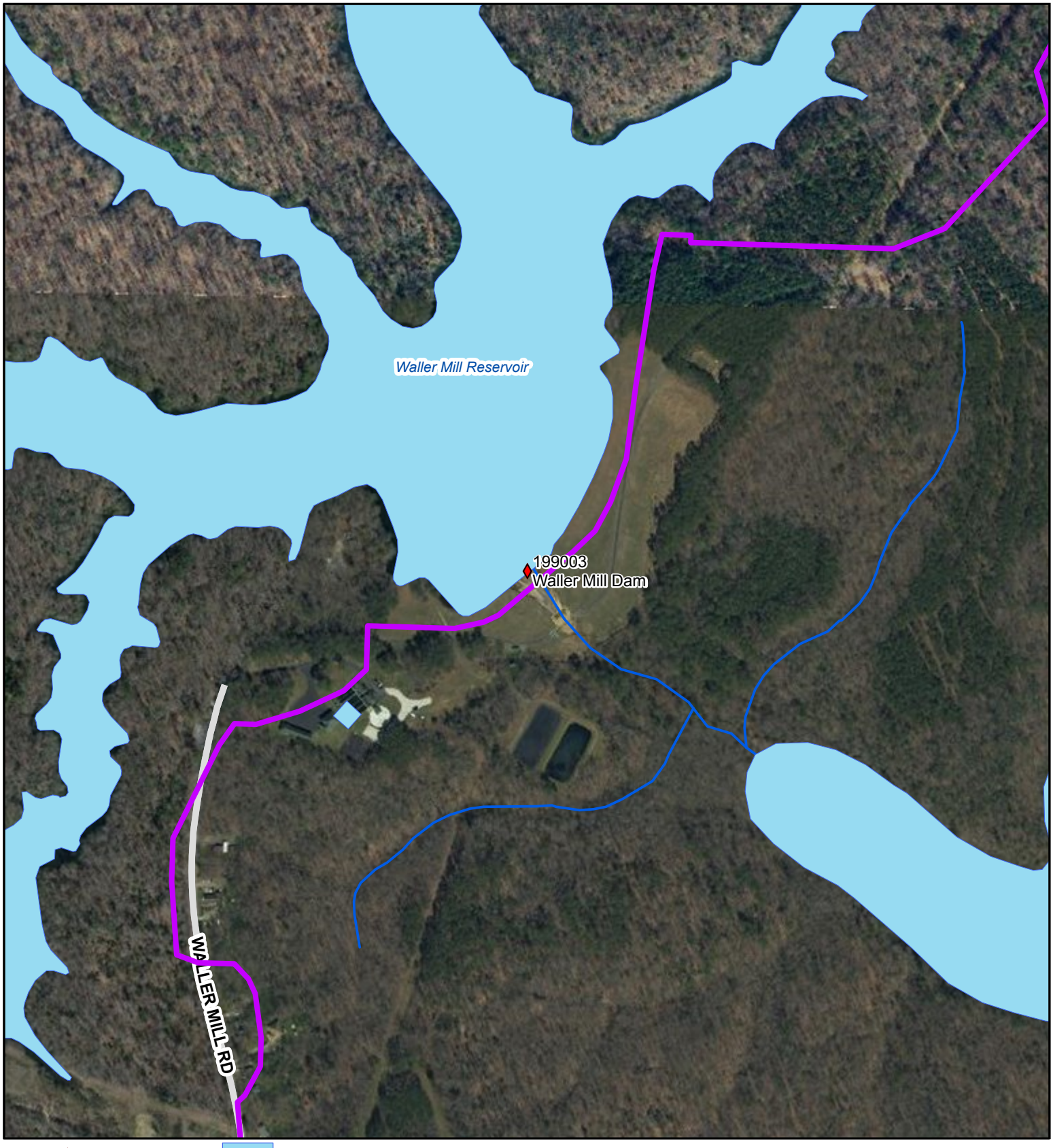
Dams Downstream:

- 199016

Potential Impact Structures (count):

- 3 Homes
- 1 Businesses
- Schools
- Hospitals
- Critical Infrastructure
- Railroads
- Utilities
- Parks
- Golf Courses

Dam Number: **199003**
Dam Name: **Waller Mill Dam**
VAHU6: YO67
Municipalities: York County
Region: 2
SWCD: COLONIAL
VA Senate: 3
HUC 12: 020801070202
VA House: 96
Watershed Name: Queen Creek
Congressional: 5102
USGS Topo: WILLIAMSBURG



Dam Safety Data Sheet

Department of Conservation and Recreation
Division of Dam Safety and Flood Plain Management
600 E Main St, Richmond, VA 23219

General

Name of Dam: Western Branch Dam

Inventory Number: 800011

Hazard Classification: High

City/County: City of Suffolk

Designed By:

Constructed By:

Regional Engineer: Mark Killgore

Year Constructed: 01/01/1963

Dam Owner:
Kristen Lentz
(757) 441-5678(Office); (757) 441-5683(Office); (757) 539-9281(Office); (757) 617-3244(Mobile); (primary)(757) 664-6701(Office)
401 Monticello Avenue
2nd Floor
Norfolk VA, 23510

Size Classification: Medium (>= 1000 - <50,000 ac. ft., >=40' <100')

Certificate Type: Regular Operation and Maintenance Certificate

Certificate Expiration: 01/15/2026

Days Since Last Inspection: 315

Inundation Report: 06/01/2019

Type of Dam
Earth (Primary)

Reservoir Purpose
Water Supply (Primary)
Recreation (Primary)

Type of Spillway

Type	Width	Outlet Gates
Uncontrolled	250.00	Concrete Spillway - Ogee
Uncontrolled (Auxiliary)	500.00	Concrete Weir Structure

Watershed

Nearest City: Suffolk

Nearest City Distance: 4.63 Miles

River or Stream: Western Branch Nansemond River - VAHU6 JL47 Western Branch Reservoir

Technical Basics

Normal Pool Area: 1250.00 Acres

Top Surface Area: 2432.00 Acres

Normal Pool Capacity: 18000.00 Acre-Feet

Top Capacity: 35300.00 Acre-Feet

Normal Pool Elevation: 21.00 Feet

Top Elevation: 31.00 Feet

Normal Pool Height: 22.00 Feet

Top Height: 41.00 Feet

Technical Hydrology/Hydraulics

Controlling PMP: 12-HR PMP

Drainage Area: 65.66 Sq. Mi.

6 Hour PMP: 27.60

12 Hour PMP: 29.60

24 Hour PMP: 29.60

Available Spillway Design Flow: 1.00 PMP

Time of Concentration: 1.00

Weighted Curve Number: 76

IDA Spillway Reduction:

Required Spillway Design Flow: .90 PMP

Inspections (Last 3 Max)

Date	Type	Condition
7/7/2020	Engineer	Satisfactory
8/16/2019	DCR Site Visit	Not Rated
7/27/2019	Engineer	Satisfactory

EAP Quick Reference

Approval Date: 09/16/2019
Expiration Date: 09/16/2025

Dam Location

Dam Address:
113 Lockwood Circle
Suffolk VA, 23434

E911 Direction to Dam:
113 Lockwood Circle, Tax Map No. 17*23, Acct No. 2518850000

EAP Contacts

Dam Operator: Chris E Harbin
(primary)(757) 441-5678(Office); (757) 441-5774(Office); (757) 604-3365(Mobile)
(primary)chris.harbin@norfolk.gov
6040 Waterworks Rd
Norfolk VA, 23502

Dam Alternate Operator:David S Rosenthal
(757) 328-1787(Mobile); (primary)(757) 441-5678(Office); (757) 441-5774(Office)
(primary)david.rosenthal@norfolk.gov
6040 Waterworks Road
Norfolk VA, 23502

Rain Gauge Observer: Claude Stone
(primary)(757) 539-9281(Office); (757) 613-2081(Mobile)
(primary)unknown@unknown.com
113 Lockwood Circle
Suffolk VA, 23434

Alternate Rain Gauge Observer:Cheryl Barnett
(primary)(757) 418-1916(Office)
(primary)unknown@unknown.com
401 Monticello Avenue
Norfolk VA, 23510

24-Hour Dispatch Center: na na
(primary)(757) 925-2030(Office)
(primary)na@na.com
300 King FOrk Road
Suffolk VA, 23434

Local Government Emergency Services:Brian Spicer
(primary)(757) 514-4532(Office); (757) 635-9402(Mobile)
(primary)bspicer@suffolkva.us
300 Kings Fork Road
Suffolk VA, 23434

Owner's Engineer:

DCR Regional Engineer:
Mark Killgore
804-786-1359
Mark.Killgore@dcr.virginia.gov
600 E. Main St., 24th Floor
Richmond VA, 23219

Transportation Administrator:Christopher G. Hall
(primary)(757) 956-3000(Office)
(primary)christopher.hall@vdot.virginia.gov
7511 Burbage Drive
Suffolk VA, 23435

National Weather Service:Eric Seymour
(757) 899-2415(Office); (primary)(757) 899-4200(Office); (800) 737-8624(Office)
(primary)eric.seymour@noaa.gov
1009 General Mahone Highway
Wakefield VA, 23888

Potential Impacts

Roadways Impacted:

- Godwin Boulevard (US 32) - 0.56 miles downstream
- Sack Point Road - 0.6 miles downstream
- Wilroy Road - 3.7 miles downstream
- US 58 - 4.6 miles downstream
- Nansemond Parkway - 6.9 miles downstream
- N Main Street - 7.3 miles downstream
- Portsmouth Boulevard (US 460) - 7.9 miles downstream
- East Washington Street (US 58) - 8.5 miles downstream

Potential Impact Structures (count):

- 310 Homes
- 0 Businesses
- 0 Schools
- 0 Hospitals
- 0 Critical Infrastructure
- 0 Railroads
- 0 Utilities
- 0 Parks
- 0 Golf Courses

Dams Downstream:

Dam Number: **800011**
Dam Name: **Western Branch Dam**
VAHU6: JL47,JL48
Municipalities: City of Suffolk
Region: 3
SWCD: PEANUT
VA Senate: 18
HUC 12: 020802080104,020802080105
VA House: 76
Watershed Name: Nansemond River-Cedar Lake,Western Branch Reservoi
Congressional: 5103
USGS Topo: CHUCKATUCK

APPENDIX I – HAZMAT INCIDENTS

This Appendix provides a list of hazardous materials incidents for the Hampton Roads region since 1998.

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Branchville (Southampton Co.)	11/21/2007	Highway	0.00cf	Lpg	$10,706
Courtland (Southampton Co.)	1/11/2004	Highway	0.00g	Sodium Hydroxide	$0
					$10,706
Chesapeake	5/12/1998	Highway	0.50g	Hydrogen Peroxide	$335
Chesapeake	6/19/1998	Highway	0.13g	Paint	$0
Chesapeake	6/22/1998	Highway	0.25g	Acetone	$403
Chesapeake	8/10/1998	Highway	15.00g	Compounds, Cleaning Liquid	$0
Chesapeake	10/16/1998	Rail	1.00g	Ethanol	$0
Chesapeake	11/25/1998	Highway	50.00g	Diesel Fuel	$100,050
Chesapeake	12/1/1998	Highway	0.05g	Hydrogen Peroxide & Peroxyacetic Acid Mixtures	$465
Chesapeake	12/14/1998	Highway	55.00g	Flammable Liquid	$85
Chesapeake	2/12/1999	Highway	4.00g	Potassium Hydroxide	$500
Chesapeake	9/29/1999	Highway	1.00lb	Resourcinol	$0
Chesapeake	11/8/1999	Highway	5.00lb	Sodium Nitrate	$460
Chesapeake	1/13/2000	Highway	3.00g	Disinfectants, Liquid, Corrosive	$375
Chesapeake	5/18/2000	Rail	1.00g	Sodium Hydroxide	$0
Chesapeake	8/11/2000	Highway	0.06g	Hydrochloric Acid	$0
Chesapeake	9/6/2000	Rail	1.00g	Diethyl Ether	$0
Chesapeake	11/7/2000	Highway	5.00lb	Oxidizing Solid, Corrosive	$1,010
Chesapeake	12/5/2000	Highway	3.00g	Toluene	$100
Chesapeake	1/2/2001	Highway	0.02g	Trichloroethylene	$85
Chesapeake	1/26/2001	Highway	125.00g	Gasohol	$2,620
Chesapeake	4/2/2001	Highway	2.00g	Chloroform	$0
Chesapeake	6/19/2001	Rail	5.00g	Carbmate Pesticides	$7,500
Chesapeake	7/5/2001	Rail	1.00g	Flammable Liquids	$0
Chesapeake	7/17/2001	Rail	1.00g	Corrosive Liquid, Acidic, Organic	$0
Chesapeake	10/15/2001	Highway	0.19g	Caustic Alkali Liquids	$525
Chesapeake	10/30/2001	Highway	0.25g	Hydrofluoric Acid Solution	$315
Chesapeake	2/11/2002	Highway	25.00g	Gas Oil	$0
Chesapeake	2/12/2002	Highway	1.50g	Combustible Liquid	$100
Chesapeake	6/26/2002	Highway	5.00g	Environmentally Hazardous Substances, Liquid	$20
Chesapeake	9/20/2002	Highway	3.00g	Toluene	$400

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Chesapeake	9/24/2002	Highway	5.00g	Petroleum Distillates	$370
Chesapeake	5/5/2003	Highway	5.00g	Flammable Liquids	$475
Chesapeake	6/30/2003	Highway	5.00g	Caustic Alkali Liquids	$475
Chesapeake	6/30/2003	Highway	1.00g	Hydrochloric Acid Solution	$400
Chesapeake	7/10/2003	Highway	0.02g	Trimethylhexamethylendiamines	$365
Chesapeake	7/15/2003	Highway	0.03g	Ethyl Chloride	$525
Chesapeake	9/16/2003	Highway	15.00g	Flammable Liquid	$0
Chesapeake	9/23/2003	Highway	5.00g	Ammonia Solution	$100
Chesapeake	10/31/2003	Highway	200.00g	Styrene Monomer	$0
Chesapeake	11/20/2003	Highway	0.01g	Oxidizing Liquid	$365
Chesapeake	11/23/2003	Highway	3,000g	Diesel Fuel	$119,500
Chesapeake	12/16/2003	Highway	1.00lb	Environmentally Hazardous Substances, Solid	$175
Chesapeake	12/26/2003	Rail	1.00g	Environmentally Hazardous Substances, Liquid	$0
Chesapeake	2/19/2004	Rail	1.00g	Combustible Liquid	$0
Chesapeake	2/23/2004	Rail	25.00g	Environmentally Hazardous Substances, Liquid	$1,500
Chesapeake	4/8/2004	Highway	0.06g	Paint	$500
Chesapeake	5/10/2004	Highway	0.25g	Corrosive Liquid, Basic, Organic	$525
Chesapeake	6/7/2004	Highway	1.00lb	Environmentally Hazardous Substances, Solid	$385
Chesapeake	7/20/2004	Rail	1.00g	Petroleum Distillates	$1,000
Chesapeake	9/20/2004	Rail	8.00lb	Corrosive Solids	$1,000
Chesapeake	3/22/2005	Highway	0.50g	Paint	$0
Chesapeake	4/13/2005	Highway	16.00lb	Batteries	$0
Chesapeake	5/3/2005	Highway	10.00 lb	Fire Extinguishers	$0
Chesapeake	5/6/2005	Highway	60.00 lb	Life-Saving Appliances	$0
Chesapeake	8/11/2005	Highway	0.25g	Sodium Hydroxide	$0
Chesapeake	3/27/2006	Highway	1.00g	Paint	$0
Chesapeake	5/2/2006	Highway	0.04cf	Carbon Dioxide	$0
Chesapeake	7/12/2006	Highway	0.50g	Paint	$0
Chesapeake	9/6/2006	Highway	0.02g	Paint	$0
Chesapeake	10/3/2006	Highway	1.00g	Paint	$0
Chesapeake	11/3/2006	Rail	0.06g	Environmentally Hazardous Substances, Liquid	$0
Chesapeake	2/9/2007	Highway	0.66g	Sulfuric Acid	$0
Chesapeake	9/25/2007	Rail	0.06g	Amines, Liquid, Corrosive	$0
Chesapeake	10/16/2007	Highway	1.00g	Corrosive Liquid, Basic, Inorganic	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Chesapeake	10/17/2007	Highway	3.00g	Hydrochloric Acid	$0
Chesapeake	10/29/2007	Highway	2.00 lb	Flammable Solids, Organic	$0
Chesapeake	11/16/2007	Highway	0.09g	Tetrahydrofuran	$0
Chesapeake	4/1/2008	Highway	0.25g	Paint	$0
Chesapeake	4/4/2008	Highway	2.00g	Paint	$0
Chesapeake	6/16/2008	Highway	15.00g	Gasoline	$5,050
Chesapeake	3/10/2009	Highway	1.06g	Flammable Liquids	$0
Chesapeake	9/11/2009	Highway	5.00g	Flammable Liquids	$650
Chesapeake	12/31/2009	Highway	0.13g	Sodium Hydroxide	$0
Chesapeake	5/17/2010	Highway	3.00g	Corrosive Liquid, Acidic, Organic	$2,881
Chesapeake	9/9/2010	Highway	0.13g	Paint	$0
Chesapeake	10/1/2010	Highway	0.53g	Sodium Hydroxide	$0
Chesapeake	11/8/2010	Highway	0.04g	Paint	$0
Chesapeake	5/16/2011	Highway	0.03g	Paint	$0
Chesapeake	11/21/2011	Highway	0.13 lb	Organic Peroxide, Type F, Solid	$0
Chesapeake	2/23/2012	Highway	1.50g	Paint	$0
Chesapeake	6/22/2012	Highway	1.00g	Paint	$0
Chesapeake	7/19/2012	Highway	4.00g	Paint	$0
Chesapeake	8/27/2012	Highway	40.00g	Aryl Sulfonic Acids	$4,000
Chesapeake	11/26/2012	Highway	1.00g	Paint	$0
Chesapeake	8/22/2013	Highway	30.00g	Fuel Oil (NO. 1, 2, 4, 5, Or 6)	$7,327
Chesapeake	9/29/2014	Highway	0.02g	Organic Peroxide Type D, Liquid	$0
Chesapeake	9/8/2017	Highway	1.00lb	Hazardous Waste, Solid, N.O.S.	$0
Chesapeake	12/3/2018	Highway	5.00g	Printing Ink, Flammable Or Printing Ink Related Material (Including Printing Ink Thinning Or Reducing Compound), Flammable	$5,500
Chesapeake	6/3/2020	Highway	25.00g	Gasohol Gasoline Mixed With Ethyl Alcohol, With Not More Than 10% Alcohol	$16,000
Chesapeake	3/8/2016	Highway	0.13g	Xylenes	$0
Chesapeake	5/8/2018	Highway	16.00lb	Toxic Solids, Organic, N.O.S.	$0
Chesapeake	9/13/2018	Highway	30.00g	Corrosive Liquid, Basic, Inorganic, N.O.S.	$3,500
Chesapeake	1/28/2019	Highway	0.63 lb	Batteries, Wet, Filled With Acid, Electric Storage	$1,325
Chesapeake	11/18/2020	Highway	2.20 lb	Batteries, Wet, Filled With Acid, Electric Storage	$619
Chesapeake	11/11/2015	Highway	0.01g	Ethyl Methyl Ketone Or Methyl Ethyl Ketone	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Chesapeake	12/14/2015	Highway	0.01g	Corrosive Liquid, Basic, Inorganic, N.O.S.	$0
Chesapeake	6/28/2016	Rail	0.02g	Caustic Alkali Liquids, N.O.S.	$2,500
Chesapeake	7/12/2016	Highway	0.01g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Chesapeake	7/13/2016	Highway	5.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Chesapeake	7/25/2016	Highway	0.01 g	Sodium Hydroxide, Solution	$0
Chesapeake	10/18/2016	Highway	1.04 g	Adhesives, Containing A Flammable Liquid	$0
Chesapeake	8/24/2017	Highway	0.50 g	Isopropanol Or Isopropyl Alcohol	$0
Chesapeake	11/10/2017	Highway	0.50 g	Ethanol Or Ethyl Alcohol Or Ethanol Solutions Or Ethyl Alcohol Solutions	$0
Chesapeake	1/25/2018	Highway	0.00 g	Corrosive Liquid, Acidic, Inorganic, N.O.S.	$0
Chesapeake	3/30/2018	Highway	6.59 g	Sodium Hydroxide, Solution	$0
Chesapeake	3/30/2018	Highway	6.59 g	Sodium Hydroxide, Solution	$0
Chesapeake	6/6/2018	Highway	0.50 g	Hydrogen Peroxide, Aqueous Solutions With Not Less Than 20 Percent But Not More Than 40 Percent Hydrogen Peroxide (Stabilized As Necessary)	$0
Chesapeake	6/11/2018	Highway	3.63 g	Flammable Liquids, N.O.S.	$0
Chesapeake	10/25/2018	Highway	6.59 g	Sodium Hydroxide, Solution	$0
Chesapeake	11/8/2019	Highway	6.57 g	Sodium Hydroxide, Solution	$0
Chesapeake	11/15/2019	Highway	0.00 g	Sodium Hydroxide, Solution	$0
Chesapeake	2/3/2020	Highway	0.02 g	Sodium Hydroxide, Solution	$0
Chesapeake	2/5/2020	Highway	1.00 g	Printing Ink, Flammable Or Printing Ink Related Material (Including Printing Ink Thinning Or Reducing Compound), Flammable	$0
Chesapeake	2/8/2016	Highway	g 15.00	Amines, Liquid, Corrosive, N.O.S. Or Polyamines, Liquid, Corrosive, N.O.S.	$0
					$292,360
Franklin	1/5/1998	Highway	0.02g	Phosphorous Trichloride	$0
Franklin	3/2/1999	Highway	40.00 lb	Calcium Hypochlorite, Hydrated Mixtures	$2,850
Franklin	3/23/2000	Highway	150.00g	Hypochlorite Solutions	$638
Franklin	8/17/2001	Highway	1.00g	Hydrogen Peroxide	$200

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Franklin	4/8/2002	Highway	0.07g	Phosphorus Trichloride	$0
Franklin	8/27/2002	Highway	0.06g	Phosphorus Trichloride	$0
Franklin	5/27/2005	Rail	2.00g	Elevated Temperature Luqiud, N.O.S.	$0
Franklin	1/13/2007	Rail	1.00g	Flammable Liquid	$0
					$3,688
Hampton	9/4/1999	Highway	25.00g	Potassium Hydroxide	$500
Hampton	9/22/2003	Highway	15.00g	Gasoline	$6,000
Hampton	6/22/2004	Highway	35.00gg	Gasoline	$1,550
Hampton	8/12/2004	Highway	1.00g	Flammable Liquids	$20
Hampton	4/2/2014	Highway	50.00g	Potassium Hydroxide	$0
Hampton	7/14/2014	Highway	5.00g	Gasoline	$1,384
Hampton	9/24/2020	Highway	10.00 g	Potassium Hydroxide, Solution	$0
Hampton	12/30/2015	Highway	0.01 g	Toluene	$0
Hampton	3/25/2016	Highway	0.01 g	Corrosive Liquid, Acidic, Organic, N.O.S.	$0
Hampton	5/12/2016	Highway	0.01 g	Corrosive Liquid, Basic, Inorganic, N.O.S.	$0
Hampton	6/15/2016	Highway	0.01 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	6/18/2016	Highway	0.01 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	6/29/2016	Highway	1.00 g	Alcohols, N.O.S.	$0
Hampton	7/13/2016	Highway	0.19 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	7/13/2016	Highway	0.13 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	8/4/2016	Highway	0.06 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	8/3/2016	Highway	2.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	11/26/2016	Highway	4.63 g	Corrosive Liquids, N.O.S.	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Hampton	12/31/2016	Highway	6.75 g	Hydrogen Peroxide And Peroxyacetic Acid Mixtures, Stabilized With Acids, Water, And Not More Than 5 Percent Peroxyacetic Acid	$0
Hampton	2/2/2017	Highway	0.25 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	3/30/2017	Highway	6.38 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	6/12/2017	Highway	4.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	5/21/2018	Highway	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	6/14/2018	Highway	4.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Hampton	6/15/2018	Highway	2.00 g	Coating Solution (Includes Surface Treatments Or Coatings Used For Industrial Or Other Purposes Such As Vehicle Undercoating, Drum Or Barrel Lining)	$0
Hampton	6/15/2018	Highway	1.00 g	Caustic Alkali Liquids, N.O.S.	$0
					$9,454
Newport News	6/3/2020	Highway	25.00 g	Gasoline Includes Gasoline Mixed With Ethyl Alcohol, With Not More Than 10% Alcohol	$1,500
Newport News	11/12/2015	Highway	1.00 g	Isopropanol Or Isopropyl Alcohol	$0
Newport News	3/2/2018	Highway	0.06 g	Sodium Hydroxide, Solution	$0
Newport News	3/12/2018	Highway	0.03 g	Sodium Hydroxide, Solution	$0
Newport News	6/14/2018	Highway	0.63 g	Acetic Acid, Glacial Or Acetic Acid Solution, With More Than 80 Percent Acid, By Mass	$0
Newport News	6/18/2018	Highway	10.00 lb	Calcium Hypochlorite, Hydrated Or Calcium Hypochlorite, Hydrated Mixtures, With Not Less Than 5.5 Percent But Not More Than 16 Percent Water	$0
Newport News	6/19/2018	Highway	1.00 g	Corrosive Liquids, N.O.S.	$0
Newport News	7/24/2018	Highway	0.02 g	Corrosive Liquid, Basic, Inorganic, N.O.S.	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Newport News	9/14/2018	Highway	0.06 lb	Batteries, Wet, Filled With Acid, Electric Storage	$0
Newport News	7/18/2019	Highway	0.53 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Newport News	7/18/2019	Highway	0.26 g	Hydrochloric Acid	$0
Newport News	1/29/1998	Highway	0.26g	Methyl Tert-Butyl Ether	$0
Newport News	3/4/1998	Highway	0.25g	Methyl Ethyl Ketone	$0
Newport News	4/1/1998	Highway	0.75g	Corrosive Liquids	$160
Newport News	4/23/1998	Highway	0.02g	Hydrochloric Acid	$0
Newport News	5/4/1998	Highway	0.25g	Sulfuric Acid	$0
Newport News	5/12/1998	Highway	0.01g	Sulfuric Acid	$0
Newport News	5/20/1998	Highway	0.00g	Sulfuric Acid	$0
Newport News	5/27/1998	Air	0.01g	Formaldehyde	$0
Newport News	6/15/1998	Highway	0.05g	Phosphoric Acid	$145
Newport News	6/15/1998	Highway	0.25g	Phosphoric Acid	$0
Newport News	7/21/1998	Highway	0.25g	Ammonia Solution	$178
Newport News	8/4/1998	Highway	0.06g	Sodium Hydroxide	$0
Newport News	8/17/1998	Highway	1.06g	Tetrahydrofuran	$0
Newport News	9/2/1998	Highway	0.01g	Sodium Hydroxide	$0
Newport News	9/16/1998	Highway	5.00g	Sulfuric Acid	$5
Newport News	9/22/1998	Highway	0.26g	Methanol	$0
Newport News	10/14/1998	Highway	0.06g	Heptanes	$0
Newport News	11/11/1998	Highway	0.38g	Aerosols, Poison, Packing Group Iii	$310
Newport News	4/2/1990	Highway	0.06g	Terpene Hydrocarbons	$0
Newport News	9/30/2003	Highway	10.00g	Diesel Fuel	$10
Newport News	8/22/2005	Highway	0.13g	Flammable Liquids	$0
Newport News	10/6/2005	Highway	0.01g	Paint	$0
Newport News	12/15/2005	Highway	1.50 lb	Fire Extinguishers	$0
Newport News	3/29/2006	Highway	-	Radioactive Material	$0
Newport News	4/3/2007	Highway	0.05g	Hydrochloric Acid Solution, Inhibited	$0
Newport News	4/17/2007	Highway	1.00lb	Fire Extinguishers	$0
Newport News	8/18/2008	Highway	0.01g	Corrosive Liquids	$0
Newport News	9/4/2009	Highway	1,100.00g	Diesel Fuel	$2,750
Newport News	4/28/2011	Highway	0.06g	Petroleum Distillates	$0
Newport News	7/12/2011	Highway	0.13g	Alcohols	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Newport News	10/15/2012	Highway	0.25gg	Paint	$0
Newport News	6/17/2013	Air	-	Carbon Dioxide, Solid Or Dry Ice	$0
Newport News	4/16/2015	Highway	15.00g	Environmentally Hazardous Substances, Liquid	$0
					$5,058
Norfolk	1/21/1998	Highway	1.00g	Isopropanol	$125
Norfolk	1/27/1998	Highway	0.25g	Sodium Hydroxide Solution	$0
Norfolk	2/3/1998	Highway	0.75g	Corrosive Liquid Basic Inorganic	$0
Norfolk	2/3/1998	Highway	0.75g	Corrosive Liquid Basic Inorganic	$0
Norfolk	2/25/1998	Highway	0.13g	Flammable Liquids	$125
Norfolk	3/4/1998	Rail		Combustible Liquid	$0
Norfolk	3/4/1998	Highway	0.02g	Styrene Monomer Inhibited	$0
Norfolk	3/26/1998	Highway	0.02g	Corrosive Liquids	$0
Norfolk	4/6/1998	Highway	5.00g	Petroleum Distillates	$125
Norfolk	4/7/1998	Highway	0.02g	Xylenes	$0
Norfolk	5/8/1998	Highway, 1 injury	0.25g	Flammable Liquids	$0
Norfolk	5/29/1998	Highway	0.75g	Flammable Liquids	$0
Norfolk	6/1/1998	Highway	0.25g	Petroleum Distillates	$0
Norfolk	6/10/1998	Highway	0.75g	Hypochlorite Solutions	$125
Norfolk	7/21/1998	Air	2.20 lb	Fire Extinguishers	$0
Norfolk	7/23/1998	Air	0.04g	Paint	$0
Norfolk	8/11/1998	Highway	0.06g	Potassium Hydroxide Solution	$125
Norfolk	8/11/1998	Highway	0.13g	Corrosive Liquid Acidic Inorganic	$125
Norfolk	8/11/1998	Highway	0.03g	Flammable Liquids	$125
Norfolk	8/12/1998	Highway	0.06g	Corrosive Liquid Acidic Organic	$125
Norfolk	8/27/1998	Highway	2.00g	Alkylamines	$125
Norfolk	9/10/1998	Highway	5.00g	Combustible Liquid	$100
Norfolk	9/29/1998	Highway	0.75g	Compound Cleaning Liquid	$125
Norfolk	9/30/1998	Highway	0.50g	Corrosive Liquids	$125
Norfolk	11/16/1998	Highway	0.02g	Corrosive Liquid Basic Organic	$0
Norfolk	12/10/1998	Air	0.12g	Corrosive Liquids	$0
Norfolk	1/7/1999	Highway	1.00g	Adhesives	$25
Norfolk	2/1/1999	Highway	0.08g	Toxic Liquid Inorganic	$0
Norfolk	2/8/1999	Highway	0.13g	Corrosive Liquids	$3

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)

Community	Date	Mode of Transport & Injuries	Quantity Released	Commodity	Damages
Norfolk	2/10/1999	Highway	0.25g	Corrosive Liquid Basic Inorganic	$20
Norfolk	2/12/1999	Highway	0.50g	Isopropanol	$125
Norfolk	3/24/1999	Highway	2.00g	Styrene Monomer Inhibited	$0
Norfolk	5/28/1999	Highway	1.00g	Flammable Liquids	$5
Norfolk	7/23/1999	Highway	1.50g	Phosphoric Acid	$125
Norfolk	7/29/1999	Highway	0.31g	Potassium Hydroxide Solution	$125
Norfolk	8/27/1999	Highway	1.00lb	Sodium Fluorosilicate	$1,483
Norfolk	9/7/1999	Air	0.02g	Isopropanol Or Isopropyl Alcohol	$0
Norfolk	10/27/1999	Highway	0.50g	Corrosive Liquid Basic Inorganic	$5
Norfolk	11/12/1999	Highway	2.00g	Fuel Oil No. 1 2 4 5 Or 6	$0
Norfolk	11/18/1999	Highway	0.07g	Isopropanol	$125
Norfolk	1/4/2000	Air	0.09g	Aerosols Flammable	$0
Norfolk	3/8/2000	Highway	0.06g	Compound Cleaning Liquid	$1
Norfolk	4/21/2000	Highway	0.01g	Coating Solution	$125
Norfolk	5/1/2000	Highway	0.50g	Phosphoric Acid	$125
Norfolk	5/2/2000	Highway	0.50g	Phosphoric Acid	$125
Norfolk	5/2/2000	Highway	1.50g	Battery Fluid Acid	$125
Norfolk	5/3/2000	Highway	25.00g	Corrosive Liquid Basic Inorganic	$1,300
Norfolk	6/21/2000	Highway	0.63g	Carbon Dioxide	$250
Norfolk	6/21/2000	Highway	0.63g	Carbon Dioxide	$250
Norfolk	8/11/2000	Highway	200.00g	Fuel Oil No. 1 2 4 5 Or 6	$200
Norfolk	11/3/2000	Air	0.01g	Toxic Liquids Organic	$0
Norfolk	11/20/2000	Highway		Caustic Alkali Liquids	$0
Norfolk	11/22/2000	Highway	1.00g	Regulated Medical Waste	$10
Norfolk	3/13/2001	Highway	18.00g	Gasoline	$4,023
Norfolk	9/20/2001	Highway	50.00g	Gasoline	$3,655
Norfolk	10/10/2001	Highway	3.00g	Sodium Hydroxide Solution	$0
Norfolk	12/19/2001	Air	0.03g	Perfumery Products	$0
Norfolk	1/24/2002	Highway	1.00g	Fuel Oil (No. 1 2 4 5 Or 6)	$1
Norfolk	2/20/2002	Air	0.01g	Flammable Liquids	$0
Norfolk	3/11/2002	Highway	0.00g	Sulfuric Acid	$300
Norfolk	6/20/2002	Rail	1.00g	Flammable Liquids	$0
Norfolk	6/22/2002	Air	1.00 lb	Consumer Commodity	$10
Norfolk	12/19/2002	Highway	1.00g	Corrosive Liquids	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Norfolk	8/8/2003	Highway	0.02g	Sodium Hydroxide Solution	$0
Norfolk	8/17/2004	Rail	1.00g	Environmentally Hazmat	$0
Norfolk	1/15/2005	Water	25.00g	Toxic Liquids Corrosive Organic	$0
Norfolk	2/19/2005	Highway	0.06g	Flammable Liquids	$0
Norfolk	2/23/2005	Water		Aerosols Non-Flammable	$0
Norfolk	3/24/2005	Highway	3.00g	Diesel Fuel	$0
Norfolk	5/2/2005	Highway	100.00gg	Fuel Oil Diesel	$0
Norfolk	7/28/2005	Highway	0.13g	Flammable Liquids	$0
Norfolk	8/9/2005	Highway	20.00g	Gasoline	$0
Norfolk	4/24/2006	Highway	0.02g	Hydrogen Peroxide	$0
Norfolk	11/15/2006	Highway	75.00g	Sodium Hydroxide Solution	$0
Norfolk	4/6/2007	Highway	1.00g	Corrosive Liquid Basic Inorganic	$0
Norfolk	4/12/2007	Highway	0.04g	Corrosive Liquids Toxic	$0
Norfolk	6/7/2007	Highway	1.00g	Sulfuric Acid	$0
Norfolk	7/27/2007	Highway	150.00g	Sodium Hydroxide Solution	$16,550
Norfolk	8/30/2007	Highway	0.02g	Sodium Hydroxide Solution	$0
Norfolk	1/24/2008	Highway	0.13g	Paint	$0
Norfolk	6/23/2008	Rail	1.00g	Isopropanol	$2,000
Norfolk	10/16/2008	Highway	0.06g	Paint	$0
Norfolk	2/23/2009	Highway	0.16g	Isopropanol	$0
Norfolk	5/5/2009	Highway	0.08g	Corrosive Liquid Basic Organic	$0
Norfolk	7/15/2009	Highway	0.26g	Nitric Acid	$0
Norfolk	8/18/2009	Air	-	Cartridges Small Arms	$0
Norfolk	5/2/2010	Water	0.53g	Corrosive Liquid Acidic Inorganic	$4,000
Norfolk	10/10/2010	Water	5.00g	Cadmium Compounds	$11,000
Norfolk	2/14/2011	Highway	0.13g	Ethyl Alcohol	$0
Norfolk	3/20/2011	Air	14.99 lb	Fire Extinguishers	$0
Norfolk	5/8/2011	Air	0.00g	Oxygen	$0
Norfolk	7/11/2011	Highway	18.00 lb	Fire Extinguishers	$0
Norfolk	7/13/2011	Highway	0.17g	Methanol	$0
Norfolk	8/17/2011	Water, 8 injuries	5.00g	2-Dimethylaminoethyl Acrylate	$7,956
Norfolk	9/11/2011	Air	0.13g		$0
Norfolk	1/16/2012	Highway	1.00g	Sulfuric Acid	$0
Norfolk	2/14/2012	Highway	0.26g	Paint	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Norfolk	11/15/2012	Highway	16.00 lb	Batteries	$5,000
Norfolk	7/15/2013	Highway	25.00g	Hydrochloric Acid	$0
Norfolk	9/13/2013	Highway	4,500.0g0	Ferric Chloride	$340,000
Norfolk	5/9/2014	Highway	0.24g	Paint	$0
Norfolk	9/29/2014	Highway	-	Carbon Dioxide, Solid Or Dry Ice	$0
Norfolk	7/17/2015	Highway	5.00g	Diethyl Sulfide	$0
Norfolk	8/7/2015	Highway	5.00 g	Corrosive Liquid, Acidic, Organic, N.O.S.	$3,500
Norfolk	3/20/2018	Air	-	Cartridges, Signal	$0
Norfolk	12/26/2018	Highway	240.00 lb	Batteries, Wet, Filled With Acid, Electric Storage	$7,500
Norfolk	12/14/2018	Highway	0.50 g	Hydrochloric Acid	$0
Norfolk	12/16/2020	Highway	20.00 g	Gasoline Includes Gasoline Mixed With Ethyl Alcohol, With Not More Than 10% Alcohol	$2,000
Norfolk	9/16/2016	Air	0.05 lb	Lithium Ion Batteries Including Lithium Ion Polymer Batteries	$0
Norfolk	7/10/2017	Air	0.03 g	Corrosive Liquids, N.O.S.	$0
Norfolk	9/1/2017	Air		Pesticides, Liquid, Toxic, Flammable, N.O.S. Flash Point Not Less Than 23 Degrees C	$0
Norfolk	12/14/2017	Air	0.00 cf	Carbon Dioxide	$0
Norfolk	2/12/2018	Air	0.03 g	Paint Related Material Including Paint Thinning, Drying, Removing, Or Reducing Compound	$0
Norfolk	5/9/2018	Air	0.00 g	Biological Substance, Category B	$0
Norfolk	6/28/2018	Highway	5.00 g	Hydrochloric Acid	$2,175
Norfolk	5/6/2019	Air		Fire Extinguishers Containing Compressed Or Liquefied Gas	$0
Norfolk	2/13/2020	Highway	50.00 g	Diesel Fuel	$10,150
Norfolk	9/10/2020	Air	0.26 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
					$425,847
Portsmouth	4/2/1998	Highway	15.00g	Ethylene Glycol Diethyl Ether	$500
Portsmouth	3/19/1999	Highway	400.00g	Dimethylethanolamine	$100,000
Portsmouth	9/20/1999	Highway	2.00g	Aluminum Chloride Solution	$0
Portsmouth	11/1/1999	Highway	30.00g	Sulfuric Acid	$30
Portsmouth	12/10/1999	Highway, 1 injury	1.00g	Sulfuric Acid	$1
Portsmouth	2/17/2000	Highway	0.08gg	Formaldehyde Solutions	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Portsmouth	8/4/2000	Highway	5.00g	Printing Ink Flammable	$0
Portsmouth	8/15/2001	Highway	1.00g	Resin	$0
Portsmouth	1/31/2002	Highway	0.25g	Chloroform	$500
Portsmouth	3/7/2002	Highway	0.06g	Organic Peroxide Type B Liquid	$0
Portsmouth	2/12/2003	Highway	5.00g	Fuel Aviation Turbine Engine	$18
Portsmouth	3/25/2003	Highway	2.00g	Fuel Aviation Turbine Engine	$9
Portsmouth	9/4/2003	Highway	1.00g	Gasoline	$10
Portsmouth	11/13/2003	Highway	0.20g	Butyl Acetates	$70
Portsmouth	12/12/2003	Highway	5.00g	Compound Cleaning Liquid	$0
Portsmouth	1/5/2004	Highway	15.00g	Fuel Aviation Turbine Engine	$52
Portsmouth	2/22/2005	Highway	10.00g	Paint	$8,100
Portsmouth	10/20/2005	Highway	7.50g	Helium Refrigerated Liquid	$0
Portsmouth	10/24/2005	Highway	100.00g	Paint Related Material	$0
Portsmouth	4/26/2007	Highway	0.04g	Corrosive Liquids Toxic	$0
Portsmouth	5/12/2007	Highway	25.00g	Hydrochloric Acid Solution	$0
Portsmouth	5/15/2007	Highway	10.00g	Gasoline	$4,030
Portsmouth	7/12/2007	Highway	1.00g	Paint	$0
Portsmouth	8/8/2007	Highway	0.50g	Paint	$0
Portsmouth	10/24/2007	Highway	0.25g	Paint	$0
Portsmouth	2/11/2008	Highway	0.05g	Paint	$0
Portsmouth	6/27/2008	Highway	0.25g	Paint	$0
Portsmouth	7/3/2008	Highway	0.25g	Hydrogen Peroxide	$0
Portsmouth	8/21/2008	Highway	0.13g	Paint	$0
Portsmouth	9/26/2008	Highway	10.00g	Environmentally Hazmat	$0
Portsmouth	10/24/2008	Highway	0.02g	Amines Liquid Corrosive	$0
Portsmouth	3/26/2009	Rail	-	Air Bag Inflators	$0
Portsmouth	8/13/2009	Highway	1.00g	Hydrochloric Acid Solution	$0
Portsmouth	9/17/2009	Highway	0.50g	Corrosive Liquid Basic Organic	$0
Portsmouth	9/28/2009	Highway	1.00g	Paint	$0
Portsmouth	4/28/2010	Highway	0.06g	Corrosive Liquid Acidic Organic	$0
Portsmouth	9/10/2010	Highway	3.00g	Corrosive Liquid Acidic Organic	$0
Portsmouth	1/4/2011	Highway	500.00g	Sulfuric Acid	$5,373
Portsmouth	2/28/2012	Highway, 1 injury	200.00g	Sodium Hydroxide	$0
Portsmouth	8/14/2012	Highway	-	Compressed Gas	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Portsmouth	10/7/2012	Highway	0.05g	Corrosive Liquid, Basic, Inorganic	$0
Portsmouth	5/9/2013	Highway	5.00g	Paint Related Material	$0
Portsmouth	9/26/2013	Highway	5.00g	Corrosive Liquid, Basic, Inorganic	$0
Portsmouth	10/31/2013	Highway	0.00g	Sulfuric Acid	$0
Portsmouth	4/17/2017	Highway	0.05 g	Ethylene Oxide Or Ethylene Oxide With Nitrogen Up To A Total Pressure Of 1mpa (10 Bar) At 50 Degrees C	$0
Portsmouth	12/14/2017	Highway	0.01 g	Corrosive Liquids, N.O.S.	$1,000
Portsmouth	9/19/2018	Highway	5.00 g	Corrosive Liquids, N.O.S.	$3,000
Portsmouth	5/5/2020	Highway	2.00 g	Isopropyl Alcohol	$0
Portsmouth	7/1/2020	Highway	0.03 g	Corrosive Liquid, Acidic, Organic, N.O.S.	$0
Portsmouth	7/1/2020	Highway	10.00 g	Corrosive Liquid, Acidic, Organic, N.O.S.	$0
Portsmouth	9/6/2016	Rail	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$5,000
Portsmouth	10/19/2016	Rail	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$5,000
					$132,693
Smithfield (Isle of Wight Co.)	2/7/2012	Highway	800.00g	Diesel Fuel	$221,000
					$221,000
Suffolk	8/10/1999	Highway	3.00g	Formaldehyde Solutions	$500
Suffolk	8/6/2000	Highway	233.13g	Chlorine	$0
Suffolk	1/8/2001	Highway	10.00cf	Ammonia Anhydrous Liquefied	$40,012
Suffolk	4/17/2001	Highway	75.00g	Fuel Oil No. 1 2 4 5 Or 6	$3,936
Suffolk	8/20/2001	Highway	1287.10g	Methanol	$0
Suffolk	1/27/2002	Highway	7700.00g	Gasoline	$220,500
Suffolk	9/30/2002	Rail	2.00g	Acrylic Acid Inhibited	$0
Suffolk	11/20/2005	Highway	4.01cf	Liquefied Petroleum Gas	$21,030
Suffolk	3/16/2006	Rail	0.00g	Sodium Hydroxide Solution	$7,000
Suffolk	10/31/2006	Highway, 2 injuries	20.00g	Petroleum Gases Liquefied	$0
Suffolk	10/2/2009	Highway	5.00g	Hypochlorite Solutions	$0
Suffolk	9/21/2011	Highway	0.10g	Organic Peroxide Type D, Liquid	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Suffolk	1/10/2017	Highway	0.00 g	Denatured Alcohol	$36,700
Suffolk	5/22/2017	Highway	1.00 g	Sodium Hypochlorite, Solution	$2,000
Suffolk	8/21/2018	Highway	0.02 cf	Ammonia Anhydrous	$0
					$331,678
Surry County	10/28/2010	Highway	5.00 g	Flammable Liquids, N.O.S.	$5,000
Surry County	2/21/2014	Highway	10.00 g	Sodium Hydroxide, Solution	$2,550
					$7,550
Virginia Beach	2/11/1998	Highway	4.00g	Potassium Hydroxide Solution	$100
Virginia Beach	4/13/1998	Highway	0.75 lb	Carbamate Pesticides Solid Toxic	$400
Virginia Beach	8/12/1998	Air	0.03g	Gasoline	$0
Virginia Beach	12/7/1998	Air		Gasoline	$0
Virginia Beach	2/22/1999	Highway	20.00g	Fuel Aviation Turbine Engine	$670
Virginia Beach	5/11/1999	Highway	0.01g	Hydrochloric Acid Solution	$250
Virginia Beach	5/19/1999	Air	0.79g	Paint	$0
Virginia Beach	6/17/1999	Air, 1 injury		Styrene Monomer Inhibited	$0
Virginia Beach	7/9/1999	Highway	0.06g	Hydrochloric Acid Solution	$330
Virginia Beach	7/29/1999	Highway	0.06g	Hydrochloric Acid Solution	$220
Virginia Beach	8/9/1999	Highway	0.50g	Hydrochloric Acid Solution	$120
Virginia Beach	8/31/1999	Highway	0.06g	Organic Peroxide Type B Liquid	$220
Virginia Beach	11/5/1999	Highway	1.00 lb	Sodium Hydrosulfide	$145
Virginia Beach	12/9/1999	Highway	1.50g	Toxic Liquids Organic	$225
Virginia Beach	1/30/2000	Air	5.28g	Resin	$0
Virginia Beach	4/27/2000	Highway	0.50g	Corrosive Liquids	$150
Virginia Beach	8/21/2000	Highway	0.25g	Organic Peroxide Type F Liquid	$100
Virginia Beach	10/4/2000	Highway	0.05g	Corrosive Liquids Toxic	$140
Virginia Beach	12/27/2000	Highway	0.02g	Flammable Liquids	$350
Virginia Beach	2/26/2001	Highway	0.50g	Compound Cleaning Liquid	$200
Virginia Beach	6/18/2001	Highway	0.02g	Organic Peroxide Type F Liquid	$300
Virginia Beach	7/23/2001	Highway	0.50g	Adhesives	$200
Virginia Beach	7/24/2001	Highway	0.03g	Caustic Alkali Liquids	$1
Virginia Beach	10/5/2001	Highway		Dichloromethane	$2,550
Virginia Beach	12/19/2001	Air	0.26g	Fuel Aviation Turbine Engine	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Virginia Beach	2/17/2002	Highway, 1 injury	0.07cf	Petroleum Gases Liquefied	$0
Virginia Beach	2/20/2002	Highway	0.02g	Carbamate Pesticides Liquid Toxic	$80
Virginia Beach	3/7/2002	Highway	0.02g	Organophosphorus Pesticides	$200
Virginia Beach	3/14/2002	Highway	1.00g	Corrosive Liquid Basic Inorganic	$70
Virginia Beach	4/3/2002	Highway	0.50g	Amines Liquid Corrosive	$200
Virginia Beach	4/16/2002	Highway	0.03g	Ammonia Solutions	$225
Virginia Beach	5/13/2002	Highway	0.02g	Toxic Liquids Organic	$240
Virginia Beach	7/12/2002	Highway	1.00 lb	Organophosphorus Pesticides	$1,550
Virginia Beach	8/6/2002	Highway	0.13g	Resin Solution Flammable	$100
Virginia Beach	6/25/2003	Highway	5.00g	Compound Cleaning Liquid	$185
Virginia Beach	8/8/2003	Highway	0.50g	Petroleum Gases Liquefied	$33,500
Virginia Beach	12/2/2003	Highway	0.05g	Petroleum Distillates	$105
Virginia Beach	12/8/2003	Highway	0.08g	Gas Oil	$120
Virginia Beach	1/6/2004	Highway	0.19 lb	Resorcinol	$0
Virginia Beach	2/19/2004	Highway	0.02g	Isopropanol	$105
Virginia Beach	3/1/2004	Highway	0.50g	Hydrochloric Acid Solution	$195
Virginia Beach	3/19/2004	Highway	4.00g	Environmentally Hazmat	$145
Virginia Beach	3/29/2004	Highway	0.38 lb	Resorcinol	$0
Virginia Beach	8/18/2004	Highway	30.00 lb	Fire Extinguishers	$135
Virginia Beach	11/11/2004	Highway	0.05g	Organic Peroxide Type D Liquid	$1
Virginia Beach	12/8/2004	Highway	0.02g	Corrosive Liquids	$125
Virginia Beach	12/9/2004	Highway	0.26g	Corrosive Liquid Acidic Organic	$105
Virginia Beach	1/31/2005	Highway	2.00 lb	Calcium Hypochlorite Hydrated	$0
Virginia Beach	3/10/2005	Highway	0.09g	Paint	$0
Virginia Beach	4/15/2005	Highway	0.13g	Paint	$0
Virginia Beach	8/22/2005	Highway	0.03g	Toluene	$0
Virginia Beach	9/12/2005	Highway	0.01g	Flammable Liquids	$0
Virginia Beach	9/12/2005	Highway	1.00g	Paint	$0
Virginia Beach	9/23/2005	Highway	1.00g	Paint	$0
Virginia Beach	10/19/2005	Highway	0.75g	Paint	$0
Virginia Beach	11/1/2005	Highway	0.06g	Compound Cleaning Liquid	$0
Virginia Beach	3/20/2006	Highway	1.00g	Paint	$0
Virginia Beach	5/22/2006	Highway	0.50g	Amines Liquid Corrosive	$0
Virginia Beach	6/2/2006	Highway	0.06g	Corrosive Liquid Acidic Inorganic	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Virginia Beach	6/27/2006	Highway	0.13g	Methanol	$0
Virginia Beach	7/13/2006	Highway	0.06 lb	Fire Extinguishers	$0
Virginia Beach	7/28/2006	Highway	0.05g	Corrosive Liquids	$0
Virginia Beach	9/21/2006	Highway	12.83cf	Liquefied Petroleum Gas	$0
Virginia Beach	9/29/2006	Highway	0.25g	Heptanes	$0
Virginia Beach	10/17/2006	Highway	1.50 lb	Consumer Commodity	$0
Virginia Beach	2/22/2007	Highway	0.09g	Potassium Hydroxide Solution	$0
Virginia Beach	3/22/2007	Highway	0.26g	Flammable Liquids	$0
Virginia Beach	4/19/2007	Highway	0.25g	Corrosive Liquids	$0
Virginia Beach	4/24/2007	Highway	1.00g	Acetic Acid Glacial	$0
Virginia Beach	5/24/2007	Highway	1.00 lb	Fire Extinguishers	$0
Virginia Beach	6/15/2007	Highway	0.50 lb	Fire Extinguishers	$0
Virginia Beach	8/21/2007	Highway	0.13g	Paint	$0
Virginia Beach	10/19/2007	Highway	0.27g	Aerosols Non-Flammable	$0
Virginia Beach	12/4/2007	Highway	0.38 lb	Batteries Wet Filled	$0
Virginia Beach	4/9/2008	Highway	0.06g	Paint	$0
Virginia Beach	4/24/2008	Highway	0.31 lb	Fire Extinguishers	$0
Virginia Beach	6/26/2008	Highway	0.13g	Petroleum Gases Liquefied	$0
Virginia Beach	9/3/2008	Highway	0.09g	Corrosive Liquid Acidic Organic	$0
Virginia Beach	9/4/2008	Highway	1.00g	Paint	$0
Virginia Beach	9/29/2008	Highway	-	Aerosols Flammable	$0
Virginia Beach	10/9/2008	Air	0.02g	Corrosive Liquids	$0
Virginia Beach	10/15/2008	Highway	2.00 lb	Consumer Commodity	$0
Virginia Beach	10/29/2008	Highway	0.13g	Ethanol (Ethyl Alcohol)	$0
Virginia Beach	11/6/2008	Highway	1.00 lb	Paint	$0
Virginia Beach	3/11/2009	Highway	0.19 lb	Consumer Commodity	$0
Virginia Beach	4/2/2009	Highway	1.63 lb	Consumer Commodity	$0
Virginia Beach	6/21/2009	Highway	15.00g	Gasoline	$10,050
Virginia Beach	6/24/2009	Highway	0.14g	Paint Related Material	$0
Virginia Beach	7/7/2009	Highway	0.08g	Corrosive Liquids	$0
Virginia Beach	9/2/2009	Air	0.26g	Paint	$0
Virginia Beach	9/3/2009	Highway	1.00g	Paint Related Material	$0
Virginia Beach	10/6/2009	Highway	0.53g	Sodium Hydroxide Solution	$0
Virginia Beach	10/19/2009	Highway	0.14g	Aerosols Flammable	$0
Virginia Beach	10/22/2009	Highway	0.08g	Paint	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Virginia Beach	12/10/2009	Highway	0.05g	Consumer Commodity	$0
Virginia Beach	12/18/2009	Highway	5.00g	Alcohols	$0
Virginia Beach	12/18/2009	Air	0.03g	Biological Substance Category B	$0
Virginia Beach	3/2/2010	Highway	0.63g	Isopropyl Alcohol	$0
Virginia Beach	3/10/2010	Highway	0.31 lb	Fire Extinguishers	$0
Virginia Beach	3/10/2010	Highway	0.02g	Paint Related Material	$0
Virginia Beach	3/15/2010	Highway	0.03g	Methyl Ethyl Ketone	$0
Virginia Beach	3/24/2010	Highway	0.03g	Amines Liquid Corrosive	$0
Virginia Beach	4/19/2010	Highway	0.50 lb	Fire Extinguishers	$0
Virginia Beach	5/7/2010	Highway	0.04g	Aerosols Flammable	$0
Virginia Beach	5/12/2010	Highway	0.50g	Coating Solution	$0
Virginia Beach	5/24/2010	Highway	0.00g	Consumer Commodity	$0
Virginia Beach	5/24/2010	Highway	0.13g	Hydrochloric Acid Solution	$0
Virginia Beach	5/28/2010	Highway	0.02g	Paint Related Material	$0
Virginia Beach	6/15/2010	Highway	0.02g	Organophosphorus Pesticides	$0
Virginia Beach	7/2/2010	Highway	0.01g	Paint	$0
Virginia Beach	7/9/2010	Air	0.13g	Corrosive Liquids	$0
Virginia Beach	7/26/2010	Air	0.14g	Aerosols Flammable	$0
Virginia Beach	8/17/2010	Highway	1.00g	Caustic Soda Solution	$0
Virginia Beach	9/20/2010	Highway	0.23g	Ethyl Methyl Ketone	$0
Virginia Beach	3/18/2011	Highway	0.08g	Corrosive Liquids	$0
Virginia Beach	7/1/2011	Highway	0.13g	Paint Related Material	$0
Virginia Beach	7/11/2011	Highway	0.09g	Aerosols, Poison, Packing Group Iii	$0
Virginia Beach	8/12/2011	Highway	0.38g	Amines Liquid, Corrosive	$0
Virginia Beach	8/15/2011	Highway	1.00g	Paint Related Material	$0
Virginia Beach	9/7/2011	Highway	0.25g	Hydrogen Peroxide	$0
Virginia Beach	9/23/2011	Highway	2.00g	Paint Related Material	$0
Virginia Beach	11/1/2011	Highway	20.00g	Coating Solution	$0
Virginia Beach	11/16/2011	Air	0.01g	Dangerous Goods In Machinery	$0
Virginia Beach	11/21/2011	Highway	358.00g	Diesel Fuel	$6,450
Virginia Beach	12/20/2011	Air	0.08g	Dangerous Goods In Machinery	$0
Virginia Beach	1/16/2012	Highway	3.25g	Chloroform	$0
Virginia Beach	2/9/2012	Highway	0.01g	Resin Solution, Flammable	$0
Virginia Beach	3/6/2012	Highway	0.25g	Paint Related Material	$0
Virginia Beach	3/12/2012	Highway	0.25g	Isopropyl Alcohol	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Virginia Beach	4/5/2012	Highway	0.02g	Isopropanol	$0
Virginia Beach	4/16/2012	Highway	2.00g	Hydrochloric Acid	$0
Virginia Beach	5/14/2012	Air	0.07g		$0
Virginia Beach	5/16/2012	Highway	0.04g	Corrosive Liquid, Acidic, Inorganic	$0
Virginia Beach	8/28/2012	Highway	0.02g	Paint	$0
Virginia Beach	9/20/2012	Air	0.06g		$0
Virginia Beach	1/16/2013	Highway	0.25g	Flammable Liquids	$0
Virginia Beach	3/15/2013	Highway	0.31g	Aerosols, Flammable	$0
Virginia Beach	4/23/2013	Highway	2.00g	Paint Related Material	$0
Virginia Beach	7/23/2013	Highway	1.00g	Paint Related Material	$0
Virginia Beach	9/13/2013	Highway	0.50g	Paint Related Material	$0
Virginia Beach	10/25/2013	Highway	1.00 lb	Smokeless Powder For Small Arms	$0
Virginia Beach	11/23/2013	Air	0.07cf	Carbon Dioxide	$0
Virginia Beach	4/11/2014	Highway	0.25g	Compounds, Tree Killing, Liquid	$0
Virginia Beach	5/30/2014	Highway	1.00g	Resin Solution, Flammable	$0
Virginia Beach	6/6/2014	Highway	0.04g	Flammable Liquids, Toxic	$0
Virginia Beach	6/24/2014	Highway	1.00g	Corrosive Liquid, Basic, Inorganic	$0
Virginia Beach	7/31/2014	Highway	1.00g	Acetone	$0
Virginia Beach	8/5/2014	Air	0.13g	Paint	$0
Virginia Beach	11/13/2014	Highway	1.00g	Denatured Alcohol	$0
Virginia Beach	11/25/2014	Highway	0.09g	Hydrogen Peroxide And Peroxyacetic Acid Mixtures	$0
Virginia Beach	5/12/2015	Highway	0.00g	Corrosive Liquid, Basic, Inorganic	$0
Virginia Beach	7/8/2015	Highway	1.25g	Flammable Liquids	$0
Virginia Beach	7/16/2015	Highway	2.67cf	Lpg	$0
Virginia Beach	7/20/2015	Highway	0.00g	Corrosive Liquid, Acidic, Inorganic	$0
Virginia Beach	4/19/2016	Highway	0.01 g	Resin Solution, Flammable	$2,000
Virginia Beach	8/19/2015	Highway	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	11/5/2015	Highway	0.50 g	Flammable Liquids, N.O.S.	$0
Virginia Beach	2/5/2016	Highway	0.25 g	Flammable Liquids, N.O.S.	$0
Virginia Beach	6/9/2016	Highway	0.02 g	Corrosive Liquid, Basic, Inorganic, N.O.S.	$0
Virginia Beach	10/19/2016	Highway	0.25 g	Sodium Hydroxide, Solution	$0
Virginia Beach	10/12/2016	Highway	18.75 g	Liquefied Gas, N.O.S.	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Virginia Beach	10/3/2016	Highway	0.03 g	Sodium Hydroxide, Solution	$0
Virginia Beach	12/1/2016	Highway	5.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	4/17/2017	Highway	0.08 g	Sodium Hydroxide, Solution	$0
Virginia Beach	6/5/2017	Highway	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	6/19/2017	Highway	0.06 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	10/2/2017	Highway	15.00 g	Hypochlorite Solutions	$3,400
Virginia Beach	1/24/2018	Highway	10.00 g	Flammable Liquids, N.O.S.	$0
Virginia Beach	4/23/2018	Highway	0.19 lb	Batteries, Wet, Filled With Acid, Electric Storage	$0
Virginia Beach	3/5/2018	Highway	0.31 lb	Batteries, Wet, Filled With Acid, Electric Storage	$0
Virginia Beach	5/23/2018	Highway	0.03 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	5/23/2018	Highway	0.03 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	10/26/2018	Highway	1.00 g	Resin Solution, Flammable	$0
Virginia Beach	11/15/2018	Highway	0.01 g	Paint Related Material Including Paint Thinning, Drying, Removing, Or Reducing Compound	$0
Virginia Beach	11/29/2018	Highway	0.04 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	4/10/2019	Highway	8.00 lb	Batteries, Wet, Filled With Acid, Electric Storage	$0
Virginia Beach	7/9/2019	Highway	1.00 g	Sodium Hydroxide, Solution	$0
Virginia Beach	11/18/2019	Highway	0.04 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	12/11/2019	Highway	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	12/26/2019	Highway	1.00 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
				Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	
Virginia Beach	8/7/2020	Highway	0.01 g	Adhesives, Containing A Flammable Liquid	$0
Virginia Beach	8/12/2020	Highway	5.00 g	Butylene See Also Petroleum Gases, Liquefied	$0
Virginia Beach	10/20/2020	Highway	0.08 g	Paint Including Paint, Lacquer, Enamel, Stain, Shellac Solutions, Varnish, Polish, Liquid Filler And Liquid Lacquer Base	$0
Virginia Beach	11/10/2020	Highway	1.00 g	Adhesives, Containing A Flammable Liquid	$0
Virginia Beach	12/3/2020	Highway	0.59 g	Gasoline Includes Gasoline Mixed With Ethyl Alcohol, With Not More Than 10% Alcohol	$6,500
Virginia Beach	11/2/2015	Highway	1.00 g	Flammable Liquids, N.O.S.	$0
Virginia Beach	11/24/2015	Highway	0.04 g	Corrosive Liquid, Basic, Inorganic, N.O.S.	$0
Virginia Beach	12/17/2015	Air	-	Carbon Dioxide, Solid Or Dry Ice	$0
Virginia Beach	5/1/2018	Air	-	Carbon Dioxide, Solid Or Dry Ice	$0
Virginia Beach	9/25/2018	Air	0.00 g	Engines Internal Combustion, Or Engines, Fuel Cell, Flammable Liquid Powered	$0
Virginia Beach	10/15/2020	Highway	50.00 g	Gasoline Includes Gasoline Mixed With Ethyl Alcohol, With Not More Than 10% Alcohol	$6,350
Virginia Beach	1/8/2016	Highway	-	Carbon Dioxide, Solid Or Dry Ice	$0
Virginia Beach	3/22/2016	Highway	2.50 g	Flammable Liquids, N.O.S.	$0
Virginia Beach	9/9/2016	Air	-	Carbon Dioxide, Solid Or Dry Ice	$0
Virginia Beach	4/6/2017	Highway	0.00 g	Ethanol Solutions	$0
Virginia Beach	5/2/2017	Highway	-	Aerosols, Flammable, (Each Not Exceeding 1 L Capacity)	$0
Virginia Beach	5/16/2018	Highway	-	Carbon Dioxide, Solid Or Dry Ice	$0
Virginia Beach	7/16/2018	Highway	0.00 g	Corrosive Liquids, N.O.S.	$0
Virginia Beach	10/19/2018	Highway	-	Carbon Dioxide, Solid Or Dry Ice	$0
Virginia Beach	12/17/2018	Highway	-	Lithium Ion Batteries Contained In Equipment Including Lithium Ion Polymer Batteries	$0
Virginia Beach	12/17/2018	Highway	0.01 g	Alcohols, N.O.S.	$0
Virginia Beach	11/5/2019	Highway	0.50 g	Hydrogen Peroxide And Peroxyacetic Acid Mixtures, Stabilized With Acids, Water, And Not More Than 5 Percent Peroxyacetic Acid	$0
Virginia Beach	11/26/2019	Highway	-	Dry Ice	$0
Virginia Beach	12/7/2019	Highway	5.00 lb	Batteries, Wet, Filled With Acid, Electric Storage	$0
Virginia Beach	8/28/2020	Highway	-	Ethyl Alcohol	$0

HAZARDOUS MATERIALS INCIDENTS (1998 – 2021)					
Community	**Date**	**Mode of Transport & Injuries**	**Quantity Released**	**Commodity**	**Damages**
Virginia Beach	9/2/2020	Highway	0.50 g	Corrosive Liquid, Acidic, Inorganic, N.O.S.	$0
Virginia Beach	9/30/2020	Highway	0.09 gg	Hydrogen, Peroxide, Aqueous Solutions With More Than 40 Percent But Not More Than 60 Percent Hydrogen Peroxide (Stabilized As Necessary)	$0
Virginia Beach	10/20/2020	Highway	0.79	Isopropanol Or Isopropyl Alcohol	$0
Virginia Beach	11/20/2020	Highway	0.00 g	Isopropanol Or Isopropyl Alcohol	$0
Virginia Beach	11/28/2020	Highway	0.50 g	Isopropyl Alcohol	$0
					$78,807
Williamsburg	4/27/2001	Highway	475.00g	Gasoline	$6,000
Williamsburg	2/18/2003	Highway	1.00g	Paint Related Material	$50
Williamsburg	9/26/2008	Highway	15.00g	Gasoline	$795
					$6,845
Yorktown (York Co.)	8/4/2006	Highway	25.00g	Fuel Oil (NO. 1, 2, 4, 5, Or 6)	$0
Yorktown (York Co.)	1/31/2014	Highway	160.00 lb	Environmentally Hazardous Substances, Solid	$0

Source: U.S. Department of Transportation, May 2021

APPENDIX J – ARCHIVED MITIGATION ACTIONS

The following mitigation actions were previously adopted by these communities and are included for archival purposes.

TOWN OF BOYKINS

TOWN OF BOYKINS MITIGATION ACTION 1	
Continue to support ongoing North Carolina / Virginia railroad efforts to widen and deepen ditches on both sides of railroad tracks south of Highway 186 to S. Railroad St., then back on Tarrara Swamp.	
BACKGROUND INFORMATION	
Site and Location:	Highway 186 to South Railroad Street
Benefit Cost:	This area floods with high frequency and may be impeding free-flow of water to and through Tarrara Swamp.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	No cost to town
Potential Funding Sources:	None needed
Lead Agency/Department Responsible:	Town of Boykins Mayor's Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Elimination of standing water in this area will also benefit mosquito control efforts.	

TOWN OF BOYKINS MITIGATION ACTION 2	
Continue to coordinate with Dominion Power on upgrading all poles, wires, attachments and generators (complete upgrade of services), removing all poles from swamp area and mitigating tree limb damage.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Frequent outages during wind, thunderstorms and ice events affect residents and emergency response capabilities.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tropical/Coastal Storm, Winter Storm, Wildfire
Goal(s) Addressed:	Goal 1, Objective 1.3; Goal 3, Objective 3.4
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	None to town
Potential Funding Sources:	DHS: HMGP
Lead Agency/Department Responsible:	Town of Boykins Mayor's Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Significant progress has been made on this initiative, but additional tasks remain.	

TOWN OF BOYKINS MITIGATION ACTION 3	
Broaden outreach for and increase participation in Reverse 911 citizen notification system for multiple hazards.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	A coordinated warning system for multiple hazards gives citizens time and opportunity to prepare for an event and to protect life and property.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Town of Boykins Mayor's Office
Implementation Schedule:	Within 4 years
ADDITIONAL COMMENTS	
This action could be coordinated with the County.	

TOWN OF BOYKINS MITIGATION ACTION 4	
Coordinate with Southampton County and the American Red Cross on public education and awareness campaigns to ensure citizens are knowledgeable of protective preparedness and mitigation activities that will lessen the potential impacts of disasters. Include information about the availability and value of flood insurance through the Town's participation in the National Flood Insurance Program (NFIP).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Low-cost protection measures help citizens help themselves.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 2, and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative; American Red Cross; FEMA materials provided at no charge; Virginia CFPF
Lead Agency/Department Responsible:	Town of Boykins
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified, specifically related to driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages. Distribution of information on the value and availability of flood insurance is representative of the Town's Strategy for Continued Participation in the NFIP.	

TOWN OF BOYKINS MITIGATION ACTION 5	
Acquire floodprone structures and convert land to open space. Other mitigation measures may include elevation, retrofit, mitigation reconstruction projects, or relocation of floodprone structures.	
BACKGROUND INFORMATION	
Site and Location:	Flood-prone areas throughout town
Benefit Cost:	Additional flood-prone structures targeted for mitigation may be identified after future disasters.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	$50,000 for land; $8,000 for each demolition
Potential Funding Sources:	DHS: HMGP, BRIC, FMA; Virginia CFPF; USACE: FPMS
Lead Agency/Department Responsible:	Town of Boykins Mayor's Office
Implementation Schedule:	To be determined
ADDITIONAL COMMENTS	
Several high priority flood-prone homes on Spring Street have been purchased and the land converted to open space.	

TOWN OF BRANCHVILLE

TOWN OF BRANCHVILLE MITIGATION ACTION 1	
Enhance the community center's ability to serve as an assembly point, distribution and information center during disasters, whether long- or short-term events.	
BACKGROUND INFORMATION	
Site and Location:	Community Center in the Town of Branchville
Benefit Cost:	The center has served as a temporary shelter, but is not equipped to do so safely. Benefits accrue when residents are protected and do not have to be housed in motels.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Objectives 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	DHS: BRIC, HMGP, HMGP 5% Initiative, HSGP; Virginia CFPF; ARPA funds
Lead Agency/Department Responsible:	Town of Branchville; Southampton County
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
The Community Center has served as a short term staging area for distributing donated goods and foods to disaster victims during Hurricane Isabel in 2003, a 2002 HAZMAT incident, an ice storm in 2000, and Hurricane Floyd in 1999. However, this building is not equipped with a big enough kitchen, stockpiled foods, blankets and beds to accommodate evacuees or displaced residents at times when Branchville becomes isolated.	

TOWN OF BRANCHVILLE MITIGATION ACTION 2	
	**Coordinate with Southampton County regarding expansion of the culvert under the local CSX railroad trestle to minimize future flooding events.**
BACKGROUND INFORMATION	
Site and Location:	The culvert is located 0.2 miles east of the Town of Branchville on Highway 186.
Benefit Cost:	Hurricane Isabel-2003, Hurricane Floyd-1999, and other major storm events have routinely flooded residential areas in the Whitehead Road area and along Highway 666. Expansion of the culvert would reduce the annual flood damages in the area. On Whitehead Road, flood waters have come up to houses, flooded garages, and inundated areas underneath houses. Along Highway 666 the water has flooded areas surrounding houses, but most are elevated 12-18 inches above grade. Flood damages have not been confirmed. Flood waters have also reached the nearby church, with no damages confirmed. During Hurricane Floyd, caskets floated out of the ground.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2, 1.3, 1.4, 1.5; Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined; requires engineering study
Potential Funding Sources:	DHS: BRIC, HMGP; CSX
Lead Agency/Department Responsible:	Town of Branchville and Southampton County
Implementation Schedule:	Within 4 years

ADDITIONAL COMMENTS

A small culvert (approximately 5’ x 4’) on the CSX railroad track located just outside of town caused widespread flooding in the north areas of Whitehead Road and has resulted in property damages. Railroad trestle blocks up, and “acts like a dam” causing the north side of Highway 186 to flood. Future flooding could cause repeated damages to residential structures in the area. Most flooding problems occur in unincorporated Southampton County – not in town limits – but one of the creeks is within town limits. People look to the Town for help.

TOWN OF BRANCHVILLE MITIGATION ACTION 3	
Coordinate with Southampton County and the American Red Cross on extensive public education and awareness campaigns to ensure citizens are knowledgeable of protective preparedness and mitigation activities that will lessen the potential impacts of disasters. Include information about the availability and value of flood insurance through the Town's participation in the National Flood Insurance Program (NFIP).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Low-cost protection measures help citizens help themselves.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 2, and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative; American Red Cross; FEMA materials provided at no charge; Virginia CFPF
Lead Agency/Department Responsible:	Town of Branchville
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified, specifically related to driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages. Distribution of information on the value and availability of flood insurance is representative of the Town's Strategy for Continued Participation in the NFIP. Distribution of information on the value and availability of flood insurance is considered a strategy for continued participation in the NFIP.	

TOWN OF BRANCHVILLE MITIGATION ACTION 4	
Educate town residents what can be expected following major disaster events and how to be prepared to be on their own for at least 72 hours before outside help arrives.	
BACKGROUND INFORMATION	
Site and Location:	Town of Branchville and surrounding communities
Benefit Cost:	In both Hurricane Isabel, 2003, and Hurricane Floyd, 1999, Branchville residents would have benefitted from better knowledge about how to prepare.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Drought, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 2, Objective 2.1
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Town of Branchville
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	

TOWN OF BRANCHVILLE MITIGATION ACTION 5	
Request, gather and assist in distribution of information regarding regional evacuation plans in Virginia *and* North Carolina.	
BACKGROUND INFORMATION	
Site and Location:	Town of Branchville and surrounding communities
Benefit Cost:	Branchville resources are limited and the community is unable to house evacuees from outside the immediate area.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tropical/Coastal Storm, Flooding, Winter Storm, Wildfire, Hazardous Materials Incident
Goal(s) Addressed:	Goal 2; Goal 3, Objective 3.1, 3.4
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time; and limited copying costs
Potential Funding Sources:	VDEM, NC Division of Emergency Management, Virginia Department of Transportation
Lead Agency/Department Responsible:	Town of Branchville; Southampton County; HRPDC
Implementation Schedule:	Within 5 years
ADDITIONAL COMMENTS	
During Hurricanes Isabel and Floyd, many evacuees from North Carolina ended up in Branchville for food, lodging and other needs. However, the Town was isolated from other major cities and lacked resources to accommodate evacuees. It is necessary to distribute information regionally on recognized evacuation routes to better guide evacuees from North Carolina, and to stockpile maps and road signs and other information about official emergency shelters.	

TOWN OF BRANCHVILLE MITIGATION ACTION 6	
Prepare structure-specific plan to protect repetitively flooded structures from flood damage. Actions could include floodproofing retrofits, elevation of structure and/or critical components, acquisition and then demolition, relocation or repurposing of structure(s). This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Townwide
Cost Benefit:	Average annual flood damages would be reduced through mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Winter Storm
Goal(s) Addressed:	Goal 1, Objective 1.1, 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; HSGP; Virginia CFPF
Lead Agency/Department Responsible:	Town Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF CAPRON

TOWN OF CAPRON MITIGATION ACTION 1	
Coordinate with Southampton County and the American Red Cross on extensive public education and awareness campaigns to ensure citizens are knowledgeable of protective preparedness and mitigation activities that will lessen the potential impacts of disasters.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Low-cost protection measures help citizens help themselves.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 2, and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP; American Red Cross; FEMA materials provided at no charge
Lead Agency/Department Responsible:	Town of Capron; Southampton County
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified regarding driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages.	

TOWN OF COURTLAND

TOWN OF COURTLAND MITIGATION ACTION 1	
Continue to implement stormwater drainage projects.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Courtland
Benefit Cost:	There have been multiple precipitation events, with excess stormwater causing damage to buildings, cars, cemetery plots and trees.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Landslide/Coastal Erosion
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2, 1.3, 1.4, 1.5
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	Project dependent
Potential Funding Sources:	DHS: HMGP; Virginia CFPF; ARPA
Lead Agency/Department Responsible:	Town of Courtland
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Recent progress has been made, but additional measures may be called for in the future, including use of an existing pond for drainage retention. VDOT has cleared lines, and regular maintenance and inspection is part of keeping the stormwater system operating well.	

TOWN OF COURTLAND MITIGATION ACTION 2	
Broaden outreach for and increase participation in Reverse 911 citizen notification system for multiple hazards.	
BACKGROUND INFORMATION	
Site and Location:	Throughout town
Benefit Cost:	A coordinated warning system for multiple hazards gives citizens time and opportunity to prepare for an event and to protect life and property.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Town of Courtland; Southampton County
Implementation Schedule:	As soon as possible
ADDITIONAL COMMENTS	
The Town is tied into the County's Reverse 911 system, but additional action is necessary to increase citizen activation.	

TOWN OF COURTLAND MITIGATION ACTION 3	
Evaluate and retrofit Courtland Elementary School to serve as a public shelter.	
BACKGROUND INFORMATION	
Site and Location:	Courtland Elementary School
Benefit Cost:	Additional public shelter would benefit evacuees in the region.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Tropical/Coastal Storm, Tornado, Winter Storm, Earthquake, Wildfire, Drought, Extreme Heat, Hazardous Materials Incident
Goal(s) Addressed:	Goal 1, Objective 1.2, 1.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS**:** BRIC, HGSP, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Town of Courtland and the American Red Cross
Implementation Schedule:	As soon as possible
ADDITIONAL COMMENTS	
This building has been identified as having potential to serve as a shelter. Some mitigation actions have been implemented, but additional retrofits are necessary.	

TOWN OF COURTLAND MITIGATION ACTION 4	
Coordinate with Southampton County and the American Red Cross on extensive public education and awareness campaigns to ensure citizens are knowledgeable of protective preparedness and mitigation activities that will lessen the potential impacts of disasters. Include information about the availability and value of flood insurance through the Town's participation in the National Flood Insurance Program (NFIP).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Low-cost protection measures help citizens help themselves.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 2, and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP; American Red Cross; FEMA materials provided at no charge
Lead Agency/Department Responsible:	Town of Courtland, Southampton County
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified related to driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages. Distribution of information on the value and availability of flood insurance is representative of the Town's Strategy for Continued Participation in the NFIP.	

TOWN OF COURTLAND MITIGATION ACTION 5	
Prepare structure-specific plan to protect repetitively flooded structures from flood damage. Actions could include floodproofing retrofits, elevation of structure and/or critical components, acquisition and then demolition, relocation or repurposing of structure(s). This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Townwide
Cost Benefit:	Average annual flood damages would be reduced through mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	High
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; HSGP; Virginia CFPF
Lead Agency/Department Responsible:	Town Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	
Town officials noted that there are no flood-prone town-owned structures of concern.	

TOWN OF IVOR

TOWN OF IVOR MITIGATION ACTION 1	
Conduct a public awareness campaign on burning laws in order to reduce the number of occurrences of wildfires.	
BACKGROUND INFORMATION	
Site and Location:	Ivor and surrounding areas identified as high risk for wildfire.
Benefit Cost:	Laws are designed to prevent high risk burning by property owners, so knowledge of those laws is critical to preventing wildfire. Benefits accrue through reduced wildfire damages.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$5,000 per year
Potential Funding Sources:	Virginia Department of Forestry (VDOF); DHS: HMGP 5% Initiative
Lead Agency/Department Responsible:	Town, in coordination with the Virginia Department of Forestry
Implementation Schedule:	Annually, prior to and during burning season
ADDITIONAL COMMENTS	
Work with VDOF to establish a more aggressive public awareness campaign to inform citizens of the burning laws and the consequences of breaking these laws.	

TOWN OF IVOR MITIGATION ACTION 2	
Establish buffer zones between residential construction and wooded areas in high wildfire risk zones.	
BACKGROUND INFORMATION	
Site and Location:	Ivor and surrounding areas identified as high risk for wildfire.
Benefit Cost:	Early identification of high wildfire zones during the development process allows easier incorporation of protection measures in the project design.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.6
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	Staff time
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Town, in coordination with Southampton County Department of Community Development
Implementation Schedule:	Within 2 years
ADDITIONAL COMMENTS	
Work with Southampton County Community Development staff to inform developers and individual homeowners if they are considering building in a high risk area for wildfire, and make suggestions on buffer zones for defensible space purposes.	

TOWN OF IVOR MITIGATION ACTION 3	
Coordinate with Southampton County and the American Red Cross on public education and awareness campaigns to ensure citizens are knowledgeable of protective preparedness and mitigation activities that will lessen the potential impacts of disasters. Include information about the availability and value of flood insurance through the Town's participation in the National Flood Insurance Program (NFIP).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Hurricane Isabel, 2003 Hurricane Floyd, 1999 Multiple winter storms, severe thunderstorms and hazardous material events
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 2, and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP; American Red Cross; FEMA materials provided at no charge
Lead Agency/Department Responsible:	Town of Ivor, Southampton County
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified related to driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages. Distribution of information on the value and availability of flood insurance is representative of the Town's Strategy for Continued Participation in the NFIP.	

TOWN OF IVOR MITIGATION ACTION 4	
Prepare structure specific plan to protect repetitively flooded structures from flood damage. Actions could include floodproofing retrofits, elevation of structure and/or critical components, acquisition and then demolition, relocation or repurposing of structure(s). This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Townwide
Cost Benefit:	Average annual flood damages would be reduced through mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Winter storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; HSGP; Virginia CFPF
Lead Agency/Department Responsible:	Town Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

TOWN OF NEWSOMS

TOWN OF NEWSOMS MITIGATION ACTION 1	
Coordinate with Southampton County and the American Red Cross on extensive public education and awareness campaigns to ensure citizens are knowledgeable of protective preparedness and mitigation activities that will lessen the potential impacts of disasters.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Low-cost protection measures help citizens help themselves.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 1, Goal 2, and Goal 3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative; American Red Cross; FEMA materials provided at no charge
Lead Agency/Department Responsible:	Town of Newsoms, Southampton County
Implementation Schedule:	Continuous
ADDITIONAL COMMENTS	
Particular life/safety concerns were identified related to driving on roads that have been or could be flooded, and promoting water conservation techniques during widespread power outages.	

TOWN OF NEWSOMS MITIGATION ACTION 2	
Broaden outreach for and increase participation in Reverse 911 citizen notification system for multiple hazards.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	A coordinated warning system for multiple hazards gives citizens time and opportunity to prepare for an event and to protect life and property. The existing siren system has limited capability and must be triggered from Courtland.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	All
Goal(s) Addressed:	Goal 2
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, HMGP 5% Initiative
Lead Agency/Department Responsible:	Town of Newsoms, Southampton County
Implementation Schedule:	Within 3 years
ADDITIONAL COMMENTS	
This action has been coordinated with the County; however additional action is required to increase citizen participation in the County's Reverse 911 system.	

TOWN OF NEWSOMS MITIGATION ACTION 3	
Implement projects to improve drainage as identified in Town's 2011 stormwater study.	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	An ongoing study will provide additional details regarding design storms, project costs and priorities.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Goal(s) Addressed:	Goal 1, Objectives 1.2, 1.3
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	DHS: BRIC, HGSP, HMGP, Virginia CFPF
Lead Agency/Department Responsible:	Town of Newsoms
Implementation Schedule:	Within 10 years
ADDITIONAL COMMENTS	

TOWN OF NEWSOMS MITIGATION ACTION 4	
Coordinate with the Virginia Department of Conservation and Recreation to resolve questions related to the Town's participation in the National Flood Insurance Program (NFIP).	
BACKGROUND INFORMATION	
Site and Location:	Throughout Town
Benefit Cost:	Citizens have expressed interest in purchasing flood insurance in areas not mapped as Special Flood Hazard Areas on the FIRM.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence
Goal(s) Addressed:	Goal 1
Priority (High, Moderate, Low):	High
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	None
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	Town of Newsoms with assistance from HRPDC and Virginia DCR
Implementation Schedule:	Within 1 year
ADDITIONAL COMMENTS	
Town officials believe that a resolution and an ordinance were passed in 2000 to gain acceptance into the NFIP; however, State officials and NFIP records do not show Newsoms as a participating jurisdiction.	

TOWN OF NEWSOMS MITIGATION ACTION 5	
Prepared structure-specific plan to protect repetitively flooded structures from flood damage. Actions could include joining NFIP, floodproofing retrofits, elevation of structure and/or critical components, acquisition and then demolition, relocation or repurposing of structure(s). This action includes Mitigation Reconstruction projects.	
BACKGROUND INFORMATION	
Site and Location:	Townwide
Cost Benefit:	Average annual flood damages would be reduced through mitigation actions.
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding, Sea Level Rise and Land Subsidence, Winter Storm
Goal(s) Addressed:	Goal 1, Objectives 1.1, 1.2
Priority (High, Moderate, Low):	Moderate
Impact on Socially Vulnerable Populations:	Moderate
Estimated Cost:	To be determined
Potential Funding Sources:	DHS: BRIC, HMGP, FMA, RFC; HSGP Note: these funding sources are not available until the Town joins the NFIP; Virginia CFPF
Lead Agency/Department Responsible:	Town Office
Implementation Schedule:	Ongoing
ADDITIONAL COMMENTS	

ONE CITY, ONE FUTURE

COMPREHENSIVE PLAN 2040

ADOPTED AUGUST 14, 2018

NEWPORT NEWS PLANNING

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Saundra N. Cherry, D. Min, Councilwoman

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Design: *Newport News Department of Communications - Graphics and Planning staff.*
Photo Acknowledgements: *Department of Parks, Recreation & Tourism and Planning staff.*

Resolution No. 13152-18

A RESOLUTION APPROVING THE *ONE CITY, ONE FUTURE 2040* COMPREHENSIVE PLAN FOR THE CITY OF NEWPORT NEWS, VIRGINIA.

WHEREAS, in 2008, the City of Newport News (the City) adopted the *Framework for the Future 2030* as its Comprehensive Plan; and

WHEREAS, in September 2013, a new comprehensive plan was initiated, *One City, One Future 2040*, after the concept was presented to City Council and endorsed; and

WHEREAS, the process involved an ambitious comprehensive planning initiative to establish a community-derived, coordinated vision for the City; and

WHEREAS, the process utilized during this planning initiative was a citizen-based strategic planning effort; and

WHEREAS, the *One City, One Future 2040* Comprehensive Plan was developed after an enormous commitment of time and effort by the staff and citizen volunteer participants; and

WHEREAS, the updated One City, One Future 2040 Comprehensive Plan is a consensus document which reflects the vision of the citizens, business owners and other stakeholders of Newport News concerning the physical development and services within the City and was organized around six themes: A Prosperous and Resilient City; A Sustainable City; An Accessible City; A Healthy and Safe City; A City That Respects Its Uniqueness; and, A City That Balances Good Places and New Spaces; and

WHEREAS, the *One City, One Future 2040* Comprehensive Plan Citizen Advisory Committee as well as the Planning Staff recommended a land use designation of Under-Study for property commonly known as the City Farm Property, on June 6, 2018, the Planning Commission voted to recommend to City Council that the land use designation for such property be changed to Parks & Recreation; and

WHEREAS, *the One City, One Future 2040* Comprehensive Plan has been advertised as required by law, public hearings have been held by the Planning Commission and by City Council, and the Newport News Planning Commission recommended adoption of the *One City, One Future 2040* Comprehensive Plan on June 6, 2018, with its recommended changes as detailed above; and

WHEREAS, the *One City, One Future 2040* Comprehensive Plan contains all elements required by state law to be included in a Comprehensive Plan. The City Council finds and concludes that the *One City, One Future 2040* Comprehensive Plan meets the state law requirements for a Comprehensive Plan in accordance with Virginia Code § 15.2-2223 (1950, as amended), with such requirements being primarily concerned with the physical development of a jurisdiction.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Newport News, Virginia, that it hereby approves the One City, One Future 2040 Comprehensive Plan as the City's new Comprehensive Plan to include the land use designation of Parks and Recreation for the property commonly known as the City Farm Property

PASSED BY THE COUNCIL OF THE CITY OF NEWPORT NEWS ON AUGUST 14, 2018

Mabel Washington Jenkins, MMC
City Clerk

McKinley L. Price, DDS
Mayor

ONE CITY, ONE FUTURE

The ***One City, One Future Comprehensive Plan*** *i*s to be used by all members of the community, as well as any other person or organization interested in the future of Newport News. Our citizens and officials have prepared this plan to be a useful, easy-to-read guide to our future. Anyone looking at the plan should understand where we are currently; where we want to go in the future; and how we plan to get there. The ***One City, One Future Comprehensive Plan*** is provided in both hard copy and digital formats to ensure that all stakeholders can easily access and maneuver through the document to help the City move forward and achieve the dream.

BUILDING OUR FUTURE
ONE BLOCK AT A TIME

Preface

Newport News is a diverse community of people and neighborhoods that has grown from a history of shipbuilding and military influences to become the fifth largest city in Virginia. We became a city in 1958 with the merger of the cities of Newport News and Warwick.[1] Our shipbuilding legacy has grown to become Huntington Ingalls Industries, America's largest supplier of military ships. We have viable military installations in Joint Base Langley-Eustis and Naval Weapon Station Yorktown. We support major employers in the manufacturing and research and technology sectors including Canon Virginia, Continental, and the Thomas Jefferson National Accelerator Facility. We are home to Riverside Regional Medical Center, the Greater Peninsula's[2] most comprehensive medical facility, and to Christopher Newport University, ranked second in the 2014 Up-and-Coming Schools (Regional Universities [South]) list (U.S. News & World Report, 2014).

Newport News has experienced positive population and economic growth over the decades as we maintained our status as the urban center on the Greater Peninsula. But, as we have matured as a major city, we have begun to experience some of the same challenges other major urban areas across the nation are facing: an aging housing stock, aging and outdated transportation infrastructure, and increased traffic congestion. Further, a lot has happened over the past five years—locally, regionally and globally—that may affect our city's well-being long term. The economic recession, sequestration, disinvestment and a declining tax base, widening income disparity, climate change, and a decline in federal spending are just some of the events and trends that require us to rethink where we are as a city, where we want to be by 2040, and how we get there. These and other events and trends are explored in **Chapter 2, Existing Conditions.**

For us to continue to move forward in a deliberate and positive manner and be the "place" that people want to live, learn, work and play, we need a long-range plan that allows us to become a more sustainable and resilient city, and remain relevant in a fast-paced and ever-changing world. The challenge before us is how to leverage our strengths and opportunities to continue to transform Newport News for the 21st century. The answers to where we are going and how we get there are presented in this ***One City, One Future Comprehensive Plan.***

[1]Warwick County (1634-1952) incorporated into the City of Warwick in 1952 before consolidating with the City of Newport News in 1958.
[2]The Greater Peninsula is comprised of Newport News, Hampton, York County, Poquoson, Williamsburg, and James City County.

MISSION

The Department of Planning's mission is to analyze, prioritize and plan for the balanced and sustainable use of the City's land and other resources to enhance the quality of life for current and future generations.

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Washington Avenue

THE ONE CITY, ONE FUTURE COMPREHENSIVE PLAN IS ORGANIZED INTO SIX CHAPTERS:

CHAPTER 1 - INTRODUCTION

Introduction describes the purpose and need for a comprehensive plan to help guide Newport News through the economic, environmental, and social challenges of the 21st century.

CHAPTER 2 - EXISTING CONDITIONS

Existing Conditions is theme-based and describes where Newport News is today; what trends, challenges and opportunities we face; what our citizens told us through the various outreach efforts; and what these existing conditions mean in light of where we want to go as a city by 2040.

CHAPTER 3 - PLANNING LEGACY

Planning Legacy describes previously adopted plans and studies and incorporates initiatives and recommendations into the comprehensive plan.

CHAPTER 4 - THE DREAM

The Dream describes our vision for what we want Newport News to be in 2040 and establishes the goals and objectives that create the roadmap for the future land use plan based on the themes established in Chapter 2.

CHAPTER 5 - FUTURE LAND USE AND TRANSPORTATION PLAN

Future Land Use and Transportation Plan is theme-based and presents the long-range vision for land use and development over the next 20 years. It also defines the land use categories used on the Future Land Use and Transportation Map and identifies associated policies.

CHAPTER 6 - IMPLEMENTATION

Implementation describes the key projects, programs, regulations, partnerships, organizational changes and other actions and strategies needed to implement the goals and objectives of the plan. Various actions required to implement plan recommendations are presented in matrix format with identified responsibility, task and time frame. This chapter also provides guidance on how to amend the comprehensive plan while maintaining consistency with the plan's vision.

1

GUIDING FUTURE INVESTMENT

The One City, One Future Comprehensive Plan establishes a clear vision of the city's future. It is a bold strategy for leveraging our strengths and opportunities to manage change and guide Newport News into the future as a city that is thriving both economically and socially. The comprehensive plan establishes a guide for decision makers based on our citizens' core values and provides strategies to balance our social, economic and environmental systems to create a more resilient city.

WHAT IS THE COMPREHENSIVE PLAN?

The comprehensive plan is the primary tool for guiding future investment in and development of the city. On a daily basis, the City of Newport News is faced with tough choices regarding transportation, housing, economic development, neighborhood improvement, and service delivery investments. The ***One City, One Future Comprehensive Plan*** is the guide for making the decisions that will reinvigorate our city and address our needs. The plan establishes a clear vision of the city's future and integrates the aspirations of a diverse population. It is a bold strategy for leveraging our strengths and opportunities to manage change and guide Newport News into the future as a city that is thriving both economically and socially. The comprehensive plan presents the "big picture" and establishes a guide for decision makers based on our citizens' core values. It provides strategies to balance our social, economic and environmental systems and create a more resilient city.

While the comprehensive plan is meant to provide a strong and constant vision for the future, it is also a living document designed to accommodate change. Progress and change will be captured yearly during the plan implementation phase of the comprehensive planning cycle (shown in Figure 1), and the plan itself will be updated to account for changing trends, challenges and opportunities as required.

The ***One City, One Future Comprehensive Plan*** will serve as the general guide for development in Newport News for the next 20 years. The plan contains the City's official policies on land use, urban design, transportation, housing, public facilities and services, environment, and economic development. It recommends changes to policy, defines priorities, and directs implementation actions to support The Dream (see Chapter 4, The Dream, our vision for the future) and path forward. Its policies apply to both public and private properties. The ***One City, One Future Comprehensive Plan*** aligns with the City's Strategic Priorities, which guide the use of city resources to achieve desired outcomes that are measurable and promote accountability. It also aligns with the ***Roadmap to Sustainability***, the City's plan to achieve its "Environmentally Sustainable Local Government Policies" strategic priority. Furthermore, this plan aligns internally with other City plans and policies, vertically with regional and state requirements, and horizontally with the comprehensive plans of neighboring jurisdictions.

The ***One City, One Future Comprehensive Plan*** is used by the City Council and Planning Commission to evaluate land use changes, and by the City Council and City Manager to make funding and budget decisions. The plan is used by City staff to regulate building and development and to make recommendations on projects and programs, many of which are captured in the Capital Improvement Plan (CIP). The CIP is the City's five-year plan for high-priority capital projects and equipment purchases. It is also used by citizens, businesses, and other stakeholders to understand the City's long-range plans for different areas of Newport News.

Figure 1: Comprehensive Planning Cycle

1

THE COMPREHENSIVE PLAN

The comprehensive plan is a legal document that must meet specific requirements for content as established in the Code of Virginia. All localities must prepare and adopt a comprehensive plan for the physical development of land within its jurisdiction. The plan must include assessments of existing conditions, growth trends, and the future needs of the community.

WHY MUST WE HAVE A COMPREHENSIVE PLAN?

The comprehensive plan is a legal document that must meet specific requirements for content. The Code of Virginia (§15.2-2223) mandates all localities prepare and adopt a comprehensive plan for the physical development of land within its jurisdiction. The plan must include assessments of existing conditions, growth trends, and the future needs of the community. It must provide guidance to promote the health, safety, order, convenience, prosperity, and general welfare of a locality's residents. The Code of Virginia requires the plan to include coastal resources management, affordable housing, transportation, and land use components. It does not, however, dictate the structure and format of the plan.

The Code of Virginia does specify the process for comprehensive plan adoption. The Planning Commission must hold a public hearing prior to an official recommendation to the City Council for adoption of the comprehensive plan. After this public hearing, the Planning Commission may recommend approval of the plan and forward it to the City Council for consideration. If the Planning Commission recommends approval, it must adopt and forward a resolution to the City Council. In developing our comprehensive plan process, we added one additional layer of participation and oversight: the Comprehensive Plan Citizen Advisory Committee (CPCAC). The CPCAC, appointed by the Planning Commission, worked with planning staff and guided the process based on citizen feedback gained through multiple outreach efforts. Figure 2 below is a simplified illustration of the plan review and adoption process for the ***One City, One Future Comprehensive Plan***.

Once the comprehensive plan is adopted, the City Council may adopt amendments as needed. The process for comprehensive plan amendments is the same as the approval and adoption process required for the original plan, minus CPCAC participation. The Code of Virginia requires localities to review their comprehensive plan every 5 years to determine if changes are needed. Implementation, monitoring and amendments for the ***One City, One Future Comprehensive Plan*** are discussed further in Chapter 6.

PLAN REVIEW AND ADOPTION PROCESS

Figure 2: Plan Review and Adoption Process

1

BUILDING ON THE PAST

Comprehensive planning is not new to the City. The first comprehensive plan was adopted in 1964. The first citizen-driven comprehensive plan was adopted in 1993. The One City, One Future Comprehensive Plan *is built on those and other successful comprehensive planning efforts as outlined in Chapter 3, Planning Legacy.*

"Hundreds of citizens worked tirelessly with City staff over the course of several years to produce the 16-chapter document that covered approximately 700 pages of content."

OUR PAST PLANNING EFFORTS

Comprehensive planning is not new to the city. The first comprehensive plan – named the *Newport News General Plan* – was adopted in 1964. The first citizen-driven comprehensive plan was adopted in 1993. The *Framework for the Future* was an in-depth look at the past, present and future of Newport News. A lot of hard work went into developing the *Framework for the Future* and its subsequent updates; its innovative solutions led to many significant investments – both public and private. Hundreds of citizens worked tirelessly with City staff over the course of several years to produce the 16-chapter document that covered approximately 700 pages of content. The *Framework for the Future* served as a model comprehensive plan for decades. In recent years, however, best practices in the planning profession have pushed localities to develop more strategic, cohesive and less voluminous comprehensive plans. The structure and length of the comprehensive plan sometimes made extracting information difficult and challenging to understand how the chapters (also known as elements or topic areas) were linked. To many readers, the chapters appeared to be independent of one other, with no clear connection or means to establish priorities for implementation. And, the plan lacked a separate implementation component with established priorities and a monitoring process. So, in 2013 the City decided it was time for a new approach and look to the comprehensive plan to reflect current best practices in planning and changes in technology and how people receive and process information. The *One City, One Future Comprehensive Plan* did not start in a vacuum. Rather, it built on the successful *Framework for the Future* and other comprehensive planning efforts outlined in Chapter 3, Planning Legacy.

Lee Hall Masion

PLAN PROCESS AND SCHEDULE

- Establish process and initial timeline for plan development
- Define methods for public outreach and education
- Establish citizen advisory committee (CPCAC)
- Identify data and reports required to initiate the process
- Determine structure and format of comprehensive plan
- Establish comprehensive plan website and maintain throughout all phases

- Develop and conduct citywide community survey
- Complete statistical analysis (population, demographics, socio-economic, land use, etc.)
- Review current planning and economic development initiatives
- Identify trends and relevant projections
- Identify strengths, weaknesses, opportunities, and threats (SWOT Analysis)
- Establish the vision, goals, and priorities for future development and investment

- Identify graphics, photos and maps for the plan
- Draft Existing Conditions Assessment
- Define general strategies to achieve vision and goals
- Explore alternatives for implementation
- Draft the comprehensive plan

- CPCAC reviews draft Comprehensive Plan
- CPCAC-approved plan submitted to Planning Commission and City Manager's Office for review
- CPCAC and staff host Planning Commission work session
- Release final draft to public
- Hold public meetings
- CPCAC reviews compiled public comments and recommends edits
- Revise comprehensive plan
- Present final draft to Planning Commission
- City Council reviews and adopts the Comprehensive Plan

- Post final comprehensive plan to website and distribute electronic and hard copies
- Establish action plan for revisions of implementation tools, as needed
- Monitor and update the implementation matrix
- Track changes to trends, revised forecasts, new challenges and other potential influences
- Conduct General Plan Amendments, as needed

2013

- *Revised comprehensive plan process*
- *Work plan and schedule*
- *Public outreach plan*
- *Citizen Advisory Committee*
- *Website*
- *Background data*

2014

- *Community survey results*
- *Statistical Profile*
- *Trends and projections*
- *SWOT Analysis*
- *Vision, goals, and priorities*

2015

- *Existing conditions assessment*
- *Strategies for implementation*
- *Alternatives*
- *Draft comprehensive plan*

2018

- *Elected officials and management comments*
- *Citizen comments*
- *Final draft comprehensive plan*
- *Planning Commission recommendation*
- *City Council adoption*

- *Implementation of action plan*
- *Monitoring and updating plan*

Figure 3: Plan Process and Schedule

OUR PLANNING PROCESS

The *One City, One Future* planning process kicked-off in 2013 with the decision to update the adopted comprehensive plan to reflect changing trends and conditions. This was the first step in a continuous sequence of activities that took more than 24 months to complete. Figure 3 shows the planning phases with associated schedule and outputs. Other tasks accomplished during the first phase included: forming the citizen advisory committee, defining the public engagement plan (Appendix B), and developing the comprehensive plan update webpage.

To be relevant and implementable, the comprehensive plan must be based on a solid foundation derived from sound data and analysis. This allows for the formulation of land use alternatives to effectively address trends, challenges, and opportunities to provide a future in line with the long-range vision. Data collection and analysis was completed by Planning staff in Phase 2 of the process. Key tasks in this phase included: establishing the statistical profile; identifying trends and projections that have or could affect the city's physical, social or economic viability; and establishing the vision, goals and priorities. The city also conducted a citizen satisfaction survey in 2016. Eight hundred randomly-selected residents were interviewed over a six-week period. A three-phase methodology was used to engage residents: 1) postcards were mailed to randomly-selected households to participate online; 2) follow-up phone surveys were conducted with those households that did not complete the online survey; and 3) a cell phone sample survey was conducted to augment the landline effort and ensure broad participation. The results of the survey are available through the Department of Planning. Survey results were used to identify initial strengths, weaknesses, opportunities and threats (SWOT Analysis) facing the city and establish priorities for future investment.

In Phase 3, Planning staff prepared the existing conditions report, defined strategies to achieve the vision and goals, and explored alternatives for implementation. This phase culminated with the draft comprehensive plan. Plan review and adoption were completed in Phase 4. Implementation and monitoring occurs in Phase 5, which will continue through the next update of the *One City, One Future Comprehensive Plan.*

ONE CITY, ONE FUTURE COMMUNITY ENGAGEMENT

JUNE 2013

1,038 COMMUNITY SURVEYS COMPLETED

3 COMMUNITY VISIONING WORKSHOPS

2 CPCAC VISIONING WORKSHOPS

Locations: Heritage High School, Mary Passage Middle School, Warwick High School, North District Town Hall, South District Town Hall, Downing-Cross Cultural Arts Center, City Center, Denbigh Community Center, Downtown Newport News Merchants and Neighbors Association, Fields House, Jim's Market, City Hall.

14 CPCAC MEETINGS

16 FOCUS GROUPS

18 STAKEHOLDER ROUNDTABLES AND INTERVIEWS

81 EVENTS

OVER 731 PEOPLE ATTENDED

Focus Groups: Virginia Peninsula Association of Realtors, Naval Weapons Station Yorktown, Christopher Newport University, Mayor's Youth Commission, Greater Peninsula Now, Southeast Community, Southeast Clarion Call, Newport News Redevelopment and Housing Authority, Newport News Shipbuilding, Newport News Rotary Club, Virginia Peninsula Chamber of Commerce, Hampton Roads Association for Commercial Real Estate, Peninsula Bicycling Association, Saint Leo University, Newport News/Williamsburg International Airport, Fort Eustis.

6 METHODS OF INPUT

43 LOCATIONS CITYWIDE

3,035 COMMENTS RECEIVED

OVER 69 HOURS OF PRESENTATIONS

Stakeholder Interviews and Roundtables: Fire Department, Police Department, Sheriff's Department, Department of Engineering, Environmental Services - Department of Engineering, Codes Compliance, Public Utilities - Waterworks, Public Works, Department of Development, Parks, Recreation & Tourism, Library & Information Systems, Human Services, Newport News Public Schools, City of Hampton, James City County, York County, City of Suffolk, Isle of Wright County.

MAY 2015

The engagement process continues with ongoing community workshops and presentations

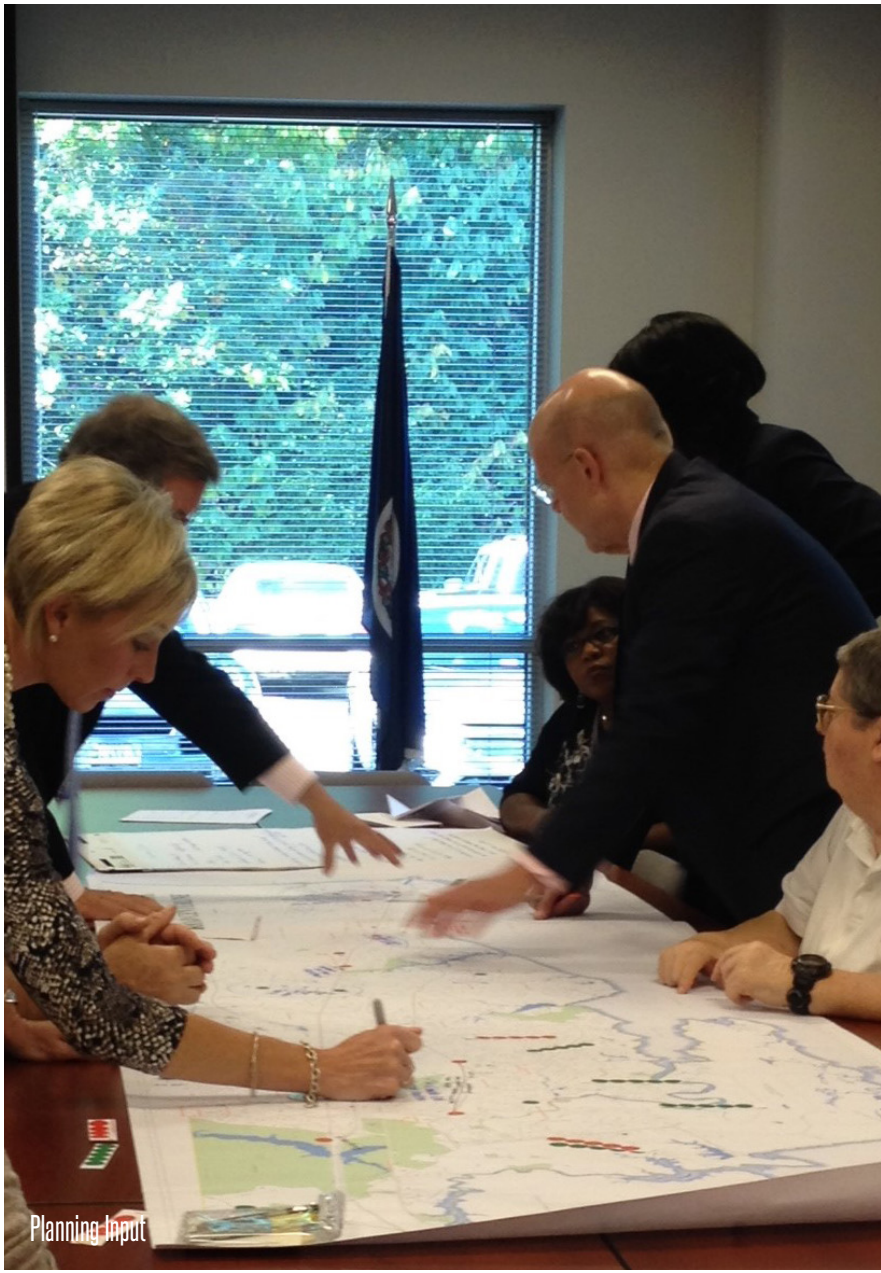
Figure 4: One City, One Future Community Engagement

HOW DID CITIZENS PARTICIPATE IN THE PLANNING PROCESS?

Effective citizen participation in the planning process ensures that diverse interests and perspectives are considered and incorporated into the comprehensive plan; it also helps gain more widespread public support for plan adoption and implementation. Citizen input informed and guided the planning process under the direction of the CPCAC. The CPCAC was a 28-member committee that assisted with development of the comprehensive plan. The committee was comprised of appointed officials, citizens and other stakeholders representing a cross-section of our city's population.

The CPCAC's purpose was to: 1) review existing trends, opportunities and socio-economic forecasts to assist in development of the vision and goals of the comprehensive plan; 2) review draft plan elements and provide feedback to staff; 3) host community meetings during the public review period; and 4) present the final draft comprehensive plan, in conjunction with Planning staff, to the Planning Commission for consideration.

A diverse mix of people, representing all walks of life in Newport News, participated in our planning process (shown in Figure 4). Participants included residents, the Virginia Peninsula Association of Realtors, Christopher Newport University (CNU) students, military personnel, business owners, the Mayor's Youth Commission, and non-profit organizations. Feedback was gathered through a series of community engagement activities including the citywide survey, community workshops, CPCAC meetings, focus groups, and roundtables. To ensure that as many stakeholders as possible had the opportunity to participate in the planning process, Planning staff also accepted input through phone calls, emails, the comprehensive plan update webpage, and the City's Facebook and Twitter accounts. The public outreach process and a summary of input received for consideration are presented in Appendix B of this plan.



Planning Input

COMPREHENSIVE PLAN CROSSWALK

ONE CITY, ONE FUTURE COMPREHENSIVE PLAN THEMES	ELEMENTS INTEGRATED (FROM FRAMEWORK FOR THE FUTURE 2030 COMPREHENSIVE PLAN)	ALIGNMENT WITH THE CITY'S STRATEGIC PRIORITIES	ALIGNMENT WITH REGIONAL STRATEGIC PRIORITIES
A PROSPEROUS AND RESILIENT CITY 	Economic Development, Education, Culture	Economic Development & Redevelopment, Fiscal Management & Efficient Operations	Hampton Roads Planning District Commission: Envision Hampton Roads
A SUSTAINABLE CITY 	Land Use, Environment, Human Services, Urban Services	Economic Development & Redevelopment, Community Maintenance & Renewal, Maximum Emphasis on Public Safety, Environmentally Sustainable Local Government Policies	Hampton Roads Planning District Commission: Envision Hampton Roads, askHRgreen.org
AN ACCESSIBLE CITY 	Housing, Human Services, Urban Services, Transportation	Fiscal Management & Efficient Operations, Environmentally Sustainable Local Government Policies	Hampton Roads Planning District Commission: Envision Hampton Roads; Hampton Roads Transportation Planning Organization: Long-Range Transportation Plan
A HEALTHY AND SAFE CITY 	Education, Parks and Recreation, Public Safety, Human Services, Culture, Urban Services	Fiscal Management & Efficient Operations, Maximum Emphasis on Public Safety	Hampton Roads Planning District Commission: Envision Hampton Roads
A CITY THAT RESPECTS ITS UNIQUENESS 	Historic Preservation, Culture	Environmentally Sustainable Local Government Policies	Hampton Roads Planning District Commission: Envision Hampton Roads
A CITY THAT BALANCES GOOD PLACES AND NEW SPACES 	Land Use	Community Maintenance & Renewal	Hampton Roads Planning District Commission: Envision Hampton Roads

Table 1 shows how the* One City, One Future Comprehensive Plan *themes integrate elements from Framework for the Future 2030 and align with City and regional strategic priorities.

WHAT IS THE PLAN STRUCTURE AND SCOPE?

An important part of the *One City, One Future Comprehensive Plan* process involved the overhaul of the original document structure to move from the traditional silo approach, discussing topics such as land use, transportation, housing, and community services and facilities as separate elements, to a systems approach. This plan recognizes that all comprehensive plan elements are part of a larger, complex system: the city as a whole. The systems approach allows us to organize the plan around themes and discuss and understand the interactions and interrelationships of the various focus areas in a way that helps us to more clearly align goals and strategies and makes it less challenging to establish priorities for implementation. The physical structure of the document has been updated to develop a more cohesive and comprehensive vision; facilitate greater coordination between the various themes; and align and prioritize actions to help us more effectively achieve our goals.

THE ONE CITY, ONE FUTURE COMPREHENSIVE PLAN IS BASED ON THE FOLLOWING SIX THEMES:

A PROSPEROUS AND RESILIENT CITY

Explores our economic vitality and whether we are equipped to adapt and bounce back in the face of adversity. It also looks at our overall ability to meet the basic needs of our population through investment and development that is both equitable and resilient. Can our citizens thrive and lead healthy lives in Newport News?

A SUSTAINABLE CITY

Acknowledges the impact our growth pattern has on our ecosystem and delivery of services, and examines the ways we can more responsibly use our resources to meet the needs of the present without compromising the needs of future generations. Can we remain the economic engine of the Peninsula without degrading or depleting our resources?

AN ACCESSIBLE CITY

Examines the housing and transportation opportunities and choices we provide to our citizens at all income levels. Do we have strong interconnected neighborhoods with sufficient connectivity to jobs, schools, services and goods? Do our citizens have sufficient access to public transportation?

A HEALTHY AND SAFE CITY

Explores how we support citizens with premier facilities and services and promote livability. Are we continually creating and improving the physical and social environments to provide our citizens with a high quality of life?

A CITY THAT RESPECTS ITS UNIQUENESS

Acknowledges our history and examines ways to preserve, promote and celebrate our natural and cultural assets. How will we continue to use these assets both as an education tool and to promote our city's identity?

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

Explores our land use patterns and the character of our established neighborhoods to determine how we can best preserve and respect the old while inviting new. Where and how do we encourage revitalization and adaptive reuse, infill development, and redevelopment in the city?

Completion of the ***One City, One Future Comprehensive Plan*** is by no means an end in itself; rather it is a new beginning. It is important that we continue the steps necessary to achieve the vision outlined in this plan. The plan is intended to be a living document; it will grow and change as internal and external conditions change. Only through continuous use, evaluation, and amendments in response to changing conditions can Newport News reach the powerful vision established by all the dedicated people who contributed to development of the ***One City, One Future Comprehensive Plan***.

2

The comprehensive plan is the single most important document for guiding a community's development. It examines the functional elements (e.g., housing, transportation, education, economic development, etc.) which affect future development; coordinates present and probable future needs and resources; documents goals and policies to promote the health, safety and general welfare of citizens; and establishes actions and priorities for implementation. The comprehensive plan is the means by which a community assesses what it has in terms of physical and social conditions, what vision it has for the future, and how to implement that vision. For a comprehensive plan to be implementable, it must be based on a study of existing conditions from which the goals, policies and strategies can be developed to support the vision and implement the plan.

This existing conditions assessment is presented by theme, as introduced in **Chapter 1, Introduction**. Themes include the following elements:

2.1 A PROSPEROUS AND RESILIENT CITY

Assesses demographics, social characteristics, economic vitality, education, and delivery of urban services and infrastructure for Newport News. Where relevant, comparisons are made to other localities, regions, Virginia, and/or the nation.

2.2 A SUSTAINABLE CITY

Explores land use, development and natural resources and the ecosystem to establish assets and challenges to our ongoing efforts to balance people, profit, and the environment.

2.3 AN ACCESSIBLE CITY

Examines conditions for housing and transportation to establish how these systems are interconnected and what challenges we face in providing choice and accessibility.

2.4 A HEALTHY AND SAFE CITY

Assesses the health and safety of our physical environment to determine what we do well and what we need to work on when it comes to ensuring equitable access and promoting healthy choices.

2.5 A CITY THAT RESPECTS ITS UNIQUENESS

Examines how we preserve, promote and celebrate our natural, historical, and cultural assets.

2.6 A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

Explores land use patterns and the character of our neighborhoods to understand how we balance respect for the old while making room for the new. This section also explores design, livability, and opportunities for revitalization and redevelopment.

INFORMATION FOR EACH THEME IS PRESENTED IN THE FOLLOWING FORMAT:

KEY FACTS AND TRENDS.

Information is pulled from a variety of resources including the U.S. Census, existing reports and studies, and stakeholder interviews. Maps, photos, and other graphics are included to emphasize key data. Data was pulled from the best available resources as of August 30, 2015, unless otherwise noted.

WHAT WE HEARD.

This is a summary of what stakeholders shared with Planning staff and CPCAC through surveys, questionnaires, community workshops, focus groups, and interviews. Input was grouped by theme, and does not include every comment received. Rather, this summary presents the overarching challenges and opportunities as provided by our stakeholders during the SWOT analysis. A more detailed summary is provided in Appendix B.

For the purposes of this plan, the term "stakeholders" includes all people who, individually or as part of an organized group, participated in the comprehensive planning process by providing input on current conditions and direction for future land use management and development. The term "residents" is used specifically for stakeholders who are inhabitants of Newport News.

WHAT IT ALL MEANS.

These are the critical points from the existing condition assessment that were considered when preparing goals, policies, strategies and actions to implement the vision. This is not a bullet-by-bullet response to the stakeholder comments presented in "What We Heard." Rather, this section considers the comments in conjunction with the key facts and trends to provide focus for Chapter 4, The Dream and Chapter 5, Future Land Use and Transportation Plan.

A view from Victory Landing Park

2.1 A PROSPEROUS AND RESILIENT CITY

This section provides key facts and trends related to social characteristics, economic development, education, and delivery of urban services and infrastructure. It also incorporates stakeholder input gathered through various outreach efforts including the citywide survey. Key points considered during the development of strategies to implement the planning vision are provided at the end of this section.

2.1.1 KEY FACTS AND TRENDS

Hampton Roads was impacted by the Great Recession (December 2007 to June 2009) and has been slow to recover as compared to other metropolitan areas with populations between one and three million. The Department of Defense (DoD) remains the primary driver of the Hampton Roads economy. Cuts to the overall national force structure in 2015 did not have as significant of an effect on military and civilian jobs in the region as feared. Previous reductions in force in Hampton Roads were taken into account, resulting in minimal loss for installations including Joint Base Langley-Eustis. However, defense spending and the number of military personnel in Hampton Roads have continued to decline.

In 2014, the region continued to struggle; local growth in gross product and employment continued to lag behind other metropolitan areas of similar population size (HRPDC, 2015). The situation on the Greater Peninsula, however, is more promising: employment growth began to accelerate and keep pace with the statewide recovery in early 2014 (Magnum Economic Consulting, LLC, 2014). On the peninsula, manufacturing remains the largest employment sector and is responsible for the recent acceleration in employment growth.

Newport News remains the economic engine of the Greater Peninsula. In 2014, nearly 99,000 people worked in the city (Virginia Employment Commission, 2014a). Employment growth in Newport News continues to be in the research and development (R&D), advanced manufacturing, traditional manufacturing, and food processing and distribution sectors. We expect further growth in these areas but may also see high growth in the aerospace and aviation industry, including material sciences. We continue to celebrate our national reputation as a shipbuilding community and promote Jefferson Lab to draw new science and technology businesses to Newport News.

Our local educational institutions—including Newport News Public Schools, Christopher Newport University, St. Leo University, Thomas Nelson Community College, William and Mary Extension Campus, Virginia Tech and University of Virginia satellite campuses, and the [Newport News Shipbuilding] Apprentice School—are providing high quality education and training, producing the qualified and competitive workforce that will allow us to capitalize on our economic strengths, increase productivity, and ensure long-term prosperity.

DEMOGRAPHICS

Hampton Roads' population is growing at a slow pace, slower than the growth rates for Virginia and the United States. Newport News' population is in line with the growth rate for the region, and is projected to continue at a growth rate of less than 1 percent each year over the next 10 years. The city is experiencing a slight decline in net migration and the birth rate. The city's population is slightly aging, yet still relatively young, and increasing in cultural diversity. The cost of living in Hampton Roads has fallen to the national average, driven by the slow recovery in housing prices.

Population and Growth

- The annual growth rate for Newport News in the past decade has been less than 1 percent. Forecasts show a continued low growth rate between 2014 and 2040, resulting in a 7.3 percent change in population between 2000 and 2040 (see Table 2). This results in a net gain of just over 13,000 persons.

CHANGE IN POPULATION, 1960-2040

YEAR	POPULATION	PERCENT CHANGE FROM PREVIOUS YEAR
1960	113,662	-
1970	138,177	21.6%
1980	144,903	4.9%
1990	171,439	18.3%
2000	180,697	5.4%
2010	180,966	0.01%
2014*	181,362	0.2%
2020+	185,196	2.3%
2030+	189,890	2.5%
2040+	193,838	2.1%

Table 2: Change in Population, 1960 - 2040

* City of Newport News, Department of Planning, 2014 Statistical Profile (U.S. Census and Hampton Roads Data Book [HRPDC])
+ Weldon Cooper Center for Public Service, Total Population Projections for Virginia and its Localities, 2020 – 2040, www.coopercenter.org/demographics/ (published November 13, 2012).

- Low population growth in Newport News between 2000 and 2014 is in part the result of a largely built-out city, but is also attributed to minimal net gain between births, deaths, in-migration and out-migration. Over the past 20 years, the city's birth rate has dropped, from 17.6 births per thousand population in 1996 to 15.7 births per thousand population in 2013.
- While immigration outpaced emigration for the region over the past few years, emigration surpassed immigration in Newport News. Data for 2011 showed that the average family income for immigrants ($31,500) was lower than that of emigrants ($35,601), thereby reducing the average income of the city (Chmura Economics & Analytics, 2014). On average, those moving into Newport News are poorer than those leaving.
- In 2014, more than 53 percent of the population was under the age of 35 (see Figure 5). This is slightly lower than in 2000, when close to 55 percent of the population was under the age of 35, but higher than the percentage for the state and the nation. In 2014, the percentage of population under the age of 35 in Virginia was 46.7 percent, which was slightly less than the 46.9 percent for the United States.

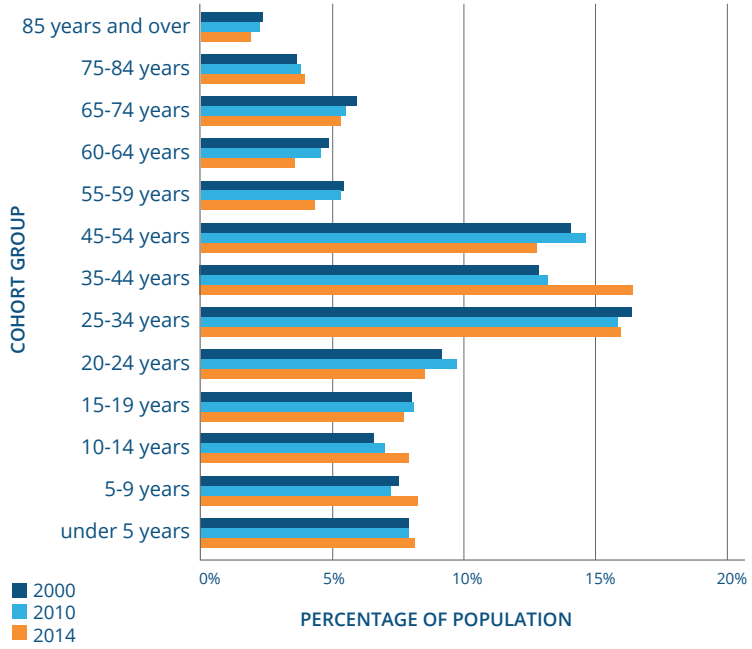


Figure 5: Age Distribution by Percent of Total Population, 2000–2014

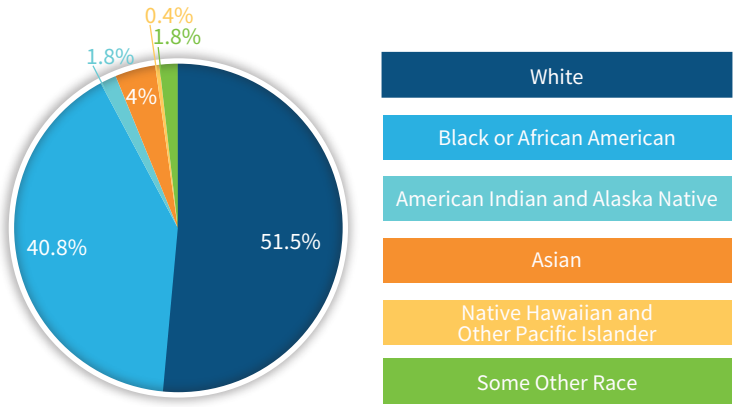


Figure 6: Racial Composition, 2014

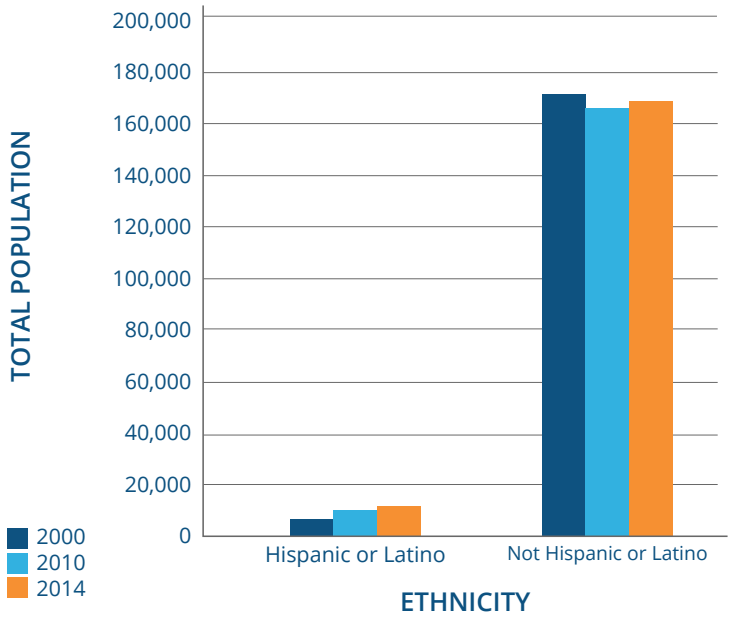


Figure 7: Hispanic or Latino Population, 2000–2014

- In 2014, approximately 11 percent of the population was 65 years and over, and just over 20 percent was under the age of 15. The largest cohort continued to be those aged 25–34 (16.4%), a reflection of the large generation of Millennials.
- Across the nation in 2011, the first of the Baby Boomer generation reached the age of 65, which was once the retirement age in the United States. It is estimated that 10,000 baby boom retirements will occur daily through 2030. Newport News is slowly seeing the effects of the aging of this cohort, as two of the largest rates of growth between 2000 and 2014 were in the 55–59 (38.8%) and 60–64 (53%) age groups. The 85 years and over cohort also experienced a significant rate of growth during that period (52.2%).

Racial and Ethnic Composition

- The racial and ethnic composition of Newport News has changed slightly since 2000. The white, black or african american, and some other race populations fluctuated between 2000 and 2014, while all other categories steadily increased. By 2020, the white cohort is forecast to comprise slightly less than 46 percent of the total population. The racial and ethnic composition for 2014 is illustrated in Figure 6.
- Between 2000 and 2014, the city's Hispanic or Latino (of any race) population increased by 91.5 percent. As shown in Figure 7, the Hispanic or Latino population (of any race) was 4.2 percent in 2000 and increased to 8 percent of the total population by 2014. In 2040, this cohort is forecast to comprise 18.4 percent of the total population (Virginia Employment Commission, 2014b).

- As illustrated in Figure 8, the number of Newport News residents that were foreign born increased by 62 percent between 2000 and 2014. In 2014, 7.7 percent of the total population was foreign born, which was lower than the percentages for Virginia (11.6%) and the United States (13.1%).

Households

- In Newport News, slightly less than two-thirds of all households (62.3%) in 2014 were comprised of families (two or more people residing together who are related by birth, marriage, or adoption). This represents a 7 percent decrease since 2000. As shown in Figure 9, family households by type were relatively stable between the 2000 and 2010 Census.

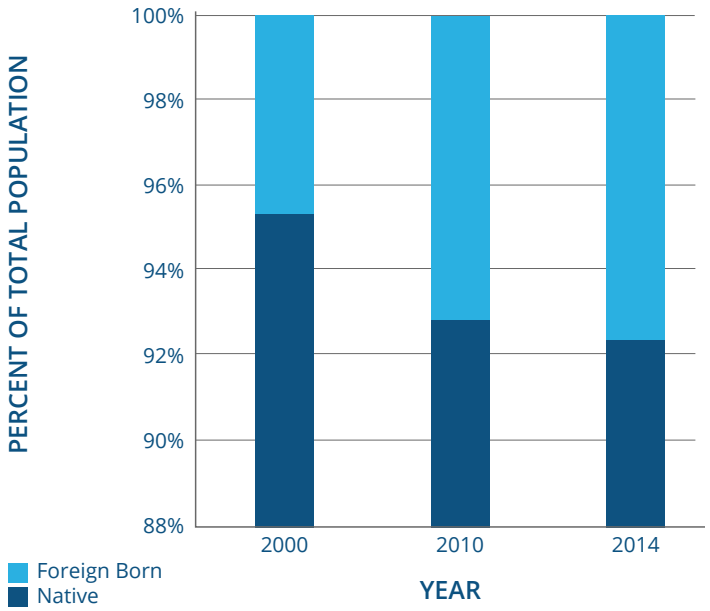


Figure 8: Place of Birth, 2000–2014

- The number of households headed by single females declined between 2010 and 2014, but continued to represent close to 29 percent of all family households. Together, single parent households comprised 37 percent of all family households in 2014. This was well above the Virginia percentage of 24.7, and the 26.9 percent for the United States the same year.
- Of the total non-family households in 2014, 83.5 percent (21,704) were single-person households. This is an increase of 15.4 percent since 2000.

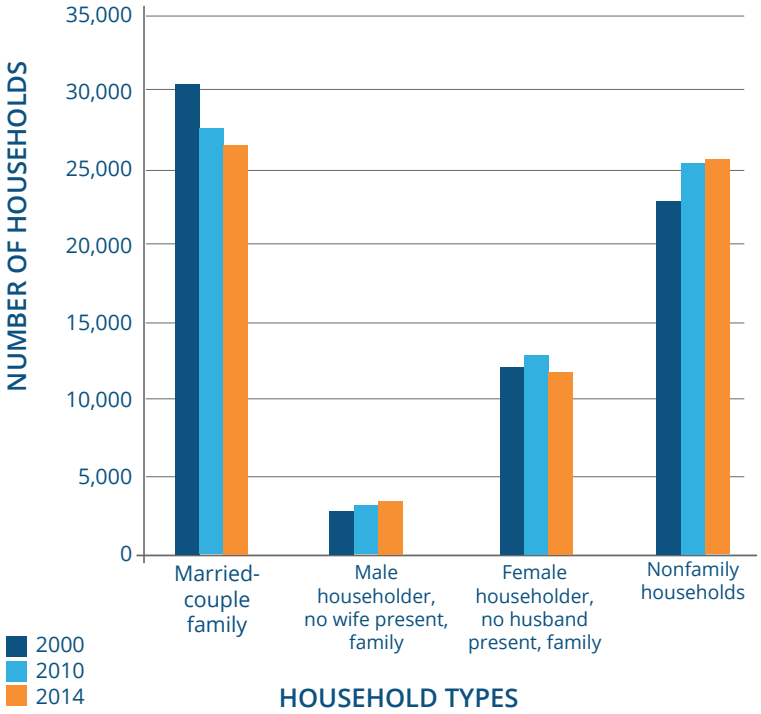


Figure 9: Family Households By Type, 2000-2014

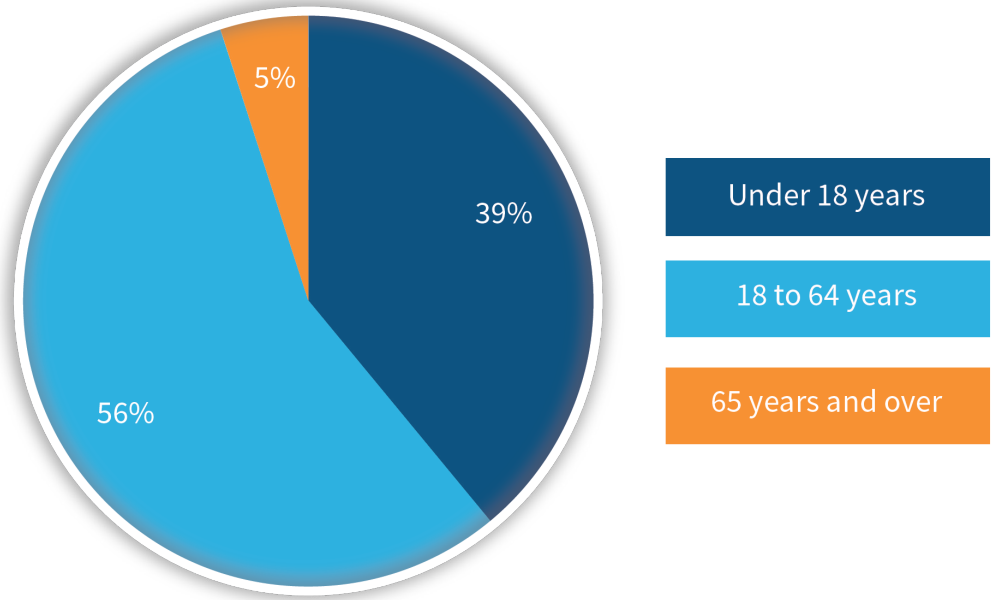


Figure 10: Population by Cohort That Lives Below the Poverty Line, 2014

- The average household size has remained constant between 2000 and 2014 at 2.5, which is slightly lower than that of Virginia and the United States at 2.6. During the same period, average family size also remained constant, hovering at just over 3.0 persons per family.

Income and Cost of Living

- Median Household Income for Newport News in 2014 was $51,000, which was below the Median Household Income for Hampton Roads ($55,997), Virginia ($64,792), and the United States ($53,482).
- The cost of living in Hampton Roads (100.1) in 2014 was just above the national average (100), but much less than many other metropolitan areas including New York, Baltimore, and Washington, DC. According to the Hampton Roads Planning District Commission (HRPDC), cost or utilities, miscellaneous goods and services, and healthcare in the region were above the national average.

Poverty

- In 2014, 14.5 percent of the total population in Newport News (26,322 people) lived below the poverty line, which was higher than the 13.1 percent poverty rate for the region. This was an increase from the 2010 poverty rate of 13.8 percent, but a decrease from 2013 at 15.2 percent. In 2014, the poverty rate for Virginia was 11. 5 percent and 15. 6 percent for the United States.
- As shown in Figure 10, nearly 39 percent of the population living below the poverty line in 2014 was under 18 years of age (10,030 children).
- In 2014, Supplemental Nutrition Assistance Program (SNAP) participation in Newport News was 14.4 percent, which was higher than the 9. 5 percent for Virginia and 13 percent for the United States. It is important to note that this number does not tell the whole story

regarding individuals and families in need of nutrition assistance, since many more are eligible and do not apply.

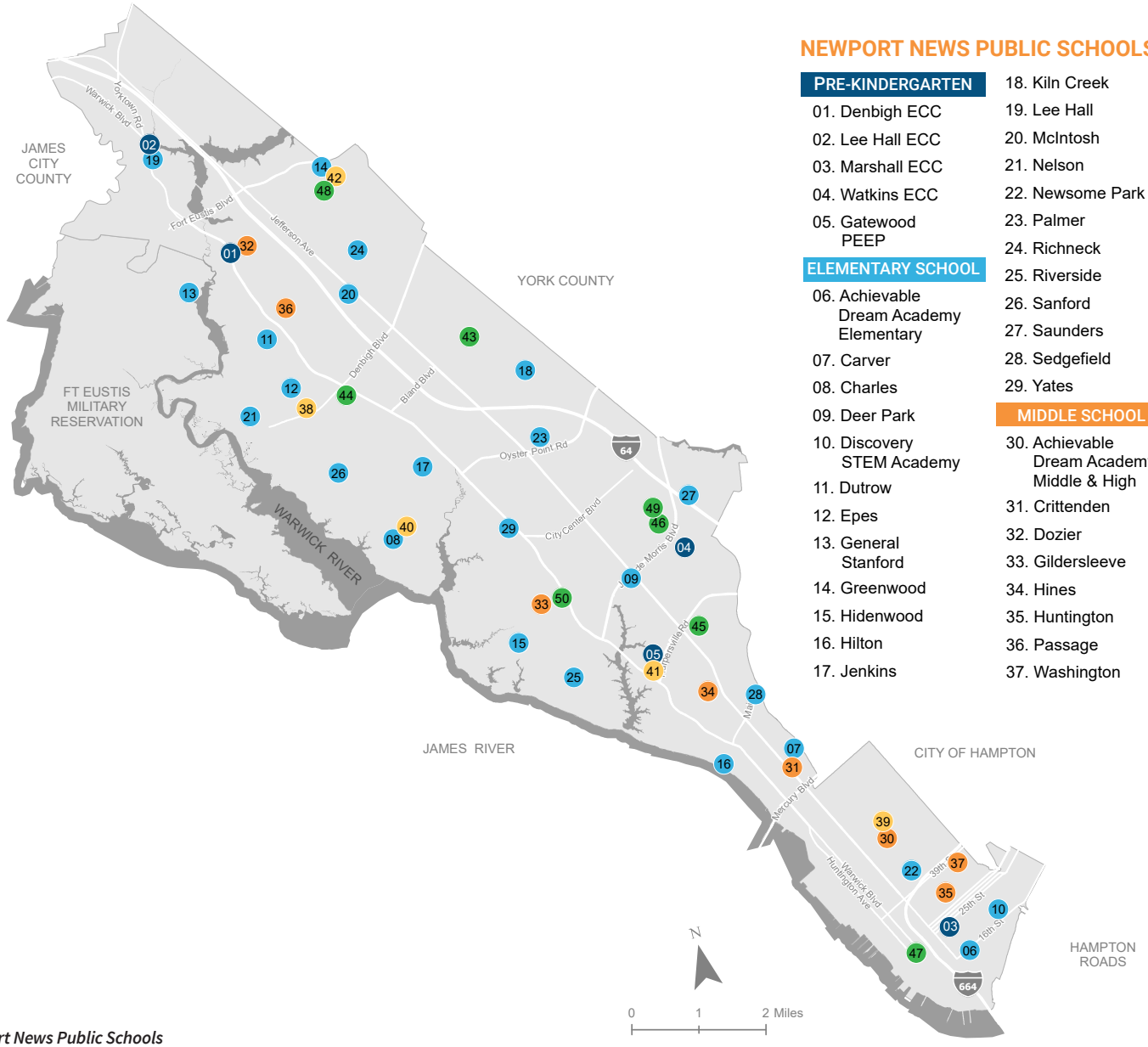
- The Point-in-Time (PIT) Count conducted in February 2014 identified 181 homeless individuals in Newport News, down from the 2013 count of 204. Of the total, 44 individuals were identified as chronically homeless, and 32 were veterans.
- The State of the Region 2014 report identified homelessness as "an acute problem in Hampton Roads" based on the annual PIT data published by the Department of Housing and Urban Development (HUD) (Koch et al., 2014). As noted in the report, a closer look at the sub-populations in the PIT data reveals a likely undercount of homeless children and youth. In fact, Project HOPE–Virginia (Virginia Education Program for Homeless Children and Youth) shows that in the 2012–2013 School Year (SY), Newport News Public Schools (NNPS) enrolled 893 students that were identified as homeless. This was an increase from SY 2010–2011 (860 homeless students).

EDUCATION AND TRAINING

The high school graduation rate in Hampton Roads has steadily increased over the past 5 years. At the same time, the number of students enrolled in the public school system has slightly declined. This is in line with enrollment trends across Virginia, where the majority of school divisions reported declines. Total enrollment in NNPS has declined as well, while the graduation rate has continued to climb. The slight decline in enrollment is likely due to the drop in military population combined with a slight decrease in the birth rate.

There is an increasing focus on post-secondary education as employers place a higher premium than ever on educated workers and the number of "middle skills jobs" continues to increase. Our economy—as that of the nation—has shifted from one of mass production to a technology- and knowledge-based system of production and services. To remain competitive, Newport News must continue to have a well-trained, highly skilled and flexible workforce. Our employers must continue to have access to training and continuing education facilities to ensure that the workforce can acquire skills to meet changing business needs and retain high levels of competency in areas of technology, science and math.

Based on the premise that every job in the future will require some level of post-secondary education, NNPS has focused on ensuring all students graduate college, career and citizen-ready. On-time



NEWPORT NEWS PUBLIC SCHOOLS

PRE-KINDERGARTEN

01. Denbigh ECC
02. Lee Hall ECC
03. Marshall ECC
04. Watkins ECC
05. Gatewood PEEP

ELEMENTARY SCHOOL

06. Achievable Dream Academy Elementary
07. Carver
08. Charles
09. Deer Park
10. Discovery STEM Academy
11. Dutrow
12. Epes
13. General Stanford
14. Greenwood
15. Hidenwood
16. Hilton
17. Jenkins
18. Kiln Creek
19. Lee Hall
20. McIntosh
21. Nelson
22. Newsome Park
23. Palmer
24. Richneck
25. Riverside
26. Sanford
27. Saunders
28. Sedgefield
29. Yates

MIDDLE SCHOOL

30. Achievable Dream Academy Middle & High
31. Crittenden
32. Dozier
33. Gildersleeve
34. Hines
35. Huntington
36. Passage
37. Washington

HIGH SCHOOL

38. Denbigh
39. Heritage
40. Menchville
41. Warwick
42. Woodside

ADDITIONAL PROGRAMS

43. Aviation Acadamy
44. Denbigh Learning Center (GED & Adult)
45. South Morrison Learning Center (GED & Adult)
46. Enterprise Academy
47. Juvenile Detention School
48. New Horizons Regional Education Center
49. Point Option
50. Telecommunications Center

Figure 11: Newport News Public Schools

graduation and completion rates continue to go up, the number of dropouts continues to decline, and the Instructional STEM (Science, Technology, Engineering, and Mathematics) program continues to grow. NNPS continues to work with local businesses, nonprofits, and other organizations to engage students in educational programs outside of school and was named a District of Distinction for its successful launch of the Summer Program for Arts, Recreation, and Knowledge (SPARK) in 2015.

- NNPS educates approximately 29,400 children in 5 early childhood centers, 24 elementary schools, 7 middle schools, 5 high schools, 1 middle/high combination school, and 9 program sites (see Figure 11).
- The graduation rate for NNPS in 2015 was 89.5 percent, an increase from 72.9 percent 7 years earlier (NNPS, 2014). The dropout rate decreased from 14 percent in 2008 to 2.8 percent in 2015.
- In 2015, NNPS students earned over 1,800 certifications in STEM. Certifications help prepare students for future careers through courses designed around industry standards. The number of student certifications has more than doubled since 2012.
- Student enrollment declined slightly in NNPS between 2010 and 2014 by 2.4 percent (less than 700 students in 5 years)(Weldon Cooper Center for Public Service, 2014).
  Projections for NNPS total enrollment in 2020 show a further drop of 4 percent or 1,100 students (see Figure 12).
- The racial and ethnic composition of students enrolled at NNPS in 2015 was approximately 75 percent Black, Hispanic, Asian, multi-race or Other, while 25 percent was White.

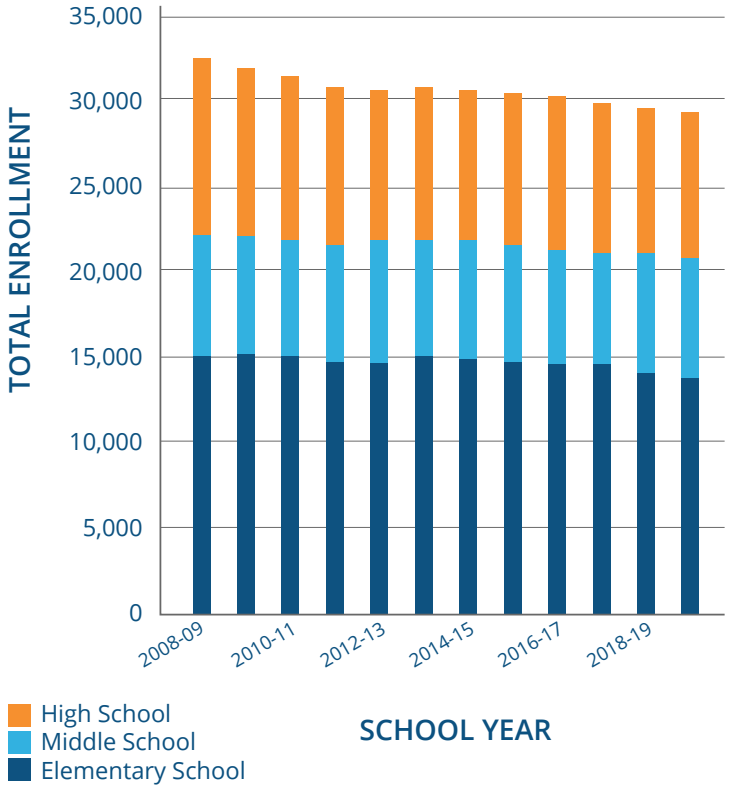


Figure 12: Total Enrollment, 2009–2020

- Approximately 63 percent of enrolled students in 2015 were identified as economically disadvantaged. Economically disadvantaged students are members of households that meet the income eligibility guidelines for free or reduced-price meals under the National School Lunch Program. The purpose of the program is to combat child hunger through schools. Food

insecurity for school-age children puts them at an increased risk for chronic health conditions, homelessness, and behavioral problems.

- Public school spending continues to decline across the country and most states are contributing less funding per student than they did before the recession hit. In FY 2014, Virginia spent $10,973 per student, which was slightly below the national average of $11,009. This was a $43 increase in funding from 2009 (Educational Finance Branch, 2015). NNPS funding per student was around the state average.
- In 2014, 88.9 percent of the population in Newport News 25 years and over completed high school (includes equivalency), which was higher than the averages for both Virginia (87.9%) and the United States (86.3%). That same year, 23.5 percent of the city's population 25 years and over had a bachelor's degree or higher, which was lower than the averages for both Virginia (35. 8%) and the United States (29.3%).
- Between 2000 and 2014, there was an increase in the percentage of population with an associate's degree or higher (see Figure 13).
- In 2014, Christopher Newport University (CNU) was listed as one of the nation's best institutions for undergraduate education and recognized as an up-and-coming university. CNU offers more than 80 areas of study at its 260-acre campus, provides opportunities for undergraduate research, and encourages community service. Enrollment in 2014 was just over 5,000 students.
- Thomas Nelson Community College, Saint Leo University, and the Virginia Tech and University of Virginia Hampton Roads Center work with individuals and businesses to develop and enhance the region's workforce. These post-secondary institutions offer convenient locations, flexible class schedules, and on-ground and internet-based classes to meet the education needs of our

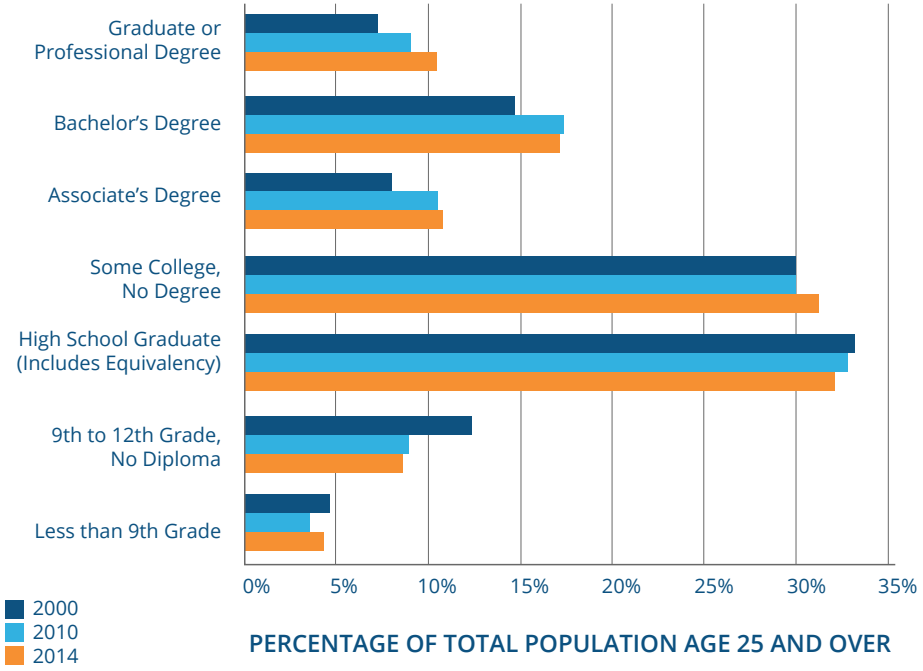


Figure 13: Educational Attainment, 2000–2014

workforce. And, they support local and regional employers with customized training programs.

- The Apprentice School—structured within Newport News Shipbuilding—offers 4- and 5-year apprenticeships in 19 shipbuilding disciplines and seven advanced programs of study. Founded in 1919, the school recruits, trains and develops its students for careers in shipbuilding. Admission is highly competitive for approximately 230 slots each year.

ECONOMY

The Hampton Roads economy continues its recovery post-recession, with gross product and employment growth lagging behind prerecession trends (HRPDC, 2015). The military and the DoD continue to provide most employment opportunities in the region. Two of the four largest employers in Virginia are the DoD and Huntington Ingalls Industries, Inc., (Newport News Shipbuilding) both of which are prominent employers in Newport News. According to the HRPDC, defense-related activities and spending account for more than 41 percent of the region's economy (HRPDC, 2013). Healthcare employment has experienced significant growth and is the only industry that added jobs throughout the recession. Riverside Health System remains one of the top 25 employers in Virginia, and Riverside Regional Medical Center continues to serve the Greater Peninsula from its 72-acre location on J. Clyde Morris Boulevard.

In Newport News, 2014 was a favorable year for business growth and diversification (Newport News Economic/Industrial Development Authority, 2014). The Newport News Economic Development Authority/Industrial Development Authority (EDA/IDA)—whose core mission is to grow and diversify the tax and employment base in Newport News—continued to provide innovative and forward-thinking solutions to foster business growth and diversification throughout the city. Several major employers announced expansion plans, new businesses opened in City Center, and the Tech Center at Oyster Point broke ground. Over 250 established businesses participated in City-sponsored business-related workshops and activities, and many took part in the Façade Improvement Grant Program and other programs offered through the Department of Development to improve commercial properties and generate job growth.

Newport News applied for and was awarded a new enterprise zone, a designation that allows new and existing businesses within the zone to receive state

Virginia Living Museum

grants for job creation and real property improvements. The zone went into effect on January 1, 2015 for a 10-year term with two 5-year renewal periods for a total of 20 years. The zone, illustrated in Figure 14, covers Oakland Industrial Park, Patrick Henry Commerce Center, Newport News/ Williamsburg International Airport, Air Commerce Park, and Upper Warwick Boulevard Retail Corridor. In addition, the EDA applied for and received certification for the City Center at Oyster Point Entertainment District through the Commonwealth's Tourism Development Financing Project. This tourism zone will increase new business, provide entertainment options for residents, and bring new visitors to Newport News.

Employment

- In Newport News in 2012, employment growth began to accelerate with significant growth in the Manufacturing sector (HRPDC, 2015). By the end of 2014, the city regained most of the jobs lost during the recession (HRPDC, 2015). HRPDC forecasts that the region may see a return to peak employment levels by spring 2018.
- In 2014, 69.5 percent of the city's population 16 years and older (99,187 people) was in the labor force. Of employment eligible females 16 years and over in Newport News, 63.5 percent where in the labor force. There was a 7.1 percent growth (6,601 people) in the city's labor force between 2000 and 2014.
- In 2014, the unemployment rate for Newport News dropped to 6.2 percent, which was higher than the unemployment rates for Virginia (4.5%) and Hampton Roads (6.0%), but lower than that of the United States (7.4%). The unemployment rate nearly doubled between 2008 and 2010, from 4.6 percent to 8.3 percent. This reflects the period from the start of the recession to its low point.
- In 2014, the average weekly wage in Newport News was $952, one of the highest in the region. This was an increase of 4 percent from the previous year (Virginia Employment Commission, 2016). In 2014, the average weekly wage in Virginia was $1,018, while the average weekly wage in Hampton Roads was $842.
- The number of new startup firms in Newport News rose by 62 percent between 2013 and 2014. The 141 startups in 2014 were just shy of the record high achieved in 2005 (144

Sidewalk seating at City Center

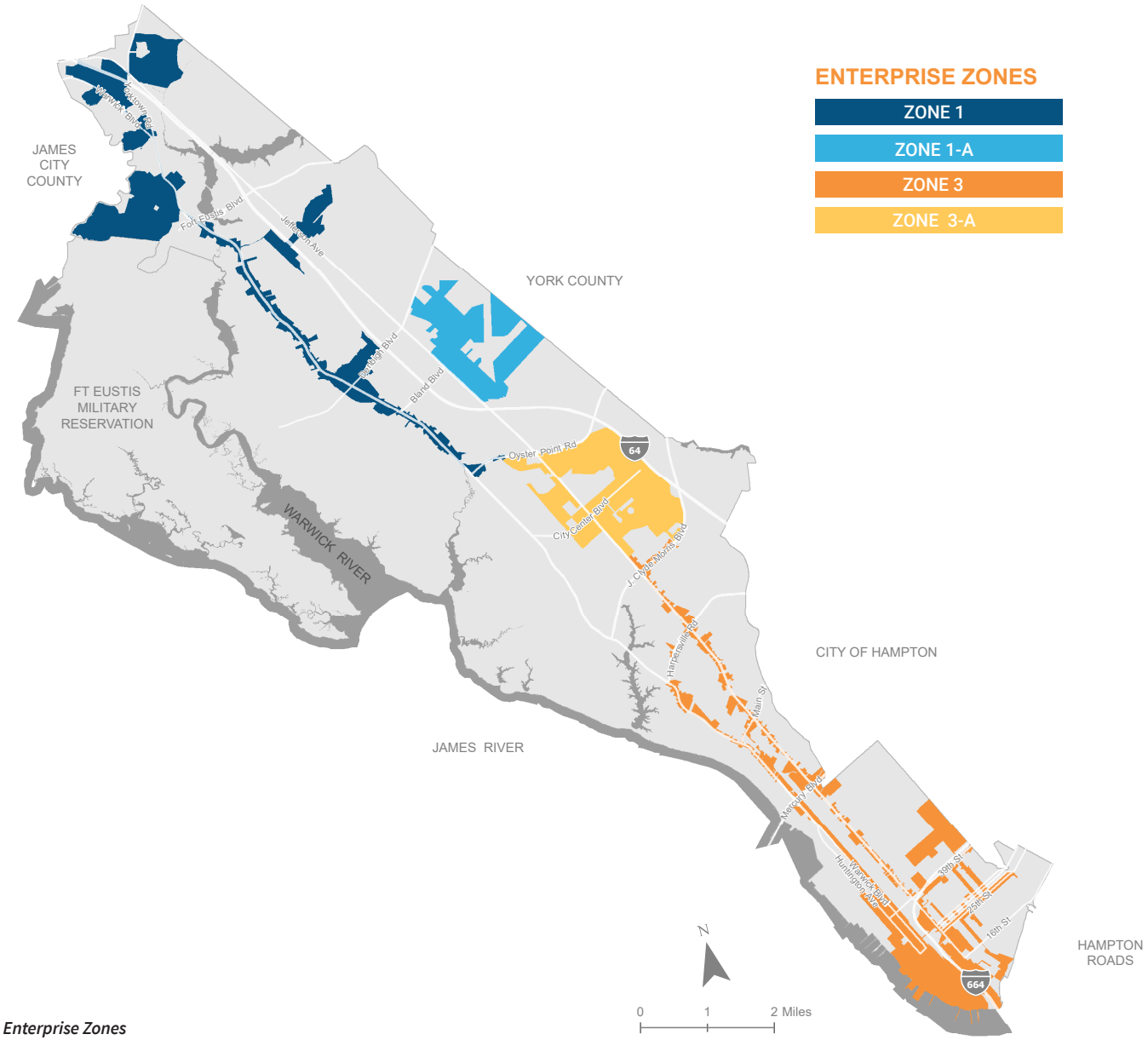


Figure 14: Enterprise Zones

new startups were reported that year) (Virginia Employment Commission, 2016).

- In 2014, the top three industries for the civilian employed population (16 years and over) in Newport News were Education Services, and Health Care and Social Assistance; Retail Trade; and Manufacturing (U.S. Census Bureau, 2015). The largest employment sector in Hampton Roads was Professional and Business Services, followed by Education Services, and Health Care and Social Assistance, and Retail Trade. The top three industries in Newport News in 2000 were the same as in 2014; the only difference was that Manufacturing and Retail Trade were flipped. In 1990, the top industries in the city were Services (business, repair, personal, entertainment/recreation, and professional); Manufacturing; and Retail Trade.
- According to the ***Greater Peninsula State of the Workforce Report 2014***, between 2010 and 2020 there will be more than 9,600 jobs openings each year on the Peninsula. The sectors with the largest numbers of annual openings are projected to be: Sales and Related; Food Preparation and Serving; Office and Administrative Support; Education, Training, and Library; and Construction and Extraction.
- The largest gaps between demand and supply for the Greater Peninsula workforce between 2010 and 2020 are projected to be: Plumbers, Pipefitters, and Steamfitters; Teacher Assistants; Carpenters; Machinists; Electricians; Police and Sheriff's Patrol Officers; Mental Health Counselors; Logisticians; Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products; and Industrial Engineers (Magnum Economic Consulting, LLC, 2014 p. 49-51).

Hilton Village celebrated 100 years in 2018

Military

- The presence of Joint Base Langley-Eustis and Naval Weapons Station (NWS) Yorktown has a positive direct impact on our economy. In FY 2013, the annual payroll for active duty military, civilians, and private businesses at Joint Base Langley-Eustis was approximately $1.28 billion. Expenditures for construction, services, and procurement of materials, equipment, and supplies exceeded $609 million. The total economic impact of Joint-Base Langley-Eustis for the region, including indirect jobs created, was $2.4 billion. That same year, the Navy estimates that NWS Yorktown had a

$216 million direct economic impact in the region.

- The large military presence also has a positive effect on our growing and diversifying workforce. Recruiting and hiring veterans and their family members strengthens the workforce with employees that have a strong sense of responsibility, the ability to work under pressure, strong leadership skills, and a high degree of professionalism. It also brings more people to the workforce who are used to adapting to change and may have a more global perspective.

Real Estate

- Commercial real estate throughout Hampton Roads continued to show signs of recovery in 2013 and 2014, as new development picked up and vacancy rates began to decline. However, vacancy rates are forecast to slowly increase as some national retailers restructure and close stores and others reposition themselves in new quality developments. Rental rates are also forecast to increase due to limited quality retail space (Machupa, 2014).
- In 2013, the lowest vacancy rate (3.75%) was in Newport News (Patrick Henry/ Oyster Point/Kiln Creek submarket). The highest vacancy rate (25.3%) in the Peninsula retail submarket was also in Newport News (Denbigh).
- Vacancy rates in the industrial market continued to fall in 2013, for the fourth straight year. It is projected that the Port of Virginia will continue to drive industrial demand for the region (Throne, 2014); container volume increased in 2013 and 2014. Note, however, that approximately one-third of cargo arrives and departs the port by rail, thereby potentially decreasing the demand for local warehouses.

URBAN SERVICES AND INFRASTRUCTURE

The City of Newport News provides a variety of urban services and physical infrastructure to its citizens. Effective delivery of these services and long-term maintenance of the infrastructure is crucial not only to overall quality of life, but to the viability of our existing businesses and our ability to attract new businesses and promote innovation and entrepreneurship. To remain economically competitive in a global world, Newport News offers cost-effective and reliable services including drinking water and waste management, and modern and efficient physical infrastructure including roads and air transportation with provisions for multimodal connectivity. Our competitive advantage is further enhanced by the ability to offer quality and diversity of natural, cultural and human resources and ensure physical security.

Key facts, trends, challenges, and opportunities related to physical infrastructure are presented in Section 2.3, An Accessible City. Key facts, trends, challenges,

and opportunities related to urban services, including public safety, are presented in Section 2.4, A Healthy and Safe City.

RESILIENCY

To ensure that Newport News has the capacity to maintain or regain functionality and vitality following natural, climate-induced, or man-made stressors or disturbances, the city continues to develop strategies and plans to better respond and adapt to changing economic, social, and physical conditions. The purpose of these strategies and plans is to ensure that our citizens have access to what they need to survive and thrive. As presented by the Urban Land Institute, resilient practices not only "help mitigate the growing risks presented by weather volatility and sea-level rise," they also enhance community livability, strengthen the economy, and restore the integrity of natural resources (Urban Land Institute, 2014).

Comprehensive, risk-based and coordinated emergency management operations are provided by the Newport News Division of Emergency Management. A division of the Fire Department, the staff manages the Emergency Operations Center (EOC) and plans for preparedness, response and recovery efforts for emergency and disaster operations within the city. Our Emergency Operations Plan, reviewed and approved by the Virginia Department of Emergency Management, is used to manage any kind of disaster, no matter how minor or significant. The Division of Emergency Management continuously coordinates within the region, and with business and industry to ensure compatibly of emergency plans and procedures. Emergency Management and the EOC are discussed further in Section 2.4, A Healthy and Safe City.

Engineering, environmental, and planning staff are engaged in regional forums and workshops on climate change and sea-level rise. Sea-level rise modeling and analysis being conducted by the Virginia Institute of Marine Science will help staff better understand how critical infrastructure in low-lying areas may be impacted, and determine if existing policies need to be revised or new strategies implemented to make Newport News more resilient to natural or man-made events. Recurrent flooding and sea-level rise are further discussed in Section 2.2, A Sustainable City.

The City is exploring the extended use of smart technology across Newport News to create more efficient and robust systems that not only provide essential services during and in the aftermath of adverse events, but recover faster after disruptions. Advances in science and technology are allowing cities to integrate technological solutions to manage their assets through the use of information and communication technologies. The city will continue to identify ways to make

neighborhoods safer, reduce energy usage, reduce flooding, and improve mobility through the use of smart technology.

In late 2015, Newport News was selected for two federal programs that will help us continue to respond and adapt to changing economic, social and physical conditions in specific areas of the city:

- Joint Base Langley-Eustis was selected by the Office of Economic Adjustment (DoD) for the Joint Land Use Study (JLUS) Program. This program assists communities in developing comprehensive strategies in response to various DoD program changes including potential incompatibilities between military operations and local development. The program promotes a proactive approach to communication and decision-making relating to land use regulation, conservation, and natural resource management issues affecting land the military owns. The City Council adopted the JLUS in 2018.
- The Environmental Protection Agency (EPA) selected Newport News to receive technical assistance through its Building Blocks for Sustainable Communities Program (Partnership for Sustainable Communities, 2014). The program helps communities adopt sustainable growth strategies that increase resilience to natural disasters, strengthen the economy, and protect human health and the environment. Technical assistance focused on equitable development in the Southeast Community, identifying strategies to create a healthy, vibrant community in which everyone can participate and benefit. The EPA-supported team of experts worked with stakeholders to define local needs and areas of vulnerability and identify strategies to promote equitable growth within the Southeast Community.

In summer of 2016, the city and the Newport News Redevelopment and Housing Authority were awarded a Choice Neighborhoods Initiative (CNI) Planning Grant from the Department of Housing and Urban Development. The grant helps local communities transform neighborhoods into places of choice by rebuilding distressed public housing and assisted housing, improving and expanding services, expanding learning opportunities, creating pathways to jobs, and strengthening families. See Section 5.3, Planning Opportunity Areas 2040, for more information.

2.1.2 WHAT WE HEARD

Some stakeholders expressed concern with the city's perceived reliance on the shipyard and DoD for economic health.

Several identified the need to emphasize and promote the technology and research opportunities within the city and promote Newport News as a hub for R&D. Others see a demographically and economically diverse city that has competing interests, but is improving in many areas such as education and public safety. Some residents pointed out that there is a high vacancy rate for commercial property on the Greater Peninsula, with a few older, larger vacant commercial properties in Newport News. Others pointed to older commercial properties with low occupancy rates and limited investment in maintenance as being of concern. A majority of stakeholders believe that revitalization of historic downtown Newport News will further enhance the city's prosperity.

Some stakeholders perceive local schools to be of poor quality and low performing, while others expressed concern with the perception that schools are of poor quality when in fact they appear to perform well. Stakeholders noted that NNPS facilities are aging; the need to renovate and replace continues to grow. In the past, NNPS added trailers to meet capacity needs. These trailers are also aging.

Some residents expressed concern with the busing of children outside their neighborhoods. Stakeholders saw a connection between a strong education base and economic prosperity and spoke of the benefits of improved partnerships with CNU, the Apprentice School, and other educational institutions. Many recognized the benefits of a strong Town and Gown relationship.

Residents see the opportunity to utilize sports as an economic driver, building more sports fields to host local and regional tournaments, and perhaps finding a location to support a semi-pro sports team.

Results from the 2016 Community Survey include:

- Over 87 percent of the residents surveyed were satisfied with their overall quality of life in Newport News; 65.8 percent of respondents said they were satisfied or very satisfied with the city as a place to retire; and 71.4 percent were satisfied with the city as a place to raise children.
- Approximately 67 percent of respondents said they were satisfied with the city in terms of job opportunities.
- Almost 66 percent of residents surveyed were satisfied with the quality of public schools in the city.
- Over 72 percent of respondents were satisfied with the resources available to Newport News school children to prepare them to go to college, get jobs, or enter the military.

- When asked to rate the value received for their tax dollars, 70.3 percent of survey respondents stated they were satisfied or very satisfied.

2.1.3 WHAT IT ALL MEANS

- Although population projections show slow growth for Newport News through 2040, new residents will still need somewhere to live and work. With limited undeveloped land, we should target areas now for higher density development and redevelopment to provide sufficient housing and job options, supported by needed resources and desirable services including transportation mode choices.
- The racial and ethnic composition of our population is changing; we are becoming more diverse. This is a benefit for businesses because increased diversity has the potential to enhance innovation and subsequently spur economic growth. We will, however, need to continue to promote policies that embrace diversity and push Newport News to be an even more equitable, healthy, and sustainable global city.
- More than a third of all family households in Newport News are headed by single parents. While male-led households tend to be in better economic standing than female-led households, both household types tend to face more social and economic challenges than married couple households (Vespa, Lewis, & Kreider 2013). Children living in single-parent households are more likely to live in poverty than children of two-parent families. With the known impacts of childhood poverty on academic performance and the opportunities for long-term employment success, the City may need to explore additional programs to intervene, redirect and prevent these children from becoming statistics.
- The gap between rich and poor has not closed significantly over the past decade. Demands on services to address poverty and related concerns will increase if the trend is not reversed.
- Homelessness continues to be a challenge—and a cost—for the City and region. Permanent affordable housing solutions and support services are needed to reduce the homeless population and prevent families and individuals from becoming homeless.

- As the school age population declines, schools become less economically diverse, and development ebbs and flows, we must decide if our schools are in the right locations.
- As the demand for some level of post-secondary education grows, the need for workforce development programs will increase and become ever more critical to address shortages in key industry sectors.
- To remain globally competitive, we must continue to diversify and innovate. To support our leading and emerging industry sectors and remain economically sustainable, development policies must continue to encourage market leadership (growth beyond geographic boundaries and traditional markets) and innovation.
- As federal spending remains tight, we can enhance our fiscal resilience by continuing to diversify our economy. We need to promote a skilled and diverse workforce, quality infrastructure (e.g., housing choice, a balanced transportation system, alternative energy sources, and quality utilities), and quality education to attract expanding and new business.
- As sea-level rise modeling and analyses are completed for Hampton Roads, the city of Newport News will need to continue to establish investment priorities to improve long-term resilience.
- To promote Newport News as a "Smart City," we will need to continue to leverage funds to invest in the technologies that allow us to more efficiently and sustainably deliver services to our customers while attracting businesses and entrepreneurs that thrive in the digital world.


Fall Festival of Folklife

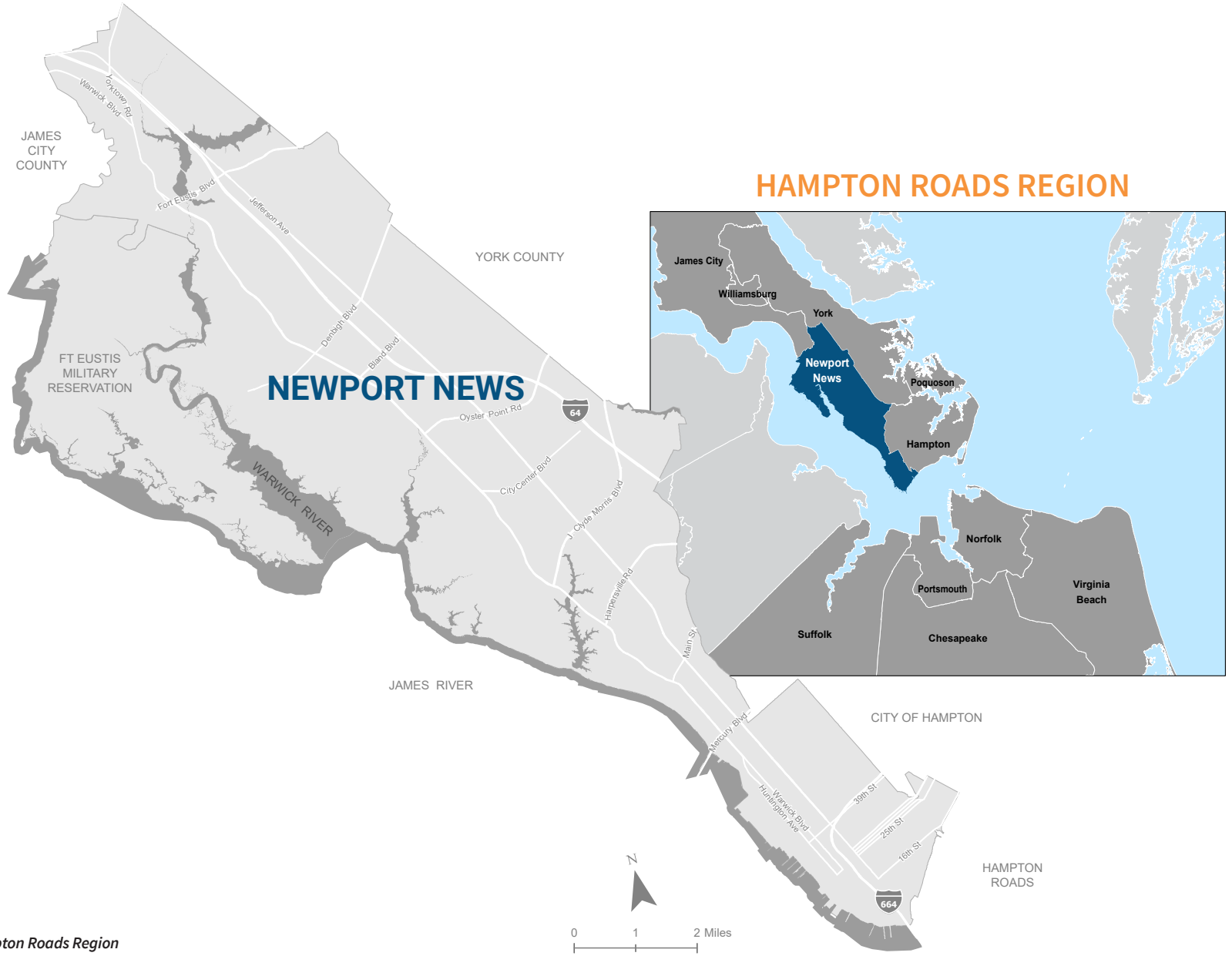


Figure 15: Hampton Roads Region

2.2 A SUSTAINABLE CITY

This section provides key facts and trends related to land use, development, and the environment. It also incorporates stakeholder input gathered through various outreach efforts including the citywide survey. Key points considered during development of strategies to implement the planning vision are provided at the end of this section.

2.2.1 KEY FACTS AND TRENDS

Chartered as an independent city in 1896, Newport News consolidated with the City of Warwick in 1958 to form what has become the fourth largest city by population in Hampton Roads.[3] Taking on the more well-known name of Newport News, the new city was comprised of 65 square miles of land area which, through several minor boundary adjustments and an annexation, increased to 70 square miles, not including water. Historic Newport News was a rapidly growing town supporting the emerging rail-port-shipyard industry and experienced immense population growth during World War II, while Warwick County was predominantly rural and slower growing with the vacant land to accommodate overflow from its urban neighbor (Planning Division, 1979). Consolidation more than tripled the size of Newport News, providing sufficient land area to support the demand for growth for more than three decades.

Centrally located in the Hampton Roads region, Newport News is easily accessible off of Interstate 64 (I-64) and I-664 (see Figure 15). Located along one of the world's largest natural harbors, the city has approximately 244 miles of shoreline (including inland areas and Fort Eustis). The natural harbor and Hampton Roads and James River shipping channels are highly valued and support the successful port, marine, and shipbuilding industries. Hampton Roads, the James River, and their tributaries also provide critical habitat for a variety of plant and animal species, and are natural assets that can be enjoyed by residents and visitors alike. See Section 2.5, A City That Respects Its Uniqueness for more on our greatest natural asset: our location on the banks of the Hampton Roads Harbor.

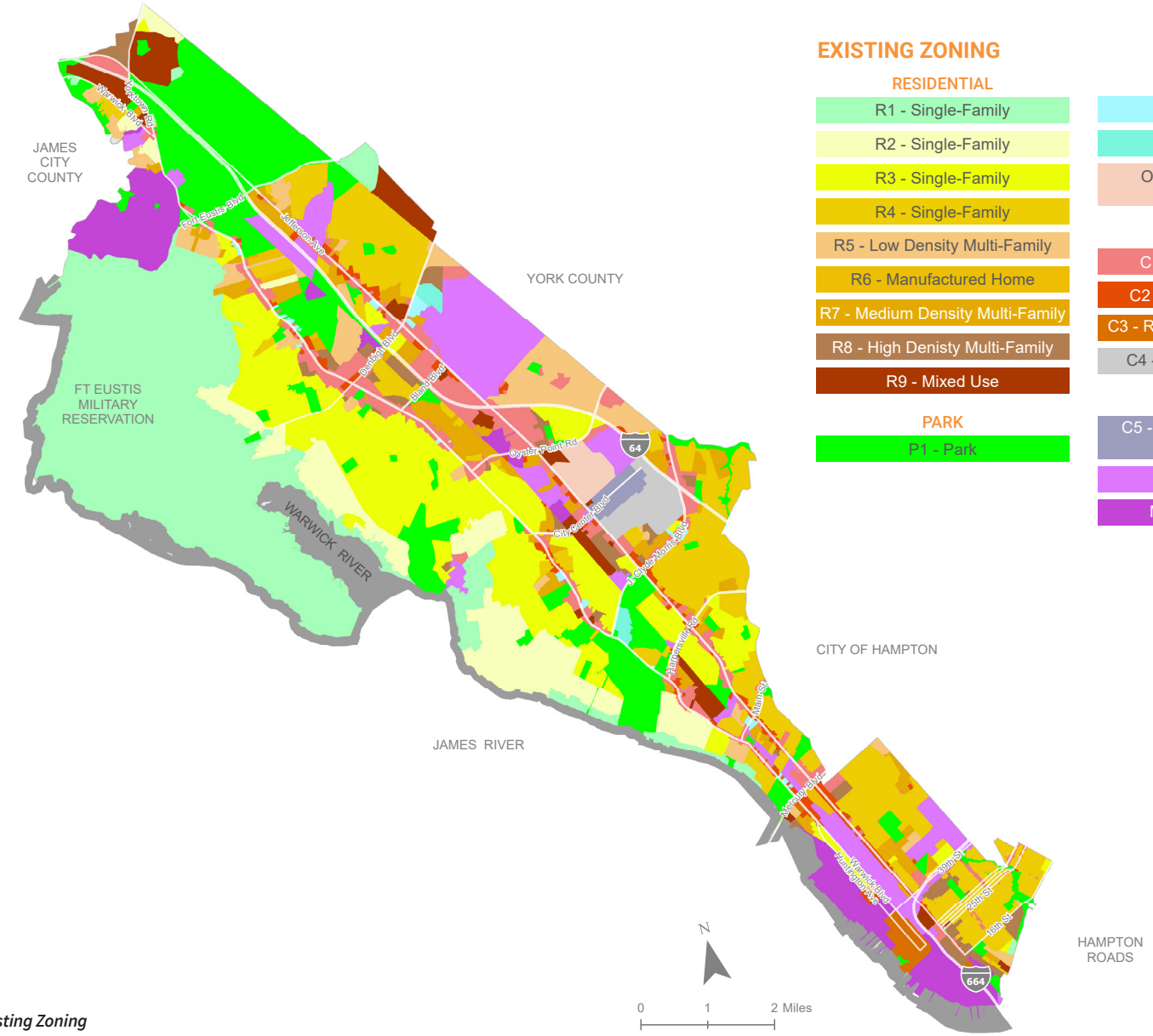
LAND USE AND DEVELOPMENT

Newport News is an urban area developed on lower-density suburban growth patterns, a reflection of the historic settlement of the former Warwick County and the market demands and availability of undeveloped land between the 1940s and 1990s. Originally comprised of manor estates and farms on large tracts of land, Newport News was laid out in a grid system in the late 19th century to support the coming of the railroad. During World War II, historic Newport News was not only a port of embarkation, it was a center for ship and aircraft building that brought a burgeoning workforce to its city limits. Quickly reaching capacity, the city was unable to accommodate the total demand for housing, so overflow went to neighboring Warwick County. During the war, new housing sprung up in Newport News and Warwick County in the form of apartments and planned communities, also known as emergency housing projects. Many of these communities became permanent postwar neighborhoods, including Harbor Homes, Marshall Courts, Orcutt Homes, Rivermont, and Brandon Heights (Quarsten & Rouse, 1996).

After the war, Newport News experienced a declining inner city and upper- and middle-income flight to nearby counties. The 1958 consolidation was seen as the solution to the city's economic problems, bringing back the tax base and providing opportunity for growth northward. As a result, the city is long and narrow: approximately 22 miles long, 7 miles wide at its widest point (excluding Fort Eustis), and 1 mile wide at its narrowest point.

The early 1960s brought the spread of subdivisions and community services ever

[3]Warwick County (1634-1952) incorporated into the city of Warwick in 1952 before consolidating with the city of Newport News in 1958.



EXISTING ZONING

RESIDENTIAL

- R1 - Single-Family
- R2 - Single-Family
- R3 - Single-Family
- R4 - Single-Family
- R5 - Low Density Multi-Family
- R6 - Manufactured Home
- R7 - Medium Density Multi-Family
- R8 - High Denisty Multi-Family
- R9 - Mixed Use

PARK

- P1 - Park

OFFICE

- O1 - Office
- O2 - Office Park
- O3 - Office / Research & Development

COMMERCIAL

- C1 - Retail Commercial
- C2 - General Commercial
- C3 - Regional Business Districts
- C4 - Oyster Point Business

INDUSTRIAL

- C5 - Oyster Point Business / Manufacturing
- M1 - Light Industrial
- M2- Heavy Industrial

A SUSTAINABLE CITY

Figure 16: Existing Zoning

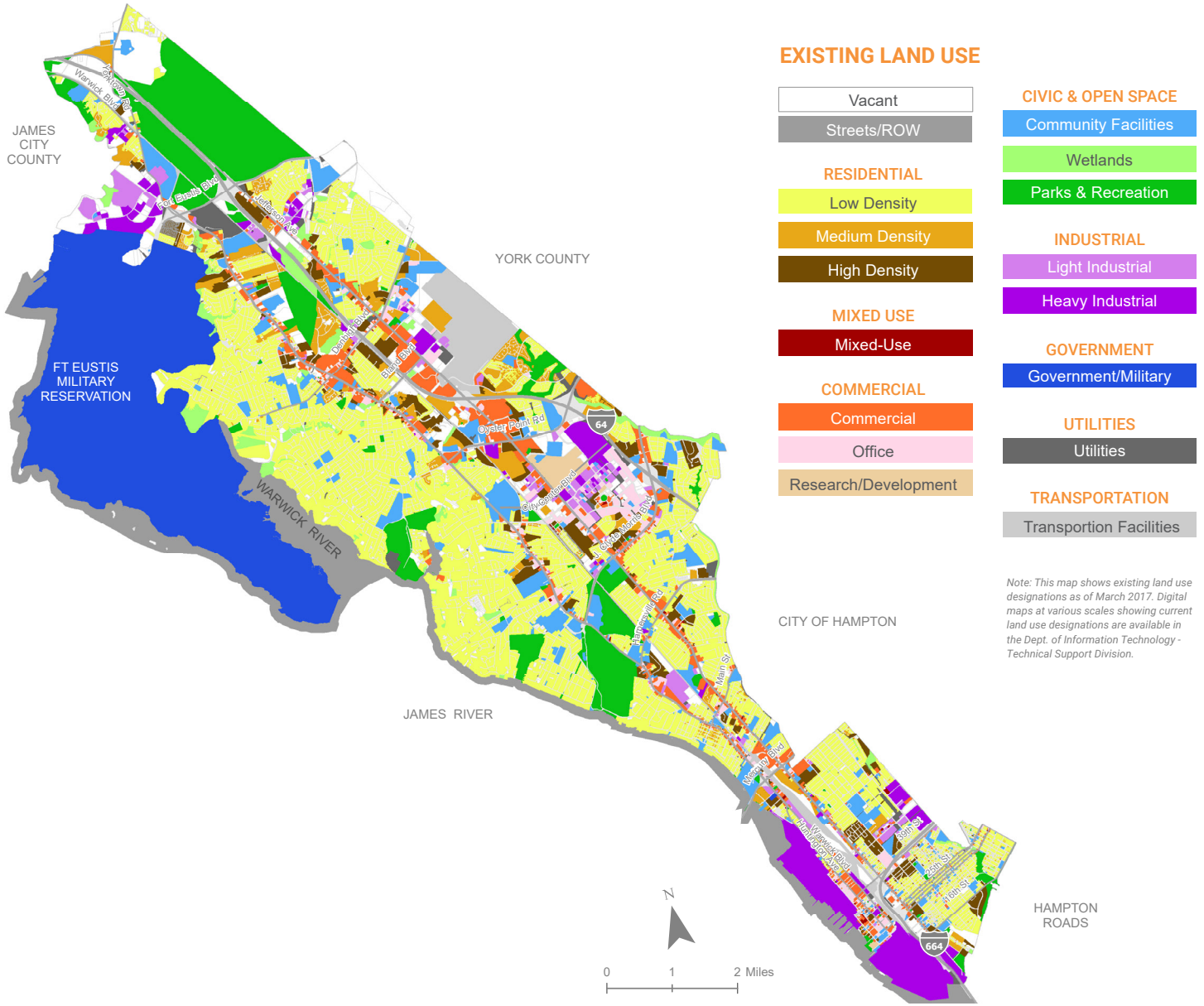


Figure 17: Existing Land Use

further north, a move that continued well into the early 1990s. Development generally occurred in a leapfrog pattern with new residential neighborhoods built on less expensive land farther from the urban core, bypassing vacant parcels closer in. The low density pattern of development north of Mercury Boulevard also led to cluster and strip commercial development along the city's two major arterials: Jefferson Avenue and Warwick Boulevard.

While there are over 3,000 acres of vacant land, only a few larger-scale development opportunities remain (see Figure 16). As of 2017, 90.6 percent of the city's land is developed, 6.8 percent is vacant, and 2.6 percent is designated wetlands (see Figure 17).

- Residential development occupies 31.9 percent of the total developed area in Newport News. Military/Federally Owned land makes up the next largest percentage of developed area, followed by parks, open space and wetlands (see Figure 18.
- With a population of 181,362 (2014) and a total land area of 70 square miles, the city's population density of 2,591 persons per square mile remains the fourth highest in Hampton Roads.
- Activity centers are established throughout Newport News, providing focal points for business and community life. Activity centers vary in size, function and character to meet the needs of their service area. Employment centers include Seafood Industrial Park, Oakland Industrial Park, and Copeland Industrial Park. Regional centers include historic downtown, Patrick Henry Mall, City Center, and the recently opened Marketplace at Tech Center. Community and neighborhood activity centers include Hidenwood and Hilton Village respectively. Some of these centers are thriving, while others face redevelopment pressure or struggle to fill vacant space. Several older activity centers, such as Newmarket, may be ideal locations for transit-oriented development (TOD).

Since the 1990s, new development has largely occurred through infill and redevelopment. Revitalization and redevelopment will continue to improve and reshape our city, especially in those sections

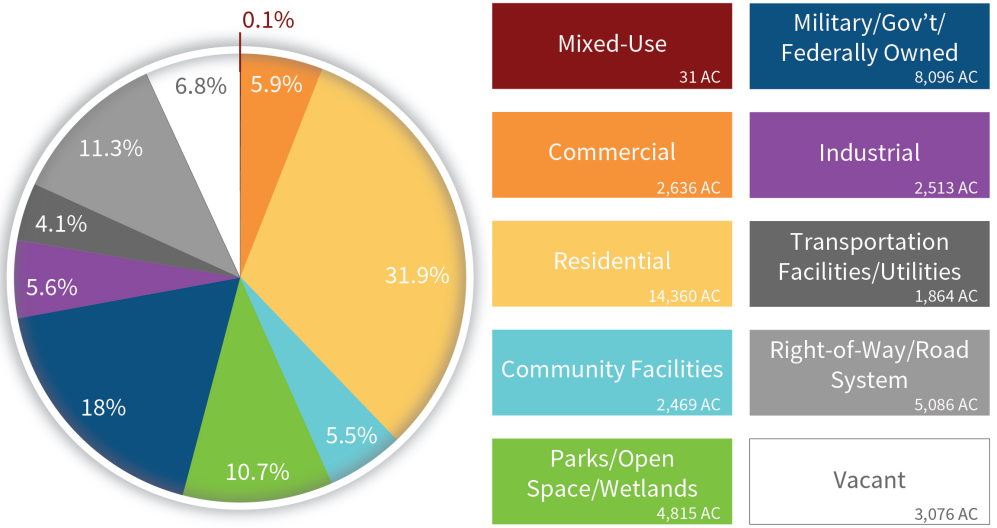


Figure 18: Existing Land Use by Actual Use

of the city identified as Planning Opportunity Areas. Each project will be assessed through the Chesapeake Bay Preservation Ordinance (Newport News Code of Ordinances, Chapter 37.1, Stormwater Management, Article V: Chesapeake Bay Preservation), and no new development will be approved that will reduce water quality. Planning Opportunity Areas are discussed further in Section 2.6, A City That Balances Good Places and New Spaces.

ENVIRONMENTAL STEWARDSHIP

Our city's shoreline is a natural resource that provides habitat for wildlife, offers public and private access to the water, and filters nutrients and other pollutants from the water. The James River and its tributaries provide habitats for a variety of plant and animal species in their wetlands, non-vegetated tidal flats, forested areas, and flood plains. With 2,883 acres of tidal wetlands and over 240 linear miles of shoreline along 14 creeks and rivers, Newport News has an extensive natural system that not only supports significant wildlife habitat, but also contributes to our economic health, public safety, and quality of life.

Newport News has gone "green," in an ongoing effort to save energy, prevent pollution, and take the practical actions needed to facilitate environmentally sustainable government policies and practices and make our community viable for future generations. The city of Newport News is committed to protecting the environment for current and future generations; it does so by meeting or exceeding requirements of all local, state, and federal environmental regulations and legislation and promoting sustainable design and development. In addition, the city promotes responsible practices and procedures in its daily operations, raises public awareness of environmental issues, and solicits citizen participation in meeting its environmental policy objectives.

The city of Newport News has partnered with other localities in Hampton Roads to spread environmental awareness since the early 1990s. Individual regional committees merged in 2011 into the umbrella campaign known as askHRgreen.org. AskHRgreen.org is administered through the HRPDC, and promotes environmental stewardship among all residents of our region. Through askHRgreen.org, residents have the opportunity to learn that small changes made at home can make a big impact. There are four major areas of focus for askHRgreen.org: Fats, Oils & Grease; Recycling & Beautification; Stormwater Education; and Water Awareness. By signing up for the askHRgreen.org e-newsletter, residents can stay informed about local events (such as rain barrel workshops and e-recycling events) and receive tips for stewardship around their homes.

The city launched NNGreen, a public awareness campaign, in 2013 to promote green practices and engage citizens in making Newport News a more sustainable community. Recent sustainability activities benefiting the community include the Residential Recycling Program, Business Recycling Services, and Electronics Recycling Program. Recognition of our award-winning sustainability best practices culminated at the 2014 Energy and Sustainability Conference with the Crystal Award, presented by the Virginia Chamber of Commerce and Virginia Commonwealth University.

Water Quality

Local Soils & Erosion and Sediment Control

A soil survey was prepared for the Tidewater cities of Virginia, which includes Newport News, by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service in cooperation with Virginia Polytechnic Institute and State University in 2009. A digital soil map with attribute information is maintained by the

USDA Natural Resources Conservation Service (updated in 2017). Together the soil survey and digital map (shown in Figure 19) detail local soil classifications.

The major soil associations in Newport News are:

- Chickahominy - Urban land complex
- Tomotley - Urban land complex
- Urban Land
- Bethera - Urban land complex

The Chickahominy - Urban land complex soil is described as very deep, poorly drained with very slow permeability and slow runoff. It has a silt loam texture and 0 to 2 percent slope. Tomotley - Urban land complex soil is described as very deep, poorly drained with a moderate to moderately slow permeability and slow surface runoff. It has a fine sandy loam texture and 0 to 2 percent slopes. Urban Land is described as areas covered by impervious materials such as asphalt or buildings. Bethera - Urban land complex soil is described as very deep, poorly drained with very slow to ponded runoff and moderately slow or slow permeability. It has a clayey silt loam texture and 0 to 2 percent slope.

All soil classifications in the city have limitations for the use of septic tanks because they have little or no capability to absorb human waste. As a result, a septic system suitability map was not prepared for this document. The use of septic systems is not an issue for new development in the city because our standard method of disposing of human waste is through the City's wastewater collection system and Hampton Roads Sanitation District (HRSD) treatment system. See Sanitary Sewer System (page 65) for more information on remaining septic tanks in the city.

As Newport News is 90.6 percent developed, soil characteristics – percent slopes, shrink/swell potential, depth to water table, erosion hazard, permeability, and drainage class – have limited applicability to future development patterns in the city. Erosion and sediment control measures are, however, evaluated on a site-by-site basis for parcels proposed for development or redevelopment in accordance with Chapter 37.1, Stormwater Management, Article VII: Soil Removal and Other Land Disturbing Activities. City inspectors conduct field checks of approved construction projects for compliance with this ordinance, which ensures that excess sediment from disturbed sites does not contribute to stormwater pollution and impairments of our local waterways.

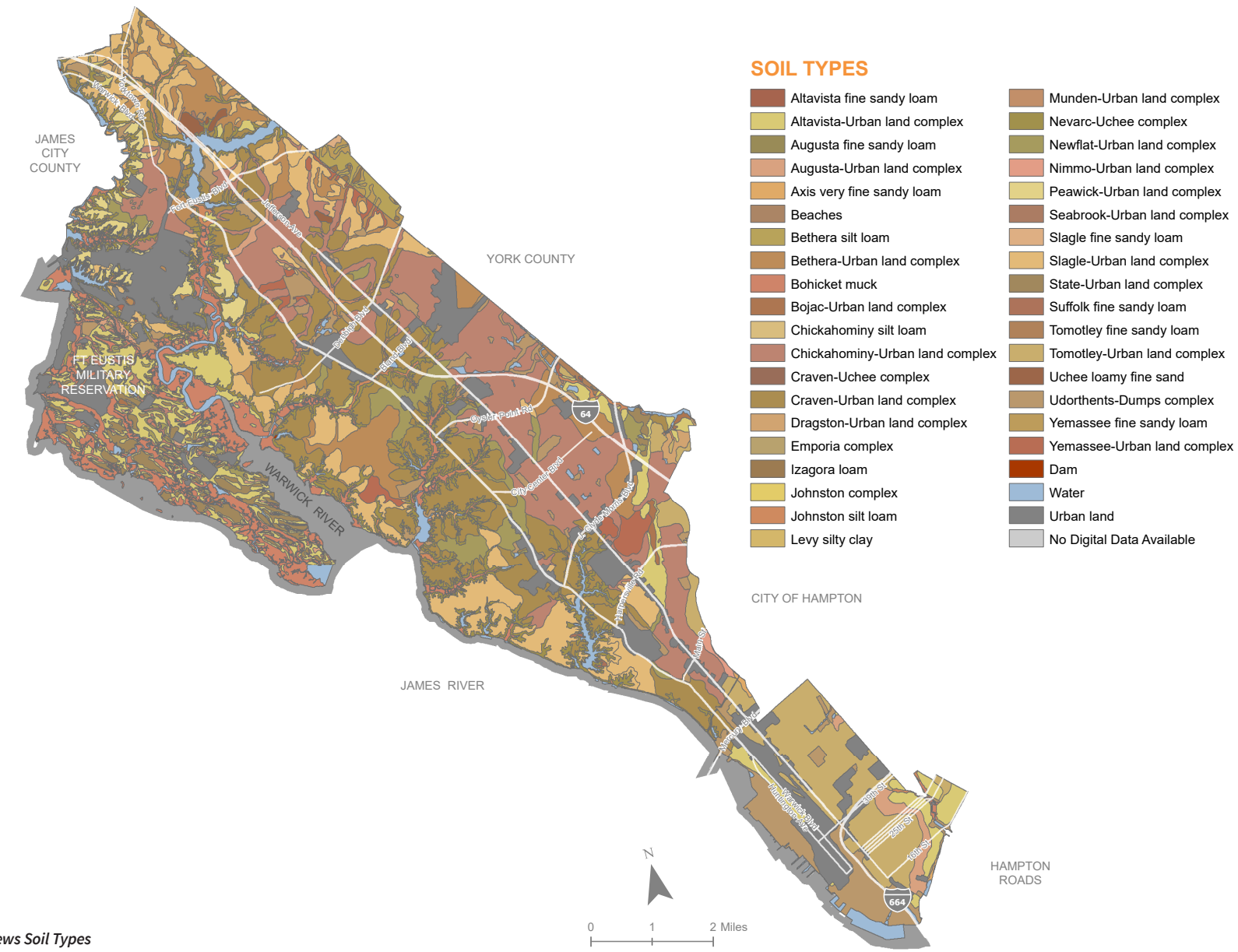


Figure 19: Newport News Soil Types

Wetlands

Newport News recognizes the importance of its natural resources, particularly wetlands, which provide a vast array of ecosystem functions including: flood reduction, water filtration, wildlife habitat, and opportunities for community engagement in outdoor activities. The city's shoreline was studied in 1974 by the College of William and Mary, Virginia Institute of Marine Science, to document tidal shoreline conditions. As illustrated in Figure 20, the shoreline inventory, updated in 2014, identified 2,567 acres of tidal wetlands in Newport News (including Fort Eustis) (Berman et al., 2014). In addition, Newport News contains approximately 1,165 acres of non-tidal, freshwater wetlands (not including Fort Eustis), found in the upper reaches of the city's creeks and in undeveloped lands.

The majority of the city's hydric soils have already been developed. Development of these lands can alter drainage patterns and deprive downstream wetlands of water. Additionally, many of our creeks and wetlands have been artificially drained by ditches. Where non-tidal wetlands remain within Newport News, they are regulated and protected by the U.S. Army Corps of Engineers and the Virginia Department of Environmental Quality (DEQ). As these parcels are considered for development, they are reviewed by multiple agencies and mitigation is required for any loss of wetlands greater than one-tenth of an acre.

The city of Newport News Wetlands Board was established in 1993 through the adoption of the Wetlands Ordinance (Newport News Code of Ordinances, Chapter 44). The Board's purpose is to preserve the city's tidal wetlands while accommodating necessary economic development. This voluntary, citizen board reviews applications for alterations of tidal wetlands, which are defined as vegetated or non-vegetated ("mudflats") lands between mean low and an elevation above mean low water equal to 1.5 times the mean tide range. The Board issues permits for activities in their jurisdiction. Permits will only be issued for activities that do not violate the purposes and intent of the city's Wetlands Ordinance or Chapter 13 of Title 28.2 of the Code of Virginia.

Chesapeake Bay Preservation Areas

The Chesapeake Bay and its perennial tributaries constitute one of the most important and productive estuarine systems in the world, providing economic and social benefits to the residents of Newport News and the Commonwealth of Virginia. The health of the Bay is vital to maintaining our economy and the welfare of our residents. In conformance with the Chesapeake Bay

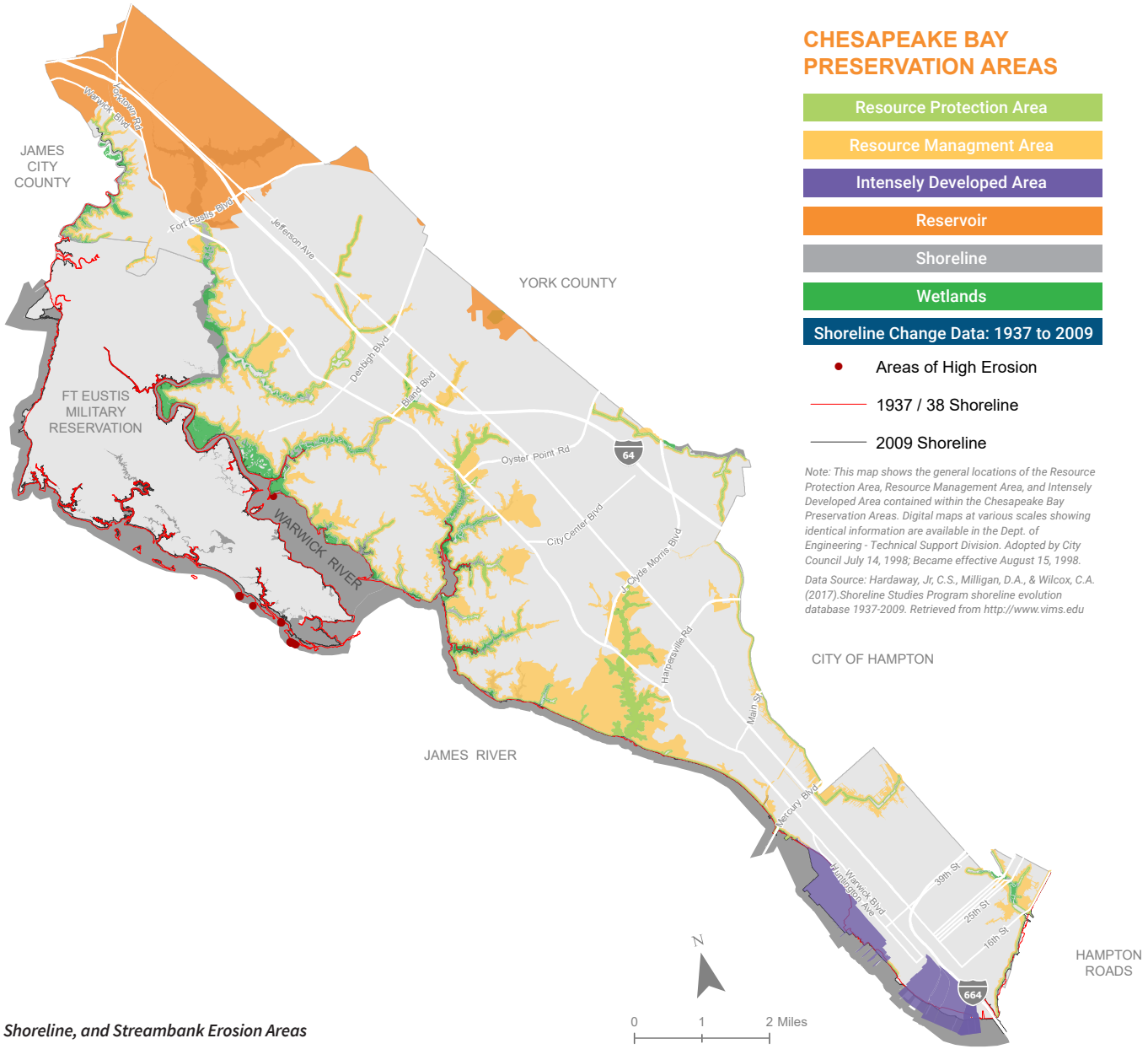


Figure 20: Chesapeake Bay Preservation Areas, Shoreline, and Streambank Erosion Areas

Preservation Act, the city of Newport News adopted a Chesapeake Bay Preservation Ordinance and associated map in 1990, which has been updated as needed to maintain consistency with state regulations. The purpose of the ordinance is to protect community and state waters from further degradation and improve water quality in the Chesapeake Bay and other state waters through effective land use planning and management. The ordinance can be accessed through the Municode website (municode.com) in the Newport News Code of Ordinances, Chapter 37.1, Stormwater Management, Article V: Chesapeake Bay Preservation.

As shown in Figure 20, land within the Chesapeake Bay Preservation Area (CBPA) is categorized as a Resource Protection Area (RPA), Resource Management Area (RMA), or an Intensely Developed Area (IDA). More than 11,200 acres within the city are within the CBPA, of which 3,727 acres are designated as RPA, 6,411 acres are RMA, and 1,069 acres are IDA.

The Resource Protection Area contains sensitive lands within 100 feet of the shoreline or along the banks of perennial streams and associated wetlands that protect and benefit water quality. Land development criteria within the RPA is stringent. A water quality impact assessment is required for all land disturbing activities in the RPA. The city encourages reestablishment of the vegetated RPA buffer where the buffer has been lost to development.

Resource Management Areas, located landward of RPA buffers, have potential to damage water quality or the protective features of RPAs without proper management. While the development criteria are less stringent in the RMA than the RPA, City staff still must review development plans and land disturbing activities to ensure that water quality is protected.

An Intensely Developed Area is land developed prior to local adoption of the CBPA Ordinance. It can be applied to areas of existing development and infill sites where little of the natural environment remains (more than 50% impervious surface). Newport News has one IDA, which is comprised of the industrial waterfront (historic downtown). This IDA constitutes one of the most important industrial areas in Virginia, providing economic and social benefits to Newport News, the Commonwealth, and the nation. Protecting the economic health of the IDA and improving the health of the Chesapeake Bay are not mutually exclusive; the City continues to explore opportunities and develop strategies to reinvest in the industrial waterfront.

The City implements the requirements of the Chesapeake Bay Preservation Act through its subdivision and site plan review processes. All development and redevelopment within the CBPA must go through either subdivision or site plan review. Proposed location and magnitude of a project determines the extent of City review. The City provides homeowners and developers with the CBPA Handbook, available through the Department of Planning, to guide applicants through the review process for development within the CBPA. Each project is assessed for compliance with the requirements of the CBPA ordinance, and no new development will be approved that would reduce water quality.

Drinking Water Supply

The reservoir watershed is well protected and parks/open space needs are balanced with water quality management measures. Numerous strategies are employed to protect our water sources. When feasible, Newport News Waterworks acquires critical lands around the various watersheds to prevent potentially harmful development on adjacent properties. (See Section 2.4, A Healthy and Safe City for more information on Waterworks and water supply.) Local regulations ensure that developers minimize impacts of earth-

disturbing activities during construction and control stormwater runoff after development. Waterworks also collaborates with developers to construct detention ponds. The city's Reservoir Protection Ordinance, which complements the Chesapeake Bay Preservation Program, prescribes buffers for intermittent and perennial streams and the reservoirs, providing an additional tool for water quality protection. York County also prescribes buffers along streams within their jurisdiction. Waterworks desires similar requirements in James City County and New Kent County within the watersheds of Skiffe's Creek, Little Creek and Diascund Reservoirs.

The Virginia DEQ is requiring individual groundwater withdrawal permit reductions to alleviate impacts on the state's aquifers. Withdrawal rights reduction will affect some Hampton Roads localities as they will not be able to meet their current water needs. While groundwater withdrawals add a safeguard to our water system for times of drought, Newport News Waterworks can meet customer needs during most drought conditions using the existing surface water supplies and some level of voluntary and incentivized reductions by customers. The proposed reduction—or even elimination of groundwater withdrawal—for Newport News would affect maintenance of the Lee Hall brackish groundwater desalting treatment facility, which requires a minimal amount of groundwater to operate. Newport News is a leader in the regional effort to study groundwater withdrawals in the area and identify measures to meet water requirements without reducing withdrawal rights. Drinking water supply and distribution is assessed in Section 2.4, A Healthy and Safe City.

Canoeing at Lee Hall Reservoir

The surface waters in and around Newport News are a valued resource. In addition to economic, recreational and environmental benefits, these waters are the primary source of potable water for Newport News and four surrounding communities. Within the boundaries of Newport News, the largest surface water reservoir for a potable raw water supply is Lee Hall Reservoir with 14.2 square miles of drainage area. The second largest is Hardwood Mills Reservoir with 9.5 square miles of watershed. The longest reach of shoreline is the James River followed by the Warwick River, Deep Creek, Lake Maury, Lucas Creek, Salter's Creek, and the Hampton Roads shoreline. Several smaller streams, lake inlets and estuaries round out the surface water sources.

Newport News Waterworks owns and operates the reservoirs that store and supply water to the treatment plants. The city's water supply is operated and maintained per Chapter 42 of the Newport News Municipal Code, Water Supply. Article V of Chapter 42 specifically addresses reservoir protection against pollution and degradation of the

drinking water supply, including inspections and enforcement. It is the city's policy to facilitate projects and promote land development practices which maintain and/or improve the quality of the city's drinking water. See "Urban Services" under Section 2.4.1 of this plan for more information on the water supply and treatment systems, along with water quality monitoring.

Comprehensive Coastal Resource Management

"Coastal ecosystems reside at the interface between the land and water, and are naturally very complex. They perform a vast array of functions by way of shoreline stabilization, improved water quality, and habitat for fishes, from which humans derive direct and indirect benefits.

The science behind coastal ecosystem resource management has revealed that traditional resource management practices limit the ability of the coastal ecosystem to perform many of these essential functions. The loss of these services has already been noted throughout coastal communities in Virginia as a result of development in coastal zone areas coupled with common erosion control practices. Beaches and dunes are diminishing due to a reduction in a natural sediment supply. Wetlands are drowning in place as sea level rises and barriers to inland migration have been created by construction of bulkheads and revetments. There is great concern on the part of the Commonwealth that the continued armoring of shorelines and construction within the coastal area will threaten the long-term sustainability of coastal ecosystems under current and projected sea level rise.

In the 1980s, interest arose in the use of planted wetlands to provide natural shoreline erosion control. Today, a full spectrum of living shoreline design options is available to address the various energy settings and erosion problems found. Depending on the site characteristics, they range from marsh plantings to the use of rock sills in combination with beach nourishment.

Research continues to support that these approaches combat shoreline erosion, minimize impacts to the natural coastal ecosystem and reinforce the principle that an integrated approach for managing tidal shorelines enhances the probability that the resources will be sustained. Therefore, adoption of new guidance and shoreline best management practices for coastal communities is now necessary to insure that functions performed by coastal ecosystems will be preserved and the benefits derived by humans from coastal ecosystems will be maintained into the future.

In 2011, the Virginia Assembly passed legislation to amend §28.2-1100 and §28.2-104.1 of the Code of Virginia and added section §15.2-2223.2, to codify a new directive

Fishing pier at King-Lincoln Park

for shoreline management in Tidewater Virginia. In accordance with section §15.2-2223.2, all local governments shall include in the next revision of their comprehensive plan beginning in 2013, guidance prepared by the Virginia Institute of Marine Science (VIMS) regarding coastal resource management and, more specifically, guidance for the appropriate selection of living shoreline management practices. The legislation establishes the policy that living shorelines are the preferred alternative for stabilizing eroding shorelines.

This guidance, known as Comprehensive Coastal Resource Management Guidance, is being prepared by VIMS for localities within the Tidewater region of Virginia and shared through their Comprehensive Coastal Resources Management Portal (CCRMP). It explicitly outlines where and what new shoreline best management practices should be considered where coastal modifications are necessary to reduce shoreline erosion and protect our fragile coastal ecosystems. This guidance will include a full spectrum of appropriate management options which can be used by local governments for site-specific application and consideration of cumulative shoreline impacts. The guidance applies a decision-tree method using a based resource mapping database that will be updated from time to time, and a digital geographic information system model created by VIMS (Center for Coastal Resource Management, 2015)."

Newport News will utilize the VIMS guidance materials when considering shoreline erosion control measures on City property. Additionally, we utilize the shoreline inventory prepared by VIMS when analyzing projects proposed on private property. An integrated approach is necessary when considering shoreline erosion, flood prevention and rising sea levels. These issues are explained further below.

Shoreline Erosion

The city continues to combat shoreline erosion that results from high water waves and wind during severe storms. Newport News has approximately 90 miles of tidal shoreline along Hampton Roads and the James River, with an additional 89 miles of shoreline from the creeks and rivers that drain into the two main bodies of water (Milligan et al., 2010).

Erosion of the shoreline and embankments affects roadways and underground utilities in low-lying areas, as well as structures in some areas. Dozens of shoreline stabilization and restoration projects have been identified to reduce the impacts of shoreline erosion throughout Newport News. In addition to protecting the shoreline, structures and infrastructure, construction of these projects will provide more natural habitat for fish and wildlife to thrive. Further, these projects will enhance the city's aesthetics and provide open space and natural areas for our residents to enjoy the natural beauty of the area in which we live.

Shoreline erosion control projects are coordinated with the Army Corps of Engineers, Virginia Marine Resources Commission, DEQ, and the Newport News Wetlands Board. In addition, the departments of Planning and Engineering review these projects for compliance with the city's Chesapeake Bay Preservation Ordinance. Guidance from VIMS is taken into consideration when planning these projects as well.

Recurrent Flooding and Sea Level Rise

The Hampton Roads region is highly vulnerable to damages from storm surge and potential sea level rise. Much of the region is relatively flat and low-lying, which allows storms to push ashore and flood large areas. Storms can have significant impacts on the natural environment resulting in beach erosion, downed trees, and loss of other vegetation. These events may also result in

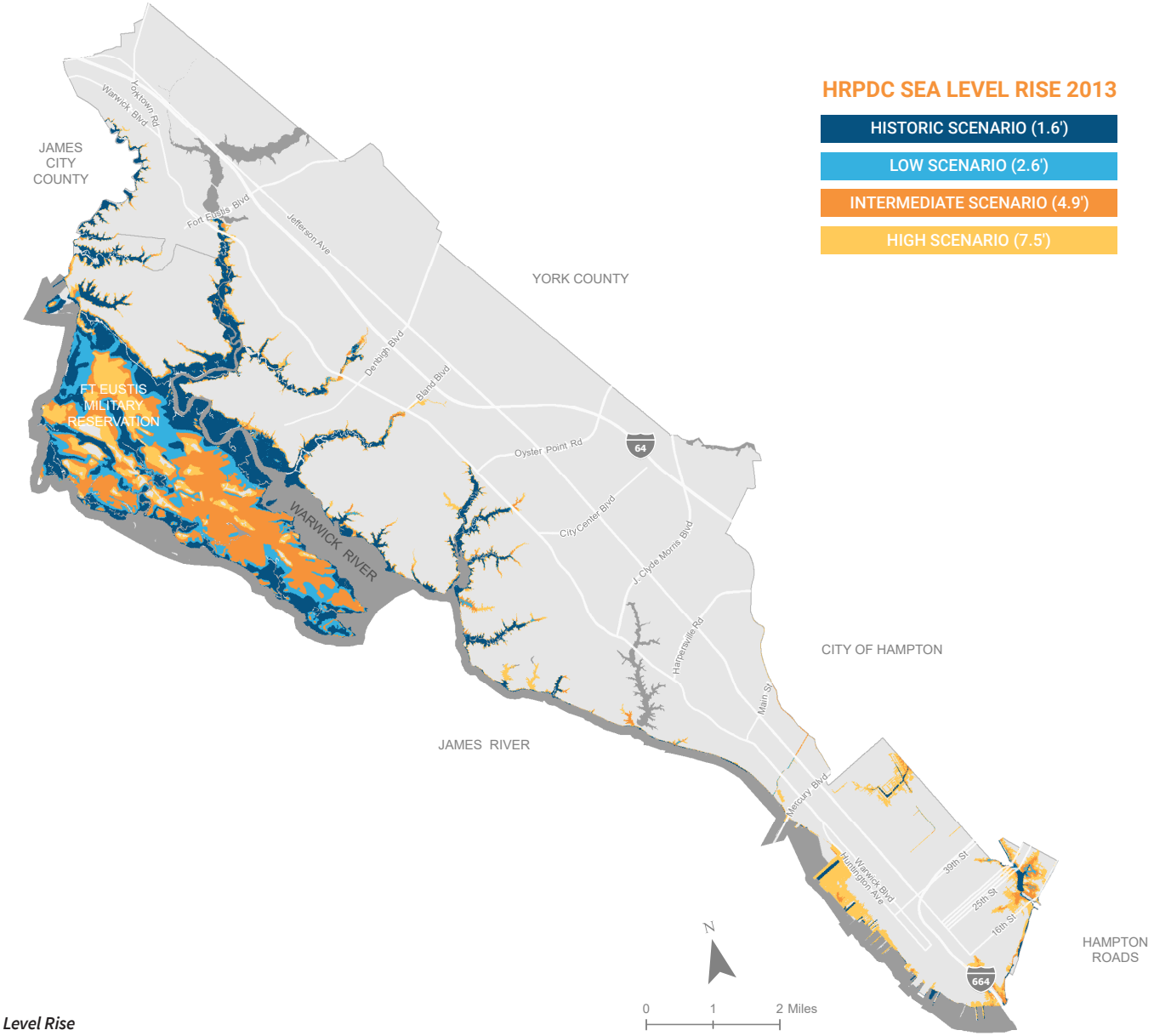


Figure 21: Sea Level Rise

impacts to structures and infrastructure.

Recent studies show sea level is rising 1 inch every 7 to 8 years along the coast of Virginia (Titus et al., 2010). Sea level rise erodes beaches, drowns wetlands, submerges low-lying lands, exacerbates coastal flooding, and increases the salinity of estuaries and aquifers. Estimates of acceleration vary, but a 1-foot total rise over the next 50 years is considered a reasonable estimate for Hampton Roads. Responses to this occurrence include armoring the shoreline, elevating land, and retreating.

Although Newport News will not be as impacted by sea level rise as other localities in Hampton Roads, we do have areas that experience recurrent flooding (see Figure 21). Of the city's total land area, less than 2 percent is located within 2 feet of current sea level. Newport News is relatively flat with an average elevation of about 20 feet above sea level. Protective barriers are generally non-existent between the built environment within the city and the surrounding waters. Therefore, any increases in water levels can produce tidal flooding in the lowest-lying areas, especially the southern portion of the city and around Fort Eustis (Joint Base Langley-Eustis). We will need to look at modeling and reporting to understand how critical infrastructure along the waterfront may be impacted and determine whether revisions to existing policies are needed. A first step in addressing recurrent flooding in low-lying areas was to update the Floodplain Development Regulations to meet new Federal Emergency Management Agency requirements.

The city updated its zoning ordinance to meet new Federal Emergency Management Agency requirements and updated floodplain maps (see Figure 22). Revisions to the maps in 2013 resulted in a reduction of total properties located in a flood zone, from more than 4,100 to just over 3,800 properties. Changes to the ordinance allow our citizens to continue to participate in the National Flood Insurance Program, and increase the freeboard requirement for all new and substantially improved structures. Elevations of the lowest floor must now be 2 feet above the base flood elevation. The Department of Engineering should be contacted for information on properties located within the flood zones.

Local floodplains generally follow the coastlines of Hampton Roads Harbor, Warwick River, and James River along with its numerous tributaries which are subject to tidal flooding. Heavy general rains occurring any time throughout the year may cause flooding of the upper reaches of these tributaries. Flooding may also occur as a result of intense rainfall produced by local summer thunderstorms or tropical disturbances such as hurricanes, which move into the area from the Gulf or Atlantic coasts.

There are two areas of Newport News that experience recurrent flooding, both located south of Mercury Boulevard: Newmarket Creek and Salter's Creek. The city is evaluating several projects that could alleviate flooding in the Newmarket Creek watershed. Salter's Creek is low-lying and subject to tidal effects. Neighborhoods bordering the creek developed as part of the original city, and thus were constructed below the current Base Flood Elevation. When the creek floods, nearby roads and property flood, too. Several projects have been identified for this area that will improve storm drainage and reduce flooding in the creek.

City staff participates on the Sea Level Rise Advisory Committee, a regional collaboration facilitated by the HRPDC, whose main objectives are to develop recommendations for local government and advocate for state and federal support for implementing actions. Regional sea level rise inundation maps are being updated by HRPDC as part of the collaborative effort to understand both the rate and magnitude of sea level rise in Hampton Roads.

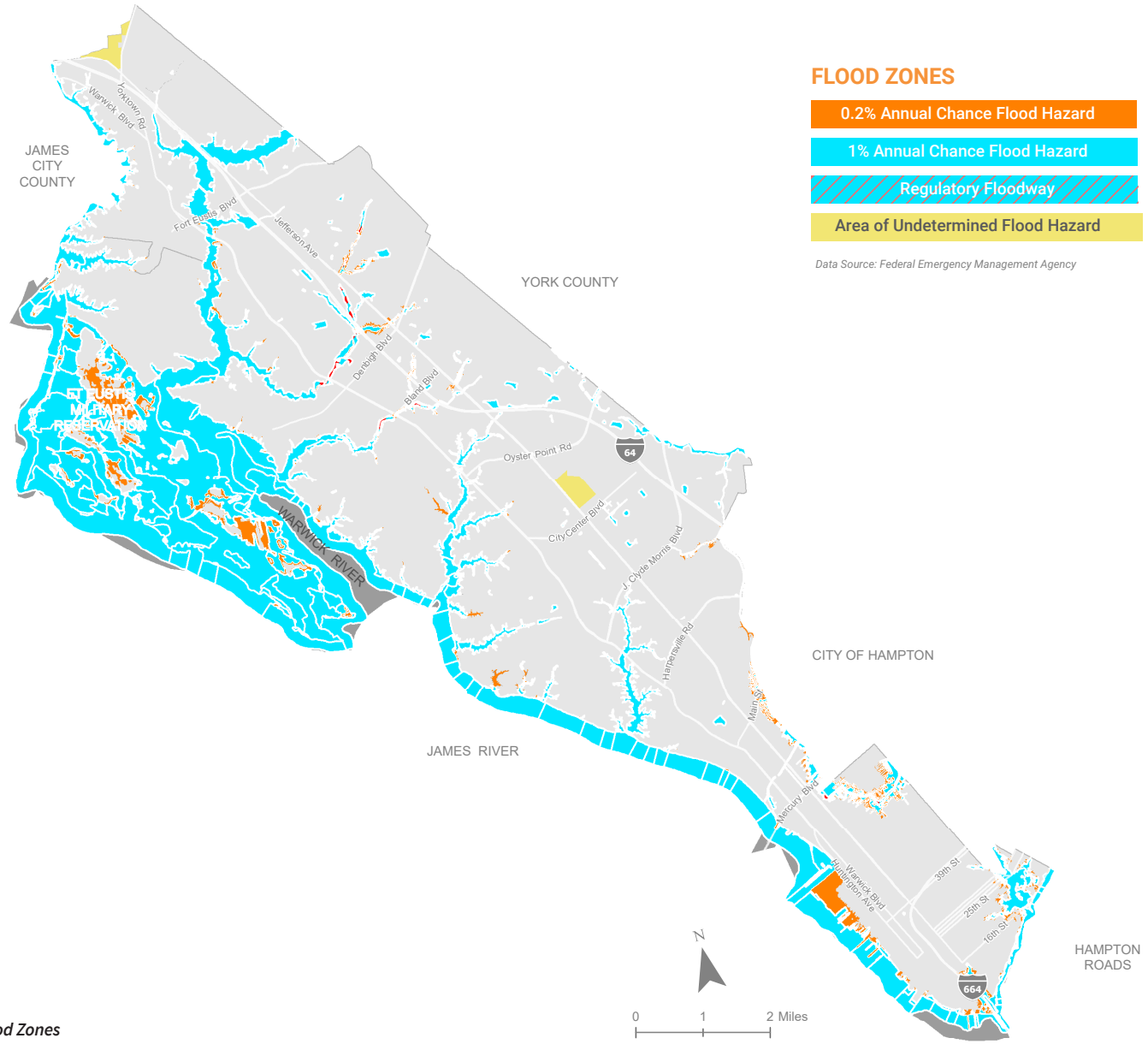


Figure 22: Flood Zones

Development and redevelopment in the 100-year floodplain should only occur in a manner that includes environmentally sensitive site design, minimizes impervious cover, enhances water quality, and protects the natural environment.

Stormwater Management

Virginia adopted new stormwater regulations that went into effect on July 1, 2014. As a result, the city amended multiple sections of Chapter 37.1, Stormwater Management, to be in compliance with the state's requirements. Stricter regulations affect how properties are developed and redeveloped, and there is an emphasis on stormwater management facilities that slow and filter stormwater runoff. Stormwater management remains a focal point for the city, as we continue to implement best management practices and other measures to control the quantity and quality of stormwater discharge into local waterways.

The Virginia DEQ carries out the mandates of the State Water Control Law and the state's federal obligations under the Clean Water Act (Virginia DEQ, 2015a). Since 1992, DEQ has tested Virginia's rivers, lakes and tidal waters for pollutants and reports their findings in a biennial water quality assessment report. The report lists those waters that do not meet standards for aquatic life, fish consumption, drinking water supply, recreational usage, shellfishing, and wildlife. When waterways do not meet water quality standards, the Clean Water Act requires that the state establish a Total Maximum Daily Load (TMDL) or "pollution diet" that sets the maximum amount of pollutants that a waterway can receive, without violating standards. TMDLs have been established for three bodies of water that are in or adjacent to Newport News: Chesapeake Bay (impaired for nutrients and sediment), Back River (impaired for bacteria), and Warwick River (impaired for bacteria).

The Municipal Separate Storm Sewer System (MS4) Permit issued to the city by DEQ, effective July 1, 2016, requires that the city address these three impaired waterways through the establishment of TMDL action plans. The "Chesapeake Bay TMDL Action Plan" and "Back River and Warwick River TMDL Action Plan" are documents that detail how the city will reduce nutrients, sediment and bacteria contributions that enter local impaired waterways through stormwater runoff. These plans were submitted to DEQ for approval in summer 2018.

The MS4 Permit governs numerous other programmatic requirements related to water quality. The city must ensure that non-stormwater illicit discharges and illegal dumping are prevented from entering and polluting our storm sewer system. Potential sources of pollution, including industrial and high-risk runoff facilities, are monitored to

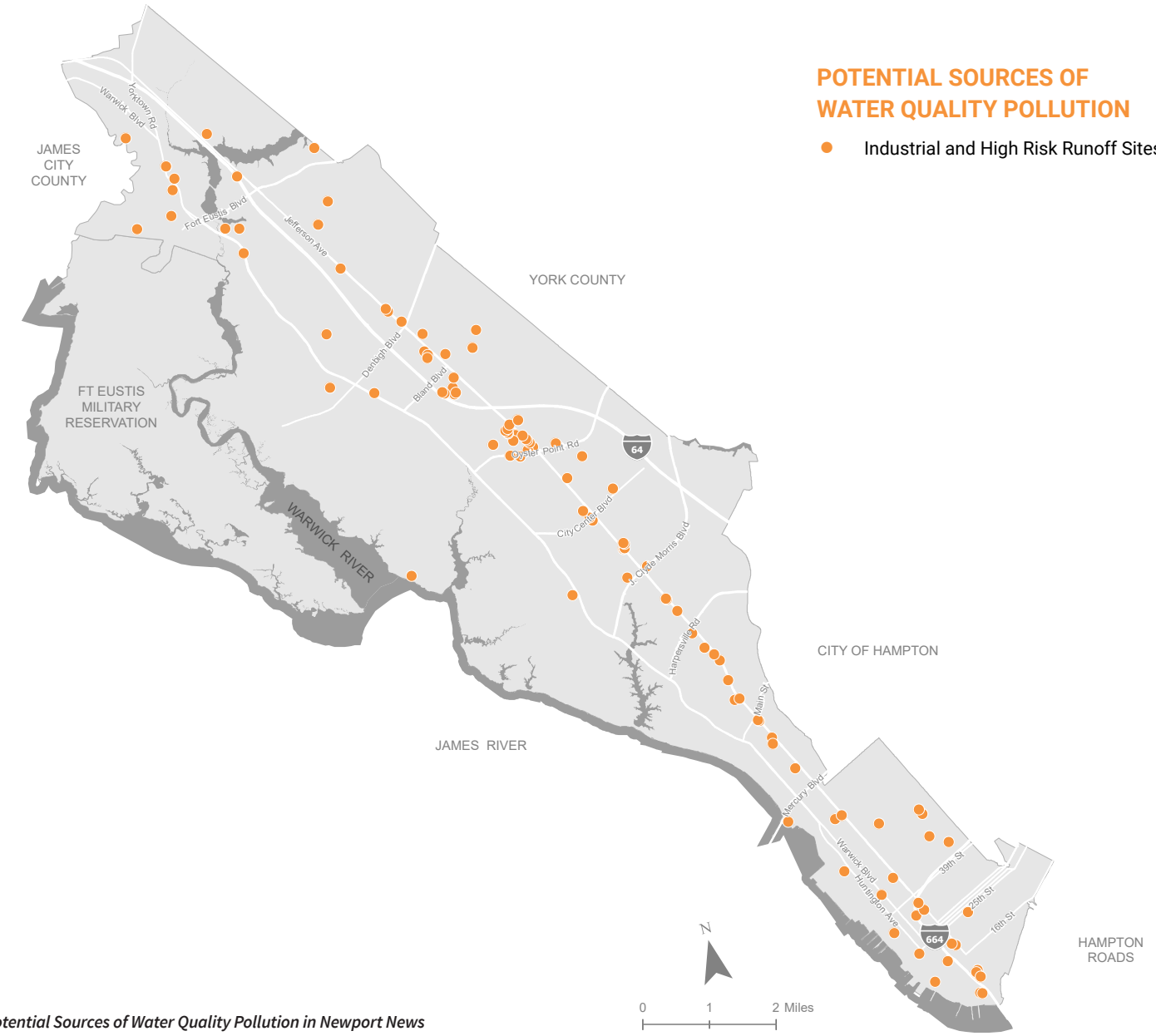


Figure 23: Potential Sources of Water Quality Pollution in Newport News

ensure pollution does not leave their sites and enter the city's storm sewer system. Those facilities are illustrated in Figure 23. Public outreach and education remains an important aspect of the city's stormwater management program. Additionally, the city is required to complete three stormwater retrofit projects prior to the permit's expiration date in June 2021. Together, these programs help the city achieve regulatory compliance and to facilitate projects and practices that maintain and/or improve local water quality.

Access to Waterfront

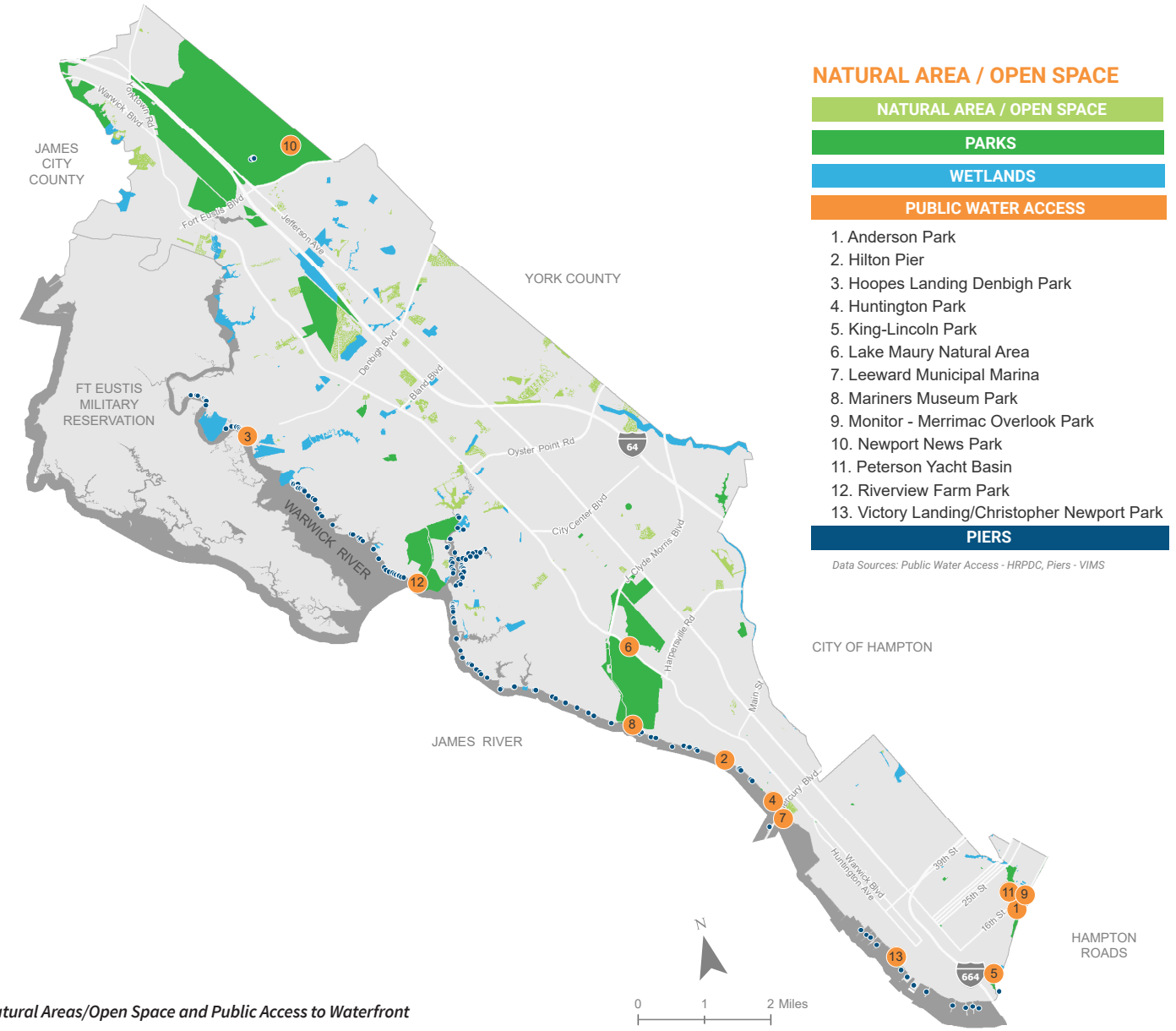
Most of the Newport News shoreline has been developed as private, residential property. The extent of city-owned waterfront is 1.3 miles or 2.6 percent of overall shoreline. Much of the shoreline along waterways is protected by the Chesapeake Bay Preservation Act. Large areas of additional shoreline surrounding streams, lakes and wetlands are found throughout the city; most of this shoreline is also developed as private, residential property. As residents seek to build docks and piers for direct, private access to waterways, city staff will review plans for compliance with all local, state, and federal requirements governing those structures. Part of this review involves ensuring that navigable channels are not compromised.

The ***One City, One Future Comprehensive Plan*** acknowledges the value of the city's natural and ecological resources and the continuing demand for public access to the waterfront. Existing waterfront facilities are well-visited during the warmer months, but the city remains challenged to meet public demand for additional waterfront access due to the lack of available land. The city is, however, committed to acquiring waterfront real estate as it becomes available, along with refurbishing existing parks to further enhance waterfront access for its citizens. As opportunities for additional waterfront access are explored, the city will be mindful of the need to protect and preserve its natural resources.

As shown in Figure 24, there are 13 existing water access sites in Newport News (HRPDC, 2018a). The city controls access to all but one of the sites: Peterson Yacht Basin access is controlled by the Virginia Department of Game and Inland Fisheries. The city's public access inventory includes five boat ramps, seven fishing piers, and three boardwalks. Swimming is permitted at three sites.

Any future opportunities to expand waterfront access for the public will consider preservation of tidal wetlands, protecting non-tidal wetlands, retaining and restoring vegetation on steep slopes to prevent erosion, and meeting the criteria for development and redevelopment as defined by the Chesapeake Bay Preservation Act.

Two opportunities to refurbish existing parks and improve waterfront access are at Victory Landing Park (downtown) and King-Lincoln Park (Marshall-Ridley Choice Neighborhood / Southeast Community). Victory Landing Park, located in a Planning Opportunity Area and designated as an Intensely Developed Area, is separated from Christopher Newport Park by the terminus of 26th Street and a parking lot in the historic downtown. As described in Section 5.2, Shaping Newport News Through 2040 of this plan, the ***Superblock Charrette Study and Downtown Vision Plan*** reimagine downtown. This includes a promenade connecting the two parks and drawing people to the waterfront for a range of activities. To enhance waterfront access in the southeast area of Newport News, residents involved in the Marshall-Ridley Choice Neighborhood planning process identified the need for a boardwalk connecting the walking trails in King-Lincoln Park to the water through the vegetated dunes. King-Lincoln Park and its waterfront are considered a hidden asset, with the beachfront secluded behind overgrown, vegetated dunes and inaccessible to persons with restricted mobility. An elevated



NATURAL AREA / OPEN SPACE

NATURAL AREA / OPEN SPACE

PARKS

WETLANDS

PUBLIC WATER ACCESS

1. Anderson Park
2. Hilton Pier
3. Hoopes Landing Denbigh Park
4. Huntington Park
5. King-Lincoln Park
6. Lake Maury Natural Area
7. Leeward Municipal Marina
8. Mariners Museum Park
9. Monitor - Merrimac Overlook Park
10. Newport News Park
11. Peterson Yacht Basin
12. Riverview Farm Park
13. Victory Landing/Christopher Newport Park

PIERS

Data Sources: Public Water Access - HRPDC, Piers - VIMS

Figure 24: Natural Areas/Open Space and Public Access to Waterfront

boardwalk will be constructed in 2018 over a long-established footpath to preserve the vegetated dunes and lessen environmental impact from increased pedestrian activity. Construction and maintenance of commercial walkways which do not alter the contour of the coastal primary sand dunes and/or beaches are specifically exempt from the Beaches and Dunes Act in the Code of Virginia.

Commercial and Recreational Fisheries

The James and Warwick Rivers, along with their tributaries, serve as fishing grounds for finfish and shellfish for both recreational and commercial fishermen. Numerous species of finfish are found in the James River, including bluefish, black seabass and summer flounder which are considered important to commercial fishermen. Spot and Atlantic croaker are popular game fish. The lower James River also serves as the spawning grounds for River herring, American shad, and striped bass (rockfish). Popular commercial shellfish species include clams, oysters, and crabs. The Virginia Department of Health has identified Hampton Roads Harbor (2014), the Warwick and James rivers (2009), and Skiffes Creek (2008) as Condemned Shellfish Areas. Shellfish may only be taken from specific sections of the condemnation areas if a permit is granted by the Virginia Marine Resources Commission.

Newport News has two commercial fisheries: Deep Creek Harbor and Seafood Industrial Park. Historically, Deep Creek Harbor was the number-one oyster-landing site in Virginia. As shellfish production in Virginia has declined, so too has commercial fishing in Deep Creek. Watermen unload their catch at the Menchville Marina (Deep Creek Harbor), an approximately 7-acre site owned by the city. The Seafood Industrial Park, located along Hampton Roads Harbor, is the only publicly-owned working waterfront, supporting the commercial seafood industry. Seafood Industrial Park, which contains seafood and other water-dependent companies, provides full-service accommodations to the seafood industry including utility hook-ups and vessel fueling, service and repair. Newport News Code of Ordinances, Chapter 11 – Watercraft, Docks, Piers and Waterways establishes the regulations for operation and maintenance of both commercial fisheries. The city will continue to promote safe and proper use of its commercial fisheries and associated facilities and protect natural resources.

Recreational fishing in Newport News is permitted at the public piers at Harwood's Mill, Hilton Pier, Hoopes Landing/Denbigh Park, Huntington Park, King-Lincoln Park, Newport News Park, Monitor-Merrimac Overlook Park, and Newport News Park. Bank fishing is permitted at several sites including Anderson Park and Lake Maury Natural Area.

Fishermen at Menchville Marina

NATURAL HERITAGE RESOURCES

Newport News has 10 distinct types of natural heritage resources with 13 total occurrences identified by the Virginia Department of Conservation and Recreation (DCR). Located between Mercury Boulevard and Lee Hall at the perimeter of the city, these areas support rare, threatened, or endangered species as identified in Table 3. The Natural Heritage Program, administered by DCR, focuses on conservation of rare and endangered species and ecosystems while providing associated benefits to human populations. DCR provides localities with strategies for long-term management of their natural heritage areas to sustain the resources.

In addition, DCR has identified six conservation sites that are necessary for the survival of the natural heritage resources. These sites are not protected lands, but are recommended for protection and stewardship. DCR-identified conservation sites are: Grafton Ponds, Beaverdam Flatwoods, Airport – Tabb, Halstead Road Sinkhole Ponds, Sandy Bottom, and the James River Ghost Fleet.

Newport News does not yet have a natural resources management plan. Such a plan typically includes an inventory of an area's natural resources, defines natural resource problems or potential threats, and recommends policies and actions to preserve the documented resources for future generations. The Department of Parks, Recreation & Tourism does, however, maintain detailed inventories of plants and animals found within the city's parks.

OPEN SPACE AND URBAN FOREST

Urban development has altered the landscape of the city, especially along our primary corridors. Reintroducing green areas throughout our community is a priority. As shown on Figure 24, the city has designated Natural Areas/Open Space on the Land Use Map as part of the strategy to protect areas within Newport News that are intended to remain undeveloped. Land designated Natural Areas/Open Space includes greenways, trails and environmentally sensitive areas such as the watershed and conservation easements. Note that the land use designation of Natural Areas/Open Space is not the same as Parks and Recreation, which is discussed in Section 2.4, A Healthy and Safe City.

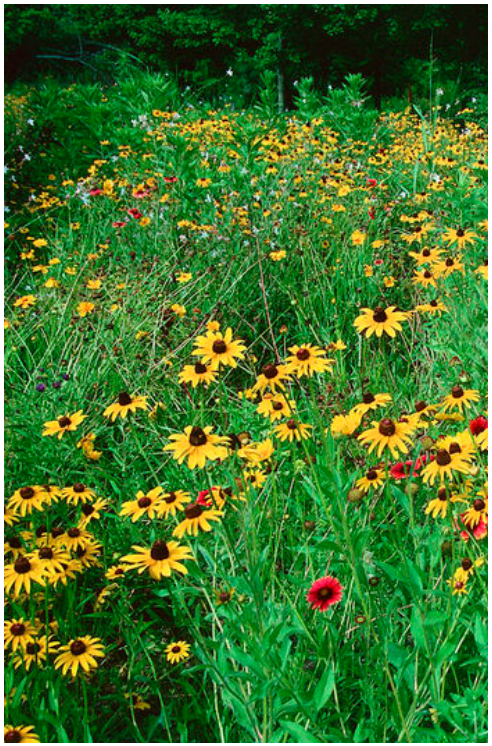
Newport News Natural Heritage Resources

GROUP NAME	SCIENTIFIC NAME	COMMON NAME
Vertebrate Animal	*Crotalus Horridus* [Coastal Plain population]	Canebrake Rattlesnake
Vascular Plant	*Chelone Cuthbertii*	Cuthbert Turtlehead
Vascular Plant	*Carex Lupuliformis*	False Hop Sedge
Vascular Plant	*Cyperus Diandrus*	Umbrella Flatsedge
Vertebrate Animal	*Falco Peregrinus*	Peregrine Falcon
Vascular Plant	*Ludwigia Hirtella*	Rafinesque's Seedbox
Vertebrate Animal	*Falco Peregrinus*	Peregrine Falcon
Terrestrial Natural Community	*Nyssa Biflora - (Quercus lyrata) / Eubotrys racemosa / Carex joorii Forest*	Coastal Plain Seasonal Pond (Swamp Tupelo - Overcup Oak Type)
Vascular Plant	*Hypericum Setosum*	Hairy St. John's-wort
Vascular Plant	*Cuscuta Coryli*	Hazel Dodder
Vertebrate Animal	*Crotalus Horridus* [Coastal Plain population]	Canebrake Rattlesnake
Vertebrate Animal	*Acipenser Oxyrinchus*	Atlantic Sturgeon

Table 3: Newport News Natural Heritage Resources

Source: Virginia Department of Conservation and Recreation, Division of Natural Heritage, Newport News Natural Heritage Resources, February 2016.

- Fourteen sites (22.4 acres) across the city have been established as permanent green space through the efforts of the Newport News Green Foundation. Sites range in size from 0.11 acres to 6.7 acres. Site conditions range from wooded to landscaped. The Newport News Green Foundation was established by resolution of the Newport News City Council in 1998; shortly thereafter it became a separately chartered nonprofit, charitable organization. The foundation's mission is to promote the creation and preservation of green space throughout the city.



- Greenways are intended to provide open space for passive recreation activities and protection for environmental resources. There are eight designated greenways in Newport News; of these, only Stoney Run has an adopted greenway corridor plan. The ***Stoney Run Greenway Corridor Study*** (2008) will be implemented in three phases, and is in the FY 2017 – 21 CIP.
- Urban forests provide direct and indirect benefits to communities. In 2011, an urban tree canopy (UTC) assessment showed that approximately 36 percent of the city's total area is covered by tree canopy (Virginia Geospatial Extension Program, 2011). Areas with the least coverage include historic downtown; the Southeast Community; Oyster Point; and the area bounded by Mercury Boulevard, Harpersville Road, Jefferson Avenue and Warwick Boulevard. Numerous areas across the city could be improved to support additional tree canopy. The best opportunities to expand the UTC are on public land. We understand the value of the UTC and have made tree preservation and increasing the canopy a priority through implementation of the requirements of our site plan regulations.
- Newport News Waterworks has two certified foresters who manage more than 4,000 acres of forest in the city's watershed. Managed forestry helps protect, restore, and sustain water quality, water flows, and watershed health and condition (USDA Forest Service, 2015). While the purpose of this strategy is to protect the drinking water supply from the impacts of urbanization, urban watershed forestry also provides community and economic benefits. A management plan will be completed to guide sustainable management of our forest resources in the watershed.

AIR QUALITY

After several years of being designated as a marginal non-attainment area for ozone, Hampton Roads meets air quality standards and continues to experience a steady decline in the number of annual high-ozone days. Virginia DEQ monitors air quality for Virginia and ensures compliance with the Virginia Air Pollution Control Law and the federal Clean Air Act. While Hampton Roads remains in compliance with air quality

standards (2013), it has been designated an 8-hour Ozone Maintenance Area since 2007 and continues to be monitored by the Environmental Protection Agency. Ozone compliance can be a challenge in the region because of the summer's weather pattern—hot and humid—which is conducive to ozone formation. The ***Ozone Advance Action Plan for Hampton Roads*** (2013) details the region's clean air programs and how implementation will continue to improve air quality through 2020. Air quality is expected to improve through further reductions in particulate emissions resulting from implementation of federal, state, and local control programs. Efforts to further improve air quality around the Commonwealth may place an even greater emphasis on complying with standards in the coming years.

Hampton Roads localities worked collaboratively through the Hampton Roads Transportation Planning Organization (HRTPO) to establish a strong planning effort to reduce emissions from vehicle miles traveled in the region. The HRTPO has successfully used Congestion Mitigation and Air Quality (CMAQ) funding to improve air quality in Hampton Roads. Efforts include improvements to and construction of bicycle paths, park and ride lots, signal enhancements, Intelligent Transport System signal systems, and transit system improvements. The city of Newport News has used CMAQ funding to upgrade our signal system, modify signal timings, and widen sidewalks in strategic areas to encourage bicycle and pedestrian activity.

ENERGY RESOURCES

Energy in Virginia is generated from a variety of sources including nuclear, natural gas, and coal. The amount of energy generated from renewable sources within the Commonwealth is relatively low. The ***2014 Virginia Energy Plan*** was prepared to address the energy imbalance between in-state and imported generation, and identify actions to increase renewable generation in Virginia. The plan provides the strategic vision for energy policy in the Commonwealth to maximize renewable generating capacity and reduce our carbon emissions.

Primary energy production generally does not occur in Hampton Roads other than at a very small scale: the individual company or homeowner level. ***Hampton Roads Energy Options*** (2012) found that energy efficiency is the most cost effective way to meet energy needs in the region (HRPDC, 2012). Newport News promotes measures to conserve and sustainably manage our energy resources for the long term and advance the use of renewable energy, alternative energy, and energy efficient projects.

- While the city does not have an adopted energy policy, we continue to promote energy efficiency and conservation practices in city facilities and vehicles. Recognizing that energy monitoring, targeting, and reporting is critical to long-term energy management, the department of Public Works is establishing the baseline for the city's energy consumption to form reduction goals and collaborating with all departments to identify and implement best practices for utility management.
- Traffic lights at all intersections have been converted from incandescent to LED, resulting in a 73 percent reduction in annual energy costs. An inventory is being conducted to identify city buildings and parking lots with outdated incandescent lighting and develop a schedule and budget for conversion.
- Meeting targets for reductions in energy consumption and pollution beyond city facilities and activities requires community support and action.

SOLID WASTE

The city continues to work toward resource conservation in solid waste through a robust resource recovery program. This includes traditional residential and business recycling that places education and outreach at the forefront of their endeavors. Consistently exceeding the state mandate for recycling, the current rate stands at 39 percent for both residential and non-residential recycling. Since 2009, the Department of Public Works' Solid Waste Division has instituted and continues to develop a resource recovery facility that includes reception and processing of household hazardous waste, scrap metals, batteries, paint, waste oil, cooking oil, tires, and electronic waste. Additionally, the facility includes one of DEQ's model compost facilities, at which brush and leaves are delivered by city trucks and individual residents to process into mulch and compost. Adjacent to a closed landfill, the resource recovery facility captures the landfill's methane gas for heating a nearby community center and middle school.

The Solid Waste Division has successfully transformed one closed landfill (Menchville) into a recreational facility, and is actively developing a larger closed landfill (Denbigh) into Stoney Run Park, featuring jogging trails, greenspace, and a water reservoir to supply up to 10 million gallons of water to the nearby athletic fields.

The city will continue to provide environmentally responsible collection and disposal of residential waste and promote clean community programs and policies.

HRSD project along Chesapeake Avenue

SANITARY SEWER SYSTEM

In the sanitary sewage system, there are two primary sources of potential pollution of local waterways and the Chesapeake Bay: the sewer system itself and septic tanks. Hampton Roads Sanitation District, in coordination with the city's Department of Public Works, continues to repair and replace wastewater collection system infrastructure in the ongoing effort to eliminate groundwater and stormwater infiltration and reduce sanitary sewer overflows. Fats, oils, and grease (FOG) solidify on sewer walls and cause blockages, which can lead to sanitary sewer overflows. Overflows can lead to fines by DEQ. Education on and enforcement of the FOG ordinance has resulted in reduced frequency of stoppages and overflows, thereby decreasing preventive maintenance costs for the city. While the FOG ordinance has reduced the frequency of stoppages and overflows, enforcement remains a challenge. The city will continue to enhance its FOG education program to further reduce frequency of stoppages and overflows.

Newport News has provided sanitary sewer service to its citizens since the late 1800s. The first sewers installed conveyed sewage from homes and businesses directly into area streams and the James River. By

the mid-1920s, water quality degradation was apparent, most notably through the economic impact to the area's fisheries, which was caused by harvesting contaminated oysters. Pollution of local beaches was also identified as a serious health problem. In response to a special report by the U. S. Public Health Service, a system of interceptor sewers and treatment facilities were proposed to mitigate the health hazard and the Hampton Roads Sanitation District (HRSD) was created. In 1941, the newly established HRSD took over the role of interception and treatment provider for the Hampton Roads communities.

The city of Newport News continues to provide the local collection system, which in 2018 consists of about 480 miles of collection sewers. The age of the system is difficult to determine; we estimate that approximately 25 percent of the system is over 50 years old. While the design life for sewer mains is generally quoted as 50 years, many of these pipes have been in service without major issues for over 100 years.

The primary source of pollution from the sewer system is an overflow commonly caused by rainfall runoff or groundwater entering the sewer system, known as infiltration or inflow. Sewer pipes often are not completely full of sewage, so water tends to enter rather than exit the pipe. The city has several programs to remove excessive infiltration and inflow from the system.

A second source of pollution from sewer systems is a failure or a blockage of a pipe. The city has full time staff to monitor and repair the sewer system to minimize pollution occurrences. The program's performance is measured by the work effort expended annually in comparison to the goals. The goals were established under a consent order and call for a defined amount of work to be completed annually. The city has met or exceeded the goal every year since 2008.

Along with the gravity sewer collection system, another vital part of the system is the network of pump stations and force mains (pressure sewers). Because gravity sewer systems flow downward, sewer pipes typically slope toward greater depths in flat areas like Newport News. Because deep sewers are more costly and difficult to install and maintain, pump stations are used to raise the sewage closer to ground level and either flow into a pressure sewer system or begin another run of gravity flow. The city operates 188 pumping stations and approximately 47 miles of pressure sewer (force mains). Most of the pipe is less than 50 years old. A robust program of operations and maintenance of the pump stations provides a high degree of reliability. The goals of the program were established under the same consent order in 2008 and have been met or exceeded every year.

Aerial view of Stoney Run Park, site of the former Denbigth Landfill

Although septic tanks throughout the city have largely been eliminated, scattered lots with tanks still exist and approximately 300 septic tanks remain in operation in Newport News. Septic tanks are allowed under the Newport News Code of Ordinances (Chapter 33 Sewers and Sewage Disposal) only if a public trunk or lateral line sewer is not reasonably available, which means within 200 feet on a straight line in length or 250 feet if there is an obstacle that needs to be avoided. A septic tank may also remain in use within the distance limits until the septic system becomes inadequate, abandoned, unsanitary or in need of repair. The continued operation of the tanks falls under the jurisdiction of the Peninsula Health District (Virginia Department of Health). There are mandatory requirements for pump-out once every 5 years, which is the responsibility of the owner. The city coordinates with the Peninsula Health District to insure pump outs occur and the systems remain in an operational state to prevent health and pollution issues. The city also evaluates the cost-effectiveness of extending public sewer lines to serve areas that were previously on septic tanks.

2.2.2 WHAT WE HEARD

Some stakeholders believe that there is a lack of vision and planning for long-term management and development of Newport News. Others stressed the need to promote the use of sustainable materials in construction by incentivizing sustainable design and development. Many stakeholders identified historic downtown as an area that could be improved through sustainable design and development, thereby reducing surface parking and enhancing aesthetics. Some stakeholders expressed concern with sea level rise and how it may affect the city long term, especially in historic downtown and the Southeast Community. Many stakeholders expressed a desire to see the use of alternative-fuel vehicles encouraged and supported in Newport News. Others hoped the city will study options for alternative/clean energy sources to address long-term energy and air quality requirements.

Illegal dumping continues in some areas of the city, affecting safety, property values, and quality of life. It is also an economic burden on the city of Newport News, which is responsible for cleanup.

Some stakeholders hope that the city will encourage adaptive reuse of vacant and underutilized properties instead of allowing the few remaining green sites to be developed for new shopping centers. Others expressed a concern with a perceived increase in the number of Brownfields (former industrial or commercial site that is affected by real or perceived environmental contamination) and greyfields (underused, outdated, failing or economically obsolescent real estate asset) within Newport News.

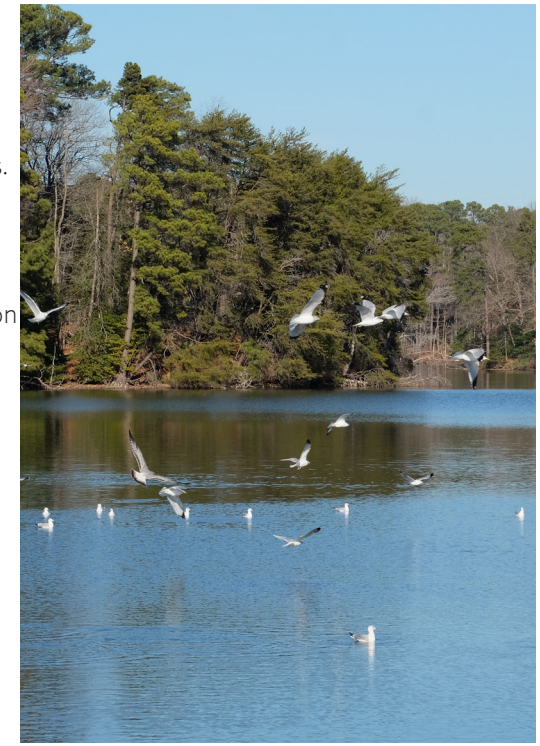
Results from the 2016 Community Survey include:

- When asked to think about how land within the city has been developed in recent years, 68 percent stated they were satisfied with the new projects.
- Almost 84 percent of survey respondents were satisfied with the city's efforts to protect the environment and natural resources.
- When asked about their level of satisfaction with the taste and quality of tap water, 78.8 percent were satisfied or very satisfied.
- Approximately 86 percent of residents surveyed were satisfied with the city's trash and recycling services.

2.2.3 WHAT IT ALL MEANS

- Vacant land for future growth is limited. We will need to explore opportunities for redevelopment and infill development to meet future demand especially in those sections of the city identified as Planning Opportunity Areas (see Section 2.6, A City That Balances Good Spaces with New Places). These areas provide opportunities for neighborhood growth and improvement, which should be guided by an area plan.
- To move forward and achieve our goals, we must spread the word on sustainability and encourage community action. Our citizens must be made aware of the benefits of sustainability: improved health, money saved, and a stronger and more resilient Newport News.
- A natural resources management plan will reinforce the city's commitment to protecting, enhancing, and providing access to natural resources for future generations.
- Future development and redevelopment along the shoreline will need to assess the potential for coastal erosion, and if required, determine which stabilization method (shoreline armoring) will be implemented to balance the needs of the public and the environment.
- Greenway corridor plans are needed to protect our stream corridors and water quality, as well as provide additional opportunities for passive recreation.
- Reissuance and implementation of the city's MS4 Permit in 2016 to control the contribution of pollutants to the MS4; prohibit illicit discharges to the MS4; control discharge of spills, dumping, or disposal of materials other than stormwater into the MS4; and carry out inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with permit conditions. The permit requirements include the retrofit of three stormwater management facilities operated by the city. Further, the associated TMDL action plan and implementation program includes additional monitoring and administrative costs to the city.

An energy study and subsequent policy will allow the city of Newport News to establish higher energy standards for buildings, institute streamlined permitting processes for distributed energy technologies, and identify partners to develop and enhance energy efficiency initiatives for existing structures. These actions will help develop a robust energy program and improve energy efficiency within the city, resulting in economic, environmental, and social benefits.



2.3 AN ACCESSIBLE CITY

This section provides key facts and trends related to transportation and housing. It also incorporates stakeholder input gathered through various outreach efforts including the citywide survey. Key points considered during development of strategies to implement the planning vision are provided at the end of this section.

2.3.1 KEY FACTS AND TRENDS

Significant investment has been made in the Hampton Roads transportation system over the past 5 years; however, traffic congestion continues to be a challenge in Newport News and the region. There is insufficient roadway capacity to support the growing population throughout the region, as well as increased truck traffic, port activity, and miles traveled for work and recreation. Further, the transportation infrastructure is aging and funding continues to fall short of addressing all needs. Traffic congestion results in lost time, increased energy consumption, and air pollution. In Newport News, the traffic challenge is further amplified by our geography and the CSX railroad:

- We are a long and narrow city traversed from end-to-end by two major arterials at maximum capacity (Jefferson Avenue and Warwick Boulevard) and have limited east-west movement;
- Our city's western and southern water boundaries limit travel to the southeast to the Monitor–Merrimac Memorial Bridge–Tunnel (MMMBT) and the James River Bridge (JRB); and,
- Our city is generally built-out, having very limited undeveloped land, which is constrained by natural features, political boundaries and land use regulations related to environmental preservation.

Proposed 28th Street Bridge Crossing into Downtown

Despite continued efforts to improve bus service and sidewalk circulation, we remain a car-dependent city with limited access to public transportation, bicycle routes, and sufficient sidewalks for commuting. The city's overall density is moderate to low, and most areas in Newport News were not designed to be walkable. Many of our employment centers are concentrated in a few areas of the city and located far from lower-cost housing, which means that lower-income households must factor in the cost of travel to their housing costs when choosing a place to live. The cost burden of commuting, for the working poor, affects their ability to find and retain employment (Roberto, 2008).

TRANSPORTATION SYSTEM

Roadways and Structures

The city of Newport News has been successful in obtaining various grants, which allows the Department of Engineering to continue to improve road and bridge safety. The department utilize all sources of funding

available to maximize investments each year. Sources of funding include state and federal grants, which will help fund the Lake Maury Bridge and Fort Eustis Boulevard Reservoir Bridge upgrades, replacement of aged infrastructure at the Washington Avenue and Huntington Avenue bridges, and provide for a new bridge along the Atkinson Boulevard extension alignment.

- Newport News has over 1,500 lane miles of roadway within its purview (see Figure 25). Of these, 85 percent have a pavement condition considered "fair" or better.
- Major arterials in the city, as well as I-64 and I-664, are at maximum capacity for vehicular traffic during peak travel periods. Most notably, I-64 in Newport News was identified by Virginia Department of Transportation (VDOT) as having a failing vehicle level of service (heavily congested with unpredictable delay times) (VDOT, 2012). This results in motorists seeking alternate north/south routes including Jefferson Avenue and Warwick Boulevard, both of which are at capacity and experience delay during peak hours due to local traffic generated by multiple major employers on the roadways (e.g., Newport News Shipbuilding, City Center, Canon, Jefferson Lab, and Fort Eustis to name a few).
- The project to increase capacity on I-64 broke ground in 2015. The existing four-lane section between Newport News, James City County and York County will be widened to six lanes. Segment 1, which spans approximately 5.6 miles from Jefferson Avenue (Exit 255) to just east of Yorktown Road (Exit 247), was completed in December 2017. Segment 2 will continue the widening from Yorktown Road to just west of Route 199/Humelsine Parkway/Marquis Center Parkway (near exit 242). Construction of Segment 2 began late 2016. Segment 3, which was added to the Commonwealth Transportation Board's Six Year Improvement Plan (SYIP) for FY 2016-2021, will complete the widening to just west of Route 199/Newman Road (Exist 234).
- At the city's request, VDOT initiated a study in 2017 to add a third exit to westbound I-64 at Exit 255. Unlike the other offramps at the exit, this ramp will provide a more direct route to Bland Boulevard, avoiding the congested Jefferson Avenue corridor. The ramp will help reduce congestion while a study for a new interchange at Denbigh Boulevard is completed.
- Newport News has 28 highway bridges, 14 culvert bridges and 4 pedestrian bridges under its purview. There are only two bridges classified as "structurally deficient": Warwick Boulevard over Lake Maury, where replacement started in 2016; and, Fort Eustis Boulevard (Route 105) over the Newport News (Lee Hall) Reservoir, which is planned for replacement starting in 2019. A bridge is considered structurally deficient if the condition rating for the deck, superstructure or substructure is a 4 or less. Both bridges have a condition rating of 4 for their superstructures. There are six bridges rated "functionally obsolete." The Federal Highway Administration classifies bridges as functionally obsolete when they were built to standards that are not used today and cannot simply be upgraded but have to be replaced for safety and accessibility requirements.

VDOT initiated the ***Hampton Roads Crossing Study*** in 2015 to re-evaluate the findings of the 2001 Final Environmental Impact Statement (FEIS) to accommodate travel demand and other needs by providing a

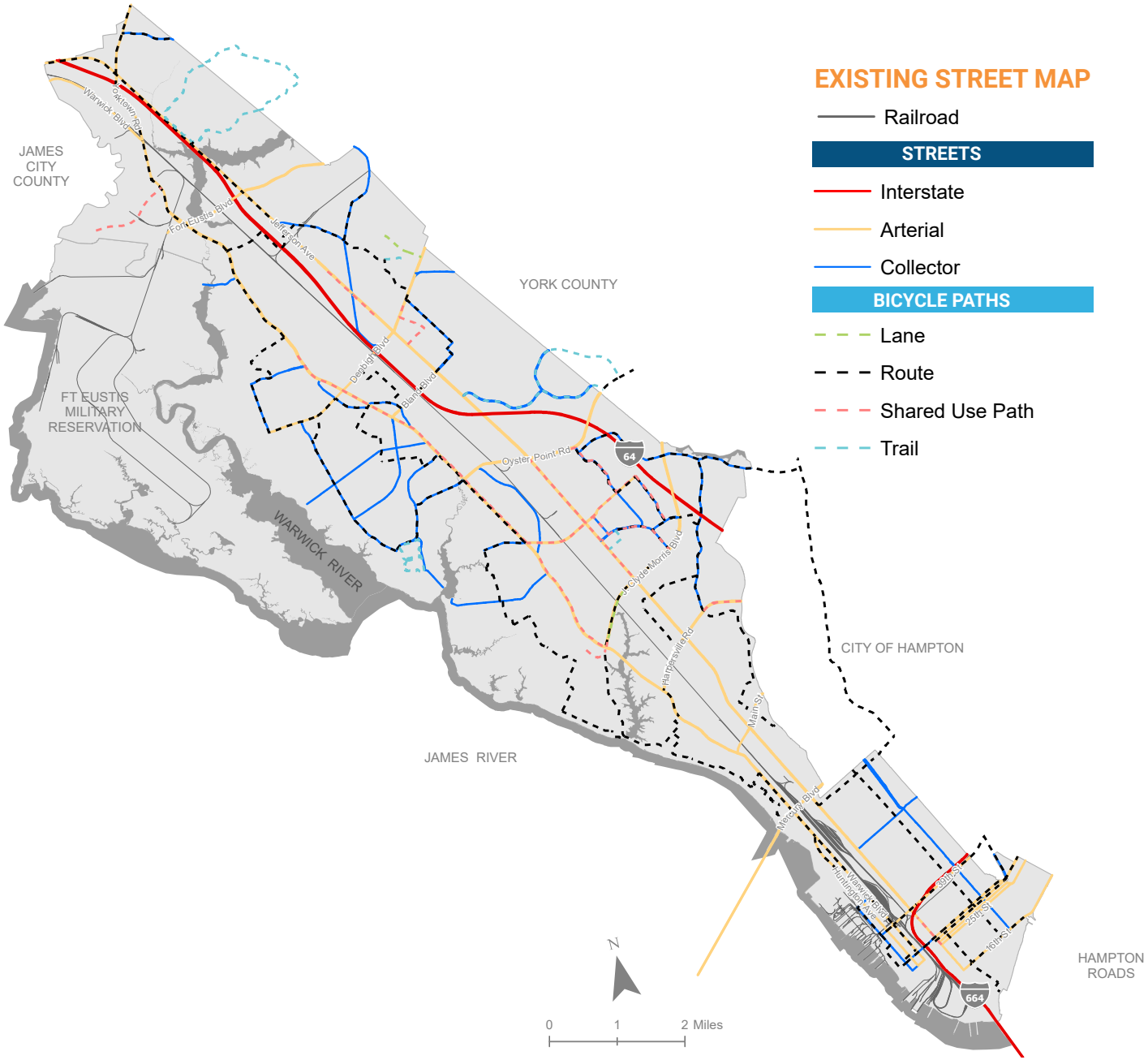


Figure 25: Existing Street Network

third crossing between the Greater Peninsula and Southside. The Record of Decision, issued June 2017, allows VDOT to move forward with widening I-64 between I-664 and I-564 and adding a bridge tunnel parallel to the existing Hampton Roads Bridge Tunnel. The Request for Proposals to deliver the expansion project was released in spring 2018.

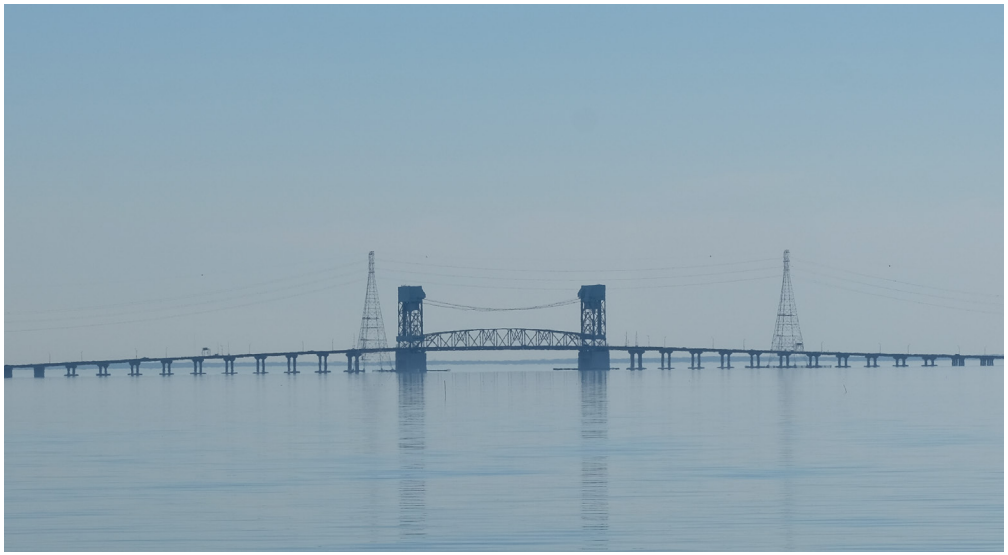
Navigating the Future to 2040, the Hampton Roads Long-Range Transportation Plan (LRTP), was adopted in 2016. The LRTP sets the transportation vision for the region and prioritizes projects for funding. By prioritizing projects, the region is able to maximize the use of scarce transportation dollars to improve the transportation system to meet long-term needs in Hampton Roads. Newport News has multiple projects on the fiscally constrained list of prioritized projects including the widening of J. Clyde Morris Boulevard from I-64 to the York County line, a study for an I-64 interchange at Denbigh Boulevard, and a study for the Peninsula Fixed Guideway/Light Rail Transit (LRT). See Table 4 for the complete list of local projects in the LRTP and VDOT Six-Year Improvement Program, FY 2018 - 23.

Commuting Behaviors

According to the U.S. Department of Transportation, Americans are driving less. Miles traveled per person has been declining since 2006. Yet, traffic congestion remains high and on average, commuters in urban areas spend over 40 hours stuck in traffic each year (US DOT, 2015). In Hampton Roads, we experienced a slight decrease (0.7%) in roadway travel between 2003 and 2012 (HTRPO, 2014). Roadway travel in Hampton Roads decreased slightly between 2003 and 2012 (and leveled off after 2007) despite a population increase of 6.1 percent during the same period. This reflects a decrease in vehicle-miles of travel per capita, which is in line with the national trend of people traveling less than they did in the previous century.

Many factors contribute to this including the rise of Millennials, many of whom prefer to live in urban areas and travel by transit, bicycle and by foot. Socioeconomic shifts and changes in consumer preferences also contribute to the trend. In addition, more commuters are trip chaining: they run errands on the way to and/or from work, thereby decreasing the number of trips per day and overall distance driven. However, trip chaining also increases the number of non-work related trips during peak travel periods.

- The number of registered vehicles in Hampton Roads has largely remained unchanged since 2007. This is also true for Newport News: the number of registered vehicles has remained



MAJOR ROAD AND OTHER TRANSPORTATION PROJECTS

Project ID	Name/Description	VDOT SYIP	2040 LRTP	Cost Est. (Thousands)
2040-101	Liberty Parkway between Oyster Point Road and Freedom Way		X	$6,000
2040-98	J. Clyde Morris Boulevard / G.W. Highway (US 17)		X	$44,000
2040-96	I-64 at Denbigh Boulevard Study		X	$5
2040-3	I-64 & Fort Eustis Boulevard Interchange		X	$267,000
4483	Atkinson Boulevard Extension: 4-lanes from Warwick Boulevard to Jefferson Avenue	X		68,383
93077	Replace Denbigh Boulevard Bridge over I-64 and CSX Railroad	X		$32,500
101279	Replacement of Bridge over Lake Maury	X		$8,863
102969	Streetscaping, Storm, Sanitary, Underground Utilities from 24th Street to 12th Street	X		$12,172
103016	Newport News Signal Timing Improvements	X		$900
103059	Newport News Pedestrian Improvements	X		$1,000
105624	Fort Eustis Boulevard Bridge Replacement over Newport News Reservoir	X		$24,200
105625	Campbell Road Reconstruction: Widening between Warwick Boulevard and Bland Boulevard	X		$8,500
107058	Newport News Citywide Signal Retiming	X		$500
108722	Hogan Drive Phase 2	X		$16,000
108723	Habersham Area Improvements: Brick Kiln Boulevard to Boykin Lane	X		$3,000
108980	Briarfield Sidewalk	X		$600
108981	Warwick Boulevard Sidewalk Widening	X		$500
109076	Amtrak Multimodal Station	X		$15,679
109801	Peninsula Regional Park and Ride Enhancement	X		$3,500
111034	Citywide Flashing Yellow Arrow Upgrades	X		$776
111035	Jefferson Avenue @ Pavilion Place New Traffic Signal	X		$645
111065	Rock Landing Drive @ Omni Boulevard New Traffic Signal	X		$1,095
111081	City of Newport News Signal System Progression	X		$1,250
111090	Jefferson Avenue Sidewalk	X		$782
111091	Jefferson Avenue / Yorktown Road Intersection Improvement	X		$2,460

Table 4: Major Road and Other Transportation Projects

Source: VDOT Six-Year Improvement Plan, FY 2018 - 23 and Hampton Roads 2040 Long-Range Transportation Program, HRPDC 2016

around 146,000 over the past 10 years.

- In Newport News, more than 78 percent of workers 16 years and over drove alone to work in 2014. As shown in Figure 26, 10 percent of workers carpooled; the remaining 12 percent used various other means of travel to work. The number of workers driving alone to work increased by 2.5 percent between 2000 and 2014, while the number of workers who used public transportation increased by 48 percent during the same period. (Note: Between 2000 and 2014, the number of workers aged 16 and older increased by just over 2 percent [2,002 workers]).
- In Newport News, the peak hour for traffic congestion is 7:00 a.m. to 8:00 a.m. This remains unchanged from 2010.
- The average trip in Hampton Roads takes 10.5 percent longer during the peak travel period compared to uncongested conditions (HRTPO, 2015). In 2013, 27 percent of the workforce took 30 minutes or more to commute to work, which was the same as in 2010. The average travel time to and from work in Newport News in 2014 was 53 minutes.
- A closer look at commuting patterns for 2012 (most recent data available for this metric) shows there were 60,888 in-commuters, 41,510 workers commuting out of the city, and 29,220 residents who live and work in Newport News (Virginia Employment Commission, 2018). As shown in Figure 27, most out-commuters (23%) are traveling to Hampton, followed by James City County (12%), Norfolk (9%), and York County (9%). Of the in-commuters, the largest percentage (24%) are commuting from Hampton, followed by York County (11%), and Virginia Beach (7%).

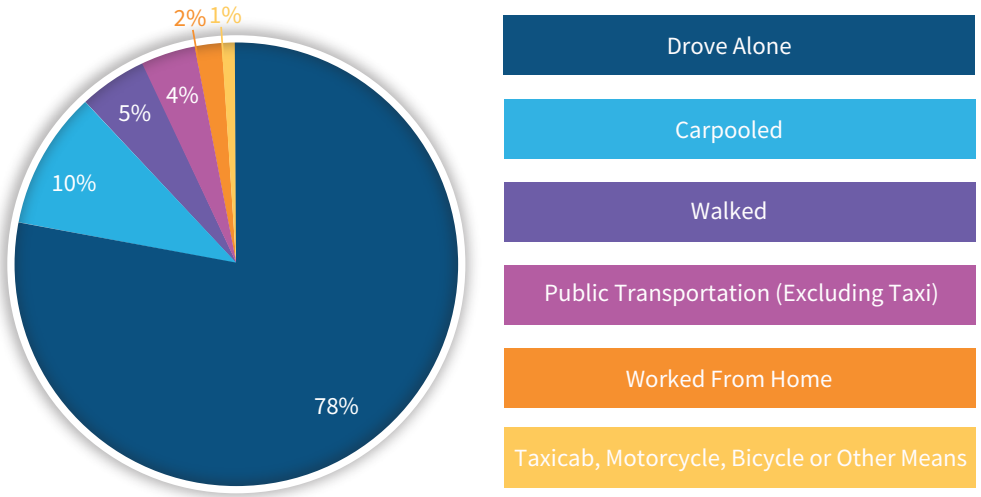


Figure 26: Means of Transportation to Work (2014)

Active Transportation

- Active transportation, non-motorized transportation options, continues to trend up nationally. Active transportation is a means of getting around that is powered by human energy and expresses the connection between healthy, active living and transportation choices (Rails-to-Trails Conservancy & Partnership for Active Transportation, 2018). In 2015, there were over 1,300 miles of shared use

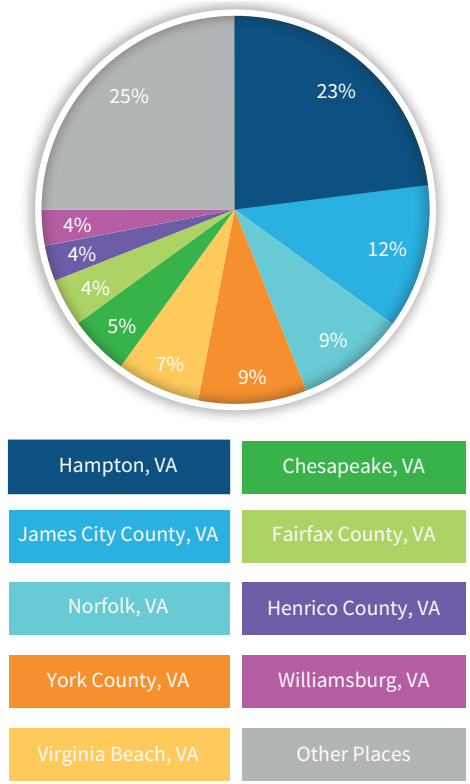


Figure 27: Top 10 Places Residents are Commuting To (2012)

paths, bike lanes, trails, and other elements that comprise the Hampton Roads bicycle and pedestrian network. In 2017, VDOT & HRTPO collaborated on the ***Birthplace of America Trail Study*** to identify recommended routes for two off-road paths (trails) to link the region's cultural and historic heritage. The Peninsula Route will go through Lee Hall and Newport News Park and continue over to the Yorktown Battlefield before heading south through Hampton and terminating at Fort Monroe. The segment through Newport News has been added to the Future Land Use and Transportation Plan, which is covered in Chapter 5.

- Although the city does not yet have a bicycle and pedestrian master plan, the Bicycle Map is being reevaluated and a sidewalk plan is nearing completion. The sidewalk plan will incorporate priorities for our ***Healthier Routes to School Initiative,*** which is part of VDOT's ***Safe Routes to School Program***.
- Newport News has 110 miles of bicycle facilities, including designated recreational trails. On busy corridors, such as Jefferson Avenue, sidewalks have been widened to 8 feet to accommodate bicyclists and pedestrians.
- The city maintains 287 miles of sidewalk. Gaps in the network exist in several planning areas including Parkview/New Market and Greater Oyster Point, where there are a variety of public services, schools and transportation hubs inaccessible by walking.

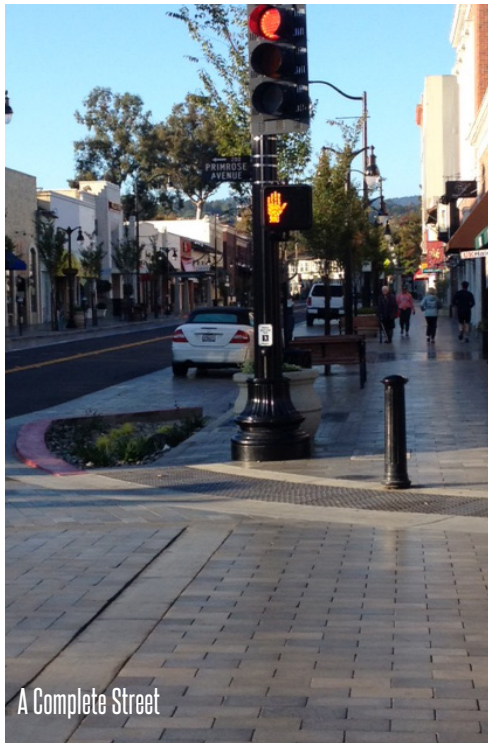
Transit

- Newport News has intercity rail service provided by Amtrak, and bus service provided regionally by Hampton Roads Transit (HRT) and Williamsburg Area Transit Authority (WATA). Construction of a new multi-modal station, the Newport News Transportation Center (NNTC), located on Bland Boulevard in proximity to the Newport News/ Williamsburg International Airport, is scheduled to begin in 2020.
- The NNTC will replace the Amtrak Station and related operations in the south Hilton area and provide for increased capacity. The city of Newport News continues to endorse LRT and bus rapid transit (BRT) with focused development centers, and connections to destinations north and south of the city.
- The Newport News Amtrak Station, located on Warwick Boulevard, provides two daily roundtrips to Richmond, Washington D.C., New York, Boston and the Northeast Corridor. It is the fourth busiest Amtrak station in Virginia,

receiving over 105,000 passengers per year and operating well above capacity. Amtrak plans to increase service to meet projected demand; however, the existing station cannot accommodate additional capacity for either passengers or additional frequencies. Any additional capacity at the existing station would interfere with CSX operations. Therefore, the city is constructing the NNTC at Bland Boulevard to accommodate increased ridership for additional trips per day, improve station capacity for passengers, improve accessibility to the local and regional transportation network, and provide capacity to support multimodal transportation connectivity.

- The NNTC will be able to accommodate six roundtrip Amtrak trains a day to meet current and projected demand. It will include dedicated areas for taxis, as well as bus bays for HRT and long-distance bus transportation.
- Newport News has long identified the CSX corridor as an opportunity for commuter rail and light rail services on the Peninsula. In 2010, the Virginia Department of Rail and Public Transportation investigated the environmental impacts of improved passenger rail service between Richmond and Hampton Roads, with eventual connections to the Southeast, Northeast, and Mid-Atlantic regions as an extension of the Southeast High Speed Rail Corridor (Washington, D.C. to Charlotte, North Carolina)(DRPT, 2018). The Final Environmental Impact Statement was approved in August 2012, and the Record of Decision was signed in December 2012. The approved alternative provides for increased frequency of current rail service along the existing CSX route on the Peninsula at the existing maximum authorized speed of 79 miles per hour, and a new higher speed rail service south of the James River between Petersburg and Norfolk. A Record of Decision for the Washington, D.C. to Richmond alignment of the Southeast High Speed Rail Corridor is anticipated at the end of 2019.
- In 2017, HRT completed the ***Peninsula Corridor Study***, which evaluated alternatives for a fixed-guideway system to connect Newport News and Hampton with future connectivity to the rest of Hampton Roads. The study screened potential corridor options and identified the most feasible options to be evaluated in more detail in a subsequent effort.
- HRT operates 15 routes and transports over 300,000 riders per month in the city. HRT also provides six commuter bus routes and three Metro Area Express routes in Newport News. Ridership on all HRT bus routes declined between FY 2013 - 15, when it went from over 16.2 million down to 14.2 million (U.S. DOT, 2018b). However, several routes have been adjusted and expanded to accommodate high volume ridership and reduce service headways.
- Williamsburg Area Transit Authority (WATA) provides service between Newport News and Williamsburg through a single route connecting in Lee Hall. From the Williamsburg Transportation Center, riders can transfer to other bus routes to reach destinations throughout the [greater] Williamsburg Area. The Williamsburg Transportation Center is also an Amtrak station.

- HRT and the city continue to improve bus stop locations. In compliance with the ***Framework for the Future 2030***, older shelters at major bus stops and transfer points were replaced to provide safe and convenient locations for passengers to wait for, embark on, and disembark from buses. In 2009, the city adopted the ***Citywide Bus Shelter Plan***, which assessed all major bus routes and stops and provided a strategy to address deficiencies and challenges. Many shelters along the major corridors were outdated, in need of repair and maintenance, and in some cases, needed to be relocated. As of 2015, all previously existing bus shelters were replaced. The focus now is on bus stop locations that would benefit from passenger amenities based on established criteria.



A Complete Street

Complete Streets

Complete Streets—designing and upgrading our roadways for use by modes other than the automobile—is gaining momentum in Hampton Roads. Several localities have incorporated goals or design standards for Complete Streets in their comprehensive plans including: James City County, Norfolk, Portsmouth, and Virginia Beach (HRTPO, 2014). While Newport News does not have a specific goal, policy, or design standard for Complete Streets, we have upgraded, and continue to upgrade, major corridors to accommodate multi-modal traffic. Jefferson Avenue in the Southeast Community is a good example of a Complete Street in Newport News, as it was reconstructed to include spacious sidewalks and bus shelters, and is being studied as a potential bicycle route as part of the Bikeways Map update.

Universal Design

Universal Design, like Complete Streets, is becoming increasingly important to design and building prosperous communities. Universal Design is "a process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation (Steinfield & Maisel, 2012)." By designing more inclusive environments, the city will work to improve the health and social participation of all residents. Incorporating elements of Universal Design are often low-cost, especially if implemented early in the design process, but can offer improvements to streetscapes, parks, transit hubs, and neighborhoods.

By Plane or By Sea

The city's transportation network includes an airport and port which, together with the interstate highway system, connect Newport News to the region, Virginia's other major cities, the entire east coast, and the rest of the nation. These assets also position us to draw more international businesses and visitors and make Newport News a bigger player in the global market.

- The Newport News/Williamsburg International Airport (NNWIA) underwent several multimillion dollar

upgrades to meet the needs of modern travelers, including construction of a federal inspection station for U.S. Customs and Border Protection. In 2014, the airport's first-ever nonstop international flight was to Cancun, Mexico.

- Although passenger levels at NNWIA have decreased by 41 percent in the past decade, the Peninsula Airport Commission continues to explore opportunities to bring additional carriers to the airport, thereby providing travelers more options at better rates. The decline in travel is due to several factors including the departure of several smaller airlines; consolidation of major airlines; a resulting decrease in the number of daily flights and direct flights; and, an increase in the average airfare by 86 percent (HRTPO, 2015). In late 2016, the Commission announced the addition of Elite Airways to the carriers at NNWIA. As of early 2018, they have not initiated a route.
- The Peninsula Airport Commission approved the NNWIA master plan update in 2014. A key component of the plan is the ability to provide a third runway, should it be required. Ours is the only airport in the region with the available land to add a runway and increase capacity.
  - » The plan includes an economic strategy and identifies opportunities to support the R&D and technology sectors by providing the means to transfer knowledge and technology to the market. Proposed actions include realignment of Brick Kiln Boulevard; realignment of McManus Boulevard; connecting Siemens Way to Turnberry Boulevard; a new general aviation area; and redevelopment of the mobile home park to support aviation, aerospace and other related businesses. The master plan also supports non-aviation development on underutilized airport property, which requires changes to the adopted Future Land Use and Transportation Map, (see Chapter 5, Future Land Use and Transportation Plan).

The Newport News Marine Terminal (NNMT), which occupies 165 acres in historic downtown, is the Virginia Port Authority's main break-bulk and roll-on/roll-off facility. NNMT, which offers both outside and covered storage space, provides direct, on-dock rail service with CSX. NNMT is also a U.S. Customs-designated port of entry. There is space to construct additional warehouses should demand for covered storage space increase. Although break-bulk cargo volume was down in 2013 and 2014 after several years of gains, there was a surge in 2015 prompted by vehicle units processed at the highest levels since 1988. Note that the Port of Virginia is the only east coast port with Congressional authorization for 55-foot depth channels and the ability to expand operations to support the larger ships that started transiting the expanded Panama Canal in 2016.

HOUSING

According to the 2015 ***Hampton Roads Real Estate Market Review***, the average sales price for a new home in Hampton Roads in 2014 was $333,402. This is a nearly 4 percent increase from 2013. With the exception of Norfolk, existing home sale prices increased from 2013 to 2014 across Hampton Roads. Newport News saw the greatest increase (24%) to $300,585. The median sale price in 2014, for a home in Newport News, was $154,500, up from $145,800 in 2012 and $153,000 in 2013 (ODU, 2015).

Maintaining safe, affordable housing in stable neighborhoods is a challenge, however, in several areas of Newport News. The Department of Codes Compliance (Codes Compliance), which promotes public safety and orderly development through enforcement of state and local

codes, responds to an increasing number of property maintenance calls each year. Codes Compliance handled an average of 15,000 property maintenance calls over the past few years. These calls generally report poor housing conditions and complaints of blight on commercial and residential buildings and properties. In addition to unsafe living conditions in rundown structures, Codes Compliance's inspectors are also challenged to address illegal boarding houses, the number of persons occupying a dwelling unit, and the misuse of hotels and motels. Although the list of abandoned and dilapidated buildings has grown over the past few years, Codes Compliance continues to address dangerous conditions utilizing a variety of tools including demolition of the most unsafe structures.

As presented in Section 2.1, A Prosperous and Resilient City Newport News had nearly half of the Peninsula's homeless population in 2014. A closer look at the data reveals a likely undercount: homeless people who were living in hotels and motels, or non-traditional shelters, such as cars or abandoned buildings, were not counted. Newport News does not have a city-sponsored or maintained shelter for the homeless, but is evaluating options to improve homelessness in the city. Further, the Greater Virginia Peninsula Homelessness Consortium continues to organize and deliver housing and services to the homeless to reduce the number of individuals who become homeless, reduce the length of homelessness, and reduce the reoccurrence of homelessness. In addition, the Department of Human Services provides the Housing Broker Team, a program designed to prevent homelessness and the reoccurrence of homelessness among families with children under 18. The city-funded program is coordinated with the Greater Virginia Peninsula Homelessness Consortium efforts.

With increased demand for quality affordable housing and workforce housing, aging structures, and the rising cost of new homes, Newport News, like many other Hampton Roads communities, is challenged with providing housing options for future residents while maintaining quality of life for existing residents.[4]

- There were 696,858 housing units in the Virginia Beach-Norfolk-Newport News Metropolitan Statistical Area (MSA) in 2014. Of those occupied, 62.2 percent were owned and 37.8 percent were rented. In Newport News there were 76,903 housing units, approximately 11 percent of the MSA inventory. Of those occupied, 50.6 percent are owned, while 49.4 percent are rented; Newport News has over 10 percent more rentals than the average for the MSA. Within Newport News, total housing units and occupied housing units has changed minimally since 2010. Between 2010 and 2014, the housing inventory increased by less than 1 percent (705 units).

[4] Affordable housing is provided by both the public and private sectors and is usually targeted at households earning less than 60% of the area median income. Workforce housing is aimed at households earning between 60% to 120% of the area median income, and who may not have sufficient income to secure quality housing in reasonable proximity to the workplace.

- As shown in Figure 28, the city's housing stock is aging: almost 59 percent of houses were built prior to 1980. While many older homes add charm and character to our neighborhoods, some property owners become overburdened by the cost and physical effort to maintain aging properties, leading to disrepair.
- The vacancy rate for the total housing stock in the city continued to increase, from 7 percent in 2010 to 10.3 percent in 2014. The vacancy rate in 2000 was 6 percent.
- Of the total housing units in the city, approximately 34 percent (26,387) are apartments. Almost 87 percent of all apartments are market-rate units. The most common apartment type is 2-bedroom units, which account for 62 percent of all market-rate units within Newport News (see Figure 29).
- The number of market-rate apartment units has generally remained consistent through the last 15 years, whereas the number of income-based units (both public and private) in the city has gradually declined since 2002. There was a 20 percent reduction (a loss of over 850 units) in income-based housing inventory over a decade.
- There is a demand for income-based (affordable) housing in Newport News as evidenced by the number of appointments scheduled in 2015. The Newport News Redevelopment and Housing Authority (NNRHA) scheduled 1,223 appointments for the Housing Choice Vouchers over a 4-day period in July, and another 2,437 appointments for public housing over a 4-day period in August 2015. The NNRHA provides new homebuyer opportunities and affordable housing for lower and moderate income families on the Greater Peninsula, acquires property for redevelopment, rehabilitates property, and manages the city's consolidated housing and community development

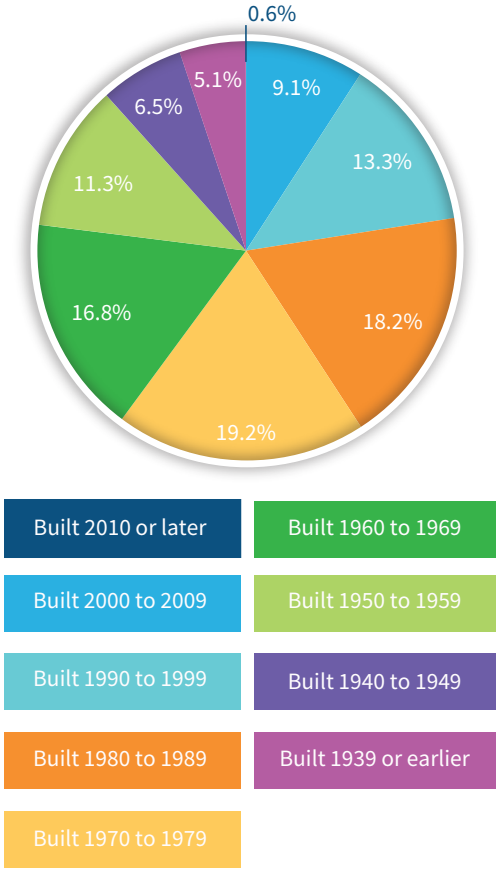


Figure 28: Year Structure Built

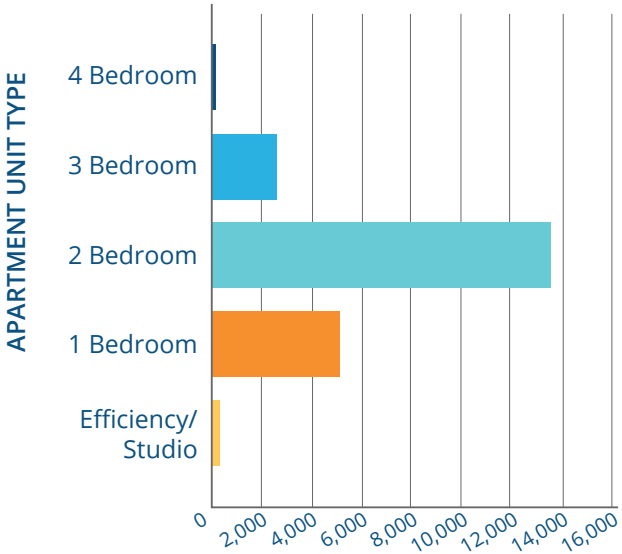


Figure 29: Total Number of Market-Rate Apartment Units by Type (2015)

programs. In addition to administering the Housing Choice Vouchers, NNRHA owns and manages over 1,600 affordable rental housing units across Newport News.

- The median gross rent for Newport News was estimated at $975 for 2014. This is a nearly 10 percent increase from 2010 ($881). The Virginia Beach-Norfolk-Newport News MSA median gross rent was $1,082.
- In 2014, 38.6 percent of households within the city were considered cost burdened. While this was a decline of approximately 5 percent from 2012, there were still almost 25,000 households that paid more than 30 percent of their household income for housing (Housing Virginia, 2015).
- Stressing the importance of accessibility by non-vehicular modes of transportation, approximately 9 percent of households in the city do not have a vehicle. This is slightly greater than the area average of 6 percent.
- Housing Virginia calculates a "Housing and Commuting Affordability Index" to determine housing affordability for households that work. It combines the median cost of housing with the average cost of commuting to derive a percent of household income required to occupy the median housing unit, which is considered to more accurately reflect housing affordability within a locality. For this index, paying 34 percent or more of household income indicates cost burden. The "Housing and Commuting Affordability Index" for Newport News in 2014 was 29.6 percent. Broken down by homeownership (plus commuting) and rental (plus commuting), 28.4 percent of income is required for homeowners to afford the median housing unit, whereas 30.7 percent of income is required for renters to afford the median housing unit (includes utilities). Drilling down into the numbers shows that renters would need $1,259 a month to afford the median gross rent for Newport News and average commuting costs. In 2014, slightly more than 22 percent of all households in the city had a household income of less than $25,000.
- Since 2000, the majority of Hampton Roads localities have been able to generate new housing to satisfy demands produced by new jobs. Between 2013 and 2033, Newport News is projected to net nearly 6,000 new jobs, which in turn will generate a demand for nearly 4,000 new housing units, assuming all employees work and live in Newport News (Sturtevant, 2014).

2.3.2 WHAT WE HEARD

Many stakeholders understand the housing–transportation connection and recognize that housing affordability is affected by transportation costs, especially in a region where people do not always work, shop and recreate where they live. All stakeholders recognize the challenges of our transportation system, both locally and regionally. The majority believes that LRT along the CSX corridor or BRT in a dedicated lane would not only relieve much of the congestion within the city, but also provide quick and reliable connections to jobs, services, and shopping for residents that currently find it challenging to get around Newport News without a privately owned vehicle, including soldiers and sailors stationed at Joint Base Langley-Eustis and Naval Weapons Station Yorktown.

Some stakeholders envision ties to Richmond and areas further north by high speed rail and to the Southside by water taxis and ferries to further reduce privately owned vehicle traffic. Most stakeholders support transit alternatives to connect Newport News to other Peninsula localities

and to Richmond and Washington, D.C. A multi-modal transportation system is seen as vital to the long-term viability of Newport News and Hampton Roads. Park n' Ride lots are desirable, especially in conjunction with any future LRT or BRT connections. Transportation options are needed for various age groups including youth and young military members, many of whom do not have access to privately owned vehicles.

Bicycle paths (multi-use or multi-purpose pathway) are desirable, especially to connect neighborhoods and schools. Students especially hope to see more pedestrian-friendly school zones. Many routes to schools require improved crosswalks, upgraded and new sidewalks, lighting, and bicycle parking accommodations. Many residents believe increasing the number of sidewalks in neighborhoods and around schools and community centers will promote walking and enhance pedestrian safety.

There is a general consensus that bike lanes, bike routes and multi-purpose trails are needed throughout the city. While there is a recognition that sidewalks are being widened in high-volume traffic areas, avid cyclists tend not to ride on sidewalks and most pedestrians do not know that the wider sidewalks are intended to be multi-use. Some residents believe that the lack of curbs and gutters citywide should be addressed before sidewalks are widened.

Traffic safety is a concern for some stakeholders, who expressed a desire for more traffic calming measures throughout the city to protect both cyclists and pedestrians. There is also a general feeling that the majority of drivers on our local roads do not know that cyclists can—by law—share the road.

Active transportation opportunities are desired, including facilities along the waterfront. Many residents believe that public access to the waterfront is limited and should be expanded in strategic areas to allow everyone the opportunity to enjoy this natural amenity and provide more active transportation options.

An increase in the use of alternative vehicles is anticipated; charging/refueling stations will be needed in parking garages and other key locations throughout Newport News.

Some stakeholders see the need to expand the airport, while others believe the area around the airport should be built up with other land uses. Numerous stakeholders question the long-term viability of NNWIA.

There appears to be a general consensus that the housing stock in Newport News is aging, there are insufficient affordable (quality) housing options for seniors and low and mid-income residents, and there is a lack of high-end housing. Many stakeholders did not foresee a change in the demand for homeownership in general

or for single-family homes in particular. Others, however, identified the need for a mix of housing types to capture the needs of both an aging population and the younger generations. The ability to age in place was a common desire among stakeholders. Many stakeholders believe that the city lacks senior housing developments that provide citizens the opportunity to age in place. Many residents envisioned housing near parks and in walkable neighborhoods with activity centers. Others see the need for higher-density development to support job growth in key areas, as well as future transit. City Center was pointed out as an opportunity area by many stakeholders who believe the area's density could be expanded as it is fully developed, providing a greater mix of uses and high-end housing.

Homelessness remains an issue for both Newport News and the Greater Peninsula. Funding and locations for services to address this segment of our population remain difficult to obtain. Many stakeholders believe that homeless shelters—similar to public and assisted housing complexes—are concentrated in some areas rather than being dispersed citywide. Some stakeholders believe we should reduce density in public housing complexes, and focus on more compact, mixed density developments. Others feel there is an opportunity to look at affordable housing across the region to ensure that each locality is providing its fair share.

Results from the 2016 Community Survey include:

- Approximately 71 percent of the residents surveyed were satisfied or very satisfied with the availability of sidewalks in Newport News, while 77 percent were satisfied with the overall condition of the sidewalks.
- When asked about their level of satisfaction with the overall condition of city streets, excluding interstates, 61.6 percent of respondents stated they were satisfied or very satisfied.
- Just under half (48.7%) of all respondents were satisfied with the traffic flow on city streets, excluding interstates.
- Over 74 percent of residents stated they were satisfied with the condition of the streets in their neighborhoods.

2.3.3 WHAT IT ALL MEANS

- Funding for transportation projects is scarce. We need to identify alternate sources of funding and reprioritize investments.
- Our existing road network—especially the arterials—lack additional capacity, and we do not have the land to build more roads. Investment in a balanced, multimodal transportation system is the only alternative to provide choice for our residents and more efficient and safer connectivity in the future.
- A multimodal transportation plan is needed to capture the latest information on travel and growth trends within the city, infrastructure conditions, projected deficiencies, strategies and prioritized actions, estimated costs, and available funding sources.
- It is important to protect the airport's airspace and ability to expand in the future.
- Job centers and workers remain dispersed. Land use densities need to increase in key locations to concentrate people near jobs, services and transit to reduce traffic volume. Overall, we need to find more ways to efficiently move people and goods within Newport News and connect to the region to support economic prosperity while enhancing local quality of life and protecting the environment.
- A housing study is needed to analyze the housing distribution of workforce and affordable housing locally and regionally. We need a housing strategy that strengthens existing commitments to income-assisted and accessible housing, preserves the overall existing stock, and provides greater choice at all income levels and more diverse neighborhoods. We also need to enable our residents to age in place with easy access to services and support systems, and conceive a solution for the homeless situation.

2.4 A HEALTHY AND SAFE CITY

This section provides key facts and trends related to public health, human services, urban services, parks and recreation, and public safety. It also incorporates stakeholder input gathered through various outreach efforts including the citywide survey. Key points considered during development of strategies to implement the planning vision are provided at the end of this section.

2.4.1 KEY FACTS AND TRENDS

There are many trends influencing the health and safety of communities around the world, including population growth/ urbanization, aging of the population, environmental damage, climate change, lifestyle choices, increased demand for fresh water, and road accidents (Urban Land Institute, 2013 p. 16). Hampton Roads faces these challenges, too, and localities are working together to develop a strategic plan to assess the challenges and determine how the region can best support sustainable and cooperative growth in the future.

With urbanization, an increased life expectancy, and pollution on the rise, there is a strain on natural resources, including food, water and air. Providing access to healthy food is a priority nationally and in Virginia. Communities are looking at creative ways to increase access to fresh, healthy locally grown food in underserved neighborhoods. They are also looking at opportunities to design and build places that support active lifestyles. Increasing opportunities for residents to engage in physical activity promotes healthier living and recognizes the connection between community development and public health. Healthy choices need to be easy ones. They should be safe, accessible and located everywhere. Nationally, there is a trend of cities partnering with a range of stakeholders to invest in healthy communities, including designing more walkable neighborhoods, rethinking public spaces, installing active transportation infrastructure, and program sponsorship.

PUBLIC HEALTH

Access to health care for mothers, infants, and young children continues to improve in Newport News. Other segments of the population, however, continue to need assistance obtaining medical care, including the homeless and the poor. Within Newport News there are numerous health care organizations working to address health, chronic diseases, and provide basic preventive care for all citizens. The Peninsula Health District (Virginia Department of Health), Hampton Newport News Community Services Board (CSB), Peninsula Agency on Aging, Hampton Roads Community Action Program (formerly Office

of Human Affairs), and city of Newport News Department of Human Services are some of the major organizations providing services and partnerships to improve the health and quality of life of our residents. In addition, Southeastern Virginia Health System operates numerous community health care centers throughout the city, offering community-based health care to the insured, uninsured, and underinsured. Our citizens have access to three major medical centers: Riverside Regional Medical Center, Bon Secours Mary Immaculate Hospital, and Sentara Port Warwick. We also have numerous private practices that provide high-quality general and specialty medical care.

The 2015 County Health Rankings for Virginia ranks Newport News as 80th out of 133 counties, cities, and towns assessed for Overall Health Outcomes. This ranking considers length of life and quality of life of residents. We are ranked 87th for Health Factors, which considers health behaviors, clinical care, social and economic factors, and the physical environment. The purpose of the rankings is to raise awareness about the many factors that influence health across the country and assist localities in identifying strategies to address their health challenges.

- In 2014, 14.2 percent of the city's population (civilian noninstitutionalized) had no health insurance coverage. This is an increase from 2010, when 13.2 percent of the population lacked health insurance coverage. Across Virginia, 12.1 percent of the population did not have health insurance coverage in 2014.
- The opening of a grocery store in the Southeast Community (located in Brooks Crossing) provides residents with access to affordable and nutritious food, an option that was lacking in the neighborhood for several years. According to the U.S. Department of Agriculture, Lee Hall is the city's other low-income census tract with low access to fresh food. Per the government's definition, this means that residents must travel more than 1 mile to the nearest grocery store.
- The city of Newport News maintains a community garden in Lee Hall, which serves the entire city. Plots are available on a first-come first-serve basis and are leased for a fee per gardening season. Over the past few years, numerous community gardens have been established in neighborhoods throughout the city, mostly sponsored by NNPS or local nonprofits. NNRHA established one at Spratley House several years ago, which has been successfully maintained by the residents. Community gardens not only provide access to fresh fruits,

Riverside Regional Medical Center

vegetables and herbs, but can beautify neighborhoods and bring neighbors closer together. They also provide recreational green space in urban areas, contribute to cleaner air, and can be used as an outdoor classroom for students to learn about biology, ecology, horticulture, nutrition, recycling, and composting.

- The ***Newport News Healthier Routes to School Program*** aligns with the goals established in the VDOT's ***Virginia Safe Routes to School Five-Year Strategic Plan*** (2012—2017). Specifically, the program is focused on increasing the percentage of students walking and bicycling to school by implementing policy changes and infrastructure improvements (such as new sidewalks where none exist) that make it feasible, attractive and sustainable to engage in active transportation.
  - » An assessment has been coordinated between the city of Newport News and NNPS to identify infrastructure improvements and prioritize investments in support of the program. Areas around 13 schools are identified for infrastructure improvements.
  - » Proposed improvements range from new or improved crosswalks, upgraded sidewalks, implementation of accessible ramps and new street lights to relocation of utilities, part-time crossing guards, and installation of pedestrian signals and bicycle racks.

- Since 2013, air quality in the Hampton Roads region has not exceeded the 8-hour ozone limit. In Newport News, we partner with state and federal agencies to develop feasible plans to improve air quality as needed.

HUMAN SERVICES

Newport News residents have access to a variety of services and programs to help them improve their quality of life. The Department of Human Services provides assistance through a variety of programs and services including: adult and family services, child welfare and protection, employment, financial benefits, and prevention programs. Through its various programs and community partnerships, the department promotes empowerment and independence for individuals and families.

There are growing health concerns in the community, and more health education and services are desired. As our population continues to age, health care and adult protective services requirements increase. The community is in need of more farmers' markets and community gardens to provide all citizens access to fresh and healthy food. The Department of Human Services sees a need to increase the capacity of quality child care providers; plan more senior living facilities; provide long-term temporary shelters that allow working homeless to get

back on their feet; and provide additional mental health programs to address a growing issue. Collocating critical services in strategic areas throughout the city is desirable to improve outreach, education, and the overall effectiveness of programs and services.

- In 2013, over 60,000 residents were connected to federal, state, and local services and programs through the Department of Human Services. The department expects the number of clients to increase as the population grows and ages. Of particular concern are the potential increases in elder abuse cases and the number of elderly who have no local family or community support which would allow them to age in place. The number of senior and assisted living facilities needed within the city is likely to increase. Mental health service requests are also expected to grow.
- As noted in Section 2.1, A Prosperous and Resilient City and Section 2.3, An Accessible City, homelessness is an ongoing challenge for the city. While the number of homeless people over the past five years has been trending down, those individuals and families with low income and barriers to finding stable housing continue to be of particular concern for the Department of Human Services, especially with regard to the impact of homelessness on children. Homelessness for children can lead to educational barriers, emotional distress and life-long health problems.
- Asset-Based Community Development (ABCD), a strategy for sustainable community-driven development, has been integrated into several Newport News neighborhoods. The Department of Human Services, in collaboration with community partners, introduces the ABCD strategy to residents and empowers them to mobilize and take ownership of community challenges and solutions. Youth and adults, working in partnership, identify opportunities, challenges, resources and solutions in their neighborhoods.
- The Department of Human Services is headquartered at Rouse Tower, which was constructed in 1974. The building is in need of repairs and upgrades including the mechanical and electrical systems. Staff is located on nine of the 12 floors; collocation of programs to increase effective and efficient service delivery, support family and community engagement, or create an environment that is welcoming to customers is challenging. Expanding facility capacity at this location is not feasible. However, service provision will become easier and more cost effective as outdated tools are replaced and the department converts to new web-based systems and continues to streamline processes.

URBAN SERVICES

As presented in Section 2.1, A Prosperous and Resilient City, effective delivery of urban services such as safe water and sanitation is essential for enhanced quality of life and economic prosperity and resilience within our city. It is critical that investments in these services preserve and protect the various systems and keep pace with planned growth and development.

- Newport News Waterworks continues to supply water to more than 400,000 customers in Newport News, Hampton, Poquoson, York County, and a portion of James City County. Water quality in Newport News meets or exceeds all federal and state requirements with no violations with regards to contaminates, whether metals, organics, or inorganics.

- Water quality in Newport News is continuously monitored and maintenance operations are conducted in full compliance with state and federal regulations. The Department of Engineering develops, implements, and maintains the programs and policies that preserve water quality, reduce erosion, and prevent flooding within the city.
  - » Waterworks treats and delivers approximately 38 million gallons of water each day, drawing from groundwater and surface water from the Chickahominy River and five reservoirs. The primary source of drinking water for the city is surface water; groundwater is a secondary water source.
  - » With successful water conservation programs, water demand has dropped from an average annual high of 49.3 million gallons per day in 1997 to 36.2 million gallons per day in 2014.
  - » The Harwood's Mill Water Treatment Plant is undergoing modernization to increase treatment capacity. Between those upgrades and the Lee Hall Water Treatment Plant, there is adequate capacity to absorb future growth in the city.
  - » Nationwide and in Newport News a backlog of replacements is needed to the water distribution pipeline network (e.g., pipelines, valves, fire hydrants, etc.). These replacements are currently being studied and programmed through the Asset Management Program.
- The Virginia DEQ proposed cutting the permitted groundwater withdrawals of the largest users, eight of which are in Hampton Roads, including Newport News Waterworks. While groundwater is a small percentage of the overall water supply source for Waterworks, it does depend on groundwater withdrawals for drought management purposes.
- To achieve its goals of providing affordable wastewater services, maintaining reliable systems and clean facilities, fostering a culture of conservation and recycling, and increasing energy efficiency, HRSD continues to implement the improvements outlined in its *Development Plan 2020*. Completion of the York River Plant expansion will double the capacity for the North Shore (includes Newport News), which is sufficient to meet forecasted growth demands throughout the area.
- The Department of Public Works supports HRSD with its mission by operating and maintaining the local wastewater collection system that feeds into the HRSD processing and treatment system. Public Works continues to upgrade its Supervisory Control and Data Acquisition system to improve continuous monitoring and overall operation of the pumping stations in Newport News. The department also administers the Inflow and Infiltration Elimination Program to implement corrective action to reduce excessive rates of inflow/infiltration.
- Public Works continues to explore opportunities to be cleaner and greener with the collection and disposal of solid waste, bulk waste, and recycling. The department offers training, education, and various support programs in its efforts to provide environmentally responsible collection and disposal and promote clean programs and policies.
  - » Our recycling rate is at 46 percent, almost twice the minimum requirement established by the state.
  - » To further reduce waste and increase recycling efforts, Public Works administers the Newport News Waste Elimination Business Program, a free program that encourages businesses to reduce waste and increase recycling efforts.

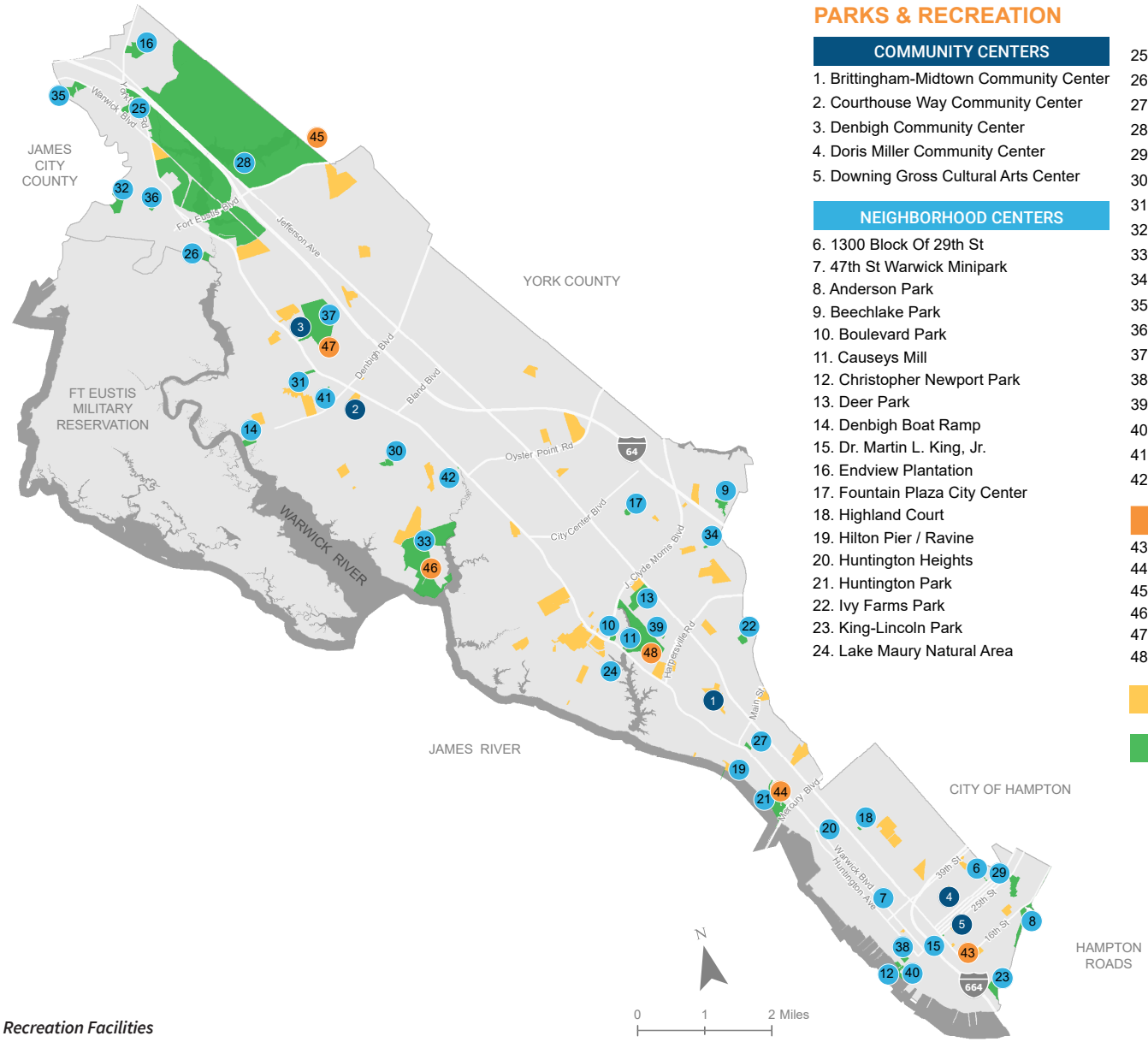
PARKS AND RECREATION

In addition to health, environmental, and social benefits, parks and open space also provide economic benefits. According to the National Recreation and Park Association, local and regional parks create nearly $140 billion in economic activity per year and support almost 1 million jobs in the United States (NRPA, 2015b). Parks and water recreation play a major role in a community's tourism economy. Some parks are tourist attractions, while others are venues for festivals, sporting events, and other special activities. In addition, proximity to and quality of parks positively affect real property value, especially residential property.

Studies show that urban residents today look to parks to provide a more social experience than they did in the past. People go to parks for special programming such as yoga, movie nights, ice rinks, and flower gardens. Parks provide the opportunity for people to interact, communicate, learn, and compete. The National Recreation and Park Association analysis of the parks and recreation national database also showed that programs are the key to great park attendance. Further, the analysis verified what many news headlines over the past few years claim: walkable cities draw Millennials (NRPA, 2015a).

In 1981, the National Recreation and Park Association established a nationally accepted standard of 10 acres of parkland for every 1,000 residents. By the early 1990s, the association began to encourage each locality to establish its own standards based on growth patterns and locally assessed needs. With the growing awareness of the benefits of parkland and recreational facilities, more localities are going beyond the acreage per person calculation and also considering access (distance and time traveled) and carrying capacity (the capacity of facilities to accommodate demand for use). In previous planning efforts, the city of Newport News has used the 10 acres per 1,000 residents standard to calculate park acreage needs. Newport News remains strong in regional parkland, but deficient in neighborhood and community parkland and athletic and recreational facilities. More green space and parks—especially small neighborhood parks—are desirable throughout the city. Other identified challenges for parks and recreation programs include limited waterfront access and parks, increasing park use and visitation (which translates to additional wear and tear on facilities), and insufficient maintenance. Another challenge is identifying areas in the city where land could be acquired for future parks.

- Newport News Parks Division has an inventory of 37 parks totaling 8,697.35 acres (see Figure 30). They vary in size from 0.11 (Huntington Heights Square) to 7,711 acres (Newport News Park). However, Newport News Waterworks owns the 7,711 acres at the north end of the city and in York County. While the entire acreage is included in the park inventory, only 3,000 acres are formally designated for recreation use. In fact, much of the property is forested and managed for water quality.
- Not including Newport News Park, there are 36 neighborhood, community and district parks totaling 986.09 acres. In urbanized areas, schools, churches, and private facilities also accommodate recreation demand and may be counted toward the total park acreage. Our totals for neighborhood parks factor in public school sites. In Virginia, the general guideline for parks is a total of 10 acres per 1,000 people. Applying this guideline to the city's park inventory, we have a deficit of approximately 844 acres (not including Newport News Park).
- There are well used recreational trails at Newport News Park and Riverview Farm Park, and the privately-owned



PARKS & RECREATION

COMMUNITY CENTERS

1. Brittingham-Midtown Community Center
2. Courthouse Way Community Center
3. Denbigh Community Center
4. Doris Miller Community Center
5. Downing Gross Cultural Arts Center

NEIGHBORHOOD CENTERS

6. 1300 Block Of 29th St
7. 47th St Warwick Minipark
8. Anderson Park
9. Beechlake Park
10. Boulevard Park
11. Causeys Mill
12. Christopher Newport Park
13. Deer Park
14. Denbigh Boat Ramp
15. Dr. Martin L. King, Jr.
16. Endview Plantation
17. Fountain Plaza City Center
18. Highland Court
19. Hilton Pier / Ravine
20. Huntington Heights
21. Huntington Park
22. Ivy Farms Park
23. King-Lincoln Park
24. Lake Maury Natural Area
25. Lee Hall Plantation
26. Lee's Mill
27. Municipal Lane Park
28. Newport News Park
29. Newsome House
30. Nicewood Park
31. Potter's Field
32. Queen's Hithe
33. Riverview Farm Park
34. Robinson Bruton Park
35. Skiffe's Creek Park
36. Skiffe's Creek Redoubt
37. Stoney Run Park
38. Superblock
39. Tear Drop Park
40. Victory Landing Park
41. Warwick Courthouse
42. Youngs Mill

SPORT FACILITIES

43. An Achievable Dream Tennis Center
44. Huntington Park Tennis Center
45. Newport News Golf Club at Deer Run
46. Riverview Gymnastics Center
47. Stoney Run Athletic Complex
48. Warwick Recreation Center

SCHOOL / RECREATION

PARK

Figure 30: Parks & Recreation Facilities

Mariner's Museum property. The city's transportation plan proposes a comprehensive trail network that goes beyond the existing trails, connecting to routes throughout the city and in adjacent jurisdictions. As the roadway system is improved and expanded, opportunities for new trails are assessed and existing trails are improved.

- There are four multipurpose community centers in Newport News: Brittingham-Midtown, Courthouse Way, Denbigh, and Doris Miller. These centers offer a variety of activities for youth and active lifestyles (50 and older), instructional classes, and after school programs. Doris Miller and Brittingham-Midtown both include a pool area. Phase II of the Denbigh Community Center will add a pool and water playground for the North District; this project is included in the CIP for FY 2019 – 20. In addition, there are two dedicated senior centers, North Newport News and Hilton, both of which require building renovations, as does the community center at Courthouse Way. An additional community center for the Southeast Community has been identified as a need.
- Newport News has made great strides in reducing the deficit in number of recreational fields, courts, and gymnasiums available to meet demand, with the addition of athletic facilities at Stoney Run Park, Denbigh Community Center, and Mary Passage Middle School. However, demand still out paces facility availability. Further, existing schools and city gymnasiums are inadequate in size to effectively serve year-around athletic programs. As a result, facilities are often limited and overcrowded. Lighted athletic fields are especially needed to meet demands of year-round sports. The second phase of Stoney Run Park, when funded, will provide additional multipurpose fields, basketball and tennis courts, walking and biking trails, and picnic areas.
- Six sport facilities and four recreational center gymnasiums support recreational needs in the city. In addition there are two tennis centers, one gymnastics center, and an athletic complex. Youth and adult sports leagues are open to all residents. A new pro shop and locker room facility was added to the Huntington Park Tennis Center in 2015. The state-of-the-art building supports 20 lighted courts. The Center Stadium Court is the next phase for Huntington Park and will allow the facility to draw more tournaments and bigger

World Arts Celebration

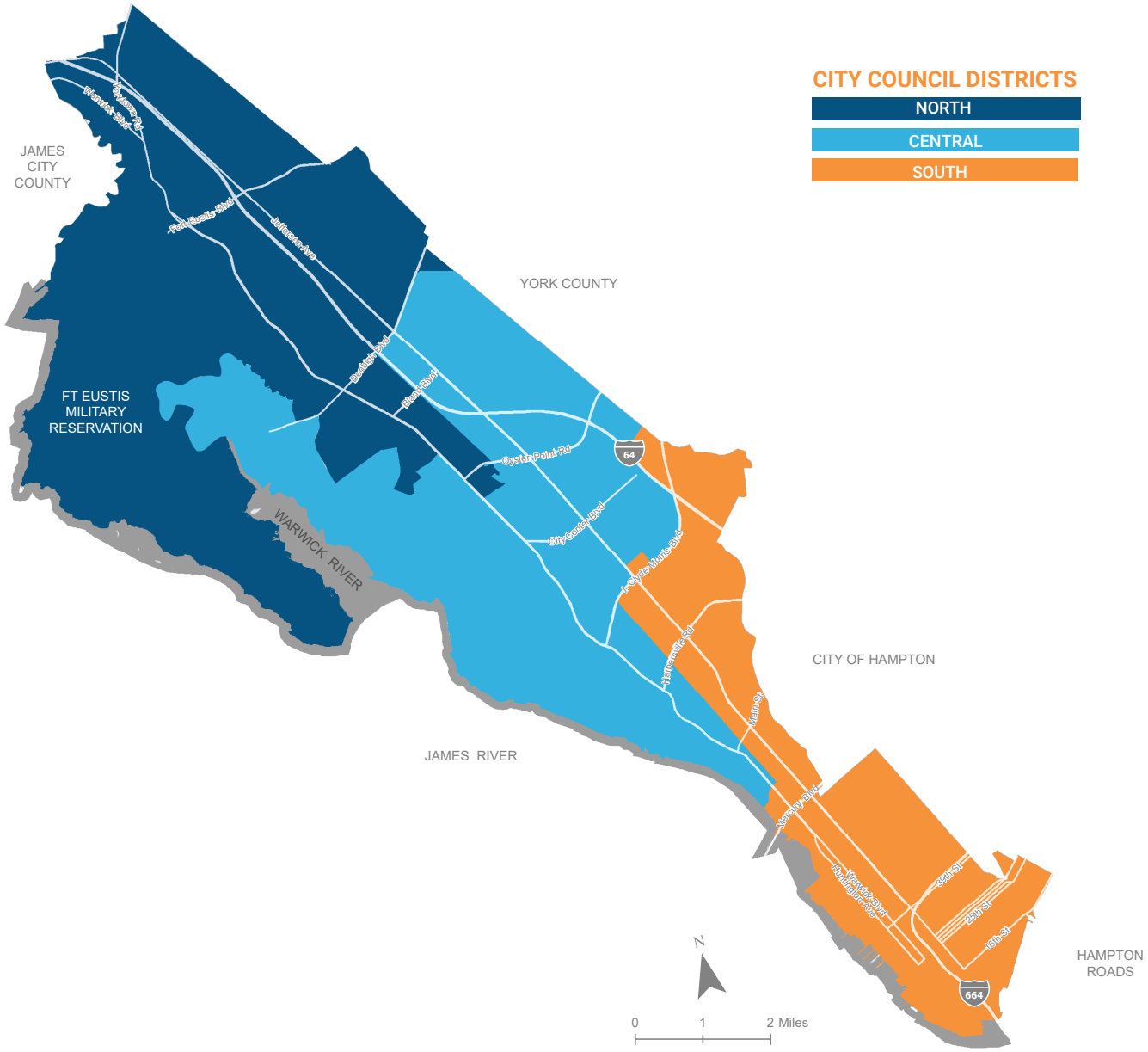


Figure 31: City Council Districts

competitions. This project is included in the CIP for FY 2019.

- Newport News Golf Club at Deer Run is a public facility with an 18-hole championship course plus 18 holes of a par 3 course. Both courses were constructed in the mid-1960s and are in need of renovation and upgrades. Revenue from rounds has steadily declined over the past decade as a result of aging infrastructure and the appeal of newer, and more updated, courses located in surrounding jurisdictions.
- The city maintains five public boat ramps: two provide access to freshwater at Newport News Park, and the other three provide direct access to the Warwick River, James River, and Hampton Roads harbor. Two of the boat ramps—Peterson's Yacht Basin and Huntington Park—and the Leeward Marina require more frequent dredging than current funding allows. While funding for channel dredging has typically been programmed every 7–9 years, the city's public boat channels have historically been refilling to the point where boating is significantly affected an average of 5–6 years following dredging.
- In addition to freshwater fishing opportunities, the city maintains six public saltwater fishing piers, including a 1,500-foot-long wavescreen fishing pier at King-Lincoln Park and the 2,364-foot-long James River Fishing Pier, considered to be the longest fishing pier on the East Coast.
- Many community facilities are aging and will require investment over the next 20 years. Thirty-seven percent of the Parks, Recreation & Tourism department's budget is generated from fees, charges and gate receipts. Additional city funding is needed to operate and maintain existing facilities. Since 1975, the city has doubled the number of public parks and tripled park visitation, while full-time park staffing has actually declined or remained static. Annual park visitation alone now exceeds 3.8 million people; with the accompanying usage and wear on park facilities, additional staff and maintenance funding is critically needed to ensure the continued quality and integrity of parks and park assets.


Huntington Park Beach

LIBRARY SERVICES

Libraries provide a variety of services and programs that focus heavily on youth engagement, workforce development and providing learning opportunities that support the community through all facets of life. Unique programs include the Mayor's Book Club, PAWS to Read, Just 2's

Storytime, and Wee Ones Storytime. The Pearl Bailey Library's youth programming received the National Arts and Humanities Award in 2013 for its after-school and out-of-school time programs that generate positive youth outcomes.

Libraries will remain relevant in the future, serving a range of needs. While the role of libraries in the community continues to evolve, one basic premise remains: libraries are seen as community places where residents can gather to exchange ideas, experience programs that introduce them to new ideas, cultures and opportunities, and experience social engagement that they might not otherwise experience. Libraries continue to be sources of life-long education and learning. Libraries are public spaces that are neutral and positive; they create a sense of place and add to the quality of life of an area. Libraries play a significant role in providing a safe alternative to the streets for youth.

- Over 890,000 patrons came to the libraries in FY 2015, checking out over 887,000 items, presenting over 152,000 requests for assistance as part of school readiness, homework assistance and employment services or to learn how to use technology.
- Programs in the buildings and outreach services to the community through school visits, the Mayor's Book Club and STEM programs at community functions reached over 14,900 participants. Cooperative programming such as the Financial Literacy Programs facilitated by CNU's Captains' Educational Enrichment Fund help the community to prosper.
- There are five operating libraries in the city: Pearl Bailey, Virgil I. Grissom, Law, Main Street, and South Morrison. The sixth—West Avenue Library—is used for administrative purposes and is closed to the public. The newest library is located in the South Morrison Family Education Center, a former elementary school. Two libraries, Virgil I. Grissom and Pearl Bailey, are a priority for replacement or renovation and expansion due to aging infrastructure and condition through heavy use.
  - » A facility and space needs assessment conducted in 2008 recommended a new 31,700 square-foot Virgil I. Grissom Library. The existing 16,600 square-foot library, located in the North District, is undersized for the population it serves; it is the only library north of J. Clyde Morris Boulevard and the busiest in the city. The building, constructed in 1977, has never undergone a major renovation.
  - » The Pearl Bailey Library, located in the South District, has an annual door count of 193,000. The facility and space needs

Main Street Library

assessment recommended that the 12,784 square-foot library be expanded to 30,000 square feet. While this library does not have a high percentage of registered patrons (i.e., those with library cards) or a high circulation, it is considered a community center/safe haven within the Southeast Community and therefore has a higher door count than Main Street Library, which is almost three times larger.

- The northern and central areas of the city are underserved. Based on projected development and future population growth, potential locations for new libraries include Lee Hall, City Center Boulevard/Tech Center area, and/or along Jefferson Avenue in the central part of the city. Libraries should be highly visible and located along transit service routes and active transportation corridors for accessibility.

PUBLIC SAFETY

Police

Newport News Police Department is the fourth largest municipal police department in Virginia. The department is comprised of four major bureaus and other special divisions, sections, units, and details and is administered from the department headquarters that opened in 2006. In 2016, the city celebrated the opening of the new South Precinct Police Station at Brooks Crossing.

In its ongoing mission to reduce crime and provide a safe environment for the citizens of Newport News, the department initiated the "Creating Responsibility In My Environment" (C.R.I.M.E.) Program in 2015 to develop a strategic plan for public safety. Through the C.R.I.M.E. planning process, a wide-range of stakeholders are working together to develop crime control goals and implementation actions. While youth and gang violence prevention continues to be a focus for the Police Department and city, the number of reported crimes in Newport News actually dropped between 2004 and 2013. Programs for youth leadership and employment training enrichment continue to grow. A more focused approach, however, is needed to engage youth and discourage them from violence and crime.

- There were approximately 6,300 Part I Crimes committed in 2013 and 2014, a decrease of almost 9 percent from 2012 (6,900 Part I Crimes).[5]
- In 2014, the highest number of crimes was in the Central Precinct, with larceny accounting for 76 percent of all crimes. Yet, the number one complaint in many neighborhoods continues to be speeding.

[5] Part I Crimes are murder and nonnegligent homicide, forcible rape, robbery, aggravated assault, burglary, motor vehicle theft, larceny-theft, and arson.

- In 2014, 7,000 inmates were committed in Newport News; an estimated 30 percent of those inmates suffer from mental illness. Nationally, correctional facilities are becoming the replacement for mental health institutions. This trend puts a strain on budget, manpower and functionality of correctional facilities.
- There is an increased focus on youth and crime for the age group between 14 and 24. The Newport News Youth & Young Adult Gang Violence Prevention Initiative was established to reduce violent gang and gang-related crime within the city and improve public safety, which is a strategic priority for the City Council. The Initiative incorporates the intervention model established by the U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention, which is based on five core strategies: community mobilization, opportunities provision, social intervention, suppression, and organizational change and development. The city continues to look at expanding its intervention and prevention programs across services and organizations to strengthen their effectiveness.
  - » Two new programs have been implemented with initial success: 1) Seeing Opportunities Within (S.O.W.) Program provides intensive intervention services to high risk and/or gang affiliated youth and young adults; and 2) the Summer Training and Enrichment Program (STEP) serves youth and young adults in the Southeast Community and Upper Warwick Boulevard by providing meaningful workforce experience.
  - » In 2015, the second year of STEP, the city doubled the number of youth employed, expanded the number of weeks worked, and increased the number of job locations. Employers included the city, private sector companies, NNPS, CNU, and various non-profits. During the second year of the summer program, there was a 17 percent decrease in juvenile offenses. This program was expanded in 2016.
  - » NNPS also launched a program in 2015 to engage students living south of Mercury Boulevard and ensure they have access to extended learning opportunities during the summer. The Summer Program for Arts, Recreation & Knowledge (SPARK) partners the schools with corporate, non-profit and city organizations to provide meals, transportation, and quality programming to students from kindergarten through 12th grade. SPARK offers classes in academics, leadership, physical fitness, mentoring, art, music, dance, and more. This program was expanded in 2016.
- Condition and location of several police facilities are concerns for the department.
  - » The North Precinct is located in a 5,000 square foot facility between Virgil I. Grissom Library and Fire Station 9. The building is not visible to the public, is undersized for the number of personnel and functions assigned, and in need of renovation.
  - » The Central Precinct is located in a former strip commercial center on Dresden Drive. The space is undersized for the number of personnel and functions assigned, and it is not visible to the public. Other challenges include a lack of sufficient space to properly store temporary evidence and issue equipment at shift change, and an unsecured parking lot.
  - » The city's dispatch center is located in the basement of City Hall. The space is considered to be in poor condition. The Police Department is assessing the feasibility of a combined dispatch center and training facility that would serve both Newport News and Hampton. There is adequate space at the Police Headquarters site for such a facility.

Fire and Emergency Medical Services

The Newport News Fire Department staffs eleven fire stations, three bureaus, four specialty teams, and the Emergency Operations Center (EOC). Responding crews typically handle around 27,000 emergency

and non-emergency responses annually, of which more than three-quarters are for medical service. The Insurance Services Office, which evaluates the capacity of local fire departments to respond to and fight structure fires, assigned the department with a Class 1 rating in 2015. A high rating (1 being the highest and 10 the lowest) helps lower fire insurance cost for commercial structures within a locality.

As the city becomes more urban and the population ages, more development occurs along the arterials and traffic becomes a greater challenge for the Fire Department as response times are affected. Age, condition, and location of department facilities are concerns. Two stations are almost 60 years old and will need to be replaced. Several other facilities are more than 30 years old. Station 11 is a temporary facility at the airport. Fire operations (Fire Marshall, administration, and logistics) are split between several facilities across the city, an arrangement that does not lend itself to effective operations. The department has outgrown the capacity of the Training Center, which lacks an auditorium.

- The number of calls for fire service has remained relatively steady, but there has been a slight increase in the number of Emergency Medical Service (EMS) calls. Between 2010 and 2014, approximately 2.5 percent of all calls were fire related. EMS calls are projected to remain constant through 2022. (Note that the forecast does not take into account population shifts, aging of the population, or changes in the health of the population.)
- The Insurance Services Office evaluation in 2014 revealed several areas within the city that have engine company coverage gaps. Further, the north end of the city was identified as having several ladder/service company coverage gaps.
- The city's oldest fire station was constructed in 1958 and the newest in 2013. While construction period, materials, and maintenance and repair investments factor into the lifecycle of a fire station, typically a station has a design life of 50 years.
  - » Fire Station 9, located on Old Courthouse Way adjacent to the Virgil I. Grissom Library, was constructed in 1958. The existing facility has limited capacity for expansion, and its age limits the ability to meet current station design requirements. An additional challenge for this station is that it has the largest coverage area in the city (8.73 square miles), and is one of the busiest districts. Response times can be hindered by congestion.

» Fire Station 8, located on J. Clyde Morris Boulevard, is the other facility constructed in 1958. This station has similar issues as Station 9. The biggest challenge is the age of the facility, which limits the type of apparatus that can be assigned to the station, thereby reducing flexibility with the fleet. The call volume for this district continues to increase with population growth, which eventually will necessitate assigning more apparatus and personnel to the station to meet the need. There is, however, no room for expansion at this site.

- Fire Station 11, located on Bland Boulevard at the airport, was established as a temporary facility. Ideally, a permanent station will be constructed in the vicinity of Denbigh Boulevard to put it closer to the call volume for the district. This would also allow the Fire Department to realign Station 4's district, moving the southern portion of the district to Station 11. This will balance out the call volume between the two stations, and enable Station 4 to handle additional calls should development occur in the northern most portion of Newport News.
- Based on a review of call volumes and density maps, the Fire Department has identified several districts with long response times and coverage gaps. Traffic congestion is an issue that affects response time. This is especially concerning where new development will further increase traffic volumes. New stations may be required based on future growth.
- Station 3, located on Jefferson Avenue, has long response times to Warwick Boulevard between Harpersville Road and Hunter Road. Located on Oyster Point Road, Station 6 has a 7.7 square mile response area through the center of the city between the James River and the Hampton city line. Station 8 has a response area just south of Station 6's that covers 5.7 square miles. The response team deals with high traffic volumes on Warwick Boulevard, Jefferson Avenue, and several east-west connectors. Future growth in the Oyster Point District will further affect response times. Stations 9 and 10 (located at Warwick Boulevard and Minton Drive) also experience long response times to outlying areas.

Sheriff's Office

The Newport News Sheriff's office is comprised of four major bureaus and various sections and special units. The Sheriff's office mission includes the custody and care of inmates within the Newport News City Jail, protection of courts and judges, serving

court documents, and law enforcement. With the closure of City Farm in 2015, all inmates are housed either in the city jail or at the Virginia Peninsula Regional Jail.

- The office of the Sheriff serves approximately 90,000 papers (i.e., criminal warrants, summons, eviction notices, etc.) each year. The civil process function is squeezed in with the criminal process function in the city jail. Ideally, deputies would facilitate this function within the police precinct districts in which the papers are being served.
- The city jail has a rated capacity of 300 inmates; the average daily population in the city jail in 2014 was 531 inmates. Overcrowding can lead to increased inmate violence and unsanitary conditions; therefore, the city contributes $4 million per year to the regional jail for up to 200 inmates to help alleviate overcrowding.
- Constructed in 1973, the city jail was designed to house administrative functions on the first three floors and hold prisoners on the top four floors. As the prison population grew, Police Department and Magistrate functions moved out of the building and the office of the Sheriff took over the entire facility. Inmates are now housed on six floors. The building layout makes it difficult to operate effectively and comply with current jail regulations and standards. The aging facility requires increased maintenance investments each year.

Emergency Operations

Newport News' Division of Emergency Management is responsible for providing comprehensive, risk-based and coordinated emergency management operations for the city. With climate change and recurring flooding, natural hazards and emergencies are a concern in our region. The city is prepared to handle weather-related anomalies including flooding, hurricanes, severe thunderstorms, tornadoes, and extreme heat. Action plans are available for severe weather, emergency operations and short-term pet sheltering in Newport News. The staff of the Division of Emergency Management also manages the Emergency Operations Center (EOC), a secure facility from which emergency situations are coordinated.

- The EOC, constructed in 1982, is located in the Public Works Operation Center in the central city. The EOC serves as a nerve center during incidents and events. EOCs should be designed and sited for survivability and security, along with other considerations. The Newport News EOC was not designed to withstand a direct hit by a strong Category 2 or higher hurricane, and is located near a hazard (CSX railroad).
- During an emergency situation, vulnerable and at-risk citizens will be provided with information on shelters, basic medical services, and evacuation recommendations. Citizens may, however, experience some challenges with evacuation including transportation and access to temporary shelter. With a higher percentage of the population reliant on public transit than elsewhere in the city, in the event of a mandatory evacuation, the Southeast Community may be especially vulnerable.

As presented in Section 2.1, A Prosperous and Resilient City, the population in Newport News is increasing in cultural diversity. With more foreign-born residents, Emergency Management recognized the need to provide emergency training to immigrants. In partnership with Commonwealth Catholic Charities,

immigrants are taught about hazards that they may face within the United States, and how to react when emergencies occur.

- Federal law requires all emergency planning districts within each state to have an emergency plan that includes a list of all facilities that keep hazardous materials (HAZMAT) on site and identification of routes likely to be used for the transportation of substances on the extremely hazardous substance list. This plan allows Newport News and the other four jurisdictions comprising the Peninsula Local Emergency Planning Committee to plan for responses to chemical emergencies and notification of emergency releases of extremely hazardous substances. Transportation of HAZMAT occurs on our secondary and primary roads and the interstates, via the CSX railroad through the city and by pipelines. The Fire Department's Hazardous Materials Response Team has the technical expertise, skills and abilities to respond to incidents involving HAZMAT and weapons of mass destruction.

2.4.2 WHAT WE HEARD

Numerous citizens expressed concern with crime and youth violence. Stakeholders identified numerous areas around the city they perceive to be experiencing increased criminal activity. Some stakeholders see the need for more police stations; others believe there are too many. Many stakeholders would like to see stronger relationships and more communication between police officers and neighborhoods. Some stakeholders believe there is a general lack of neighborhood pride and values in some areas of the city, which contributes to decline.

Non-profit and faith-based organizations are community assets that improve quality of life for many residents; however, there is concern by many residents that there is inadequate coordination between the various assets to maximize services in neighborhoods. Some stakeholders believe that implementation of the Asset-Based Community Development model in challenged neighborhoods is helping residents working to bring about change from within, including strengthening neighborhood pride and values.

There are growing health concerns in the community, and more health education and services are desired. As our population continues to age, health care and adult protective services requirements increase. The community is in need of more farmers' markets and community gardens to provide all citizens access to fresh and healthy food.

Parks are a good thing, regardless of size. There is a prevailing feeling that there is

insufficient green space throughout the city and that more recreational opportunities are needed, especially those geared toward the youth. More green space is desirable, especially in areas that are underserved. Increased public access to and recreational activities along the waterfront are still priorities for most stakeholders. More off-street multi-use trails are desirable, with Noland Trail being identified as a model to replicate.

Libraries throughout the city are highly utilized and remain valued assets to a range of stakeholders. Accessibility to these assets is a concern in some areas, especially those that lack sidewalks and/or are not easily accessed from transit lines. Some areas of the city are not currently served by a local library, which is another accessibility challenge for some residents. Many stakeholders inquired about the possibility of collocating city services within neighborhoods to improve customer service, including libraries with computer labs to support education and employment opportunities.

Results from the 2016 Community Survey include:

- Approximately 78 percent of survey respondents were satisfied with the resources for seniors to help them to continue to live independently, while over 75 percent were satisfied with social services for families including child welfare and protective services and help for needy residents.
- Eighty-five percent of residents surveyed were satisfied with the overall quality of the city's recreation programs and facilities, while 94.7 percent were satisfied with how well kept the city's parks are.
- Parks continue to receive high use: close to 80 percent of survey respondents indicated they had visited a city park during the previous 12 months.
- Almost 96 percent of respondents are satisfied with Newport News Public Libraries.
- When asked about their level of satisfaction with the overall quality of Police Department services, 90.9 percent of respondent said they were satisfied, while 85.1 percent said they were satisfied with the level of Police visibility in Newport News.
- Ninety-eight percent of residents surveyed were satisfied with the overall quality of Fire Department services, while 96.3 percent were satisfied with the overall quality of Emergency Management Services.
- When asked about their level of satisfaction with the city's efforts to prevent crime, 65.1 percent of respondents stated they were satisfied. At the same time, 70.4 percent were satisfied with the overall feeling of safety in the city.
- Almost 66 percent of survey respondents were satisfied with the city's work to combat gang activity.

2.4.3 WHAT IT ALL MEANS

- As presented in Section 2.1, A Prosperous and Resilient City, the city's population is aging and becoming more diverse, the percentage of total population that is foreign born is increasing, and people immigrating here tend to be poorer than those leaving. These trends will add pressure on the human services system as the need for assistance will grow.

- With limited vacant land, opportunities to expand traditional parks and recreation facilities continue to decrease. The city of Newport News may need to explore non-traditional strategies for acquiring additional green space and recreational opportunities. We have numerous community facilities that need to be renovated or replaced in the long term. When feasible, these facilities should be collocated to reduce cost and improve customer service and accessibility.
  - » A study is required to determine the location for a new Virgil I. Grissom Library, which is programmed in the CIP for FY 2019 – 21.
  - » A study is required to determine the size of and location for the Pearl Bailey Library expansion.
  - » Replacement police precincts are needed in the North District and the Central District.
  - » Several replacement fire stations are needed.
  - » There is a desire to consolidate fire operations to one facility.
  - » A new 911/EOC should be constructed at a central location within Newport News with easy access to main arterials and the interstate, but removed from hazards; located on high ground; and able to withstand a Category 4 or 5 hurricane.
  - » The Newport News City Jail is an outdated and overcrowded facility that will need to be replaced.

2.5 A CITY THAT RESPECTS ITS UNIQUENESS

This section provides key facts and trends related to culture and tourism, historic preservation, and aesthetics. It also incorporates stakeholder input gathered through various outreach efforts including the citywide survey. Key points considered during development of strategies to implement the planning vision are provided at the end of this section.

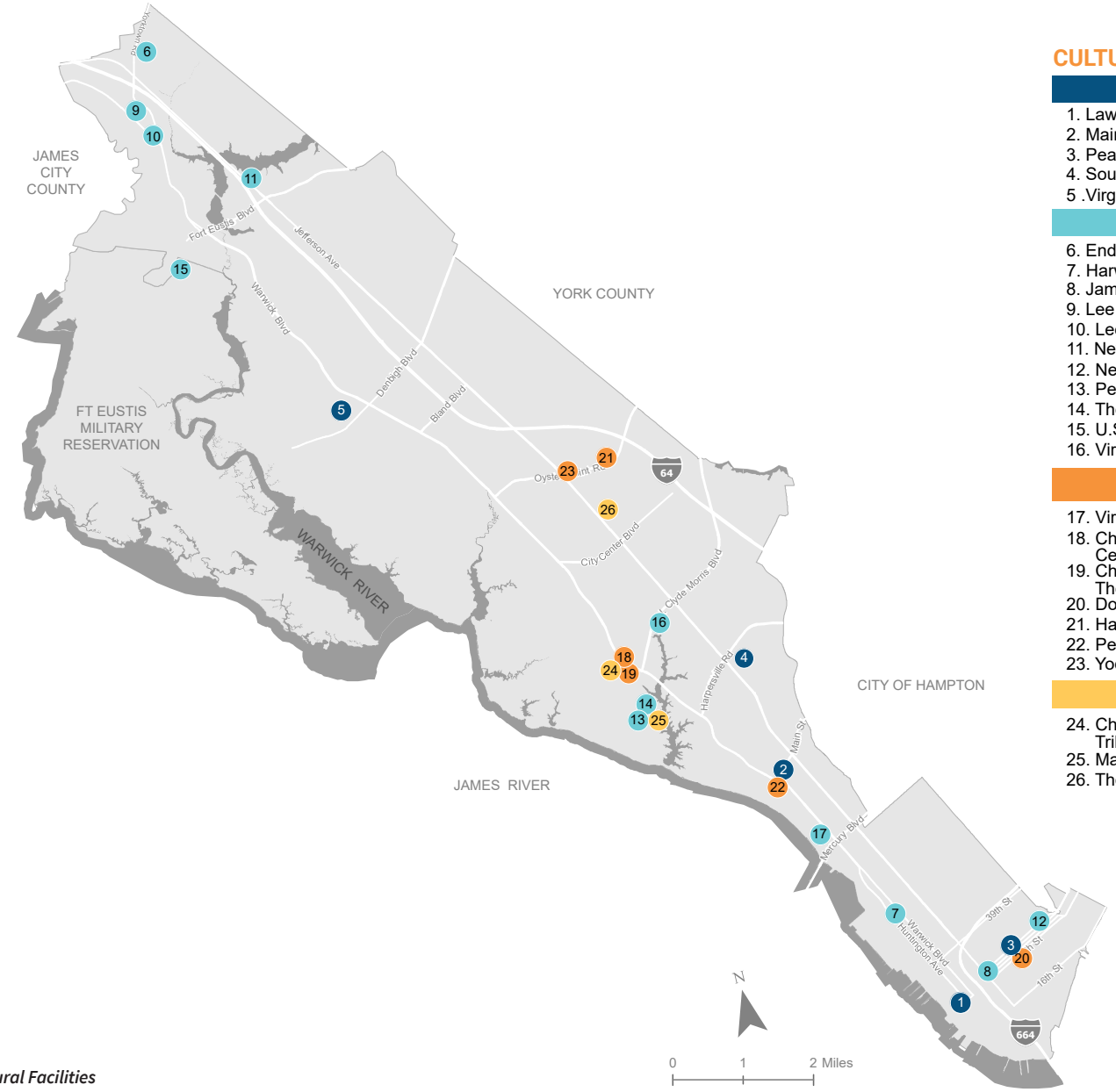
2.5.1 KEY FACTS AND TRENDS

With over 240 linear miles of shoreline along 14 creeks and rivers providing recreational, economic and aesthetic value, along with its many museums, cultural events, and historical landmarks, Newport News offers residents and visitors the opportunity to experience many unique adventures. Centrally located within Hampton Roads, the city also offers easy access to a greater array of art, cultural and historic sites and events throughout the region. Newport News provides and supports a wide variety of cultural activities ranging from annual special events such as the Fall Festival of Folklife, Children's Festival of Friends, Celebration in Lights, and 25 Nights of Lights; to performing and visual arts presentations at Downing-Gross Cultural Arts Center and exhibits and educational programs at the Newsome House Cultural Center and Museum and the Peninsula Fine Arts Center; to historical reenactments at Lee Hall Mansion and Endview Plantation; to a broad range of performances at the Ferguson Center for the Arts. One of the city's major attractions is the Mariners' Museum and park, which draws a national and international audience to explore maritime culture, science and history. There are 10 museums in Newport News, with an eleventh—Lee Hall Depot—planned to open within the next few years (see Figure 32).

While Newport News lost many of the historic structures that once lined the streets of the original city, preservation efforts have yielded a greater appreciation of our historic and cultural landscape and the establishment of Hilton Village Historic District, North End/ Huntington Heights Historic District, the Newsome House Museum and Cultural Center, and Lee Hall Depot. The Department of Parks, Recreation & Tourism— the custodian of the city's historic sites—is responsible for maintaining and interpreting the many educational resources available to the community and its visitors.

CULTURE AND TOURISM

Providing a wide selection of arts and cultural activities is a priority for the city. Arts and cultural activities enhance the quality of life for our citizens and serve as an important



CULTURAL FACILITIES

LIBRARIES

1. Law Library
2. Main Street Library
3. Pearl Bailey Library
4. South Morrison Library
5 .Virgil I. Grissom Library

MUSEUMS

6. Endview Plantation
7. Harwood House Museum
8. James A. Field House
9. Lee Hall Mansion
10. Lee Hall Train Depot
11. Newport News Park Discovery Center
12. Newsome House Museum & Cultural Center
13. Peninsula Fine Arts Museum
14. The Mariners' Museum
15. U.S. Army Transportation Museum
16. Virginia Living Museum

PERFORMANCE HALLS

17. Virginia War Museum
18. Christopher Newport University Ferguson Center for the Arts
19. Christopher Newport University Gaines Theater
20. Downing-Gross Cultural Arts Center
21. Hampton Roads Academy Auditorium
22. Peninsula Community Theatre
23. Yoder Barn Theatre

SPECIALIZED FACILITIES

24. Christopher Newport University Paul & Mary Trible Library
25. Mariner's Museum
26. Thomas Jefferson National Accelerator Facility

Figure 32: Cultural Facilities

tool in retaining and attracting people and business to the city. Newport News offers museums, performing arts, historic preservation, festivals, and other creative activities that enhance our well-being, improve economic and cultural vitality, and enrich our sense of identity and heritage.

- What was one of many successful events to showcase Newport News in 2015, the inaugural One City Marathon was attended by several thousand participants, including runners from around the nation. Certified as a Boston Marathon qualifier, the course took runners from Newport News Park through a unique landscape of neighborhoods and activity centers to the Victory Landing Arch. In addition to the marathon, the event included a marathon relay, 8k race, and the Nautical Mile (geared to kids, both young and old). The goals of the marathon are to promote city pride and community unity; build on healthy living initiatives, and gain exposure for the city.
- Six of our 10 museums are nationally accredited. Accreditation validates a museum's operations and impact and increases its credibility and value.
- Designed by the world-renowned architectural firm of Pei Cobb Freed & Partners, the Ferguson Center for the Arts drew more than 2 million people to more than 600 performances in its first 12 years of operation. The center provides both world-class programming and educational opportunities to the community. Located at CNU, the center's mission is to enhance and enrich cultural development and awareness by offering cost-effective and diverse cultural experiences. Through its Arts for All program, the Ferguson Center provides access to live performances for children and families in at-risk communities. The University plans to expand its cultural assets with a fine arts center that will be located adjacent to the Ferguson Center.
- CNU's Yoder Barn Theatre supports its LifeLong Learning Society—among other arts and cultural activities—which is an organization dedicated to persons of retirement age. The organization offers a range of activities from lectures, course, and discussion groups to lunches, dinners, and field trips. It brings together people of diverse backgrounds with an interest in learning.
- The city of Newport News Arts Commission annually awards grants to support arts programs throughout the city. In 2015, grants were awarded to more than two dozen recipients including the Mariners' Museum,

Selene by Maria Gamundi (located near the Lion's Bridge)

Peninsula Fine Arts Center, and the Virginia Living Museum. Public art is commissioned by the Newport News Public Art Foundation, which places monumental-scale works of art throughout the city. Since 2001, the foundation has placed 18 sculptures created by a diverse and renowned group of artists at locations throughout the city for people to enjoy as they go about their daily lives.

- The Downing-Gross Cultural Arts Center is a multi-purpose cultural space dedicated to "building community through the arts." Located in the former Walter Reed School, the historic building was restored and reopened to the public in 2008. The center offers live performances, films, exhibits, and instructional classes in a variety of arts. It also houses the Anderson Johnson Gallery, the permanent exhibit for the murals that once adorned the folk artist's house on Ivy Avenue in the Southeast Community.
- Opened in 2006, the Marriott Hotel and Conference Center at City Center provides 25,000 square feet of meeting space to support both the city's cultural and business needs including reunions, weddings, and professional association meetings.
- Tourism has been a major driver of the economy in several localities throughout the region. The Hampton Roads tourism industry, however, has not returned to its 2007 peak of inflation-adjusted hotel spending and local tax collections (HRPDC, 2015). The continued weakened economy and shrinking federal budgets have reduced business travel, thereby reducing the number of hotel stays in the region. As of 2014, tourism was still down in Newport News, recovering from the recession. This trend, however, shows signs of improving, primarily due to lower fuel costs.
- In 2014, the Newport News Tourism Development Office conducted a survey of passengers at Newport News/Williamsburg International Airport (NNWIA). Over 40 percent of the respondents were in the city on business, 63 percent were return visitors, approximately 27 percent indicated an interest in history when visiting Newport News, and 33 percent stayed in a hotel/motel when in town.

HISTORIC PRESERVATION

Historic preservation in Newport News documents both pre-1865 agrarian Warwick County and the urban center created by Collis P. Huntington in the late 19th century. Mulberry Island (Fort Eustis) and Denbigh,

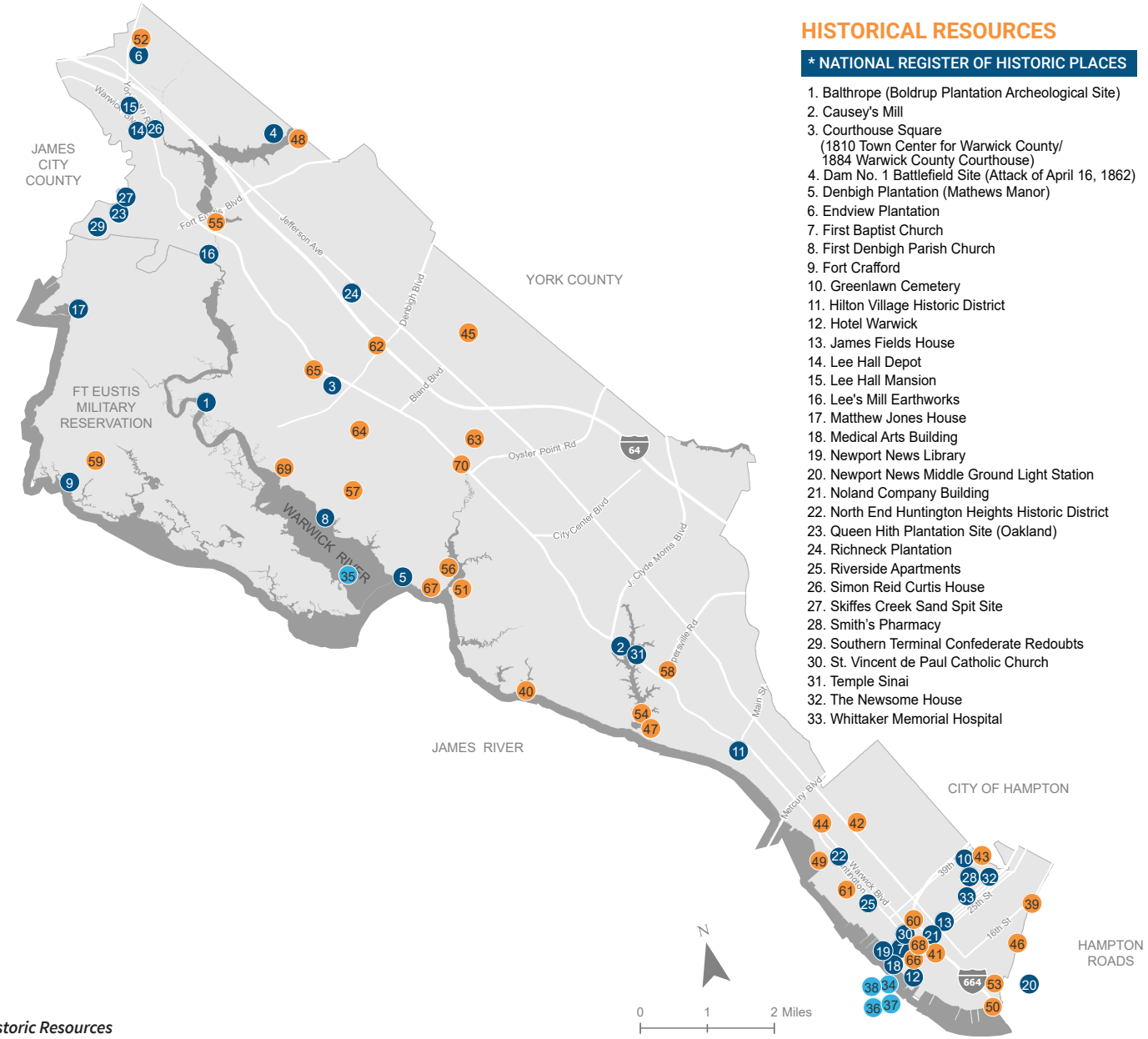
areas of the county first settled by the English shortly after the establishment of Jamestown, became centers of activity for tobacco and wheat planters from England. Colonists built homesteads along the Warwick River, Waters Creek, Skiffs Creek, and other navigable streams within the area that became the modern city of Newport News. During the Civil War, the Virginia Peninsula was a strategic approach to the Confederate capital of Richmond. Newport News Point became Camp Butler, a fortified Union camp. Newport News was the scene of two pivotal Civil War battles: the clash of the U.S.S. Monitor and C.S.S. Virginia (formerly the U.S.S. Merrimack) in March 1862; and the Warwick-Yorktown Siege in April and May 1862. Newport News was a quiet, rural place after the Civil War until the 1880s when Collis P. Huntington built the railroad and shipyard. The rapid expansion that followed construction of the railroad and shipyard allowed Newport News to serve during the Spanish-American War and both world wars as a major port of embarkation and debarkation, dispatching millions of men and tons of supplies to the battlefronts.

There are 33 resources in Newport News listed on the National Register of Historic Places, which is the Nation's official list of historic places deemed worthy of preservation. Resources on the National Register are also on the Virginia Landmarks Register. In addition, there are 31 resources designated as local landmarks. Local landmarks are places, people, and events that are significant to the local history of Newport News, and are not on the state or National Registers (see Figure 33). There are no formal criteria for determining local landmarks.

Preserving historic resources brings cultural, social, educational, historic and aesthetic value to communities; it also provides economic benefit. Historic preservation improves property values, entices visitors, and can lead to job creation, as evidenced by the many historic sites within the region.

- In the late 1980s, the Virginia Department of Historic Resources surveyed historic downtown Newport News and identified 25 structures and one historic district as significant architectural resources. Of these, the Hotel Warwick and the West Avenue Library are on the National Register of Historic Places. The First Baptist Church, at the corner of West Avenue and 29th Street, was declared eligible for the Register, but it was never nominated.
- We have another 31 places, people or events that are considered significant to local history and listed by the Division of Historic Services as local landmarks.

Causey's Mill (Photo by Wallace Roark)



HISTORICAL RESOURCES

* NATIONAL REGISTER OF HISTORIC PLACES

1. Balthrope (Boldrup Plantation Archeological Site)
2. Causey's Mill
3. Courthouse Square (1810 Town Center for Warwick County/ 1884 Warwick County Courthouse)
4. Dam No. 1 Battlefield Site (Attack of April 16, 1862)
5. Denbigh Plantation (Mathews Manor)
6. Endview Plantation
7. First Baptist Church
8. First Denbigh Parish Church
9. Fort Crafford
10. Greenlawn Cemetery
11. Hilton Village Historic District
12. Hotel Warwick
13. James Fields House
14. Lee Hall Depot
15. Lee Hall Mansion
16. Lee's Mill Earthworks
17. Matthew Jones House
18. Medical Arts Building
19. Newport News Library
20. Newport News Middle Ground Light Station
21. Noland Company Building
22. North End Huntington Heights Historic District
23. Queen Hith Plantation Site (Oakland)
24. Richneck Plantation
25. Riverside Apartments
26. Simon Reid Curtis House
27. Skiffes Creek Sand Spit Site
28. Smith's Pharmacy
29. Southern Terminal Confederate Redoubts
30. St. Vincent de Paul Catholic Church
31. Temple Sinai
32. The Newsome House
33. Whittaker Memorial Hospital

VIRGINIA LANDMARK REGISTER

34. C.S.S. Florida
35. Davis and Kimpton Brickyard
36. N.S. Savannah
37. S.S. John W. Brown
38. U.S.S. Cumberland (44NN73) March 8, 1862

LOCAL LANDMARKS

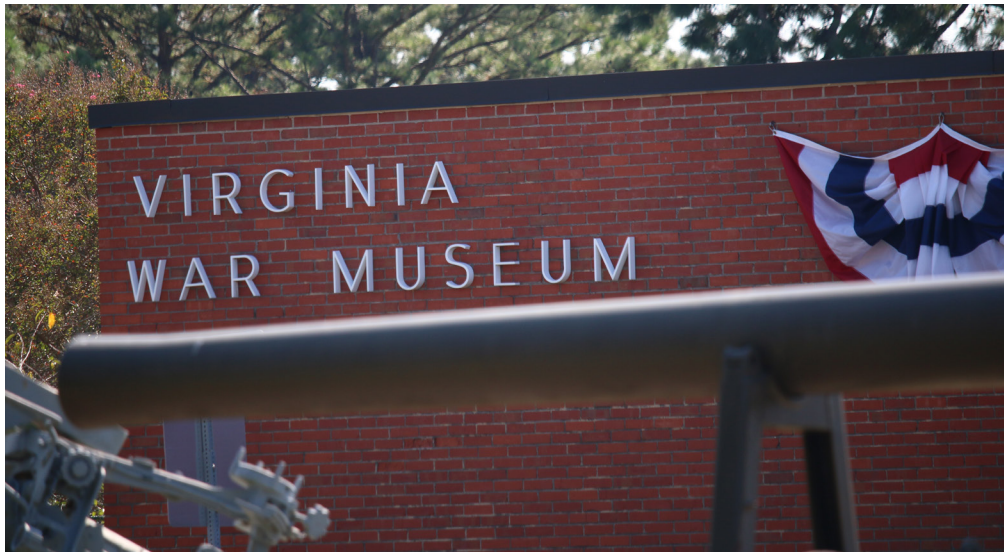
39. Battle of the Monitor / Merrimac
40. Blunt Point
41. C & O Railroad
42. Camp Alexander
43. Camp Butler
44. Camp Hill
45. Camp Patrick Henry
46. Camp Stuart
47. Cedar Grove
48. Colossian Colony
49. Consolidation of Newport News / Warwick County
50. Curtis Flying School
51. Deep Creek
52. Endview
53. King / Lincoln Park
54. Lake Maury (Water's Creek)
55. Lee's Mill Skirmish
56. Menchville
57. Mennonite Colony
58. Morrison
59. Mulberry Island
60. Newport News Female Academy
61. Newport News Shipyard
62. Oriana Station
63. Oyster Point Station
64. Peartree Hall
65. Potter's Field
66. Victory Arch
67. Warwick Town
68. West Avenue Library
69. Windmill Point
70. Young's Mill

** Sites Also Listed on Virginia Landmarks Register*

Figure 33: Historic Resources

Some of these landmarks may be eligible for the National Register of Historic Places. A citywide architectural survey has not been performed.

- Newport News is home to two national historic districts: Hilton Village, a residential neighborhood built between 1918 and 1920 to serve as war time housing; and North End/Huntington Heights, a compact, middle-class and upper middle-class residential neighborhood built between 1900–1935 in association with the nearby Newport News Shipbuilding and Dry Dock Company. The city's zoning ordinance provides special regulations for both districts to protect them from destruction, degradation, and encroachment. Both historic districts maintain architectural guidelines and an Architectural Review Board.
  - » While Hilton Village continues to retain its historic value, the neighborhood center has experienced some decline over the past decade. This is in large part because some of the more successful businesses relocated to newer shopping centers elsewhere in the city.
  - » The Warwick Boulevard corridor through the Hilton Village/Rivermont area is showing signs of decline. There are many deteriorated sites, vacant commercial spaces, and the pedestrian environment lacks a unified streetscape design and safe, accessible and unobstructed sidewalks. Attracting investors to redevelop properties along the corridor remains a challenge.
  - » North End/Huntington Heights continues to be preserved for future generations by maintaining the historical accuracy and appropriateness of the properties within the historic district regardless of changes in the surrounding environment. While this snapshot of a unique point in time retains its historical integrity and remains a very walkable neighborhood, the general appearance of the neighborhood is beginning to show small signs of neglect. Maintaining a historic home can be an economic hardship; cost of repairs can be prohibitive and lead to deferred maintenance and disrepair.
- Originally known as East End, the Southeast Community is designated a Neighborhood Conservation District. The area has an eclectic mix of housing styles built over a century, with many of the original homes still standing. Some sections of the neighborhood have been demolished to make way for income-assisted housing, and some incompatible small scale infill development has occurred. There are no design guidelines associated with the district to ensure that the remaining architectural character is retained and the overall appearance of the community is enhanced.



- While development is encouraged to be sensitive to the historical significance and cultural landscape of our nationally recognized historic resources, the city of Newport News does not have a long-range plan to establish the cultural preferences and priorities of our citizens or diversify participation in the historic, arts and cultural activities offered.

2.5.2 WHAT WE HEARD

Stakeholders see historic preservation as an economic driver. Many stakeholders feel that we need to show a greater appreciation for the city's history and cultural resources by preserving and promoting remaining historic buildings, sites, and neighborhoods. Many stakeholders believe that investing in existing facilities, creating greater connections between established facilities, and promoting and celebrating the city's historic features will enhance tourism.

Many stakeholders expressed the need for a consistent city brand and more collaboration between local government and major organizations to market all the positive aspects of Newport News; they believe that Newport News lacks a "sense of place." Stakeholders stressed the need to protect and enhance the city's uniqueness—those characteristics that make Newport News different, unusual, and unique and make people both want to live here and visit. Newport News must tell its story and market the "good." A comprehensive wayfinding system is needed to define the city's gateways, major corridors, and entrances to areas of interest. (The city started installing wayfinding signs in 2015 to guide residents and visitors to desired locations.) Neighborhoods lack identities (unique characteristics that foster a sense of community and distinguish one from the next); many would benefit from gateway signs to set them apart and define boundaries. We need a more prominent Welcome Center and a Newport News Museum. Preserve the Warwicktown archeological site and promote historic presentations similar to Jamestown and Williamsburg.

Some stakeholders feel that Newport News needs to be a stronger regional player and help set the long-range vision for Hampton Roads, especially since the city is the geographic center of the region. Many stakeholders believe that no one locality can offer all the desired services and amenities that larger cities throughout the United States can. Thus, collaboration and marketing as a region is critical to long-term economic vitality and sustained quality of life in Hampton Roads.

Results from the community survey include:

- Almost 81 percent of survey respondents were satisfied with the number of community events, festivals, and cultural activities in Newport News, while 86.2 percent were satisfied with the quality of these events.
- The majority of residents responding to the survey (80.6%) said they were satisfied with the overall appearance of the city.
- When asked about level of satisfaction with availability of entertainment or things to do in Newport News, 73.8 percent said they were satisfied.

2.5.3 WHAT IT ALL MEANS

- The city is rich in cultural and historic resources and amenities. We will need to establish a strategy to "package" our story to better market our unique assets and bring new visitors and business to the city.
- While it is important to revitalize areas of our city and make way for new development as the city continues to grow and evolve, we must balance making way for the new with preserving our history. Because historic preservation can be cost prohibitive to some property owners, it is imperative that the city explore incentives to rehabilitate, reuse, and restore historic resources.
- A comprehensive historic resources investigation is necessary to establish which resources remain and help inform planning and land use decisions regarding preservation.
- The economic viability and architectural integrity of the Hilton Village neighborhood center is at risk. Strategies should be explored to revitalize this important "main street."
- To preserve the architectural integrity of the Southeast Community, we will need to reevaluate the Neighborhood Conservation District to ensure the boundaries are appropriate and develop associated architectural guidelines to ensure that infill development and neighborhood revitalization is compatible with the established neighborhood character.

The Unfinished March" in Martin Luther King , Jr. Plaza

2.6 A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

This section provides key facts and trends related to land use patterns, neighborhoods, activity centers, revitalization and redevelopment, and urban design. It also incorporates relevant stakeholder input gathered through various outreach efforts including the citywide survey. Key points considered during development of strategies to implement the planning vision are provided at the end of this section.

2.6.1 KEY FACTS AND TRENDS

As presented in Section 2.2, A Sustainable City, approximately 93 percent of the city's land is developed. Revitalization and redevelopment will be the primary strategies to accommodate future growth and develop a livable city with a great sense of place. As a city, we need to preserve and restore our neighborhoods for recreation, leisure, education, culture, history, dining, shopping, relaxing, and socializing. And, we need to ensure that we balance investments in new places that enhance our existing assets. Moving forward, what we build and how we build it will have the most significant impact on economic vitality and overall quality of life in Newport News.

LAND USE PATTERN

The land use pattern in Newport News is the result of both lower-density suburban growth patterns between the 1940s and 1990s, and the city's geographic shape and location. Upper- and middle-income flight led to our suburban style residential neighborhoods north of Mercury Boulevard (see Section 2.1, A Prosperous and Resilient City for additional information). The long, narrow shape of our city—combined with the presence of the CSX railroad down the spine—resulted in a transportation system that relies on two major arterials that extend from one end of Newport News to the other. This in turn influenced where businesses located; i.e., land use was often determined by where the roads provided access and visibility to the most affordable land. As a result, our major commercial and industrial uses are located along the primary corridors, with the densest concentration in the central area of the city.

Almost one-third of the city is designated for residential use, with another 30 percent designated for employment (commercial, industrial and military). Residential uses occur throughout the city, with low-density single-family neighborhoods predominating, especially between Warwick Boulevard and the James River. Moderate to high-density residential is generally located between and adjacent to Warwick Boulevard and Jefferson Avenue. Commercial uses are located throughout the city, but tend to be most prevalent along Jefferson Avenue and Warwick Boulevard, mostly in cluster or strip development. Industrial uses are mostly clustered in the northern and southern ends of the city along the CSX spine, while the military land use is assigned to Fort Eustis. Public facilities and parks are located in each of the three voting districts, with Newport News Park being the most dominant feature in the northern portion of the city.

OUR NEIGHBORHOODS

There is no one definition of a neighborhood. Neighborhoods vary based on geographic, demographic, and social characteristics—along with individual perspective. Distinguishable neighborhoods have a unique form, composition, and character. In Newport News, there are a handful of distinguishable neighborhoods that were developed based on specific plans, such as North End/Huntington Heights and Hilton Village. There are over 120 neighborhoods within Newport News. The majority of our neighborhoods are

defined as such based on subdivision maps; many of them lack distinctive characteristics to set them apart and make them individually recognizable. For many, the only distinguishable feature is an entry sign. The majority also lack activity centers, open space, and neighborhood associations. Some even lack sidewalks, as the city did not require them until the early 1990s; and then only on one side of the street.

Newport News has three distinct activity areas—north, central and south (aligned with voting districts)—each with a different character (see Figure 34). And, within those activity areas, we have an eclectic mix of neighborhoods. The city's oldest neighborhoods are mostly located south of Mercury Boulevard and tend to be more urban in character. Initially, they were identifiable, stable neighborhoods served by local schools, parks, churches, and other facilities and amenities. Today, several are in decline and in need of revitalization. Our newest neighborhoods are in the central area of the city and squeezed in between older subdivisions in the northern area. Two larger neighborhoods have been approved for development: Hilton Commons, (pending actual construction) and Huntington Pointe, where construction started in 2017.

Activity Centers

Activity centers are focal points for a diverse mix of community activities. They offer residential, employment, shopping, educational, recreational, civic, cultural, and spiritual activities to their targeted service areas. Activity centers are places where citizens can interact in the public realm when going about their daily activities. These hubs vary in size, primary function, and character depending on the size of their service areas. In Newport News, we have four types of activity centers: neighborhood, community, regional, and employment (see Section 2.2.1, Figure 19).

Neighborhood Activity Centers

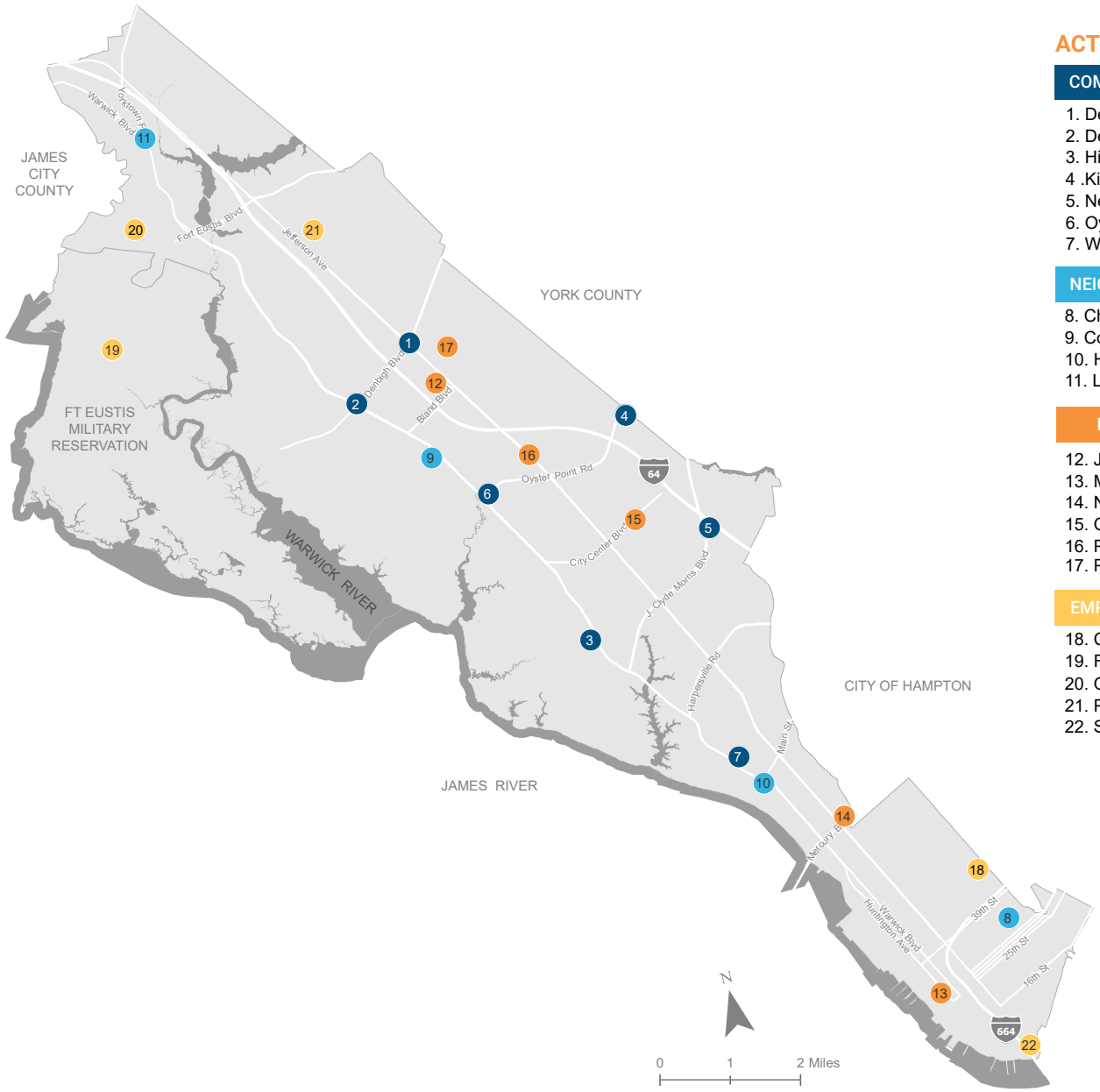
Neighborhood activity centers offer everyday goods and services to residents of one or more nearby neighborhoods. The previous comprehensive plan identified 25 neighborhood centers throughout the city. Several of these centers were only concepts, and have not been developed including Asheton, Huntington Pointe, and the Southeast Waterfront. Others exist but are in various stages of decline and/or disrepair, such as Chestnut Avenue and Lee Hall Village. Brentwood Shopping Center was converted to Riverside Brentwood Medical Center. Beaconsdale Shopping Center was redeveloped in 2015 and is now a car dealership.

Hilton Village has experienced some decline in recent years as evidenced by an increase in vacancies and visible lack of property maintenance. The Colony Neighborhood Activity Center, which includes the Village Square Shopping Center and adjacent commercial sites, is showing signs of age. Some improvements have been made to the shopping center, which tends to be fully occupied; however, the overall site is underutilized and is not pedestrian friendly.

Community Activity Centers

Community activity centers are larger in size and serve a bigger market area than neighborhood activity centers. Some are considered specialty centers and may serve the entire city. These activity centers provide locations for civic, retail, employment, and recreation. Typically, these centers include grocery stores, offices, and a variety of specialty commercial stores. They can also include libraries, public safety offices, and post offices.

The previous comprehensive plan identified nine community activity centers within the city. Of these, Greater Asheton



ACTIVITY CENTERS

COMMUNITY ACTIVITY CENTERS

1. Denbigh/Jefferson
2. Denbigh/Warwick
3. Hidenwood
4 .Kiln Creek
5. Newport Square
6. Oyster Point Plaza
7. Warwick Village

NEIGHBORHOOD ACTIVITY CENTERS

8. Chestnut Avenue
9. Colony
10. Hilton Village
11. Lee Hall Village

REGIONAL ACTIVITY CENTERS

12. Jefferson Commons
13. Maritime Center (historic downtown)
14. Newmarket
15. Oyster Point/City Center/Tech Center
16. Patrick Henry / Mall
17. Patrick Henry CommerCenter

EMPLOYMENT ACTIVITY CENTERS

18. Copeland Industrial Park
19. Fort Eustis Military Reservation
20. Oakland Industrial Park
21. Peninsula Industrial Park
22. Seafood Industrial Park

Figure 34: Activity Centers

Area was planned but not developed due to the economic downturn, and Lower Jefferson Avenue/Southeast Commerce Center (Brooks Crossing) is under development. The South Precinct Police Station and several commercial tenants have already opened in the latter. Some redevelopment and adaptive reuse has occurred on lower Jefferson Avenue; however, private investment has been limited.

- Newport Square Community Activity Center continues to evolve. One side of the center has been upgraded for new tenants including Stratford University and Riverside Medical Center. The other half of the center has not been improved and shows signs of decline.
- Hidenwood Shopping Center was purchased by CNU's Real Estate Foundation in 2013. Renovated in 2015, the shopping center retained several long-standing businesses and rounded out the tenant spaces with new college-oriented businesses. The shopping center is one of several properties acquired by CNU as part of their long-range plan to develop an adjacent community activity center with uses oriented toward students.
- Warwick Center is comprised of Warwick Village and Warwick Center shopping centers, and serves the neighborhoods along Warwick Boulevard between Mercury and J. Clyde Morris boulevards. Surrounding uses include single-family and multi-family residential, community facilities, and industrial uses. Between the shopping centers and the railroad tracks to the east is the former Camp Morrison, which was rezoned in 2013 for development of residential and office uses. The shopping centers are not connected other than by the sidewalk along Warwick Boulevard. Hilton Commons (formerly Camp Morrison) was designed to integrate the new development with the shopping centers. A few improvements have been made at these shopping centers, which were originally constructed in the early to mid-1960s.
- Kiln Creek encompasses the Victory Crossing Shopping Center and a variety of adjacent commercial and entertainment uses including several hotels and a movie theater. This community activity center is located in both Newport News and York County, and serves Kiln Creek and other nearby neighborhoods. Recently, there have been some improvements to individual tenant spaces within the shopping center. Overall, this center is low-density, disconnected, and designed for the automobile.

  In 2012, York County approved a rezoning of approximately 46 acres located at the end of Commonwealth Drive to establish a mixed-use development consisting of apartments, townhouses, and commercial space. Commonwealth Drive extends through the center of the Kiln Creek Community Activity Center and dead-ends south of the shopping center at the approved development. As part of the development, four apartment buildings encompassing a minimum 50 units will be constructed in Newport News on property zoned for multi-family housing.
- Oyster Point Plaza is located on the south side of Oyster Point Road at the intersection with Warwick Boulevard. Anchored by a grocery store, the center is fully occupied. Cosmetic improvements were made to the building several years ago, but the overall shopping center is showing signs of aging.

- Denbigh-Jefferson Community Activity Center encompasses all four corners of the intersection and associated parcels, and serves residents throughout the Denbigh area. While mixed-use development (Villages of Stoney Run) has occurred behind the northeast corner of this center, the intersection continues to be dominated by gas stations, pharmacies, and a strip commercial center.
- Denbigh-Warwick Community Activity Center is comprised of the Denbigh Village, Newport Crossing and Warwick-Denbigh shopping centers. They provide a variety of commercial retail services to residents throughout the Denbigh area. Denbigh Village Shopping Center was purchased in 2016 and renamed DW Center. It is undergoing a major transformation geared to bring in new shops, restaurants and entertainment activities. Newport Crossing Shopping Center was envisioned as a high-density, mixed-use center to support the planned transit station just east of the site. A permit has been approved for a grocery store with gas station for the former K-mart store, but the remainder of the big-box shopping center remains underutilized and in decline.

Regional Activity Centers

Regional activity centers typically are large, mixed-use places providing employment, shopping, entertainment, and cultural opportunities. Regional activity centers tend to serve extended market areas, including nearby localities. Ultimately, we envision these centers will be transit-oriented development. In Newport News, our regional centers mostly support retail and entertainment activities. As of 2015, only City Center at Oyster Point and Port Warwick support cultural, business and residential activities, along with commercial retail and entertainment uses.

- Previously identified as the Maritime Center, historic downtown is one of the city's five regional centers. The ***Maritime Center Plan*** was completed in 1999 for the area located between the waterfront, CSX railroad, 51st Street, and 23rd Street. (Additional information on this and other area plans is presented in Chapter 3, Planning Legacy.) Newport News Shipbuilding, the U.S. Navy and the city were partnering at the time to bring more jobs to the downtown. The ***Maritime Center Plan*** was intended to capitalize on the shipbuilding and port history and planned investments and reestablish downtown as a vibrant component of the city. Over the years, shipyard and port-related investments have continued in downtown by the center's major employers, but other private investments have been minimal. Investment has been limited to the new Apprentice School, a mixed-used development, and Navy housing.
- In 2014, the city renewed its efforts to revitalize downtown through the ***Superblock Charrette Study***, which builds on the strengths of the ***Maritime Center Plan*** and factors in changing demographics and market realities to provide an updated strategy for moving toward a revitalized downtown, with focus on the Superblock. The ***Downtown Design Vision*** (2016) was the first follow-on action of the ***Superblock Charrette Study***. It established a vision and design goals for a larger area of downtown.
- The Newmarket Regional Activity Center is located at Jefferson Avenue and Mercury Boulevard, and is partially located in Hampton. The center encompasses a variety of office and commercial uses including the Newmarket Plaza Shopping Center and

Newmarket South Shopping Center. Once the commercial center for the Peninsula, the area—which included the Peninsula's first mall—began to decline in the 1980s as newer malls opened elsewhere in the region and various retailers relocated or closed shop. While the former Newmarket North Mall (also known as Newmarket Fair) was converted into a business center (Net Center) with some success, the overall appearance of the regional center is one of decline, and it is host to second-tier commercial retail tenants. HRT serves the area; however, it is an auto-oriented destination.

- Oyster Point/City Center, originally envisioned as an industrial complex, has developed into a business park and mixed-use center supporting a variety of uses including a hotel and conference center and high-density housing. The opening of City Center Boulevard expansion in 2015 provided a more direct connection to nearby Port Warwick, albeit more of an automotive link. The opening of Marketplace at Tech Center expands development in the greater Oyster Point District to the intersection of Oyster Point Road and Jefferson Avenue. The commercial center is the first phase of Tech Center, which is envisioned to provide 1 million square feet of research-focused office space. To support buildout of the Tech Center and expansion of the adjacent Jefferson Lab, the City plans to relocate the Service Center for Operations and Transportation (SCOT) which supports the Newport News Public Schools. A site for SCOT relocation has not been named.
- Patrick Henry Mall is the core component of the Patrick Henry/ Operations Center Regional Center. Initially, the Center was comprised of retail, office, and service oriented commercial uses located between Oyster Point Road and I-64. The Patrick Henry Regional Center expanded with the mixed-use development of Patrick Henry Place, which at buildout will include medium and high-density residential in the form of townhouses, condominiums and apartments. Development of Patrick Henry Place was slowed by the recession and the ongoing recovery, but construction started again in 2016.
- The city-owned land on which the Operations Center is located could become a part of this regional center once a fixed guideway is established to support transit through the city's center.

City Center

- Bland Regional Activity Center is the area generally bounded by I-64, Jefferson Avenue, and Turnberry Boulevard. Located near the airport, it includes office, commercial, and residential uses. Jefferson Marketplace, constructed in 2011, is the newest addition to the center. Both the Marketplace and nearby Jefferson Commons have been successful with tenant occupancy; however, several tenants recently announced plans to relocate. Newport Marketplace, constructed in the 1990s, is showing some signs of decline with several tenant spaces that have been vacant for extended periods.

Employment Centers

Employment centers are activity centers devoted to business and industry; they permit corporate business parks, targeted primary businesses, and industrial uses that provide economic benefit to the city within compact and specified employment centers. Retail uses are limited to those that support the primary businesses within the employment center. These activity centers are easily accessible from the interstate highways; in the long term, they will be supported by an enhanced transit network.

In Newport News, typical uses in employment centers include offices, R&D, manufacturing and supporting facilities, and warehouses. Previous comprehensive plans identified 19 such activity centers within the city; however, a review of these centers and existing conditions shows that many of them are actually individual businesses or a component of an existing community or regional activity center; for example, Newport News Shipbuilding (Huntington Ingalls Industries) is a component of the historic downtown regional activity center. The following activity centers are proposed as the city's long-term employment centers.


Port Warwick

- Seafood Industrial Park is located on the east side of I-664 at the mouth of the Monitor-Merrimac Memorial Bridge-Tunnel (MMBT). Owned by the city of Newport News, the park is home to numerous seafood and water-dependent companies. Land is leased to companies on a long-term basis and the city provides full-service accommodations; however, the facilities built on the land are owned by the companies. The Seafood Industrial Park has averaged in the top 10 nationally for value of seafood landed over the past decade, and is consistently 100 percent leased.
- Copeland Industrial Park is located in Newport News and Hampton adjacent to the convergence of I-64 and I-664. The approximately 773-acre park is located in an Enterprise Zone. With

the proposed expansion of a major tenant, the cities are collaborating on transportation infrastructure improvements to support the expansion and improve the overall appearance of the park to draw more businesses.

- Oakland Industrial Park is comprised of approximately 645 acres and is located adjacent to Fort Eustis. It is also located in an Enterprise Zone (see Section 2.1.1, Figure 14).
- Peninsula Industrial Park is located between Jefferson Avenue and Shields Road. The center is southeast of the railroad spur line and is intended for heavy commercial and light industrial uses.
- Fort Eustis is approximately 7,933 acres and is primarily located in Newport News. The facility supports a population of more than 22,000.

DEVELOPMENT AND REVITALIZATION OPPORTUNITIES

There are two major opportunities for revitalization in Newport News: the Southeast Community and historic downtown.

Southeast Community

The Southeast Community, which is comprised of several neighborhoods, was once the gateway to Newport News and the most densely populated area of the city. The community began to decline after the 1958 consolidation and people started to migrate to the northern areas of the city. Economic decline followed as businesses moved to the "suburbs." In the 1960s and 1970s, public housing sprang up in large concentrations, and construction of I-664 in the 1980s led to further isolation of the community.

- As of 2014, the population of this area is 15,880 (8.8% of the city's total population). African-Americans comprise 92.7 percent of the population. Population decline has been steady since 2000.
- Housing units in the community are largely renter-occupied, and median home value is well below that of the city as a whole.
- Just over 40 percent of the community's total population lived in poverty in 2014. Of those living in poverty, approximately 58 percent were children (under the age of 18).
- Of the population 16 and older, 48.1 percent were employed and 11.8 percent were unemployed. The remaining population was not in the workforce.

Small Boat Harbor

- Approximately 25 percent of the population 25 and older did not graduate from high school or have an equivalency in 2014.

Historic Downtown

In 2013, the new Apprentice School opened in downtown Newport News. In addition to a new state of the art facility, the development project included a mix of workforce housing and retail space. In a partnership between the city, Commonwealth of Virginia, Huntington Ingalls Industries and Armada Hoffler Holding Company, the development project was envisioned as the catalyst for revitalization of the downtown.

The city of Newport News retained consultants in summer 2014 to conduct an intensive brainstorming session to develop a shared community vision and identify strategies to jumpstart additional change in downtown. A plan was developed for the Superblock, the area bounded by 26th and 28th Streets and Washington and West Avenues. Additional information is presented under Activity Centers and Infill and Redevelopment Opportunities in this section.

GREENFIELD DEVELOPMENT

As previously stated, Newport News is mostly built out. Vacant parcels tend to be smaller and dispersed throughout the city. There is one area remaining in the city that provides an opportunity to develop a new quality neighborhood while preserving existing assets: Lee Hall.

Lee Hall is an area rich in historic and cultural assets and contains several of the few remaining large undeveloped parcels in the city. The ***Lee Hall Area Plan*** (adopted in 1997) provides a guide for revitalization of and future growth and development in this area. While some elements of the plan have been implemented, other planned investments have not materialized due to changing economic conditions. Lee Hall Mansion and Endview Plantation remain cultural assets and tourist attractions. The Lee Hall Depot has been relocated and is being restored. Lee Hall Village continues to be an opportunity for restoration and preservation. And, the more than 400 acres owned by the Economic Development Authority are still undeveloped.

INFILL AND REDEVELOPMENT OPPORTUNITIES

With limited vacant land and environmental constraints, growth in Newport News will be largely accommodated through infill and redevelopment, with high-density growth in targeted areas supported by enhanced public transit.

- There is an overabundance of strip retail centers in the city. As newer centers are built in the central area of Newport News, successful tenants relocate and older centers are left with lower tier retailers and high vacancy rates. Eventually, many of these properties decline due to lack of investment in routine maintenance and repair and upgrades. Smaller centers often are boarded up or leased out to non-traditional commercial center uses, which can result in incompatibilities with neighborhood character and surrounding uses. This is evident along lower Jefferson Avenue, multiple sections of Warwick Boulevard, and portions of Denbigh Boulevard.
- City Farm Correctional Facility was closed in 2015. The 50-acre site has direct access to the James River and Deep Creek Harbor. The adopted ***Riverview Farm Park Master Plan*** calls for development of a public park on the City Farm property; however, given the timeframe since the original plan was developed (adopted in 1991), it may be worth revisiting and updating the plan for this area.
- There are numerous opportunities for redevelopment within the Southeast Community, mostly concentrated along lower Jefferson Avenue, and pockets south of 25th Street approximately between I-664 and Marshall Avenue. The city continues to make investments along lower Jefferson Avenue in accordance with the ***Jefferson Avenue Corridor Study***, but other recommendations from the ***Southeast Community Plan*** have not been implemented.
- As presented under Regional Activity Centers, historic downtown is an opportunity area. Comprised of 334 acres of land, approximately 30 percent is covered in surface parking. Construction of the federal courthouse, Navy housing and the new Apprentice School has not yet triggered further investment in the area. A concept plan to jumpstart change in downtown is presented in the ***Superblock Charrette Study***; implementation could ultimately lead to the rebirth of downtown as an urban waterfront village and enhance transformation of the Marshall-Ridley Choice Neighborhood via the 28th Street bridge. Early actions, including those that set the stage for change, are in the approved Capital Improvement Plan for FY 2018 – 22.

URBAN DESIGN AND AESTHETICS

Land use and aesthetics are primary factors that shape the urban environment. How we perceive our neighborhoods and the city overall is affected by the physical elements that surround us. While Newport News, like all jurisdictions in Virginia, has been given the authority to regulate land use through its comprehensive plan and zoning ordinance, the city does not have

the authority to impose general design requirements. Although aesthetics can be subjective, basic standards of quality lead to architecturally sound designs, development compatible with surroundings, and well-designed site elements.

The city's physical appearance helps shape the way we perceive ourselves and how others perceive our community. Visual and aesthetic character encompasses a wide range of natural and cultural features that elicit responses—both positive and negative—and contribute to "sense of place." This sense of place reflects the characteristics that make a community special or unique. While Newport News has made significant investments to improve its visual image, there are still many areas of the city where design and appearance have been neglected. The physical appearance of our gateways, major corridors and public spaces has an effect on our economic sustainability and shapes our city's livability; if we do nothing to define, develop and enhance Newport News' unique characteristics, we become indistinguishable from other localities in the region and lose a competitive advantage. "A community's appeal drives economic prosperity (McMahon, 2012)."

As is the case with the word "neighborhood", there is no one agreed to definition of the term "livability". Livability encompasses the various factors that shape a community and influence our experience and perceptions of that place. Many definitions agree that there are essential elements that make one place more livable than another. These elements include a sense of place; a well-designed public realm (including streets); compact, walkable development; planning and design that enhance public safety and personal security; and sustainable urban design.

- Walkability is an important element of urban design. Newport News is a car-dependent city with an average Walk Score of 32, with most errands requiring a car. Our most walkable neighborhoods are City Center and the Southeast Community (Walk Score, 2015). Walk Score measures the walkability of neighborhoods and cities around the country. A score less than 50 indicates that most, if not all, errands require a car.
- A wayfinding program is being finalized; implementation will help reduce sign clutter and synchronize wayfinding, improve navigability for visitors, promote activity centers, enhance gateways, and provide a more unified identity citywide.
- The public realm—city streets and public spaces—is being improved with landscaping, undergrounding of utilities, and controlling of business signs. There are, however, older stretches of Warwick Boulevard, Jefferson Avenue, J. Clyde Morris Boulevard, and Mercury Boulevard, where improvements are lagging.
- The city continues to underground utilities along major arterials as roads are improved and widened to enhance the streetscape appearance and reduce the potential for power outages during storms. New public and private developments are designed to underground utilities and screen equipment boxes to improve the visual appearance of our streets.
- We recognize that there are urban and suburban areas within Newport News and that development standards, such as setback requirements, may be different for each.
- Recommendations from the ***Jefferson Avenue Corridor Study*** are being implemented between 25th and 36th

streets, which include the introduction of on-street parking on lower Jefferson Avenue, landscaping, and pedestrian-scaled street lights among other improvements. A second phase of this project will continue the improvements south to 12th Street. These investments will provide for an attractive, vital gateway into the Southeast Community and the Marshall-Ridley Choice Neighborhood and encourage private investment in this opportunity corridor.

- Recommendations from the ***Upper Warwick Boulevard Corridor Study*** are being implemented. Landscaping and traffic signal improvements have been installed, and the EDA/IDA has acquired several properties to improve the overall appearance of the business corridor.

2.6.2 WHAT WE HEARD

Newport News has a unique mix of neighborhoods. We need to formally recognize and enhance those differences to make each area successful and a draw for a mix of demographics. The neighborhoods south of Mercury Boulevard require special attention. Some stakeholders hope to see new housing developments for both seniors and families in this area, while others identify the need for new recreation/youth/sports facilities and job opportunities. Stakeholders desire walking/biking connections between schools and nearby neighborhoods, e.g., between Menchville High and the Riverfront Planning Opportunity Area across Deep Creek.

Many stakeholders hope to see vacant and deteriorating commercial activity centers revitalized and/or redeveloped instead of developing new commercial centers on the city's few remaining greenfield sites (land that has not been previously developed). This approach will help eliminate blight in older neighborhoods, allow for the productive reuse of commercial centers, and reserve green sites for future development or preservation actions.

A shared choice for revitalization and redevelopment is downtown Newport News. Stakeholders see opportunity in the historic downtown, but, the city will need to create interest to bring people to the area. One attraction should be the waterfront, the other is the shipyard. Entertainment and dining options are desirable along the waterfront. Stakeholders also noted that the city lacks a regional draw such as a sports arena, amphitheater or large commercial retailer such as IKEA. Workforce housing (see Section 2.3, An Accessible City) is needed near the shipyard and should provide opportunities at various price points. Note that only 27 percent of shipyard employees live in Newport News; some stakeholders

expressed the need to stop creating a city of commuters – keep people in town rather than just passing through.

Aesthetics are a priority for many stakeholders who believe overall community character has been impacted by developments that detract from their surroundings rather than enhancing them. There is a feeling that Newport News lacks a "sense of place" and does not put a high enough value on aesthetics and visual resources. In addition to creating a "sense of place" and improving overall community character, new developments—regardless of size—should incorporate environmental design strategies to reduce the potential for crime. Stakeholders noted that development and property improvements should be completed in a way that recognizes property owners' rights while improving neighborhood value and quality of life.

Many stakeholders expressed the need for a consistent city brand and more collaboration between local government and major organizations to market all the positive aspects of Newport News. Many stakeholders stressed the need to protect and enhance the city's uniqueness—those characteristics that make Newport News different, unusual, and unique and make people both want to live here and visit.

Newport News should preserve and celebrate its history and historic neighborhoods; recognize and promote the unique character and diversity of its neighborhoods; support a revitalized downtown; provide services and work opportunities in walkable neighborhoods; provide connections to major employment centers, entertainment, and shopping via light rail and/or BRT; and provide both formal and informal gathering places to encourage social activity and interaction. Corridors can be beautified through façade improvements, improved design, and enhanced landscaping. Complete streets will provide safe, alternative modes of transportation.

Results from the 2016 Community Survey include:

- When asked about their level of satisfaction with their neighborhoods as a place to live, 82.6 percent of respondents said they were satisfied, while 80.1 percent said they were satisfied with their feeling of connection to the community.
- Almost 85 percent of residents surveyed said they were satisfied with the overall cleanliness of their neighborhood.
- The majority of respondents (87.4%) stated that they were satisfied with the appearance of landscaping in medians and along roadways.

2.6.3 WHAT IT ALL MEANS

- We have identified many activity centers throughout the city, yet very few of them have a specific or master plan.
- Despite the decline and high percentage of people living in poverty, the Southeast Community has numerous assets that can be built on to revitalize the area and create a quality, stable and inviting neighborhood.
- The *Lee Hall Area Plan* is almost 20 years old. Due to changing conditions, we need to take a fresh look at the area and develop updated strategies for preservation and growth.
- There continues to be strong support for converting the [now closed] City Farm property into waterfront parkland. An updated plan for the parkland will be developed with the community.
- Community renewal and maintenance, and economic development and redevelopment are strategic priorities for the city. A comprehensive plan to revitalize and redefine the city's gateways and major corridors is a needed first step to support our businesses, draw new investments, and aesthetically improve our city.
- Without distinguishable neighborhood boundaries and neighborhood associations, our residents lack the ability to take ownership of their living environment.
- It is unclear what affect an additional 1 million square feet of office space in Tech Center will have on the rest of Newport News. A market analysis will be needed to determine if additional redevelopment opportunities exist for office space.
- With construction of the Newport News Transportation Center at Bland Boulevard and Campbell Road, the city will need to evaluate the potential for revitalization and redevelopment of the Bland Regional Center to encourage higher density, mixed-use development to support alternate modes of transportation.
- Initially, the city's visual image can be improved through reinvestment in older residential neighborhoods and commercial centers, enhancing major corridors, and investment in our gateways. Meeting people's needs through effective urban design is a priority for the city. Design guidelines and revised regulations have the opportunity to improve livability through access, comfort, social interaction, and safety.
- To further enhance the public realm and maintain the integrity of our neighborhoods, the city will need

to require any wireless facilities and their support structures exceeding 50 feet above ground level to be placed underground.

- As we give form, shape, and character to new spaces, we must also look to our existing places and identify opportunities to enhance and reshape them to ensure that our physical environment is both livable and resilient.
- We will need to take a closer look at employment and population growth projections over the next few years to determine if and how our land use will need to change.
- To support sustainable growth, we need a balanced, multimodal transportation system in Newport News. Transit-ready and transit-oriented development will support a multimodal system and mostly occur at our regional activity and employment centers, as they tend to be major attractions and traffic generators capable of supporting public transit.

Existing conditions | 2

Photo by William King

3

The city of Newport News has a long history with comprehensive planning, including smaller area and neighborhood plans. These smaller plans are intended to provide more detailed analysis of existing conditions than the citywide comprehensive plan, and propose specific actions for areas that have the potential to experience significant change. Each plan reflects and responds to the unique characteristics and planning context of the specific area for which it is prepared. Area and neighborhood plans are an effective way for Newport News to directly engage stakeholders in developing a framework to guide change in their own neighborhoods, which are the building blocks of civic life.

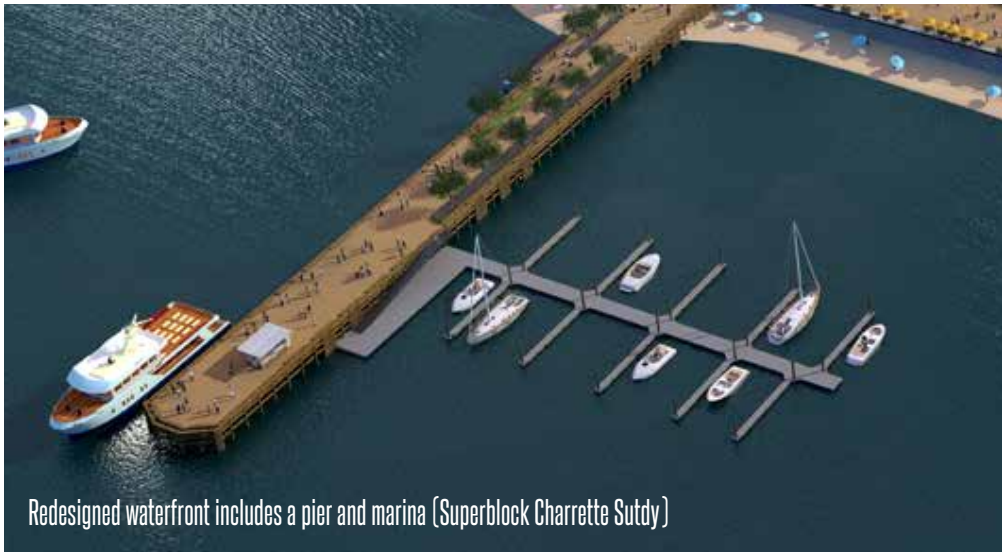
3

In response to emerging opportunities and challenges, small area plans are prepared to give stakeholders the opportunity to develop a shared vision for their local area and help shape the future of their neighborhoods. These plans guide public and private actions that may physically or socially change an area of the city and make them better places to live, work, learn, and play. The flexibility of the planning process enables each plan to address a range of development concerns, with emphasis placed where it is most needed. The variation in the types of plans produced reflects the planning needs for each unique area. Some plans provide a comprehensive look at a geographic area, while others are more focused on a particular issue or opportunities. Nevertheless, all are land use based and focused on managing growth and development long term.

As with the comprehensive plan, citizen participation is important to the success of the small area and neighborhood planning process. The planning process brings together diverse interests to develop a shared vision that drives the goals and strategies for each plan. It is a collaborative process of citizens and government working together to identify strategies and solutions to strengthen neighborhoods for the foreseeable future. The outcome of the process—the plan itself—is a tool for building, rebuilding, maintaining, and changing an area to address specific challenges and opportunities.

The comprehensive plan serves as the umbrella planning policy and incorporates the smaller plans as appendices that contribute to the overall vision and goals for the city. Some have been formally adopted as amendments to the comprehensive plan, while others have not. Regardless, all provide guidance for public and private actions in specific areas of Newport News.

Similar to the comprehensive plan, area and neighborhood plans should be reviewed on a regular basis and updated in response to new policy initiatives, unanticipated development opportunities, or changed community objectives or conditions. Area and neighborhood plans for Newport News are summarized in this section to document investments to date and identify next steps in implementation.



Redesigned waterfront includes a pier and marina (Superblock Charrette Sutdy)

3.1 ADOPTED AREA AND NEIGHBORHOOD PLANS

SOUTHEAST COMMUNITY PLAN (2011)

The ***Southeast Community Plan*** is a guide for redevelopment of the area. The plan establishes long-range goals for reinvestment in and stabilization of the community. It also provides an action plan to guide the city and community toward achieving the vision of a neighborhood where people safely live, work, and play while enjoying and celebrating the area's history and cultural heritage.

Major community challenges identified in the plan include lack of employment and economic development opportunities, lack of housing diversity, poor condition of existing housing supply, crime and drug related activity, and concentration of low-income residents. To address these issues, the community established principles to guide reinvestment in and revitalization of the area. The guiding principles address preservation of residential neighborhoods, historic preservation, redevelopment and compatible infill development, and commercial revitalization. The ***Southeast Community Plan***, adopted in 2011, incorporates information and recommendations from previously prepared plans including the ***Southeast Community Urban Waterfront Design Study*** and ***Jefferson Avenue Corridor Study***.

Investments to Date

- Implementation of ***Jefferson Avenue Corridor Study*** recommendations.
- Construction of Dr. Martin Luther King, Jr. Plaza.
- Installation of bus shelters.
- Demolition of over 130 abandoned and dilapidated structures throughout the community since 2009 to eliminate unsafe, distressed conditions.
- Reinvestment in single-family neighborhoods, including construction of new homes in Madison Heights area and rehabilitation of Marshall Courts.
- Groundbreaking on Brooks Crossing and the opening of new businesses.

Status/Recommendations

- Continue implementation actions and program investments in the CIP.
- Identify additional funding sources for priority actions.

JEFFERSON AVENUE CORRIDOR STUDY (2009)

Jefferson Avenue was once the heart and soul of the southeastern portion of Newport News. Lined with small businesses, homes and churches, Jefferson Avenue around 25th Street was a model of an active urban neighborhood. After years of disinvestment, suburban flight, and general neglect, the Southeast Community now lacks the basic neighborhood services once provided along Jefferson Avenue. Inspired by recommendations from various planning products including the comprehensive plan and the ***Southeast Community Urban Waterfront Design Study***, the ***Jefferson Avenue Corridor Study*** was prepared to help the community recapture the vibrancy and convenience of a pedestrian-friendly, active, mixed-use Jefferson Avenue. The study was developed to further the community's vision for lower Jefferson Avenue between 25th and 36th streets and guide public and private investments on targeted sites.

Investments to Date

- Extension of the Lower Jefferson Urban Corridor Overlay District.
- Undergrounding and relocation of overhead utilities.

- Installation of streetscape and on-street parking.
- New development including Brooks Crossing.
- Targeted preservation through restoration providing modern apartments and mixed-use opportunities.

Status/Recommendations

- Continue implementation actions and program investments in the CIP.

- Extend streetscape improvements to other segments of Jefferson Avenue.

SOUTHEAST COMMUNITY URBAN WATERFRONT DESIGN STUDY (2007)

The ***Southeast Community Urban Waterfront Design Study*** was driven by a change of zoning request and the proposed future development of an upscale residential community along the waterfront. The city believed that improving the appearance and functionality of the waterfront and surrounding areas would aid in the success of the pending development and lead to greater private investment in the vicinity, thereby improving the overall viability of surrounding neighborhoods.

Although the proposed development was never constructed, the design study established a vision, goals, and implementation actions for the waterfront area that were incorporated into the comprehensive plan and the ***Southeast Community Plan***. Recommended changes to the physical fabric of the waterfront community focused on access and gateways, open space, community character and civic assets, economic development, and housing. The study identified opportunities to build on existing assets including activating and connecting open spaces, preserving landmarks, and developing appropriate infill along established mixed-use corridors.

Investments to Date

- Development and implementation of the ***Jefferson Avenue Corridor Study.***
- Development and adoption of the ***Southeast Community Plan.***

Status/Recommendations

- Continue implementation actions and program investments in the CIP.
- Extend the grid pattern of north-south streets to the waterfront.
- Improve access to neighborhoods from the interstate and to the water for residents.
- Develop Salter's Creek and Chesapeake Avenue improvements (walking and biking trails).

WARWICK BOULEVARD CORRIDOR STUDY (2004)

Warwick Boulevard from Oyster Point Road north to Fort Eustis Boulevard was identified in the ***Framework for the Future*** (2001) as a corridor experiencing decline and having an unattractive visual appearance. It was feared

that the continued decline of this corridor would adversely impact adjoining residential areas and lead to further deterioration, vacancies, and abandoned properties. The ***Warwick Boulevard Corridor Study*** analyzed existing conditions and provided recommendations to improve the visual quality of the corridor and entice private investment.

At the time the study was prepared, the city had invested substantial public funds within the corridor including construction of Mary Passage Middle School and the Waterworks Maintenance Building, and upgrade of the Lee Hall Treatment Plant. It was determined that these public investments and the surrounding communities needed to be protected from further decline along the corridor.

Investments to Date

- Sidewalk improvements throughout the corridor.
- Landscape improvements in medians.
- Acquisition of abandoned/deteriorated properties by the EDA/IDA.
- Reinvestment in several structures through the Façade Improvement Grant Program.

Status/Recommendations

Since study adoption in 2004, there have been significant improvements to the Warwick Boulevard streetscape; however, there has not been a sustained effort to address revitalization needs throughout the corridor or in adjacent commercial areas.

- Update plan to reflect current conditions
- Prepare a special area plan to extend revitalization to commercial and mixed-use areas adjacent to the corridor

STONEY RUN GREENWAY CORRIDOR PLAN (2003)

The city prepared the ***Stoney Run Greenway Corridor Plan*** as part of its local Chesapeake Bay Preservation Act program. The purpose of this greenway—as with all greenways identified on the Future Land Use Plan Map (Figure 35)—is to protect and enhance natural resources. Greenways are corridors of protected open space managed for conservation and recreation purposes.

Stoney Run Creek is a branch of the Warwick River with a historic past; it was used to move people and goods within old Warwick County. Today, the creek is mostly shallow and its banks are mostly developed with residential uses. Enhancing its water quality will improve the overall health of the creek, the tributary it runs into, and the Chesapeake Bay.

For implementation purposes, the Stoney Run corridor was divided in three segments, as many recommendations were specific to individual segments. Implementation actions range from shoreline erosion control projects to reclamation of portions of the floodplain. General recommendations common to all segments include cleanup of trash on land and in the creek, preserving/replacing streamside vegetative buffers, and preserving and enhancing wildlife areas.

Investments to Date

- The approved FY 2018 – 22 CIP budgets funds for the first phase of this project: land acquisition in 2022.
- In July 2016, the city initiated a one-year construction project to retrofit the regional best management practice (BMP) and improve drainage for Stoney Run Creek at the sand pits. The project constructs a new drainage channel to improve water quality, restores the existing stream channel, and dredges both ponds for additional storage capacity.

Status/Recommendations

Based on the age of the plan, the city should consider updating it to reflect current conditions, refine the trail system and other amenities proposed, and identify alternate funding strategies for implementation of phases two and three after 2022.

NEWPORT NEWS MARITIME CENTER PLAN (1998)

Newport News initiated its first efforts to redevelop downtown in the 1960s following consolidation with the city of Warwick and construction of the new City Hall at the terminus of Washington Avenue. Subsequent efforts to revitalize downtown continued through the 1980s and '90s, as businesses and residents continued to move northward to new business parks and suburban neighborhoods. In 1998, a new vision and investment plan were crafted in another attempt to end the continuing decline of historic downtown. While Newport News Shipbuilding, the U.S. Navy, and the city partnered to bring more jobs to downtown, the area had not seen any significant investment outside of the shipyard in years. The ***Newport News Maritime Center Plan*** was intended to capitalize on the shipbuilding and port history and planned investments to reestablish downtown as a vibrant component of the city.

Since then, shipyard-related and port-related investments have continued in downtown, but private investments have been minimal. In 2014, the city renewed its efforts to revitalize downtown through the ***Superblock Charrette Study***, which builds on the strengths of the ***Newport News Maritime Center Plan*** and factors in changing demographics and market realities to provide an updated strategy for moving toward a revitalized downtown.

Investments to Date

- Development of Victory Landing Park.
- Construction of the Apprentice School.
- Construction of Navy housing.
- Mixed-use development in vicinity of Navy housing and Apprentice School.

Status/Recommendations

In 2016, the city of Newport News hired a consultant to develop the "Downtown Vision." The consultant will build on the ***Superblock Design Charrette Study*** and develop new strategies to support a design vision that preserves the significant structures in downtown and the neighboring employment centers. It will increase the vitality and prosperity of downtown Newport News in the areas of innovation, housing and commercial diversity, arts and entertainment, community programming, and connectivity. The vision will establish the downtown character and design, and

identify the character, form, and activities that define the downtown as unique in the region.

Based on the age of the ***Newport News Maritime Center Plan*** and ongoing efforts to create a new vision and investment strategies for downtown, the 1998 document should not be carried forward in the comprehensive plan.

STONEY RUN PARK PLAN (1998)

The city closed its last remaining landfill in 1996. The closed landfill, located off Warwick Boulevard in Denbigh, totaled 228 acres. The ***Framework for the Future*** recommended that a park be developed on the site to meet the active and passive recreational needs for the immediate area, which lacked such facilities. A citizen's advisory committee worked with city staff, a planning consultant, and the public at-large to develop the vision to convert the landfill to a city park. The plan proposes a multi-use recreation area with basketball courts, multipurpose fields, picnic area, trails, lake amenities, playgrounds, and general landscape improvements.

Investments to Date

The Stoney Run Athletic Complex opened in 2005. Upon the landfill closing, all other improvements need to be programmed for implementation to fully realize the community's vision for Stoney Run Park.

Status/Recommendations

- Review plan with Department of Parks, Recreation & Tourism to determine if it should be updated to reflect current conditions and reevaluate planned amenities.
- Identify alternate funding strategies for implementation.
- Continue implementation actions and program investments in the CIP.

HILTON AREA NEIGHBORHOOD PLAN (1998)

The ***Hilton Area Neighborhood Plan*** was the city's strategic response to the gradual economic decline of the areas surrounding Hilton Village. Historic Hilton Village was developed in 1918 as the nation's first government-sponsored planned community. Designed to house shipyard workers, the Village has its own shops and community facilities. While the residential area was well maintained, the commercial district along Warwick Boulevard was showing signs of neglect. Therefore, the comprehensive plan recommended preparation of a neighborhood plan to identify opportunities to reinvigorate the area.

The plan recognized the strengths in the area, including the mix of land uses and diversity in the housing stock, and made recommendations to address issues while further enhancing the unique character of the area. Recommendations included improving the Rivermont, North Hilton, and Main Street gateways; prohibiting adult businesses in the historic area and the gateways; providing off-street parking, pedestrian paths, and reducing visual clutter; and relocating the fire station within the plan area.

Investments to Date

Many of the plan recommendations have been implemented, including streetscape improvements, new signage, façade improvements, relocation of Fire Station #3, and construction of Municipal Lane Park. There are, however, areas that require further assessment and long–term investment.

Status/Recommendations

Based on the age of the plan, the city should consider updating it to reflect current conditions, develop new investment strategies, and identify alternate funding sources for implementation.

LEE HALL AREA PLAN (1997)

Lee Hall is an area rich in historic and cultural assets, and encompasses several of the few remaining large undeveloped parcels in Newport News. In 1995, the Lee Hall Area Citizen Advisory Committee, comprised of representatives from local residential, business, and historic preservation interests, worked with the city to develop a long-range vision for the area. The plan captures the vision and goals developed by the committee to revitalize Lee Hall and guide future growth. Specifically, the plan focuses on preservation of historic and cultural assets, economic development, transportation improvements, and investment in community facilities and public infrastructure.

Investments to Date

Some elements of the plan have been implemented, including relocation and restoration of the Lee Hall Depot, investments in public utilities, establishment of a historic district overlay to improve the unique architectural value and character of the area, and comprehensive change in land use and zoning designations. Other planned investments have not materialized due to changing economic conditions.

Status/Recommendations

Based on the age of the plan, the city should consider updating it to reflect current conditions, develop new investment strategies, and identify alternate funding sources for implementation.

HAMPTON ROADS WATERFRONT PARKS PLAN (1994)

The purpose of the Hampton Roads Waterfront Parks Plan was to evaluate the Southeast Community's recreational needs and develop a concept and investment plan for King-Lincoln Park and Anderson Park. The Department of Parks, Recreation & Tourism has been diligently implementing this plan over the years.

King-Lincoln Park, an 18-acre park once known as Pinkett's Beach, is recognized as an integral part of the Southeast Community. The master plan calls for complete redevelopment of this neighborhood park to provide both passive and active recreation opportunities. At 70 acres, Anderson Park is the city's third largest public park. It is comprised of both marsh land and beachfront property, and is a collection of six non-contiguous recreational areas including South Anderson Park and Salter's Creek. South Anderson Park is an active recreational area with a promenade, softball field, and basketball court. Salter's Creek is approximately 50 acres of natural marsh that extends from Peterson's Yacht Basin northward to 35th Street. The master plan calls for a pedestrian boardwalk, observation deck, and community garden within this area.

Investments to Date

- Replaced Interpretive Center and installed new playground, picnic shelters, and new stage at King-Lincoln Park.
- Installed new pier.
- Completed beach nourishment project, constructed beach breakwaters along Anderson Park, and installed new playground equipment.
- Dredged channel to boat basin in Peterson's Yacht Basin.
- Designed Chesapeake Avenue Bike Trail; funding for first phase of implementation received in 2016.

Status/Recommendations

- Review plan with Department of Parks, Recreation & Tourism to determine if it should be updated to reflect current conditions and reevaluate planned amenities.
- Identify alternate funding strategies for implementation.
- Continue implementation actions and program investments in the CIP.

PATRICK HENRY COMMERCENTER 2001 (1992)

Patrick Henry CommerCenter 2001 was prepared for the Newport News Industrial Development Authority (IDA) to guide development of property adjacent to the Newport News/Williamsburg International Airport. At the time, the IDA owned approximately 200 acres in the 1,484-acre study area and desired a plan to guide their oversight of CommerCenter development to complement the current and future airport. The overarching goal of the plan was to create a desirable location for a high quality and attractive office/industrial park around the airport. The plan also accommodated for future airport growth including terminal construction, improved airport access, runway extensions, and a third runway. Development north of Turnberry Boulevard and south of Bland Boulevard was controlled through a design review and approval process established by the IDA.

Investments to Date

- Comprehensive change in land use and zoning designations.
- Private investment in existing businesses and development of privately owned vacant land.
- Transportation system improvements.
- Expansion of the airport, including construction of a second terminal.

Status/Recommendations

The *Patrick Henry CommerCenter Plan* was intended to be a 10-year implementation program, and much of the development that occurred was not according to the plan. Remaining vacant lands are mostly owned by the Peninsula Airport Commission, EDA/IDA, and the city. Allowing for changing economic conditions and the fact that the plan is more than 20 years old, it should not be carried forward in the comprehensive plan. Remaining actions will be guided by the updated comprehensive plan, *Newport News/ Williamsburg International Airport Master Plan Update* (2014), and other policies.

DEEP CREEK/MENCHVILLE MASTER PLAN (1990)

The Deep Creek/Menchville area contains some of the most valuable land, water and environmental resources within the city. Located at the confluence of the Warwick and James rivers, the area contained the last undeveloped land overlooking the James River within the city. With more than 400 acres of residual rural lands in the 1980s, development pressure was mounting and

the city and community wanted a plan to establish the vision and framework for development. The community-based planning process was initiated to evaluate existing conditions and establish a vision for future development of the land to preserve the natural and cultural assets and create an amenity that reflects the character and history of the area. The community envisioned a 300-acre riverfront park with active and passive recreation, a working farm, and a revitalized working marina and waterfront. One of the immediate implementation actions in the ***Deep Creek/ Menchville Master Plan*** was the formation of a task force and planning process to design the public park; another was temporary consolidation of City Farm operations to a smaller area until the correctional facility could be relocated elsewhere in the city.

Investments to Date

- Design of Riverview Farm Park (adopted 1991)
- Construction of playground, picnic areas, restrooms, soccer fields, skate park, dog park, and multi-use trails
- Construction of Riverview Gymnastics Center
- Transfer of Menchville Marina from private to public ownership to preserve working waterfront for watermen
- Stabilization of bulkhead at marina
- Closure of City Farm

Status/Recommendations

Implementation of plan recommendations has been slow, with approximately one-third of the improvements completed. This is mainly the result of City Farm operations continuing through summer of 2015.

Recognizing that this master plan is now over 25 years old, it is worth revisiting the plan to ensure it still meets city goals and public needs. The Future Land Use Map (Figure 35) has been updated to reflect the community's desire for a park on the City Farm site.

RICHNECK NEIGHBORHOOD LAND USE PLAN (1988)

The first ***Richneck Neighborhood Plan*** was adopted in 1974; its goal was to preserve a primarily single-family residential area supported by a large centrally located commercial/office complex with industrial expansion along the railroad spur. The plan was updated in 1998 to reflect modifications to the original vision resulting from private development and public investments, and provide revised projections for future land use.

Investments to Date

The greater Richneck area is generally built out, with a few smaller vacant parcels sprinkled throughout the area. Future development of these parcels should result in development compatible with existing uses. The only remaining undeveloped parcel of any significant size is located east of and parallel to the Colony Pines neighborhood. Initially referred to as the Eastern Boundary Expansion Area, the almost 400 acres were transferred to the city through a boundary line adjustment with York County. In 2007, a rezoning to R9 Mixed Use zoning district was approved for the property to develop a mixed-use neighborhood named Huntington Pointe. Construction started in 2017.

Status/Recommendations

This plan has largely been implemented and should not be carried forward in the comprehensive plan. Remaining actions, mostly related to the transportation network, will be guided by the comprehensive plan and other policies. Development of Huntington Pointe will be guided by the approved rezoning and associated master development plan.

Concept for Downtown (Superblock Charrette Study)

Concept for Downtown Washington Avenue (Superblock Charrette Study)

“We are a self-sustaining city, a historical city, a maritime city; a city of art, science, and technology; a city of military, ship builders and corporations; a city of culturally diverse people and public spaces; a city not on the brink of greatness, but one that is already great.”

Our vision for 2040 is not just what we hope to achieve, but rather a dream that can be brought to fruition, a legacy for future generations, and the solid foundation of this comprehensive plan. This section details our vision for 2040, and identifies the goals and objectives that will uphold this vision.

4

One City, One Future Comprehensive Plan is characterized by six themes. These themes emerged during the data collection task, were grouped by topic area, and united into the following: A PROSPEROUS AND RESILIENT CITY, A SUSTAINABLE CITY, AN ACCESSIBLE CITY, A HEALTHY AND SAFE CITY, A CITY THAT RESPECTS IT'S UNIQUENESS, AND, A CITY THAT BALANCES GOOD PLACES AND NEW SPACES. Once the themes were drafted, they were revised with input from the CPCAC.

Newport News is...

A PROSPEROUS AND RESILIENT CITY

We are an economically diverse and business friendly city with a strong applied technology base, dynamic research and development sector, robust health sector, and locally-owned businesses all reinforced by a highly educated and highly skilled workforce supported through higher educational opportunities.

We draw the next generation of workers, who gravitate to employers that promote a new approach to workplace productivity and flexibility.

We are a city with a strong and diverse economy. The economy is dynamic and resilient due to its highly skilled and highly educated workforce. Attracted to the quality of life in the city, energetic and talented workers create a new culture of innovation.

A SUSTAINABLE CITY

We protect our natural resources, employ renewable sources of energy and green building practices, and promote an economically and socially resilient environment with sound land use decisions.

AN ACCESSIBLE CITY

We offer a wide range of housing choices to citizens of all income levels in all generations.

We are a city that meets the housing needs of all. The diversity of housing types and densities reflects the variety of needs in the city.

We are a city of diverse and vibrant neighborhoods. High quality neighborhoods make Newport News a great place to live. Homes are well maintained, as are the public facilities that serve residents. Remodeling and upgrading have made older neighborhoods attractive to young families while thoughtful infill development has enabled these neighborhoods to retain their character. New, higher density neighborhoods thrive in mixed-use areas located throughout the city.

We offer an efficient and balanced multimodal transportation system that connects all activity centers and neighborhoods to local and regional employment, services and recreational opportunities.

We are a city offering an array of mobility choices. The city's transportation system is based on moving people and goods rather than moving cars. Automobile dependency has been reduced by convenient and workable alternatives including connections to public transportation and an integrated pedestrian and bicycle system. Land use and transportation work together to provide mobility to shape a high quality environment less dominated by the automobile and more sensitive to air quality, energy conservation, and protection of livable neighborhoods.

A HEALTHY AND SAFE CITY

We serve as a model community, providing abundant parks and recreational programs, renowned cultural and entertainment amenities, and an excellent school system.

We provide recreational access to our citizens to enjoy our unique location on the water.

We are a city served by outstanding community facilities. All improvements are context sensitive and help reinforce the character and quality of the city's neighborhoods. The city has a reputation of having one of the best school systems, providing cutting edge medical facilities, and state of the art cultural venues.

We are a city with excellent parks. The open space network reinforces its reputation of providing abundant access to the natural environment and to new neighborhoods and mini-parks. An extensive waterfront park opens up the downtown area as a regional attraction. The city's open spaces are linked with trails and greenways that provide magnificent views of the water. We are secure and safe, as the city places the highest priority on protecting all citizens, preventing crime and placing focus on preparedness to ensure that it can respond effectively in an emergency.

A CITY THAT RESPECTS ITS UNIQUENESS

We preserve and promote our unique history and natural environment, thereby reinforcing the city's identity and civic pride for residents and visitors alike.

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

We maintain and promote neighborhoods with unique identities and character that provide the basic social, service, and commercial opportunities needed for a high quality of life for all.

We are a city with superior urban design. Newport News is a city of distinction with places that nurture a sense of community and neighborhoods that retain their unique character and preserve key historic features.

Our Vision

Newport News is economically strong, culturally diverse, and environmentally responsible with an exceptional quality of life, making it the preferred place in the southeast region of the United States to live, learn, work, and play.

Ella Fitzgerald mural by artist Asa Jackson

OUR GOALS AND OBJECTIVES

A PROSPEROUS AND RESILIENT CITY

GOAL: GROW AND DIVERSIFY OUR ECONOMY FOR LONG-TERM RESILIENCY

OBJECTIVES:

- Collaborate with educational institutions, business leaders, and employers to retain and expand existing businesses and attract new businesses.
- Collaborate with educational institutions, business leaders, and employers to meet the needs of chronically unemployed and underemployed residents.
- Enhance and expand workforce development including drawing telecommuters to our city.
- Retain and promote a qualified and globally competitive labor force.
- Spur local entrepreneurship and support small business development.
- Promote the quality of local educational institutions.
- Provide skills-based training at all education levels.

A PROSPEROUS AND RESILIENT CITY

GOAL: REIMAGINE AND REBRAND

OBJECTIVES:

- Promote Newport News as an accessible, diverse, and dynamic destination.
- Brand and market the city as a destination for tourism, culture, and entertainment.
- Champion redevelopment of downtown to create a unique activity center that provides opportunity to "live where you work" and "live where you play."

GOAL: ABATE AND ENHANCE

OBJECTIVES:

- Reduce blight and enhance the public realm.
- Continue conversion of areas with aboveground utilities with installation of underground utilities and facilities to improve the public health, safety, and welfare.
- Continue to encourage collocation of utilities and communication antennas to manage the proliferation of towers and poles.
- Establish an effective plan to manage vacant land and public buildings.
- Partner with neighborhood leaders and businesses to help citizens maintain and improve their properties.
- Work with regional leaders and organizations to address major land use and transportation challenges in Hampton Roads.

A SUSTAINABLE CITY

GOAL: SUSTAIN, BALANCE, AND GO GREENER

OBJECTIVES:

•Support and incentivize development that preserves and protects natural resources, enhances the built environment, and embraces green technology.

- Encourage development that is context-sensitive and supports a balance between the built and natural environments that minimizes environmental impacts.
- Increase reuse and recycling efforts and reduce solid waste disposal.
- Maintain and expand the city's urban forest.
- Protect working waterfronts from natural, economic, and institutional threats to ensure their continued commercial and industrial use.
- Encourage transit-ready and transit-oriented development to maintain a balanced, economically sustainable mix of land uses supported by an interconnected multimodal transportation system citywide.
- Reduce parking requirements for developments close to future transit stops and areas targeted for higher-density, compact mixed-use development.
- Reduce impervious surface coverage in commercial and employment areas.
- Support development that minimizes flood hazards and protects the quality of streams, rivers and water resources, and air quality.

A SUSTAINABLE CITY

GOAL: SUSTAIN, BALANCE, AND GO GREENER (continued)

OBJECTIVES:

- Support projects that enhance reservoir protection and watershed preservation.
- Continue to ensure safe and reliable water, wastewater, and stormwater services.
- Encourage the use and development of alternative renewable energy sources.
- Practice and promote energy efficiency and conservation, and sustainable building practices and products.

GOAL: COOPERATE

OBJECTIVES:

- Be a leader in regional sustainability efforts to ensure the long-term viability of Hampton Roads.
- Support the study of sea-level rise and land subsidence in the region.
- Identify areas within Newport News that may be vulnerable.

AN ACCESSIBLE CITY

GOAL: EXPAND OPPORTUNITIES

OBJECTIVES:

- Ensure that people of all ages and at all income levels have the opportunity to live in safe, accessible, and quality housing citywide.
- Provide a variety of housing types at varying densities throughout the city.
- Improve housing quality and affordability.
- Provide opportunities to increase homeownership.

GOAL: REVITALIZE

OBJECTIVES:

- Preserve and revitalize existing residential neighborhoods to maintain and contribute to their unique character, form, scale, and history.
- Support infill development and revitalization projects that are based on quality architectural designs that bring value to and are compatible with surroundings, and incorporate well-designed site elements including landscaping, pedestrian access and circulation, and green building elements.
- Explore opportunities to reuse vacant building sites to provide new mixed-use and/or housing options.
- Work with neighborhoods to document neighborhood history and character to develop neighborhood brands.
- Develop a hierarchy of regional, community and neighborhood mixed-use activity centers to effectively meet residents' needs for goods and services, and contribute to overall quality of life.

AN ACCESSIBLE CITY

GOAL: CONNECT

OBJECTIVES:

- Develop and maintain a safe, accessible, and efficient multi-modal transportation system.
- Use alternative methods of transportation to reduce congestion.
- Connect neighborhoods, employment, and activity centers.
- Create and promote a citywide pedestrian and bicycle system.
- Support regional initiatives to enhance and expand mass transit service throughout Hampton Roads and beyond.
- Maintain an attractive street and highway system that allows safe, convenient, and efficient movement of people and goods.
- Promote complete streets that provide safer routes to schools and encourage walking and biking citywide.

A HEALTHY AND SAFE CITY

GOAL: COLLABORATE AND PROTECT

OBJECTIVES:

- Ensure that people of all ages and abilities and at all income levels have the opportunity to live in safe, accessible, and quality neighborhoods citywide.
- Support patterns of development that implement our land use plan and provide citizens with a healthy and safe community in which to live, work, learn, and play.
- Provide equal access to housing, education and job training, health care, employment, transportation, and parks and recreation.
- Develop a system of accessible greenways and recreational trails that connect neighborhoods, natural and cultural resources, and recreation facilities to provide multiple opportunities for citizens to enjoy a healthy and active lifestyle.
- Support healthy neighborhoods and provide access to a variety of affordable healthy food options citywide.
- Engage citizens in efforts to reduce crime and the perception of crime throughout the city.
- Promote the “good news” or successes in the city.
- Collaborate with public, private, and non-profit organizations to maximize efficiency and innovation, and implement best practices in delivering exceptional services.

A CITY THAT RESPECTS ITS UNIQUENESS

GOAL: PRESERVE AND CELEBRATE

OBJECTIVES:

- Preserve and enhance our unique natural assets including vistas.
- Provide opportunities for education, recreation, and tourism.
- Integrate preservation with positive and well-balanced economic growth.

GOAL: CELEBRATE AND PROMOTE OUR CULTURAL ASSETS

OBJECTIVES:

- Preserve, enhance, and celebrate the city's story – historic, cultural, and economic – to promote community identity, and civic pride.
- Incorporate public art along major roadways and in public gathering places.

A CITY THAT RESPECTS ITS UNIQUENESS

GOAL: CONSERVE AND ENHANCE THE WATERFRONT, AND PROVIDE PUBLIC ACCESS

OBJECTIVES:

- Promote public, cultural, recreational, and commercial activities along the waterfront.
- Create more public access points to the James River.
- Sustain working waterfronts.
- Implement recommendations of waterfront studies.

Redesigned waterfront (Superblock Charrette Study)

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

GOAL: STABILIZE, ENHANCE, AND GROW

OBJECTIVES:

- Improve the overall appearance of the city, especially along the major corridors, by applying enhanced urban design guidelines and improved landscape standards to public and private development.
- Encourage redevelopment, infill development, and adaptive reuse of existing structures to reduce vacancies.
- Identify and enhance primary gateways to the city to establish a sense of place.
- Develop a comprehensive wayfinding system.
- Repurpose automobile oriented uses and infrastructure.
- Support new residential development and redevelopment that incorporates greenspace/parks and other public spaces and promotes equity.
- Support new development that is compatible with the desired character, intensity, and land use of the surrounding community.
- Enhance entryways to established neighborhoods and protect them from incompatible land uses.
- Create and reinvent public spaces that strengthen the connection between people and shared places, and promote health and well-being.
- Reduce the prevalence of surface parking lots by encouraging transit-oriented and transit-ready development and mixed-use walkable communities.
- Reduce the prevalence of other impervious surfaces by increasing vegetated areas.

5

A vision for the Superblock (Superblock Charrette Sutdy)

The vision and goals presented in **Chapter 4, The Dream** provide the framework for the roadmap to 2040 outlined in this chapter and illustrated on the Future Land Use Map and Transportation Map. The purpose of this plan is to provide a clear guide for orderly growth, development, and reinvestment throughout Newport News. Planning and development decisions should align with this plan and its associated goals and objectives to ensure that Newport News in 2040 is still a prosperous, resilient, sustainable, accessible, healthy, safe, and unique city that balances its good spaces with new places.

Marshall-Ridley Choice Neighborhood: Housing Phase 1 (Jefferson Avenue and 28th Street)

5.1 LAND USE DESIGNATIONS AND OVERLAYS

Prior to presenting the Future Land Use and Transportation Plan and the Planning Opportunity Areas, this chapter describes the land use categories and overlay districts depicted on the maps.

Land use designations and overlay districts identify the range of land uses and the character of development that should occur citywide in conformance with the vision and goals presented in the comprehensive plan.

Land use categories are used to identify the desired primary use for existing and future areas for development. Although general in nature, these designations provide guidance for any changes to the more specific zoning regulations and zoning district locations and boundaries that implement the comprehensive plan.

Because Newport News is mostly built out, proposed land uses are generally consistent with existing uses. In other cases, the designation may be different from what is physically on the ground today, indicating that the city expects the current use to change. For example, a parcel that is vacant today but designated for residential use on the map would be expected to be developed with housing during the next 20 years. Similarly, a parcel that is in industrial use today but designated as mixed use on the map would be expected to redevelop at some point with a mixture of uses. Several of the land use categories may include sub-categories which are included to provide further guidance and consistency related to type and density of development.

The Future Land Use and Transportation Maps (illustrated in Figures 35 and Figure 36) are largely implemented through the city's zoning regulations. Each color coded category on the Land Use Map (see Figure 35) has a corresponding set of compatible zoning districts (see Figure 16). Many of the land use categories have more than one corresponding zoning district, permitting an interpretation of the map based on existing uses and local conditions. Whereas the land use categories are intentionally broad, the zoning designations are more prescriptive and address qualities such as building heights, setbacks, permitted and conditional uses, allowable lot coverage, and parking requirements.

While the Future Land Use and Transportation Plan guides zoning, it is not the same as the Zoning Map. By definition, the Land Use and Transportation Maps are intended to be general and does not necessarily follow parcel boundaries. Moreover, the designation of an area with a particular land use category does not mean that the most intense zoning district consistent with that category is "automatically" permitted. That is

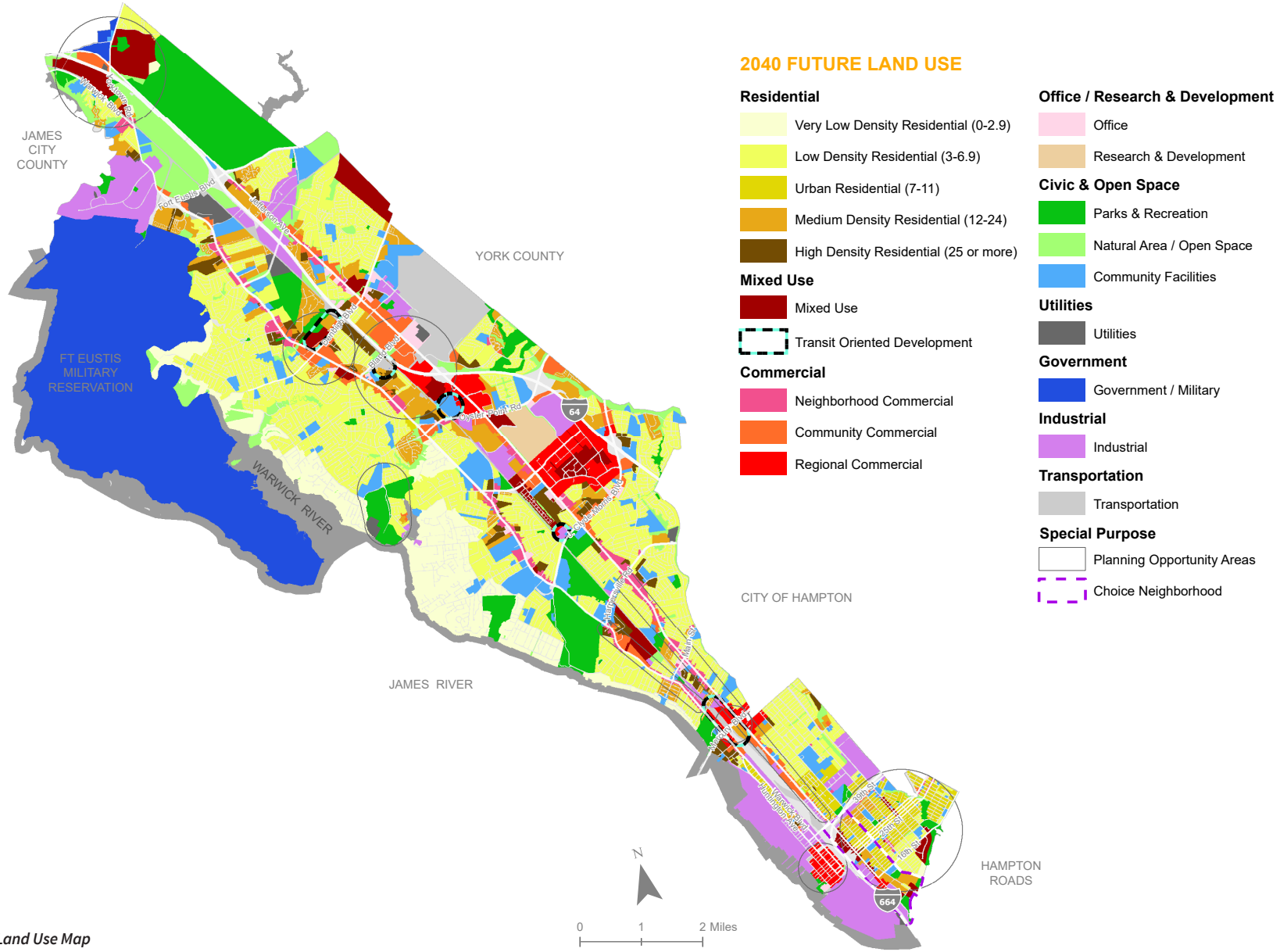


Figure 35: Future Land Use Map

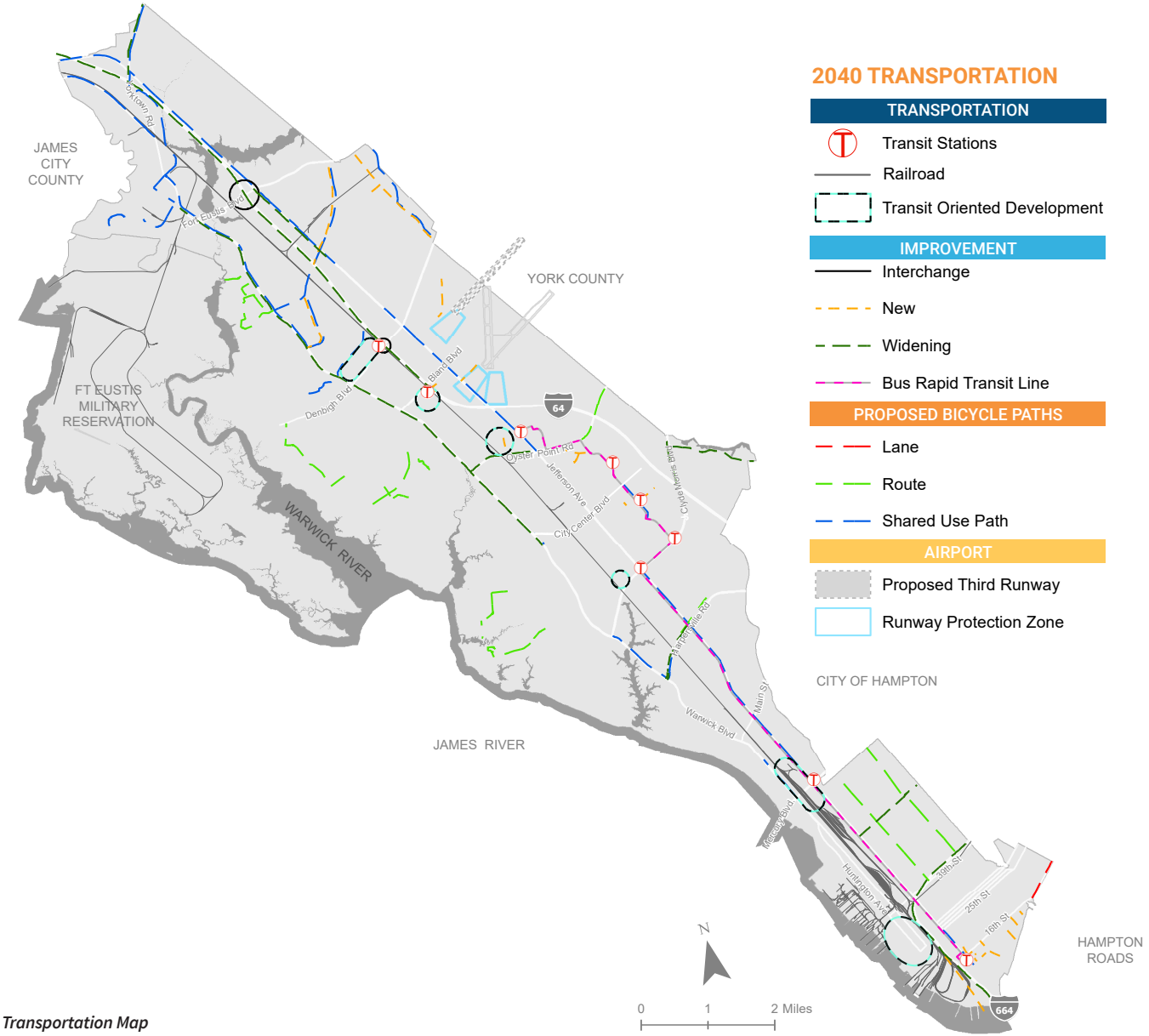


Figure 36: Future Transportation Map

particularly true in the residential areas, where there is a range of zoning densities within each category.

In most cases, developing a property with a use that is not consistent with what is shown on the Land Use and Transportation Maps would require an amendment to the comprehensive plan. The definitions below are intended to guide the determination of consistency. Requests to amend the Land Use and Transportation Plan are subject to a public process involving the Planning Commission and City Council.

There are a total of 10 land use categories shown on the Land Use Map (Figure 35): residential, mixed use, commercial, office and research and development, industrial, civic and open space, utilities, transportation, and government. There is also a special purpose category for areas that have or will have an adopted area plan. The purpose of this designation is to make the reader aware of the area plans that provide more specific intent and direction for land use and development in specific areas of Newport News.

RESIDENTIAL

- **Very Low Density** – This land use designation provides for the development of large lot single-family dwellings and ancillary structures. The density range is 0 to 2.9 dwelling units per acre.
- **Low Density** – This land use designation provides for the development of conventional single-family detached dwellings and suburban subdivisions. The density range is 3 to 6.9 dwelling units per acre.
- **Urban Residential Density** – The Urban Density Residential land use designation provides for the development of single-family detached and attached dwellings. The density range is 7 to 11 dwelling units per acre.
- **Medium Density** – The Medium Density Residential land use designation provides for the development of single family attached and multiple family dwellings. The density range is 12 to 24 dwelling units per acre.
- **High Density** – This land use designation provides for the development of multi-story, multiple family developments. The density range is 25 or more dwelling units per acre.

MIXED USE

- **Mixed Use** – This land use designation accommodates a horizontal and/or vertical mixture of retail, office, restaurant, entertainment, cultural, and residential uses.
- **Transit-Oriented Development** – This land use designation is intended for areas located within ¼ of a mile of existing and planned transit stations. It is intended to provide for walkable, mixed-use neighborhoods supported by a mix of residential, office, and retail uses.

COMMERCIAL

- **Neighborhood** – The Neighborhood Commercial land use designation accommodates small scale retail or offices, professional services, convenience retail and storefront retail that serve a market at a neighborhood scale.
- **Community** – The Community Commercial land use designation accommodates medium to large scale wholesale, retail, lodging, offices, and service establishments typically located along major corridors that can function

Residential densities amended on October 13, 2020 by City Council (Resolution No. 13358-20)

independent of adjoining development and/or require individual access to public rights-of-way.

- **Regional** – The Regional Commercial land use designation accommodates large destination retail, wholesale, light industrial, tourist attractions, lodging, and service establishments with a coordinated design, including shared parking areas and points of access to public rights-of-way. These areas should include large auto-oriented commercial uses with direct access and visibility from or to the interstate highway system.

OFFICE & RESEARCH AND DEVELOPMENT

- **Office** – Office land use designation is for areas that accommodate all offices including professional and medical services. This land use designation can be used to transition between residential and commercial uses.
- **Research and Development** – The Research and Development land use designation is used for areas that promote economic growth and business development, including office, research, trade, education, occupation, information, and technology services.

INDUSTRIAL

The **Industrial** land use designation is for areas devoted to manufacturing, storage and distribution businesses/operations, assembly, and processing.

CIVIC & OPEN SPACE

- **Natural Area/Open Space** – The Natural Area/Open Space land use designation is used to protect lands with unique natural conditions such as floodplains, scenic vistas, environmentally sensitive areas, and trails. Land designated as natural area/open space is intended to remain undeveloped in the future.
- **Parks and Recreation** – The Parks and Recreation land use designation includes active or passive parks such as playing fields, playgrounds, community centers, and other recreational uses.
- **Community Facilities** – This land use designation accommodates public or semi-public facilities including but not limited to: governmental offices, police and fire facilities, hospitals, educational institutions, and places of worship.

UTILITIES

The **Utilities** land use designation accommodates land used or dedicated for public and private utilities, including pipelines, utility lines, power lines, water and wastewater facilities, electrical substations, and telephone.

TRANSPORTATION

The **Transportation** land use designation is for areas dedicated to vehicle, air, or rail transportation.

GOVERNMENT/MILITARY

The **Government/Military** land use designation includes military bases and other related facilities.

SPECIAL PURPOSE

- **Planning Opportunity Area** – This designation is intended to provide flexibility for those areas that have been identified as redevelopment areas where the highest and best use for the land has not been determined. Land use designations will be determined through a subsequent area or neighborhood plan.

Regional commercial amended on October 13, 2020 by City Council (Resolution No. 13358-20)

5.2 SHAPING NEWPORT NEWS THROUGH 2040

Chapter 4 lays out the detailed vision for 2040 by theme, while Chapter 5 identifies the focus areas, priorities, and strategies for achieving our land use and development goals to draw and retain a diverse and creative population and be the city of choice well into the future. To ensure that growth and development continues to take shape as envisioned by our stakeholders, the following additional guidance is provided for investment and development citywide.

- Neighborhoods remain the basic social, service, and community development unit of the city. The city of Newport News continues to value the unique identity and character of each neighborhood and explore opportunities to protect and enhance them.
- Activity centers are the focal points of community life and have a range of sizes, functions, and character. Each center will have a detailed plan to protect and enhance it. New development (including infill and redevelopment) should be focused in these areas whenever possible. Density, mix of uses, and walkability will drive investment in all activity centers. Those centers located in proximity to future transit stations will build out transit ready.

- Our natural areas, open spaces and recreational facilities will be linked by a network of greenways and trails (pedestrian and bicycle) to the maximum extent feasible. At the same time, we continue to protect our natural resources to preserve and enhance quality while ensuring their continued existence for future generations.
- We will continue to invest in a balanced transportation system that provides equal access and mobility choice to all. High-density, pedestrian and transit-oriented development will be planned and constructed in targeted areas to protect established neighborhoods, alleviate traffic congestion to the extent feasible, and support enhanced bus services, future transit investments, and expanded pedestrian and bicycle facilities. We strive to be a more connected city. A formal policy is needed to provide clear goals and objectives and a toolbox of strategies to stimulate the type of development that supports transit and transit users.
- Neighborhoods and activity centers will be accessed by landscaped streets throughout the city. To the

extent feasible, overhead wires will be eliminated and the proliferation of signs will be controlled.

- As we approach build out, priority will be given to renewing obsolete uses and blighted areas. Infill and redevelopment projects will be designed to fit in with the established character of the neighborhood or activity center for which it is proposed.
- Healthy, sustainable, and equitable neighborhoods provide a range of housing options that promote clean and safe living conditions for all residents.
- We continue to recognize that the way our city looks says a lot about who we are and our values and priorities. A visually and functionally unified city provides a public environment that is celebrated and supports a healthy and creative population.

5.3 PLANNING OPPORTUNITY AREAS 2040

Because Newport News is mostly developed, the majority of land use changes in the future will be the result of infill, redevelopment, and revitalization efforts, mainly in targeted areas. Priority will be given to areas that have experienced disinvestment, renewing obsolete uses, eliminating blighted areas, and maintaining and improving the identity of unique neighborhoods including those with undeveloped land. These focus areas require special planning considerations that will be captured in area plans, providing additional analysis and direction to meet the needs of each target area.

Through the *One City, One Future* planning process, nine areas were identified as opportunity areas. Each area is unique and provides opportunity for further assessment and planning for investment over the next 20 years. In this section, the nine planning areas are outlined with respective challenges and opportunities identified that may spur demand for future investment. Each Planning Opportunity Area has significant potential to help achieve the ***One City, One Future Comprehensive Plan*** goals and objectives.

SOUTHEAST COMMUNITY

The Southeast Community, first known as the East End, was the city's original residential neighborhood. It was developed to support the city's burgeoning industrial and maritime activities. Long narrow residential blocks were served by an electrical streetcar system that took workers to and from the waterfront. Once the most densely populated area of the city, the Southeast Community has experienced a steady decline in population since 2000.

Economic decline in the area began decades earlier before construction of I-664 cut the community off from the historic downtown and businesses started to move to the "suburbs" of Newport News.

The ***Southeast Community Plan*** (see Chapter 3, Planning Legacy) is a guide for reinvestments in a 4.4-square-mile area of the city that has some challenges, but also has many assets and opportunities that can be built upon to provide residents and businesses with an urban environment in which they can thrive. As a result of planning efforts in the Southeast Community, the city has invested in numerous actions, including street and bridge improvements, demolition of blighted and abandoned buildings, construction of new housing, enhancement of public facilities, and investment in various programs to support creative, intellectual, and cultural pursuits of residents.

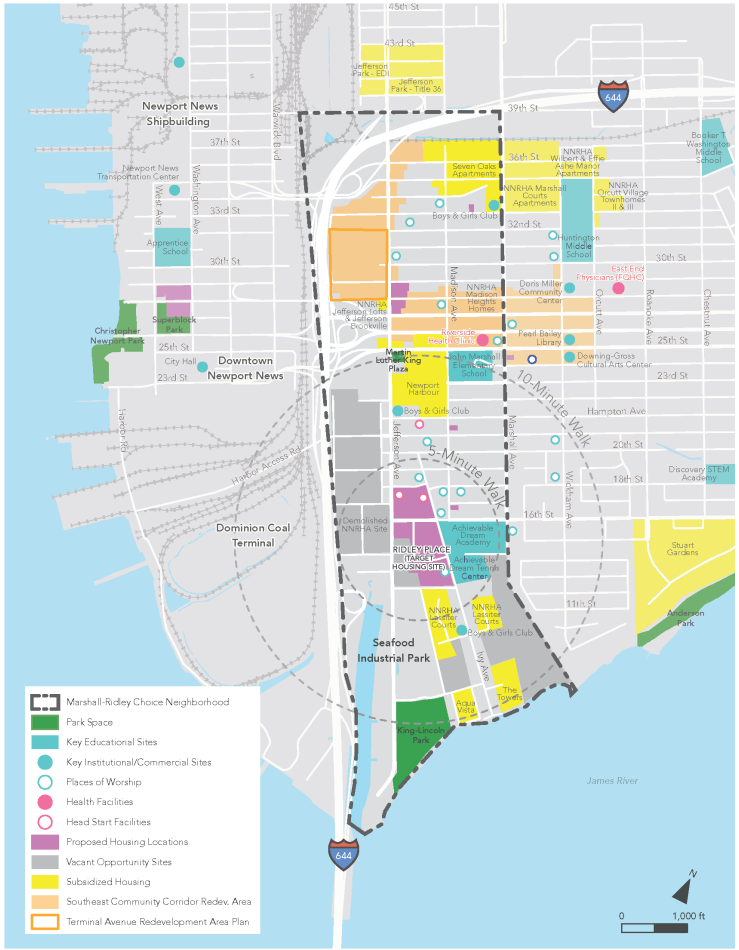


Figure 37: Marshall-Ridley Choice Neighborhood

In an effort to build momentum in implementing further change in the neighborhood, the city of Newport News and the Newport News Redevelopment and Housing Authority successfully applied for a Department of Housing and Urban Development planning grant through the Choice Neighborhoods Initiative. While the target area for the planning effort is a subarea of the Southeast Community, the intent is to implement projects that will spur transformation of the area and lead to further investment in the larger community. The key output from the Choice Neighborhoods Initiative planning process, which kicked-off in fall 2016, is the Transformation Plan for the Marshall-Ridley Choice Neighborhood (see Figure 37), which will become an addendum to the comprehensive plan once adopted by City Council.

The Choice Neighborhoods Initiative planning process has brought together residents, local leaders, and many other community stakeholders to create a transformation plan in a target area. Choice Neighborhoods Initiative focuses on three core goals: housing, people, and neighborhood. The ***Marshall-Ridley Choice Neighborhood Transformation Plan*** was adopted by City Council in June 2018.

RIVERVIEW

The Riverview area contains 17 percent of the undeveloped land in Newport News. This area is valuable not only for this reason, but also because it is bounded by the Warwick River and Deep Creek at the confluence of the James River, and has the potential to provide much desired public access to the water. With the closing of City Farm, public discussion on how to best utilize the valuable waterfront property has become more urgent. As presented in Chapter 3, Planning Legacy,the ***Riverview Farm Park Plan*** was adopted in 1991. The plan provides for a 300-acre park, which preserves components of the City Farm.

This plan preserves cultural, natural, and visual resources/assets. Opportunities for recreation and waterfront access are also enhanced by this plan. This area is currently designated as a Planning Opportunity Area (with an underlying land use designation of Parks and Recreation) to allow the city and community to appropriately assess and update plans before moving forward.

PATRICK HENRY

The Patrick Henry area was largely undeveloped up until the 1970s. The only major development in the area prior to that time was Camp Henry, which became the Newport News-Williamsburg Airport when the Peninsula Airport Commission and U.S. War Asset Administration reached an agreement to transfer the former camp for redevelopment as an airport. During the 1970s, I-64 and I-264 were completed from Richmond to Virginia Beach creating more traffic through this area of Newport News and, during the 1980s and 90s there was a residential and commercial development boom in the area surrounding the airport.

The area continued to grow into the 21st century, making it a major regional destination. The recent developments of Jefferson Commons, Jefferson Place, and the Marketplace at Tech Center, along with the Ferguson Enterprise expansion, prove that the area remains a desirable business location. But, with the growth along Jefferson Avenue between J. Clyde Morris Boulevard and Denbigh Boulevard has come increased congestion. With few vacant sites, several aging commercial centers, and the approved construction of the Newport News Transit Center, the city has an opportunity to take a closer look at the Patrick Henry area and develop a plan for final build out and strategic, frequent, and reliable transit connections and more walkable areas.

Handshake by Gunther Stilling

JEFFERSON AVENUE CORRIDOR

Jefferson Avenue south of Mercury Boulevard was identified in the ***Framework for the Future*** (2001) as an area in decline and ripe for revitalization. While the ***Southeast Community Plan*** and the ***Jefferson Avenue Corridor Study*** addressed the corridor south of 39th Street, no plans address the needs of the corridor between 39th Street and Harpersville Road. This area of the city's busiest arterial road reflects the effects of pyramid zoning (allowing multiple uses in specific zones) and features many aging residential, commercial, and industrial centers. The city has the opportunity to take a closer look at this portion of Jefferson Avenue and inventory and assess land uses to identify opportunities for reinvestment.

NEWMARKET

The Newmarket area remained mostly undeveloped until the end of World War II, when increased industry in the downtown area and the development of new suburbs after the war pushed retail and residential development to the west and north of the original city. The area grew marginally with the construction of the James River Bridge in 1928 and Mercury Boulevard in 1943.

Previous comprehensive plans identified the Newmarket area as a Regional Center (Transit-Oriented Development). Regional Centers are large, mixed-used places supporting a range of activities. They are high-density and urban in character. While the vision for this area is one of mixed-use transit-oriented development, the reality is that the area has declined significantly, both on the Newport News and Hampton sides.

Current commercial development is dominated by auto related businesses, professional offices, and general retail. Housing in the area is dominated by mobile home parks and multi-family homes. The Newmarket area lacks vacant land for new development, but provides significant opportunity for revitalization and redevelopment long term. There is no area plan for Newmarket, which is needed to form a cohesive vision for an economically revitalized gateway into Newport News. It provides the opportunity to partner with the city of Hampton to create a shared vision since the area crosses boundary lines.

Lee Hall Depot

LEE HALL

As presented in Chapter 3, Planning Legacy, Lee Hall is an area rich in historic and cultural assets. Lee Hall Mansion and Endview Plantation were centerpieces in the Confederate effort during the Civil War. Both were sold to the City of Newport News in the latter part of the 20th century. Lee Hall Depot, which was constructed in the 1880s, was relocated into Lee Hall Village in 2015

and is being restored. The largest remaining undeveloped parcels within Newport News are also located in this Planning Opportunity Area.

The ***Lee Hall Area Plan***, adopted in 1997, provides a long-term vision for preserving historic and cultural resources while supporting economic investments. While some public and private investments have occurred, many other planned investments have not materialized. With changing economic conditions, it is critical that new investment strategies be developed to ensure that future development respects and complements the area's historic character.

DOWNTOWN

During the World Wars, the historic downtown became increasingly crowded. The area was an important strategic position for sending troops and supplies overseas, and shipyard production increased as more ships were needed for the wars. In order to keep up with demands, the number of shipyard workers increased dramatically. The increase in troops in the area, as well as the increase in shipyard workers, meant there was a need for more housing and supporting services. Construction boomed between 1900 and the 1940s. In the mid-1950s, downtown faced a crisis following mass migration of upper-income residents and businesses out of the area to the northern areas of the expanded city.

Downtown has been targeted for redevelopment since the early 1960s with limited success. Significant investment has, however, been made to support Navy/Shipyard activities. Investments include the new Apprentice School, Liberty apartments, HomePort Navy housing, and the Virginia Advanced Shipbuilding and Carrier Integration Center (VASCIC).

In 2015, the city took a fresh look at the area through the ***Superblock Charrette Study***, which highlighted the assets and opportunities of a targeted area of downtown and resulted in a renewed effort to revitalize the area. The ***Downtown Vision Plan*** (2016) took the guiding principles and design concepts from the Charrette Study and applied them to a broader area to provide the updated vision for a reimagined downtown.

HILTON-RIVERMONT

While much of the original eight-block community was built by 1920, additional residential subdivisions were built to the north and south, between Warwick Boulevard and the James River between 1920 and 1940. During the 1950s, commercial structures and strip malls were introduced along Warwick Boulevard to the north of Hilton Village (North End). South of Hilton Village (South End), commercial structures and centers were also appearing,

but with a much different character. On Warwick Boulevard in the south section of the planning area, Googie (a form of modern architecture) appeared in the form of early 1960s eateries and services. Although many of the businesses have since closed, the original buildings and signs still exist today. The history and character of the Hilton/Rivermont area is diverse. There are opportunities to maintain the existing character in each of the three sections, or develop and sustain one style for the entire opportunity area. Attracting investors to reinvest in commercial properties and redevelop obsolete buildings remains a challenge.

DENBIGH

From 1885 until the 1960s the area remained largely undeveloped rural land dominated by farms, churches, and a few service stations. During the 1960s the area saw the development of large single-family subdivisions and commercial strips along the once rural crossroads of U.S. Route 60 and Denbigh Boulevard. The growth of the area was compounded by the growth of military facilities and missions nearby and the mass migration of citizens out of downtown Newport News.

By the 1990s, the Denbigh area began to show signs of disinvestment. This was a result of newer commercial properties being developed along the Jefferson Avenue corridor. Some of the residential areas also began to show signs of decline and lose value because of the lack of quality investment along the Warwick Boulevard corridor. Today the area suffers from subprime retailers, a concentration of low-income apartments, and pockets of single-family homes that are poorly maintained and aging. The area lacks a central focal point which could help attract quality investment. The EDA/IDA has acquired numerous properties along the corridor throughout Denbigh as recommended in the ***Upper Warwick Boulevard Corridor Study***.

Recently, private investment has started a transformation of one of the corridor's major shopping centers. Updating the study and taking a broader look at revitalization and redevelopment opportunities in the commercial areas along and adjacent to Warwick Boulevard will provide direction for future public and private investment.

1884 Warwick County Courthouse

5.4 ONE CITY, ONE FUTURE PRIORITIES & STRATEGIES

Through data collection and analysis, as well as public engagement, overarching concerns and recommendations for the long-term sustainability of Newport News were identified. After initial identification and subsequent revisions, the CPCAC and Planning staff developed priorities based on the identified challenges and opportunities. Priorities were then grouped by theme for the priority-strategy matrices in this section.

Ribbon cutting ceremony (bottom) for the newly-constructed boardwalk at King-Lincoln Park (top). The boardwalk is one of three early action activities for the Marshall-Ridley Choice Neighborhood.

A PROSPEROUS AND RESILIENT CITY

PRIORITY	STRATEGY
a) Provide housing choices and employment options to meet projected needs.	Target relevant Planning Opportunity Areas for higher density development and redevelopment. ■ Prepare specific plans for targeted areas. ■ Market the *Downtown Vision Plan* to attract investment.
b) Provide permanent affordable housing solutions and support services.	Conduct a Housing Market Study to establish a factual framework from which to develop new housing policy.
c) Determine if city schools need to be expanded, restructured, or relocated to meet projected population needs.	Support NNPS in its evaluation of projected enrollment and focused development efforts in Planning Opportunity Areas.
d) Collaborate with educational institutions, business leaders, and employers to retain and expand existing and attract new businesses.	Continue to recruit new partners and expand summer work programs for 16 to 21 year-olds. ■ Conduct a feasibility study to analyze information and communication technology solutions to manage the city's assets and develop an implementation plan for the investments that will allow us to more efficiently and sustainably deliver services and attract new businesses and entrepreneurs. ■ Study the feasibility of establishing entertainment and/or innovation districts to enhance the city's fiscal resilience, provide more live/work/play options, and revitalize underperforming commercial areas. ■ Identify viable strategies to attract non-traditional businesses, new economy jobs, and telecommuters to Newport News, expand the broadband network and wireless connectivity, and bridge the digital divide.
e) As sea level rise modeling and analyses are completed for Hampton Roads, the city of Newport News will identify opportunities to improve long-term resilience.	Perform studies and analyses to identify best practices, priority areas for protection, and long-term investment.

Table 5: One City, One Future Priorities & Strategies

A SUSTAINABLE CITY

PRIORITY	STRATEGY
a) Seize opportunities for sustainable redevelopment and infill development to meet future demand.	Monitor changes to ownership and conditions on strategically important sites and corridors to explore partnerships with public, private, and nonprofit stakeholders. ■ Identify greyfield sites suitable for redevelopment and define strategies for sustainable revitalization of these targeted areas.
b) Emphasize sustainability and encourage community action in support of all future planning efforts.	Enforce maximum vegetative buffers and tree preservation for all projects through the site plan review process. ■ Implement the recommendations of the city's *Sustainability Roadmap*.
c) Develop a natural resources management plan.	Work in cooperation with various city departments to develop a comprehensive natural resources management plan that identifies, protects, supports, and provides access to the city's diverse natural assets.
d) Require future development and redevelopment along the shoreline to assess the potential for coastal erosion, and if required, determine which stabilization method (shoreline armoring) will be implemented.	Enforce best practices in site design to reduce runoff and erosion, prevent flooding, and improve the quality of waterways.
e) As sea level rise modeling and analyses are completed for Hampton Roads, the city of Newport News will identify opportunities to improve long-term resilience.	Prepare greenway corridor plans to preserve, protect, and enhance corridors and water quality. ■ Explore opportunities to provide additional waterfront access and recreation opportunities. ■ Enforce the Chesapeake Bay Preservation Ordinance and update as needed to ensure compliance and improve the health of the bay and its tributaries.
f) Prepare, implement, and monitor plans to meet revised water quality mandates.	Explore alternative funding sources to fund water quality plans. ■ Prepare updated water quality plans that define the policies, promote the objectives, and preserve the quality of waterways within Newport News.
g) Prepare an energy study and subsequent policy.	Commit funds to perform an energy study and draft a policy for implementation.
h) Prepare a working waterfront policy.	Commit funds to assess working waterfronts and draft a policy for implementation.

Table 5: One City, One Future Priorities & Strategies (continued)

AN ACCESSIBLE CITY

PRIORITY	STRATEGY
a) Identify alternate sources of funding and reprioritize investments for transportation projects.	Prepare a multimodal transportation plan to capture the latest information on travel and growth trends within the city, infrastructure conditions, projected deficiencies, strategies and prioritized actions, estimated costs, and available funding sources, including recommendations from the *Fort Eustis Joint Land Use Study*.
b) Invest in a balanced, multimodal transportation system.	Participate in the *Peninsula Corridor Study* to define preferred alignments and transit technology for high capacity transit on the Peninsula. ■ Work with other Peninsula localities and Amtrak to improve and increase service to Newport News. ■ Close sidewalk gaps and improve sidewalks where needed in conformance with city design standards to ensure a safe and inviting pedestrian environment. ■ Construct walkable and bikeable facilities separate from vehicle lanes where possible.
c) Reduce physical barriers in public spaces, housing, and transit systems to ensure users of all abilities can participate in the city's social and economic networks.	Work with local residents to identify barriers in activity areas and transit systems for users of mobility devices, caregivers with strollers, and children.
d) Increase land use densities in key locations to concentrate people near jobs, services, and transit to reduce traffic volumes.	Find more ways to efficiently move people and goods within Newport News and connect to the region to support economic prosperity while enhancing local quality of life and protecting the environment. ■ Encourage well-planned developments that are pedestrian-friendly and support future transit links. ■ Identify TOD opportunities. ■ Establish a TOD policy to provide a framework for planning and implementing transit-ready development in Planning Opportunity Areas.
e) Implement a housing strategy that strengthens existing commitments to income-assisted and accessible housing, preserves the overall existing stock, and provides greater choice at all income levels and more diverse neighborhoods.	Encourage developers, through density bonuses and other incentives, to include affordable units in large residential developments.
f) Provide easy access to services and support systems, and conceive a solution for the homeless situation.	Work with the Greater Virginia Peninsula Homeless Consortium and other service providers to address root causes of short and long-term homelessness.

Table 5: One City, One Future Priorities & Strategies (continued)

A HEALTHY AND SAFE CITY

PRIORITY	STRATEGY
a) Identify opportunities to expand parks and recreation facilities and programs to promote healthy lifestyles, personal enjoyment, social and family interaction, and conservation of natural and cultural assets.	Conduct a parks and recreation needs assessment to establish priorities for future development of parks, recreation and cultural facilities, programs and services. ■ Explore non-traditional strategies for acquiring additional green space and recreational opportunities. ■ Expand program offerings, when appropriate and cost effective, through contractual relationships with private providers and vendors. ■ Provide new lighting on unlit fields and establish new fields to help address facility limitations during "off-season" use. ■ Evaluate opportunities for development or improvement of sports facilities to attract and encourage out-of-town visitation and tourism benefits.
b) Program community facilities for renovation or replacement. When feasible, these facilities should be collocated to reduce cost and improve customer service and accessibility.	Conduct a study to determine community facility needs throughout the city and identify opportunities for collocation. ■ Conduct a study to determine if it is economically feasible to construct a new jail or rehabilitate the existing facility.
c) Identify and pursue venues and programs that provide public access to, and enjoyment of, local waterways and water bodies, with emphasis on the Warwick River, James River, and Hampton Roads Harbor.	Explore, and pursue as appropriate, public-private contracts and relationships to expand waterfront recreation opportunities. ■ Evaluate future park use of the former City Farm property to accommodate public waterfront access.
d) Evaluate whether the EOC is in the right location and properly designed to serve as an effective facility for coordinating emergency response efforts.	Conduct a study to determine if the existing EOC has the capabilities to provide flexibility, sustainability, security, survivability, and interoperability during emergency response efforts. ■ Seek an alternate location to site a new facility if warranted.

Table 5: One City, One Future Priorities & Strategies (continued)

A CITY THAT RESPECTS ITS UNIQUENESS

PRIORITY	STRATEGY
a) Attract new visitors and business to the city.	Establish a strategy to better market Newport News as a destination. ■ Develop an interactive GIS map that highlights historic sites around the city and provides information on scheduled activities and events. ■ Develop a mobile application that encourages visitors to engage with the city's unique historic fabric.
b) Perform a comprehensive historic resources investigation.	Compile a comprehensive inventory of cultural, historic, and archaeological resources for improved management and preservation. ■ Prioritize resources for preservation.
c) Rehabilitate, reuse and restore historic resources.	Explore incentives to preserve cultural and historic assets and encourage developers to incorporate them in new development and redevelopment projects. ■ Identify grants to restore, maintain, and promote historic resources. ■ Identify key resources that qualify for State and/or National Register designation.
d) Seek to create new historic districts and an overarching Architectural Review Board.	Based on comprehensive historic resources investigation, determine if new historic districts are needed and develop guidelines for preservation and rehabilitation.
e) Restore economic viability and architectural integrity of Hilton Village neighborhood center.	Prepare an area plan to identify strategies and priority actions to revitalize this important "main street."
f) Preserve the traditional neighborhood character of the Southeast Community.	Reevaluate the Neighborhood Conservation District to ensure the boundaries are appropriate. ■ Develop associated guidelines to ensure that infill development and neighborhood revitalization is compatible with the established neighborhood character.

Table 5: One City, One Future Priorities & Strategies (continued)

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

PRIORITY	STRATEGY
a) Provide housing choices and employment options to meet projected needs.	Prioritize list of activity centers, budget for planning activities, and schedule preparation of specific plans. ■ Establish planning process for specific plans.
b) Revitalize the Southeast Community to create a quality, stable and inviting neighborhood.	Develop the *Marshall-Ridley Choice Neighborhood Transformation Plan.* ■ Identify and fund early action items within the next 2 to 5 years to establish momentum for and commitment to change. ■ Implement the Transformation Plan.
c) Revitalize the Lee Hall Area and identify opportunities for private investment.	Update the *Lee Hall Area Plan*.
d) Promote and support community renewal and maintenance, and economic development and redevelopment citywide.	Develop a comprehensive plan to revitalize and redefine the city's gateways and major corridors as a needed first step to support our businesses, draw new investments, and aesthetically improve our city. ■ Provide incentives to homeowners in neighborhood conservation districts to maintain and restore their homes. ■ Explore best practices in community renewal and maintenance to identify strategies to stabilize residential neighborhoods and incentivize homeowners to rehabilitate and maintain their properties. ■ Coordinate with VDOT to identify opportunities to enhance gateways along the I-64 and I-664 corridors and provide a coordinated and positive gateway image.
e) Establish distinguishable neighborhood boundaries and neighborhood associations to promote neighborhood pride and encourage residents to take ownership of their living environment.	Explore use of the Asset-Based Community Development initiative as a mechanism for residents to establish their neighborhood boundaries.
f) Explore the impact of new office and commercial space on older commercial areas of Newport News.	Conduct a market analysis to determine if additional redevelopment opportunities exist throughout the city.
g) Evaluate the potential for revitalization and redevelopment of the Bland Regional Center to encourage higher density, mixed-use development to support alternate modes of transportation.	Prepare an area plan for the Bland Regional Center.
h) Champion effective urban design.	Prepare urban design guidelines and revise regulations to improve livability through access, comfort, social interaction and safety. ■ Reinvest in older residential neighborhoods and commercial centers, enhance major corridors, and invest in gateways.
i) Identify opportunities to enhance and reshape existing places to ensure that our physical environment is both livable and resilient.	Establish design principles and policies to make neighborhoods more walkable, livable and inviting. ■ Identify opportunities to revitalize public spaces that promote social interaction and a sense of community.
j) Support sustainable growth and push transit-oriented development at our regional and employment centers.	Establish a toolbox that encourages transit-ready development and provides guidelines for land banking, special assessments, tax incentives, and joint development options to support current and future transit investments. ■ Study the feasibility of implementing interim TOD zoning.

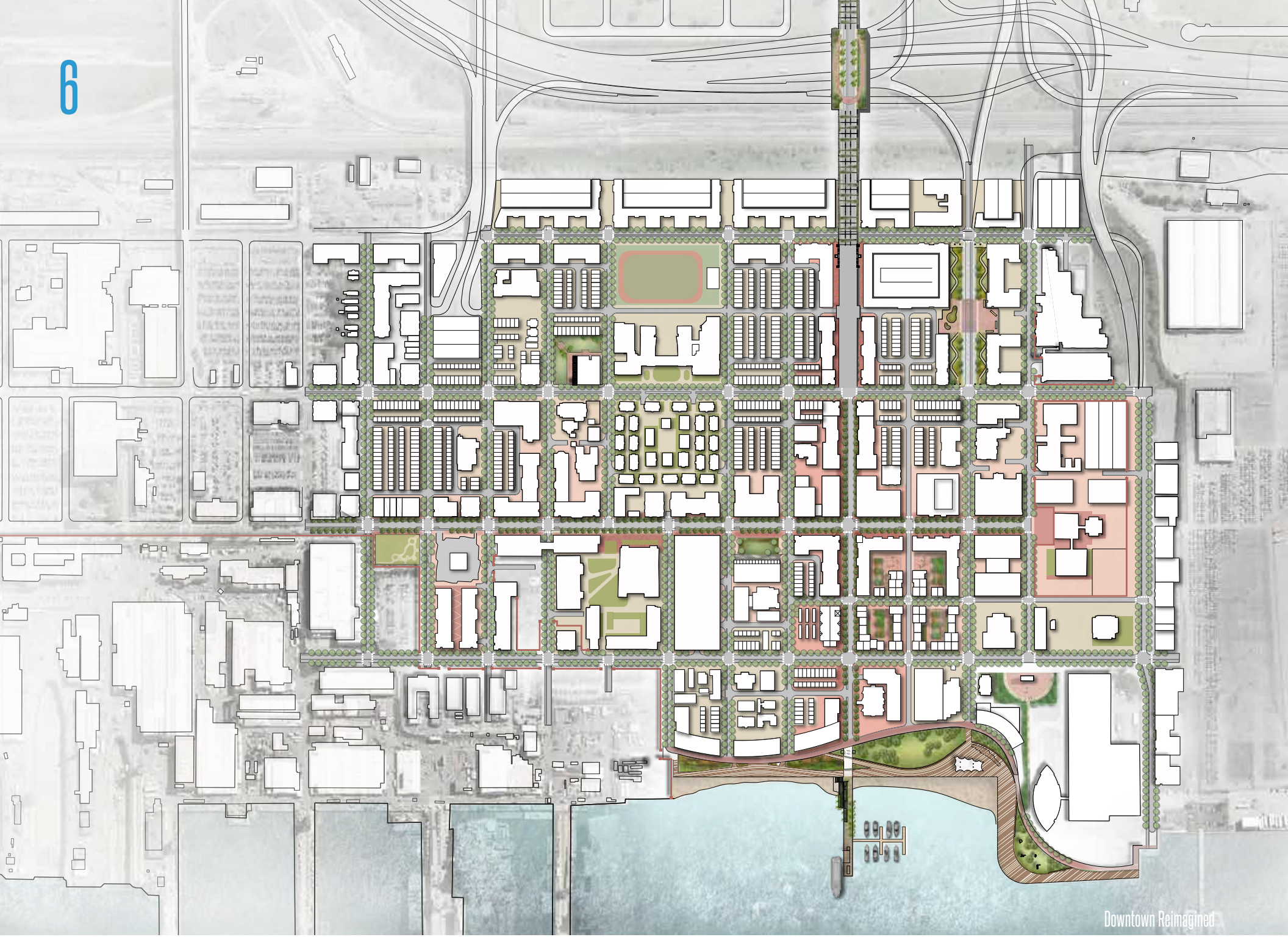
Table 5: One City, One Future Priorities & Strategies (continued)


NEWPORT NEWS

TOOLS TO IMPLEMENT THE COMPREHENSIVE PLAN

One City, One Future Comprehensive Plan guides decision-making related to investment in and development of our natural and built environments. The primary tools used by the city to implement the comprehensive plan are development regulations (e.g., the zoning and subdivision ordinances) and the Capital Improvement Plan (CIP).

6



Downtown Reimagined

6.1 TOOLS TO IMPLEMENT THE COMPREHENSIVE PLAN

ZONING ORDINANCE

The zoning ordinance promotes the health, safety, and general welfare of the public by establishing the regulations for development and use of land throughout the city. The zoning ordinance consists of a map and text, which together show how Newport News is divided into different use districts and explains the rules and standards that apply to each district. In general, zoning designations align with the land use designations on the Future Land Use and Transportation maps. A comprehensive rezoning of land within the city occurred in 1997 to align zoning designations with the adopted comprehensive plan. This action was necessary to address a number of inconsistencies and challenges with the previous zoning ordinance, which was adopted in 1969. The comprehensive rezoning incorporated recommendations from the comprehensive plan, including the elimination of pyramid zoning (allowing multiple uses in specific zones) and creation of new zones (e.g., C4 Oyster Point Business District).

As a transit-oriented development policy is adopted and area and neighborhood plans are completed for the Planning Opportunity Areas, the zoning ordinance will need to be updated to align with these comprehensive planning outputs.

SUBDIVISION REGULATIONS

Subdivision regulations assure the orderly subdivision of land and its development. The city's subdivision ordinance establishes the general regulations for subdividing land in Newport News, including lot shape and size. Further, the regulations establish the standards that guarantee adequate streets, utilities, drainage, and access to land intended for sale and development. No amendments are proposed to the subdivision ordinance. As more detailed plans are developed for the Planning Opportunity Areas, Planning staff will review the ordinance to determine if an update is required.

SITE REGULATIONS

The city's site regulations promotes the orderly development of certain activities within Newport News to ensure that such activities are consistent with the comprehensive plan, compatible with surrounding uses, and adhere to local, state, and federal environmental regulations. All site plans are reviewed by a committee comprised of staff from various city departments including Engineering, Codes Compliance, Planning, Police,

A river view (Photo by Nathan Sturre)

and Fire. Site plan review considers the application of development standards to a specific site and assesses compatibility of a project with its environment and other land uses in the surrounding area, proposed landscaping improvements, impacts on the transportation network, and potential impacts on stormwater drainage.

No amendments are proposed to the site regulations. As more detailed plans are developed for the Planning Opportunity Areas, Planning staff will review the ordinance to determine if an update is required.

SIGN ORDINANCE

The purpose of the sign ordinance is to encourage the effective use of signs for communication while maintaining and enhancing the physical appearance of the city. Sign regulations govern the use, placement, number and physical dimensions of signs, as well as promote proper maintenance and renovation of signs. No amendments are proposed to the sign ordinance. As more detailed plans are developed for the Planning Opportunity Areas, Planning staff will review the ordinance to determine if an update is required.

CAPITAL IMPROVEMENT PLAN

The CIP reflects the vision and priorities of the City Council and establishes the city's capital expenditures over a multi-year period. One of the numerous inputs to the capital planning process is the comprehensive plan. Capital improvement projects derived from the comprehensive plan may include acquisition of land for public purpose such as park facilities; renovations and alterations to public buildings; acquisition of major equipment; new construction of or major improvements to city infrastructure (e.g., installation of new sidewalks or construction of new roads); and planning studies, engineering, and design services for future capital improvements. The CIP provides for orderly and systematic planning and investment of projects on a priority basis.

Prior to the end of each fiscal year, city departments submit their projects for the CIP. Projects are selected based on needs established in the comprehensive plan, department strategic plans, and City Council priorities. Every September the CIP Evaluation Team is assembled to evaluate and prioritize requests. The team submits the draft CIP to the City Manager, who then reviews and adjusts the plan to best reflect the city's Strategic Initiatives and citywide capital priorities. City Council reviews the City Manager's Recommended CIP at the end of the calendar year and may make adjustments. Final approval is anticipated

by the end of January the following year. Citizens can review the approved CIP on the city's website.

6.2 AREA PLANS, PLAN AMENDMENTS AND UPDATES

AREA PLANS

The comprehensive plan provides the broad framework which guides land use, development, and redevelopment in Newport News. There are some areas of the city, however, that require additional analysis and more detailed direction regarding urban form and design, economic development, public services, community facilities, health and safety, transportation, and/or education and workforce development. Area plans will be developed with input from residents, business owners, property owners, civic groups, and other identified stakeholders in the targeted areas.

A general planning process for area plans will be developed prior to any action to initiate any such plan. At a minimum, area plans will include:

- an inventory and assessment of existing conditions,
- evaluation of market and socioeconomic conditions contributing to the current conditions,
- assessment of existing and future land use designations,
- vision and goals for the area,
- recommendations for action, and
- an implementation plan.

AMENDMENTS

Plan amendments are initiated when applicants submit zoning requests which, if approved, would not align with the land use designation in the adopted comprehensive plan. The city can initiate comprehensive plan amendments in support of individually proposed zoning changes in instances where existing conditions or emerging policy or trends warrant them. This is the case with unique economic development opportunities or other investments that will increase our ability to achieve the goals established in the comprehensive plan. Amendments to the Future Land Use and Transportation maps and/or the plan text are considered on an ongoing basis.

Because plan amendments have been infrequent over the past decade and the comprehensive plan is reviewed and may be updated every 5 years, it may be more practicable and desirable to conduct amendments on a regular schedule. By conducting an annual assessment of all proposed amendments, Planning Commission and City Council would be presented with a broad examination of proposed changes and how they may affect the overall vision, goals, and strategies in the comprehensive plan. Constant amendment of the plan can undermine and limit its effectiveness at guiding land use. Annual review and of proposed amendments would not preclude change of zoning applications from moving forward, nor would it preclude City Council from approving zoning requests that do not align with the comprehensive plan.

UPDATES

As noted above and discussed in Chapter 1, Introduction, the Code of Virginia requires all localities to review their comprehensive plan every 5 years to determine if changes are needed. Regular reviews provide the opportunity to revise data and trends to reflect existing conditions, include updated survey results, identify completed actions, and revise policies and statements when justified. Comprehensive plan updates may be minor or may involve substantial rewrite.

Approximately 18 months prior to the 5-year mark, the Department of Planning prepares a report for Planning Commission and City Council, recommending if a comprehensive plan update is required and what level of effort the action will require. Regardless of level of effort, updates include citizen engagement.

6.3 MONITORING AND TRACKING SUCCESS

The city will monitor plan implementation to evaluate the effectiveness of recommended actions and implementation tools. At the end of each fiscal year, the Department of Planning will submit a report to the Planning Commission and City Council assessing actions taken, summarizing recommendations for amendments, and identifying emerging trends or changing economic conditions that may affect the goals and strategies in the comprehensive plan and warrant an update. The annual report will allow all of our stakeholders—decision makers, city staff, partner organizations, and the public—to follow implementation progress and celebrate successes. A monitoring program will also identify any critical challenges or issues encountered during implementation that may result in future amendments or updates to the plan. Monitoring will ensure that our plan remains useful and relevant.

6.4 ACTION PLAN

The following tables list actions by theme that will implement the comprehensive plan. These actions align with the priorities and strategies in Section 5.4, One City, One Future Priorities & Strategies. City staff will take the lead in plan implementation; however, other partners will be needed to fully realize the vision for Newport News in 2040. Recognizing that implementation will take time, especially with limited resources and competing priorities, actions have been categorized as annual, continuous, short-range (SR), mid-range (MR), and long-range (LR). The intent is that the short-ange actions will become the focus for implementation between plan adoption and the subsequent 5-year update.

A PROSPEROUS AND RESILIENT CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
PRC-1	Develop a planning process and prioritize specific plans to be prepared for Planning Opportunity Areas.	CMO Planning Development	SR	Planning	N
PRC-2	Schedule and budget plans.	Planning	SR	Operating Budget	N
PRC-3	Identify early public action items to entice private investments in accordance with the *Downtown Vision Plan.*	CMO Development	SR	Planning, Programming, Coordination, Incentives	N
PRC-4	Implement early action items to entice private investments in accordance with the *Downtown Vision Plan.*	CMO Development Engineering Parks, Recreation & Tourism	MR	Implementation	Y
PRC-5	Engage subject-matter experts in preparation of a citywide housing market study to guide development of a housing policy and inform specific plans for Planning Opportunity Areas.	Planning	SR	Operating Budget	N

Table 6: One City, One Future Implementation Action Plan

A PROSPEROUS AND RESILIENT CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
PRC-6	Establish regulations and guidelines to promote a variety of housing types, especially in activity centers.	Planning Development Engineering	MR	Planning	N
PRC-7	Maximize summer work program capacity.	CMO	Annual	Coordination, Operating Budget, Implementation	N
PRC-8	Engage subject matter experts in preparation of an information and communications technology feasibility study.	CMO Information Technology	SR	Coordination, Analysis, Planning, Operating Budget	N
PRC-9	Engage subject matter experts in identifying areas for protection and long-term investment to reduce the effects of sea level rise and recurrent flooding.	Engineering Public Works Planning	MR	Coordination, Analysis, Planning, Operating Budget	N

TIMEFRAME CATEGORIES

- *(SR) SHORT-RANGE (0-5 YEARS)*
- *(MR) MID-RANGE (6-10 YEARS)*
- *(LR) LONG-RANGE (10+ YEARS)*

CAPITAL FUNDS

- *YES (Y) OR NO (N)*

Table 6: One City, One Future Implementation Action Plan (continued)

A SUSTAINABLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
SC-1	Prioritize, program, fund, and implement *Sustainability Roadmap* recommendations.	Public Works	Annual	CIP, Operating Budget, Implementation, Monitoring	Y
SC-2	Engage subject-matter experts in preparation of a natural resources management plan to inventory the city's diverse natural assets.	Planning Engineering (Environmental Services)	SR	Coordination, Operating Budget	N
SC-3	Prioritize and program preparation of greenway corridor plans.	Parks, Recreation & Tourism Planning	SR	Coordination, Planning, Operating Budget	N
SC-4	Engage subject-matter experts in preparation of greenway corridor plans.	Parks, Recreation & Tourism Planning	SR/MR	Analysis, Planning, Operating Budget	N
SC-5	Complete implementation of the *Stoney Run Corridor Plan.*	Parks, Recreation & Tourism Engineering	SR	CIP	Y
SC-6	Monitor enforcement of Chesapeake Bay Preservation Ordinance and update regulations and associated policies as state law requires.	Engineering	Annual	Monitoring	N

Table 6: One City, One Future Implementation Action Plan (continued)

A SUSTAINABLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
SC-7	Prioritize and program preparation of water quality plans to preserve quality waterways within the city.	Engineering	SR	Planning, Operating Budget	N
SC-8	Prepare and adopt water quality plans.	Engineering	SR	Analysis, Planning, Regulation/ Policy	N
SC-9	Program preparation of energy study and associated policy.	Planning Engineering Public Works	SR	Coordination, Operating Budget	N
SC-10	Engage subject-matter experts in preparation of an energy study and associated policy.	Planning Engineering Public Works	SR	Analysis, Planning	N
SC-11	Adopt energy policy.	City Council	SR	Regulation/ Policy	N
SC-12	Engage subject matter experts in preparation of a working waterfronts assessment and associated policy.	Planning Development Engineering	SR	Analysis, Planning	N

Table 6: One City, One Future Implementation Action Plan (continued)

AN ACCESSIBLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
AC-1	Engage subject-matter experts in preparation of a multimodal transportation plan for the city, which will include pedestrian and bicycle circulation improvements.	Planning Engineering	SR	Coordination, Operating Budget	N
AC-2	Champion the locally preferred alternative(s) for the *Peninsula Corridor Study* and participate in subsequent environmental impact analysis as a cooperating agency to advance transit solution funding and implementation.	CMO Engineering Planning	SR	Coordination, Planning	N
AC-3	Identify easement and acquisition priorities for locally preferred alternative(s) and develop strategy and financing options.	CMO Engineering	MR	Coordination, Planning, Operating Budget	N
AC-4	Acquire easements and sites (if needed) to support implementation of locally preferred alternative(s).	Engineering	LR	CIP	Y
AC-5	Continue to work with Hampton Roads Transportation Planning Organization and other localities to implement the *Long-Range Transportation Plan* to improve the regional transportation network.	Mayor CMO Engineering	Continuous	Coordination, Analysis, Planning, Monitoring, Implementation	Y
AC-6	Continue implementation of sidewalks citywide and improved pedestrian crossings at major intersections.	Engineering	Continuous	Implementation	Y

Table 6: One City, One Future Implementation Action Plan (continued)

AN ACCESSIBLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
AC-7	Update the Bus Shelter Program to capture existing conditions, changing standards, and prioritize remaining investments.	Planning Engineering	SR	Coordination, Planning	N
AC-8	Prepare a bus stop policy to establish evaluation and implementation criteria and construction standards.	Planning Engineering	SR	Coordination, Planning, Policy	N
AC-9	Construct Atkinson Boulevard extension between Warwick Boulevard and Jefferson Avenue.	Engineering	SR	Monitoring, Implementation	N
AC-10	Pursue state and federal approvals for interchange at Atkinson Boulevard and I-64.	Engineering	SR	Coordination	N
AC-11	Identify funding for design and construction of interchange at Atkinson Boulevard and I-64.	Engineering	MR	CIP	Y
AC-12	Construct interchange at Atkinson Boulevard and I-64.	Engineering	LR	Implementation	Y

Table 6: One City, One Future Implementation Action Plan (continued)

AN ACCESSIBLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
AC-13	Pursue state and federal approvals for additional offramp at Exit 255.	Engineering	SR	CIP, Operating Budget, Implementation, Monitoring	N
AC-14	Identify funding for design and construction of additional offramp and congestion mitigation improvements along the Jefferson Avenue corridor at Exit 255.	Engineering	MR	Coordination, Operating Budget	Y
AC-15	Construct additional offramp and congestion mitigation improvements along the Jefferson Avenue corridor at Exit 255.	Engineering	MR	Coordination, Planning, Operating Budget	Y
AC-16	Pursue state and federal approvals for interchange at Denbigh Boulevard and I-64.	Engineering	SR	Analysis, Planning, Operating Budget	N
AC-17	Identify funding for design and construction of interchange at Denbigh Boulevard and I-64.	Engineering	MR	CIP	Y
AC-18	Construct interchange at Denbigh Boulevard and I-64.	Engineering	LR	Monitoring	Y

Table 6: One City, One Future Implementation Action Plan (continued)

AN ACCESSIBLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
AC-19	Support implementation of the Peninsula Airport Commission's *Airport Master Plan.*	Planning Engineering	Continuous	Planning, Analysis, Implementation	N
AC-20	Support regional efforts to establish a dedicated funding source for transit.	CMO	SR	Coordination	N
AC-21	Identify and secure funding to implement high speed rail on the Peninsula.	Engineering	MR	Coordination	N
AC-22	Prepare a universal design policy to guide future investments in public spaces and facilities.	Planning Engineering Codes Compliance Public Works Parks, Recreation & Tourism	SR	Coordination, Planning	N
AC-23	Identify and prioritize public spaces and facilities for universal design investment.	Planning Engineering Parks, Recreation & Tourism	SR	Coordination, Planning, Programming	N
AC-24	Identify TOD opportunities and prepare a TOD policy.	Planning Engineering	SR	Coordination, Planning	N

Table 6: One City, One Future Implementation Action Plan (continued)

AN ACCESSIBLE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
AC-25	Explore options to incentivize developers to include affordable units in larger residential and mixed-use developments.	Planning Development NNRHA	SR	Coordination, Planning	N
AC-26	Explore options and implement preferred action to establish a day center to provide supportive services, transition services and other community resources for the homeless.	CMO Planning Department of Human Resources	SR	Coordination, Analysis, Planning	N
AC-27	Explore option to establish a housing resource center.	CMO Planning	MR	Coordination, Analysis, Planning	N
AC-28	Implement preferred action to establish housing resource center.	CMO Planning Engineering	LR	Implementation	Y

TIMEFRAME CATEGORIES

- *(SR) SHORT-RANGE (0-5 YEARS)*
- *(MR) MID-RANGE (6-10 YEARS)*
- *(LR) LONG-RANGE (10+ YEARS)*

CAPITAL FUNDS

- *YES (Y) OR NO (N)*

Table 6: One City, One Future Implementation Action Plan (continued)

A HEALTHY AND SAFE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
HSC-1	Prepare and conduct a parks and recreation needs assessment.	Parks, Recreation & Tourism Planning	SR	Coordination, Planning	N
HSC-2	Based on needs assessment, prepare a parks and recreation plan to establish priorities and actions to meet needs long term.	Parks, Recreation & Tourism Planning	SR	Coordination, Analysis, Planning	N
HSC-3	Identify and secure funding for parks and recreation plan implementation.	Parks, Recreation & Tourism	MR	CIP	Y
HSC-4	Engage subject-matter experts in studying alternatives and design expansion for Pearl Bailey Library and Grissom Library.	Library Engineering	SR	Coordination, Operating Budget, Planning	N

TIMEFRAME CATEGORIES

- *(SR) SHORT-RANGE (0-5 YEARS)*
- *(MR) MID-RANGE (6-10 YEARS)*
- *(LR) LONG-RANGE (10+ YEARS)*

CAPITAL FUNDS

- *YES (Y) OR NO (N)*

Table 6: One City, One Future Implementation Action Plan (continued)

A HEALTHY AND SAFE CITY

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
HSC-5	Prepare a study to analyze options to collocate community facilities to reduce operating costs and improve customer accessibility and service.	Planning Human Services Police, Fire Libraries, Development	SR	Coordination, Analysis, Planning	N
HSC-6	Engage subject-matter experts in studying options to construct a new jail or rehabilitate the existing facilities.	Sherriff's Office	SR	Operating Budget, Analysis, Planning	N
HSC-7	Engage subject-matter experts in assessing EOC capabilities and provide recommendations for action.	Public Works (EOC) Engineering	MR	Coordination, Operating Budget, Analysis, Planning	N
HSC-8	Identify sites for replacement fire stations and opportunity for fire operation consolidation.	Planning Fire Development	MR	Coordination, Analysis, Planning, Programming	Y

TIMEFRAME CATEGORIES

- *(SR) SHORT-RANGE (0-5 YEARS)*
- *(MR) MID-RANGE (6-10 YEARS)*
- *(LR) LONG-RANGE (10+ YEARS)*

CAPITAL FUNDS

- *YES (Y) OR NO (N)*

Table 6: One City, One Future Implementation Action Plan (continued)

A CITY THAT RESPECTS ITS UNIQUENESS

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
CRU-1	Develop a marketing strategy.	CMO Planning Development	SR	Coordination, Analysis, Planning	N
CRU-2	Implement prioritized actions to support the marketing strategy.	Planning	SR	Program, Implementation, Operating Budget	N
CRU-3	Investigate methods of conducting a comprehensive historic resources investigation and select the preferred approach.	CMO Development	SR	Coordination, Analysis	N
CRU-4	Program and budget for historic resources inventory.	CMO Development Engineering Parks, Recreation & Tourism	MR	Operating Budget	N
CRU-5	Conduct a historic resources investigation, prepare inventory, and identify resources that qualify for designation.	Planning	MR	Implementation	N

Table 6: One City, One Future Implementation Action Plan (continued)

A CITY THAT RESPECTS ITS UNIQUENESS

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
CRU-6	Explore options to incentivize developers to incorporate cultural and historic assets in new development and redevelopment projects.	CMO Planning Development	MR	Coordination, Analysis, Planning, Incentives	N
CRU-7	Explore funding options to restore, maintain, and promote historic resources.	Planning	MR	Analysis, Planning	N
CRU-8	Explore opportunities for new historic districts and associated guidelines.	Planning	MR	Regulation/ Policy	N
CRU-9	Outline Neighborhood Conservation District boundaries and develop associated guidelines for Southeast Community.	Planning	SR	Analysis, Planning	N
CRU-10	Adopt Southeast Community Conservation District Overlay and associated guidelines.	City Council Planning	SR	Regulation/ Policy	N

Table 6: One City, One Future Implementation Action Plan (continued)

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
GPNS-1	Prepare and adopt the *Marshall-Ridley Choice Neighborhood Transformation Plan.*	City Council CMO Planning Development NNRHA	SR	Coordination, Analysis, Planning, Regulation/Policy, Operating Budget	N
GPNS-2	Implement early action items identified through the Choice Neighborhoods planning process.	City Council CMO Planning Development NNRHA	SR	Implementation	N
GPNS-3	Identify development partner(s) for implementation of prioritized actions in the *Marshall-Ridley Choice Neighborhood Transformation Plan.*	CMO Planning Development NNRHA	SR	Coordination, Incentives	N
GPNS-4	Implement the *Marshall-Ridley Choice Neighborhood Transformation Plan.*	CMO Planning Development NNRHA Engineering	SR to LR	Implementation	Y
GPNS-5	Prepare a plan to redefine the city's gateways.	Planning Development Engineering	SR	Coordination, Analysis, Planning	N
GPNS-6	Implement the gateway plan.	Engineering Public Works	SR	Implementation	Y

Table 6: One City, One Future Implementation Action Plan (continued)

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

ITEM	ACTION	RESPONSIBLE AGENCIES	TIMEFRAME	ACTION TYPE	CAPITAL FUNDS Y/N
GPNS-7	Explore options to incentivize homeowners in historic and conservation districts to maintain and restore homes.	CMO Planning Development	MR	Incentives, Regulation/Policy	N
GPNS-8	Develop a tool box of strategies for community revitalization and stabilization.	Planning Development Engineering Codes Compliance	SR	Coordination, Analysis, Planning, Regulation/Policy	N
GPNS-9	Prioritize and coordinate neighborhoods for Asset-Based Community Development (ABCD) Initiative.	CMO Planning Development Human Services Police	SR	Coordination, Analysis, Planning	N
GPNS-10	Implement ABCD citywide.	CMO Planning Development Human Services Police	Continuous	Implementation, Monitoring	N
GPNS-11	Explore options to incentivize developers to build projects that are more walkable, livable, inviting, and transit-ready when appropriate.	CMO Planning Development Engineering	SR	Coordination, Analysis, Planning, Incentives, Regulations/Policy	N

Table 6: One City, One Future Implementation Action Plan (continued)


PNC

ACRONYMS AND GLOSSARY

Adaptive reuse – Rehabilitation or renovation of existing buildings or structures for any use other than the present use. Amenities may include recreational facilities, scenic views, or landscaping (Planning, 2008).

Amenity – Features of a development that increases marketability to the public or desirability to the community (Planning, 2008).

AMTRAK – The name of the company providing passenger train service in the United States (Planning, 2008).

Architectural resources – A structure or collection of buildings unique to a specific period, in style and design, or patterns of development that are significant to the city's history (Planning, 2008).

Architectural Review Board – A board composed of citizens residing within a historic district whose duties are to prepare guidelines and review proposed exterior building changes and all new construction in the district (Planning, 2008).

Balanced transportation – Equal emphasis on all modes of transportation within the city's transportation system (HRTPO, 2016).

Best Management Practices (BMP) – A combination of conservation measures, structures, or management practices that reduces or avoids adverse impacts of development on adjoining site's land, waterways, and waterbodies (Planning, 2008).

Bicycle lane – A designated area within a street roadway reserved for bicycle travel and separated from the rest of the roadway by painted lines or other pavement markings (Planning, 2013).

Bicycle trail – A right-of-way reserved exclusively for bicycle travel and separated from public or private travelways (Planning, 2008).

Bicycle route – A facility shared with motorists within a street roadway identified only by bikeway signs without any special pavement markings (Planning, 2008).

Bikeway – A bicycle pathway: a bike lane, bike trail, or bike route (Planning, 2008).

Blighted area – An area characterized by deteriorated or abandoned buildings (Planning, 2008).

Brownfield – Vacant or underused industrial and commercial properties where expansion or redevelopment is complicated by the potential presence of environmental contamination (American Planning Association, 2004).

Buffer – Any area of land used to physically and visually separate one use or property from another in order to lessen or moderate the impacts of noise, light, or other nuisances. Examples include open spaces, landscaping, berms, walls, fences, building setback, or any combination (Planning, 2008).

A

Bus Rapid Transit (BRT)– A bus-based public transit system that is designed to deliver reliable, fast, and cost-effective services. Dedicated lanes and traffic signal prioritization are typically included in BRT systems (U.S. DOT, 2018a).

Capital Improvements Plan (CIP) – A multi-year plan for acquiring, constructing, and financing public buildings (e.g., schools, parks, fire stations, libraries, etc.); expensive equipment such as fire engines; and public works such as sanitary sewers, water lines, storm sewers, and streets with improvements usually scheduled six years into the future. The city's capital budget is the first year of the CIP (Planning, 2008).

Character – The combination of qualities and features that distinguish one neighborhood or area of the city from another and which distinguishes Newport News from other cities (Planning, 2008).

Chesapeake Bay Preservation Act (CBPA) – A locally adopted Virginia law designed to protect the waters of the Chesapeake Bay, including its branches and tributaries (VDEQ, 2018b).

City Council – The legislative and governing body of Newport News (Planning, 2008).

Clean Air Act – Federal legislation enacted to provide comprehensive air pollution abatement and control which sets national standards for air quality (Planning, 2008).

Clean Water Act – Federal legislation enacted to provide comprehensive water pollution abatement and control and clean the nation's rivers so that the nation's water will be suitable for drinking, swimming, and fishing (Planning, 2008).

Community Services Board (CSB) – An extension of local government responsible for coordinating mental health, mental retardation and substance abuse services for residents within the communities it serves (Planning, 2008).

Comprehensive Plan – A document required by State law which guides the long-range development of the city. It is recommended by the City Planning Commission and adopted by City Council (Planning, 2008).

Comprehensive Plan Citizen Advisory Committee (CPCAC) – A committee appointed by the City Planning Commission that assists with the development of the comprehensive plan.

Congestion Mitigation Air Quality (CMAQ) – A program authorized under the federal transportation program which funds transportation improvements to improve air quality in regions that do not meet air quality standards (Planning, 2008).

CSX – The company that owns the major rail line and provides rail freight service between Newport News and Richmond. The company was created by the Chesapeake and Ohio Railroad (Planning, 2008).

Cultural resources – Buildings, structures, districts, and sites including their landscape settings, objects, or documents that are representative or that exemplify the cultural, architectural, economic, social, political, or historic heritage of the city or its neighborhoods (Planning, 2008).

Density – The number of dwelling units per acre (American Planning Association, 2004).

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Department of Codes Compliance – City department designated to enforce the zoning and building code regulations (Planning, 2013).

Department of Environmental Quality (DEQ) – A governmental agency for Virginia responsible for the administration of state and federal laws and regulations for air quality, water quality, water supply, and land protection (Planning, 2008).

Detention pond – A natural or man-made structure used for the temporary storage of water runoff and which provides for the controlled release of such waters (Planning, 2008).

Easement – The right to use property owned by another for specific purposes or to gain access to another property (Planning, 2008).

Economic development – An activity, conducted primarily by local government and/or organized business groups, that provides a service, produces a good, retails a commodity, or emerges in any other use or activity for the purpose of making financial gain (American Planning Association, 2004).

Economic Development Authority/Industrial Development Authority (EDA/IDA) – A political subdivision that serves to promote development by issuing bonds for economic activities (Planning, 2008).

Enterprise Zone – A geographical area where job creation and private investment is encouraged through special taxes or regulatory exemptions granted by a government authority (DHCD, 2018).

Endangered species – A species of animal or plant existing in such small numbers that it is in danger of extinction (Planning, 2008).

Environmental Protection Agency (EPA) – The federal agency whose mission is to protect human and environmental health (Planning, 2008).

Erosion and Sediment Control – The regulations created and administered by the Virginia Soil and Water Conservation Board to implement the Erosion and Sedimentation Control Law, Code of Virginia, Section 10.1-560 (Planning, 2008).

Federal Emergency Management Agency – The federal agency of the United States Department of Homeland Security that coordinates the response to disasters that occur in the United States (FEMA, 2013).

Floodplain – A relatively flat or low lying area adjoining a river, stream, or watercourse which is subject to periodic partial or complete inundation (Planning, 2008).

Gateway – A point along a roadway at which a motorist or pedestrian gains a sense of having entered a particular place (American Planning Association, 2004).

Greyfield – An underused, outdated, failing, or economically obsolescent real estate asset (Sobel, Greenberg, & Bodzin, 2013).

Greenway – An open space corridor along a creek, railroad, or other natural or cultural feature. Greenways may be used to connect parks, neighborhoods, activity centers, and other facilities with trails (Planning, 2008).

A

Habitat – The native environment for plants and animals (Planning, 2008).

Hampton Roads Planning District Commission (HRPDC) – A political subdivision of the Commonwealth of Virginia whose purpose is to facilitate local and state government cooperation to address regionally significant issues. It represents sixteen local governments in the Hampton Roads area (HRPDC, 2018b).

Hampton Roads Sanitation District (HRSD) – A political subdivision of the Commonwealth of Virginia created to protect and enhance public health and Hampton Roads waters through quality wastewater treatment (Planning, 2008).

Hampton Roads Transit (HRT) – The regional transit authority responsible for public transportation in six Hampton Roads cities: Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach (Planning, 2008).

Identity – The total effect of the characteristics by which a neighborhood, activity center, area, or city overall is recognized and definitively known (Planning, 2008).

Image – The concept of a neighborhood, area of the city, or the city overall that is held by the public (Planning, 2008).

Infill – The development of vacant or partially-developed parcels that are in areas that are substantially or fully built (Planning, 2008).

Inflow and Infiltration Elimination Program – A city program to define the areas within the waste water collection system that are in poor condition and allow groundwater to infiltrate (Planning, 2008).

Infrastructure – Public facilities and governmental services which support the population of the city (Planning, 2008).

Joint Land Use Study (JLUS) – A cooperative planning effort that addresses compatibility around military installations. It is conducted as a joint venture between an active military installation, surrounding jurisdiction, state and federal agencies, and other affected stakeholders (HRPDC, 2018c)

Level of Service (LOS) – The method used by traffic engineers and transportation planners to measure the amount of traffic congestion on a street during the morning (am) or evening (pm) peak hours (Planning, 2008).

Light rail – A form of public transit on rail tracks which is similar to the streetcar or trolley which is less expensive to build than a subway (Planning, 2008).

Metropolitan Statistical Area (MSA)– A geographical area with a substantial population at its core and adjacent communities have close social and economic ties with that core (Planning, 2008).

Newport News Green Foundation – A non-profit tax exempt organization established by resolution of the City Council in June 1998. Its purpose is to acquire title to real parcels which have limited development potential along the city's arterial corridors (Planning, 2008).

Newport News Public Schools (NNPS) – Newport News Public Schools division is comprised of 38 schools (Planning, 2008).

Newport News Redevelopment and Housing Authority (NNRHA) – A political subdivision of the Commonwealth of Virginia. The general power of NNRHA is to acquire, lease, operate and maintain public housing projects (Planning, 2008).

Open space network – Interconnected areas of open space throughout the city (Planning, 2008).

Part I Crime – A serious offense such as murder, rape, robbery, aggravated assault, burglary, larceny, auto theft or arson (Planning, 2008).

Peninsula Airport Commission – The agency created by the Commonwealth of Virginia to own and operate the Newport News-Williamsburg International Airport (Planning, 2008).

Peninsula Fine Arts Center – Private, not-for-profit museum for visual arts, located in Mariners Museum Park (Planning, 2008).

Performing arts – The presentation of dramatic or musical work or other entertainment before an audience (Planning, 2008).

Planning Commission – The public body in Newport News that is authorized by the Code of Virginia and appointed by the City Council to prepare and recommend to the City Council the city's comprehensive plan, zoning, subdivision, site regulations and sign ordinances. The Planning Commission consists of nine members who are residents of the city and who are considered to be qualified by knowledge and experience to make decisions regarding growth and development (Planning, 2008).

Public realm – Public spaces such as streets, sidewalks, parks and open space (Planning, 2008).

Public/private partnership (P3) – A type of real estate development in which financial investment, risk and benefits are undertaken jointly by a government and a business(es), generally in order to attract private investment by shifting some of the risk onto government (Sadran, 2017).

Pyramid zoning – A term describing a zoning ordinance which allows more than one type of use in the same district, such as single family, multiple family and commercial uses in the commercial district, thereby making development difficult to control (Planning, 2008).

Redevelopment – The partial or complete rebuilding of a previously developed area with the intent of improving the condition of the area and/or changing the type and/or intensity of uses (Planning, 2008).

Right-of-way – An area dedicated for public use for pedestrian and vehicular movement, which may also accommodate public utilities (Planning, 2008).

A

Runoff – That portion of precipitation that falls onto the surfaces of roofs, streets, ground, etc., and is not absorbed or retained by that surface, but collects and runs off the land and carries non-point pollution (Planning, 2008).

Service Center for Operations and Transportation (SCOT) – The physical plant for school buses, food, textbook storage and other school related functions (Planning, 2008).

Species – Biological classification consisting of plants or animals which have a high degree of similarity and persistent differences from other species (Planning, 2008).

Stormwater – The flow of water which results from precipitation and occurs immediately following rainfall or snowmelt (Planning, 2008).

Streetscape – An area that may either abut or be contained within a public right-of-way or private street that may contain sidewalks, street furniture, landscaping or trees, and similar features (Planning, 2008).

Strip development – A pattern of commercial development located along one or both sides of a street that is generally one lot in depth and is characterized by closely spaced driveways with little to no landscaping and open space (Planning, 2008).

Town and Gown - The relation between colleges and the communities in which they reside (Planning, 2008).

Transit-Oriented Development (TOD) – A mixed-use residential and commercial area designed to maximize access to public transportation and often incorporates features to encourage transit ridership (Planning, 2008).

Virginia Department of Transportation (VDOT) – A state agency responsible for planning, constructing, and maintaining transportation improvements in Virginia (Planning, 2008).

Virginia Living Museum – Private, not-for-profit museum which commemorates the historic and present living environment of Virginia (Planning, 2008).

Virginia Marine Resources Commission (VMRC) – The Commonwealth of Virginia commission responsible for tidal and non-tidal wetlands and marine life (Planning, 2008).

Virginia Pollutant Discharge Elimination System Permit – A permit required by and obtained from the State Water Control Board to establish appropriate levels of toxic discharge from point and non-point sources of water pollutants (Planning, 2008).

Watershed – The region drained by or contributing water to a stream, lake or other body of water (Planning, 2008).

Waterworks – The city's water department (Planning, 2008).

Zoning – The process of classifying land into areas or districts which specify allowable uses and size restrictions for buildings within these areas (American Planning Association, 2004).

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B

WHAT WE HEARD—PART I

A Report to the Citizen Advisory Committee

OVERVIEW

This report summarizes citizen input gathered through a citywide survey, quality of life questionnaires, comment cards, other written communications, community workshops, and various focus groups between June 2013 and October 30, 2014 in support of the comprehensive planning process. Input has been grouped by common, overarching themes and is maintained in an Excel workbook for tracking and analysis. This report does not list every comment received, but instead presents the overarching concerns and recommendations as provided by citizens. Many comments are summarized rather than included verbatim, as numerous comments were expressed by multiple stakeholders in slightly different ways. Some issues, opportunities, and recommendations may be presented under more than one theme. This recognizes that key topics – housing, transportation, economic development, education, services, etc. – are not standalone elements of the comprehensive plan; rather they are an intricately linked system of topics that must be addressed as a whole to ensure a healthy, economically viable, and sustainable city tomorrow. Detailed recommendations related to specific sites or activities will be considered as alternatives when future land uses are explored and the implementation matrix is developed. Responses are not ranked, unless otherwise noted.

A second report summarizing citizen input between November 2014 and February 2015 was generated and is included as an appendix to the comprehensive plan.

Please note that citizens and stakeholders include all people who, individually or as part of an organized group, are participating in the comprehensive planning process by providing input on current conditions and direction for future land use management and development. The terms may be used interchangeably, as staff is using the definition of stakeholder as being "an individual, group or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity or outcome of the project." (5th Edition PMBOK® Guide)

WHAT WE DID

Below is a summary of the various methods used to gather citizen input in the initial phases of the comprehensive planning process. Outreach is an ongoing effort throughout the planning process.

COMMUNITY PREFERENCE SURVEY

A community survey was administered for the city of Newport News in 2013 as part of the effort to assess citizen satisfaction with the quality of services. The multi-page survey was mailed to a random sample of households. A total of 1,038 surveys were completed.

CPCAC VISIONING

Planning staff facilitated a visioning session with the Comprehensive Plan Citizen Advisory Committee (CPCAC) in March 2014, and results were ranked by the committee at the subsequent meeting. The CPCAC Chairman led a second visioning exercise in April 2014.

Appendix | B

COMMUNITY WORKSHOPS

The planning team (staff and CPCAC) hosted three community workshops, one each in the north, central, and south districts. The first workshop, held in June 2014, had low attendance. Workshops held in July and October 2014 were well attended. The agenda for each of the workshops was the same: participants were provided with an overview of the comprehensive planning process, a presentation on visioning, and a visioning exercise. Participants were also asked to complete a quality of life/visioning questionnaire and were provided comment cards for additional feedback.

FOCUS GROUPS

The purpose of holding focus groups in the comprehensive planning process is to bring together small gatherings of stakeholders with a common interest – whether geographic, economic, environmental, historic, cultural, etc. – to gain more detailed insight on a specific topic. The planning team has identified numerous organizations with whom to conduct focus groups as part of the data collection and analysis phase of the comprehensive planning process. Staff has conducted two focus groups to date: (1) Virginia Peninsula Association of Realtors, and (2) Naval Weapons Station Yorktown.

COMMENT CARDS AND QUESTIONNAIRE

Public comment cards are provided at the CPCAC meetings and a fillable version is available on the comprehensive plan website. Comment cards provide citizens an opportunity to ask questions and share ideas for CPCAC consideration. All comments are reviewed by staff to capture input.

A quality of life questionnaire is distributed to participants of the various public outreach efforts throughout the data collection and analysis phase. The purpose of the questionnaire is to gather citizens' more detailed opinions on issues and opportunities within the city and quality of life priorities.

WEBSITE

Citizens who are either unable to participate in the various outreach efforts or who have participated and are simply interested in updates and tracking progress can do so on the comprehensive plan website. Meetings, agendas, meeting summaries, announcements of key events, and special reports are posted on the site. In addition, a fillable comment card is available for public input.

HOW CITIZEN INPUT WILL BE USED

Citizen input is sorted by relevance and grouped by themes or topic areas and serves as the inspiration for the comprehensive plan goals and strategies, and the foundation for the existing conditions report and development alternatives. The input is shared with the CPCAC for consideration as they develop a vision statement, goals and recommendations, and provide direction to Planning staff on plan development.

OTHER OPPORTUNITIES FOR CITIZEN INPUT

Planning staff will provide numerous ongoing opportunities for citizen engagement and feedback throughout the remaining phases of the comprehensive planning process. Updates on progress and consultation with key stakeholders will occur through early summer 2015.

CPCAC MEETINGS

CPCAC meetings will continue until a final draft comprehensive plan is presented to the Planning Commission and recommended for approval by the City Council. Due to time constraints, the public does not have the opportunity to comment during CPCAC meetings. However, meetings are open to the public and comment cards and the questionnaire are provided to gather input for the CPCAC's consideration.

COMMENT CARDS AND QUESTIONNAIRE

The comment cards and questionnaire will continue to be distributed during all citizen outreach activities, and the fillable comment card will remain on the website. Staff will continue to review feedback and present it to the CPCAC for consideration.

WEBSITE

The city's website was recently updated; as a result, so too was the Department of Planning's site. Staff has reviewed the content and format and identified several opportunities to improve the comprehensive plan tab and expand content for public accessibility. This site will continue to be updated to provide a calendar of events, meeting notes, and a library of reports and special studies generated as part of the comprehensive plan update. Citizens will have the opportunity to submit feedback through the website.

FOCUS GROUPS AND STAKEHOLDER INTERVIEWS

Focus groups will continue throughout the remainder of the calendar year and into early January 2015. Meetings have already been scheduled with the Mayor's Youth Commission, CNU, Newport News Redevelopment and Housing Authority, and Greater Peninsula NOW. Staff has reached out to the Junior League and Fort Eustis, and will continue to coordinate with them and other organizations to gather more detailed information and insight on specific topics.

Interviews will be conducted with various city departments and other organizations as needed to establish existing conditions, challenges, and priorities for future investment.

OPEN HOUSE AND PUBLIC REVIEW PERIOD

The final draft ***One City, One Future Comprehensive Plan*** will be posted to the Department of Planning's website and hard copies will be placed in public libraries for a 30-day public review period. Electronic copies will be provided upon request. All stakeholders who have identified interest in receiving meeting notices and updates on the process via email will be notified of the release of the final draft document. Citizens will be able to submit comments via the website and by phone, mail and electronic mail. During the review period, the CPCAC will host three public meetings in an Open House format to present the plan and gather public feedback.

PHONE CALLS AND EMAIL

Planning staff is available to accept comments by phone or in person at City Hall. Citizen comments can also be emailed to staff at any time during the comprehensive planning process.

SUMMARY OF CITIZEN INPUT

GENERAL

While some citizens see Newport News as a blue collar community with plenty of commercial blight, crime, and congestion, many can envision a future where the region and the world recognizes what many have known for a long time: it's a great place to live, work, learn

and play. Newport News is "home" for many. For others, it comes down to location: the geographic center of Hampton Roads, proximity to the water, proximity to the transportation network, and proximity to major employers. In general, citizens recognize that Newport News is built out and resources will need to be focused on infill development, revitalization of existing neighborhoods and activity areas, and redevelopment of strategic areas. Many comments on future development stressed the need to build up, not out and to cluster higher density, mixed-use development in targeted areas.

ISSUES AND OPPORTUNITIES

- The city lacks a consistent identity/brand.
- A comprehensive wayfinding system is needed to define the city's gateways, major corridors, and entrances to areas of interest.
- A sense of place should be created in every neighborhood through gathering places that are based on community driven plans, design, and implementation actions.
- The city lacks a regional draw such as a sports arena, amphitheater or large commercial retailer like IKEA.
- Promote maritime history and proximity to water to draw visitors to Newport News.
- Celebrate diversity.
- Focus on the basics first: infrastructure improvements to eliminate flooding and reduce crime.
- Stop creating a city of commuters – keep people in town rather than just passing through.

A PROSPEROUS CITY

Some citizens expressed concern with the city's perceived reliance on the shipyard and the Department of Defense for economic health and recommended more economic diversity to encourage new businesses and development, especially in the downtown and Southeast Community. Recommendations included establishing a more diverse industrial base, expanding the medical base, and growing the high-tech sector to keep the workforce in Newport News. Several identified the need to emphasize the technology and research opportunities within the city. Others saw a demographically and economically diverse city that has competing interests, but is improving in many areas such as education and public safety. It was pointed out by several citizens that there is a high vacancy rate for commercial property on the Peninsula, and that there are numerous older, large vacant commercial properties in Newport News. Stakeholders saw a connection between a strong education base and economic prosperity and recommended improved partnerships with Christopher Newport University (CNU), the Apprentice School, and other educational institutions. Citizens also see the opportunity to utilize sports as an economic driver, building more sports fields to host local and regional tournaments, and perhaps finding a location to support a semi-pro sports team. There were more than a few recommendations to allow casinos, especially on the river.

ISSUES AND OPPORTUNITIES

- Support sustainable growth of CNU.
- Strengthen and promote the Town and Gown relationship.
- Support neighborhood schools.

- Work with educational institutions to align programs with workforce opportunities.
- Downtown should be revitalized and support a hotel.
- Entrepreneurial training programs geared to youth and young adults will lead to new, thriving businesses citywide.
- Collaboration between public and private sectors to establish a workforce development program with local established industries is needed.
- Increase science, technology, engineering, and mathematics (STEM) jobs, and promote the city as a hub for research and development.
- Support small businesses and a diversified economy to retain the younger populations (Generation Y [the Millennials] and Generation Z [the next generation]).
- Inventory and assess commercial areas throughout the city to determine opportunities for reinvestment and redevelopment.
- Utilize the port to promote global trade.
- Promote tourism.

A SUSTAINABLE CITY

There is a prevailing feeling that there is insufficient green space throughout the city and that more recreational opportunities are needed, especially those geared toward the youth. Several citizens believe that there is a lack of vision and plan for long-term management and development of Newport News. Some stakeholders expressed concern with sea level rise and how it may affect the city long-term. Others stressed the need to promote the use of sustainable materials in construction, while a few recommended that the city incentivize sustainable design and development. Green buffers are recommended along major streams and other waterways. Alternative vehicles are encouraged and supported with modified infrastructure, and options for alternative/clean energy sources are studied.

ISSUES AND OPPORTUNITIES

- Enhance transportation and land use around military installations to prevent encroachment and support long-term sustainability of the missions.
- Allow and promote community gardens citywide.
- Every neighborhood activity center should include a grocery store.
- Neighborhood and corridor plans are asset-based community development plans that lead to sustainable development.
- Watershed protection is critical for long-term sustainability.
- Rehabilitate and reuse existing facilities instead of always building new.
- There is too much surface parking in downtown. Build parking structures and provide sufficient landscaping/green area and improve overall aesthetics.
- There appears to be a growing number of brownfields and greyfields within the city.

A HOME FOR EVERYONE (AN ACCESSIBLE CITY)

There appears to be a general consensus that the housing stock in Newport News is aging, there are insufficient affordable (quality) housing options for seniors and low and mid-income residents,

and there is a lack of high-end housing. Many stakeholders did not foresee a change in the demand for homeownership in general or for single-family homes in particular. Others, however, identified the need for a mix of housing types to capture the needs of both an aging population and the younger generations. The ability to age in place was a common theme among stakeholders. Many citizens envisioned housing near parks and in walkable neighborhoods with activity centers.

ISSUES AND OPPORTUNITIES

- Established neighborhoods are preserved and enhanced.
- Alternative types of affordable housing are provided, e.g., micro apartments or housing for commuting workers.
- High-end residential development is needed throughout the city.
- Senior housing developments provide opportunities to age in place.
- Alternative housing styles like mother-in-law suites and ground floor flats allow seniors to age in place in their current neighborhoods.
- Homeless shelters are smaller and dispersed throughout the city.
- Concentrations of public housing should be eliminated and affordable housing should be dispersed citywide.
- There are many influencers on housing choices, the most common of which are proximity to and quality of schools, access to and convenience of the transportation system, and proximity to key services.
- Endview/Lee Hall area is developed to provide a variety of housing choices and a walkable neighborhood that incorporates dining, shopping and recreational opportunities such as multi-purpose trails.

PROVIDING ACCESS AND MOBILITY CHOICES (AN ACCESSIBLE CITY)

All citizens recognize the challenges of our transportation system, both locally and regionally. The majority believes that light rail along the CSX corridor or bus rapid transit (BRT) in a dedicated lane would not only relieve much of the congestion within the city, but also provide quick and reliable connections to jobs, services, and shopping for residents that currently find it challenging to get around Newport News without a privately owned vehicle. Some stakeholders are thinking of regional connections and envision ties to Richmond and areas further north by high speed rail and to the Southside by water taxis and ferries. Some citizens see the need to expand the airport, while others recommend building up the area around the airport with other land uses. Park n' Rides are desirable, especially in conjunction with any future light rail or BRT connections. There is a general consensus that bike lanes, bike routes and multi-purpose trails are needed throughout the city. Many also believe that public access to the waterfront is limited and should be expanded in strategic areas to allow everyone the opportunity to enjoy this natural amenity. An increase in the use of alternative vehicles is anticipated and charging/refueling stations are envisioned in parking garages and other key locations throughout Newport News.

ISSUES AND OPPORTUNITIES

- Improved public access is needed to open space and recreational areas including Newport News Park.
- Public access to the waterfront is needed throughout the city.
- Light rail or BRT is needed along the CSX line with feeders to neighborhoods and activity centers throughout the city.
- Transportation options should target various age groups including youth and young military members, many of whom do not have access to privately owned vehicles.
- Bike lanes and routes are needed throughout the city and in key areas such as Newport News Park to improve connectivity and safety.
- A bicycle master plan is needed.
- The airport use is expanded and becomes the center of an aerotropolis node.
- Parking garages and charging stations are located citywide.
- Rail infrastructure in the downtown is used for emergency evacuations of citizens in the southern district.
- Public transportation is also provided using the waterways in the form of ferries and water taxis.
- All bus stops are safe and provide shelter.
- Lack of curbs and gutters citywide should be addressed before sidewalks are widened.
- Transportation and land use planning need to occur simultaneously – transit-oriented development should support new transit lines and existing stops.

A HEALTHY COMMUNITY (A HEALTHY AND SAFE CITY)

There is a vision for a well-connected city that features walkable urban pockets and great services in the form of activity centers in all neighborhoods. Numerous citizens expressed concern with crime and youth violence. Some citizens perceive local schools to be of poor quality and low performing, while others expressed concern with the perception that schools are of poor quality when in fact they appear to perform well.

ISSUES AND OPPORTUNITIES

- More green space and parks are needed throughout the city.
- Small neighborhood parks are needed throughout the city.
- Build upon cultural development programs at Pearl Bailey, Downing-Gross and Doris Miller to increase growth of youth.
- Create walkable waterfronts and provide public access and parking to allow for water activities including kayaking and fishing.
- The city lacks sufficient multi-purpose athletic fields.
- Satellite libraries with computer labs are provided citywide to support online education opportunities.
- Crime is spreading, e.g., to the central business district and to Eastwood/Young's Mill neighborhoods.
- There is a lack of supervised youth activities in various areas of the city.
- Many community amenities are aging and require investment.
- Improve access to libraries citywide, including areas not currently served such as Lee Hall.

RESPECTING OUR HERITAGE (A CITY THAT RESPECTS ITS UNIQUENESS)

There are numerous recommendations to show a greater appreciation for the city's history and cultural resources by preserving and promoting remaining historic buildings, sites, and neighborhoods. Many stakeholders recommended opportunities to enhance tourism by investing in existing facilities, creating greater connections between established facilities, and promoting the city's historic features.

ISSUES AND OPPORTUNITIES

- Downtown is revitalized. Investments include green space and parking garages to eliminate most of the surface parking lots.
- Celebrate and promote the city's history with ship building and the military in the downtown area.
- The restored Lee Hall Train Station becomes the city's welcome center.
- The USS United States (or other similar historic ship) is anchored off Christopher Newport Park and becomes a draw to downtown and the waterfront.
- The restored Greek Orthodox Church becomes the Newport News Museum and Visitors Center.
- Preserve and reuse older/historic buildings to maintain neighborhood character.
- Preserve Warwicktown archeological site and promote historic presentations similar to Jamestown and Williamsburg.
- Respect the history of key areas of the city and incorporate preservation of these areas into any plans for future development.
- Historic preservation becomes an economic driver.

GOOD PLACES, NEW SPACES (A CITY THAT BALANCES GOOD PLACES AND NEW SPACES)

Newport News of the future preserves and celebrates its history and historic neighborhoods; recognizes and promotes the unique character and diversity of its neighborhoods; supports a revived downtown; provides services and work opportunities in walkable neighborhoods; provides connections to major employment centers, entertainment, and shopping via light rail and/or BRT; and provides both formal and informal gathering places to encourage social activity and interaction. Newport News of the future has a high quality of life and is recognized for this value regionally and nationally. Corridors are beautified through façade improvements, improved design, and enhanced landscaping. Complete streets provide safe and alternative modes of transportation.

ISSUES AND OPPORTUNITIES

- Relocate or close City Farm and develop the waterfront area, providing public access and entertainment venues.
- Relocate or close City Farm and develop housing, entertainment, and waterfront access.
- Provide public access to the waterfront throughout the city.
- Every neighborhood has an activity center that provides general services and recreational opportunities.
- Oriana Road shopping center is redeveloped as a high-density, mixed use activity center.
- Leverage the waterfront in the Southeast Community to draw new investment and revitalization.

- The Superblock and Christopher Newport Park are redeveloped to provide waterfront access, connections to the Southeast Community along 28th Street, restaurants, an outdoor entertainment venue, and access to the USS United States or another similar historic ship.
- Convert vacant public facilities to provide additional services and commercial opportunities, e.g., convert the old Hilton Fire Station into a coffeehouse.
- Improved wayfinding and branding draws people to the downtown.
- Reinvest in older commercial areas like Hilton Village.
- Create walking/biking connections between schools and nearby neighborhoods, e.g., between Menchville High and the Riverfront Planning Area across Deep Creek.
- Complete streets (major corridors) include landscaping and façade improvements to beautify these multi-modal areas.
- The Newport News Transportation Center is supported by mixed-use development, walking and biking trails, and safe connections to higher density areas nearby.
- There is a lack of commercial development and investment along the Warwick Boulevard corridor from Denbigh Boulevard north and along the Jefferson Avenue corridor from Mercury Boulevard south.
- Downtown is underutilized. Consider port and industrial expansion and provide millennial housing and amenities.
- City government should be located in the geographic center of the city to better serve all districts.
- Visitor welcome centers and rest areas are established at the north and south ends of Newport News to capture what often is pass-through traffic.

WHAT WE HEARD—PART II

A Report to the Citizen Advisory Committee

OVERVIEW

This report summarizes citizen input gathered through quality of life questionnaires, comment cards, other written communications, various focus groups, roundtables, and interviews between November 1, 2014 and May 8, 2015 in support of the comprehensive planning process. Input has been grouped by common, overarching themes. This report does not list every comment received, rather presents the overarching concerns and recommendations as provided by citizens. Many comments are summarized rather than included verbatim as numerous comments were expressed by multiple stakeholders in slightly different ways. Some issues, opportunities and recommendations may be presented under more than one theme. This recognizes that key topics – housing, transportation, economic development, education, services, etc. – are not standalone elements of the comprehensive plan, rather are an intricately linked system of topics that must be addressed as a whole to ensure a healthy, economically viable, and sustainable city tomorrow. Detailed recommendations related to specific sites or activities will be considered as alternatives when future land uses are explored and the implementation matrix is developed. Responses are not ranked, unless otherwise noted.

This is the second of two reports summarizing citizen input for the comprehensive plan update. The first report captured input between June 2013 and October 30, 2014.

WHAT WE DID

FOCUS GROUPS

The purpose of holding focus groups in the comprehensive planning process is to bring together small gatherings of stakeholders with a common interest – whether geographic, economic, environmental, historic, cultural, etc. – to gain more detailed insight on a specific topic. During the period covered by this report, 13 focus groups were conducted. This brought the total to 15 focus groups conducted as part of the data collection and analysis phase of the comprehensive planning process. Focus groups covered in this report:

- Christopher Newport University (CNU) students from the Center for Community Engagement
- Mayor's Youth Commission
- Greater Peninsula NOW
- Southeast Community
- Newport News Redevelopment and Housing Authority
- Newport News Shipbuilding (Huntington Ingalls Industries)
- Newport News Rotary Club
- Virginia Peninsula Chamber of Commerce
- Hampton Roads Association for Commercial Real Estate
- Peninsula Bicycling Association
- Saint Leo University
- Newport News Public Schools (NNPS)
- Fort Eustis

ROUNDTABLES AND INTERVIEWS

The planning team conducted roundtables and interviews with an additional 15 stakeholders including various city departments, Newport News Sheriff's Office, Newport News Waterworks, and Newport News/Williamsburg International Airport (NNWIA). The team also met with planning staff from James City County, York County and Hampton, and conducted telephonic meetings with Suffolk and Isle of Wight County.

SUMMARY OF STAKEHOLDER INPUT

GENERAL

Newport News is a great place to raise a family according to many stakeholders, but lacks a viable social scene for 25 to 35 year olds. Some stakeholders see City Center as having potential to draw more interest when it is built out, but perceive the area as lacking energy for now. Younger students stressed a strong desire for a more family-friendly city, as opposed to a business-friendly city. Millennials emphasized the need for diversity—in demographics, activities, food options, education, and employment. There is a strong desire to see a revitalized downtown, with increased density and a mix of uses. Many recognize that it is unlikely that it will once again be a traditional downtown, but see the opportunity for this area to take on a different—yet well defined—role and be successful.

While Newport News is not a 24-hour city, some stakeholders see the need to recognize that non-traditional work schedules have increased and some services—such as bus and child care services—need to offer more flexible hours to meet the needs of our citizens.

Newport News lacks a "sense of place." Many stakeholders expressed the need for a consistent city brand and more collaboration between local government and major organizations to market all the positive aspects of Newport News. Some stakeholders feel that Newport News needs to be a stronger regional player and help set the long-range vision for Hampton Roads, especially since the city is the geographic center of the region. Many stakeholders believe that no one locality can offer all the desired services and amenities that larger cities throughout the United States can. Thus, collaboration and marketing as a region is critical to long-term economic vitality and sustained quality of life in Hampton Roads.

There are strong connections between Newport News and nearby communities, especially on the Peninsula. Some stakeholders live in other communities and work and shop in Newport News, while others live in Newport News and commute outside the city to work. Therefore, opportunities to enhance land use and services near locality boundaries and improve the transportation system across city limits will benefit the region.

Some stakeholders believe that the media creates or perpetuates a negative image of Newport News. The media seems to always highlight the "bad"—we need to do a better job of marketing the "good."

ISSUES AND OPPORTUNITIES

- Newport News provides active, affordable options for entertainment that draw multigenerational interest.
- Localities will work together to create the image/brand for Hampton Roads that will draw unique schools and employers to the area.
- Newport News must tell it its story; market the "good."
- Neighborhoods lack identities and would benefit from signs to distinguish them from each other.

A PROSPEROUS AND RESILIENT CITY

Our economic strengths are in research and development (R&D), advanced manufacturing, traditional manufacturing, and food processing and distribution. We will continue to grow in these areas, but may also see high growth in the aerospace and aviation industry, including material sciences. Some stakeholders want to see more professional and fewer retail jobs, especially in the science and technical fields. We continue to celebrate our national reputation as a shipbuilding community and promote Jefferson Lab to draw new science and technology businesses to Newport News.

Tourism, a regional draw that peaked in 2007, has been slow to rebound throughout Hampton Roads. To increase tourism generated revenue, our marketing strategy could draw on the fact that Newport News is the center of Hampton Roads and all other destination points are easily accessible from here. The interstates are assets that can lead to greater investment and prosperity.

There is a disconnect between some stakeholders' perception of the public school system and the actual performance of our schools based on statistics. For the past 5 years, NNPS has focused on ensuring all students graduate college, career, and citizen-ready. On-time graduation and completion rates continue to go up, the number of dropouts continues to decline, and the Instructional STEM (Science, Technology, Engineering and Mathematics) program continues to grow. There is an increasing focus on post-secondary education as employers place a higher premium than ever on educated workers and the number of "middle skills jobs" continues to increase. Some stakeholders believe more apprenticeship and internship programs are needed, both at the high school and college level. Some employers see the need for more trade programs.

CNU students identify diversity and professional mobility as key factors when evaluating employment opportunities.

Jurisdictions across the country are focusing on disaster planning and leveraging their resources to achieve healthier and more resilient communities. Newport News' Emergency Management has a comprehensive emergency operations plan in place to manage responses and coordinate damage assessment and recovery after a disaster. While the plan allows emergency personnel to respond to typical events, there is concern that a major event would be challenging to respond to especially in terms of accessing vulnerable areas of the city and providing temporary housing to displaced citizens. The Emergency Operations Center (EOC) is a secure facility from which responses are coordinated during emergency situations. Long-term, a consolidated EOC/911 call center would improve emergency planning and response activities by relocating the center to higher ground and constructing a hardened facility to withstand a Category 2 or greater hurricane.

ISSUES AND OPPORTUNITIES

- Retaining industrial land— especially for manufacturing— may be a challenge. This land is critical to support expanding and new businesses.
- The Air Commerce Park provides opportunity for growth in production services.
- The Seafood Industrial Park is a major asset.
- Industrial and commercial opportunities are expanded in the Southeast Community. Targeted areas include Jefferson Avenue, Chestnut Avenue, and the west side of Jefferson Avenue between 14th and 22nd streets.

- Employers in Newport News and throughout Hampton Roads reach out to students early to promote job and career opportunities.
- More workforce training centers are established to meet the needs of area employers.
- Every job will require some level of post-secondary education.
- Development in flood prone areas is discouraged.

A SUSTAINABLE CITY

Newport News has gone "green," in an ongoing effort to save energy, prevent pollution, and take the practical actions needed to facilitate environmentally sustainable government policies and practices and make our community viable for future generations.

Overall, the Newport News water utility is in good shape. There is sufficient capacity to meet the needs of Waterworks' customers for the foreseeable future, and water treatment capability is more than adequate to absorb projected growth. The watershed is well protected and parks/open space needs are balanced with water quality management measures. There is a backlog of water distribution system projects to replace aging components. Needed improvements are being studied and will be programmed through capital improvement planning. The Virginia Department of Environmental Quality is requiring individual groundwater withdrawal permit reductions to alleviate impacts on the state's aquifers. Withdrawal rights reduction will affect some Hampton Roads localities as they will not be able to meet their current water needs. While groundwater withdrawals add a safeguard to our water system for times of drought, Newport News Waterworks can meet customer needs during severe drought conditions using the existing surface water supplies and some level of voluntary and incentivized reductions by customers. The proposed reduction— or even elimination of groundwater withdrawal—for Newport News would affect maintenance of the Lee Hall treatment facility, which requires a minimal amount of groundwater to operate. Newport News Waterworks is participating in the regional effort to establish a groundwater advisory committee and delay decreases in permitted groundwater withdrawals to allow the region to study ways to meet water needs without the reductions.

Virginia adopted new stormwater regulations that went into effect in July 1, 2014. As a result, the city amended its stormwater and Chesapeake Bay Preservation regulations to be in compliance with the state's requirements. Stricter regulations affect how properties are developed and redeveloped.

Although Newport News will not be as impacted by sea level rise as other localities in Hampton Roads, we do have areas that experience recurrent flooding. The city will need to look at modeling and reporting to understand how critical infrastructure along the waterfront may be impacted and determine whether revisions to existing policy are needed. A first step in addressing recurrent flooding in low lying areas was to update the Floodplain Development Regulations to meet new Federal Emergency Management Agency requirements.

The city continues to repair and replace the wastewater collection system in the ongoing effort to eliminate groundwater and stormwater infiltration and reduce sanitary sewer overflows. Education on and enforcement of the fats, oils and grease (FOG) ordinance has resulted in reduced frequency of stoppages and overflows, thereby decreasing preventive maintenance costs for the city. Continued education and outreach will further reduce the amount of FOG being poured down drains.

Illegal dumping continues in some areas of the city, affecting safety, property values, and quality of life. It is also an economic burden on the city, which is responsible for cleanup.

Some stakeholders recommend adaptive reuse of vacant and underutilized properties throughout the city instead of clearing the few remaining green sites for new shopping centers.

After several years of being designated as a marginal non-attainment area for ozone, Hampton Roads meets air quality standards and continues to experience a steady decline in the number of annual high-ozone days. Efforts to further improve air quality around the Commonwealth may place an even greater emphasis on complying with standards in the coming years.

ISSUES AND OPPORTUNITIES

- An energy use policy will promote and encourage energy efficiency and associated cost savings.
- An integrated natural resources management plan will inventory our natural resources and establish management goals to protect those resources long term.
- Flood control in the Southeast Community is a priority.
- The James River is a critical natural resource that is well protected.
- The city works closely with James City and New Kent counties to establish sufficient protective buffers and land use controls within the watersheds of Skiffe's Creek and the Little Creek and Diascund reservoirs.
- Newport News is a leader in the regional effort to study groundwater withdrawals in the area and identify measures to meet water requirements without reducing withdrawal rights.
- Continued FOG education and enforcement further reduces sewer system overflows, thereby reducing penalties and impacts on the environment and our health.

AN ACCESSIBLE CITY

There is a prevailing feeling that light rail or similar transit option is needed to reduce the number of vehicles on the road and provide reliable transportation for those that do not have access to cars, including soldiers and sailors stationed at Fort Eustis and Naval Weapons Station Yorktown. Bicycle paths are desirable, especially to connect neighborhoods and schools. Students hope to see more pedestrian-friendly school zones. Traffic safety is a concern for some stakeholders, who expressed a desire for more traffic calming measures throughout the city to protect both cyclists and pedestrians. Most stakeholders support transit alternatives to connect Newport News to other Peninsula localities and to Richmond and Washington, D.C. A multi-modal transportation system is seen as vital to the long-term viability of Newport News and Hampton Roads.

Some stakeholders question the viability of the NNWIA, and suggested a regional mega-airport to replace the three located between Norfolk and Richmond. This may provide better flying options for the region's residents and businesses, and provide opportunities to redevelop the three small airports. The NNWIA, however, has a master plan that adds a third runway to provide simultaneous approach capability, which neither of the other two airports can do. Further, the master plan includes an economic strategy that capitalizes on opportunities in the R&D and technology sectors to expand the reach of these sectors by helping to transfer technology to the market. The master plan also recommends realignment of Brick Kiln Boulevard, improved circulation on McManus Boulevard, and connecting Siemens

Way to Turnberry Boulevard. These transportation improvements will improve traffic flow, eliminate cut-through traffic, and provide enhanced economic development opportunities at the airport and surrounding area.

Safe, affordable housing in stable neighborhoods continues to be a challenge in several areas of Newport News. The number of property maintenance calls to Codes Compliance continues to increase. These calls generally report poor housing conditions and complaints of blight on commercial and residential buildings and properties. The number of persons occupying a dwelling unit and illegally converted boarding houses are also challenges for the city. The list of dilapidated buildings targeted for demolition continues to grow.

Homelessness remains an issue for both the city and the Peninsula, as the most recent point-in-time count shows. Funding and locations for services to address this segment of our population remain difficult to obtain. Some stakeholders recommend reduced density in public housing complexes, instead hoping to see more compact, mixed density developments spread throughout the city rather than concentrated in one area.

There is an opportunity to look at affordable housing across the region to ensure that each locality is providing its fair share. A housing study should be conducted to analyze the housing distribution of workforce and affordable housing locally and regionally.

ISSUES AND OPPORTUNITIES

- Additional connectors between Warwick Boulevard and Jefferson Avenue are constructed to improve traffic flow citywide.
- Public transportation is cleaner and safer, and headways are increased to enhance service to employment and activity centers.
- Sidewalks are constructed in neighborhoods and around schools and community centers to promote walking and ensure more pedestrian-friendly school zones.
- NNWIA has a healthy future with an expanded aviation school and training.
- Alternative types of housing are provided, including duplexes, condominiums, and family-oriented (child friendly housing) complexes.
- A rental inspection program will help protect vulnerable tenants, preserve safe and healthy rental housing, reduce blight, and increase neighborhood property values.
- Affordable housing solutions and a day center alleviate homelessness in Newport News.
- New residential developments include a mix of incomes to provide a better balance of affordable housing throughout the city.
- City Center is fully developed, providing a greater mix of uses and high-end housing.
- Higher-density development is needed to support job growth in key areas.

A HEALTHY AND SAFE CITY

Crime is a shared concern, with stakeholders identifying numerous areas around the city that are believed to have increased criminal activity. Some stakeholders see the need for more police stations; others believe there are too many. Some stakeholders recommend the institution of an improved neighborhood watch program that trains residents on how to rebuild neighborhood pride and values. Overall, the number of reported crimes in Newport News actually dropped between 2004 and 2013. But, youth and gang violence prevention continues to be a focus for the Police Department and city. Programs for youth leadership and employment training enrichment continue to grow. A more focused approach, however, is needed to engage youth and discourage them from violence and crime.

There are facility needs for the Police Department, including a new Central Precinct. The former Rite Aid store is too small to support assigned staff and functions. The precinct lacks designated work space and there is no room to properly store temporary evidence or to issue equipment at shift change. Further, the parking lot is unsecured and police vehicles continue to be vandalized. A new library in the North District should include a collocated North Precinct to replace the undersized and outdated facility on DeShazor Drive. Ideally, a new North Precinct will include a training facility with a computer lab, multi-purpose room, conference rooms, and a library.

Aging infrastructure is a challenge for the Sheriff's Office. Although the jail has been renovated several times, it was designed to old standards, which makes it difficult to comply with current regulations. The jail does not function as it should, and it was never designed to house inmates on all seven floors. A new facility should be planned for downtown, generally in the same area it is located in today.

As more development occurs along the arterials, traffic becomes a greater challenge for the Fire Department as response times are affected. Age, condition and location of Fire Department facilities are concerns. Two stations are almost 60 years old and will need to be replaced. Several other facilities are more than 30 years old. Station 11 is a temporary facility at the airport. A new station should be constructed along Turnberry Boulevard. Fire operations (Fire Marshall, administration, and logistics) are split between several facilities across the city and should be located in one. The department has outgrown the capacity of the Training Center, which lacks an auditorium.

NNPS facilities are old and aging; the need to renovate and replace continues to grow. In the past, the schools added trailers to meet capacity needs. These trailers are also aging, and should be phased out.

Non-profit and faith-based organizations are community assets that improve quality of life for many residents. There needs to be a more deliberate effort to coordinate between the various assets to improve our neighborhoods.

There are growing health concerns in the community, and more health education and services are desired. As our population continues to age, health care and adult protective services requirements increase. The community is in need of more farmers' markets and community gardens to provide all citizens access to fresh and healthy food. There is a need to increase the capacity of quality child care providers.

Parks are a good thing, regardless of size. More green space is desirable, especially in areas that are underserved. Newport News remains strong in regional parkland, but deficient in neighborhood and community parkland and athletic and recreational facilities. Increased public access to the waterfront is still a priority for most

stakeholders. More off-street multi-use trails are desirable. Sufficient resources to properly maintain park, athletic and recreation facilities remain a challenge.

Libraries will remain relevant in the future, serving a range of needs. Libraries are public spaces that are neutral and positive; they create a sense of place and add to the quality of life of an area. Next generation libraries are designed as flexible spaces that can support a variety of activities and on-demand space (known as makerspace). New libraries will be located along transit lines within activity areas. Renovation of Grissom and Pearl Bailey libraries remain a priority for the Newport News Public Library System.

ISSUES AND OPPORTUNITIES

- Strong relationships and open communication are established between neighborhoods and police officers.
- Future mixed-use and higher density development is designed to ensure that Fire Department resources can effectively respond to emergencies.
- Human Services will continue to automate, thereby streamlining processes and reducing both footprint and costs. Collocation of services—a one-stop shop—that serve similar clientele will improve outreach, education and overall effectiveness of programs and services.
- Prevention programs provide residents with the tools to succeed, increasing overall health, economic viability, and self-sufficiency of the community.
- Food deserts are a thing of the past. Healthful food options are available citywide and there is strong support for the garden to table movement.
- The Noland Trail is a model that is replicated in other areas of Newport News.
- Collocating various city services within neighborhoods will improve customer service.
- Libraries are improved and expanded to offer more services and activities for the community, and help create a sense of place in neighborhoods.

A CITY THAT RESPECTS ITS UNIQUENESS

Tourism has declined. Many stakeholders stress the need to protect and enhance the city's uniqueness—those characteristics that make Newport News different, unusual, and unique and make people both want to live here and visit.

ISSUES AND OPPORTUNITIES

- We recognize and celebrate our history and culture.
- Development and property improvements are completed in a way that recognizes property owners' rights while improving neighborhood value and quality of life.
- Art districts—like SoHo and Ghent—encourage diversity, innovation, and are appealing to all generations.
- New historic districts preserve the unique character of our oldest neighborhoods.

A CITY THAT BALANCES GOOD PLACES AND NEW SPACES

Newport News has three distinct activity areas—north, central and south—each with a different character. We need to recognize and enhance those differences to make each area successful and a draw for a mix of demographics. The neighborhoods south of Mercury Boulevard require special attention. Some stakeholders hope to see new housing developments for both seniors and families in this area, with others identify the need for new recreation/youth/sports facilities and job opportunities.

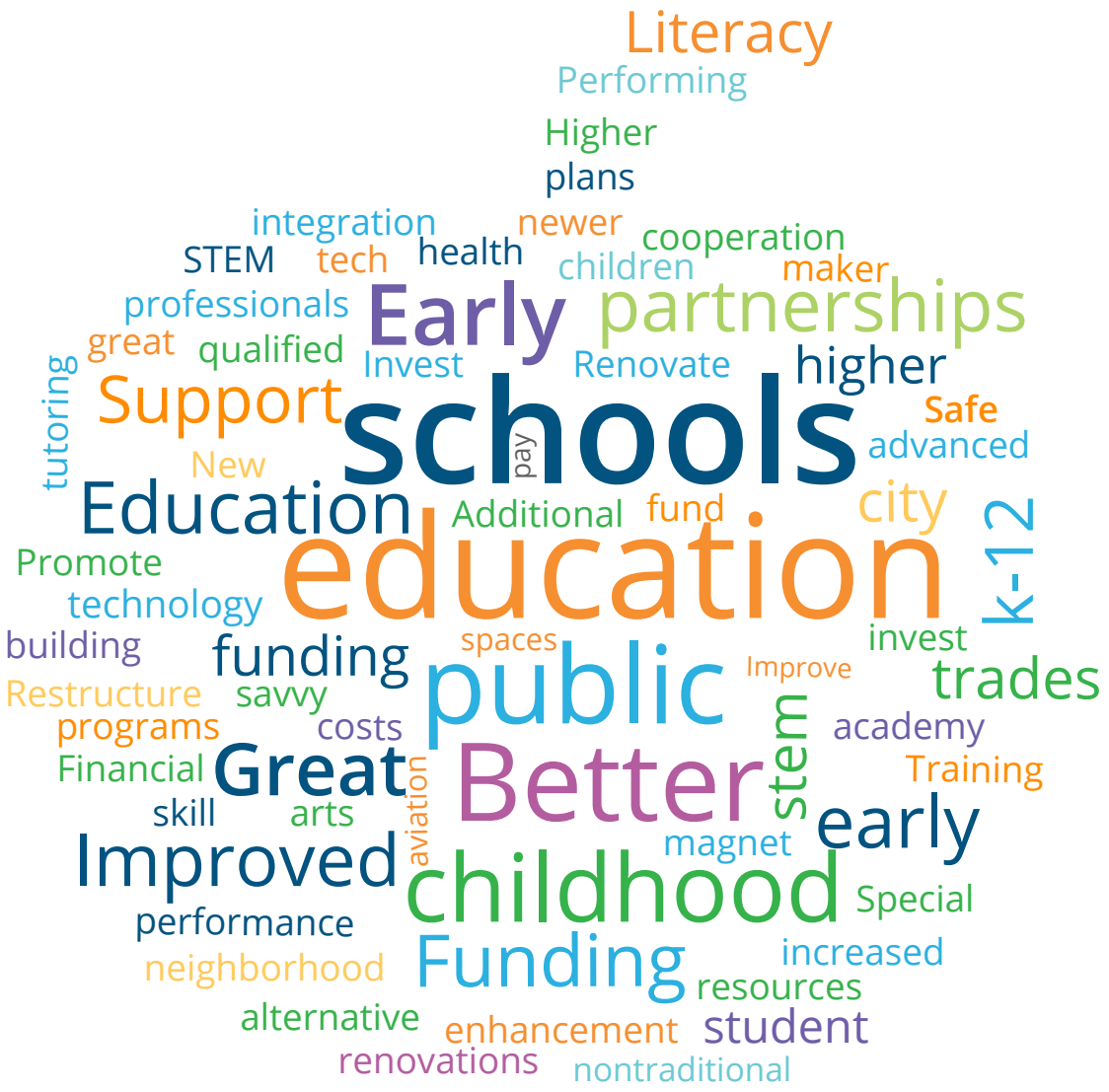
Many stakeholders hope to see vacant and deteriorating commercial centers revitalized and/or redeveloped instead of developing new commercial centers on the city's few remaining green sites. This approach will help eliminate blight in older neighborhoods, allow for the productive reuse of commercial centers, and reserve green sites for future development or preservation actions. A shared choice for revitalization and redevelopment is downtown Newport News.

Many stakeholders see opportunity in the historic downtown. But, the city will need to create interest to bring people to the area. One attraction should be the waterfront, the other is the shipyard. Workforce housing is needed near the shipyard and should provide opportunities at various price points. Note that only 27 percent of shipyard employees live in Newport News.

Aesthetics are a priority for many stakeholders who believe overall community character has been impacted by developments that detract from their surroundings rather than enhancing them. There is a feeling that Newport News lacks a "sense of place" and does not put a high enough value on aesthetics and visual resources. In addition to creating a "sense of place" and improving overall community character, new developments—regardless of size—should incorporate Crime Prevention Through Environmental Design strategies to reduce the potential for crime.

ISSUES AND OPPORTUNITIES

- The Warwick Courthouse area is redeveloped to create an activity center including a new library and teen center.
- The Southeast Community has a viable central business district and an active waterfront that includes entertainment and food options.
- Efforts to revitalize downtown, the Southeast Community, and Huntington Heights include aesthetic improvements to the public realm.
- Efforts to revitalize downtown will require more rooftops—higher density and a choice of housing types.
- Entertainment and dining options are desirable along the waterfront.
- Christopher Newport Park and Victory Landing are recognized assets and enhanced to draw more people to downtown.


Literacy
Performing
Higher
plans
integration
newer
cooperation
STEM
tech
health
children
maker
professionals
Early
partnerships
great
qualified
Invest
Renovate
higher
tutoring
Support
schools
Safe
pay
advanced
New
Education
Additional
fund
city
education
k-12
Promote
technology
building
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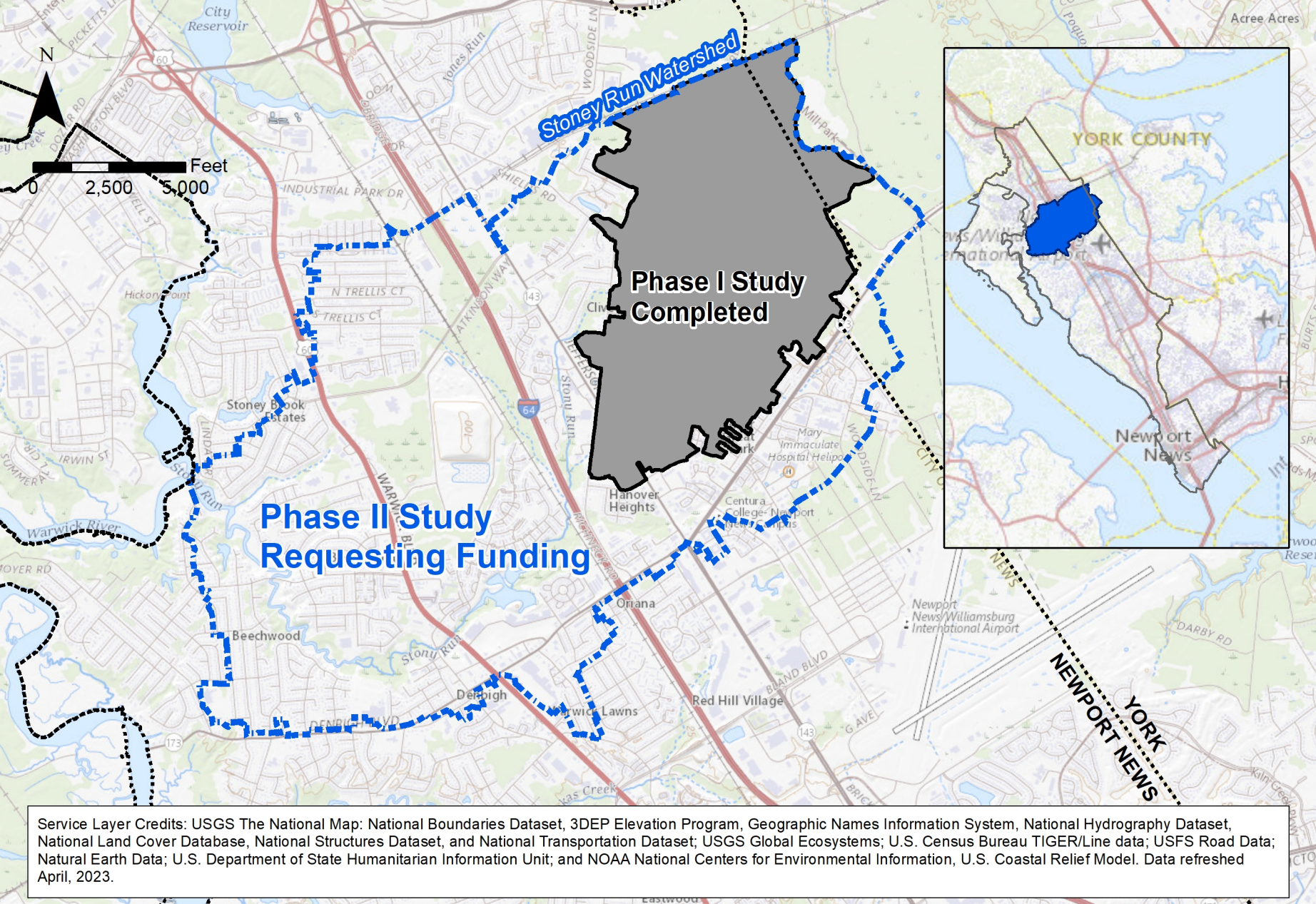
aviation
early
magnet
Improved
childhood
Special
performance
Funding
increased
neighborhood
resources
alternative
enhancement
student
renovations
nontraditional


CORPORATION OF NEWPORT NEWS
1958
VIRGINIA



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

newport news | BUILT ON BREAKTHROUGHS

Office of the
City Manager

October 16, 2023

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Re: Virginia Community Flood Preparedness Fund (CFPF) Grant Application - Authorization to Request Funding
CID510103-2 - City of Newport News, Virginia

Dear CFPF:

This letter serves to provide certification that I, as the Acting City Manager for the City of Newport News, Virginia, have provided authorization for submission of the Stoney Run Flood Reduction Improvements CFPF grant funding application in accordance with the CFPF Grant Manual.

Furthermore, I certify that the City has dedicated sufficient funding for the City's cost share for this study with the understanding that awards granted under the CFPF will be disbursed in accordance with the CFPF Grant Manual by the Virginia Resources Authority. The City will utilize Stormwater Utility Service Charge collections to fund the necessary cost sharing for the project. Stormwater Utility Services are authorized under Chapter 37.1, Article 2 of the City's Code of Ordinances.

Please direct any additional questions to Kathie Angle at (757) 933-2311 or anglekk@nnva.gov.

Sincerely,

Alan K. Archer
Acting City Manager

AKA:KKA:wjw

newport news | BUILT ON BREAKTHROUGHS

Office of the
City Manager

October 16, 2023

Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Re: Virginia Community Flood Preparedness Fund (CFPF) Grant Application - Authorization to Request Funding
CID510103-1 - City of Newport News, Virginia

Dear CFPF:

This letter serves to provide certification that I, as the Acting City Manager for the City of Newport News, Virginia, have provided authorization for submission of the Newmarket Creek Watershed Study CFPF grant funding application in accordance with the CFPF Grant Manual.

Furthermore, I certify that the City has dedicated sufficient funding for the City's cost share for this study with the understanding that awards granted under the CFPF will be disbursed in accordance with the CFPF Grant Manual by the Virginia Resources Authority. The City will utilize Stormwater Utility Service Charge collections to fund the necessary cost sharing for the project. Stormwater Utility Services are authorized under Chapter 37.1, Article 2 of the City's Code of Ordinances.

Please direct any additional questions to Kathie Angle at (757) 933-2311 or anglekk@nnva.gov.

Sincerely,

Alan K. Archer
Acting City Manager

AKA:KKA:wjw

CITY OF NEWPORT NEWS
DEPARTMENT OF ENGINEERING

TO: Acting City Manager, A. Archer **DATE: October 16, 2023**

FROM: Director of Engineering

SUBJECT: Virginia Community Flood Preparedness Fund (CFPF) Grant Application - Authorization to Request Funding CID510103-1 and CID510103-2

ACTION

- ☐ **INFORMATION**
- ☐ **APPROVAL**
- ☐ **AS REQUESTED**
- ☐ **FILE**
- ☐ **COMMENT/RECOMMENDATION**
- ☐ **REPLY, MY SIGNATURE**
- ☐ **REPLY, YOUR SIGNATURE**
- ☐ **INVESTIGATE AND REPORT**
- ☐ **TAKE ACTION**
- ☐ **CONTACT ME**
- ☐ **ADVISE DISPOSITION**
- ☐ **READ AND RETURN**
- ☐ **NOTE AND FORWARD TO**

_____

☐ _____

COMMENTS: _____

For your signature. Please return to my office once signed.

City of Newport News
Department of Engineering

October 16, 2023

To: Director of Engineering

From: Acting Chief of Civil Design

Subject: Grant Authorization Letters for Signature

Please find attached two letters that need the City Manager's signature for two Community Flood Preparedness Fund grants the City is pursuing.

The first letter is for the design of multiple projects to address flooding issues in the Stoney Run watershed. A study has identified six large scale projects and several accompanying projects needed to address the repeated flooding in Colony Pines and Windsor Great Park neighborhoods. The total cost of all the work is approximately $46.2 million. We have investigated several options and spoken with the Virginia Department of Emergency Management concerning funding the work. The intent is to apply for a Community Flood Preparedness Fund grant to cover $4.8 million in design and then a Building Resilient Infrastructure and Communities grant next year to cover construction. Approximately $13 million has been budgeted in the CIP to cover the City's cost share.

The second letter is for a Capacity & Planning study for the full Newmarket Creek watershed. This includes four drainage basins – Upper Newmarket Creek, Lower Newmarket Creek, Government Ditch, and Birdella Lake. Throughout the watershed the former creek has been urbanized/channelized and it experiences frequent flooding. The study will improve upon existing, older models and leverage new, improved modeling to evaluate the watershed and identify potential projects to improve drainage. The study will also involve coordination with FEMA to develop new floodplain mapping. The total work is approximately $580,000 with the City anticipating a cost share of 10%.

Please have the City Manager sign these two letters to be included in our grant applications. It would be appreciated to have the letters completed by October 31st. Please contact me at anglekk@nnva.gov or (757)926-8655 for any questions.

Kathie Angle
Digitally signed by Kathie Angle
DN: C=US, E=anglekk@nnva.gov, O=City of Newport News, OU=Civil Design Engineering, CN=Kathie Angle
Date: 2023.10.16 12:03:28-04'00'

Kathie Angle, PE, CFM

KKA/XXX
Attachments: Grant Authorization Letters for Stoney Run & Newmarket Creek

Shields Road, August 2021

Shields Road, September 2006

Daily Press
THURSDAY
OCTOBER 12, 2006

LOCAL NEWS

WATERLOGGED IN DENBIGH

Water from the remnants of Tropical Storm Ernesto flows over Shields Road in the Denbigh area of Newport News last month. PHOTO COURTESY BY JOE AND MARY FRANCES LIEBERMAN

They've had it up to here

Denbigh residents are fed up with flooding from heavy rain. Newport News is reviewing what can be done about it.

BY SABINE C. HIRSCHAUER
shirschauer@dailypress.com | 247-4536

NEWPORT NEWS — When Ernesto bore down on the Peninsula last month, Newport News thought that it dodged a bullet.

Although floodwaters displaced residents of City Line Apartments, city officials happily reported that many storm-water improvements they made paid off.

Not so for some people in northern Newport News.

A nearly 30-year-old drainage system, overwhelmed by new development, led to serious flooding in the Richneck area of Denbigh.

City officials say they are working on a plan to fix the problem, but residents' patience is running thin.

"The drainage throughout the community is just ridiculous," said Debra Mabus, who lives on Mona Drive.

Mabus said that last month, she lost antique furniture and many boxes of collectibles, such as fine china and newspaper clippings of presidential elections that dated to the 1970s.

She now wants to put her home up for sale and move by next summer. "We cannot afford losing more and more things," she said. "I can't keep going through the stress."

During Ernesto, it began to rain at 10 a.m., said Charles A. Carrithers, who bought his home on Windsor Castle Road in 1977, before nearby subdivisions were built. By 10:30 a.m., Carrithers had more than 30 inches of water in his backyard.

Windsor Castle Road never flooded until 1999, when Hurricane Floyd drenched the area, said Carrithers, who figures his damage came to $7,000.

"We have more and more flooding with less and less rainfall," Carrithers said. "They kept building, and we went underwater."

Every time it rains hard now, a retention pond in Carrithers' neighborhood floods, and ditches crest with waist-high water.

The city built a 250-foot-long, 16-

Please see **FLOODLING PROBLEMS/C2**

Shields Road, October 2006

Shields Road, September 2006

Victoria Station, September 2006

Victoria Station, September 2006

Drainage Channel Leading to Windsor Castle Drive, September 2006

Jouette Drive, August 2020

Jouette Drive, August 2020

Jouette Drive, August 2020

Magna Carta Drive, August 2020

Keppel Drive, August 2020

Harlech Place, August 2020

Harlech Place, August 2020

Harlech Place, August 2020

Belvoir Circle, March 2022

Belvoir Circle, March 2022

Lowry Place, August 2020

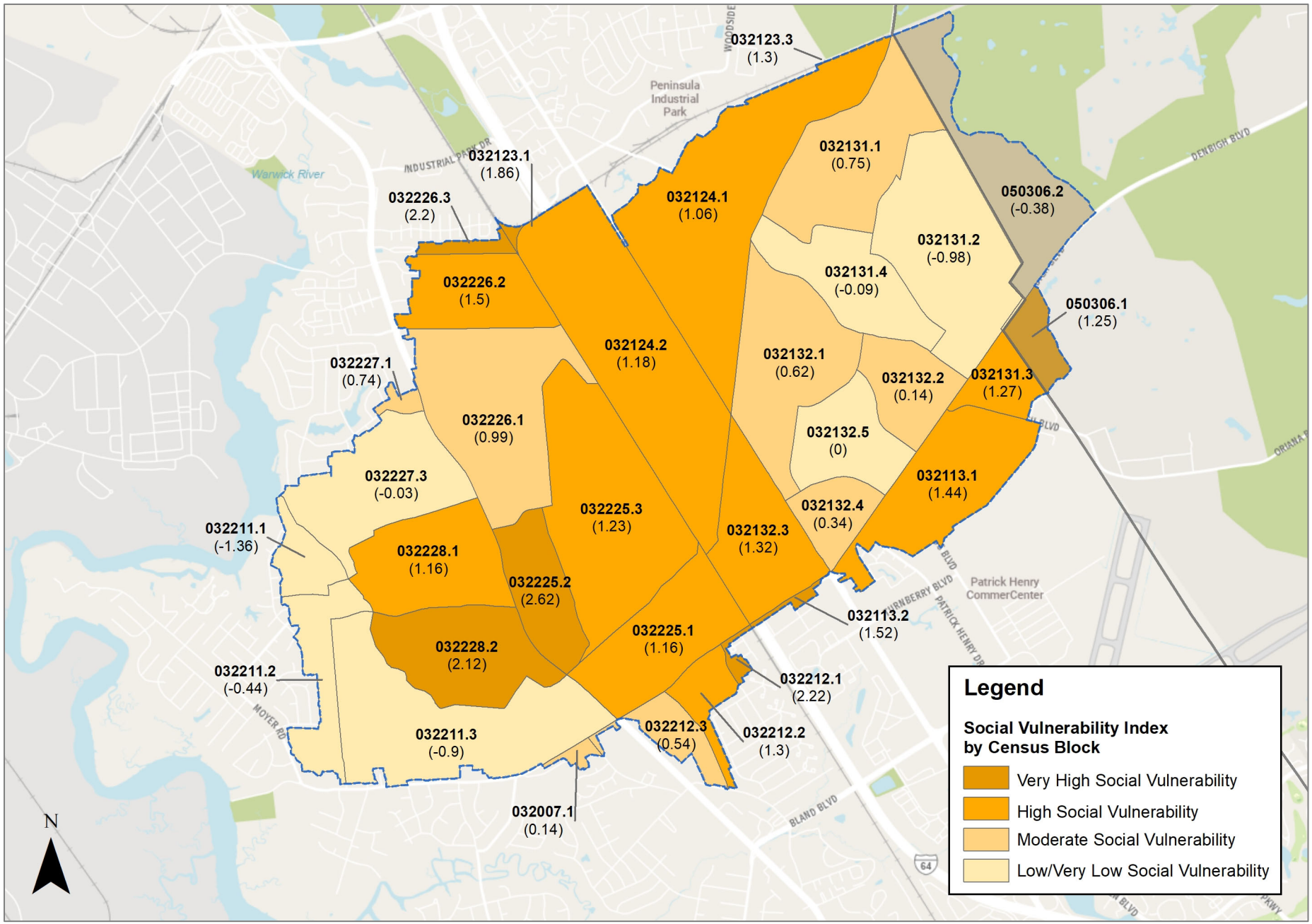
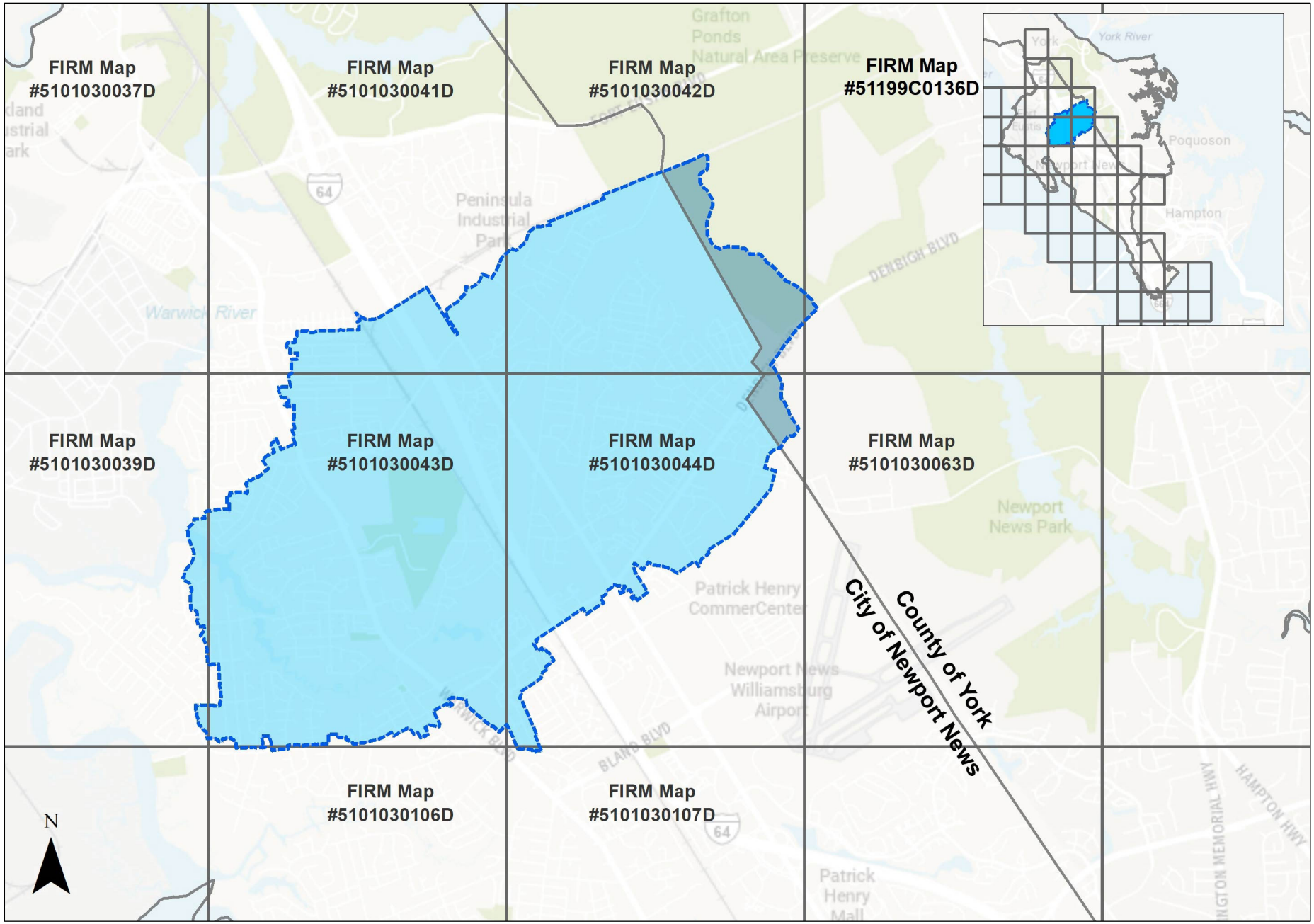
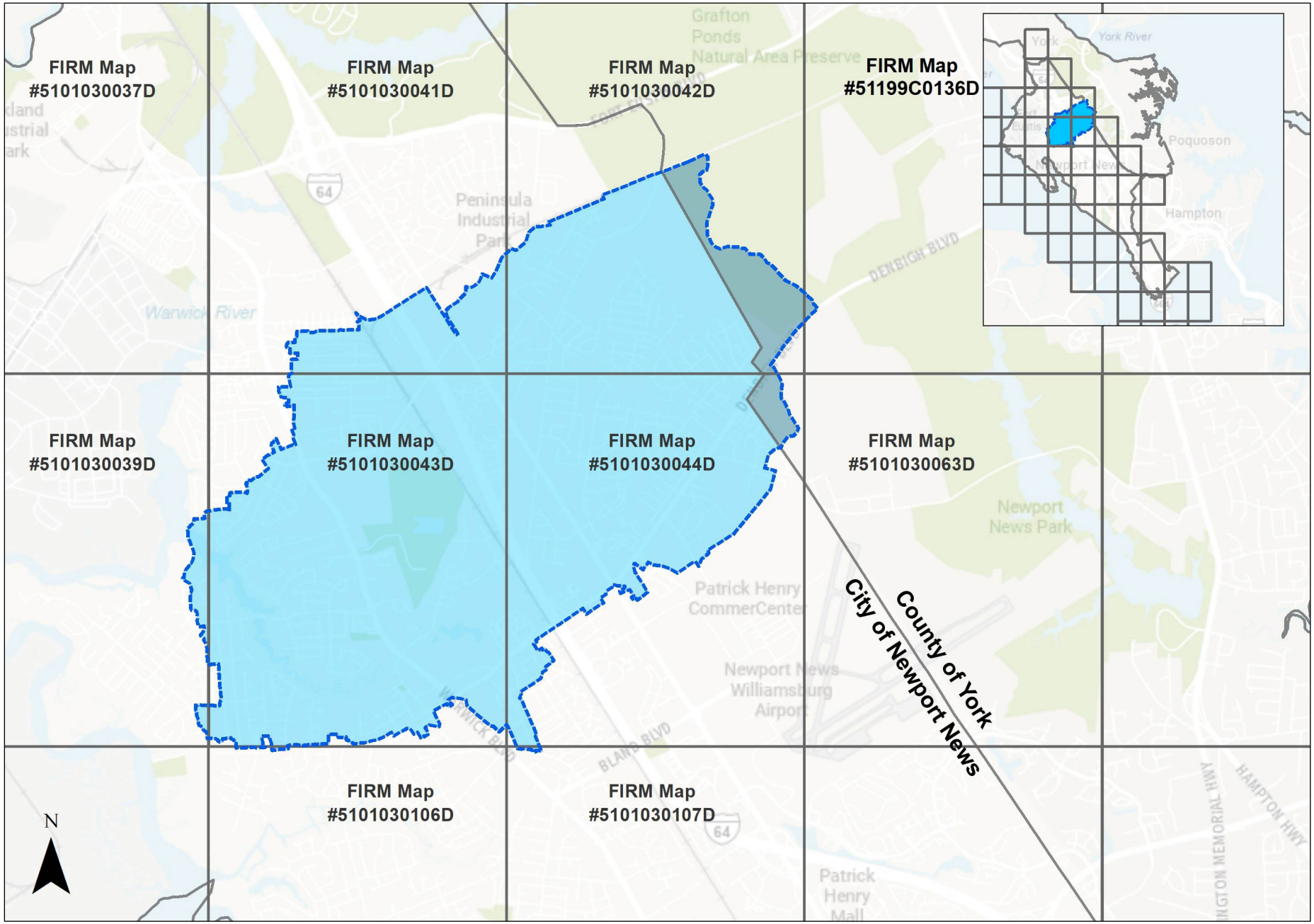


Figure 3. Stoney Run Watershed Census Block Groups – Social Vulnerability Index Rating

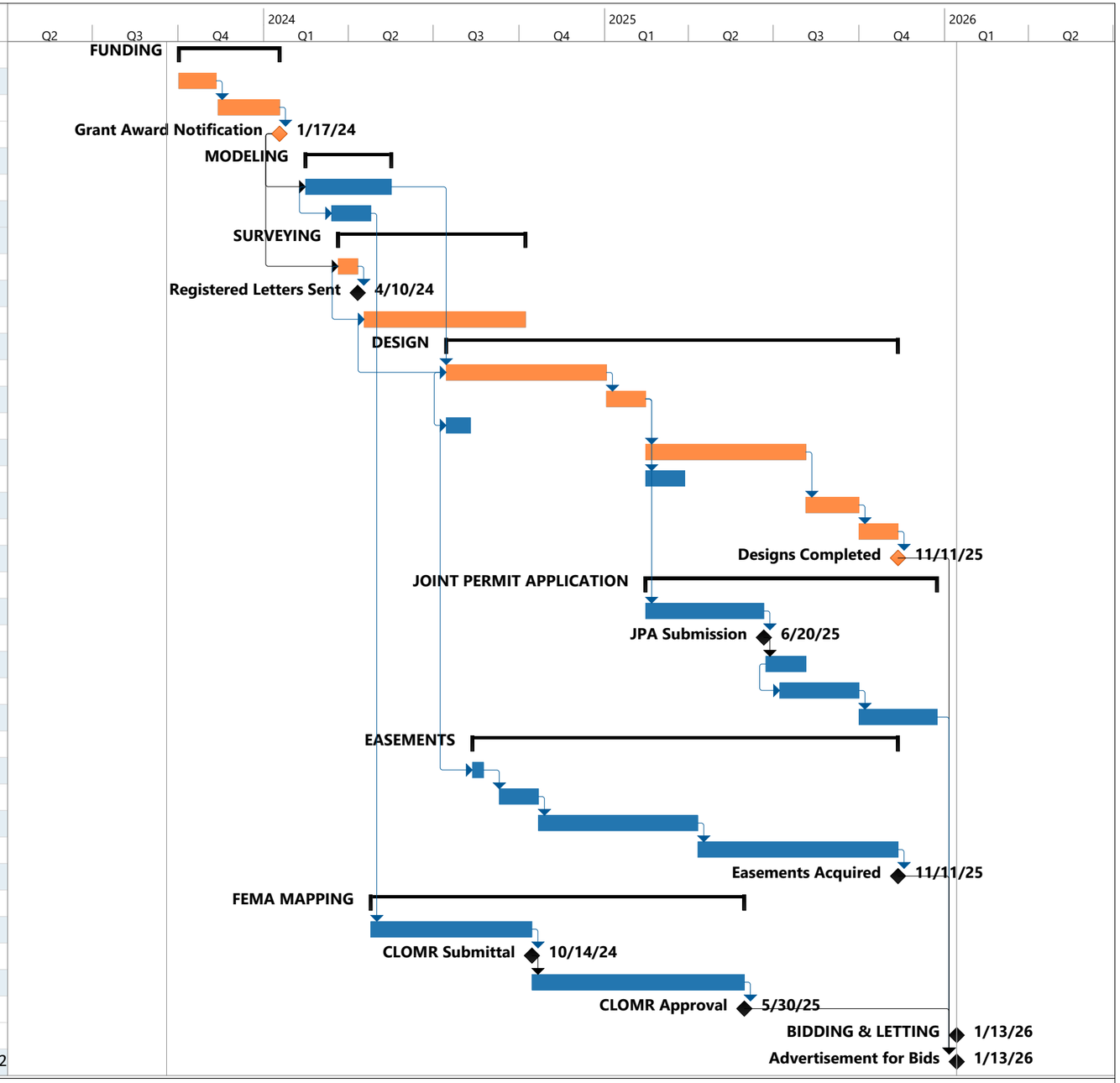


CID#510103-2_Newport News. Stoney Run Watershed FIRMettes.



CID#510103-2_Newport News. Stoney Run Watershed FIRMettes.

ID	ID	Task Mode	Task ID	Task Name	Duration	Start	Finish	Predecessors
1	**1**		**TASK 1**	**FUNDING**	**75 days**	**Mon 10/2/23**	**Wed 1/17/24**	
2	2		1.A	CFPF Application	30 days	Mon 10/2/23	Fri 11/10/23	
3	3		1.B	CFPF Evaluation Process	45 days	Mon 11/13/23	Wed 1/17/24	2
4	4		1.C	Grant Award Notification	0 days	Wed 1/17/24	Wed 1/17/24	3
5	**5**		**TASK 2**	**MODELING**	**66 days**	**Thu 2/15/24**	**Thu 5/16/24**	
6	6		2.A	2D SWMM Downstream Impacts & Design	66 days	Thu 2/15/24	Thu 5/16/24	4SS+20 days
7	7		2.B	1D SWMM for CLOMR	30 days	Thu 3/14/24	Wed 4/24/24	6SS+20 days
8	**8**		**TASK 3**	**SURVEYING**	**140 days**	**Thu 3/21/24**	**Mon 10/7/24**	
9	9		3.A	Property Owner Notifications	15 days	Thu 3/21/24	Wed 4/10/24	4SS+45 days
10	10		3.B	Registered Letters Sent	0 days	Wed 4/10/24	Wed 4/10/24	9
11	11		3.C	Topographic & Boundary Surveying	120 days	Thu 4/18/24	Mon 10/7/24	9SS+20 days
12	**12**		**TASK 4**	**DESIGN**	**340 days**	**Mon 7/15/24**	**Tue 11/11/25**	
13	13		4.A	60% Plans & Specs	120 days	Mon 7/15/24	Thu 1/2/25	6,11SS+60 days
14	14		4.B	60% Reviews	30 days	Fri 1/3/25	Thu 2/13/25	13
15	15		4.C	Identify Easement Requirements	20 days	Mon 7/15/24	Fri 8/9/24	13SS
16	16		4.D	90% Plans & Specs	120 days	Fri 2/14/25	Mon 8/4/25	14
17	17		4.E	Easement Plats	30 days	Fri 2/14/25	Thu 3/27/25	14
18	18		4.F	90% Reviews	40 days	Tue 8/5/25	Tue 9/30/25	16
19	19		4.G	Final Plans & Specs	30 days	Wed 10/1/25	Tue 11/11/25	18
20	20		4.H	Designs Completed	0 days	Tue 11/11/25	Tue 11/11/25	19
21	**21**		**TASK 5**	**JOINT PERMIT APPLICATION**	**220 days**	**Fri 2/14/25**	**Tue 12/23/25**	
22	22		5.A	JPA Preparation	90 days	Fri 2/14/25	Fri 6/20/25	14
23	23		5.B	JPA Submission	0 days	Fri 6/20/25	Fri 6/20/25	22
24	24		5.C	Application Review	30 days	Mon 6/23/25	Mon 8/4/25	23
25	25		5.D	Public Notice & Comment Period	60 days	Tue 7/8/25	Tue 9/30/25	24SS+10 days
26	26		5.E	Permit Decision	60 days	Wed 10/1/25	Tue 12/23/25	25
27	**27**		**TASK 6**	**EASEMENTS**	**320 days**	**Mon 8/12/24**	**Tue 11/11/25**	
28	28		6.A	Council Authorization	10 days	Mon 8/12/24	Fri 8/23/24	15SS+20 days
29	29		6.B	Contact Property Owners	30 days	Tue 9/10/24	Mon 10/21/24	28FS+10 days
30	30		6.C	Negotiation and Acquisition	120 days	Tue 10/22/24	Thu 4/10/25	29
31	31		6.D	Condemnation for Holdouts	150 days	Fri 4/11/25	Tue 11/11/25	30
32	32		6.E	Easements Acquired	0 days	Tue 11/11/25	Tue 11/11/25	31
33	**33**		**TASK 7**	**FEMA MAPPING**	**280 days**	**Thu 4/25/24**	**Fri 5/30/25**	
34	34		7.A	CLOMR Application	120 days	Thu 4/25/24	Mon 10/14/24	7
35	35		7.B	CLOMR Submittal	0 days	Mon 10/14/24	Mon 10/14/24	34
36	36		7.C	316-AD Process and Adjustments	160 days	Tue 10/15/24	Fri 5/30/25	35
37	37		7.D	CLOMR Approval	0 days	Fri 5/30/25	Fri 5/30/25	36
38	**38**		**TASK 8**	**BIDDING & LETTING**	**0 days**	**Tue 1/13/26**	**Tue 1/13/26**	
39	39		8.A	Advertisement for Bids	0 days	Tue 1/13/26	Tue 1/13/26	20FS+45 days,32



Project: Newport News Master
Date: Thu 11/2/23

Task	Inactive Milestone	Start-only	Path Driving Predecessor Summary Task
Split	Inactive Summary	Finish-only	Path Driving Predecessor Normal Task
Milestone	Manual Task	External Tasks	Progress
Summary	Duration-only	External Milestone	Manual Progress
Project Summary	Manual Summary Rollup	Deadline	
Inactive Task	Manual Summary	Path Driving Predecessor Milestone Task	

LOCAL RESILIENCE PLAN

Interim

November 2023

Prepared in accordance with the Grant Manual for the Virginia Community Preparedness Fund and the requirements of a Local Stormwater Management Fund

CITY OF NEWPORT NEWS
DEPARTMENT OF ENGINEERING
2400 Washington Avenue
Newport News, VA 23607

newport news | VIRGINIA

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Acronyms

Acronym	Description
BFE	Base Flood Elevation
BMP	Best Management Practice
CFPF	Community Flood Preparedness Fund
CIP	Capital Improvements Plan
CRS	Community Rating System
DCR	Department of Conservation and Recreation
EOP	Emergency Operations Plan
FAP	Flood Assistance Program
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
MSL	Mean Sea Level
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
TMDL	Total Maximum Daily Load
SFHA	Special Flood Hazard Area
SLR	Sea Level Rise
SWM	Stormwater Management
USFWS	United States Fish and Wildlife Service
VFRIS	Virginia Flood Risk Information System

Executive Summary

The City of Newport News (City) is located on Virginia's Lower Peninsula in the coastal plain of the Chesapeake Bay watershed. Many areas in the City are susceptible to periodic flooding given their proximity to the shoreline and the low and flat topography, with land surface elevations ranging from MSL to 70 feet above MSL, with an average of 20. 31% of the population lives in the coastal zone, and FEMA has mapped approximately 10% of the land area in SFHAs. Much of the development in the current SFHAs occurred between the 1920s and 1960s—before the City's FIRM and BFE determinations were developed. The City's stormwater infrastructure is also aging, with many systems designed under older, less stringent design standards, which has made areas of the City even more prone to flooding, including areas outside of the FEMA-designated SFHAs.

The purpose of the Virginia CFPF is to support flood prevention and protection projects and studies in areas that are subject to recurrent flooding. Newport News is in the midst of a three-year, multi-million-dollar effort to integrate its global resilience efforts with the most current data and information to form a comprehensive stand-alone resilience plan. The City cannot receive CFPF grant funding for flood prevention projects until the Virginia DCR has approved a local resilience plan. This Interim Local Resilience Plan has been developed to document how the City's current resilience initiatives meet the nine requirements of a CFPF local Resilience Plan while the City progresses on its more comprehensive integration project.

Specifically, the Interim Local Resilience Plan demonstrates that the City's program meets the CFPF Local Resilience Plan requirements through

- Investments in flood reduction and resilience improvement projects;
- Prioritizing nature-based and green solutions;
- Addressing existing flooding conditions in the City's socially vulnerable and low-income neighborhoods;
- Identifying neighborhoods of repetitive loss;
- Employing equitable strategies for property acquisition;
- Implementing standardized policies and procedures for flooding debris management;
- Requiring improvements of substantially damaged structures within the floodplain;
- Coordinating flood response and resilience planning internally and regionally; and
- Integrating current data and maps with planning efforts to account for the projected effects of sea level rise and climate change.

Introduction

City of Newport News, Virginia Overview

The City of Newport News is located on the coastal plain of Virginia's Lower Peninsula (**Figure 1**). Newport News is approximately 26 miles long and less than a mile wide at its narrowest point. Its topographic elevations range from mean sea level in the southern sections to 70 feet further inland, with an average elevation of about 20 feet. The City borders the James River to the southwest, Hampton Roads to the southeast, the City of Hampton to the east, York County to the northeast, James City County to the north, and is in the Chesapeake Bay watershed.

Figure 1. The City of Newport News, Virginia

In 2020, Newport News' 186,247 aggregate population resided in 74,922 households with a density of 2,700 people per square mile (**Table 1**) and 31% of the population living within the coastal zone. Many neighborhoods experience periodic flooding given their proximity to each shoreline and associated waterbodies, with two major watersheds, Newmarket Creek and Salters Creek, vulnerable to significant coastal flooding issues. Newport News participates in the NFIP, with approximately 10% of the land mapped in an SFHA. Much of the development in these floodplains occurred between the 1920s and 1960s, before the existence of FIRM maps and BFE determinations. Consequently, moderately intensive nor'easter-type storms cause substantial damage to structures located in the floodplain.

Table 1. Newport News Demographic and FEMA NFIP Data

Population (2020)	184,247
# of Households	74,922
Density	2,700/mi^2
Median Household Annual Income	$57,922
FIPS CODE	5156000
FEMA Community Number	510103
NFIP Participant	Yes
CRS Class	7

In addition to approximately 70 mi.^{2} of land, the 14 major watersheds include 51 mi.^{2} of inland water, 2,883 acres of tidal wetlands, and 244 linear miles of tidal shoreline that are hydrologically connected to the James River, York River, and Chesapeake Bay basins. The extensive stormwater infrastructure includes approximately 3,000 structures, 200 miles of storm sewer, 60 miles of major outfall ditches, 60 stormwater management facilities, 50 miles of roadside ditches, and 53 miles of back and side lot ditches. The

drainage infrastructure ranges from 12-inch diameter driveway culverts up to 73-foot-wide open channels, all ultimately discharging into tidally influenced water bodies.

The City's aging stormwater system presents a logistical challenge, requiring increased inspections, maintenance, rehabilitation, and replacement over the next several decades (**Figure 2**). Newport News continues to update and modernize the stormwater infrastructure in the older urbanized areas, given that historical design standards and regulations did not account for future upstream volumes or existing downstream capacity. Due to the age of some of the infrastructure, in some locations this historical infrastructure was constructed without a formal design.

Given the City's location along the coast, the projected SLR will impact many City watersheds dramatically. The City is experiencing more frequent and intense storm events that are increasing localized and nuisance flooding. It continues to proactively integrate these climate change realities and additional State legislative and policy requirements into its programs to protect life, limb, and property within the Newport News jurisdictional boundary.

Figure 2. The City's Aging Stormwater System Built to Meet Historically Less Stringent Design Standards Presents a Logistical Challenge (*Photo: Harlech Place, August 2020*)

Purpose of a Resilience Plan

In 2016, the Virginia General Assembly enacted the Virginia Shoreline Resiliency Fund. In 2020, the fund's priorities were expanded to address inland flooding, and the fund was renamed the Virginia Community Flood Preparedness Fund (CFPF). Localities must use CFPF money "*primarily for the purpose of implementing flood prevention and protection projects and studies in areas that are subject to recurrent flooding as confirmed by a locality-certified floodplain manager*."[1] Projects in low-income geographic areas, provide community-scale hazard mitigation, and integrate nature-based solutions are prioritized.

Local government capital projects only qualify for CFPF if the locality has a Virginia Department of Conservation and Recreation (DCR) approved local Resilience Plan. Local Resilience Plans may be a single document or a combination of documents that together address nine specific elements:

1. Project Based,
2. Nature Based,
3. Social Equity,
4. Flooding/Repetitive Loss,
5. Property Acquisition,
6. Debris Management,
7. Substantial Damage/Improvement,
8. Regional Coordination & Schedule, and
9. Best Science & Mapping.

Descriptions of each of these Local Resilience Plan elements are presented in **Appendix A.**

[1] 2023 Funding Manual for the Virginia Community Flood Preparedness Fund

City Resilience Planning and Implementation

Introduction

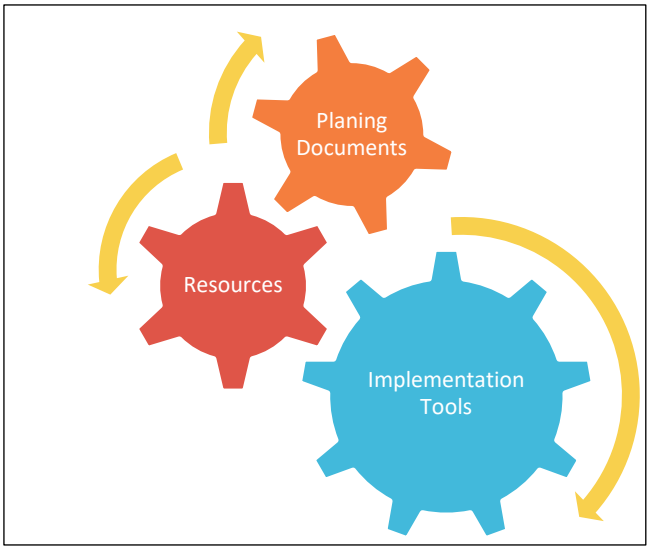

Figure 3. The City Implements Resilience in Projects Through the Integrated Use of Resources, Planning Documents, and Implementation Tools

Newport News continues to incorporate resilience into its numerous planning, program, and project initiatives. With prior CFPF funding, the City is in the midst of a three-year, multi-million-dollar effort to integrate its global resilience efforts, including stormwater management, floodplain management, and resilience and climate change, with the most up-to-date data and information to form a comprehensive stand-alone City-specific resilience plan. Concurrently, it continues to press forward in addressing known chronic flooding issues to protect life and property. This document serves as an Interim Local Resilience Plan to describe the current means, methods, and mechanisms for addressing resilience as it pertains to citywide flooding and how the City's current process satisfies the CFPF Local Resilience Plan elements so we can apply for and obtain CFPF grant money for ongoing projects concurrent with our larger integration project.

The City's Interim Local Resilience Plan is a series of 33 distinct living resources, planning documents, and implementation tools that are applied in conjunction with one another to ensure the most appropriate solutions are selected and employed, thus ensuring long-term resilience (**Figure 3**). The resources, planning documents, and implementation tools identified in **Figure 4** are based on the best data available at the time of their development. They are reviewed and updated as part of the ongoing master planning effort. The joint application of these resources, planning documents, and implementation tools ensures that the City's Interim Local Resilience Plan is consistent with the CFPF Local Resilience Plan required elements:

- The City's Interim Local Resilience Plan is **project-based** as it has already invested significant resources in the identification of flood reduction and resilience improvement projects. The City has already designed and constructed many of these projects, including flood relief, infrastructure retrofit, and stream restoration, while others remain on the City's prioritization list for completion as funding is secured.
- The Newport News Interim Local Resilience Plan prioritizes **nature-based** and green solutions. The City's multifaceted approach to minimizing impacts associated with flooding incorporates regulatory oversight to preserve the natural benefits associated with its low-lying riparian areas and floodplains through the implementation of its floodplain management and Chesapeake Bay Preservation Act programs. Solutions to flooding issues that emphasize nature-based designs and conservation score higher in the City's prioritization matrices as they also provide the City with Chesapeake Bay pollutant reduction credits.
- Newport News has an obligation to all neighborhoods when addressing flooding issues. The City's Interim Local Resilience Plan incorporates studies and associated plans to address existing conditions in the City's **socially vulnerable and low-income neighborhoods** and identify specific flood relief projects aimed at the long-term viability of these neighborhoods.
- The Interim Local Resilience Plan documents how the City identifies neighborhoods inside and outside of the mapped SFHA that have experienced **repetitive loss** and uses the acquired information to further determine the appropriate long-term flood management solution.
- The Interim Local Resilience Plan documents the City's guidelines for property acquisition and relocation, employing **equitable acquisition strategies**, and ensuring that acquired properties are either returned to an undeveloped open space or retrofitted as part of a flood control project.

- The Interim Local Resilience Plan documents the City's standardized policies and procedures for **debris management** associated with a natural disaster or flooding event and as required by the City's MS4 permit.
- The Interim Local Resilience Plan documents the City's floodplain management policies and procedures that specify the requirements associated with substantial development or improvement of structures **located within the SFHA.**
- City planning and response to flooding events and other emergency disasters are **coordinated both internally and regionally**. Responsibilities, schedules, and expectations are documented in communication and coordination protocols.
- As evidenced by its current multifaceted integration master planning effort, the City **utilizes current data**, including the most recent flood maps, and integrates such data with its long-term planning efforts to **account for the projected effects of sea level rise and climate change**.

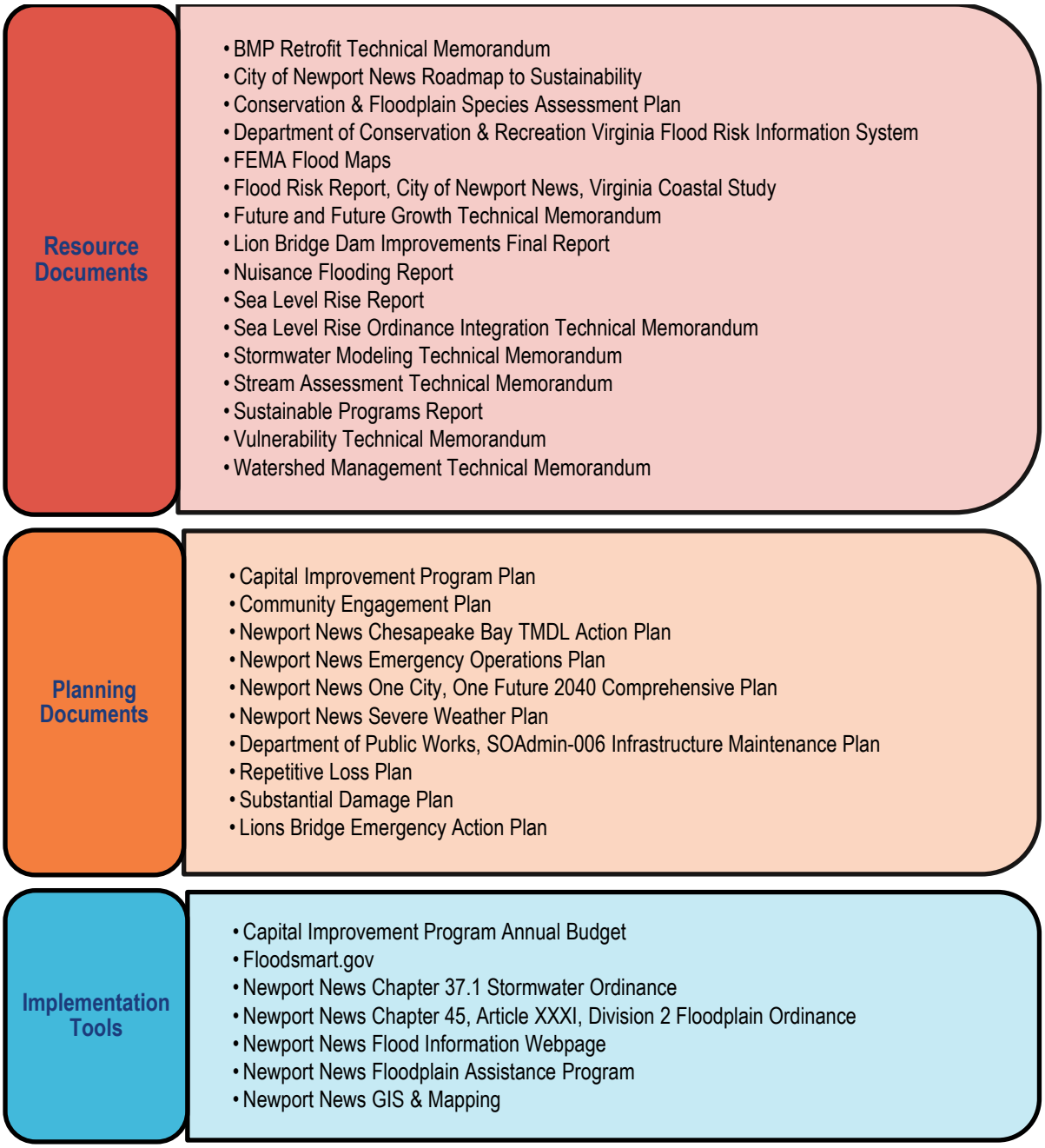

Figure 4. Resources, Planning Documents, and Implementation Tools Forming the City's Interim Local Resource Plan

Appendix B provides a summary of each of the City's Resources, Planning Documents, and Implementation Tools including:

- The document title,
- The corresponding CFPF Local Resilience Plan Element(s), and
- A general description of the document, its intended use, and how it is employed by the City.

Resilience Mapping

Newport News values access to the most current and available data when developing and utilizing its resources, planning documents, and implementation tools. The City maintains 143 GIS feature classes in 18 distinct GIS groups (**Figure 5**). Individual feature class names and the City department responsible for maintaining the data and meeting the update schedule requirements are listed in Appendix C.

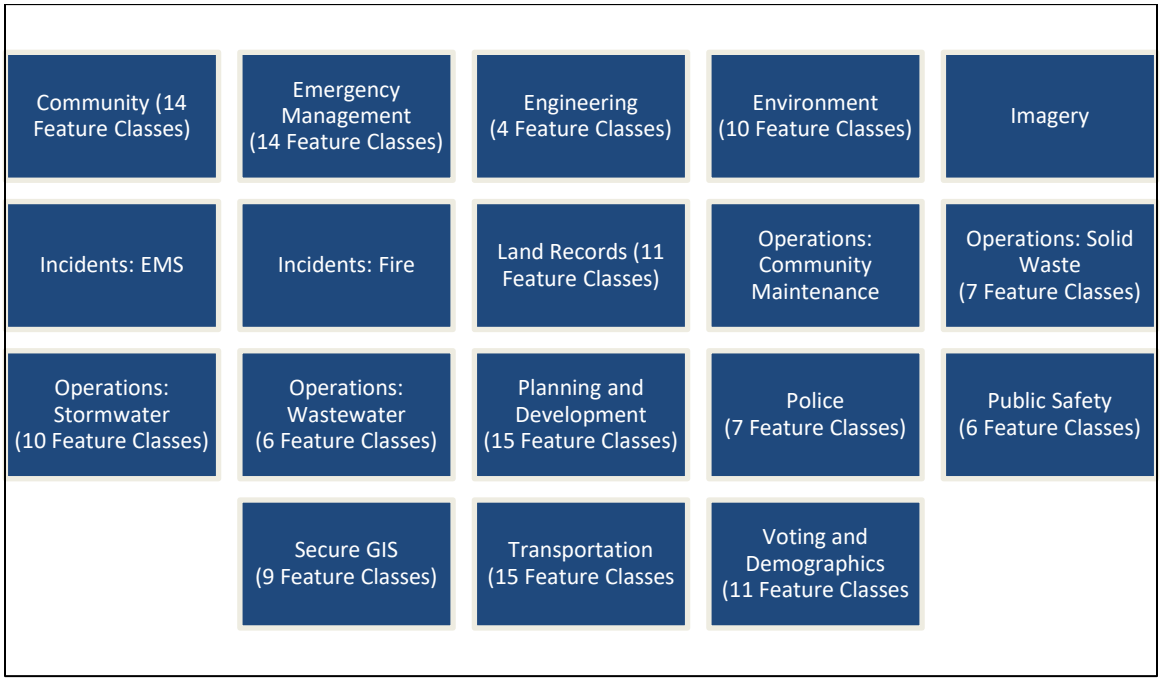

Figure 5. The Interim Local Resiliency Plan Consists of 143 Feature Classes in 18 Distinct GIS Groups

Appendix A. General Descriptions of the Nine CFPF Local Resilience Plan Elements

CFPF Element		Description
Number	**Title**	
1	Project Based	It is project-based with projects focused on flood control and resilience.
2	Nature Based	It incorporates nature-based infrastructure to the maximum extent possible.
3	Citywide/Social Equity	It includes considerations of all parts of a locality regardless of socioeconomics or race and addresses flood resilience needs of underserved populations within the community.
4	Citywide Flooding/Repetitive Loss	It identifies and includes all flooding occurring in all areas of the community, not just within the SFHAs, and provides the number and location of repetitive loss and severe repetitive loss properties. Repetitive loss and/or severe repetitive loss often occur outside of the SFHA and to properties not captured in NFIP reporting. All flooding should be tracked and addressed by the community.
5	Property Acquisition	If property acquisition and/or relocation guidelines are included, the guidelines include equitable relocation strategies for all affected and where land is acquired. Property acquisitions must remain undeveloped, as permanent open space, and under ownership or easement by the locality in perpetuity, except that flood control structures may be built on the property.
6	Debris Management	It includes a strategy for debris management.
7	Substantial Damage/Improvement	It includes administrative procedures for substantial development/substantial improvement of structures within the SFHA.
8	Regional Coordination & Schedule	It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.
9	Best Science & Mapping	It is based on the best available science and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.

Appendix B. City of Newport News Resources, Planning Documents, and Implementation Tools Comprising the City's Interim Local Resilience Plan

Resources

Newport News utilizes the following resources to implement its Interim Local Resilience Plan.

BMP Retrofit Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	This study identified retrofit projects to improve flooding issues and drainage within the City.
2	Nature Based	Retrofit projects that incorporated nature-based infrastructure were prioritized.

The BMP Retrofit Technical Memorandum analyzed existing stormwater management facilities within the City to identify facilities that can be retrofitted to provide improved stormwater management and water quality (Figure 1: *Newport News Retrofit Opportunities*; Table 10: *BMP Retrofit Feasibility Analysis*). Once facilities were prioritized based on age, type of facility, and the practicality of retrofitting the facility, the pollutant load reduction potential and approximate costs for retrofitting were calculated. Implementing these retrofit opportunities identified will improve the stormwater management capabilities, improve water quality, and reduce flooding risks within the City.

City of Newport News Roadmap to Sustainability

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
2	Nature Based	The plan's multiple initiative categories include resource conservation, open space, and sustainable built environment to address nature-based goals.
9	Best Science & Mapping	The plan uses the best available science and data to identify programs and goals for the City's sustainable effort.

The City of Newport News Roadmap to Sustainability details short- and long-term actions to advance the City's sustainability initiatives. These initiatives focus on what the roadmap defines as the triple bottom line: environmental stewardship, social responsibility, and economic prosperity. This roadmap plans for the impacts of climate change, including sea level rise and the increased risk of flooding, on the built and natural environment, on City infrastructure, and the City's population. By increasing the efficiency and effectiveness of city government operations, pursuing sustainable public facility design, and ensuring appropriate private development plan approval incentives, the city will be positioned for sustainable gains.

Conservation & Floodplain Species Assessment Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
2	Nature Based	This plan prioritizes natural resource protection and conservation.
5	Property Acquisition	This plan includes property acquisition for conservation of critical habitat areas for threatened and endangered species.
9	Best Science & Mapping	This plan uses the best available science, including updated floodplain maps.

The Conservation & Floodplain Species Assessment Plan identifies threatened and endangered species, as defined by the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the locations of their associated critical habitat within the City (Table 1: *Threatened and Endangered Species within Newport News, VA*). This assessment identifies suitable floodplain parcels for the conservation of critical habitat and other conservation opportunities within the City (Figure 14: *Vacant Parcel Conservation Suitability*). This assessment will help support the City in reducing the risk of flooding, resulting in a more resilient community.

Department of Conservation & Recreation Virginia Flood Risk Information System

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	This system identifies flooding risks citywide.
9	Best Science & Mapping	This system uses the best available science and updated SFHA maps.

The Virginia Flood Risk Information System (VFRIS) contains publicly accessible and searchable data and information, including the flood risk of a property, whether a property is within the Special Flood Hazard Area (SFHA), flood insurance studies, and flood risk reports. The system pulls data from the Federal Emergency Management Agency, Fish and Wildlife Service, ESRI GIS, and the Virginia Geographic Information System. This spatial visualization of the SFHA and flood risk helps the City plan resilient future growth and helps property owners understand their property risks and make well-informed decisions.

Federal Emergency Management Agency (FEMA) Flood Maps

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	These maps are citywide.
8	Regional Coordination & Schedule	These maps are used by many departments, including on interdepartmental projects.
9	Best Science & Mapping	These maps use the best available science and updated floodplain data.

The FEMA Flood Maps illustrate the Citywide flood risks and play a critical role in identifying SFHAs. The City references these maps both in plan review and approval of proposed development and for identifying existing structures located in the SFHA. The City has integrated these maps into its Geographic Information System and made them accessible to the community to further increase local knowledge of potentially hazardous areas due to flooding.

Flood Risk Report, City of Newport News, Virginia Coastal Study

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
2	Nature Based	The report prioritizes preventative measures (Chapter 4) and natural resource protection activities (Section 4.1.3).
3	Social Equity	The report is citywide.
5	Property Acquisition	The report provides federal mitigation options for acquisition.
8	Regional Coordination & Schedule	The report assists with coordinating federal and local flood control efforts.
9	Best Science & Mapping	The report is based on a detailed analysis of risk factors. It also includes a Flood Risk Map for use by both the public and private sectors.

This Flood Risk Report (FRR) provides a comprehensive picture of flood risk within the City through flood risk assessment and analysis. This report maps flood risk (Figure 3-1: *Flood Risk* Map), summarizes the potential economic impacts of floods (Table 3-1: *Summary of Potential Flood Losses – City of Newport News, Virginia*), and proposes actions to reduce flood risk. This information helps local officials, floodplain managers, planners, emergency managers, and others better understand their flood risks, take steps to mitigate those risks, and communicate those risks to residents and local businesses. The FRR can be used to help update hazard mitigation and emergency operations and response plans and develop hazard mitigation projects. This resource is used to increase the City's resilience to flooding and better protect residents.

Future and Future Growth Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	This study focuses on two underserved and potentially socially vulnerable populations: African Americans and the elderly.
8	Regional Coordination & Schedule	This study assists with interdepartmental projects and coordination.
9	Best Science & Mapping	This study uses the best available science and incorporates climate change and sea level rise into the modeling of future conditions.

The Future and Future Growth Technical Memorandum evaluates existing and future conditions within various climate change categories, including nuisance flooding, storm surge flooding, and SLR. The assessment also evaluates the impacted population, planned developments, and planned growth areas inside and outside of the floodplain. This assessment conducted a breakout evaluation of the two largest potentially socially vulnerable demographic groups in the City, Black or African Americans and the elderly, which showed these groups are more likely to be affected by SLR (Table 3: *Population Distributions in Current 1% and 0.2% AEP Event Floodplains*). This analysis identified areas with high projected future growth and the need for greater resiliency planning (Table 14: *Planning opportunity area descriptions and future flooding exposure*). Furthermore, the analysis includes a review of the City's current floodplain management ordinance to guide recommendations for development, particularly more stringent requirements for residential development in current and future floodplain areas (Table 12: *Floodplain development regulation recommendations*).

Lions Bridge Dam Improvements Final Report

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	This report is about the Lions Bridge Dam Improvements project, which improves flood control and resilience.

This Lions Bridge Dam Improvements Final Report documents the design of many improvements made to the Lions Bridge Dam, which was previously classified as having a Significant Hazard Potential. Inspections of the dam were conducted, which provided data to assess the overall condition of the dam and develop and implement a rehabilitation plan for the Principal Spillway and Low-Level Outlet.

Nuisance Flooding Report

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	This report proposes potential projects to reduce nuisance flooding.
2	Nature Based	The nuisance flooding projects that utilized nature-based infrastructure to the maximum extent possible were prioritized and were selected to continue the development of a conceptual design.

The Nuisance Flooding Report evaluated potential nuisance flooding projects by analyzing historical stormwater flooding data and considering the proximity to coastal flooding, storm surge impacts, and the existing local stormwater drainage network. From the evaluation, four areas and projects were selected to be scoped for nuisance flooding concept design solutions: subsurface storage, constructed wetland, vegetated bioretention, and driveway pipe upsizing. These areas were identified as highly impacted by frequent flooding and containing undercapacity stormwater infrastructure. This report details the methodology and resulting benefits provided by the concept designs for the four selected nuisance flood mitigation strategies. Implementation of these projects will make a more resilient City.

Sea Level Rise Report

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
9	Best Science & Mapping	This report uses the best available science and incorporates climate change and sea level rise into the projection of future conditions.

The Sea Level Rise Report estimates the anticipated increase in elevation of day-to-day water levels and the timeframe in which each sea level scenario—1.5 foot, 3 feet, 4.5 feet, and 6 feet—are expected to occur (Table 1: *Suggested planning horizons associated with the SLR values for the Newport News Climate Change and Resilience Master Plan*). This report is used to understand how future coastal water levels may change and the vulnerability of the City to increased frequency and magnitude of flooding. It informs the development of strategies to decrease exposure to flooding. Quantifying future sea level rise and incorporating these scenarios into future design and models will help the City adequately plan for future infrastructure, projects, and development.

Sea Level Rise Ordinance Integration Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
9	Best Science & Mapping	This report uses the best available science and incorporates climate change and sea level rise.

The Sea Level Rise Ordinance Integration Technical Memorandum provides specific language recommendations to incorporate climate change and sea level rise considerations into local ordinances (Table 1: *Recommended updates to the Newport News Code of Ordinances*). These proposed language changes meet new sea-level rise requirements in Virginia state laws. These changes in City ordinances will enhance and create strategies, programs, and policies that address future flooding conditions and protect new and existing developments from sea level rise.

Stormwater Modeling Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	Stormwater modeling needs were partially based on the social vulnerability of populations within a watershed (Figure 3: *Newport News Social Vulnerability Risk Index*).
4	Flooding / Repetitive Loss	Stormwater modeling needs were partially based on areas with a history of flooding and repetitive loss.
9	Best Science & Mapping	Stormwater modeling needs were partially based on future watershed characteristics, which incorporate the effects of climate change and sea level rise.

The Stormwater Modeling Technical Memorandum analyzes the City's current stormwater inventory (Table 2: *Evaluation of Current Stormwater Model Inventory*) and identifies and prioritizes watersheds where more detailed stormwater modeling is needed (Table 3: *Evaluation of Future Stormwater Modeling Needs*). The watersheds identified were prioritized based on current watershed characteristics, including current flooding conditions and stormwater infrastructure, projected future watershed characteristics, which factored in planned drainage improvement projects and future population and development, and social vulnerability. Studies and modeling of the areas recommended in this memorandum will allow the City to understand better the current state of the City's stormwater system and to better prepare for the future.

Stream Assessment Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	This memorandum identifies and prioritizes specific stream restoration projects.
2	Nature Based	Restoration projects that incorporate nature-based techniques and infrastructure are prioritized.

The Stream Assessment Technical Memorandum identifies eroding streams and sediment sources that are candidates for restoration projects to reduce the amount of sediment in the City's waterways (Figure 4/Table 8: *Sites Selected for Inclusion in the SWM Masterplan*). Candidates were selected using aerial imagery and applying factors such as accessibility, utility conflicts, potential forest loss, and stream segment slope were considered, and streams were evaluated in the field by a surveyor. The City will prioritize these projects to reduce streambank erosion and the minimize flooding along streams and neighboring properties.

Sustainable Programs Report

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	This report identifies and prioritizes future projects that focus on flood control and resilience.
2	Nature Based	The proposed green infrastructure projects that incorporate nature-based infrastructure were prioritized.
3	Social Equity	This report emphasizes not only the environmental and economic benefits but also the social benefits of the proposed green infrastructure projects.
9	Best Science & Mapping	This report uses the best available science.

The Sustainable Programs Report reviewed the green and resilient programs of other local governments to identify programs and strategies that would benefit the City and align with the City's sustainability goals. Strategies and suitable areas for green development within the City were identified, including proposed green infrastructure development on city-owned lands (Table 12: *Summary of Proposed Green Infrastructure Practice Types and Prioritization*) and incentives for citizens to implement green infrastructure practices on private properties (Table 17: *Example Prioritization Methodology for Green Infrastructure BMP Incentive Program*). The costs and the benefits of such developments were analyzed to help inform the prioritization of these projects. The provided recommendations for incorporating GI into the City's sustainable development strategy can be used to enhance and create new goals for the Roadmap to Sustainability and to establish a plan for achieving these sustainability goals.

Vulnerability Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
4	Flooding / Repetitive Loss	This memorandum factors in previous flooding and repetitive loss into the vulnerability analysis.
9	Best Science & Mapping	This memorandum uses the best available science and considers the effects of climate change and sea level rise on the vulnerability of areas.

The Vulnerability Technical Memorandum provides a comprehensive vulnerability assessment to assess potential flooding impacts on the built environment, land area, and natural infrastructure (Table 18: *Critical Asset Vulnerability Scores*). This technical memorandum describes the loss estimation process and presents the flood impact assessment results for current and future projected coastal flood hazards under four different sea-level rise scenarios: 1.5, 3, 4.5, and 6 feet (Figure 5: *Projected flood extent for increasing sea level rise scenarios for the 100-yr flood event*). Quantifying the direct economic impact of future flooding will help the City financially plan for the future and incentivize early investment in stormwater infrastructure and flood mitigation efforts.

Watershed Management Technical Memorandum

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	This analysis of drainage deficiencies was citywide.
4	Flooding / Repetitive Loss	Drainage deficiencies were identified in part by previous flooding and repetitive loss.
9	Best Science & Mapping	This analysis used the best available science and updated floodplain maps.

The Watershed Management Technical Memorandum identifies and maps drainage deficiencies within each City watershed, including both areas where infrastructure may be undersized or needs improvement and areas where more information is needed. Drainage data was analyzed, and maps and tables were produced summarizing drainage deficiencies throughout the City (Table 2: *Summary of Missing Drainage System Data by Watershed*). This effort demonstrates the City's ongoing efforts to improve the drainage and stormwater management systems.

Planning Documents

The City uses the following planning documents to implement its Interim Local Resilience Plan.

Capital Improvement Program Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	The CIP identifies specific projects for development and implementation in the areas of flood control, stormwater management, and dam safety.
3	Social Equity	Projects are based on need and involve a priority evaluation of the needs of the entire City.
8	Regional Coordination & Schedule	Projects are evaluated based on need and are scheduled based on the best possible availability of resources and criticality.

The Capital Improvements Plan (CIP) is the City's five-year plan that establishes both a schedule and funding strategy for high-priority capital projects and equipment purchases. Examples of capital improvement projects that impact and improve the City's resiliency to flooding include improvements to undersized and failing drainage systems, construction of new stormwater infrastructure, repairs to existing stormwater infrastructure, citywide mapping, flood risk modeling, dredging of stormwater management ponds, improvements to dams, and the development of a stormwater master plan.

The CIP allows for the systematic evaluation of capital projects, keeps the public informed about future needs and projects, fosters cooperation and coordination between interrelated departments, identifies the most economical means of financing capital projects, and facilitates coordination between capital needs and the operating budget.

Community Engagement Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	This plan emphasizes the input of the public, diverse stakeholders, and those who represent underserved communities.
9	Best Science & Mapping	Floodplain educational materials are based on the best available science.

The Community Engagement Plan guides engaging diverse stakeholders in floodplain education, including floodplain residents, developers, environmental organizations, and more. The plan also guides evaluating existing floodplain educational materials and developing an educational program to explain the function of floodplains and conservation areas, the requirements for development, and the effects of development. The plan addresses how to keep the public well-informed about flood-related infrastructure and projects and provides for timely project updates and responses to inquiries from the media and public.

Hampton Roads Regional Hazard Mitigation Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	Chapter 7 identifies twenty goals and projects specifically for Newport News.
3	Social Equity	Recommendations in the plan apply citywide. The social vulnerability for each type of hazard, including flooding, storm surge, and sea level rise, is discussed in Chapter 5.
4	Flooding / Repetitive Loss	Recommendations in the plan apply citywide. Chapter 4 identifies multiple types of flooding that occur in the City.
8	Regional Coordination & Schedule	The Plan includes specific actions, lead agencies, funding sources, target completion dates, interim measures of success, and priorities.
9	Best Science & Mapping	Chapters 4 and 5 contain detailed risk assessments based on currently available scientific and economic data.

The Hampton Roads Hazard Mitigation Plan identifies and assesses hazard risks, including flooding, storm surge, and sea level rise risks (Table 5.7A: *HAZUS Flood Damage Vulnerability Results*; Table 5.7B: *Coastal Storm Surge Impacts, 2020*; Table 5.8: *Exposure to one-meter sea level rise above spring high tide*). The plan recommends specific actions designed to protect residents, business owners, and the built environment from natural disasters and assigns responsibility for these actions to specific individuals, departments, or agencies. This hazard mitigation plan helps save lives, property, and money and will reduce future vulnerability.

Newport News Chesapeake Bay TMDL Action Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	The Chesapeake Bay TMDL Action Plan identifies stream restoration projects. Many of these projects include co-benefits, such as protecting infrastructure from stream bank erosion and flood control by reconnecting the stream to its floodplain.
2	Nature Based	Stream restoration projects use Natural Channel Design techniques to mimic natural stream functions.
8	Regional Coordination & Schedule	The plan includes three phases to achieve Bay TMDL pollutant reduction targets through 2028.
9	Best Science & Mapping	Compliance is demonstrated through design specifications and calculations approved by the Department of Environmental Quality and the Chesapeake Bay Program Expert Panel.

The City has developed and implemented a series of Chesapeake Bay TMDL Action Plans aimed at minimizing the pollutants of concern discharging into the Chesapeake Bay. While the Chesapeake Bay TMDL Action Plans are predominantly water quality-based, the individual projects offer an opportunity to mitigate drainage and flooding impacts. Projects such as those in the currently applicable 2018 Chesapeake Bay TMDL Action Plan include using 'green' controls to reduce stormwater pollution while concurrently mitigating flow and velocity. These projects include the completed Stoney Run Stream restoration, the planned Hampton Channel improvements and constructed wetlands, and the planned Public Works annex retrofit (Table 6-4: *First Permit Cycle Planned/Completed Water Quality Projects Summary*).

Newport News Emergency Operations Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	The plan addresses mitigation, preparation, and recovery operations for many types of hazardous events citywide, including flooding.
4	Flooding / Repetitive Loss	The Plan addresses mitigation, preparation, and recovery operations for flooding events citywide.
8	Regional Coordination & Schedule	The plan outlines protocols and procedures for communication and coordination between departments and personnel during emergencies.

The Newport News Emergency Operations Plan provides the executive framework for the coordinated response to major emergencies and disasters, including flooding. The response aims to address the immediate and short-term actions to preserve life, property, environment, and the social, economic, and political structure of the community. The plan specifically addresses the coordination of response efforts for incidents requiring multi-agency coordination. This plan allows the City to be prepared and respond quickly and efficiently when disasters, such as large-scale flooding, strike.

Newport News One City, One Future 2040 Comprehensive Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	The plan evaluates citywide demographics, land use, and flood zones.
8	Regional Coordination & Schedule	The plan addresses the City's goals and initiatives for the next twenty years.

The Newport News One City, One Future 2040 Comprehensive Plan establishes a clear vision for the City's future and serves as a general guide for development. This plan includes the City's official policies on important topics such as land use, urban design, the environment, public facilities, and more. The plan includes strategies for leveraging strengths and opportunities to manage change and guide the City into the future as a city that is thriving both economically and socially. As part of the comprehensive plan, sections and strategies are dedicated to resiliency against flooding and a changing climate. This includes planning for stream bank erosion (Figure 20: *Chesapeake Bay Preservation Areas, Shoreline, and Streambank Erosion Areas Map*), sea level rise (Figure 21: *Sea Level Rise Map*), and flooding (Figure 22: *Flood Zones Map*). The comprehensive plan aligns with the Roadmap to Sustainability, and the identified priorities and strategies focus in part on sustainability and resiliency (Table 5: *One City, One Future Priorities & Strategies*).

Newport News Severe Weather Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	The plan addresses mitigation, preparation, and recovery operations for weather events citywide and identifies socially vulnerable populations within flood-prone areas.
4	Flooding / Repetitive Loss	The plan addresses mitigation, preparation, and recovery operations for flooding events citywide.
8	Regional Coordination & Schedule	The plan outlines protocols and procedures for communication and coordination between departments and personnel during severe weather events.

The Newport News Severe Weather Plan provides a guide for an effective and coordinated response on the part of local government and supporting organizations in the event of a severe weather emergency, including hurricanes, floods, severe thunderstorms, winter storms, and extreme heat. The plan includes information about flood insurance policies within the City and a potential loss analysis for a flood event. The Severe Weather Plan is an annex to the City of Newport News Emergency Operations Plan (EOP) and includes more detailed information, decision-making tools, and research information to support decision-making.

Department of Public Works, SOAdmin-006 Infrastructure Maintenance Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
6	Debris Management	The plan addresses the process and responsibility for debris management for the City's natural and built infrastructure.

The Infrastructure Maintenance Plan describes the inventory, inspection, maintenance, and cleaning programs that ensure the City's public stormwater facilities and infrastructure function as designed and are operable during storm events. Ensuring preventative and corrective maintenance is performed properly and promptly on stormwater infrastructure reduces the City's vulnerability to the adverse effects of flooding and storm events.

Repetitive Loss Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
4	Flooding / Repetitive Loss	This plan identifies areas of repetitive loss throughout the entire city, not just in the SFHA.

The Repetitive Loss Plan identifies specific neighborhoods and properties within the City that have a repetitive history of flooding damage and are at risk of flooding again (Figure 1: *Newport News Repetitive Loss Neighborhood Map*). This plan maps these neighborhoods and provides recommendations for mitigation approaches to implement to help prevent these properties from continuing to flood (Table 3: *Citywide Mitigation Strategies*). This plan helps to prevent future property damage and will decrease future flooding repair expenditures.

Substantial Damage Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
7	Substantial Structural Improvement	This plan includes procedures for substantial improvements of damaged structures within the SFHA.
8	Regional Coordination & Schedule	This plan includes protocols for post-disaster event coordination and communication.

The Substantial Damage Plan outlines the steps involved in the substantial damage process and the methods to ensure that post-disaster substantial damage responsibilities are met. If the damage to a property is defined as "substantial" as identified by an official city inspection, the property must be repaired to comply with the current flood code and regulations. This repair helps prevent repetitive and future loss at properties that are initially vulnerable to flood damage. These proactive steps help protect the City from further negative impacts of future flooding.

Lions Bridge Emergency Action Plan

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	This plan is based on the Lions Bridge Dam Improvements project, which improves flood control and resilience.
8	Regional Coordination & Schedule	This plan fosters coordination and communication between necessary departments during an emergency.

The Lions Bridge Emergency Action Plan prescribes actions to be taken in the event of a failure or conditions potentially leading to the failure of the Lions Bridge Dam and defines protocols and procedures for notification of and coordination with the appropriate personnel. This plan is designed to protect life and property in the event of a failure and will allow the City to be prepared and respond quickly in an emergency.

Implementation Tools

The City uses these tools in the implementation of its Interim Local Resilience Plan.

Capital Improvement Program Annual Budget

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
1	Project Based	The CIP budget funds specific projects for development and implementation in the areas of flood control, stormwater management, and dam safety.
3	Social Equity	Projects are based on need and involve a priority evaluation of the needs of the entire City.
5	Property Acquisition	The CIP budget provides the necessary funding for property acquisition identified in studies and plans.
6	Debris Management	The CIP budget provides the necessary funding for ensuring debris management is adequately funded in case of emergency.
8	Regional Coordination & Schedule	Projects are evaluated based on need and are scheduled based on the best possible availability of resources and criticality.

The Capital Improvement Program Annual Budget details the expenses and funding sources of the capital improvement projects proposed in the CIP. Examples of capital improvement projects that impact and improve the City's resiliency to flooding include improvements to undersized and failing drainage systems, construction of new stormwater infrastructure, repairs to existing stormwater infrastructure, citywide mapping, flood risk modeling, dredging of stormwater management ponds, improvements to dams, and the development of a stormwater master plan. The capital improvement budget ensures that these projects are financially feasible.

Floodsmart.gov

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	The information provided on flood insurance and the costs of flooding addresses the flood resilience needs of all populations in the community, regardless of socioeconomics.
4	Citywide Flooding /Repetitive Loss	The information can be applied citywide.
9	Best Science & Mapping	The information on this website uses the best science available and uses updated flood maps.

Floodsmart.gov is a website run by FEMA which has a myriad of resources related to flood insurance, the cost of floods, and proper flood preparation. This website is a helpful reference for the City and property owners within the City to understand flood insurance better and the costs associated with it.

Newport News Chapter 37.1 Stormwater Ordinance

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
2	Nature Based	The ordinance, through the Virginia Runoff Reduction Method, incentivizes the use of techniques that maximize infiltration of stormwater as opposed to structural controls.
3	Social Equity	The ordinance is enforced and is applicable citywide.
4	Flooding / Repetitive Loss	The ordinance is enforced and is applicable citywide.
8	Regional Coordination & Schedule	The ordinance outlines responsible parties for implementing and enforcing the programs and requirements laid out in the ordinance, including protocols for communication and coordination between responsible parties.
9	Best Science & Mapping	The ordinance relies on the best science available and updated maps.

Chapter 37.1 of the Newport News Code of Ordinances outlines the aspects of the City's stormwater management program. It gives the City the legal authority to implement all aspects of the program, including imposing a stormwater management service charge to property owners. Ensuring the stormwater management program is adequately funded allows the City to perform the necessary functions to follow permit conditions, protect water quality, and protect property and infrastructure from flooding.

Newport News Chapter 45, Article XXXI, Division 2 Floodplain Ordinance

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
2	Nature Based	The ordinance mandates prevention and natural resource protection.
3	Social Equity	The ordinance is enforced and is applicable citywide.
4	Flooding / Repetitive Loss	The ordinance is enforced and is applicable citywide.
7	Substantial Damage/Improvement	These floodplain development regulations serve to reduce potential substantial damage to property and infrastructure.
9	Best Science & Mapping	The ordinance relies on the best science available and updated maps.

The Floodplain Ordinance in Chapter 45 of the Newport News Code of Ordinances outlines floodplain development regulations to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base. By regulating new development in flood-prone areas and requiring the implementation of measures to protect against flooding, the City has taken proactive steps to reduce the future potential flood damage.

Newport News Flood Information Webpage

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	This webpage allows for public preparedness and input, regardless of socioeconomic status.
9	Best Science & Mapping	The webpage uses the best available science and updated maps.

The City maintains a webpage dedicated to flooding and resources to help the public prepare for a potential flood event. This webpage includes information to help protect people during a flood, including evacuation zone maps and evacuation tips, and information to help protect property, including flood insurance information and protective preventative measures. This webpage also allows the public to provide input and feedback about the City's stormwater management program and plan.

Newport News Floodplain Assistance Program

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
2	Nature Based	The program focuses on providing a means for property owners of repeatedly flooding properties to sell. Structures are removed, and the lot is perpetually maintained as green space.
3	Social Equity	Since FAP assistance is provided at no cost to the property owner, anyone with a qualifying property within the SFHA can access the FAP assistance, regardless of socioeconomic status.
4	Flooding / Repetitive Loss	FAP assistance is available to many properties that have a history of repetitive flooding.
5	Property Acquisition	FAP assistance includes property acquisition and relocation of properties that are originally within the SFHA.

The Flood Assistance Program (FAP) provides flood assistance alternatives to property owners whose property is located within the 100-year floodplain, including property and structure acquisition, structure relocation, and structure elevation, at no cost to the property owner. This program aims to reduce or eliminate flood-associated losses that result from the frequent flooding of properties located in the floodplain.

Newport News GIS & Mapping

CFPF Resilience Plan Element		Document's Relationship to CFPF Resilience Plan Element
3	Social Equity	All mapping layers and associated metadata are available citywide
9	Best Science & Mapping	Map layers are kept up-to-date and rely on the best available data and science.

The City maintains a robust Geographic Information System available to the public through an online portal. Multiple stormwater and flood control layers are maintained, including stormwater infrastructure, stormwater management facilities, flood zones, sea level rise, storm surge, coastal erosion, Chesapeake Bay Preservation Area, topography, and drainage basins. This Geographic Information System helps City officials perform their necessary duties to help prevent flooding within the City and allows for a more flood-aware and flood-educated public.

Appendix C. City of Newport News GIS Feature Classes Incorporated into the City's Interim Local Resilience Plan

GIS Data Layer	GIS Data Group	Responsible Party	Update Frequency
Community Center	Community	IT - GIS Division	As Needed
Golf Course	Community	IT - GIS Division	As Needed
Hospital	Community	IT - GIS Division	As Needed
Library	Community	IT - GIS Division	As Needed
Museum	Community	IT - GIS Division	As Needed
Park	Community	IT - GIS Division	As Needed
Park Boundaries	Community	IT - GIS Division	As Needed
Public WiFi	Community	IT - GIS Division	As Needed
School	Community	IT - GIS Division	Yearly
School Zone: Elementary	Community	IT - GIS Division	Yearly
School Zone: Elementary Crosstown Busing	Community	IT - GIS Division	Yearly
School Zone: High	Community	IT - GIS Division	Yearly
School Zone: Middle	Community	IT - GIS Division	As Needed
Trails	Community	IT - GIS Division	As Needed
Debris Removal Sites	Emergency Management	IT - Asset Management Division (AMD)	As Needed
Debris Removal Zones	Emergency Management	IT - AMD	As Needed
Evacuation Route	Emergency Management	VDEM	VDEM Data
Evacuation Zones (A-D)	Emergency Management	VDEM	VDEM Data
Flood Prone Intersections	Emergency Management	IT - AMD	FEMA Data
Flood Hazard Zones	Emergency Management	FEMA	As Needed
Shelters	Emergency Management	VDEM	As Needed
Surry Emergency Planning Zone	Emergency Management	VDEM	VDEM Data
Surry Evacuation Assembly Center	Emergency Management	VDEM	VDEM Data
Surry Monitoring Points	Emergency Management	VDEM	VDEM Data
Surry Protective Action Zone	Emergency Management	VDEM	VDEM Data
Surry Sirens	Emergency Management	VDEM	VDEM Data
Surry Sirens 1 Mile Buffer	Emergency Management	VDEM	VDEM Data
Water Level Sensor	Emergency Management	IT - AMD	As Needed
City Projects	Engineering	IT - GIS Division	Continuously
Survey Control Grid	Engineering	IT - GIS Division	As Needed
Survey Control Points (Primary)	Engineering	IT - GIS Division	As Needed
Survey Control Points (Secondary)	Engineering	IT - GIS Division	As Needed
Chesapeake Bay Preservation Areas	Environment	IT - GIS Division	As Needed
Elevation Contour Lines	Environment	IT - GIS Division	3 Year Cycle
Reservoir Protection Buffer Zone	Environment	IT - GIS Division	As Needed
Reservoir Protection Districts	Environment	IT - GIS Division	As Needed
Soils	Environment	IT - GIS Division	Continuously
Stormwater Management Facilities	Environment	IT - AMD & IT - GIS Division	As Needed
Stream (Waterline)	Environment	IT - GIS Division	As Needed
Vegetation	Environment	IT - GIS Division	As Needed
Waterbody	Environment	IT - GIS Division	As Needed
Wetlands	Environment	IT - GIS Division	As Needed
Imagery (Latest)	Imagery	IT - GIS Division	1 Year Cycle
Incidents EMS	Incidents EMS	IT - GIS Division	Continuously
Incidents Fire	Incidents Fire	IT - GIS Division	Continuously

Address Points	Land Records	IT - GIS Division	Continuously
Building Footprints	Land Records	IT - GIS Division	Continuously
City Boundary	Land Records	IT - GIS Division	As Needed
Easement	Land Records	IT - GIS Division	Continuously
Internal Lot Lines	Land Records	IT - GIS Division	Continuously
Neighborhood Boundaries (Names)	Land Records	IT - GIS Division	As Needed
Parcel Boundaries	Land Records	IT - GIS Division	Continuously
Subdivisions	Land Records	IT - GIS Division	As Needed
Tax Blocks	Land Records	IT - GIS Division	As Needed
Traverse Lines	Land Records	IT - GIS Division	As Needed
Zip Code	Land Records	United States Post Office	Federal Data
Mowing Areas	Operations: Community Maintenance	IT - GIS Division	Continuously
Bulk Enclosures	Operations: Solid Waste	IT - AMD	Continuously
Bulk Pickup	Operations: Solid Waste	IT - AMD	Continuously
Garbage Pickup	Operations: Solid Waste	IT - AMD	Continuously
Leaf Collection	Operations: Solid Waste	IT - AMD	Continuously
Recycling (Automated)	Operations: Solid Waste	IT - AMD	Continuously
Recycling (Manual)	Operations: Solid Waste	IT - AMD	Continuously
Street Sweeping	Operations: Solid Waste	IT - AMD	Continuously
Ditches	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Drainage Basins (Local Watersheds)	Operations: Stormwater	IT - AMD & IT - GIS Division	As Needed
End Sections	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Gravity Mains	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Inlets	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Junction Boxes	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Manholes	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
National Watershed Boundaries	Operations: Stormwater	IT - AMD & IT - GIS Division	As Needed
Pump Stations	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Underground Enclosures	Operations: Stormwater	IT - AMD & IT - GIS Division	Continuously
Forced Mains	Operations: Wastewater	IT - AMD & IT - GIS Division	Continuously
Gravity Mains	Operations: Wastewater	IT - AMD & IT - GIS Division	Continuously
Laterals	Operations: Wastewater	IT - AMD & IT - GIS Division	Continuously
Manholes	Operations: Wastewater	IT - AMD & IT - GIS Division	Continuously
Pump Stations	Operations: Wastewater	IT - AMD & IT - GIS Division	Continuously
Service Areas	Operations: Wastewater	IT - AMD & IT - GIS Division	As Needed
Airport FAA 7460 Notification Area	Planning and Development	FAA	As Needed
Airport Noise Contour	Planning and Development	FAA	As Needed
Economic Development Site	Planning and Development	IT - GIS Division	As Needed
Enterprise Zone	Planning and Development	IT - GIS Division	Yearly
Historic Districts	Planning and Development	IT - GIS Division	As Needed
Historic Resources	Planning and Development	IT - GIS Division	As Needed
HUB Zone	Planning and Development	US Small Business Administration	Federal Data
Land Use Existing	Planning and Development	IT - GIS Division	As Needed
Land Use Future	Planning and Development	IT - GIS Division	Every 5 Years
New Market Tax Credit	Planning and Development	IT - GIS Division	As Needed
Opportunity Zone	Planning and Development	IT - GIS Division	As Needed

Overlay District	Planning and Development	IT - GIS Division	As Needed
Technology Zone	Planning and Development	IT - GIS Division	As Needed
Tourism Zone	Planning and Development	IT - GIS Division	As Needed
Zoning	Planning and Development	IT - GIS Division	Ordinance
Accident Reports (24 hours)	Police	Newport News Police Department	Daily
Daily Arrest Report (24 hours)	Police	Newport News Police Department	Daily
Daily Juvenile Report (24 hours)	Police	Newport News Police Department	Daily
Daily Offenses(24 hours)	Police	Newport News Police Department	Daily
Field Contacts (24 hours)	Police	Newport News Police Department	Daily
Theft from Vehicle (24 hours)	Police	Newport News Police Department	Daily
Tow/Impound (7 days)	Police	Newport News Police Department	Weekly
Fire District	Public Safety	IT - GIS Division	As Needed
Fire ESZ	Public Safety	IT - GIS Division	As Needed
Fire Station	Public Safety	IT - GIS Division	As Needed
Police District	Public Safety	IT - GIS Division	As Needed
Police ESZ	Public Safety	IT - GIS Division	As Needed
Police Station	Public Safety	IT - GIS Division	As Needed
CERT Volunteers	Secured GIS Layers	IT - GIS Division	Secure
Electricity Dependent Homes	Secured GIS Layers	IT - GIS Division	Secure
Emergency Shelters	Secured GIS Layers	IT - GIS Division	Secure
Flood Repetitive Loss Properties	Secured GIS Layers	FEMA	Secure
Hazardous Facilities	Secured GIS Layers	IT - GIS Division	Secure
MS4	Secured GIS Layers	IT - GIS Division	Secure
Pre-Incident Plan Points	Secured GIS Layers	IT - GIS Division	Secure
Waterworks	Secured GIS Layers	Waterworks - GIS Division	Secure
Public Works	Secured GIS Layers	IT - AMD & IT - GIS Division	Secure
Airport Runways (StreetPavement)	Transportation	IT - GIS Division	As Needed
Bicycle Paths	Transportation	IT - GIS Division	As Needed
Bridges	Transportation	IT - GIS Division	As Needed
Bus Routes	Transportation	HRT	HRT Data
Bus Stops	Transportation	HRT	HRT Data
Dams	Transportation	IT - GIS Division	As Needed
Edge of Roads	Transportation	IT - GIS Division	Continuously
Other Paved Areas (StreetPavement)	Transportation	IT - GIS Division	Continuously
Railroad	Transportation	IT - GIS Division	As Needed
Right of Way	Transportation	IT - GIS Division	As Needed
Road Centerline	Transportation	IT - GIS Division	Continuously
Sidewalks (StreetPavement)	Transportation	IT - GIS Division	Continuously
Special Event Route	Transportation	IT - GIS Division	As Needed
Streetlights	Transportation	IT - AMD & IT - GIS Division	As Needed
Traffic Signals	Transportation	IT - AMD	As Needed
Census Block	Voting and Demographics	U.S. Census Bureau	Every 10 years

Census Block Group	Voting and Demographics	U.S. Census Bureau	Every 10 years
Census Tract	Voting and Demographics	U.S. Census Bureau	Every 10 years
City Council District	Voting and Demographics	IT - GIS Division	As Needed
Neighborhood Statistical Areas	Voting and Demographics	IT - GIS Division	As Needed
Polling Place	Voting and Demographics	IT - GIS Division	As Needed
State House District	Voting and Demographics	IT - GIS Division	Every 10 years
State Senate District	Voting and Demographics	IT - GIS Division	Every 10 years
US House District	Voting and Demographics	IT - GIS Division	Every 10 years
US Senate District	Voting and Demographics	IT - GIS Division	Every 10 years
Voting Precincts	Voting and Demographics	IT - GIS Division	As Needed

Title:	Stoney Run Drainage Improvements	Date:	11/7/2023
Purpose:	Budget Memo & Cost Explanation for Fiscal Year 24	Prepared By:	William Rose

	Total Budget	**$**	**4,747,000**
	Design:		
	Study & Design	$	4,747,000
		$	4,747,000
	Cost Sharing:		
A	Design- Grant Application	$	4,272,300
B	Design- City Match	$	474,700
		$	4,747,000

A	To be funded in the Stormwater Grants Fund for FY24 Fund 4300
B	To be funded in the Stormwater Drainage Fund for FY24 Fund 2543

William Rose
Fiscal Services Administrator

Kathie Angle
Acting Chief of Civil Design

Appendix F: Cost Narrative Form

CID#510103-2 City of Newport News

Community Flood Preparedness Fund & Resilience Virginia Revolving Loan Fund

Detailed Cost Narrative

Period of Performance: 2/1/2024 through 10/1/2026

Submission Date: 11/15/2023

Grand Total State Funding Request	$ 4,272,300.00
Grand Total Local Share of Project	$ 474,700.00
Federal Funding (if applicable)	0
Project Grand Total	$ 4,747,000.00
Locality Cost Match	10%

Breakout by Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)	$0.00	$0.00	$0.00	$0.00	$0.00	$ -	$0.00	$0.00	$ -
Local Share	$0.00	$0.00	$0.00	$0.00	$0.00	**$ 474,700.00**	$0.00	$0.00	**$ 474,700.00**
State Share	$0.00	$0.00	$0.00	$0.00	$0.00	**$4,272,300.00**	$0.00	$0.00	**$ 4,272,300.00**
Total	$0.00	$0.00	$0.00	$0.00	$0.00	**$4,747,000.00**	$0.00	$0.00	**$ 4,747,000.00**

1. Needs and Problems

a. Specific problem being solved (not just that flooding exists or may occur in the future).

The Stoney Run watershed in Newport News has experienced significant, repeat flooding from rainfall events. Flooding chronically threatens this community, and the City is committed to expediting efforts to reduce future damage to structures, parcels, and public infrastructure. The City participates in the National Flood Insurance Program, and floodplains and floodways are mapped. The watershed has areas of very high social vulnerability, and many residents cannot afford flood insurance. An unnamed August 15, 2020, storm—which produced over two feet of street and parcel flooding and was widely reported in the media—became the catalyst for significant, City-led hazard mitigation and resiliency-building efforts.

Newport News has conducted multiple studies to identify problems contributing to the elevated frequency and magnitude of flooding in the Stoney Run watershed. The most recent engineer's estimate for the fixes is $46.2 million (in 2023 dollars)—which will require grant funding to move forward. This CFPF grant, if awarded, will provide the funds needed for the City to conduct surveying, prepare modeling, submit and obtain a FEMA letter of map revision, prepare environmental permit applications, conduct geotechnical testing, and prepare design plans and bid documents for eight flood reduction projects:

- Filson Court Redirection,
- Dilts Drive BMP Outfall,
- Windsor Castle Drive Culvert,
- Belvoir Circle Box Culverts,
- Eastnor Court Outfall NE Extended,
- Keppel Drive Box Culverts,
- Colony Pines Basin Restoration and Improvements, and
- Stoney Run Outfall Capacity Improvements.

b. Factors which contribute to the identified problem.

Much of the drainage system was constructed over 50 years ago, using historical design standards that have been since modified and are now under review due to changes in precipitation rates and intensities associated with climate change. Consisting mostly of single-family residential lots, large portions of the watershed are fully developed. The primary issue related to flooding is the configuration of the drainage system—which is dictated by the topography, historical building patterns, and length of pipe and channel runs to drainage outfalls. Stormwater runoff from the upper watershed must drain almost one mile through a series of pipes and ditches to reach the Colony Pines Basins—a significant but undersized detention facility. From there, it must travel an additional two miles to reach the Stoney Run Park Basin and then another mile to reach tidal waters. The flat topography produces flat hydraulic grade lines that impede upstream drainage. The drainage system has been continuously modified to include stormwater management features such as dry ponds, channel improvements, and constructed floodplains; however, opportunities to add additional, effective flood storage have been exhausted.

c. Why the project is needed either locally or regionally?

The City has completed several studies of the Stoney Run watershed using the EPA's Storm Water Management Model (SWMM). The most recent study, entitled "Stoney Run Drainage Improvements," used a calibrated, high-resolution 2D SWMM model to focus on relieving flooding in the 743-acre upper portion of the watershed (in the Colony Pines and Windsor Great Park neighborhoods). The study's September 2022 report documents the effort to evaluate a wide range of potential flood reduction projects and contains detailed descriptions of the watershed history, citizen complaints, modeling and calibration efforts, and the identified potential flood reduction projects. A copy of this report is being submitted with this application.

d. How the project decreases the risk to public safety through flood risk reduction.

The project will provide the City with biddable plan sets for the eight projects listed above. All eight projects will provide significant drainage capacity to move floodwaters to their ultimate downstream outfall. Modeling for the 2022 Stoney Run study showed that 236 structures—many of which are multi-family apartments—will be completely removed from the 100-year floodplain, and this number will be further refined as the current project moves forward. The project will also result in updates to the FEMA Flood Insurance Rate Maps and Flood Insurance Study, which will better represent flood risk than the current, effective maps.

e. How the project protects or conserves natural resources.

The primary functioning flood storage facility—the Colony Pines Basin—is undersized and needs outfall structure improvements, including enhanced debris and trash protection mechanisms. The City has had difficulty operating this facility largely due to interpretations of wetlands-related regulatory requirements. The basin will be reworked using green infrastructure practices to provide larger, more reliable flood storage while improving water quality. Other existing storage basins will get similar upgrades.

f. Who is protected?

By the numbers, the Stoney Run watershed has:

- 13,825 structures on 9,582 parcels assessed at $2,250,223,140,
- 1 hospital, 7 schools, 1 fire station, 1 police station, 1 library, and 3 parks,
- 4 nursing homes, 10 large rehabilitation clinics, 1 emergency shelter, 1 telecommunications facility,
- 10 flood storage basins and 51 water treatment facilities and pump stations,
- Since 2013:
    - 365 flooding and standing water complaints,
    - 1,090 non-maintenance drainage issues,
    - 4,524 work orders for stormwater operations,
- 6 FEMA repetitive loss properties, and
- 159 properties with flood insurance (only 1.6% percent of the parcels).

The watershed population has a high social vulnerability, reflected in the number of flood insurance policies—many residents cannot afford flood insurance coverage. Additionally, many properties are not mapped in a FEMA Special Flood Hazard Area.

g. The safety threats, or environmental concerns related to flood risk.

The Stoney Run watershed experiences significant flooding from various flooding events, including heavy rainfall, flash flooding, overbank flooding, tropical storms, hurricanes, and Nor'easters. Flooding is a safety issue for the people who live in, work in, and visit the watershed. This flooding impacts homes, including low-income apartment buildings, a major urban arterial roadway, an Interstate highway, and the CSXT railroad—a critical line of industrial transportation.

Within the Stoney Run watershed, 77 Critical facilities are at risk from flooding, including seven schools, one hospital, ten large rehabilitation clinics, four nursing homes, one police station, one fire station, one emergency shelter, one telecommunication, and 51 water treatment facilities and pump stations. Two critical facilities—both pump stations—are within a Special Flood Hazard Area.

h. Groups to be targeted who might directly benefit from this flood risk reduction effort.

People who live in, work in, and visit the watershed will benefit directly from this flood risk reduction effort. In particular, property that may be identified as located within a newly mapped FEMA SFHA using the best available data generated from this study will be clearly identified. Additionally, property owners, critical structures, and the public in general will benefit from the ability of the City to utilize the best available engineering to implement floodplain management and flood reduction projects.

i. What would happen (or not happen) if the applicant does not receive funding?

The City does not have $46.2 million in available or anticipated funds to implement these flood control improvements. Consequently—without grant funding—the projects would be phased over a very long timeline, during which additional frequent flooding damage would occur. As indicated in the press materials submitted with this application, the citizenry "has had it" with repeated flooding events and is pressuring the City to act now. Without CFPF support, the City would need to identify additional funds to complete the study and delay the relief sought throughout the community.

If the City does not do the surveying and modeling to address the downstream impacts of the flood reduction improvements identified in the 2022 study, none of the proposed improvements can be implemented. Residents will continue to experience frequent flooding, and future flooding will worsen with climate change impacts. Similarly, no improvements can be implemented without FEMA approval of the CLOMR application. Finally, design plans and documents are needed to get these projects out for bid, and environmental and geotechnical issues must be addressed. Without this work, nothing will happen to improve the flooding in the Stoney Run watershed.

j. Alternatives analysis of the viability of the project, how selected project reduces risk to populations at risk of flooding. Provide examples of current or previous related projects, data, outcomes, etc. that justify the approach chosen. Include how long and how much protection to be achieved.

The flood reduction projects described above and in the 2022 Stoney Run Drainage Improvements report were painstakingly analyzed using 2D SWMM modeling. Part of that analysis involved calibrating the models, which was accomplished to a very high degree of reliability. The City and its consultants evaluated numerous alternatives, including adding or enlarging flood storage impoundments, buyouts, floodproofing, elevations, enhanced maintenance, and other means to lower hydraulic grade lines and protect infrastructure in the flood-prone portions of the watershed. Ultimately, they demonstrated that conveyance improvements in the backbone drainage network, with targeted impoundment improvements, will be the most effective way to reduce flooding. Similar watershed modeling studies throughout Hampton Roads—Salters Creek in Newport News and Hampton, multiple master drainage plans in Chesapeake and Virginia Beach—and elsewhere throughout the Commonwealth use the same approach. The City has developed a detailed Gantt chart schedule that shows this work taking nearly four years to design, bid, and construct the first improvement projects (note: construction is outside the timeline for this grant award). The level of protection used for these projects is the 100-year design storm because the City's consultants determined that using this increased design standard was appropriate from a cost-benefit perspective.

2. Goals and Objectives

a. Goals should be listed as an outcome or result and solve the problem or need to be identified.

There are five major goals for this grant project:

- Collect surveying and geotechnical data to allow the modeling and design work to proceed.
- Model downstream impacts from the potential flood reduction projects identified in the 2022 Stoney Run Drainage Improvements report and develop necessary adjustments to the overall plan to avoid adverse impacts.
- Prepare design plans and bid documents for eight flood reduction projects.
- Prepare, submit, and obtain a Joint Environmental Permit application required for the projects.
- Prepare, submit, and obtain a Conditional Letter of Map Revision (CLOMR) from FEMA.

b. Objectives must be specific, measurable, and time-bound.

All five goals are specific and complimentary and will be accomplished within the three-year grant performance period. Each goal has specific deliverables (survey drawings, a geotechnical report, SWMM models, the Joint Permit Application, a FEMA CLOMR application, and the biddable plans and specifications).

c. Objectives be achievable within the agreement period.

The City has developed a detailed schedule, as delineated in the Gantt chart submitted with this application. Note that the Gantt chart lists workdays in the detail section; calendar days are plotted on the chart graph. The schedule for the project can be completed in 727 calendar days (492 workdays). The project can be completed well within three years, allowing for reasonable schedule slack.

3. Work Plan

a. What are the major activities and tasks?

The major activities and tasks for this project, delineated on the Gantt chart, are:

- Modeling

  The consulting engineer will prepare 2D SWMM models to evaluate the downstream impacts of the eight proposed flood improvement projects and configure adjustments to each to ensure that downstream impacts are properly addressed—ultimately to be approved by FEMA through a CLOMR application. The FEMA models will be submitted in 1D PCSWMM format to be consistent with the approach used in the effective FEMA models and Flood Insurance Study.

- Surveying

  The consulting engineer will obtain detailed topographic and boundary surveying to support the preparation of design plans and the acquisition of easements necessary to construct the projects.

- Design

  The consulting engineer will prepare complete design plans, specifications, and bid documents. These deliverables will be submitted for review and approval at the 60- and 90-percent completion level, followed by a final plan submittal and review process.

- Joint Permit Application

  The consulting engineer will prepare and submit a VMRC Joint Permit Application (JPA) to the Virginia Marine Resources Commission and work to incorporate the regulators' comments and conditions in the design plans.

- Easements

  The consulting engineer will work with the City Attorney's office and Engineering Department to prepare easement plats and obtain the required easements for construction.

- FEMA Mapping

  The consulting engineer will prepare and submit a CLOMR application to FEMA addressing all eight proposed flood reduction projects and respond to FEMA requests for additional information until the CLOMR is approved.

b. Who is responsible for completing the activities and tasks?

The Newport News Department of Engineering will oversee this project, including stakeholder engagement, data exchange coordination, overall guidance, and contractor management. The contracted consulting engineer will complete the study and prepare the documents, including any necessary coordination with regulatory agencies and FEMA.

c. What is the timeframe for accomplishing activities and tasks?

Newport News proposes an overall schedule of approximately three years for this project after award notification. We have proposed what we believe to be a reasonable timeline for all parties; however, some events and durations, such as the time needed for FEMA's CLOMR review, are out of Newport News' control.

d. Identify the required partners to ensure success and where they are represented in the work plan.

Aside from the participation of Newport News' internal departments—including Engineering, Communications, Emergency Management, Public Works, and the City Attorney's office—the City will need approval from outside agencies to ensure the success of this project. FEMA, Virginia DCR, Virginia DEQ, and the Virginia Marine Resources Commission will play integral roles in reviewing the plans and supporting documents and issuing the appropriate permits and letter of map revision.

e. Deliverables

This study will produce the following deliverables:

- 1D and 2D PCSWMM models detailing existing and improved conditions associated with the 10-, 50-, 100-, and 500-year design storms,
- Detailed topographic and boundary survey plots of the project sites,
- Easement acquisition plats,
- Biddable design plans, specifications, and supporting documents (including updated cost estimates),
- A Joint Permit Application for submittal to the Virginia Marine Resources Commission.
- A Conditional Letter of Map Revision application for submittal to FEMA Region III.

4. Evaluation

a. Indicators of success.

The indicators of success for this project will be readily apparent. When the modeling is complete, it must incorporate input from the surveying work, FEMA, the City, and regulatory agencies reviewing the Joint Permit Application (the Army Corps of Engineers, Virginia Marine Resources Commission, DEQ, DCR, and others) to satisfy the flood reduction goals of this project. The biddable construction plans and documents will be the ultimate deliverables and must comply with FEMA and regulatory requirements. The easement plats will demonstrate the City's commitment to the plans and flood reduction projects. Approval of the Joint Permit Application and FEMA Conditional Letter of Map Revision will be significant, objective milestones.

b. Data that will be collected and how the data will be used to measure success.

The topographic and boundary surveying will be the most significant data collected for this project. The City will provide interdepartmental reviews of the surveying CD files and easement plats, which will be incorporated into the project deliverables. Acceptance of the biddable plans and supporting documents—which will come after multiple levels of City, FEMA, and regulatory review—will demonstrate the ultimate success fo the project.

Data required to support the VMRC Joint Permit Application will also be collected and reviewed by regulatory agencies. Conditional Letter of Map Revision approval and Joint Permit Application issuance will be measures of success.

c. How was cost-effectiveness evaluated and measured against the expected outcomes?

Cost-effectiveness will be proven over the long term by reduced flood damages. In terms of measurable cost-effectiveness at the conclusion of this project, success will be measured by developing a set of biddable plans that land within the estimated budget ($46.2 million in 2023 dollars) and are approved by the City, FEMA, and the appropriate regulatory agencies.

d. What products, services, meetings, outreach efforts, etc. will be conducted and how will success be measured?

Newport News will employ the services of an on-call consulting engineer currently under an existing professional services procurement to complete this project. Success will be measured upon completion of the previously identified deliverables. The City will conduct outreach as warranted to seek support from the communities and stakeholders residing in the Stoney Run watershed.

e. Project progress monitoring plan to ensure the project meets the requirements of the agreement and is delivered on time. Outline how delays or other findings may be used to modify or improve outcomes/deliverables.

The City will employ regular status meetings with the consulting engineer to ensure that progress is consistent and that questions or concerns are addressed as quickly as possible. Unforeseen challenges are not uncommon in this type of study, and all parties will actively communicate regarding the nature of and solutions to such challenges as they arise. The City will be very active in guiding and shaping this project, making critical decisions, and helping keep the project moving forward daily.

CID#510103-2_Newport News Stoney Run Repetitive and Severe Repetitive Loss Properties

Property #	# of Flood Events*	Description
1	2	Severe flooding reported by homeowner as a result of an upstream BMP overtopping during both Hurricane Mathew and a flash flood event in August 2020.
2	1	Severe flooding reported by homeowner through community flood master planning coordination.
3	6	Severe repetitive loss damage recorded in 1999, 2000, 2003 (twice), 2004, and 2006. An average of $60k in damages were assessed per occurrence.
4	1	This property was reported to have experienced structural flooding via the City's flood report hotline.
5-9	> 1	These properties are reported to have experienced repetitive losses due to unknown storms. The exact number of losses per property are unknown.

Besides the properties listed above, from 2013-present, the City has recorded 170 flood complaints within the Stoney Run watershed. These flooding reports combine to tell a recent story of frequent and widespread flooding in the face of everyday rainfall events.

*The number of flood events listed for each property are likely higher in reality as these values only account for confirmed flooding reports. There are many instances in which flood damage was repaired at the cost of the owner and therefore was not reported. This trend makes it difficult to track total losses.

Date	Duration	Loss	Description	Source
9/22/1989	UNK	UNK	**Hurricane Hugo**: Street, yard, and structural flooding reported by community members.	Communication with Community
9/15/1999	UNK	>60k	**Hurricane Floyd**: Street, yard, and structural flooding reported by community members. Flood related losses were recorded at a commercial structure on Jefferson Avenue.	Communication with Community/Dewberry Repetitive Loss Report
2000	UNK	>60k	**Flash Flood**: Repetitive flood losses recorded at a commercial structure on Jefferson Avenue.	Dewberry Repetitive Loss Report
9/18/2003	UNK	>60k	**Hurricane Isabel**: Repetitive flood losses recorded at a commercial structure on Jefferson Avenue.	Dewberry Repetitive Loss Report
10/1/2003	UNK	>60k	**Flash Flood**: Repetitive flood losses recorded at a commercial structure on Jefferson Avenue.	Dewberry Repetitive Loss Report
2004	UNK	>60k	**Flash Flood**: Repetitive flood losses recorded at a commercial structure on Jefferson Avenue.	Dewberry Repetitive Loss Report
9/22/2006	UNK	>60k	**Tropical Storm Ernesto**: Repetitive flood losses recorded at a commercial structure on Jefferson Avenue. Street and structural flooding >2ft reported by community members.	Dewberry Repetitive Loss Report/Communication with Community
7/21/2013	>22.5 Hours	UNK	**Flash Flood**: Five reports from homeowners cited flooding.	GIS 311 Calls
10/8/2016	UNK	UNK	**Tropical Cyclone Mathew**: Two reports from homeowners cited flooding.	GIS 311 Calls
9/8/2018	UNK	UNK	**Hurricane Florence**: One report from a homeowner cited flooding.	GIS 311 Calls
8/15/2020	UNK	UNK	**Flash Flood**: Community members reported flooding of streets, key infrastructure, and residential/commercial structures (>2 ft in depth in some places). Twenty reports from homeowners cited flooding. Two homeowners also reported structural damage.	Communication with Community/GIS 311 Calls
03/2022	UNK	UNK	**Flash Flood**: Forty homeowner reports cited flooding.	GIS 311 Calls