

NEW BERN

RESILIENCE

RESILIENCY & HAZARD MITIGATION PLAN

JANUARY 2022

PREPARED FOR

THE CITY OF NEW BERN

NEW BERN

NORTH CAROLINA

Everything comes together here

PREPARED BY

LEAD CONSULTANT

moffatt & nichol

SUBCONSULTANTS

UNC ASHEVILLE NEMAC+FernLeaf

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1.0 Executive Summary

This section discusses the executive summary of the Plan. It consists of the following seven subsections:

1.1 Community Inventory
1.2 Study Area
1.3 Grant Goals and Objectives
1.4 Community Engagement and Outreach Strategy Summary
1.5 Stakeholder Engagement Summary
1.6 Planning Process Summary
1.7 Risk and Vulnerability Assessment Summary

1.1 Community Inventory

The City of New Bern, North Carolina is a beautiful coastal community with a long history and a wide range of local assets and historic properties. It is also vulnerable to a combination of riverine, coastal, stormwater, high tide, and sea level rise flooding threats.

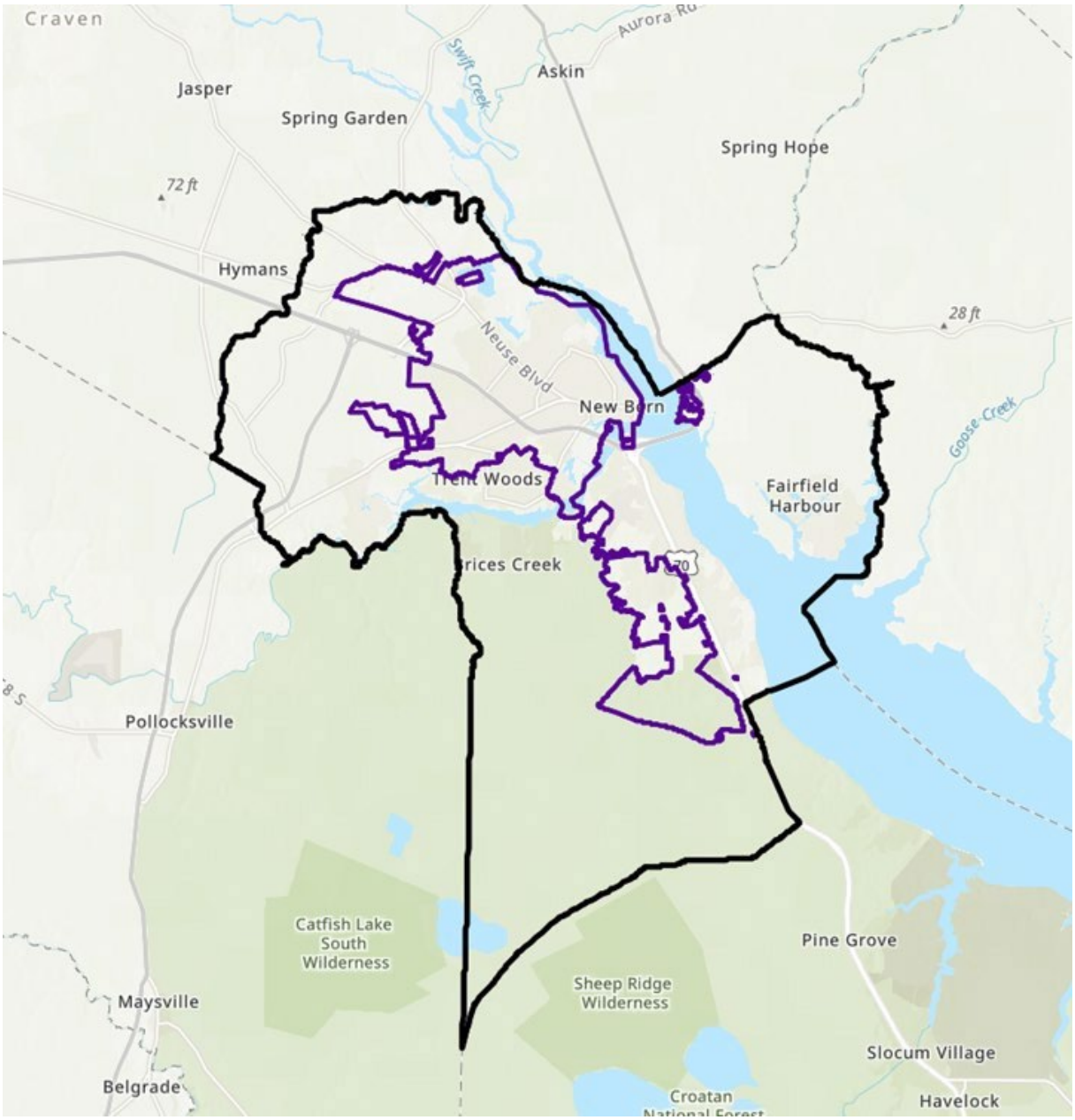
Located at the confluence of the Trent and Neuse Rivers in Eastern North Carolina, the community was devastated by Hurricane Florence in September 2018. Approximately 4,325 homes and 300 businesses in and around the city were damaged. About 260 of these structures are in two of the city's locally designated historic districts and listed on the National Register of Historic Places. Many more of the homes that were affected are in the city's most vulnerable neighborhoods, where 36 percent of the population lives at or below the poverty level. Total damage estimates were close to $100 million for this single event.

The unprecedented 11'+ storm surge affected the homes and businesses of the city's wealthiest residents as well as those living in its poorest communities, revealing the city's vulnerability to flooding and water intrusion. Although comprised of different populations with varying socio-economic backgrounds, buildings, and structures, each of New Bern's neighborhoods desires to adapt to the increasing frequency and strength of dangerous storm events.

1.2 Study Area

The map below shows the extent of the study area for the vulnerability and risk assessment (black border) as well as the city limits (purple border). The study area extent was determined using the census block group areas that include, and in some cases extend beyond, the city limit boundary. Census block group areas are also used for assessment summaries and for neighborhood-level insights.

Figure 1.1. Study Area Extent



1.3 Grant Goals and Objectives

The City of New Bern developed a comprehensive land use, hazard mitigation, and resiliency plan to inform future development and investment decisions as the community also deals with the impacts of climate change and sea level rise. Flooding is the most frequent natural hazard in the eastern portion of North Carolina, yet most stakeholders are not equipped or prepared to deal with the consequences of periodic flooding.

To address these threats, the city has undertaken a robust process to develop this citywide *Resiliency and Hazard Mitigation Plan* to increase community resilience to flood hazards, including the effects of climate change.

The *Resiliency and Hazard Mitigation Plan* (the Plan) includes the following major components:

- Planning Process
- Community Profile
- Planning Process
- Community Profile
- Capability Assessment
- Vulnerability Assessment
- Resilience Strategy
- Plan Maintenance Procedures

1.4 Community Engagement and Outreach Strategy Summary

In developing the outreach strategy for the Plan, the Consultant Team considered the following:

- Resiliency and hazard mitigation can be difficult realities for the public to comprehend as they impact one's quality of life, one's home and community, and can spur anxious thoughts of the future. Our engagement effort set aside time to strategically inform and educate citizens on the issues to engage in meaningful dialogue helping to lessen concerns of the unknown.
- COVID-19 created both challenges and opportunities for project teams to engage the public. As such, the Consultant Team devised a strategy that provides a hybrid approach – one that was predominantly virtual and digital with the inclusion of in-person focus group meetings and information boards.
- The outreach effort successfully engaged multiple groups to provide an opportunity for various disciplines and backgrounds to be represented as planning priorities and concerns were discussed. City staff and key regional stakeholders, elected officials, and the public-at-large comprised the main cohorts for engagement throughout the process. However, within the public-at-large group, other community sectors required specialized tools to ensure their views are co-opted into the process. These included key historic preservation interests and those generally disenfranchised from traditional public engagement initiatives, such as those lacking access to digital resources. These and other subgroups identified in the process had different challenges and concerns, and as such the outreach strategy provided a tailored approach to accommodate each of these groups.

From this foundation, the Consultant Team created a process that relied on communication and coordination by several parties, each supporting the other towards the project's unified goal. In our public engagement work, we strive to continually learn about a community and adapt to maximize the amount and value of feedback received. The outreach strategy evolved over time and was refined as the project advanced from data collection and alternative solutions to final plan development. The framework and processes created as part of this effort are expected to remain in place and continue to support resilience in the City of New Bern over time.

The Consultant Team collaborated with the City of New Bern to create a resiliency webpage, hosted on the City's website, to share information regarding project updates, resiliency, and grant information: www.newbernnc.gov/resiliency.

The webpage launched on Monday, August 31, 2020, prior to Public Meeting #1 with information readily available regarding this project. The webpage was updated over time as new resources were created.

The Consultant Team held three public meetings on Thursday, September 10th, 2020; Thursday, February 4, 2021; and Thursday, July 22, 2021.

Two public surveys were created using SurveyMonkey® and used to obtain feedback, concerns, and targeted responses from the New Bern community. The surveys coincided with the public meetings and provided a way for the public to share their feedback, concerns, and personal experiences with resiliency and hazard mitigation situations. Questions evolved over the course of the project to correlate with the planning efforts.

Social media was used throughout the planning process to communicate with the New Bern community. In addition to ongoing planning updates, a series of social media graphics was generated to help increase visibility regarding key project milestones, such as the announcement of upcoming public meetings and public surveys, and drive traffic to the website.

1.5 Stakeholder Engagement Summary

The Planning Team invited a wide range of stakeholders to participate in a two-session virtual workshop, held over Zoom on February 22, 2021, from 9:00 a.m. to 11:30 a.m. and February 24, 2021, from 1:00 p.m. to 3:00 p.m. that educated, engaged, and gathered input from these stakeholders. Stakeholders represented a diverse group, including state representatives, local liaison groups, nonprofits, designers, professors, service members, and neighborhood and community representatives. The format included both large group sessions and smaller breakouts focusing on the following topics: flood vulnerability assessment, historic preservation, public outreach and education, and the environment & nature-based and engineering solutions Between 32-35 stakeholders attended the workshop over the course of two sessions, with 42-45 total participants including the moderators and notetakers.

1.6 Planning Process Summary

The planning process evolved through a diversity of thought as groups and individuals from different backgrounds, knowledge, and expertise were able to contribute to the Plan. Leveraging digital tools expanded the team's outreach efforts beyond traditional in-person events; despite the pandemic halting in-person opportunities, the Planning Team witnessed an increase in overall public participation by functioning in a virtual realm.

The public provided feedback and comment through surveys and participating in public meetings. The website functioned as a storing house of information and archived meeting minutes, presentations, and survey results.

The Planning Team met monthly via WebEx to obtain project updates, discuss recent progress, and provide needed input. Planning team members included key staff from the City of New Bern and Craven County and the project team (Moffatt & Nichol, NEMAC+FernLeaf and The Craig Group).

1.7 Risk and Vulnerability Assessment Summary

1.7.1 : Study Area Summary

Table 1.1 Summary of Vulnerability and Risk

Asset Category	Total Assets	Floodplain Inundation	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)	Tidal Flooding (Current)	3 ft + MHHW*	5 ft + MHHW
Critical Facilities	328	32 (10%)	29 (9%)	157 (48%)	0	0	3 (1%)
Government Owned	251	40 (16%)	44 (18%)	108 (43%)	0	0	7 (3%)
Commercial & Industrial	1396	134 (10%)	121 (9%)	917 (66%)	3 (<1%)	4 (<1%)	21 (2%)
Parks & Cultural	348	70 (20%)	66 (19%)	150 (43%)	0	0	12 (3%)
Residential	22346	3,232 (14%)	3,676 (16%)	15,395 (69%)	28 (<1%)	96 (<1%)	957 (4%)
Historic	2335	528 (23%)	601 (26%)	1,698 (73%)	14 (<1%)	17 (<1%)	76 (3%)
Employees	9705	1,151 (12%)	1,161 (12%)	7,041 (73%)	683 (7%)	683 (7%)	716 (7%)
Sales Volume	$2.5B	$96M (4%)	$205M (8%)	$2.0B (81%)	$9.9M (<1%)	$9.9M (<1%)	$18M (1%)
Road Accessibility	31669	14,503 (46%)	15,069 (48%)	28,278 (89%)	87 (<1%)	915 (3%)	3268 (10%)
Improved tax value	$4B	$625M (16%)	$698M (18%)	$2.7B (69%)	$17.8M (<1%)	$39.7M (1%)	$166M (4%)

Note: Numbers reflects the total number of assets and for eachthreat the number and percentage of assets with medium or high combinedvulnerabilityand risk.

* MHHW = Mean Higher High Water

1.7.2 : Overall Findings

1. High levels of vulnerability and risk are associated with multiple types of flooding.
2. Highest levels of vulnerability and risk are associated with major category storm surge (Cat 3-5).
3. Higher proportions of residential property are vulnerable within the socio-economically stressed neighborhoods.
4. Several areas of the city are vulnerable to future tidal flooding and sea level rise. Assets most vulnerable to future tidal flooding are related to roads and mobility.

1.7.3 : Floodplain Inundation: Key Findings

The threat of floodplain inundation presents high levels of exposure and vulnerability and risk to many assets assessed in the city and study area. The following lists the four asset categories with the highest levels of vulnerability and risk.

- Historic (22%)
- Parks and cultural (19%)
- Government-owned (16%)
- Residential (14%)

1.7.4 : Storm Surge: Key Findings

Storm surge presents the highest levels of exposure and vulnerability and risk of all flood hazards assessed in this study. Vulnerability and risk is especially high with major storm surge categories 3-5. The following lists the four asset categories with the highest levels of vulnerability and risk for Cat 3-5 for the study area.

- Historic (73%)
- Residential (69%)
- Commercial & Industrial (66%)
- Critical facilities (48%)

1.7.5 : Tidal Flooding and Sea Level Rise: Key Findings

Current tidal flooding presents relatively low exposure and vulnerability to current assets within the assessment study area. However, water levels that could be associated with seal level rise present the potential for increasing vulnerability to future tidal flooding and more persistent inundation. While not analyzed in this assessment, higher water levels will also contribute to greater risk to coastal flooding and storm surge.

2.0 Introduction

This section discusses the introduction of the Plan. It consists of the following seven subsections:

2.1 How to use this Plan
2.2 What is resilience?
2.3 What are natural hazards and what is hazard mitigation?
2.4 What are chronic stressors, acute shocks, and risk accelerators?
2.5 Why is this process critical to community preparedness and well-being in the City of New Bern?
2.6 What is included in this Plan?

2.1 How to use this Plan

The *New Bern Resiliency and Hazard Mitigation Plan* is divided into various sections, each available on the City of New Bern's Resiliency webpage as a separate PDFwith an accompanying appendix (if applicable). Each section offers an introductory subsection, as indicated above, to further help navigate the reader. Please reference *2.6 What is Included in this Plan?* on page 2-4 for a list of the Plan's sections.

It is important to note that this local resiliency and hazard mitigation plan is meant to build upon previous and existing planning efforts. It is meant to expand, enhance, and complete those previous products in new ways. For example, detailed and lengthy information contained within the Pamlico Sound Regional Hazard Mitigation Plan is not necessarily repeated here in its entirety.

2.2 What is resilience?

To understand the question, "what is resilience?", one must understand there is not a single, universal definition of resilience currently in use by planners and practitioners in the field. Each state and federal agency, contractor, academic, and individual has a slightly different interpretation of what resilience means in relation to any given sector, community, system, institution, asset, or individual.

For the purposes of this Plan, we will focus on the following definition of resilience as our primary focal point:

The capacity of a sector, community, system, institution, asset, or individual to withstand, respond, and recover from an adverse event no matter what types of chronic stressors, acute shocks, and risk accelerators may be impacting the target.

In the case of this Plan, the target is the City of New Bern. The adverse events focused on in this Plan are all related to the flood hazard, as discussed below. The process, framework, and data established by this Plan can be leveraged in the future to address other natural hazards (and potentially human-caused hazards as well) for a more comprehensive look at resiliency for the future.

2.3 What are natural hazards and what is hazard mitigation?

Natural hazards are naturally occurring events such as floods, high winds, wildfires, earthquakes, droughts, tornadoes, severe thunderstorms, and other forms of atmospheric, hydrologic, and geologic disturbances. For contrast, examples of non-natural hazards (also called human-caused hazards or man-made hazards) are events such as hazardous materials spills, acts of terrorism, and active shooter scenarios, to name a few.

The current focus of this plan is the flood hazard, including coastal flooding, riverine flooding, storm surge inundation (from hurricanes), stormwater runoff, and other forms of flooding.

The word *mitigation* can have quite different definitions depending on the agency or the intended use of the term. The definition of hazard mitigation according to the Federal Emergency Management Agency (FEMA) is:

Any action taken to reduce or eliminate the long-term risk to people and property from natural hazards.

Hazard mitigation is a vital component of resilience. Many traditional hazard mitigation techniques reduce a community's vulnerability to flooding, such as property acquisition/demolition, elevation, relocation, floodproofing, flood control, utility protection, infrastructure protection, education and outreach, and other such mitigation activities.

It is important to look at a comprehensive range of potential hazard mitigation techniques as part of any resilience effort. However, it is also important to look beyond traditional hazard mitigation to more holistic community solutions that protect property, socio-economic considerations, cultural heritage, community values, tourism potential, and other diverse aspects of the planning area.

2.4 What are chronic stressors, acute shocks, and risk accelerators?

2.4.1 : Chronic Stressors

There are three types of stressors that can impact a target, any of which can be chronic in nature. The three types of stressors are *current, future*, and *legacy*.

Current stressors result from ongoing human activities that can, in some cases, be alleviated. Examples of current stressors may include lack of local funding for planned solutions to known issues, aging infrastructure, public transit stresses, social inequity, crowding, violence, politics, and other such factors.

Future stressors are typically additional issues that compound current stressors, which require preparation and planning for mitigation in advance of their onset. Examples of future stressors may include future land subsidence, sea level rise, shoreline change, urban expansion, new invasions by nonnative species, and other such factors.

Legacy stressors are stressors that result from past actions that cannot be undone, but whose impacts still have influence over present-day conditions. These legacy stressors can sometimes be reduced or mitigated, and many times are associated with prior land use decisions or policy decisions that have inherently increased risk over time.

2.4.2 : Acute Shocks

Sudden or acute shocks on a system may include natural and human-caused disasters or emergency events that affect a target suddenly and sometimes without warning. Examples of acute shocks may include tornadoes, floods, earthquakes, active shooters, bombings, and hazardous materials incidents.

2.4.3 : Risk Accelerators

Potential risk accelerators are long-term variables that are typically associated with high uncertainty. These accelerators threaten to exacerbate the effects of chronic stressors and acute shocks. Examples of risk accelerators may include climate change, sea level rise, new development in high hazard areas that increase hazard risk and put more assets in harm's way, prolonged periods of heightened security, and other such items.

2.5 Why is this process critical to community preparedness and well-being in the City of New Bern?

The City of New Bern, North Carolina is a beautiful coastal community with a long history and a wide range of local assets and historic properties. It is also vulnerable to a combination of riverine, coastal, stormwater, high tide, and sea level rise flooding threats.

Figure 2.1. Aerial photograph of New Bern



Located at the confluence of the Trent and Neuse Rivers in Eastern North Carolina, the New Bern community was devastated by Hurricane Florence in September 2018. Approximately 4,325 homes and 300 businesses in and around the city were damaged. About 260 of these structures are in two of the city's locally designated historic districts and listed on the National Register of Historic Places (NRHP). A considerable number of homes that were affected are in

the city's most vulnerable neighborhoods, where 36 percent of the population lives at or below the poverty level. Total damage estimates were close to $100 million for this single event.

The unprecedented 11'+ storm surge affected the homes and businesses of the city's wealthiest residents, as well as those living in its poorest communities, revealing the city's vulnerability to flooding and water intrusion. Although comprised of different populations with varying socio-economic backgrounds, buildings, and structures, each of New Bern's neighborhoods desire to adapt to the increasing frequency and strength of dangerous storm events.

The City of New Bern must develop a comprehensive land use, hazard mitigation, and resiliency plan to inform future development and investment decisions as the community also deals with the impacts of climate change and sea level rise. Flooding is the most frequent natural hazard in the eastern portion of North Carolina, yet most stakeholders are not equipped or prepared to deal with the consequences of periodic flooding.

The effects of Hurricane Florence on the local economy have also highlighted the fragility of the area's tourism industry. The loss of convention and meeting business due to the closure and rehabilitation of the Craven County Convention Center and the city's largest hotel has adversely affected the city's historic main street small businesses who are still struggling to recoup lost revenues as of the writing of this plan. This Plan is also being developed during the nationwide response to Covid-19 in 2020 which has worsened these concerns.

To address these threats, the City has undertaken a robust process to develop this citywide *Resiliency and Hazard Mitigation Plan* to increase community resilience to flood hazards, including the effects of climate change.

2.6 What is included in this Plan?

The *Resiliency and Hazard Mitigation Plan* (the Plan) includes the following major components:

- Planning Process
- Community Profile
- Capability Assessment
- Cultural Heritage
- Vulnerability Assessment
- Resilience Strategy
- Implementation Approach

The **Planning Process** (Section 3) documents the steps followed by the community and its stakeholders in the development of this Plan. This includes detailed descriptions of planning team meetings, public meetings, stakeholder engagement workshops, public participation surveys, virtual and social media outreach, and other relevant components of community involvement.

The **Community Profile** (Section 4) describes the community's setting, its history and development, its demographic mix, its economic base, its cultural activities, and its housing opportunities.

The **Capability Assessment** (Section 5) describes the City's resources (both present and future) for addressing resiliency and flood mitigation within the planning area.

The **Cultural Heritage** (Section 6) discusses the importance of tangible and intangible cultural and historic assets to the city's identity, assessing community values for cultural heritage, threats posed by climate impacts to that heritage, methods for adapting to future conditions and New Bern's historic preservation legacy.

The **Vulnerability Assessment** (Section 7) contains a detailed analysis of exposure, vulnerability, and risk as it relates to the potential impacts of flooding on the planning area and identified assets.

The **Resilience Strategy** (Section 8) outlines the City's vision for resilience, resilience pillars (also called core tenets), resilience goals and objectives, and proposed resilience actions.

The **Implementation Approach** (Section 9) establishes the methods the City will use in implementing the activities identified in the Resilience Strategy.

The Plan also includes a series of appendices, including acronyms and abbreviations, glossary of terms, complete documentation of the planning process, including findings of the public participation surveys (*Appendix C – Planning Process*), and other technical information not provided in the body of the Plan, such as the flood hazard history *(Appendix D – Flood Hazard History National Climatic Data Center (NCDC))* and adoption resolution *(Appendix E – Adoption Resolutions)*.

3.0 Planning Process

This section discusses the planning process of the Plan. It consists of the following eight subsections:

3.1 General Process
3.2 Outreach Strategy Overview
3.3 Public Participation
3.4 Public Meetings
3.5 Digital Outreach Material
3.6 Stakeholder Engagement
3.7 Planning Team Meetings
3.8 Findings & Conclusions

3.1 General Process

Public engagement is at the cornerstone of any planning project as diversity and inclusion of thought from all members of society ensure an equitable plan for the future. In the case of the *City of New Bern Resiliency and Hazard Mitigation Plan*, the Consultant Team sought feedback from a variety of stakeholders, including federal agencies, state agencies, academia, professionals, and the public. Each played a role in the outcome of the Plan. This chapter focuses on the various outreach methods, tools, and strategies the Consultant Team used to communicate and collaborate with the stakeholders.

3.2 Outreach Strategy Overview

In developing the outreach strategy for the Plan, the Consultant Team – comprised of Moffatt & Nichol, NEMAC+FernLeaf and The Craig Group – considered the following:

- Resiliency and hazard mitigation can be difficult realities for the public to comprehend as they impact one's quality of life, one's home and community, and can spur anxious thoughts of the future. Our engagement effort set aside time to strategically inform and educate citizens on the issues to engage in meaningful dialogue helping to lessen concerns of the unknown.
- Covid-19, an infectious disease caused by a newly discovered coronavirus, created both challenges and opportunities for project teams to engage the public. As such, the Consultant Team devised a strategy that provided a hybrid approach – one that was virtual and digital with the inclusion of in-person focus group meetings and information boards.
- The outreach effort successfully engaged multiple groups to provide an opportunity for various disciplines and backgrounds to be represented as planning priorities and concerns were discussed. City staff and key regional stakeholders, elected officials, and the public-at-large comprised the main cohorts for engagement throughout the process. However, within the public-at-large group, other community sectors required specialized tools to ensure their views are co-opted into the process. These included key historic preservation

interests and those disenfranchised from traditional public engagement initiatives, such as those lacking access to digital resources. These and other subgroups identified in the process had different challenges and concerns, and as such the outreach strategy provided a tailored approach to accommodate each of these groups.

From this foundation, the Consultant Team created a process that relied on communication and coordination by several parties, each supporting the other towards the project's unified goal. In our public engagement work, we strive to continually learn about a community and adapt to maximize the amount and value of feedback received. The outreach strategy evolved over time and was refined as the project advanced from data collection and alternative solutions to final plan development. The framework and processes created as part of this effort are expected to remain in place and continue to support resilience in the City of New Bern over time.

3.3 Public Participation

A vital component of any resiliency and flood mitigation planning process is public participation. Individual citizen and community-based input provides the Consultant Team with a greater understanding of local concerns and increases the likelihood of successfully implementing mitigation activities by developing community "buy-in" from those directly affected by the decisions of public officials. As citizens become more involved in decisions that affect their safety and resiliency, they are more likely to gain a greater appreciation of the hazards present in their community and take the steps necessary to reduce their impact. Public awareness is a key component of any community's overall resilience strategy aimed at making a home, neighborhood, school, business, or entire planning area safer from the potential effects of the flood hazard.

Public involvement in the development of this Plan was sought using multiple methods including in-person and virtual public meetings, digital outreach material (presented by a robust public project information website, online public participation surveys, social media graphics, email campaigns, and press releases) and working alongside stakeholders as part of a two-day stakeholder engagement workshop. Public meetings were held at three pre-determined points during the planning process *(see Planning Process 3-14)*[i]: (1) near the beginning of the planning process; (2) once the draft vulnerability assessment had been developed to gauge public perception of the preliminary information; and (3) near the end of the planning process prior to finalization and local adoption. These public meetings were held virtually, with a central location(s) within New Bern to ensure that interested citizens had reasonable access to participate in-person in the planning process. Public meetings also offered a live component on the City's public, education and government channel (PEG), as well as on the project website and City's social media channels. The online public participation surveys (discussed in greater detail in 3.5.3: Online Participation Surveys and *Appendix C – Planning Process – Survey Results)* were promoted via social media outlets, email, at planning team meetings, and the first two public meetings to incentivize public participation. Additionally, the Planning Team – comprised of key county and New Bern city staff, and the Consultant Team – met monthly to review project updates and collaborate on various aspects of the Plan. Each of these outreach methods is explained in further detail below.

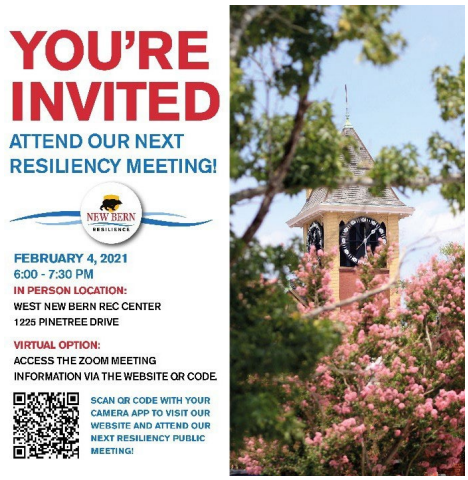
3.4 Public Meetings

Three (3) hybrid virtual/in-person public meetings were held at various points in the planning process to allow the New Bern community to engage with the Consultant Team and local planning team by viewing presentations, relaying their concerns, and contributing to the Plan. Details of these three events are provided below. Further information can be found in *Appendix C – Planning Process – Public Meetings*, including sign-in sheets, handouts, and relevant presentation slides. *(see Planning Process 3-14)*[ii]

3.4.1 : Public Meeting #1

Public Meeting #1 was held on Thursday, September 10, 2020, from 6:00 p.m. to 7:00 p.m. via Zoom and at two in-person locations: City Hall and Development Services. This meeting provided an introductory overview to the planning process, focusing on the goal of the planning effort, specific objectives to accomplish, relevant terminology, and information on how the public can stay informed and actively involved throughout the planning process. Participants were encouraged to take the first public participation survey (discussed further in 3.5.3 Online Public Participation Surveys) and share feedback with the Consultant Team. A total of 45 individuals participated in the public meeting on Zoom, 3 attended at City Hall, 0 attended at development services, and 634 views were noted on Facebook. A summary of the questions and answers that stemmed out of Public Meeting #1 are included in *Appendix C – Planning Process – New Bern Resiliency Public Meeting 1 Q&A*.

Figure 3.1. Public Meeting 2 Announcement



3.4.2 : Public Meeting #2

Public Meeting #2 was held on Thursday, February 4, 2021, from 6:00 p.m. to 7:30 p.m. at the West New Bern Recreational Center along with a virtual component on Zoom. The purpose of this meeting was to present the findings of the vulnerability assessment, focusing on an update of the vulnerability assessment process, identification of community assets and potential threats/hazards, an overview of the draft vulnerability assessment results and findings, and outlining the next steps. A total of 25 individuals participated in the public meeting via Zoom and at West New Bern Rec Center. A summary of the questions and answers that stemmed out of Public Meeting #2 are included in *Appendix C – Planning Process – New Bern Resiliency Public Meeting 2 Q&A*.

Source: Moffatt & Nichol, 2021

3.4.3 : Public Meeting #3

Public Meeting #3 was held on Thursday, July 22, 2021 from 6:00 p.m. to 7:00 p.m. at the New Bern City Hall Courtroom along with a virtual component on Zoom and Facebook Live. The purpose of this meeting was to present the Draft New Bern Resiliency Plan's outline of sections and provide opportunity for public input on the vision statement, resiliency pillars, and goals. A total of 29 individuals participated in the public meeting via Zoom, Facebook Live and at City Hall Courtroom. A summary of the questions and answers that stemmed out of Public Meeting #3 are included in *Appendix C – Planning Process – New Bern Resiliency Public Meeting 3 Q&A*.

3.5 Digital Outreach Material

The Consultant Team relied heavily on digital outreach material during the planning process to reach a larger audience, and in response to restrictions related to Covid-19. Project branding, a project webpage built on New Bern's public-facing city website, two (2) online public participation surveys, social media posts, email campaigns, and press releases were all used to communicate project updates with the New Bern community. More information regarding each is provided below.

3.5.1 : Project Branding

The City of New Bern already has a well-developed brand, which the Consultant Team believed was important to link to this planning process for consistency and identity. Through an evolutionary design exercise, Marquis Latimer +

Halback *(see Planning Process 3-14)*[iii] – a design firm dedicated to creating compelling environments to live, work and play – created a branding package that built upon New Bern's graphic elements. A project logo, symbolic of New Bern's bear and shield logo with "New Bern Resilience" written below matches the look and feel of other New Bern initiatives. The shield symbolizes protection and resonates well with resiliency as a means to protect. "Resilience comes together here" as a sub header provided a secondary option. Colors, fonts, and other branding elements were inspired by New Bern's branding and used throughout all digital and print outreach material.

Figure 3.2. New Bern Resilience Logo Design



Source: Marquis Latimer + Halback, 2020

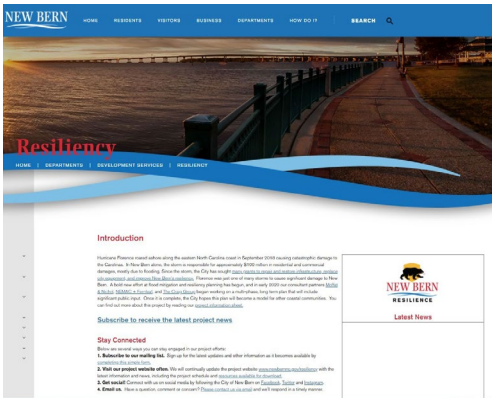
3.5.2 : Project Website

The Consultant Team collaborated with the City of New Bern to create a resiliency webpage, hosted on the City's website, to share information regarding project updates, resiliency, and grant information: www.newbernnc.gov/resiliency.

The webpage launched on Monday, August 31, 2020, prior to Public Meeting #1 with information readily available regarding this project. The webpage was updated over time as new resources were created. Project items were produced by the Consultant Team and sent to New Bern's Public Information Officer (PIO) to upload to the website. The website hosted virtual meeting links, a project information fact sheet, links to and results of the two surveys, planning resources, and other relevant information.

Additionally, the website offered an introduction to the planning effort, a way for interested individuals to subscribe to receive the latest project news, several ways to stay connected, and the project schedule. Over time, information relating to project updates was shared on the webpage, including information relating to flood risk and vulnerability, local capabilities for hazard mitigation, historic preservation, and public engagement.

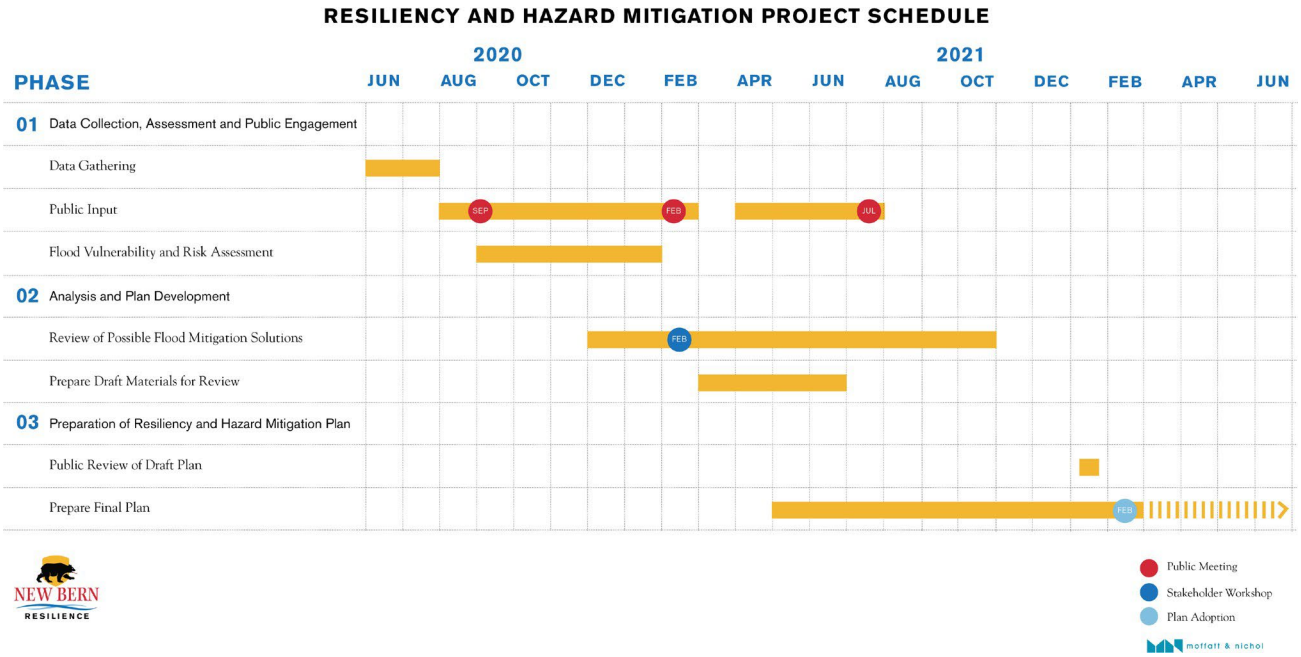
Figure 3.3. New Bern Resiliency Project Website



Source: City of New Bern/ Moffatt & Nichol, 2020

The project schedule provided the public with an understanding of the project's intent and timeline inclusive of meetings and deliverables.

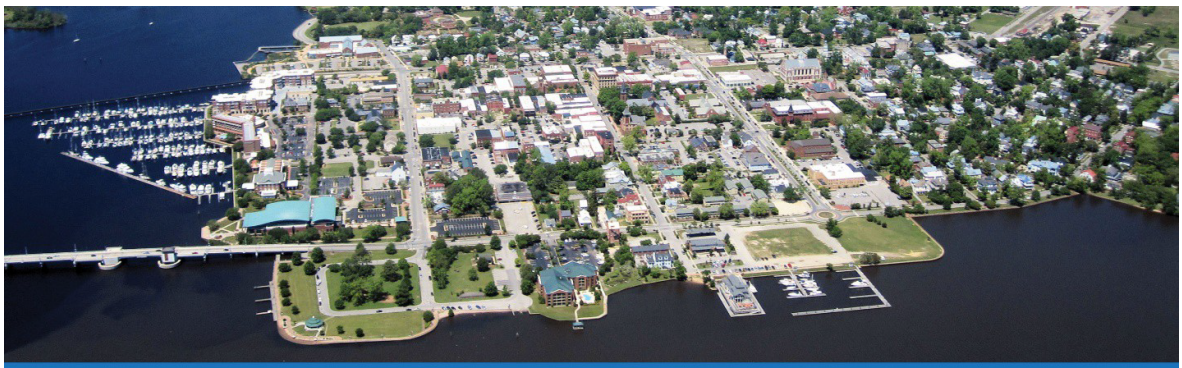
Figure 3.4. New Bern Resiliency and Hazard Mitigation Project Schedule



Source: City of New Bern/ Moffatt & Nichol, 2022

The project information fact sheet provided basic information on the planning process and project contact information.

Figure 3.5A. Project Information Fact Sheet, Page 1



CITY OF NEW BERN RESILIENCY AND HAZARD MITIGATION PLANNING PROCESS

PROJECT INFORMATION FACT SHEET

The City of New Bern is currently engaged in a process to develop a ***Resiliency and Hazard Mitigation Plan*** aimed at enhancing overall community resilience, better understanding flood risk within the community, and identifying potential flood mitigation solutions.

Purpose of the Project

The purpose of this project is to create a more resilient New Bern. Resiliency is the ability of a community, business, school, family, or individual to ***withstand*** an adverse event, ***recover*** from it, and ***respond*** to it. In order to do that, a community must first understand its risk. At the current time, our focus is on flood risk…looking at the physical, social, and economic impacts of flooding and how flooding affects our homes, businesses, workplaces, and other community assets.

Public Participation and Stakeholder Engagement

This planning process will involve ***widespread participation*** across city departments; from a wide range of local, regional, and national stakeholders and subject matter experts; and, of course, everyone who lives and works in the City along with our visitors, guests, and neighbors. One question we want to fully explore is not only what is essential for the community to function following a disaster, but what is truly of value to the community in terms of our shared vision, identity, and core characteristics.

Flood Hazards to be Addressed

The first phase of this project will focus on ***flood-related hazards***. These may include coastal hazards (such as tidal flooding and storm surge from hurricanes and tropical storms); river flooding; heavy rainfall and drainage-related flooding; and thunderstorms and other severe weather events. There are other complex issues to consider as well, such as the potential for sea level rise and other climate change factors that may affect the way we look at the flood hazard moving forward.

Involvement in the Process

As we work through this process, there will be multiple opportunities for ***community input***. There will be virtual and in-person public meetings; focus group meetings to talk about specific flooding issues in specific parts of the community; and public participation surveys to help collect valuable input. We will also be making draft sections of our ***Resiliency and Hazard Mitigation Plan*** available on the project website for review and comment.

Source: City of New Bern/ Moffatt & Nichol, 2020

Figure 3.5B. Project Information Fact Sheet, Page 2



CITY OF NEW BERN RESILIENCY AND HAZARD MITIGATION PLANNING PROCESS

PROJECT INFORMATION FACT SHEET

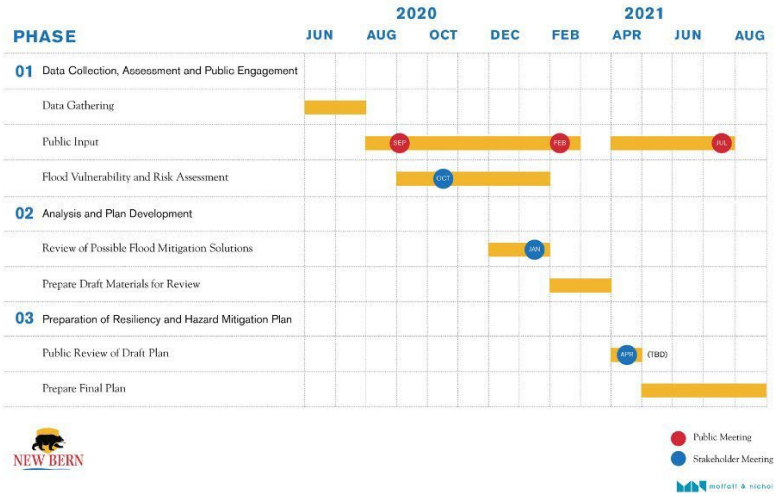
Schedule

The goal is to finalize the ***Resiliency and Hazard Mitigation Plan*** by Summer 2021. Ultimately, this document will be ***a roadmap*** for future projects that reduce flood risk and ***a framework*** for resiliency from other hazards as well. Our vision is for this plan to be more than just another document or study…this plan will lead to practical solutions that will reduce flood impacts to the extent possible and to help us be better prepared for the flood losses that do occur.

Contact Information

Please contact Amanda Ohlensehlen, Community & Economic Development Manager, via email or by phone at (252) 639-7580.

RESILIENCY AND HAZARD MITIGATION PROJECT SCHEDULE



NEW BERN RESILIENCE

moffatt & nichol

Source: City of New Bern/ Moffatt & Nichol, 2020

*Please note, project schedule was adjusted to accommodate updates in the planning process and the Project Information Fact Sheet reflects the initial schedule.

The planning resources provided a series of resiliency and hazard mitigation planning documents and links to promote education and participation in the resiliency and hazard mitigation planning process. Overall, the website was well received garnering approximately 458,000 total visits since website launch.

3.5.3 : Online Public Participation Surveys

Two public surveys were created using SurveyMonkey® and used to obtain feedback, concerns, and targeted responses from the New Bern community. The surveys coincided with the public meetings described above and provided a way for the public to share their feedback, concerns, and individual experiences with resiliency and hazard mitigation situations. Questions evolved over the course of the project to correlate with the planning efforts. The surveys were tailored to appeal to the public and incorporated questions on key topics pertaining to the Plan such as historic preservation, private property, communal assets, and the low-income sector of the community. Each survey asked a series of baseline questions, including demographic ones, and used "skip logic" to segment the survey responses.

The public participation surveys were formally titled *New Bern Resiliency and Hazard Mitigation: Primary Public Survey 1 and 2*. Survey 1 was available from August 28, 2020 to October 2, 2020 and had a total of 275 participants. Estimated time to complete both surveys was 16 minutes. Survey 2 was available from December 4, 2020 to January 29, 2021 and had a total of 281 participants. The complete results of the surveys, including charts and figures, can be found in *Appendix C – Planning Process – New Bern Resiliency and Hazard Mitigation: Primary Public Survey 1 and 2*. The surveys themselves are closed but are still available online for reference at the following links:

www.surveymonkey.com/r/NBResiliency1 (Survey 1) and

www.surveymonkey.com/r/NBResiliency2 (Survey 2).

New Bern's logo and color palette were used to unify the public surveys with the City's brand standards and to reinforce that these were official survey instruments being utilized by the City.

3.5.3.1 Survey 1 Summary Findings

The following is a high-level summary of the responses obtained through the Survey 1 efforts:

- Most respondents were from older demographics, owned single family homes, and/or did not live in a floodplain. The second survey was designed to gather responses from other demographics and citizens in more areas.
- Economic, people, and cultural/historic were the top three (3) assets in terms of perceived vulnerability to flood hazards.
- Emergency operations, elder care, medical facilities, major bridges, police stations, and small businesses were identified as the most important community assets.
- Protection of critical facilities, protection of utilities, strengthening emergency services, and preventing development in flood hazard areas were highest citizen priorities for planning.
- Regulating new construction and restriction of new development were top-ranked actions that residents believe should be taken.

3.5.3.2 Survey 2 Summary Findings

The following is a high-level summary of the responses obtained through the Survey 2 efforts:

- There were more responses for this survey. There was not a lot of cross-pollination in terms of the individuals who completed each survey.

- Survey #1 focused on community preferences. As noted, most people who took Survey #1 did not live in the floodplain or have flood insurance. As a result, the Consultant Team wanted to focus Survey #2 on people that are impacted by flooding. Younger groups were sought after to take this survey as there was not a large concentration of the younger demographic in Survey #1.
- Many people who answered this survey either live downtown or in the historic district. There was a high correlation of those who took the survey who live downtown and work downtown, as well as a high percentage of survey respondents were retired.
- Most people did carry flood insurance (46%) or do not live in a flood hazard zone (42%).
- 61% have had home/neighborhood affected by flooding in the past. Hurricane Florence (in 2018) was the major cause of flooding. Then heavy storms, then 2020 hurricanes.
- 29% of people felt that personal safety was threatened, 28% had damage to their home, and 14% said commute was compromised when impacted by flooding.
- 70% felt that flooding threatened their neighborhood and 57% felt that flooding threatened their residence.
- Downtown, emergency services, and roads were considered key places to be protected and strengthened.
- Emergency services and electricity ranked highest in terms of critical services/places during flooding events. Then grocery stores and hospitals/community centers.
- 52% of people have not taken any actions to make homes/neighborhoods more resistant to flooding.
- Of those who said yes, they did home updates (raising homes and various components of their homes).
- 72% reviewed insurance coverage and 68% identified where their property was located relative to flood hazard zones.
- Most people feel there should be a financial incentive for historic district property owners to make flood improvements.
- People felt whatever happens in New Bern should happen in other communities.

The results of the two surveys were presented to members of the Planning Team at Planning Team Meeting #4 on October 22, 2020 (Survey 1) and Planning Team Meeting #6 on January 28, 2021 (Survey 2) so the public opinion could be factored into final changes and additions to the draft Plan.

3.5.4 : Social Media

Social media was used throughout the planning process to communicate with the New Bern community. In addition to ongoing planning updates, a series of social media graphics was generated to help increase visibility regarding key project milestones, such as the announcement of upcoming public meetings and public surveys, and drive traffic to the website.

Figure 3.6. Social Media Campaign



Source: City of New Bern/ Moffatt & Nichol, 2020

3.5.5 : Email Campaigns

The project website included a "subscribe" feature which allowed the project team the means to communicate directly with those interested in staying up-to-date on the Plan's progress. Email blasts were sent out to 103 subscribers, comprising all segments of New Bern's community as well as state and local representatives: businesses; nonprofits; the school system; community development groups; local and state officials; environmental interest groups; local, regional, and state media organizations; daycares; the faith-based community; local HOAs; and others.

3.5.6 : Press Releases

Press releases were provided by the City of New Bern to various constituents during the planning process. These releases focused on project updates focused primarily on state and private grant funding and awards for initiatives relating to this Resiliency effort.

3.6 Stakeholder Engagement

The Planning Team invited a wide range of stakeholders to participate in a two-session virtual workshop, held over Zoom on February 22, 2021, from 9:00 a.m. to 11:30 a.m. and February 24, 2021, from 1:00 p.m. to 3:00 p.m. that educated, engaged, and gathered input from these stakeholders. Stakeholders represented a diverse group, including state representatives, local liaison groups, nonprofits, designers, professors, service members, and neighborhood and community representatives. The format included both large group sessions and smaller breakouts focusing on the following topics: flood vulnerability assessment, historic preservation/cultural resources, public outreach and education, and the environment & nature-based and engineering solutions. Between 32-35 stakeholders attended the workshop over the course of two sessions, with 42-45 total participants including the moderators and notetakers.

Stakeholder Meeting #1's session began with a welcome and overview of New Bern's path to resilience and informing the stakeholders about the overall project objectives. The presentation stated creating a resiliency framework and developing strategy initiatives are at the cornerstone of this planning effort. An overview of the current resiliency planning effort was addressed before the session split into virtual "breakout room" discussions. Each breakout room focused on the Plan's focus areas – flood vulnerability assessment, historic preservation/cultural resources, public outreach & education, and the environment & nature-based and engineering solutions. Breakout rooms, with approximately 10 participants each, were able to engage in detailed discussions. Breakout room discussions were held for 45 minutes before all stakeholders were brought back into the "main room" for a conclusive report out. Stakeholders were given an assignment to reflect on and complete before the second meeting.

Stakeholder Meeting #2's session began with a welcome and overview of New Bern's resilience goals for 2021 and beyond. The City stated they are looking to build upon proactive steps and are placing strong emphasis on implementing programs and projects. *The two top priorities stemmed from the workshop are educational outreach to help citizens and businesses be better prepared and more resilient, as well as seek funding for engineering and nature-based solutions.* Methods of achieving these initiatives include coordinating efforts to share information, aligning goals with statewide and regional resiliency initiatives, and actively seeking funding and guidance for next steps. A recap of Stakeholder Meeting #1's key takeaways was addressed before the session split into breakout room discussions. Like Stakeholder Meeting #1, each breakout room met for 45 minutes before reconvening to hear the final report out from each group and a summary of the team's next steps. Meeting highlights from each of the breakout room discussions are included in 3.6.1.

3.6.1 : Meeting Highlights

Meeting highlights from each of the breakout room discussions are included below.

3.6.1.1 Flood Vulnerability Assessment

- Development of problem statements
- Potential loss of road access
- How the flood assessment can be used to inform land use planning/zoning/construction policies
- Additional sources of information may be available from state and federal agencies

3.6.1.2 Historic Preservation/Cultural Resources

- Concept for multidisciplinary team
- Community outreach enhancements
- Securing Council approval for HPC elevation design guidelines
- Design guidance for landscaping/nature-based solutions
- Funding
- Establish field team for disaster preparedness
- Reduce flood insurance costs
- Policies for adapting historic properties to minimize flooding

3.6.1.3 Public Outreach and Education

- Variety of communications challenges (Covid-19, decline in cable and newspaper usage, lack of internet access)
- Challenges in pre-disaster environment (lack of "seriousness," protection of emergency services)
- Challenges in post-disaster environment (communicating disaster information quickly)
- Outreach opportunities (leaders/ambassadors, communications hub, SMS/text messaging, training)

3.6.1.4 The Environment, Nature-Based and Engineering Solutions

- Variety in terminology
- Range of solutions that fit many categories based on scale and location, environmental criteria, and prioritization of vulnerable areas
- Protective berms/levees and pump stations
- Implementation of green infrastructure
- Importance of transportation facilities, especially for evacuation routes during significant flood events
- Importance of understanding risks of different flood hazards in relation to the lifespan of mitigation solutions
- Importance of co-benefits of solutions including flood risk reduction, community enhancement, and environmental protection and restoration benefits

Multiple state stakeholders participated in both the flood vulnerability and nature-based solutions groups and proposed ideas for mitigation and/or funding strategies. Additionally, one-on-one meetings and discussions were held with a variety of groups, such as Rotary, USACE (United States Army Corps of Engineers), University of North Carolina-Wilmington (UNCW), North Carolina State University and others. As the State participates in obtaining FEMA funding, it will be important to keep state stakeholders involved. Meeting minutes, a litany of stakeholder groups, and a summary of the questions and answers that stemmed out of the Stakeholder Meeting Series are included in

Appendix C – Planning Process – Stakeholder Engagement. Additionally, please reference *Appendix C – Planning Process – Stakeholder Engagement* for a full list of stakeholder organizations who participated.

3.6.2 : Crowd Sourcing Map

To facilitate feedback with the stakeholder team, the Consultant Team published and shared an ArcGIS Online (AGOL) map, which allowed stakeholders the ability to map geographic points and attach comments and files for the City of New Bern. The map consisted of a basic street map with general points of interest, water features, and political boundaries. Stakeholders were required to have an organizational AGOL account to participate; since many of the stakeholders are members of municipal and state organizations, many of the participants indicated they had access to an AGOL account and were interested in participating.

Credentials were given to 4-5 team members who did not have access in order for them to participate, however at the end of the open comment period, the Consultant Team noted no feedback was provided through the tool. There were several challenges that prevented the AGOL tool from being used to its fullest potential. In terms of "lessons learned," This was the first time AGOL was used in this manner to facilitate engagement of this kind from a wide variety of participants in the study area. It took a few weeks to figure out appropriate configurations that would allow connections between different organizations, and further time to figure out how to set up AGOL for shared groups. If AGOL is intended to be used as a tool from the beginning, having the tools set up and tested closer to the start of the project would help build and direct attention to the portal earlier. This would also allow for tutorials to be offered to the stakeholder group indicating how best to use the tool for optimum input and build their comfort level with the approach.

The Consultant Team still believes this tool can be an effective component of outreach and could be leveraged in the future when small groups of stakeholders need to record and communicate information spatially on a map. For larger groups, for situations that require the Team to be more specific in who is granted access, and for situations when users do not have access to AGOL, other platforms offer interactive mapping features as part of their outreach platform, inclusive of project website, survey, social media integration, ADA-compliant virtual public meetings, and other tools.

3.7 Planning Team Meetings

The Planning Team met monthly via WebEx to obtain project updates, discuss recent progress, and provide needed input. Planning team members included key staff from the City of New Bern and Craven County and the Consultant Team (Moffatt & Nichol (M&N), NEMAC+FernLeaf (N+F) and The Craig Group (TCG)). Topics and dates for each of the Planning Team Meetings are as follows:

- Meeting 1 – July 29, 2020 – Kickoff Meeting
- Meeting 2 – August 27, 2020 – Public Outreach Strategy
- Meeting 3 – September 24, 2020 – Vulnerability Assessment
- Meeting 4 – October 22, 2020 – Historic Preservation/Cultural Resources
- Meeting 5 – December 20, 2020 – Flood Vulnerability Assessment Preliminary Results
- Meeting 6 – January 28, 2021 – Public Outreach Update
- Meeting 7 – February 25, 2021 – Stakeholder Engagement, AccelAdapt, Resilience Strategy
- Meeting 8 – March 25, 2021 – Resilience Strategy Development
- Meeting 9 – April 22, 2021 – Resilience Strategy Development 2
- Meeting 10 – May 27, 2021 – Resilience Actions
- Meeting 11 – July 1, 2021 – Resiliency Plan Update

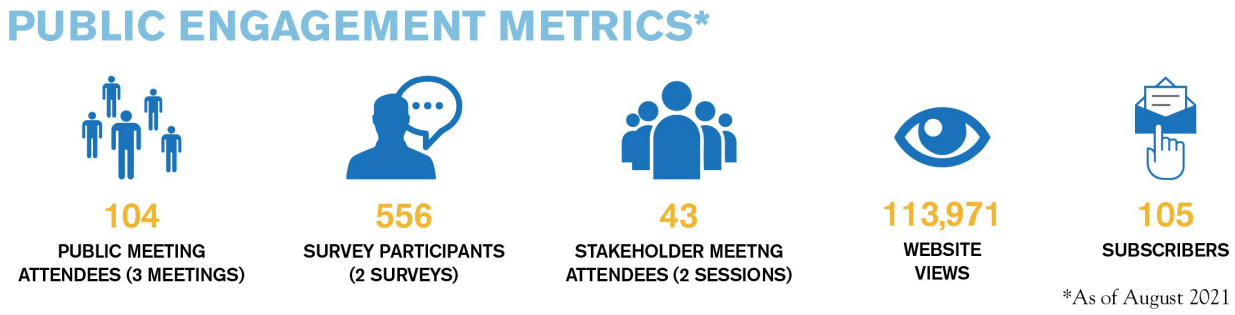
- Meeting 12 – August 24, 2021 – Resilience Action Prioritization

For the list of planning team members, as well as meeting minutes, please reference *Appendix C – Planning Process – Planning Team Meetings* for a full roster of names, departments, and contact information.

3.8 Findings & Conclusions

The planning process evolved through a diversity of thought as groups and individuals from various backgrounds, knowledge, and expertise were able to contribute to the Plan. Leveraging digital tools expanded the team's outreach efforts beyond traditional in-person events; despite the pandemic halting in-person opportunities, the Planning Team witnessed an increase in overall public participation by functioning primarily in a virtual realm. The website functioned as a storing house of information and archived meeting minutes, presentations, and survey results. In summary, public and stakeholder input was taken into consideration during a variety of opportunities throughout the planning process, including planning team meetings, surveys, public meetings, as well as during the drafting and prioritizing of the resiliency pillars and goal statements.

Figure 3.7. Public Engagement Metrics



Source: City of New Bern/ Moffatt & Nichol, 2021

[i] The first public meeting was held withinthe first 60 days of the planning process for Community Rating System (CRS) credits. This public meeting (andsubsequent public meetings) was separate from the core planning team meetings.
[ii] Many of the slides presented at the public meetings reflect informationincluded in the report.
[iii] Marquis Latimer + Halbackperformed the logo designas a subconsultant to The Craig Group. They were not involvedin any other part of the planning process.

4.0 Community Profile

This section discusses the community profile of the planning area. It consists of the following two subsections:

4.1 Introduction
4.2 Community Description

4.1 Introduction

New Bern was settled in 1710 by Swiss and German immigrants led by Swiss Baron Christoph DeGraffenriedwho named the town after Bern, the capital of Switzerland. According to legend, Bern, Switzerland was founded by a group of hunters who named the city after the first animal they came upon, a bear (Bern being the old Germanic word for bear). Thus, New Bern's city emblem, as in Bern, Switzerland, is a black bear going up a golden road. In 2010 with the celebration of the 300th anniversary of the city, over 58 fiberglass bears were adopted by local businesses, designed by local artists, and situated throughout the city.

Figure 4.1. The statue "Bearon DeGraffenried" in the wake of Hurricane Florence





Source: City of New Bern

Friday, September 14, 2018 Hurricane Florence hit, causing the Neuse and Trent Rivers to surge into the streets of New Bern. Though bolted down, even *Bearon DeGraffenried* found himself hoisted from his spot at Union Point Park and carried to the middle of East Front Street by a storm surge estimated at greater than 10 feet. By the time Florence's waters had subsided, the loss of a few bears was insignificant compared with the loss experienced by the city's residents and businesses.

Final reports indicated nearly $100 million in damage to 1,725 single-family homes and 225 commercial properties ravaged by Hurricane Florence. Of these, 37% were either destroyed or suffered major damage. Not counted in these losses is the economic and emotional costs associated with residential and business displacement and emergency

response. With over 500 people rescued by emergency responders from homes and vehicles, Florence was not only an economic disaster, but it also took a toll on the city's social and emotional wellbeing. *(see Community Profile 4-8)*[i]

Maybe that's why Matthew Montanye, the City's Director of Public Works, spoke to the symbolic importance of the new Flag Bearer at its October 2020 unveiling, "There's so much more to this bear. It represents our city, our state, and our country." *(see Community Profile 4-8)*[ii]

Figure 4.2. The bear's symbolic importance is presented in various forms, from art installations to the City's logo



Source: City of New Bern

Hence why in developing the symbol for the *New Bern Resilience and Hazard Mitigation Plan*, it was natural that city planners would look to the bear as representing the resilience of New Bern *(see Community Profile 4-8)*[iii].

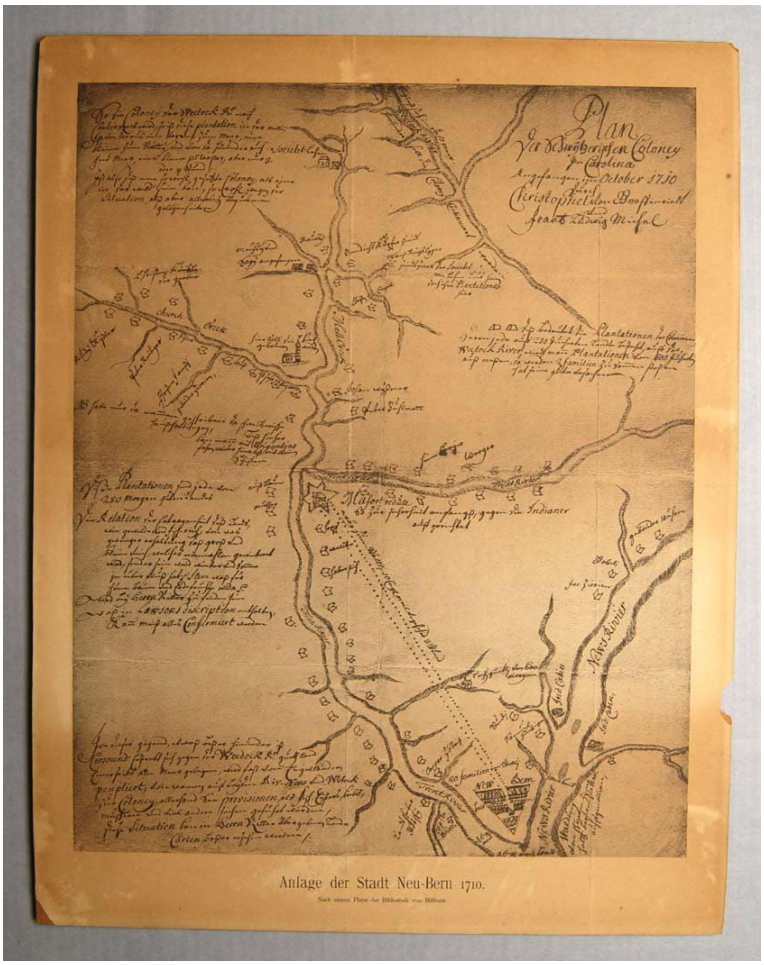
"Most of us will never forget Hurricane Florence," Montanye said. "Some of us, like myself, are still working on doing some of those repairs, whether it's repairs to our buildings, our bears, or our drainage system. We work on Hurricane Florence related issues every day." *(see Community Profile 4-8)*[iv]

4.2 Community Description

4.2.1 Early History of New Bern

When New Bern was established in 1710, by Baron Christoph von Graffenried at the strategic confluence between the Trent and Neuse Rivers, it was the first large-scale attempt at European Colonization. Before the Europeans arrived, the Tuscarora Indians also lived along New Bern's riverbanks in a village they called Chattoka. Attacks by the indigenous Americans caused the initial abandonment of the settlement; and it was not until the 1720s that the permanent town of New Bern was incorporated. Throughout the 1750s, New Bern grew in commercial and political importance with the construction of commercial and governmental buildings in addition to establishment of the state's first newspaper, *The North Carolina Gazette* in 1751. By 1765, Lieutenant General William Tryon was appointed the eighth Governor of the Colony of North Carolina and passed legislation to make New Bern the state's permanent capital.

Figure 4.3. "*Plander Schwytzerischen Coloney in Carolina, angefangen im October 1710*" (Plan of the Swiss Colony in Carolina begun in 1710)



Source: Craven County Digital History Exhibit, #TP.1958.029.002

New Bern is the second oldest colonial town in North Carolina and thrived on its waterfront location as a trade center. In its earliest years, the city's economy depended on its status as the first capital of the Colony of North Carolina and the seat of Craven County.

The architecture of New Bern appropriately reflects its rich, prosperous history, with an emphasis on the Federal style. In 1787, William Attamore described the many balconies and piazzas, sometimes two stories, on the front and back of residences to accommodate the summer heats, which are still evident and relevant today. *(see Community Profile 4-8)*[v] Quiet, shady residential streets on large landscaped lots expand from the picturesque waterfront parks and slips. Given its picturesque setting and growing political prestige, New Bern quickly became known as "the Athens of the South." The city's thriving economy attracted skilled craftspeople and exposed residents to national stylistic trends, which directly affected the architecture.

Original plans for the city incorporated broad streets with adequate space between homes and principal streets along the banks of the two rivers. Much of this scheme still survives today with New Bern's atmosphere, scale, and ambiance still intact.

The American War of Independence (1775-1783) minimally affected the town when it was captured by the British in 1781. Naval and agricultural activity continued and expanded, resulting in increased trade activity along the

riverfronts. "New Bern also became a cosmopolitan center...for fashion and architectural influences from other major American cities." *(see Community Profile 4-8)*[vi] After the Revolution, westward expansion and competition between towns to be the government seat, resulted in the legislature departing New Bern to meet in locations throughout the state until, in 1792, Raleigh was named the permanent state capital.

During the Civil War (1861-1865), New Bern's growth was briefly interrupted. Following the 1862 Battle of New Bern, fleeing confederate troops burned wharves, industrial properties, and transportation assets. *(see Community Profile 4-8)*[vii] Afterwards, the city was largely occupied by the Union Army as they took up residence in some of New Bern's finer homes, including the ruins of Tryon Palace. The Union Army used these structures as garrisons and administrative buildings, while the First Presbyterian Church was used as a hospital and lookout. The church's belfry still shows carved names and initials of Union soldiers. *(see Community Profile 4-8)*[viii]

By the 1850s, New Bern's enslaved and free African American communities had grown to represent more than half of the city's population. After the Civil War, New Bern received an influx of northern migrants as the lumber and naval economy quickly returned to pre-war levels. Occupied by Federal troops, New Bern was a draw for African American people during Reconstruction (1865-1877), ultimately resulting in a white minority population. During this period lumber production drove the local economy. New Bern prospered as one of the South's leading lumber producing regions. With this growing prosperity, the city invested in public works and infrastructure. Commercial buildings were established downtown and new residential neighborhoods were developed including Riverside in 1894, Ghent in 1906, and DeGraffenreid Park in 1926.

The Fire of 1922 greatly impacted the African American community, consuming large portions of the city including forty residential blocks north of Queen Street, home to most of New Bern's African American neighborhoods. This resulted in the dispersal of African American families into other New Bern neighborhoods or out of the city.

During the 1940s, the United States' involvement in World War II (1941-1945) brought jobs and commerce with the construction of the Cherry Point Marine Corps Air Station. By the 1950s and 1960s, New Bern's African American neighborhoods were suffering from disinvestment. Yet, a number of African American landmark institutions were still serving the needs of the community. Good Shepherd Hospital, opened in 1938 and built with funding from the Episcopal Church and the Duke Endowment, continued medical service until 1967. Today the property houses a community nursing home. *(see Community Profile 4-8)*[ix] Good Shepherd is just one of the heritage sites showcased on 16 interpretive signs along New Bern's African-American Heritage Trail. This neighborhood trail tells the story of the people, the places and the events defining African American heritage in the greater Craven Terrace/Dryborough neighborhood.

4.2.2 Early Development of African American Neighborhoods

New Bern has a rich and storied African American neighborhood history. Dryborough was founded by General (and future Governor) Benjamin Smith and his wife, Sarah Rhett Dry Smith(1762-1821). Sarah was the daughter of Colonel William Dry (1720-1781) who owned the land Dryborough would occupy. This land was developed as an expansion of the city and was incorporated in 1806. It became a cultural center of African American life which persisted even after the Great Fire of 1922. Reizensteinville was developed by Charles Reizenstein in the 1890s as the first major public housing project for African American people. Charles Reizenstein was a prominent figure within New Bern, and it would be remisedto not recognize his contributions to New Bern's Jewish community. Much like how he developed the land that would take his name, he also contributed to the construction of the Chester B'nai Sholem temple, which bears his son's first name—Chester. *(see Community Profile 4-8)*[x] These early neighborhoods of Dryborough and Reizensteinville demonstrate the diverse cultural and social history of New Bern as it evolved from the colonial era to today.

4.2.2.1 Greater Five Points

Greater Five Points is a collection of neighborhoods including Greater Duffyfield, Dryborough, Walt Bellamy, Trent Court, and Craven Terrace, clustered around the Five Points commercial area. It is home to over 3,300 residents, the majority of which are African American. The neighborhood covers 462 acres, of which 50% of the land area is within either a 100-year or 500-year floodplain. Hurricane Irene (2011) and Hurricanes Fran and Bertha (1996) contributed to high vacancies in the area, which was exacerbated with the flooding of additional homes by Florence in 2018.

A historically African American community located directly west of the historic downtown, the Greater Five Points reflects New Bern's early occupation by African American artisans in the period following the American Revolution and by hundreds of enslaved persons prior to and during the Civil War. Black artisans and craftsmen were responsible for constructing the city's community buildings, wharves, and ships leading to economic prosperity for them and the city. The disenfranchisement law of 1900 with its "separate but equal" status caused an increase in black owned businesses and churches in the area.

4.2.2.2 Long Wharf and Greater Duffyfield

During the latter half of the 19th Century, black doctors, lawyers, and businessmen in New Bern were a distinct elite population mostly defined by boundaries outside of the immediate downtown to the north and the west. Today these neighborhoods are known as Long Wharf and Greater Duffyfield with buildings dating from the last decade of the nineteenth century up through World War II.

Five basic house types dominate, including the 1 ½ story cottage, the I-House, the 2-story front gable house, the 1-story front gable house, and the 1- and 2 story Craftsman and Foursquare style houses. Most of the houses built after 1922 were single-family homes of better living conditions intended for renters, similar to the white working-class neighborhoods. Only a few sections of the narrow, front gable "shotgun houses" still exist today.

4.2.2.3 The Great Fire of 1922

As previously referenced, the Great Fire of 1922 began in Craven Terrace and swept through New Bern, destroying over 1,000 homes (25% of the city's building stock), leaving 3,000 citizens homeless (one quarter of the residents), 90 percent of whom were African American, and resulted in an economic loss of $2.5 million. With no housing or jobs, many African American families left and by 1940, New Bern had shifted from a predominately African American city to one that was predominately white. However, some from the African American neighborhoods relocated to Dryborough and constructed new homes.

During the 1930s, new neighborhood landmarks were created including Kafer Park along with Good Shepherd Hospital, which was founded to provide necessary health care for African Americans. Moving into the World War II era, the construction of military bases in eastern North Carolina spurred new jobs for African Americans living in New Bern. New African American businesses opened, and the Five Points area realized a renaissance with the return of African American veterans and prominent local leaders who engaged in the New Bern Civic League. They established public institutions, such as the Cedar Street Recreation Center, the first recreational center for African Americans, which begun in 1948 with labor from returning vets and high school students. J. T. Barber High School was constructed in 1955 to provide a higher quality of public investment in the education of African American youth in New Bern.

However, the social and economic challenges of the late 1950s and 1960s diluted the gains of the immediate post-war years and with the widening of Broad Street in the 1950s, the impact to the business community was felt in both Five Points and downtown New Bern. A series of events escalatedthe economic and social downturn of the area. A lunch counter sit-in March of 1960 saw the arrest of 29 students; Good Shepherd Hospital, the only hospital for African Americans was left with no full-time doctor; in January 1965, the Klu Klux Klan firebombed cars and businesses on Broad Street; and New Bern schools, not fully integrated until 1970, saw black per-pupil spending

desperately behind that of white schools. This resulted in many African Americans moving from New Bern to other cities with better jobs, education, and race relations.

Today Five Points is suffering the results of decades of public and private disinvestment, limited job opportunities, increased crime, inadequate housing, minimal public transit, chronic health conditions, poor educational attainment, and decreased property values.

4.2.2.4 Greater Five Points Redevelopment Plan

In 2018 the New Bern Redevelopment Commission was created to deliver a plan "that combines the idealism of 'The New Bern Gateway Renaissance Plan' with the execution of 'The Greater Five Points Transformation Plan'." The Commission is tasked with working with the community and the City of New Bern to implement the goals and objectives of the Redevelopment Plan and address what new issues may be faced by the community, such as the need for increasing resilience and protecting people and places threatened by flooding disasters.

The Greater Five Points is poised through the implementation of the Redevelopment Plan to rebuild in a way that "celebrates and honors its rich African American heritage and ultimately provides residents and the community an area that cultivates creativity and entrepreneurship, fosters diversity, and promotes growth and wellness."

4.2.3 New Bern Today

New Bern, located at the confluence of the Neuse River and Trent River, is the county seat for Craven County. Major employers in the area include MCAS Cherry Point, a large Marine base located 18 miles south of New Bern; Carolina East Health, a large regional hospital; and manufacturers, including Moen and Bosch. Similarly, retirees are attracted to the area from outside the state, resulting in a 4% increase in out-of-state residents annually since 2013.

4.2.3.1 Population Trends

New Bern's population has increased steadily since 1980. In 2000, the city had 10,006 households which increased by 27.4% to 12,746 households by 2010. The 2019 American Community Survey (ACS) 5-year estimate is a total population of 29,895 with 15, 793 households. Less than one-fifth of all owner-occupied housing units were constructed prior to 1950 with over one-half constructed between 1950 and 1999. In the past 20 years nearly one-third of the existing housing stock was built. ACS data indicates 13,757 occupied housing units (87.1%) and 2,036 vacant units (12.9%). Of those occupied units, 53% are owner-occupied and 47% are rental units (49.4%). The ACS data shows 2,069 vacant housing units (appx. 13.7%) a rate higher than that of Craven County at 12.7% but lower than the statewide rate of 14.3% The median home value as of 2015 was $147,400 and the median rent was $623/month.

Nearly 80% of the population is 18 years or older, with a growing percentage (21.8%) over age 65. This is an increase of 2.8% from 2017 as retirees are attracted to the area from outside the state, resulting in a 4% increase in out-of-state residents annually since 2013. Employment levels for those of a working age (17,671) total 77% while those residents with formal education beyond high school totals 63%.

Median household income is $43,204 with a poverty rate of 18.7%. Racial and ethnic demographics indicate a white alone population of 58.9% with an African American or Black population of 30.4%. Asians constitute 5.9% with the remainder being multi-racial or some other race alone.

With an increasing diversity in educational, economic, cultural and ethnic backgrounds and values among New Bern's populace, city leaders understand the need to work closely with civic, business, educational, and social

service organizations to meet the needs of underserved families in the city. Many of whom live, work, worship, and educate in the areas most impacted by flooding disasters and the increased threat of sea level rise.

4.2.3.2 Regional / Local Economy

New Bern's status as a colonial capital reflects the importance of heritage in eastern North Carolina. The first English settlement on Roanoke Island, now known as the Lost Colony, was founded by Sir Walter Raleigh in 1597. North Carolina's oldest continuous settlement, Bath(1705), is located just an hour northeast of New Bern. The region's historic reputation as a major supplier of naval stores, then cotton, and later tobacco represents its continuing role as a productive agricultural region and one that provides necessary commodities to inland areas of the state still today. *(see Community Profile 4-8)*[xi]

"Fertile soil, rushing rivers, and railroads" along with the significant industrial growth that resulted from the construction of Interstate 95 (I-95_ connecting New England to Florida, attracted Fortune 500 companies. The 1941 Marine Corps training camp, now known as Marine Corps Base Camp Lejeune, has created a metropolitan area of over 197,000 residents.

The region's economy has diversified to include the defense sector (four military bases and contracting firms), value-added agriculture (including food & beverage), aerospace, life science and health care, advanced manufacturing (motor vehicle assembly & parts manufacturing, large appliances, industrial machinery, etc.) and tourism, with being a critical industry to New Bern's economic health.

According to Visit North Carolina's most recent economic study, in 2019 visitors to Craven County spent $155 million, an increase of 4.3% from 2018, directly sustaining more than 1,180 jobs in the county. Total payroll generated by tourism was $31.6 million and local tax revenue generated by sales and property taxes from travel related businesses was $3.38 million.

4.2.3.3 New Bern / Craven County Heritage Tourism Value

The National Trust for Historic Preservation defines heritage tourism as "traveling to experience the places, artifacts, and activities that authentically represent the stories and people of the past and present. It includes visitation to cultural, historic, and natural resources." Heritagetourism is one of the fastest-growing segments in the tourism industry, equating to $171 billion in annual spending.

Eighty-one percent of U.S. tourists are considered "cultural tourists," and 56 percent of the U.S. population indicated it included at least one cultural, arts, historic or heritage activity or event while on a trip in the past year. According to a 2013 national research study on U.S. Cultural and Heritage Travel by Mandela Research, 76% of all U.S. leisure travelers participate in cultural and/or heritage activities while traveling, translating to 129.6 million adults each year. Cultural and heritage visitors spend, on average, $1,319 per trip compared to $820 for all U.S. travelers. *(see Community Profile 4-8)*[xii]

New Bern promotes the heritage travel experience with not only its downtown National Register of Historic Places district, home to the birthplace of Pepsi and best-selling novelist and screenwriter Nicholas Sparks, but also the state-owned reconstructed colonial governor's mansion, Tryon Palace. But with Hurricane Florence devastating downtown and other prime heritage destinations in 2018 and the more recent closures forced by the pandemic, visitation to historic New Bern declined. But the understood value of New Bern's cultural heritage to the local economy has supported the creation of new heritage experiences for visitors. While Tryon Palace continues to draw a significant number of visitors to the area, other cultural heritage experiences have increased visitor awareness of New Bern's historic past. Mellissa Riggle, Executive Director of the Craven County-New Bern Tourism Development authority, reflected in a recent news article on the increase in popularity of self-guided tours and other outdoor experiences, specifically, New Bern's Civil War Heritage and African American Heritage tours. "Our infrastructure

for tourism has poised us to come back really strong in the wake of COVID, we've got these great assets, and we are just ready and excited to welcome everybody in." *(see Community Profile 4-8)*[xiii]

Ensuring communities "build back better" post-disaster includes not only improving the physical resilience of a community's built heritage, but also its economic and cultural resilience. Telling the stories of place and people through community-based history tours is an essential tool in the disaster resilience toolkit. It helps to establish community value for the places that matter and encourages residents to be pro-active in protecting those cultural and historic assets.

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[ix] New Bern African American Heritage Tour

[x] Goldring/Woldenberg Institute of Southern Jewish Life. "ISJL - North Carolina New Bern Encyclopedia." Accessed August 19, 2021. https://www.isjl.org/north-carolina-new-bern-encyclopedia.html.

[xi] "Innovation Yesterday and Today," North Carolina East Alliance https://www.nceast.org/overview/history-place/

[xii] *2013 Cultural & Heritage Traveler Study, Mandala Research, LLC*

[xiii] New Bern knows how to capitalize on history: Tourism comes roaring backin 'Bear Town', Kim Grizzard, The Reflector, July, 24, 2021



5.0 Capability Assessment

This section explores the capability of the City of New Bern and its partners to support and implement the City's resiliency and flood mitigation goals. It consists of the following six subsections:

5.1 General Overview
5.2 Community Plans and Ordinances
5.3 Risk Management Plans and Procedures
5.4 Fiscal Resources
5.5 NOAA Storm Events Database Research
5.6 Conclusions

5.1 General Overview

The purpose of conducting a Capability Assessment (also known as a literature review) is to estimate and better understand the ability of a local jurisdiction to implement a comprehensive Resilience Strategy, and to identify potential opportunities for establishing or enhancing specific resiliency and hazard mitigation policies, programs, or projects. As with any planning process, it is important to try to establish goals, objectives, and actions that are feasible, based on an understanding of the organizational capacity of the agencies and departments tasked with their implementation. A Capability Assessment helps to determine which resilience 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, available tools, amount of fiscal resources, and current political climate.

A Capability Assessment has two primary components: 1) an inventory of a local jurisdiction's relevant plans, policies, studies, ordinances, reports, and programs already in place; and 2) an analysis of its capacity to carry them out. Careful examination of local capabilities will help detect existing gaps, shortfalls, or weaknesses with ongoing government activities that could hinder proposed mitigation activities. These gaps may be opportunities for future resilience activities. A Capability Assessment also highlights the positive mitigation measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future mitigation efforts.

The Capability Assessment completed for the City of New Bern serves as an important planning step and an integral part of the foundation for designing an effective Resilience Strategy. Coupled with the Vulnerability Assessment, the Capability Assessment helps identify and target meaningful resilience actions for incorporation into the Resilience Strategy portion of the Plan. It not only helps establish the vision, resiliency pillars, and goals for the City to pursue under this Plan, but also ensures that the goals are realistically achievable under given local conditions.

In order to create an inventory and conduct an analysis of local government capabilities, the Moffatt & Nichol team performed a literature review by gathering available resources from a multitude of sources, including Craven County and the City of New Bern. The documents were sorted into the following categories: Community Plans and

Ordinances, Risk Management Plans and Procedures, Fiscal Resources, and NOAA Storm Events Database Research. Each resource that was collected was analyzed to identify elements that could either support or hinder flood hazard mitigation.

A general scoring method was applied to the information that was collected and reviewed to quantify the City's overall capability. Based upon the scoring system, each capability indicator was assigned a point value based on its relevance to resiliency and flood hazard mitigation. Using this scoring methodology, a total score and an overall capability rating of "High," "Moderate," or "Limited" was determined according to the total number of points received. These classifications are designed to provide nothing more than a general assessment of the local government's capability to effectively implement flood risk reduction activities. Based upon the analysis conducted, the City of New Bern is considered to have **HIGH** capability for flood mitigation, having received a score of 66 *(see page Capability Assessment 5-40)*.[i] This determination provides critical information for developing an effective and meaningful resilience strategy.

5.2 Community Plans and Ordinances

5.2.1 : City of New Bern Parks & Recreation Comprehensive Plan for a Healthy Community

5.2.1.1 Overview

The Parks and Recreation Department of the City of New Bern has worked consistently since the 2006 Master Plan to improve and expand its services and facilities. A number of the recommendations from the 2006 study have been implemented, while some have not. The previous recommendations that have not been implemented were examined for relevancy and were incorporated, if applicable. This document's intent will provide guidance for the next tenyears for the Parks and Recreation Department. This update began with an examination of existing facilities, conditions, programs, and staffing. A survey was conducted to determine which current area residents desire and the survey was widely distributed in an effort to ensure diversity. The responses helped determine these recommendations.

Parks, recreation, health, and fitness are all part of the economic development fabric for the City of New Bern. Companies prioritize their location(s) based on a number of factors, including where employees will be happy. Retirees want to locate in a community with active recreational opportunities and a stimulating cultural scene. Residents stay in places with which they have an affinity. Therefore, parks and recreation is an integral part of this equation. The continued support for Parks and Recreation by the New Bern Board of Aldermen is crucial to this balance.

5.2.1.2 Elements That Support Flood Hazard Mitigation

Simmons Street & Oaks Road Constructed Wetland:

- The City owns a 52-acre parcel on Simmons Street between the railroad tracks and Oaks Road. It is a constructed wetland designed to remove water during storm events from areas prone to flooding. The wetland appears to have a path which weaves around depressions where the water accumulates. The wetland also has two areas where vehicles might park. This would be an ideal spot for a nature viewing area and walking trail. There is also an opportunity to educate the public about stormwater.

Beech Street/Harbor Drive:

- This 0.47-acre property was acquired in a FEMA buy-out. It is located on the Neuse River in a residential neighborhood. This property would be a suitable location for a canoe/kayak put-in. Someone with a residence

at the end of the street has put a large "no trespassing" sign on the road which looks to apply to the city property. This may dissuade citizens from accessing the property.

Based on the survey responses, the following activities and facilities were the most desired from a nature/family-oriented perspective:

- Walking trail;
- Nature preserve; and
- Open green spaces *(see page Capability Assessment 5-40).* [ii]

Riparian, wetland, sensitive habitats, unusual topography, and other natural constraints limit the usable land within certain parks. While these are certainly desirable resources, they limit what can be done on the parcel. Craven County falls under the Coastal Area Management Act (CAMA) and the Neuse River Buffer Rules. These two sets of rules serve to further constrain what can be done on certain parcels. As minimum guidelines, the standards are intended to be used as a flexible planning tool. In practice, some standards will most likely not be met while others may be abundantly met due to need.

- Creation of parks/green space *(see page Capability Assessment 5-40)* [iii]

5.2.1.3 Elements That May Hinder Flood Hazard Mitigation

- Development is prioritized based on the greatest benefits for the greatest number of people, not necessarily looking at the environmental impacts.
- Riparian, wetland, sensitive habitats, unusual topography, and other natural constraints limit the usable land within certain parks. While these are certainly desirable resources, it limits what can be done on the parcel. Craven County falls under the Coastal Area Management Act (CAMA) and the Neuse River Buffer Rules. These two sets of rules serve to further constrain what can be done on certain parcels. As minimum guidelines, the standards are intended to be used as a flexible planning tool. In practice, some standards will most likely not be met while others may be abundantly met due to need.

5.2.2 : Administrative Support

Figure 5.1. Craven County Community Foundation awarding $10,000 to a partnership between Swiss Bear and the City of New Bern develop a hazard mitigation and resiliency plan in the aftermath of Hurricane Florence



▲ HIDE CAPTION

The Craven County Community Foundation recently awarded $10,000 to a partnership between Swiss Bear and the City of New Bern to develop a hazard mitigation and resiliency plan in the aftermath of Hurricane Florence. Pictured from left are Amanda Ohlensehlen, Community and Economic Development manager; Tyler Harris, past president of the foundation; Margaret Shields, grant writer; Sabrina Bengal, Ward 1 city alderman; Dana Outlaw, mayor; Jonathan Segal, current foundation president; Mark Stephens, city manager; and Lynne Harakal, executive director of Swiss Bear. [Contributed photo]

Source: New Bern

5.2.2.1 Overview

The site contains a welcome message from the City Manager, Foster Hughes. It also contains more information about him, his background, and his role. There is a brief message on the City Hall website. Brenda E. Blanco, CMC, NCCMC is the City Clerk and Colleen M. Roberts is the Public Information Officer.

Margaret Shields is the grants administrator for the City. She works for a private business called Fund Development, LLC.

https://www.newbernsj.com/news/20200123/craven-county-community-foundation-awards-118000-for-hurricane-recovery

5.2.2.2 Elements That Support Flood Hazard Mitigation

Margaret helps the community obtain grant funding for mitigation projects.

- Margaret was the grant administrator for grants written for Tryon Palace. Tryon Palace is located in the City of New Bern and was awarded $1 million in grant monies for mitigation type projects.

5.2.2.3 Elements That May Hinder Flood Hazard Mitigation

- Not applicable.

5.2.3 : Appendix A - Subdivisions

5.2.3.1 Overview

The purpose of this ordinance is to establish procedures and standards for the development and subdivision of land within the territorial jurisdiction of Craven County; to provide for the orderly growth and development of Craven County; for the coordination of streets and highways within proposed subdivisions with existing or planned street and highways, and with other public facilities; for the dedication or reservation of recreation areas serving residents of the immediate neighborhood within the subdivision, and of rights-of-way or easements for street and utility purposes; and for the distribution of population and traffic in a manner that will avoid congestion and overcrowding, and will create conditions essential to public health, safety, and the general welfare. This ordinance is designed to further facilitate adequate provision of water, sewerage, parks, schools, and playgrounds, and also facilitate the further subdivision of larger tracts into smaller parcels of land.

5.2.3.2 Elements That Support Flood Hazard Mitigation

- *Section 109. – Floodplain Requirements*
    - The following floodplain requirements shall apply to all preliminary and final subdivision plats:
        - 109.1: all subdivision proposals shall be consistent with the need to minimize flood damage.
        - 109.2: all subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.
        - 109.3: all subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards.
        - 109.4: base flood elevation data shall be provided for subdivision proposals and other proposed Development which is greater than the lesser of 50 lots or five acres.

Part of the preliminary and final plats include:

- The exact location of the flood hazard boundary area, floodway, and floodway fringe areas from the community's flood hazard boundary maps or other Federal Emergency Management Agency maps or from accurate topographical elevations based on geodetic survey data. Or, at the discretion of the owner, benchmark elevations at a minimum of 800 ft. apart and referenced to either United States Geological Survey or 1988 North American Vertical Datum.
- A note on the map, if applicable, that all or part of this subdivision lies within a Special Flood Hazard Area as shown on the Federal Emergency Management Agency Flood Insurance Rate Maps for Craven County.

5.2.5.5 Elements That May Hinder Flood Hazard Mitigation

- *Section 206. - Variances*
  - Allowing variances has the potential to circumvent flood hazard mitigation policies or practices that may be in effect to limit flood damages.
  - From ASFPM's (Association of State Floodplain Managers) No Adverse Impact (NAI) Guidance: "Flood damages throughout the nation are increasing. If communities only follow minimum national approaches, that trend will likely continue. In order to assist communities with better approaches for flood loss reduction, ASFPM developed the No Adverse Impact approach." https://www.floodsciencecenter.org/projects/no-adverse-impact-floodplain-management-community-case-studies/

5.2.4 : Building Plans, Permitting, and Inspections from 2015 to 2017

5.2.4.1 Overview

The Inspections Division is responsible for permitting, inspecting, and code compliance of all building construction (new, renovation, repairs, etc.) within the city limits and extra-territorial jurisdiction of the City of New Bern. In addition, this division enforces nuisance abatement, minimum housing code, and the FEMA Flood Program. Building permits are required for most building projects that include structural, electrical, mechanical, plumbing, or gas. The annual building report from 2016 and 2017 were reviewed as well as the New Bern 2015 Permits Interactive Story Maps.

5.2.4.2 Permits Overview

- *Building:*
  - Required for structural work or project cost equal to or greater than $15,000 and accessory structures that are 12' or greater in any dimension.
- *Electrical, Mechanical, Plumbing & Insulation:*
  - Required for any new construction, renovations, and rehabilitation of residential and commercial.
- *Gas:*
  - Required for gas lines and appliances, when applicable.
- *CAMA:*
  - Any development within 75' of an Area of Environmental Concern.
- *Floodplain (only properties that are identified as being in a floodplain require permits):*
  - Any new construction or renovation costing more than 50% of the value of the property; moving or replacing HVAC, electrical, and/or plumbing; all new development and subdivisions.

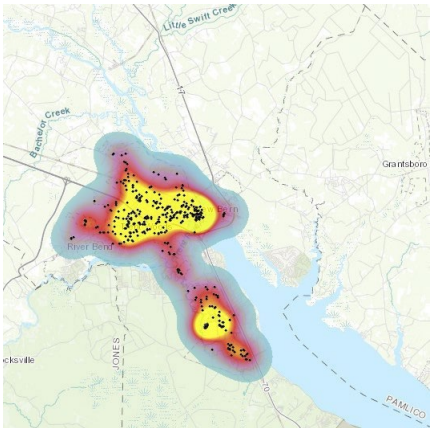
5.2.4.3 Elements That Support Flood Hazard Mitigation

- Demolition of structures in 2017: there were 6 commercial demolitions, 2 institutional demolitions, and 5 residential demolitions. Homes, buildings, signs, and trees were part of the demolitions.
- Demolition of structures in 2015: there were 4 commercial demolitions and 15 residential demolitions.

5.2.6.6 Elements That May Hinder Flood Hazard Mitigation

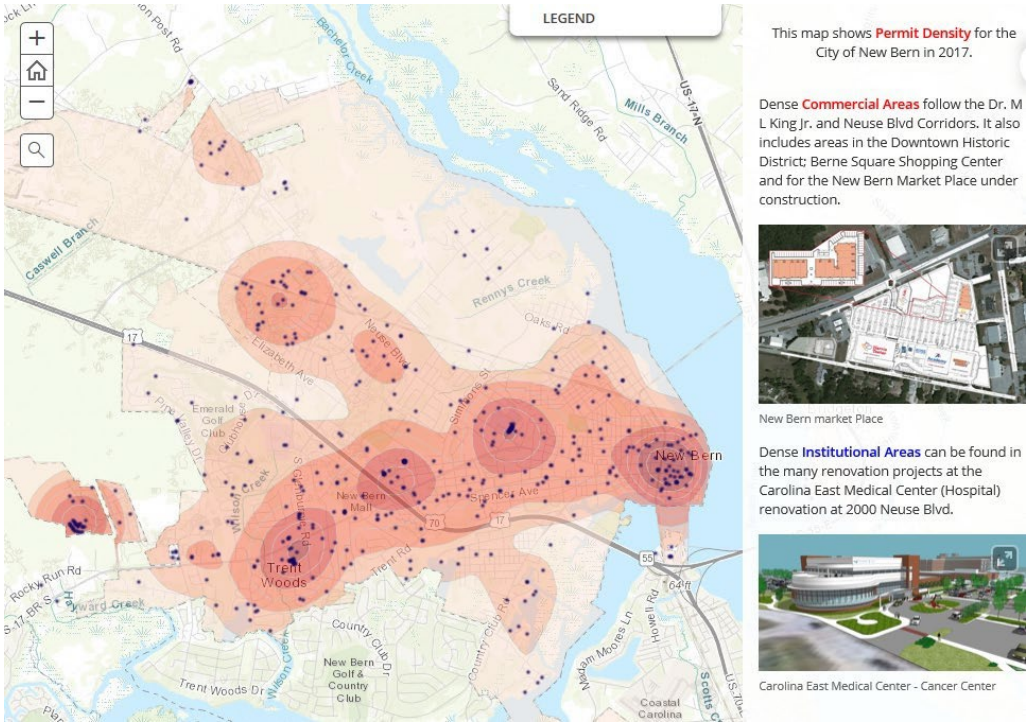
- Thirteen boat lifts and docks were built in 2015.
- Building of accessory structures, decks, porches, or ramps, signage in 2015 adding impervious surface.
- Density of development in 2015 is in floodplain areas.
- Twelve boat lifts and docks were built in 2017.
- Building of accessory structures, decks, porches, or ramps in 2017 adding impervious surface.
- Some of the density of development in 2017 is in floodplain areas.

Figure 5.2. Density of development



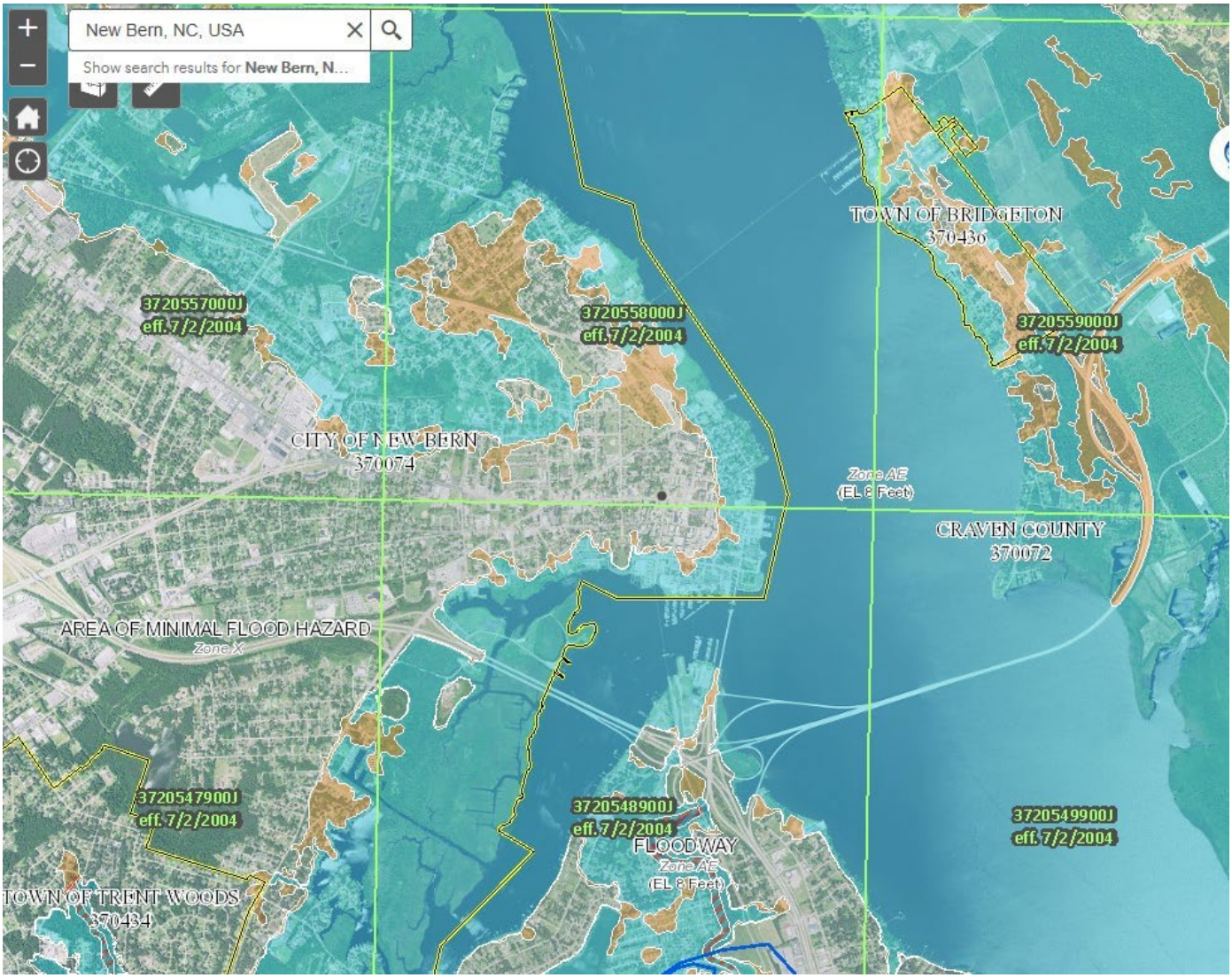
Source: Building Plans, Permitting, and Inspections from 2015 to 2017

Figure 5.3. City of New Bern Permit Density, 2017



Source: Building Plans, Permitting, and Inspections from 2015 to 2017

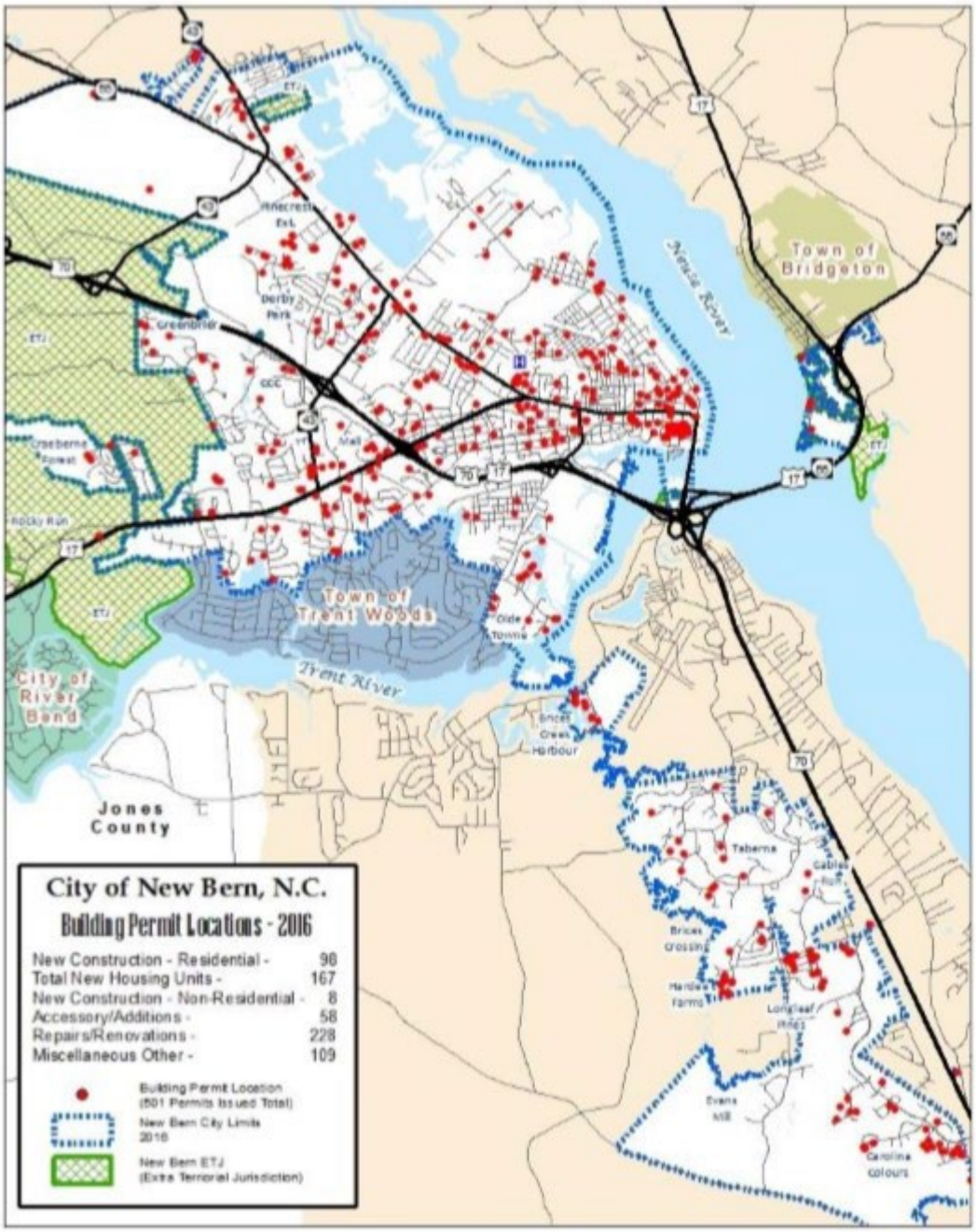
Figure 5.4. Flood Insurance Rate Map Panels for the City of New Bern Study Area, Showing Maps Effective as of July 2, 2004



Source: Building Plans, Permitting, and Inspections from 2015 to 2017

The same can be said for 2016…

Figure 5.5. City of New Bern, NCBuilding Permit Locations, 2016



Source: Building Plans, Permitting, and Inspections from 2015 to 2017

5.2.5 : Capital Improvements Plan (FY's 2020 through 2025 – Adopted)

5.2.5.1 Overview

This is the capital improvement plan FY's 2020 through 2025 – Adopted for Craven County; updated with 2020 budget. This plan is detailed in spreadsheet form.

5.2.5.2 Elements That Support Flood Hazard Mitigation

- A few recreation and water projects anticipated.
- There is a water reserves and water budget.

5.2.5.3 Elements That May Hinder Flood Hazard Mitigation

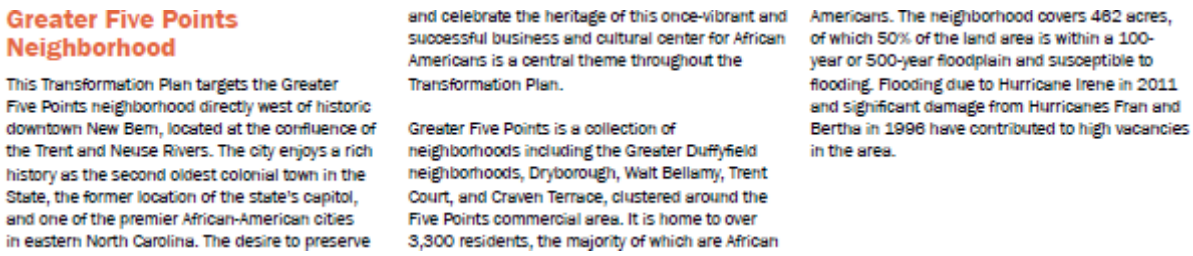
Development projects anticipated with the addition of impervious surface for parking lots and such. This may not be an automatic hindrance to floodplain management, stormwater management, etc., but is a form of development that should be monitored for flood-related impacts.

5.2.6 : Choice Neighborhoods Transformation Plan (Neighborhood Plan) - 2016

5.2.6.1 Overview

The Greater Five Points neighborhood is critical to the future of New Bern and to the residents who call it home. It has a rich African American heritage pre-dating the Civil War, and today is struggling to return to the thriving community it once was. The investment efforts over the last 15 years are beginning to show positive results but a comprehensive, achievable vision is needed to further advance progress. The community has thoughtfully crafted a set of 'keys to our success' with detailed strategies for achieving a holistic range of desired changes and improvements. The Greater Five Points Transformation Plan builds off the recently completed New Bern Gateway Renaissance Plan, which currently guides public investments in the area. The Transformation Plan provides a detailed roadmap with specific partners and timeframes for implementation. The community readily acknowledges that revitalization of the area will not occur overnight and is not the responsibility of a single entity. Rather, achieving this shared vision will be a collaborative public/private effort that is already gaining momentum.

Figure 5.6. Greater Five Points Neighborhood



Greater Five Points Neighborhood

This Transformation Plan targets the Greater Five Points neighborhood directly west of historic downtown New Bern, located at the confluence of the Trent and Neuse Rivers. The city enjoys a rich history as the second oldest colonial town in the State, the former location of the state's capitol, and one of the premier African-American cities in eastern North Carolina. The desire to preserve and celebrate the heritage of this once-vibrant and successful business and cultural center for African Americans is a central theme throughout the Transformation Plan.

Greater Five Points is a collection of neighborhoods including the Greater Duffyfield neighborhoods, Dryborough, Walt Bellamy, Trent Court, and Craven Terrace, clustered around the Five Points commercial area. It is home to over 3,300 residents, the majority of which are African Americans. The neighborhood covers 462 acres, of which 50% of the land area is within a 100-year or 500-year floodplain and susceptible to flooding. Flooding due to Hurricane Irene in 2011 and significant damage from Hurricanes Fran and Bertha in 1996 have contributed to high vacancies in the area.

Source: Choice Neighborhoods Transformation Plan (Neighborhood Plan) - 2016

5.2.6.2 Elements That Support Flood Hazard Mitigation

- Creating public green spaces in the floodplain to preserve it.

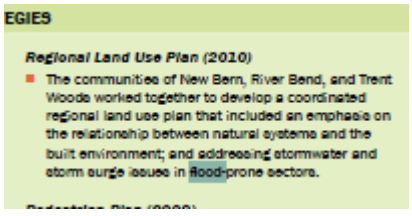
Figure 5.7. Public green space in a floodplain



Source: Choice Neighborhoods Transformation Plan (Neighborhood Plan) - 2016

- A 25-acre wetland and pump station near the neighborhood was built in the recent past to reduce flooding impacts (see page 14).
- Implementing Regional Land Use Plan (2010) (Page 15):

Figure 5.8. Implement Regional Land Use Plan (2010)



Source: Choice Neighborhoods Transformation Plan (Neighborhood Plan) - 2016

- Creation of rain gardens to reduce flooding in the neighborhood – page 72.
- Demolition of buildings in floodplain areas – page 74.
- Maximizes public utilization of any green spaces created as a result of floodplain issues – page 75.
- Trent Court Redevelopment – page 93.

5.2.6.3 Elements That May Hinder Flood Hazard Mitigation

- Current flooding and stormwater infrastructure (page 24).
- Funding acquisition.
- Vacancy of lots due to flood-prone nature -> it is both a challenge and opportunity (page 25) -> want to infill and then develop with new housing:
    - See Goal C-3 on page 71.
- Creating a greenway in floodplains with vacant land – page 78.

5.2.7 : Community Development Block Grants (CDBG) Entitlement Cities Program – Proposed Amendment 2014-2019 Consolidated Plan and 2014-2015 Annual Action Plan

5.2.7.1 Overview

The 2014-2019 Consolidated Plan provides the U.S. Department of Housing and Urban Development (HUD) with information on the City of New Bern's intended uses of HUD's Community Development Block Grant (CDBG) funds. The City allocates the annual funding from the CDBG program to public, private, or non-profit parties consistent with HUD program goals and requirements. CDBG program objectives include providing decent housing, creating suitable living environments, and expanding economic opportunities.

Through a review of housing market, community development, homeless needs, and economic development data, the City has developed the strategies for the use of these funds which include efforts to transform the Gateway District, provide roof repair or replacement, support agencies that assist the homeless, increasing the stock of affordable housing, and providing public improvements and infrastructure. The City's Consolidated Plan follows requirements of HUD and uses HUD's format and data tables required for plans adopted after November 15, 2012. The Consolidated Plan is implemented and updated through annual Action Plans and Consolidated Annual Performance Evaluation Reports (CAPER). The Action Plans establish the priority for projects and funding for the upcoming year. The CAPER details the results of funded projects during the individual project years.

5.2.7.2 Elements That Support Flood Hazard Mitigation

- Public improvement needs identified include street improvements (including a need for bike lanes), flood and drainage improvements, and sidewalk improvements (page 42).
- The 2010 Regional Hazard Mitigation Plan was considered when preparing this plan.
- Rehabilitation of structures instead of developing new structures.
- Demolition of dilapidated structures (i.e., structures that are abandoned and not suitable for rehabilitation).
- Developing new parks and green spaces in the Gateway District.

5.2.7.3 Elements That May Hinder Flood Hazard Mitigation

- Removing barriers to help developers build affordable housing (page 80).
- Monitoring and compliance procedures/process (page 84).
- Available funding and priorities, i.e., flood hazard mitigation is not the priority of these CDBG funds/program even though CDBG funds have historically been used in communities for elevation projects, acquisition projects, etc., particularly for in-kind match for the Hazard Mitigation Grant Program (HMGP).

5.2.8 : Comprehensive Economic Development Strategic Plan

5.2.8.1 Overview

Craven County's purpose in seeking a comprehensive economic development strategic plan is to establish the foundation for reorganizing its approach to economic development. The County recognizes that it is critical to implement a strategy that is grounded in reality and fosters a long-term, economically sustainable future for all residents. At the base level, the County Administration and Economic Development Strategic Work Group (SWG) recognize that it is essential to think and act in a coordinated, efficient manner when utilizing precious community resources to expand the local economy. More specifically, the comprehensive economic development strategic plan provides the "road map" for Craven County to succeed in attracting private investment within a challenging and competitive regional market.

5.2.8.2 Elements That Support Flood Hazard Mitigation

- A list of site selection factors is included on pages 5-7 and environmental regulations (presumably including wetlands, floodplains, T&E habitat) were considered. These factors would be used to determine the locations for new industry clusters.

5.2.8.3 Elements That May Hinder Flood Hazard Mitigation

- Considers exploring options for bringing in more livestock and aquaculture operations.

5.2.9 : Code of Ordinances - Chapter 18 - Floods

5.2.9.1 Overview

This ordinance is dated June 19, 2020. It is the purpose of this chapter to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed to *(see page Capability Assessment 5-40)*: [iv]

- Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion, flood heights, or velocities.
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters.
- Control filling, grading, dredging, and all other development which may increase erosion or flood damage.
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters, or which may increase flood hazards to other lands.

The objectives of this chapter are:

- To protect human life and health.
- To minimize expenditure of public money for costly flood control projects.
- To minimize the need for rescue and relief efforts associated with flooding, and generally undertaken at the expense of the general public.
- To minimize prolonged business losses and interruptions.

- To minimize damage to public facilities and utilities (i.e., water and gas mains, electric, telephone, cable and sewer lines, streets, and bridges) that are located in flood prone areas.
- To help maintain a stable tax base by providing for the sound use and development of flood prone areas in such a manner as to minimize flood blight areas.
- To ensure that potential homebuyers are notified that property is in a special flood hazard area.

5.2.9.2 Elements That Support Flood Hazard Mitigation

- Identifying Special Flood Hazard Areas and updating the Flood Insurance Rate Map (FIRM) in cooperation with FEMA and its Flood Insurance Study (FIS).
- Establishment of floodplain development permit for development activities within Special Flood Hazard Areas.
- Compliance and enforcement to this ordinance:
    - No structure or land shall hereafter be located, extended, converted, altered, or developed in any way without full compliance with the terms of this chapter and other applicable regulations.
- Section 18-40. – General Standards.
- Section 18-41. – Specific Standards.
- Section 18-42. – Standards for floodplains without established base flood elevations.
- Section 18-43. – Floodways and non-encroachment areas.

5.2.9.3 Elements That May Hinder Flood Hazard Mitigation

- There is not anything that may hinder flood hazard mitigation, since this is an ordinance to protect the floodway and mapped flood hazard areas.

5.2.10 : GIS Practitioners

5.2.10.1 Overview

A Geographic Information System (GIS) is a computer system that allows users and analysts to map, model, query, and analyze large quantities of data within a single database according to their location or spatially. GIS gives users the power to: create maps, integrate information, visualize scenarios, present powerful ideas, and develop effective solutions.

GIS is a tool used by individuals and organizations, schools, governments, and businesses seeking innovative ways to solve their problems. GIS stores information about the world as a collection of layers that can be linked together by a common locational component such as latitude and longitude, postal address, census tract name, or road name. Dozens of map layers can be arrayed to display information about transportation networks, hydrography, population characteristics, economic activity, and political jurisdictions.

Local governments use GIS to improve decision making, service delivery, and citizen engagement. Since most government data is location based, equipping New Bern's organization with the latest in GIS technology provides the tools needed to make the community better and can support overall community resiliency. Operations run more smoothly, and citizens have more positive experiences.

Figure 5.9. New Bern GIS Strategic Assessment



Source: GIS Practitioners

5.2.10.2 Elements That Support Flood Hazard Mitigation

- Other related websites mentioned are Craven County GIS; USGS Current Conditions for NC Streamflow; Live River Levels; and NC Flood Plain Mapping Program.
- Also see the New Bern GIS Strategic Assessment reviewed previously as part of this section.

5.2.10.3 Elements That May Hinder Flood Hazard Mitigation

- Not applicable.

5.2.11 : Greater Duffyfield Community Development Strategic Plan (Neighborhood Plan) 2001

5.2.11.1 Overview

The vision for this strategic plan is to create a safe, healthy, clean, and self-sustaining community that is diverse, yet unified, resulting in vitality and community pride. The mission of the plan is for the Greater Duffyfield Community Development to be an organized effort between residents, concerned citizens, faith-based institutions, youth, businesses, public agencies, and law enforcement, which is committed to building an environmentally, socially, economically, and culturally sound community.

5.2.11.2 Elements That Support Flood Hazard Mitigation

- A goal is to promote and maintain a clean community and to promote Greater Duffyfield as investment worthy.
- Goal – To promote and maintain a clean community:
    - Increase enforcement of nuisance abatement ordinances;
    - Promote participation in Earth Day and River Day cleanup efforts;
    - Develop "ADOPT A STREET" Program;
    - Develop expanded plan to address community's drainage needs; and

- Increase pedestrian access/safety through sidewalk and trail systems.

- Goal – To promote Greater Duffyfield as investment worthy:
  - Ensure effective implementation of other goals;
  - Develop a promotional message for Greater Duffyfield;
  - Develop a media campaign to promote the history and improvements in Greater Duffyfield; and
  - Develop a community education campaign on home maintenance and improvements.

5.2.11.3 Elements That May Hinder Flood Hazard Mitigation

- The focus of this plan is more on the affected populations, not the environment, so those goals/priorities could limit the scope of flood hazard mitigation if the stakeholders are only looking at direct population-based flood protection measures.

5.2.12 : New Bern Historic Preservation Plan

5.2.12.1 Overview

Preservation in New Bern has encompassed private, governmental, and non-profit actions. Sometimes independent and sometimes coordinated, they have together brought New Bern to the point where a comprehensive preservation plan is proposed. New Bern's preservation efforts continue to mirror national trends with the growth in listings on the National Register of Historic Places, a commitment to local preservation with an ordinance and local preservation commission, the adoption of the Main Street Program which combines preservation and downtown economic development, a renewed focus on heritage tourism, and the growth of private non-profits that engage in education, rehabilitation, and advocacy.

5.2.12.2 Elements That Support Flood Hazard Mitigation

- Vision: New Bern's preservation programs will create a distinctive and high quality of life by balancing the past and the future, private rights and public values, expansion, and infill, reflecting the diversity of people and resources which make it unique.
- Appointed advisory committee.
- Historic Preservation Commission (HPC) charged to "promote, enhance, and preserve the character of the districts and to encourage preservation activities throughout the city."
- The New Bern Preservation Foundation (NBPF) is a private non-profit organization whose mission is "to preserve historically significant structures and sites in and around New Bern."
- Preservation Legal Action Trust (PLAT) – helped establish legislation to regulate demolition of contributing structures within the local historic districts.
- Historic District Residents Association (HDRA).
- Tryon Palace
  - Tryon Palace, a state-owned historic site, has been involved and continues to be involved in programs and projects that have a direct impact on larger preservation issues in New Bern and beyond.
  - It provides administrative support for the Kellenberger Trust, which has underwritten many preservation projects over the years.

- The restoration of the site and its ancillary buildings has provided an example of stewardship and has spurred private sector investment in the immediate vicinity.
- Future plans include a focus on preservation trades and opportunities for accurate and hands-on restoration experiences and planning for preserving the historic assets of Clermont Plantation, a historic property on the shores of Brices Creek and the Trent River.
- Generates tourism and stimulates the economy in New Bern with funds acquisition going towards rehabilitation and preservation efforts instead of new construction.

- Swiss Bear Downtown Development Corporation: private nonprofit, Swiss Bear was established to stimulate and coordinate the revitalization of the downtown and redevelopment of its waterfront.

5.2.12.3 Elements That May Hinder Flood Hazard Mitigation

- Page 85 to 87 – biggest issues/challenges New Bern faces:
  - Seems like citizens are worried about cost and how restrictive these ordinances are.
  - Some citizens would rather see growth and development instead of protection/preservation efforts. (As one puts it, "Balancing preservation and financial health of the city").

5.2.13 : Manufactured Housing Ordinance

5.2.13.1 Overview

The purpose of these regulations is to regulate and control the design of minimum standards of any new planned manufactured home park in order to promote the health, safety, and general welfare of the inhabitants of the county. The county hereby exercises its authority to make and adopt manufactured home park regulations under provisions pursuant to G.S. § 153A-121. On and after August 21, 1978 these regulations shall govern every new manufactured home park or any additions to a manufactured home park lying within the county outside the jurisdiction of any municipality, or within the territory jurisdiction of any municipality whose governing body agrees by resolution to such regulations.

5.2.13.2 Elements That Support Flood Hazard Mitigation

- No person shall begin construction on any new manufactured home park until a plat has been properly presented and approved by the county planning board and the county board of commissioners.
- No manufactured home may be occupied within a manufactured home park until a certificate of compliance has been issued.
- Certificates of compliance.
- General provisions:
  - Any land within the jurisdiction of these regulations deemed by the planning board to be subject to flooding or unsuitable for residential occupancy may be prohibited for residential development, but such land may be set aside for such uses as will not be endangered by periodic or occasional inundation. The planning board, in making its determination, shall be guided by an analysis of available data on topography, soils, floodplains, drainage, or ground and surface water information. All manufactured homes within the flood hazard areas must meet the requirements set forth in the county flood damage prevention ordinance.
- Swiss Bear Downtown Development Corporation: private nonprofit, Swiss Bear was established to stimulate and coordinate the revitalization of the downtown and redevelopment of its waterfront.

5.2.13.3 Elements That May Hinder Flood Hazard Mitigation

- Variances allowed.
    - Allowing variances has the potential to circumvent flood hazard mitigation policies or practices that may be in effect to limit flood damages.
    - From ASFPM's No Adverse Impact (NAI) Guidance: "Flood damage throughout the nation are increasing. If communities only follow minimum national approaches, that trend will likely continue. In order to assist communities with better approaches for flood loss reduction, ASFPM developed the No Adverse Impact approach." https://www.floodsciencecenter.org/projects/no-adverse-impact-floodplain-management-community-case-studies/

5.2.14 : New Bern Gateway Renaissance Plan (Neighborhood Plan)

5.2.14.1 Overview

The vision of this plan is for the Gateway District to thrive again as a community rooted in history but with a focus on the future. It will be a neighborhood of choice and a great place to live, work, play, and create. Known for a mix of uses, it will be a place with welcoming residential streets that connect to vibrant, walkable main streets. New public spaces will encourage interaction and foster diversity. It will better connect to its surrounding neighbors but will always maintain a distinct identity. People of every income, age, and race will enjoy a neighborhood characterized by new parks, new retail, new gateways, new recreational paths, and new cultural institutions. Both existing and new residents will come to know each other and together rebuild a new, stronger community.

The mission of the plan is to:

- Create a realistic and implementable revitalization strategy for the neighborhoods just west of downtown and—at the same time—focus efforts on brownfield sites that are in need of revitalization.
- Strengthen residential neighborhoods with new single-family and multi-family infill.
- Make sure that every resident living in the neighborhoods today can stay and create new housing options that welcome back old residents and an array of new residents alike.
- Re-invent Broad, Pollock, and Queen as three main streets that are each vibrant, walkable, and unique.
- Connect all the neighborhoods and commercial streets with a network of green spaces and public spaces for the residents to come together, socialize, and build relationships.

5.2.14.2 Elements That Support Flood Hazard Mitigation

- Landscape restoration portion.
- Some of the plan's aspects directly pertaining to the Five Points study area include: locating future mixed-use and commercial uses within its vacant buildings and on vacant lots, designating the undeveloped/recreational areas to the south and west of Stanley White Recreation Center as an official conservation area, and generally addressing storm water and storm surge issues in flood-prone sectors.
- The present plan incorporates conservational themes from the Land Use Plan to inform the proposed canal greenway, expanded riverfront promenade, and reuse/restoration of the flood-prone land in the neighborhood's northeast portion.
- Flood Hazard Mitigation Buyout Area (page 17):
    - In 1996, after Hurricanes Fran and Bertha, the City of New Bern was awarded federal funds to buy out flood-damaged homes thorough a voluntary program. This area is located in the northern part of

Greater Duffyfield. The City is not allowed to sell these properties for housing, but they are valuable as additional green space within the study area.

  - It will be in the Northern Greater Duffyfield area to build the community and restore the landscape.

- The study area's detailed land use map illuminates one of its biggest challenges: overabundant vacant property, particularly within the residential areas. Unoccupied houses and empty lots fragment the community and project an image of general neglect. During the public engagement process, residents expressed particular frustration about frequent flooding.
- Flooding Issues Identified (Page 25):
  - Because the flooding issue is unlikely to be solved in the near future, this district will need to transition from residential blocks to a collection of alternative community assets such as gardens and playgrounds that can withstand frequent floods. Northwestern and riverfront portions of the study area also lie within the floodplain, but inundation issues in these regions are not so severe as to inhibit development. Additionally, the City has invested heavily in a new flood control pumping system to further mitigate current issues.

Figure 5.10. Flooding Issues Identified



Source: New Bern Gateway Renaissance Plan(Neighborhood Plan)

- Key Initiatives (Page 68):

Figure 5.11. Key Initiatives



7	Reuse flood-prone land and restore landscape	• City to continue to acquire unbuildable lots • Identify appropriate agency to remove abandoned structures and maintain land • Initiate a series of public meetings to develop community-based master plan	• Federal and State agricultural and education grants connected to community garden initiatives • Corporate grants (Home Depot, Lowes, Scotts Miracle Grow) related to community garden initiatives • North Carolina State Parks "Adopt a Trail" and "Recreational Trails" program • EPA wetland grants	2-5

Source: New Bern Gateway Renaissance Plan(Neighborhood Plan)

- Page 87:
    - The area contains many vacant buildings and entirely cleared lots that cannot be rebuilt upon due to FEMA required deed restrictions and financing barriers. These properties should be converted into public open space so the once-challenged area can become a neighborhood asset. Additionally, the open space can be utilized to assist with mitigation efforts for flooding issues through the development of bioswales and rain gardens. The City should continue to acquire abandoned property as it becomes available to contribute to this initiative.
    - Action Steps: to identify potential uses such as rain gardens and bioswales to assist with neighborhood flooding issues.

5.2.14.3 Elements That May Hinder Flood Hazard Mitigation

- There is nothing that stands out that may hinder flood hazard mitigation due to the public engagement process and flooding issues voiced.

5.2.15 : New Bern GIS Strategic Assessment

5.2.15.1 Overview

Recent interviews with city personnel identified important themes with regard to GIS implementation. It was determined that GIS should be applied in a simple yet effective way. It should be integrated as fully as possible into the workflow of each department. As discussed with the City Manager, GIS currently assists and will continue to assist the City of New Bern in achieving its mission. By following the recommendations in this implementation plan, the City of New Bern will utilize GIS in innovative ways, enabling the City to be part of the top tier of city GIS implementations in the state of North Carolina.

5.2.15.2 Elements That Support Flood Hazard Mitigation

- Including FEMA flood zones/flood hazard areas in GIS database for access.
- Support of the FEMA Community Rating System (CRS) allowing the City to maintain a lower flood premium rating. The City is currently a Class 10 community.
- Will include data extraction by geographic region (e.g., how much flooding occurs on Dunn Street?).
- A 311 GIS application could allow citizens to play a role in supporting the department by identifying flooding concerns, pothole repairs, sidewalk repairs (e.g., failing ADA ramps), and general complaints/concerns. City staff can then proactively track, manage, analyze, map and report inquiries and complaints, actions taken, final results, and citizen satisfaction.
- Including floodplain mapping from NC Flood Maps.

- GIS analysis on the return on investment results from preventing a water main break, wasted release of treated drinking water, customers being out of service, and avoiding the risk of flood damage to adjoining property.
- Mapping flood zones, evacuation zones, health hazards, zoning, and public easements. These areas are highly vulnerable, especially when selecting properties for homes, sites for buildings, or emergency shelters. GIS analysis and maps are often used to support decision making and to develop policy.
- Including land use and parcel base map layer to help with floodway management and building code enforcement.

5.2.15.3 Elements That May Hinder Flood Hazard Mitigation

- GIS data gaps still exist.

5.2.16 : Open Space Ordinance

5.2.16.1 Overview

The purpose of this ordinance is to require that all residential subdivisions containing 31 or more single-family or duplex houses, or multi-family developments containing ten or more dwelling units, or planned unit developments shall be developed so that a minimum of five percent of the total area of the development remains as usable open space. For purposes of this article, the term "development" refers to the entire development developed out of a single tract, or contiguous multiple tracts under common ownership regardless of whether the development is constructed in phases or stages.

5.2.16.2 Elements That Support Flood Hazard Mitigation

- Requires that a usable open space be left in its natural or undisturbed state if wooded (as of the date development began) or is properly planted and landscaped with the objective of creating wooded areas or other areas.
- Requires that a usable open space is protected with a conservation easement to ensure the prevention and maintenance of the space in perpetuity.

5.2.16.3 Elements That May Hinder Flood Hazard Mitigation

- Allows for the payment of a fee in lieu of designating a usable open space.

5.2.17 : Planners

5.2.17.1 Overview

The New Bern Planning and Zoning Board consists of 10 members. Seven members, appointed by the Board of Aldermen, shall reside within the city. Three members, appointed by the Craven County Board of Commissioners, shall reside within the city's extraterritorial planning area. All members shall have demonstrated special interest, experience, or education in banking, economics, environmental and land use policy, housing, or industry. Board members are appointed for three-year staggered terms, but members may continue to serve until their successors have been appointed. Vacancies are filled for the unexpired terms only. Membership appointments are limited to two successive terms.

All members may participate in and vote on all issues before the board, regardless of whether the issue affects property within the city or within the extraterritorial planning area. The board's major responsibilities are to make recommendations concerning conditional use and special use permit requests, subdivision general plans, zoning

amendment proposals, and make studies and recommend to the Board of Aldermen plans, goals, and objectives relating to the growth, development, and redevelopment of the City.

The board's regular meetings are held at 5:30 p.m. on the first Tuesday of each month in the second-floor courtroom at City Hall, located at 300 Pollock Street.

Table 5.1. Current Roster

Name	Term Expires	Appointing Official
Anne Schout	6/30/2022	Mayor
Travis Oakley	6/30/2022	Ward 1 Alderman
Margie Dunn	8/14/2022	Ward 2 Alderman
Gasper Sonny Aluzzo	6/30/2021	Ward 3 Alderman
Raymond Layton	6/30/2020	Ward 4 Alderman
Marcus Simmons	9/23/2022	Ward 5 Alderman
Pat Dougherty	7/24/2020	Ward 6 Alderman
Don Black (Chair)	6/30/2022	Craven County

Source: New Bern

5.2.17.2 Elements That Support Flood Hazard Mitigation

- TBD through stakeholder engagement.

5.2.17.3 Elements That May Hinder Flood Hazard Mitigation

- TBD through stakeholder engagement.

5.2.18 : Regional Land Use Plan

5.2.18.1 Overview

The municipalities of New Bern, River Bend, and Trent Woods are preparing a New Bern Regional Land Use Plan (LUP). This is the second joint regional planning effort between New Bern, River Bend, and Trent Woods.

The City of New Bern has received grants from the North Carolina Division of Coastal Management (DCM) for the two-phase planning project. The DCM requires coastal communities to adopt a local LUP in accordance with guidelines established by the Coastal Resources Commission (CRC). The North Carolina Coastal Area Management Act (CAMA) 15A NCAC 07B and 07 L and the DCM guidance document, entitled "Technical Manual for Land Use Planning" sets forth the requirements for LUPs. These guidelines provide a set of standards and requirements that must be addressed during the planning process. Each LUP includes local policies that address protection of productive resources, desired types of economic development, community development, natural resource protection, and reduction of storm hazards.

5.2.18.2 Elements That Support Flood Hazard Mitigation

- Key Issues Important to the planning area: Natural Hazard Areas – policies that reduce community vulnerability to natural hazards.
    - Wetlands should not be traded off to other places.
    - More training for emergency responders.
    - Government is doing a good job in hazard planning.
    - Conserve and maintain floodplains, and other coastal features for their flood and natural storm protection functions in order to protect and properly address public health, safety, and welfare issues. (Page 79)
- Natural System Analysis – Starting on page 30.
- Estuarine systems are only "areas of environmental concern" per CAMA guidelines in area.
    - Want to protect coastal wetland AECs to mitigate tidal flooding.
- Part of Neuse River Riparian Buffer Protection Program.
- FEMA flood hazard areas identified (page 37) – communities are also active participants in the National Flood Insurance Program (NFIP).
    - Municipalities enforce the minimum FEMA/NFIP standards.
- The hurricane storm surge inundation areas have been mapped to illustrate the extent of hurricane-induced flooding based upon slow moving (5-15 mph) and fast moving (15.1-35 mph) category 2, 3, and 5 hurricanes (See Figure F 5a and F 5b). While the identified hurricane surge areas often parallel the 100-year flood hazard area shown in Figure 4, there are some additional portions of the New Bern, River Bend, and Trent Woods planning jurisdictions that are subject to hurricane-induced flooding. These areas are generally located in New Bern in the downtown/historic district peninsula and south of Trent Road. Residential and institutional uses are the most predominant land use types located within the majority of the above-identified areas. Some commercial and industrial uses are located within the hurricane-induced areas of New Bern, particularly in the area east of the downtown/historic district. Flooding as well as high winds would impact the New Bern Region during a major coastal storm.
- Have mapped/identified natural hazards, sea level rise and climate change, and storm surge areas.
- Environmental composite map identifies three land classes with high hazard flood areas, storm surge areas, etc. within it and Table 12 is the natural features inventory (page 46-48).
- Craven County and a number of the municipal jurisdictions within Craven County administer local ordinances which regulate development within designated flood areas. The dominant sources of flooding in the study area are storm surge and riverine flooding. Storm surge from the Atlantic Ocean propagates into Pamlico Sound, which further propagates into Neuse River and Trent River. The City of New Bern has documented 62 repetitive loss properties within its jurisdiction. Appropriate mitigation measures include elevating buildings above the level of the base flood, demolishing buildings, and removing buildings from the Special Flood Hazard Area. Sometimes, mitigation includes drainage-improvement projects that meet NFIP standards.
- Regulation of land development from the City of New Bern, DWR, and CAMA (page 59).
    - CAMA management goals and planning objectives beginning on page 80 to 101.
- Stormwater management ordinances in place.
- "Plan to management topics" (part of the plan that demonstrates how the land use and development goals and policies guide development in a manner that is consistent with management topics) (pages 102 to 108), which include, but are not limited to:
    - Improving public access to rivers, streams, and estuaries of Craven County.
    - To maintain land use compatibility.

- To improve infrastructure and carrying capacity.
- Calls for multiple objectives for natural/open space preservation for stormwater and watershed protection.
- To improve water quality.
- To conserve wetland areas and protect forests.

5.2.18.3 Elements That May Hinder Flood Hazard Mitigation

- Future Land Use needs projected for this growing area.
- Need for new and/or improved infrastructure.
- Aversion of traffic to reduce daily AADTs for main routes.

5.2.19 : Riverstation Neighborhood Plan (2000)

5.2.19.1 Overview

The vision for the Riverstation neighborhood involves the creation of a revitalized, mixed use, in-town neighborhood that serves as a vital link between two significant national register historic districts (New Bern's Downtown Historic District and Riverside Historic District). The neighborhood will rely on its rich industrial heritage and riverfront location to define its unique character. Planning tools, such as historic preservation, urban design, and traditional neighborhood planning that places a special emphasis on creating a pedestrian-oriented environment are the principal vehicles for revitalization of this important neighborhood. There are five key components that will create synergy for future sustainability.

5.2.19.2 Elements That Support Flood Hazard Mitigation

- One key component is community parks, open spaces, and an organized network of pedestrian pathways that can be important features that enhance the quality of life for the residents. New and repaired sidewalks offer increased pedestrian safety and access to local businesses and jobs. A riverfront promenade extending from Queen Street to and including the Maola Milk Company property will provide pedestrian access to nearly one mile of the Neuse River shoreline (Page 3).
- Starting on Page 10 – Resources (Natural Resources): promote better access to the river for residents.
- Page 11 - (Open Spaces Resources).
- Parks, recreation, and tree preservation (planting trees are also wanted/needed) are key environmental issues that this plan focuses on.

5.2.19.3 Elements That May Hinder Flood Hazard Mitigation

- Heavy industry and railroad presence in this neighborhood.
- Promoting better access to the river for residents could also add to flooding issues.
- Preserving historic resources in the neighborhood.
- Drainage issues identified.
- Funding acquisition for implementation.

5.2.20 : This History and Architecture of Long Wharf and Greater Duffyfield (Neighborhood Plan) 1994

5.2.20.1 Overview

Long Wharf and Greater Duffyfield are African American neighborhoods in New Bern. This report gives a brief history of New Bern's African American past neighborhoods, neighborhoods and buildings currently present, and finally presents recommendations for these neighborhoods.

From the report: "Today New Bern is a thriving tourist town and port on the North Carolina coast. Second only to Wilmington as a coastal urban center, the city of some twenty thousand citizens commands a picturesque point of land where the Trent River meets the broad Neuse River on its way to the Pamlico Sound. Thousands of visitors arrive annually to tour the reconstructed Governor's Palace of colonial administrator William Tryon and stroll the handsome Historic District of eighteenth and nineteenth century homes that surround the downtown and overlook the gently flowing rivers.

African Americans have played a major role in the development of New Bern through more than two centuries. For most of the town's history, the majority of its population was black. The labor of slaves provided the engine of the economy during the hundred years before the Civil War. In those decades, New Bern also possessed the state's largest concentration of free blacks. Skilled African American artisans crafted the community's buildings, wharves, and ships. After the Civil War, the town boasted an enterprising, educated African American elite. Black doctors, lawyers, businessmen, and religious leaders influenced life not only in their city, but also across North Carolina.

Today New Bern's main African American neighborhoods are the areas of Long Wharf and Greater Duffyfield, lying west and north of downtown. Long Wharf dates to the city's earliest era as an eighteenth-century port and was home to numerous free blacks. Greater Duffyfield blossomed during the first years of freedom following the Civil War, and its inhabitants included many of that era's black business, professional, and religious figures. Both neighborhoods have changed greatly over time. As residents became more prosperous, they replaced antebellum buildings. Today virtually all structures date from the last decade of the nineteenth century and the first four decades of the twentieth, with a scattering of later examples. The neighborhoods and their architecture provide an important window on New Bern's vibrant African American heritage.

Part One of this report offers a brief history of black New Bern. Part Two begins with discussions of African American neighborhood development and architecture in the city. Then separate sections consider Long Wharf and Greater Duffyfield: the history and significant individual buildings of each neighborhood. Part Three suggests recommendations for action."

5.2.20.2 Elements That Support Flood Hazard Mitigation

- Not applicable.

5.2.20.3 Elements That May Hinder Flood Hazard Mitigation

- Not applicable.

5.2.21 : New Bern Area Metropolitan Planning Organization Transportation Plan

5.2.21.1 Overview

The Metropolitan Transportation Plan is the blueprint for future transportation systems within the New Bern Metropolitan Planning Area (MPA). It is a vision for a safe and efficient transportation infrastructure that will adequately serve the region, which includes the City of New Bern, Town of Bridgeton, Town of Trent Woods, Town

of River Bend and the urban portion of Craven County. A map of the Metropolitan Planning Area is shown in Figure 1. The plan identifies future transportation deficiencies and investments and system improvement recommendations for all modes of transportation that will be necessary to meet the transportation needs of the region through the Design Year of 2040. The area has seen slow growth in the past decade but continues to trend upwards. Recent growth has been strong, and indications are that the New Bern area will experience moderate but sustained growth in the coming years. To accommodate future growth, transportation services, policies, programs, and infrastructure are developed and implemented through the regional transportation planning process carried out by the New Bern Area Metropolitan Planning Organization. This document is a product of that process.

5.2.21.2 Elements That Support Flood Hazard Mitigation

- Wetlands and floodplains were considered when developing growth constraints (Pg. 17-18).
- Communities within the MPO have adopted multiple land use plans and adhere to zoning ordinances in order to protect the sensitive resources (wetlands, conservation areas, and agricultural land) in the area throughout transportation development (Pg. 1-9).
- The following Peer Exchange Recommendations will be incorporated into transportation-related decisions due to continued risk of natural disasters and man-made emergencies (Pg. 98):
    - Review population information to identify areas with high population density of minority, disabled, and limited English proficiency populations, zero vehicle households, and include special consideration within planning processes to address such populations.
    - Continue to monitor evacuation plans and coordinate with NCDOT and NCDPS to develop contingency plans for these situations.
    - Consider enacting a MOA with NCDOT for debris clean up and disaster recovery.
    - Coordinate emergency planning efforts and evacuation routes with nearby MPOs and counties in North Carolina and South Carolina.

5.2.21.3 Elements That May Hinder Flood Hazard Mitigation

- 7 out of 23 Current TIP Projects listed in the plan have a “Major” rating with regards to one or more hydrologic factors (Impaired stream, Waterbody, Wetland, Outstanding Resource Waters, 100-Year Floodplain, and 500-Year Floodplain). This rating indicates that the project will have the highest degree of impacts, based on GIS analysis (Pg. 110).
- By far the greatest potential environmental impacts for transportation project being constructed in North Carolina’s coastal plain are on wetlands, floodplains, and other hydrological factors. (Pg. 113).

5.2.22 : Urban Design Plan 2000

5.2.22.1 Overview

In late 2000, the City of New Bern and Swiss Bear, Inc., decided it was time to update their urban design plan for the next decade. Allison Platt & Associates, along with Randall Gross Development Economics, Kubilins Transportation Group, and Mortar&Ink were selected to prepare the plan. The previous urban design plan, completed in 1991, has helped guide development for the last decade, and has resulted in impressive new development in the downtown area, including two new hotels, a convention center, and numerous new or renovated office, retail, and residential uses. It has also resulted in streetscape and park improvements throughout the downtown.

However, while the downtown is prospering, there is still much to be done in the areas surrounding the downtown. There are many vacant and underutilized properties along Broad Street from First to East Front Streets, and this is particularly significant now because the removal of the John Lawson Bridge has given added importance to Broad

Street as a gateway to downtown. In addition, residential areas to the north and south of Broad Street, west of downtown, are distressed and in need of renovation and replacement of substandard housing.

Lastly, the area north of the railroad Depot is largely vacant with the closing of the Coastal Lumber facility there. This area, which borders the river on the northeast, represents a tremendous opportunity to increase the tax base by adding new development.

5.2.22.2 Elements That Support Flood Hazard Mitigation

- Areas of concern identified:
  - Drainage;
  - Lack of trees;
  - Public open space along the riverfront; and
  - Shoreline needs to be improved.
- Neighborhood improvements:
  - Five Points Housing Revitalization Plan and Riverstation Plan with greenspace.

5.2.22.3 Elements That May Hinder Flood Hazard Mitigation

- Building of waterfront promenade;
- Water views;
- Waterfront public access; and
- Plans to alleviate transportation/traffic issues.

5.2.23 : Zoning Ordinance

5.2.23.1 Overview

Code of Ordinances Supplement 8; online content updated on February 27, 2020. Code of Ordinances of Craven County, North Carolina codified through ordinance of August 19, 2019. Ordinance of 06-01-2020 (1) adopted 6/3/2020 "A Flood Damage Prevention" ordinance has not yet been codified because it was received by Municipal Code since the previous update. The legislation has been enacted though.

5.2.23.2 Elements That Support Flood Hazard Mitigation

- Flood Damage Prevention Ordinance (of 06-01-2020 (1)).
- Appendix E – Basic Plan Craven County Coastal Flooding.

5.2.23.3 Elements That May Hinder Flood Hazard Mitigation

- Allowable variances from ordinances.
- Focus of the majority of ordinances are not on flood hazard mitigation.

5.3 Risk Management Plans and Procedures

5.3.1 : Continuity of Government Operations Plan (part of Emergency Operations Plan)

5.3.1.1 Overview

Continuity of government is an essential function of emergency management and is vital during an emergency or disaster situation. All levels of government (federal, state, and local) share a constitutional responsibility to preserve the life and property of their citizens. State and local continuity of government is defined as the preservation,

maintenance, or reconstitution of the civil government's ability to carry out its constitutional responsibilities. Emergency and disaster occurrence could result in significant disruption of government functions, which CRAVEN COUNTY EOP 46 BASIC PLAN necessitates that all levels of state and local government develop and maintain procedures to ensure continuity of government.

5.3.1.2 Elements That Support Flood Hazard Mitigation

- In general, this plan provides guidance for continuing operations during natural hazard events, which would include flood events.

5.3.1.3 Elements That May Hinder Flood Hazard Mitigation

- The plan supports continuity of operations during natural hazards; however, it does not focus *specifically* on flood hazards.

5.3.2 : Craven County Disaster Recovery Alliance: Craven County Long Term Recovery Group

5.3.2.1 Overview

The mission of the Craven County Disaster Recovery Alliance (CCDRA) is to strengthen area wide disaster coordination through information sharing, simplifying the access to available resources for individuals and families, and jointly resolving cases with unmet needs from disasters. CCDRA's vision is to continue assisting those still affected by Hurricane Matthew with long-term recovery and unmet needs assistance, and to be an ongoing resource for all future disasters that will happen again in Craven County.

The CCDRA - a long-term recovery group (LTRG), began meeting soon after Hurricane Matthew hit eastern North Carolina in October 2016. The LTRG was formed with the help of FEMA Volunteer Agency Liaisons and a coalition comprised of representatives from corporations, faith-based organizations, community non-profits, governmental agencies, and concerned citizens in January 2017.

In June 2018, the CCDRA team of volunteers organized a Disaster Preparedness Workshop for churches and non-profits. This was the first step in helping to prepare the community for a disaster. This website has been created to help the community be better prepared when a disaster happens and to better educate families, businesses, groups, and those who are eventually affected by a disaster on what to do next.

CCDRA will be working with organizations in the county to form a Community Organization Active in Disaster (COAD). The Craven County COAD will consist of representatives from public, private, and not-for-profit agencies whose goal will be to share information and resources that will help residents prepare for, respond to, and recover from future disasters.

5.3.2.2 Elements That Support Flood Hazard Mitigation

- Disaster case management is the link between families and resources *(see page Capability Assessment 5-40)*.[v]
    - The Disaster Case Management Committee aids those affected by a disaster in taking the right steps in their recovery. They are a vital part of the long-term recovery process and work with individuals and families directly to provide outreach, screening and intake for case management, assessment of recovery needs, recovery planning, action, and advocacy, and monitor the recovery process. They are the primary point of contact in assisting with coordination of necessary services and resources to address the complex disaster recovery needs. The case manager serves as the central link between the individual and family and CCDRA.
- FEMA is a partner.

- Resources include "Be Prepared" like signing up for CodeRed Emergency Notification System and ReadyNC.org; making a plan like Red Cross Ready; staying informed and sheltering in place like having an emergency supply kit *(see page Capability Assessment 5-40)*. [vi]

5.3.2.3 Elements That May Hinder Flood Hazard Mitigation

The program helps support sound disaster relief practices and philosophies; however, the program does not focus specifically on the flood hazard.

5.3.3 : Craven County Emergency Operations Plan

5.3.3.1 Overview

This plan establishes the policies and procedures by which Craven County will coordinate local resources with state and federal response to disasters impacting Craven County and its citizens. Most county departments and/or organizations have emergency functions to perform in addition to their normal duties. Each is responsible for developing and maintaining emergency management procedures in accordance with the direction given in this plan. Specific responsibilities are outlined in the basic plan and in the separate annexes of this plan. Responsibilities of certain non-government organizations (NGOs) that are not part of county government are also addressed in the appropriate annexes. This plan supports the National Incident Management System (NIMS) and the Incident Command System (ICS) approach to enable all involved organizations to work together effectively to prevent, prepare for, respond to, and recover from domestic incidents regardless of cause, size, or complexity. Additionally, all personnel with Emergency Support Function (ESF) responsibilities will be trained on the principles of the NIMS and integrate those principles into all ESF planning and response operations.

It is the emergency management mission of Craven County to provide for the protection of the people and resources in the county in order to minimize damage, injury, and loss of life resulting from any type of emergency or disaster; keep affected persons informed about the situation and how they can protect themselves; provide for the continuity of government; and provide for survey of damage (private and public) and damage assessment resulting from such emergency or disaster.

5.3.3.2 Elements That Support Flood Hazard Mitigation

- The mission statement includes language on minimizing the adverse impacts that could result from any type of disaster, including flood-related events.
- Emergency Management Planning Responsibilities on page 2 match the five phases of emergency management. Mitigation is the second phase listed.
    - Prevention;
    - Mitigation;
    - Preparedness;
    - Response; and
    - Recovery.
- Flood hazard analysis beginning on page 3.
- Areas that are more prone to flash-flooding and dam failure were identified in order to streamline the hazard warning and evacuation processes.

5.3.3.3 Elements That May Hinder Flood Hazard Mitigation

- There is nothing that may hinder flood hazard mitigation since this is a plan to guide agencies in minimizing damage in a disaster event.

5.3.4 : Firewise USA Certification

5.3.4.1 Overview

Firewise USA® is a voluntary program that provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community.

Research around home destruction vs. home survival in wildfires point to embers and small flames as the main way that the majority of homes ignite in wildfires. Embers are burning pieces of airborne wood and/or vegetation that can be carried more than a mile through the wind and can cause spot fires and ignite homes, debris, and other objects.

There are methods for homeowners to prepare their homes to withstand ember attacks and minimize the likelihood of flames or surface fire touching the home or any attachments. Experiments, models, and post-fire studies have shown homes ignite due to the condition of the home and everything around it, up to 200' from the foundation. This is called the Home Ignition Zone (HIZ).

5.3.4.2 Elements That Support Flood Hazard Mitigation

- In general, the program provides for wildfire hazard mitigation in the wildland-urban interface and supports sound fire resistant practices, especially in high risk areas.

5.3.4.3 Elements That May Hinder Flood Hazard Mitigation

- The program helps support sound mitigation practices and philosophies; however, the program does focus on the fire hazard and not the flood hazard.

5.3.5 : Pamlico Sound Regional Hazard Mitigation Plan

5.3.5.1 Overview

This plan was developed in a joint and cooperative manner by members of a Hazard Mitigation Planning Committee (HMPC) which included representatives of County, City, and Town departments, federal and state agencies, citizens, and other stakeholders. This plan ensures all jurisdictions in the Pamlico Sound Region remain eligible for federal disaster assistance including FEMA Hazard Mitigation Grant Program (HMGP), PDM, BRIC (Building Resilient Infrastructure and Communities), and Flood Mitigation Assistance (FMA) programs.

This plan has been prepared in coordination with FEMA Region IV and NCEM and in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C. 5165, enacted under Section 104 of the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October 2007. Additionally, this plan will be monitored and updated on a routine basis in compliance with the above legislation and with the National Flood Insurance Act of 1968, as amended by 42 U.S.C. 4001 et seq, and North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act, as amended by Senate Bill 300: An Act to Amend the Laws Regarding Emergency Management as Recommended by the Legislative Disaster Response and Recovery Commission (2001).

This plan has been adopted by each participating jurisdiction in accordance with standard local procedures under the authority and police powers granted to counties as defined by the State of North Carolina (N.C.G.S., Chapter 153A)

and the authority granted to cities and towns as defined by the State of North Carolina (N.C.G.S., Chapter 160A), including the City of New Bern. Copies of adoption resolutions are provided in Section 9 Plan Adoption.

5.3.5.2 Elements That Support Flood Hazard Mitigation

- Goals and objectives:
    - Goal 1 - Reduce the risk of loss of life and personal injury from natural hazards through local land development regulations, capital improvements, planning/investment, and proactive long-range planning regarding land use and post-disaster redevelopment.
        - Objective 1.1: Reduce the length of time that local infrastructure systems are deemed inoperable due to the impacts of natural hazards.
    - Objective 1.2: Preserve open space in floodplain areas.
    - Objective 1.3: Reduce flooding and erosion vulnerability through land development initiatives, maintenance, and improvement of storm drainage.
- Table 7.3 – Mitigation Action Plan for Craven County:
    - Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Map adequately delineates portions of the community deemed unsuitable for development due to existing environmental conditions. This effort will also involve the identification of potential drainage easements and open space areas that will positively affect drainage conditions within areas documented as stormwater/flooding hot spots. Additionally, the County will attempt to identify portions of the County susceptible to wildfire damage.
    - Review respective Flood Damage Prevention Ordinances to assess whether any revisions and/or updates have been mandated by FEMA or North Carolina Emergency Management (NCEM). Additionally, jurisdictions will consider whether regulatory options are available to provide for more effective floodplain management.
    - Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLP's) from future flooding events. The County will maintain a list of RLP's, and on an annual basis, will apply for funding for all structures that meet cost-benefit thresholds as defined by FEMA. Craven County will assist all municipal jurisdictions in working through the structural mitigation grant funding process.
- Craven County has two large municipal jurisdictions including the City of New Bern and the City of Havelock. These two communities are connected by a fifteen mile stretch of US Highway 70. It is anticipated that residential and non-residential development will continue to occur at a fairly rapid pace along this stretch. As this development continues, the County will consider instituting corridor planning and ultimately, there is potential for the establishment of corridor specific zoning regulations.
    - Known flood zone acreages in Table C.9 and FEMA flood hazard areas mapped in Figure C.18.
    - Flood depth, 1% annual chance floodplain mapped in Figure C.25.
    - Capability assessment is high for all categories for Craven County.
    - New Bern is part of the NFIP program since 1978.
    - In 2012 Craven County applied for and received a Pre-Disaster Mitigation Program grant through the NC Department of Emergency management for the 5-county region.

5.3.5.3 Elements That May Hinder Flood Hazard Mitigation

- City of New Bern was not a Community Rating System (CRS) participant at the time of this plan's development but is currently registered as a Class 10 community in FEMA's Community Status Book.
- Craven County does not maintain zoning regulations within unincorporated areas.
- Most structures were built in the 90's:
    - 8% in 1939 or earlier;
    - ~30% in 1970-1990;
    - 5% in 1940s; and
    - 7% from 2005 or later.
- Hazards for this region include hurricanes, nor'easters, winter storms, flooding, thunder and windstorms, tornadoes, dam/levee failure, erosion, and storm surge. Craven County has 4 dams. The area is a flood zone A, indicating a 1% chance of flooding.

5.3.6 : StormReady Certification

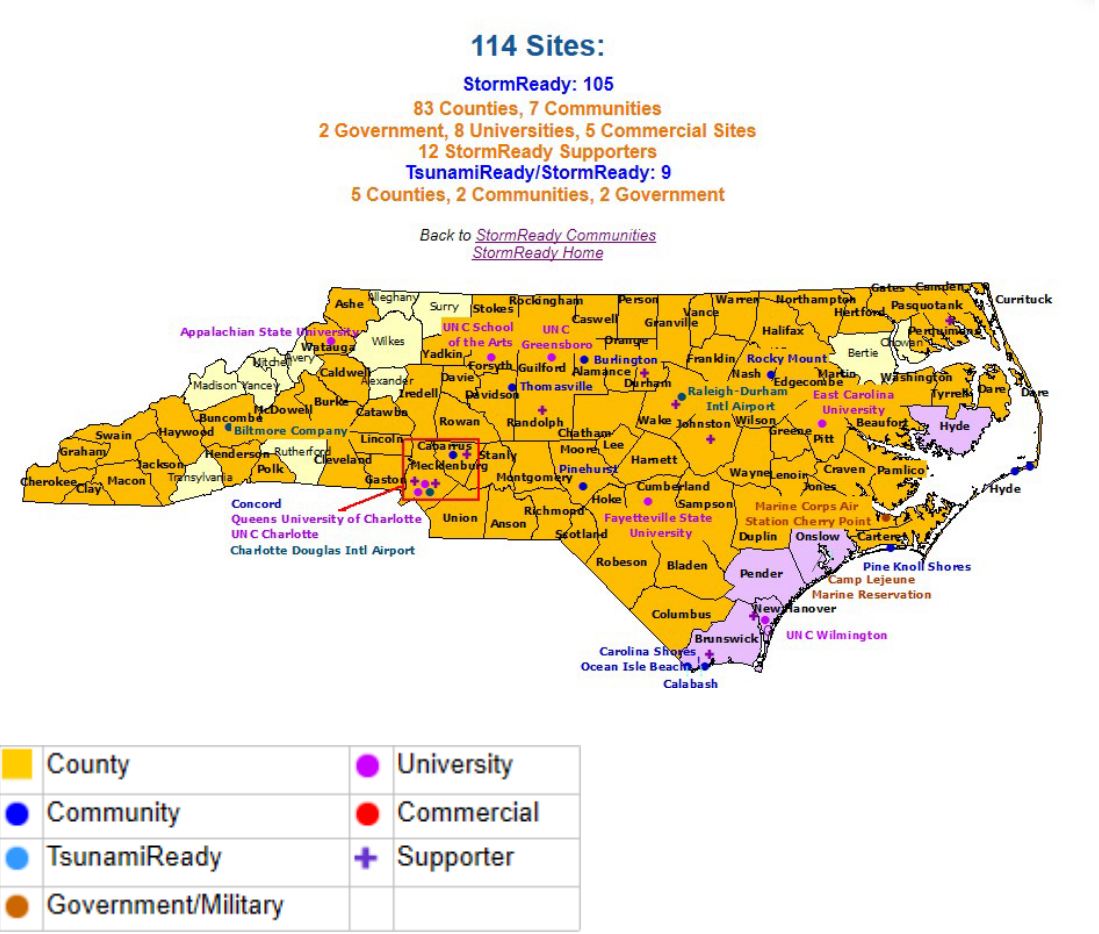
5.3.6.1 Overview

StormReady helps community leaders and emergency managers strengthen local safety programs. StormReady communities, counties, Indian nations, universities and colleges, military bases, government sites, commercial enterprises, and other groups are better prepared to save lives from the onslaught of severe weather through advanced planning, education, and awareness. No community is storm proof, but StormReady can help communities save lives.

StormReady uses a grassroots approach to help communities develop plans to handle all types of extreme weather. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations. Applying is easy. To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center.
- Have more than one way to receive severe weather warnings and forecasts, and to alert the public.
- Create a system that monitors weather conditions locally.
- Promote the importance of public readiness through community seminars.
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises.

Figure 5.12. StormReady Sites in North Carolina



Source: StormReady Certification

5.3.6.2 Elements That Support Flood Hazard Mitigation

- StormReady certification tends to lean more towards preparedness and safety, and less toward pre-disaster flood mitigation.

5.3.6.3 Elements That May Hinder Flood Hazard Mitigation

- StormReady certification tends to lean more towards preparedness and safety, and less toward pre-disaster flood mitigation.

5.3.7 : Water Rising: Equitable Approaches to Urban Flooding

5.3.7.1 Overview

Water professionals, city agencies, community-based organizations, and residents are all responding to the growing challenge of urban flooding. They are working on strategies to adapt to live with the new normal of more extreme flooding. In many cases, they are initiating efforts to mitigate or lessen the occurrence and impact of flooding by building barriers or restoring natural buffers, retrofitting infrastructure, and relocating to safer ground. Stakeholders are building resilience—the capacity for people to prepare for, respond to, and recover from flood events.

There is, however, a disconnect in how these responses take place. Climate justice advocates are working to document flooding impacts in vulnerable communities and lift voices from these communities into decision-making processes. Community-based and environmental organizations recognize these inequities and use strategies informed by those most negatively affected. But these stakeholders often lack the resources to deploy solutions fully. Local governments, water professionals, utilities, and city agencies are building new infrastructure and flooding barriers, though often without engaging the very communities most affected. The lack of communication among stakeholders is a missed opportunity to coordinate and leverage efforts.

Now is the time to bring the knowledge, resources, and efforts of all these stakeholders together to help ensure that all people are safe and resilient. Water professionals, public agencies, and community organizations can more rapidly make progress on effective and equitable solutions to flooding when they work together. Local government agencies and water professionals must root their practices in community-driven efforts to advance policies and practices that benefit all residents. Communities must recognize the complicated nature of flooding and flood management, and they must work with public agencies to find solutions. Solving these problems will require new technological approaches and management strategies. It will also demand coordinated efforts on a scale we have never seen. Many localities are ready to do this work, but initial steps remain unclear or are difficult to take.

Water utilities have a significant role in this endeavor, and much of this report refers to their specific involvement as it relates to stormwater management and urban flooding. There is, however, a broad range of water professionals across local, state, and federal agencies who deal with flooding. The lessons from this report apply across this spectrum. All actors must prioritize equity in their approach, incorporating social considerations alongside improved climate models and the best available science for investments, infrastructure, and policy decisions.

Across the US Water Alliance member and partner network, we see promising examples of diverse stakeholders coming together in new and exciting ways to address urban flooding. We see city managers and chief resilience officers visiting neighborhoods and garnering community input for flood solutions. We see community advocates collecting and publicizing data or working with local governments to develop strategies. We see water and wastewater utilities stepping up to invest in vulnerable neighborhoods in their service areas.

We must accelerate and expand these efforts across the nation. This report puts forth five priority actions for a resilient and equitable future. These actions will bring water professionals, public agencies, and communities together to address vulnerabilities head-on, prioritize investments, and become resilient to flooding exacerbated by climate change.

The five actions draw from our collaboration with nine cities working to implement urban flooding solutions in historically marginalized or vulnerable communities. Our methodology began with background research and a literature review on flooding inequities, urban flooding, and climate change adaptation. We then engaged cross-sector teams from the nine cities in the Climate Resilience, Water, and Equity: An Urban Flooding Bootcamp (the Bootcamp).

Urban flooding exacerbated by climate change is daunting. But it also presents an opportunity to build resilient communities where people live, work, and play. Water professionals, utilities, public works departments, city agencies with decision-making authority around stormwater or flood management, climate justice leaders, community advocates, and local governments all have a place in this work. We invite you to use these actions to collaborate for a more just, climate-safe future.

5.3.7.2 Elements That Support Flood Hazard Mitigation

- Definitions from page 9 are helpful for laypersons to understand many of the topics in the report.

- The urban flooding bootcamp – held in nine cities around the U.S. (including Raleigh, NC):
    - The Bootcamp was part of The Kresge Foundation's Climate Resilience and Equitable Water Systems Initiative (CREWS), which aims to advance climate-resilient and equitable water systems in US cities. CREWS envisions cities where urban and wastewater systems are resilient to climate-driven flooding and provide reliable and equitable water services to communities.
    - The Bootcamp brought together cross-sector learning teams in nine US cities to better understand how cities, utilities, and communities are collaborating to address flooding challenges and bolster community resilience.
    - At the bootcamp there was an exploration of what works, what the challenges are, and how to improve collaboration across all stakeholders. The goal was to accelerate existing efforts in these nine cities and share their insights with others to advance the field of equitable climate resilience.
- Key urban flooding challenges were identified and discussed as to how to address.
- Flooding inequities were identified and discussed as to how to address.
- Five priority actions for equitable resilience were developed, which are:
    1. Using data to identify risks, assets, and community vulnerabilities;
    2. Commit to ongoing and meaningful community engagement;
    3. Set a proactive vision and build strategic alignment;
    4. Fully incorporate equity into resilience planning processes; and
    5. Target investments in vulnerable communities.
        - For each priority action, there is a discussion and case example where the methods were implemented in at-risk communities.
- Notes section identifies other resources/articles that may be useful to look into further.

5.3.7.3 Elements That May Hinder Flood Hazard Mitigation

- All items related to flood hazard mitigation are in this report, therefore, there are no elements included that may be a hindrance to the efforts.

5.4 Fiscal Resources

5.4.1 : Comprehensive Annual Financial Report for the Year Ended June 30, 2018

5.4.1.1 Overview

This report includes all the funds of the City. The City provides a full range of services including police and fire protection; sanitation services; construction and maintenance of streets and other infrastructure; community development services including planning and zoning; and parks and recreational services. In addition to general governmental activities, the City owns and operates electric, water, sewer and stormwater utilities; therefore, these activities are included in the reporting entity. The New Bern Housing Authority, the New Bern-Craven County Public Library, Swiss Bear Downtown Development Corporation, and Friends of the Fireman's Museum do not meet the established criteria for inclusion in the reporting entity, and accordingly are excluded from this report.

5.4.1.2 Elements That Support Flood Hazard Mitigation

- The City carries $1,000,000 of flood insurance, subject to a $50,000 deductible, included in its commercial property coverage. The City does not have any property that has been mapped and designated in "Zone A" (an area close to a river, lake, or stream, otherwise known as the 100-year floodplain or Special Flood Hazard Area) by the Federal Emergency Management Agency.

- The FEMA Hurricane Irene Fund is used to account for the revenues and expenditures associated with federal disaster and funding received subsequent to Hurricane Irene.
- Drainage improvements fund is used to account for the City's expenditures associated with various drainage projects within the City.
- Note 11 (notes to financial statements) – Risk Management starting on page 90.
- Disaster assistance grant FEMA-4285-DR-NC (page 199).
- Spencer Ave. & Park Ave. Water & Sewer System Improvements Project (page 12).
- West New Bern Water System Improvements Project.
- Township No. 7 Sewer System Improvements Project – Phase III.

5.4.1.3 Elements That May Hinder Flood Hazard Mitigation

- New Water Resources Operations Facility (page 12).
- Budget preparation process and allocation of funds.

5.4.2 : Electric Utility Fees

5.4.2.1 Overview

This site details residential rates, commercial rates, street, and area lighting, as well as renewable resource/solar alternatives available to the City of New Bern. Gas in not an available utility in New Bern.

5.4.2.2 Elements That Support Flood Hazard Mitigation

- Could fees be utilized for projects outside of electric utilities? This question will be explored with stakeholders during the stakeholder engagement phase of this planning process.

5.4.2.3 Elements That May Hinder Flood Hazard Mitigation

- Not applicable.

5.4.3 : StormReady Utility Fees

5.4.3.1 Overview

This is a series of tables comprising fee structures and computed bills for stormwater fees and fee structures in North Carolina as of July 2019 provided by NCDEQ Water Infrastructure group and UNC Environmental Finance Center. Residential stormwater, non-residential stormwater, and multi-family stormwater details are included. These tables where created using data from a survey of 2019 stormwater fees and fee structures. Fees and fee structures data are displayed for 79 local utilities throughout the state. For more information please visit: https://efc.sog.unc.edu/project/stormwater-programs-administration-and-finance and https://deq.nc.gov/about/divisions/water-infrastructure.

Craven County nor the City of New Bern are included in these series of tables.

5.4.3.2 Elements That Support Flood Hazard Mitigation

- Could fees be utilized for projects outside of just stormwater related issues?
    - This question will be explored with stakeholders during the stakeholder engagement phase of this planning process.
    - It may depend on local ordinances, but in general fees can be used for any type of flood mitigation project (i.e., projects outside of just stormwater related issues).

5.4.3.3 Elements That May Hinder Flood Hazard Mitigation

- Not applicable.

5.4.4 : Water/Sewer Fees

5.4.4.1 Overview

The City's current water and sewer rate structure is a demand plus commodity structure. Each customer is charged monthly for a readiness-to-serve rate (demand component) based on the size of their water meter and for their monthly water consumption (commodity component). The demand component is billed at a flat rate based on meter size, while the commodity component is billed at a unit price per thousand gallons of consumption. The water and sewer rates for City of New Bern customers have been established and are modified from time to time by the New Bern Board of Aldermen.

5.4.4.2 Elements That Support Flood Hazard Mitigation

- Could fees be utilized for projects outside of just water/sewer lines? This question will be explored with stakeholders during the stakeholder engagement phase of this planning process.

5.4.4.3 Elements That May Hinder Flood Hazard Mitigation

- Not applicable.

5.5 NOAA Storm Events Database Research

5.5.1 : Global and Regional Sea Level Rise Scenarios for the United States

5.5.1.1 Overview

The Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force, jointly convened by the U.S. Global Change Research Program (USGCRP) and the National Ocean Council (NOC), began its work in August 2015. The Task Force has focused its efforts on three primary tasks: 1) updating scenarios of global mean sea level (GMSL) rise, 2) integrating the global scenarios with regional factors contributing to sea level change for the entire U.S. coastline, and 3) incorporating these regionally appropriate scenarios within coastal risk management tools and capabilities deployed by individual agencies in support of the needs of specific stakeholder groups and user communities. This technical report focuses on the first two of these tasks and reports on the production of gridded relative sea level (RSL, which includes both ocean-level change and vertical land motion) projections for the United States associated with an updated set of GMSL scenarios. In addition to supporting the longer-term Task Force effort, this new product will be an important input into the USGCRP Sustained Assessment process and upcoming Fourth National Climate Assessment (NCA4) due in 2018. This report also serves as a key technical input into the in-progress USGCRP Climate Science Special Report (CSSR).

In order to bound the set of GMSL rise scenarios for year 2100, we assessed the most up-to-date scientific literature on scientifically supported upper-end GMSL projections, including recent observational and modeling literature related to the potential for rapid ice melt in Greenland and Antarctica. The projections and results presented in several peer-reviewed publications provide evidence to support a physically plausible GMSL rise in the range of 2.0 meters (m) to 2.7 m, and recent results regarding Antarctic ice-sheet instability indicate that such outcomes may be more likely than previously thought. To ensure consistency with these recent updates to the peer-reviewed scientific literature, we recommend a revised 'extreme' upper-bound scenario for GMSL rise of 2.5 m by the year 2100, which is 0.5 m higher than the upper bound scenario from Parris et al. (2012) employed by the Third NCA (NCA3). In addition,

after consideration of tide gauge and altimeter-based estimates of the rates of GMSL change over the past quarter-century and of recent modeling of future low-end projections of GMSL rise, we revise Parris et al. (2012)'s estimate of the lower bound upward by 0.1 m to 0.3 m by the year 2100.

This report articulates the linkages between scenario-based and probabilistic projections of future sea levels for coastal-risk planning, management of long-lived critical infrastructure, mission readiness, and other purposes. The probabilistic projections discussed in this report recognize the inherent dependency (conditionality) of future GMSL rise on future greenhouse-gas emissions and associated ocean-atmosphere warming. In recognition of the different time horizons of relevance to different decision contexts, as well as the long-term GMSL rise commitment (lagged GMSL response) from ongoing increases in ocean-atmosphere warming, GMSL rise and associated RSL change are quantified from the year 2000 through the year 2200 (on a decadal basis to 2100 and with lower temporal frequency between 2100 and 2200).

The 0.3 m-2.5 m GMSL range for 2100 is discretized by 0.5-m increments and aligned with emissions-based, conditional probabilistic storylines and global model projections into six GMSL rise scenarios: a Low, Intermediate-Low, Intermediate, Intermediate-High, High and Extreme, which correspond to GMSL rise of 0.3 m, 0.5 m, 1.0 m, 1.5 m, 2.0 m and 2.5 m, respectively. These GMSL rise scenarios are used to derive regional RSL responses on a 1-degree grid covering the coastlines of the U.S. mainland, Alaska, Hawaii, the Caribbean, and the Pacific island territories, as well as at the precise locations of tide gauges along these coastlines. These scenario based RSL values fill a major gap in climate information needed to support a wide range of assessment, planning, and decision-making processes. GMSL was adjusted to account for key factors important at regional scales, including: 1) shifts in oceanographic factors such as circulation patterns; 2) changes in the Earth's gravitational field and rotation, and the flexure of the crust and upper mantle, due to melting of land-based ice; and 3) vertical land movement (VLM; subsidence or uplift) due to glacial isostatic adjustment (GIA, which also changes Earth's gravitational field and rotation, as well as the overall shape of the ocean basin), sediment compaction, groundwater and fossil fuel withdrawals, and other non-climatic factors. Key findings include:

- Along regions of the Northeast Atlantic (Virginia coast and northward) and the western Gulf of Mexico coasts, RSL rise is projected to be greater than the global average for almost all future GMSL rise scenarios (e.g., 0.3-0.5 m or more RSL rise by the year 2100 than GMSL rise under the Intermediate scenario).
- Along much of the Pacific Northwest and Alaska coasts, RSL is projected to be less than the global average under the Low-to-Intermediate scenarios (e.g., 0.1-1 m or less RSL rise by the year 2100 than GMSL rise under the Intermediate scenario).
- Along almost all U.S. coasts outside Alaska, RSL is projected to be higher than the global average under the Intermediate-High, High, and Extreme scenarios (e.g., 0.3-1 m or more RSL rise by the year 2100 than GMSL rise under the High scenario).

Finally, the consequences of rising RSL are presented in terms of how the frequency of moderate-level flooding associated with a NOAA coastal/lakeshore flood warning of a serious risk to life and property may change in the future under the sea level scenarios. The elevation threshold used to classify such events by NOAA on their tide gauges varies along the U.S. coastline, but in general it is about 0.8 m (2.6 feet) above the highest average tide and locally has a 20% annual chance of occurrence. For example, using the flood-frequency definition, we find at most locations examined (90 cities along the U.S. coastline outside of Alaska) that with only about 0.35 m (<14 inches) of local RSL rise, annual frequencies of such disruptive/damaging flooding will increase 25-fold by or about (±5 years) 2080, 2060, 2040 and 2030 under the Low, Intermediate-Low, Intermediate, and Intermediate High subset of scenarios, respectively.

5.5.1.2 Elements That Support Flood Hazard Mitigation

- Acknowledgement of largescale coastal flooding risk/increases to coastal flooding (including tidal flooding not related to storm events) as more and more people move to the coast each year (according to Melillo et al., 2014).
- The White House Council on Climate Preparedness and Resilience in 2015 called for the establishment of the Federal Interagency Sea Level Rise (SLR) and Coastal Flood Hazard Scenarios and Tools Task Force.
    - This Task Force is charged to develop and disseminate, through interagency coordination and collaboration, future RSL and associated coastal flood hazard scenarios and tools for the entire U.S.
    - These scenarios and tools are intended to serve as a starting point for on-the-ground coastal preparedness planning and risk management processes, including compliance with the new Federal Flood Risk Management Standard (FFRMS).
    - The Task Force is charged with leveraging the best available science; incorporating regional science and expertise where appropriate; building this information into user-friendly mapping, visualization, and analysis tools; and making it easily accessible through established Federal web portals.
- Looking at case studies from around the world and developing new flood-control infrastructure (like in London – page 15 in the pdf or 5 of the report).
- Modeling efforts to determine RSL.
- Implementing line items in budgets to plan for the mobilization of personnel, pumps, sandbags, and other temporary flood-control measures in the event of flooding.
- Assessing current existing storm-flood defenses in place and their effectiveness.
- NOAA's efforts to warn of floods that have a serious risk to life and property.
- "The GMSL and RSL products developed here will be a key input into the USGCRP Sustained Assessment process and inform the upcoming NCA4 due in 2018. They will also support the next steps of the Interagency Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Task Force. These next steps will focus on the integration of these global and regional scenario products within the diversity of coastal risk management tools and capabilities deployed by individual agencies in support of the needs of specific stakeholder groups and user communities. This deployment of scenarios and tools will help serve as a starting point for on-the-ground coastal preparedness planning and risk management processes needed to ensure that U.S. coastal communities (and their economies) remain vibrant and resilient to ongoing and future changes in sea level."

5.5.1.3 Elements That May Hinder Flood Hazard Mitigation

- Predictions that some locations/areas will be impacted more so by the RSL rise and are not adequately prepared – page 44.
- "Eventually, the cumulative toll from recurrent tidal flooding above a local-specific physical threshold (i.e., duration, magnitude, or frequency) will eventually degrade sector-specific functionalities and/or exceed economic or public-tolerance thresholds."
- Modeling at national scales and not necessarily at local scales/site specific scales.

5.6 Conclusions

The resources described above were categorized and evaluated to assess their overall contribution to potential flood resiliency activities. The points system below was utilized to document that the City of New Bern has a high overall capability rating and is especially capable of securing, directing, managing, and fully utilizing grant funding for flood mitigation projects by leveraging the wide range of personnel, mechanisms, and experience at its disposal.

5.6.1 : Points System for Capability Ranking

Scoring:

0-24 points = Limited overall capability
25-55 points = Moderate overall capability
56-103 points= High overall capability

5.6.1.1 Community Plans and Ordinances (up to 58 points)

Yes=3 points No=0 points

- Code of Ordinances – Chapter 18 – Floods 3
- GIS Practitioners 3
- New Bern Historic Preservation Plan 3
- Manufactured Home Ordinance 3
- Planners 3
- Regional Land Use Plan 3
- Comprehensive Economic Development Strategic Plan 3
- Urban Design Plan 2000 3
  - **Subscore** **24**

Yes=2 points No=0 points

- Administrative Support 2
- 2013 Parks and Rec Comprehensive Plan for a Healthy Community 2
- Community Development Block Grants (CDBG) Entitlement Cities Program-Proposed Amendment 2014-2019 Consolidated Plan and 2014-2015 Annual Action Plan 2
- New Bern Gateway Renaissance Plan (Neighborhood Plan) 2
- New Bern GIS Strategic Assessment 2
- Open Space Ordinance 2
- Capital Improvement Plans (FY's 2020 through 2025 – Adopted) 2
- Building Plans, Permitting, and Inspections from 2015-2017 2
- New Bern Metropolitan Planning Organization Transportation Plan 2
  - **Subscore** **18**

Yes=1 point No=0 points

- Appendix A – Subdivisions 1
- Greater Duffyfield Community Development Strategic Plan (Neighborhood Plan) 2021 1
- Riverstation Neighborhood Plan 1
- Choice Neighborhoods Transformation Plan (Neighborhood Plan) – 2016 1
- The History and Architecture of Long Wharf and Greater Duffyfield

(Neighborhood Plan) 1994	1
• Zoning Ordinance	1
Subscore	**6**

5.6.1.2 Risk Management Plans/Procedures (up to 21 points)

Yes=2 points No=0 points

• Craven County Disaster Recovery Alliance: Craven County Long Term Recovery Group	2
• Craven County Emergency Operations Plan	2
• Firewise USA Certification	2
• Pamlico Sound Regional Hazard Mitigation Plan	2
• StormReady Certification	2
• Water Rising: Equitable Approaches to Urban Flooding	2
Subscore	**12**

Yes=1 point No=0 points

• Continuity of Government Operations Plan (part of Emergency Operations Plan)	1
Subscore	**1**

5.6.1.3 Fiscal Resources (up to 14 points)

Yes=1 point No=0 points

• Comprehensive Annual Financial Report for the Year Ended June 30, 2018	1
• Electric Utility Fees	1
• Stormwater Utility Fees	1
• Water/Sewer Fees	1
Subscore	**4**

5.6.1.4 NOAA Storm Events Database Research (up to 10 points)

Yes=1 point No=0 points

• Global and Regional Sea Level Rise Scenarios for the United States	1
Subscore	**1**

Total Capability Score **66 (High)**

[i] HIGH = 56-103, MODERATE = 25-55, LIMITED = 0-24

[ii] Linkage to CRS Activity 420

[iii] Linkage to CRS Activity 420

[iv] Linkage to CRS Activity 510 and 530

[v] Linkage to CRS Activity 330

[vi] Linkage to CRS Activity 610

6.0 Cultural Heritage

This section discusses the cultural heritage of New Bern. It consists of the following subsections:

6.1 Introduction
6.2 Assessing Community Value for Cultural Heritage
6.3 Evaluating New Bern's Cultural Heritage
6.4 Historic Preservation in New Bern
6.5 Economic Value of Historic Preservation
6.6 Considering Cultural Resources in Hazard Mitigation Planning
6.7 Planning for Climate Impacts on Cultural Resources

6.1 Introduction

"I love this community and feel that the Historic District is most important to the future of our City and County." - New Bern Community Survey Respondent

When asked about the most vulnerable assets in New Bern to flood hazards, community survey respondents identified in order of importance – economic, people and cultural & historic assets. *(see Cultural Heritage 6-28)*[i]

FEMA understands the importance of historic properties and cultural resources to community identity. This is why the agency developed specific guidance for assessing hazard risk and planning for hazard mitigation of heritage assets specifically. In their "how-to-guide" for state and local government mitigation planning (*Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning*), FEMA offers a description of "historic property" as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places... This term includes artifacts, records, and remains that are related to and located within such properties." The description of "Cultural Resources" includes "non-living examples of objects acquired and preserved because of their potential value as examples, as reference material, or as objects of artistic, historic, scientific, educational, or social importance, either individually or as a collection."

It is the intent of this plan to broaden the terminology to "Cultural Heritage" recognizing both the tangible resources (buildings, sites, structures, districts and objects) and the "intangible" resources as defined by the United Nations Educational Scientific and Cultural Organization (UNESCO). *Cultural Heritage* refers to both the tangible and intangible heritage represented by resources that are "movable" (paintings, sculptures, coins, manuscripts) and "immovable" (buildings, monuments, archaeological sites, underwater ruins, etc.) as well as societal (oral traditions, performing arts, rituals). What is important to understand about the equal value of both the tangible and intangible aspects of cultural heritage is that there is a shared bond, "a belonging to a community, a representing of our history and our identity; our bond to the past, to our present, and the future." *(see Cultural Heritage 6-28)*[ii]

Thus, when speaking of the importance of cultural and historic assets to the people of New Bern, the tangible, intangible and societal resources and values must be taken into consideration. Cultural Heritage does not exist solely within designated historic district boundaries. How the community values its heritage resources, and its cultural practices is central to prioritizing resilience approaches for those places that matter in New Bern.

Those places the community values are made up of not only historically, architecturally, and economically significant properties, but also places and traditional practices that garner the public's sentiment. It may be a neighborhood park or a basketball court, a fishing pier or a farmer's market, a barber shop or a neighbor's porch. Whatever the location, determining how the community prioritizes that experience of place and its importance to their cultural identity is critical in determining the adaptation strategies that will not only reduce risk, but will also have the greatest buy-in from the community and result in actions for plan implementation at the neighborhood or property level.

6.2 Assessing Community Value for Cultural Heritage

The methodology applied for this assessment was a "whole community" understanding of the values of New Bern residents related to cultural heritage. Extensive research was conducted through historical documents, city and state plans, current studies, surveys and discussions with community members. Due to COVID-19 constraints, the latter of these were limited with the exception of arranged meetings and informal discussions at coffee shops, cafes and with innkeepers.

6.2.1 : Surveys

As part of the overall public outreach strategy, three online surveys were conducted incorporating questions that addressed not only individual and property owner knowledge regarding vulnerability of historic neighborhoods and cultural institutions to extreme storm events and sea level rise, but also to the community values for New Bern's cultural heritage. In this way the project team was able to determine not just the importance of specific properties, but the values held for certain property types and locations. Some of these properties are National Register of Historic Places listed properties while others are locally-designated. Still others have no official government designation, but are called out in others way as significant (i.e. properties on the New Bern African American Heritage Trail).

6.2.2 : Public Meetings / Site Visits

The next method of outreach included virtual / in-person public meetings where, again, individuals were solicited as to their priorities for cultural heritage resources. This led to two site visits by the historic preservation team in the Fall and Winter of 2020. The first was a reconnaissance drive of those properties reported to the North Carolina State Historic Preservation Office as receiving wind or flooding damage from Hurricane Florence. At one of those sites, the North Carolina History Center at Tryon Palace, personnel discussed the damage to the building and some of the collection. But their greatest concern was the lack of communication during and after the storm event, along with the need to better prepare the facility for future events. What appears to have been lacking was any type of emergency and disaster preparedness plan and training to prepare the state-owned property and its collections for disasters. Additionally, there was limited coordination between the City and the State when it came to knowing what personnel were remaining on site and what work had been done to prepare the property for the event.

In December the preservation team followed up the prior site visit with a tour of New Bern's historic districts along with the New Bern Historic Preservation Administrator. Discussions centered around the basis for design decisions of the New Bern Historic Preservation Commission in addressing flood and hurricane damaged buildings in the downtown historic district. Members of the Historic Preservation Commission met with the preservation team to talk about priority properties, neighborhoods of concern vulnerable to flooding and experiences associated with Hurricane Florence. While there the team presented to two New Bern Rotary clubs on the importance of resilience

and mitigation planning for historic neighborhoods and the downtown. Significant feedback was given regarding the flooding aftermath from Florence in the Riverside district. Additionally, the Historic Preservation Administrator invited a team member to meet with two members of a neighborhood group in the Duffyfield / Dryborough area to discuss the potential for survey of significant African American properties in that area.

While driving around the Greater Five Points area, the team observed numerous social connections occurring between neighboring homes (i.e. lots of front porch and sidewalk conversations in Duffyfield area) and the use of commercial buildings for neighborhood service organizations. In follow-up research related to these underserved areas, the team learned about two extant properties documented in *The Green Book*. [See Section 6.3 for additional details on The Green Book.]

6.3 Evaluating New Bern's Cultural Heritage

As part of the guidance for determining priorities for adaptation, FEMA discusses the evaluation of individual historic properties and cultural resources for historic significance. While the notion of "contributing" and "non-contributing" resources is clearly understood by preservation practitioners, it's important to note that the key question in evaluating priorities for historic property mitigation or adaptation is not what is contributing or noncontributing, but instead, "which property/resource would the community miss most if it were lost?" In order to determine the answer to that question, multiple factors are used to determine the overall value each historic property and cultural resource in the inventory holds for the community. This requires considering not just the historic significance of an asset, but also other variables such as: Geographic Context of Significance, Level of Significance, Integrity, Economic Importance and Public Sentiment.

As regards the historic significance of the resources, the level of historic designation (ie. National Register, Local Landmark) is evaluated. Also assessed is the resources geographic context of significance (e.g. National, Tribal, State, or Local significance). Finally, Is the level of historic or architectural significance qualified as high, medium or low? These are the evaluation criteria applied for understanding the historic and architectural significance of properties in New Bern's designated historic districts and for determining priorities for adaption. Once this level of value is determined, the other variables (economic importance and public sentiment) are assessed and rated similarly as low, medium, or high.

Regarding the historic and architectural character of New Bern's designated resources, it is important to review how the city developed in order to understand the recommendations for prioritization found later in this report.

6.3.1 : New Bern's Architectural Heritage

The City of New Bern, laid out by John Lawson at the request of Baron von Graffenreid, was planned for broad streets and space between residences to avoid overcrowding and "in order to enjoy a purer air."*(see Cultural Heritage 6-28)* [iii] Two principal streets divided the town like a cross, with multiple cross streets extending from them. Today, the minor streets are quiet with well landscaped, shaded lots that still greatly resemble the original plan. While the Federal architecture style was the primary style in Lawson's time, New Bern, thanks to centuries of economic prosperity, is a reflection of national trends in architectural design that include styles representative of the various eras in the city's domestic and commercial building development. As noted by the New Bern Historic Preservation Commission's (HPC) design guidance, the quality of the architecture is worthy of note. "The vast majority of structures express a high degree of academicism successfully rendered by skilled and sensitive craftsman." *(see Cultural Heritage 6-28)*[iv]

6.3.2 : Natural Register of Historic Places & Local Historic Districts

The National Register is the official list of the nation's historic buildings, districts, sites, structures, and objects worthy of preservation. The National Register was established with the passage of the National Historic Preservation Act of 1966. The National Register program is overseen by the National Park Service and recognizes more than 90,000 properties for their significance in American history, architecture, art, archeology, engineering, and culture.

According to the National Park Service (NPS), there are 52 listings in the National Register of Historic Places (National Register) in New Bern which includes districts, sites and individual properties. The City of New Bern has two locally designated historic districts—the Downtown Local Historic District designated in 1981 and the Riverside Historic District designated in 2004. The city has no individually designated local landmarks.

While the New Bern HPC guidelines state "nothing remains of the earliest colonial buildings," it is unclear if that is truly the case when comparing the historic resources from the colonial-era with those extant today. Per C. J. Sauthier's 1769 map of the New Bern, there are four buildings that "tentatively are identified as surviving from that time." *(see Cultural Heritage 6-28)*[v] *Those properties are primary in considering priorities for increasing resilience and preparing for future conditions of flooding and sea level rise based on their historic and architectural significance to New Bern's colonial-era period of significance.*

6.3.2.1 : New Bern Historical District (1973)

Within the boundaries of the New Bern National Landmark Historic District, there are 492 resources that contribute to the district's period of significance which maintain their historic integrity. In addition, there are 130 properties that are not contributing to the district's significance, but which are reviewed by the New Bern Historic Preservation Commission under the preservation ordinance. As stated in the historic district guidelines, "the HPC is tasked with using the historic guidelines to determine whether changes to a structure, both contributing and noncontributing, are not incongruous, or complimentary to the special character of the historic districts." *(see Cultural Heritage 6-28)*[vi]

The pre-dominant building styles representative of New Bern's architectural heritage within the National Landmark period of significance include: Georgian, Federal, Greek Revival, Colonial Revival, Italianate, Second Empire, Queen Anne, Neoclassical Revival, Spanish Revival, Foursquare, Art Deco, Craftsman/Bungalow and late-nineteenth and early-twentieth century commercial buildings. Regional vernacular styles contributing to the district are also evident. Per the 1973 National Register of Historic Places (National Register) nomination form, the district's period of significance was expanded to include resources dating between 1770 to 1953 around Criterion C, notable for their architecture.

6.3.2.1.1 Colonial Period Resources

Regarding the formative colonial period, there are fourteen Georgian style buildings, forty-seven Federal style, fourteen Greek Revival, one early Italianate and two Renaissance Revival. As stated in the National Register documentation, "the New Bern version of Federal architecture is Adamesque; it is restrained and elegant and, above all, sophisticated." These are the resources most associated with the primary period of significance, the colonial era. Features of the Federal style continued to appear in building types well into the 1840's.

6.3.2.1.2 Significant 19th Century Resources

Noted in the 1973 National Register nomination is the coquina wall and arched gateway of Cedar Grove Cemetery, constructed in 1854. (The property is partially located in the floodplain and the coquina material is particularly susceptible to water intrusion.) As well, the First Presbyterian Church and Christ Church are both called out as significant for their Gothic Revival design.

Figure 6.1. Coquina Entrance Gate at Cedar Grove Cemetery



Source: New Bern Visitor's Guide *(see Cultural Heritage 6-28)*[vii]

6.3.2.1.3 Significant 20th Century Resources

Lumber industry success in the early twentieth century resulted in a building boom. Local architect Herbert Woodley Simpson was credited with "the design of every important structure built in New Bern in the first two decades of the twentieth century." He excelled in a combination of the Queen Anne and Neo-Classic Revival styles, mostly in residences, with many scattered throughout the historic district. His nonresidential buildings include the Atlantic and East Carolina Railway Station, St. Cyprian's Episcopal Church, New Bern Municipal Building, Masonic Temple, Sudan Temple, Old City Hall and Theatre, New Bern National Cemetery, and Cedar Grove Cemetery. *(see Cultural Heritage 6-28)*[viii]

6.3.2.2 DeGraffenreid Park Historic District (2006)

There are 86 contributing and 21 noncontributing buildings reflecting domestic architecture of a variety of styles including; Colonial Revival, Tudor Revival, Bungalow/Craftsman and Modern styles. The district is significant under National Register Criteria A and C for community planning and development and architectural importance. The period of significance is determined to be between 1927 and 1956 for this compact, six block district located one mile west of central New Bern.

6.3.2.3 Ghent Historic District (1988)

Primarily an early 20th-Century development, this neighborhood contains 191 contributing and 100 noncontributing properties constructed in Colonial Revival, Bungalow/Craftsman, and other vernacular styles. The period of significance is 1906 through 1941 as reflected in Criteria A and C for community planning and development and architectural importance. The Ghent district is the city's second suburban residential development and its only streetcar suburb with the most concentrated and intact collection of early twentieth century residences.

The district is typical of a streetcar suburb in North Carolina with residences standing close to the street on narrow lots. Today, a grassy median with small trees runs down the center of Spencer Avenue where the streetcar system previously ran. Most of the residences are in the bungalow style and are of frame construction, while some higher style brick Colonials and Craftsman houses are apparent.

6.3.2.4 Riverside National Historic District (1988)

The Riverside Historic District consists of 15 blocks east of the A&NC Railroad tracks in northeast New Bern. There are 178 contributing and 35 noncontributing properties. Turn-of-the-Century and Early 20th-Century styles predominate including Queen Anne, Bungalow/Craftsman, and Classical Revival. The district's period of significance is 1894 through 1937.

Laid out in a grid pattern aligned with National Avenue leading to the National Cemetery, Riverside was New Bern's first suburb developed from farmland between 1894 and 1912. The neighborhood is characterized by mature trees along several main avenues and side streets of uniform lots, with the largest and most prestigious homes along National Ave.

This neighborhood was specifically called out by residents as having significant flooding inundation during Florence. It is rated as having mixed vulnerability and risk of flooding.

6.3.2.5 Individually-listed National Register Properties – Public Buildings

The following properties are highlighted as priorities for adaptation due to their meeting not only the community value criteria of having significant historic and architectural significance, but also meeting a middle to high degree of importance in the areas of economic importance and public sentiment.

6.3.2.5.1 City Hall (New Bern Municipal Building) (1897) 300 Pollock St

No flooding impact. This Romanesque Revival building displays a dual façade to both Pollock and Craven Streets. A corner clock tower overlooks the central downtown. Originally constructed to serve as a United States Post Office, Courthouse and Customs House, the exterior of the structure is mostly unchanged, though the interior has been altered in repeated renovation projects and for its adapted use as a municipal building. *(see Cultural Heritage 6-28)*[ix] The clock tower was not part of the original design, but was added later and subsequently altered. The building reached its current form in 1910. The building passed to the City of New Bern in 1936 with the completion of the present-day Court House. It's architectural style and exterior granite makes it a noteworthy building in New Bern and the North Carolina Tidewater region. New Bern's City Hall building is an iconic symbol of New Bern for both residents and tourists.

Figure 6.2. New Bern Municipal Building



Source: New Bern Visitor's Guide *(see Cultural Heritage 6-28)*[x]

6.3.2.5.2 Tryon Palace (1770; reconstructed 1959)

High vulnerability and high risk for flood inundation. New Bern's historic centerpiece attracting visitors from North Carolina and beyond is Tryon Palace. Designed in the Georgian style, it was regarded as one of the most beautiful buildings in British America. The Georgian brick mansion was named after William Tryon, the British Colonial governor who had it built in 1770.

Governor Tryon commissioned architect John Hawks to design an elaborate governor's mansion to also function as a location for government business. Tryon secured funding from the North Carolina legislature by convincing them to increase taxes to pay for the project as the first permanent capital of the Colony. Tryon left North Carolina in June 1771 to become Governor of New York.

During the American Revolution, Patriots occupied the capital, holding the first sessions of the General Assembly as they worked to design a free and independent state. In 1794 the North Carolina capital was moved to Raleigh and the Palace was rented for various purposes including a Masonic lodge, a private school and a boarding house. In 1798, a fire destroyed nearly everything but the kitchen and the stable offices. As the city grew, George Street was extended into the Palace grounds and over the original Palace foundation with dozens of houses and businesses built on either side of the ruins.

In the 1940's, a preservation group dedicated to the Palace's restoration raised funds for the building's reconstruction and in 1959 the Tryon Palace Historical Sites and Gardens were opened to the public. The reconstructions and restoration included removing more than 50 buildings and rerouting NC Route 70, including a bridge over the Trent River. The Palace was reconstructed from the original plans on its original foundation and completed with period furnishings. Visitors experience costumed interpretations of 18th century life and activities of pre-revolution North Carolina history.

In addition to the reconstructed Palace, a contemporary building, the adjacent North Carolina History Center, was constructed in 2010. The new space includes rotating exhibits, artifacts and interactive historical activities that are owned and operated by the state. Built with the environmental conditions in mind, the History Center is a LEED Certified building with permeable surface parking areas, restored wetlands and energy-efficient maintenance. On average, Tryon Palace is New Bern's top tourist attraction, recording upwards of nearly 227,000 visitors annually. *(see Cultural Heritage 6-28)*[xi]

Figure 6.3. Tryon Palace



Source: Visitnc.com

6.3.2.5.3 New Bern Academy (1809) 508 New St

No flooding impact. Also operated by Tryon Palace, the New Bern Academy Museum was originally a school house for both boys and girls. The first public school having burned in 1795, this Federal-style building replaced it in 1810. Worth noting is that a public election held in 1874 resulted in the election of several black citizens to the board of trustees of this then all-white-student Academy, demonstrating an acute interest in education on the part of the town's black population. Thus, in 1873, the trustees of the New Bern Academy resolved to provide a school for the town's black children. The state constitution, as amended by the convention of 1875, provided for the establishment of separate but equal educational facilities for white and Negro children.

During the Civil War, the building served as a hospital. In 1899, the school transitioned from a private academy to part of the New Bern graded school system. The school remained operational until 1971, making it one of the oldest continuously used school buildings in America. *(see Cultural Heritage 6-28)*[xii] Today the building hosts a museum with four exhibits on Civil War History, New Bern Architecture and the history of the structure itself.

6.3.2.5.4 Craven County Courthouse (1935) 302 Broad St

Low risk and low vulnerability for flood inundation. The U.S. Post Office and Courthouse, designed by local architect Robert F. Smallwood, was one of the largest and most expensive buildings in Eastern Carolina when it opened in 1935. For a brief time, the building also served as a customs house. During World War II, the U.S. Marine Corps Command Contingent occupied the second and third floors.

Judge John Davis Larkins Jr. who served the U.S. District Court for the Eastern District of North Carolina tried several important cases, which greatly strengthened both civil rights and environmental protection legislation, in the U.S. Post Office and Courthouse.

In 1992, the post office vacated the building and in 2004, the U.S. General Services Administration assumed ownership. In 1973, it was listed in the National Register of Historic Places as a contributing building within the nationally significant New Bern Historic District.

An excellent example of the Georgian Revival style of architecture, the three-story red veneer brick building with contrasting limestone trim, sits atop a granite base. The most significant interior space is the ceremonial courtroom with its mahogany panels punctuated by fluted pilasters with Ionic capitals and lit by bronze chandeliers with eagle motifs that were meticulously designed by the building's architect.

The courtroom contains significant murals from the New Dea, illustrating significant events in New Bern's history. *(see Cultural Heritage 6-28)*[xiii]

6.3.2.5.5 J.T. Barber School (1951 – 1955) 1700 Cobb St

High vulnerability and medium risk for flood inundation. The J. T. Barber School was designed by architect Raymond Fusion, incorporating modernistic features into this segregated African-American High School. J. T. Barber School is an outgrowth of the 1905 West Street Graded School, New Bern's first free public school for the education of African American students. John Thomas Barber was principal of West Street School between 1905 and 1944. Barber believed learning was the birthright of every American child. Under his leadership the faculty grew, enrollment increased and additional courses were added. By 1925, the West Street School included a high school department with ten students in the first graduating class.

During its years as a segregated school, the J. T. Barber School graduated many students who went on to achieve outstanding careers in business, law, education, and health. The school also excelled in the area of sports with several of the school's athletes becoming professional basketball and football players. The J. T. Barber School evolved through the years from its beginning as a segregated black middle school when it opened in 1951, to a segregated black high school upon its completion in 1955, to an integrated middle school in 1970, to an elementary "school of excellence" in 1990. The initial five years of the school's existence, however, laid the groundwork for New Bern's African American citizens' sense of pride and ownership in their association with J. T. Barber School.

6.3.2.5.6 New Bern Craven County Library; 400 Johnson St

Low risk and low vulnerability for flood inundation. In 1964, a committee was formed to find a new building for the library. The Library Board decided to donate the John Wright Stanly House to the Tryon Palace Commission. The new library site chosen was two adjoining lots on the corner of Johnson and Middle Streets. John N. Petersen was selected as architect for the new building. In 1965, a Board of Trustees was established. Temporary headquarters for the library was set up at 311 E. Front St. A groundbreaking ceremony was held on December 15, 1966. The dedication and formal opening of the new library occurred on January 28, 1968.

6.3.2.5.7 Union Point Park (non-contributing; Downtown Historic District) East Front Street

High vulnerability and high risk for flood inundation. Property along the Neuse River in the city's early history was the site of seafood and sawmill operations. By the early 1900's, New Bern's decline as a port city led to the gradual deterioration of the Neuse and Trent waterfront. By the early 1920's Union Point was used as a city dump. In 1931 the New Bern Women's Club initiated a major project to convert the Union Point dump into a park and construct a Club House. With P.W.A. funds and a local match, "a large force of laborers began by leveling and grading the land." The building and park became a rallying point that boosted the morale of the city and was the place for community activities, parties, picnics and dances for many years. In the 1950's and 1960's, the City developed the park further

with a pavilion, a picnic area and boat ramps. The Park's prominent location and close proximity to the downtown made it a keystone in the on-going redevelopment of the waterfront and revitalization of the downtown.

In 1990, the city and Swiss Bear co-sponsored development of an urban design plan to provide guidelines for the growth and development of downtown and Five Points. In 1995, public dollars were leveraged with private donations garnered from a fundraising campaign initiated by Swiss Bear involving many local businesses and thousands of individual contributors. The outpouring of community support led to the City's contracting for completion of the promenade, bulkhead, railings and pedestrian walkway under the bridge. On June 28, 1998, City and County officials, the fundraising committee members and hundreds of residents gathered at the waterfront park to celebrate the dedication of the revitalized Union Point Park.

6.3.2.6 Individually-listed National Register Properties – Privately Owned

6.3.2.6.1 Masonic Temple and Theater; 516 Hancock Street (see Cultural Heritage 6-28)[xiv]

Medium vulnerability and low risk for flood inundation. In 1799 John Dewey, a Mason who was a house carpenter by trade, drew up plans for a Federal style lodge building and made an estimate of expenses for a "building [that] shall contain six rooms and it shall be constructed as to answer to the purpose of dancing assemblies." On April 15, 1801, the cornerstone of the structure was laid with appropriate Masonic ceremonies. During the Civil War the building became a Confederate arsenal and after the capture of New Bern by the Union in March, 1862, a Union hospital and coffin manufactory.

Lowthrup Hall, adjacent to the Lodge Room on the top floor, has been used for public assemblies since it was finished, and the theater has been in almost continuous use since 1805. During the Civil War years, it served periodically as a place for the production of plays. Since the introduction of motion pictures on October 12, 1917, it has been used as a movie theater.

The Masonic Temple and Theater is recognized as having great historic value locally for its association with some of New Bern's most prominent citizens and for its continuous use as a Masonic Hall and theater. The most notable feature of the building is the well-preserved group of mid-nineteenth century trompe l'oeil paintings, unique in design and execution in North Carolina. *(see Cultural Heritage 6-28)*[xv]

6.3.2.6.2 First Presbyterian Church (1819-1821; individually National Register listed)

No flooding impact. Constructed between 1819 – 1821, the sanctuary was used as a Union Hospital during the Civil War. "The church itself, which stands virtually alone as a building type in the state and is more evocative of the New England church and green than of its North Carolina location, has great importance because of its uniqueness." *(see Cultural Heritage 6-28)*[xvi]

6.3.3.6.3 St. Paul's Roman Catholic Church (1840-1841); 510 Middle Street

No flooding impact. St. Paul's was designed by Bishop England from the Diocese of Charleston, who was instrumental in establishing the church in New Bern. *(see Cultural Heritage 6-28)*[xvii] "Catholic historian J.J. O'Connell believes that the first Catholic church built in the state was probably at New Bern, and that the first Catholic clergyman permanently stationed in North Carolina took up his work there." *(see Cultural Heritage 6-28)*[xviii] The overall plan of the building remains much as designed in 1839, however, the interior has been altered over time.

6.3.2.6.4 Harvey Mansion (ca. 1804); 221 South Front Street

High vulnerability and medium risk for flood inundation. John Harvey, a merchant and ship owner, constructed the Harvey Mansion between South Front Street and the Trent River sometime after 1804, the year he purchased the property from George Ellis. According to the National Register description, "Despite its size and the numerous changes in entrances and porches, the entire house seems to have been constructed at one time." Constructed in

Flemish bond masonry, the building is three stories with a full basement. Of the four original interior end chimney shafts, only two remain, the other pair falling victim to hurricanes.

A wealthy merchant of the period, Harvey's property appears to be the only surviving example where both the business and dwelling were housed under one roof. John Harvey seems to have built office, storerooms, and even warehouse areas into his residence. The significance of the house is enhanced because it still maintains its relation to the water. Thus, in addition to the importance of the Harvey Mansion as an unusually large and elegantly finished house, it is especially interesting because it illustrates so vividly the dependence' of early nineteenth century New Bern upon sea trade. *(see Cultural Heritage 6-28)*[xix]

6.3.2.7 Significant African American Properties (contributing to historic districts)

New Bern is fortunate to have a rich African-American history. During its earliest colonial era, the city was populated by a predominantly black community serving as artisans and builders of the colonial capital. According to information provided on the New Bern African American Heritage Tour, "the Free Black artisans, including tailors, painters, carpenters, and brick masons, along with commercial laborers, both Black and White, flocked to the area."

An event which greatly impacted the African-American community, causing many to leave the city and be displaced to other neighborhoods, was the Great Fire of 1922.

New Bern had suffered some significant fires between 1791 and 1798, and again in 1843, yet the city was able to rebound largely due to the demand for lumber, millwork and naval stores. But the Great Fire of 1922 devastated the city, particularly the African-American neighborhoods. It was on December 1, 1922, that a fire started in the chimney of a home near where Craven Terrace stands today. Due to the coincidence of a series of unfortunate events, the fire quickly spread and grew out of control. When it was finally extinguished, 25% of the city or almost 40 blocks had burned, nearly 1,000 buildings were destroyed, and 3,200 people were left homeless.

An important educational and public awareness tool, New Bern's African American Heritage Trail identifies points of interest located within the greater Craven Terrace/Dryborough neighborhoods. A self-guided tour allows visitors to explore interpretive panels along the trail with topics ranging from pre-Civil War to Jim Crow into the era of the New Deal and contemporary history including little-known stories about the New York Knicks' Walt Bellamy and author Alex Haley residing in New Bern.

Another important historical narrative containing information about places important to New Bern's African-American history is the *Green Book.* Published as a guide for black travelers journeying within the United States and abroad, the *Green Book* was used "as a preventative measure to embarrassments, difficulties, and critical safety concerns black travelers faced as they traveled the racially segregated United States." At first only Northeast states were referenced, but by 1938 the Green Book listed eight cities in North Carolina, including new Bern. The city has two extant Green Book listings, the Rhone Hotel (listed as 42, now 512 Queen St.) and the H.C. Sparrow Tourist Home (listed as 68 West St., now 731 West St.) While not individually designated as historic, both of these properties are within the boundaries of National Register Historic Districts. So too are all of the properties which are part of the African-American Heritage Tour. *(see Cultural Heritage 6-28)*[xx]

While the risk associated with the two extant Green Book properties is listed as "moderate combined risk and vulnerability of floodplain inundation," the cultural heritage these properties embody is at high risk due to the destruction caused by Hurricane Florence in New Bern's most vulnerable, predominantly black neighborhoods.

But perhaps no property better represents the significance of place to African-American identity and community connectedness, than the Stanley White Recreation Center. An important community gathering space first constructed in 1948 as the Cedar Street Recreation Center, it was built for New Bern's black residents during segregation. The replacement building was constructed in 1975 very near the site of the first recreation center. Located in the heart

of the Duffyfield neighborhood and a critical community gathering space, integral to the social fabric of the neighborhood for decades... it was severely damaged by Hurricane Florence and subsequently demolished in 2021.

Initially sited in a flood zone with a high risk of repeated flooding, the demolition of this non-contributing building was completed with the City's intention to rebuild the facility, away from the flood inundation area. However, the location for the new facility is oriented away from the neighborhood core closer to downtown. While the new location would reduce flooding impacts, some in the neighborhood believe the value to the community was its central location in the heart of Duffyfield.

As is suggested in a recent work on the topic of inequity in resilience planning the challenges of ensuring community buy-in to resilience projects in the Greater Five Points area must be approached from a cultural, societal and racial perspective, at the neighborhood level. An ongoing program of "whole community" engagement means taking the conversation to the church parking lot, as one person described it.

"We have to meet the people where they are. The planning has to be moved from downtown and moved right into the neighborhood. We have to step outside of the meeting room in City Hall and take it to the church parking lot or take it to the Community Center. What's going to make it better for you and what's going to be best for your kids, your grandma, and so forth and really just have that conversation." (see Cultural Heritage 6-28)[xxi]

Public awareness and education is a mitigation strategy outlined by FEMA in Hazard Mitigation Planning. In New Bern it represents an opportunity to more fully engage with African-American residents to not only rebuild the Stanley White Center, but to build a foundation of trust in how community is defined, determined and done right. Again, it's a matter of valuing cultural heritage -- "belonging to a community, a representing of our history and our identity; our bond to the past, to our present, and the future."

6.3.2.7.1 Charlotte S. Rhone Cultural Center (1935; 1947); 608 West Street

No flooding impact but is at risk of storm surge inundation (Cat 3-5). The West Street Colored Library was established on June 6, 1935 with Works Project Administration funding. The new library was dedicated and opened in 1947. The library board of directors was composed of White and African-American citizens. The third president, Charlotte S. Rhone, improved the library's collection and added a cement walkway. In 1972 Craven County Commissioner Carmi White recommended that the library merge with the New Bern branch of the library system. In the summer of 1973, the West Street library became part of the New Bern-Craven County Public Library. The West Street Library building now houses the Charlotte S. Rhone Cultural Center, named in recognition of Ms. Rhone's work championing the library initiative and her leadership of the Climbers Club, which is the current owner of the building.

6.3.2.7.2 Amelia-Green House aka Green Hollister House (ca. 1800); 310 George Street

This property parcel is partially located in the floodplain at George St with low vulnerability and low risk for flood inundation and is at risk of storm surge inundation (Cat 1-5). This home was purchased in 1800 by John Carruthers Stanly for his wife's grandmother, Amelia Green, to save it from the tax collector. Mrs. Green lived at the residence until her death around 1823. Mr. Stanly was the illegitimate son of John Wright Stanly, who was a prominent New Bernian. Although Stanly's mother was an Ebo slave, he was able to prosper as a barber, owning his own business and eventually earning enough money to purchase a plantation and more than 160 slaves. *(see Cultural Heritage 6-28)*[xxii]

6.3.2.7.3 Rhone Hotel (1923); 512 Queen Street

This property has moderate vulnerability and low risk for flood inundation and is at risk for storm surge inundation (Cat 1-5). The Rhone Hotel was the first owned and operated African-American hotel in New Bern. Originally built for Henrietta Rhone in 1923, it operated into the 1950's. The building was also the residence of Charlotte Rhone, the

first black registered nurse in the state, the first social worker in Craven County and the third president of the West Street Colored Library. As was previously mentioned, the property is also notable for its listing in The Green Book.

6.3.2.7.4 John R. Green House (ca. 1820); 411 Johnson Street

This property has moderate vulnerability and low risk for flood inundation and is at risk of storm surge inundation (Cat 1-5). John R. Green was a man who bought his own freedom and eventually ran his own tailor shop from 1814 until 1850. His home was built in the 1820's during a time when blacks were the predominate community in New Bern.

6.3.2.7.5 King Solomon's Lodge No.1 (ca. 1870); 710 Howard Street

*This property has low vulnerability for flood inundation and is at risk of storm surge inundation (Cat 3-5).*This fraternal lodge building is the home of the first black Masonic Lodge established in North Carolina after Emancipation. King Solomon's served as the mother lodge for other black Masonic organizations across the state. "The building became the scene of balls and other social events, political rallies, temperance conventions, and public commemorations of the Emancipation Proclamation." *(see Cultural Heritage 6-28)*[xxiii] Also referred to as "Drayton Hall" in honor of Past Grand Master Paul Drayton, who founded the Lodge, the building served the African American community for decades, even surviving the Great Fire of 1922. *(see Cultural Heritage 6-28)*[xxiv] Originally established at the corner of Johnson and Hancock Streets, the building was moved in 1924 to the corner of Queen and Howard Streets. As of 2019, the Lodge is reportedly still active despite damage to the building from a 2009 fire.

Figure 6.4. King Solomon's Lodge, taken duringsite visit December 2020



Source: Photo by Lisa Craig (Left) Photo from Peter B. Sandbeck, *The Historic Architecture of New Bern and Craven County, North Carolina,* 1988. (Right)

6.3.2.7.6 Harmony House/Mission Care Home (ca. 1955); 1607 Dillahunt Street

This property has high vulnerability with medium risk for flood inundation and is at risk of storm surge inundation (Cat 1-5). Built in the 1950's this site is perhaps the first African American care home established in North Carolina as referenced in a news article by the owner.

Figure 6.5. 1607 Dillahunt



Source: Google Street view

6.3.3 : New Bern's Local Historic Districts

New Bern has three historic districts with homes, stores and churches dating back to the early 18th century. Historic markers point out the houses where the first elected assembly in the colonies met in defiance of the crown in 1774, where a signer of the U.S. Constitution lived, and where George Washington slept — twice. Markers also show demarcate the home of jurist William Gaston, the first chief justice of the state Supreme Court and composer of the state song.

6.3.3.1 Downtown New Bern Historic District

A 56 square block containing a collection of buildings and landscape elements that characterize a typical Southern town, evolving from the colonial era to the present day, downtown New Bern was designated as a local historic district in 1981, eight years after the New Bern Historic District was listed on the National Register of Historic Places. The boundary for local designation was expanded to include several additional blocks on its northern periphery. The local district designation was done to establish a zoning overlay where by all exterior changes to buildings and associated landscapes and infill sites would be reviewed to ensure compliance with the New Bern historic preservation design guidelines.

6.3.3.2 Riverside Historic District

The Riverside Historic District was designated a local district in 2004 having been listed on the National Register in 1987. Situated only a few blocks from the Neuse River, the Riverside neighborhood began as "Dunn's Fields," farmland that was subdivided and sold for the planned community of Riverside. The Guion House, which was the first lot sold in 1894, is the only example of the Second Empire style in Riverside. In the decades following, several other examples of Queen Anne, Classic Revival, Colonial Revival and the Craftsman style were built. Primarily residential, the district does have a few significant institutional and industrial buildings that add to the overall character such as the Riverside United Methodist Church and the Riverside Graded School.

6.4 Historic Preservation in New Bern

One of the earliest preservation efforts in New Bern was the reconstruction of Tryon Palace. Largely destroyed by a fire in 1798, the remaining ruins were demolished or reused for apartments. In the 1920's preservation interest emerged with three women leading the movement to have the palace reconstructed. The group - Minette Chapman Duffy, Gertrude S. Carraway and Ruth Coltrane Cannone - was later joined by Maude Moore Latham and May Gordon Latham Kellenberger. Together they raised funds and publicity for the massive project. By the 1940's the Tryon Palace Commission was legislated to oversee the reconstruction into the 1950's.

Preservation efforts such as the Tryon Palace Commission reflected a national growing interest in honoring and protecting the nation's historic past. This trend continued nationally and at the state and local levels with the passage of the National Historic Preservation Act of 1966 (NHPA), creating the National Register of Historic Places among other programs recognizing the value of heritage assets to communities nationwide.

According to the National Register of Historic Places, there are 52 individually listed historic properties in New Bern as of May 2021. Additionally, the City of New Bern's two locally designated historic districts have boundaries that overlap the National Register districts. What this means is that properties listed in the local historic districts are subject to design review by the New Bern Historic Preservation Commission. Properties listed exclusively on the National Register and not locally designated, while not subject to local design review are in the case of a federal undertaking, (i.e. federal permitting, licensing, funding, ownership) subject to design review and compliance by the NC State Historic Preservation Office under Section 106 of the NHPA. This may apply to any state or federally funded mitigation projects that might have an adverse impact on individual buildings, cultural resources or sites (including viewsheds) in or adjacent to National Register listed properties or districts.

6.4.1 : Historic Preservation Commission

Established in April of 1980, the New Bern Historic Preservation Commission (HPC) was designated to aid and advise historic property owners regarding their preservation options. Vested with the mandate, "to promote, enhance, and preserve the character of the districts and to encourage preservation activities throughout the city", the commission consists of nine members which are appointed by the Board of Alderman, each for a three-year term. The HPC is a public commission that is responsible for developing and administering the historic guidelines. "A preservation commission's primary responsibility is to prevent changes in a historic district that would be incongruous (not in keeping) with the special character of the district." (Handbook for Historic Preservation Commissions in North Carolina). Their goal is to maintain the community's individual character and sense of place.

The HPC has three major preservation tasks.

1. Review and approve all exterior changes to contributing historic structures in addition to infill development in the locally designated historic districts.
2. Review and approve demolition of contributing structures and subsequent site redevelopment.
3. Monitor demolition by neglect of contributing historic structures in the locally designated historic districts and take actions to prevent demolition by neglect.

The New Bern Historic Preservation Commission (HPC) plays an important role in preparing historic properties for future flood risk. Under the local ordinance, the Commission is responsible for "ultimately deciding if an application for certificate of appropriateness (COA) is complete." *(see Cultural Heritage 6-28)*[xxv] This includes providing adequate information in the COA application about a property's flood risk. Additionally, the HPC in its review and action on a COA application, may negotiate with property owners who may propose demolition or moving of a historic structure to alleviate flood risk. To that end, individual members of the commission are responsible for "being knowledgeable of all relevant state statues and city ordinances related to preservation, historic guidelines, and HPC policies... And being familiar with any design reviews that have taken place for the application."

Outside of the COA design review process, the HPC has some responsibility toward public outreach, historic property survey and the maintenance and updating of the city's historic inventory. Increasing public awareness regarding the threat of natural disasters to historic places and cultural heritage is an important aspect of the HPC's work, particularly as it relates to educating residents and property owners about the risks associated with flooding and sea level rise on

their homes and businesses. Opportunities also exist for conducting intensive level surveys that take into consideration risk assessment factors in those vulnerable neighborhoods at greatest risk of flooding.

6.5 Economic Value of Historic Preservation

Economic studies of the value of historic preservation specifically identify the designation of historic districts, the accompanying regulatory overlays and tax incentives, the specialized and localized use of tradespeople, and the heritage traveler as contributing to stabilization and growth in local property values and local and state economies. *PlaceEconomics*, an international firm specializing in economic analysis of heritage assets, provides compelling data demonstrating that "designating a landmark or district as historic typically maintains if not boosts the value of the property, and as an economic development tool, historic preservation has proved its worth. Nearly any way the effects are measured, be they direct or indirect, historic preservation tends to yield significant benefits to the economy. *(see Cultural Heritage 6-28)*[xxvi]

In study after study conducted for historic communities, the findings are clear.

[Preservation] has proven to be an effective tool for a wide range of public goals including small business incubation, affordable housing, sustainable development, neighborhood stabilization, center city revitalization, job creation, promotion of the arts and culture, small town renewal, heritage tourism, economic development, and others. (see Cultural Heritage 6-28)[xxvii]

Understanding what is at risk to cultural heritage-based economies if actions are not taken to respond to flood risk is critical. This can be done through a variety of means including:

- calculating sales tax, property tax and property valuation;
- identifying the number of jobs and businesses created;
- valuing revenues generated through arts and cultural activities and creative class contributions;
- estimating the cost of empty buildings or less than optimized use of buildings;
- totaling the indirect impacts of sales and services; and
- valuing the perceived aesthetic of historic assets, essential for the visitor experience.

New Bern's historic districts are key contributors to the City's and County's economy. The economic vitality of New Bern's historic districts is critical to the city's future, if New Bern is to retain its competitive edge in today's challenging tourism and real estate markets. The City must work with property owners and residents to mitigate and adapt to the threat flooding poses to the historic downtown, neighborhood historic districts and the livelihoods of residents dependent on the survival of cultural heritage assets in those districts.

6.5.1 Heritage Tourism

Downtown New Bern is both a National Register and a Local Historic District. Within this historic downtown, restaurants, retail shops, museums, cultural attractions and recreational boating create an inviting destination for travelers from around the world. Heritage Tourism *(see Cultural Heritage 6-28)*[xxviii] has become a major source of revenue for the city as "heritage" visitors generate greater economic impact -- they spend more per day, stay longer, and visit more places than tourists in general. The following statistics reflect the heritage traveler in general:

- $62 more spent per day;
- 90% come with families;

- 55% spend nights away from home;
- 58% are employed;
- 58% are employed full-time;
- 64% are visiting for the first time; and,
- 84% will return to bring others or "to take more time." *(see Cultural Heritage 6-28)*[xxix]

According to the city's visitor bureau, New Bern is one of North Carolina's main tourism attractions, serving as a core destination for both day-trippers and overnight guests. The economic significance of Historic New Bern can be measured, in part, by tourism's contribution to Craven County *(see Cultural Heritage 6-28)*[xxx]:

- Total payroll generated by the tourism industry in Craven County was $31.16 million
- Travel and tourism industry directly employs more than 1,180 in Craven County
- About $3.38 million in local taxes were generated from sales and property taxes from travel-generated businesses in Craven County
- North Carolina Tourism demand increased 5.9% in 2019. Since 2009, visitor spending has grown at an annualized rate of 5.4% per year. *(see Cultural Heritage 6-29)*[xxxi]

6.6 Considering Cultural Resources in Hazard Mitigation Planning

The New Bern Resilience and Hazard Mitigation planning process for the reduction of risk to historic resources follows the approach recommended by the Federal Emergency Management Agency's (FEMA's) "how-to guide" for state and local government mitigation planning, entitled Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning (FEMA 386-6). As referenced in the publication, "It is more cost-effective to assess potential effects from a disaster and to implement preventative measures than to wait for a disaster to strike and then assess actual impacts."

FEMA defines hazard mitigation planning as "the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and manmade hazards." Thus, planning for reducing loss to historic properties is whey using FEMA's framework for incorporating cultural resources in hazard mitigation is a critical a starting point for mitigation planning in New Bern. The measures used in New Bern -- community members engaged, property vulnerability assessed, costs and losses estimated, properties prioritized, and adaptation strategies evaluated -- establishes a practical, replicable approach to hazard mitigation planning for other North Carolina historic communities. The vision, goals and objectives with project-specific actions are crafted to support the plan's implementation over the coming five-year period.

6.6.1 : Identify the Hazards

In New Bern, there are a number of ways water can inundate the city. Rainfall induced flooding from river overflow can overwhelm the storm water system. Storm surge occurs when flooding from an abnormal rise in tide is generated by a severe storm. Tidal flooding typical occurs along the coastline from a high tide not associated with a tropical storm. Finally, Sea Level Rise refers to the rise over time of the local mean sea level which manifests in increased frequency and severity of high tide flooding.

FEMA characterizes flood zones by the terms '100-year flood' or '1-percent annual exceedance probability flood' referring to a magnitude of flooding that has a greater than one percent chance of occurring in a given year. "Put differently, a 100-year flood has a 26% chance of occurring over the course of 30 years or 39.5% chance over the course of 50 years." *(see Cultural Heritage 6-29)*[xxxii]

During early Planning Team meetings, the primary hazards identified as immediately relevant to New Bern's cultural heritage included: rainfall induced flooding, coastal storms, and general flooding (i.e. tidal flooding, riverine overflow, and sea level rise) based on current and future conditions. Thus, with the relevant flooding hazards for the historic districts determined the preservation team used the NCDNCR and the FEMA vulnerability assessment protocols to conduct a review of the historic resource inventory for the 1 percent annual chance and .02 percent annual chance and immediately surrounding areas.

6.6.1.1 : Extreme Storm Events

"New Bern is really now a spectacle, her streets full [of] the tops of houses, timbers, shingles, dry goods, barrels and hogsheads, empty most of them, rubbish,… in so much that you can hardly pass along; a few days ago so flourishing and the inhabitants never knew so violent a storm."
Governor William Tryon on the 1769 hurricane in a letter to the Earl of Hillsborough

"The storm did not discriminate. It hit everybody. The low income, the middle income – it's like, bam. It's really something to see the devastation in this town."
Naderia Tucker, Trent Court, New Bern on the aftermath of Hurricane Florence, 2018

New Bern has experienced extreme storm events for centuries, including major hurricanes documented as early as 1769. During a hurricane in 1913, the Neuse River reached nine feet above normal high water. Since the turn of the 20th century New Bern has experienced no less than 20 hurricanes, with increasing regularity in the last 25 years.

"One thing becomes also very clear. The ten feet (10') flood line was reached and surpassed in 1955," as stated in North Carolina's Hurricane History by Jay Barnes about the impacts of Hurricane Ione which caused the Neuse River to rise ten- and one-half feet above normal high water.

Hurricane Bertha, which struck in 1996 was referenced by Neuse riverfront homeowner Elizabeth Civils as a powerful storm. Ms. Civils said she couldn't hear well, but could feel the powers of the hurricane. "The house did all right," Civils told the Raleigh News and Observer, "until this - this thing- came up in the front yard and started banging on the house. It made the whole house shake; I could feel it." What came banging at her door was a thirty-foot Catalina sailboat that had been moored behind the nearby Comfort Suites Hotel. The boat, along with a large portion of a floating concrete dock, came crashing over Civils' seawall, knocked over a large pecan tree, and bashed into her home.

The Tryon Palace Commission noted in its meeting minutes hurricane impacts beginning in 1995 with hurricane Felix which "provided an opportunity to test the site's hurricane readiness." Hurricane Fran in 1996 caused damage to the Palace Main building, the Commission House, and the Hay House. Both Hurricanes Bertha and Fran impacted attendance as reflected in the Director's reports in 1997. This was again the case in 1999 when Hurricanes Dennis I and II, Floyd and Irene caused significant damage to the future site of the History Education and Visitor Center and

decimated attendance at the Palace and Gardens. In 2011 Hurricane Irene's wind-driven rain caused damage to the site as well as the interiors of some of the properties including the Jones House and the New Bern Academy.

And then there was Florence.

"I lived on Queen Street at the time of Florence, a block and a half up from where the floodwaters stopped. I've since moved to Riverside, about a block in from where it flooded during Florence. The Riverside neighborhood was badly flooded and many of the homes nearest the river have since been demolished or raised on pilings or higher foundations. And of course, the flood zone maps changed and one of the issues I've heard from neighbors is the new cost in insurance; it was a determining factor for us when we were looking at properties on the market in Riverside."

6.6.2 : Assess Historic Property and Cultural Resource Inventory

While the necessary human, technical and financial resources were being gathered, the public engaged and the hazards identified and profiled, the process of assessing historic resources *(see Cultural Heritage 6-29)*[xxxiii] within the project study area for their cultural heritage value and vulnerability began through both windshield surveys and a guided tour with New Bern's preservation planner. We learned more about the individual property's historic, cultural or architectural significance, the conditions that make each building vulnerable to flooding and the subsequent damage to the materials and structural system that could result from a major inundation event. As well we heard about the criteria considered by the HPC in the design review of historic rehabilitation and new construction projects initiated post-Florence. Finally, through a series of public meetings we learned what places matter to New Bern residents and their values for the city' cultural heritage.

6.6.3 : Determining Community Value for Cultural Heritage

Every successful local planning effort begins with collaboration, data collection and community engagement. Clearly, cultural resource identification and vulnerability assessment work must be advised by those deeply involved in heritage. In New Bern the project followed that path involving the Community Development Division's staff and the Historic Preservation Commission along with community members.

Regarding community concern for cultural heritage assets, over one-third of participants in public meetings and online surveys identified themselves as residents of historic districts, while nearly 20% answered that they work in historic areas. When asked what assets they perceived as most susceptible to flood hazards, after the local economy and people, community members referenced cultural and historic resources. Among their greatest concerns about the impacts of flooding on New Bern is the impact on the waterfront, the historic downtown, historic neighborhoods and culturally significant resources as well as vulnerable African-American neighborhoods and individual properties.

Additionally, the North Carolina Department of Natural and Cultural Resources provided valuable information on resources impacted by Florence as well as a data set of properties listed or determined eligible for listing on the National Register.

The flood hazard area of New Bern contains many buildings and structures, historic and non-historic, that along with their environmental setting, historic use and cultural importance, add to the physical and historic context of the city. As experienced by visitors and residents, these assets define New Bern's character and identity. It is the

combination of streetscape and water views, building scale, rhythm, and detail and the physical layout of the city that uniquely characterizes New Bern.

In determining the community value for New Bern's cultural heritage, specifically its historic buildings and sites, the preservation team has applied the associated criteria of historic significance, public sentiment, economic importance, and degree of integrity to properties within the flood risk area, and when appropriate, outside the area of risk for their cultural heritage value. The FEMA-required ranking for purposes of prioritization for hazard mitigation and adaptation was conducted through a combination of professional evaluation and community input via the online surveys, public meetings, and discussions held with city staff, commission members and community residents. Community members were asked to identify buildings and streetscapes which characterize New Bern.

6.6.3.1 Places of Community Identity: Sacred Structures

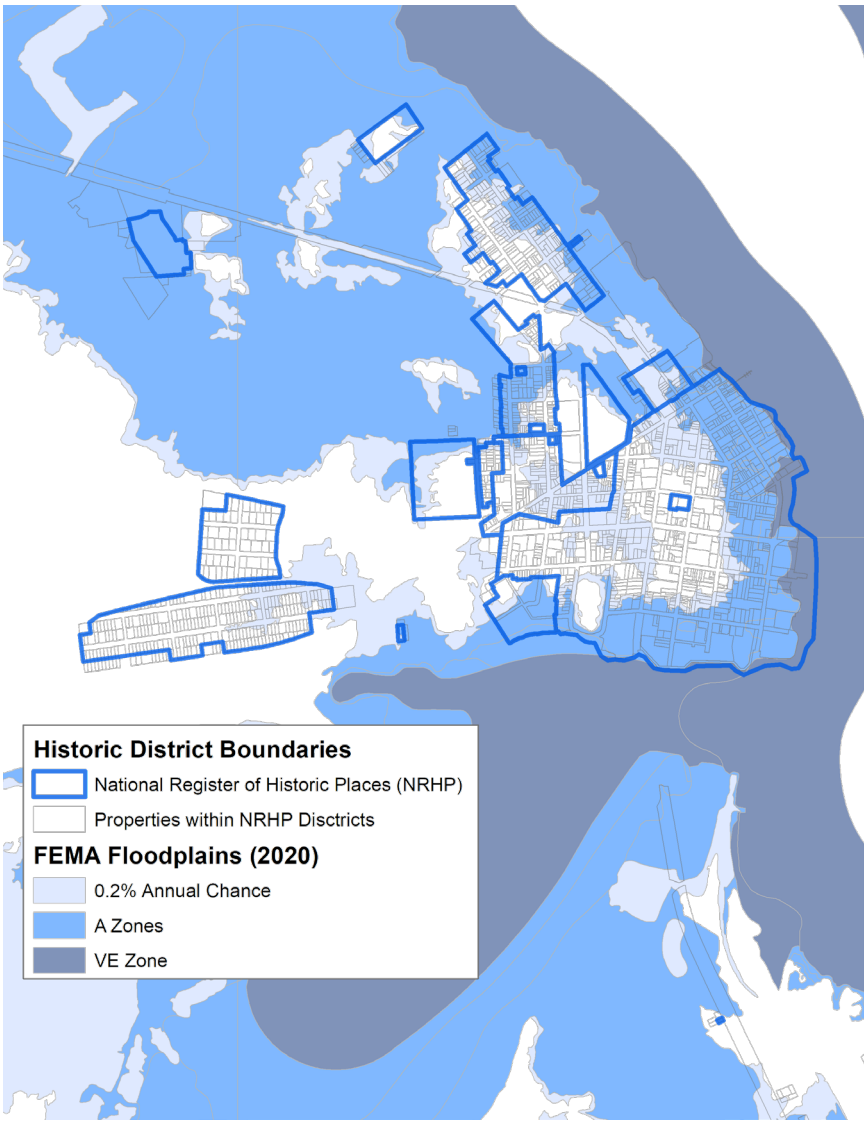
Additionally, while conducting site assessments, the preservation team identified a number of places important not because of their historic architectural significance, but because they serve as "sacred structures" in the community. Gathering places not formally recognized as highly significant for their history or architecture, yet are at the heart of what residents can recognize as home. These places in New Bern included the location for the farmer's market, the numerous sidewalk cafes, the downtown hardware store, the riverwalk, the churchyards, and the Bear Town Bears. These places, buildings and objects create connections between the lives of people and the places they value on a day-to-day basis, whether it's just to meet for coffee, walk the dog, or chat in the aisles.

These "sacred structures" are incorporated into the prioritization process as places with great public sentiment, if not great historic significance. These are places that need to be protected in order to ensure that "normalcy" is preserved in times of emergency. They are symbols of the community's identity, its essence and its resilience.

While none of these "sacred structures" were specifically called out by residents in surveys as having a high priority to protect, there is sometimes a disconnect between community-stated preferences and actual practices. By conducting our site assessment and mapping community behavior, we "ground truthed" the "public sentiment" aspect identified by FEMA as an important factor in determining community value for heritage assets.

A more comprehensive effort could be made citywide to document these gathering places and support future planning efforts to determine which places can endure and which need sensitive changes to ensure their future in the case of disaster.

Figure 6.6. Study Area Map with historic district outlines and properties highlighted in historic district.



Source: NEMAC+Fernleaf

6.7 Planning for Climate Impacts on Cultural Resources

In researching planning tools that address flooding and cultural resource protection it is clear that FEMA has developed the most comprehensive standardized guidance to address the impact of flooding hazards and other natural disasters on cultural resources [xxxiv] taking into consideration the Secretary of the Interior's Standards for Rehabilitation *(see Cultural Heritage 6-29)*[xxxv] and the required compliance review processes established under the National Historic Preservation Act. *(see Cultural Heritage 6-29)*[xxxvi]

While FEMA's guidance is critical in Hazard Mitigation planning, the State of North Carolina, with its recently issued *North Carolina Climate Risk Assessment and Resiliency Plan (State Resiliency Plan),* offers some specific guidance for the City of New Bern to consider in taking action to reduce climate risk and improve recovery for resources associated with its cultural heritage.

Consistency with State priorities in climate resilience planning for cultural resources is critical to successful funding for implementation of priority actions in the New Bern Resiliency and Hazard Mitigation Plan. While strategies for greater climate resilience are included specifically for cultural resources, it is important to note that concerns for commerce and business along with climate justice are also relevant to the adoption of strategies for protecting New Bern's vulnerable cultural heritage. The following represents key observations, impacts and strategies offered at the state level that can be modeled in New Bern.

"Cultural resources such as local historic sites and museums are irreplaceable, making them inherently sensitive to sea level rise and the increasing frequency and severity of heavy precipitation and flooding." Strategies called out by the State include building resilience into assets owned and managed by government, at the state and local level including museums, historic sites and parks. In addition, DNCR recognizes the importance of providing greater technical assistance to locally-owned cultural resources. The report highlights the fact that wind and water damage from Hurricane Florence resulted in the loss of historic building fabric with large piles of debris containing elements from historic buildings. DNCR staff recounted seeing discarded mantelpieces, flooring, and wainscoting and intervened in a number of occasions to salvage the materials and provide technical assistance with drying techniques.

New Bernis known not only for its historic architecture, but also its historic downtown which caters to local residents and a heritage-based tourism industry that brings economic stability and cultural vibrancy to the city. To that end, other strategies modeled by the state include the need to sustain business operations, "getting people back to work and transitioning to a more resilient economy." Increasing the resilience of infrastructure is essential to small business retention but planning for business continuity is also crucial. DNCR also supports commerce in local historic districts and can serve as a resource for the North Carolina Main Street and Rural Planning program in efforts to educate and train New Bern's Main Street business owners on how to be better prepared for flooding disasters.

Lastly, as the City found with Hurricane Florence, there are culturally significant, if undocumented, portions of New Bern with strong roots in New Bern's past and current community development. As reference of New Bern in the State Resilience Plan, "it is 'virtually certain' that rising sea level and increasing intensity of coastal storms will drive increases in storm surge flooding... impacting high-value, ocean-facing properties… as well as underserved communities along the entire North Carolina coast… communities like New Bern."

Ensuring that the "whole community's" heritage is embraced and prepared for future climate impacts requires incorporating climate justice into all aspects of resilience planning and adaptation. Thus, again, reflective of policies identified in the State Resilience Plan, to address equity and inclusion, it is essential to partner with those institutions already involved in this work such as the University of North Carolina. By partnering with academic institutions, the City can address gaps in research on climate resilience, better assess the degree of disaster vulnerability with specific communities in New Bern have in the instance of disasters and take advantage of state resources available to do effective and equitable public engagement with socially and economically diverse neighborhoods. The City can not only use state support to increase outreach efforts in New Bern's underserved communities, but also funding through the National Park Service and the National Trust for Historic Preservation specific for surveying and conducting public outreach in African-American neighborhoods.

Protecting New Bern's cultural assets from climate-related disasters is an imperative. "Indeed, at risk is the continued survival and vitality of North Carolina's historic communities... 'Water where it doesn't belong' is among the gravest climate-related threats to cultural resources throughout North Carolina," according to the authors of the State Resilience Plan.

6.7.1 : Establish Preservation Priorities

Critical to the preservation prioritization process was the development of a GIS database and associated risk mapping. As referenced in this plan, the preservation team prioritized a number of properties or property types in the study area as having high **community value**. All of these properties are considered contributing to the National Register and local historic districts. It's important to note that with a five-year planning frame typically associated with hazard mitigation plans, it is likely impossible to implement appropriate structural or non-structural adaptation actions for the ultimate protection of those prioritized properties within the next five-years. What matters is that steps are taken within the planning period to reduce risk to those properties through any of the five FEMA referenced adaptation alternatives.

6.7.1.1 : Preservation Hierarchy and Highest Risk

The preservation team utilized a survey, community input from public meetings and professional assessments for historic significance of contributing properties in the study area to determine the preservation hierarchy, which properties rated highest in historic significance, public sentiment, economic importance and total community value. *(see Cultural Heritage 6-29)*[xxxvii]

There are a number of categories of building types and uses that rated high with the community. While most of these properties were prioritized based on their cultural heritage value, it's important to note that some properties within the designated historic districts were included because of their importance to the community's societal, economic, civic and spiritual values, be they historically contributing or non-contributing. The following were prioritized using a community values assessment process for protection and post-event recovery. To clarify, it is properties with high risk.

Historic districts and property types prioritized for their value to the city's tourism economy were referenced by community members as critical to the protecting the city's economy, it's accessibility and its identity. As survey and interview comments reflect:

- *Historic New Bern in general, businesses and residences are such a draw for the area and have an incredible economic impact upon the community.*
- *Historic churches… and places of commerce that are essential to our tourist industry.*
- *I love this community and feel that the Historic District is most important to the future of our City/County.*

In addition to the public sentiments offered toward protection of places that matter to New Bern residents, the preservation team assessed the historic significance of individual assets and property types to adopt the following properties for development of adaptation strategies:

- *Downtown New Bern Historic District (properties within the 1 % annual chance area)*
- *Riverside* Historic District (properties within the 1% annual chance area)
- *Religious* Buildings (properties within the 1% annual chance area)
- *Colonial-era* Buildings (properties within the 1 – .02% annual chance area)

Historically contributing publicly-owned properties prioritized for their cultural, societal, civic and economic value to the city were referenced by community members as critical to the protecting the city's economy, it's accessibility and its identity. The prioritized list in order of importance includes:

- New Bern City Hall

- Tryon Palace
- Union Point Park
- Craven County Courthouse
- New Bern Craven County Library
- J.T. Barber School

Non-contributing properties prioritized for their value to the city's tourism economy were referenced by community members as critical to the protecting the city's economy, it's accessibility and its identity. Survey and interview comments reflect this public sentiment value:

- *Roads [and bridges] provide access to grocery and hardware stores hospitals and doctor's offices.*
- *Tourism is a major contributor to the economy of New Bern.*
- *Focus on buildings and businesses that drive the tourism economy. At the end of the day, it's this cashflow and the Trent River bridge that keeps downtown Historic New Bern alive.*
- *New Bern could easily do more preventive planning and design for Union Point.*

Thus, the following properties are identified as critical in mitigation strategy development in support of protecting cultural heritage in New Bern.

- Trent River Bridge
- New Bern Riverfront Convention Center
- North Carolina History Center
- Union Point Park & Riverwalk

Figure 6.6. Union Point Park



Source: visitnewbern.com

Historically contributing properties in vulnerable underserved neighborhoods prioritized for their cultural, societal, and civic value to the city were referenced by community members as critical to the protecting the city's identity and workforce. Survey and interview comments reflect this public sentiment value:

- *Duffyfield is a low-lying district that I consider historic…*
- *Focus on areas primarily inhabited by our most vulnerable who can least afford recovery...*
- *Help property owners raise out of the floodplain, especially in predominantly black neighborhoods.*
- *History is valuable, but so are the lower income neighborhoods.*

Sacred Structures (ie. places observed as significant for social and civic interaction) identified by the preservation team for prioritization for their societal value include:

- Mitchell's Hardware
- Bear Town Bears
- Sidewalk cafes
- Churchyards
- Franklin's Antique Mall
- Farmer's Market (421 S. Front Street)

Figure 6.7. Mitchell's Hardware & Bear Town Bear, taken during site visit December 2020





Source: Photos by Lisa Craig

6.7.1.2 : Identify Alternative Mitigation Actions

FEMA guidance specifically identifies five categories of mitigation action. These include: **Prevention, Property and Resource Protection, Structural Diversions, Public Education and Awareness and Natural Resource Protection for Historic Landscape Features and Archeological Sites.** All of these actions allow for the adaptation of historic properties and cultural resources to flooding hazards. The adaptation actions recommended for New Bern's cultural heritage assets focus on public education and awareness, property and resource protection and prevention. More about each of these alternatives follows:

Public Education and Awareness is critical to the implementation of mitigation and adaptation alternatives for New Bern's waterfront, downtown and neighborhoods. A public education campaign incorporating ongoing public outreach through online and in-person communications platforms (disaster readiness brochures, informational kiosks, disaster preparedness workshops, the New Bern Resilience webpage, Instagram and twitter postings, informational tables at public celebrations), should accompany other mitigation actions. Even small outreach efforts, such as sharing with property owners ways to protect and recover family photos or other personal collections is a step towards creating greater awareness of the need to protect the community's cultural heritage.

Prevention involves reduction of loss through administrative actions in the land development process including performance standards and regulations. This directly relates to how historic buildings are rehabilitated post-disaster, but also to how they are adapted to reduce flooding risk pre-disaster. It also applies to new construction in historic areas as wells as site improvements that impact the environmental setting of historic areas, including the downtown and neighborhood historic districts. Specific actions include planning policies and zoning regulations, building codes, capital improvement programs, open space preservation and storm water management regulations. Whatever policies or programs are initiated to support the reduction of flood risk, the impact on cultural heritage assets must be considered for potential changes to the character-defining features of buildings, the historic viewsheds of waterfront areas, and the traditional spatial relationships of neighborhoods.

Property and Resource Protection provides the greatest opportunity for individual action to prepare historic properties and cultural resources for reduced flood risk. It begins with basic property improvements completed by individual property owners including preventive maintenance, floodproofing, elevating and retrofitting utility systems, and anchoring furniture or other irreplaceable items of value. But it also includes more aggressive approaches to property protection such as retrofitting through replacement of structural systems, insertion of flood

control devices, alteration of historic landscapes, and more intrusive changes including building elevation, relocation and even demolition.

Elevation, the most commonly used strategy for preparing properties for future flooding, led the National Park Service to develop the most recent guidance on flooding adaptation for historic properties. The *Secretary of the Interior's Standards for Rehabilitation & Guidelines on Flood Adaptation for Rehabilitating Historic Buildings (Design Guidelines)*, is intended to "provide information about how to adapt historic buildings to be more resilient to flood risk" *(see Cultural Heritage 6-29)*[xxxviii] consistent with the established SOI Standards for Rehabilitation used by local, state and federal agencies involved in design review of designated historic properties.

These Design Guidelines address specific treatment approaches for flood adaptation of historic properties and include the following:

- Planning and Assessment for Flood Risk Reduction
- Temporary Protective Measures
- Site and Landscape Adaptations
- Protect Utilities
- Dry Floodproofing
- Wet Floodproofing
- Fill the Basement
- Elevate on a New Foundation
- Elevate the Interior Structure
- Abandon the Lowest Floor
- Move the Historic Building

Along with these more traditional approaches to reduce flood risk, additional concepts are explored such as hydraulic lift and anchoring systems, buoyant foundations and large-scale site protection measures such as mechanized sea walls and nature-based soft-engineered flood protection methods. Whichever adaptation alternative is selected for historic properties at risk individually or at the neighborhood scale, the efficacy of the action must next be evaluated through one or more of the three FEMA recommended alternative methods for historic properties and cultural resources. These include: 1) preservation hierarchy and areas of highest risk; 2) STAPLEE criteria; and 3) benefit-cost analysis.

Because the property and resource protection adaptation alternatives for individual historic properties at riskare yet to be fully evaluated using the STAPLEE or benefit-cost analysis, the preservation team has focused on recommendations applicable to all those properties and neighborhoods identified as having high priority for action. The adaptation alternatives selected at the direction of community members participating in public meetings are in the categories of public education and awareness and prevention.

That stated, structural diversions and property and resource protection measures are being recommended via this planning document. Those actions may have an effect on the historic significance on properties listed or determined eligible for listing on the National Register of Historic Places. Thus, the City will need to consider the applicable restrictions not only under local law (Historic District Ordinance – Article XXI), but also under state and federal laws

and regulations. If state or federal funding, permitting or licensing are required, the mitigation or adaptation undertaking will be reviewed by NCDNCR State Historic Preservation Office for compliance with State law (G.S. 121-12) and Federal law (National Historic Preservation Act - Section 106).

For a complete list of the recommended resiliency actions, please reference Section 8, Resilience Strategy.

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[i] Resilience and Hazard Mitigation PlanUpdate – Survey #1
[ii] "What is Cultural Heritage" – KhanAcademy
[iii] HPC p. 9
[iv] HPC p. 9
[v] https://www.newbernnc.gov/document_center/Development%20Services/historic%20preservation/2021/Res%20Amend%20Historic%20District%20Guidelines.pdf pg. 1-3
[vi] https://www.newbernnc.gov/document_center/Development%20Services/historic%20preservation/2021/Res%20Amend%20Historic%20District%20Guidelines.pdf pg. 15
[vii] *New Bern History*, New Bern Visitor's Guide. https://www.newbern.com/new-bern-history.html
[viii] https://files.nc.gov/ncdcr/nr/CV0028.pdf page 8
[ix] https://files.nc.gov/ncdcr/nr/CV0029.pdf
[x] *City Hall,* New Bern Visitor's Guide. https://www.newbern.com/city-hall.html
[xi] https://www.newbernsj.com/20150309/tryon-palace-reports-25-percent-growth-in-visitation/303099861
[xii] https://www.tryonpalace.org/new-bern-academy-museum
[xiii] U.S. Post Office and Courthouse, New Bern, NC, General Services Administration
[xiv] National Register of Historic Places, "Masonic Temple and Theater" 1971. https://files.nc.gov/ncdcr/nr/CV0026.pdf
[xv] Masonic Hall and Theater, National Register of Historic Places, 1971.
[xvi] "First Presbyterian Churchand Courtyard", National Register of Historic Places Nomination Form, 1971. https://files.nc.gov/ncdcr/nr/CV0017.pdf
[xvii] https://files.nc.gov/ncdcr/nr/CV0031.pdf
[xviii] https://files.nc.gov/ncdcr/nr/CV0031.pdf page 4
[xix] Harvey Mansion, National Register of Historic Places – Nomination Form, 1971
[xx] New Bern African-AmericanHeritage Tour, CravenCounty Convention and Visitor Center
[xxi] Ibid. p.18
[xxii] https://visitnewbern.com/wp-content/uploads/2016/12/african_american_tour.pdf
[xxiii] http://kellenbergerroom.blogspot.com/2019/06/king-solomons-lodge-no-1.html
[xxiv] Ibid
[xxv] New Bern Historic Preservation ordinance [citation]
[xxvi] Mason, Randall. *Economics and Historic Preservation: A Guide and Review of the Literature*, The Brookings Institution Metropolitan Policy Program. 2005
[xxvii] Measuring Economic Impacts of Historic Preservation – A Report to the Advisory Council on Historic Preservation – Nov. 2011 - Donovan Rypkema and Caroline Cheong, Place Economics and Randall Mason, PhD University of Pennsylvania School of Design, Historic Preservation Program
[xxviii] The National Trust for Historic Preservation defines Heritage Tourismas: "Traveling to experience the places, artifacts and activity that authentically represent the stories and people of the past. Heritage Tourism can include cultural, historic and natural resources."
[xxix] 'The Economics of Historic Preservation", D. Rypkema.(Note: It should be noted that "Heritage or Cultural Tourism" has become an international growth industry, and a significant and growing part of the U.S. travel experience. William Norman, President and CEO of the Travel Industry Association of America.)
[xxx] "Tourist to Craven County spent $155 million in 2019." The Sun Journal; September 17, 2020. https://www.newbernsj.com/story/news/local/2020/09/17/tourist-spent-money-craven-county-2019-tourism-tda-bed-tax-heads-in-beds/3486205001/

[xxxi] *Economic Impact of Visitors in North Carolina 2019.* https://partners.visitnc.com/contents/sdownload/72106/file/NC-TSA-2019.pdf

[xxxii] Threat: Floodplain Inundation, Preliminary Assessment, New Bern, Accel Adapt.

[xxxiii] For purposes of this document the term "historic resource" or "historic property" refers to the definition usedin the National Register of Historic Places of "any prehistoric or historic district, site, building, structure, or object significant in American history, architecture, engineering, archeology, and culture."

[xxxiv] FEMA, Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning, FEMA 386-6 / May 2005

[xxxv] Department of the Interior, National Park Service, Secretary of the Interior's Standards for Rehabilitation, https://www.nps.gov/tps/standards/rehabilitation/rehab/stand.htm

[xxxvi] National Historic Preservation Act of 1966 as amendedthrough 2006, http://www.achp.gov/docs/nhpa%202008-final.pdf

[xxxvii] See FEMA 386-6 Worksheet #4 "Determine Community Value for Historic Property and Cultural Resource Assets"

[xxxviii] Guidelines on Flood Adaptationfor Rehabilitating Historic Buildings, pg. 2

7.0 Vulnerability Assessment

This section discusses the vulnerability assessment of the Plan. It consists of the following nine subsections:

7.1 Overview of Assessment Framework
7.2 Study Area
7.3 Community Assets
7.4 Flood Hazards and Threats Assessed
7.5 Components of Vulnerability and Risk Assessment Methodology
7.6 Vulnerability and Risk Assessment Results
7.7 Floodplain Inundation
7.8 Storm Surge
7.9 Tidal Flooding and Sea Level Rise

7.1 Overview of Assessment Framework

This assessment uses a risk analysis framework based on NOAA's U.S. Climate Resilience Toolkit and its Steps to Resilience. In particular, this assessment uses Steps 1-2 to "Explore climate threats" and "Assess vulnerability and risk" along with the key concepts within those steps. The U.S. Climate Resilience Toolkit defines exposure as "the presence of people, assets, and ecosystems in places where they could be adversely affected by hazards." For purposes of this assessment, "exposure" specifically means that a community asset (e.g., a structure, parcel, or roadway) is spatially coincident with a specific hazard (e.g., flooding). For example, a warehouse located within the 500-year floodplain is considered to be "exposed."

Conceptually, the hazards to which assets are exposed are influenced by both climate and non-climate stressors (see Figure 7.1). For purposes of this assessment, these hazards are presented using pre-existing hazard or threat information and models. The "impact" these hazards may have on community assets is evaluated through an assessment of vulnerability and risk.

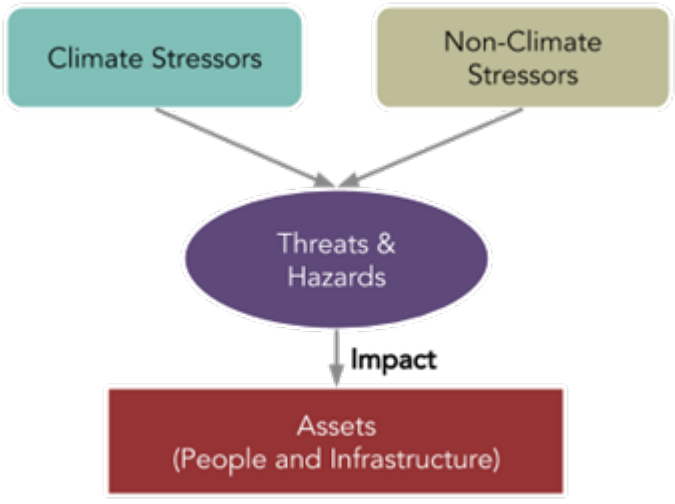


Figure 7.1. Conceptual model showing the relationships between stressors, threats and hazards, and assets affected

The assessment was conducted in four stages:
1. Asset and threat identification, data collection and normalization;
2. Spatial relation analysis of individual assets to each hazard layer;
3. Application of asset-scale vulnerability and risk rulesets (described further in subsequent sections); and
4. Aggregation of vulnerable and at-risk assets to census block groups.

Source: NEMAC+FernLeaf

7.2 Study Area

The map in Figure 7.2 shows the extent of the study area for the vulnerability and risk assessment (black border) as well as the City limits (purple border). The study area extent was determined using the census block group areas that include, and in some cases extend beyond, the City limit boundary. Census block group areas are also used for assessment summaries and for neighborhood-level insights.

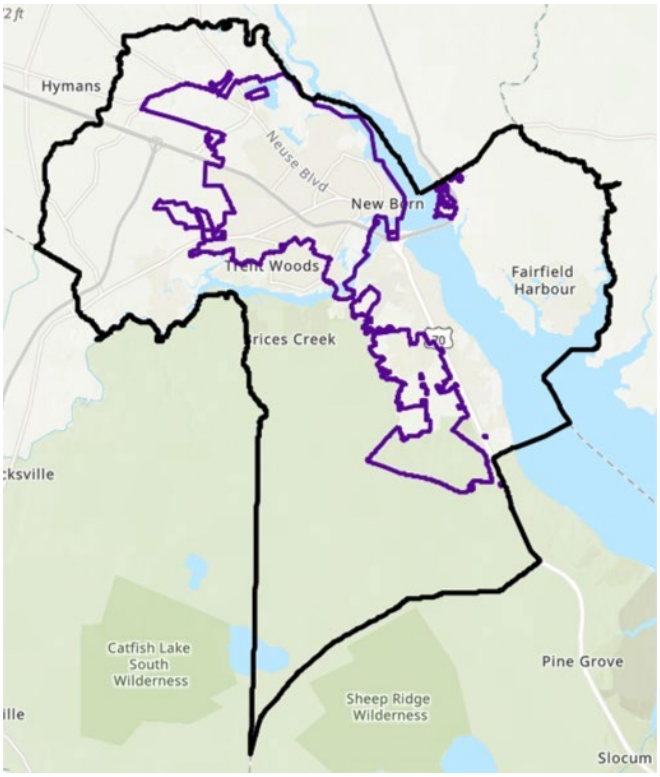


Figure 7.2. Study area (black border) used for the assessment and the New Bern city limits (purple border)

Source: NEMAC+FernLeaf

7.3 Community Assets

Assets specific to the city were identified in order to represent and assess the vulnerability and risk to the community and to the City of New Bern. Table 7.1 shows the list of asset themes and categories that were used as the basis of the flood assessment and for the summary metrics of vulnerability and risk. Most assets were represented using county property parcel datasets for Craven County, but other State of North Carolina data resources were also used. Table 7.2 shows the data sources used for the different types of assets in the assessment.

Table 7.1. Asset themes and categories assessed

Property and Public Services
Commercial & Industrial Property Includes non-residential properties that serve businesses and organizations. They also typically support commerce, jobs, and tourism.
Residential Property Includes all single-family residences, multiple-family residences, low-income housing, apartments, manufactured houses, and mobile home parks.
Government-Owned Property Includes all federally-, state-, county-, and city-owned properties, except for those associated with parks and recreation and critical facilities.
Critical Facilities Includes fire and police stations that aid in emergency response, some utilities, as well as other critical facilities not included in another category.
Parks & Cultural Property Includes parks and recreational facilities and buildings or properties that are cultural landmarks or other historic resources.
Historic Includes parks and recreational facilities and buildings or properties that are cultural landmarks or other historic resources.
Roads & Mobility
Major Roads Includes all major and secondary roads and considers the critical access they provide for emergency services. Road connectivity and accessibility by fire/emergency services was also considered.
Minor Roads Includes all residential and tertiary roads. Road connectivity and accessibility by fire/emergency services was also considered.
Economic Factors
Annual Sales Volume Total reported annual sales volume for individual companies and businesses.
Jobs/Employees Total number of jobs or employees reported for individual companies and businesses.
People & Socio-economics
Total Population 15 socio-economic and demographic metrics are available to examine elements of social vulnerability and characteristics of populations and households at the census tract and block group level.
Public Housing Also part of Residential and/or Government-Owned Property, includes all identified public housing.
SNAP Food Retailers Also part of Commercial & Industrial Property, includes all SNAP retailers identified by USDA-FNS.

Source: NEMAC+FernLeaf

Table 7.2. Asset types and data sources

Asset Type	Source	Data format
Property parcels	Craven County GIS (accessed August 2020)	Vector features
Building footprints	NC Emergency Management and State of North Carolina (2017, 2020)	Vector features
Historic properties and cultural landmarks	NC Historic Preservation Office	Vector features
Road centerlines	Open Street Map (accessed August 2020)	Linear Features
Socio-economic Metrics	U.S Census, American Community Survey (ACS) 5-year estimates (2013-2018)	Vector features
Social Vulnerability Index	Center for Disease Control (CDC)'s Social Vulnerability Index (2018)	Vector features
Business Data (Annual Sales Volume and Jobs/Employees)	Esri's Business Analyst and Infogroup	Vector features

Source: NEMAC+FernLeaf

7.4 Flood Hazards and Threats Assessed

Table 7.3 shows the flooding threats and sources of information for each used in this assessment. Each threat is described in more detail in the subsequent assessment sections.

Table 7.3. Threats and source of information used in the assessment

Threat	Source	Data format
Floodplain Inundation (100-year and 500-year)	FEMA Digital Flood Insurance Rate Map (DFIRM) (Effective June 2020)	Vector
Storm Surge (Category 1–2)	National Storm Surge Hazard Maps (NOAA)	Raster
Storm Surge (Category 3–5)	National Storm Surge Hazard Maps (NOAA)	Raster
Tidal Flooding (Current)	High Tide Flooding (NOAA Office for Coastal Management)	Raster
Sea Level Rise and Future Tidal Flooding (3 feet + Mean Higher High Water (MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)	Raster
Sea Level Rise and Future Tidal Flooding (5 feet + MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)	Raster

Source: NEMAC+FernLeaf

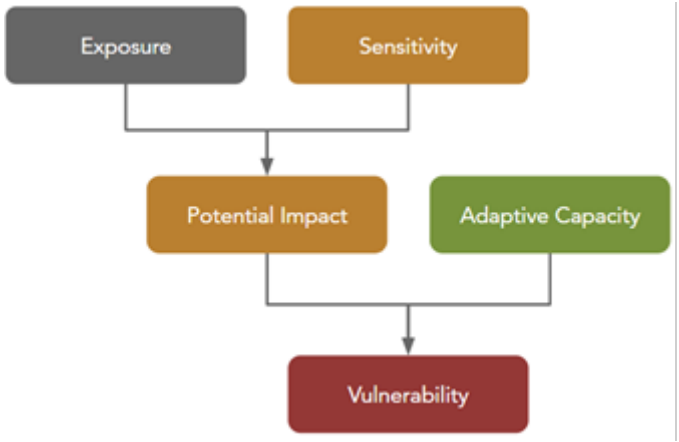
7.5 Components of Vulnerability and Risk Assessment Methodology

The vulnerability and risk assessment framework used multi-criteria decision analysis as well as spatial analysis in a data-driven pipeline. *(see Vulnerability Assessment 7-30)*[i] This involved developing criteria, or rules, that were used to assign to assets specific ordinal classifications of high, medium, and low for each of the variables described below. The classifications were then combined using a matrix approach to determine levels of vulnerability, risk, and combined vulnerability and risk. *(see Vulnerability Assessment 7-30)*[ii]

7.5.1 : Vulnerability

Vulnerability describes the susceptibility of exposed assets based on the two core concepts described above: (1) potential impact—the degree to which an asset is affected; and (2) adaptive capacity—the ability the asset has to cope with a potential impact (see Figure 7.3). Based on this framework, the most vulnerable assets are those with high potential impact and low adaptive capacity.

Figure 7.3. Illustration of the components for assessing vulnerability



Source: NEMAC+FernLeaf

7.5.1.1 Potential Impact

Potential impact is the degree to which an exposed asset (an asset that is in harm's way) is potentially negatively affected by a climate-related threat. The level at which an exposed asset is negatively affected is also referred to as the asset's sensitivity. Assets that are not exposed have no potential impact; thus, they are not vulnerable, or at-risk. Exposed assets were evaluated for levels of sensitivity, which were used in determining levels of potential impact.

Factors used to determine levels of potential impact were based on the asset's characteristics or on the level of impact due to service loss if the asset were to be affected. *(see Vulnerability Assessment 7-30)*[iii] For example, a property with a building structure in a flood hazard area has a higher potential impact than does a property that does not have a building in a flood hazard area.

Table 7.4 shows the assets identified as being highly sensitive with greater potential impact for the purposes of this assessment. These potential impact classifications were used for all flood-related assessments.

Table 7.4. Description of high potential impactassets for differentasset categories

Asset Category	High Potential Impact Assets
Critical Facilities	Welfare, Major health/medical facilities, Nursing home, Public safety (including law enforcement), Schools
Commercial & Industrial	Multi-business properties
Parks & Cultural	Cultural properties (religious)
Residential	Multi-residential (multi-family) properties, Mobile homes, Group homes, Retirement homes, Public housing properties
Historic	National Register listed properties, Study listed properties, properties determined eligible for National Register listing

Source: NEMAC+FernLeaf

7.5.1.2 Adaptive Capacity

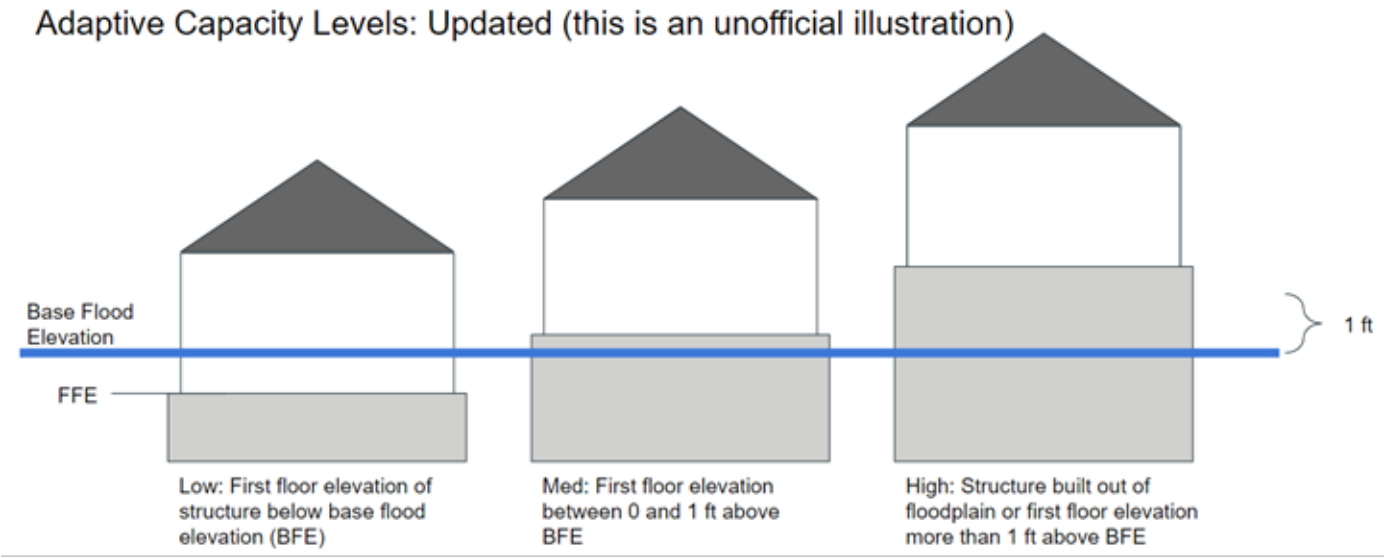
Adaptive capacity considers how an asset is able to cope with a threat event or impact. An asset with adaptive capacity is able to withstand an impact with minimal disruption or loss. Measures of adaptive capacity can include both physical and social elements, conditions, and designs in place that help an asset absorb an impact. Assets exposed to flooding were evaluated for indicators of adaptive capacity and classified accordingly.

For example, a commercial building that has flood-proofed its foundation and raised its ground floor above flood levels has more adaptive capacity than a commercial building that has not done so. As another example, a park with facilities designed to withstand flood waters without damaging its infrastructure has adaptive capacity.

For this assessment, finished floor elevations (FFEs) were made available through the State of North Carolina building footprints dataset (Light Detection and Ranging LiDAR-derived). These elevations were used in comparison with FEMA's base flood elevations (BFEs) that are provided for the 100-year (1-percent-annual-chance flood) floodplain extent. For the areas outside these areas, within the 500-year (0.2-percent-annual-chance flood) the nearest adjacent 100-year BFE *(see Vulnerability Assessment 7-30)*[iv].

Using the FFE, buildings on properties were classified as having more or less adaptive capacity. Properties with buildings below BFE were considered to have "low" adaptive capacity, those with buildings at BFE and up to 1 foot above BFE were considered to have "medium" adaptive capacity, and those with buildings more than 1 foot above BFE were considered to have "high" adaptive capacity. These FFEs were used as an adaptive capacity factor for all flooding threat assessments. Figure 7.4 helps to illustrate how these levels of adaptive capacity were determined.

Figure 7.4. Illustration of different levels of adaptive capacity as it relates to the base flood elevation



Source: NEMAC+FernLeaf

Figure 7.5. Matrix showing the combination of potential impact and adaptive capacity that informs levels of vulnerability



Source: NEMAC+FernLeaf

7.5.2 : Risk Scoping

Just as potential impact and adaptive capacity combine to determine vulnerability, risk probability and risk consequence combine to give us an assessment of risk scoping (see Figure 7.6). High risk assets are those with high risk probability and high-risk consequence.

Figure 7.6. Illustration of the components for risk scoping



Source: NEMAC+FernLeaf

7.5.2.1 Risk Probability

Probabilities were determined for each threat using annualized likelihoods of threat occurrence or relative levels based on known risk factors. For example, for Floodplain Inundation, the 100-year and 500-year flood hazard zones were used to evaluate different probabilities of flooding for each asset. The highest risk probability for a parcel or building (if exposed) is considered for every threat. For storm surge, a likelihood of exceedance approach was used as a risk probability factor, with lower category storms having higher risk probability. Risk probability was not differentiated for tidal or future sea level rise water levels. However, vulnerability assessments were performed for multiple potential future water levels.

7.5.2.2 Risk Consequence

Risk consequence refers to negative outcomes or critical thresholds that indicate varying levels of significance if a threat were to occur. For this assessment, estimated potential food depths were used as indicators of risk consequence. Similar to adaptive capacity levels, building FFEs were used, but here were used to estimate the potential depth of flooding based on the difference between the FFE and BFE or other information related to flood depth (as with storm surge). While depth-damage curve functions were not applied to this assessment, general depth-damage curves established for the region and by FEMA were used to determine important inflection points. *(see Vulnerability Assessment 7-30)*[v], [vi] Other information from hazard mitigation considerations were also used in establishing thresholds for the Limit of Moderate Wave Action (LiMWA) zone separate from stillwater zones. *(see Vulnerability Assessment 7-30)*[vii], [viii] Different depths were used depending on the flooding threat and the level of data available. Table 7.5 shows the levels of depth used for the classification of risk consequence levels.

Table 7.5. Description of risk consequence levels used for the assessment

Risk Consequence Level	Floodplain Inundation (Depths based on BFE and Building-level FFEs)	Storm Surge (Depths from surge inundation mapping product values)
High	Depth 1.5 feet or greater in wave action zones OR 3 feet or greater in stillwater zones	Depth greater than 3 feet
Medium	Depth between -2 feet to 1.5 feet in wave action zones OR 1 foot to 3 feet in stillwater zones	Depth between 1 and 3 feet
Low	Depth less than -2 feet in wave action zones OR less than 1 foot in stillwater zones	Depth less than 1 foot

Source: NEMAC+FernLeaf

Levels of risk probability and risk consequence are then combined to inform risk scoping (see Figure 7.7). For example, a parcel with a building in the 100-year flood hazard zone with a potential flood depth of more than 3 feet would have a high risk classification, while a parcel in the 500-year flood hazard zone without an exposed building would have a low risk classification. It is important to note that this step is referred to as risk scoping, as no loss estimates are quantified.

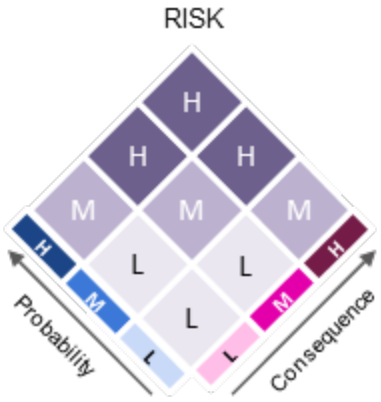


Figure 7.7. Matrix showing the combination of probability and consequence that informs levels of risk

Source: NEMAC+FernLeaf

7.5.3 : Combined Vulnerability and Risk

Vulnerability considers how an asset might be impacted and its ability to cope if a given threat event were to occur, and risk considers the probability of the threat occurring and the general consequence of the threat. Combining these concepts allows decision makers to evaluate which assets are most susceptible and most likely to be impacted, and also to consider options according to different levels of risk thresholds.

The matrix shown in Figure 7.8 features the combination of vulnerability and risk for Commercial Property and Floodplain Inundation. High-vulnerability and high-risk parcels are in the top-most cell. Those that have low vulnerability and low risk are in the bottom-most cell.



Figure 7.8. Matrix showing the combination of vulnerability and risk

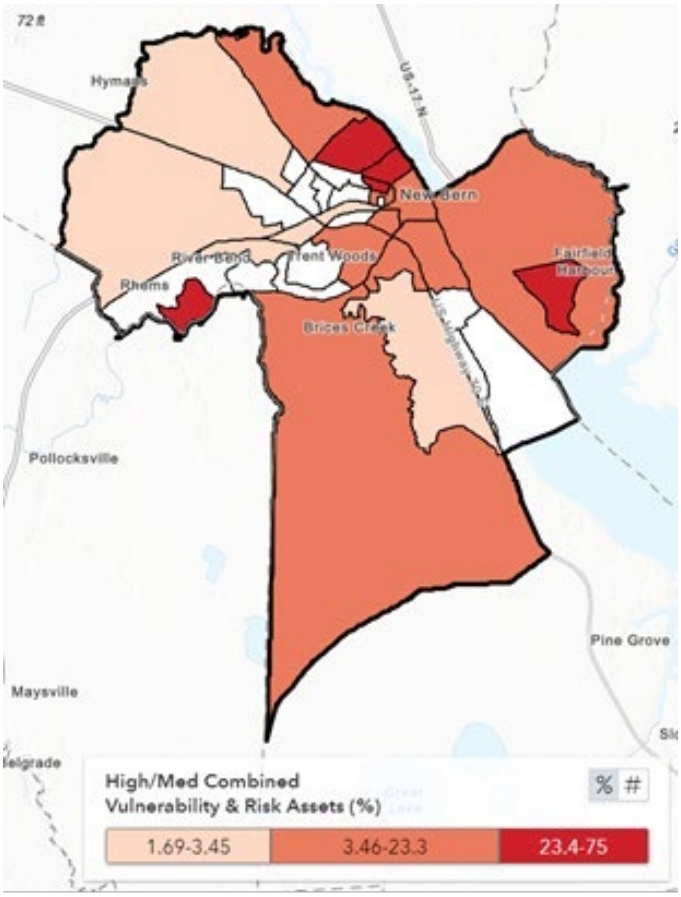
Source: NEMAC+FernLeaf

7.5.3.1 Aggregation of Vulnerability and Risk

In order to focus on the most vulnerable and risk assets, the assets with either medium or high combined vulnerability and risk are mapped at an aggregate scale, which in this case are census block groups. In the matrix in Figure 7.8, these are the cells with the two darkest shades of red.

Due to varying sizes of census tracts in the region, the percent of assets with medium-high combined vulnerability and risk map is used to provide a relative perspective of vulnerability within different areas in the city. An example census block group map is shown in Figure 7.9.

Figure 7.9. Example map showing aggregation of vulnerability and risk for census block groups



Source: NEMAC+FernLeaf

7.5.4 : High-Level Summary of Assessment Ruleset Components

Table 7.6 provides a high-level summary of the types of criteria used for each component of the vulnerability and risk assessment framework.

Table 7.6. Summary of components of vulnerability and risk

Hazard	Exposure	Vulnerability		Risk	
		Potential Impact	Adaptive Capacity	Probability	Consequence
Floodplain Inundation	FEMA flood zones (100-year, and 500-year)	Criticality of asset based on type and use	Height above/ below base flood elevation (BFE)	Levels of flood probability (100-year, 500-year)	Potential flood depth (based on difference between FFE and BFE)
Tidal Flooding	NOAA high tide extent (impact threshold)	Criticality of asset based on type and use	Height above/ below base flood elevation (BFE)	N/A	N/A
Storm Surge	Any storm surge category (Categories 1–5)	Criticality of asset based on type and use	Height above/ below base flood elevation (BFE)	Levels of Storm Category (1–5)	Potential flood depth (based on inundation mapping product)
Future Tidal Flooding and Sea Level Rise	NOAA 3 feet Sea Level Rise (SLR); NOAA 5 feet SLR	Criticality of asset based on type and use	Height above/ below base flood elevation (BFE)	N/A	N/A

Source: NEMAC+FernLeaf

7.6 Vulnerability and Risk Assessment Results

The results of the assessment show different levels of vulnerability and risk for different asset categories. The geographic areas with the highest levels of vulnerability and risk also vary for each asset category and by threat. The following sections provide a summary of vulnerability and risk for the study area with a separate section for each flooding threat assessed. Additionally, City staff have access to the assessment information in a format to support planning purposes.

7.6.1 : Summary of Vulnerability and Risk for the Study Area

Table 7.7 shows a summary of the total number of assets assessed and the number and percentage of assets with medium or high combined vulnerability and risk for each threat.

Table 7.7. Summary table of results for the study area

Asset Category	Total Assets	Floodplain Inundation	Storm Surge (Categories 1–2)	Storm Surge (Categories 3–5)	Tidal Flooding (Current)	3 feet + MHHW	5 feet + MHHW
Critical Facilities	328	32 (10%)	29 (9%)	157 (48%)	0	0	3 (1%)
Government Owned	251	40 (16%)	44 (18%)	108 (43%)	0	0	7 (3%)
Commercial & Industrial	1,396	134 (10%)	121 (9%)	917 (66%)	3 (<1%)	4 (<1%)	21 (2%)
Parks & Cultural	348	70 (20%)	66 (19%)	150 (43%)	0	0	12 (3%)
Residential	22,346	3,232 (14%)	3,676 (16%)	15,395 (69%)	28 (<1%)	96 (<1%)	957 (4%)
Historic	2,335	528 (23%)	601 (26%)	1,698 (73%)	14 (<1%)	17 (<1%)	76 (3%)
Employees	9,705	1,151 (12%)	1,161 (12%)	7,041 (73%)	683 (7%)	683 (7%)	716 (7%)
Sales Volume	$2.5B	$96M (4%)	$205M (8%)	$2.0B (81%)	$9.9M (<1%)	$9.9M (<1%)	$18M (1%)
Road Accessibility	31,669	14,503 (46%)	15,069 (48%)	28,278 (89%)	87 (<1%)	915 (3%)	3268 (10%)
Improved Tax Value	$4B	$625M (16%)	$698M (18%)	$2.7B (69%)	$17.8M (<1%)	$39.7M (1%)	$166M (4%)

Source: NEMAC+FernLeaf

Note: Numbers reflects the total number of assets and for each threat the number and percentage of assets with medium or high combinedvulnerabilityand risk.

7.6.2 : Overall Findings

1. High levels of vulnerability and risk are associated with multiple types of flooding, especially major flooding associated with 100-year and 500-year potential flood event and storm surge. Highest levels of vulnerability and risk are associated with major category storm surge (Categories 3–5) where at least 40% of assets are highly vulnerable and at-risk across all asset categories.

2. Higher proportions of residential property are vulnerable within the socio-economically stressed neighborhoods. For example, 10% more homes are vulnerable in areas that have the highest relative percentage of households living below the poverty line.

3. Several areas of the City are vulnerable to future tidal flooding due to sea level rise. Assets most vulnerable to future tidal flooding are related to roads and mobility.

The following sections highlight findings for each threat assessed. Findings explore drivers of vulnerability and risk, census block group maps showing levels of vulnerability and risk, and key messages about assets that are vulnerable and at-risk to flooding.

7.7 Floodplain Inundation

7.7.1 : How the threat was assessed

FEMA flood zones were used for the assessment of floodplain inundation. In coastal areas such as New Bern, FEMA flood zones represent a combination of rainfall-induced and storm surge flooding. Flood zones are characterized by risk probability, or how likely flooding is to recur or be exceeded over a time period. For example, the terms "100-year flood," "1-percent-annual-chance flood," and "1-percent annual exceedance probability flood" are used to refer to a magnitude of a flood that has a greater than one percent chance of occurring or being exceeded in any given year. Put differently, a 100-year flood has a 26% chance of occurring over the course of 30 years (the typical life of a home mortgage for instance) or a 39.5% chance over the course of 50 years. In addition to the 100-year flood zones, other flood zones considered in the floodplain inundation assessments include floodway, wave action areas, and the "500-year flood" zone, or "0.2-percent-annual-chance flood."

The assessment used the most recent Flood Insurance Rate Map (FIRM) effective June 19, 2020, and both the 100-year and 500-year floodplain extents developed by FEMA through the North Carolina Floodplain Mapping Program (NCFMP) to support the National Flood Insurance Program (NFIP). It is worth noting that the vulnerability assessment conducted for the City of New Bern is more detailed than the typical analysis conducted for regional and statewide plans.

The assessment of floodplain inundation focused on identifying assets that have greater potential impact, such as critical assets (e.g., major medical facilities) or where more people could be affected (e.g., apartment buildings). The assessment also considered how adaptive buildings are based on estimated FFEs. Table 7.8 highlights the factors used to assess different aspects of vulnerability and risk.

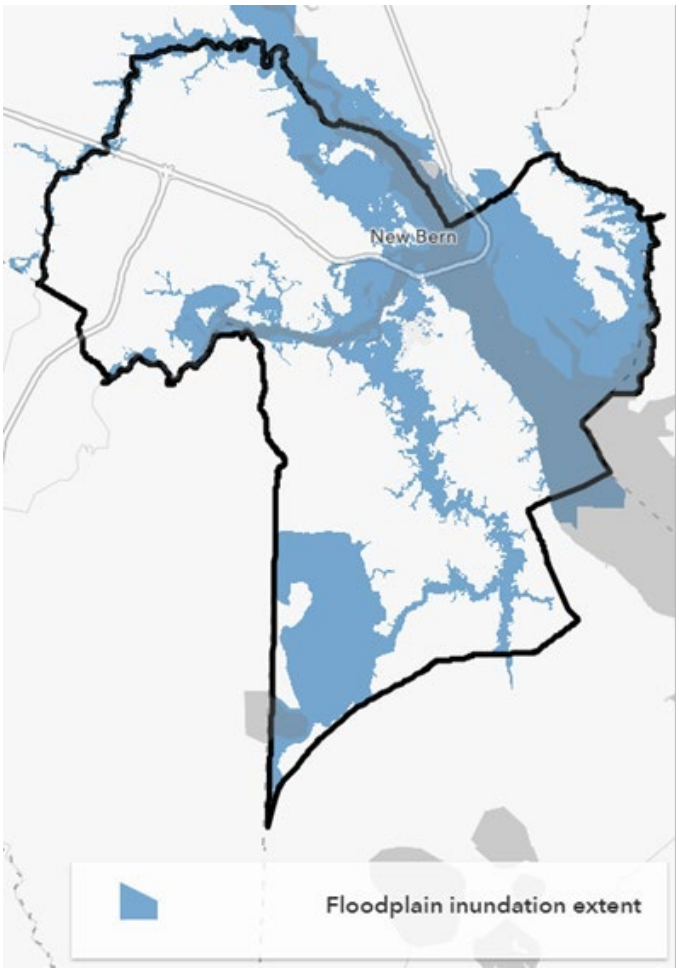
Table 7.8. Assessment factors used in the floodplain inundation assessment

Key assessment factors
• Criticality of buildings in floodplain • First floor elevation of buildings • Likelihood of flooding (e.g., 100-year versus 500-year flood risk) • Potential depth of flooding

Source: NEMAC+FernLeaf

Figure 7.10 shows the entire extent of FEMA floodplains (100-year and 500-year) for the assessment study area. The assessment study area is based on a census block group boundary that includes all of the City of New Bern and immediately surrounding areas. This expanded extent was selected to ensure that all relevant populations and assets were considered in the analysis, including those just outside the official city limits of New Bern.

Figure 7.10. Extent of floodplain inundation, based on FEMA 100-year and 500-year floodplains



Source: NEMAC+FernLeaf

7.7.2 : Key Findings for Floodplain Inundation

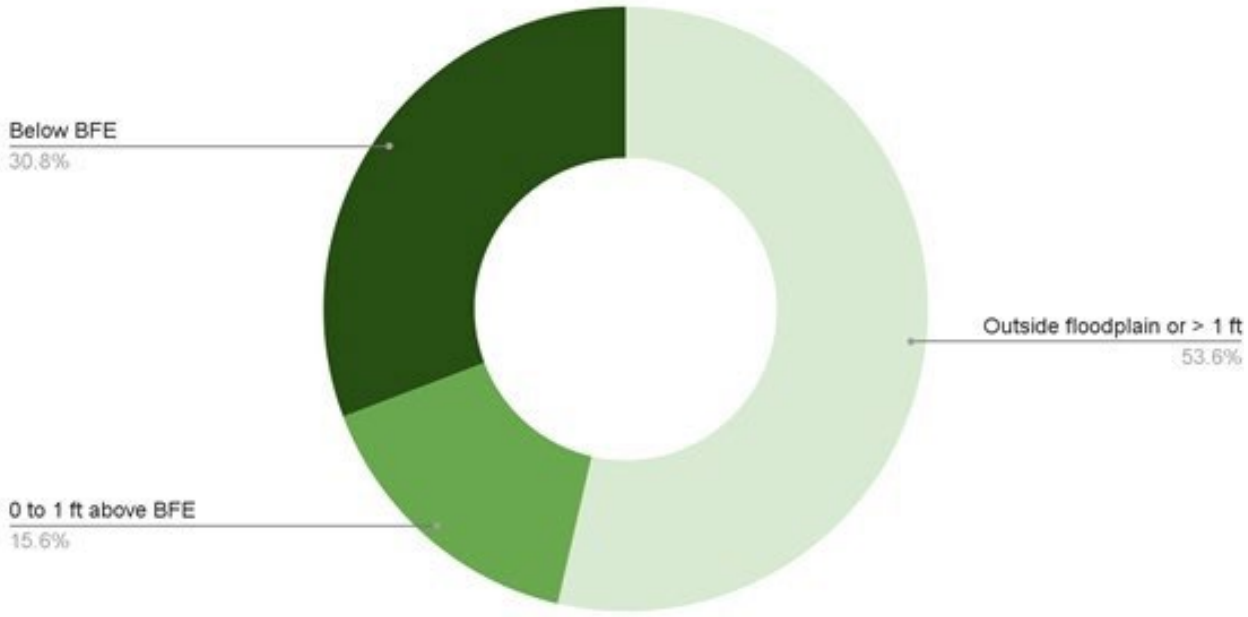
The threat of floodplain inundation presents high levels of exposure and vulnerability and risk to many assets assessed in the City and study area. The following lists the four asset categories with the highest levels of vulnerability and risk (see Table 7.7 for more asset details).

- Historic (22%)
- Parks and cultural (19%)
- Government-owned (16%)
- Residential (14%)

The assessment also examined different characteristics of vulnerability and risk for assets within the study area to understand drivers of vulnerability and risk for assets in the floodplain. For example, a number of properties in the study area were found to have low adaptive capacity. Properties with low adaptive capacity include those with buildings with FFEs estimated to be below the BFE. Many of these include properties with buildings constructed before the first floodplain development ordinances were in place in the City of New Bern (pre-FIRM) or that are

outside the 100-year regulatory floodplain extent (but within the 500-year extent) and have limited ability to cope with flooding. Figure 7.11 shows for residential properties, about 31% fall within this category (in dark green). An additional 15% of properties have buildings estimated to be at or less than 1-foot above BFE (medium green) that have moderate adaptive capacity, and about 54% of properties have buildings with first elevations more than 1-foot above BFE. Many of these buildings were constructed more recently and required additional adaptive measures at time of construction such as additional freeboard requirements. These also include properties with buildings located outside the floodplain.

Figure 7.11. Levels of adaptive capacity for residential property and floodplain inundation



Source: NEMAC+FernLeaf

7.7.2.1 Property & Critical Facilities

All types of properties and critical facilities are vulnerable to floodplain inundation, with all having at least 9% with medium or high vulnerability and risk. Within the city limits, levels of vulnerability and risk are higher for most property-based asset categories (see Table 7.7).

Residential properties are among the assets with the highest vulnerability and risk to floodplain inundation. Levels of vulnerability and risk to residential property varies throughout the study area. For example, six census block groups in the study area have more than 43% residential properties with medium or high vulnerability and risk (see Figure 7.12). Within the city limits, this includes the areas within the Greater Duffyfield, Downtown, and north of Downtown.

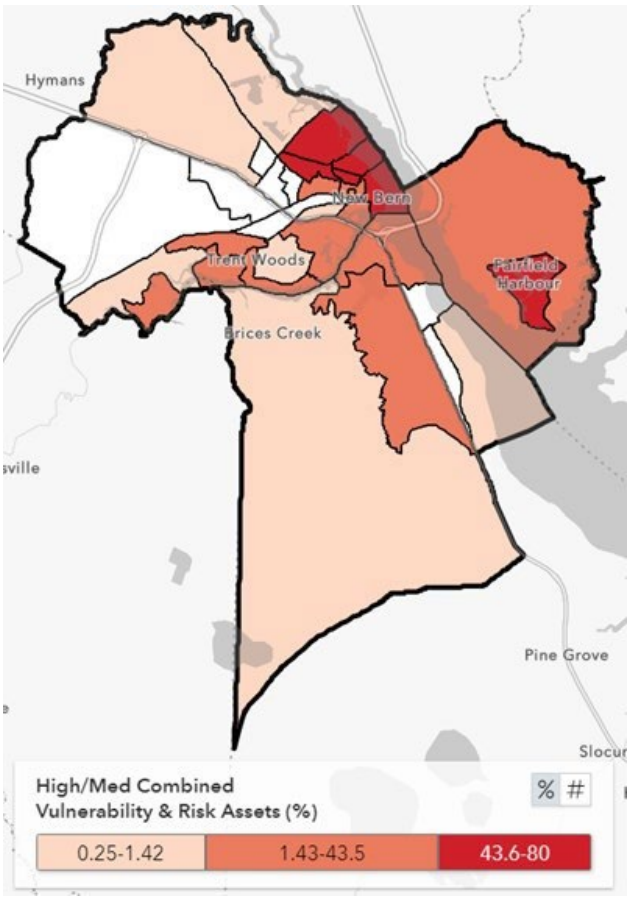


Figure 7.12. Residential property and floodplain inundation

Source: NEMAC+FernLeaf

Areas with high levels of residential physical vulnerability also co-occur with many of the most socially vulnerable areas of the city, based on the CDC's Social Vulnerability Index and the percentage of households living below the poverty line (see Figure 7.13). Some of these areas include the areas of Greater Duffyfield and the area of the medical center. The assessment shows that residential property in areas with higher socio-economic stress are more vulnerable. For example, for the entire study area, about 14% of residential properties have medium to high vulnerability and risk. In the areas with a relatively high percentage of households living below the poverty line (dark purple in Figure 7.13) about 27% of residential properties are vulnerable and at-risk.

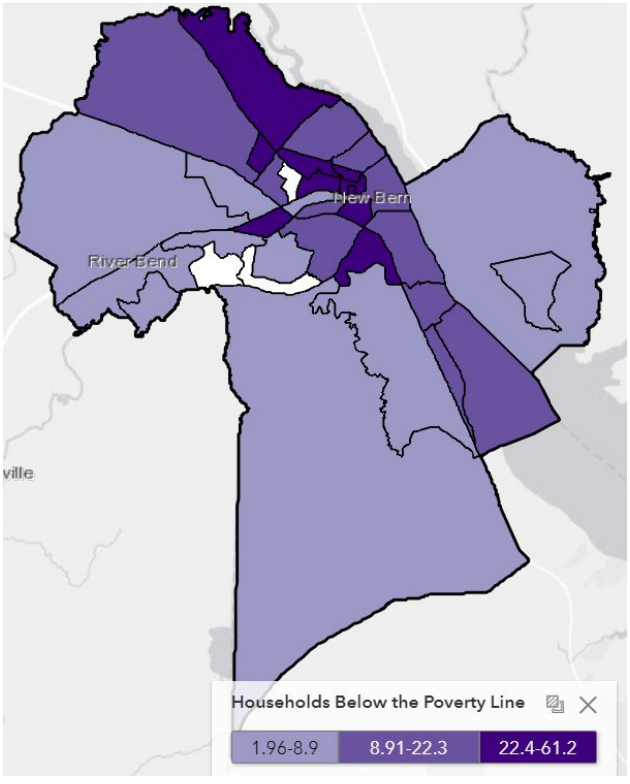


Figure 7.13. CDC Social Vulnerability Index

Source: NEMAC+FernLeaf

Parks and cultural properties also have high levels of vulnerability and risk (20%). These include community center locations, churches, and other religious places.

Historic properties have the highest level of vulnerability and risk (22%) of all property types assessed (based on percentage vulnerable and risk in the study area). With more than 500 properties total with medium or high vulnerability and risk, more than one-half of these are within the downtown area.

Government-owned and critical facilities are also vulnerable in many of the same areas as residential and cultural properties, especially in the Greater Duffyfield and north of Downtown. Throughout the study area about 16% of government-owned assets have medium to high vulnerability

and risk with 22% within the city limits (see Figure 7.14). Highly vulnerable critical facilities include 12 medical, 7 schools, 3 utilities, 2 social services, and 2 public safety properties.

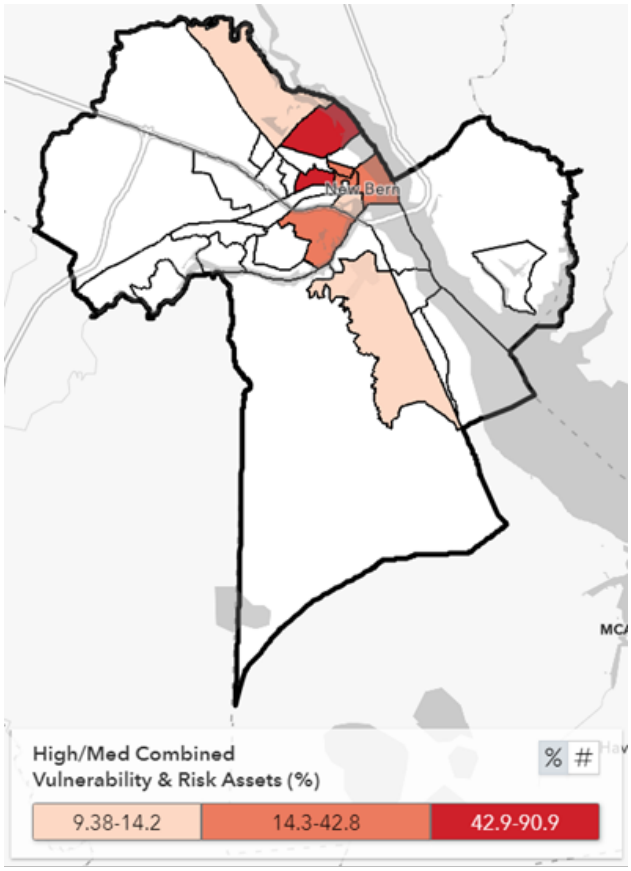


Figure 7.14. Government-owned property and floodplain inundation

Source: NEMAC+FernLeaf

Many of the critical facilities that are vulnerable also serve as critical community resources, especially for already potentially underserved disproportionately impacted populations.

Business corridors are also vulnerable and at-risk to floodplain inundation with about 9% of all commercial and industrial properties with medium to high vulnerability and risk in the study area (11% inside city limits). The majority of vulnerable assets are in the Downtown and north of Downtown areas and includes (but not limited to) the following key corridors:

- Broad Street
- Pollock Street
- South Front Street
- East Front Street
- North Craven Street
- National Avenue/Oaks Road

7.7.2.2 Economic Factors

Highly vulnerable businesses in the study area support about 20% of annual sales volume and 31% of business-related jobs (employees). These are businesses where structures are vulnerable to inundation and that have relatively high risk probability of flooding. Therefore, this shows the level of business disruption that could occur in terms of jobs and sales potentially affected. The amount of total assessed tax value vulnerable to floodplain inundation is proportional to the level of residential property vulnerable and at-risk (12% in study area).

7.7.2.3 Roads & Mobility

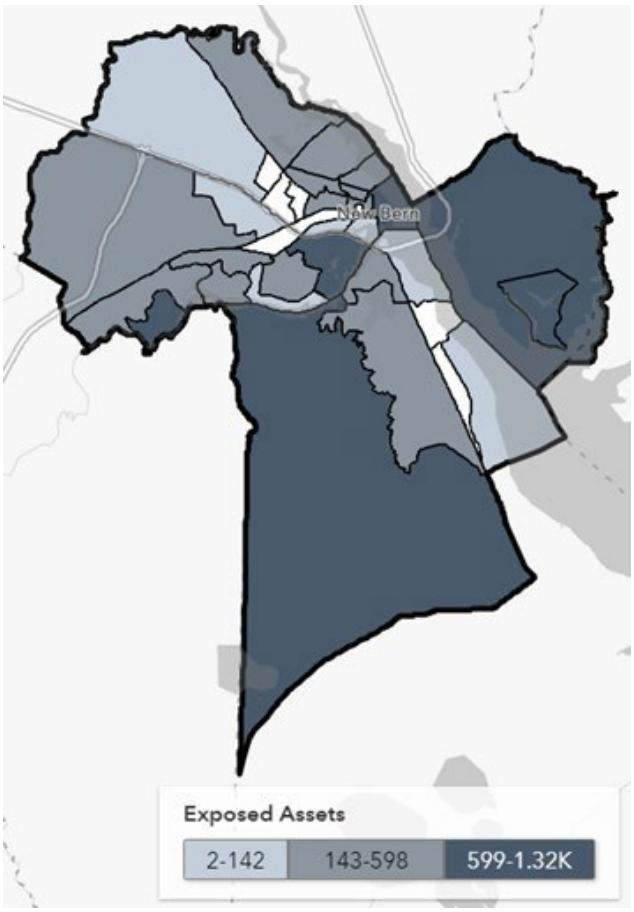
About 13% of major roads and 48% of minor roads in the study area have the potential for being accessible to the 100-year floodplain extent. This amounts to about 45% of all properties (regardless of type) having the potential for inaccessibility. This includes properties associated with roads that are potentially inundated or inaccessible by emergency responders from a fire station due to flooding. Figure 7.15 shows road centerlines in red that are potentially inaccessible due to the extent of floodplain inundation along with the properties that are also potentially inaccessible to these.

Figure 7.15 shows the number of all properties exposed to potential inaccessibility due to 100-year floodplain inundation.

Figure 7.15. Illustration of roads and properties potentially inaccessible to 100-year floodplain inundation (top) and a map showing the number of all properties potentially inaccessible within for the study (bottom)



Source: NEMAC+FernLeaf



Source: NEMAC+FernLeaf

7.8 Storm Surge

7.8.1 : How the threat was assessed

The assessment uses the Sea, Lake, and Overland Surge from Hurricanes (SLOSH) Maximum of the Maximum Envelopes of Water (MOM) layer developed by the NOAA National Weather Service's National Hurricane Center, with a separate focus on Categories 1–2 versus 3–5, when evaluating risk. *(see Vulnerability Assessment 7-30)*[ix] This layer represents a "worst-case" scenario of flooding resulting from an "ideal" storm.

The assessment of storm surge is based on inundation extents of different storm category levels from the NOAA SLOSH model. Like other flood inundation hazards, vulnerability is based on assessing buildings in the inundation extents and criticality/use of the property (for potential impact), as well as estimated FFEs (to determine adaptive capacity). This assumes that buildings with FFEs above the BFE are more adaptive to a storm surge event. Risk scoping levels were based on storm category levels within separate Category 1–2 versus 3–5 assessments. For example, within the Category 1–2 assessment a Category 1 storm is considered to have greater risk probability. Within each assessment, the evaluation of risk also considers the potential maximum flood depth. Table 7.9 lists the primary factors used in assessing vulnerability and risk to storm surge.

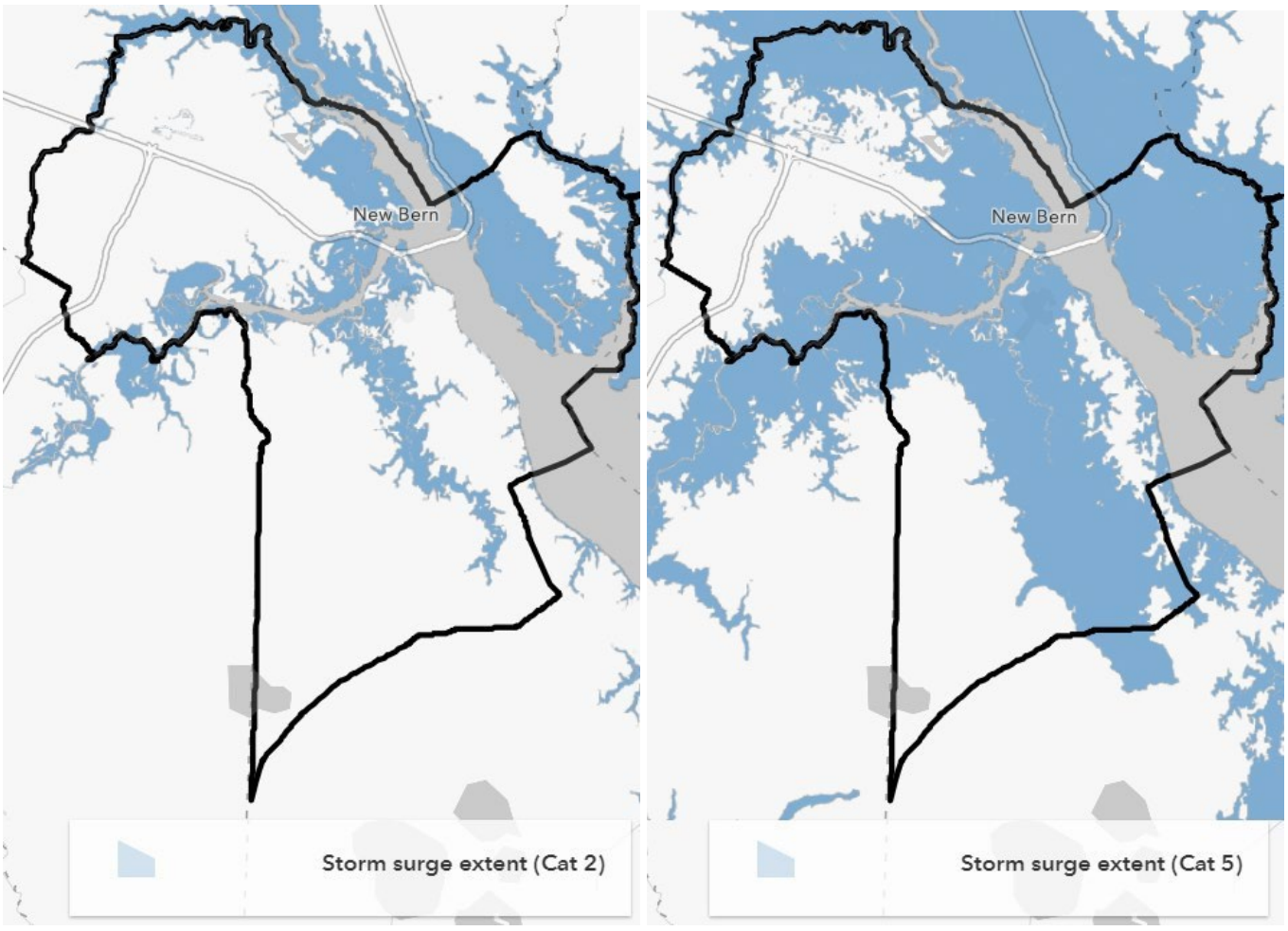
Table 7.9. Assessment factors used in the assessment of storm surge

Key assessment factors
• Criticality of buildings in the floodplain • First floor elevation of buildings • Storm Category levels 1–2 versus 3–5 • Potential maximum depth of flooding

Source: NEMAC+FernLeaf

Figure 7.16 shows the Sea, Lake, and Overland Surge from Hurricanes (SLOSH) Maximum of the Maximum Envelopes of Water (MOM) category extents (Category 2 and Category 5) for the assessment study area.

Figure 7.16. Extent of potential storm surge inundation for Categories 1–2 (left) and Categories 3–5 (right), based on NOAA SLOSH MOM



Source: NEMAC+FernLeaf

7.8.2 : Key Findings for Storm Surge

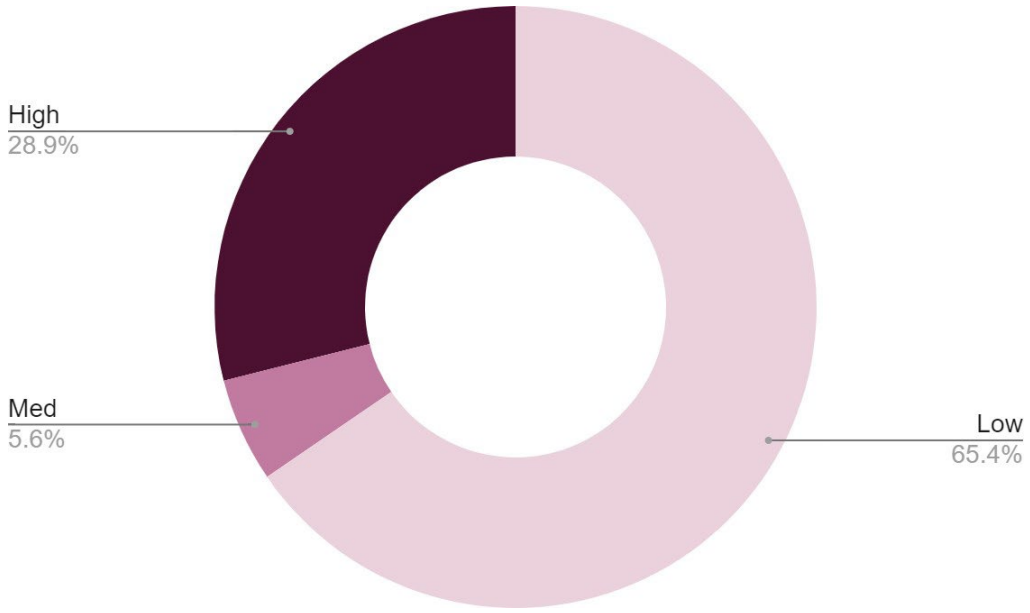
Storm surge presents the highest levels of exposure and vulnerability and risk of all flood hazards assessed in this study. Vulnerability and risk are especially high with major storm surge categories 3–5. The following lists the four

asset categories withthe highest levels of vulnerability and risk for Category 3–5 for the study area (see Table 7.7 for more asset details).

- Historic (73%)
- Residential (69%)
- Commercial & Industrial (66%)
- Critical Facilities (48%)

The assessment examined different characteristics of vulnerability and risk for assets in storm surge risk areas. The potential flood depth is a particular driver of risk to storm surge. Properties with high risk consequence include those with a potential flood depth of greater than 3 feet. Figure 7.17 shows for the more than 18,500 residential properties exposed to Category 3–5 storm surge, about 29% fall within this high-risk consequence category (in dark pink). An additional 6% of properties have potential flood depth between 1 foot to 3 feet (medium pink) that have medium risk consequence, and about 65% of properties with potential flood depth less than 1 foot (light pink).

Figure 7.17. Levels of risk consequence for residential properties exposed to storm surge Category 3–5



Source: NEMAC+FernLeaf

7.8.2.1 Property & Critical Facilities

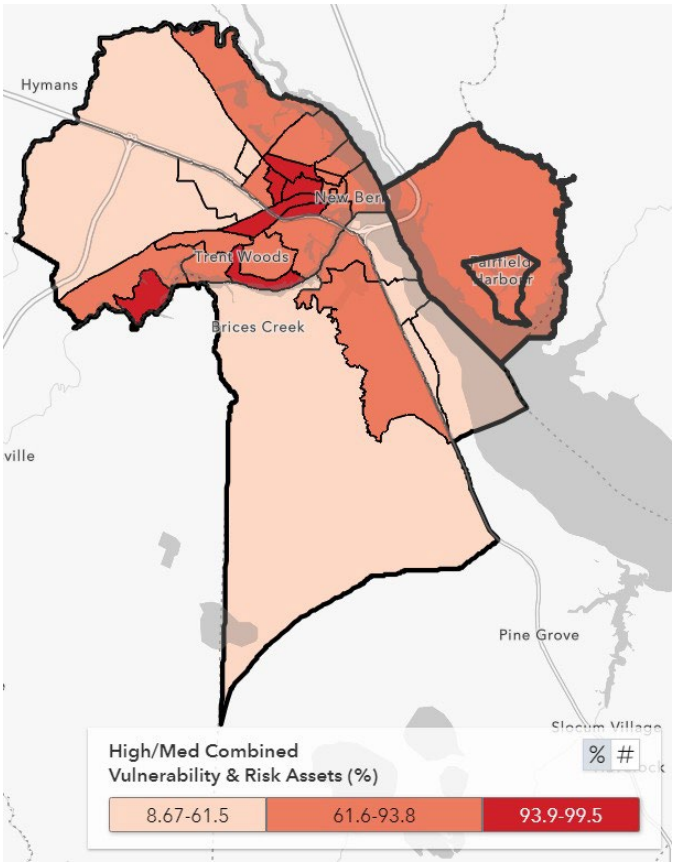
All types of properties and critical facilities are vulnerable to inundation from storm surge, all with at least 8% with medium or high vulnerability and risk to storm surge categories 1–2 and all with at least 43% to categories 3–5.

Residential properties are highly vulnerable and at-risk to major category storm surge with about 69% in the study area with medium or high vulnerability and risk. At least 60% of residential properties are vulnerable and at-risk to category 3–5 storm surge in the majority of census block groups in the study area including seven census block groups with at least 93% residential vulnerability and risk. Areas with the highest percent vulnerable and at-risk include the

Medical Center area, Degraffenreid Park and south of Dr. Martin Luther King Boulevard, Trent Woods, and River Bend (see Figure 7.18).

Similar to floodplain inundation, many areas with high levels of residential vulnerability and risk to storm surge are also areas and neighborhoods with high social vulnerability.

Figure 7.18. Residential property and storm surge (Category 3–5)



Source: NEMAC+FernLeaf

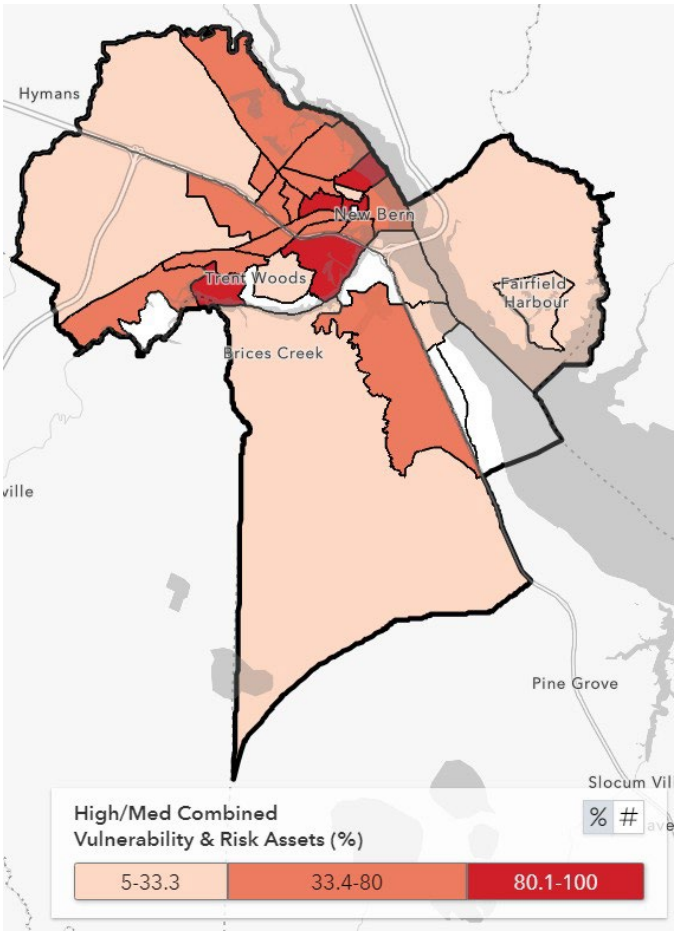
Parks and cultural properties have high levels of vulnerability and risk to storm surge with 19% to categories 1–2 and 43% to categories 3–5. These include community center locations, churches, and other religious places.

Historic properties have the highest level of vulnerability and risk to major category storm surge of all property types assessed (73% based on percentage vulnerable and risk in the study area). With nearly 1,700 properties total that have medium or high vulnerability and risk, with most of these properties located Downtown and in neighborhoods east of Downtown.

Government-owned and critical facilities are also vulnerable, especially in the Greater Duffyfield and the Medical Center area. Throughout the study area, about 43% of government-owned property and 48% of critical facilities have medium to high vulnerability and risk. Highly vulnerable critical facilities include 46 medical, 28 schools, 21 utilities, 2 social services, and 12 public safety properties.

A high proportion of critical facilities that are vulnerable also serve as critical community resources in underserved neighborhoods. The dark red areas on map in Figure 7.19 shows census block groups where more than 80% of critical facilities are vulnerable and at-risk.

Figure 7.19. Critical facilities and storm surge (Category 3–5)



Source: NEMAC+FernLeaf

Business corridors are also vulnerable and at-risk to floodplain inundation with about 66% of all commercial and industrial properties with medium to high vulnerability and risk to category 3–5 storm surge in the study area. Commercial property also has a large difference in vulnerability between categories 1–2 and 3-5. While about 9% are vulnerable and at-risk to categories 1–2 about 66% are vulnerable to categories 3–5. The majority of vulnerable assets are in the Downtown and north of Downtown areas and includes (but not limited to) the following key corridors:

- U.S. Highway 17 South
- U.S. Highway 70 East
- Highway 70/Broad Street
- Neuse Boulevard

- Trent Road/Boulevard
- Downtown

7.8.2.2 Economic Factors

Businesses in highly vulnerable and at-risk to major category storm surge support about 81% of annual business-related sales volume and 73% of business-related jobs (employees). These are businesses where structures are vulnerable and at-risk to category 3–5 storm surge.

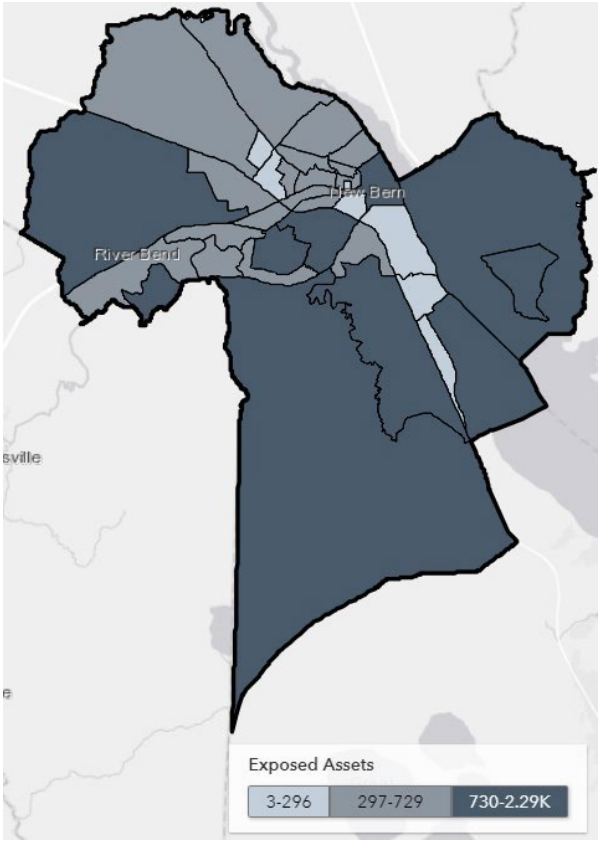
The amount of total assessed tax value vulnerable to floodplain inundation is proportional to the level of properties that are vulnerable and at-risk with about 69% of all assessed improvement values vulnerable and at-risk to major category storm surge. This includes all tax assessed improvement values associated with properties that have medium or high vulnerability and risk (regardless of property types).

7.8.2.3 Roads & Mobility

Potential for road inaccessibility is high with any level of storm surge. Nearly half (48%) of properties are exposed to potential road inaccessibility with storm surge categories 1–2 and 89% potentially inaccessible to categories 3–5. This amounts to about 45% of all properties (regardless of type) having the potential for inaccessibility. This includes properties associated with roads that are potentially inundated or inaccessible by emergency responders from a fire station due to flooding.

The map below shows the number of all properties in every census block group exposed to potential inaccessibility due to storm surge inundation (Category 3–5).

Figure 7.20. Properties potentially inaccessible to storm surge (Category 3–5)



Source: NEMAC+FernLeaf

7.9 Tidal Flooding and Sea Level Rise

7.9.1 : How the threat was assessed

The "High Tide Flooding" layer produced by NOAA was used to assess current vulnerability and risk to high tide flooding. This dataset shows areas that are currently subject to flooding from a tide elevation of 1.77 feet above average daily higher high tide (Mean Higher High Water, or MHHW) at Beaufort, NC gage (ID: 8656483).

The tidal flood elevation threshold mentioned above is derived by NOAA using a methodology that enables consistent quantification and communication of tidal flooding impacts across the country. *(see Vulnerability Assessment 7-30)*[x] The 2019 State of U.S. High Tide Flooding reported that there were four minor flood days in 2019 at the Beaufort, NC gage under the recently adopted "derived" threshold. *(see Vulnerability Assessment 7-30)*[xi]

In order to assess future change related to sea level rise, water levels of different thresholds are mapped on top of current tidal datums—such as MHHW—to map the extent of future tidal flooding and inundation due to sea level rise. For this assessment, multiple water level thresholds were considered, including 3 feet and 5 feet above MHHW, as mapped in the NOAA Sea Level Rise Viewer. *(see Vulnerability Assessment 7-30)*[xii] These extents provide a screening-level view of the increase in severity (area affected) of potential future high tide flooding due to rising sea levels. In other words, the extent for a given relative sea level provides information about potential flooding that could at first be observed several times a year as high tides, as well as more persistent inundation over time. Limitations to this approach should be recognized, in particular, that these water level extents do not consider hydraulic or geomorphological factors, such as potential shifts in future tidal ranges.

Table 7.10. Factors used in the assessment of tidal flooding and sea level rise

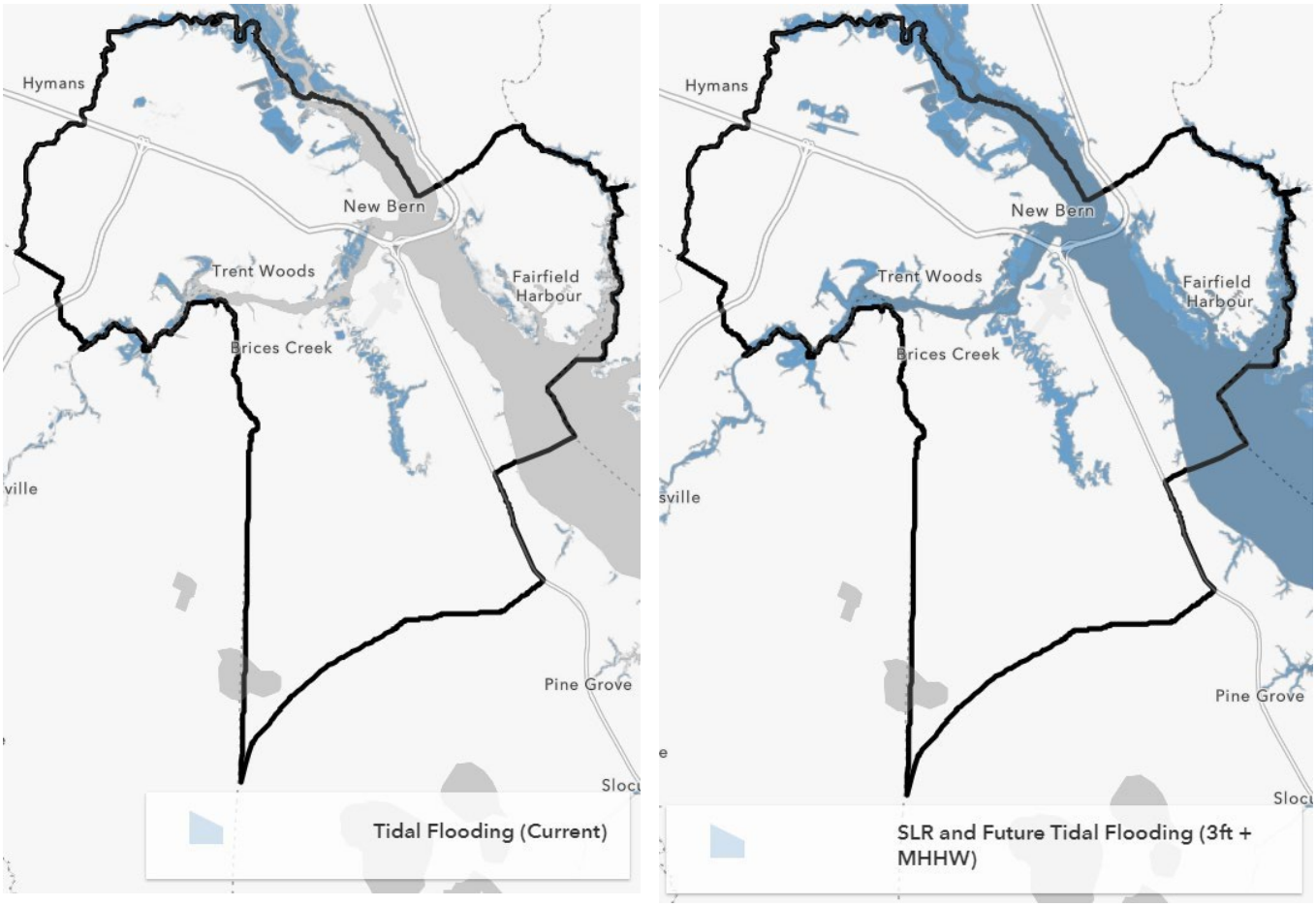
Key assessment factors
• Criticality of buildings in the floodplain • First floor elevation of buildings

Source: NEMAC+FernLeaf

Figure 7.21 shows the extents of current tidal flooding, water level of 3 feet + MHHW, and water level of 5 feet + MHHW for the assessment study area.

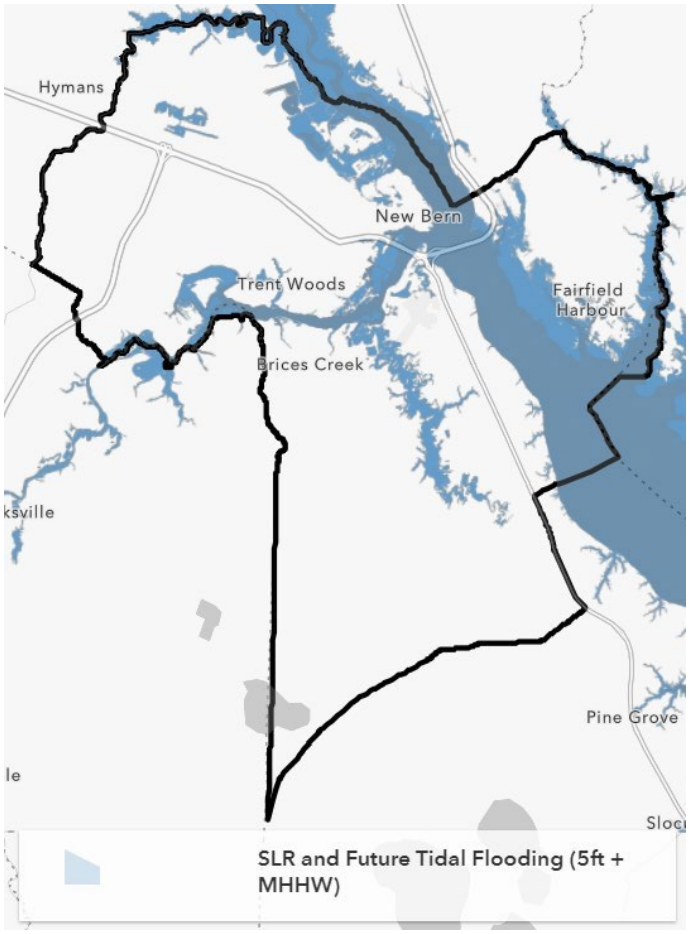
Figure 7.21. Extents of current tidal flooding (top left), 3 feet above MHHW (topright), and 5 feet above MHHW(bottom)

Current tidal flooding (High Tide) **3 feet + MHHW**



Source: NEMAC+FernLeaf

Current tidal flooding (High Tide) **5 feet + MHHW**



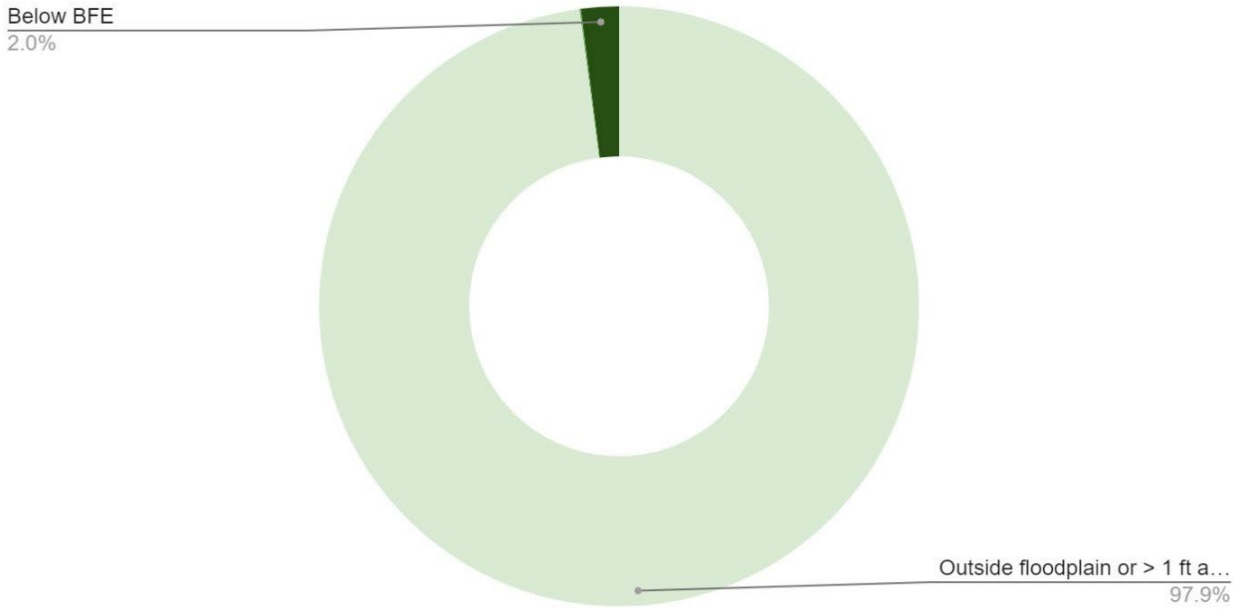
Source: NEMAC+FernLeaf

7.9.2 : Key Findings for Tidal Flooding and Sea Level Rise

Current tidal flooding presents relatively low exposure and vulnerability to current assets within the assessment study area. However, water levels that could be associated with sea level rise present the potential for increasing vulnerability to future tidal flooding and more persistent inundation. While not analyzed in this assessment, higher water levels will also contribute to greater risk to coastal flooding and storm surge. The following table lists the four asset categories with the highest levels of vulnerability to current and future water levels (see Table 7.7 for more asset details).

Figures 7.22 and 7.23 show the levels of adaptive capacity residential properties have to current and future tidal flooding (using BFE as a general measure of adaptive capacity). This shows that about 2% have low adaptive capacity to current tidal flooding (in dark green). This is due to the large number of properties within tidal flooding zones where buildings are outside flooding extents.

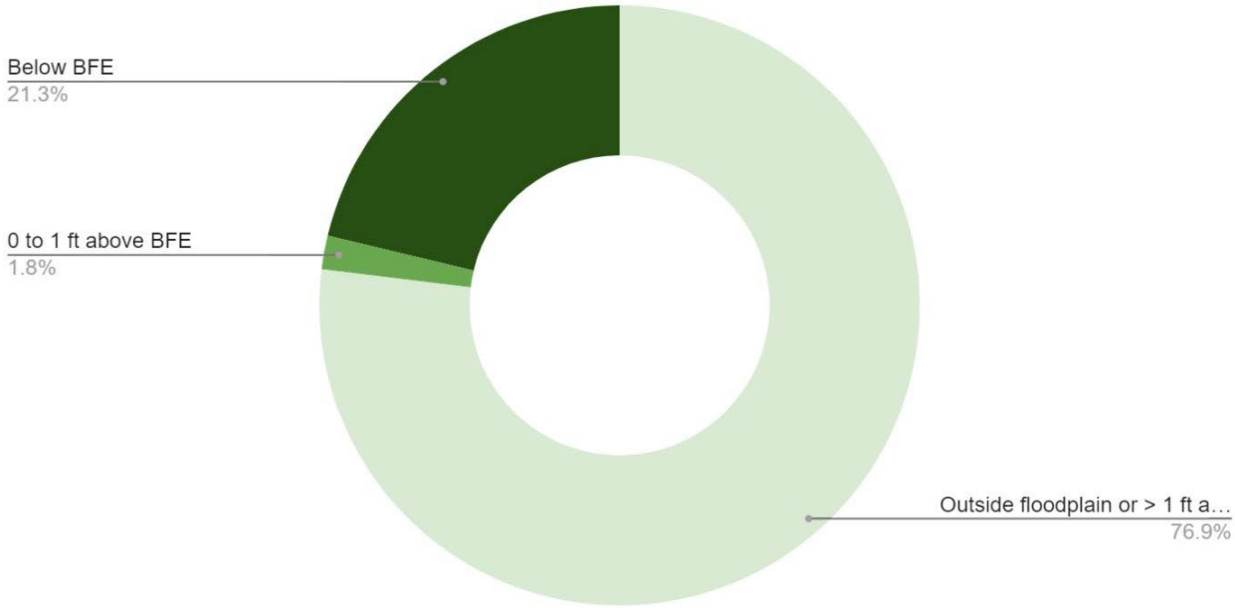
Figure 7.22. Levels of adaptive capacity for residential property and current tidal flooding



Source: NEMAC+FernLeaf

At the 5 feet + MHHW water level, the proportion of residential properties with low adaptive capacity increases to about 21%. In addition to a greater total number of properties being exposed, a higher proportion also have low adaptive capacity.

Figure 7.23. Levels of adaptive capacity for residential property and future tidal flooding and potential sea level rise (5 feet above MHHW)



Source: NEMAC+FernLeaf

7.9.2.1 Property & Critical Facilities

Lower levels of vulnerability are associated with current tidal flooding. While a few residential properties are vulnerable to current tidal flooding, this represents less than 1% of properties in the study area. No critical facilities, government-owned, or parks and cultural assets are vulnerable to current tidal flooding.

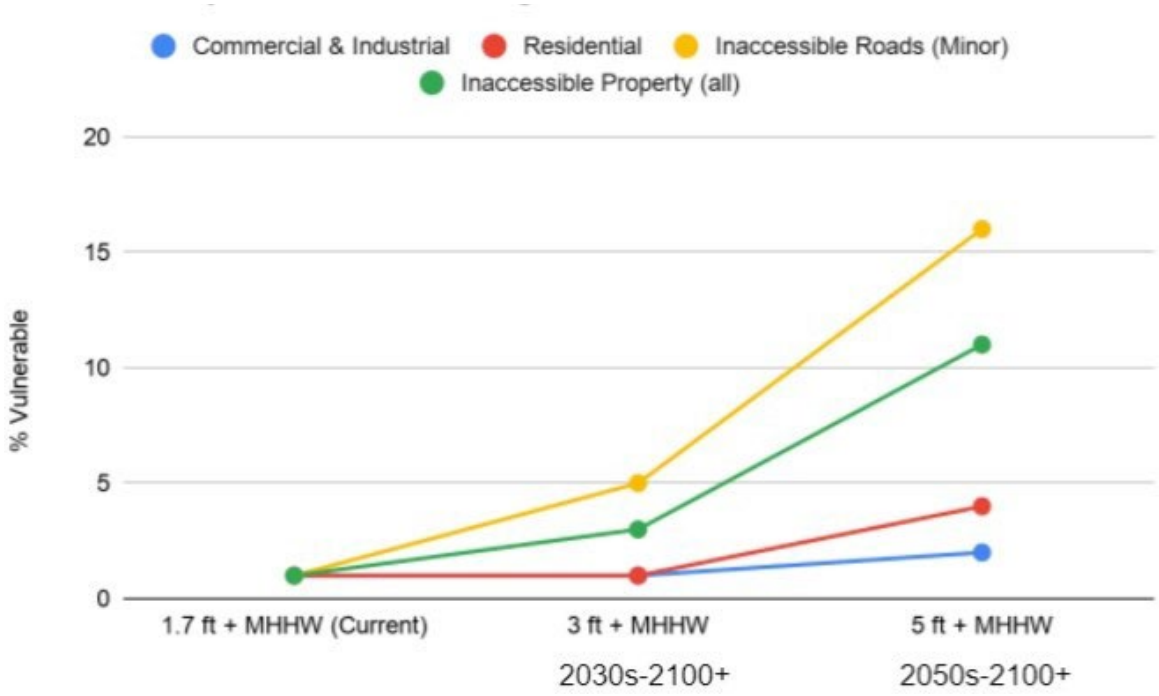
Vulnerability of residential properties to current tidal flooding is relatively low (less than 1%), but vulnerability could increase to about 4% of residential properties with future change. The assessment indicates a gradual increase in vulnerability between current conditions and 3 feet + MHHW with a larger increase associated with 5 feet + MHHW.

7.9.2.2 Roads & Mobility

The highest vulnerability to future tidal flooding and sea level rise is associated with potentially inaccessible roads and property. The percentage of potentially inaccessible properties could increase from about 1% to about 10% of all properties (regardless of type) having the potential for inaccessibility. This includes properties associated with roads that are potentially inundated or inaccessible by emergency responders from a fire station due to flooding.

Figure 7.24 shows the increase in percent vulnerable for residential and commercial property and inaccessible roads and property.

Figure 7.24. Potential increase in vulnerability to tidal flooding and sea level rise for commercial and industrial property, residential property, potentially inaccessible minor roads, and potentially inaccessible property



Source: NEMAC+FernLeaf

The assessment of vulnerability highlights how and where the city's assets are vulnerable and at-risk to a range of flooding hazards. However, it is important to keep in mind that the Plan is solutions-oriented. In fact, the purpose of the Vulnerability and Risk Assessment is to provide a foundation to help inform the development and implementation of resilience strategies andto recognize opportunities. The next section on resilience strategies identifies resilience pillars with goals and actions that can be taken to build resilience and mitigate hazards.

[i] Malczewski, Jacek, and Claus Rinner. *Multicriteria Decision Analysis in Geographic Information Science.* Springer-Verlag, 2015.
[ii] EPA Office of Water, Climate Ready Estuaries. *Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans.* U.S. Environmental Protection Agency, 2014. [https://www.epa.gov/sites/production/files/2014-09/documents/being_prepared_workbook_508.pdf]
[iii] Glick, P., B. A. Stein, and N.A. Edelson, editors. *Scanning the Conservation Horizon: A Guide to Climate Change Vulnerability Assessment*. National Wildlife Federation, 2011. [http://www.habitat.noaa.gov/pdf/scanning_the_conservation_horizon.pdf]
[iv] FEMA. FEMA P-499: Home Builder's Guide to Coastal Construction. December, 2010. [https://www.fema.gov/sites/default/files/2020-08/fema499_2010_edition.pdf]
[v] FEMA. Home Builder's Guide to Coastal Construction. FEMA P-499. December, 2010. [https://www.fema.gov/sites/default/files/2020-08/fema499_2010_edition.pdf]
[vi] US Army Corps of Engineers, Institute for Water Studies. Catalog of Residential Depth-damage Functions Used By The Army Corps Of Engineers In Flood Damage Estimation. IWR Report 92-R-3. May, 1992. [https://apps.dtic.mil/dtic/tr/fulltext/u2/a255462.pdf]

[vii] FEMA. Features of Flood Insurance Rate Maps in Coastal Areas. [https://www.fema.gov/flood-maps/coastal/insurance-rate-maps]
[viii] FEMA. User's Guide to Technical Bulletins. NFIP Technical Bulletin 0. July, 2019. [https://www.fema.gov/sites/default/files/2020-07/fema_using-technical-bulletins_guide.pdf]
[ix] NOAA National Hurricane Center: Sea, Lake, and Overland Surges from Hurricanes (SLOSH). [https://www.nhc.noaa.gov/surge/slosh.php]
[x] Sweet, W.V., G. Dusek, J. Obeysekera, and J. Marra, 2018: Patterns and Projections of High Tide Flooding Along the U.S. Coastline Using a Common Impact Threshold. NOAA Technical Report NOS CO-OPS 086, 44 pp. [https://tidesandcurrents.noaa.gov/publications/techrpt86_PaP_of_HTFlooding.pdf]
[xi] https://tidesandcurrents.noaa.gov/HighTideFlooding_AnnualOutlook.html
[xii] https://coast.noaa.gov/slr/

8.0 Resilience Strategy

This section discusses the resilience strategy of the Plan. It consists of the following subsections:

1. Elements of a Resilience Strategy
2. Vision Statement
3. Resiliency Pillars
4. Goals and Objectives
5. Actions

8.1 Elements of a Resilience Strategy

A thorough resilience strategy contains four important elements: a vision statement, resilience pillars (also known as core tenets), goals and objectives, and actions. These elements are described in detail below.

8.2 Vision Statement

A strong *vision statement* helps determine and drive a community's direction. In many cases, local jurisdictions face a variety of conflicting priorities, fierce competition for funding, fatigue in terms of political and stakeholder support, and other challenges that hinder the implementation of risk reduction activities.

A clearly stated and officially adopted vision statement will help the City of New Bern remain "on-track." According to a report issued by the American Planning Association (APA), "when coordination of plans is absent…a community may not be treating hazards as a planning priority, especially in land-use planning." The establishment of a strong vision statement will help galvanize local planning efforts across multiple departments and make hazard risk the local priority it should be. It will also help support regional coordination with county agencies, surrounding jurisdictions, and regional, state, and Federal organizations.

The Core Planning Team developed several draft vision statements for consideration by the group. The top three draft vision statements are included below, with the first draft of the final vision statement presented last.

- *Draft Vision Statement #1:* "New Bern will utilize its values of heritage, intelligence, leadership, and personal responsibility to develop methods and investments to prepare for, respond to, and recover from disasters with inclusive, collaborative partnerships between the public, non-profit, and private sectors to ensure they serve as efficient conduits to programs and resources accessible for all residents."
- *Draft Vision Statement #2:* "We are a city that embraces our changing environment. We will advance resiliency through solutions that relate to health and public safety, housing, the economy, infrastructure, our natural resources, and cultural heritage. In so doing, we will adapt to thrive."
- *Draft Vision Statement #3:* "By implementing the New Bern Resilience and Hazard Mitigation Plan, the City of New Bern, its residents, businesses and community stakeholders will adapt to a future of rising

tides and extreme storms, embrace equitable and sustainable development, increase economic security, protect public health, and promote its cultural heritage."

The final vision statement for this Plan selected and finalized from the list above is:

By implementing the New Bern Resilience and Hazard Mitigation Plan, the City of New Bern, its residents, businesses and community stakeholders will prepare for, adapt to, and respond to a future of rising tides and extreme storms, embrace equitable and sustainable development, increase economic security, protect public health, and promote its cultural heritage.

This vision statement was chosen because it best represents the Core Planning Team's thoughts, values, and hopes for resiliency in the planning area and beyond, and provides a strong foundation and framework for an overall resiliency mindset moving forward.

8.3 Resiliency Pillars

Resilience pillars (also referred to as core tenets) create broad categories to define and categorize the community's goals and objectives as they relate to community resilience. During the course of the public engagement process, the community expressed concerns based on various themes. These themes, listed in order of magnitude based on community priorities and preferences, became the foundation for the project's resiliency pillars. The six (6) pillars identified and agreed upon by the Core Planning Team are listed below:



1. Health and Safety
2. Housing
3. Economy
4. Infrastructure
5. Natural Resources
6. Cultural Heritage

These resilience pillars are defined in detail below.

8.3.1 : Health and Safety

Health and safety involves the planning and coordination of public health, healthcare, and emergency response systems to minimize and/or prevent health emergencies from occurring. It is also vital to support emergency and medical care and human services tothose affected by floods.

The purpose of this resilience pillar is to reduce the public health and human service effects on the City of New Bern and enhance community resilience to respond to a disaster.

8.3.2 : Housing

The housing component of a resilient community consists of many factors, including the physical protection of the primary residential building, economic stability of the resident(s), potential for isolation during a flood event, ability

for the resident(s) to evacuate if needed, communication, and length of time needed for the resident(s) to return to normal living after the event.

The purpose of this resilience pillar is to address the vulnerability of existing housing within the City of New Bern and to develop strategies to strengthen, fortify, and mitigate at-risk properties and residents, and to plan for the resiliency of future development relative to future conditions.

8.3.3 : Economy

The economic vitality of a community is crucial to a community's overall health and resilience. The vulnerability assessment completed for this planning effort includes economic factors related to business impacts in terms of employees and sales, but the conceptual value of economic considerations in the context of resiliency is extensive.

The purpose of this resilience pillar is to support, enhance, and better understand the resiliency of the City's economy to more confidently withstand direct and indirect financial disruptions as the result of sudden shocks, chronic stressors, and other emergency events.

8.3.4 : Infrastructure

Infrastructure encompasses physical systems including, but not limited to, transportation networks, roads, bridges, water systems, sewer systems, storm drainage systems, electrical power grid, and communications grids that provide connection, protection, and basic quality of life to the City and its residents.

The purpose of this resilience pillar is to protect and improve the resiliency of the City's infrastructure to withstand and recover from natural hazards and provide life-safety protection during extreme hazards.

8.3.5 : Natural Resources

Natural resources, such as creeks, wetlands, forests and open space, provide important protection and buffer from storm surge, flooding, and other impacts as well as provide critical habitat for fish and wildlife. The City of New Bern is a riverine-based landscape situated at the mouth of the Pamlico Sound within the Neuse River Basin. Its unique setting creates both the opportunity and need to develop nature-based designs that allow its residents to coexist through resilience planning and project implementation.

The purpose this resilience pillar is to work with partners and stakeholders to become a more resilient city by analyzing and implementing sustainable, nature-based solutions that will enable both its built and natural environments to better withstand future weather events associated with climate change as well as natural disasters.

8.3.6 : Cultural Heritage

Cultural heritage is the legacy of physical artifacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations. Cultural heritage includes tangible culture, intangible culture, and natural heritage.

The purpose of this resilience pillar is to protect New Bern's cultural heritage and historic community character through ongoing public education, planning and the adaptation of historic and culturally significant places to minimize flooding and climate impacts.

8.4 Goals and Objectives

Each resilience pillar defined above is supported by the *goals and objectives* listed below.



8.4.1 : Health and Safety

- Goal HS1: Provide accessible and affordable basic health services and communication.
- Goal HS2: Ensure easy access to fresh and healthy foods.
- Goal HS3: Increase construction of connected and equitable pedestrian sidewalks, trails, greenways, and bike paths for exercise and access.
- Goal HS4: Develop a comprehensive emergency operations framework.



8.4.2 : Housing

- Goal HO1: Educate citizens of best practices related to finances in predation of home ownership.
- Goal HO2: Educate citizens and other parties on best practices related to homeownership/renter-ship.
- Goal HO3: Partner with developers to create sustainable PUDs preserving open spaces for flood control and limiting impervious surfaces.
- Goal HO4: Implement various pre- and post-disaster mitigation practices, including property acquisition, elevation, relocation, and floodproofing.



8.4.3 : Economy

- Goal EC1: Improve community resilience while advancing social and racial equity.
- Goal EC2: Build business resilience and advance small business startups throughout the community.
- Goal EC3: Provide training and educational opportunities for job skills/trades and provide a path to careers through internships and apprenticeships.



8.4.4 : Infrastructure

- Goal IN1: Ensure daily peak capacities and operating reserve capacities are available and ensure redundancy in operating systems.
- Goal IN2: Ensure reliability through financial stability, design, testing, maintenance, and repairs.
- Goal IN3: Inventory all sidewalks and roads and compare for equitable access to well-maintained sidewalks and roadways.
- Goal IN4: Inventory and evaluate the performance of the existing stormwater system, including closed pipe systems and open surface drainage systems.

- Goal IN5: Establish the infrastructure necessary to support a comprehensive emergency operations framework.



8.4.5 : Natural Resources

- Goal NR1: Design new developments to protect natural resource areas and include educational components to convey the importance of natural areas.
- Goal NR2: Convert flood-prone areas into safe accessible green and public spaces, making sure to include women, children, older persons, and persons with disabilities.
- Goal NR3: Promote physical and mental health through improvements in water quality and air quality.
- Goal NR4: Reduce flood risk while improving water quality and enhance wildlife habitat and recreational opportunities.
- Goal NR5: Improve community resiliency through identification, prioritization, design and implementation of nature-based solutions that support the City of New Bern's Redevelopment Plan, environmental values, and historic preservation priorities.
- Goal NR6: Foster collaboration with federal, state, regional, and local agencies, as well as other coastal communities, to increase resilience in New Bern.



8.4.6 : Cultural Heritage

- Goal CH1: Implement a public awareness and engagement program to support proactive action by property owners, stewards, and residents in preparing themselves and their older and historic buildings for future disasters.
- Goal CH2: Lead with infrastructure resilience efforts in flood adaptation and mitigation to protect historic and culturally significant neighborhoods.
- Goal CH3: Ensure that disaster recovery incorporates a "build back better" approach that prioritizes building rehabilitation over demolition.
- Goal CH4: Align land use and economic development planning to incentivize the adaptation of cultural and natural heritage assets.

8.5 Actions

Each goal defined above is supported by specific activities as defined in the *Resilience Action* list found in the following subsection. Supporting information for each identified action, including lead agency responsible, timeframe for completion, estimated cost, and potential funding sources, has been developed to the extent possible and will continue to be developed over the course of Plan implementation. Additional information, including detailed Resilience Action Worksheets, is available upon request from the City.

HS1a: Coordinate with the Craven County Health Department and other relevant stakeholders to establish a health center (or centers) in the most vulnerable area(s) of New Bern.

HS2a: Work with organizations and retailers to establish a farmers' market and or grocery store in food desert areas.

HS3a: Construct pedestrian infrastructure with appropriate wayfinding signage to connect citizens to various parts of the City, including a system of design greenways that connects historic and culturally significant areas throughout the City.

HS4a: Establish emergency shelters and/or alternative temporary housing opportunities to be utilized during and following a hazard event.

HS4b: Analyze emergency transportation operations based on established evacuation zones/subzones and primary and alternate transportation routes, and convey information to the public using standardized communication, education, signage, and maps.

HS4c: Establish non-negotiable emergency contracts that discuss materials staging areas, points of distribution, and the mobilization of materials to affected individuals.

HS4d: Emphasize public health concerns by partnering with first responders and public health organizations to educate building owners on an annual basis about the biological hazards associated with post-disaster building rehabilitation.

HS4e: Create a framework for coordination of non-profit organizations during and following a disaster event.

HS4f: Establish a field team to assist in pre-disaster preparedness and post-disaster recovery.

HO1a: Engage with local financial institutions to host or facilitate classes in-person and online on personal finances and financial risk management for flood risk, including discussion of various types of personal and homeowners insurance.

HO2a: Hold classes and discussions on home ownership/renter-ship as it relates to the flood hazard, geared toward homeowners, renters, landlords, and real estate agents.

HO3a: Design PUD's for smaller homes and land preservation.

HO4a: Explore potential property acquisition locations and codify previously-identified property buyout areas, to potentially include an outreach program that supports community-based planning for buyouts.

HO4b: Analyze potential properties suited for structure elevation and/or relocation, including specific guidance for properties in designated historic districts.

HO4c: Implement wet and/or dry floodproofing measures for suitable vulnerable structures, to include specific guidance for properties in designated historic districts.

HO4d: Establish locations and opportunities for permanent replacement housing for affected individuals during and following a hazard event.

HO4e: Work directly with leaders in vulnerable, culturally-significant neighborhood communities to identify, communicate, and promote affordable mitigation and adaptation opportunities for homes older than 50 years.

EC1a: Develop and implement a personal resilience toolkit for use by families and individuals in all City neighborhoods with special emphasis on Greater Five Points.

EC2a: Work collaboratively with the New Bern Area Chamber of Commerce and the SBC to develop a business resilience toolkit.

EC2b: Conduct an economic assessment to determine the value of heritage tourism to the New Berm economy with specific emphasis on what revenue is at risk if resilience is not addressed.

EC3a: Establish partnerships with Craven Community College (CCC) and East Carolina University (ECU) to create an apprenticeship program in city departments and other agencies.

IN1a: Fund and construct new power delivery point, substation, feeder, and feeder ties per the most recent load study.

IN2a: Perform frequent cost of service studies to ensure adequate rates. Fund predictive testing, maintenance, repair and vegetation management

IN3a: Provide an app for citizens to share concerns related to conditions/access and/or educate individuals about existing app(s).

IN4a: Perform an inventory of existing stormwater infrastructure.

IN4b: Perform a comprehensive study of the existing stormwater system to determine system performance and capacity.

IN5a: Establish a long-term Emergency Operations Center (EOC) and communication distribution network with necessary equipment.

NR1a: Improve and/or encourage compliance with existing design standards that set aside areas for protection as natural resources, and educate relevant parties on the specifics of existing ordinances and standards.

NR2a: Conserve parcels for enhancing/restoring floodplain connectivity and flood water attenuation through stream restoration and other means.

NR2b: Create a plan of dedicated open space areas that encourages effective utilization of open space and allows for the conversion of areas into open spaces and parks.

NR3a: Enhance and increase the percentage of green streetscapes and natural areas within residential neighborhoods and urban locations to motivate healthy behaviors, support physical activity, and improve/sustain mental health.

NR3b: Augment tree canopies to reduce energy demands and lower local emissions.

NR4a: Develop small-scale projects, such as rain gardens, to reduce impacts of local flooding events which improving community appeal and habitat.

NR4b: Adopt Low Impact Development (LID) standards for new or redevelopment that use or mimic natural processes to manage stormwater runoff.

NR5a: Duffyfield Canal Restoration Project

NR5b: Duffyfield Stormwater Enhancement Project

NR5c: Trent Court Shoreline Restoration/Green Space Project

NR5d: Ensure the long-term maintenance of the existing water level gage to support flood inundation mapping and prediction.

NR5e: Install a new water level gage in the Jack Smith Creek watershed to support flood inundation mapping and prediction.

NR6a: Foster coordination and collaboration with three (3) Federal agencies per year to develop and implement resiliency solutions.

NR6b: Foster coordination and collaboration with three (3) State agencies per year to develop and implement resiliency solutions.

NR6c: Foster coordination and collaboration with three (3) regional agencies per year to develop and implement resiliency solutions.

NR6d: Foster coordination and collaboration with three (3) universities per year to develop and implement resiliency solutions.

NR6e: Create and fund a grants manager position to utilize the existing framework for financing from grant and loan sources to support projects to enhance and/or restore natural resources as well as funding opportunities for public and private investment in adaptation and rehabilitation of culturally and historically significant areas.

CH1a: Establish partnerships and shared opportunities to educate the public about the value and methods for adapting historic places (e.g., historic preservation month, emergency preparedness month, hurricane awareness month, Earth Day, other).

CH1b: Provide technical assistance specific to cultural institutions and historic sites and museums on developing disaster and emergency management plans.

CH1c: Share success stories on adaptation with the NC State Historic Preservation Office to support New Bern as a model for best practices in resilience planning in North Carolina.

CH1d: Develop interpretive signage which includes a history of disaster events and future flood risk in areas vulnerable to flooding and sea level rise.

CH2a: Prioritize mitigation work on publicly owned buildings and infrastructure to fortify older and historic neighborhoods that contribute to the economic, cultural, and social vitality of New Bern.

CH2b: Promote new housing infill sensitive to the architectural and historic character and social connectedness of the neighborhood.

CH2c: Conduct 3D lidar scanning of the Downtown Historic District to create both a visualization of the impacts of sea level rise over the next 100 years and a data record that can be used post-disaster for reconstruction or rehabilitation of damaged or lost properties.

CH2d: Develop design guidelines for adapting historic properties to minimize flooding.

CH2e: Gather or update survey data on the location, appearance, significance, integrity, and boundaries of properties in flood hazard areas sufficient to evaluate the properties' historic, architectural, archeological, and cultural significance.

CH2f: Conduct a non-structural assessment flood elevation survey for prioritized properties within the historic district.

CH3a: Support flexibility in historic district design review by utilizing the National Park Service (NPS) flooding for rehabilitation guidance. (e.g., use of flood resistant materials, building elevation & relocation, flood barriers).

CH3b: Train City and County disaster response staff and property stewards involved in disaster preparedness, response and recovery on preservation-sensitive adaptation and rehabilitation approaches.

CH4a: Recognize and promote the adaptation of properties that support the heritage travel and tourism industry.

CH4b: Partner with Swiss Bear, Inc. and the New Bern Chamber of Commerce to identify and adopt policies that support small business continuity planning within the designated historic districts.

CH4c: Support through technical assistance those neighborhood-serving commercial properties in culturally significant areas in Greater Five Points, including Dryborough and Duffyfield

CH4d: Create regulatory incentives, including market-based approaches, for private sector investment in adaptation and mitigation within public space and historic commercial corridors.

CH4e: Establish a cultural heritage overlay district that supports documenting, designating and incentivizing social and cultural heritage assets, both tangible and intangible, to acknowledge neighborhood identity, disaster risk and the need to enhance cultural uses and maintain vulnerable buildings.

8.6 Prioritization

Resilience actions identified as part of the resilience strategy were rated using the STAPLEE method, which uses seven criteria to evaluate an action: Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Within each criteria, multiple overarching considerations were made to assess each action:

- Social: community acceptance and effects on portions of the population
- Technical: technical feasibility, long-term nature of solutions, and secondary impacts
- Administrative: staffing, funding allocations, and maintenance and operation
- Political: political support, plan champions and proponents, and public support
- Legal: state/local/regional authority and potential legal challenges
- Economic: costs and benefits, contribution to economic goals, and funding
- Environmental: effects on land/water/endangered species/waste and consistency with environmental laws and goals

Additional information on the STAPLEE method can be found under Objective 17.2 at the following link: https://training.fema.gov/hiedu/docs/cem/comparative%20em%20-%20session%2017%20-%20assess%20and%20select%20mitigation%20options.doc

Resilience actions are prioritized for implementation based on their STAPLEE score. The ten top-rated actions across all resilience pillars are listed below, with item 1 being the highest-ranked action and item 10 being the lowest-ranked action among the top ten actions.

1. (NR5b) Duffyfield Stormwater Enhancement Project
2. (NR5a) Duffyfield Canal Restoration Project
3. (IN1a) Fund and construct new power delivery point, substation, feeder, and feeder ties per the most recent load study.

4. (NR4a) Develop small-scale projects, such as rain gardens, to reduce impacts of local flooding events while improving community appeal and habitat.
5. (NR6a) Foster coordination and collaboration with three (3) Federal agencies per year to develop and implement resiliency solutions.
6. (NR6b) Foster coordination and collaboration with three (3) State agencies per year to develop and implement resiliency solutions.
7. (NR6c) Foster coordination and collaboration with three (3) regional agencies per year to develop and implement resiliency solutions.
8. (NR6d) Foster coordination and collaboration with three (3) universities per year to develop and implement resiliency solutions.
9. (NR6e) Create and fund a grants manager position to utilize the existing framework for financing from grant and loan sources to support projects to enhance and/or restore natural resources as well as funding opportunities for public and private investment in adaptation and rehabilitation of culturally and historically significant areas.
10. (EC1a) Develop and implement a personal resilience toolkit for use by families and individuals in all City neighborhoods with special emphasis on Greater Five Points.

In addition to ranking resilience actions across all resilience pillars, actions are also prioritized within each of the six pillars. The top three resilience actions within each pillar are listed below, with item 1 being the highest-ranked action and item 3 being the lowest-ranked action among the top three actions within each pillar. A complete list of STAPLEE scores for all actions listed within this Plan is available upon request from the City.

Health & Safety:

1. (HS1a) Coordinate with the Craven County Health Department and other relevant stakeholders to establish a health center (or centers) in the most vulnerable area(s) of New Bern.
2. (HS4f) Establish a field team to assist in pre-disaster preparedness and post-disaster recovery.
3. (HS4a) Establish emergency shelters and/or alternative temporary housing opportunities to be utilized during and following a hazard event.

Housing:

1. (HO1a) Engage with local financial institutions to host or facilitate classes in-person and online on personal finances and financial risk management for flood risk, including discussion of various types of personal and homeowners insurance.
2. (HO2a) Hold classes and discussions on home ownership/renter-ship as it relates to the flood hazard, geared toward homeowners, renters, landlords, and real estate agents.
3. (HO4e) Work directly with leaders in vulnerable, culturally-significant neighborhood communities to identify, communicate, and promote affordable mitigation and adaptation opportunities for homes older than 50 years.

Economy:

1. (EC1a) Develop and implement a personal resilience toolkit for use by families and individuals in all City neighborhoods with special emphasis on Greater Five Points.

2. (EC2a) Work collaboratively with the New Bern Area Chamber of Commerce and the Small Business Center (SBC) to develop a business resilience toolkit.

3. (EC2b) Conduct an economic assessment to determine the value of heritage tourism to the New Berm economy with specific emphasis on what revenue is at risk if resilience is not addressed.

Infrastructure:

1. (IN1a) Fund and construct new power delivery point, substation, feeder, and feeder ties per the most recent load study.
2. (IN4b) Perform a comprehensive study of the existing stormwater system to determine system performance and capacity.

3. (IN5a) Establish a long-term Emergency Operations Center (EOC) and communication distribution network with necessary equipment.

Natural Resources:

1. (NR5b) Duffyfield Stormwater Enhancement Project

2. (NR5a) Duffyfield Canal Restoration Project

3. (NR4a) Develop small-scale projects, such as rain gardens, to reduce impacts of local flooding events while improving community appeal and habitat.

Cultural Heritage:

1. (CH2b) Promote new housing infill in non-flood-prone areas that is sensitive to the architectural and historic character and social connectedness of the neighborhood.

2. (CH2f) Conduct a non-structural assessment flood elevation survey for prioritized properties within the historic district.

3. (CH3b) Train City and County disaster response staff and property stewards involved in disaster preparedness, response, and recovery on preservation-sensitive adaptation and rehabilitation approaches.

Overall, STAPLEE scores determined for each resilience action help prioritize projects, policies, and other activities for implementation across all resilience pillars and within individual pillars. Prioritization is for planning purposes only and was completed with best available information. It is anticipated that the prioritization of resilience actions will continue to evolve over time as the Plan is implemented and additional information becomes available.

9.0 Plan Maintenance Procedures

This section discusses how the Resiliency Strategy will be implemented by the City of New Bern and how the overall Plan will be evaluated, updated, and enhanced over time. This section also discusses how the public will continue to be involved in the resiliency planning process. It consists of the following subsections:

1. Implementation
2. Monitoring, Evaluation, and Enhancement
3. Continued Public Involvement

9.1 Implementation

The City of New Bern, along with its individual departments, partners, stakeholders, and contractors, is responsible for implementing the resiliency actions identified in this Plan (Section 8). In most cases, each proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual department leads to update their own unique action item list as needed without altering the broader focus of the Plan. Having said this, the overall lead agency for this Plan is the City of New Bern Community & Economic Development Division.

In addition to the assignment of a local lead department or agency, an implementation time period or a specific implementation date or window has been assigned to most actions to help assess whether actions are being implemented in a timely fashion. The City will seek outside funding sources to implement projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions. It will be the responsibility of each department or project champion to determine additional implementation procedures beyond those listed within the Plan. This includes integrating the requirements of the Plan into other local planning documents, processes, or procedures such as comprehensive, land use, or capital improvement plans, when appropriate.

The members of the Core Planning Team will remain charged with ensuring that the vision and goals of new and updated local planning documents are consistent with the vision and goals of this Plan and will not contribute to increased hazard vulnerability within the City. Opportunities to integrate the requirements of this Plan into other local planning mechanisms shall continue to be identified through future meetings of the Core Planning Team and through the five-year review process described herein. Although it is recognized that there are many possible benefits to integrating components of this Plan into other local planning mechanisms, the development and maintenance of this stand-alone Resiliency Plan is deemed by the Core Planning Team to be the most effective and appropriate method to implement resiliency and flood hazard mitigation actions at this time.

9.2 Monitoring, Evaluation, and Enhancement

The department with overall responsibility for monitoring and maintaining this Plan is the City of New Bern Community & Economic Development Division. The official plan update cycle for this plan will be on a 5-year basis.

More frequent revisions and updates of the Plan may be necessary to ensure that the vision and goals of the Plan are kept current, considering potential changes in hazard vulnerability, development, social and economic changes, climate change, and resiliency priorities. In addition, ongoing revisions may be necessary to ensure that the Plan is in full compliance with applicable state and federal regulations. Periodic evaluation of the Plan will also ensure that specific actions are being reviewed and carried out in an effective and timely manner. It is recommended that these periodic evaluations take place at least annually as part of the overall 5-year plan update cycle. Changes recommended during an annual periodic review may be made immediately if time-sensitive, or they may be held for the more comprehensive 5-year plan update. At a minimum, the Plan will be updated in some form every 5 years.

The Core Planning Team will continue to meet regularly, as determined by the Community & Economic Development Division. These meetings will take place in the Spring of each year so as to coincide with Hurricane Season preparations and public outreach messages. A primary purpose of these meetings will be to assess the status of any resiliency actions relevant to the upcoming hurricane season. Meetings will also be convened as necessary following any disaster events warranting a reexamination of the actions being implemented or assigned priorities. These planning team meetings will likely be concurrent with the periodic evaluations described above.

Staff will also continue to attend training workshops sponsored by North Carolina Emergency Management (NCEM) and other partners as appropriate in order to keep up-to-date with any changing guidance or planning requirements and to communicate that information to other City representatives, partners, and stakeholders.

As part of this monitoring, evaluation, and enhancement process, the City will provide an annual report to the Board of Aldermen in order to evaluate the Plan's effectiveness. This will help ensure that the Plan is continuously maintained and updated to reflect the needs present within the planning area.

9.2.1 : Focus of the 5-Year Plan Review

The Plan will be thoroughly reviewed in its entirety by the Core Planning Team every 5 years to determine whether there have been any significant changes in the planning area that may, in turn, necessitate changes in the types of resiliency actions proposed. New development in identified hazard areas, an increased exposure to flooding hazards, the increase or decrease in capability to address hazards, and changes to state or federal legislation are examples of factors that may affect the necessary 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 resiliency measures. The plan review also provides the opportunity to address actions that may not have been successfully implemented as assigned. The Community & Economic Development Division will be responsible for reconvening the Core Planning Team and conducting the 5-year review.

During the 5-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the vision, core tenets, and goals still address both current and future conditions?
- Has the nature or magnitude of flood risks changed?
- Are the current resources appropriate for implementing the Plan?
- Are there implementation problems, such as technical, political, legal, or coordination issues with other agencies, partners, or stakeholders?
- Have the outcomes occurred as expected?
- Did departments, agencies, and other partners participate in the plan implementation process as proposed?

Following the 5-year review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures outlined herein. Upon completion of the review and update/amendment process, the Plan will be submitted to the Board of Aldermen for final review, approval, and adoption in accordance with local procedures.

9.2.2 : Future Disaster Declarations

Following a disaster declaration, the Plan will be revised as necessary to reflect lessons learned, or to address specific issues and circumstances arising from the event. It will be the responsibility of the Community & Economic Development Division to reconvene the Core Planning Team and ensure the appropriate stakeholders are invited to participate in the plan revision and update process following declared disaster events.

9.2.3 : Reporting Procedures

The results of the 5-year review will be summarized by the Core Planning Team in the relevant sections of the updated plan. This includes: a comprehensive description of the plan update process including an evaluation of plan effectiveness (Section 3); any updates to the community profile (Section 4); any changes relevant to the capability assessment (Section 5); changes to cultural and historic resources (Section 6), any notable revisions or updates to the flood vulnerability assessment (Section 7); updated resiliency goals and consideration of resiliency action alternatives (Section 8); status updates on previously adopted actions (including the identification of reasons for delays or obstacles to their implementation) as well as the identification of newly proposed actions; and revisions or updates to plan maintenance procedures (Section 9).

Any necessary revisions or changes to Plan elements must follow the monitoring, evaluation, and enhancement procedures outlined herein.

9.3 Continued Public Involvement

Public participation is an integral component of the resiliency planning process and will continue to be essential as this Plan evolves, matures, and is updated over time. The most appropriate and meaningful opportunities for the general public to be involved in the maintenance and implementation of the Plan is during the 5-year plan review process described earlier in this section. As demonstrated in Section 3: Planning Process, participating members of the public and stakeholder partners have been diligent and successful in participating in widespread involvement through multiple methods. While the 5-year plan review process represents the greatest opportunity for such involvement, other efforts to involve the public in the maintenance, evaluation, and revision process will continue to be made as necessary, especially before the start of each annual Hurricane Season.

These efforts may include:

- Advertising meetings of the Core Planning Team in local newspapers, public bulletin boards, and/or City and County office buildings;
- Designating willing and voluntary citizens and private sector representatives as official members of the Core Planning Team;
- Working with children through school programs and other appropriate venues in an effort to engage parents and other adults;
- Utilizing local media to update the public of any maintenance and/or periodic review activities taking place;
- Utilizing City and County websites to advertise any maintenance and/or periodic review activities taking place;

- Keeping copies of the Plan online and in public libraries; and
- Posting any Annual Reports on the Plan to City websites.

APPENDIX A

ACRONYMS AND ABBREVIATIONS

Acronyms and Abbreviations

The following is a list of acronyms and abbreviations that are either used within this Plan or that are helpful in the context of community resilience and hazard mitigation.

AICP*	American Institute of Certified Planners
APA	American Planning Association
AGOL	ArcGISOnline
ASFPM	Association of State Floodplain Managers
BCA	Benefit-Cost Analysis
BFE	Base Flood Elevation
BRIC	Building Resilient Infrastructure and Communities
CDBG	Community Development Block Grant
CDBG-DR	Community Development Block Grant-Disaster Recovery
CDBG-MIT	Community Development Block Grant-Mitigation
CDC*	Centers for Disease Control
CFM*	Certified Floodplain Manager
CIKR	Critical Infrastructure and Key Resources
CLOMA	Conditional Letter of Map Amendment
CLOMR	Conditional Letter of Map Revision
COBRA	Coastal Barriers Resources Act
CRHMP	Cultural Resource Hazard Mitigation Plan
CRS	Community Rating System
DFE	Design Flood Elevation
DEM	Digital Elevation Model
DFIRM	Digital Flood Insurance Rate Map
DR*	Disaster Declarations
EM	Emergency Management
EMS	Emergency Management Services
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operation Plan
EPA*	Environmental Protection Agency
ESF	Emergency Support Function
FEMA*	Federal Emergency Management Agency
FFE	Finished Floor Elevation
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance
FY*	Fiscal Year
GIS*	Geographic Information System
GMSL	Global Mean Sea Level
H&H	Hydraulics and Hydrology

Hazus-MH*	Hazards U.S.-Multi-Hazard
HHS	Department of Health and Human Services
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HPC	Historic Preservation Commission
HPF	Historic Preservation Foundation
HUD*	U.S. Department of Housing and Urban Development
IA	Individual Assistance
IRC	International Residential Code
LiDAR*	Light Detectionand Ranging
LiMWA	Limit of Moderate Wave Action
LOMA	Letter of Map Amendment
LOMR	Letter of Map Revision
M&N	Moffatt & Nichol
MHHW	Mean Higher High Water
MOM	Maximum of the Maximum Envelopes of Water
MSL	Mean Sea Level
NAVD88*	North American Vertical Datum 1988
NBHS	New Bern Historical Society
N+F	NEMAC+FernLeaf
NCDC	National Climatic Data Center
NCFMP	North Carolina Floodplain Mapping Program
NCORR	North Carolina Office of Recovery and Resiliency
NCDOT*	North Carolina Department of Transportation
NCEM	North Carolina Emergency Management
NCHPO	North Carolina Historic Preservation Office
NFIP	National Flood Insurance Program
NFWF	National Fish and Wildlife Foundation
NHC	National Hurricane Center
NOAA*	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
NTHP	National Trust for Historic Preservation
NWS*	National Weather Service
PA	Public Assistance
PE*	Professional Engineer
PIO	Public Information Officer
R&R	Response and Recovery
RL	Repetitive Loss
SBA	Small Business Administration
SFHA	Special Flood Hazard Area
SLOSH*	Sea, Lake, and Overland Surge from Hurricanes
SLR	Sea Level Rise

SRL	Severe Repetitive Loss
STAPLEE*	Social, Technical, Administrative, Political, Legal, Environmental, Economic
SVI	Social Vulnerability Index
TCG	The Craig Group
UNC	University of North Carolina (including UNC-Wilmington, UNC-Chapel Hill, UNC-Asheville, etc.)
USACE*	United States Army Corps of Engineers

* denotes common acronym terminology and will be introduced once in the Plan upon first reference. All other acronyms will be introduced once per section upon first reference in that section.

APPENDIX B

GLOSSARY

Glossary

The following is a list of terms and their associated definitions as used or referenced within this Plan, or that are helpful in the overall context of community resilience and hazard mitigation. If the definition has an official source, that source is stated at the end of the definition. If there is no specific source given, the definition was developed as part of the development of this Plan. Note: larger topics or themes are introduced and described in detail throughout the Plan. Not all of these appear in the list below.

Adaptation	The action or process of adapting or being adapted.
Adaptive Capacity	Ability an asset has to cope or withstand impacts from a hazard with minimal disruption or cost.
Asset	Resources, services, infrastructure, and people that make up a collection of community values that are represented in a resilience assessment or plan.
Base Flood	A flood having a one percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood." The base flood is the national standard used by the National Flood Insurance Program (NFIP) and all Federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development. Base Flood Elevations (BFEs) are typically shown on Flood Insurance Rate Maps (FIRMs). (FEMA)
Benefit-Cost Analysis	A quantitative procedure that assesses the desirability of a project by taking a view of avoided future damages compared to the cost of a project. The outcome of the analysis is a benefit-cost ratio, which demonstrates whether the net present value of benefits exceeds the net present value of costs. (FEMA)
Coastal High Hazard Areas	Special Flood Hazard Areas (SFHAs) along the coasts that have additional hazards due to wind and wave action. These areas are identified on Flood Insurance Rate Maps (FIRMs) as zones V, V1-V30, and VE. (FEMA)
Community Rating System	A program developed by FEMA to provide incentives for those communities in the Regular Program that have gone beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding. (FEMA)
Cost Effectiveness	A qualitative method for comparing the costs of several alternative means to achieve the same benefits of a given objective and the benefits in the context of avoided future damages and losses. Cost effectiveness is generally determinedthrough consensus of local officials and may be determined in tandem with a benefit-cost analysis.
Critical Facility	Typical critical facilities include hospitals, fire stations, police stations, storage of critical records, and similar facilities. These facilities should be given special consideration when formulating regulatory alternatives and floodplain management plans. A critical facility should not be located in a floodplain if at all possible. If a critical facility must be located in a floodplain it should be provided a higher level of protection so that it can continue to function and provide services after the flood. Communities should develop emergency plans to continue to provide these services during the flood. Under Executive Order 11988, Floodplain Management, Federal agencies funding and/or permitting critical facilities are required to avoid the 0.2

	percent (500-year) floodplain or protect the facilities to the 0.2 percent chance flood level. (FEMA)
Cultural Resources	Aspects of a cultural system that are valued by or significantly representative of a culture or that contain significant information about a culture. Cultural resources may be tangible entities or cultural practices. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places and as archeological resources, cultural landscapes, structures, museum objects and archives, and ethnographic resources for Federal management purposes. Also includes cultural items as that term is defined in section 2(3) of the Native American Graves Protection and Repatriation Act [25 USC 3001(3)]; and archeological resources, as that term is defined in section 3(1) of the Archaeological Resources Protection Act of 1979 [16 USC 470bb(1)]. (FEMA)
Development	Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials. A community without a Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map (FHBM) must require a permit for all proposed construction or other development in the community, so that it can determine whether the construction or other development is proposed within a flood-prone area. Once a FIRM or FHBM has been issue for the community, it must require permits within the designated Special Flood Hazard Area (SFHA). (FEMA)
Disaster	An occurrence of a natural catastrophe that has resulted in severe property damage, deaths, and/or multiple injuries. (FEMA)
Elevated Building	A building that has no basement and that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns. Solid (perimeter) foundations walls are not an acceptable means of elevating buildings in V and VE zones. (FEMA)
Elevation Certificate	A community's permit file must have an official record that shows new buildings and substantial improvements in all identified Special Flood Hazard Areas (SFHAs) are properly elevated. This elevation information is needed to show compliance with the floodplain management ordinance. FEMA encourages communities to use the Elevation Certificate developed by FEMA to fulfill this requirement since it also can be used by the property owner to obtain flood insurance. Communities participating in the Community Rating System (CRS) are required to use the FEMA Online Elevation Certificate (FEMA 81-31). (FEMA)
Emergency Support Function	A functional area of response activity established to facilitate the delivery of Federal assistance required during the immediate response phase of a disaster to save lives, protect property and public health, and to maintain public safety. ESFs represent those types of Federal assistance which the State will most likely need because of the impact of a catastrophic or significant disaster on its own resources and response capabilities, or because of the specialized or unique nature of the assistance required. ESF missions are designed to supplement State and local response efforts. (FEMA)
Exposure	An asset that is in harm's way of a hazard or threat.

Federal Share	The amount of project funding the Federal government agrees to provide to a grantee on the assumption the applicant will provide a share of the total funding needed to complete the project.
Flash Flood	Follows a situation in which rainfall is so intense and severe and runoff so rapid that it precludes recording and relating it to stream stages and other information in time to forecast a flood condition. (FEMA)
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waters, unusual or rapid accumulation or runoff of surface waters, or mudslides/mudflows caused by accumulation of water. (FEMA)
Flood Insurance Rate Map	Official map of a community on which FEMA has delineated the Special Flood Hazard Areas (SFHAs), the Base Flood Elevations (BFEs), and the risk premium zones applicable to the community. (FEMA)
Flood Insurance Study	A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information and maps are assembled into an FIS. The FIS report contains detailed flood elevation data in flood profiles and data tables. (FEMA)
Flood-Related Erosion	The collapse or subsidence of land along the shore of a body of water as a result of 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 an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding. (FEMA)
Flood Zones	Flood hazard areas identified on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded). (FEMA)
Floodplain	Any land area susceptible to being inundated by floodwaters from any source. (FEMA)
Floodplain Management	A decision-making process that aims to achieve the wise use of the nation's floodplains. "Wise use" means both reduced flood losses and protection of the natural resources and function of floodplains. (FEMA)
Floodproofing	Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.
Floodway	A "Regulatory Floodway" means 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 a designated

	height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations. For streams and other watercourses where FEMA has provided Base Flood Elevations (BFEs), but no floodway has been designated, the community must review floodplain development on a case-by-case basis to ensure that increases in water surface elevations do not occur, or identify the need to adopt a floodway if adequate information is available. (FEMA)
Freeboard	An additional amount of height above the Base Flood Elevation used as a factor of safety (e.g., 2 feet above the Base Flood) in determining the level at which a structure's lowest floor must be elevated or floodproofed to be in accordance with state or community floodplain management regulations. (FEMA)
Grant Programs	Programs of discretionary or formula grants and/or cooperative agreements administered by a Federal or State agency. (FEMA)
Hazard Mitigation	Any action taken to reduce or eliminate the long-term risk to people and property from natural hazards. (FEMA)
Historic Property	Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records and material remains which are related to such district, site, building, structure, or object. [(16 USC Section 70(w)(5)]. (FEMA)
Hurricane	A tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74 miles per hour or more and blow in a large spiral around a relatively calm center or "eye." Circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrodynamic Forces	Hydrodynamic forces are imposed on an object, such as a building, by water flowing against and around it. Among the forces are positive frontal pressure against the structure, drag effect along the sides, and negative pressure in the downstream side. Hydrodynamic forces are one of the main causes of flood damage. Typical areas where hydrodynamic forces are of particular concern are along rivers and streams with high velocity floodwaters and coastal and other areas subject to wave forces. (FEMA)
Hydrostatic Forces	Standing water or slowly moving water can induce horizontal hydrostatic forces against a structure, especially when floodwater levels on different sides of a wall are not equal. Also flooding can cause vertical hydrostatic forces, or flotation. Hydrostatic forces are one of the main causes of flood damage. (FEMA)
Jurisdiction	A range or sphere of local government authority. For example, jurisdictions relevant to this planning effort include the City of New Bern, Craven County, and other local government entities.
Low Income	Federal agencies and programs may, within the boundaries set by Federal law, establish their own guidelines for defining low-income populations. The following are common explanations of low-income populations as defined by the agencies determining program eligibility: • HUD defines a low-income household as a household whose total income does not exceed 80 percent of the median income for the area, as determined by HUD, with adjustments for smaller and larger families, except that HUD may establish income ceilings higher or lower than 80 percent of the median for the area on the basis of HUD's findings that such variations are necessary because of prevailing levels of

	construction costs or fair market rents, or unusually high or low family incomes. HUD income limits are updated annually and are available from local HUD offices for the appropriate jurisdictions. • HHS does not define "low-income," but it issues poverty guidelines in the Federal Register each year for use in determining eligibility for certain of its means-tested programs. These guidelines simplify poverty thresholds issued by the Census Bureau for use for administrative purposes such as determining financial eligibility for certain Federal programs. (FEMA)
Matching Funds	The amount of project funding that a grantee agrees to provide in return for being awarded partial Federal funding of the same project. Also called a *non-Federal share*.
Natural Hazard	Naturally occurring atmospheric, hydrologic, or geologic events that are potentially dangerous or harmful and that are often the root cause of unwanted outcomes. Natural hazards include flooding, hurricanes, tornadoes, droughts, wildfires, earthquakes, severe winter weather, high wind events, etc.
Natural Resources	Land, fish, wildlife, biota, and water. Water means salt and fresh water, surface, and ground water used for drinking, irrigation, aquaculture, and recreational purposes, as well as in its capacity as fish and wildlife habitat. (FEMA)
Nonprofit Organization	A tax-exempt organization that serves the public interest. In general, the purpose of this type of organization must be charitable, educational, scientific, religious, or literary. It does not declare a profit and utilizes all revenue available after normal operating expenses in service to the public interest. This organization is a 501(c)(3) or a 501(c)(4) designate. (FEMA)
Plan Development	The process of generating and comparing possible solutions for achieving goals and objectives, determining response and recovery capabilities, and identifying resource gaps. (FEMA)
Planning Team	A group of individuals with a variety of expertise and perspectives planning for natural hazards.
Population	People within a community or study area. Socioeconomic metrics are often used to understand demographics and elements of social vulnerability within a community.
Post-FIRM Building	A building for which construction or substantial improvement occurred after December 31, 1974 or on or after the effective date of an initial Flood Insurance Rate Map (FIRM), whichever is later. Post-FIRM buildings are new construction and those built after the effective date of the first FIRM for a community. Insurance rates for Post-FIRM buildings are dependent on the elevation of the lowest floor in relation to the Base Flood Elevation (BFE). (FEMA)
Pre-FIRM Building	A building for which construction or substantial improvement occurred on or before December 31, 1974 or before the effective date of an initial Flood Insurance Rate Map (FIRM). Pre-FIRM buildings are those built before the effective date of the first FIRM for a community. This means they were built before detailed flood hazard data and flood elevations were provided to the community and usually before the community enacted comprehensive regulations on floodplain regulation. Pre-FIRM buildings can be insured using "subsidized" rates. These rates are designed to help people afford flood insurance even though their buildings were not built with flood protection in mind. (FEMA)

Public Assistance	The Public Assistance (PA) Grant Program provides assistance to State, Local, Tribal, and Territorial governments, and certain types of Private Non-Profit (PNP) organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. (FEMA)
Redevelopment	Rebuilding degraded, damaged or destroyed social, economic and physical infrastructure in a community, State or Tribal government to create the foundation for long-term development. (FEMA)
Rehabilitation	The return of infrastructure damaged by a major disaster to a safe and sanitary living or functioning condition. Specifically refers to returning infrastructure to a habitable condition. (FEMA)
Repetitive Loss Structure	An NFIP-insured structure that has had at least 2 paid flood losses of more than $1,000 each in any 10-year period since 1978. (FEMA)
Resilience	The capacity of a sector, community, system, institution, asset, or individual to withstand, respond, and recover from an adverse event no matter what types of chronic stressors, acute shocks, and risk accelerators may be impacting the target.
Risk	The potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences. With respect to continuity, risk may degrade or hinder the performance of essential functions and affect critical assets associated with continuity operations. (FEMA) Within the assessment framework risk refers to the combination or probability and consequence of a hazard impacting an asset.
Sector	Sectors are cross-sections of an area such as residential, commercial, industrial, government, faith-based and charitable, historic, emergency services, and other reflections of life, infrastructure, and assets.
Socially Vulnerable Populations	Socially vulnerable populations are people or groups that are underserved in terms of the distribution of community resources, or have been made susceptible due to historical marginalization and/or stressors in the community, such as lack of affordable housing and economic opportunity. Socially vulnerable populations are also disproportionately impacted by hazard events.
Special Flood Hazard Area	An area having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM) Zone A, AO, A1-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V. The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. For the purpose of determining Community Rating System (CRS) premium discounts, all AR and A99 zones are treated as non-SFHAs. (FEMA)
Special Needs Population	A population whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care. Individuals in need of additional response assistance may include those who have disabilities, who are from diverse cultures, who have limited English proficiency, who are non-English-speaking, or who are transportation disadvantaged. (FEMA)
Storm Surge	A dome of sea water created by the strong winds and low barometric pressure in a hurricane that causes severe coastal flooding as the hurricane strikes land. (FEMA)

Sustainability	Meeting the needs of the present without compromising the ability of future generations to meet their own needs. (FEMA)
Technically Feasible	Term used to describe a project or action utilizing design and construction methods and materials, which are approved, codified, recognized, fall under standard or acceptable levels of practice or otherwise are determined to be generally acceptable by the design and construction industry. (FEMA)
Threat	A natural occurrence that has or indicates the potential to harm life, information, operations, the environment, and/or property.
Underserved Populations	Groups that have limited or no access to resources or that are otherwise disenfranchised. These groups may include people who are socioeconomically disadvantaged; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors. (FEMA)
Very Low Income	For Federal housing programs, a household income of 50 percent of the area median by household size. HUD data is used to calculate very low-income limits. (FEMA)
Vulnerability	Susceptibility an asset has to a hazard or threat. An asset's level of vulnerability is informed by the combination of its potential impact and adaptive capacity.
Vulnerability Assessment	A vulnerability assessment evaluates the susceptibility of assets exposed to hazards. The assessment is performed spatially if data is available to adequately represent exposure, potential impact and adaptive capacity.
Watercourse	A watercourse means only the channel and banks of an identifiable watercourse, and not the adjoining floodplain areas. The flood carrying capacity of a watercourse refers to the flood carrying capacity of the channel (except in the case of alluvial fans, where a channel is not typically defined). (FEMA)
Wet Floodproofing	Wet Floodproofing includes permanent or contingent measures applied to a structure or its contents that prevent or provide resistance to damage from flooding while allowing floodwaters to enter the structure or area. Generally, this includes properly anchoring the structure, using flood resistant materials below the Base Flood Elevation (BFE), protection of mechanical and utility equipment, and use of openings or breakaway walls. Application of wet floodproofing as a flood protection technique under the is limited to enclosures below elevated residential and non-residential structures and to accessory and agricultural structures that have been issued variances by the community. (FEMA)

APPENDIX C

PLANNING PROCESS

TEAM MEMBER	DEPARTMENT	PHONE	EMAIL	PRIMARY ROLE
CORE PLANNING TEAM*				
Amanda Ohlensehlen	Community and Economic Development	252-639-7580	ohlensehlena@newbernnc.gov	Project Lead
Jeffrey Ruggieri	Development Services	252-639-7587	ruggierij@newbernnc.gov	Project Director
Jordan Hughes	City Engineer	252-639-7527	hughesj@newbernnc.gov	Engineered Solutions
Stanley Kite	Emergency Management	252-636-6608	skite@cravencountync.gov	Natural Hazard Risk Management
Robert Boyd	Fire-Rescue Chief	252-639-2931	boydr@newbernnc.gov	Search and Rescue, EMS, other
Matt Schelly	Floodplain Administrator and Historic Preservation	252-639-7583	SchellyM@newbernnc.gov	Floodplain Management, NFIP, Historic Preservation, Cultural Resources
Mark Stephens**	City Manager/Mayor's Office	252-639-2700	stephensm@newbernnc.gov	Liason with chief local elected official
Colleen Roberts	Public Information Officer	252-639-2707	robertsc@newbernnc.gov	News releases and communications
Matt Montanye	Public Works/Stormwater	252-639-7501	montanyem@newbernnc.gov	Public Works
George Chiles	Stormwater		ChilesG@newbernnc.gov	Stormwater Management, Historical Flooding
Charles Bauschard	Utilities	252-639-2750	bauschardc@newbernnc.gov	Outages, Continuity of Operations
Subtotal	**11**			
STAKEHOLDER ENGAGEMENT GROUP				
Dana Outlaw	Mayor	252-649-4137	outlawd@newbernnc.gov	Local governance
Sabrina Bengel	Board of Aldermen, Ward 1	252-514-5734	bengels@newbernnc.gov	Local governance
Jameesha "Jamee" Harris	Board of Aldermen, Ward 2	252-639-0451	harrisj@newbernnc.gov	Local governance
Robert "Bobby" Aster	Board of Aldermen, Ward 3	252-649-4100	asterb@newbernnc.gov	Local governance
Johnnie Ray Kinsey	Board of Aldermen, Ward 4	252-639-0452	kinseyj2@newbernnc.gov	Local governance
Barbara J. Best	Board of Aldermen, Ward 5	252-637-7419	bestb@newbernnc.gov	Local governance
Jeffrey T. Odham	Board of Aldermen, Ward 6	252-649-4285	odhamj@newbernnc.gov	Local governance
Michael Scott Davis	Board of Aldermen, City Attorney	252-514-2828	msd@dhwlegal.com	Local governance
Brenda E. Blanco	Board of Aldermen, City Clerk	252-639-2701	blancob@newbernnc.gov	Local governance
Lee Hodge	Chamber of Commerce (no longer the Chamber chair)	252-637-3111	lch@wardandsmith.com	Small Business, Local Economy
Kevin Roberts	Chamber of Commerce		kroberts@newbernchamber.com	
David Daniels	New Bern Police Department, Captain	252-672-4190	danielsd@newbernnc.gov	Public Safety
Valerie Anderson	FEMA Region IV	770-220-5661	valerie.anderson@fema.dhs.gov	Flood Mitigation
Mary Hogan	Finance Director		hoganm@newbernnc.gov	Finance, Capital Improvements, Project Funding
Kimberly Ostrom	City Grants Office		OstromK@newbernnc.gov	
Representative(s) (Nelson McDaniel?)	CARE - Citizens Advocating Resiliency Education		nelsonmcdaniel@embarqmail.com	Resiliency Education/Local Advocacy
Alice Wilson	GIS	252-639-7588	wilsonac@newbernnc.gov	Asset Management
Maria Cho	Historic Downtown Residents Council, CARE		mariacho.nb@gmail.com; info@newbern-HDRA.com	
Tharesa Lee	New Bern Housing Authority / New Bern Redevelopment Commission		tchadwicklee@newbernha.com	Acting Executive Director
Kip Peregoy	New Bern Redevelopment Commission, Vice Chair		kperegoy@carolinacolours.com	
Mandy Todd	ISO/CRS Specialist	843-399-5127	ktodd@ISO.com	
Tancred Miller	NC DCM	252-808-2808 x 224	Tancred.Miller@ncdenr.gov	Coastal Issues
Samantha Burdick	NC DCM		Samantha.Burdick@ncdenr.gov	Coastal Resilience Coordinator
Steve Garrett	NCEM / NCIP	919-825-2300	steve.garrett@ncdps.gov	Flood Mitigation, Floodplain Management, NFIP
Jason Pleasant	NCEM/Mitigation		Jason.Pleasant@ncdps.gov	
Chris Crew	NCEM/SHMO	919-825-2305	john.crew@ncdps.gov	State Hazard Mitigation Officer
Steve McGugan	NCEM		steve.mcgugan@ncdps.gov	
Eryn Futral	NFIP / NCEM		eryn.futral@ncdps.gov	
Jessica Whitehead	NCORR	984-833-4345	jessica.whitehead@ncdps.gov	State-Level Resilience and Recovery
Maggie Battaglin	NCORR		maggie.battaglin@ncdps.gov	
John Wood	NC SHPO	252-830-6580 x 225	john.p.wood@ncdcr.gov	Historic Preservation
Jim Medlock	USACE		James.M.Medlock@usace.army.mil	
Jason Glazener	USACE / Wilmington		Jason.S.Glazener@usace.army.mil	Wilmington Office, USACE
Wesley Brown	USACE / Wilmington		Wesley.A.Brown@usace.army.mil	
Keith Keeney	USACE		Keith.A.Keeney@usace.army.mil	
Robert Cox	UNC-EPIC		rcox3@uncc.edu	
Christina Kipitopoulou	UNC-EPIC		christina.k@uncc.edu	
Sushma Masemore	DENR/DEQ		sushma.masemore@ncdenr.gov	Deputy Assistant Secretary for Environment & State Energy Director
Melissa Riggle	New Bern Convention & Visitors Bureau, TDA Executive Director		executivedirector@visitnewbern.com	Tourism Agency
Larry Rosenstrauch	New Bern Preservation Foundation, CARE		citycolors@gmail.com	Non-Profit Historic Preservation Advocate
Foster Hughes	Parks and Recreation	252-639-2901	hughesf@newbernnc.gov	Asset Management
Anne Schout	Phoenix Project & Planning and Zoning Board		anneschout@gmail.com	Community Planning
Don Black	Planning and Zoning Board		don@donblack.com	
Ruth Cox	Historic Preservation Board	252-670-4499	ruthpcox@msn.com	Chair, HPC

Daryl Nelson	Streets, Public Works	252-639-7519	nelsondr@newbernnc.gov	Historical Flooding, Access, Transportation
Lynne Harakal	Swiss Bear - NC Main Street, Director		director@swissbear.org	Main Street Program
Narcisa Pricope	UNC-Wilmington		pricopen@uncw.edu	Socio-economic Impacts of Hurricane Florence
Dr. Joanne N. Halls	UNC-Wilmington, Professor, Dept. of Earth & Ocean Sciences		hallsj@uncw.edu	Socio-economic Impacts of Hurricane Florence
Christopher Walston	US EPA		walston.christopher@epa.gov	Environmental Issues
Judy Avery, Interim Exec Director	Homebuilder's Association of Craven & Pamlico Counties	252-636-3707	info@newbernbuilders.com	Builders, Resiliency in development
Michael Carpenter	NC Home Builder's Association, Executive VP		mcarpenter@nchba.org	Builders, Resiliency in development
William L. "Bill" Faulkenberry, AIA	MBF Architects, PA		faulkenberry@mbfarchitects.com	Historic preservation
Sonja Babic - President	Craven County Real Estate Association	252-617-0861	sonja@primerealtync.com	Real estate
Darlene Spivey - Association Executive	Neuse River Region Association of Realtors	252-636-5364	darlene@nrrar.com	Real Estate
Brant Bills	New Bern Breakfast Rotary		brantbills@yahoo.com	Rotary
Deedra Durocher	New Bern Breakfast Rotary		deedra110@verizon.net	Rotary
Karen Masch	New Bern Breakfast Rotary		cottagegifts@verizon.net	Rotary
Joe Peters	New Bern Noon Rotary, County Elections		jpeters@curtismedia.com	Rotary
Subtotal	**29**			
BROADER AUDIENCES				
Jamara Wallace	Duffyfield Residents Association		jamarawallace@yahoo.com	Chairman
Pastor Gregory Holmes	Duffyfield Religious Commuity - RDC Health/Wellness Working Group		drglholmes@cs.com	First Missionary Baptist Church
Pastor Linster Strayhorn	Duffyfield Religious Community Member		pastorlinster5@embarqmail.com	United Missionary Baptist Church
Tom Beam	NCBM		tbeam@ncbaptist.org	
Various	General Public (Three Separate and Distinct Groups)			Public input/involvement
Steve Bevington	NCLWF		steve.bevington@ncdcr.gov	
Representative	National Fish & Wildlife Foundation		communications@nfwf.org	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Representative	National Fish & Wildlife Foundation		easygrants@nfwf.org	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Arielle Mion	National Fish & Wildlife Foundation		Arielle.Mion@NFWF.ORG	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Kaitlin Goldsmith	National Fish & Wildlife Foundation		Kaitlin.Goldsmith@NFWF.ORG	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Sydney Godbey	National Fish & Wildlife Foundation		Sydney.Godbey@NFWF.ORG	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Jim McConnel	Fire Safety		mcconnellj@newbernnc.gov	Fire Div Chief of Training
Danny Hill	Fire Safety - Fire Marshall		hilld@newbernnc.gov	
Justin Mercer	NC Clean Water Management Trust Fund		justin.mercer@ncdcr.gov	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Bridget Munger	NC Office of Recovery & Resiliency, Communications Director		communications@rebuild.nc.gov	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Representative	NC Department of Justice, Environmental Enhancement Grant		EEG@ncdoj.gov	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Millie Chalk	Duke Energy Foundation		Millie.chalk@duke-energy.com	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Representative	National Trust for Historic Preservation		bjones@savingplaces.org; info@savingplaces.org	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Dr. Bill Hunt	NCSU		wfhunt@ncsu.edu	Biological & Agricultural Engineering - Duffyfield/Jack Smith Creek Projects
Jason R. Jones, Chairman	Craven County Commissioners		jjones@cravencounty.gov	Chairman, Craven County Commissioners
Don Baumgardner	Resiliency Hazard Mitigation, County		dbaumgardner@cravencountync.gov	Planning Director, Craven County
Chad Strawn	Resiliency Hazard Mitigation, County		cstrawn@cravencountync.gov	
Jeff Wood	Craven County Econoimic Development Director/Craven 100 Alliance		jwood@cravencountync.gov	Econ Dev
Sandra Phelps	Craven County Disaster Recovery Alliance/ United Way of Coastal Carolina		sandra@unitedwaycoastalnc.org	United Way Executive Director
Kitti Hardison	United Way Disaster Recovery Director		kitti@unitedwaycoastalnc.org	United Way of Coastal Carolina Community Relations Manager -/ Craven County Disaster Recovery Alliance
Diana Maxwell	National Trust		DMaxwell@savingplaces.org	
Suzie Koonce	Wells Fargo Foundation		suzie.koonce@wellsfargo.com	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Jenny Tinklepaugh	Golden LEAF Foundation		jtinklepaugh@goldenleaf.org	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
Nadine Alger	Camden Square Apartments		camdensquareapts@gmail.com	Neighborhood Representative
Paul Jabs	Carolina Colours		fpjabs@sbcglobal.net	Neighborhood Representative
Chip Madison	Craeberne Forest		Hrm3rd@earthlink.net	Neighborhood Representative
Tish Bell	Craven Terrace/Trent Court		latisha.bell@presmgmt.com	Neighborhood Representative
Steve Strickland	Derby Park		dpcomwatch@gmail.com	Neighborhood Representative
Sandy Tabak	Evans Mill		royletabak@hotmail.com	Neighborhood Representative
Mary Trude	Evans Mill		nctrude@aol.com	Neighborhood Representative
Marshall Williams	Ft. Totten/Green Park - Community Development Advisory Committee Chair	252-229-1201	mwilliams1@suddenlink.net	Neighborhood Representative
Mike Genest	Ghent		JMG@FORGELAWGROUP.COM	Neighborhood Representative
John Harding	Greenbrier		harding@embarqmail.com	Neighborhood Representative
Jim Morrison	Greenbrier		jmorrison00@gmail.com	Neighborhood Representative
Susan Lytton	King's Row		kingsrowwatch@hotmail.com	Neighborhood Representative
Roger and Sue Herold	Lake Tyler		suzyg1708@yahoo.com	Neighborhood Representative

Latisha Simmons	New Bern Towers		lsimmons@newbernha.com	Neighborhood Representative
Sheila Henderson	New Hope		skhen49@gmail.com	Neighborhood Representative
Kathy Murphy	Olde Towne		ter83kat@suddenlink.net	Neighborhood Representative
John Boyd	Olde Towne		jboyd5@suddenlink.net	Neighborhood Representative
Richard Fonville	Pembroke		fonvillejr43@suddenlink.net	Neighborhood Representative
Tiffany Dove	Pembroke		tddove@embarqmail.com	Neighborhood Representative
Steven Best	Pleasant Hill		bbest0112@gmail.com	Neighborhood Representative
Robert Olmedo	Riverside		bobolmedo@gmail.com	Neighborhood Representative
Bill Olvaney	Sellhorn Heights		jerseyfolks@suddenlink.net	Neighborhood Representative
Kennail Humphrey	Sunnyside		sunnyside.newbern@gmail.com	Neighborhood Representative
Bart Rovins	Taberna		Brovins06@gmail.com	Neighborhood Representative
Debbra Doheny	The Meadows		debbra.doheny@zenetex.com	Neighborhood Representative
Casey Magiera	Trent Village		caseymagiera@yahoo.com	Neighborhood Representative
Mia & Scott Waligora	Tryon Village		tryonvillageneighborhoodwatch@aol.com	Neighborhood Representative
Selma Campbell	West Wood Arms Apartments		selmac2@yahoo.com	Neighborhood Representative
Peggy & John Hodges	Woodrow		thehodgelodge@yahoo.com	Neighborhood Representative
Deann Saulter	Wyndsor Park		deann.saulter@wynnefieldproperties.com	Neighborhood Representative
Delane Jackson	Town of River Bend, Town Manager		manager@riverbendnc.org	Neighboring Jurisdiction
Town Hall	Town of Trent Woods		townhall@trentwoodsnc.org	Neighboring Jurisdiction
Chuck Tyson	Town of Trent Woods, Mayor		chucktyson@tysonandhooksrealty.com	Neighboring Jurisdiction
Frank Bottorff	City of Havelock, City Manager		fbottorff@havelocknc.us	Neighboring Jurisdiction
Jack Veit	Craven County, Manager		jveit@cravencountync.gov	Neighboring Jurisdiction
Amber Parker	Craven County, PIO		aparker@cravencountync.gov	Neighboring Jurisdiction
Chip Hughes	Craven County Sheriff's Office		chughes@cravencountync.gov	Neighboring Jurisdiction
Jon Segal	Craven County Affiliate, President NC Comm Foundation		JonSegal@rocketmail.com	Neighboring Jurisdiction
Alice Tolson	Craven County Affiliate, NCCF, Grants Comm. Chairman		cruella@alicetolson.com	Grantors for City Grants, Heighten awareness of ongoing efforts/progress
John Ward	Wells Fargo Bank		John.W.Ward2@wellsfargo.com	
Tracy Skrabal	NC Coastal Federation, Manager, SE Office		tracys@nccoast.org	Non-profit organization
Katy Langley Hunt	Neuse Riverkeeper		lowerneuserk@soundrivers.org	Non-profit organization
Mike Williams	Habitat for Humanity, Director		mwilliams@cravencountyhabitat.org	Non-profit organization
Lovay Singleton	Veteran's Employment Base Camp		lovayw@gmail.com	Non-profit organization
Pamela Hawkins	County's Soil & Water Conservation		phawkins@cravencountync.gov	Potential resources and support
Vann Rogerson	NC East Alliance, Interim President/CEO		rogerson@nceast.org	Regional Agencies
Trey Goodson	NC East Alliance, Regional Economic Developer		goodson@nceast.org	Regional Agencies
Mark Hamblin	NC East Alliance, Board Chair		mark@fmbyhamblin.com	Regional Agencies
Representative	NC Governor's Office		governor.office@nc.gov	State Agency, Potential resources and support
Representative	State Construction Office		sco@doa.nc.gov	State Agency, Potential resources and support
Latif Kaid	State Construction Office Director		latif.kaid@doa.nc.gov	State Agency, Potential resources and support
Rhonda Murray	MCAS Cherry Point, Community Plans & Liaison Officer		Rhonda.murray@usmc.mil	Alignment of goals and objectives/conflict identification
Subtotal	**11**			
CONTRACTOR SUPPORT				
Mike Robinson	Moffatt & Nichol	919-781-4626 x. 12104	mrobinson@moffattnichol.com	Project Manager
Matt Hutchins	NEMAC+FernLeaf	828-777-6388	mhutchins@fernleafinteractive.com	Risk and Vulnerability Assessment
Lisa Craig	The Craig Group	410-991-0288	lcraiggroup@gmail.com	Historic Preservation
Subtotal	**3**			

**Mark Stephens, City Manager, resigned from the City mid-stream of the planning process and was replaced on the Planning Team by Foster Hughes as Interim City Manager. Foster was appointed City Manager in September, 2021.

**It is assumed that M&N and other contractor support will be present at all meetings as needed and appropriate; this list is primarily focused on local participation*

Aldermen

Sabrina Bengel
Jameesha Harris
Robert V. Aster
Johnnie Ray Kinsey
Barbara J. Best
Jeffrey T. Odham

NEW BERN
CITY OF NEW BERN

300 Pollock Street, P.O. Box 1129
New Bern, NC 28563-1129
(252) 636-4000

Dana E. Outlaw
Mayor
Mark A. Stephens
City Manager
Brenda E. Blanco
City Clerk
Mary M. Hogan
Director of Finance

City of New Bern Resiliency and Hazard Mitigation Plan Kickoff Meeting

Wednesday, July 29, 2020 | 2 p.m. to 4 p.m.
WebEx Link Provided in Meeting Invite for Virtual Participation

〉 Welcome and Overview (10 minutes)

〉 Introductions (15 minutes)

Brief self-introductions of all planning team members, including consultant staff

〉 Goals and Objectives (10 minutes)

Discussion of primary goals and objectives for this project

〉 Project Team (2 minutes)

Detailed look at the consultant organizational chart for the project, including team leaders, technical specialists, and subject matter experts

〉 Planning Process (45 minutes)

Brief overview of the proposed 12-month planning process, including details about vulnerability assessment, historic preservation, public involvement, and stakeholder participation

〉 Schedule (2 minutes)

Discussion of project timeline, including tasks, subtasks, and major milestones

〉 Roles and Responsibilities (3 minutes)

Overview of key roles and responsibilities for planning team members and stakeholders

〉 Next Steps (3 minutes)

Discussion of next steps, including future meetings, data collection, and literature review support

〉 Open Discussion (30 minutes)

Please note: all times are approximate based on questions, discussion, etc. as the meeting progresses.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

KICKOFF MEETING

Presented to:

City of New Bern

Core Planning Team

July 2020

Welcome and Overview



- **Amanda Ohlensehlen**
  Community & Economic Development Manager

Path to Resilience

2013
- Developed a partnership with NCSU to initiate hazard mitigation efforts

2014
- Completed the Jack Smith Creek Wetlands & Stormwater Management Project

2015
- Installation of monitoring stations for the Jack Smith Creek Wetlands

2016
- Active participant of the Craven County Long Term Recovery Group

2017
- Established a Redevelopment Commission comprised of citizen representatives to address equity and reinvestment
- Supported the development of the Hurricane Matthew Resilient Re-Development Plan for Craven County

2018
- Recognized the need to develop a Hazard Mitigation and Resiliency Plan
- Advocate in D.C. with federal resiliency leaders

2019
- The CARES Committee hosted multiple subject matter experts on resiliency
- Award of $$ from multiple granting agencies to establish a holistic resiliency plan

2020
- Award of $328,500 from NCORR to assist with storm resiliency, recovery, and mitigation projects
- Initiated the development of a Resiliency and Hazard Mitigation Plan
- Released an updated Final Flood Hazard Determinations



- City of New Bern has been actively working towards becoming a more resilient city
- Success is a process and requires commitment from all levels
- Grant funding is a testimony to the importance of the City's dedication and commitment to this plan

Agenda

- Welcome and Overview
- Introductions
- Goals and objectives
- Project team
- Planning process
- Schedule
- Roles and responsibilities
- Next steps
- Open discussion



- **Flexible agenda**
- **Please feel free to post questions to the chat function as we go along to help facilitate discussion at the end**
- **We will try to keep the meeting to 90 minutes but 2 hours is allocated to allow for discussion**

Introductions


Mike Robinson


Jeff Crump


Dawn York


Rebeckah Sims


Allison Bryan


Jeff Hicks


Matt Hutchins


Lisa Craig



- Consultant Team
- Moffatt & Nichol
- NEMAC+FernLeaf
- The Craig Group

Introductions





- Who you are
- Your primary role
- How you see yourself supporting resiliency and flood mitigation
- The piece you add to the puzzle!

Overall Project Goal



To develop a citywide
Resiliency and Hazard Mitigation Plan
to increase community resilience to the flood hazard, including sea level rise and climate change, through an engaged stakeholder process

Overall Project Objectives



- **Create a resiliency framework**
  - Avoid hazards
  - Withstand future events
  - Support recovery
  - “Build Back Better” at the citizen, business, and municipal levels
- **Develop strategy initiatives**
  - Routine activities
  - Highly feasible solutions
  - Ambitious solutions

- **Social and community health programming**
- **Land-use regulatory changes**
- **Large-scale infrastructure projects**
- **Green infrastructure practices and projects**

Specific Focus Areas

- Underserved and socially vulnerable populations
- Historic structures
- Green and hybrid infrastructure solutions
- Structural and economic resilience in historic main street and commercial areas
- Less reliance on Federal funding following future disasters
- Land use changes to improve resiliency
- Coordination within and beyond the corporate limits of New Bern
- CRS participation under the NFIP



- **Regional Resilience Tool Kit**
- **12 North Carolina State Disaster Recovery Framework Recovery Support Functions**
- **6 FEMA Recovery Support Functions**

Project Team



CITY OF NEW BERN

PROJECT PRINCIPAL	PROJECT MANAGER	QUALITY MANAGEMENT
Tim Reid, PE	Mike Robinson, CFM	Scott Lagueux, AICP, LEED AP *(Planning)* Johnny Martin, PE *(Engineering)*

DELIVERY TEAM

HAZARD MITIGATION & EMERGENCY MANAGEMENT PLANNING
Mike Robinson, CFM
Rebeckah Hollowell

VULNERABILITY ASSESSMENT
Matt Hutchins
Jeff Hicks

HISTORIC PRESERVATION
Lisa Craig

FLOOD ANALYSIS & GIS APPLICATIONS
Katie Finegan, PE
Jeff Crump, CFM, PE
Brian Joyner, PE
Amy Mindick-Walling, PE, PMP
Allison Bryan

RESILIENCY SOLUTIONS
Jeff Crump, CFM, PE
Brian Joyner, PE
Allison Bryan

CLIMATE CHANGE ADAPTATION
Lynette Cardoch, PhD, LEED AP

PUBLIC MEETINGS, STAKEHOLDER ENGAGEMENT
Dawn York
Amanda Zullo

SOCIAL & ECONOMIC ANALYSIS
Ayse Karanci, PhD
Ali Rezvani, PhD

LEGEND – Moffatt & Nichol • NEMAC+FernLeaf • Craig Group

- Specialists from Moffatt & Nichol, NEMAC+FernLeaf, and The Craig Group
- All aspects of the planning process covered by appropriate staff

Planning Process



Phase 1: Data Collection, Assessment and Public Engagement	Phase 2: Analysis and Plan Development	Phase 3: Preparation of Resiliency and Hazard Mitigation Plan
▪ Task 1: Data Gathering ▪ Task 2: Public Input ▪ Task 3: Vulnerability and Risk Assessment	▪ Task 4: Review of Possible Solutions ▪ Task 5: Prepare Draft Plan	▪ Task 6: Public Review of Draft Plan ▪ Task 7: Prepare Final Plan

- Each task has various subtasks
- Broad project team to help support individual requirements
- Two subcontractors to assist with specialized requirements

Vulnerability and Risk Assessment

Framework for assessing vulnerability and risk

- Exposure = the presence of people and assets that could be affected
- Vulnerability = the susceptibility of assets
- Risk = the likelihood and consequence



- **Resiliency has many different definitions, but can commonly be summarized by saying the ability to withstand, recover and respond more quickly and effectively following sudden shocks and in light of chronic stressors**

Same Exposure; Different Vulnerability



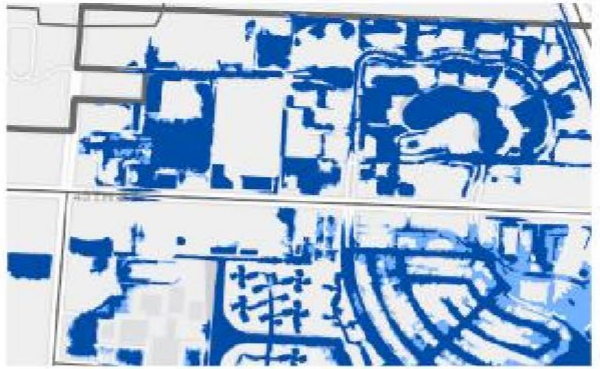


Asset



Commercial Property

Threat



Rainfall-induced flooding

Exposure



Commercial property and rainfall-induced flooding



Your Input

VULNERABILITY				RISK			
Potential Impact		Adaptive Capacity		Probability		Consequence	
High	Structure in inundation extent and historic, multiple-residence, apartment, manufactured house, nursing/retirement home, group home, or mobile home park	Low	Structure in floodplain built before 1979 without a BFE requirement	High	In 10-yr inundation extent	High	Structure exposed and above median value
Med	Structure in inundation extent and single-residence	Med	Structure in floodplain built from 1979 to 2015 (at BFE)	Med	In 100-yr inundation extent	Med	Structure exposed and below median value
Low	No structure in inundation extent (land only)	High	Structure built out of floodplain or structure in floodplain built 2016 to present (1-2 ft above BFE)	Low	In 500-yr inundation extent	Low	No structure exposed

Vulnerability and Risk



Commercial property and rainfall-induced flooding

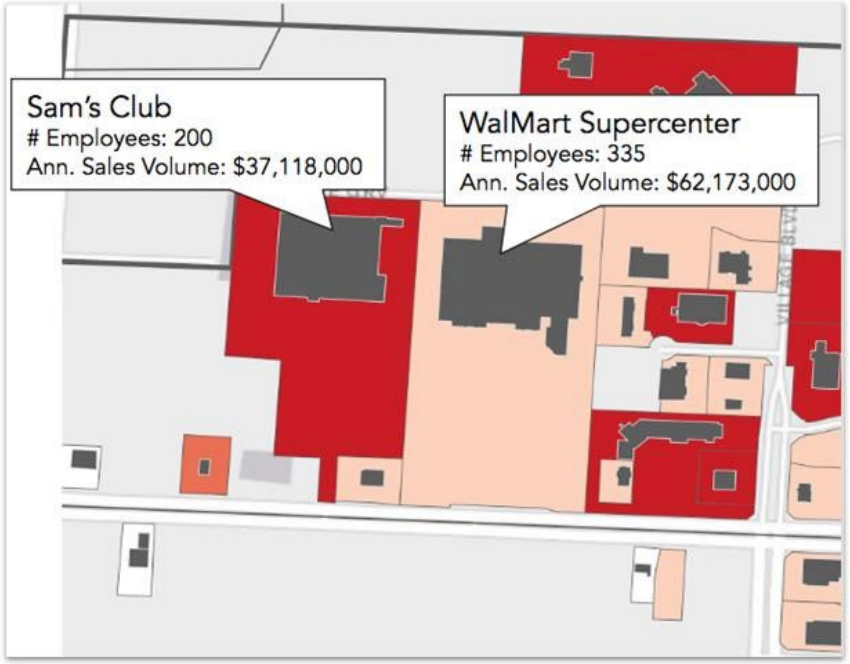
Direct Impact to Property and Public Services

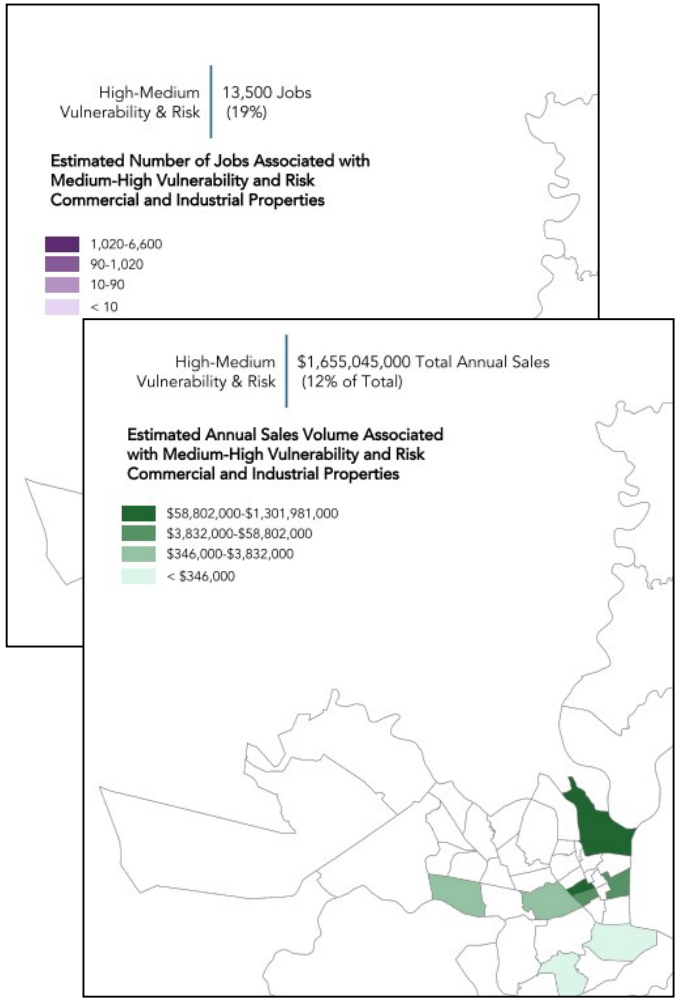


- Criticality of assets and other property-level characteristics

Economic Impacts





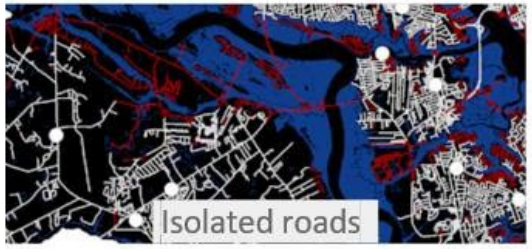


- Potential business disruption
  - Annual Sales Volume
  - Jobs

Critical Road Access and Mobility









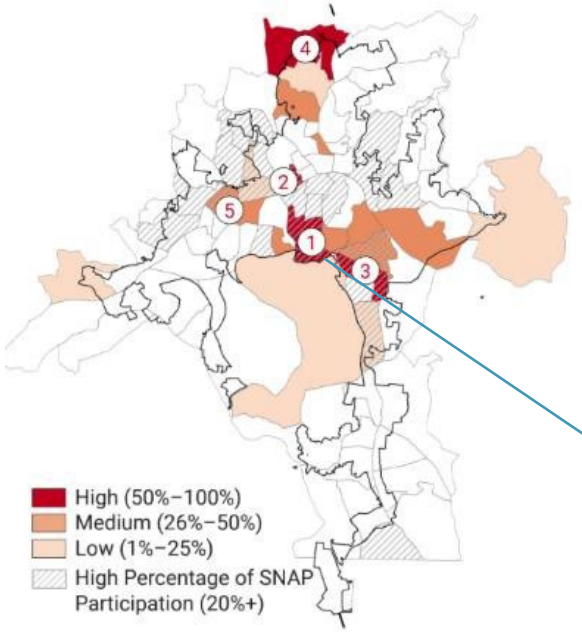






- Access for emergency response
- Potential loss of mobility and access to services

Social Vulnerability

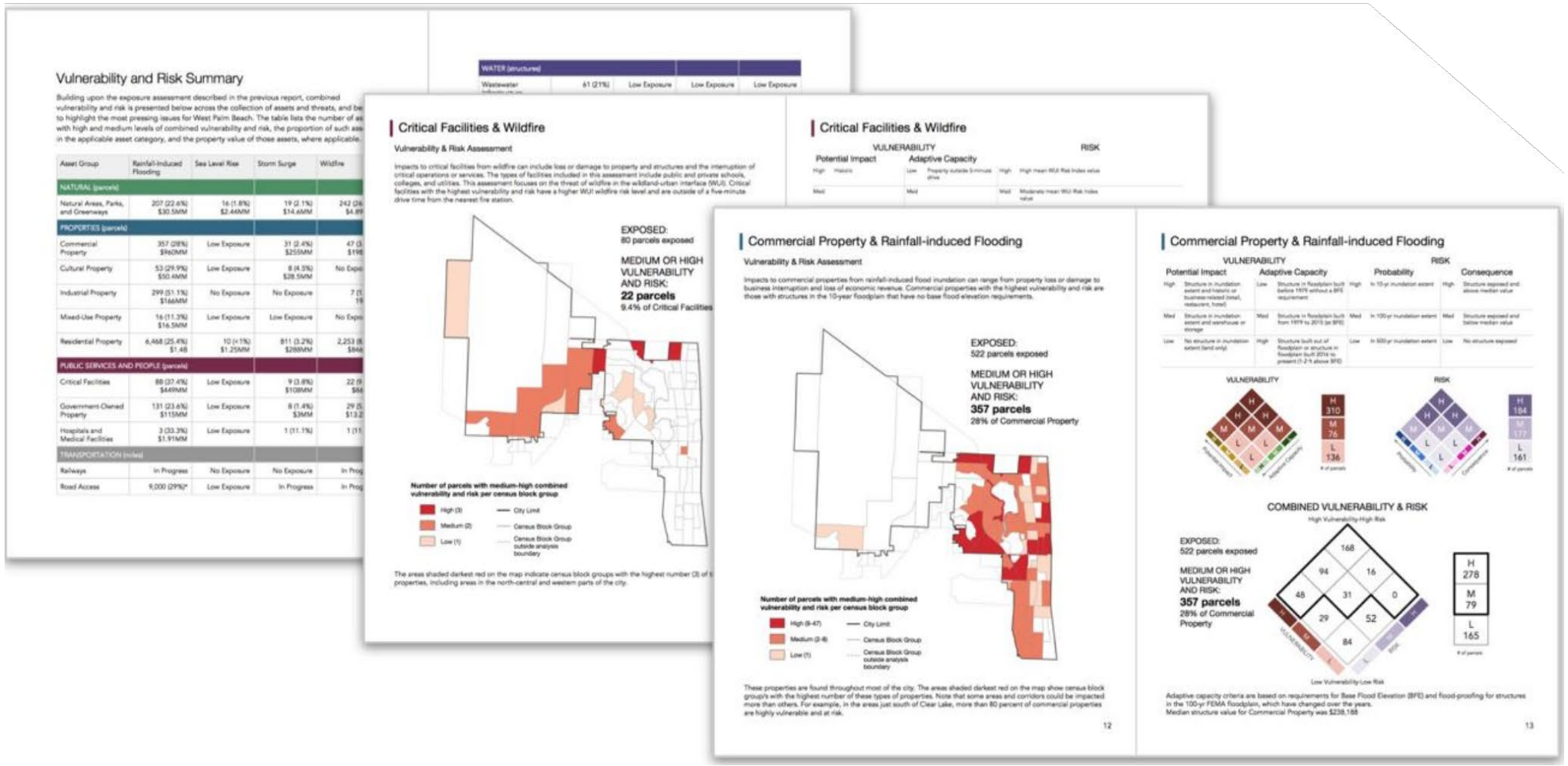


Neighborhood Summary		Total Assets	500-yr Flood Events	
Roads & Mobility	Inaccessible Major Roads	28 lane mi	9 lane mi	(32%)
	Inaccessible Minor Roads	33 lane mi	24 lane mi	(73%)
Properties Isolated	Commercial	192	186	(97%)
	Residential	1,773	1,752	(99%)
	Critical Facilities	13	12	(92%)
	Government	14	5	(36%)
	Parks & Cultural	72	53	(74%)
Potential Economic Impact	Annual Sales Volume	$500M	$400M	(95%)
	Jobs/Employees	3,896	3,722	(95%)
Social Vulnerability	Overall Social Vulnerability	High (Socioeconomic, Household Composition & Disability, Minority Status & Language, Housing & Transportation)		
	Public Housing	38	37	(97%)
	SNAP Retailers	8	8	(100%)



- **Social vulnerability is an important consideration for all threats**

For a Clear Understanding Citywide



Take Deeper Dives With AccelAdapt™



Which leverages your outstanding GIS investments





City-Specific Approach

Flooding Threats for the City of New Bern

Threat	Data Source
Floodplain Inundation	FEMA flood maps
Storm Surge	NOAA SLOSH MOM (Categories 1-5)

- Riverine flooding
- Coastal flooding
- Storm surge inundation
- Stormwater/urban flooding/excessive rainfall
- Levee/dam failure inundation
- Sea Level Rise (SLR) influences (as an exacerbator of risk)
- Climate change influences (as an exacerbator of risk)



- **Need to discuss exact list of threats to be used for analysis**
- **Need to prioritize that list to assist with workflow**
- **Possibly via online survey to capture input**

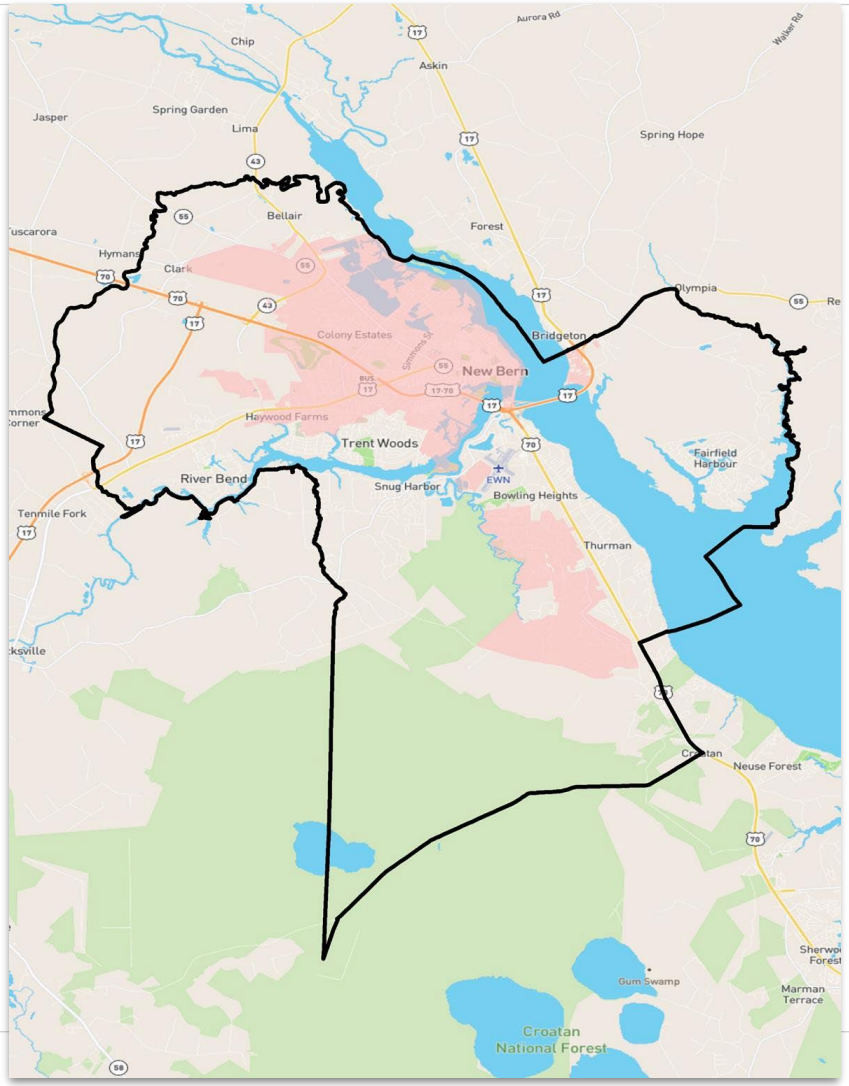
Asset Themes and Categories

Asset Theme	Asset Category
Property and Public Services	Residential Property
	Commercial & Industrial Property
	Critical Facilities
	Government-Owned Property
	Parks & Cultural/Historical Property
Economic	Annual Sales Volume
	Jobs
Roads and Mobility	Major and Minor Roads
	Critical Access to Property
People and Socioeconomics	People and Socially Vulnerable Populations
	Public Housing
	SNAP Retailers



- Data sources used to represent community assets
  - Craven County Property Parcels
  - Historic Property Inventory
  - Business Data
  - Regional Road Network Dataset
  - U.S. Census/ACS
  - CDC Social Vulnerability Index

Proposed Study Area

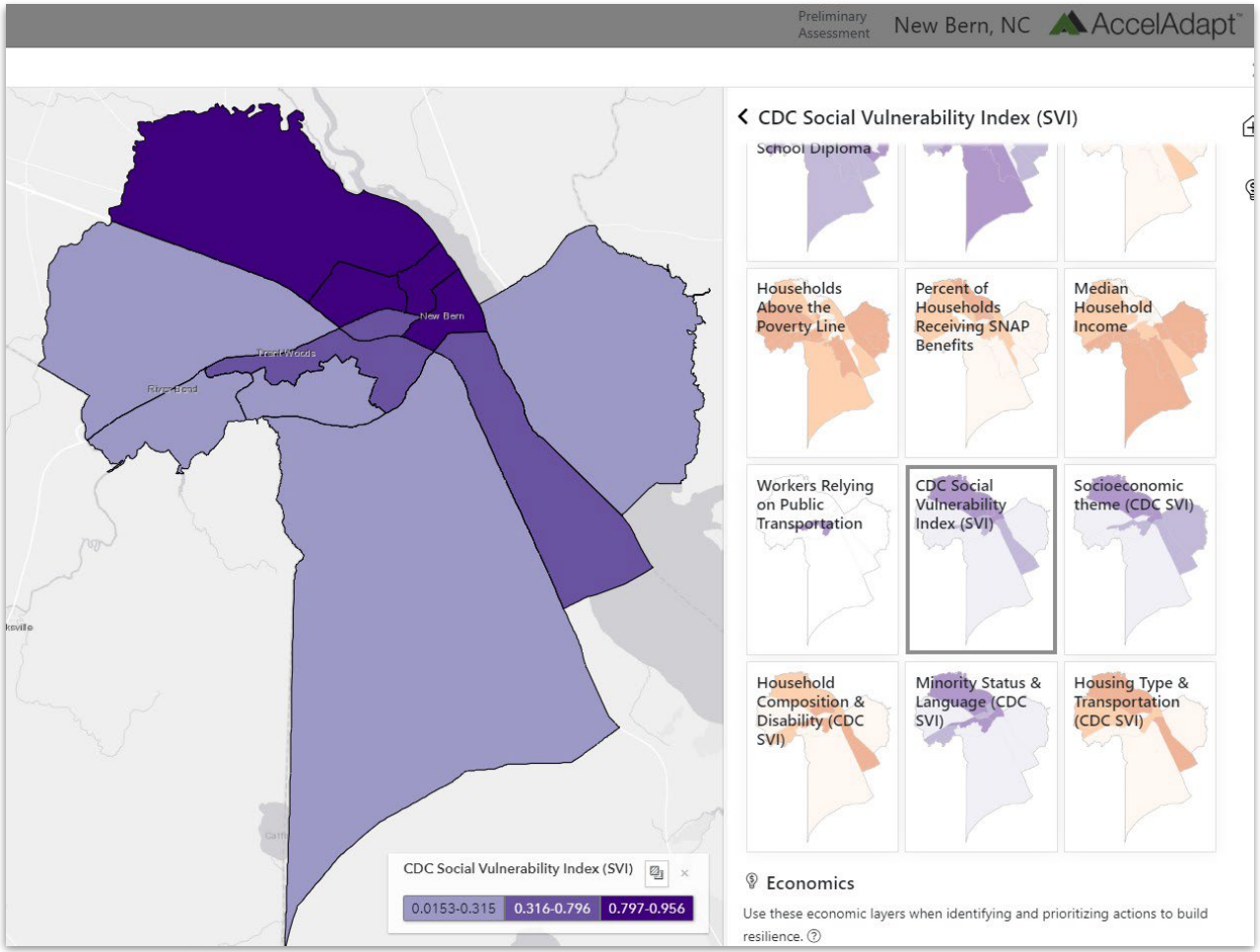


Proposed Study Extent

City Limits

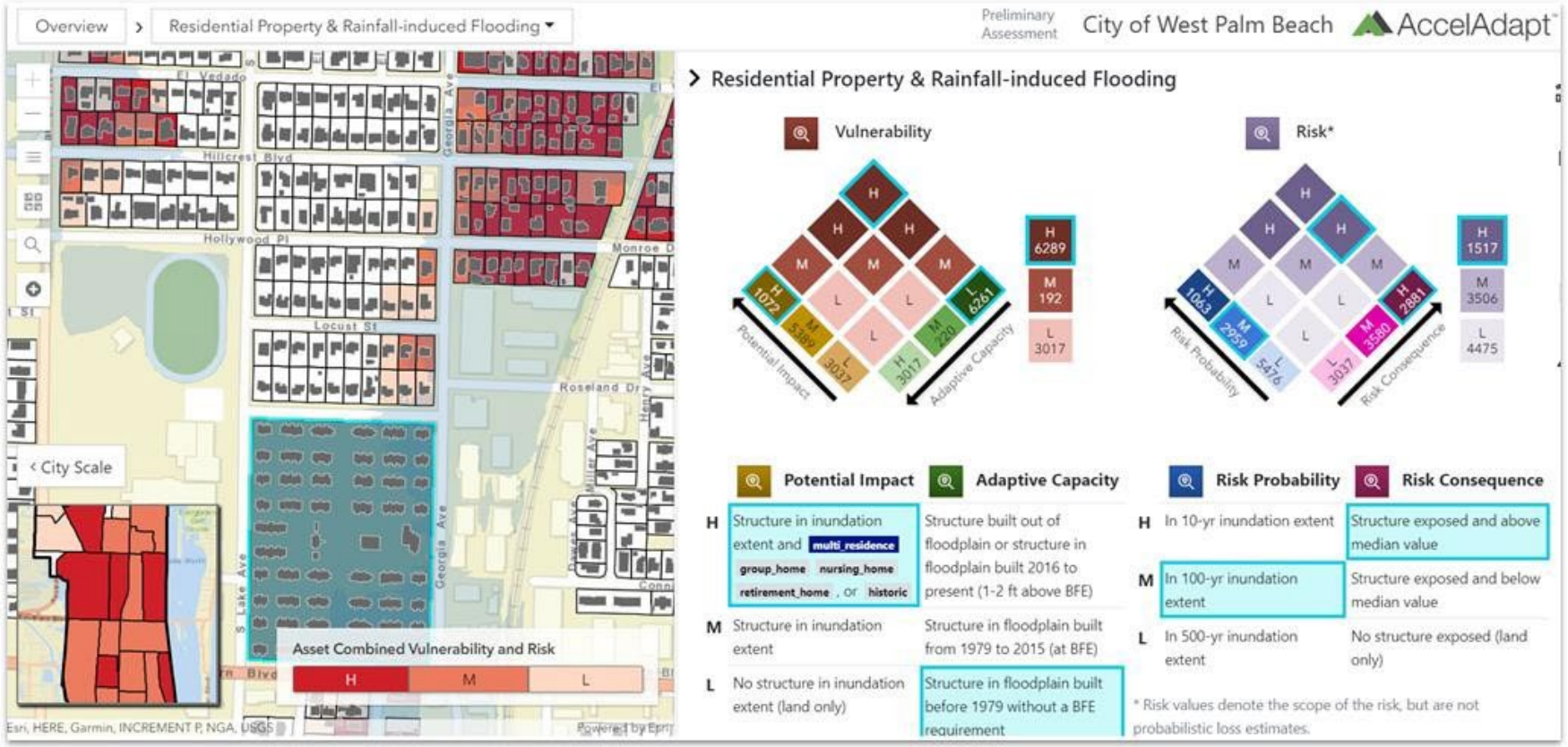
- Includes all census tract areas that intersect with the City Limits
- Will capture input from the planning team regarding exact spatial extent

Socioeconomics



- Social vulnerability will be a key focus throughout the assessment
- Have started to assemble socioeconomic metrics for the project area
- Overall Social Vulnerability Index (CDC), based on themes:
  - Socioeconomic
  - Household Composition & Disability
  - Minority Status & Language
  - Housing & Transportation

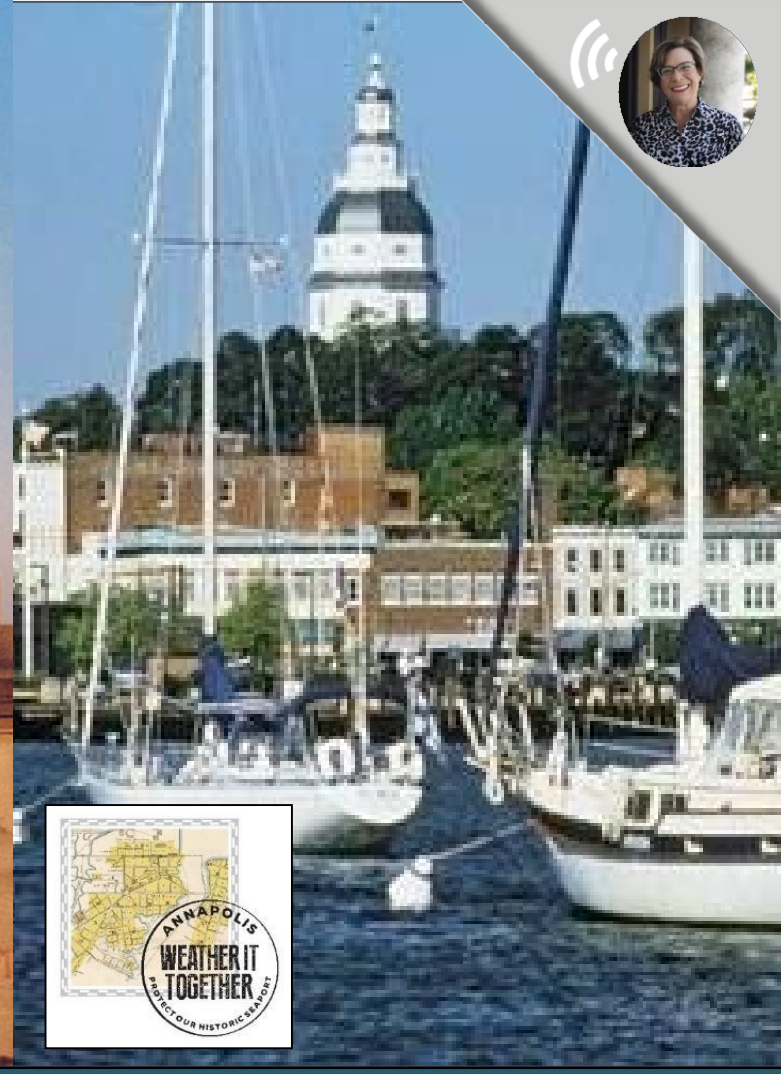
Supporting Insights and Use of Information



- **Using AccelAdapt, staff will be able to explore preliminary vulnerability and risk assessments and be able to:**
  - View and interact with information (citywide, neighborhood, historic district and parcel-level)
  - Identify key concerns and vulnerable areas
  - Provide input and feedback







Heritage & Resiliency

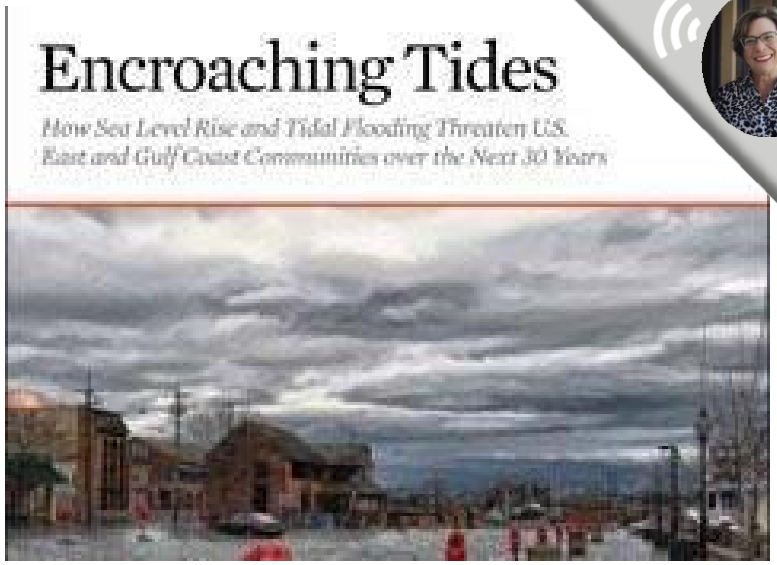
Engaging Historic Coastal Communities in Resilience Planning



Annapolis, Maryland:
A Case Study in Hazard Mitigation Planning





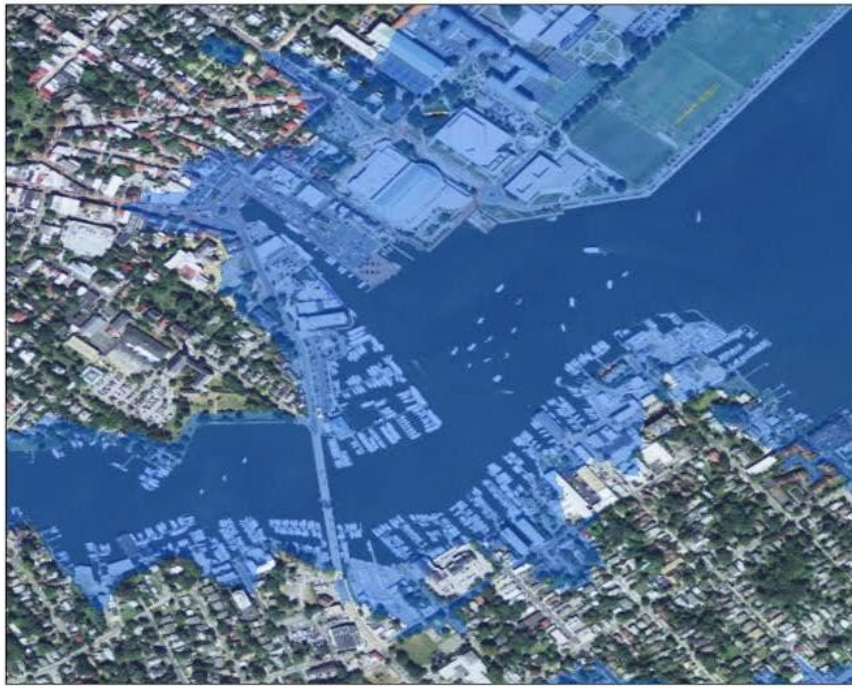




Annapolis:
A Landmark at Risk
Sea Level Rise and Tidal Flooding

- Greatest nationwide increase in nuisance flooding between 1963 - 2013 - 925%
- An average of 3.8 to 39.3 days per year
- By 2065, nuisance flooding is estimated to occur 385 times each year - more than once a day

Annapolis FEMA Flood Insurance Rate Map (FIRM) 2016

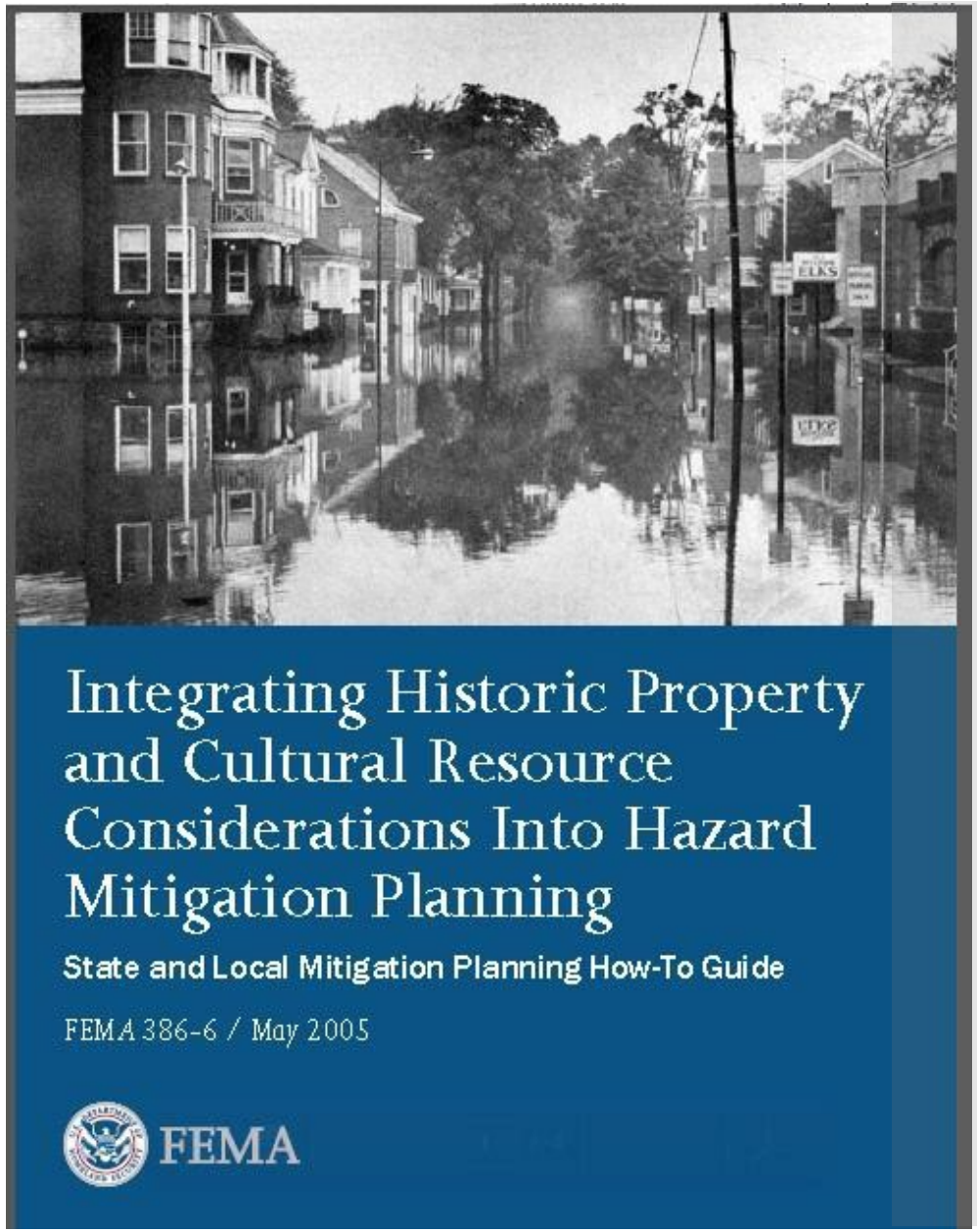




Base Flood Elevation (BFE)
4.5’ = 1% annual chance flood
+ 3.7’ for sea level rise
= 8.2’ for daily future conditions (2100)

Design Flood Elevation(DFE)
BFE + 2’ freeboard = 6.5’

FEMA Hazard Mitigation Planning for Cultural Resources



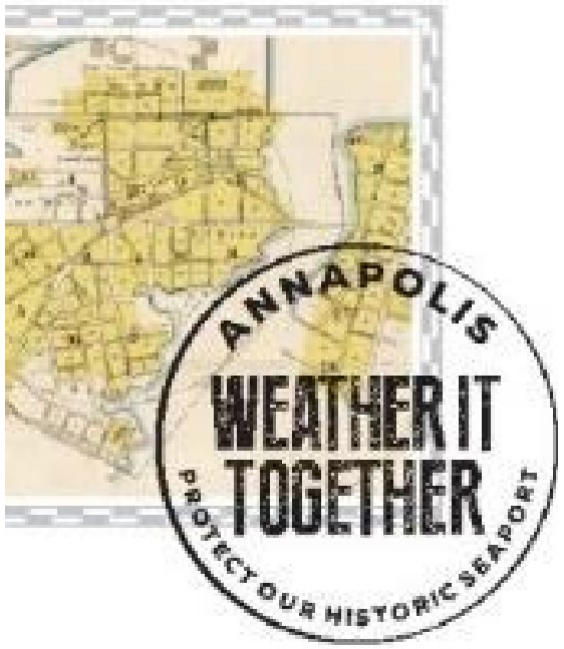
Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and manmade hazards.

- Organize efforts to develop a mitigation plan;
- Identify hazards and assess losses to community;
- Set mitigation priorities and goals and write the plan;
- Implement the mitigation plan.

Weather It Together

Step #1 – Organize Resources









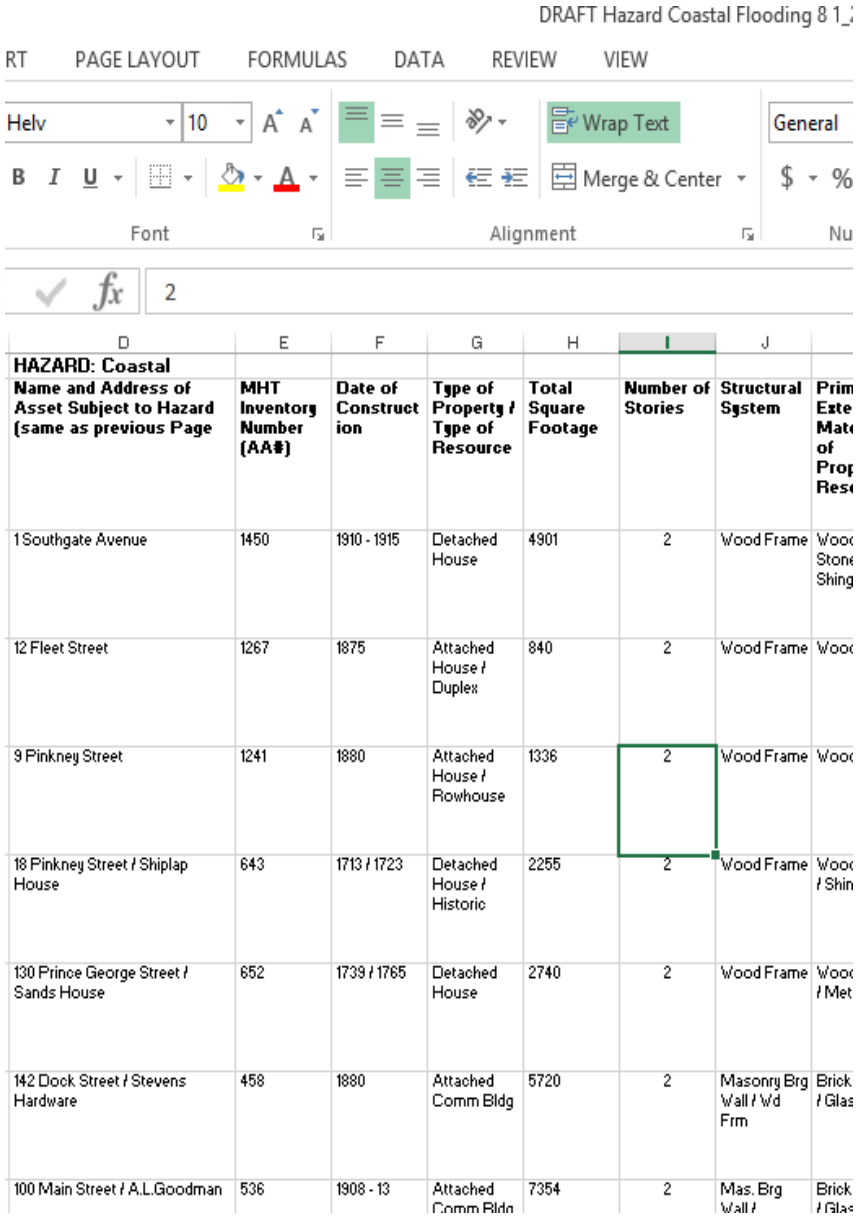
Weather It Together was conceived as a public/private partnership to address the impacts of Climate Change and Sea Level Rise on historic and cultural resources in Annapolis, the Chesapeake Bay and the nation.

Weather It Together brought together a 32-member advisory planning team, architects & planning consultants, technology specialists, nearly 3,000 community members and $485k in funding.



Weather It Together

Step #2 – Survey Resources



DRAFT Hazard Coastal Flooding 8 1_2

RT PAGE LAYOUT FORMULAS DATA REVIEW VIEW

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Merge & Center

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D	E	F	G	H	I	J	
HAZARD: Coastal							
Name and Address of Asset Subject to Hazard (same as previous Page	**MHT Inventory Number (AA#)**	**Date of Construction**	**Type of Property / Type of Resource**	**Total Square Footage**	**Number of Stories**	**Structural System**	**Prim Exte Mat of Prop Res**
1 Southgate Avenue	1450	1910 - 1915	Detached House	4901	2	Wood Frame	Wooc Stone Shing
12 Fleet Street	1267	1875	Attached House / Duplex	840	2	Wood Frame	Wooc
9 Pinkney Street	1241	1880	Attached House / Rowhouse	1336	2	Wood Frame	Wooc
18 Pinkney Street / Shiplap House	643	1713 / 1723	Detached House / Historic	2255	2	Wood Frame	Wooc / Shin
130 Prince George Street / Sands House	652	1739 / 1765	Detached House	2740	2	Wood Frame	Wooc / Met
142 Dock Street / Stevens Hardware	458	1880	Attached Comm Bldg	5720	2	Masonry Brg Wall / Wd Frm	Brick / Glas
100 Main Street / A.L.Goodman	536	1908 - 13	Attached Comm Bldg	7354	2	Mas. Brg Wall /	Brick / Glas

FEMA Worksheet #3

- Name/Address of Resource
- Date of Construction
- Type of Property
- Square Footage
- Structural System
- Primary Materials
- Current Function
- Current Condition
- Owner Interest in Mitigation

Weather It Together

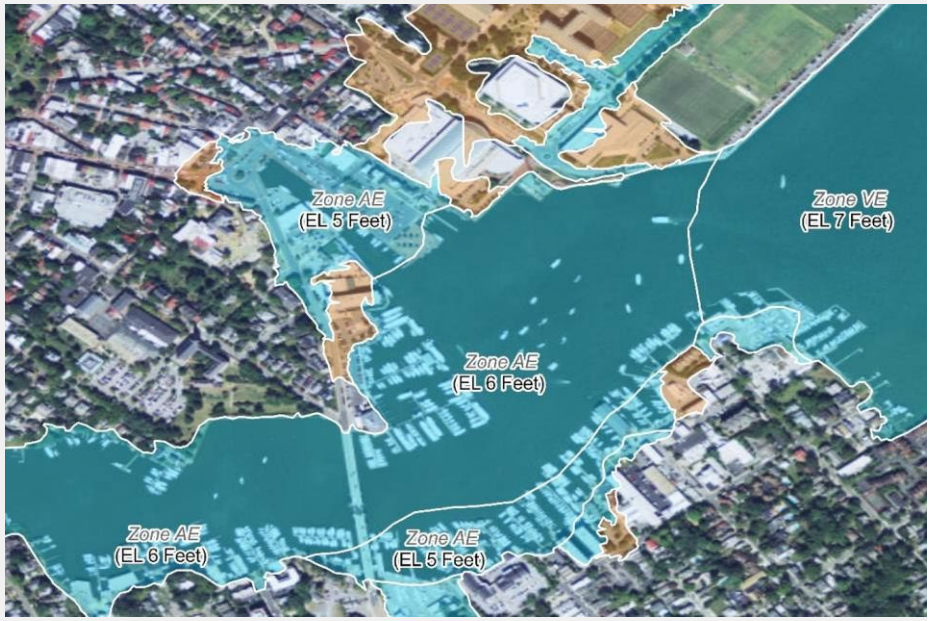
Step #2 – Survey Resources & Assess Economic Vulnerability & Community Value

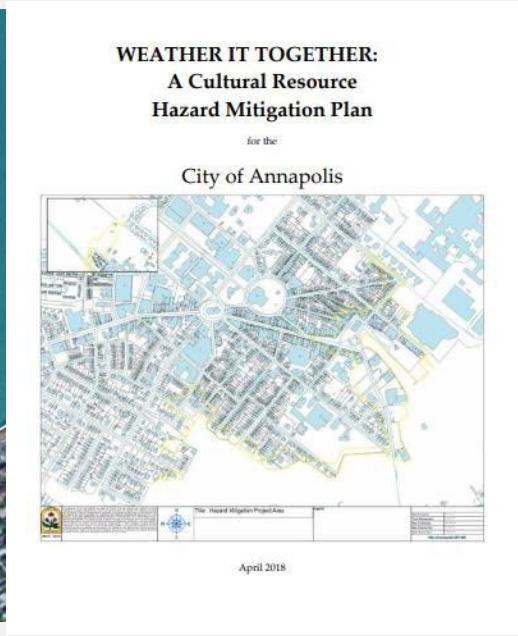


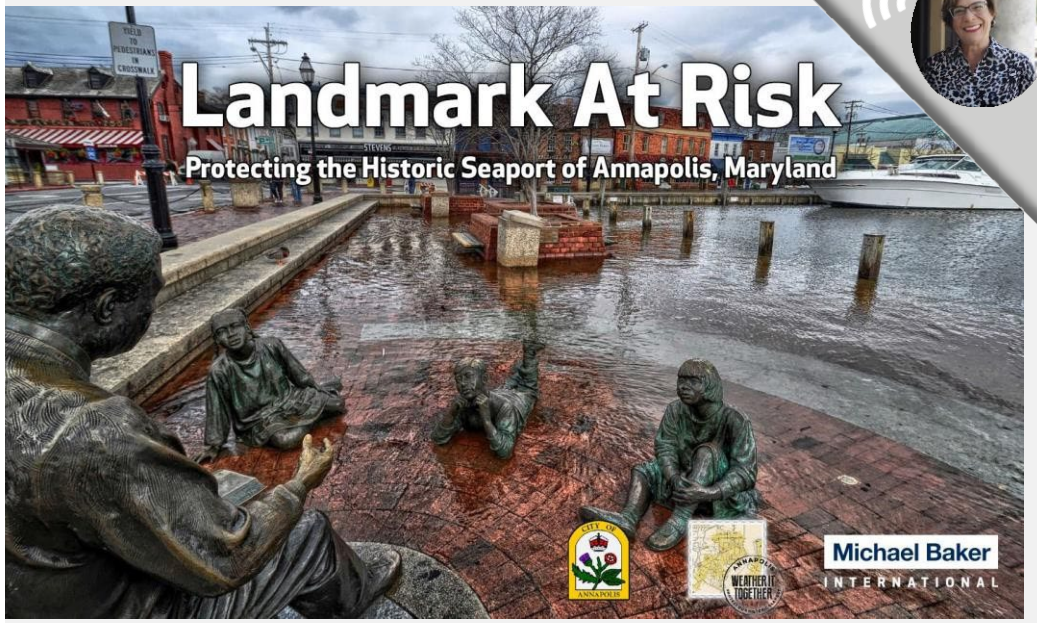
FEMA Worksheets #3 & #4

Property Vulnerability (High, Med, Low)
Loss to Structure ($)
Loss to Contents ($)
Loss of Function / Use ($)
Displacement Cost ($)
= $288 million loss/cost per event

Historic Designation (NR, Local)
Geographic Significance
Level of Significance (H/M/L)
Economic Importance (H/M/L)
Degree of Integrity (H/M/L)
Public Sentiment (H/M/L)
= Total Community Value




WEATHER IT TOGETHER:
A Cultural Resource
Hazard Mitigation Plan
for the
City of Annapolis
April 2018





Weather It Together

Step #3 – Draft the Plan
Step #4 – Plan for Implementation

- Establish Goals & Objectives
- Identify & model adaptation strategies using preservation priorities, benefit cost analysis and STAPLEE
  - STAPLEE – Social, Technical, Administrative, Political, Legal, Economic & Environmental
- Secure funding, amend policies, seek approval
  - ***Weather It Together: Nation's first FEMA-approved cultural resource-based mitigation plan***















Weather It Together Award Winning Community Engagement

Make it Inviting & Fun!

- Branding
- Graphic Facilitation
- Radio Interviews
- Town Halls
- Open Houses
- Planning Charrettes
- Workshops
- Lectures
- Book signings
- Tours



St. Augustine, Florida:
A Case Study in Community Value Assessment



Determining Community Value in St. Augustine:

An Online Survey & Workshop on Community Resilience & Cultural Resources

January 31, 2019

National Trust for Historic Preservation®

FLAGLER COLLEGE

CITY OF ST AUGUSTINE EST. 1565

Do you own a property or business in the flood zone?



- Yes - 38%
- No - 36%
- Don’t know - 26%

Develop and share tools and best practices including:



- Partnering with experts to identify cost effective / feasible adaptation measures - 83%
- Developing a "how-to" workbook on adapting historic properties - 66%
- Completing a 3D laser-scan of historic areas - 48%
- Seeking funds for model adaptation projects on historic properties - 44%

National Register properties with greatest community value

1. Castillo de San Marcos – 67%
2. Hotel Ponce de Leon/Flagler – 57%
3. St. Augustine NHL District – 52%
4. Hotel Alcazar/Lightner Museum – 51%
5. Lincolnville Historic District – 45%
6. Government House – 39%
7. The Bridge of Lions – 39%
8. St. Augustine Lighthouse – 38%
9. Cathedral Basilica – 32%
10. FL National Guard HQ/Cemetery – 29%



Summary of Guidelines on Flood Adaptation for Rehabilitating Historic Buildings

Planning and Assessment for Flood Risk Reduction is a step that should be completed for all project prior to selecting an adaptation

The U.S. Department of the Interior, National Park Service publication: Guidelines on Flood Adaptation for Rehabilitating Historic Buildings, 20

appropriate adaptation strategies for historic buildings and offers the recommended and not recommended modes of act

Protect Utilities

Protect Utilities

- Relocate all Utilities Above the Flood Risk Level
- Protect Utilities in a Watertight Impermeable Enclosure
- Elevate & Anchor Exterior Mechanical Equipment Compatible with Historic Characte
- Utilize Fencing & Landscaping to Screen Exterior Mechanical Equipment
- Relocate Interior Mechanical Equipment
- Relocate Ducts, Pipes, & Conduits
- Utilize Duct Insulation that can be Removed After Flood
- Install an Electrical Disconnect Above Flood Risk Level
- Eliminate Electric Service from Flood Prone Areas
- Install Backflow Prevention Devices
- Install Sump Pumps

Dry Floodproofing

Structural Considerations

- Evaluate Strength of Masonry Walls & Footings Against Flood
- Anchor the Structure to the Foundation

Site Drainage

- Prepare to Manage Floodwaters
- Plan for Removing Water Post Flooding
- Install Drainage System Around Foundation & Footings
- Install Backflow Prevention Devices
- Install Sump Pumps

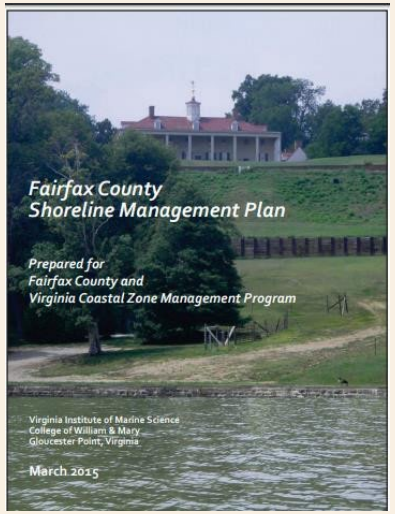
Coverings & Coatings

- Design Temporary or Permanent Closures
- Install Stanchions, Fasteners, or Tracks for Flood Shields
- Install a Low Wall Around Basement Windows
- Install Vents in Foundations Walls that Can be Sealed
- Coasting or Covering the Exterior of Foundation Wall Surfaces
- Wrap the Foundation with Temporary Removable Waterproof Membrane
- Inspect Permanent Coating or Membranes Regularly

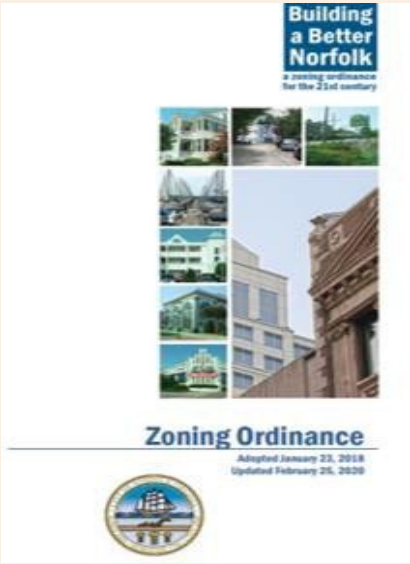
Flood Mitigation Decision Guidance



Public Policy Best Practices Analysis



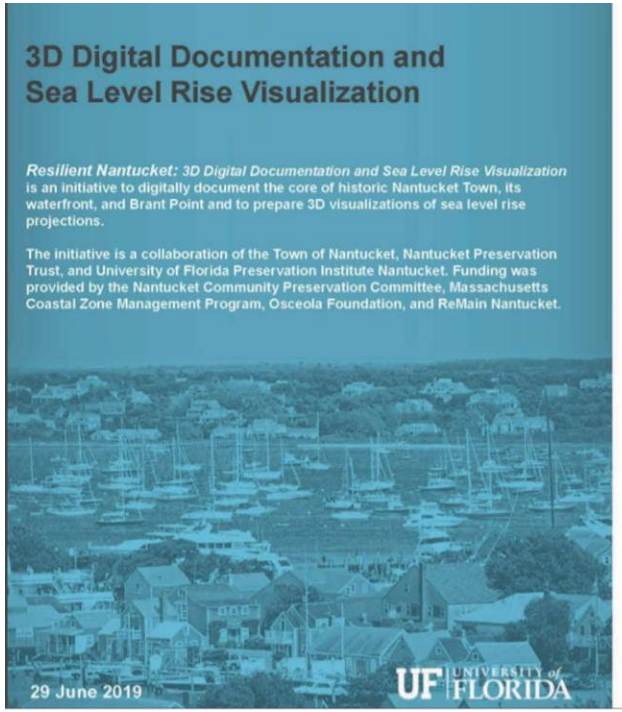
- **Norfolk** Zoning Ordinance designates Coastal Resilience and Upland Resilience Overlay zones
- **San Francisco** adopted guidance for incorporating sea level rise into capital planning processes.
- **Fairfax County, VA** Wetlands Board has adopted a living-shorelines first policy.
- **Boston, MA** requires completion of a future conditions' checklist for new and redevelopment.
- **Virginia Beach** Purchase of Development Rights (PDR) and Transferrable Development Rights



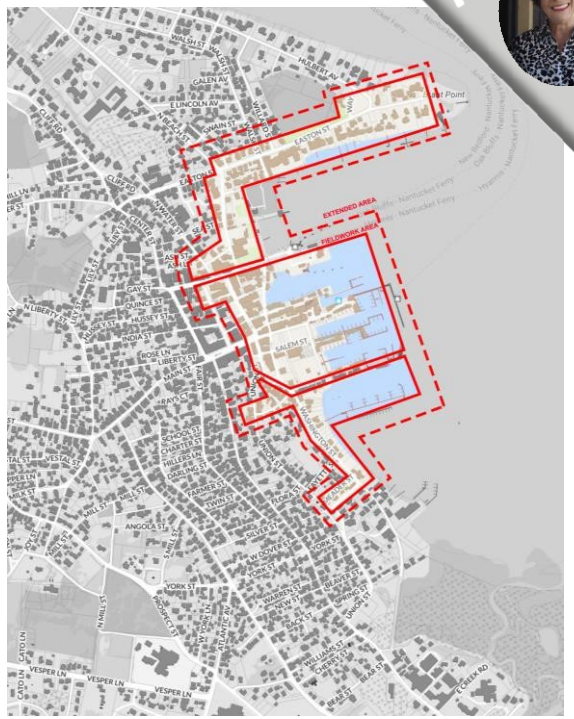


Nantucket, Massachusetts:
A Case Study in Resilience Documentation & Design

Develop and share tools and best practices including:







- Partner with experts to identify cost effective adaptation actions – 85%
- Develop a “how-to” workbook on adaptation – 69%
- Complete a 3-D laser-scanning project – 64%





Resilient Nantucket

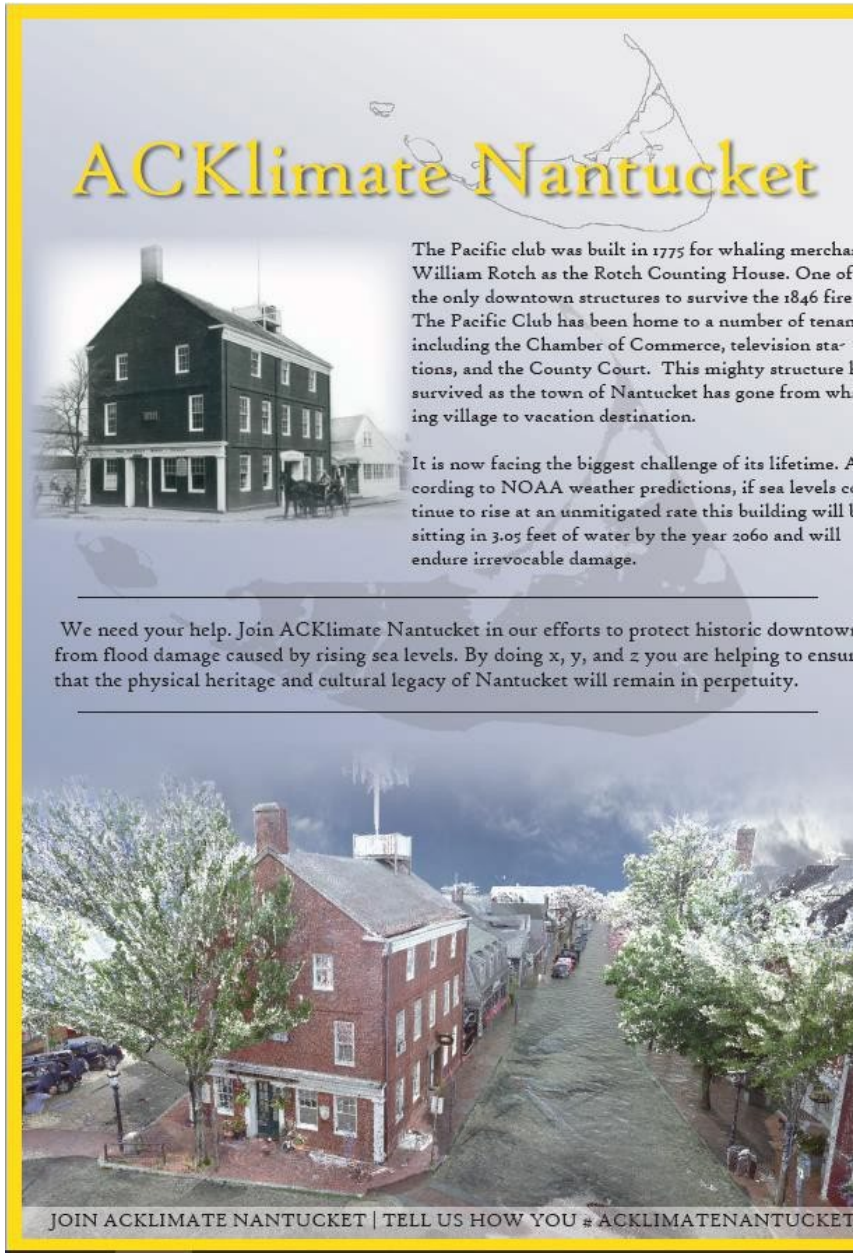
3D Digital Documentation and Sea Level Rise Visualization

Developed by the University of Florida's Preservation Institute Nantucket, this 3D Documentation program is supporting Community Resiliency Planning for the Town of Nantucket. Given the island's status as a National Historic Landmark District, the community has identified "preserving historical landmarks as a component of resilience planning."



"We recommend that the Town of Nantucket integrate resiliency and adaptation measures into the existing *Building with Nantucket in Mind: Guidelines for Protecting the Historic Architecture and Landscape of Nantucket."*

Historic Structure Signage



Partnership with Nantucket Historical Association or Nantucket Preservation Trust

Signage to include:

- Brief history and significance of structure
- Detail flood projections
- Resiliency measures (Call to Action)

Resilient Nantucket: Designed for Adaptation

The Craig Group, Thomason & Associates and Preservation Institute Nantucket are assisting the **Town of Nantucket** through a Massachusetts Municipal Vulnerability Preparedness (MVP) grant to develop a public awareness toolkit on adaptation strategies for private property owners and Design Guidelines for the Town of Nantucket's National Historic Landmark District.





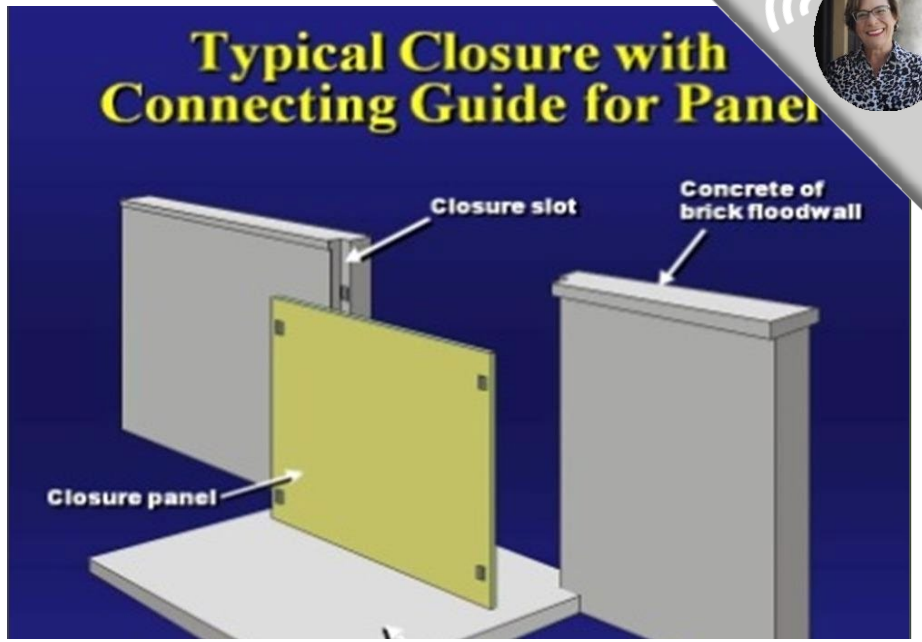
Secretary of the Interior's Guidelines on Flood Adaptation for Historic Rehabilitation



- Temporary Protective Measures
- Site and Landscape Adaptations
- Protect Utilities
- Dry Floodproofing
- Wet Floodproofing
- Fill the Basement
- Elevate on a New Foundation
- Elevate the Interior Structure
- Abandon the First Story
- Move the Historic Building









Building Specific Flood Adaptation Strategies
Summer Garden Theater: Annapolis

Temporary Protection
Protect Utilities
Dry Floodproofing

Case Studies: Designing For Elevation





"It is the opinion of the City and SHPO that preserving the Historic District fully in-tact is secondary to preserving the buildings and neighborhood, which opens the option for elevating, moving, and otherwise altering these buildings. If the buildings are not flood mitigated, they will become unlivable…The goal is to preserve lives and social interactions, not just the historic condition of buildings."

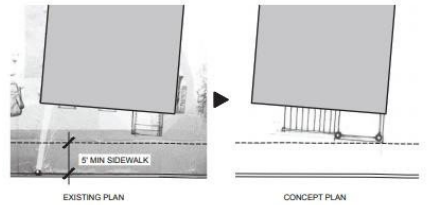




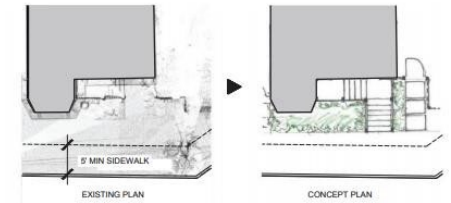


Schenectady, NY

Stockade Historic District Flood Mitigation Design Guidelines









Successful design solutions respond to the unique qualities and constraints of each property, such as architectural character, orientation, proximity to the street, and the extent that it will be elevated.





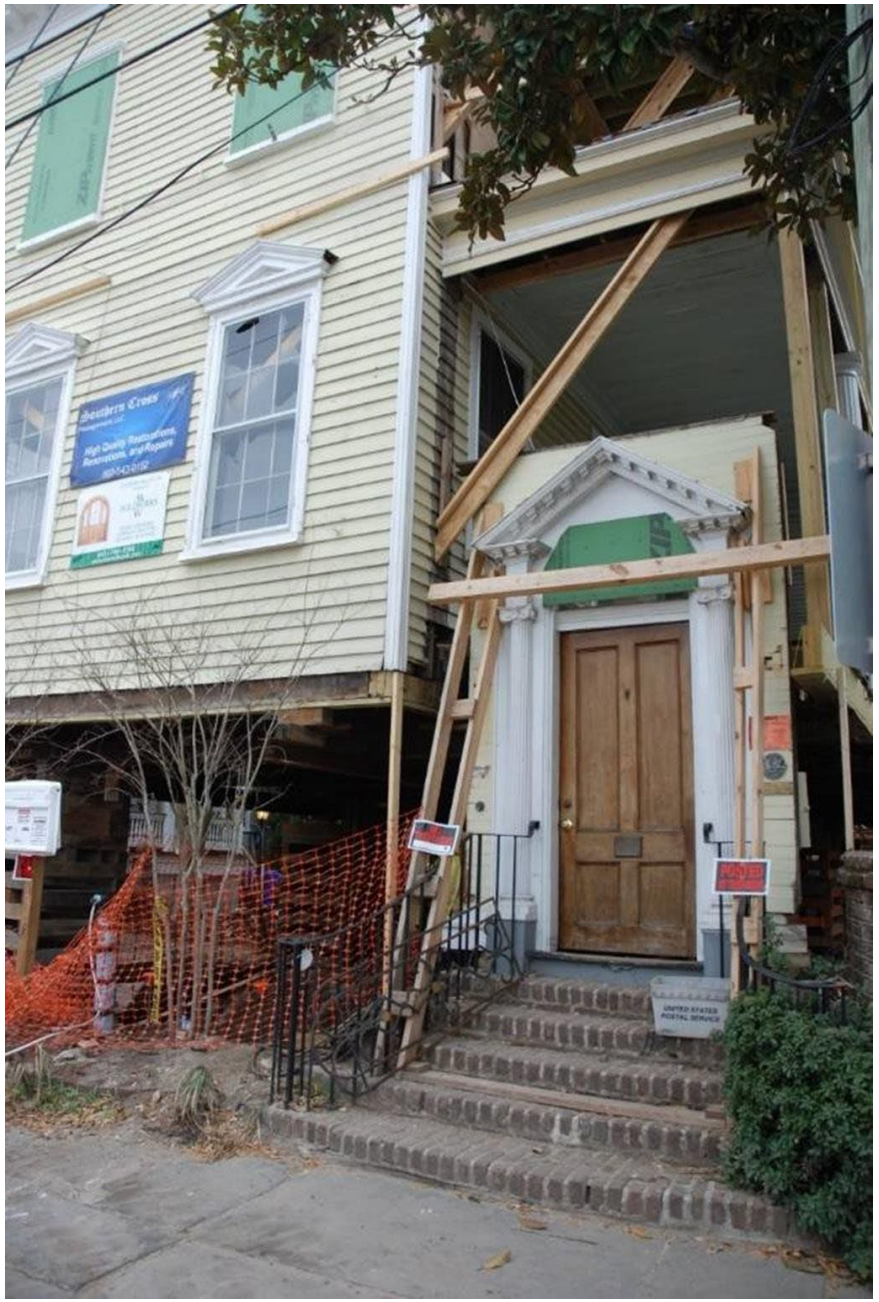






Building Types: Charleston

Adjoined Buildings
Sister Houses
Freedman's Cottages
Category 1 & 2 Buildings







Building Elevation: Charleston

Site Considerations
Preservation & Architectural Considerations
Foundation Design Considerations

Public Outreach Strategy

- **Internal coordination management**
- Public Outreach Strategy participants
  - Roles/responsibilities
- Public outreach process
  - Detailed outline of tasks/deliverables based on key project stages
- Stakeholder database
  - Storing house of contact information
  - Strategy/method of communication



- **Strong internal coordination ensures a successful community engagement strategy**
- **Education we're going to want to provide**
- **Input we're going to want to collect**

Public Outreach Strategy

- **Communications**
  - In-person (if possible)
    - Public meetings
    - Town Hall-type events
    - One-on-one meetings
    - Stakeholder interviews
  - Target different groups with different approaches



- **In-person outreach, if possible, provides more connection, more trust, and more synergy between the public and the project team**
- **As time is limited, this is typically reserved for key project stakeholders, in a more personal setting and for public meetings, where many people can come together to participate and provide feedback**

Public Outreach Strategy

- **Communications**
  - Digital (possibly preferable for the short-term)
    - Virtual meetings/engagement
    - Website
    - Presentations
    - Social media
    - Online survey
    - Press release
    - Phone interviews
    - QR code capability



- **Community engagement relies heavily on various forms of outreach**
- **We've been living in a digital age for decades. Now, thanks to COVID, our reliance on technology is more important than before**
- **Factoring numerous communication channels ensures your messaging is reaching more people in various demographics**

Public Outreach Strategy

- **Communications**
  - Print
    - Project Overview materials
      - Posters/flyers at designated key locations
        - Meeting announcements/relevant outreach details
        - Hardcopy surveys
        - Project information relayed to the public for educational purposes
        - Information kiosk



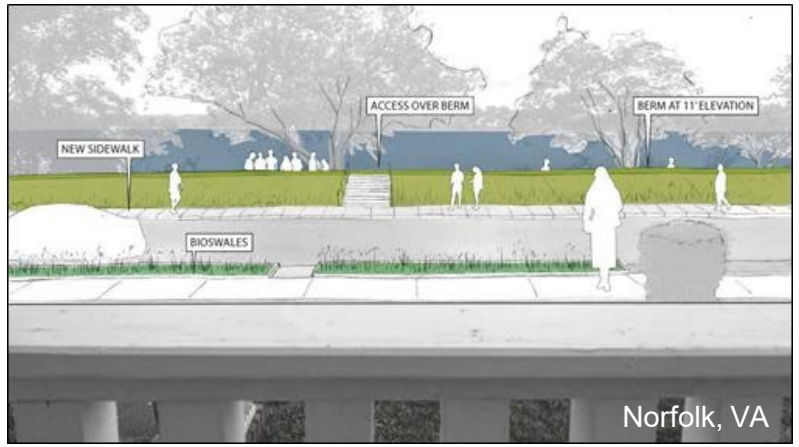
- **Community engagement relies heavily on various forms of outreach**
- **Print materials are important to consider especially for targeted groups that aren't technologically savvy or for those without technology access**
- **Locating printed material at key locations where the targeted groups are located will ensure those affected will be aware of the project's efforts**

Mitigation and Resilience Solutions



- **Coastal Flooding, Sea Level Rise and Riverine Inundation**
  - Living Shorelines
  - Building Elevation
  - Property acquisition
  - Small berms
  - Bulkhead/Floodwall
  - Flood gates
  - Pumping stations
  - Raised roadways





- **Specific types of solutions will be identified as data is analyzed and problem statements are developed**
- **Will also include recommendations for plans, policies, procedures, ordinances, guidelines, etc. that support flood mitigation**

Mitigation and Resilience Solutions



Coastal Flooding, Sea Level Rise and Riverine Inundation





- Solutions will range from easily achievable actions to more ambitious proposals

Mitigation and Resilience Solutions

- **Stormwater and Drainage**
  - Green infrastructure
  - Improved conveyance
  - Watershed detention volume


Norfolk, VA


Wake Forest, NC


New Orleans, LA

- **Solutions will balance reduced risk from natural hazards while improving the economic, social, and environmental health of the planning area**

Community Rating System (CRS) Activities

300 Public Information Activities	
310	Elevation Certificates
320	Map Information Service
330	Outreach Projects
340	Hazard Disclosure
350	Flood Protection Information
360	Flood Protection Assistance
370	Flood Insurance Promotion
400 Mapping and Regulations	
410	Flood Hazard Mapping
420	Open Space Preservation
430	Higher Regulatory Standards
440	Flood Data Maintenance
450	Stormwater Management
500 Flood Damage Reduction Activities	
510	Floodplain Management Planning
520	Acquisition and Relocation
530	Flood Protection
540	Drainage System Maintenance
600 Warning and Response	
610	Flood Warning and Response
620	Levees
630	Dams
700 Community Classification Calculations	
710	County Growth Adjustment
720	Community Total Points

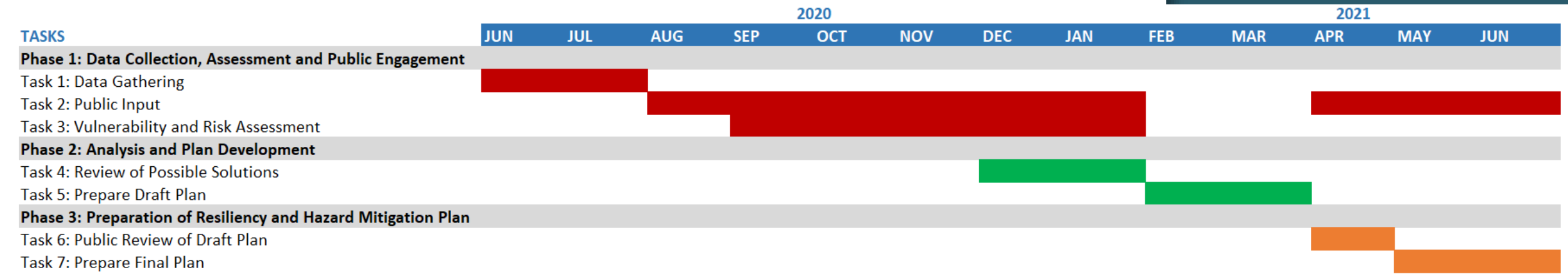
- **Efforts that could earn credit in the CRS include**:
  - Open green spaces (CRS Activity 420)
    [2013 Parks & Rec Comp. Plan]
  - Disaster case management linking resources and families (CRS Activity 330)
    [Craven County Long Term Recovery Group]
  - Resources such as “Be Prepared” like signing up for CodeRed Emergency Notification System and ReadyNC.org; making a plan like Red Cross Ready; staying informed and sheltering in place like having an emergency supply kit
    (CRS Activity 610)
    [Craven County Long Term Recovery Group]
  - Code of Ordinances – Chapter 18 – Floods
    (CRS Activity 510 and 530)

Taken from the 2017 CRS Coordinators Manual 508



- **New Bern is in the process of establishing itself as a CRS community under the NFIP**
- **This would lead to discounts in flood insurance premiums for property owners**
- **Currently at Level 10**
- **Initial goal expressed is to reach at least Level 8 if possible**

Schedule



- Some tasks will be done concurrently
- Some tasks depend upon outcomes of previous tasks
- Public input will be collected throughout most of the process

Project Outcomes

- City of New Bern Hazard Mitigation and Resiliency Plan Document
- One year AccelAdapt access to interactive vulnerability assessment for ongoing review/application



- **Outlining for the plan document has already started**
- **Will include a variety of sections that support flood mitigation and resiliency**
- **Many times the process used to develop a plan is as important as the plan itself**

Roles and Responsibilities

- Monthly planning team meetings
- Participation in larger stakeholder meetings
- Interaction with public engagement as appropriate
- Review of draft work products
  - Maps, tables, narrative write-ups, etc.
- Collaboration with local GIS manager for AccelAdapt



- **Data collection and validation/confirmation**
- **Rule setting for analyses**
- **Historical hazard occurrences and personal observations**
- **Departmental mindsets and priorities**

Next Steps

- Monthly planning team calls
- Public involvement
- Stakeholder engagement



- **Monthly calls will be a combination of status updates and focused discussion on specific topics**
- **Public involvement will be virtual for the time being**
- **Stakeholder engagement meetings will be scheduled to discuss preliminary vulnerability assessment findings, draft resiliency solutions, etc.**

Open Discussion

- *Questions about the material presented today*
- *Thoughts and input for moving forward*
- *Specific expectations for the project outcomes*



- **We will start with any questions that came in via the Chat box**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Public Outreach Strategy Meeting
August 27, 2020 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Charles Bauschard	City of New Bern
George Chiles	City of New Bern
Matt Montanye	City of New Bern
Amanda Ohlensehlen	City of New Bern
Matt Schelly	City of New Bern
Alice Wilson	City of New Bern
Margaret Shields	City of New Bern (contractor)
Ira Whitford	Craven County
Matt Hutchins	NEMAC+FernLeaf
Keri Ragland	The Craig Group
Lisa Craig	The Craig Group
Mike Robinson	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Amanda Zullo	Moffatt & Nichol
Dawn York	Moffatt & Nichol

Word of welcome from Mike – second core planning team meeting to discuss public and stakeholder outreach

Roll Call
Participants listed above.

Overall Project Goal
Reminder of overall project goal – to develop a citywide Resiliency and Hazard Mitigation Plan to increase community resilience to the flood hazard.

Project Schedule
Public input and vulnerability assessment items lined up for August and September (and the focus of this call).

Public Outreach Strategy (speaker: Amanda Zullo)
Hybrid approach between the client and consultant. Three surveys set up online to correspond with three virtual public meetings (September, January, and June) with in-person locations. Two to three stakeholder engagement meetings (October and January). Social media being utilized.

Public-Facing Project Website:
https://www.newbernnc.gov/departments/development_services/resiliency.php
Website will be updated throughout the project to include public participation surveys, presentations, meeting minutes, planning resources, and funding details.

Project Logo: The project will utilize existing City branding and guidelines.

Public Participation Survey: Survey #1 will be a broad involvement opportunity that covers resilience priorities and preferences, why participants care about resilience, and demographic data. Future surveys will be more detailed and address specific topics and geographic areas.

Public Participation Survey (speaker: Lisa Craig)
Community Values: Determine what places and experiences residents value (historical designation, geographic context, level of significance, economic importance, integrity, public sentiment)

- Margaret Shields asked in the chat box:
  Q: Are you partnering with other organizations to get the survey out, i.e., Chamber of Commerce, Swiss Bear, residents' associations, etc.?
  A: Yes, the planning team will be partnering with relevant organizations.

Public Meeting #1 (speaker: Amanda Zullo)
First public meeting will be a Zoom meeting with in-person viewing opportunities (New Bern City Hall, Development Services Conference Room) on September 10, 2020 from 6 to 7 p.m.

Vulnerability Assessment Updates (speaker: Matt Hutchins)
Data collection: Key datasets are in-hand (parcel dataset, building footprints with finished floor elevations (FFE), 2020 flood hazard areas). Final data coordination to be conducted with the City's GIS department to determine metadata for the parcel and FFE datasets.

Flooding Threats: Threats, data sources, and flooding types have been identified and are currently being researched.

Asset Categories: Asset categories and types have been gathered from the parcel dataset and other sources. Additional assets may be needed, and data gathering will be coordinated with the City.

Finalizing the Study Extent: It is recommended to focus on the City limits and consider extended areas surrounding the City limits.

Vulnerability Assessment Next Steps: Data collected so far will be confirmed with the City. Assessment of critical development according to various criteria will be conducted, and AccelAdapt analysis and preliminary results will follow.

Historic Preservation Next Steps (speaker: Lisa Craig)
Data gathering and review will be conducted using State and local plans and historic district guidelines. Amanda Zullo, Matt Hutchins, and Lisa Craig will participate in a call with the State Historic Preservation Office to discuss the City plan. Public input will be gathered to identify/interview historic district stakeholders and conduct a community values assessment.
The vulnerability and risk assessment will identify vulnerable historic districts, review adaptation strategies, and recommend policies to address vulnerabilities.

Group Discussion (facilitated by Mike Robinson)
Amanda Ohlensehlen asked Amanda Zullo if she had reviewed the flyer being sent out to advertise the first public meeting. Amanda Zullo reviewed the flyer and noted that the QR code will direct people to the New Bern resiliency website.

Amanda Ohlensehlen said Colleen Roberts will be sending out an outreach email containing the flyer, and that the flyer may be printed and posted at City Hall and around the City. If anyone would like hard copies of the flyer, Amanda will facilitate printing.

Mike Robinson said that during the first public meeting, there will be a 10-12 minute presentation then break for Q&A; the presentation will replay on a loop following the Q&A and allow for additional questions from new participants who may join the Zoom meeting late.

Next Planning Team Meeting (speaker: Mike Robinson)
Thursday, September 24 at 1 p.m. First public meeting is Thursday, September 10 at 6 p.m.

Final Discussion (facilitated by Mike Robinson)
The City is interested in staying apprised of the status of BRIC (Building Resilient Infrastructure and Communities) funding applications at the beginning of 2021, so if additional information becomes available Amanda Ohlensehlen would like for that information to be passed along to the City. Mike Robinson thinks that the City's resiliency approach would fit well into the BRIC program. Lisa Craig noted that coordination will also be needed with the State Hazard Mitigation Officer, and that some of New Bern's projects may be a good fit for FMA (Flood Mitigation Assistance) as well.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

OUTREACH STRATEGY MEETING

Presented to:

City of New Bern

Core Planning Team

August 2020

Agenda

- Welcome and Roll Call
- Activity from Past Month
- Public and Stakeholder Outreach Strategy
- Vulnerability Assessment Update
- Historic Preservation Update
- Group Discussion
- Next Steps
- Reminder for Next Meeting



- **Flexible agenda**
- **Feel free to post questions to the chat function as we go along to help facilitate discussion at the end**
- **We will try to keep the meeting to 45 minutes with time at the end for discussion**

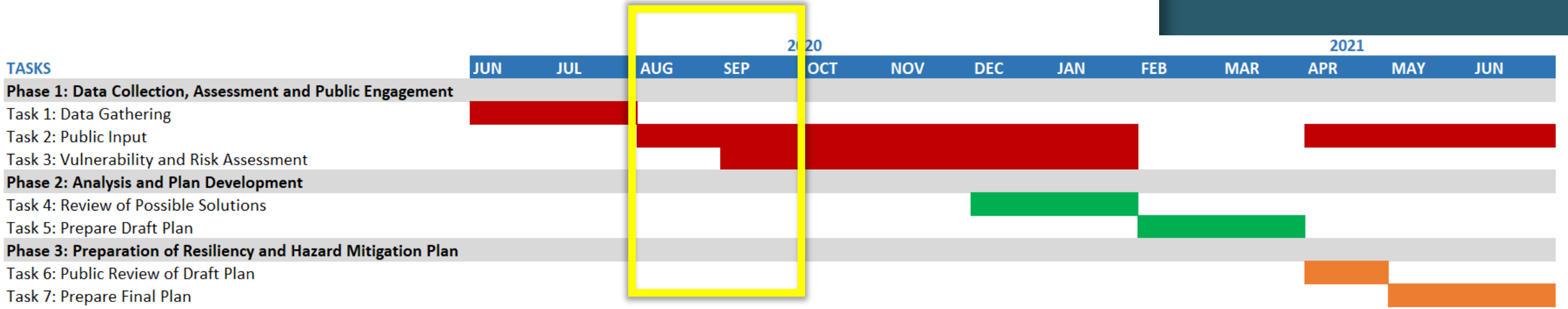
Overall Project Goal

To develop a citywide
Resiliency and Hazard Mitigation Plan
to increase community resilience to the flood hazard, including sea level rise and climate change, through an engaged stakeholder process



- **If anyone has ideas or suggestions to improve this goal statement, please email Mike or Amanda**

Schedule



- Some tasks will be done concurrently
- Some tasks depend upon outcomes of previous tasks
- Public input will be collected throughout most of the process

Activity from Past Month

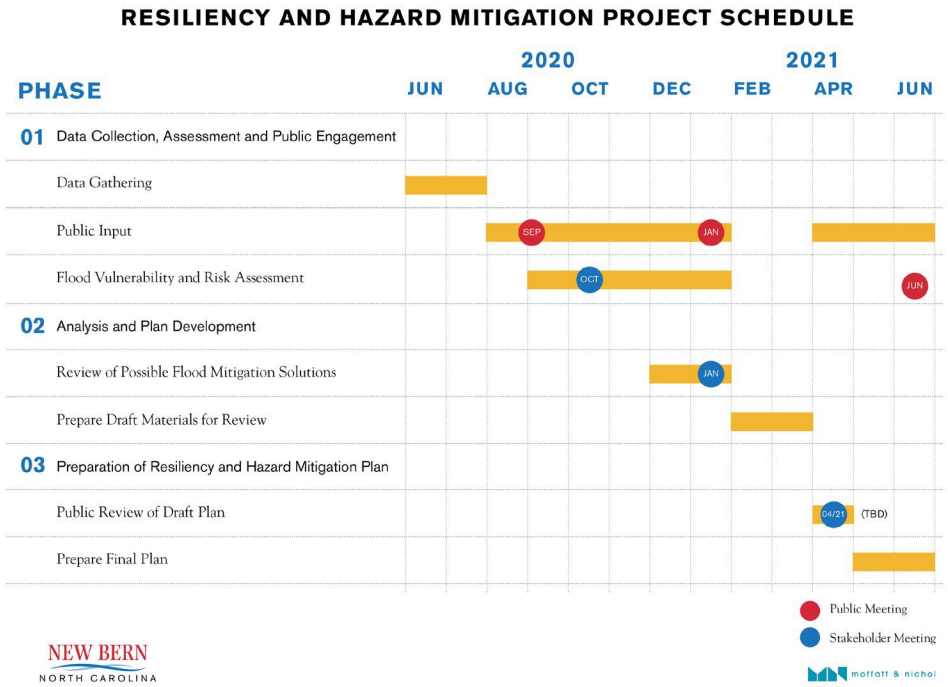
- **Public outreach**
  - Public and stakeholder outreach strategy
  - Project website
  - Project logo design
  - Public Meeting #1 scheduled
- **Vulnerability assessment**
  - Final data collection
  - AccelAdapt assessments
- **Historic preservation research**



- **Main speakers for today are Amanda Zullo, Matt Hutchins, and Lisa Craig**

Public Outreach Strategy

- **Strategy Approach**
  - Client and Consultant working together to optimize outreach
  - (3) Virtual Public meetings, with in-person locations
  - (2-3) Stakeholder engagement meetings
  - Resiliency webpage
  - Project info. fact sheet
  - Planning resources
  - (3) Surveys
  - Social Media





- **Public involvement has two main objectives:**
- **Education we want to provide**
- **Input we want to collect**

Public-Facing Project Website

- **Introduction and project overview**
  - Project information fact sheet
- **Email subscription for project news**
- **Link to public participation surveys**
- **Project schedule and other project details**
  - Contact information
  - Presentations and downloads
  - Meeting minutes and notes
  - Planning resources
  - Funding details



- https://www.newbernnc.gov/departments/development_services/resiliency.php
- **Interaction with Facebook, Twitter and other social media outlets**

Project Logo

- **Designing a resiliency-specific logo for use with all project materials**
  - Will likely follow the same City branding and guidelines currently in place (examples below)
  - Something that carries the message of resiliency and hope



NEW BERN
NORTH CAROLINA
Everything comes together here



NEW BERN
NORTH CAROLINA
Everything comes together here



NEW BERN
CHAMBER OF COMMERCE

- **Designs are in process and updates will be shared as they become available**

Public Participation Survey



- **Survey #1 will be a broad involvement opportunity**
  - Topics include:
    - "Your Resilience Priorities and Preferences“ (intro)
    - "Why I Care about Resilience“ (impact analysis)
    - "A Little More about Me" (demographic data)
- **Future surveys will be more specific and will address specific topics and geographic areas of the community**

- **Survey #1 will launch August 31 and end on September 24**
- **The survey duration is subject to change depending on number of responses**

Public Participation Survey: Community Values

Determining what places and experiences New Bern residents value requires the analysis of a number of variables including:

- *Historic Designation (NR, Local)*
- *Geographic Context of Significance*
- *Level of Significance (H/M/L)*
- *Economic Importance (H/M/L)*
- *Degree of Integrity (H/M/L)*
- *Public Sentiment (H/M/L)*

"While all a community's historic properties and cultural resources are important, some do a better job in visually reflecting the community's history, some are more important to the local economy, and some are better able to convey important information about the past."

Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning
FEMA 386-6 / May 2005



- The values you use to establish your preservation priorities are unique to the community.
- It is possible that your community's preservation values may conflict with those of the larger jurisdiction… In such cases, you do not have to accept the priorities of the larger jurisdiction. Rather, you should document in your plan the process you followed to determine your preservation priorities.
- It will be clear to the community, county, State, or anyone else who reads the plan why you are pursuing a given course of action.

Public Meeting #1

- **Zoom meeting with in-person viewing opportunities**
  - September 10, 6-7 p.m.
  - Meeting hosted on Zoom and Facebook LIVE
  - In-person viewing opportunities:
    - New Bern City Hall
    - Development Services Conference Room



Vulnerability Assessment Updates



- **Data collection**
  - Flooding threats
  - Asset categories
- **Study area extent**
- **Next steps**

Data Collection and Coordination

- **Key datasets in-hand**
  - Parcel dataset to represent City's assets
  - Building footprints and Finished Floor Elevation (FFE)
  - 2020 flood hazard areas
- **Final data coordination with City GIS**
  - Metadata on parcels and FFE
  - Final review and confirmation of asset and threat data



- **The City has provided a lot of valuable data that is not usually available**
- **Exciting opportunity for assessment to use FFE**
- **Special thanks to Alice Wilson and the City's GIS!**

Flooding Threats

Threat	Data Source	Flooding types
Floodplain Inundation	FEMA FIRM (Floodway, 100-yr, 500-yr, other available return periods)	Riverine, Coastal/Storm Surge
Storm Surge	NOAA SLOSH (Cat 1-5)	Storm Surge
Tidal Flooding (Current)	NOAA High Tide (NOAA Impact Threshold)	King Tides, Sunny Day Flooding
Sea Level Rise and Future Tidal Flooding	NOAA Sea Level Rise (Thresholds based on planning horizon)	Future Tidal, Coastal, SLR Inundation
Levee/Dam Failure	Currently researching	Inundation
Stormwater/Urban/Rainfall	Currently researching	Inundation



- **Threat extents based on trusted sources of information**
- **Future change related to Sea Level Rise can be tied into strategic planning horizons**

Asset Categories

Asset Category	Specific Asset Types (from data received)	Sources	Needed
Residential	Multi-residence, Single-residence, Manufactured	Craven County GIS (Parcels)	Retirement, Group Homes, Assisted Housing
Commercial and Industrial	Retail, Restaurant, Hotel, Office, Industrial/Manufacturing	Craven County GIS (Parcels)	✓
Critical Facilities	Medical, Utilities, Food Infrastructure, Public Safety (Fire, Police)	Craven County GIS (Parcels)	✓
Government-Owned	Federal, State, Municipal	Craven County GIS (Parcels)	City-Owned (confirm)
Parks and Cultural	Parks, Recreation, Cultural, Religious	Craven County GIS (Parcels)	✓
Historic	National Register Properties	NRHP	State/Locally Designated
Socioeconomic	Social Vulnerability, SNAP Retailers	US Census, CDC, USDA FNS	Assisted Housing
Annual Sales Volume	Total sales	Esri Business Analyst	✓
Jobs/Employees	Total employees	Esri Business Analyst	✓
Roads	Major, Minor	OSM	✓



- **Few data gaps remaining**
- **City or external sources could be used to fill remaining gaps**

Finalizing the Study Extent



- **Recommendation:**
  - 1) Focus on City Limits
  - 2) Consider extended area surrounding the City Limits

- The City Limit extent will be the focus of key findings
- Extended area provides additional social vulnerability integration (using Census/CDC derived information)

Vulnerability Assessment: Next Steps



2020 FEMA FIRM with properties and building footprints

Example Assessment Criteria:

- Criticality of assets
- Pre/Post FIRM and FFE
- Risk probability (e.g. 100-year vs 500-yr)

- Confirmation of final data (Aug.-Sept.)
- Assessment criteria development (Sept.)
  - City-specific factors related to critical assets and adaptive capacity
  - Input and feedback at next planning meeting
- Analysis and preliminary results in AccelAdapt (Oct.-Nov.)

Historic Preservation: Next Steps

Data Gathering & Review

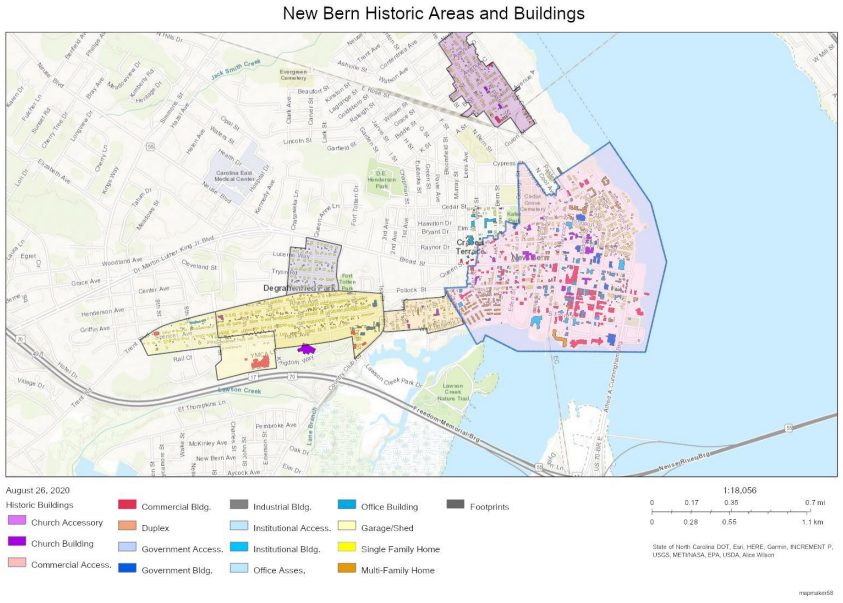
- NC Climate Risk Assessment & Resilience Plan
- Regional Land Use Plan
- Historic Preservation Plan
- Historic District Guidelines
- Historic Preservation Meeting (Aug. 10)

Public Input

- Identify & interview historic district stakeholders
- Conduct a Community Values assessment

Vulnerability and Risk Assessment

- Identify vulnerable historic districts & NR-listed contributing resources
- Review proposed adaptation strategies for impact on historic districts
- Identify public policy approaches for adaptation specific to historic districts



- ***"Water where it doesn't belong" is among the gravest climate-related threats to cultural resources throughout North Carolina.***
- ***Our agency will encourage local jurisdictions to incorporate [NPS flood adaption] guidelines into local planning efforts and regulatory schemes...***
- ***...many of the decisions that could protect cultural assets rest in the hands of local government and private property owners.***
- ***NC Climate Risk Assessment & Resilience Plan [June 2020]***

Group Discussion

- Questions about the material presented today?
- Thoughts and input moving forward?



- **We will start with any questions that came in via the Chat box**
- **Any feedback is welcome**
- **Feedback can also be emailed to Mike or Amanda following the meeting**

Next Planning Team Meeting

- Thursday, September 24 at 1 p.m.
- Remember first Public Meeting on Thursday, September 10 at 6 p.m.



- **We've already discussed immediate next steps**
- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Outreach and Vulnerability Assessment Meeting
September 24, 2020 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Jordan Hughes	City of New Bern
Matt Montanye	City of New Bern
Amanda Ohlensehlen	City of New Bern
Matt Schelly	City of New Bern
Mark Stephens	City of New Bern
Alice Wilson	City of New Bern
Matt Hutchins	NEMAC+FernLeaf
Aashka Patel	NEMAC+FernLeaf
Lisa Craig	The Craig Group
Mike Robinson	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Rebeckah Sims	Moffatt & Nichol
Dawn York	Moffatt & Nichol

Word of welcome from Mike – third core planning team meeting to discuss status of public outreach and flood vulnerability assessment

- **Roll Call**
  - Participants listed above.
- **Activity from Past Month**
  - Activity from the past month will be included in the following updates on public outreach and flood vulnerability assessment, to be presented by Mike Robinson, Lisa Craig and Matt Hutchins. The newly adopted "New Bern Resilience" logo was also introduced.
- **Update on Public and Stakeholder Engagement (Mike Robinson & Lisa Craig)**
  - Public Meeting 1 Attendance (held September 10, 2020 from 6 to 7 p.m.) – 45 participants on Zoom; 3 attendees at City Hall; 0 attendees at Development Services; 634 views on Facebook – a lot of information shared creating a foundation to continue building upon.
    - Future public meetings will be more tailored and will seek to reach specific audiences and address specific needs within the community.
    - Comments and questions received during the public meeting were captured in the minutes from the meeting and will be reviewed and incorporated into the planning process as appropriate.
  - New project logo discussed: "New Bern Resilience: Resiliency comes together here"
    - This logo was designed to provide an identity to the project's materials and be reflective of New Bern's overall branding standards
    - The new logo will be used on social media, documents, postings on the website, etc.
    - Desire is to use the logo on this project and beyond

- Survey 1 Analysis – the survey has been open to the public from August 28 through September 24 with 220 responses, an 81% completion rate, and average of 14 minutes spent on each survey so far.
  - Question for group: Do we want to extend the survey beyond September 24? Recommend at least one additional week. Amanda concurred and will discuss the sending of additional reminders with Colleen.
  - Many people are still visiting the website and one more push may be beneficial.
  - Take some of the answers into perspective, as some people may be answering for what they believe to be true but may not know for sure.
  - Question 9 has had varied results throughout the run of the survey of what types of assets people are most concerned with in relation to being susceptible to flood hazards in New Bern.
  - Question 10 – most people consider the emergency services as very important community assets; then transportation infrastructure; then small businesses and major employers; then schools and such.
  - Responses also included some steps the local government could take to reduce or eliminate the risk of future flood hazard damages to their neighborhoods (question 12).
  - Question 13 – structural projects were ranked #2 for question 12 but ranked #6 for this question.
  - Based on survey responses, the internet appears to be the best choice for how to most effectively reach citizens to provide information on how to make their homes and neighborhoods more resistant to flood hazards. Also high on the list were mobile messages and alerts, so people may be plugging into New Bern's system that way (question 15).
  - Question 16 – only nine things are what most people have done currently.
  - Majority of people are between 55-64 or over 65. Need to think more about how to reach younger people. Also need to think more about how to reach more families.
  - Able to reach lots of people within city limits and those who have been living in New Bern for 20 years or more.
  - Need to think about how to reach additional zip code areas (with 0% participation) or understand better the populations residing in those zip codes.
  - <u>Will continue to analyze these results and move forward with how to engage more people.</u>
- Matt Schelly: For the survey, for someone who is answering for a household, could demographics of the household be included as a response?
  - Lisa also mentioned that we need more engagement from families and will need to brainstorm how to accomplish this.
  - Lisa recommended reaching out to the education community.
- Any other suggestions or comments, please send to Mike or Amanda.

- **Vulnerability Assessment Update (Matt Hutchins)**
  - High level overview and preview of approach for assessing the community assets.
  - Feel free to comment on anything brought up on the slides.

- Looking to FEMA and NOAA as trusted sources of information that are going into the analysis (floodplain inundation, storm surge, tidal flooding, and SLR).
  - No existing data sources for levee/dam failure or stormwater/rainfall.
- Have preliminary results with associated mapping.
- SLR is a stressor for all other threats.
- Want to identify how the assessment can help inform long-term planning for the City.
  - These SLR analyses will be helpful for handling future uncertainty.
- Matt Schelly: How transferable is the Beaufort SLR analysis/projection to the City of New Bern?
  - The team is looking into this. There is a USGS gauge near a tidal/riverine confluence. Aashka Patel is specifically looking into this for NEMAC+FernLeaf. She mentioned an NCEM gauge that could also be incorporated into the analysis. Taking into account all differences in geomorphology, flooding type, etc.
- Alice Wilson: Participating with UNC-Wilmington in a resiliency workshop with the City and New Hanover County. With SeaGrant there has been some SLR analyses done already too. Recommend looking into that dataset as well.
- Working on how to understand tidal flooding thresholds that are more specific to New Bern.
- Seeing more persistent inundation over time.
- Coordinated with Alice (with the City) on GIS data needs (thanks again!).
- Vulnerability and risk factors are combined to create a single output of "combined vulnerability and risk."
- Will provide assessment summaries to support communication of findings which will identify neighborhood areas most at risk.
- Will prepare interactive tool to support insights and use of information. Will be working with the City on this tool.
- Mike: Several questions asking for input from the planning team in your slides; should we create a questionnaire? Or should we plan a time to talk with the City specifically on these questions?
  - Matt said any responses would be helpful.
  - Amanda says New Bern has a wealth of information. Would be welcome to having a conversation offline. Staff members could tell us where the major problem areas are, especially the public works department.
  - Is there a preference? → Zoom meeting, Word document questionnaire, etc.?
    - Amanda says Word document questionnaire first to send to staff, then follow up phone call.

- **Group Discussion**
  - Questions about the material presented today?
  - Thoughts and input moving forward?
  - Matt Schelly: Matt Hutchins you said you were looking into road flooding inundation, the UNC-W/Sea Grant study has looked into that previously. Recommend contacting them for the dataset.
    - Alice Wilson said the professor will be sharing her PowerPoint from a recent meeting and can send it to us. The professor is aware of this project.

  - Matt Montanye: The questionnaire (Word document) is best option to start the discussion on additional information from each City department, then follow up with a Zoom meeting to discuss answers. Agrees with Amanda.
  - Amanda:
    - USACE Neuse River Basin plan update (3 year study) – Amanda and City staff informed them of things happening in New Bern (significantly impacted by riverine flooding and storm surge; want to be better informed of USACE operations, etc.) – might be an opportunity for larger scale/regional studies – Amanda will share what we are doing and then will share with us what they are doing.
  - Lisa: We should engage with the agencies on activities moving forward that we recommend from our findings so that we can obtain funding. Also, keep in mind what is important to the public; that should be our priority.
  - Amanda: May be receiving additional FEMA funding for this project; our deliverable will be an amendment to the regional Craven County hazard mitigation plan; this is a "guinea pig" project for FEMA and something they may want to see other communities do in the future.
- **Next Steps**
  - Site visits
  - Ongoing public involvement
  - Stakeholder engagement
  - Preliminary vulnerability assessment results
- **Reminder for Next Meeting**
  - Thursday, October 22 at 1 p.m.
  - The focus will be on historic preservation.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

NEW BERN RESILIENCE

OUTREACH AND VULNERABILITY ASSESSMENT UPDATES

Presented to:

City of New Bern

Core Planning Team

September 2020

Agenda

- Welcome and Roll Call
- Activity from Past Month
- Public Outreach Update
- Vulnerability Assessment Update
- Group Discussion
- Next Steps



- **Flexible agenda**
- **Post questions to the chat function to help facilitate discussion at the end**

Public Meeting 1 Attendance

- 45 participants on Zoom
- 3 attendees at City Hall
- 0 attendees at Development Services
- 634 views on Facebook



- **September 10, 6-7 p.m.**
- **Hybrid meeting: online and in-person venues, including social media**

Public Meeting Comments and Questions

- What examples of other cities or regions that have successfully mitigated are we turning to for guidance?
- How will this planning be integrated into the New Bern Urban Design Plan and the Redevelopment Plan that has been developed?
- Is Stanley White included in this process on Chapman Street?
- Can the group describe in more detail what stakeholder involvement looks like when developing a resiliency plan?



- **There was a request for the planning team to contact the organization CARE**
- **There was a request for more information on the background and credentials of the speaking team**

Project Logo





- Intent of the logo is to provide an identity to the project's materials
- The project logo is reflective of New Bern's overall branding standards

Survey 1 Analysis

- 220 responses
- 81% completion rate
- 14 m is the average time spent on each survey



- **Survey 1 was open to the public from August 28 to September 24**
- **Do we want to keep the survey open longer??**
- **Recommendation is to extend the survey by at least one week**

Survey 1 Analysis



- **Q1: What is your relationship to New Bern?**
  80% live in New Bern

Q2: Is your home located in a floodplain?
59% of people's homes are not located in a floodplain
7% don't know

Q3: Do you have flood insurance?
54% of survey participants do not

Survey 1 Analysis



- **Q4: Who is your flood coverage provider?**
  - 71% have National Flood Insurance Program - FEMA

Q5: If you do not have flood insurance, why not?

- 69% of survey participants are not located in a floodplain

Q6: Have you ever experienced or been impacted by a flood-related disaster?

- 67% of survey participants said yes

Survey 1 Analysis



- **Q7: If "yes", which flood hazard have you experienced or been impacted by?**
  - 90% stated flooding caused by hurricanes and tropical storms, including storm surge

Q8: How concerned are you about the possibility of all of New Bern community being impacted by these flood hazards?

- 83% of survey participants are very concerned about flooding caused by hurricanes and tropical storms, including storm surge

Survey 1 Analysis



- **Q9: Which of the following types of assets are most susceptible to flood hazards in your community?**
    1. Economic
    2. People
    3. Cultural/Historic
    4. Infrastructure
    5. Community
    6. Governance
    7. Environmental
    8. Experience

- **Rating Score:**
    1. **People: 5.49**
    2. **Infrastructure: 5**
    3. **Governance: 4.19**
    4. **Economic: 5.88**
    5. **Experiences: 2.76**
    6. **Cultural/Historic: 5.02**
    7. **Community: 4.27**
    8. **Environmental: 3.93**

Survey 1 Analysis



Q10: How important is each of the following specific community assets to you?

1. Hospitals & Medical Facilties
2. Emergency Medical Facilities
3. Fire Stations
4. City/County Emergency Operations Centers
5. Police Stations
6. Major Bridges
7. Small Businesses
8. Major Employers
9. Schools (K-12)
10. Emergency Shelters
11. Historic Buildings/Districts
12. Airports
13. City Hall/Courthouse
14. Eldercare Facilities
15. Colleges
16. Parks
17. Daycare Facilities

- **Extremely Important to Very Important**

Survey 1 Analysis



Q11: Please indicate how important each statement is to you?

1. Protecting critical facilities
2. Protecting and reducing damage to utilities
3. Protecting private property
4. Strengthening emergency services
5. Preventing development in flood hazard areas
6. Promoting cooperation among public agencies, non-profit organizations, and businesses
7. Addressing socio-economic disparity in economically distressed neighborhoods and business districts
8. Protecting historic and cultural landmarks and districts
9. Enhancing function of natural features
10. Protecting transportation networks

- **Very Important to Somewhat Important**

Survey 1 Analysis



- **Q12: What are some steps your local government could take to reduce or eliminate the risk of future flood hazard damages to your neighborhood?**
  1. Regulate new construction/redevelopment to incorporate flood protection measures
  2. Design and construct permanent structural protection systems
  3. Restrict new development/redevelopment in flood prone areas
  4. Design and construct nature-based barriers
  5. Create an economic incentive to assist property owners with mitigating or adapting their property to reduce flood risk
  6. Educate property owners on wet/dry floodproofing/elevation strategies
  7. Publicize the importance of property owners acquiring flood insurance
  8. Fund temporary storm protection systems

- **Other Comments:**
  - Focus on areas heavily flooded first
  - Maintain clearance of debris for all storm ditches and creek beds
  - Consider a coastal hazards statement
  - Retrofit stormwater practices, and living shorelines, to reduce flooding potential
  - Nature-based solutions
  - Educate homeowners on methods to maintain SMS
  - Dredge major rivers to increase flow out of low areas
  - Adopt the Netherlands' flooding policy
  - Install underground utilities
  - Use the RR tracks as a levee

Survey 1 Analysis



- **Q13: How important is each for your community to pursue?**
    1. Prevention
    2. Emergency Services
    3. Property Protection
    4. Public Education & Awareness
    5. Natural Resource Protection
    6. Structural Projects
    7. Historic Preservation

- **Very Important**

Survey 1 Analysis



- **Q14: Rank the places you are most interested in protecting in order of importance.**
    1. Home/neighborhood
    2. Business/work
    3. Downtown
    4. School
    5. Neighborhood business districts
    6. Cultural and historic properties
    7. Government offices
    8. Places of worship
    9. Public parks & playgrounds

- **Home/Neighborhood - 8.29**
- **Business/Work - 6.42**
- **Downtown - 5.99**
- **School - 5.21**
- **Neighborhood Business Districts - 4.62**
- **Cultural & Historic Properties - 4.38**
- **Government Offices - 4.29**
- **Places of Worship - 3.60**
- **Public Parks & Playgrounds - 2.80**

Survey 1 Analysis



- **Q15: What are the most effective ways for you to receive information about how to make your home and neighborhood more resistant to flood hazards?**

1. Internet (Web Pages)
2. Internet (Social Media)
3. Mail
4. Television news
5. Public Meetings/Workshops
6. Mobile messages/alerts
7. Newspaper
8. Radio news
9. Television ads
10. Television programs
11. Brochures/flyers in public buildings
12. Automated phone calls
13. Radio programs
14. Church bulletins
15. Door hangers
16. Word of mouth
17. Radio ads

- **Other ways:**
  - **Email**
  - **All**
  - **Watershed-scaled educational campaigns**
  - **Scheduled weekend workshops**
  - **Workplace announcements and training**

Survey 1 Analysis



- **Q16: Check the disaster preparedness activities you've done in your household, plan to do in the near future, have not done, or are unable to do.**
  1. Prepared my home by installing smoke detectors
  2. Talked with household members about what to do in case of a natural disaster or emergency
  3. Developed a "Household Family Emergency Plan"
  4. Implemented mitigation measures to protect my property
  5. Attended meetings or received written information on natural disasters or emergency preparedness
  6. Established a financial plan and/or have a reserve fund set aside for post event recovery
  7. Discussed or created a utility shut-off procedure in case of emergency
  8. Within the last year, a member of my household was trained in CPR
  9. Created a business continuity plan that addresses future disasters

- **Have Done**

Survey 1 Analysis



Q17: What is your age range?

41%	65+
31%	55-64
12%	35-44
11%	45-54
3%	25-34
1%	18-24
0%	Under 18

Q18: How many people live in your household?

75%	1 to 2
19%	3 to 4
5%	5 to 6
1%	7 or more

Survey 1 Analysis



Q19: Where do you live?

75%	I live inside the city limits of New Bern
13%	I live outside the city limits of New Bern
4%	I live in Craven County
3%	I am not a Craven County resident
2%	I live outside Craven County
1%	Not applicable, I don't live in the vicinity

Q20: How long have you lived in New Bern?

34%	1-5 years
29%	20 years or more
20%	10-19 years
13%	6-9 years
5%	Less than one year

Survey 1 Analysis



- **Q21: If you live in New Bern, which zip code?**

50%	28562
50%	28560
0%	28561, 28563, 28564

- **Q22: If you don't live in New Bern full time, which describes your relation to New Bern?**

62%	Other *(see sidebar)*
21%	I visit New Bern
17%	I own a second home in New Bern

- **Q22. Other relations to New Bern:**
  - **Trent Woods resident**
  - **Relatives live in New Bern**

Survey 1 Analysis



Q23: What is your living situation?

94%	I own my home
6%	I rent my home
0%	I live with family or friends

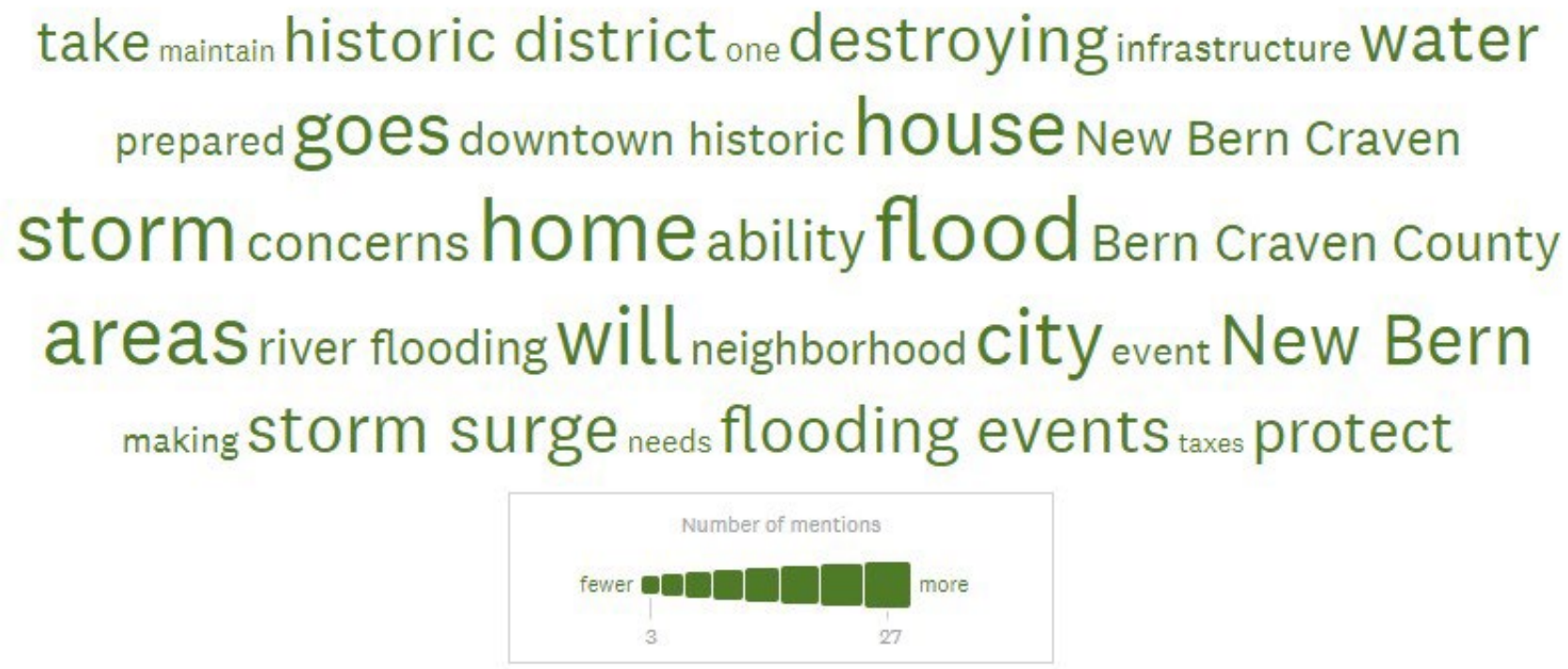
Q24: What type of building do you live in?

92%	Single-family home
2%	Manufactured home
2%	Other *(see sidebar)*
1%	Apartment (5 or more units in structure)
1%	Duplex
1%	Apartment (3-4 units in structure)
1%	Condominium

- **Q24. Other dwelling type:**
  - **Townhome**
  - **2-story building**

Survey 1 Analysis

- **Q25: “My greatest concerns about how future flooding and storms will impact New Bern/Craven County are…”**





- **Tags:**
  - Climate change
  - Destroy business
  - Disadvantaged residents
  - Downtown destruction
  - Economic infrastructure
  - Economic social impacts
  - Education
  - Failed city planning
  - Flooding
  - Frequency of storms
  - Historic district
  - Historic home
  - Home
  - Infrastructure
  - Lack of innovation
  - Lack of planning
  - Long recovery
  - Mental health consequences
  - Nature based solutions
  - No flood zone development
  - No solution
  - Our environment
  - Power loss in home
  - Preservation
  - Property damage
  - Protect home
  - Rescuers
  - Resiliency
  - Resiliency planning
  - Storm surge
  - Stormwater infrastructure
  - Sustainability

Vulnerability Assessment Update and Preview



Assessment Approach:

1. Consider the level of information (and type of assessment) needed to make informed decisions

2. Apply vulnerability and risk assessment framework using the best available data

3. Consider how future climate change (and changing stressors) could influence vulnerability and risk

4. Develop assessment summaries and key findings to support resilience and hazard mitigation strategies

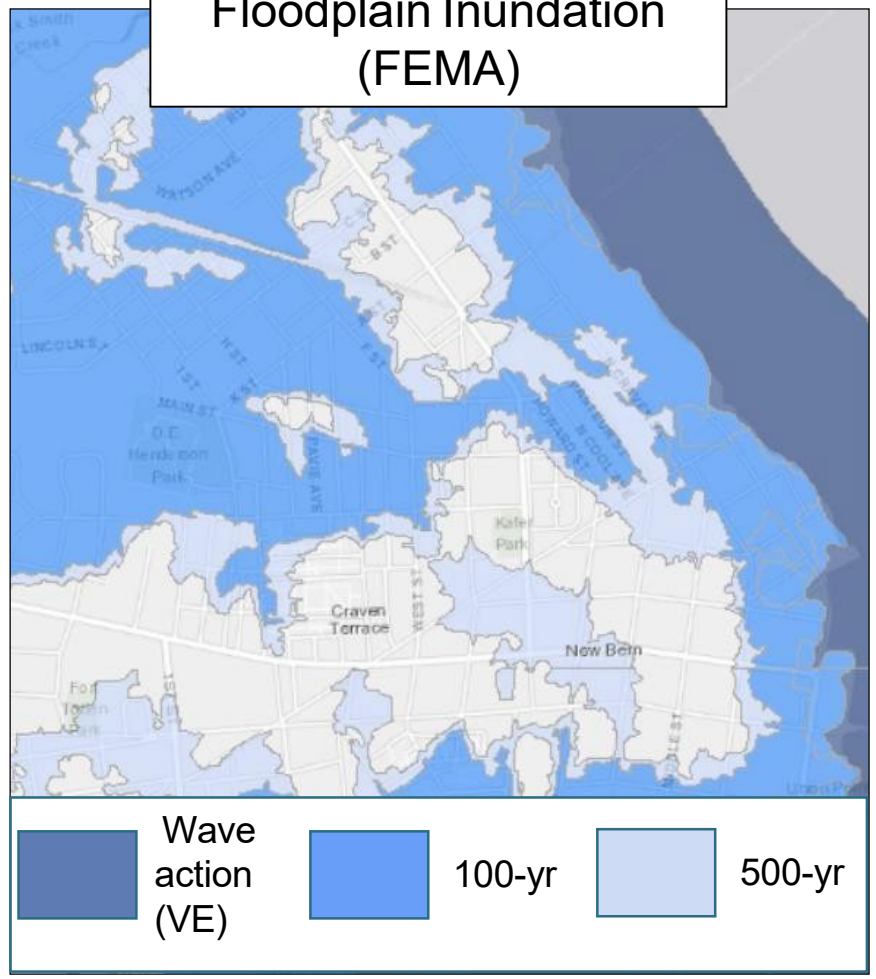
Flooding Threats (Update)

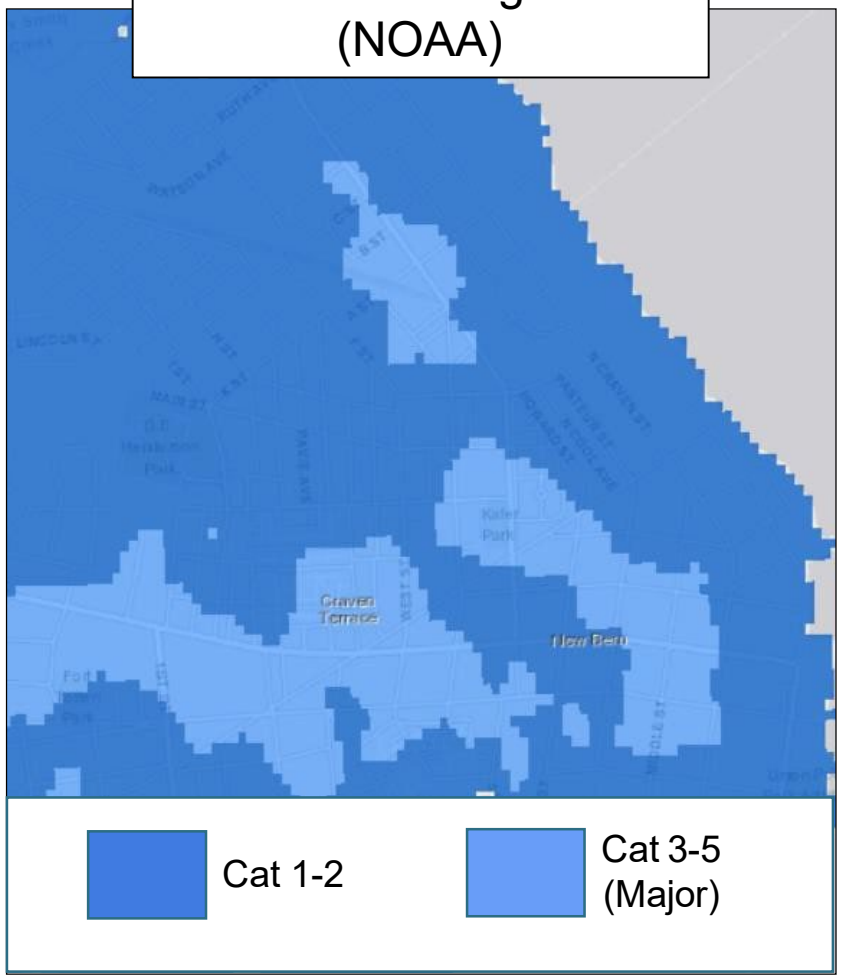
Threat	Data Source	Flooding types
Floodplain Inundation (Riverine and Coastal)	FEMA FIRM (100-yr, 500-yr, other available return periods)	Riverine, Coastal/Storm Surge
Storm Surge	NOAA SLOSH (Cat 1-5)	Storm Surge
Tidal Flooding (Current)	NOAA High Tide (NOAA Impact Threshold)	King Tides, Sunny Day Flooding
Sea Level Rise and Future Tidal Flooding	NOAA Sea Level Rise (Thresholds based on planning horizon)	Future Tidal, Coastal, SLR Inundation

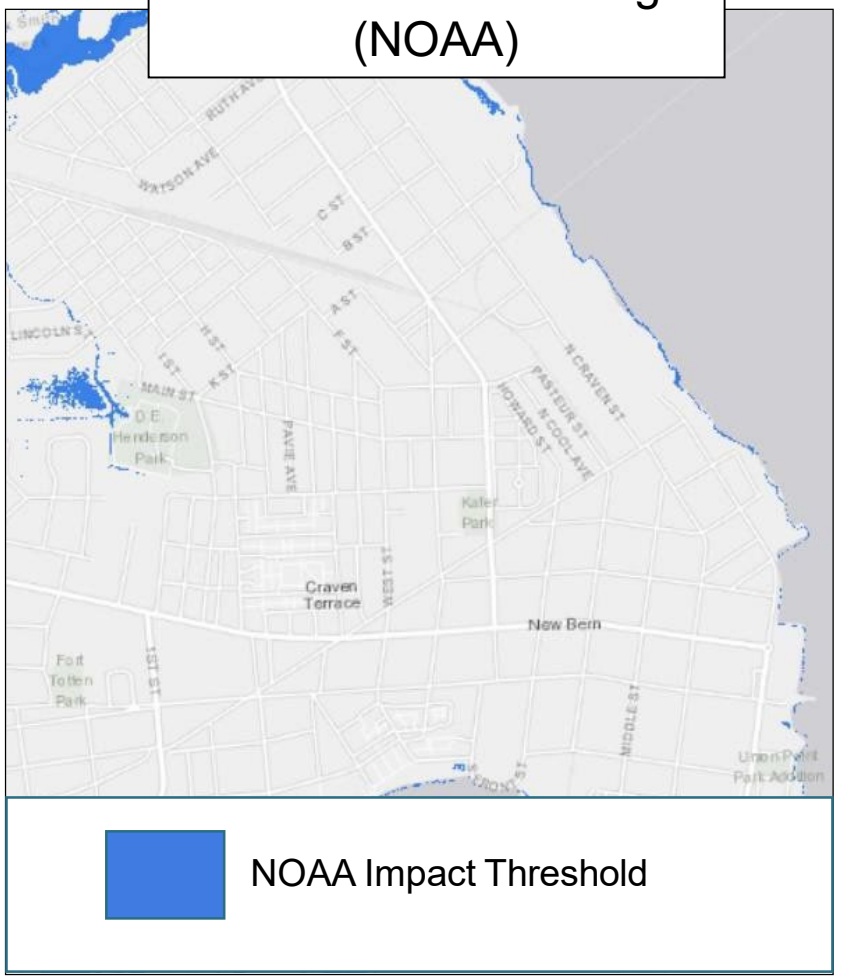


- **FEMA and NOAA as trusted sources of information**
- **No existing data sources for:**
  - **Levee/Dam Failure**
  - **Stormwater/Rainfall**

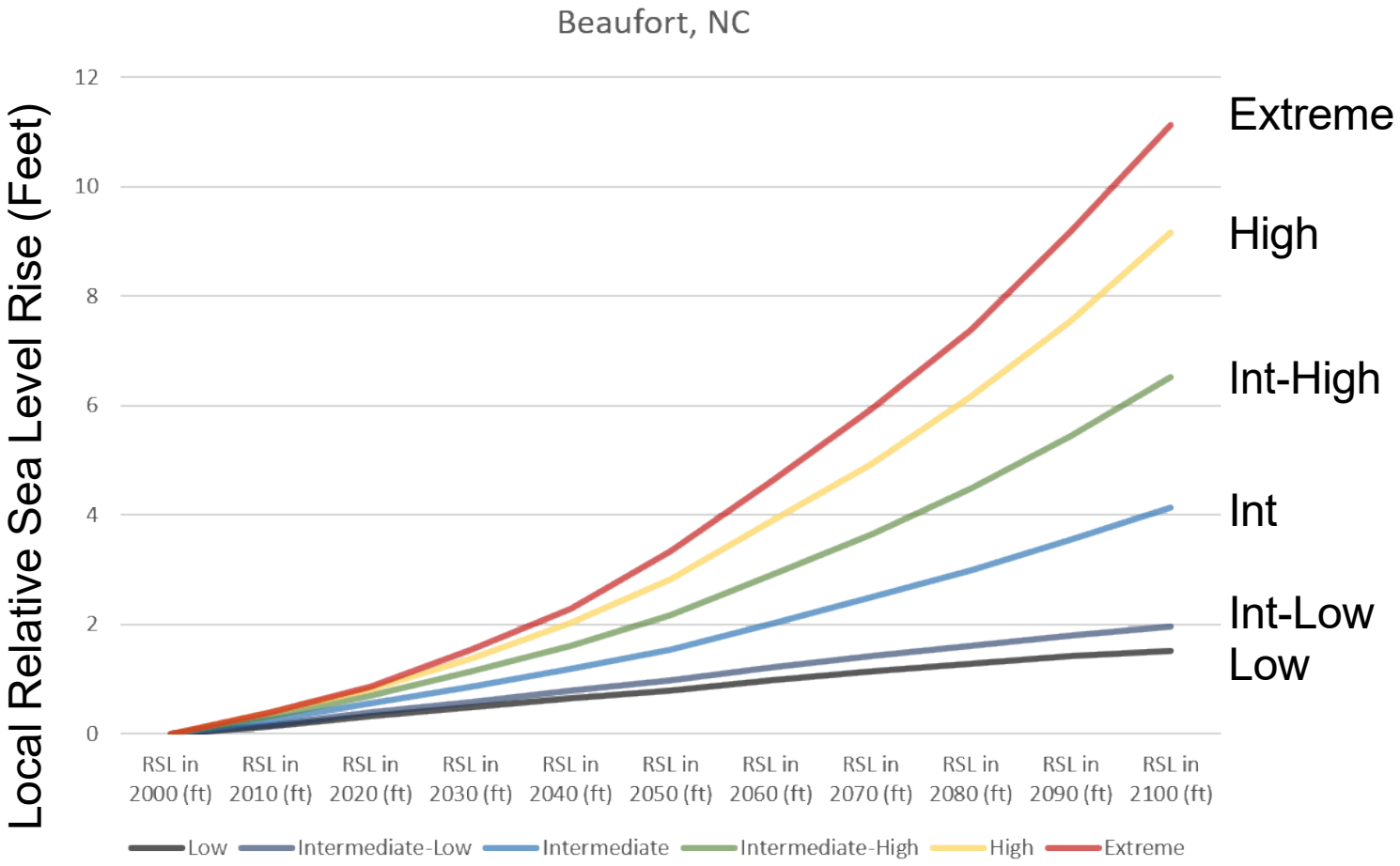
Flooding Threats (Preliminary)







Sea Level Rise (NOAA)



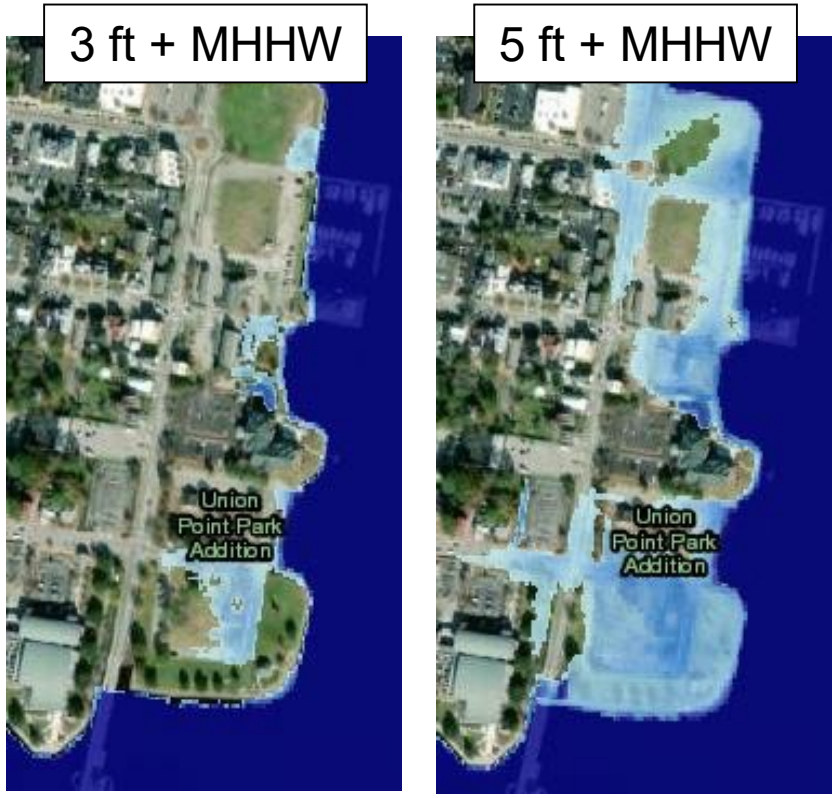
Note: Beaufort is one of the nearest official NOAA tidal stations
Source: NOAA Sea Level Rise Curves
https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=8656483



- SLR is a stressor to all types of flooding
- How can the assessment help inform the City's planning horizons?
- Two planning thresholds (Mid and Long-term) can be helpful for handling future uncertainty

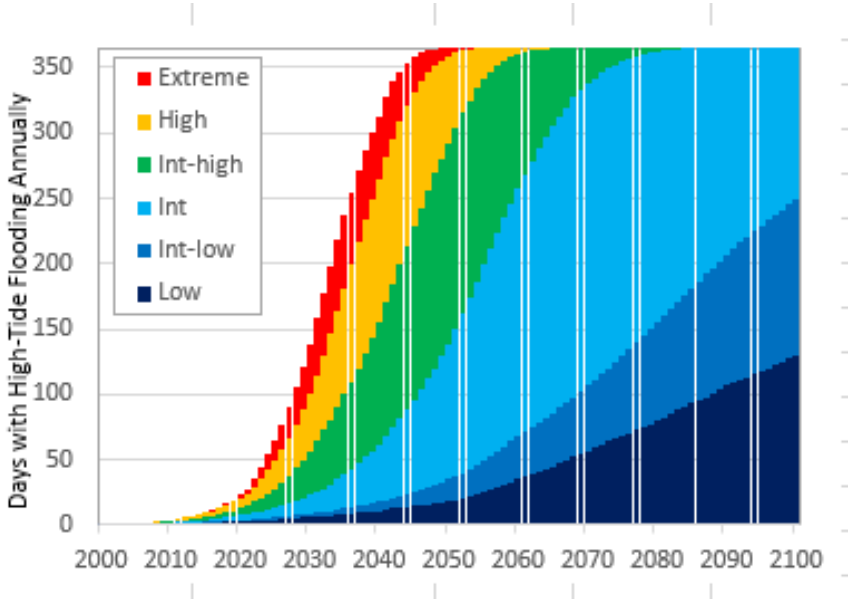
Sea Level Rise (NOAA)

Extent and Severity of Potential Tidal Flooding and Persistent Inundation (NOAA SLR Viewer)



Note: these example images are not representative of the entire City

Frequency of High Tide Flooding Days for Beaufort, SC (NOAA)



Note: High tide flooding threshold for Beaufort, NC is 1.77 ft + MHHW

- Potential future water levels can be used to understand future change
- Water levels can be used to understand both frequency and severity
- Currently working to understand tidal flooding thresholds more specific to New Bern

Asset Categories (Update)

Asset Category	Specific Asset Types (from data received)	Sources	Status
Residential	Multi-residence, Single-residence, Manufactured, Retirement, Group Homes, Assisted Housing	Craven County, New Bern GIS (Parcels)	✓
Commercial and Industrial	Retail, Restaurant, Hotel, Office, Industrial/Manufacturing	Craven County GIS (Parcels)	✓
Critical Facilities	Medical, Utilities, Food Infrastructure, Public Safety (Fire, Police)	Craven County GIS (Parcels)	✓
Government-Owned	Federal, State, Municipal/City-Owned	Craven County, New Bern GIS (Parcels)	✓
Parks and Cultural	Parks, Recreation, Cultural, Religious	Craven County GIS (Parcels)	✓
Historic	National Register Properties, and Locally Designated	NRHP, NCHPO	✓
Socioeconomic	Social Vulnerability, SNAP Retailers, Assisted Housing	US Census, CDC,USDA FNS	✓
Annual Sales Volume	Total sales	Esri Business Analyst	✓
Jobs/Employees	Total employees	Esri Business Analyst	✓
Roads	Major, Minor	OSM	✓



- **Coordinated on asset data needs**
- **Thanks again to Alice Wilson (GIS)!**

Flooding Assessment Factors (Preliminary)

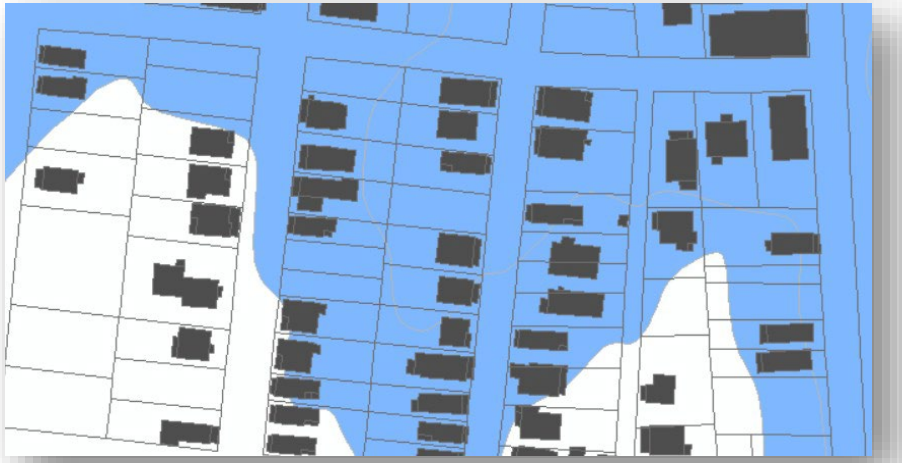


Vulnerability

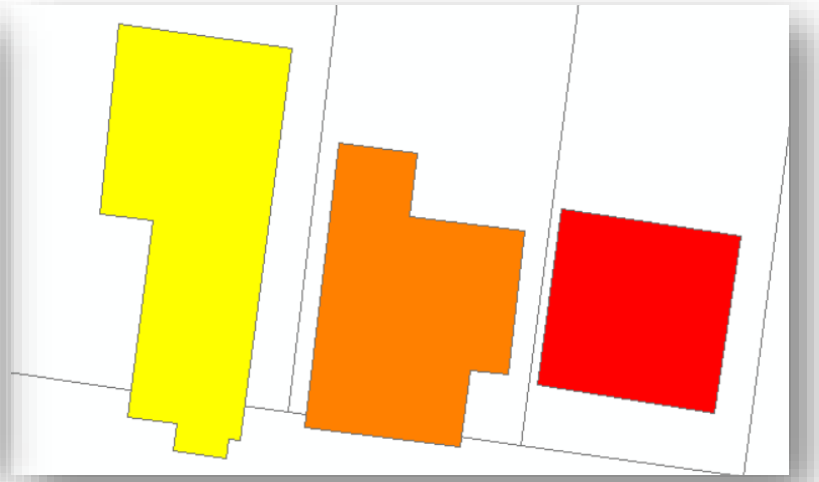
- Asset within extent of potential inundation
- Criticality or use of assets
- First floor elevation and pre vs post FIRM

Risk

- Probability or likelihood of flooding
- Depth of flooding



Example extent of potential inundation



Example buildings with finished floor elevations. Left to Right: above BFE, at BFE, below BFE

- **Vulnerability and risk factors are combined to create a single output of "combined vulnerability and risk"**

Property

Asset Categories

- Residential
- Commercial and Industrial
- Historic

Example Insights

- Vulnerable homes, neighborhoods, and commercial corridors
- Where physical vulnerabilities intersect with high social vulnerability



Example residential area showing a vulnerable retirement community

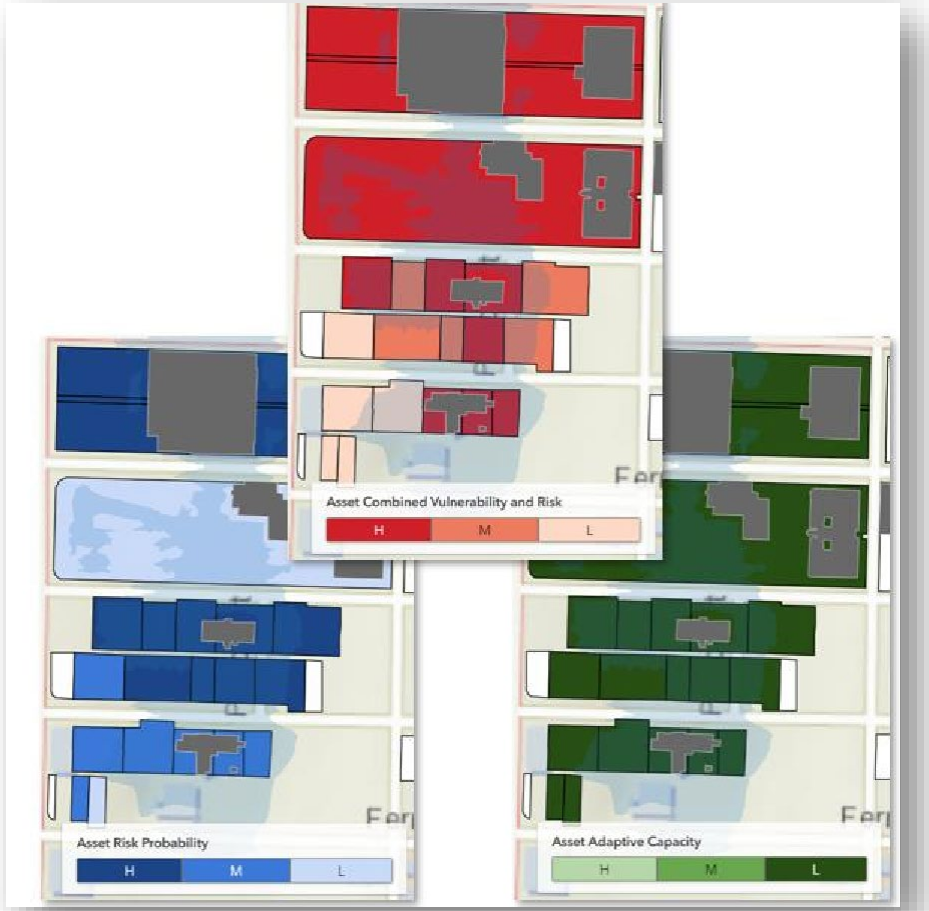
Community & Public Services

Asset Categories

- Critical Facilities
- Government-Owned
- Parks and Cultural

Example Insights

- Specific lifelines that are vulnerable and at-risk
- Potential for loss or disruption to key services in socially vulnerable areas



Example government-owned properties, showing overall vulnerability (red), probability (blue), and adaptive capacity (green)

- **What are the critical facilities and services that community members rely on the most?**

Economic Factors

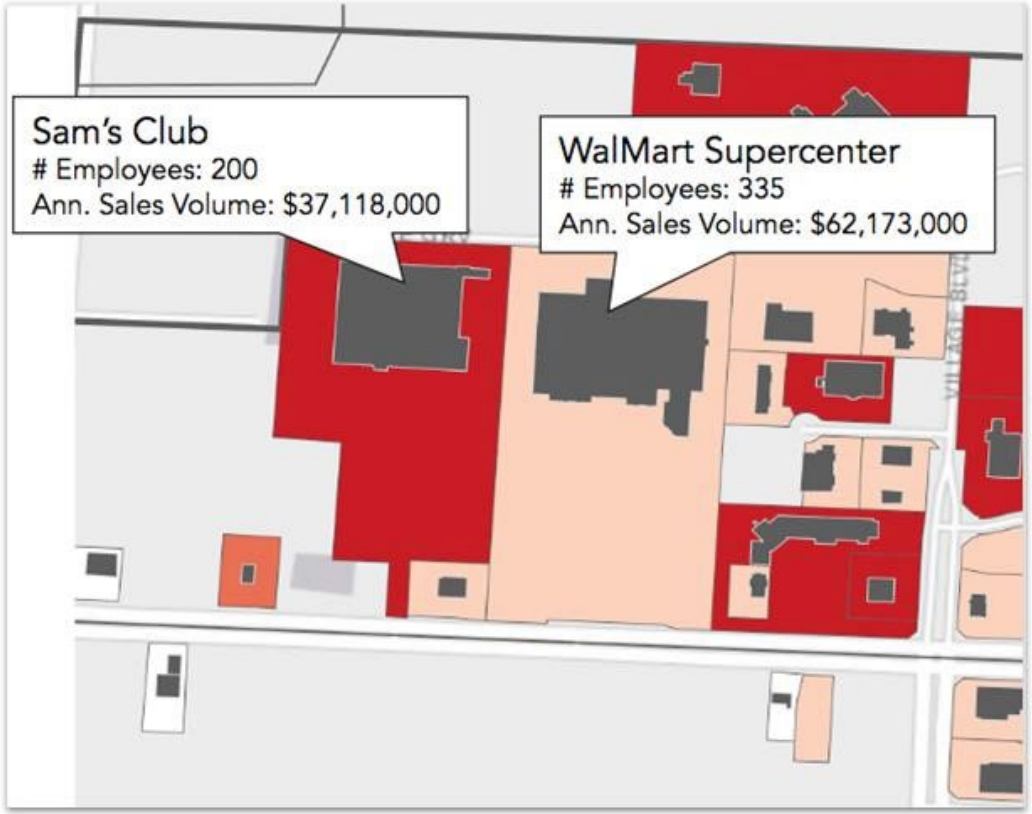


Asset Categories

- Annual Sales Volume
- Jobs/Employees

Example Insights

- Areas where high proportions of sales and jobs could be impacted
- Potential business interruption as it relates to jobs and sales



Example of two locations with high sale volume and jobs with different levels of vulnerability associated with each location

- **Are there particular types of businesses or areas in the City that have been most affected by business interruption in past flooding events?**

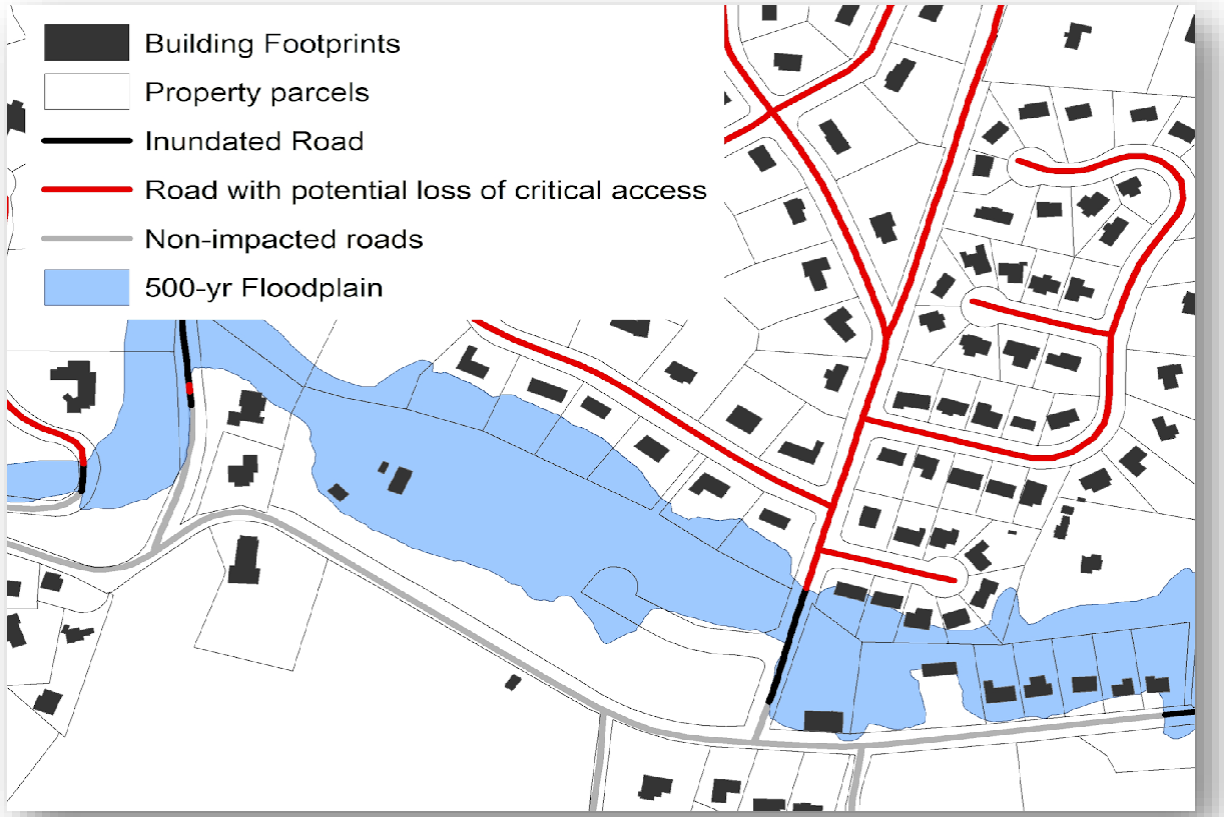
Roads & Mobility

Asset Categories

- Major roads
- Minor roads

Example Insights

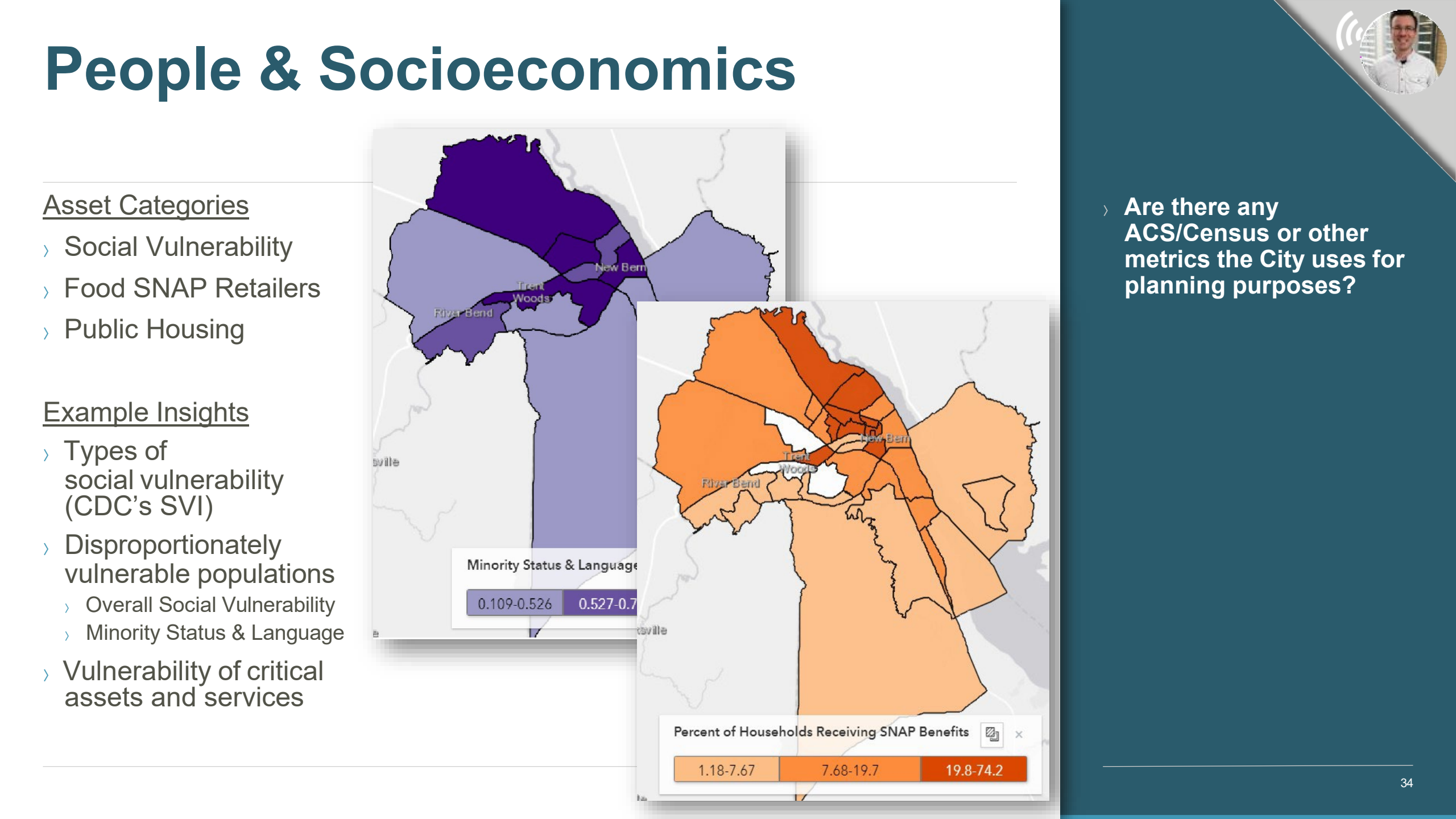
- Inundated roads
- Inaccessible roads
- Isolated properties (including critical facilities)



Example neighborhood potentially inaccessible due to flooding

- **Are there any known areas of concern related to road access during flood events (especially for emergency response services)?**

People & Socioeconomics



Asset Categories

- Social Vulnerability
- Food SNAP Retailers
- Public Housing

Example Insights

- Types of social vulnerability (CDC's SVI)
- Disproportionately vulnerable populations
  - Overall Social Vulnerability
  - Minority Status & Language
- Vulnerability of critical assets and services

- **Are there any ACS/Census or other metrics the City uses for planning purposes?**

Assessment Summaries to Support Communication of Findings

Map summaries

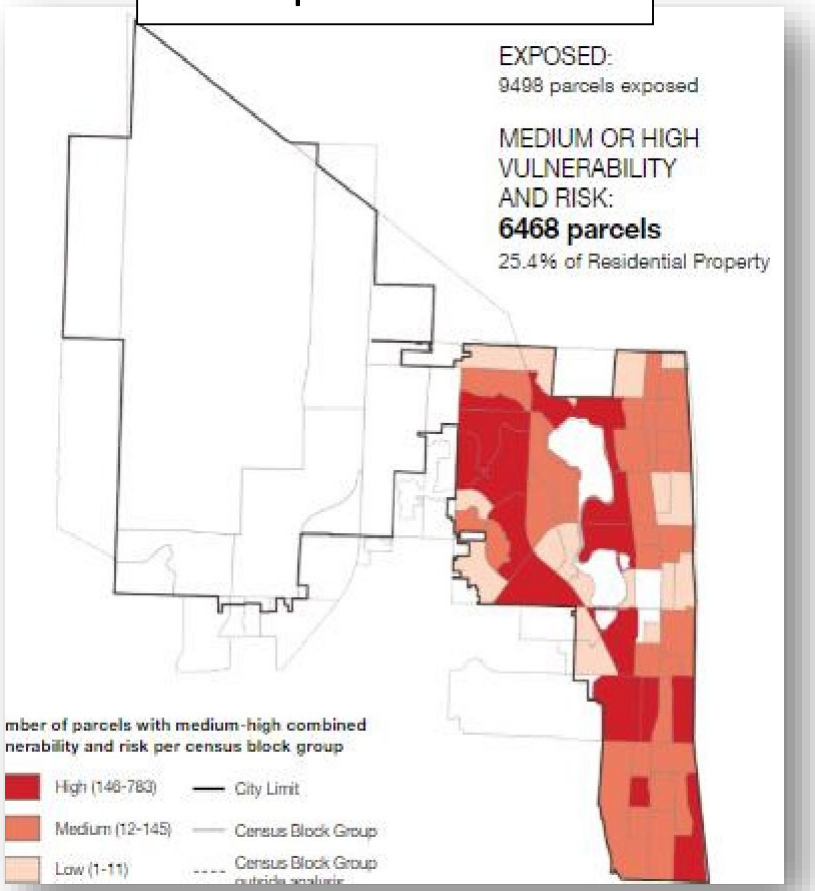
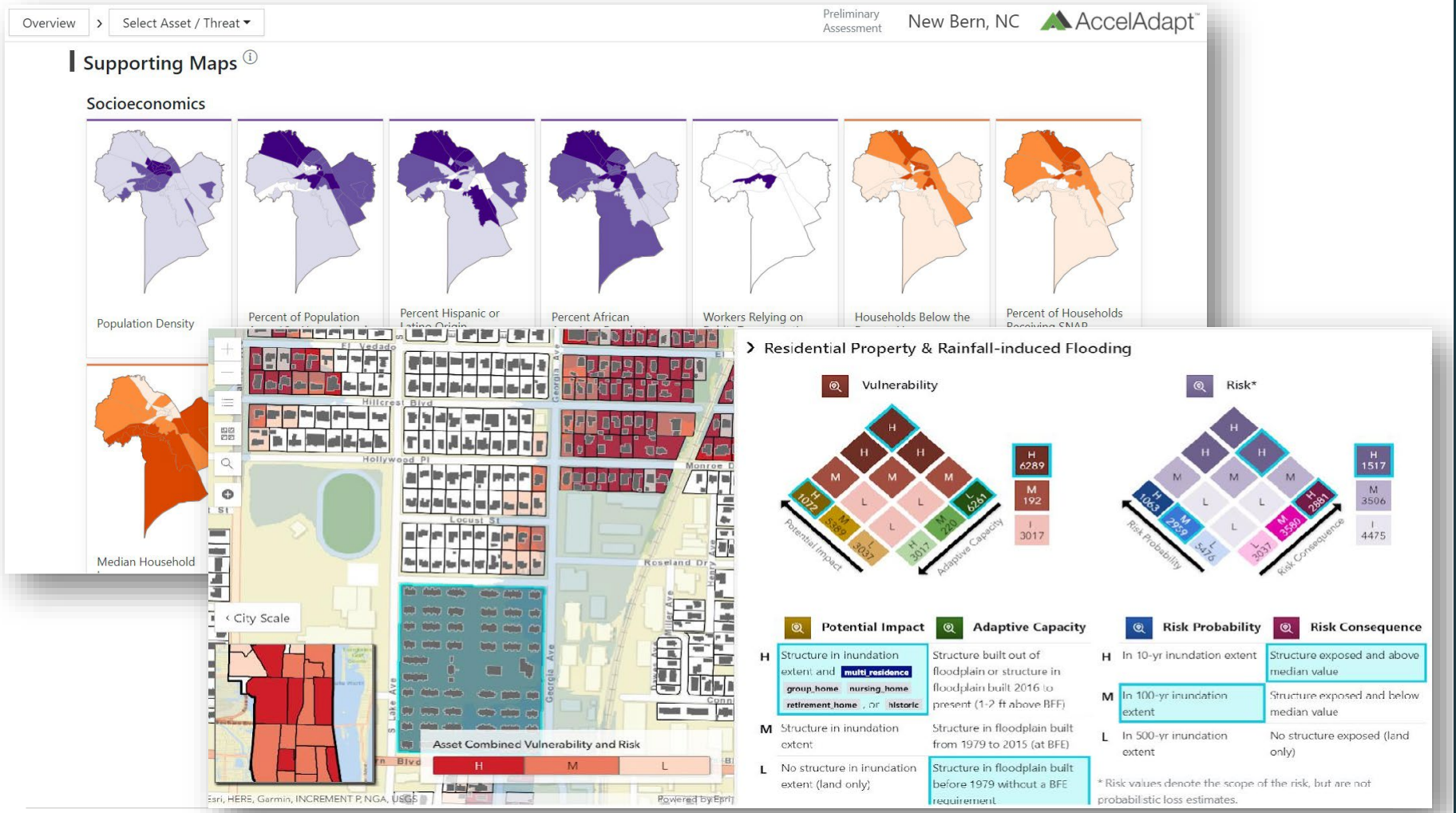


Table summaries (Citywide, Neighborhood Areas)

Preliminary Assessment		(in Lockwood Drive Area)	(100-yr and 500-yr)		Tidal Flooding	
Property	Commercial	157	153	(97%)	42	(27%)
	Residential	1,430	1,414	(99%)	204	(14%)
	Critical Facilities	26	24	(92%)	13	(50%)
	Government	16	14	(88%)	9	(56%)
	Parks & Cultural	14	14	(100%)	1	(7%)
Roads & Mobility	Inaccessible Major Roads (lane miles)	23	22 (100-yr)	(96%)	4	(17%)
	Inaccessible Minor Roads (lane miles)	33	32 (100-yr)	(97%)	15	(45%)
	Inaccessible Property	1,889	1,574	(83%)	461	(24%)
Potential Economic Impact	Annual Sales Volume	5.5	5.5	(100%)	4.9	(89%)
	Jobs/Employees	47,000	47,000	(100%)	43,000	(91%)
Social Vulnerability	Overall Social Vulnerability (CDC)	High (Socioeconomic, Household Comp				
	Public Housing	6	6	(100%)	1	(17%)
	SNAP Retailers	7	7	(100%)	4	(57%)

- **We will be coordinating on how best to represent neighborhood areas in assessment summaries**

Interactive Tool to Support Insights and Use of Information



- Geared toward use by city staff and departments
- We will be coordinating with the City on providing access to staff with delivery of the preliminary assessment

Group Discussion

- Questions about the material presented today?
- Thoughts and input moving forward?



- We will start with any questions that came in via the Chat box
- Any feedback is welcome
- Feedback can also be emailed to Mike or Amanda following the meeting

Next Steps



- **Next Planning Team Meeting**
  - Thursday, October 22 at 1 p.m.
  - Next month's focus topic will be historic preservation
- **Ongoing Work**
  - Site visits
  - Public involvement
  - Stakeholder engagement
  - Preliminary vulnerability assessment results

- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Historic Preservation Meeting
October 22, 2020 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Jordan Hughes	City of New Bern
Matt Montanye	City of New Bern
Amanda Ohlensehlen	City of New Bern
George Chiles	City of New Bern
Margaret Shields	City of New Bern
Matt Schelly	City of New Bern
Jeffrey Ruggieri	City of New Bern
Charles Bauschard	City of New Bern
Alice Wilson	City of New Bern
Matt Hutchins	NEMAC+FernLeaf
Aashka Patel	NEMAC+FernLeaf
Lisa Craig	The Craig Group
Keri Ragland	The Craig Group
Mike Robinson	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Amanda Zullo	Moffatt & Nichol
Dawn York	Moffatt & Nichol

Word of welcome from Mike – fourth core planning team meeting to discuss historic preservation.

- **Roll Call**
  - Participants listed above.
- **Activity from Past Month**
  - Completed and closed out first public input survey.
  - Completed development of departmental questionnaire to be distributed to City staff.
  - Progress on vulnerability assessment.
- **Survey Findings (Amanda Zullo)**
  - Survey was open for a month and closed on September 24th.
  - Most respondents were from older demographics, owned single family homes, and/or did not live in a floodplain. Next input survey will aim to gather responses from other demographics and citizens in more areas.
  - Economic, people, and cultural/historic were the top 3 assets in terms of vulnerability to flood hazards.
  - Emergency operations, elder care, medical facilities, major bridges, police stations, and small businesses were the most important community assets.
  - Protection of critical facilities, protection of utilities, strengthening emergency services, and preventing development in flood hazard areas were highest citizen priorities for planning.
  - Regulating new construction and restriction of new development were top ranked actions that residents think should be taken.
- **Vulnerability Assessment Update (Matt Hutchins)**
  - Limited survey response from residents living in the floodplain – how can the information from the vulnerability assessment be used to guide the next phase of outreach?

  - Neighborhood areas were identified for outreach based on how many homes are in the floodplain, where flooding calls were placed during Hurricane Florence, and level of social vulnerability. 70% of all homes exposed to flooding are within the identified neighborhood areas.
  - Continued collaboration between team members working on vulnerability assessment, historic preservation, and public outreach.
  - Consideration of 100- and 500-year storm events as well as smaller storm events (25-year, 50-year, etc.).
- **Historic Preservation (Lisa Craig)**
  - FEMA planning guide – Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning.
  - Two considerations during planning process: historic properties (National Register) and cultural resources ("moveable artifacts").
  - Goals of integrated planning include identifying & organizing resources, assessing risk & prioritize for protection, evaluating hazard mitigation alternatives, and writing & implementing a hazard mitigation plan.
    - Organizing resources: build the planning team, assess community support, and engage the public; assess building/site characteristics most impacted, determine area for potential effect for future conditions, identify National Register or locally designated historic & cultural resources, determine which additional neighborhoods may be vulnerable, assess actions to be taken
    - Assess risks and priorities: create an informed public, determine hazard impacts, compile existing survey information, determine feasible adaptation strategies, establish valuation estimates, identify economic incentives, assess historic preservation considerations, and consider community sentiment. Survey & inventory to collect building/site information (type of property, square footage, owner interest in mitigation, economic assessment, etc.)
    - Evaluate community value: historic designation, geographic context, level of significance, public sentiment, economic importance, degree of integrity, and total level of community value. Community value survey conducted to gather public sentiment.
- **Historic Preservation and Community Value (Keri Ragland)**
  - "The Sacred Structures of Small Towns" case study in Manteo, NC ground-truthed public sentiment and created a map of "sacred structures."
  - Prioritize things needed in order to resume normalcy after a flood hazard event.
- **Historic Preservation (Lisa Craig)**
  - Economic value: assess economic value in the flood hazard area and New Bern
  - Evaluate mitigation alternatives: prevention, property & resource protection, structural diversions, public education & awareness, and natural resource protection for landscape & architectural sites (green vs gray approaches)
  - Property and resource protection: guidance from U.S. Department of the Interior. Temporary protective measures, site & landscape adaptations, floodproofing, etc.
  - Draft, implement, and monitor plan: formulate goals & solicit public input, identify & prioritize actions, prepare implementation strategy, and monitor/update plan

- **Historic Preservation Site Visit (Keri Ragland)**
  - Site visit on September 26th.
  - Elevations are based on the structure location and design.
  - Prioritize mitigation with preservation of historical significance and integrity.
  - Matt Schelly: currently there are no specific guidelines related to elevation of structures; committee is discussing two additional guidelines.
  - Historic preservation extends outside the historic district limits. Opportunities exist for outreach and extension of design guidelines.
  - Matt Schelly: HPC created a new committee dedicated to property owners outside the historic district.
- **Group Discussion**
  - Questions about the material presented today?
  - No questions from City staff.
- **Next Steps**
  - Reschedule November and December planning team meetings to avoid Thanksgiving and Christmas holidays.
  - Continue public involvement and stakeholder engagement.
  - Preliminary vulnerability assessment results.
- **Reminder for Next Meeting**
  - Meeting dates and times are being scheduled.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

RESILIENCY AND HAZARD MITIGATION PLAN



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NEW BERN RESILIENCE

HISTORIC PRESERVATION & OUTREACH UPDATES

Presented to:

City of New Bern

Core Planning Team

October 2020

Agenda

- Welcome and Roll Call
- Activity from Past Month
- Survey Findings
- Historic Preservation
- Group Discussion
- Next Steps



- **Flexible agenda**
- **Post questions to the chat function to help facilitate discussion at the end**

Activity from Past Month

- Survey Completion
- Vulnerability Assessment Progress
- Site Visit – Historic Preservation



- **Flexible agenda**
- **Post questions to the chat function to help facilitate discussion at the end**

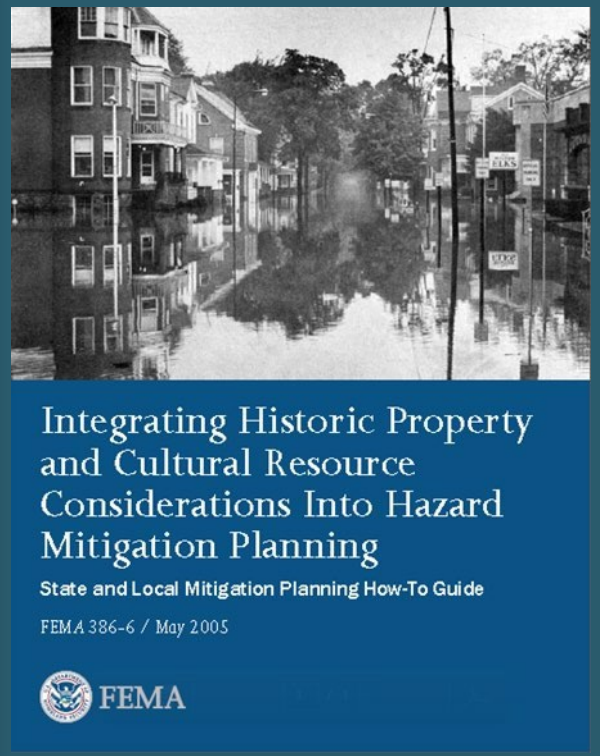
Survey Findings



- Survey closed on [Date]
- Total Respondents
- Average Survey Respondent Demographics:
- Older
- Historic District Resident
- 2-3 person household
- Etc.
- Opportunity for new audience outreach

Historic Preservation & Hazard Mitigation Planning

- *Historic preservation planning* allows for the protection of historic properties before they are threatened.
- *Hazard mitigation planning* allows for the protection of life and property from damage caused by hazards.
- *Integrating* these two planning process ensures future growth of safe and *resilient* historic communities.
- *Historic Property* - prehistoric or historic district, site, building, structure or object listed in or eligible to the National Register of Historic Places.
- *Cultural Resource* - "moveable heritage" = artifacts, statuary, artwork, archival documents, family heirlooms, photographs, written records.



Historic Preservation: Goals of Integrated Planning



- *Identify & organize resources* than enhance the capability for incorporating historic property and cultural resources into hazard mitigation planning.
- *Assess risk* by determining which properties and resources are likely to be damaged in a disaster and *prioritize* those MOST important to the community for protection.
- *Evaluate hazard mitigation alternatives* for properties and resources using benefit-cost analysis, STAPLEE and other decision-making tools
- *Write and implement a hazard mitigation plan* that addresses historic properties and cultural resources.

Historic Preservation: Organize Resources

- *Assess building/site characteristics most impacted*
- *Determine total area of potential effect for future conditions [Graphic from Matt]*
- *Identify the National Register or locally designated historic properties & cultural resources*
- *Determine which neighborhoods have not yet been designated, but may be vulnerable*
- *Decide how to assess public sentiment and/or economic importance for historic properties / cultural resources*



- Build the Planning Team - Identify & Engage the Core Planning Team
- Assess Community Support - Historic Survey / GIS / Hazard Mitigation / Plan Review
- Engage the Public – Identification and Audience Engagement

Historic Preservation: Assess Risks & Priorities



- *Create an informed & engaged public on hazard preparedness*
- *Determine hazard impacts specific to building characteristics, archaeological features and natural resources*
- *Compile existing survey information in central database for floodplain area*
- *Determine preservation feasible structural and non-structural adaptation strategies*
- *Establish valuation estimates for historic property loss or displacement*
- *Identify economic incentives or relief to leverage a historic property owner investment in adaptation*
- *Assess historic preservation considerations for historic properties and cultural resources important to protect/adapt for future conditions*
- *Consider community sentiment for what places are important to protect/adapt to future conditions.*

- **Identify Hazards**
- **Profile Hazard Events**
- **Inventory Assets**
- **Estimate Loses**

Historic Preservation
Risks & Priorities: Survey & Inventory

- Name/Address of Resource
- Date of Construction
- Type of Property
- Square Footage
- Structural System
- Primary Materials
- Current Function
- Current Condition
- Owner Interest in Mitigation



- FEMA Worksheet #3 - Inventory Historic Property and Cultural Resource Assets

Historic Preservation: Survey & Inventory

- *Level of Property Vulnerability (High, Medium, Low)*
- *Loss to Structure ($)*
- *Loss to Contents ($)*
- *Loss of Function or Use ($)*
- *Displacement Cost*
- *Total Loss for Hazard Event*
- *Level of Community Value for Ranking Purposes (H/M/L)*



FEMA Worksheet #3 – Inventory Historic Properties and Cultural Resource Assets

Survey information collected by Name/Address of property in Hazard Area

Determine Hazard Event & baseline for loss

Historic Preservation: Community Value

- *Historic Designation (National Register, Locally designated)*
- *Geographic Context of Significance (National, Tribal, State, Local)*
- *Level of Significance (High, Medium, Low)*
- *Public Sentiment (H/M/L)*
- *Economic Importance (H/M/L)*
- *Degree of Integrity (H/M/L)*
- *Total Level of Community Value (H/M/L)*



FEMA Worksheet #4 – Determine Community Value for Historic Property and Cultural Resource Assets

Survey information collected by Name/Address of property in Hazard Area

Add ranking of Community Value (Low / Medium / High) to Worksheet #3

Historic Preservation: Community Value Survey



- FEMA Worksheet #4 – Determine Community Value for Historic Property and Cultural Resource Assets
- Survey information collected by Name/Address of property in Hazard Area
- Add ranking of Community Value (Low / Medium / High) to Worksheet #3

Historic Preservation: Community Value Survey



- FEMA Worksheet #4 – Determine Community Value for Historic Property and Cultural Resource Assets
- Survey information collected by Name/Address of property in Hazard Area
- Add ranking of Community Value (Low / Medium / High) to Worksheet #3

Historic Preservation: Community Value – Site Visit

- Ground Truthing Public Sentiment



- Sacred Spaces – reference article based on Manteo, NC

Historic Preservation: Economic Value

Type of Structure (Residential, Commercial, Industrial, Religious/Non-profit, Government, Education)

In Hazard Area
- # & $ Value of Historic Properties
- # & $ Value of all properties
- % of properties that are historic
- Value of Historic Properties as % of Total Property Value

In New Bern
- # & $ Value of Historic Properties
- # & $ Value of all properties
- % of properties that are historic
- Value of Historic Properties as % of Total Property Value



FEMA Worksheet #2 – Determine Extent and Value of Historic Properties

- **Number & Value of Properties in Hazard Area**
- **Number & Value of Properties in New Bern**
- **Number & Value of Historic Properties in New Bern**
- **Number & Value of Historic Properties in Hazard Area**

Historic Preservation: Evaluate Alternatives

- Secretary of the Interior's Standards for Flooding Adaptation & Rehabilitation
- Cultural Landscape Considerations

Planning, Land Use & Building Codes



- Option to speak specifically on Community Values
- Keri can dicuss concept of Sacred Spaces – reference article based on Manteo, NC may be of relevance

Historic Preservation: Draft, Implement & Monitor Plan



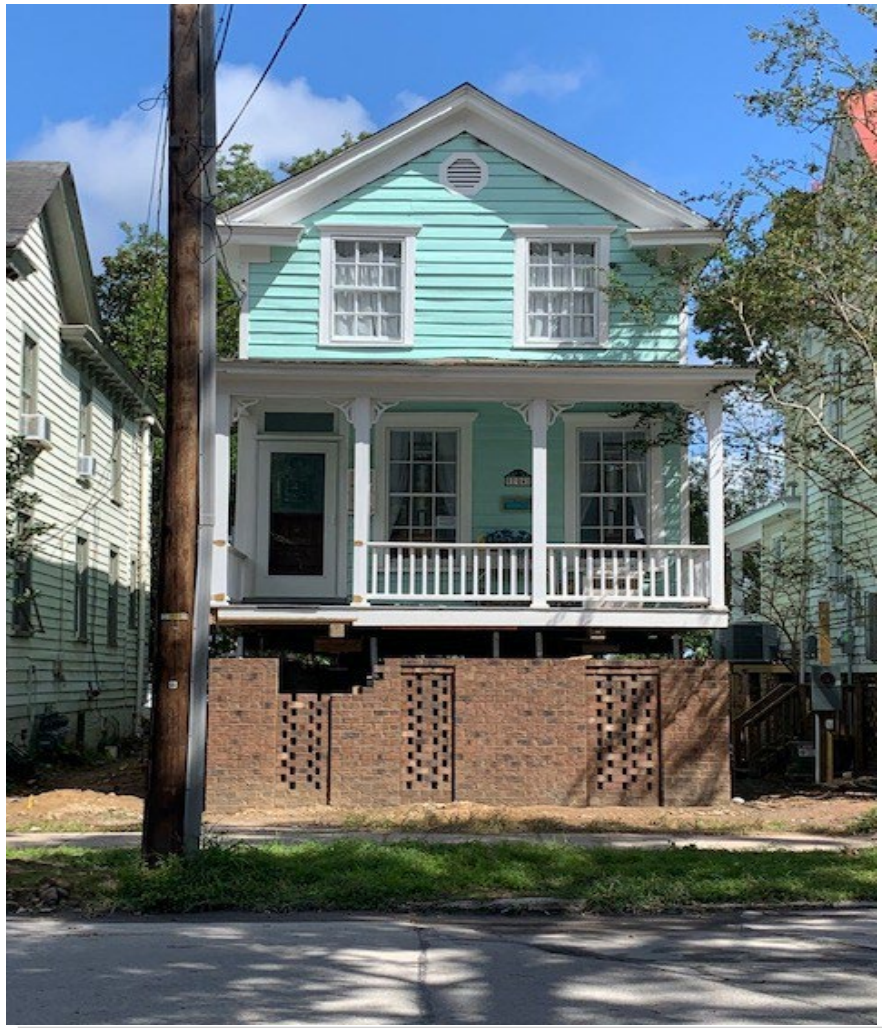
- Option to speak specifically on Community Values
- Keri can dicuss concept of Sacred Spaces – reference article based on Manteo, NC may be of relevance

Historic Preservation



- 212 South Front Street
- Three different elevations

Historic Preservation





- 704 East Front Street
- Design Guidelines
- HPC application

Historic Preservation



- Different vulnerabilities?
- Are they in Flood Zone?

Historic Preservation





- Tryon Palace
- Floodwaters rose to 13.5'
- Damage has not yet been repaired while more is has occurred in the past six months

Historic Preservation



Group Discussion

- Questions about the material presented today?
- Thoughts and input moving forward?



- We will start with any questions that came in via the Chat box
- Any feedback is welcome
- Feedback can also be emailed to Mike or Amanda following the meeting

Next Steps

- **Next Planning Team Meeting**
  - Thursday, November **
  - Next month's focus topic will be **
- **Ongoing Work**
  - Site visits
  - Public involvement
  - Stakeholder engagement
  - Preliminary vulnerability assessment results



- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Flood Vulnerability Assessment: Preliminary Results Meeting
December 10, 2020 from 2:00 p.m. to 4:00 p.m.
Meeting Minutes

Attendees:

Charles Bauschard	City of New Bern
George Chiles	City of New Bern
Matt Montanye	City of New Bern
Jeffrey Ruggieri	City of New Bern
Amanda Ohlensehlen	City of New Bern
Colleen Roberts	City of New Bern
Matt Schelly	City of New Bern
Alice Wilson	City of New Bern
Margaret Shields	City of New Bern (contractor)
Stanley Kite	Craven County
Matt Hutchins	NEMAC+FernLeaf
Aashka Patel	NEMAC+FernLeaf
Keri Ragland	The Craig Group
Lisa Craig	The Craig Group
Mike Robinson	Moffatt & Nichol
Jeff Crump	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Amanda Zullo	Moffatt & Nichol
Dawn York	Moffatt & Nichol
Rebeckah Sims	Moffatt & Nichol
Dwight Otwell	Moffatt & Nichol

Word of welcome from Mike – fifth core planning team meeting to discuss the preliminary results for the flood vulnerability assessment

Roll Call
Participants listed above.

Housekeeping (speaker: Amanda Ohlensehlen)
Social distancing and wearing masks per COVID protocol in the room. Any comments or questions in the room, come to the microphone or raise hands. If online, post comments in the chat.

Hybrid Meeting Approach (speaker: Mike Robinson)
Our fifth meeting is a hybrid approach, accommodating in person and online participants. As there was not a November meeting, this meeting is longer and more in-depth to review the preliminary results for the flood vulnerability assessment.

Public Outreach and Stakeholder Engagement Updates (speaker: Amanda Zullo)
Survey #2 launched December 4th and will run until January 15th. Its main focus is on community values, actions to build resilience, and historic preservation. Social media graphics have been developed and will be utilized to grab people's attention. The second public meeting is scheduled for February 4th. Based on the survey results thus far, it appears most people taking the second survey did not participate in the first public meeting nor take survey #1. Planning team members were encouraged to share the link and engage others to take the survey.

Preliminary Vulnerability and Risk Assessment (speaker: Matt Hutchins)

Review of guiding principles and threats associated with the assessment. Discussion of the various components to assess vulnerability, including sensitivity and potential impact, adaptive capacity, risk probability and risk consequence.

- Lisa Craig asked in the chat box:
  Q: Is the property information you are using up to date? Lisa stated since she was in New Bern recently, she saw many properties that have been mitigated/in the process of being mitigated.
  A: NEMAC+FernLeaf is using 2020 parcel-based information, so yes, it is the most up to date. Additionally, they used building information (from Alice Wilson). Finished floor elevations are from 2014, from the State. The City of New Bern has not updated this information. Building footprint data source is also from the State. NEMAC+FernLeaf will explore what properties have been redeveloped/newly built for these results.
- Someone asked:
  Q: How are you defining risk?
  A: Properties where structures are potentially inundated by the threats and have limited adaptive capacity, as well as high risks associated with them.
- Someone asked:
  Q: Is this inundation up to BFE (Base Flood Elevation) or is it just based on any water on the property?
  A: NEMAC+FernLeaf stated it is any part of the structure that is impacted.
- Matt Hutchins asked:
  Q: How often do you see the effects of King tides and normal high tides? Are many properties affected? Any streets closed or impacted?
  A: New Bern stated yes, we are seeing significant effects.
- Someone asked:
  Q: How do you consider that type of flooding that doesn't occur until days later from the event in the analysis?
  A: That dynamic is tricky. We can look at statewide products and climate change data to include in this analysis. But the model will not be utilized the same to capture that phenomenon.
- Someone asked:
  Q: Can the tables show the break down between properties within City limits?
  A: Yes.
- Someone asked:
  Q: What would be the best way to receive comments/feedback on the assessment tool?
  A: We would like to start to finalize the assessment. We will coordinate with Alice on ArcGIS Online users to be given access. Will use existing City's organizational account.

Matt stated they would plan a training for the City of New Bern to use AccelAdapt. Next steps going into 2021 include:

- Continuing public involvement (survey and public meeting)
- Discussing preliminary results of capability assessment
- Begin mitigation strategy development
- Begin targeted stakeholder engagement
- Finalize the flood risk assessment

Dwight Otwell, M&N GIS Manager, will develop an interactive ArcGIS StoryMap to use for stakeholder engagement.

Next Planning Team Meeting (speaker: Mike Robinson)
Thursday, January 28 at 1 p.m.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

NEW BERN RESILIENCE

FLOOD VULNERABILITY ASSESSMENT: PRELIMINARY RESULTS

Presented to:

City of New Bern

Core Planning Team

December 2020

Agenda



- Welcome, Roll Call and Introductions
- Public Outreach and Stakeholder Engagement Updates
- ***Flood Vulnerability Assessment Discussion***
- Group Discussion
- Next Steps Going into 2021!

- **Flexible agenda**
- **Post questions to the chat function for those participating virtually to help facilitate discussion at the end**
- **Feel free to ask us to pause for questions if there's a point of discussion you'd like to explore while we're presenting**

Public Outreach & Upcoming Stakeholder Engagement



Hurricane Florence roared ashore along the eastern North Carolina coast in September 2018 causing catastrophic damage to the Carolinas. In New Bern alone, the storm is responsible for approximately $100 million in residential and commercial damages, mostly due to flooding. Since the storm, the City has sought many grants to repair and restore infrastructure, replace city equipment, and improve New Bern's resiliency. Florence was just one of many storms to cause significant damage to New Bern. A bold new effort at flood mitigation and resiliency planning has begun, and in early 2020 our consultant partners Moffat & Nichol, NEMAC + Fernleaf, and The Craig Group began working on a multi-phase, long term plan that will include significant public input. Once it is complete, the City hopes this plan will become a model for other coastal communities. You can find out more about this project by reading our project information sheet.

Subscribe to receive the latest project news

Stay Connected

Below are several ways you can stay engaged in our project efforts:

1. Subscribe to our mailing list. Sign up for the latest updates and other information as it becomes available by completing this simple form.

2. Visit our project website often. We will continually update the project website www.newbernnc.gov/resiliency with the latest information and news, including the project schedule and resources available for download.

3. Get social! Connect with us on social media by following the City of New Bern on Facebook, Twitter and Instagram.

4. Email us. Have a question, comment or concern? Please contact us via email and we'll respond in a timely manner.

The Process Forward

The following chart outlines our estimated 12-month planning process and highlights specific timeframes when public meetings and other public involvement opportunities are expected to occur. These dates may change as the project moves forward so check back for updates.

Next Steps

We'll share our next steps over the course of the resiliency planning process. Please check back as updates occur.

NEW BERN RESILIENCE

Latest News

Take our survey!
The City of New Bern is launching its second survey for New Bern's Resiliency & Hazard Mitigation Plan. Community values, actions to build resilience & historic preservation are the focus topics - and we need your input! (survey open until Jan. 15)

The City of New Bern has received a grant from the National Fish & Wildlife Foundation to support our work to create a more resilient city.
Read more about the grant here.

The results of our first survey can be found here.
We appreciate your feedback!

Survey Results

Our second survey is now active and we encourage you to participate and offer feedback. Community values, actions to build resilience and historic preservation are the focus topics of this one. The survey has been shared via email, City 3 TV, the City website, and social media as well as posted on flyers placed at city buildings. You can launch the survey by clicking here.

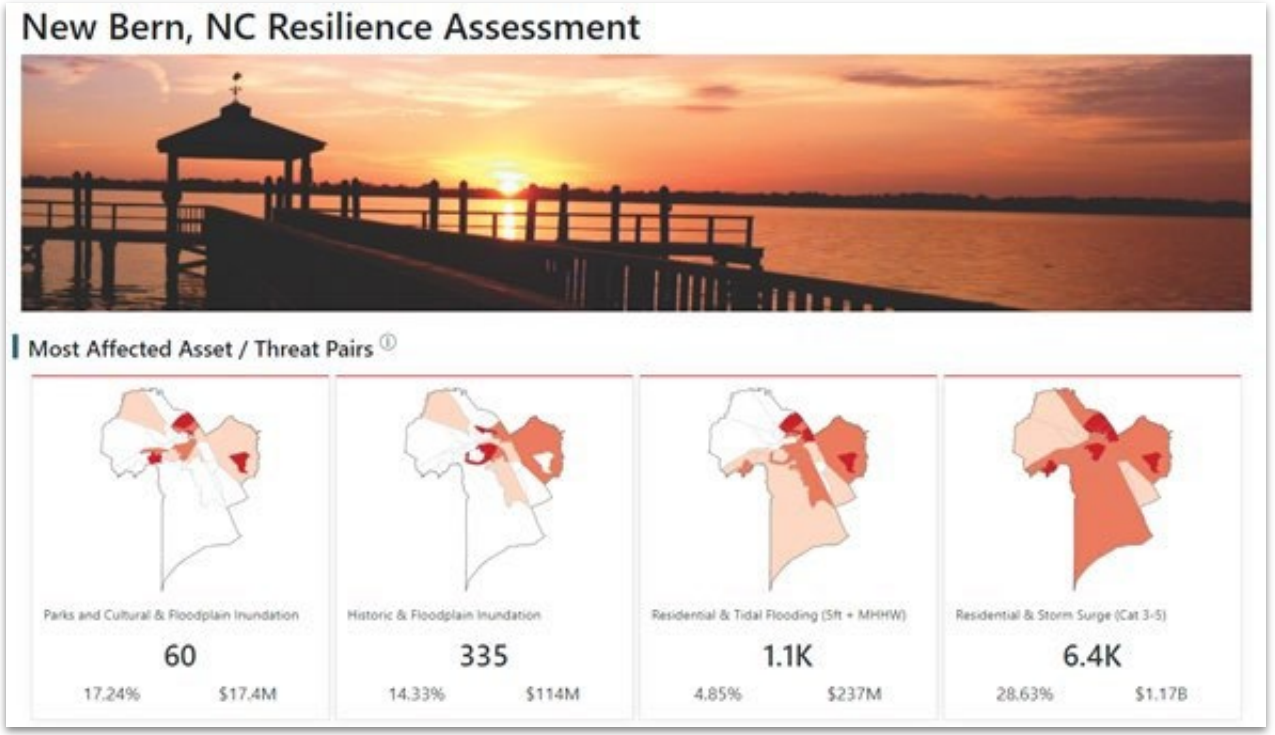
Results from our September survey can be viewed here. This was the first survey in the development of our resiliency plan. 275 people responded and we hope even more will join in this citywide effort and lend their feedback and input as we move forward.



- Survey #2 launched 12/4/20 and will close on 1/15/21
- Survey #2 will focus on:
  - Community Values
  - Actions to Build Resilience
  - Historic Preservation
- Social Media Graphics
- Outreach Multiplier
- Public Meeting #2 is scheduled for 2/4/21 (TBC)

Preliminary Vulnerability and Risk Assessment: Outline

- Overview of Assessment Components
- Preliminary Results and Findings
- Review Assessment
- Summaries and Resources
  - Citywide Analytics & Neighborhood Summaries
  - AccelAdapt
- Questions



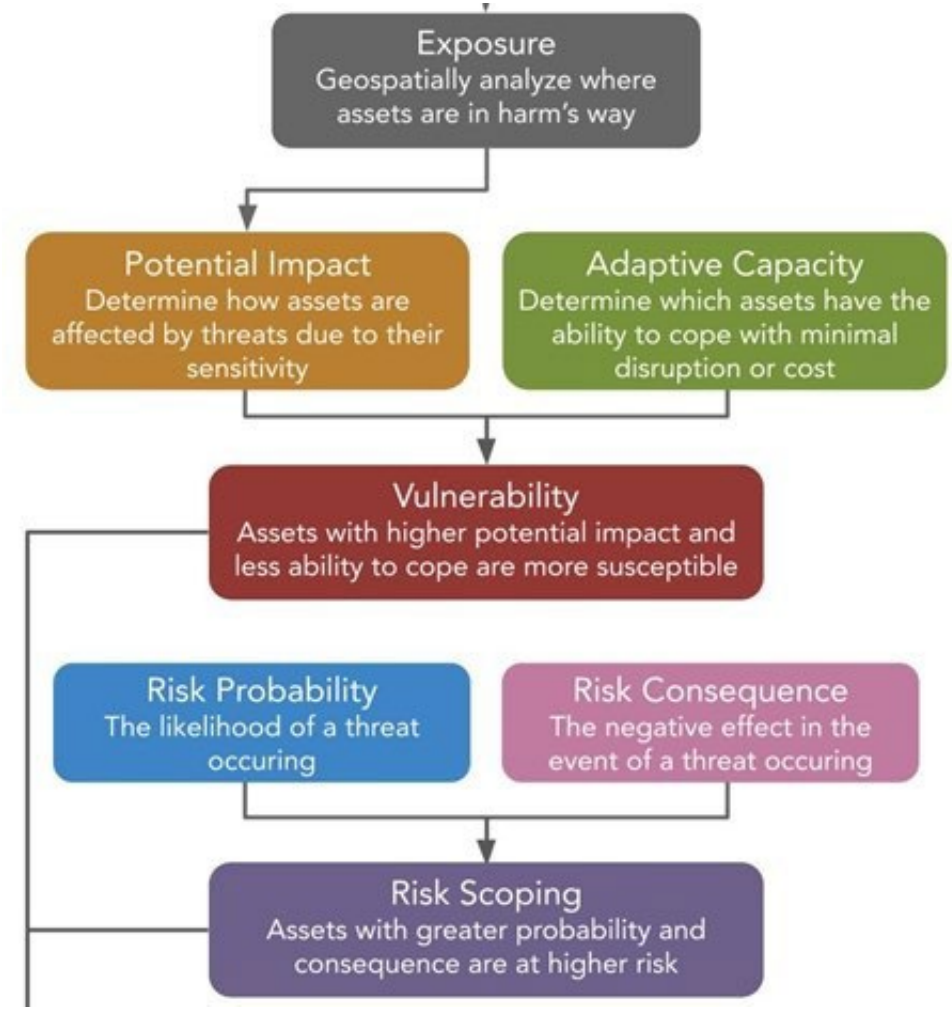
Guiding Principles for the Assessment



- Be transparent
- Use the best available science and data
- Inform community-specific strategies and priorities for building resilience

Flood Vulnerability and Risk Assessment Components

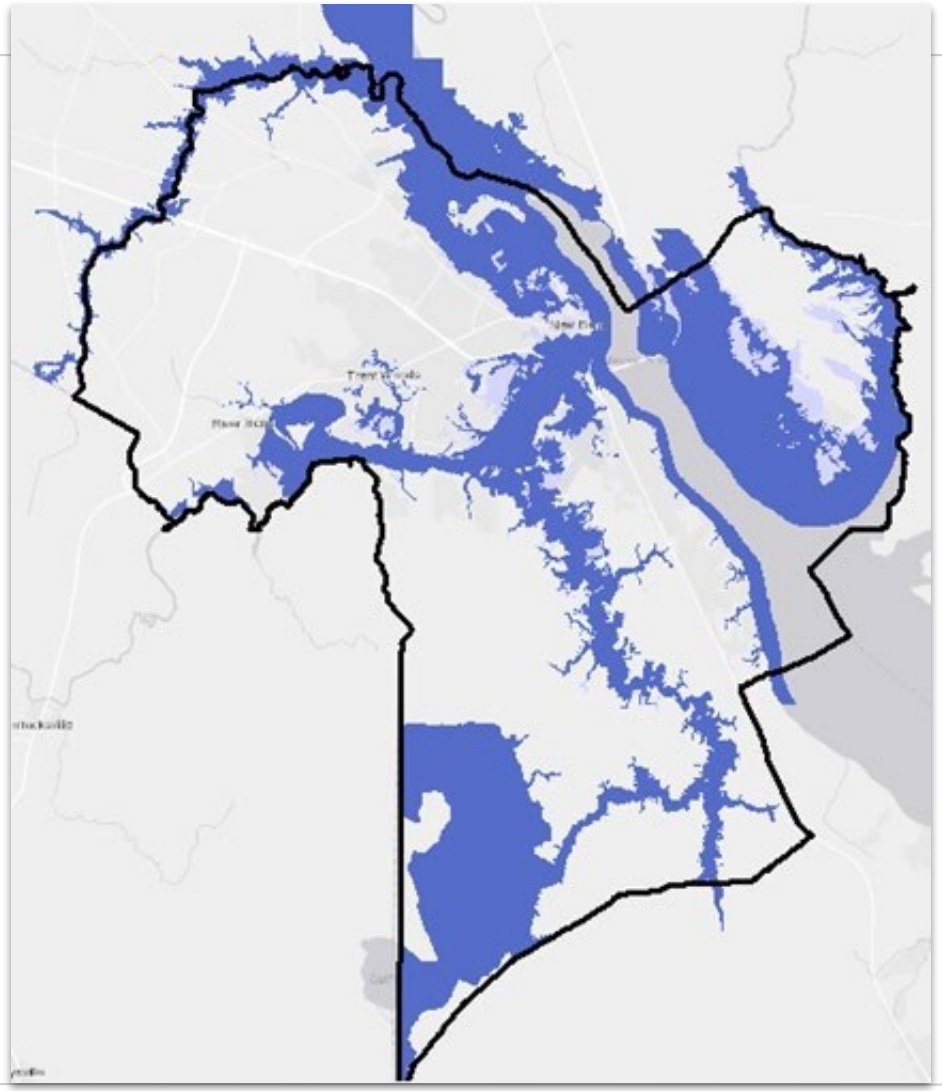
- **Vulnerability:** Susceptibility based on sensitivity/potential impact and adaptive capacity.
- **Risk Scoping:** The probability and negative consequence of threats.



Threats

Floodplain Inundation (100-yr and 500-yr)	FEMA DFIRM (Effective June, 2020)
Storm Surge (Cat 1-2)	National Storm Surge Hazard Maps (NOAA)
Storm Surge (Cat 3-5)	National Storm Surge Hazard Maps (NOAA)
Tidal Flooding (Current)	High Tide Flooding (NOAA Office for Coastal Management)
Sea Level Rise and Future Tidal Flooding (3 ft + MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)
Sea Level Rise and Future Tidal Flooding (5 ft + MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)

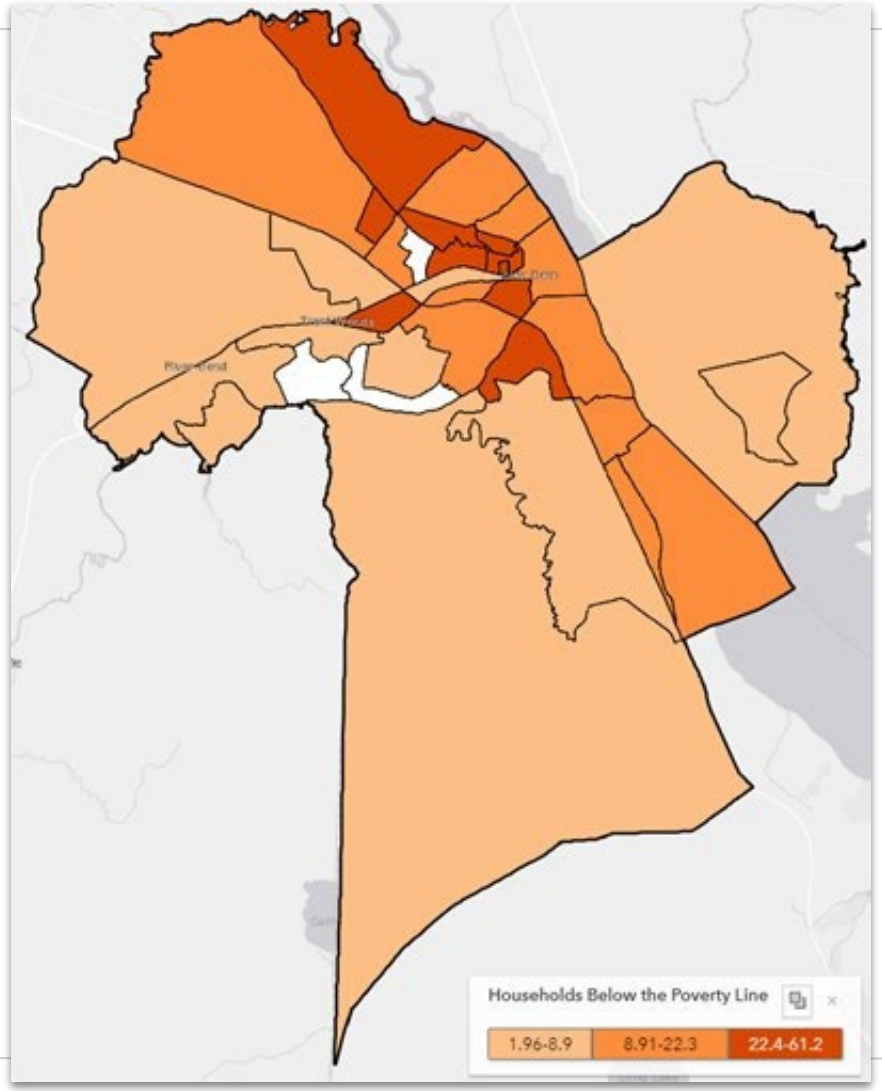
FEMA Floodplains



Assets and Socioeconomics

Property and Public Services	Critical Facilities
	Government-Owned
	Commercial & Industrial
	Parks & Cultural
	Residential
	Historic
Economic	Sales Volume (Businesses)
	Jobs (Businesses)
	Improved value (Assessed value)
Roads & Mobility	Inaccessible Roads (Major)
	Inaccessible Roads (Minor)
	Isolated Property (All)

Households Below Poverty Line



Overview of Assessment Components

Example Threat: Floodplain Inundation

100-yr

500-yr



This is a preliminary analysis

Exposure

Presence of assets in harm's way

Example: Commercial & Industrial

Exposed parcel

500-year flood extent



This is a preliminary analysis

Sensitivity & Potential Impact

Degree to which assets are affected, based on asset use/type and criticality

High: Structure in floodplain and multi-business

Med: Structure in floodplain and single-business

Low: No structure in floodplain (land only)



This is a preliminary analysis

Adaptive Capacity

Ability to cope or withstand with minimal disruption or cost

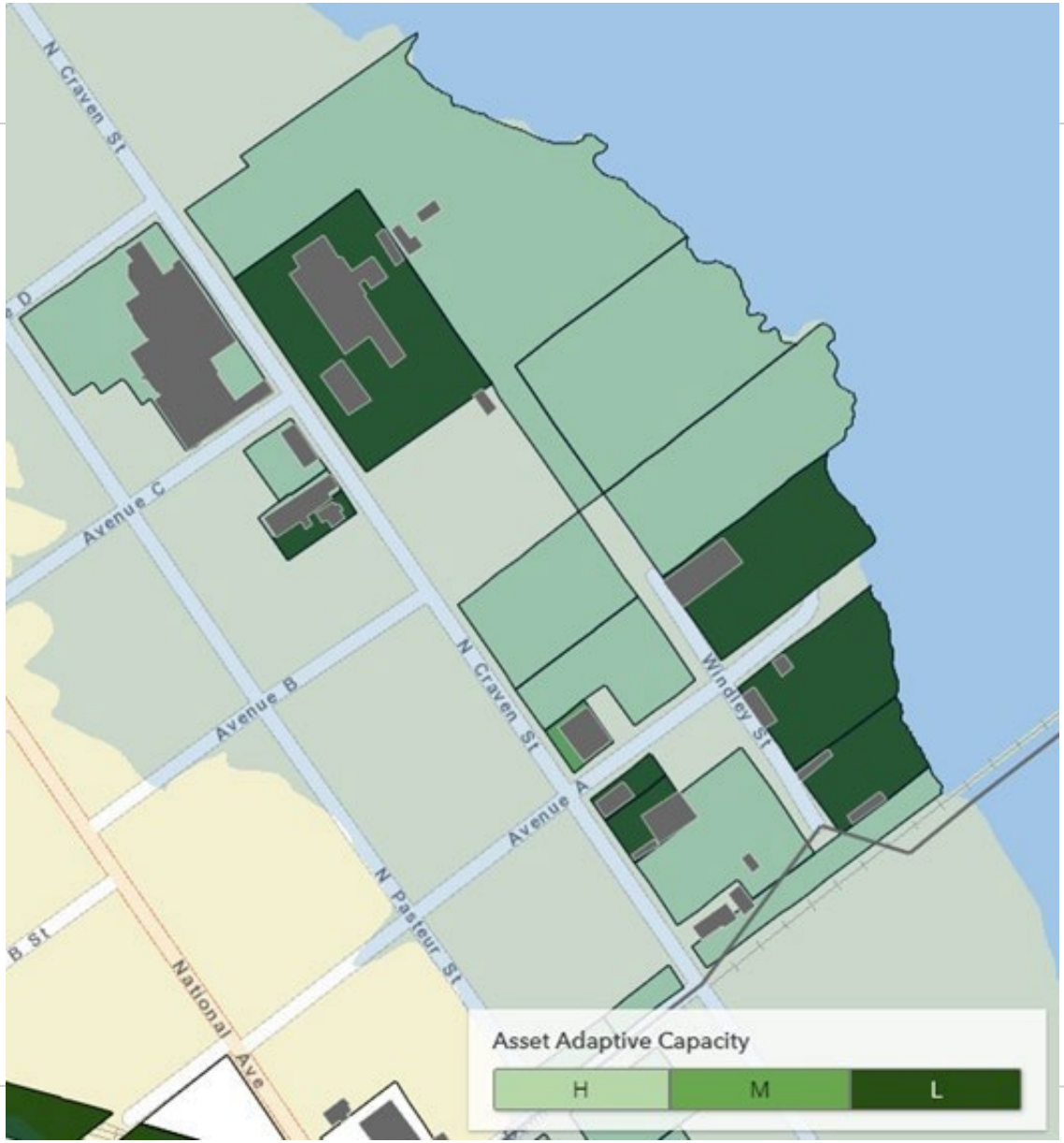
Uses finished first floor (FFE) elevation information

Low: First floor elevation of structure more than 1 ft below base flood elevation (BFE)

Med: First floor elevation between BFE and 1 ft below BFE

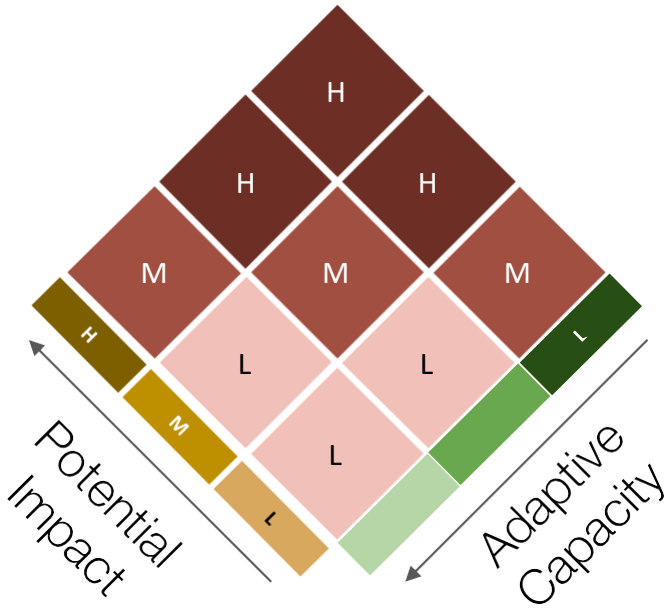
High: Structure outside floodplain or first floor elevation above base flood elevation (BFE)

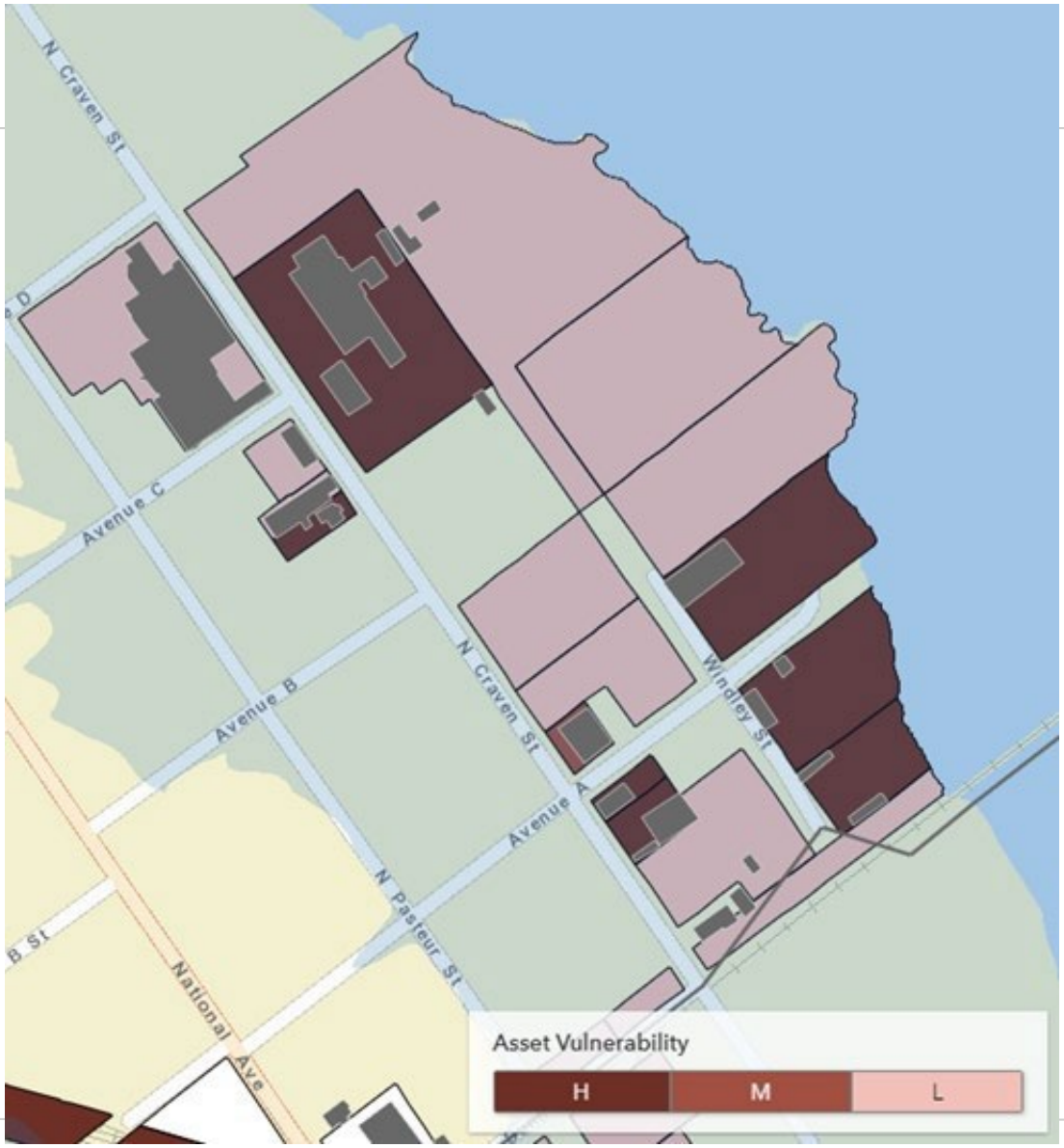
This is a preliminary analysis



Vulnerability

Based on potential impact and adaptive capacity





This is a preliminary analysis

Risk Probability

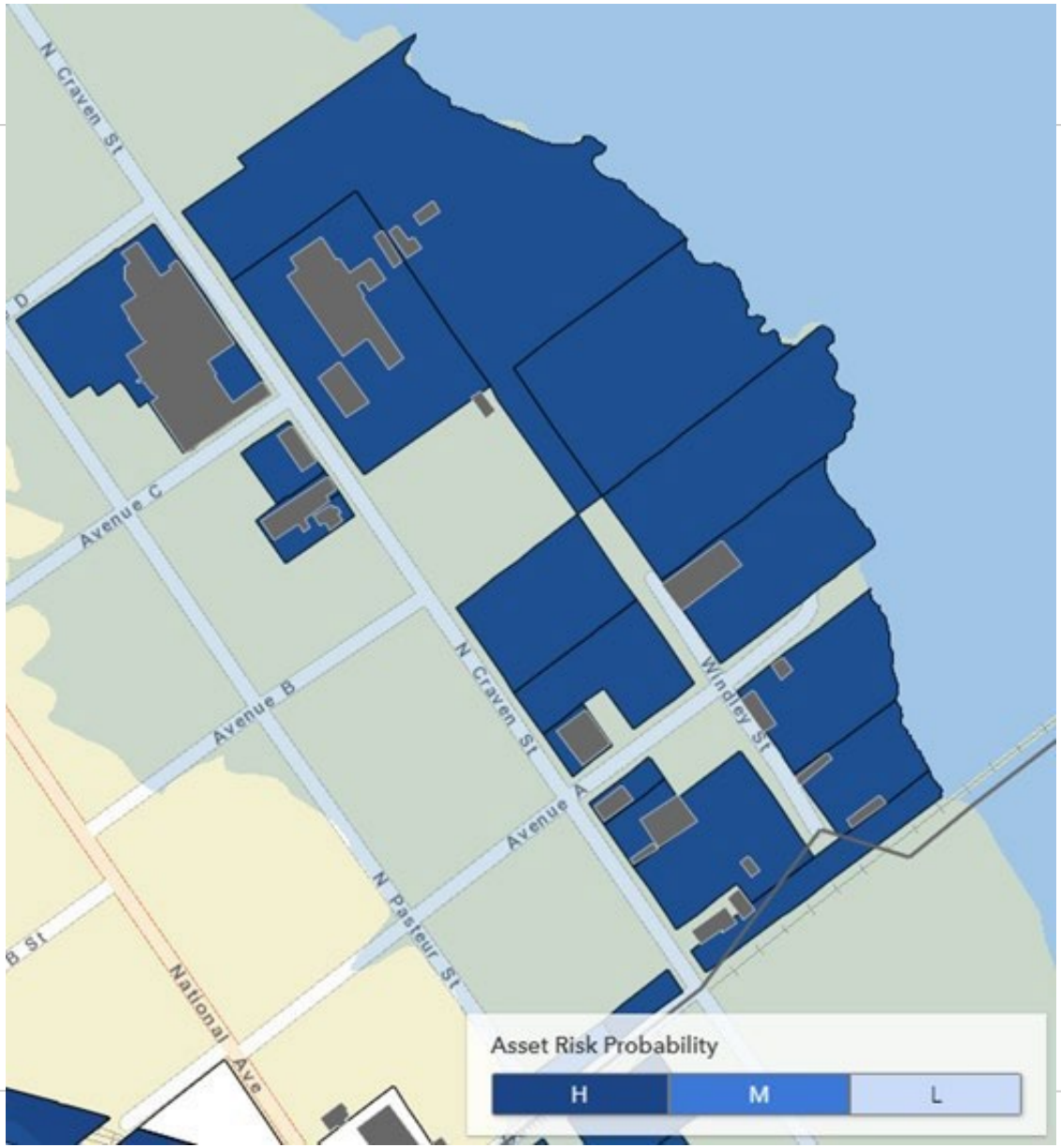
Likelihood of flooding based on highest parcel flood probability

Floodplain Inundation:

- High: 100-year
- Med: 500-year

Note: SLR Tidal Flooding threat assessments do not examine differential risk probability but do look at multiple future change thresholds

This is a preliminary analysis



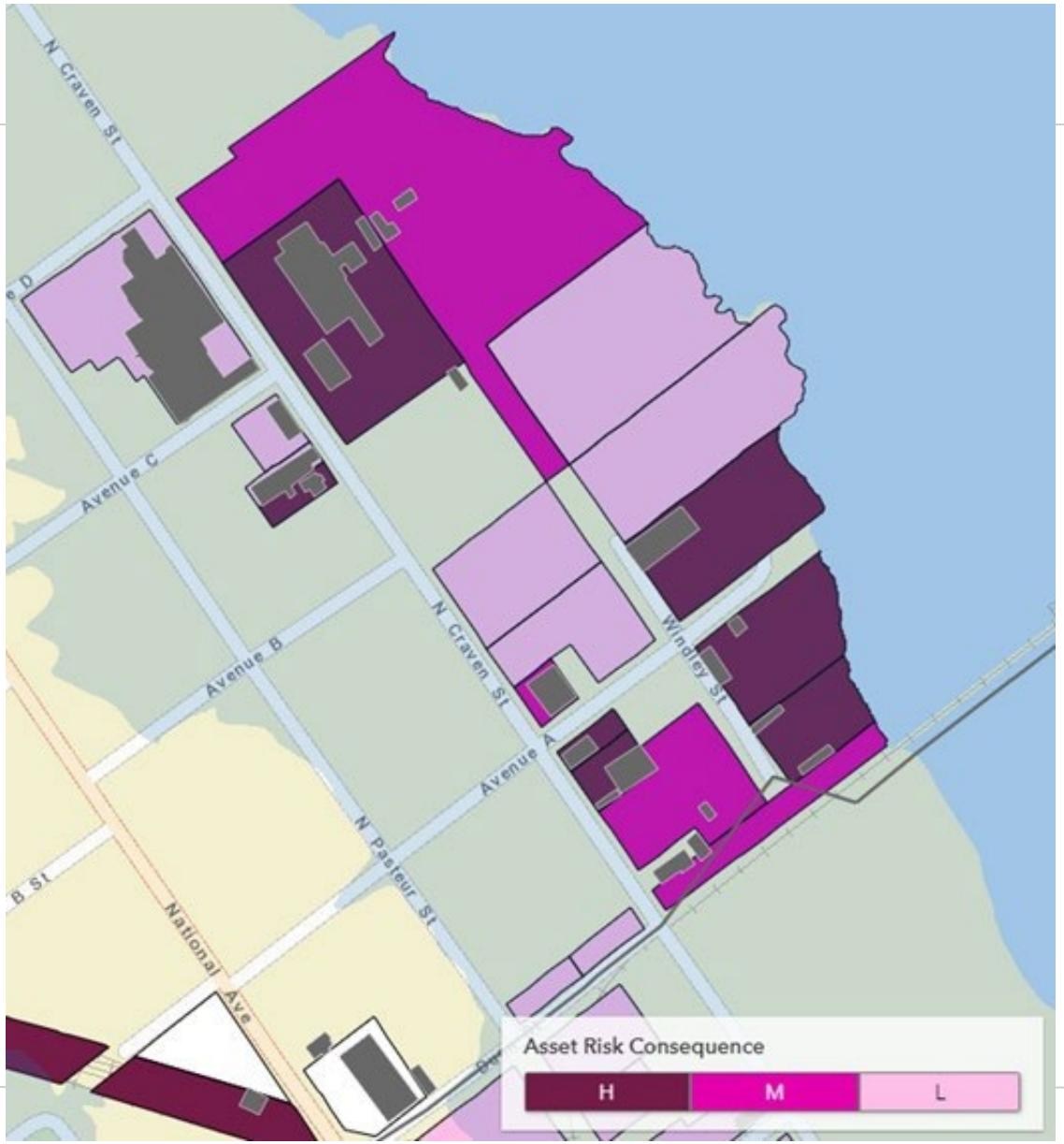
Risk Consequence

Negative outcome based on potential flood depth (of buildings)

Floodplain Inundation:

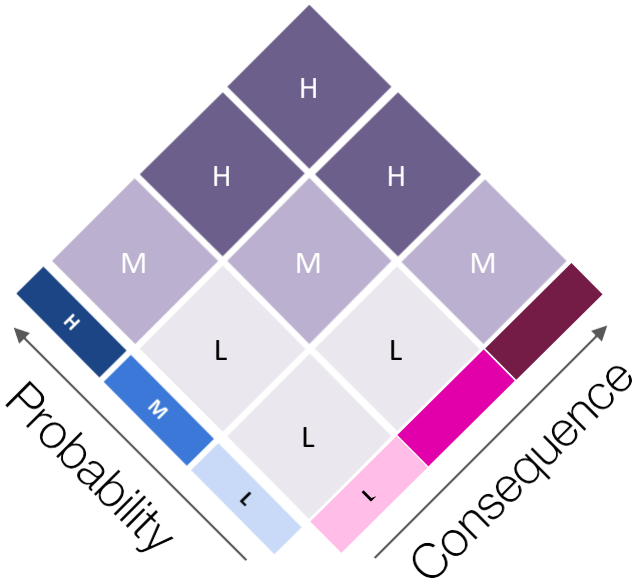
- **High**: Flood depth 3 feet or greater
- **Med**: Flood depth 1 to 3 feet
- **Low**: Flood depth less than 1 foot or structure not exposed

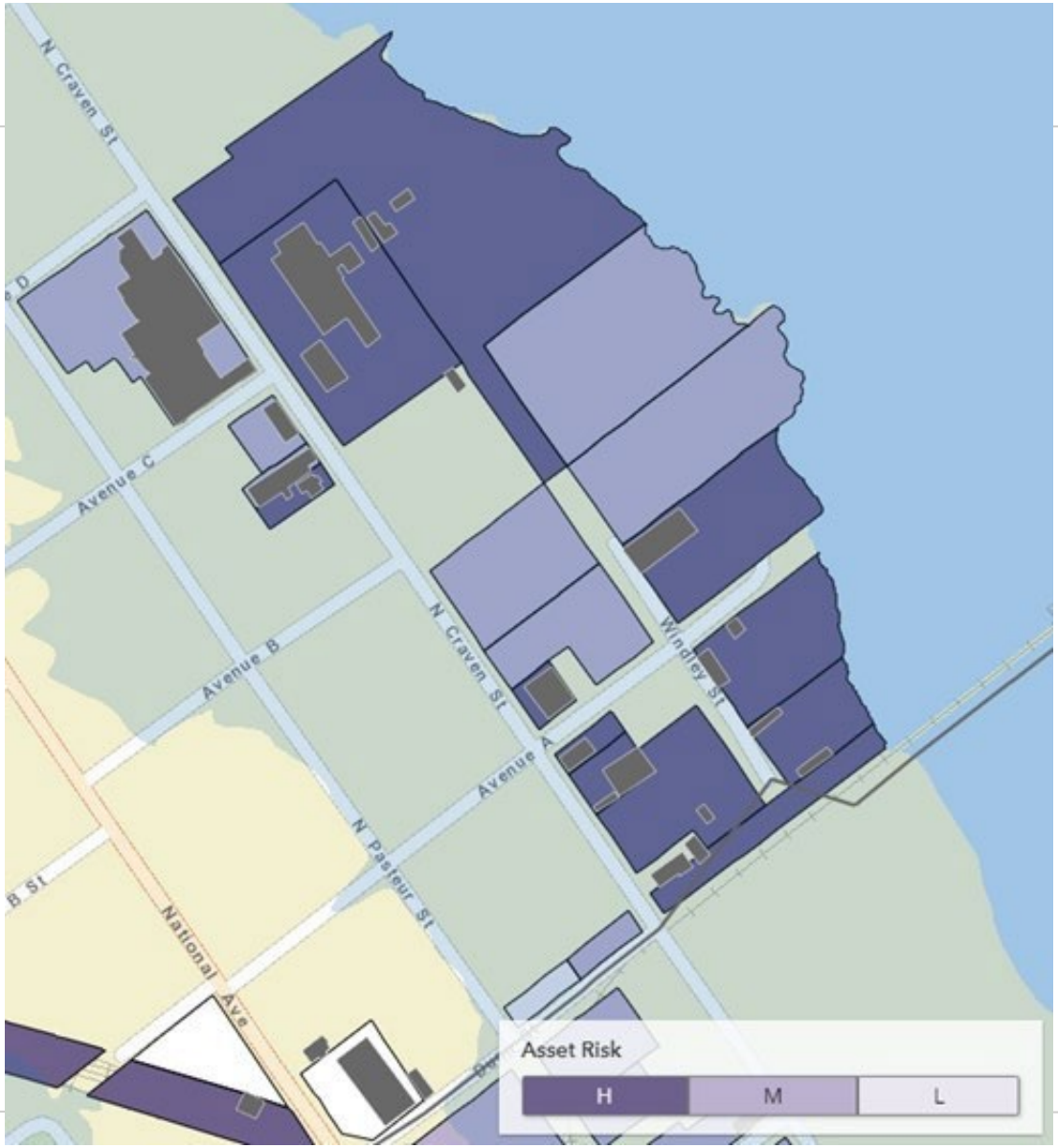
This is a preliminary analysis



Risk Scoping

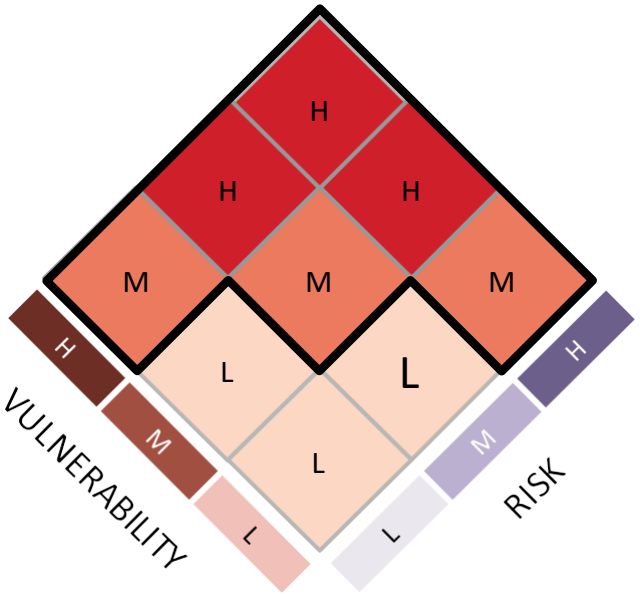
Based on probability and consequence

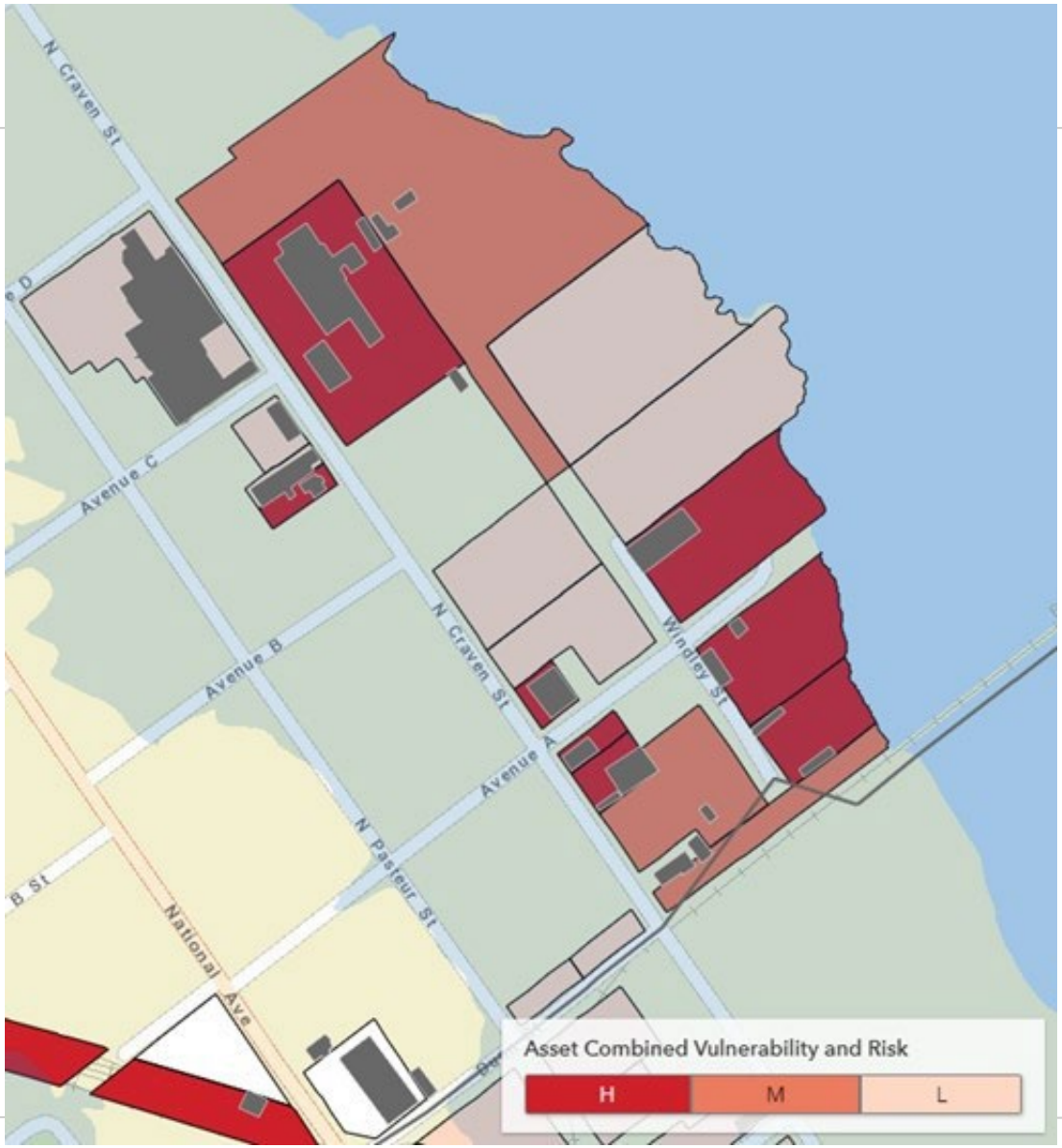




This is a preliminary analysis

Combined Vulnerability and Risk





This is a preliminary analysis

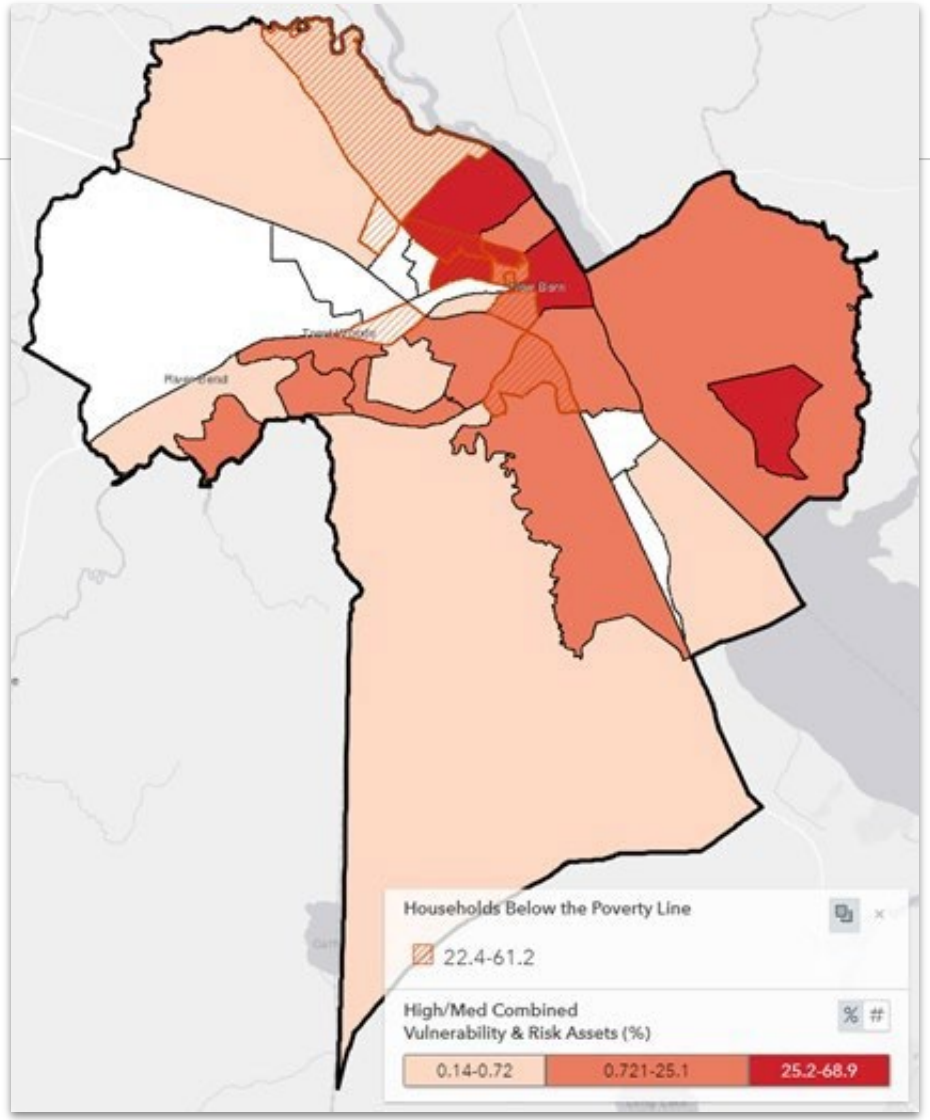
Assessment Results & Initial Findings

Properties Vulnerable to 100-yr and 500-yr Flood

	Total Assets	Floodplain Inundation (100 and 500-yr)
Critical Facilities	290	19 (7%)
Government-Owned	251	34 (14%)
Commercial & Industrial	1,396	83 (6%)
Parks & Cultural	348	60 (17%)
Residential	22,347	2,286 (10%)
Historic	2,338	335 (14%)

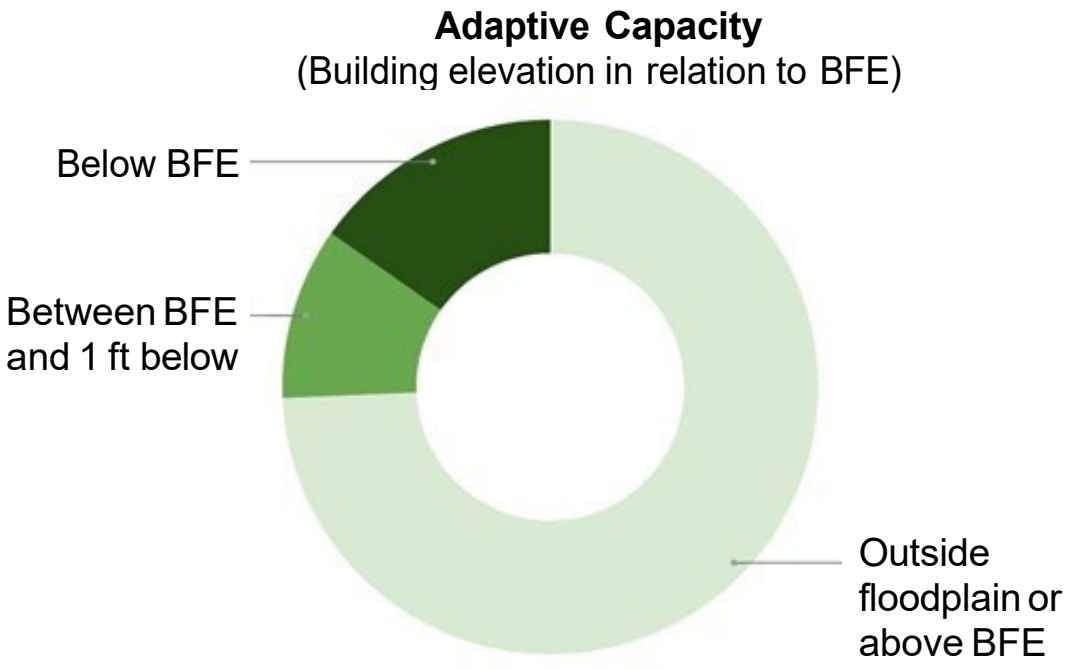
Three of the five areas with most vulnerable residential properties have among the highest percentage of households below the poverty line

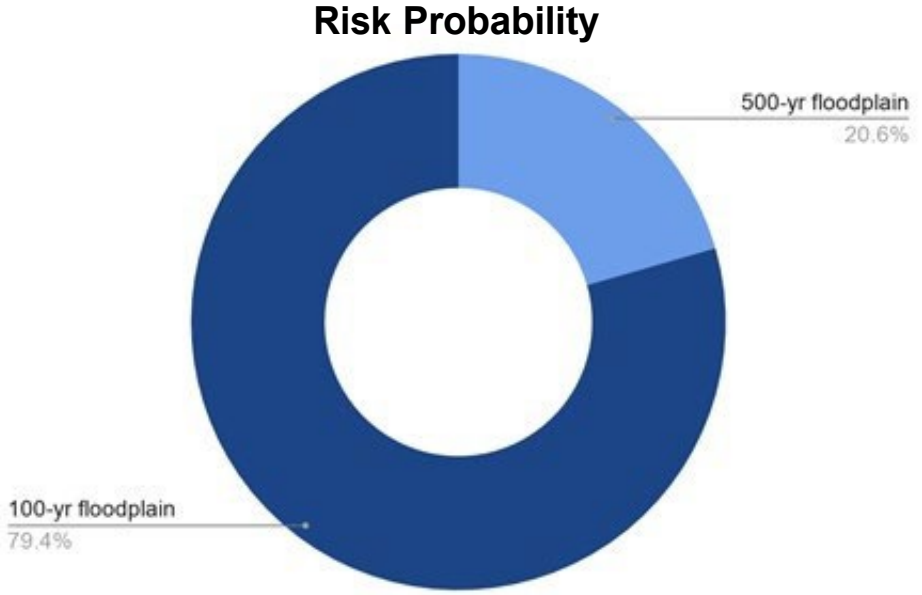
Residential Property

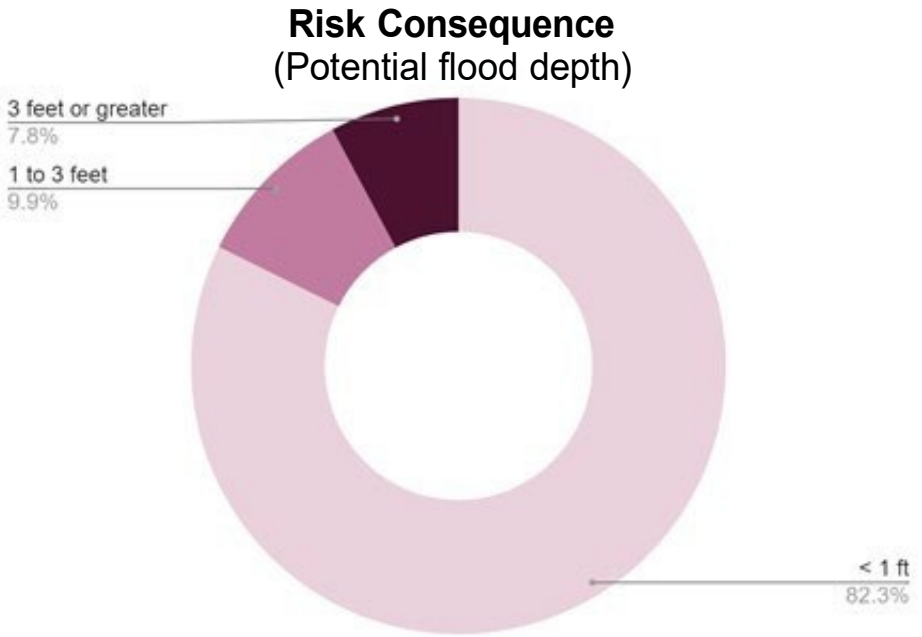


Vulnerability and Risk Indicators

Residential properties in 100-yr and 500-yr floodplains





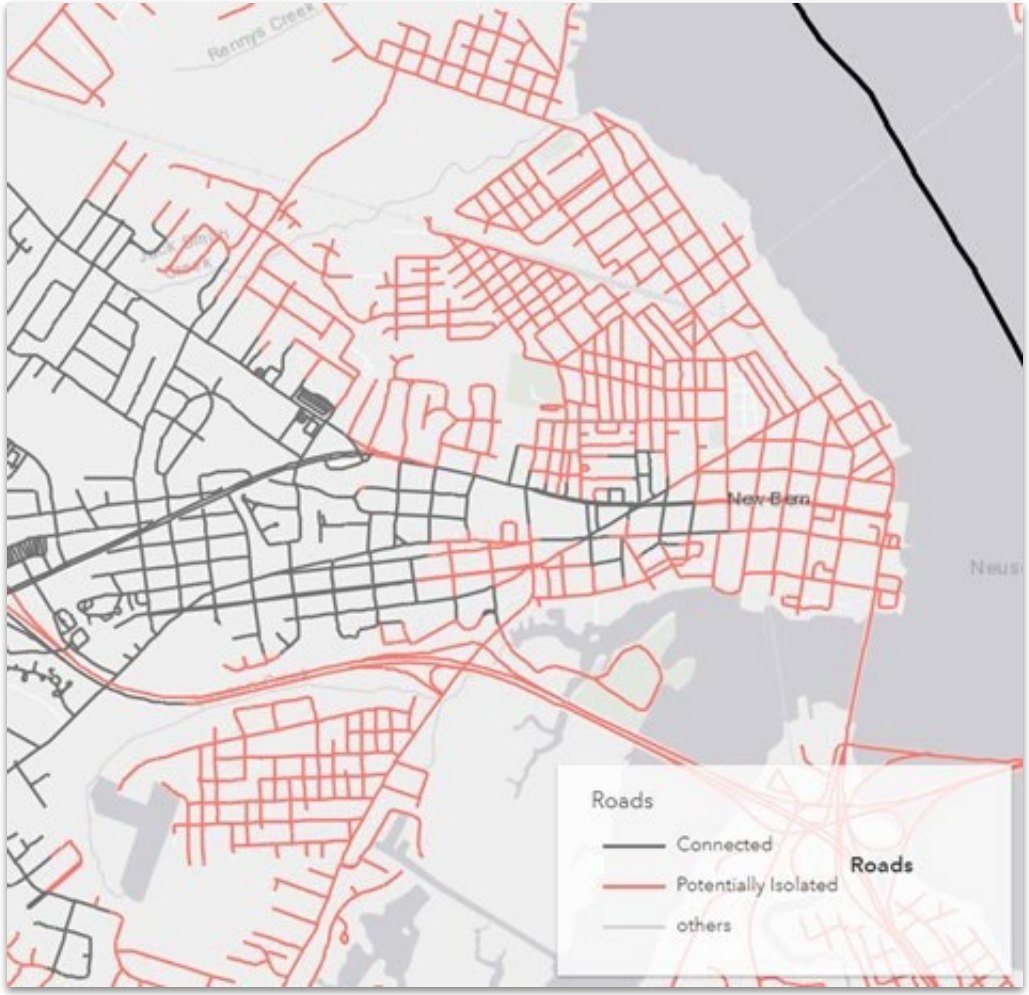


This is a preliminary analysis

High Levels of Vulnerability to Storm Surge Inundation

	Total Assets	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)
Parks & Cultural	348	29 (8%)	106 (30%)
Residential	22,347	1,829 (8%)	6,397 (29%)
Historic	2,338	215 (9%)	913 (35%)
Sales Volume (businesses)	$1.4B	$11M (1%)	$733M (52%)
Jobs (businesses)	3,600	220 (6%)	840 (23%)
Inaccessible Roads (Major)	180 (lane miles)	57 (32%)	132 (73%)
Inaccessible Roads (Minor)	503 (lane miles)	223 (44%)	444 (88%)
Isolated Property (all)	31,670	15,000 (47%)	28,100 (89%)

Potentially Inaccessible/Isolated Roads (Cat 1-2)



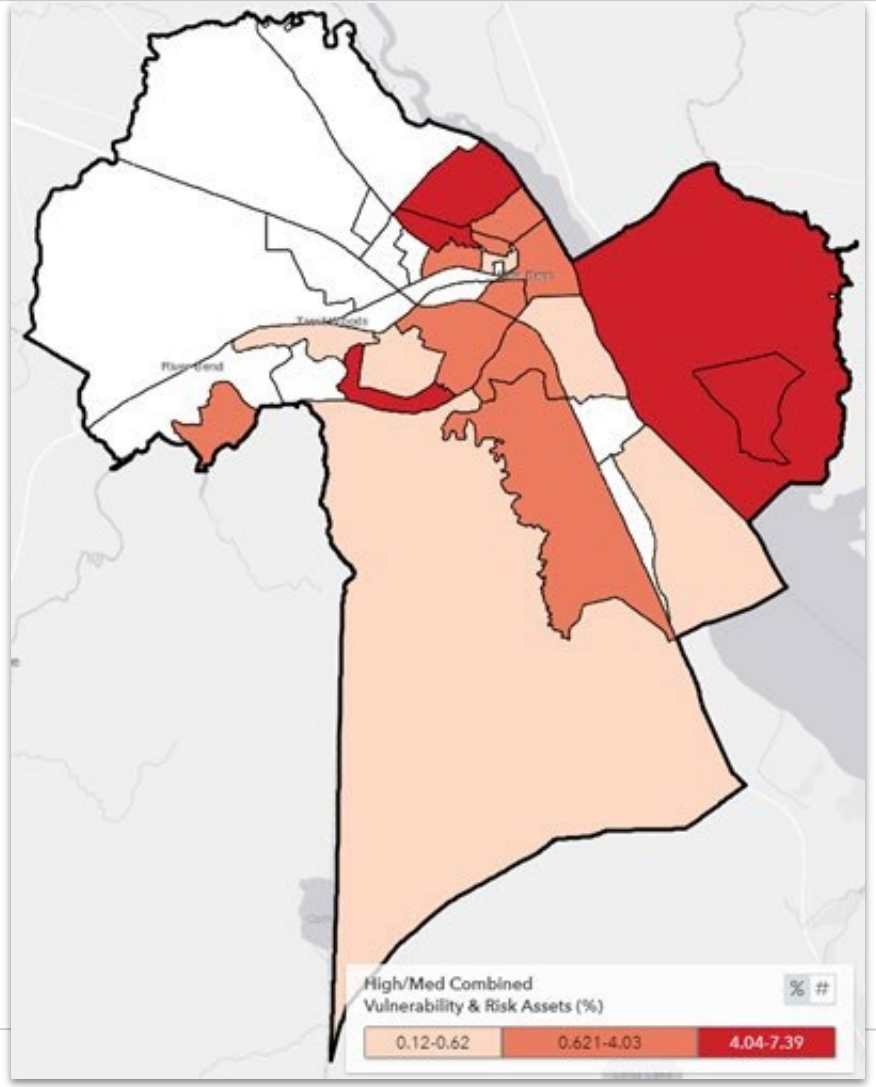
This is a preliminary analysis

Vulnerability to Current Tidal Flooding (King Tides)

Residential Property

	Total Assets	Tidal Flooding (Current)
Critical Facilities	290	1 (<1%)
Government-Owned	251	8 (3%)
Commercial & Industrial	1,396	15 (1%)
Parks & Cultural	348	4 (1%)
Residential	22,347	311 (1%)
Historic	2,338	25 (1%)

Note: Current Tidal Flooding based on NOAA's High Tide impact threshold (1.8 ft + MHHW)

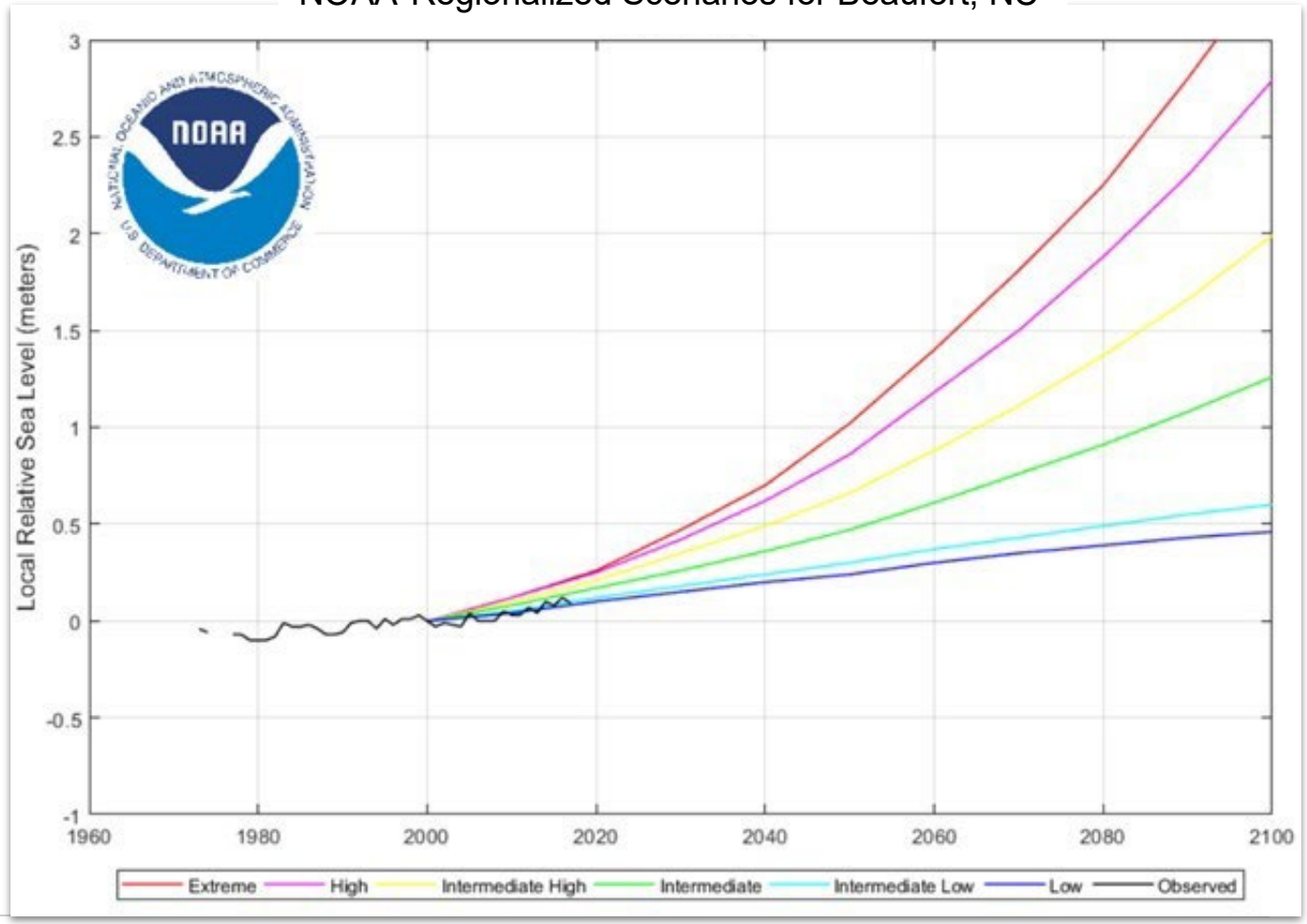


Sea Level Rise and Future Tidal Flooding



- Screening-level analysis using multiple water levels
- Projection timelines currently based on regionalized NOAA scenarios for Beaufort, NC
- Water levels and time ranges help consider the range of future projections and planning with uncertainty
- Important limitations include hydrological and hydraulic connectivity, and change in coastal geomorphology

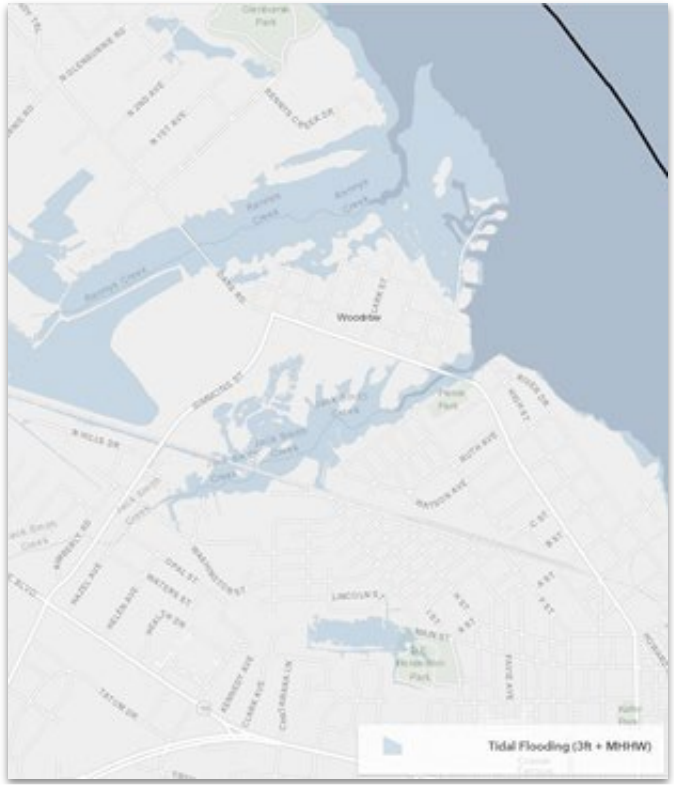
NOAA Regionalized Scenarios for Beaufort, NC



Sea Level Rise and Future Tidal Flooding: Inundation Extents

Note: Current high tide water level and timing ranges are still being considered and refined







Water Levels and Approximate Time Ranges (NOAA High to Int Low):

Water Level	1.8 ft + MHHW	3 ft + MHHW	5 ft + MHHW
Persistent Inundation	n/a	3 ft of SLR (2050s-2100+)	5 ft of SLR (2070s-2100+)
High Tide	Current	1.2 ft of SLR (2030s-2060s)	3.2 ft of SLR (2050s-2100+)

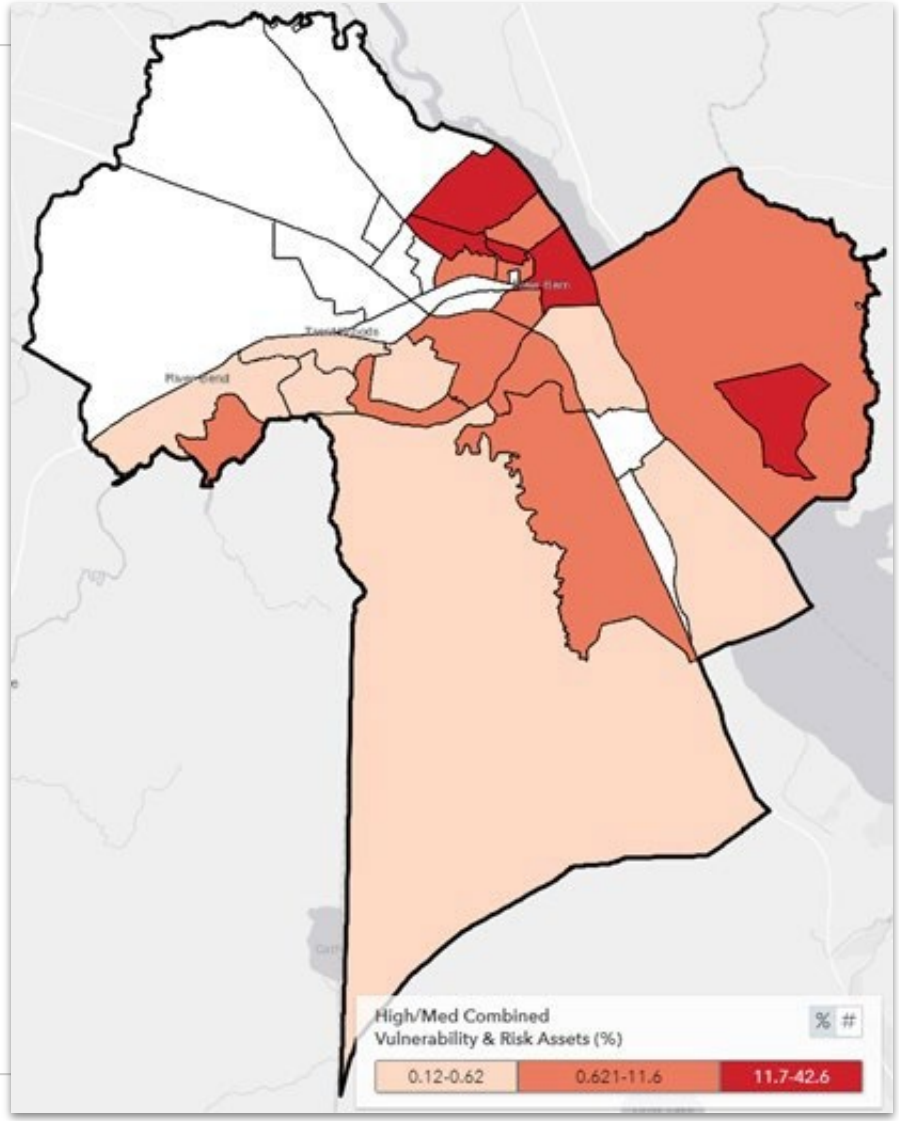


Increasing Vulnerability and Risk with SLR

A primary impact from sea level rise will be from the severity and frequency of tidal flooding and more persistent inundation

	Total Assets	Tidal Flooding (Current)	Future Tidal Flooding & SLR (3 ft + MHHW)	Future Tidal Flooding & SLR (5 ft + MHHW)
Critical Facilities	290	1 (<1%)	1 (<1%)	7 (2%)
Government-Owned	251	8 (3%)	7 (3%)	18 (7%)
Commercial & Industrial	1,396	15 (1%)	17 (1%)	25 (2%)
Parks & Cultural	348	4 (1%)	7 (2%)	15 (4%)
Residential	22,347	311 (1%)	448 (2%)	1,083 (5%)
Historic	2,338	25 (1%)	32 (1%)	91 (4%)

Residential Property & SLR/Future Tidal Flooding (5ft + MHHW)

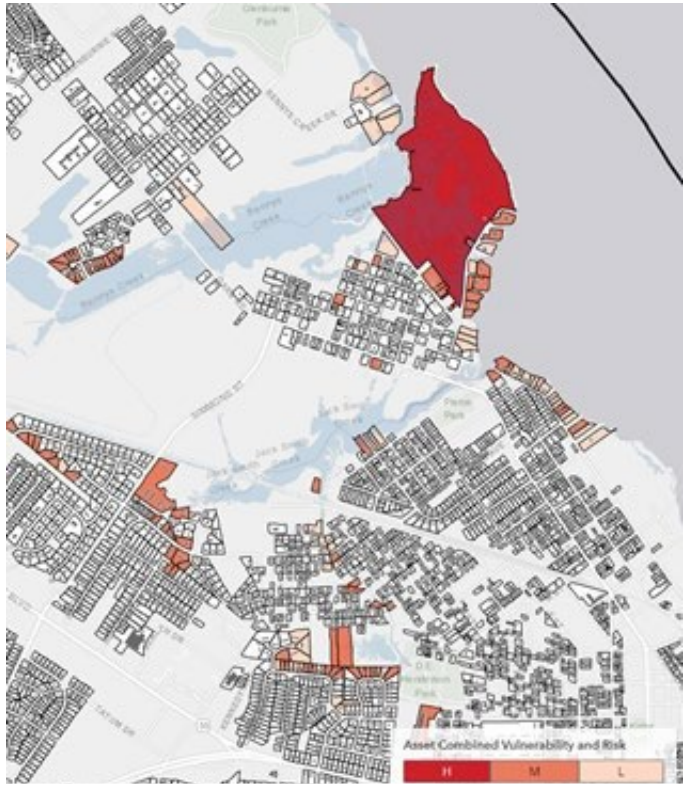


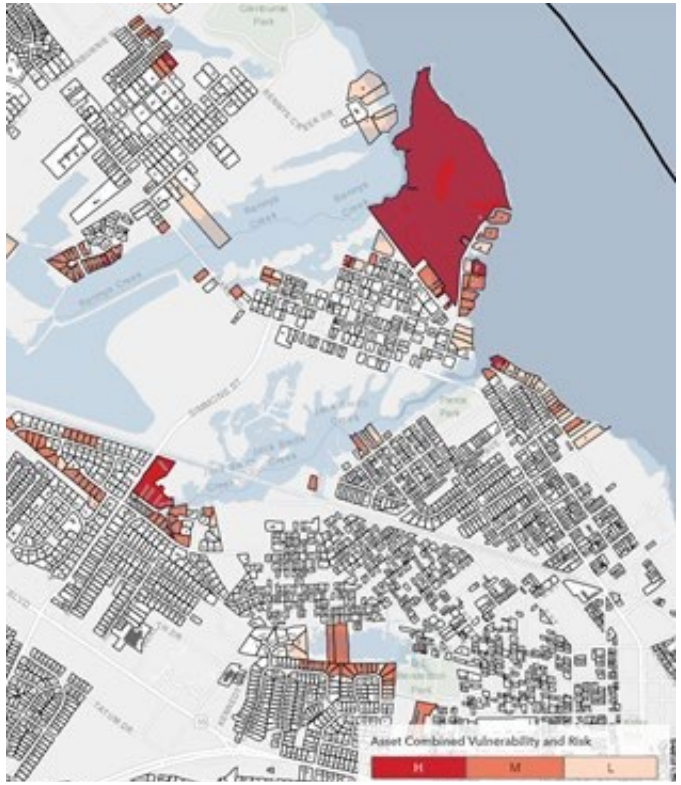
This is a preliminary analysis

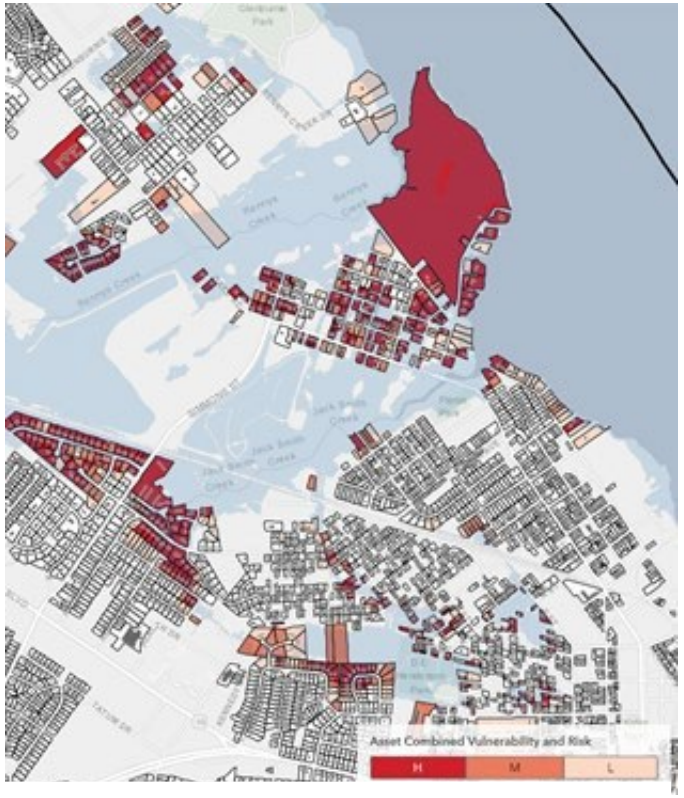
Increasing Vulnerability and Risk with SLR

This is a preliminary analysis

Note: Ranges and timing of impacts are still being considered







Water Levels and Approximate Time Ranges (NOAA High to Int Low):			
Water Level	1.8 ft + MHHW	3 ft + MHHW	5 ft + MHHW
Persistent Inundation	n/a	3 ft of SLR (2050s-2100+)	5 ft of SLR (2070s-2100+)
High Tide	Current	1.2 ft of SLR (2030s-2060s)	3.2 ft of SLR (2050s-2100+)



Citywide Summary of Vulnerability and Risk

Preliminary Analysis	Total Assets	**Floodplain Inundation**	**Storm Surge (Cat 1-2)**	**Storm Surge (Cat 3-5)**	**Tidal Flooding (Current)**	**SLR & Future Tidal Flooding (3 ft + MHHW)**	**SLR & Future Tidal Flooding (5 ft + MHHW)**
Critical Facilities	290	19 (7%)	12 (4%)	64 (22%)	1 (<1%)	1 (<1%)	7 (2%)
Government-Owned	251	34 (14%)	29 (12%)	65 (26%)	8 (3%)	8 (3%)	18 (7%)
Commercial & Industrial	1,396	83 (6%)	52 (4%)	286 (20%)	15 (1%)	17 (1%)	25 (2%)
Parks & Cultural	348	60 (17%)	29 (8%)	106 (30%)	4 (1%)	7 (2%)	15 (4%)
Residential	22,347	2,286 (10%)	1,829 (8%)	6,397 (29%)	311 (1%)	448 (2%)	1,083 (5%)
Historic	2,338	335 (14%)	215 (9%)	913 (35%)	25 (1%)	32 (1%)	91 (4%)
Sales Volume (businesses)	$1.4B	$21M (2%)	$11M (1%)	$733M (52%)	$920K (<1%)	$920K (<1%)	$6M (<1%)
Jobs (businesses)	3,600	270 (8%)	220 (6%)	840 (23%)	160 (4%)	160 (4%)	177 (5%)
Improved value (assessed)	$5.7B	$506M (9%)	$291M (5%)	$1.2B (21%)	$94M (2%)	$124M (2%)	$194M (3%)
Inaccessible Roads (Major)	180 (lane miles)	50 (28%)	57 (32%)	132 (73%)	38 (21%)	38 (21%)	39 (22%)
Inaccessible Roads (Minor)	503 (lane miles)	220 (44%)	223 (44%)	444 (88%)	15 (3%)	34 (7%)	68 (14%)
Isolated Property (all)	31,670	14,520 (46%)	15,000 (47%)	28,100 (89%)	70 (<1%)	890 (3%)	3,260 (10%)

Example Neighborhood Area: Duffyfield

Preliminary Analysis	Total Assets	Floodplain Inundation	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)	Tidal Flooding (Current)	Future Tidal Flooding & SLR (3 ft + MHHW)	Future Tidal Flooding & SLR (5 ft + MHHW)
Critical Facilities	22	2 (9%)	1 (5%)	3 (14%)	0 (0%)	1 (5%)	1 (5%)
Government-Owned	20	1 (5%)	1 (5%)	3 (15%)	0 (0%)	0 (0%)	2 (10%)
Commercial & Industrial	35	2 (6%)	2 (6%)	11 (3%)	1 (3%)	1 (3%)	1 (3%)
Parks & Cultural	54	12 (22%)	4 (7%)	8 (15%)	0 (0%)	0 (0%)	0 (0%)
Residential	775	135 (17%)	86 (8%)	270 (29%)	9 (1%)	4 (2%)	25 (5%)
Historic	387	42 (14%)	20 (9%)	113 (11%)	1 (<1%)	2 (<1%)	6 (2%)

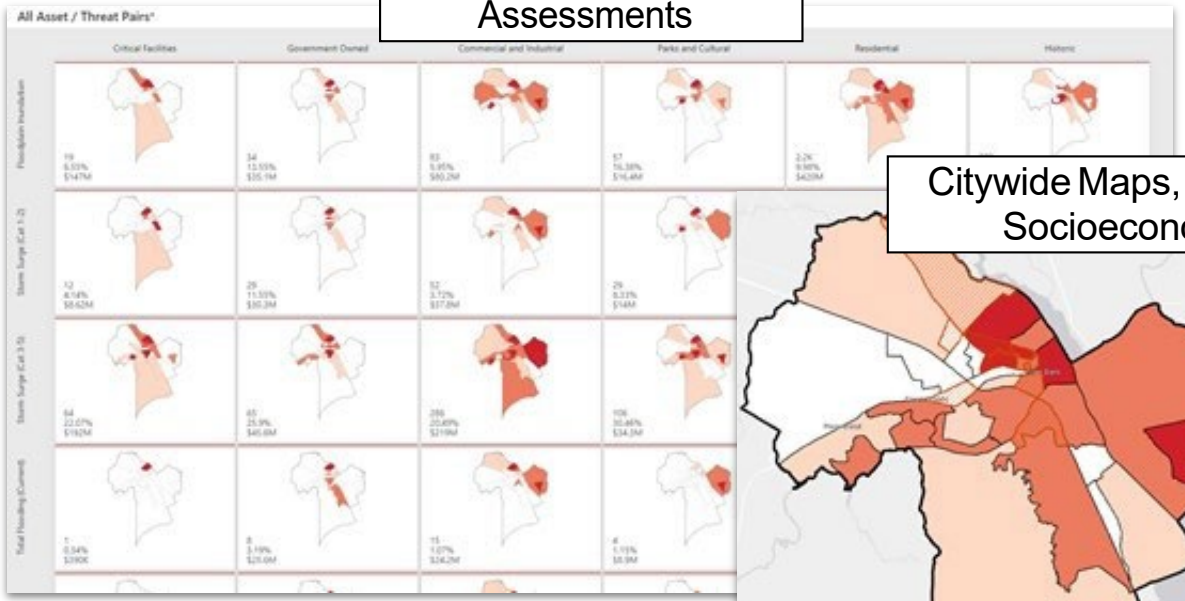


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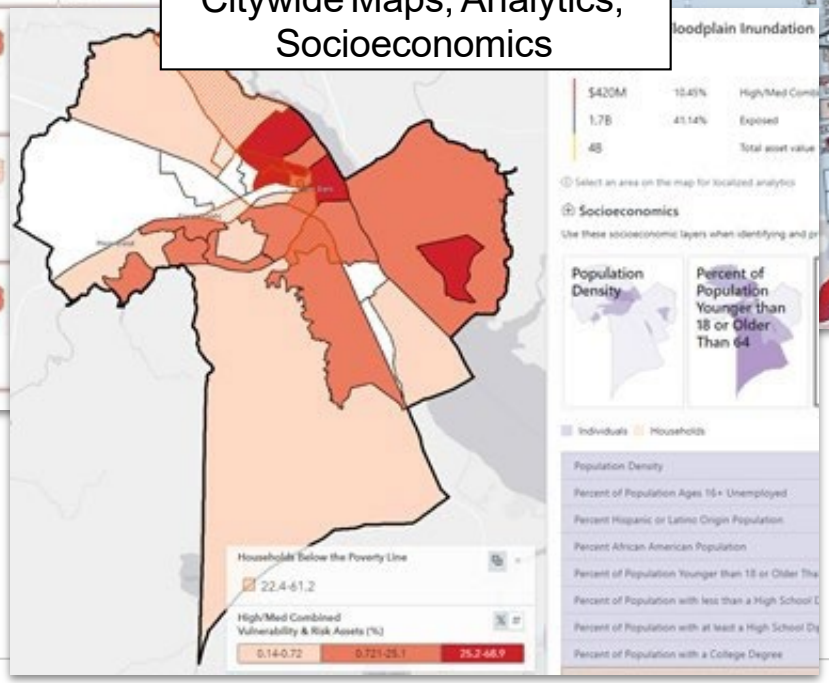
AccelAdapt: Interact and explore all assessments

https://newbernnc.acceladapt.com

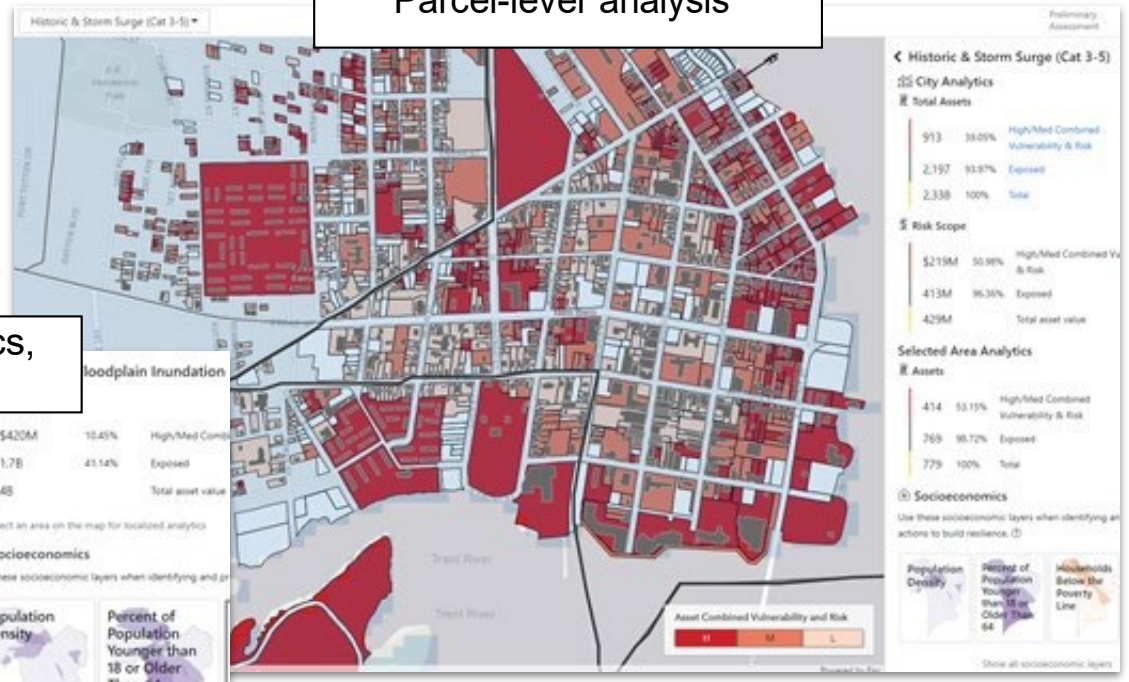
Access to all Assessments



Citywide Maps, Analytics, Socioeconomics



Parcel-level analysis



AccelAdapt Overview

Next Steps Going Into Next Year



- January Planning Team Meeting on January 28
- Discuss preliminary results of capability assessment
- Begin mitigation strategy development
- Begin targeted stakeholder engagement
- Finalize the flood risk assessment
- Continue public involvement

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Project Updates & Survey #2 Meeting
January 28, 2021 from 1:00 p.m. to 2:30 p.m.
Meeting Minutes

Attendees:

Matt Montanye	City of New Bern
Amanda Ohlensehlen	City of New Bern
Matt Schelly	City of New Bern
Alice Wilson	City of New Bern
Margaret Shields	City of New Bern
George Chiles	City of New Bern
Jeffrey Ruggieri	City of New Bern
Charles Bauschard	City of New Bern
Matt Hutchins	NEMAC+FernLeaf
Aashka Patel	NEMAC+FernLeaf
Lisa Craig	The Craig Group
Keri Ragland	The Craig Group
Mike Robinson	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Rebeckah Sims	Moffatt & Nichol
Dawn York	Moffatt & Nichol
Amanda Zullo	Moffatt & Nichol

Word of welcome from Mike – sixth core planning team meeting to discuss status of project updates and survey #2 results.

- **Roll Call**
  - Participants listed above.
- **Takeaways from December site visit (Lisa Craig)**
  - Lisa and Keri went to New Bern in December and were able to meet with City staff. They gathered a lot of photographs and documentation and will upload to the shared Teams folder. This visit helped them gain a better contextual understanding of New Bern and understanding its redevelopment plan goals both in terms of the greatest potential for flooding and disaster, as well as the greatest needs for resilient solutions. They met with the historic architecture staff member as well as the Rotary and did a public involvement follow-up at the Rotary meeting. The Craig Group was able to determine next steps and identify data gaps. There was discussion regarding mapping and raising awareness. Lisa stated they will be researching policy incentives and completing condition assessments using FEMA Cultural Resources Worksheets.
- **Activity from the Past Month (Mike Robinson)**
  - Activity from the past month include: presentation of preliminary flood vulnerability assessment results, refinement of preliminary flood vulnerability assessment, refinement of historic preservation observations, rollout of public participation survey #2, planning and development for public meeting #2 (to be held in February), development of online GIS tool for stakeholder engagement, updates and enhancements to City of New Bern Resiliency website, and interagency coordination on large-scale planning efforts (e.g., USACE, NC DCM, etc.)

- USACE is very impressed with what the City of New Bern is doing in this planning process and wishes other communities and cities would follow suit.

- **Public Outreach Update (Amanda Zullo)**
  - Public Meeting 2 will be held February 4, 2021 from 6 to 7:30 p.m. It will be a hybrid meeting with virtual (Zoom) and in-person (West New Bern Rec Center) locations to present the findings of the vulnerability assessment to the public.
  - A series of social media outreach to spread the word about the second survey and upcoming public meeting.
  - There will be a Stakeholder meeting to be held at the end of February (date/time TBD). It will be a virtual meeting with focus group discussions.
  - Survey 2 Analysis
    - There were more responses for this survey. There was not a lot of cross-pollination in terms of the people who have taken each survey.
    - Survey #1 focused on community preferences. People who took Survey #1 did not live in the floodplain or have flood insurance.
    - Wanted to focus Survey #2 on people that actually are impacted by flooding.
    - Longer survey (~11 minutes to take). A lot more questions skipped. A lot more open-ended questions.
    - Majority of people lived either in downtown or historic district who answered this survey. Correlation – live downtown, work downtown. Retired people as well taking this survey.
    - Amanda O. tried reaching younger groups to answer the survey.
    - Most people did carry flood insurance (46%) or do not live in the flood hazard zone (42%).
    - 61% have had home/neighborhood affected by flooding in the past. Hurricane Florence (in 2018) was the major cause of flooding. Then heavy storms, then 2020 hurricanes.
    - 29% of people felt that personal safety was threatened, 28% had damage to their home, and 14% said commute was compromised when impacted by flooding.
    - 70% felt that flooding threatened their neighborhood and 57% felt that flooding threatened their residence.
    - Key places to be protected and strengthened: downtown, emergency services, and roads.
    - Critical services/places during flooding events: emergency services and electricity highest. Then grocery stores and hospitals/community centers.
    - 52% of people have not taken any actions to make homes/neighborhoods more resistant to flooding.
    - Of those who said yes, they did home updates (raising homes and various components of their homes).
    - 72% reviewed insurance coverage and 68% identified where their property were located relative to flood hazard zones.
    - Most people feel there should be a financial incentive for historic district property owners to make flood improvements.
    - People felt whatever happens in New Bern should happen in other communities.

- **Vulnerability Update Final Results (Matt Hutchins)**
  - Matt stated the PowerPoint will be made available and we can coordinate by e-mail or set up another call.
  - The results are refined based on December's meeting feedback. We are going to highlight new results/changed results. We've refined how the adaptive capacity was able to recognize finished floor elevations. We've adjusted assumptions they were making to be better aligned with FEMA guidelines. We've refined how we considered buildings in proximity to floodplain to assess tidal flooding impacts.
  - Used NCDOT bridges to refine consideration of elevated roadways.
  - All City Core Planning Team (those on the monthly calls) have access to AccelAdapt. The Team can use your ArcGIS Online login, but we've made it available without an ArcGIS Online login now.
  - Any other staff members that need access should email Amanda O. and she will coordinate with Alice. A training/tutorial is forthcoming.
  - All final results are in the tool.
- **Group Discussion**
  - After initially presenting the preliminary results, Matt talked about riverine flooding. Amanda O. asked how are you handling that? Is there a way to incorporate riverine flooding into the AccelAdapt analysis?
    - Something we looked at but with existing datasets from FEMA, riverine flooding also is combined with coastal flooding, so it's hard to tease out separately.
    - Dwight Otwell is going to be using GIS to analyze riverine flooding. There may be overlap/duplication between GIS work and AccelAdapt work.
    - Challenging because of geographic location.
  - Events/impacts of events seen in New Bern are often compounded by events/impacts of events in areas that are draining to New Bern.
  - Participating in regional/ongoing inter-agency coordination to help alleviate impacts from other areas that impact New Bern. This is a three-year process. We will work to be informed on what is coming down to New Bern.
    - This will likely drop when the City of New Bern's plan will drop.
  - Mike, Matt H., and Dwight to set up call to talk through the riverine flooding issue next week.
  - Bring in USACE to talk about their efforts during public engagement opportunities. The public would love to hear about regional efforts.
  - Maybe plan another public meeting/stakeholder meeting with the USACE. We can host, open and close, but let USACE present.
  - Outreach plan has shifted and had to get creative because of the ongoing impacts of COVID.
  - Something that the electric department (City of New Bern) and UNC EPIC group, focus is Duke Energy, but doesn't align with City of New Bern goals. A separate discussion may be needed to understand what the data means to better attract funding for large-scale infrastructure projects in New Bern.
    - Jim Fox and Mike Robinson participated in the call. May pull him in to help walk through this issue.

        - New Hanover County is working on funding for an infrastructure project through Duke Energy.
        - Dawn York is aware of this and can help identify some opportunities.
        - Amanda thinks there will be a lot of opportunities that come out of this planning effort.
    - If we need interim calls between the monthly calls, please feel free to reach out and we can certainly get the team together to do that.
        - Amanda O. anticipates more interim calls once stakeholder engagement begins.
- **Next Steps**
    - Site visits
    - Ongoing public involvement
    - Stakeholder engagement
    - AccelAdapt
- **Reminder for Next Meeting**
    - Thursday, February 25 at 1 p.m.
    - The focus will be on stakeholder engagement and mitigation strategy development.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

PROJECT UPDATES & SURVEY #2 RESULTS

Presented to:

City of New Bern

Core Planning Team

January 2021

Agenda

- Welcome and Roll Call
- Takeaways from December Site Visit
- Activity from Past Month
- Public Outreach Update
- Survey #2 Analysis
- Vulnerability Assessment Update
- Group Discussion
- Next Steps



- **Flexible agenda**
- **Post questions to the chat function to help facilitate discussion at the end**

Takeaways: December Site Visit

- *Identification/documentation*
  - History of disasters in New Bern / Craven County / NC
  - Prioritized historic / cultural properties (mapping)
    - Early Colonial-era Buildings within 1% chance area
    - Period of significance for each district/neighborhood
    - Historic evolution of the waterfront edge
    - Properties with significant public sentiment (Community Survey)
    - Properties with potential cultural significance called out in New Bern Redevelopment plan
    - New Bern Bears (Public Awareness & Education)



- Disasters mentioned in the 1972 New Bern Historic District nomination include:
  - Hurricane of Sept. 1769
  - Fires of 1791 & 1794 and 1798 (Burned the Governor's Palace)

Fire of 1922

Major Hurricanes:

September, 1913
October, 1929
September, 1933
Barbara, 1953
Hazel, 1954
Ione, 1955
Donna, 1960
Bertha, 1996
Fran, 1996
Bonnie, 1998
Dennis, 1999
Floyd, 1999
Isabel. 2003
Irene, 2011
Florence, 2018

Takeaways: December Site Visit

- ***Research on policy incentives***
  - NC 15% residential tax credit and the federal rehabilitation tax credit for income-producing property can incorporate mitigation alternatives
  - Research other NC incentives or state enabling authority to determine if they encourage mitigation
- ***Complete conditions assessments using FEMA Cultural Resources Worksheets for:***
  - Colonial Properties in the 1% chance Floodplain
  - Individually listed National Register properties
    - Specific example is the King Solomons Masonic Lodge



"We frequently work closely with property owners in designing and undertaking appropriate methods for adaptation to climate change, sea level rise, and other severe weather incidents such as hurricanes."

John Wood,
Preservation Specialist, North Carolina Department of Natural and Cultural Resources

Takeaways: December Site Visit

- *Possible prototype properties for proposed adaptation alternatives determined by:*
  - Period of significance
  - Proximity to 1% and .02% chance flood areas
  - National Register designation & geographic significance
  - Historic significance
  - Public sentiment
  - Economic significance
  - Degree of Integrity



- Colonial-era houses
- Shotgun houses (Dryborough)
- King Solomon's Masonic Lodge
- Mitchell's Hardware (& other downtown gathering places)
- Commercial properties in vulnerable districts
- Selected churches
- Point Park
- City owned buildings
- Community Survey identified properties

Activity from the Past Month



- Presentation of preliminary flood vulnerability assessment results
- Refinement of preliminary flood vulnerability assessment
- Refinement of historic preservation observations
- Rollout of Public Participation Survey #2
- Planning and development for Public Meeting #2 (to be held in February)
- Planning and development for Stakeholder Engagement Meetings (to be held in February)
- Development of online GIS tool for stakeholder engagement
- Updates and enhancements to City of New Bern Resiliency website
- Interagency coordination on large-scale planning efforts (e.g., USACE, NC DCM, etc.)

- Some of this activity blurs into December and February as well.
- Another significant item is access to AccelAdapt for the core planning team

Public Outreach Update

- **Public Meeting #2**
  - February 4, 2021
  - 6:00 – 7:30 PM
  - Hybrid meeting: Zoom (online) and West New Bern Rec Center (in-person)
  - Present findings of vulnerability assessment
- **Stakeholder Meeting**
  - End of February (Date/Time TBD)
  - Virtual meeting with focus group discussions



- **A series of social media graphics went viral to spread word about Survey 2 and the upcoming public meeting**

Survey #2 Results

Survey #2 Summary

- 280 responses
- 49% completion rate
- 11 m is the average time spent on each survey



- **Survey 2 was open to the public from December 4, 2020 to January 29, 2021**

Previous Participation



- **Q1: Did you participate in Public Meeting/Survey 1?**
  - 69% Did not participate in Public Meeting 1 nor take Survey 1
  - 20% Only completed Survey 1
  - 8% Did both
  - 3% Only participated in the public meeting

Neighborhood Breakdown



Q2: What neighborhood area do you live in?

- 18% Downtown
- 13% Historic district
- 5% Ghent, Riverside, Trent Woods
- 4% James City, Fairfield Harbour, Brice's Creek, River Bend
- 3% Greenbrier
- 2% Woodrow, Taberna, Old Town, Longleaf Pines

- All others listed are 1% or less

Employment Breakdown



Q3: What neighborhood area do you work in?

- 15% Downtown
- 22% Retired
- 12% N/A
- 4% Historic district, James City
- 3% Hospital, Havelock
- 2% All over, Fairfield Harbour, Ghent, Riverside, Trent Woods

- All others listed are 1% or less

Flood Insurance



Q4: Do you carry flood insurance?

- 46% Yes
- 42% No, I don't live in a flood hazard zone
- 10% No, my property is elevated out of the flood hazard zone
- 7% No, it's too expensive
- 4% No, my lender does not require it
- 4% If flood insurance covered water main breaks or other multi-property flooding events, I would carry it

Previous Flooding Experience



Q5: Has your home/neighborhood area been affected by flooding in the past?

- 61% Yes
- 39% No

Of those who said “yes”, they specified:

- 67% Hurricane Florence
- 19% 2018
- 7% Heavy storm
- 2% 2020, Hurricane

All others listed are 1% or less

Impacts of Past Flooding on Home/Neighborhood

Q6: Please choose the closest description of how past flooding impacted your home/neighborhood.

- 32% Other
- 29% My personal safety was threatened
- 14% My daily commute was compromised
- 9% My access to essential services was halted
- 9% My attendance to civic services was paused
- 7% My employment was affected



- 28% Damage to home
- 21% N/A
- 15% Loss of utilities
- 10% Difficult to come home
- 8% Flooded home
- 7% Damage to neighbor's home, not impacted
- 3% All, Affected business, Flooded cars, no flooding, rental property
- 2% Evacuated, fear, replaced HVAC unit, stayed in place

Thoughts on Personal Vulnerability



Q7: Do you consider yourself and/or your family vulnerable to the impacts of flooding and sea level rise?

- 70% Threatens my neighborhood
- 57% Threatens my residence
- 47% Threatens my ability to travel
- 38% Threatens my family's well-being
- 31% Threatens my ability to access medical services
- 30% Threatens my personal health
- 23% Threatens my social network
- 22% Threatens my livelihood

Protection of Key Neighborhood Places



Q8: What key places in your neighborhood would you like to see protected and strengthened?

- 17% Downtown district
- 11% Emergency services, Roads
- 8% Historic New Bern
- 7% Homes, Stormwater
- 6% Hospitals, Public Utilities
- 5% All, Businesses, Storm drains, Tryon Place, Utilities
- 3% Churches, Essential businesses, Fire, Grocery stores, N/A, Police station, Power grid, Residences
- 2% Central hubs for support, Convention Center, Schools, Low lying areas
- 1% Damaged homes, Doctor's offices, Duffyfield, Infrastructure, Internet, More resources needed, Riverside, Stanley White

- **All others listed are under 1%**

Critical Services or Places



Q9: What services or places have you found to be most critical to you and your community during, or in the aftermath of, major flooding events?

- 29% Emergency services
- 15% Electricity
- 11% Grocery stores
- 10% Hospitals, Community centers
- 8% N/A
- 7% Police
- 5% Aftermath recovery, Businesses, Churches, Utilities
- 4% Communications, Emergency housing, Essential services, Fire department, Gas stations, Internet, Shelters
- 3% FEMA, Food distribution centers, Pharmacies, Public works
- 2% Access roads, City to provide resources, Road service, Town Hall
- 1% Banks, Disaster recovery team, Doctor's office, Emergency food, Evacuation assistance, Hardware stores

- All others listed are 1% or less

Personal Initiative to Flooding



Q10: Have you taken any actions to make your home, business, or neighborhood more resistant to flooding?

- 52% No
- 48% Yes

Of those who said “yes”, they specified:

- 26% Raised mechanical equipment
- 23% Raised HVAC
- 8% Drainage improvements, Flood vents
- 7% Enhance food vents, Raised house
- 6% Raised generator

- All others listed were 5% or less

Personal Actions Against Flooding



Q11: What actions have you taken to protect your property against flooding?

- 72% Reviewed my insurance coverage
- 68% Identified where my property is located relative to flood hazard zones
- 44% Read about the impacts of sea level rise on my property/community
- 43% Purchased flood insurance
- 27% Consulted with design professionals or contractors on floodproofing my property
- 17% Completed floodproofing my property
- 6% I've not taken any actions yet

Projects to Benefit Historic Properties



Q12: Please indicate the top 5 projects that would benefit historic properties in New Bern.

- 72% Develop and distribute design guidelines for adapting properties to minimize flood risk
- 64% Educate residents about financial and insurance benefits of natural disaster preparedness
- 61% Educate home buyers and real estate professionals about floodplains
- 58% Lead a community design workshop to develop flood adaptation alternatives for New Bern's historic properties
- 53% Develop and distribute a disaster-preparedness toolkit specific to historic properties and cultural institutions
- 52% Collect data on the economic impact of flooding on city and business revenues
- 39% Provide materials for business owners on flood preparedness
- 25% Create interpretive plaques to educate residents and visitors about past flood events and future sea level rise

City's Financial Incentive



Q13: Should the City of New Bern offer a financial incentive for historic district property owners to make flood improvements sensitive to historic preservation design standards?

- 37% Yes
- 28% Yes, but only with an annual program cap
- 24% No, I think other non-financial incentives should be explored
- 12% No

City-led Resilience Activities



Q14: The City of New Bern can lead resilience efforts related to flood adaptation for historic properties through the following activities.

- 69% Establish a field team to assist in pre-disaster preparedness and post-disaster recovery
- 62% Reduce flood risk and flood insurance costs by promoting individual property owner participation in the National Flood Insurance Program
- 55% Integrate historic properties and cultural resources into the County's Hazard Mitigation Plan update
- 50% Establish an incentive for flood adaptation at the local policy level
- 37% Coordinate with the County to conduct annual training for government staff on flood mitigation, risk reduction and disaster response

City-led Flood Disaster Recovery Plan Activities



Q15: The City should develop a flood disaster recovery plan and response capability to rebuilt better through the following activities.

- 63% Establish a field team with expertise in historic properties to assist in post-disaster recovery
- 60% Adopt a citywide post-disaster redevelopment plan that takes historic places into consideration
- 53% Provide a disaster-preparedness toolkit to historic property owners in areas prone to flooding
- 53% Develop an expedited post-disaster design review process
- 48% Develop post-disaster redevelopment standards for historic district

Prioritization for Historic Property Benefits



Q16: The City's update of the Comprehensive Plan should prioritize which one of the following for the greatest benefit of historic properties?

- 37% Partner with the County to develop a floodplain management plan
- 37% Develop a plan for adapting to sea level rise
- 25% Update the zoning ordinance to encourage and incentivize flood adaptation measures

Integration of Flood Adaptation Actions



Q17: The City should integrate flood adaptation actions into city policies, aligning with state and federal plans through the following activities.

- 58% Update City plans to ensure consistency with State plans which address flooding hazards
- 55% Revise the City's building code to require preservation-sensitive flood adaptation of historic properties
- 51% Prioritize water-dependent uses and public open space for low-lying areas prone to flooding
- 49% Protect historic view sheds through imposing limitations on construction in areas prone to flooding with scenic vistas
- 49% Establish a disaster-response team to triage historic properties after a flooding disaster

City-led Tools and Practices for Minimizing Flood Risk



Q18: The City should develop and share tools and leading practices for minimizing flood risk through the following activities.

- 82% Partner with experts to identify cost effective and feasible adaptation measures for New Bern's historic places
- 59% Develop and disseminate a "how-to" workbook on adapting historic properties for flooding and sea level rise
- 53% Recruit owners of historic properties in the areas prone to flooding and seek funding for model flood adaptation designs
- 42% Collect data on the economic impact of flooding on employees and businesses in areas prone to flooding
- 39% Complete a 3D laser-scanning project to create a visual record of current flooding and future sea level rise impacts

Feasibility of Natural Resource Protection



Q19: The City should determine feasibility of using natural resource protection measures for minimizing flood risk through the following activities.

- 65% Work with environmental and economic experts to determine cost effective and feasible natural resource adaptation alternatives to address flooding and sea level rise
- 24% Determine feasibility of using natural barriers to adapt public spaces to flooding
- 11% Conduct a landscape design workshop to develop flooding adaptation strategies for public space

GIS Database Support for Flood Risk Management



Q20: The City should build, update, and maintain a GIS database and documentation to support informed decisions for flood risk management to prioritize the following activities.

- 35% Survey, photo-document and laser-scan the most vulnerable historic properties in areas prone to flooding
- 33% Collect and update data on economic impacts of flooding on historic properties
- 24% Complete archaeological survey for vulnerable sites in areas prone to flooding
- 8% Other

- **Of those who indicated "Other":**
  - **20% Prioritize flood areas**
  - **10% Build a sea wall, Evaluate property value, Floodplain maps, Focus on Duffyfield, Focus on the whole city, Promote home ownership, Provide grants to assist, Public vs. private dollars, Request for other options**

Protection Against Public Property



Q21: Besides your own property, select from the list below five (5) publicly accessible buildings, sites, or points of interest with the greatest vulnerability to flooding that you would like to see better protected against a flooding or weather-related disaster.

- 64% New Bern City Hall, Tryon Palace
- 51% North Carolina History Center at Tryon Palace
- 50% Union Point Park
- 49% Craven County Courthouse
- 44% New Bern Craven County Library
- 35% Oaks Road Elementary School
- 26% J.T. Barber School
- 23% US District Court House
- 19% Farmer's Market
- 12% Other
- 9% New Bern Battlefield Site
- 6% Gull Harbor

- **Of those who indicated "Other":**
  - **41% Convention Center**
  - **18% Downtown**
  - **12% Sudan building**
- **All others listed were 6% or less**

Vulnerable Sacred Places



Q22: Sacred places are critical community resources. From which of the following historic churches with the greatest vulnerability to flooding do you, your family, or your community receive services?

- 27% Christ Church Episcopal
- 26% Other
- 20% St. Paul's Catholic Church, Centenary Methodist Church
- 18% First Presbyterian Church
- 15% First Baptist Church
- 10% St. John's Missionary Baptist Church
- 9% Temple Chester B'nai, Riverside United Methodist
- 4% Mount Shiloh Missionary Baptist Church, First Church – Christ Scientist

- **Of those who indicated "Other":**
  - **42% None**
  - **8% Tabernacle Baptist**
  - **4% 1st Missionary Baptist, Abundant Life Miracle, All downtown churches, Broad Street Christian, Council Bluffs, First Mission Baptist, Garber, Kingdom Impact, List is too Christian, New Song UMC, Only if they offer to help, Pollocksville Presby, Temple Baptist Church**

Protection Against Historic Property

Q23: Besides your own property, select from the list below five (5) locally significant historic buildings, sites or points of interest with the greatest vulnerability to flooding that you would like to see better protected against a flooding or weather-related disaster.

- 67% Harvey Mansion
- 49% J.T. Barber School
- 30% Coor-Bishop House
- 28% Jones-Jarvis House
- 27% Slover-Bradham House, Eli Smallwood House
- 23% Coor-Gaston House, Smith-Whitford House
- 20% Other
- 18% Dr. Earl S. Sloan House



- Of those who indicated "Other":
  - 15% Not familiar with these
  - 10% Request for site photos, Stanley White
  - 5% All, All schools, Fireman's Museum, Gertrude Carroway house, Jasper Hayes Center, Narrow focus, None, Owner's responsibility, Religious locations, Rudolf Ulrich House, Salter's Store, Salvation Army, Sparrow House, Those impacted, We all need to relocate, Wall Street Library

General Thoughts on Historic Property Resilience



Q24: What are your general thoughts regarding nuisance flooding, sea level rise, and adaptation strategies for historic properties in New Bern?

- 21% Long term strategy
- 19% Take action!
- 13% All are affected
- 12% Flood zones will flood, Preventative planning
- 9% This is inevitable
- 8% Broad solutions, Financial support
- 7% Stormwater plan, Act now!
- 6% Ownership responsibility
- 5% Modify historic rules

- **All others listed were under 4%**

Increasing Resilience to Flooding



Q25: Which of the following do you think would be most effective for increasing resilience to flooding in your community? Please rank the following statements, from most important to least important.

- 4.57 Pre-disaster or citywide planning efforts (e.g. comprehensive planning, Sea Level Rise Plan)
- 4.01 Financial incentives for property owners to build resilience
- 3.86 Policies or ordinances that require more resilient land uses and development practices
- 3.47 Increasing public awareness and education
- 2.66 Increasing or supporting access to critical community services
- 2.53 Digital information resources or tools with flood risk information

- **Numbers indicate the weighted score**

Key Flooding Issues or Challenges



Q26: What do you see as the key issues or challenges related to flooding that need to be addressed?

- 3.80 Impacts to homes and personal property
- 3.11 Potential loss of critical services (access to food, schools, community centers)
- 2.93 Impacts to businesses
- 2.58 Lack of access to transportation and ability to evacuate from storms
- 2.55 Lack of public information on flooding risk and future sea level rise

- **Numbers indicate the weighted score**

Greatest Resilience Challenges



Q27: What do you see as the greatest challenges to building resilience personally, in your community or for your personal property?

- 52% Actions I can take would not be enough to mitigate the severity of future flooding
- 51% Actions to build resilience are too costly or would not be financially feasible
- 36% I need more information about what actions I can take
- 14% Other

- **Of those who indicated "Other":**
  - **17% Funding assistance, Regional strategy needed**
  - **11% Not affected**
  - **6% Can't control nature, CAT 3-5 hurricane storm, climate change education, constructed Riverwalk, global strategy needed, government concern, higher landlord standards, loop in USACE, Maintain watersheds, Mitigate storm runoff, Protect historic property, We're doomed**

Age



Q28: What is your age?

- 37% 65+
- 36% 55-64
- 13% 35-44
- 11% 45-54
- 3% 25-34
- 0% 0-24

Number of People in Household



Q29: How many people live in your household?

- 77% 1-2
- 19% 3-4
- 3% 5-6
- 7% 1%

Zip Code



Q30: What is your personal residence/business zip code?

- 54% 28560
- 45% 28562
- 2% 28550
- 1% 28519

Additional Comments or Concerns



Q31: Please provide any additional comments or concerns regarding your thoughts on New Bern's community values, actions to build resilience, and historic preservation.

- 21% Take action!
- 9% Thank you!
- 7% Collaborate with County
- 5% Preservation for all, Preserve tourism efforts, Protect elderly, Protect low-income, Want to learn more

- All others listed were under 3%

Vulnerability Assessment Results (Final)

Vulnerability Assessment Update: Final Results

- Refinements since last meeting
- Results and key highlights
- City Limit and general area summaries
- AccelAdapt



- **Results shown are from 01/27/21 Update**

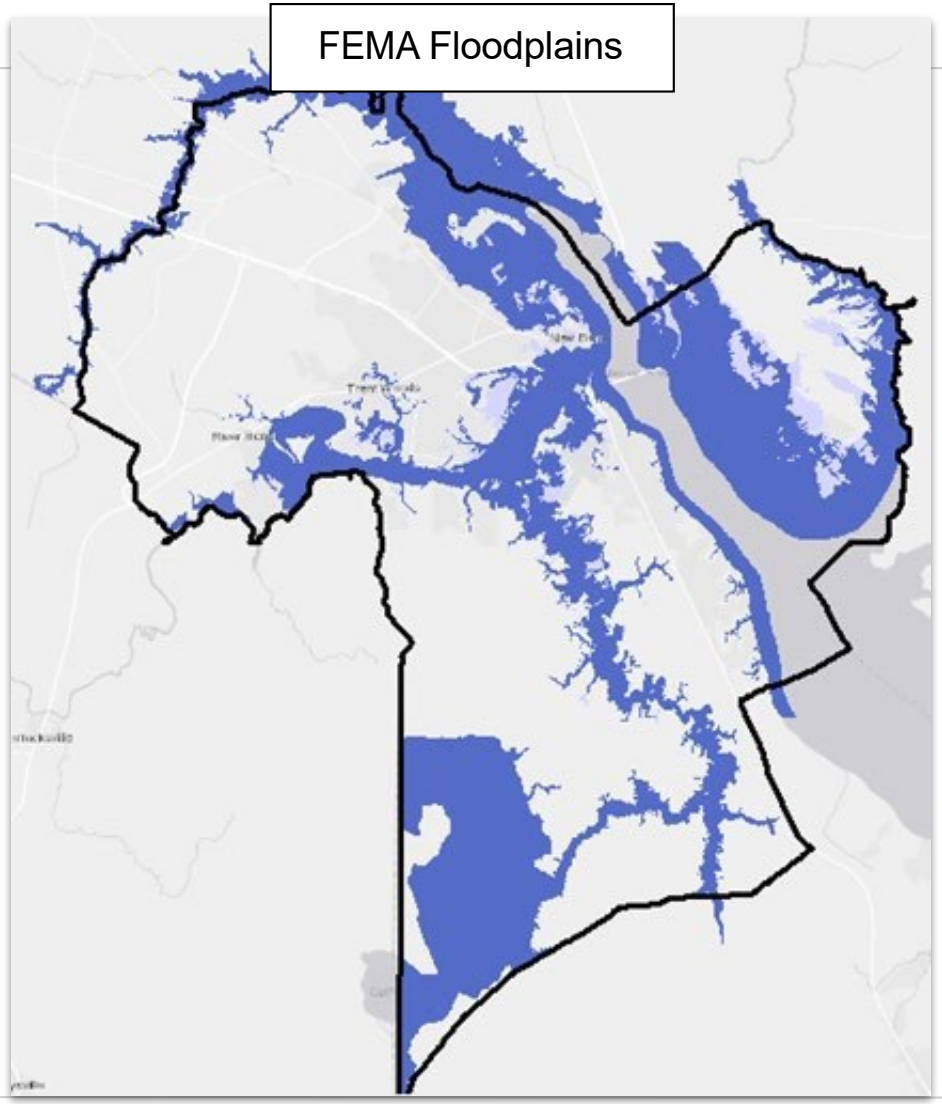
Flood Vulnerability and Risk Assessment Components

- **Vulnerability**: Susceptibility based on sensitivity/potential impact and adaptive capacity
- **Risk Scoping**: The probability and negative consequence of threats.



Threats

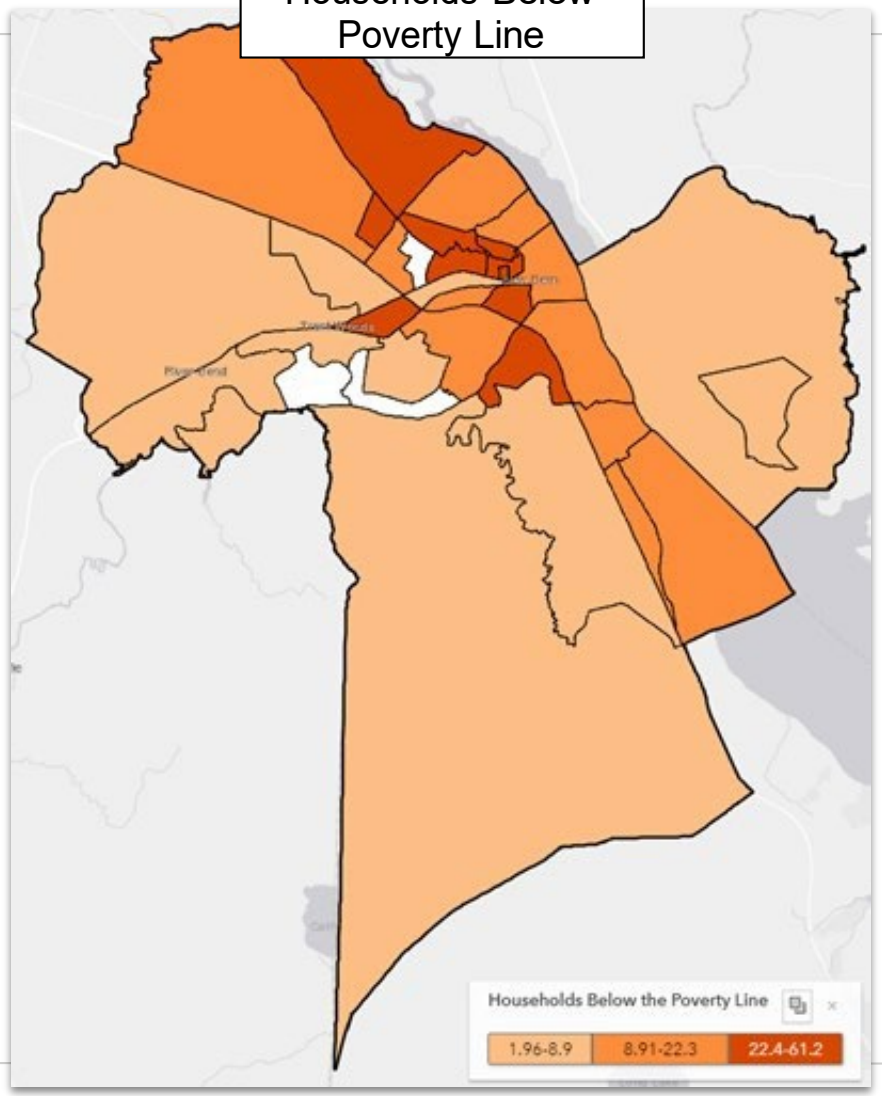
Floodplain Inundation (100-yr and 500-yr)	FEMA DFIRM (Effective June, 2020)
Storm Surge (Cat 1-2)	National Storm Surge Hazard Maps (NOAA)
Storm Surge (Cat 3-5)	National Storm Surge Hazard Maps (NOAA)
Tidal Flooding (Current)	High Tide Flooding (NOAA Office for Coastal Management)
Sea Level Rise and Future Tidal Flooding (3 ft + MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)
Sea Level Rise and Future Tidal Flooding (5 ft + MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)



Assets and Socioeconomics

Property and Public Services	Critical Facilities
	Government-Owned
	Commercial & Industrial
	Parks & Cultural
	Residential
	Historic
Economic	Sales Volume (Businesses)
	Jobs (Businesses)
	Improved value (Assessed value)
Roads & Mobility	Inaccessible Roads (Major)
	Inaccessible Roads (Minor)
	Isolated Property (All)

Households Below Poverty Line



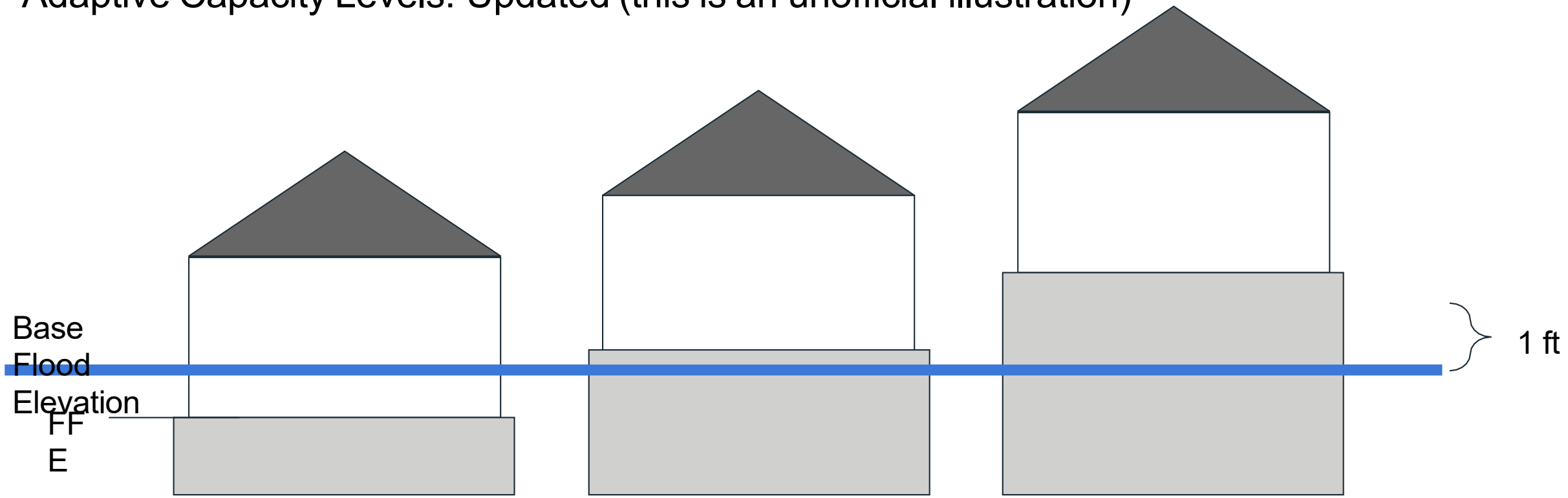
Refinement #1



- Adaptive Capacity (Vulnerability Component) updated to better recognize Finished Floor Elevations
  - Result is more properties are recognized to have low adaptive capacity (any below BFE)
  - Better alignment with FEMA guidelines on vulnerability and resilience standards
  - Better reflection of FFE data (and potential limitations on level of precision)

Refinement #1

Adaptive Capacity Levels: Updated (this is an unofficial illustration)



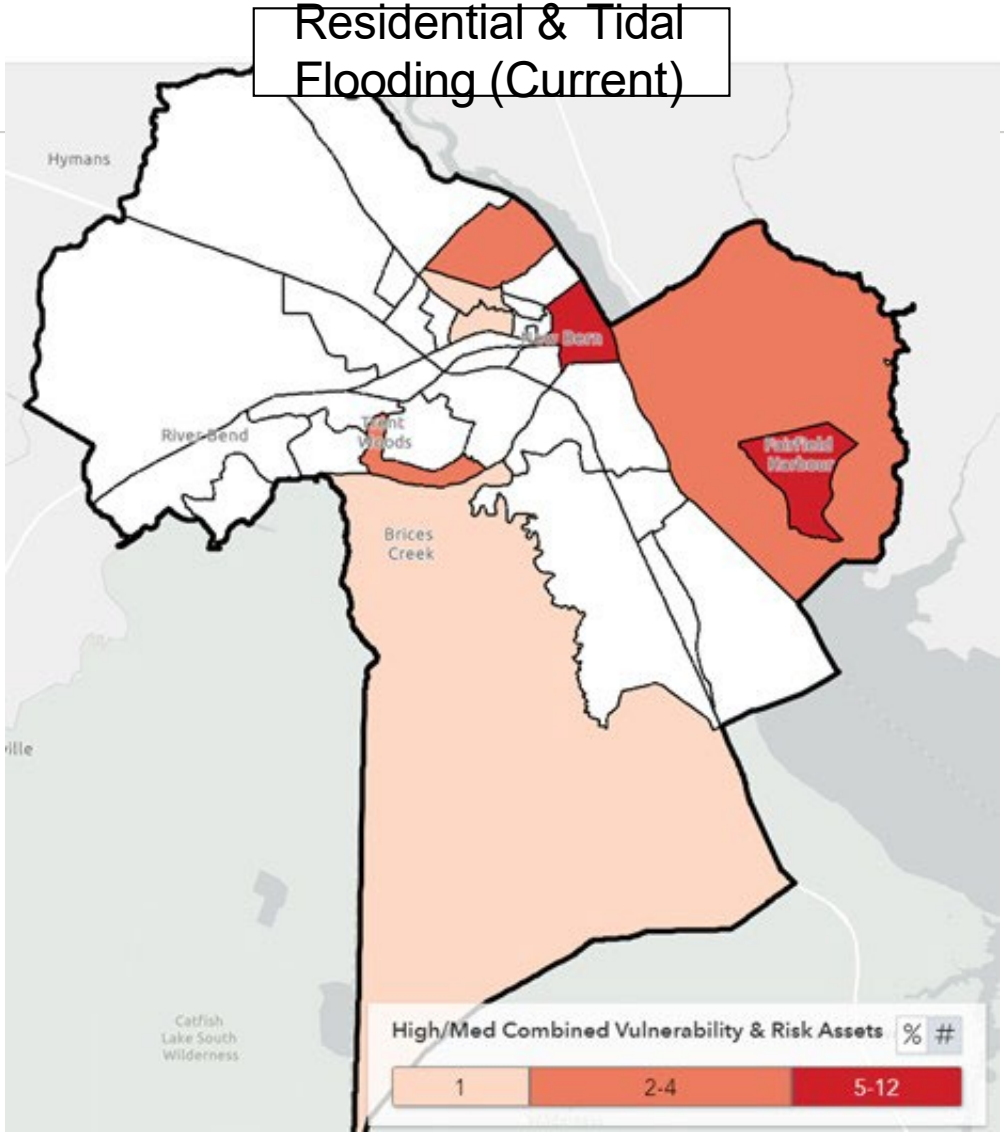
Low: First floor elevation of structure below base flood elevation (BFE)

Med: First floor elevation between 0 and 1 ft above BFE

High: Structure built out of floodplain or first floor elevation more than 1 ft above BFE

Refinement

- Tidal flooding to better recognize building exposure to tidal flooding
  - Results in less overall high vulnerability and risk
  - Especially for residential



Refinement

- NCDOT bridges used to refine consideration of elevated roadways
  - Result is fewer roads (especially major) considered potentially inaccessible, especially for current tidal flooding
  - Updated result:

	Total Asset	Tidal Flooding (current)
Inaccessible Roads (Major)	91 (lane miles)	0 (0%)
Inaccessible Roads (Minor)	476 (lane miles)	6 (1%)

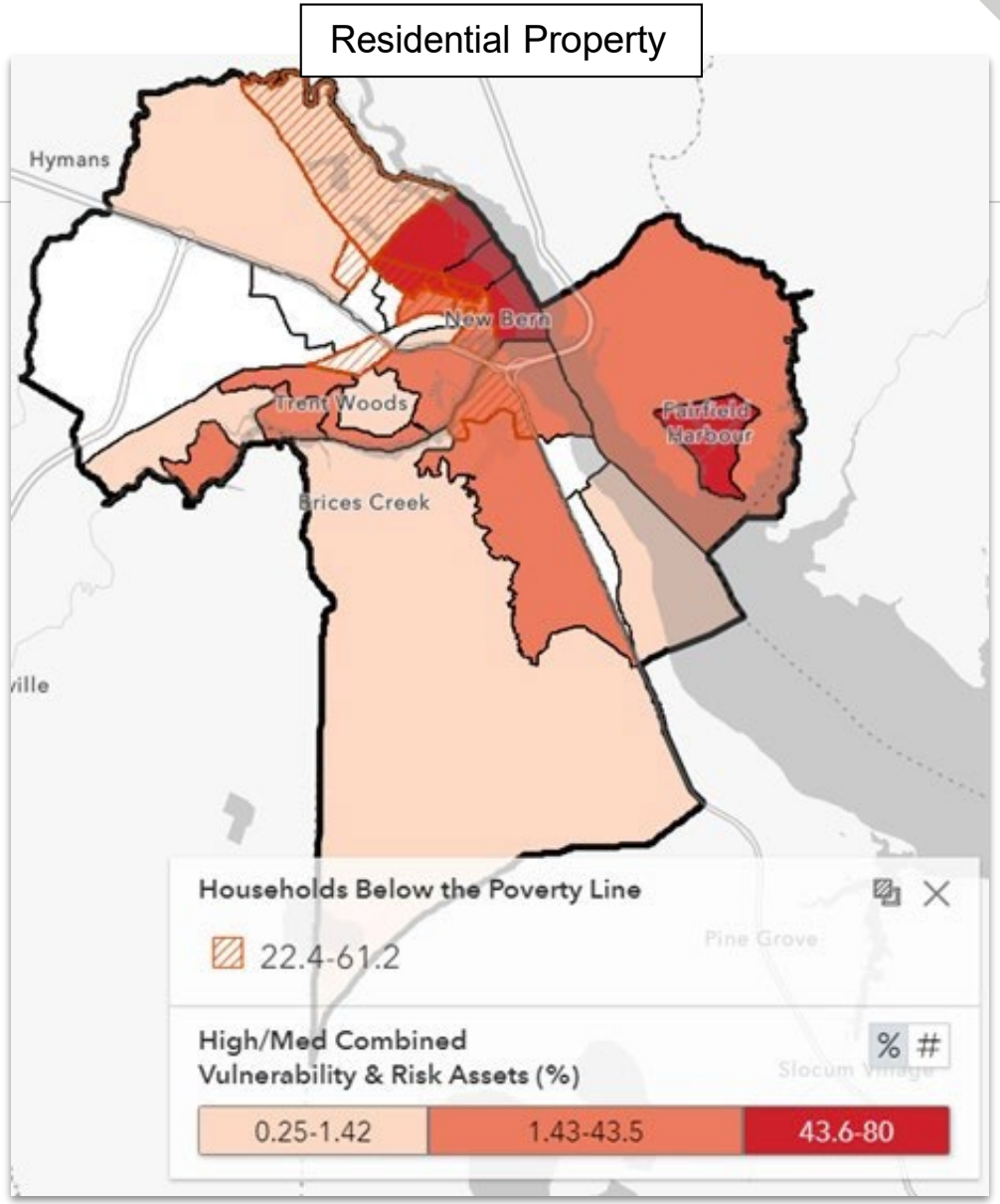


Assessment Results (Update)

Properties Vulnerable to 100-yr and 500-yr Flood

	Total Assets	Floodplain Inundation (100 and 500-yr)
Critical Facilities	290	27 (9%)
Government-Owned	251	40 (16%)
Commercial & Industrial	1,396	132 (9%)
Parks & Cultural	348	67 (19%)
Residential	22,347	3,207 (14%)
Historic	2,338	506 (22%)

Three of the five areas with most vulnerable residential properties have among the highest percentage of households below the poverty line

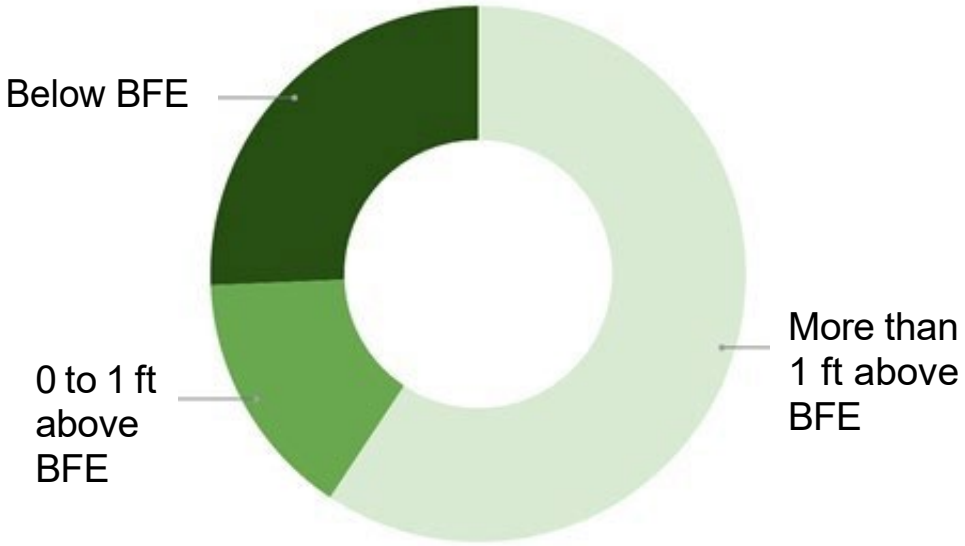


This is a preliminary analysis

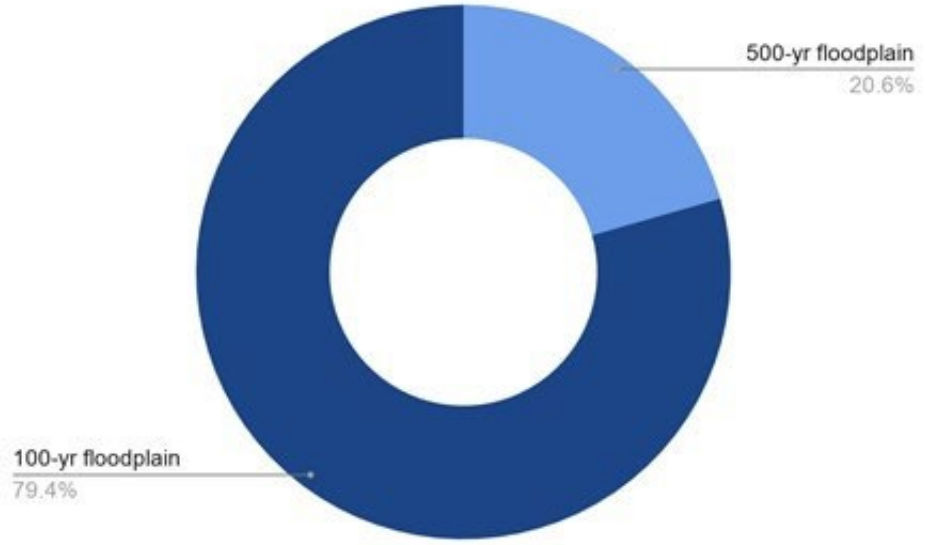
Vulnerability and Risk Indicators

Residential properties in 100-yr and 500-yr floodplains

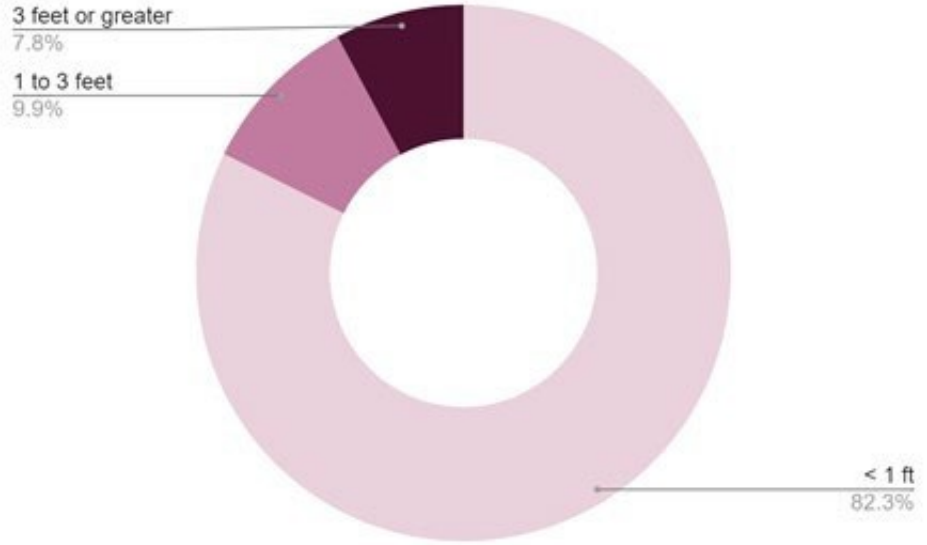
Adaptive Capacity
(Building elevation in relation to BFE)



Risk Probability



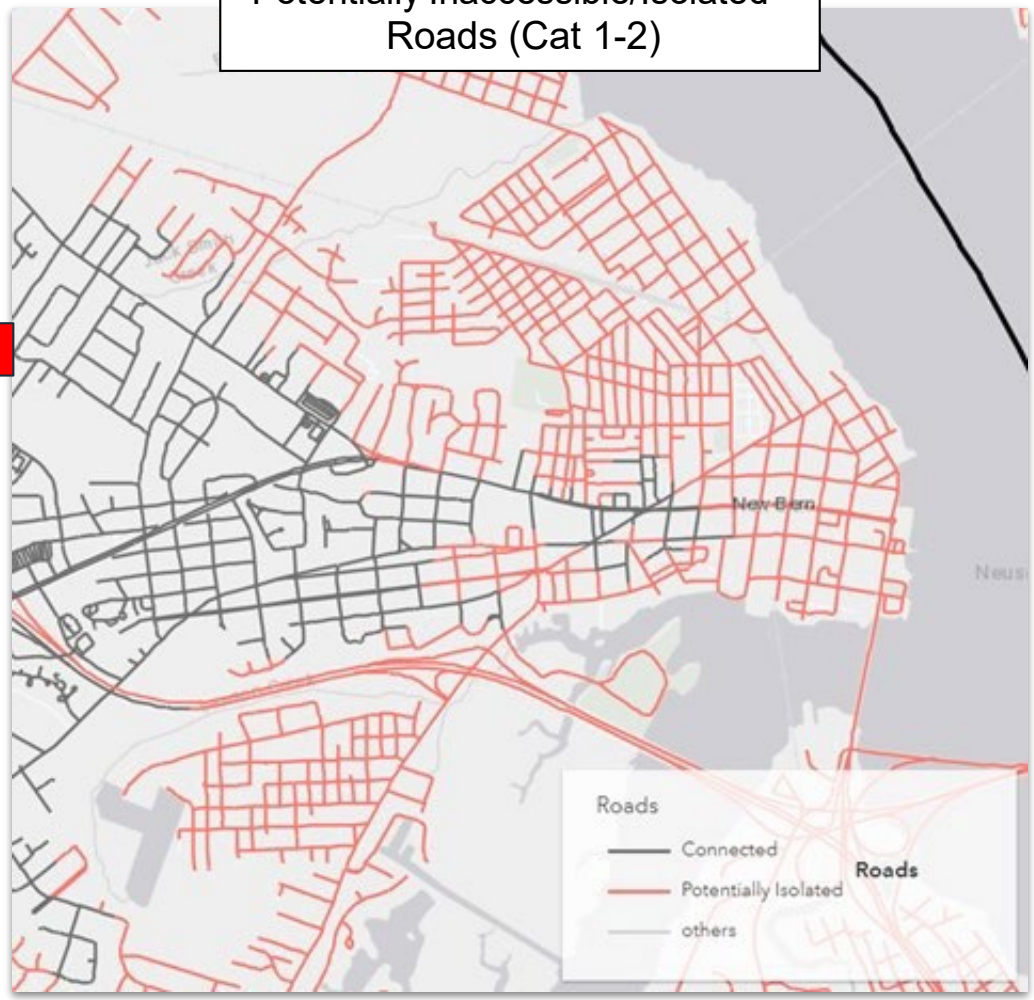
Risk Consequence
(Potential flood depth)



High Levels of Vulnerability to Storm Surge Inundation

	Total Assets	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)
Parks & Cultural	348	62 (18%)	126 (43%)
Residential	22,347	3,672 (16%)	15,386 (69%)
Historic	2,338	582 (25%)	1,685 (72%)
Sales Volume (businesses)	$1.4B	$11M (1%)	$733M (52%)
Jobs (businesses)	8,990	1,170 (13%)	6,390 (71%)
Inaccessible Roads (Major)	224 (lane miles)	48 (21%)	155 (69%)
Inaccessible Roads (Minor)	1,080 (lane miles)	523 (48%)	973 (90%)
Isolated Property (all)	31,670	14,900 (47%)	28,100 (89%)

Potentially Inaccessible/Isolated Roads (Cat 1-2)

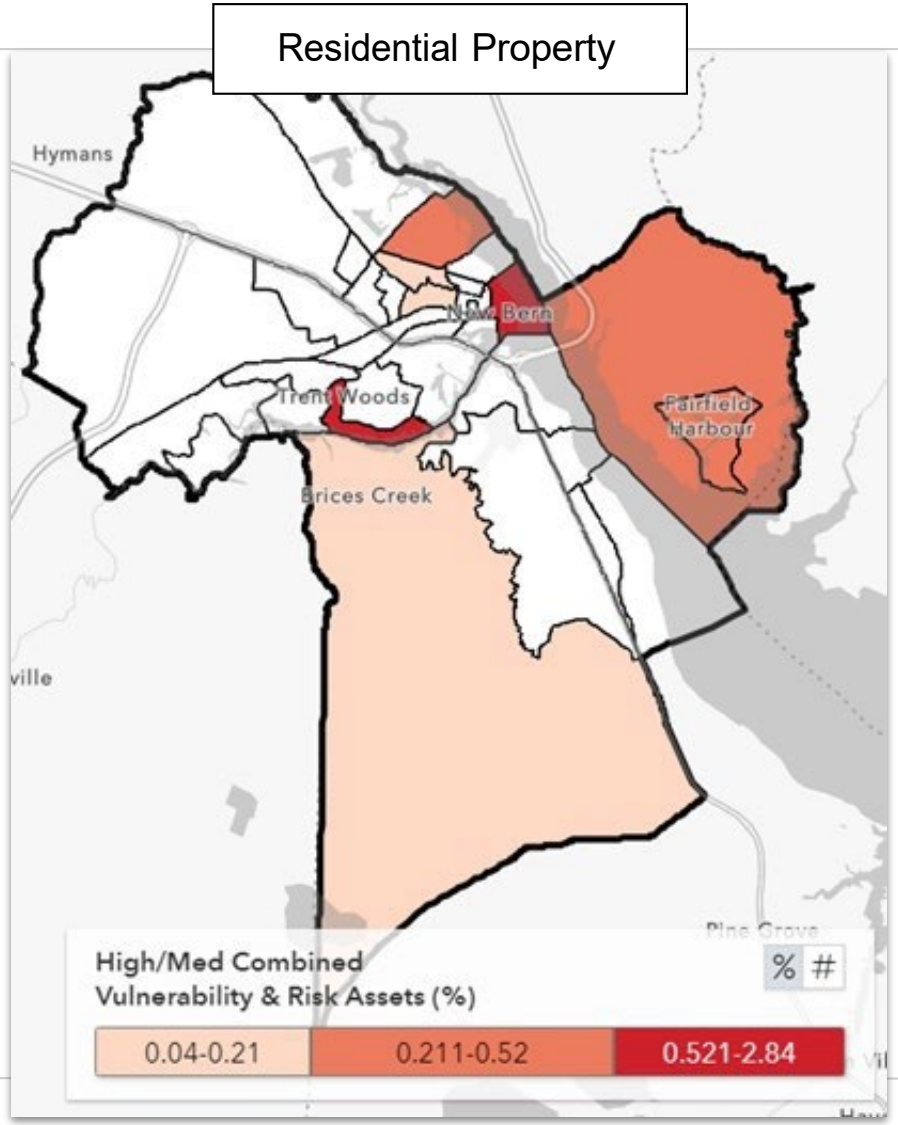


This is a preliminary analysis

Vulnerability to Current Tidal Flooding (King Tides)

	Total Assets	Tidal Flooding (Current)
Critical Facilities	290	0 (0%)
Government-Owned	251	0 (0%)
Commercial & Industrial	1,396	3 (<1%)
Parks & Cultural	348	0 (0%)
Residential	22,347	28 (<1%)
Historic	2,338	14 (<1%)

Note: Current Tidal Flooding based on NOAA's High Tide impact threshold (1.8 ft + MHHW)

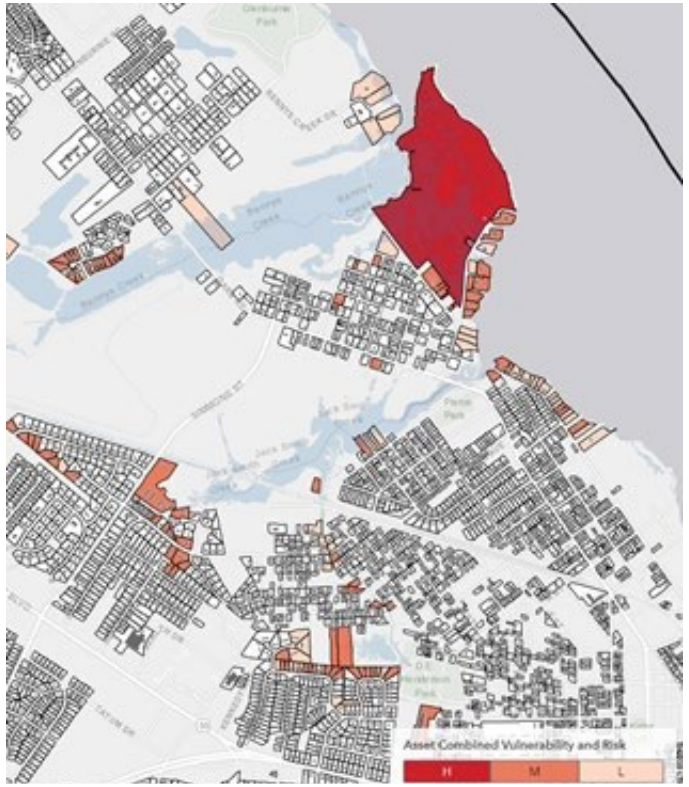


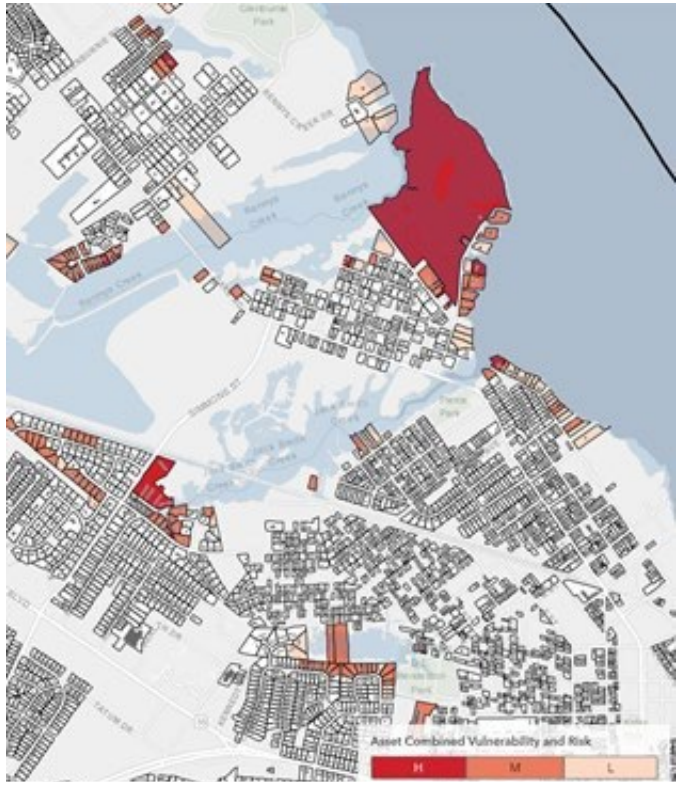
This is a preliminary analysis

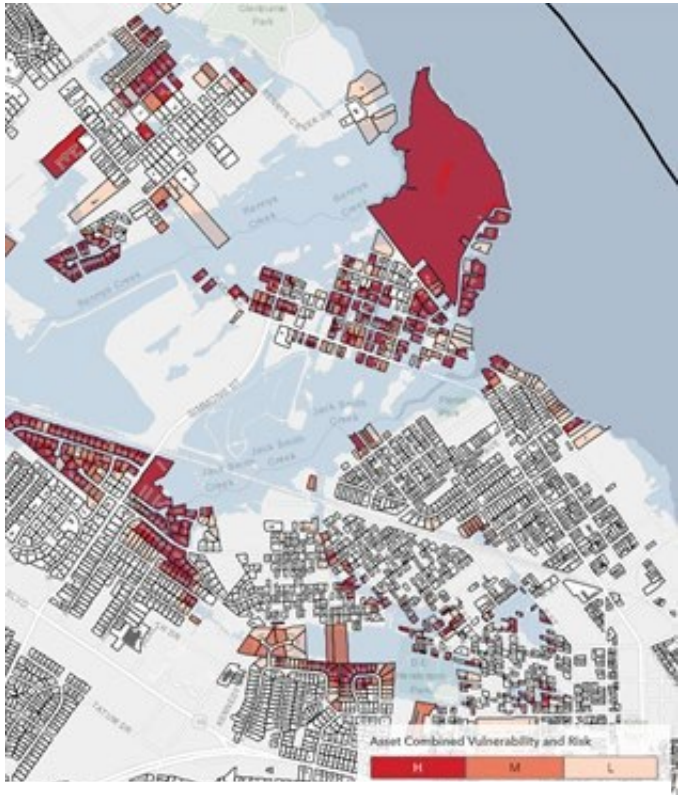
Increasing Vulnerability and Risk with SLR

This is a preliminary analysis

Note: Current high tide water level and timing ranges are still being considered and refined







Water Levels and Approximate Time Ranges (NOAA High to Int Low):			
Water Level	1.8 ft + MHHW	3 ft + MHHW	5 ft + MHHW
Persistent Inundation	n/a	3 ft of SLR (2050s-2100+)	5 ft of SLR (2070s-2100+)
High Tide	Current	1.2 ft of SLR (2030s-2060s)	3.2 ft of SLR (2050s-2100+)



Vulnerability and Risk: Study Area

Preliminary Analysis	Total Assets	**Floodplain Inundation (100-yr, 500-yr)**	**Storm Surge (Cat 1-2)**	**Storm Surge (Cat 3-5)**	**Tidal Flooding (Current)**	**Future Tidal Flooding & SLR (3 ft + MHHW)**	**Future Tidal Flooding & SLR (5 ft + MHHW)**
Critical Facilities	290	27 (9%)	21 (7%)	126 (43%)	0 (0%)	0 (0%)	3 (1%)
Government-Owned	251	40 (16%)	43 (17%)	107 (43%)	0 (0%)	0 (0%)	7 (3%)
Commercial & Industrial	1,396	132 (9%)	121 (9%)	916 (66%)	3 (<1%)	4 (0%)	21 (2%)
Parks & Cultural	348	67 (19%)	62 (18%)	147 (42%)	0 (0%)	0 (0%)	12 (3%)
Residential	22,347	3,207 (14%)	3,672 (16%)	15,386 (69%)	28 (<1%)	97 (<1%)	959 (4%)
Historic	2,338	506 (22%)	582 (25%)	1685 (72%)	14 (1%)	17 (1%)	76 (3%)
Sales Volume (businesses)	$2B	$225M (11%)	$338M (17%)	$1.6B (80%)	$0 (0%)	$110K (<1%)	$35M (2%)
Jobs (businesses)	8,990	1,180 (13%)	1,170 (13%)	6,390 (71%)	150 (2%)	150 (2%)	390 (4%)
Improved value (assessed)	$4B	$622M (16%)	$698M (17%)	$2.7B (68%)	$18M (<1%)	$40M (1%)	$166M (4%)
Inaccessible Roads (Major)	224 (lane miles)	30 (13%)	48 (21%)	155 (69%)	2 (1%)	2 (1%)	9 (4%)
Inaccessible Roads (Minor)	1,080 (lane miles)	522 (48%)	523 (48%)	973 (90%)	9 (3%)	41 (1%)	137 (13%)
Isolated Property (all)	31,670	14,400 (45%)	14,900 (47%)	28,100 (89%)	60 (<1%)	900 (3%)	3,200 (10%)

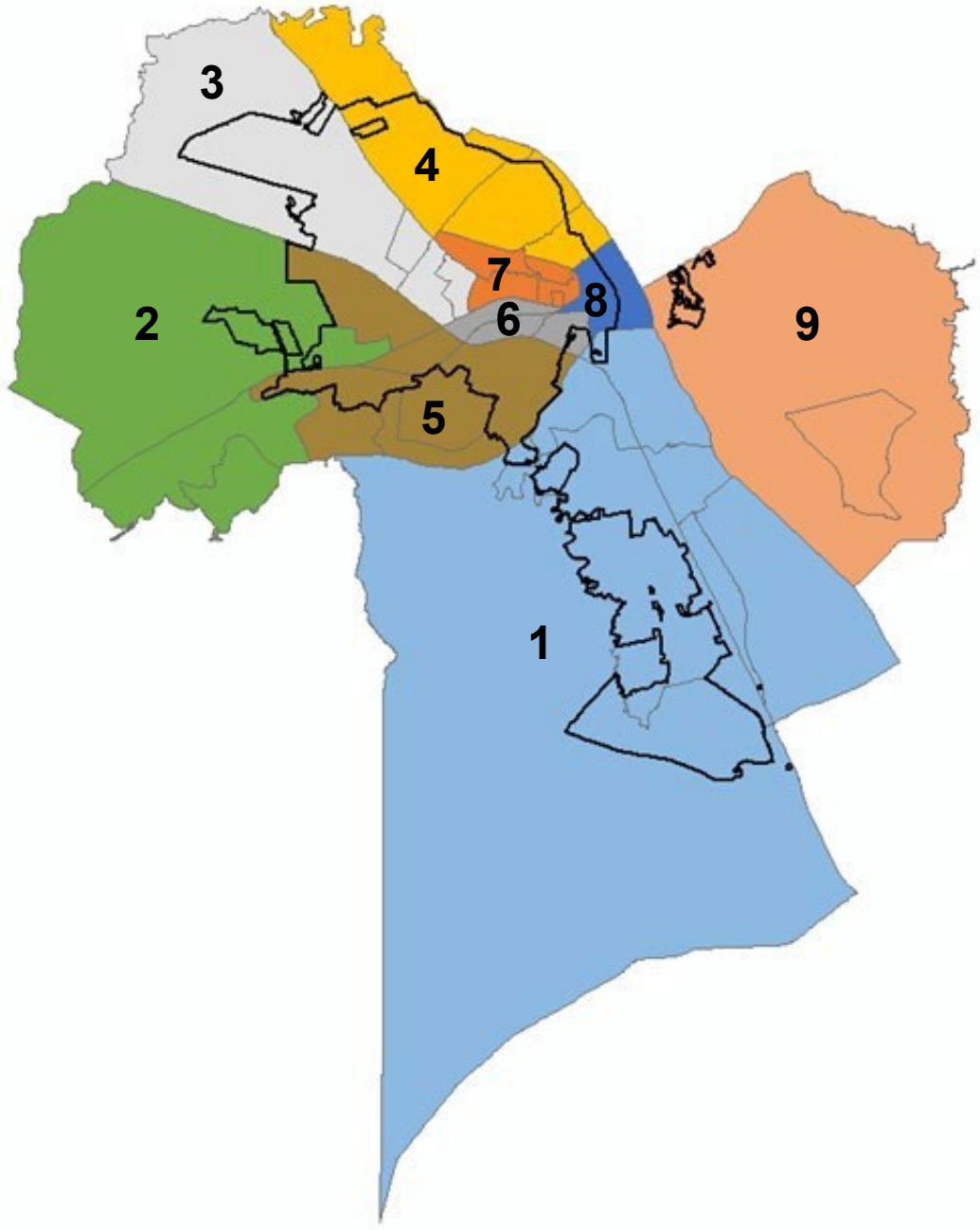


Vulnerability and Risk: Within City Limits

Preliminary Analysis	Total Assets	Floodplain Inundation (100-yr, 500-yr)	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)	Tidal Flooding (Current)	Future Tidal Flooding & SLR (3 ft + MHHW)	Future Tidal Flooding & SLR (5 ft + MHHW)
Critical Facilities	194	25 (13%)	19 (10%)	109 (56%)	0 (0%)	0 (0%)	3 (2%)
Government-Owned	165	37 (22%)	38 (23%)	96 (58%)	0 (0%)	0 (0%)	5 (3%)
Commercial & Industrial	975	110 (11%)	93 (10%)	729 (75%)	3 (<1%)	4 (0%)	16 (2%)
Parks & Cultural	209	58 (28%)	51 (24%)	123 (59%)	0 (0%)	0 (0%)	10 (5%)
Residential	11,564	1,935 (17%)	1,909 (17%)	7,897 (68%)	17 (<1%)	35 (<1%)	470 (4%)
Historic	1,941	495 (26%)	531 (27%)	1,477 (76%)	14 (1%)	17 (1%)	75 (4%)
Sales Volume (businesses)	$1.4B	$88M (6%)	$197M (14%)	$1.2B (86%)	$0 (0%)	$0 (0%)	$29M (2%)
Jobs (businesses)	6,240	1,060 (17%)	990 (16%)	4,630 (74%)	150 (2%)	150 (2%)	350 (6%)
Improved value (assessed)	$2.2B	$398M (18%)	$388M (18%)	$1.5B (68%)	$14M (<1%)	$25M (1%)	$73M (3%)
Inaccessible Roads (Major)	91 (lane miles)	10 (11%)	17 (19%)	62 (68%)	0 (0%)	0 (0%)	3 (3%)
Inaccessible Roads (Minor)	476 (lane miles)	193 (41%)	186 (39%)	433 (91%)	6 (1%)	26 (5%)	74 (16%)
Isolated Property (all)	16,500	6,600 (40%)	6,500 (39%)	14,400 (87%)	30 (<1%)	500 (3%)	1,800 (11%)

General Summary Areas

1. South New Bern and James City
2. River Bend
3. Northwest and Caswell Branch
4. North New Bern and Renny's/Jack Smith Creek
5. West New Bern and Trent Woods
6. Degraffenried Park, Walt Bellamy, and Trent Court
7. Greater Duffyfield and Medical Center
8. Downtown
9. East New Bern and Fairfield Harbor





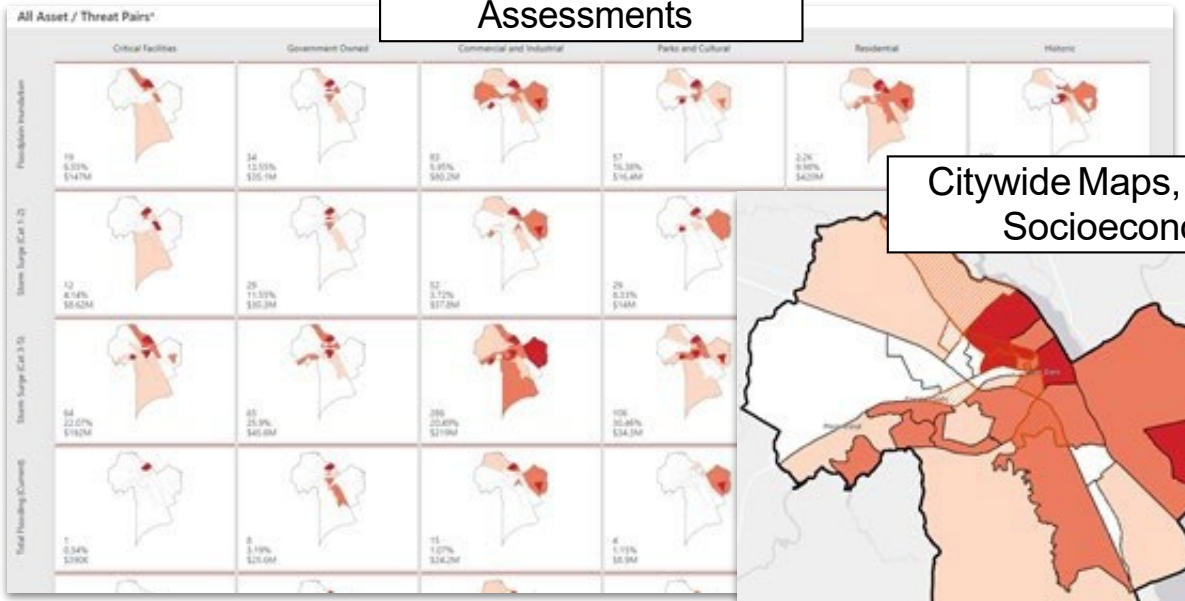
Example Neighborhood Area: Greater Duffyfield and Medical Center

Preliminary Analysis	Total Assets	**Floodplain Inundation (100-yr, 500-yr)**	**Storm Surge (Cat 1-2)**	**Storm Surge (Cat 3-5)**	**Tidal Flooding (Current)**	**Future Tidal Flooding & SLR (3 ft + MHHW)**	**Future Tidal Flooding & SLR (5 ft + MHHW)**
Critical Facilities	54	15 (28%)	12 (22%)	43 (80%)	0 (0%)	0 (0%)	2 (4%)
Government-Owned	38	17 (45%)	15 (39%)	28 (74%)	0 (0%)	0 (0%)	1 (3%)
Commercial & Industrial	115	10 (9%)	9 (8%)	105 (91%)	0 (0%)	0 (0%)	0 (0%)
Parks & Cultural	59	25 (42%)	21 (36%)	36 (61%)	0 (0%)	0 (0%)	4 (7%)
Residential	1,658	758 (46%)	700 (42%)	1,546 (93%)	2 (0%)	3 (0%)	180 (11%)
Historic	457	134 (29%)	133 (29%)	337 (74%)	0 (0%)	0 (0%)	14 (3%)

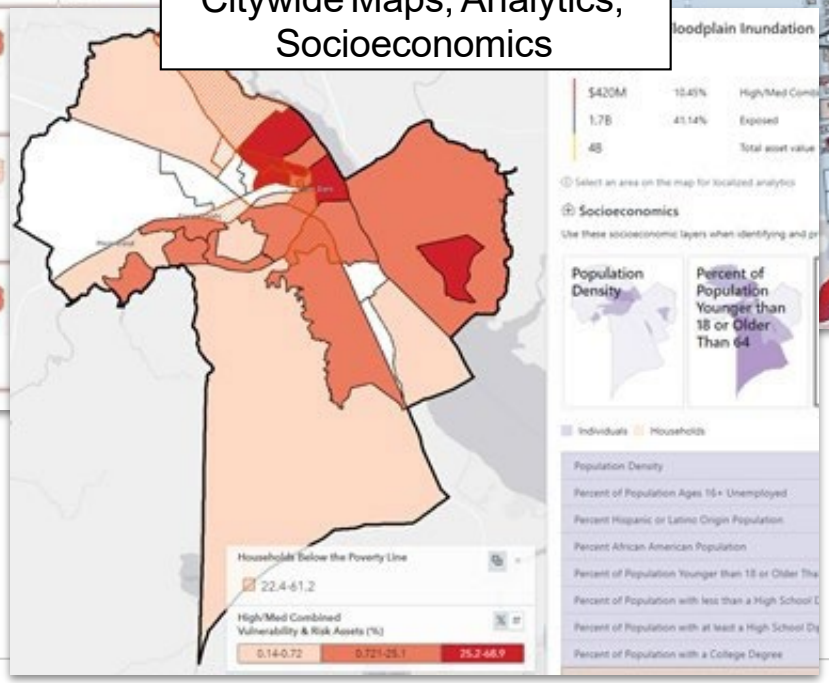
AccelAdapt: Interact and explore all assessments

https://newbernnc.acceladapt.com

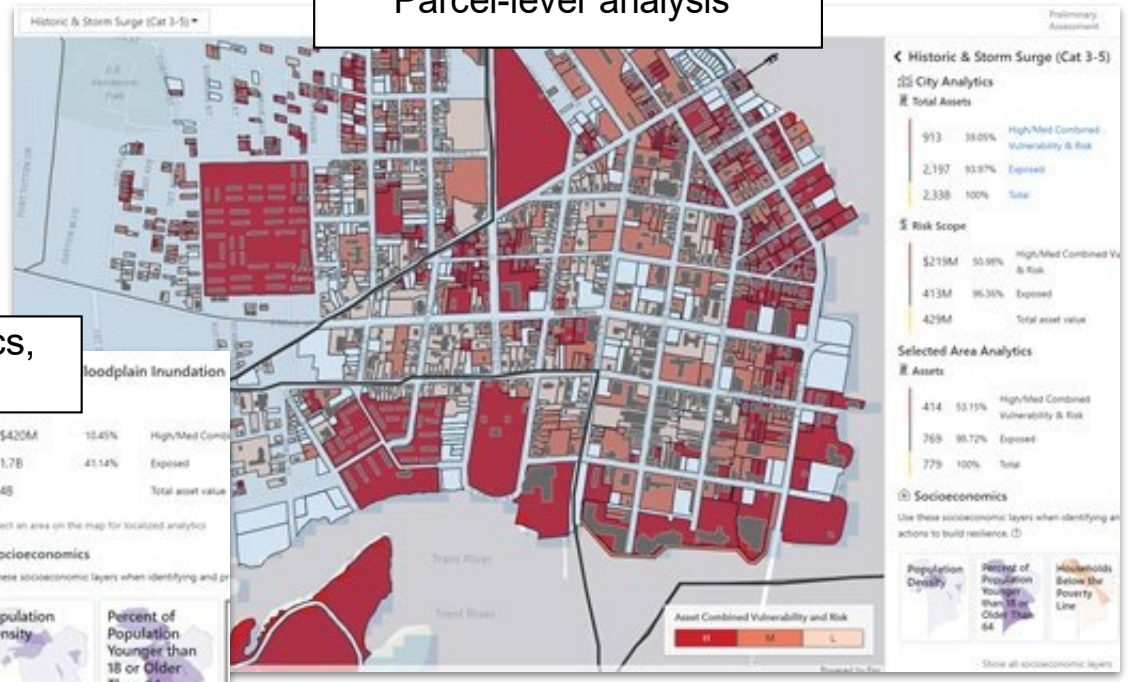
Access to all Assessments



Citywide Maps, Analytics, Socioeconomics



Parcel-level analysis



AccelAdapt: Update



- All City Core Planning Team have access
  - Staff can use ArcGIS Online user credentials
  - Please contact Alice Wilson (City of New Bern GIS) with questions about access
- Optional non-AGOL logins accepted (a new option of access for non-AGOL users)
- All final results updated and City Limits added
- Training/tutorial will be scheduled

Group Discussion



- Historic Preservation and Cultural Resources?
- Public Outreach?
- Stakeholder Engagement?
- Vulnerability Assessment?

Next Steps



- **Next Planning Team Meeting**
  - Thursday, February 25 at 1 p.m.
  - Next month's focus will be stakeholder engagement and mitigation strategy development
- **Ongoing Work**
  - Site visits
  - Public involvement
  - Stakeholder engagement
  - AccelAdapt interaction
  - Final vulnerability assessment results

- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Stakeholder Engagement, AccelAdapt, and Resilience Strategy Meeting
February 25, 2021 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Amanda Ohlensehlen	City of New Bern	Mike Robinson	Moffatt & Nichol
Matt Schelly	City of New Bern	Allison Bryan	Moffatt & Nichol
George Chiles	City of New Bern	Dawn York	Moffatt & Nichol
		Jeff Crump	Moffatt & Nichol
Matt Hutchins	NEMAC+FernLeaf		

Word of welcome from Mike – seventh core planning team meeting to discuss stakeholder engagement, AccelAdapt, and resilience strategy.

- **Roll Call**
  - Participants listed above.
- **Activity from Past Month (Mike Robinson)**
  - Survey #2 was completed January 29th
    - 281 respondents, adding up to 556 responses between both surveys
  - Public meeting #2 was held on February 4th
    - 25 attendees (virtually)
    - 75 attendees between both public meetings
  - Updates made to New Bern Resiliency webpage
    - 113,741 views; 96 email subscribers
  - New project fact sheet for City to use in reaching out to stakeholder groups
  - Stakeholder engagement meetings held February 22nd and 24th
- **Stakeholder Meetings (Mike Robinson)**
  - Two-part workshop that educated, engaged, and gathered input from stakeholders
  - Large group sessions and smaller breakout sessions
  - 42-45 attendees during the workshop, 32-25 excluding moderators and notetakers
  - Sessions were successful especially given the online environment
  - Meeting highlights:
    - Flood vulnerability: development of problem statements, potential loss of road access, how the flood assessment can be used to inform land use planning/zoning/construction policies, additional sources of information may be available from state and federal agencies.
    - Outreach and education: variety of communications challenges (COVID, decline in cable and newspaper, lack of internet access), challenges in pre-disaster environment (lack of "seriousness", protection of emergency services), challenges in post-disaster environment (communicating disaster information quickly), outreach opportunities (leaders/ambassadors, communications hub, SMS/text messaging, training).
    - Engineering solutions: protective berms/levees and pump stations, implementation of green infrastructure, importance of transportation

facilities, importance of understanding risks of different flood hazards in relation to the lifespan of mitigation solutions, importance of co-benefits of solutions.
        - Nature-based solutions: variety in terminology, range of solutions that fit many categories based on scale and location, environmental criteria, prioritization of vulnerable areas.
        - Historic preservation: concept for multidisciplinary team, community outreach enhancements, securing Council approval for HPC elevation design guidelines, design guidance for landscaping/nature-based solutions, funding, establish field team for disaster preparedness, reduce flood insurance costs, policies for adapting historic properties to minimize flooding.
    - Amanda Ohlensehlen: Did State stakeholders generate comments relating to flood insurance, mitigation strategies, etc.?
        - Multiple State stakeholders participated in Flood Vulnerability and Nature-based Solutions groups and proposed ideas for mitigation and/or funding strategies.
        - Details from discussion will be reflected in the notes (to be shared with the City).
        - State participates in obtaining FEMA funding, so important to keep them involved.
- **AccelAdapt (Matt Hutchins)**
    - https://newbernnc.acceladapt.com
    - All core planning team members should have access
    - AccelAdapt summarizes the flood vulnerability assessment findings, identifies effects of a hazard on people/built environment/services, and identifies the cause(s) of vulnerabilities
    - Interactive training system to cover tool features/capabilities, where to access assessment information, and use cases/use in development of strategies
        - Amanda Ohlensehlen: Focus on use cases and use in development of strategies
        - Aim for week of March 8th for training
- **Resilience Strategy Development (Mike Robinson)**
    - Vision statement, 3-5 overarching goal statements, objectives to support goal statements, and actions to be taken to achieve goals
    - STAPLEE method for prioritization of potential projects
    - Linking the vulnerability assessment to strategy development
- **Reminder for Next Meeting**
    - Thursday, March 25 at 1 p.m.
    - The focus will be on mitigation strategy development. Review AccelAdapt tool and information.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

NEW BERN RESILIENCE

STAKEHOLDER ENGAGEMENT

ACCELADAPT

RESILIENCE STRATEGY

Presented to:

City of New Bern

Core Planning Team

February 2021

Agenda

- Welcome and Roll Call
- Activity from Past Month
- Stakeholder Engagement
- AccelAdapt Vulnerability Assessment Information
- Resilience Strategy Development
- Group Discussion
- Next Steps



- **Flexible agenda**
- **Post questions to the chat function to help facilitate discussion at the end**

Activity from Past Month



- Survey #2 Completion (Jan. 29)
  - 281 respondents
  - 556 total survey responses between both surveys
- Public Meeting #2 (Feb. 4)
  - 25 attendees, all virtual
  - 75 total attendees between both public meetings
- Updates to Resiliency landing page
  - 113,741 website views
  - 96 email subscribers
- New project fact sheet
- Stakeholder Engagement Meetings (Feb. 22 and 24)

Stakeholder Meetings

- 2-part workshop format
- Goal was to educate, engage and garner input
- Held Monday and Wednesday for 2 to 2.5 hours each with the Wednesday meeting building upon the Monday meeting
- Each day's agenda consisted of:
  - Large group session with 3 speakers
  - 5 breakout sessions
  - Large group report-outs, Q&A and wrap-up discussion
- Overall very successful given the online environment



- **Day 1**
  - 10 – HP
  - 11 - FVA
  - 8 – PO
  - 5 – ES
  - 9 – NBS
  - 2 – Me and Amanda
  - 45 (including moderators and notetakers)
  - 35 (excluding moderators and notetakers)
- **Day 2**
  - 9 – HP
  - 11 - FVA
  - 8 – PO
  - 12 – ES / NBS
  - 2 – Me and Amanda
  - 42 (including moderators and notetakers)
  - 32 (excluding moderators and notetakers)

Stakeholder Meeting Highlights

- Key thoughts on ***Flood Vulnerability***
  - Potential loss of ***road access*** during flood events (including in areas of new construction)
  - Understand how the assessment could be used to help inform ***land use planning***, ***zoning***, and ***construction policies***
  - Additional sources of information that may be available soon from federal and state partner agencies
    - Wave and water level modeling data from the USACE
    - Additional flood extents from NCEM in coordination with NCDCM



- **Day 2 the breakout group focused on problem statements using assessment information and brainstorming strategies to address vulnerabilities**

Stakeholder Meeting Highlights



- Key thoughts on ***Outreach and Education***
  - Variety of ***communications*** challenges
    - Covid-19
    - Decline in traditional cable and newspaper usage
    - Lack of Internet access
  - Challenges in the ***pre-disaster*** environment
    - Some have a lack of "seriousness" mindset, despite New Bern's outreach and communication efforts
    - Protection of services / locations people flee to for help
  - Challenges in the ***post-disaster*** environment
    - Getting shelter information out quickly

- **Outreach Opportunities:**
  - Leverage leaders / ambassadors to spread word in their silos
  - Reach youth through educational programs
  - Communications hub for those looking to relocate to New Bern
  - Include resources / info in welcome baskets
  - SMS/text messaging, Apps, direct mail
  - Share floodplain information via outreach
  - Get shelter / emergency services info out sooner
  - Resiliency Ambassadors, training, marketing, education

Stakeholder Meeting Highlights



- Key thoughts on ***Engineering Solutions***
  - Protective ***berms/levees with pump stations*** can provide protection from certain types of events
    - As demonstrated in the Jack Smith Creek area and modeled after the Elizabeth City plan (which share similar flood threat types)
  - Implementation of ***green infrastructure*** interspersed where possible throughout the City
    - Improve management of stormwater runoff for frequent flood events from localized rainfall (not large-scale events from tropical systems or from swelling rivers due to events in the upstream watersheds)
    - Improve water quality and can provide community amenities/aesthetics
  - Importance of ***transportation facilities*** and their interaction with and relation to other facilities
    - Highlighted by the need for evacuation routes and emergency vehicle access during large events that may not be possible to mitigate

- **Important to understand and quantify the risks of flooding hazards compared to the solutions that are being proposed as well as the lifespan of those solutions**
- **For all projects, it is important to identify and/or create co-benefits with mitigation solutions that provide community amenities and/or aesthetic benefits beyond simple flood protection**

Stakeholder Meeting Highlights



- Key thoughts on ***Nature-based Solutions***
  - Nature-based infrastructure is known by different ***terms***, including green infrastructure, natural infrastructure, or "Engineering with Nature" (USACE)
  - Common thread is that nature-based solutions provide ***more value*** than grey infrastructure and yield community and ecosystem benefits
  - Must consider a ***range of nature-based solutions*** that fit many categories based on scale and location including watershed or landscape scale, neighborhood or site scale and coastal areas, such as shoreline stabilization
  - ***Environmental criteria***, such as wetlands, endangered species and water quality, are a few of the criteria to be evaluated for siting nature-based solutions
    - Analysis should also include demographics, flood inundation, SLR, etc.
  - ***Ongoing programs and planning efforts***, such as the Redevelopment Commission and the Choice Neighborhood Initiative, play a significant role in prioritizing where nature-based solutions can protect and reduce flooding in vulnerable communities

- **The biggest selling points for nature-based solutions are its many benefits beyond mitigating the effects of natural hazards**
- **Nature-based solutions can provide short- and long-term environmental, economic, and social advantages that improve a community's overall quality of life**

Stakeholder Meeting Highlights

- Key thoughts on ***Historic Preservation***
- Concept for ***multi-disciplinary team***
  - Common methodology for scoring properties and situations evenly
  - Alderman-appointed team member from each Ward
  - Utilize the NC CREST (Cultural Resources Emergency Stabilization Team)
- ***Community outreach*** enhancements include:
  - Promoting public awareness of flooding risk (Hurricane Preparedness Month or Flood Safety Week) and NFIP
  - Disseminating information on HPC guidance for elevation, basic costs for adaptation, and information on measures not requiring HPC review
- Draft and secure Council approval for HPC Elevation Design Guidelines
- Incorporate use of synthetic materials below the DFE and rear of properties
- Incorporate design guidance for landscaping/nature-based solutions
- Add "how-to" component on methods of dry and wet floodproofing
- Secure funding to address limited staff capacity to research best practices and develop rules of procedure



- **Top 3 actions the City can launch today for a more resilient historic community**

1. Establish a field team to assist in pre-disaster preparedness and post-disaster recovery
2. Reduce flood risk and flood insurance costs by promoting participation in the NFIP and CRS
3. Develop design guidelines for adapting historic properties to minimize flooding

AccelAdapt



- AccelAdapt access
  - Has everyone successfully logged into the tool?
  - Has everyone been able to successfully review the data?
- AccelAdapt demo/walkthrough
- Troubleshooting
- Upcoming AccelAdapt training session

- **Potential dates for AccelAdapt training session**
  - 3/3 after 3:00
  - 3/4 1:00-3:30
  - 3/5 after 1:00
  - 3/8 after 11:00
  - 3/9 11:00-3:00
  - 3/10 11:00-1:00

AccelAdapt Demo

Resilience Strategy Development



- ***Vision Statement***
- 3-5 overarching ***Goal Statements***
  - Long-term and strategic in nature
  - Achieve multiple community benefits
- ***Objectives*** to support the goal statements
  - ~2-3 objectives per goal
- ***Actions***
  - Projects and activities
  - Plan updates and policy changes
  - Comprehensive range of techniques
  - More short-term, but also forward-thinking

- **All of these pieces together form the "Strategy"**

Resiliency Actions

- Project title
- Project description
- Specific hazard or threat addressed
- Lead department or person responsible
- Timeframe for completion
- Estimated budget requirement(s)
- General cost effectiveness
- Prioritization



- **Potential challenges**
  - Environmental considerations
  - Coordination issues or conflicts
  - Full Benefit-Cost Analysis (BCA)

Prioritization of Potential Projects

- **S**ocial
- **T**echnical
- **A**dministrative
- **P**olitical
- **L**egal
- **E**conomic
- **E**nvironmental



- **The STAPLEE method is recognized by FEMA and widely used for mitigation planning purposes**

Linking the Vulnerability Assessment to Strategy Development

- Review the AccelAdapt results to look for ***risk-based solutions***
- Consider past planning team meetings
- Consider public and stakeholder input
- Evaluate any past ideas the City has developed
- Be prepared to further discuss strategy development at our March planning team meeting



- **Take into account:**
  - Past occurrences
  - Current conditions
  - Future conditions

Next Steps

- **Next Planning Team Meeting**
  - Thursday, March 25 at 1 p.m.
  - Next month's focus will be ***mitigation strategy development***
    - Vision statement, goals, objectives, actions, etc.
- **Review AccelAdapt tool and information**



- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Resilience Strategy Meeting
March 25, 2021 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Amanda Ohlensehlen	City of New Bern	Lisa Craig	The Craig Group
Alice Wilson	City of New Bern	Keri Ragland	The Craig Group
Jeffrey Ruggieri	City of New Bern		
Matt Schelly	City of New Bern	Mike Robinson	Moffatt & Nichol
George Chiles	City of New Bern	Allison Bryan	Moffatt & Nichol
Margaret Shields		Dawn York	Moffatt & Nichol
		Jeff Crump	Moffatt & Nichol

Word of welcome from Mike – eighth core planning team meeting to discuss the resilience strategy.

- **Roll Call**
  - Participants listed above.
- **Activity from Past Month (Mike Robinson)**
  - Two stakeholder meetings and follow-up planning team meetings in February
  - Internal resilience strategy discussions
  - AccelAdapt training
    - The first of two sessions was recorded for those who couldn't attend
    - A summary document of questions/answers/outcomes will be provided following the second session
  - Dawn York has had discussions with professors and graduate students who are interested in supporting this work in New Bern
- **Historic Preservation (Lisa Craig)**
  - Digging into the idea of "community significance" to help in the identification and prioritization of historic properties
    - Colonial heritage, African American heritage, sacred places, commercial areas, "non-contributing" parks, and waterfront community buildings/spaces
  - Strategy for adaptation using FEMA guidance (proximity to flood zones, national register designation, state/local/cultural/historic significance, public sentiment, economic significance, etc.)
  - Two approaches: public properties or private properties
    - Determine hazard vulnerability, assess building condition, and identify mitigation/adaptation approach in line with Secretary of Interior's standards
  - Feedback from the City: Identification of public properties due to ability to implement measures, but also potentially work with private property owners to take mitigation measures on their own

        - Recommendations should differ in depth/detail for private and public properties in the mitigation plan
    - Mitigation plan will include framework of mitigation strategies for different property prototypes, to be applied to particular properties on an individual basis
        - Individual properties can refer back to the plan
- **Resilience Strategy Development (Mike Robinson)**
    - 4-5 resilience pillars/core tenants under one vision statement, with 1-3 overarching goal statements that support each pillar
        - Objectives (optional) and actions fall under each goal statement
    - Vision statement: sentence/short paragraph that describes the overall resilience and hazard mitigation vision over a lengthy planning horizon
        - Feedback from City: provide some vision statement examples to the planning team, or some common verbs/action words often found in vision statements
        - Don't make vision statement too cheesy or empty
            - Make sure it fits the City specifically and has actual meaning
    - Resilience pillars: examples include (but not limited to) housing, economy, infrastructure, historic preservation, environment
        - Historic preservation: rephrase pillar description to be more forward-looking and emphasize the need to adapt resources to future conditions
        - Adjust Environment pillar to be Natural Resources (parks, green space, etc.)
            - Potential Recreation goal statement under Natural Resources (with indoor recreation falling under different pillars)
        - Potentially add Health & Safety pillar
    - Goal statements: long-term and strategic statements than strive to achieve multiple community benefits
    - Actions: projects and activities that address a specific hazard or threat
        - Include department/person responsible, timeframe, budget, cost effectiveness, funding sources, and prioritization
- **Planning, Project Identification, and Prioritization (Mike Robinson)**
    - Identify a suite of potential solutions
        - Brainstorm strategies and include a mix of structural and nonstructural measures with some nature-based solutions
        - Compile resilience project portfolio
    - Consolidate and prioritize projects
        - Evaluate strategy feasibility and consolidate/prioritize strategies
    - Set up a site visit to identify/match project types with locations
    - Planning team will start working on a suite of potential solutions
    - No updates on status of buyouts
    - STAPLEE method for prioritizing potential projects
    - Link the vulnerability assessment to strategy development
- **Reminder for Next Meeting**
    - Thursday, April 22 at 1 p.m.

- The focus will be on resilience strategy development. There may be a potential meeting conflict so the team will look to other dates to reschedule the meeting.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

RESILIENCY AND HAZARD MITIGATION PLAN



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NEW BERN RESILIENCE

RESILIENCE STRATEGY

Presented to:

City of New Bern

Core Planning Team

March 2021

Agenda

- Welcome and Roll Call
- Activity from Past Month
- Historic Preservation
- Resilience Strategy Development
- Group Discussion
- Next Steps



- **Flexible agenda**
- **Post questions to the chat function to help facilitate discussion at the end**

Activity from Past Month



- Stakeholder Engagement Meeting Follow-ups
- Resilience Strategy Discussions
- AccelAdapt Training
  - Good first tutorial session (recording of the session is also available)
  - Second session tentatively planned for next week or the week after (day/time TBD)
  - After the second session, we plan on providing a brief document that outlines the questions, answers and other outcomes from those sessions

Historic Preservation

- Identification and Prioritization of Historic Properties & Cultural Resources
  - New Bern's Colonial Heritage (Architecture & Tourism)
  - New Bern's African-American Heritage (Culture, Housing Types & Commerce)
  - New Bern's Sacred Places & Spaces (Religious Buildings & Cemeteries)
  - New Bern's Commercial Areas (Districts, Strips & Corners)
  - New Bern's "Non-Contributing" Community (Parks & Waterfront Buildings – Public Health & Economy)



Architectural Significance

- Tryon Palace – original construction 1767-1770; restored 1959
- 12 Colonial Era buildings (NR)
- New Bern Academy Museum (1810; 1885) (NR)
- First Presbyterian Church (1819-1821) (NR)
- Masonic Temple and Theater (1802; 1809; 1904) (NR)
- St. Paul's Roman Catholic Church (1841) (NR)
- City Hall (1897) (NR)
- Cedar Grove Cemetery (Coquina Wall - 1853) (NR)

Community Significance

- Downtown Local Historic District (1770 – 1953) (includes NR New Bern Historic District)
- Riverside Historic District (1894-1937) (NR)
- Greater Five Points (Duffyfield & Dryborough – early 19th C.)
- J. T. Barber School (1951-55)

Historic Preservation: Priorities for Adaptation



Strategy for Adaptation

- Period of significance
- Proximity to 1% and 0.2% annual chance flood zones
- National Register designation & local/state/national significance
- Cultural/Historic significance
- Public sentiment
- Economic significance
- Degree of Integrity



- Colonial-era houses
- Shotgun houses (Dryborough)
- King Solomon's Masonic Lodge
- Mitchell's Hardware
- Commercial properties in Redevelopment Area
- Union Point Park
- City Hall
- Community Survey identified properties

Historic Preservation: Proposed Adaptation Models

- Determine hazard vulnerability
- Assess building condition
- Identify mitigation / adaptation approach consistent with Secretary of the Interior's Standards (Flood Rehabilitation)
  - Structural integrity (repair/replace)
  - Barrier (temporary / permanent)
  - Dry/Wet Floodproofing
  - Elevate
  - Relocate



- Public Properties (NR)
  - New Bern City Hall
  - Tryon Palace & North Carolian History Center
  - Union Point Park
  - J.T. Barber Elementary School
- Private Properties (NR)
  - Harvey Mansion
  - New Bern Academy Museum
  - Cedar Grove Cemetery
  - King Solomon Lodge
  - Mitchell's Hardware
  - Shotgun Houses
  - Colonial House

Resilience Strategy Development



- ***Vision Statement***
- 4-5 ***Resilience Pillars*** (i.e., Core Tenants)
- 1-3 overarching ***Goal Statements*** for each pillar
- ***Objectives*** to support the goal statements (optional layer)
- ***Actions***
  - Project and activity ideas
  - Plan updates and policy changes
  - Comprehensive range of techniques
  - More short-term, but also forward-thinking

- **All of these pieces together form the "Strategy"**
- **Can be tailored to fit your vision**

Vision Statement



- A sentence or short paragraph that describes the community's overall vision as it relates to resilience and hazard mitigation
- States what we are trying to build or accomplish
- Serves as a touchstone for future actions
- Should consider a lengthy planning horizon, such as 25, 50 or 75 years

- **Ideas can be emailed to Mike and Amanda for consensus and merging into a draft vision statement for review and discussion by the planning team**

Resilience Pillars

EXAMPLES

HOUSING

Statement regarding safe and resilient housing in the City of New Bern

ECONOMY

Statement regarding the importance of small and large businesses, tourism, and other economic factors in the City of New Bern

HISTORIC PRESERVATION

Statement regarding the need to preserve history and cultural significance in the City of New Bern

INFRASTRUCTURE

Statement regarding the need to maintain and improve infrastructure, including transportation, in the City of New Bern

ENVIRONMENT

Statement regarding the need to enhance the environment and other natural beneficial functions in the City of New Bern



- **“Resilience Pillars”**
- **“Community Pillars”**
- **“Core Tenants”**

Goal Statements



- Each core tenant should have 1-3 goals
- Long-term and strategic in nature
- Should strive to achieve multiple community benefits

- EXAMPLE: The Housing pillar may have a goal to increase affordable replacement housing options for post-disaster recovery

- **Optional layer of objectives can be added to better break out, organize or define the goal statements**

Resiliency Actions

- Project title
- Project description
- Specific hazard or threat addressed
- Lead department or person responsible
- Timeframe for completion
- Estimated budget requirement(s)
- General cost effectiveness
- Potential funding sources
- Prioritization



- **Includes projects, activities, etc.**
- **Potential challenges**
  - Environmental considerations
  - Historic Preservation considerations (NHPA - Section 106)
  - Coordination issues or conflicts
  - Full Benefit-Cost Analysis (BCA)

Planning, Project Identification, and Prioritization

- **Step 1: Identify a Suite of Potential Solutions**
- Brainstorm strategies
- Include right mix of structural (infrastructure) and nonstructural (policy-related) approaches
- Include nature-based solutions
- Compile options into a resilience project portfolio
- **Step 2: Consolidate and Prioritize Projects**
- Evaluate strategies and feasibility
- Consolidate and prioritize strategies





- **More that we can do to protect and enhance natural protective functions, the greater long-term benefits we'll see in hazard mitigation, environmental quality, and economic prosperity**

- **Natural/nature-based solutions**
- **Natural infrastructure (aka green infrastructure)**
- **Hybrid solutions**

Resiliency Project Types



- **Types of Engineering Solutions**
- Bulkhead/Floodwall
- Berms/Levees
- Breakwaters
- Flood Gates/Tide Gates
- Pumping Stations
- Raised Roadways
- Living Shorelines
- Improved Stormwater Conveyance
- Detention Basins
- Green Infrastructure (Bioretention, Permeable Pavement, etc.)
- Buyouts
- Building Elevation
- Floodproofing
- Temporary Flood Control Measures (inflatable dams, sand bags, etc.)

Prioritization of Potential Projects

- **S**ocial
- **T**echnical
- **A**dministrative
- **P**olitical
- **L**egal
- **E**conomic
- **E**nvironmental



- **The STAPLEE method is recognized by FEMA and widely used for mitigation planning purposes**
- **Facilitates consideration of a wide range of factors**
- **Other factors can be added as well, e.g., STAPLEE + XYZ**

Linking the Vulnerability Assessment to Strategy Development

- Review the AccelAdapt results to look for ***risk-based solutions***
- Consider past planning team meetings
- Consider public and stakeholder input
- Evaluate any past ideas the City has developed
- Be prepared to further discuss strategy development at our April planning team meeting



- **Take into account:**
  - Past occurrences
  - Current conditions
  - Future conditions

Open Discussion



- Questions about developing a strategy?
- Questions about anything else we've discussed today?

Next Steps

- **Next Planning Team Meeting**
  - Thursday, April 22 at 1 p.m.
  - Next month's focus will continue to be on ***resilience strategy development***
- **Review AccelAdapt tool and information**
- **Develop new project ideas to discuss**



- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
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Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

RESILIENCY AND HAZARD MITIGATION PLAN



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NEW BERN RESILIENCE

RESILIENCE STRATEGY

Presented to:

City of New Bern

Core Planning Team

April 2021

Agenda



- Welcome and Roll Call
- Activity from Past Month
- Resilience Strategy Development
  - Vision Statement
  - Resiliency Pillars
  - Goals
  - Actions
- Group Discussion
- Next Steps

- **Flexible agenda**

Activity from Past Month



- Resilience Strategy Email Series
  - Vision Statement (week of 3/29)
  - Resiliency Pillars (week of 4/5)
  - Goals (week of 4/12)
  - Actions (week of 4/19)
- Rough draft of resilience strategy
- 2nd AccelAdapt tutorial still available

Resilience Strategy Development



- ***Vision Statement***
- 6 ***Resilience Pillars*** (i.e., Core Tenets)
- 2-5 overarching ***Goal Statements*** under each pillar
  - ***Objectives*** to support the goal statements (optional layer, if needed)
- ***Actions***
  - More short-term, but also forward-thinking
  - Project and activity ideas
  - Plan updates and policy changes
  - Comprehensive range of techniques
  - From simple, every-day solutions to bigger, more ambitious projects

- **All of these pieces together form the "Strategy"**
- **Can be tailored to fit the vision**

Draft Vision Statements



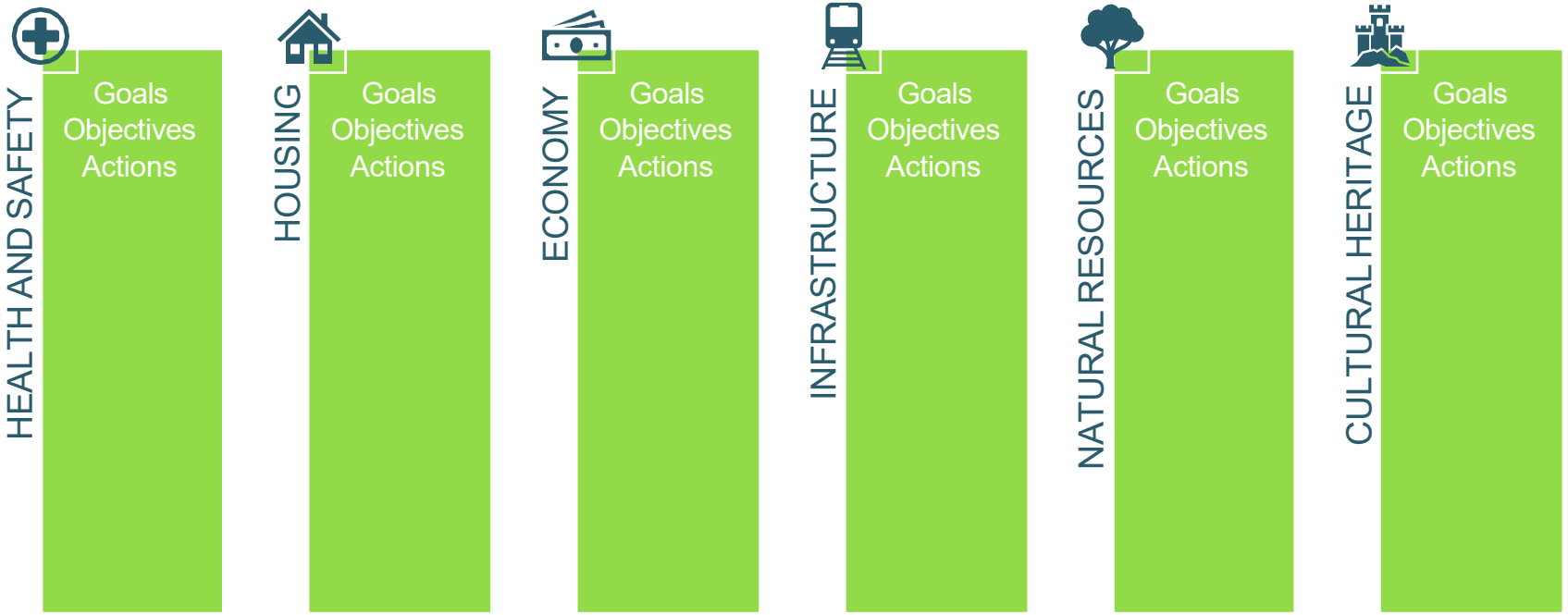
- “New Bern will utilize its values of heritage, intelligence, leadership, and personal responsibility to develop methods and investments to prepare for, respond to, and recover from disasters with inclusive, collaborative partnerships between the public, non-profit, and private sectors to ensure they serve as efficient conduits to programs and resources accessible for all residents.”

- "By implementing the New Bern Resiliency and Hazard Mitigation Plan, the City of New Bern, its residents, businesses, and community stakeholders will adapt to a future of rising tides and extreme storms, embrace equitable and sustainable development, increase economic security, protect public health, and promote its cultural heritage."

- “We are a city that embraces our changing environment. We will advance resiliency through solutions that relate to health and safety, housing, the economy, infrastructure, our natural resources, and cultural heritage. In so doing, we will adapt to thrive.”

- **These are the 3 ideas that have been submitted to-date**
- **We can take one of them and finalize it, or create others to choose from**

Draft Resilience Pillars





- Need to confirm that these are set, or if there are changes or additional pillars to add
- Currently listed in order based on priorities expressed through the public participation surveys
- The priority of each can either be implicit or implied

Draft Goal Statements
Health and Safety



- Goal #1: Provide accessible and affordable basic health services and communication.
- Goal #2: Ensure easy access to fresh and healthy foods.
- Goal #3: Increase construction of connected and equitable pedestrian sidewalks, trails, greenways, and bike paths for exercise and access.

- **3 draft goals submitted for the Health and Safety pillar**

Draft Goal Statements
Housing



- Goal #1: Educate citizens on best practices related to finances in predation of home ownership.
- Goal #2: Educate citizens on best practices related to homeownership.
- Goal #3: Partner with developers to create sustainable PUDs preserving open spaces for flood control and limiting impervious surfaces.

- **3 draft goals submitted for the Housing pillar**

Draft Goal Statements
Economy



- Goal #1: Advance racial equity.
- Goal #2: Build business resilience.
- Goal #3: Provide training and educational opportunities for job skills/trades.
- Goal #4: Provide a path to careers through internships and apprenticeships.
- Goal #5: Advance Small Business startups throughout the community.

- **5 draft goals submitted for the Economy pillar**

Draft Goal Statements
Infrastructure

- Goal #1: Ensure daily peak capacities and operating reserve capacities are available.
- Goal #2: Ensure redundancy in operating systems.
- Goal #3: Ensure reliability through financial stability, design, testing, maintenance, and repairs.
- Goal #4: Inventory all sidewalks and roads and compare for equitable access to well-maintained sidewalks and roadways.



- **4 draft goals submitted for the Infrastructure pillar**

Draft Goal Statements
Natural Resources



- Goal #1: Design new developments to protect natural resource areas.
- Goal #2: Convert flood-prone areas into safe accessible green and public spaces, making sure to include women, children, older persons, and persons with disabilities.
- Goal #3: Design educational components in natural areas to convey their importance.
- Goal #4: Promote physical and mental health through improvements in water quality and air quality.
- Goal #5: Reduce flood risk while improving water quality and enhance wildlife habitat and recreational opportunities.

- **5 draft goals submitted for the Natural Resources pillar**

Draft Goal Statements
Cultural Heritage



- Goal #1: Implement a public awareness and engagement program to support proactive action by property owners, stewards, and residents in preparing themselves and their older and historic buildings for future disasters.
- Goal #2: Lead with infrastructure resilience efforts in flood adaptation and mitigation to protect historic and culturally significant neighborhoods.
- Goal #3: Ensure that disaster recovery incorporates a “build back better” approach that prioritizes building rehabilitation over demolition.
- Goal #4: Align land use and economic development planning to incentivize the adaptation of cultural and natural heritage assets.

- **4 draft goals submitted for the Cultural Heritage pillar**

Draft Resiliency Actions
Health and Safety

- Action #1: Work with the County Health Department to establish a health center(s) in the most vulnerable areas. (Goal #1)
- Action #2: Work with organizations and retailers to establish a farmers' market and or grocery store in food desert areas. (Goal #2)
- Action #3: Construct pedestrian infrastructure to connect citizens to various parts of the city. (Goal #3)



- **3 actions for Health and Safety**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Housing

- Action #1: Host or facilitate classes in-person and online on personal finances. (Goal #1)
- Action #2: Hold classes and discussion on home ownership. (Goal #2)
- Action #3: Design PUD's for smaller homes and land preservation. (Goal #3)



- **3 actions for Housing**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Economy

- Action #1: Develop and implement a personal resilience toolkit for use by families and individuals in all City neighborhoods with special emphasis on Greater Five Points. (Goal #1)
- Action #2: Work collaboratively with the New Bern Area Chamber of Commerce and the SBC to develop a business resilience toolkit. (Goal #2)
- Action #3: Establish partnerships with Craven Community College (CCC) and East Carolina University (ECU). (Goal #3)
- Action #4: Create an apprenticeship program in city departments and other agencies. (Goal #4)



- **4 actions for economy**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Infrastructure



- Action #1: Fund and construct new power delivery point and substation, per the most recent load study. (Goal #1)
- Action #2: Fund and construct new feeder and feeder ties per the most recent load study. (Goal #2)
- Action #3: Perform frequent cost of service studies to ensure adequate rates. Fund predictive testing, maintenance, repair and vegetation management. (Goal #3)
- Action #4: Perform an inventory and provide an app for citizens to share concerns related to conditions/access. (Goal #4)

- **4 actions for Infrastructure**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Natural Resources



- Action #1: Create design standards to set aside areas for protection as natural resources. (Goal #1)
- Action #2: Convert areas into open spaces and parks. (Goal #2)
- Action #3: Install wayfinding signs/paths. Hold classes. (Goal #3)
- Action #4: Enhance natural areas to motivate healthy behaviors and improve or sustain mental health. (Goal #4)
- Action #5: Increase percentage of green space within a two-mile radius of residential neighborhoods with lower socioeconomic status to support physical activity. (Goal #4)

- **11 actions for Natural Resources**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Natural Resources



- Action #6: Categorize urban locations for green streetscapes to encourage active modes of transport, such as walking or cycling. (Goal #4)
- Action #7: Augment tree canopies to reduce energy demands and lower local emissions. (Goal #4)
- Action #8: Conserve parcels for enhancing or restoring floodplain connectivity and/or flood water attenuation. (Goal #5)
- Action #9: Develop small-scale projects, such as rain gardens, to reduce impacts of local flooding events which improving community appeal and habitat. (Goal #5)

- **11 actions for Natural Resources**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Natural Resources



- Action #10: Improve community resiliency through identification, prioritization, design and implementation of nature-based solutions. (Goal #5) (Could also be elevated to a Goal.)

- Action #11: Create a framework for financing from grant sources to support projects to enhance and/or restore natural resources. (Goal #5)

- **11 actions for Natural Resources**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Cultural Heritage



- Action #1: Establish partnerships and shared opportunities to educate the public about the value and methods for adapting historic places (e.g., historic preservation month, emergency preparedness month, hurricane awareness month, Earth Day, other). (Goal #1)

- Action #2: Emphasize public health concerns by partnering with first responders and public health organizations to educate stewards and owners of older and historic properties on an annual basis about the biological hazards associated with post-disaster building rehabilitation. (Goal #1)

- Action #3: Provide technical assistance specific to cultural institutions and historic sites and museums on developing disaster and emergency management plans. (Goal #1)

- **14 actions for Cultural Heritage**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Cultural Heritage



- Action #4: Prioritize mitigation work on publicly owned buildings and infrastructure to fortify older and historic neighborhoods that contribute to the economic, cultural, and social vitality of New Bern. (Goal #2)
- Action #5: Create and increase existing open space in older and historic neighborhoods through a system of design greenways that connects historic and culturally significant areas throughout the city. (Goal #2)
- Action #6 Promote new housing infill sensitive to the architectural and historic character and social connectedness of the neighborhood. (Goal #2)
- Action #7: Work directly with leaders in vulnerable communities to identify, communicate and promote manageable mitigation opportunities and disaster preparedness strategies. (Goal #2)

- **14 actions for Cultural Heritage**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Cultural Heritage



- Action #8: Support flexibility in historic district design review by utilizing the National Park Service (NPS) flooding for rehabilitation guidance (e.g., use of flood resistant materials, building elevation and relocation, flood barriers). (Goal #3)

- Action #9: Train city and county disaster response staff and property stewards involved in disaster preparedness, response and recovery on preservation sensitive adaptation and rehabilitation approaches. (Goal #3)

- Action #10: Prioritize nature-based solutions that support the City of New Bern's Redevelopment Plan, environmental values, and historic preservation priorities. (Goal #4)

- **14 actions for Cultural Heritage**
- **Can include projects, activities, updates, outreach, etc.**

Draft Resiliency Actions
Cultural Heritage



- Action #11: Recognize and promote the adaptation of properties that support the heritage travel and tourism industry. (Goal #4)
- Action #12: Partner with Swiss Bear, Inc. and the New Bern Chamber of Commerce to identify and adopt policies that support small business continuity planning within the designated historic districts. (Goal #4)
- Action #13: Create regulatory incentives, including market-based approaches, for private sector investment in adaptation and mitigation within public space and historic commercial corridors. (Goal #4)
- Action #14: Identify funding opportunities for public and private investment in adaptation and rehabilitation of culturally and historically significant areas (BRIC, HUD, CDBG, SBA, FEMA, etc.). (Goal #4)

- **14 actions for Cultural Heritage**
- **Can include projects, activities, updates, outreach, etc.**

Open Discussion



- Questions?
- Comments?

Next Steps

- Next Planning Team Meeting
  - Thursday, May 27 at 1 p.m.
  - Next month's focus will continue to be on ***resilience strategy development***, especially Actions
- Continue to review AccelAdapt tool and information
- Continue to develop new project ideas to discuss



- **Monthly calls will be a combination of status updates and focused discussion on specific topics**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

City of New Bern
Resilience Actions Meeting
May 27, 2021 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Alice Wilson	City of New Bern	Matt Hutchins	NEMAC+FernLeaf
Jeffrey Ruggieri	City of New Bern		
Matt Schelly	City of New Bern	Allison Bryan	Moffatt & Nichol
George Chiles	City of New Bern	Dawn York	Moffatt & Nichol
Jordan Hughes	City of New Bern	Amanda Zullo	Moffatt & Nichol

Word of welcome from Dawn – ninth core planning team meeting to discuss the resilience actions.

- **Roll Call**
  - Participants listed above.
- **Activity from Past Month (Dawn York)**
  - Drafting plan chapters; draft to be submitted in August
  - Discussions between M&N and City staff regarding reporting requirements and deadlines for NFWF grant
    - NFWF provides funding to support project planning and prioritization process
  - Additional application being prepared for NCLWF grant
    - Duffyfield Canal stream restoration/enhancement project is frontrunner
- **Duffyfield Canal (Dawn York)**
  - Application being prepared for NCLWF grant
  - Ideal section for restoration is near Henderson Park (City owned, no structural interference, ties to recreation area)
    - Restoration efforts can't affect easements or cut off access west of channelized portion near baseball fields; sewer lines running parallel to channel in this area
  - Areas father north near Rennys Creek will be more difficult to complete due to railroad property ownership
  - City owns a few properties along the canal and could potentially obtain additional properties
  - Easements could potentially be obtained from property owners, but may be less likely for railroad properties and would present additional cost of land lease agreements
  - Additional stormwater improvements are being made to the east of the Duffyfield Canal area
  - Ditch system from Henderson Park to the hospital runs along the greenway system, so potential for multifaceted project
  - City has aerial imagery of the area from 1999 to present; NCDOT may have additional imagery

        - High resolution imagery from 2007 and 2010 located by UNCW
        - City has 1913 street plan and 1924 Sanborn map that shows the canal area
    - M&N following up with USACE to ask if Duffyfield Canal is being considered within the larger Neuse River basin study
        - Set up coordination meeting between USACE and City staff (Jeff Ruggieri, Jordan Hughes, George Chiles) to establish City priorities and opportunities
- **Mitigation Action Worksheets (Allison Bryan)**
    - Worksheets being developed for each action identified within the resilience strategy
    - More detailed discussion at next monthly meeting to identify project contacts and other information
- **Third Public Meeting (Amanda Zullo)**
    - Schedule for August to coincide with submittal of the draft plan
- **Reminder for Next Meeting**
    - Thursday, June 26 at 1 p.m.
    - The focus will be on mitigation actions and plan development. There may be a potential meeting conflict so the team will look to other dates to reschedule the meeting.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Resilience Strategy Meeting
July 1, 2021 from 1:00 p.m. to 2:00 p.m.
Meeting Minutes

Attendees:

Alice Wilson	City of New Bern	Lisa Craig	The Craig Group
Jeffrey Ruggieri	City of New Bern	Keri Ragland	The Craig Group
Matt Schelly	City of New Bern		
Avery Smith	City of New Bern	Mike Robinson	Moffatt & Nichol
		Allison Bryan	Moffatt & Nichol
Matt Hutchins	NEMAC+FernLeaf	Dawn York	Moffatt & Nichol
		Amanda Zullo	Moffatt & Nichol

Word of welcome from Amanda – eleventh core planning team meeting to discuss the resilience actions.

- **Roll Call**
  - Participants listed above.
- **Activity from Past Month (Amanda Zullo)**
  - Authors working on writing sections of the plan
  - Resiliency solutions team is working to set up a second site visit
  - Next public meeting is July 22 from 6-7pm, taking place in City Hall Courtroom and streamed over Zoom/Facebook Live; focus will be on the outline and structure of the draft plan and how public comment will be collected
- **Plan Outline (Amanda Zullo)**
  - Executive Summary
  - Introduction
  - Planning Process
  - Community Profile/History
  - Cultural Resources/Historic Preservation
  - Vulnerability Assessment
  - Resilience Strategy and Actions
  - Implementation Plan and Local Adoption
  - Appendices
- **Group Discussion (Mike Robinson)**
  - Workshop to support resiliency solutions team and discuss resilience action worksheets/STAPLEE method
    - Potential to hold workshop on the same day as the next public meeting (July 22), or schedule workshop after the public meeting to allow public feedback to shape discussion (after public meeting preferred by the planning team)
    - Potential meeting spaces at Craven Community College
    - Cap workshop time at two hours
  - Schedule Duffyfield Canal flyover by UNCW for July 22 (same day as public meeting)

- **Mitigation Action Worksheets (Allison Bryan)**
  - Health and Safety:
    - County health dept.: under Jeff R and Redevelopment Commission
    - Food desert farmers' market and grocery store: under Jeff R and Redevelopment Commission
    - Jeff mentioned they have a $70K grant for this to be built in Duffyfield neighborhood
    - Ped. Infrastructure: under Jeff R and Redevelopment Commission
    - Jeff mentioned in March 2022 – they will have a Ped. Plan update
  - Housing:
    - In-person and online classes on personal finance: under Jeff R and Redevelopment Commission for Duffyfield neighborhood
    - Classes on home ownership: under Jeff R and Redevelopment Commission for Duffyfield neighborhood
    - PUD: not under Jeff, but the Redevelopment Commission is getting around to it
  - Economy:
    - University partnerships: Jeff. R is apprehensive about this, flag for later.
    - Apprenticeship program: Jeff likes this idea, perhaps loop University partnerships (Economy, #3) into this one.
  - Infrastructure:
    - Power delivery system: Public Works
    - Cost of service studies: Public Works
    - Inventory and app for citizens: Redevelopment Commission to provide technical support, GIS to support back end, and Public Works to conduct the monitoring
- **Reminder for Next Meeting**
  - Thursday, July 22 or 29 at 1 p.m. (TBD)
  - The focus will be on pulling together the complete final draft plan. The scheduling dates are now TBD based on today's call discussion. The team will provide New Bern an updated schedule.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

RESILIENCY AND HAZARD MITIGATION PLAN



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NEW BERN RESILIENCE

RESILIENCY PLAN UPDATE

Presented to:

City of New Bern

Core Planning Team

July 2021

Agenda

- Welcome and Roll Call
- Activity from Past Month
- Plan Outline
- Authors' Questions / Group Discussion
- Resilience Action Development
- Next Steps



- **Meeting update**

Activity from Past Month

- Authors immersed in writing their sections of the plan
- Solutions team is working on a second site visit *(TBD)*
- Next public meeting is scheduled and preparations are underway
  - July 22, 2021
  - 6:00 – 7:00 PM
  - City Hall Courtroom and Zoom/Facebook Live
  - Focus on presenting outline and structure of draft plan and how the public will be able to review



Plan Outline

- Executive Summary
- Introduction
- Planning Process
- Community Profile/History
- Cultural Resources (i.e. Historic Preservation)
- Capability Assessment/Literature Overview*
- Vulnerability Assessment*
- Resilience Strategy with Resilience Actions
- Implementation Plan/Local Adoption
- Appendices



- **Feedback on order and flow?**
- ***Details in appendix**

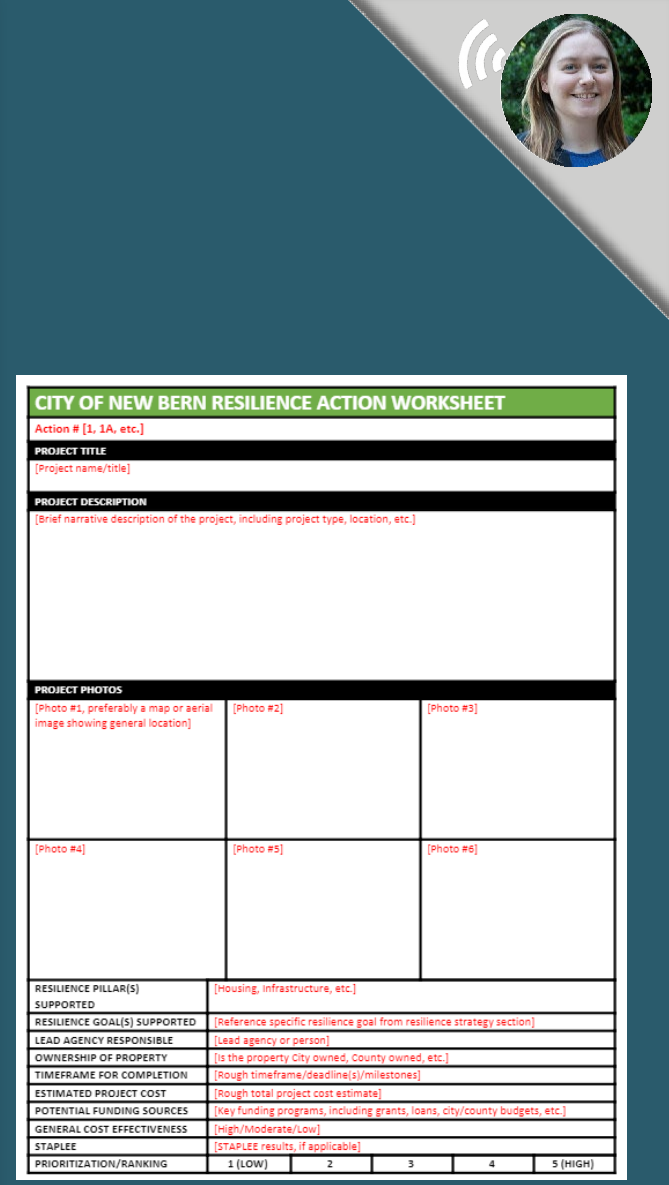
Authors' Questions / Group Discussion



- Workshop – late July to support solutions team?
- Second site visit to support solutions team
- Do any of the authors have 1-2 questions to help move their sections forward?

Resilience Action Development

- Resilience Action Worksheets
  - Project description & justification
  - Representative photos
  - Resilience pillars & goals supported
  - **Lead agency**
  - Project timeline, cost, and cost effectiveness
  - Potential funding sources
  - Prioritization/ranking



CITY OF NEW BERN RESILIENCE ACTION WORKSHEET

Action # [1, 1A, etc.]

PROJECT TITLE

[Project name/title]

PROJECT DESCRIPTION

[Brief narrative description of the project, including project type, location, etc.]

PROJECT PHOTOS

[Photo #1, preferably a map or aerial image showing general location]	[Photo #2]	[Photo #3]
[Photo #4]	[Photo #5]	[Photo #6]

RESILIENCE PILLAR(S) SUPPORTED	[Housing, infrastructure, etc.]				
RESILIENCE GOAL(S) SUPPORTED	[Reference specific resilience goal from resilience strategy section]				
LEAD AGENCY RESPONSIBLE	[Lead agency or person]				
OWNERSHIP OF PROPERTY	[Is the property City owned, County owned, etc.]				
TIMEFRAME FOR COMPLETION	[Rough timeframe/deadline(s)/milestones]				
ESTIMATED PROJECT COST	[Rough total project cost estimate]				
POTENTIAL FUNDING SOURCES	[Key funding programs, including grants, loans, city/county budgets, etc.]				
GENERAL COST EFFECTIVENESS	[High/Moderate/Low]				
STAPLEE	[STAPLEE results, if applicable]				
PRIORITIZATION/RANKING	1 (LOW)	2	3	4	5 (HIGH)

Resilience Action Development



- **Health & Safety**
  - Work with County Health Department to establish a health center(s) in the most vulnerable areas.
  - Work with organizations and retailers to establish a farmers' market and or grocery store in food desert areas.
  - Construct pedestrian infrastructure to connect citizens to various parts of the city, including a system of design greenways that connects historic and culturally significant areas throughout the City.
- **Housing**
  - Host or facilitate classes in-person and online on personal finances.
  - Hold classes and discussion on home ownership.
  - Design PUD's for smaller homes and land preservation.

Resilience Action Development



- **Economy**
  - Develop and implement a personal resilience toolkit for use by families and individuals in all City neighborhoods with special emphasis on Greater Five Points.
  - Work collaboratively with the New Bern Area Chamber of Commerce and the SBC to develop a business resilience toolkit.
  - Establish partnerships with Craven Community College (CCC) and East Carolina University (ECU).
  - Create an apprenticeship program in city departments and other agencies.
- **Infrastructure**
  - Fund and construct new power delivery point, substation, feeder, and feeder ties per the most recent load study.
  - Perform frequent cost of service studies to ensure adequate rates. Fund predictive testing, maintenance, repair and vegetation management.
  - Perform an inventory and provide an app for citizens to share concerns related to conditions/access.

Resilience Action Development



Natural Resources

- Create design standards to set aside areas for protection as natural resources, and conserve parcels for enhancing/restoring floodplain connectivity and/or flood water attenuation.
- Convert areas into open spaces and parks.
- Install wayfinding signs/paths. Hold classes.
- Enhance and increase percentage of green and natural areas within a short radius of residential neighborhoods to motivate healthy behaviors, support physical activity, and improve/sustain mental health.
- Categorize urban locations for green streetscapes to encourage active modes of transport, such as walking or cycling.

Resilience Action Development



Natural Resources

- Augment tree canopies to reduce energy demands and lower local emissions.
- Develop small-scale projects, such as rain gardens, to reduce impacts of local flooding events which improving community appeal and habitat.
- Improve community resiliency through identification, prioritization, design and implementation of nature-based solutions that support the City of New Bern's Redevelopment Plan, environmental values, and historic preservation priorities.
- Create a framework for financing from grant sources to support projects to enhance and/or restore natural resources as well as funding opportunities for public and private investment in adaptation and rehabilitation of culturally and historically significant areas (BRIC, HUD, CDBG, SBA, FEMA, etc.).

Resilience Action Development



- **Cultural Heritage**
  - Establish partnerships and shared opportunities to educate the public about the value and methods for adapting historic places (e.g., historic preservation month, emergency preparedness month, hurricane awareness month, Earth Day, other)
  - Emphasize public health concerns by partnering with first responders and public health organizations to educate stewards and owners of older and historic properties on an annual basis about the biological hazards associated with post-disaster building rehabilitation.
  - Provide technical assistance specific to cultural institutions and historic sites and museums on developing disaster and emergency management plans.
  - Prioritize mitigation work on publicly owned buildings and infrastructure to fortify older and historic neighborhoods that contribute to the economic, cultural, and social vitality of New Bern.
  - Promote new housing infill sensitive to the architectural and historic character and social connectedness of the neighborhood.

Resilience Action Development



Cultural Heritage

- Work directly with leaders in vulnerable communities to identify, communicate and promote manageable mitigation opportunities and disaster preparedness strategies.
- Support flexibility in historic district design review by utilizing the National Park Service (NPS) flooding for rehabilitation guidance. (e.g. use of flood resistant materials, building elevation & relocation, flood barriers).
- Train city and county disaster response staff and property stewards involved in disaster preparedness, response and recovery on preservation sensitive adaptation and rehabilitation approaches.
- Recognize and promote the adaptation of properties that support the heritage travel and tourism industry.
- Partner with Swiss Bear, Inc. and the New Bern Chamber of Commerce to identify and adopt policies that support small business continuity planning within the designated historic districts.

Next Steps*

- Next Planning Team Meeting - TBD
  - Thursday, July 22 or 29 at 1 p.m.
  - Update on plan document
- Next month's call will focus on pulling together the complete final draft plan
  - *July 23rd: Final internal draft sections due*
  - *August 6th: Final draft submission to New Bern*
- New Bern will have two weeks to submit plan comments
  - *August 20th: All comments due to team*
- M&N will have one week to wrap all comments
  - *August 27th: Final plan submission to New Bern*



- **Monthly calls will be a combination of status updates and focused discussion on specific topics**
- ***Dates TBD based on today's call. Team to provide New Bern updated schedule.**

THANK YOU



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NEW BERN
NORTH CAROLINA
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9/10/2020

New Bern Resiliency Public Meeting 1 Sign-In Sheet

Name	Email

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9/10/2020

New Bern Resiliency Public Meeting 1 Q&A

1. **What examples of other cities or regions that have successfully mitigated are we turning to for guidance?**
   Lisa stated there are a number of historic cities that have dealt with this issue. Charleston, SC developed its design guidelines to address what is becoming annual flooding events, as well as tidal flooding, similar to what we experienced in Annapolis, MD. St. Augustine, FL has a public policy toolkit, which we can build upon and develop for New Bern. We can look at how we can regulate and incentivize the adaptation of buildings. Nantucket, MA is developing design guidelines to elevate its historic buildings and better manage flooding with their properties. But, it doesn't always have to be about the historic buildings; many buildings and neighborhoods that were constructed in the 1920s and 1930s can apply the same adaptation strategies applied to historic buildings. For New Bern, we're looking at communities that have been successful in putting hazard mitigation and resiliency plans in place that incorporate historic properties. We respect the need for a full set of tools to be made available for planning for future resilience.

   Mike stated he worked with the City of Elizabeth City, NC on a flood mitigation and more resilient waterfront master plan. He has also worked with a number of communities in eastern NC following Hurricane Matthew with the resilient redevelopment planning initiative that followed that event. We can bring neighboring knowledge into this project which will help sections of the plan to develop. We're open to additional partners as stakeholders for future engagement.

2. **A call participant mentioned there is a group that was formed in New Bern after Hurricane Florence called "CARE", which stands for "Citizens Advocating Resiliency and Community Education". The call participant would like for the planning team to get in touch with CARE as they represent leaders from various organizations and would be beneficial stakeholders.**

3. **There was a request for more information on the background and credentials of the speaking team.**
   Mike has been doing hazard mitigation planning for 20 years. Mike started in state government and has worked for two different state governments including the State of North Carolina. Mike is currently working at Moffat & Nichol, his third private sector firm, doing mitigation planning. Hazard mitigation has been Mike's full-time job for 20 years in some shape, form or fashion whether it's been on the planning side, grants management, and different types of planning that ties in with hazard mitigation. Mike has lived in North Carolina for 20 years and has worked with multiple communities throughout the state.

   Lisa has been in the field for 30 years and worked in both public and private sectors. She has worked for three private sector firms and started her career in historic preservation running a statewide nonprofit preservation group in Oregon. Lisa found her way to the National Trust for

Historic Preservation in Washington, DC. and she has spent the last 27 years living in the DC area. Lisa served as the state historic preservation officer for the District of Columbia, and also wore the duplicate hat of the local preservation chief for the District and most recently, for the City of Annapolis, MD. Lisa has worked in private property redevelopment doing military housing around the country and working on projects like Pearl Harbor and the US Air Force Academy. Lisa has seen the issue of disaster and how it can impact historic resources and entire communities. The last 10 years, starting in Annapolis, MD, Lisa focused her efforts on the intersect between historic preservation and resilience and addressing issues of disaster management and preparation in historic communities. Lisa has worked in National Historic Landmark cities, like Annapolis, St. Augustine and Nantucket and is looking forward to this work in New Bern, NC.

Amanda is an urban designer, with a background in real estate development, architecture and planning. Amanda's 10-year career had opportunities to work on international, national and state waterfront projects. Sea level rise and resiliency have been causes of concern. Amanda's graduate thesis project looked at how rising tides could affect the City of Philadelphia's waterfront. She appreciates looking to historical precedents and how cities can hopefully pivot to a suitable future for waterfront cities that are getting bombarded by storms. Waterfront destination planning is embedded in Amanda's career DNA. Amanda worked with Mike on the City of Elizabeth City. We had a chance to present this project as a case study at APA-VA, APA-NC, and were slated to present at APA-Nationals but due to COVID, we weren't able to present. Our team's passions and expertise are in this line of work and we're excited to work with the City of New Bernon this meaningful project.

4. **How will this planning be integrated into the New Bern Urban Design plan and the Redevelopment Plan that has been developed?**
   Mike stated the team has done an extensive literature review, where we've examined all previous plans for the City of New Bern as well as regional and state level documents. We've been identifying these documents for areas where they address flood risk and flood mitigation, where they provide opportunities to support these efforts, as well as opportunities to address any disincentives. We're looking for opportunities as we review to integrate what we do as part of this process. We would highlight recommendations as part of this plan to go to the appropriate departments and planning committees (local, regional, etc.) so that they can in turn integrate this information for risk mitigation and potential mitigation solutions into future revisions of their planning documents.

5. **Is Stanley White included in this process on Chapman Street?**
   Colleen stated Stanley White is located in an area that frequently floods. This is one of the goals of this initiative, to look at areas that are repeatedly suffering during disaster events. Wholeheartedly the answer is absolutely. When we are looking at the flood vulnerability assessment, we're looking at the entire community and surrounding area. We'll look at hot

spots and hazard occurrences. We're not ruling out any areas. We're looking at where the flood risk is across the community in terms of high, moderate, and lower risks.

6. **Can the group describe in more detail what stakeholder involvement looks like when developing a resiliency plan?**
   There are two things in terms of tonight's material: there is public involvement and there is stakeholder involvement. When we engage stakeholders, these are groups for example with data sets that we need to explore and integrate into our assessment. They may be responsible for other studies. They may have valuable historical information. The stakeholders tend to be departments and agencies and members of the academic community. They may be at a level for helping with plan writing and technical review of some of the draft products that will be developed. Stakeholders are also members of the public. We come up with goals and objectives through these processes. In the Community Values exercise, we come up with priorities for preservation and adaptation. Stakeholders really are a double check and can help the planning team develop these goals and objectives. They play a very important role and are involved throughout the process. They represent the voices of the community. We'll work with our partners; the federal and state agencies that will provide funding for these initiatives to be implemented. The community members are so important to be part of the recovery process in the event of a disaster. Once we identify these potential mitigation solutions, we'll look at implementing the solutions the community decides to move forward with which will require funding. If you involve the agencies that provide the funding, if they've been more involved in the process, this can help as the process moves forward which can result in a successful implementation.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

RESILIENCY COMES TOGETHER HERE

Planning for a More Resilient New Bern

September 2020

Welcome!



- We appreciate your attendance. Please reference the ***Meeting Information Sheet*** for further information.
- Hybrid meeting format
- **Meeting Rules of Conduct**
  - Be respectful and courteous of others
  - Keep yourself on mute / turn off your video to lessen distractions
  - Wait for your turn for your question to be asked
  - If your question does not get addressed during the meeting, the planning team will respond in a timely manner

- **How to ask questions:**
- **If participating virtually, please send in questions to Amanda Zullo in the "Chat" feature – OR – use the "raise your hand" feature**
- **If participating at an in-person venue, please write down your questions on the note card provided and bring your questions to your meeting venue's moderator**

Meet Tonight's Speakers & Moderators



Amanda Ohlensehlen
City of New Bern



Mike Robinson
Moffatt & Nichol



Lisa Craig
The Craig Group



Amanda Zullo
Moffatt & Nichol





Colleen Roberts
City of New Bern



Dawn York
Moffatt & Nichol

Ways to Get Informed & Involved

- Complete our public participation survey by 9/24
- Subscribe to our mailing list
- Visit our project webpage often
- Get social!
- Email us: resiliency@newbernnc.gov

- Please visit www.newbernnc.gov/resiliency to learn more about the project, access all project resources, and take the survey



- Community Survey Metrics:
  - 151 participants so far
  - The survey takes approximately 10-12 min. to complete

Overview

- First Public Meeting for the ***Resiliency and Hazard Mitigation Planning*** Project
- We will provide about 20 minutes of information followed by about 10 minutes of ***Q&A***
- The presentation will ***repeat*** at the bottom of the hour for those that can join later
- More information is available on our City of New Bern ***Resiliency web page***

- ***Thank you*** **for participating in this virtual format!**



- **Resiliency web page**
- **Public Participation Survey**
- **Frequently Asked Questions**
- **Email list for project updates**

What is the goal of this project?

To develop a citywide
Resiliency and Hazard Mitigation Plan
to increase community resilience to flooding, including sea level rise and climate change, through an engaged stakeholder process



- **Municipal-level detail**
- **Overall community resilience**
- **Focusing primarily on the flood hazard for this phase**
- **Future conditions**
- **Public involvement, stakeholder engagement, and interagency coordination**

What are our objectives?



Create a Resiliency *Framework*

- ***Avoid*** hazards when possible
- ***Withstand*** future events
- ***Support*** post-disaster recovery
- ***"Build Back Better"*** at the citizen, business, and municipal levels

Develop Strategic *Initiatives*

- ***Routine*** (day-to-day) activities
- Highly ***feasible*** solutions
- More ***ambitious*** solutions

- **Social and community health programming**
- **Land-use regulatory changes**
- **Large-scale infrastructure projects**
- **Green infrastructure practices**
- **Nature-based solutions**
- **Take into account community values**

What will we focus on?

- Underserved and socially ***vulnerable populations***
- ***Historic*** properties and ***cultural resources***
- ***Economic resilience*** in historic main street and commercial areas
- Green and hybrid ***infrastructure*** solutions
- More ***self-reliance*** and ***less reliance*** on Federal support following future disasters
- ***Land use*** changes to improve resiliency
- ***Coordination*** within and beyond the city limits
- ***Community Rating System (CRS)*** participation under the ***National Flood Insurance Program (NFIP)***



- **Regional Resilience Tool Kit**
- **12 North Carolina State Disaster Recovery Framework Recovery Support Functions**
- **6 FEMA Recovery Support Functions**
- **NFIP Floodplain Management Guidelines**
- **National Park Service flooding adaptation guidance**

Some Key Definitions

- What is ***resiliency***?
  - The ability to ***withstand***, ***recover*** and ***respond*** more quickly and effectively following an event

- What is ***hazard mitigation***?
  - Any action taken to reduce or eliminate the loss of life or property due to natural hazards



- **Resiliency has many different definitions**
- **Resiliency takes into account sudden shocks and chronic stressors**

What is a vulnerability assessment?

Exposure	• The presence of ***people*** and ***assets*** that could be affected by a flood event
Vulnerability	• The ***susceptibility*** of those assets to a flood event
Risk	• The likelihood of ***occurrence*** and the potential ***consequences***



- **Our next public meeting will focus heavily on the preliminary findings of our flood vulnerability assessment**
- **You will have an opportunity to provide information that will help finalize that assessment**

How can you get informed and involved?

- **Virtual and online opportunities**
  - Virtual meetings through Zoom or WebEx
  - Project information website
  - Presentations
  - Social media such as Facebook and Twitter
  - Public participation surveys
  - Press releases
  - Other opportunities



- **Community engagement relies heavily on various forms of outreach**
- **We've been living in a digital age for decades. Now, due to COVID, our reliance on technology is more important than before**
- **Factoring numerous communication channels ensures our messaging is reaching more people in various demographics**

Community Engagement Opportunities

- **In-person opportunities (when possible)**
  - Public “town hall” style meetings
  - Interviews with community leaders
  - Stakeholder discussions
  - Different approaches with different groups
- **Printed materials (where possible)**
  - Posters/flyers at public locations
  - Meeting announcements
  - Hardcopy surveys
  - Project information for educational purposes
  - Information kiosk
  - Door hangers or mailed information



- **In-person outreach, if possible, provides more connection, more trust, and more synergy between the public and the project team**
- **Community engagement relies heavily on various forms of outreach**

Your voice matters!

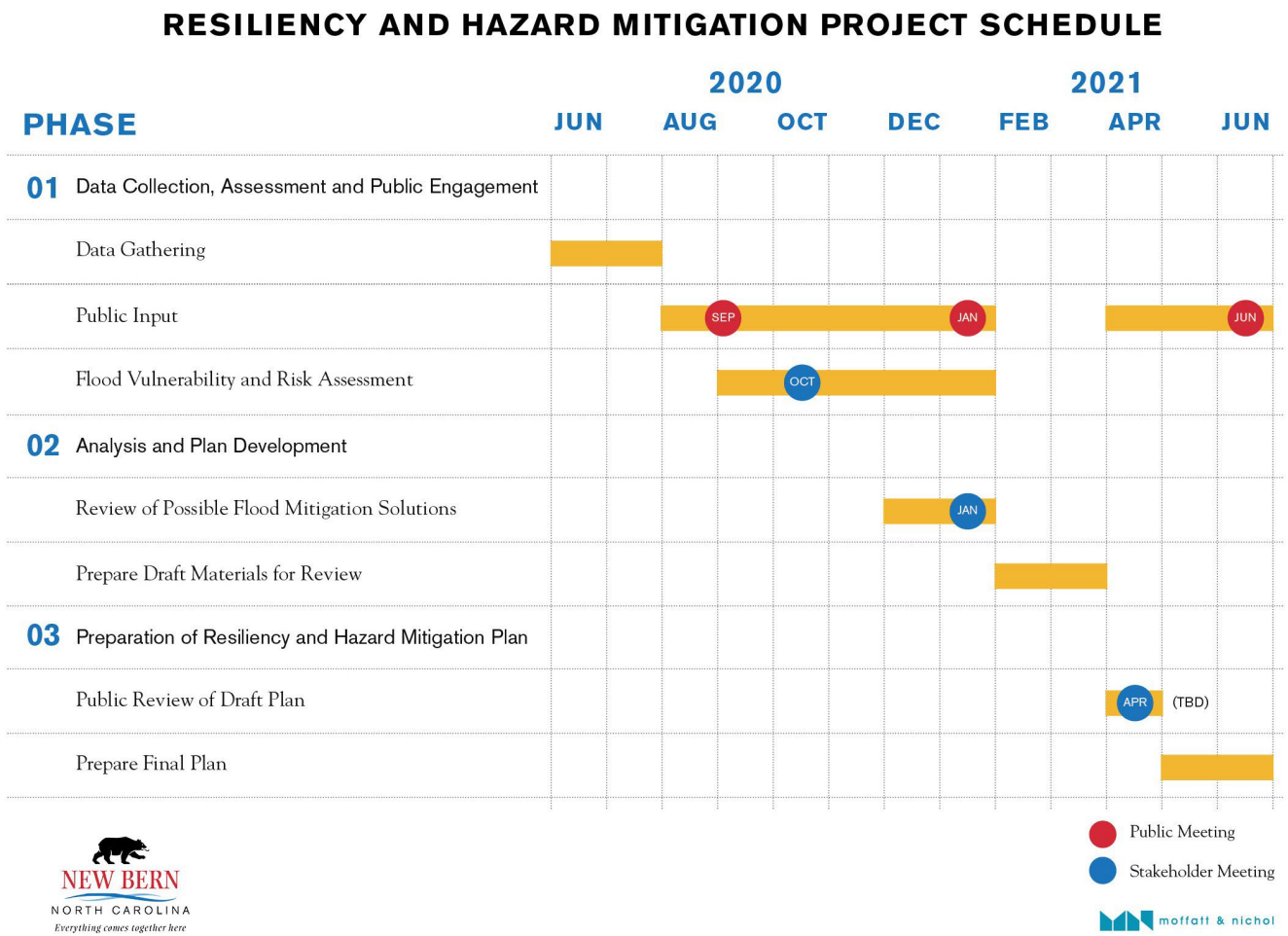
“My greatest concerns about how future flooding and storms will impact New Bern/Craven County are…”

- *“Making sure our **local City and County government leaders**, both elected and key staff, **are working with state and regional leaders** to make New Bern/Craven County better prepared and more resilient to flooding that will only increase as the climate changes.”*
- *“That resiliency plan does not adversely **impact underserved communities**. Funding and prioritizing projects based on what is best for entire city.”*
- *“My home and others in my neighborhood will flood again. **Can't mentally or physically handle another flood.”***
- “…I would hate to see lack of planning and forethought result in the ***destruction of the beautiful downtown historic buildings and general infrastructure.”***



- **Community Survey #1 shows:**
- **78%** of participants live in New Bern
- **67%** do not live in a floodplain, but 87% are very concerned and have been impacted by flooding caused by hurricanes and storms
- **80%** believe New Bern should regulate new construction/ redevelopment to incorporate flood protection measures
- **Take the Survey!**
- www.newbernnc.gov/resiliency

Project Schedule



NEW BERN
NORTH CAROLINA
Everything comes together here

- Three (3) meetings for the public to participate in the planning process and provide meaningful feedback for the plan effort
- Three (3) surveys to align with the public meetings for the public to share information
- Public meetings to occur in September '20, January '21, and June '21
- Schedule to adjust on an as needed basis

Your engagement will result in...

- New Bern's first ***Resiliency and Hazard Mitigation Plan***
- An interactive ***vulnerability assessment*** tool
- Ongoing ***community involvement***
- ***A more resilient New Bern!***



- **Many times the process used to develop a plan is as important as the plan itself**

Q&A



- **Reminder: Meeting Rules of Conduct**
  - Be respectful and courteous of others
  - Keep yourself on mute / turn off your video to lessen distractions
  - Wait for your turn for your question to be asked
  - If your question does not get addressed during the meeting, the planning team will respond in a timely manner
- Questions about the material presented today
- Thoughts and input for moving forward
- Specific expectations for this project

- **How to ask questions:**
- **If participating virtually, please send in questions to Amanda Zullo in the "Chat" feature – OR – use the "raise your hand" feature**
- **If participating at an in-person venue, please write down your questions on the note card provided and bring your questions to your meeting venue's moderator**

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

www.newbernnc.gov/resiliency

New Bern Resiliency Public Meeting 2 Information Sheet

This public meeting is conducted across multiple channels (Zoom, Facebook Live, and streaming at one (1) in-person venue). We appreciate your attendance in whichever format you're participating. To ensure a smooth and timely meeting, we politely ask that you adhere to the following rules of conduct:

1. Please be respectful and courteous of others.
2. If participating virtually, please keep yourself on **mute** and turn off your video to lessen distractions.
3. Please wait for your turn for your question to be asked.
4. If your question does not get addressed during the public meeting Q&A time frame, the planning team will respond to your question in a timely manner. All questions and answers will be shared on the project website (see information below).

How to ask questions during the Q&A:

1. **If participating virtually,** you can use the **chat** feature and send in your questions – or – you can use the **raise your hand** feature. **If using the chat feature**, the meeting moderator will see your question coming in through the chat and address your question to the planning team. **If using the raise your hand feature,** the meeting moderator will prompt you to speak by turning off your mute and allowing you to ask your question.
2. **If participating in person,** please come to the podium microphone to ask your question. This will ensure both in-person and virtual participants will hear your question.

Please visit our project website, www.newbernnc.gov/resiliency, to subscribe to our mailing list and access all planning related resources.

1. **Subscribe to our mailing list.** Sign up for the latest updates, meetings, and other information as it becomes available.
2. **Visit our project webpage often.** The project webpage will host all information relating to this initiative, including the project schedule and resources available for download. It is continually updated with the latest information and news.
3. **Get social!** Connect with us on social media by following the City of New Bern on Facebook, Twitter and Instagram.
4. **Email us.** Have a question, comment, or concern about the resiliency plan? Contact us at resiliency@newbernnc.govand we'll respond in a timely manner.

Please use the back of this page to take notes during the meeting.

NEW BERN
RESILIENCE

Notes:

New Bern Resiliency Public Meeting 2 Q&A

1. **Is the flood vulnerability assessment being funded from a grant or federal funds?**
   The planning process is funded through grants. The City of New Bern's Resiliency landing page describes the grants that fund this work, along with a timeline.

2. **During the flood vulnerability assessment presentation as part of Public Meeting 2, many maps were shown at the study-wide scale. Is the analysis available at a more detailed scale, perhaps at a neighborhood or block scale?**
   The assessment is performed at the level of scale presented. The City is able to evaluate parcel-level data.

3. **The survey appears to emphasize voluntary efforts to mitigate risk. What about other sources of financial assistance being identified sooner than later, that is, before the next flooding event?**
   The options for funding flood mitigation strategies will be analyzed in the next phase of the plan. Emphasizing with hazard mitigation at the community level requires many types of mitigation techniques to create flooding problem solutions. Individual property owner solutions and funds are available through State of North Carolina and federal government agencies such as FEMA, EPA, and NOAA. We will be looking at the most appropriate funding options across a diverse range of sources.

4. **Is this the first time a flood vulnerability assessment study been done for New Bern?**
   Yes, this is the first time the City of New Bern has conducted such a study.

5. **Will there be a future partnership between City and County officials to comprehensively address mitigation in the future?**
   As shown in the presentation's total survey area, flooding does not stop at municipal boundaries. It is the City's hope to provide this plan as a model to the County and to other communities.

6. **As part of the next steps, are there plans to include educating local government and stakeholders regarding climate science and how it effects planning and policy?**
   Our upcoming stakeholder meeting at the end of February will provide additional insight and contributions to the project that will build upon public meetings. All input will be incorporated into the plan document and mitigation solutions. We are looking for ways to make this a more meaningful process for all participants.

7. **Has the planning team worked in collaboration with state-level agencies to evaluate the feasibility of solutions? For example, NC Emergency Management, NC Office of Recovery and Resiliency?**

The State recently releasedthe NC Climate Risk and Resilience Plan in 2020. Members of the team provided potential mitigation solutions. State of North Carolina has in place a program for local hazardmitigation planning process. As we look at mitigation projects, we will make sure they are consistent with local, regional, and state priorities.

8. **What are the special considerationsregardinghistoric structures?**
   We are encouraging the use of the National Park Service's guidelines to minimize damage and as sources of targetedassistance for retrofitting historic buildings.

9. **Howcan a homeowner get more information on pre-disaster funding?**
   FEMA funding has a current program called Building Resilient Infrastructure and Communities (BRIC). For homeowners, typical projects include elevating the home, utilities, and similar mitigation projects. Homeowners work with local government to express an interest in a type of project, such as relocation or participation in volunteer acquisition. Homeowners can coordinate with the City of New Bern to submit an application to the State of North Carolina. Additional resources can be provided as needed. A dedicated email can be used to email questions to the City of New Bern Resiliency Email: resiliency@newbernnc.gov

10. **Where can we locate the information presented at Public Meeting 2 on flood vulnerability assessment?**
    The City of New Bern Resiliency
    Webpage: https://www.newbernnc.gov/departments/development_services/resiliency.php will have all public facing resources available.

    There was a comment at the end of the Q&A session. Georgina Sanchez stated this is a really interesting, comprehensive study. Thank you for sharing your preliminary results. She is a researcher with the Center for Geospatial Analytics at NCSU. Her team conducts extensive research to understand and anticipate increasing flood risk due to extreme precipitation and urban development. She would love to have a follow up conversation regarding the planned next phases (to identify solutions) for the City of New Bern.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

NEW BERN RESILIENCE

Resiliency comes together here

PUBLIC MEETING #2

Planning for a More Resilient New Bern

February 2020

Welcome!



- We appreciate your attendance. Please reference the ***Meeting Information Sheet*** for further information.
- Hybrid meeting format
- **Meeting Rules of Conduct**
  - Be respectful and courteous of others
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Meet Tonight's Speakers & Moderators



Matt Hutchins
NEMAC+FernLeaf



Amanda Ohlensehlen
City of New Bern



Colleen Roberts
City of New Bern



Amanda Zullo
Moffatt & Nichol

Flood Vulnerability and Risk Assessment



- Update of where we are in the assessment process
- Identification of community assets and potential threats/hazards
- Draft assessment results and findings (overview)
- Next steps
- Questions and feedback



Purpose of the Assessment

The purpose of the assessment is to provide a **resource to inform strategies and actions** that can build community resilience and mitigate the impacts of flooding

- Builds on and integrates with the City's planning efforts
- Uses an assessment framework to understand vulnerability and risk
- Is solutions-oriented and informs targeted use of limited resources

Ultimately, the information will be used to develop a ***Resiliency and Hazard Mitigation Plan***



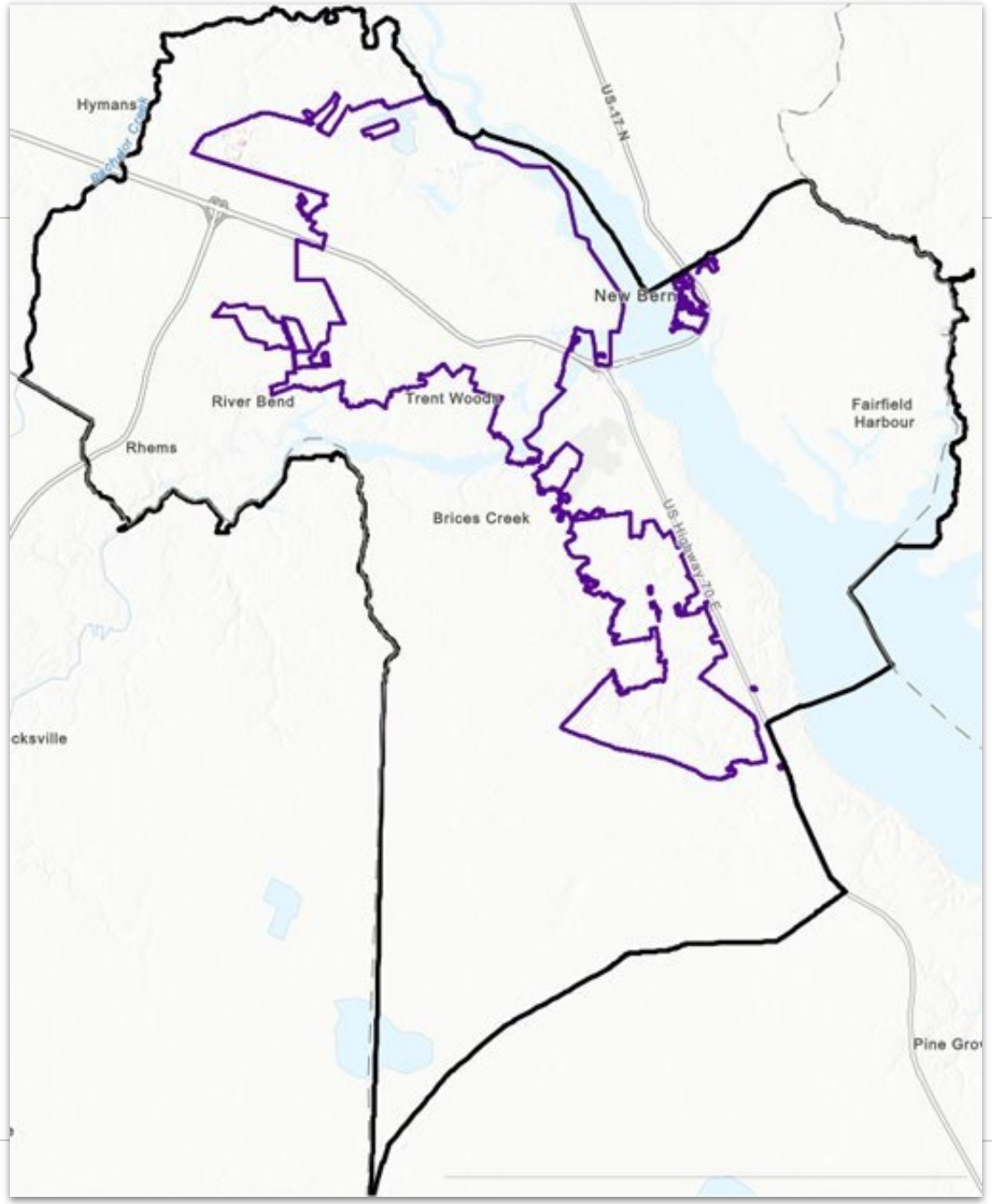
What is Resilience?

Resiliency is the ability of a community, business, school, family, or individual to **withstand** an adverse event, **recover** from it, and **respond** to it.

Current focus is on flood risk, looking at the physical, social, and economic impacts of flooding and how flooding affects our homes, businesses, workplaces, and other community assets.

Study Area

- Includes City of New Bern and surrounding area
- Main focus area is within the City Limits (purple line)

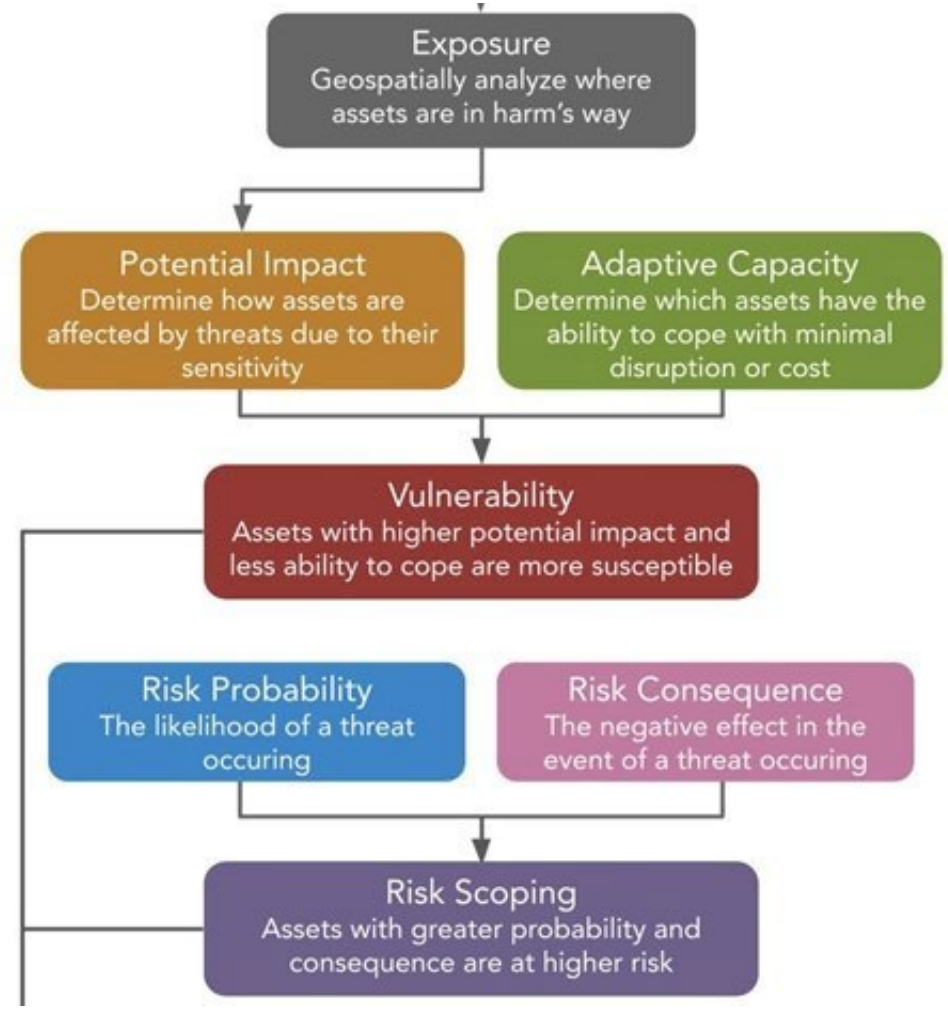


Assessment Framework

U.S. Climate Resilience Toolkit
toolkit.climate.gov

- **Vulnerability**: Susceptibility based on sensitivity/potential impact and adaptive capacity

- **Risk Scoping**: The probability and negative consequence of threats.

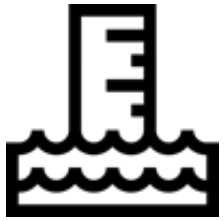


Flooding Threats and Hazards



FLOODING

- Floodplain Inundation (100-yr and 500-yr)
- Storm Surge Inundation (Cat 1-2)
- Storm Surge Inundation (Cat 3-5)
- Tidal Flooding (Current High Tide)



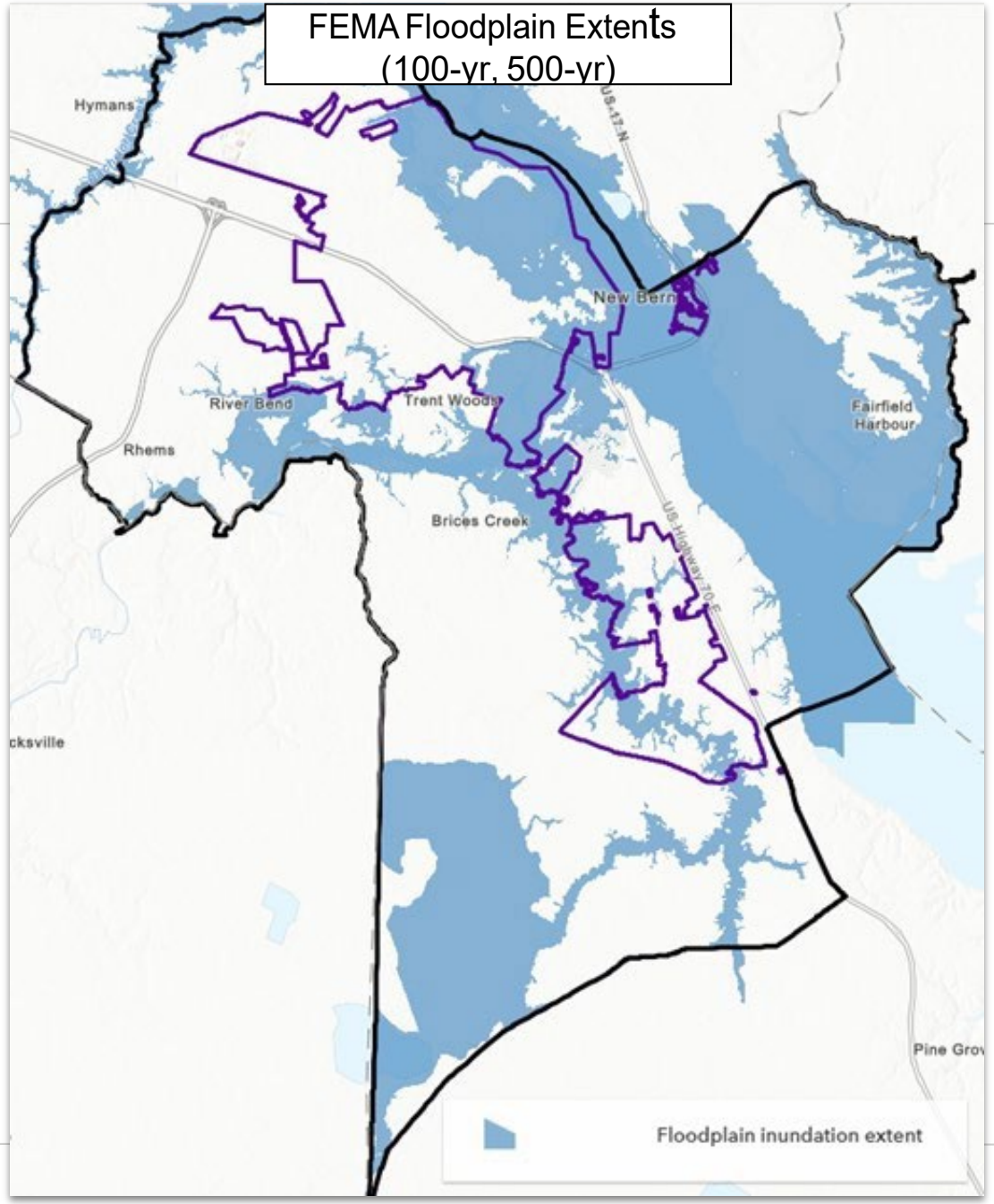
SEA LEVEL RISE

- 3 ft above MHHW
- 5 ft above MHHW

MHHW = Mean Higher High Water:
the average daily height of the highest tide

Sources of Threat Information

Floodplain Inundation (100-yr and 500-yr)	FEMA DFIRM (Effective June, 2020)
Storm Surge	National Storm Surge Hazard Maps (NOAA)
Tidal Flooding (Current)	High Tide Flooding (NOAA Office for Coastal Management)
Sea Level Rise (levels above MHHW)	NOAA Sea Level Rise Viewer (NOAA Office for Coastal Management)



Community Assets



PROPERTY AND PUBLIC SERVICES

Residential

Commercial & Industrial

Government-Owned

Critical Facilities (schools and public safety)

Parks and Cultural (community centers and religious)

Historic

ROADS & MOBILITY

Major and minor road systems

Access to critical services

ECONOMIC FACTORS

Sales volume

Jobs

PEOPLE AND SOCIOECONOMICS

Sensitive populations

Public housing

SNAP food retailers

Same exposure, different vulnerability

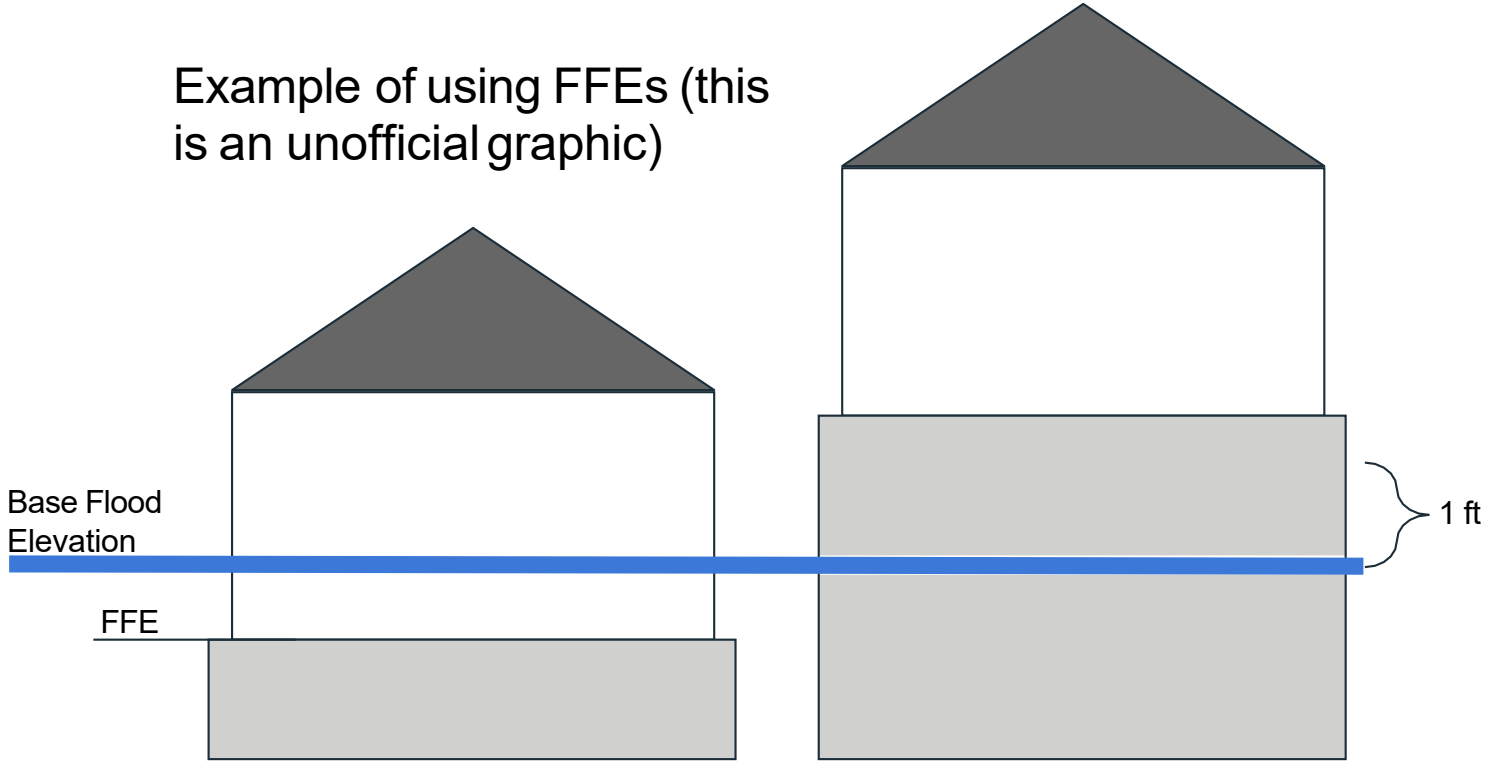


Example assessment considerations

City-specific factors are used to define what makes city assets highly vulnerable and at risk to flooding

- ✓Use or type of property and buildings in the floodplain
  - e.g. single family vs multi-family
- ✓First Floor Elevations (FFE)
  - Indicator of ability to cope with flood inundation
- ✓Likelihood of flooding
  - e.g. 100-yr vs 500-yr flood risk
- ✓Potential depth of flood inundation
  - Potential depth as it relates to established base flood

Example of using FFEs (this is an unofficial graphic)



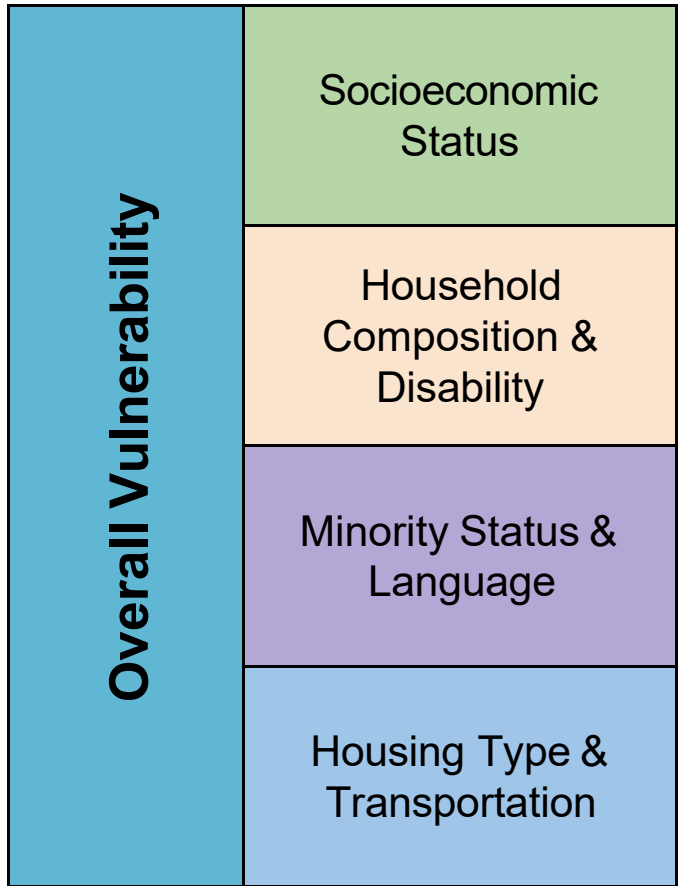
First floor elevation below base flood elevation (BFE)

First floor elevation more than 1 ft above BFE

Social vulnerability is a key consideration



- Vulnerable populations are disproportionately affected by hazard events
- Information used throughout the project to understand multiple aspects of social vulnerability
  - CDC's Social Vulnerability Index (SVI)
  - Critical Community Assets (community centers, food SNAP retailers, public housing)
  - Understanding from community input and past experiences (e.g. Hurricane Florence)



From CDC's SVI

Overview of Assessment Results (DRAFT FOR INPUT)

High levels of vulnerability associated with flooding and storm surge

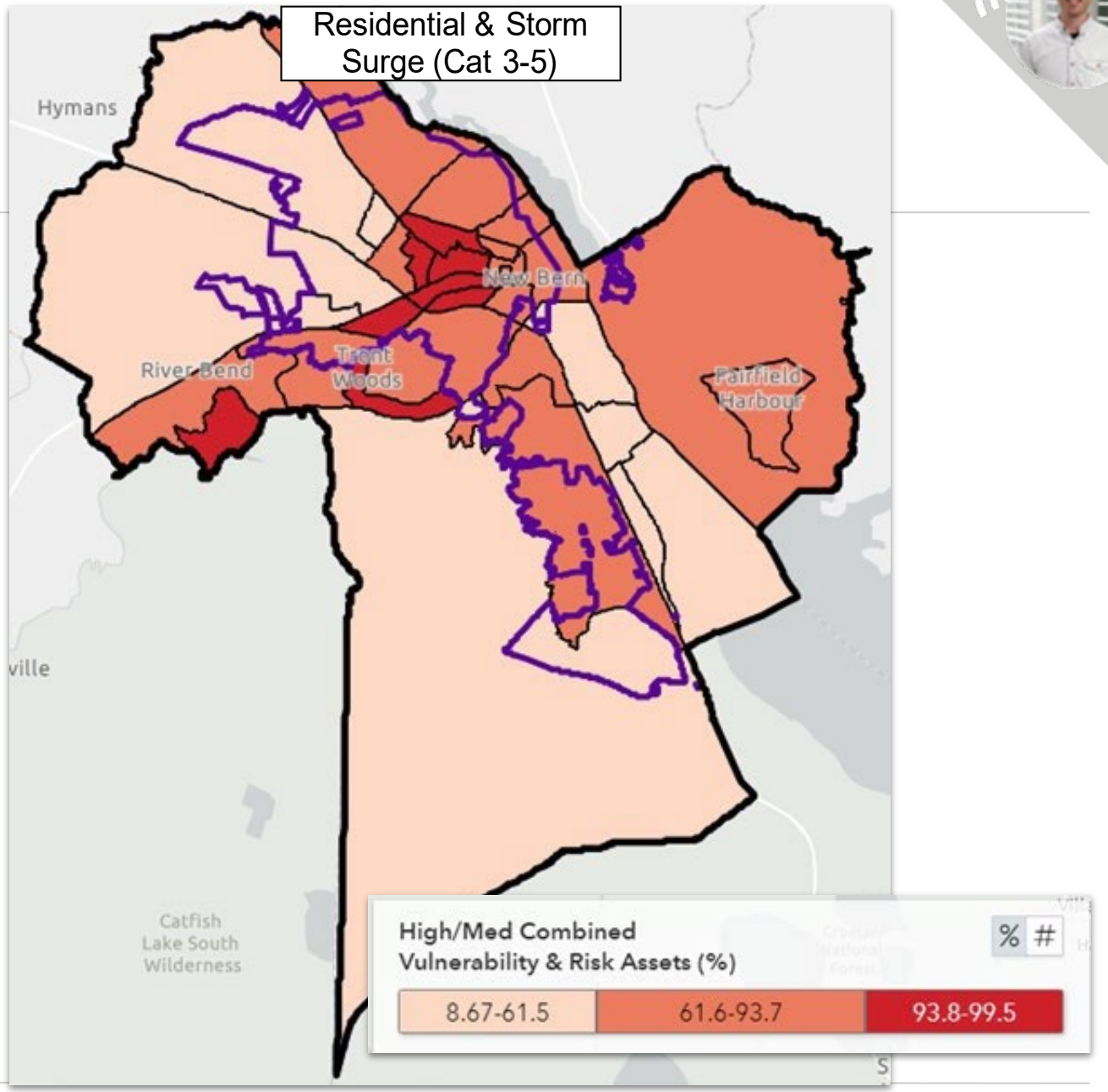
	Floodplain Inundation	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)
Commercial & (Businesses)	110 (11%)	93 (10%)	729 (75%)
Residential (Homes)	1,935 (17%)	1,909 (17%)	7,897 (68%)
Critical Facilities (Schools, utilities, public safety)	25 [illegible]	19 (10%)	109 (56%)

- Numbers and percentages are property parcels with medium to high vulnerability and risk inside the City Limits

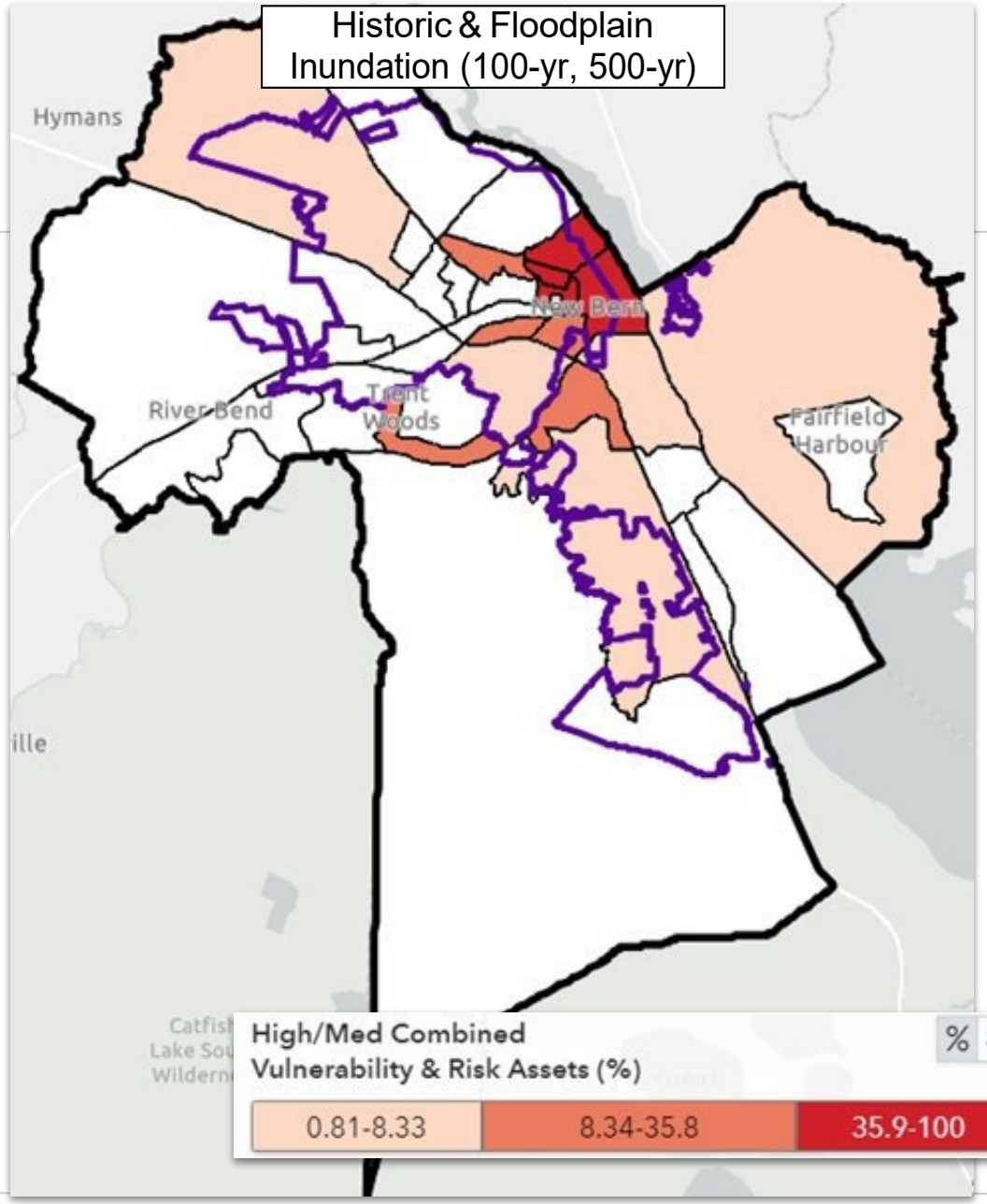
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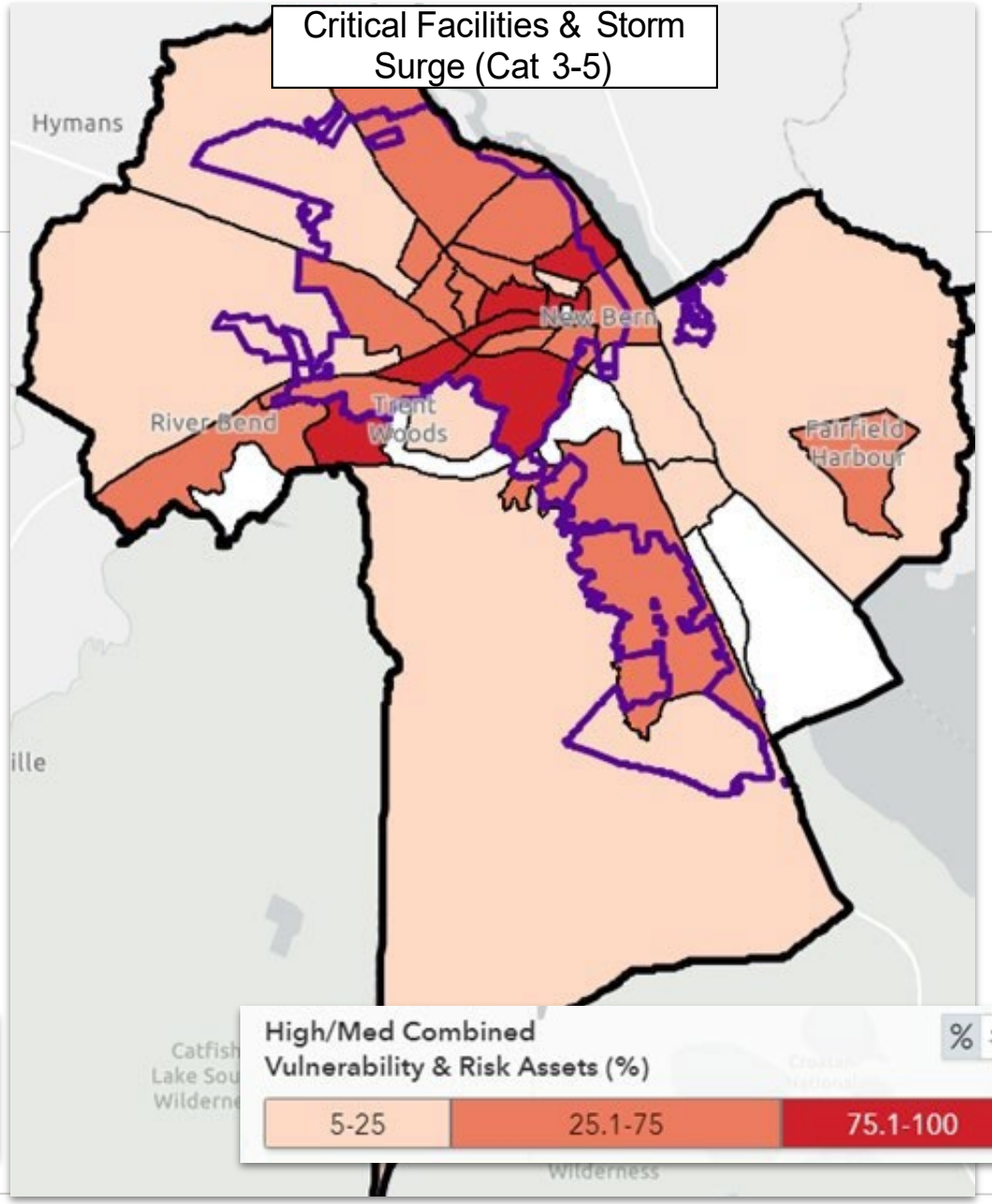
Certain areas of the City are more vulnerable

- Planning-scale maps help identify neighborhood areas with highest levels of vulnerability
- More than 90% of residential property is vulnerable to storm surge (Cat 3-5) in several neighborhood areas



DRAFT


Historic & Floodplain Inundation (100-yr, 500-yr)
Hymans
New Bern
River Bend
Trent Woods
Fairfield Harbour
High/Med Combined Vulnerability & Risk Assets (%)
% #
0.81-8.33
8.34-35.8
35.9-100

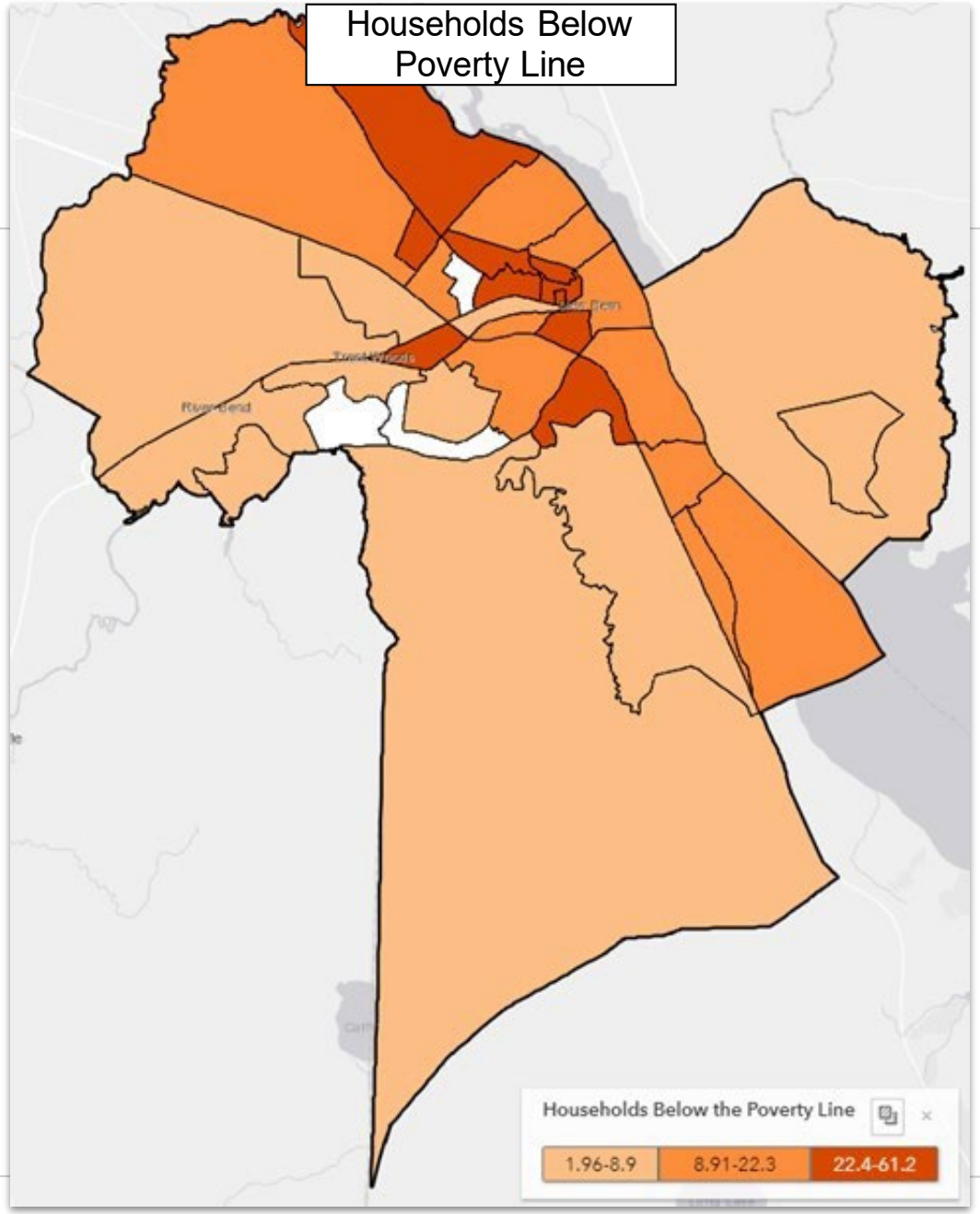

Critical Facilities & Storm Surge (Cat 3-5)
Hymans
New Bern
River Bend
Trent Woods
Fairfield Harbour
High/Med Combined Vulnerability & Risk Assets (%)
% #
5-25
25.1-75
75.1-100

DRAFT

Areas with sensitive populations are vulnerable

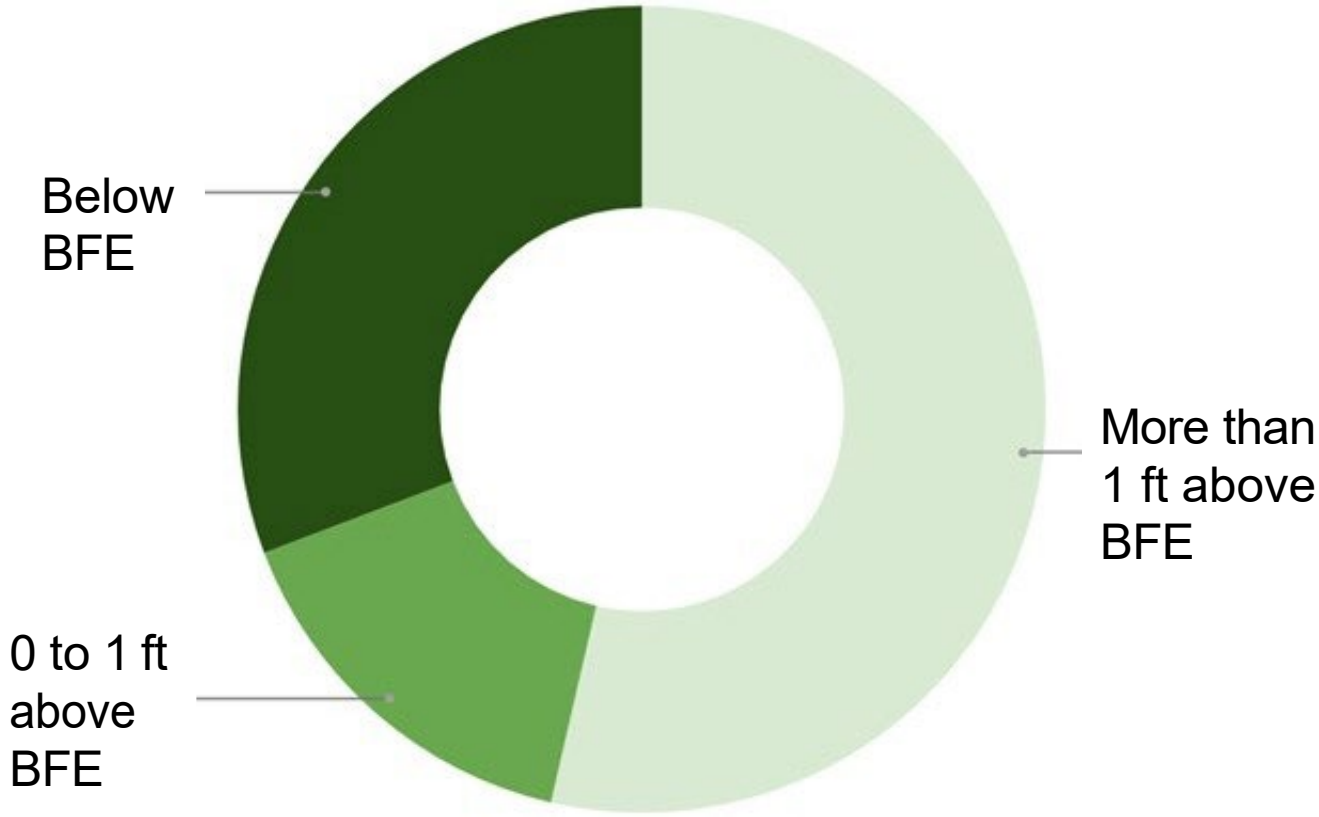
Residential vulnerability is high in areas with high percentages (more than 22%) of households are living below the poverty line (dark orange)

- 81% properties are vulnerable to storm surge (Cat 3-5)
- 27% properties vulnerable to floodplain inundation (100-yr, 500-yr)



Ability to cope with flood inundation is a driver of vulnerability

- 31% of properties have buildings below base flood elevation (BFE). Most of these constructed before development requirements were in place
- 69% are at or above base flood elevation



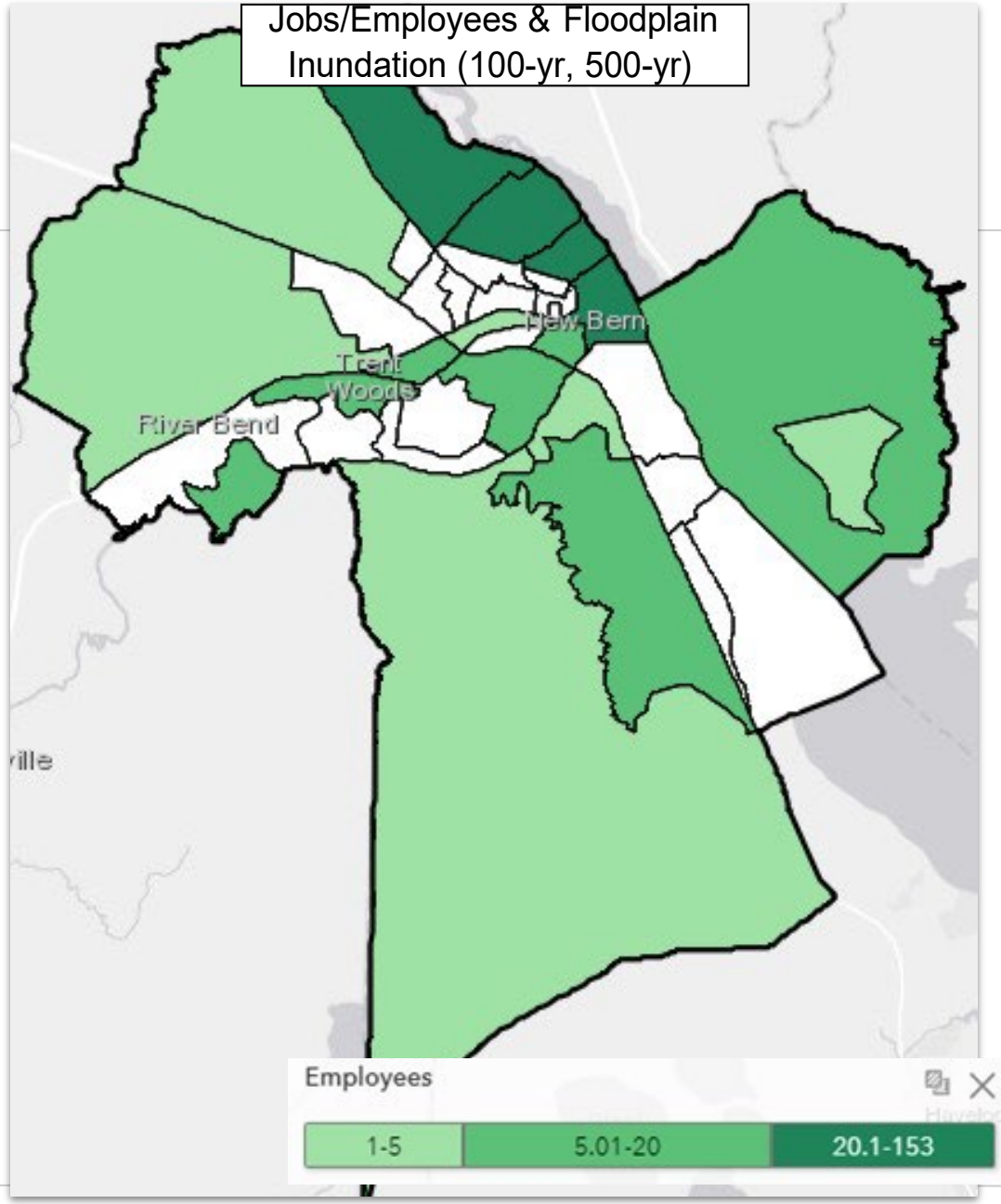
All properties prone to floodplain inundation

DRAFT

Places of employment are also vulnerable to flooding

	Floodplain Inundation	Storm Surge (Cat 1-2)	Storm Surge (Cat 3-5)
Jobs (employees at vulnerable business locations)	1,060 (17%)	990 (16%)	4,630 (74%)
Sales Volume (sales at vulnerable business locations)	$88M (6%)	$197M (14%)	$1.2B (86%)

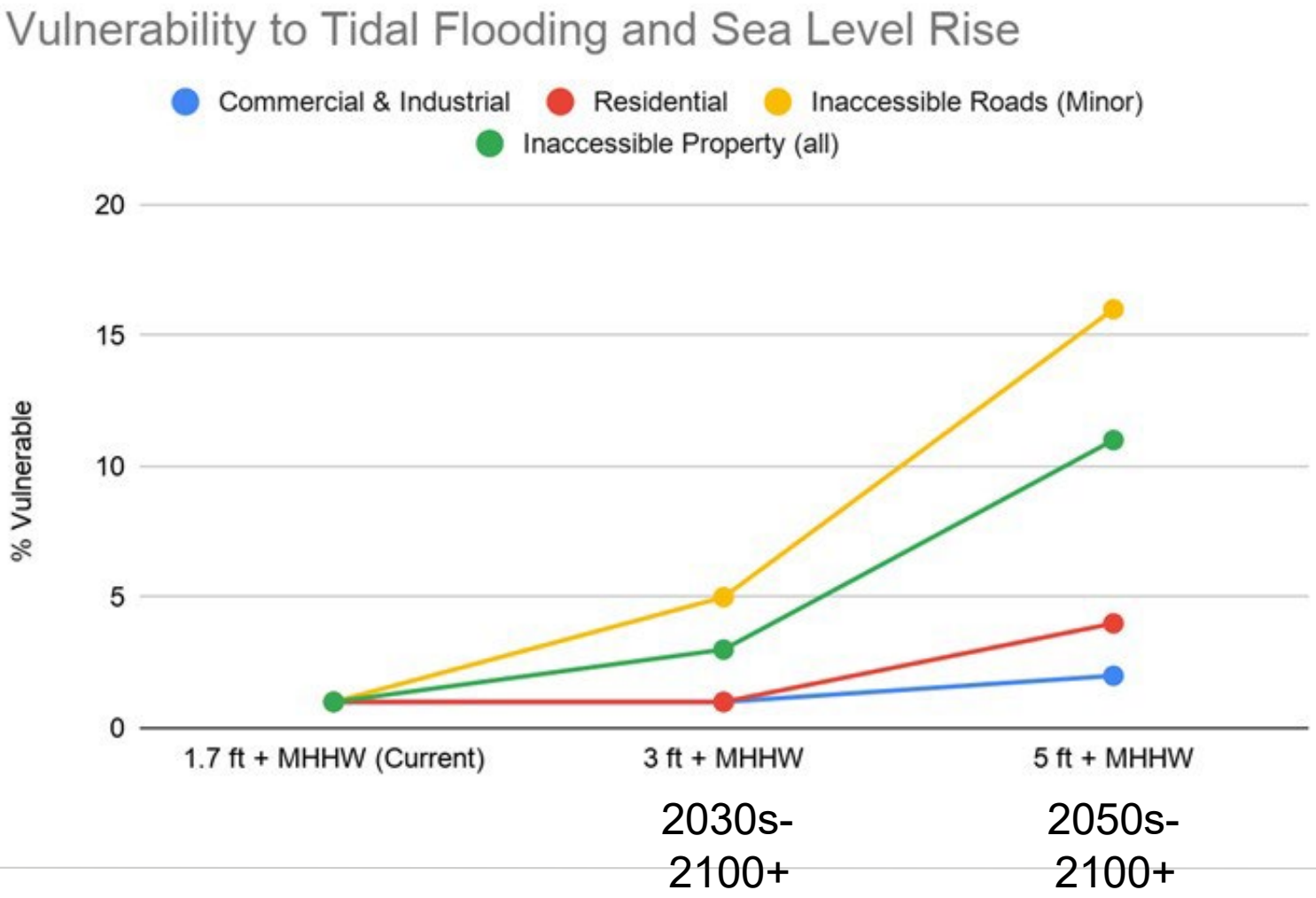
Numbers and percentages in the table above are those associated with medium to high vulnerability and risk inside the City Limits



DRAFT

Vulnerability to tidal flooding is currently low but could increase with sea level rise

- Roads and Mobility- potentially inaccessible roads (minor) and property
- Range in timing of future sea leve rise projections
- Time ranges indicate timing of potential tidal flooding and persistent inundation (based on NOAA High to Int. Low projections)



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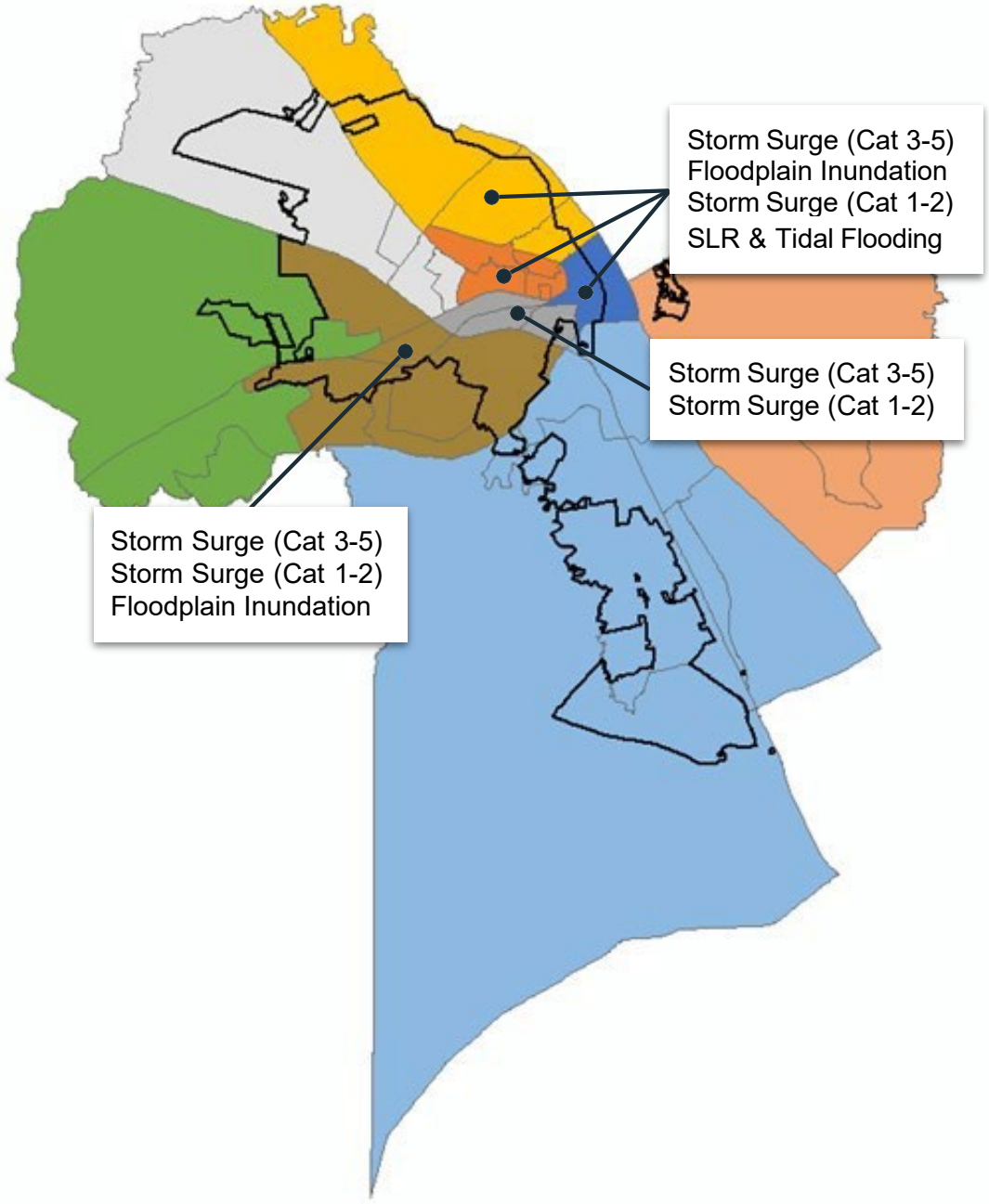
Additional considerations of sea level rise



- This assessment of sea level is a screening-level analysis
- Assessment highlights challenges but also opportunities
- There are also others risks associated with sea level rise
  - Increased frequency of tidal flooding
  - Increased risk to storm surge and coastal flooding

Key issues vary across the City

- Assessment provides ability to target key threats and specific types of vulnerabilities
- Potential solutions can be tailored in areas of the City in order to address specific issues



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Potential Resilience and Flood Mitigation Solutions (Next Phase)

Strategies and Actions



- Information from the assessment will be used to develop specific risk-based goals, strategies, and actions
- Strategies and actions may range from Infrastructure to Policy and Outreach (among others)
- Actions will be identified that the City can implement successfully over time

Public Participation



- **Reminder: Meeting Rules of Conduct**
  - Be respectful and courteous of others
  - Keep yourself on mute / turn off your video to lessen distractions
  - Wait for your turn for your question to be asked
  - If your question does not get addressed during the meeting, the planning team will respond in a timely manner
- Questions about the material presented today
- Thoughts and input for moving forward
- Specific expectations for this project

- **How to ask questions:**
- **If participating virtually, please send in questions in the "Chat" feature – OR – use the "raise your hand" feature.**
- **If participating in-person, please come to the podium microphone to ask your question.**

Questions?



Our team is available to answer any questions related to:

- Assessment process or methodology
- Draft results and insights
- Next steps
- Anything else?

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

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New Bern Resiliency Public Meeting 3 Q&A

1. **Who comprised the team that developed the draft plan (with qualifications please)?**
   Moffatt & Nichol (M&N) took the lead on this project. Moffatt & Nichol is a nationwide engineering firm which specializes in coastal environments and is familiar with eastern North Carolina through many years of work in this area. fM&N also partnered with a group from UNC Asheville, NEMAC-FernLeaf, who have been very hands-on with helping to develop the vulnerability assessment using a software called Excel Adapt. The Craig Group, lead by Lisa Craig, also assisted with this project. This group focuses specifically on hazard mitigation as it relates to historic preservation and has worked nationwide on similar projects. The local planning team involved consists of a dozen members that represent all of the City departments.

2. **Recognizing that this is a high-level project, how actionable will this final plan be for the average homeowner, renter, and business person?**
   The actions being developed have a two-page worksheet format where they will be described using actionable information including: who the lead agency or department responsible is; who the point of contact is; how much it will cost; what funding sources are available; if the cost is to the individual, city, county or other agency; where can citizens go to find more information; etc. For example: how to retrofit your home (elevating, floodproofing). These worksheets will answer all of these questions and define all activities, as well as explain how they will be implemented. The planning process also includes prioritizing projects and deciding which ones will be short-term and long-term, and take into account internal goals for the City of New Bern. This will all be built into the implementation section in the plan.

3. **What has been your rate of implementation on past projects?**
   With hazard mitigation planning projects in general, one of the biggest challenges has been implementation because of funding hindrances. We are closely monitoring a new FEMA grant program called BRIC (Building Resilient Infrastructure in Communities). Last year, $500 million was made available for resiliency projects. This year they've allocated $1 billion, because FEMA and state agencies have seen that successful resiliency projects need funding. We are aligning our implementation actions with appropriate funding sources such as this one. State divisions are also making funding more available for resiliency projects. Our hope is that as more funding becomes available, we see more success in capability to implement these projects.

4. **I am encouraged that the execution of some of these elements will be simple (speaking to what homeowners, business owners, and the local government can do).**
   Some of these projects will be more traditional and technical engineering projects, and some will be nature-based and more creative. Although some will be technical, there will be something for everyone to be able to use as we move forward.

5. **As far as implementation, are those elements going to be addressed via steps (ex. are you going to publish an order to implementation- what to first, second, third, so on)?**
   One method we are using is called the STAPLEE method- an acronym that stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. We will be conducting a workshop with City officials to score the actions that we come up with to prioritize projects. We will assign a score to each of the STAPLEE categories, and then look at the overall score for all seven. Then, we can rank the categories overall as well as rank the action items within each category, and look at what other factors (additional studies need to be done for each, and funding needed for each) and use this as a way to rank the order of projects.

6. **What is the term of your contract with the City from beginning to projected end?**
   The projected end is coming up soon. Regardless of what is on paper though, we are not going to finish this project and leave. We are going to stay involved as long as we need to as the plan is finalized and we go through the draft stages. Around August or September is the projected end, but we are not in a hurry to leave and end our involvement. Additionally, this was originally supposed to be a 12-month planning process, but with COVID-19, we have had to adjust as we move forward and some steps (public meetings, etc.) took longer because of COVID-19 restrictions.

7. **My concern is there will be a plan as the deliverable, but it will not be simple enough to implement.**
   The City does have a plan moving forward, but the plan is not the end of it, rather it is the beginning of a forward-moving project. The City has already looked into and applied for grants for funding for implementation of these projects. Follow-up answer from the City of New Bern: The City has already been awarded a $300,000, three-year grant from the State of North Carolina and hired a consulting firm to assist with implementation of projects from the resiliency plan. As projects come out of the plan, we already have funding to start implementation. Implementation has always been the goal from the beginning.

8. **A major emphasis in all BRIC funding (40% of the $1 billion) supports equity. How does this plan take advantage of these new funds?**
   FEMA recently announced which projects were chosen for BRIC funding. We are looking closely at those projects, how to make the City of New Bern resiliency projects competitive, and how to make the wording of our proposals align closer with FEMA's priorities so New Bern gets chosen in the future. FEMA is still defining equity in terms of criteria, benefits and costs analysis, and eligibility, so we are learning how to implement our project ideas so support their criteria for equity.

   Closing comments at the end of the Q&A session:
   Public participation over the past 10-12 months has been outstanding, especially given the circumstances with COVID-19. Thank you everyone for your participation and input.

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

NEW BERN RESILIENCE

Resiliency comes together here

PUBLIC MEETING #3

Planning for a More Resilient New Bern

July 2021

Welcome!



- We appreciate your attendance. Please reference the ***Meeting Information Sheet*** for further information.
- Hybrid meeting format
- **Meeting Rules of Conduct**
  - Be respectful and courteous of others
  - Keep yourself on mute / turn off your video to lessen distractions
  - Wait for your turn for your question to be asked
  - If your question does not get addressed during the meeting, the planning team will respond in a timely manner

- **How to ask questions:**
- **If participating virtually, please send in questions in the "Chat" feature.**
- **If participating in-person, please coordinate with Colleen to obtain the microphone.**
- **Time limit: under 4 minutes for public comments.**

Agenda



- Review the DRAFT New Bern Resiliency Plan:
  - Outline of Sections
  - Opportunity for Public Input* *(during meeting)*:
    - Vision Statement
    - Resiliency Pillars
    - Goals

*The following are in DRAFT mode to allow the public an opportunity to weigh in on aspects of the Plan.

- Discuss the Next Steps for the Resiliency Plan
  - Public to submit comments via online form on website (TBD)

DRAFT New Bern Resiliency Plan: Outline of Sections



- Table of Contents
- Executive Summary
- Introduction
- Planning Process
- Community Profile
- Capability Assessment
- Cultural Heritage
- Vulnerability Assessment
- Resilience Strategy
- Implementation
- Appendices

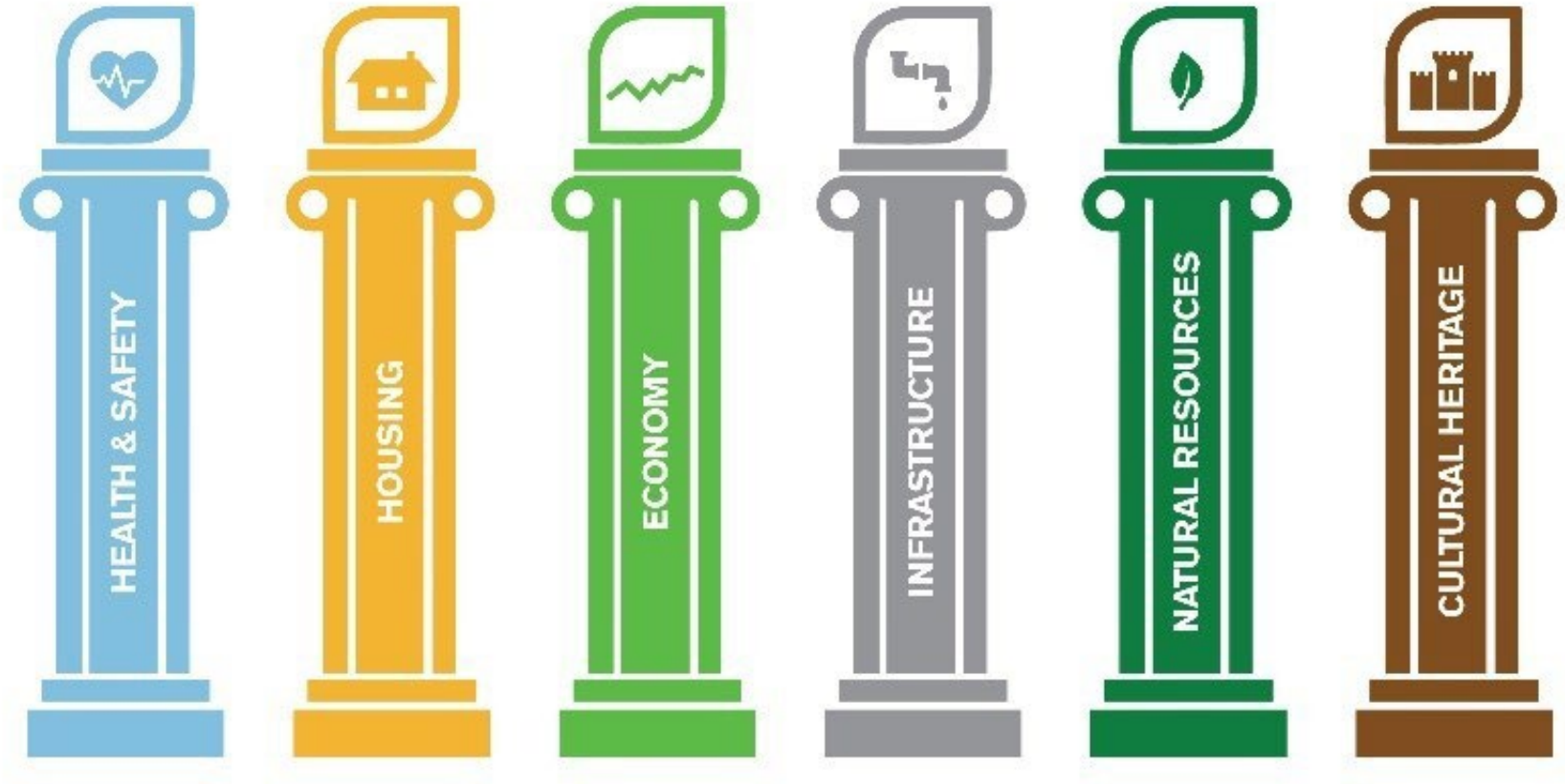
Opportunity for Public Feedback: DRAFT Vision Statement

- *By implementing the New Bern Resilience and Hazard Mitigation Plan, the City of New Bern, its residents, businesses and community stakeholders will prepare for, adapt to, and respond to a future of rising tides and extreme storms, embrace equitable and sustainable development, increase economic security, protect public health, and promote its cultural heritage.*



- **A strong vision statement helps determine and drive a community's direction.**
- **The Core Planning Team developed several draft vision statements for consideration.**
- **The final vision statement presented was selected from a list of three (3) initial draft vision statements.**

Opportunity for Public Feedback: DRAFT Resiliency Pillars



- Resiliency pillars create broad categories to define and categorize the community's goals and objectives as they relate to community resilience.

Opportunity for Public Feedback: DRAFT Goals



- ***Goal 1.A.:*** Provide accessible and affordable basic health services and communication.
- ***Goal 1.B.:*** Ensure easy access to fresh and healthy foods.
- ***Goal 1.C.:*** Increase construction of connected and equitable pedestrian sidewalks, trails, greenways, and bike paths for exercise and access.



- **Each resilience pillar is supported by goals and objectives.**

Opportunity for Public Feedback: DRAFT Goals



- ***Goal 2.A.:*** Educate citizens of best practices related to finances in predation of home ownership.
- ***Goal 2.B*** Educate citizens on best practices related to homeownership.
- ***Goal 2.C.:*** Partner with developers to create sustainable PUDs preserving open spaces for flood control and limiting impervious surfaces.

- **Each resilience pillar is supported by goals and objectives.**

Opportunity for Public Feedback: DRAFT Goals



- ***Goal 3.A.:*** Advance racial equity.
- ***Goal 3.B.:*** Build business resilience.
- ***Goal 3.C.:*** Provide training and educational opportunities for job skills/trades and provide a path to careers through internships and apprenticeships.
- ***Goal 3.D.:*** Advance Small Business startups throughout the community.



- **Each resilience pillar is supported by goals and objectives.**

Opportunity for Public Feedback: DRAFT Goals



- ***Goal 4.A.:*** Ensure daily peak capacities and operating reserve capacities are available and ensure redundancy in operating systems.
- ***Goal 4.B.:*** Ensure reliability through financial stability, design, testing, maintenance, and repairs.
- ***Goal 4.C.:*** Inventory all sidewalks and roads and compare for equitable access to well-maintained sidewalks and roadways.



- **Each resilience pillar is supported by goals and objectives.**

Opportunity for Public Feedback: DRAFT Goals



- ***Goal 5.A.:*** Design new developments to protect natural resource areas.
- ***Goal 5.B.:*** Convert flood-prone areas into safe accessible green and public spaces, making sure to include women, children, older persons, and persons with disabilities.
- ***Goal 5.C.:*** Design educational components in natural areas to convey their importance.
- ***Goal 5.D.:*** Promote physical and mental health through improvements in water quality and air quality.
- ***Goal 5.E.:*** Reduce flood risk while improving water quality and enhance wildlife habitat and recreational opportunities.



- **Each resilience pillar is supported by goals and objectives.**

Opportunity for Public Feedback: DRAFT Goals



- ***Goal 6.A.:*** Implement a public awareness and engagement program to support proactive action by property owners, stewards and residents in preparing themselves and their older and historic buildings for future disasters.
- ***Goal 6.B.:*** Lead with infrastructure resilience efforts in flood adaptation and mitigation to protect historic and culturally significant neighborhoods.
- ***Goal 6.C.:*** Ensure that disaster recovery incorporates a "build back better" approach that prioritizes building rehabilitation over demolition.
- ***Goal 6.D.:*** Align land use and economic development planning to incentivize the adaptation of cultural and natural heritage assets.



- **Each resilience pillar is supported by goals and objectives.**

Next Steps for Resiliency Plan

DRAFT Resiliency Plan Review by City of New Bern

Public Open Comment Period on DRAFT Resiliency Plan – Coming SOON to website!

- Review the plan during 30-day window
- Submit comments

All comments to be incorporated into FINAL Resiliency Plan

Any questions?



- **How to ask questions:**
- If participating virtually, please send in questions in the "Chat" feature.
- If participating in-person, please coordinate with Colleen to obtain the microphone.
- Time limit: under 4 minutes for public comments.

THANK YOU



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moffattnichol.com

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City of New Bern
Engineering Solutions Stakeholder Meeting: Day 1
February 22, 2021 from 9:30 a.m. to 10:15 a.m.
Meeting Minutes

Attendees:

Jeff Crump	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Christina Kopitopoulou	UNC-EPIC
Dr. Bill Hunt	NCSU
Rob Cox	UNCC

- **Ranking Flooding Threats before AccelAdapt**
  - Multiple people think floodplain flooding threats are the most important.
  - Storm surge and future sea level rise also ranked as important.
- **Ranking Flooding Threats after AccelAdapt**
  - Many people agree that storm surge might have more substantial impacts than floodplain flooding threats.
  - Floodplain and category 1-2 hazards look fairly similar.
  - Dr. Bill Hunt divided threats into tiers:
    - Top tier: floodplain and storm surge;
    - Middle tier: other (local stormwater flooding);
    - Lower tier: tidal flooding and sea level rise
  - Solutions to address category 5 hurricane and localized stormwater flooding issues are very different
  - Keep recurrence intervals in mind—floodplain and localized flooding are likely to occur more often than a category 5 hurricane
- **Ranking Assets**
  - Critical facilities, residential areas, roads, and socioeconomic services were ranked as the highest priorities for flood protection.
  - The storm surge during Hurricane Florence was probably closer to a category 3-5 even though the storm was only category 1. Why? Damages experienced during Florence were almost 2 orders of magnitude larger than the AccelAdapt category 1-2 damage estimates.
  - AccelAdapt estimates represent a maximum possible damage for high and medium risk properties under certain flooding scenarios.
- **Mitigation Solutions**
  - Some solutions are only applicable for certain types of flooding.
  - Local flooding issues and macro threats (storm surge, large riverine events, etc.) are two different drivers.
  - Pump stations developed by NC State along with the City of New Bern work great, but pump stations work best with levees and other protective measures.
  - It is important to quantify risk when developing solutions. How likely is the occurrence of the events we're designing measures to protect against?
  - Mitigation solutions will be further considered during cost-benefit analysis.

  - Green infrastructure can be "amenitized" for a community and can provide other benefits other than pluvial flood mitigation.
  - An improved stormwater conveyance system maintenance can be emphasized rather than just increasing capacity.
  - What value/co-benefits can we provide to the community via flood protection measures?
  - Comment: Bill Hunt stated the pump stations with berms/levees have potential for protecting against multiple flood hazards, as well as some green infrastructure throughout the City, and potentially breakwaters and living shorelines for coastal hazards.
  - The City of New Bern is in a very unique location that makes it vulnerable to many different types of threats and combinations of threats.
  - In terms of approach, nature-based solutions will be considered first.
  - Flooded roads impact access to lots of other facilities and services. If facilities cannot be accessed during flood events, does that make a stronger case for prioritizing protection for roadways?
  - Building elevations should be strongly considered, especially for high and medium risk structures.
  - We should employ principles of LID as a City requirement.
  - The City should employ building codes and ordinances with LID in mind; as there are current potential for legislative handicaps.
  - Policy is an important part of engineering.
- **Recommendations**
  - Pump stations with protective berms/levees.
  - Green infrastructure interspersed where possible throughout the City.
  - Make sure we understand the risks of flooding hazards compared to the solutions we are wanting to implement, and also the lifespan of those solutions.
  - Look for co-benefits with mitigation solutions— mitigation solutions that provide community amenities and/or aesthetic benefits.
  - Consider importance of transportation and its interaction with/relation to other facilities.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Flood Vulnerability Assessment Stakeholder Meeting: Day 1
February 22, 2021 from 9:30 a.m. to 10:15 a.m.
Meeting Minutes

Attendees:

Matt Hutchins	NEMAC+FernLeaf	Danielle Costantini	NCDEQ
Aashka Patel	NEMAC+FernLeaf	Jason Glazener	USACE/Wilmington
Don Baumgardner	Craven County	Sam Burdick	NCDCM
Maggie Battaglin	NCORR, NCDPS	Mary Hogan	NB Fin. Director
Sushma Masemore	NCDEQ	Bart Rovins	Taberna
		Grace Maze	USACE/Wilmington

- **Overview (Matt Hutchins)**
  - Matt provided an overview of the Draft Vulnerability and Risk Assessment, focusing on flooding and where it is to date.
  - He reviewed key highlights and summary information from the draft assessment. He explored a few example draft results in interactive AccelAdapt tool. Matt then opened the discussion up to any questions about high-level draft results.
- **Open Discussion**
  - Comment: Maggie stated she does not have any questions; however this is a really great tool that has a lot of good information.
  - Q: Sam asked who has access to AccelAdapt?
  - Q: Danielle asked about filtering and break out by asset type?
  - Comment: Bart stated his concern about the nexus of this effort to future planning and zoning types of issues and future considerations. The Battlefield District has new residential properties in areas that were very wet before the construction started and with only one paved road going in and out.
  - A: Matt replied this is the next step. The assessment is not regulatory (re: the construction comment), but more for the planning purpose. The roads threat is being considered throughout the assessment.
  - Comment: Mary stated she is new to New Bern, but she has lived in a few different communities with flooding. The problem is huge and multi-generational. She would like to get a handle on the pieces of the problem that we can chip away at - as a Director of Finance, breaking down things into what we can afford to do. In coastal Georgia, for example, she stated they did BMPs. In Durham, a water attraction deals with stormwater issues.
  - Q: Matt asked can the group identify any additional information or considerations related to flood vulnerability in the community?
  - A: Maggie stated there are buyout programs at NCORR. She has been talking to the City on expanding the program within the City of New Bern. She sees this data can help figure out where the funding can go.
  - Comment: As a resource to consider, the Hurricane Matthew Craven County Redevelopment Plan was offered:

https://files.nc.gov/rebuildnc/documents/matthew/rebuildnc_craven_plan_combined.pdf

- Comment: Sam stated in terms of low hanging fruit, HMP works at the regional level and Hurricane Matthew Redevelopment Plan at the County level. There may be some actions to pull from that. We should be using work that has already been done.
- Comment: Jason said wave and water level modeling data is coming out in the next year or too.
- Q: Matt asked does the USACE consider riverine vs storm surge flooding?
- A: Grace stated one of the problems is trying to separate those two. Wes Brown (USACE) would have a lot to say on this topic.
- Q: Sam asked regarding NCEM local level data, are we coordinating with NCEM to get data from them?
- A: NCEM is working on enhanced risk products and has historical flooding event extents (i.e. Hurricane Florence flooding)

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Historic Preservation Stakeholder Meeting: Day 1
February 22, 2021 from 9:30 a.m. to 10:15 a.m.
Meeting Minutes

Attendees:

Lisa Craig	The Craig Group	Jim Morrison	Greenbrier
Keri Ragland	The Craig Group	John Wood	NC SHPO
Bill Faulkenberry	MBF Architects, PA	Kennail Humphrey	Sunnyside
Chris Crew	NCEM/SHMO	Tripp Eure	MBF Architects, PA
		Marlena Byrne	NCDPS

- **Historic Preservation Review (Lisa Craig)**
  - Lisa explained our progress thus far on identifying historic preservation and cultural areas of significance.
    - Some of the properties are just important to the community.
    - We are in the process of mapping properties that are at risk. Looking at 1% and 0.2% annual chance flood zones. We have 335 properties in these categories that are designated. 205 of those are in the downtown area. Colonial era properties or individually listed properties are pinpointed.
    - Community noted some of the most important community ones. Listed a few are highlighted here. We also found out how critical the downtown was, not just in terms of buildings but also streetscapes, views, and access. We received many comments about churches, access to grocery stores, and the business district.
    - Other places include downtown buildings and individual businesses, focusing on the local economy and tourism. Mitchell's hardware, also a gathering place, was noted.
    - Some non-historic places were called out by the community as a place of normalcy, such as the convention center and walkways.
    - Vulnerable neighborhoods include some historic places but might not be located in a historic district. Important building to the community, including African-American places.
- **Top 3 Preferences for Possible City Actions**
  - Lisa asked the group to rank their top three preferences based on the following survey:
    1. Establish a field team to assist in pre-disaster preparedness and post-disaster recovery.
    2. Reduce flood risk and flood insurance costs by promoting participation in the National Flood Insurance Program (NFIP).
    3. Establish an incentive for flood adaptation at the local policy level.
    4. Develop design guidelines for adapting historic properties to minimize flooding.
    5. Educate residents and business about economic benefits of natural disaster preparedness.
    6. Educate home buyers and real estate professional about flood risk and adaptation.

7. Develop a "how-to" workbook/workshop on adapting historic properties to flooding.
8. Photo-document and laser-scan the most vulnerable historic properties in flood-prone areas.

- Overall results were:
  1. Establish a field team to assist in pre-disaster preparedness and post-disaster recovery.
  2. Reduce flood risk and flood insurance costs by promoting participation in the NFIP.
  - With these landing in a tie:
  4. Develop design guidelines for adapting historic properties to minimize flooding.
  6. Educate home buyers and real estate professional about flood risk and adaptation.
  7. Develop a "how-to" workbook/workshop on adapting historic properties to flooding.

- **City Actions Exercise**
  - Lisa walked the stakeholder group through the exercise to determine City actions.
    1. What actions can be taken?
    2. What barriers exist to taking those actions?
    3. What approach should be taken to accomplish the actions?
    4. What are milestones in the action process?
    5. What factors into the cost for those actions?
    6. Who is responsible for those actions?
    7. What are the immediate next steps for action?
- **Open Discussion with Stakeholders**
  - Q: Lisa asked what is the first action?
  - A: Multi-disciplinary team members; predetermine team makeup - multi discipline. John stated we need preservationists - accessing buildings ahead of time, engineers, architects, contractors, emergency management people, building inspectors. Local floodplain admin. Public works.
  - Q: Lisa asked what about residential areas? Who else should be a part of the field team?
  - A: A rep from the insurance industry to help educate people. Security or police presence for legitimacy
  - Q: Lisa asked how do we convene that group? Do they need training? What are the next steps to secure these folks, made of volunteers? What to do first once pulled?
  - A: We need training and a methodology to score things similarly.
  - Q: Lisa asked do we have any barriers to getting them to this point? What do we need to overcome?
  - Q: Jim asked what composition did the city's damage access team have last time?
  - A: Bill stated mostly governmental. Chris Crew added NC Cultural Resources has a CREST team, cultural resources emergency stabilization team. They give advice, provide training, and participate in the recovery of historic artifacts and buildings. Adrienne Berney at NCDCS is contact.

- Q: Lisa stated this is great information. A team is available and has a model for this approach. How do we get this started working with New Bern government?
- A: The government has many volunteer committees or Alderman will select someone from their ward.
- Q: Lisa stated there needs to be activation, someone ready to go. Is there a significant cost here or is it volunteers only?
- A: Jim answered I don't think there is a significant cost. Question is what can I do to my house that requires a sophisticated answer because there is an HPC process. What if we handed out this information right before events? What can I do, what is the cost? We need something with immediate actions.
- A: Bill stated it is about the makeup of the team. Committee is not called on often. Hopefully, the challenge is to have this that meets somewhat regularly to make sure they are still intact and ready. It needs to be looked at annually to keep it in place. Look at our history, more damage regularly.
- A: Jim stated the local historic district should be consulted on this. They oversee the certificate of appropriateness of changes. Working with them to have all of this written in advance, what does and does not require a permit.
- A: Tripp Eure stated some of the things we are doing include having some guidelines on elevating houses. Matt Schelly is working on how to prepare for a flood event regarding what you can and cannot do. Someone from HPC needs to be a part of that stakeholder group.
- Q: Lisa asked what are the immediate next steps for action? In terms of the how-to, what gets us to tie into your team, Tripp? It sounds like there are some things in the works with the Alderman. Do you have some things in the works already? Do you already have immediate actions plans, need to nominate more people? Under who?
- A: The planning department. We need a methodology for contractors who flood the area. We need to be able to coordinate with them about what the historic allowances are. They need some permission from the government on what they can do with and without review, what they should be qualified to do.
- Comment: Lisa stated you can pick something like hurricane preparedness month or flood safety week to get this information out for more education and awareness.
- Comment: Jim stated Riverside and the historic association are good avenues for that. When he was on HPC, some cities have modified their guidelines for non-primary facades. We can maybe use some substitute materials on other sides to minimize damage and recovery costs.
- Q: Lisa said let us jump to design guidelines. Which do just that, allow for synthetic materials for other parts of the house or for below design flood elevation level to help reduce flood costs. Tripp, is there room for a more robust approach?
- A: Tripp Eure stated there are two guidelines not yet approved. The first is elevating a structure, cannot be more than the regulatory limit. Second is that once the footprint has been elevated for terracing or landscaping to help bring the visual appearance back to original context. How To - staff is managing, alternative methods deemed acceptable with FEMA and Department of the Interior.

- Comment: Lisa stated there are some really good models out there in the sense of gathering. Those are resources we can help provide. I've seen several examples. That's an action we can take relative to design guidelines, is to get the how-to on adaptation strategies. Can ideas be sent to John Wood as a regional clearinghouse, compared with other communities? We want this to be applicable elsewhere.
- Q: Lisa stated I don't think we have barriers other than staff and time. What is the approach, Tripp, to getting these developed and in front of alder people for consideration?
- A: Tripp Eure said there's some other changes to the guidelines that we are waiting for to do as part of a package. To do all at once is the best use of time.
- Comment: Lisa remarked the milestone is then getting that information together and in front of you, Tripp.
- Comment: Tripp Eure stated Matt Schelly has a notebook of relevant information. Matt would draft the staff rules of procedures. He could use some help as he's busy.
- Q: Lisa stated another milestone is to draft the rules of procedures together. Putting this all together is more than just staff time. Is this something that could be a carry on of this plan? Do we need additional funding for more staff or resources?
- A: Yes
- Comment: Bill said HPC is limited to exterior guidelines. One of the things I noticed after the last event was contractors taking out a lot of historic fabric on the inside. Need to regulate but not confuse with HPC.
- Q: Lisa said we need to get some information in front of HPC. The next conversation on the 24th will be on the immediate actions. Final comments?
- A: Wood stated are there design guidelines with SHPO specifically for flooding? Will make a note.

- **Key Takeaways**
  - The group identified their top three (3) preferences for City Actions regarding Historic Preservation and Resilience. The top three answers were:
    1. Establish a field team to assist in pre-disaster preparedness and post-disaster recovery.
    2. Reduce flood risk and flood insurance costs by promoting participation in the NFIP.
    4. Develop design guidelines for adapting historic properties to minimize flooding.
  - The group then walked through an exercise to determine next steps for the City to take action.
    1. Establish a Team:
       - The first action is to create a multi-disciplinary team of preservationists, engineers, architects, contractors, building inspectors and other professionals. The group would need to establish a common methodology to score all properties and situations evenly.
       - To get this group started, the Alderman could appoint members of the committee from each Ward. A great tool will be to utilize the NC CREST (Cultural Resources Emergency Stabilization Team)

for advice and to provide training. The team would need to remain active and meet semi-regularly.

- Community outreach should take advantage of Hurricane Preparedness Month or Flood Safety Week to boost awareness. The committee could pass out information regarding HPC Guidelines on elevation and perhaps general adaptation costs as well as what they can and cannot do without review from the HPC.

2. Design Guidelines:
    - There is a need to revamp the design guidelines to allow for the use of synthetic materials for parts of the structure or perhaps those below the design flood elevation level. Tripp Eure indicated that there are currently revisions of the Design Guidelines up for review regarding elevation and landscaping. Guidelines in the future could include a "How To" on adaptation strategies. The barriers here are likely only staff and time and a milestone would be to draft a Rules of Procedures. Additional funding may be needed to support staff.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Public Outreach and Education Stakeholder Meeting: Day 1
February 22, 2021 from 9:30 a.m. to 10:15 a.m.
Meeting Minutes

Attendees:

Colleen Roberts	City of New Bern	Melissa Riggle	NB Conv. & Visitors
Amanda Zullo	Moffatt &Nichol	David Daniels	NB Police Dept.
Eryn Futral	NFIP/NCEM	Katy Hunt	Neuse Riverkeeper
Maria Cho	Res. Council		

- **Introductions (Amanda Zullo)**
  - Katy Hunt, Lower Neuse River Keeper – recently I spoke with BOA after fish kill in October. Emphasized that storm water runoff and pollution runoff are big causes of fish kills. We are focused on how we can protect green infrastructure and the health of our rivers.
  - David Daniels, NBPD – we make sure citizens are as safe as possible; how can we educate the community to stay safe during storms; storms put our staff in danger with rescues.
  - Eryn Futral, NC Emergency Mgmt. Risk Section, Eastern Branch NFIP planner – we are here to assist local communities with development of flood ordinances; wants to better communicate risk to communities and how the State can assist them.
  - Maria Cho, New Bern citizen – her home in New Bern flooded during Florence. She became part of CARE group, grassroots level to partner with city and improve resiliency planning. She is also a commissioner with Redev. Comm. which explores flood mitigation alternatives. She wants to help all voices learn about climate change and how we can move forward.
  - Melissa Riggle, new Executive Director of Tourism Development Authority – we promote the city throughout the state. When devastation occurs it significantly impacts tourism and our industry. Our goal is to gain insight as to when this occurs, how can we get the Visitor's Center involved and help to look out for tourism assets and hospitality partners. Storms affect tourism and businesses – how can we rebound long term?
- **Open Discussion**
  - Q: Amanda asked what resources can be brought forward to help the community as this plan moves forward?
  - A: Colleen Roberts stated there is the City PEG channel, social media, and website. The challenges are people are cord-cutting from cable, there is a decline in newspaper readership, people don't have access to the internet, and there is difficulty in assembling groups during COVID.
  - A: Maria Cho noted reaching out to churches and faith-based leaders. People often want to protect their church during times of need and times of disaster.
  - A: Eryn Futral said the State helps communities and cities with outreach to groups. They use realtors. We need to reach as many people as possible. Can we get community leaders and volunteers to help spread the word in their silos? We

need to reach children through education programs and help teach them about risk.

- A: Maria Cho spoke to NB Boys & Girls Club recently about how to get involved in climate change. We could all use a lesson in that.
- Q: Amanda Zullo asked what tools and strategies can we come up with as a group to help communicate out/extend this into the community?
- Q: David Daniels stated we do a good job of getting the information out, but some don't heed the seriousness of it. How can we better communicate the risk of flooding?
- Q: Eryn Futral stated how many people are reaching out to the Chamber or TDA on a regular basis?
- A: Melissa Riggle remarked several hundred in the last few months. We have active efforts going out to market to those folks. We continue to see a rise in people looking to relocate to our area. We receive inquiries from realtors too. Perhaps we put something in there – a communication hub or something where they can get this information. People usually visit New Bern 4-6 times before buying property here. Is there a platform people could use – do some communities use SMS/text messaging service for when Wi-Fi is down? Could we give directions as to where people can go to get information?
- A: Katy Hunt stated we visited several times before moving here to Riverside. After we moved in someone contacted us, a neighborhood representative perhaps. They shared a lot of information about the town with a welcome basket. Could we put information in there about resources and other important info?
- Comment: Colleen Roberts stated this is New Bern's Welcome Wagon/Newcomer's Club.
- A. Maria Cho said the City of Brevard has documents on floodplain info.
- A: Eryn Futral said the state provides maps that might be helpful. These can be brought into GIS to help show people floodplain information and where structures are vulnerable.
- Q: Amanda Zullo asked how best can we educate the New Bern community about the severity of sea level rise and how best to prepare for future flooding?
- A: David Daniels expressed concerns about our shelters/pet friendly shelters. He stated we have to wait for the county to release this information. By the time we get it, time is of the essence. We should explore how we can get that information out sooner, to help people make decisions sooner and get to those shelter resources quicker.
- Comment: Katy Hunt said we can use direct mail to alert folks to disaster preparedness and let them know they are in a flood prone area.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Stakeholder Meeting: Day 1
February 22, 2021 from 9:00 a.m. to 11:30 a.m.
Meeting Minutes

Attendees:

Amanda Ohlensehlen	City of New Bern
Colleen Roberts	City of New Bern
Jennifer Mayo	City of New Bern
Matt Hutchins	NEMAC+FernLeaf
Aashka Patel	NEMAC+FernLeaf
Lisa Craig	The Craig Group
Keri Ragland	The Craig Group
Mike Robinson	Moffatt & Nichol
Jeff Crump	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Amanda Zullo	Moffatt & Nichol
Rebeckah Sims	Moffatt & Nichol
Dawn York	Moffatt & Nichol

Historic Preservation Group:

Bill Faulkenberry	MBF Architects, PA
Chris Crew	NCEM/SHMO
Jim Morrison	Greenbrier
John Wood	NC SHPO
Kennail Humphrey	Sunnyside
Tripp Eure	MBF Architects, PA
Marlena Byrne	NCDPS

Flood Vulnerability Assessment Group:

Don Baumgardner	Craven County
Maggie Battaglin	NCORR. NCDPS
Sushma Masemore	NCDEQ
Danielle Costantini	NCDEQ
Jason Glazener	USACE/Wilmington
Samantha Burdick	NC DCM
Mary Hogan	NB Fin. Director
Bart Rovins	Taberna
Grace Maze	USACE/Wilmington

Public Outreach Group:

Eryn Futral	NFIP/NCEM
Maria Cho	Res. Council
Melissa Riggle	NB Conv. & Visitors
David Daniels	NB Police Dept.
Katy Hunt	Neuse Riverkeeper

Engineering Solutions

Christina Kopitopoulou	UNC-EPIC
Dr. Bill Hunt	NCSU
Rob Cox	UNCC

The Environment and Nature-Based Solutions:

Kip Peregoy	NB Redev. Commis.
Dr. Narcisa Pricope	UNCW
Greer Shivers	UNCW
Millie Chalk	Duke Energy Found.
Steve Bevington	NCLWF
Kimberly Ostrom	NB City Grants

Word of welcome from Mike – this is the first part of a two-session stakeholder engagement series.

- **Welcome and Overview (Amanda Ohlensehlen)**
  - New Bern's path to resilience was discussed as well as the overall project objectives. Creating a resiliency framework and developing strategy initiatives are at the cornerstone of this planning effort.
  - Specific focus areas were discussed (such as underserved and socially vulnerable populations and historic structures) as well as various support functions underway.

- **The Path Forward: An Overview of the Current Resiliency Planning Effort (Mike Robinson)**
  - The various efforts of what has transpired so far was discussed, including project schedule, public outreach and stakeholder engagement, local capability assessment, local vulnerability assessment and resilience and mitigation strategy development. Mike iterated the goal is to develop a citywide Resiliency and Hazard Mitigation Plan to increase community resilience to the flood hazard, including sea level rise and climate change. Mike stated is it important to identify resilience goals and activities that are realistic for the community.
  - In terms of the flood vulnerability assessment, Mike stated we are focusing on multiple types of flooding and we are using an assessment framework to understand exposure, vulnerability and risk. The assessment considers a wide range of community assets and resources and models various types of impacts.
  - In terms of the strategy moving forward, we are looking at resilience goals, objectives and actions both in terms of long-term vision but also short-term results.
- **Breakout Room Discussion (Amanda Zullo)**
  - The stakeholders were now going to segway into their designated breakout room discussions. The five topics are:
    - Historic Preservation – led by Lisa Craig, The Craig Group
    - Flood Vulnerability Assessment – led by Matt Hutchins, NEMAC+FernLeaf
    - Public Outreach & Education – led by Amanda Zullo, Moffatt & Nichol
    - Engineering Solutions – led by Jeff Crump, Moffatt & Nichol
    - The Environment and Nature-Based Solutions – led by Dawn York, Moffatt & Nichol
  - Each of the breakout rooms have separate meeting minutes, which will accompany these meeting minutes.
- **Conclusion (Mike Robinson)**
  - Each of the breakout groups shared in their key takeaways.
  - Housekeeping items were discussed, including the next stakeholder session will be held on February 24, 2021 from 1:00 – 3:00 PM.
  - Mike reminded the stakeholders of any homework assignments from the group.
- **Open Discussion with City (Optional) (Amanda Ohlensehlen)**
  - 23 invitees stayed on for the open discussion.
  - Q: Narcisa Pricope asked has the team prioritized locations and identified them for green infrastructure updates?
  - A: Dawn York answered the City has been awarded a grant to help with this effort. The goal is to use a similar stakeholder approach – go through the hazard mitigation process, ID the risk/vulnerability, social/equity access concerns, and understand where we can implement. We want to go through the initial process before we get to the field. We are aligning work with already existing efforts. Use the FVA and work the City is doing to align these efforts.
  - A: Jeff Crump stated we need to end up on actual projects. We need to have the threats quantified first then ID solutions from various perspectives. The approach is more high level than identifying different sites. Jeff showed AccelAdapt to the meeting participants.

- A: Matt Hutchins stated overlaying other data helps to ID the issues/impact and placing projects in high concentration vulnerability locations is key. We have to think about the economic development and what it is we are protecting.
- Q: Dawn York asked the identification of priority redevelopment efforts is underway. Could additional assets be added to this?
- A: Amanda Ohlensehlen stated this is part of reinforcing the discussions.
- Comment: Kip Peregoy stated their initial focus was stormwater management, and we can't increase housing / quality of life without managing everyday stormwater. Our goal is to have this area have the same opportunity to meet state stormwater regulations.
- Comment: Jeff Crump stated there's different scales of mitigation solutions, so we need to figure out how to make them "less bad". There is a toolbox of solutions.
- The group decided since there is overlap in the conversations happening between the Engineering Solutions group and the Environment and Nature-Based Solutions group, the team will evaluate the possibility of combining some of the groups for Wednesday's session.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Environmental and Nature-Based Solutions Stakeholder Meeting: Day 1
February 22, 2021 from 9:30 a.m. to 10:15 a.m.
Meeting Minutes

Attendees:

Dawn York	Moffatt & Nichol	Greer Shivers	UNCW
Rebeckah Sims	Moffatt & Nichol	Millie Chalk	Duke Energy Found.
Kip Peregoy	NB Redev. Commis.	Steve Bennington	NCLWF
Dr. Narcisa Pricope	UNCW	Kim Ostrom	NB Grants Office

- **Opening Remarks and Discussion (Dawn York)**
  - Appreciate all the introductions, especially the ties to the City of New Bern, and interest in environmental/nature-based solutions for resiliency efforts.
  - There is a lot we can discuss. This will be a very flexible, informal discussion. Dawn prepared some slides to help guide the conversation. They will be used as launching points to talk through during this session.
  - Dawn stated we want to drill down what topics are important for nature-based solutions as they relate to building resiliency for the City of New Bern.
  - Dawn stated we are halfway through the process so there is still a lot to do. We are moving into Phase II, with Phase I continuing.
  - The City of New Bern has been awarded NFWF funding through a grant to identify environmental/nature-based solutions with implementation recommendations.
  - Dawn stated to the stakeholders to think of what each is doing as not just stakeholder engagement but also project planning. Each stakeholder is a subject matter expert and critical to move this process forward.
  - Dawn stated we want to consider several environmental datasets to assess what makes the City of New Bern important from an environmental perspective.
  - It was noted most everyone in this session will also be on the second stakeholder session, held on Wednesday, February 24, 2021.
  - Dawn mentioned we are considering combining the nature-based solutions group with the engineering group for Wednesday based on debrief discussions today.
  - Q: What are the environmental assets that need to be protected, enhanced, restored? Suggested…
    - Water quality
    - Wetland degradation
    - Stream functionality
    - Floodplain connection
    - Threatened and endangered species
    - Anadromous fish
  - Q: What is it about the City of New Bern that makes it a priority for grant funding acquisition?
- **Discussion (Steve Bennington)**
  - LWF has approximately $5 million for statewide restoration efforts.
  - Water quality is the highest priority.

        - Resource value/water scores for City of New Bern are high.
    - Once water is restored, it helps other factors like species.
    - Then social factors play an important role in the scoring (i.e., community/social benefits for access and equity).
- **Discussion (Dawn York)**
    - M&N and City of New Bern are working with LWF (Justin) to match the NFWF grant. New Bern is in unique position as it sits in the landscape and how the community and staff are promoting/advocating for these efforts.
    - Redevelopment has a specific set of goals; one is greenway planning.
- **Discussion (Kip Peregoy)**
    - New Bern has a great Parks and Recreation Department. There are a lot of facilities on the water. Crabbing and fishing are prominent. Also, a lot of minority populations have access to the water. There is a low-income/public housing near Trent River that has been especially impacted by flooding but does exist with access. Stormwater management is key, and the City is currently working on a major stormwater project currently. (This was mentioned by Amanda Ohlensehlen to the large group later in the call).
- **Discussion (Millie Chalk)**
    - Duke Energy does not have as much money as LWF.
    - Grant is funded by an impact program (resiliency grant).
        - Monies are awarded depending on what has occurred in a given year (i.e., natural disasters and such).
    - Nature grant program protects wildlife, restoring natural resources, etc.
    - We are working on access to the water, especially for underserved communities.
    - Social equity and racial justice are another grant program with a three-year grant cycle.
    - Best fit for the grant program to apply to is needed.
    - A dialogue with funders helps to achieve successful grant awarding.
    - Millie sees that a patchwork of funds, from a variety of sources to provide the funds needed to implement the work, has to happen.
- **Question (Dawn York)**
    - Q: Which habitat types are most at-risk from flood inundation/erosion/SLR? Suggested:
        - Riverine shoreline
        - Freshwater marsh
        - Riverine swamp
    - Dawn mentioned that the City of New Bern is a riverine system but also coastal in nature. It is affected by storm surge and SLR.
- **Discussion (Narcisa Pricope)**
    - As part of SeaGrant, Narcisa stated we wanted to look specifically at wetlands from a high-level delineation with a better scale than NWI.

- **Discussion (Greer Shivers)**
  - Greer mentioned erosion impact on hardened structures occur over time, especially bulkheads being impacted by storm surge and undercutting the structure/washing the structure away.
- **Question (Dawn York)**
  - Q: Should there be a removal of existing bulkheads?
- **Discussion (Rebeckah Sims)**
  - NCNHP data was discussed for conservation value of biodiverse wildlife habitat that are based on weighted parameters to generate a score (parameters include watersheds, wetlands, streams, fish habitat, etc.).
- **Discussion (Narcissa Pricope)**
  - Narcisa showed Craven County CEG Visit 1 February 21, 2019 data and mapping. She examined the physical vulnerability of buildings below flood elevations and how they are mapped.
  - She also looked at socially vulnerable populations that are highly impacted by flooding as well.
  - The number of flood damaged residences were assessed and mapped post-Florence by block group layer.
  - Road infrastructure impacts were reviewed, then various scenarios (like SLR scenarios, etc.) were reviewed to assess impacts.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Engineering and Nature-Based Solutions Stakeholder Meeting: Day 2
February 24, 2021 from 1:30 p.m. to 2:15 p.m.
Meeting Minutes

Attendees:

Jeff Crump	Moffatt &Nichol	Kimberly Ostrom	NB City Grants
Dawn York	Moffatt & Nichol	Dr. Narcisa Pricope	UNCW
Allison Bryan	Moffatt & Nichol	Millie Chalk	Duke Energy Foun.
Rebeckah Sims	Moffatt & Nichol	Steve Bevington	NCLWF
Christina Kopitopoulou	UNC-EPIC	Kip Peregoy	NB Redev. Comm.
Dr. Bill Hunt	NCSU	Steve McGugan	NCEM
Jeff Ruggieri	NB Dev. Services		

- **Initial Discussion**
  - The group had a discussion of the potential nature-based and engineering solutions to mitigate flood risk.
  - Henderson Park and Trent Court are potential project areas identified as part of the City redevelopment effort.
  - Project ideas could be applied in different locations throughout the City, not just the two areas discussed.
- **Henderson Park**
  - Within the FEMA 100-year floodplain, BFE (building floor elevation) is 9 feet.
  - The surrounding drainage ditches (and Duffyfield canal) run to Jack Smith Creek.
  - The area experiences tidal flooding in addition to being susceptible to floodplain hazards.
  - The focus is on green space rather than just the recreation center building—how can community value be improved at this space?
  - The northeastern most ball field is often wet (with a couple feet of water) and the viability as recreational space is limited.
  - Stream restoration/rehabilitation along Duffyfield canal; coupled with establishment of wetland areas in wooded area west of park and the northeastern ball field area.
  - The relocation of recreation facilities will help utilize much of the area for stormwater retention.
  - The water will have to be pumped out due to low-lying nature of the area and shallow groundwater table.
  - We should consider how water can be kept in the retention areas until water can be pumped out, via flood walls, berms, etc.
  - Dr. Narcisa Pricope's lab at UNCW has a LiDAR drone that could be used to survey the area as high-resolution DEM (about 4cm vertical accuracy).
- **Trent Court**
  - The four lowest-lying buildings are condemned and are slated to be demolished and rebuilt.
  - The buildings were constructed in the 1940s and the area south of the four existing buildings will be designated for public open space, with the potential for the establishment of a living shoreline.

  - Some people think the waterfront should be developed.
  - There is a potential riverside treatment wetland with a total of 4.5 acres.
  - There is a potential grant opportunity. The State has a surplus in funds this year, largely funding innovative stormwater projects. This type of grant project has been done in Washington, NC
  - Q: What is drainage infrastructure like in the area?
  - A: The sanitary sewer lift station in the area is being relocated.
  - The State has a law allowing non-grant funded stormwater measures to serve as mitigation banks.
- **Other Considerations**
  - The City is prioritizing historic districts and the most vulnerable areas for mitigation.
  - The planning team can build on work that NCSU and UNCW have done to date.
  - Input from all the community stakeholders should be considered when deciding what kinds can/should be implemented in different areas. Today's discussion serves as a high-level brainstorming effort rather than definite project plans.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Flood Vulnerability Assessment Stakeholder Meeting: Day 2
February 24, 2021 from 1:30 p.m. to 2:15 p.m.
Meeting Minutes

Attendees:

Matt Hutchins	NEMAC+FernLeaf	Jason Glazener	USACE Wilmington
Aashka Patel	NEMAC+FernLeaf	Sam Burdick	NC. Div. of Co. Mgnt
Don Baumgardner	Craven County	Bart Rovins	Citizen, Taberna
Maggie Battaglin	NCORR, NCDPS	Grace Maze	USACE Wilmington
Sushma Masemore	NCDEQ	Kennail Humphrey	Sunnyside
		Greer Shivers	UNCW

- **Review of Monday's Session (Matt Hutchins)**
  - Matt asked is there anything else we did not capture from Monday?
- **Input on Key Vulnerabilities from Assessment**
  - Comment: Maggie stated she does not have any questions, however this is a really great tool that has a lot of good information.
  - Q: Sam asked who has access to AccelAdapt?
  - Q: Danielle asked about filtering and break out by asset type?
  - Comment: Bart stated his concern about the nexus of this effort to future planning and zoning types of issues and future considerations. The Battlefield District has new residential properties in areas that were very wet before the construction started and with only one paved road going in and out.
  - A: Matt replied this is the next step. The assessment is not regulatory (re: the construction comment), but more for the planning purpose. The roads threat is being considered throughout the assessment
  - Comment: Mary stated she is new to New Bern, but she has lived in a few different communities with flooding. The problem is huge and multi-generational. She would like to get a handle on the pieces of the problem that we can chip away at - as a Director of Finance, breaking down things into what we can afford to do. In coastal Georgia, for example, she stated they did BMPs. In Durham, a water attraction deals with stormwater issues.
  - Q: Matt asked can the group identify any additional information or considerations related to flood vulnerability in the community?
  - A: Maggie stated there are buyout programs at NCORR. She has been talking to the City on expanding the program within the City of New Bern. She sees this data can help figure out where the funding can go.
  - Comment: As a resource to consider, the Hurricane Matthew Craven County Redev. Plan was offered: https://files.nc.gov/rebuildnc/documents/matthew/rebuildnc_craven_plan_combined.pdf
  - Comment: Sam stated in terms of low hanging fruit, HMP works at the regional level and Hurricane Matthew Redevelopment Plan at the County level. There may

be some actions to pull from that. We should be using work that has already been done.
    - Comment: Jason said wave and water level modeling data is coming out in the next year or too.
    - Q: Matt asked does the USACE consider riverine vs storm surge flooding?
    - A: Grace stated one of the problems is trying to separate those two. Wes Brown (USACE) would have a lot to say on this topic.
    - Q: Sam asked regarding NCEM local level data, are we coordinating with NCEM to get data from them?
    - A: NCEM is working on enhanced risk products and has historical flooding event extents (i.e. Hurricane Florence flooding)
- **Discussion of example problem statement looking at the greater Duffyfield and Medical Center area. Also discussed how to use AccelAdapt to highlight how information is readily available to identify these issues and causes of vulnerability.**
- **Problem statement using Bart's example: road access and flooding impacts to homes (in Battlefield district and throughout the City).**
    - Summarize an assessment finding
        - Battlefield district area - flood risk related to road access; base elevations for homes probably meet regulatory requirements but during Florence the roads were inundated and stranded people. Many elderly people in this neighborhood (sensitive populations).
    - Identifies the effects/consequences of a hazard
        - Potential impact to human life/safety
        - The value of property - damage to homes
        - Insurance may only cover a fraction of the cost
        - Sensitive populations may be disproportionately affected by this financial loss
        - Affects emergency response (supply, etc.)
    - Identifies the causes of vulnerabilities
        - People may not be aware of the risk of driving through inundated roads
    - Comment: Bart stated the Countyline road is a dirt road that takes you to US70. The isolation of roads from this road could potentially landlock the Blue Water Rise development.
- **What are some examples for how these vulnerabilities can be addressed?**
    - Comment: Jason stated flood alert system.
    - Comment: Maggie stated post-disaster grants for residential acquisition, especially for long-term or perpetual vulnerabilities.
    - Comment: Sushman stated on transportation: DOT is currently evaluating highway systems that could be utilized in local efforts. There are also opportunities in the power sector.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Historic Preservation Stakeholder Meeting: Day 2
February 24, 2021 from 1:30 p.m. to 2:15 p.m.
Meeting Minutes

Attendees:

Lisa Craig	The Craig Group	Tripp Eure	MBF Architects, PA
Keri Ragland	The Craig Group	Janet Kelly-Scholle	NCDPS
Chris Crew	NCEM/SHMO	Amanda Martin	NCDPS
Jim Morrison	Greenbrier	Sabrina Bengel	B.of.Alder., Ward 1
Kennail Humphrey	Sunnyside		

- **Introductions (Lisa Craig)**
  - Tripp Eure represents the Historic Preservation Commission (HPC).
  - Chris Crew represents NC's emergency management manager and has worked on guidelines in Raleigh.
  - Jim Morrison represents the Board of Adjustment. He spent six years on the HPC and was active in historical society.
  - Janet is in the communications office of NC Office of Recovery and Resiliency. She has a graduate certificate in Historic Preservation from University of Kentucky.
  - Sabrina represents the Alderman for the first Ward. She is in her eighth year and has served on the HPC. Sabrina's husband has also done HP work in the community.
- **Review of Monday's Discussion**
  - Lisa reviewed the slides pertaining to flooding hazards and vulnerability maps. Areas were prioritized by the historic preservation or by community values through the online survey. Lisa mentioned we are beginning to identify properties that are particularly significant. These properties have to be prioritized due to FEMA guidance. There are 335 properties that are nationally registered. 205 of those are in the downtown area alone. There are other properties in the inventory that are vulnerable, particularly in Duffyfield and Dryborough, and DeGraffenreid.
  - In terms of public buildings, Lisa discussed the identified properties. Lisa reiterated concerns from the survey including residential area, churches, and roadways. We need to ensure the marinas are open and downtown commercial properties are active. We need to protect historical and social significant properties. Although the waterfront has non-contributing significant properties, the community feels when the park and convention center are open, that circumstances appear to be normal again. It was noted that what may be good for designated buildings will also be good for all older buildings.
  - Comment: Chris Crew stated FEMA Region IV is working on the new guidance for elevations concerning historic structures. At one time there was a set of "historic foundation treatments" suitable for use on elevations that were deemed to have an adverse impact. There may be an opportunity to participate in a wider conversation and make some amendments to the local historic development guidelines.

- **Owner / Resident Actions**
  - Q: Lisa asked in order for people to be more informed about their risk, what actions need to be taken to ensure that property owners are aware of their flood risk? Are there people who don't know their flood risk?
  - A: Yes, I think people don't know exactly what it is or what the flood risk was. Sabrina Bengel stated a lot of what she saw during this time was that people don't understand the process, what freeboard or elevation is or what their elevation is. It is confusing. To her, every time somebody buys a house, they need to be told. These are important things to know in an area that floods. A lot of people are unable to process what everything means for them. They don't know how to make the necessary decisions. Her ward has flooding over different neighborhoods.
  - Q: Lisa stated we need actions that simplify and communicate the flood risk and we need to develop methods to do that. Lisa asked Sabrina what were some of the barriers? What can we do to help?
  - A: Sabrina Bengel said so many people are in the same boat, we were overwhelmed with so many people who had flooding. She stated we didn't have enough staff or people to talk to them one on one. A lot of that was a barrier. Now that we are more informed, Sabrina would like to see statewide legislation to see this information on a deed and to give the people the information. Before someone get a building permit, tell them the elevation. People who have never flooded in 100 years did this recent time.
  - Q: Jim Morrison asked if this could be put on a tax bill, perhaps annually?
  - A: Sabrina Bengel stated there would be a cost associated to get a surveyor to perform the work.
  - Q: Lisa Craig asked the group what about a meeting? Someone could come to a meeting and explain where the neighborhood lies on the flood map?
  - A: Sabrina Bengel stated they hear you after, not prior. It would be better to have a Facebook site where people can seek this information on their own.
  - Q: Jim asked if everyone knew about NC FRIS? https://fris.nc.gov/fris/Home.aspx?ST=NC
  - A: This site helps to tell you about flood risk at different elevations.
  - Comment: Lisa stated we will have some map products that are clear to make things easy to locate. There is a NB resilience page on the website to make information easily accessible. This needs to be one step so people can identify where are you on the floodplain and what improvements you can make.
  - Q: Lisa stated there is another concern with the real estate community - how does this impact somebody trying to sell their home? That's an important step so that people can still buy properties and understand flood insurance and what they can do.
  - Comment: Lisa stated part of the outreach and vulnerability is people will need flood insurance if they have flooding after an event. Everyone needs to understand the consequences.

- Comment: Janet Kelly-Scholle stated she was looking at a property on Zillow. The FRIS flood rating for properties near the coast is already available.
- Comment: Lisa stated I think people are being more diligent now. Real estate professionals have to tell them if they are asked, but maybe not without asking.
- Q: Lisa asked who is responsible for helping property owners? Who is responsible for getting this information out?
- A: From the political side, all homeowners should seek this information out. If someone gets mortgage, the bank and insurance provider should also be involved.
- Q: Lisa asked what are some immediate next steps? A robust website?
- A: Yes, you need to coordinate with community responses. Educating the realtors, the bankers, and insurance people so that they know it's their outreach to very specific stakeholders.
- Q: Lisa stated let's jump to adaptations. What do we need to provide to encourage, promote, and support for property owners to act themselves? The City will develop guidelines. What do we need to do to connect the property owners and adaptation strategies?
- A: The HPC has been discussing adaptation strategies, however there are no specific conclusions yet. There are a variety of different methods out there. This will require more dialog.
- Q: Lisa stated to this point, before this meeting, there was a review of specific flood adaptation strategies that meet NPS guidance. It sounds like a presentation like this would be useful. What is appropriate and characteristic to New Bern, such as flood vents? What are examples of what might fit within the district? A flood wall or berming that is consistent with guidelines. What are examples of elevation and what materials were used?
- A: We are just not aware of all of the options. We have initial information from FEMA documents.
- Comment: The biggest issue we had was a lot of complaints of people not understanding why they can't use certain materials; they just want to get things fixed but they don't understand why they aren't allowed. We should create a coalition of federal and state people to work and come do a session with HPC and the Board of Alderman so that we can understand and help advise our citizens. Someone stated they would like to see more help from state and federal and want to know why we can't use or do certain things.
- Comment: People seem to not know they're in the HP district. They need to get approval in emergency situations. There is room for refinement in a multi-disciplinary team idea.
- Comment: Lisa stated we could use rules of procedure and learn from Florence.
- Comment: Janet stated some of my research was on this communication gap including how to prepare, how to communicate during a disaster. There are quite a few resources but are not all pulled together. HP owners need to be educated in advance, as this takes time and effort. The SHPO does have some info and videos on their website. They do some boots on the ground walk throughs, handing out

flyers, and giving advice. There are resources but they are scattered, not pulled together, and need to be supplemented.

- Comment: Lisa stated there are several how-to's for information on how to do things like try out photos, mantels, woodwork, etc. How to do all this is out there.
- Comment: The CREST team would do this if you provide the opportunity for them. They need an audience.
- Comment: We need to remember that they are historic properties not in the district. In some cases, some of the redevelopment areas need to show opportunities in the houses that they can renovate or build for flood containment.
- Comment: One other challenge is the information packet needs to be given out so that insurance adjusters will be coming by. They don't understand the HP and tell people to tear everything out and that they would pay for it. This may prolong owners from getting in houses.
- Comment: In a post event scenario, people want to get back in their homes. But we need to get ahead of this curve. We need to use hurricane preparedness month, to get this information out.
- Q: Lisa stated it may come down to costs, and really just pulling all of this information together. Responsibilities for this might be this team, working with the City and perhaps one of the cultural organizations, and neighborhood groups. It sounds like a communication, information gathering, and distribution effort.
- A: Yes.
- Q: Lisa said it does take leadership. Alderman can join in; it might just be a request to get the committee up and running and tasking it as the next step?
- A: Sabrina Bengel said right now our main action is flood mitigation and funding sources. We are looking at lots of different areas as so much of my ward is historic. Even in our minority community, redevelopment, on the flip side, retention ponds where we can build.
- Comment: Lisa said we have opportunities for leadership, information gathering, combining community and residential and city resources. Lisa thinks we have most of the information for these two big things.
- Comment: Between the City and resident actions, we have a good menu to move forward with planning efforts and next steps. We can provide information on grants and funding to help with this.
- Comment: What we really need is information on what will work in New Bern, what is consistent with NPS guidance, and how that information ties into the design guidelines of being refined and supplemented.
- Comment: There needs to be a simplified and common understanding of what is the risk, where are people in the floodplain, how are they vulnerable, and what does it really mean. What do I need to understand about what is sufficient to protect my property?
- Comment: We need a robust website, which is already started, to get people moving over to the website, provide an online toolkit with examples of adaptation strategies of what will work and what has worked.

- Q: How do we accomplish this working with partners like real estate and insurance companies? Where do we put this information? Do we reach out to the neighborhood and present how to go about doing this?
- Comment: Make sure that people do understand about NFIP, what is covered, and what isn't. Are you in an HD or just an older, vulnerable property? How do we get people back in their homes?
- Comment: What is permissible materials specifically in New Bern? Check with the state on guidance, determine if synthetic materials are acceptable options.
- Comment: Videos might be an easy entry. There are lots of resources available. We can think of the CREST program as an outreach tool.
- Q: Who can do this to share with residents?
- A: This might be a field team committee.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Public Outreach and Education Stakeholder Meeting: Day 2
February 24, 2021 from 1:30 p.m. to 2:15 p.m.
Meeting Minutes

Attendees:

Colleen Roberts	City of New Bern	Melissa Riggle	NB Conv. & Visitors
Amanda Zullo	Moffatt & Nichol	David Daniels	NB Police Dept.
Eryn Futral	NFIP/NCEM	Tiffany Dove	Pembroke
Maria Cho	Res. Council	Katy Hunt	Neuse Riverkeeper

- **Introductions (Amanda Zullo)**
- **Open Discussion**
  - Q: Amanda Zullo asked what are key action items New Bern should consider as part of the outreach portion of the New Bern resiliency and hazard mitigation plan?
  - A: Eryn Futral said we need to find individuals who have passion about resiliency planning, mitigation and development. These persons should be those who can relay this information in a way that is universal to all citizens touching each of their concerns (financial, infrastructure, cost/benefit, etc.).
  - A: Colleen Roberts stated we partner with the school system to create lesson plans to teach the youth. We can put together a video for kids teaching the effects of climate change/sea level rise. Also, we continue with the City's hurricane expo and work towards expanding it.
  - A: Amanda Zullo stated there is a park near her home for walking the dogs. There are placards there that display/teach you things/share info as you walk the park. Could we implement this through an arts group for an environmental education opportunity?
  - A: Maria Cho said we can benefit from public/private partnerships.
  - A: Amanda and Colleen spoke of the Resiliency Toolkit and the possibility of seeking grant funding to create it.
  - Q: Amanda asked what tools and communication strategies can we devise to better equip our New Bern Resiliency Ambassadors to spread the news faster?
  - A: Eryn Futral said there are existing websites, information, and brochures that provide vital info on risk, insurance, and financial savings due to building to higher standards (insurance premiums). CRS user groups have most likely already created examples. There are two in North Carolina: Outer Banks CRS Users Group and Southeast NC Users group.
  - A: David Daniels said NBPD does tabletop exercises for training. We could do those with ambassadors and let them work through the disaster process. For example: every year they do a tabletop at the airport, simulate a plane crash, bring in the stakeholders, and each person has a responsibility in that disaster response.
  - Q: Amanda Zullo asked how can we streamline the communications process to inform citizens in advance of a storm event occurring and provide info/resources quicker?

- A: Eryn Futral said mailers, electronic billboards, door hangers, and communication meetings in underserved areas prone to flooding.
- A. Maria Cho said there is a great resource list of organizations, government, nonprofits, advocacy groups, school board, pastors/communication advocates, and their contact information. The use of CodeRED or apps to communicate to residents and to encourage preparedness & survival from disasters. ReadyNC.org can be a resource.
- A: Tharesa Lee said we often use the same communications/ambassador groups across New Bern. There are many more people who are essential to the outreach process. Tharesa said she will send that info along. She helped plan Duffest, a local festival, and 3-4 days before the event, the hurricane was threatening. They had to make a decision to cancel it. It took two weeks to redo all the marketing they'd created over a 7-month process. Her experience is that people will do whatever they need to do. Make sure you touch all involved parties. Even going door-to-door if you have to. Touch everyone through all channels – newsletters, one-on-one communication, everyone in the community can play a role. Use the Chamber, they have business members and that's how some employees get their information. You can also pass out flyers.
- Q: Amanda Zullo asked who in New Bern would be effective New Bern resiliency ambassadors?
- A: David Daniels said faith-based groups, crime watch groups, and phone trees.
- Q: Amanda Zullo asked how can we leverage current communication tools to better educate the public about resiliency and its underlying severity?
- A: Tiffany Dove stated she doesn't have anything to add right now but likes what everyone is saying. She had never experienced flooding like with Florence. She has a neighbor who just got back in her house a month ago. She also has an aunt that is still not in her home yet. They had no damage all the way to the extreme of total devastation. She's now gotten flood insurance when before she didn't need it. It would be helpful to get information ahead of time, especially about insurance. Her aunt had gotten flood insurance ahead of time, but Tiffany didn't need it.
- A: Maria Cho said we need to partner with realtors. There has been some awareness after Florence – you had to disclose whether your house had been flooded.
- A: Katy Hunt said she survived Katrina, so she was already educated to look at flood maps when looking to purchase a home here. Use direct mailers when people move in, from insurance companies & also from the City (list of resources).
- A: David Daniels stated mailers are a good idea. We could include some information with our utility bills.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

City of New Bern
Stakeholder Meeting: Day 2
February 24, 2021 from 1:00 p.m. to 3:00 p.m.
Meeting Minutes

Attendees:

Amanda Ohlensehlen	City of New Bern
Colleen Roberts	City of New Bern
Matt Hutchins	NEMAC+FernLeaf
Aashka Patel	NEMAC+FernLeaf
Kim Rhodes	NEMAC+FernLeaf
Lisa Craig	The Craig Group
Keri Ragland	The Craig Group
Mike Robinson	Moffatt & Nichol
Jeff Crump	Moffatt & Nichol
Allison Bryan	Moffatt & Nichol
Amanda Zullo	Moffatt & Nichol
Rebeckah Sims	Moffatt & Nichol
Dawn York	Moffatt & Nichol

Historic Preservation Group:

Chris Crew	NCEM/SHMO
Jim Morrison	Greenbrier
Kennail Humphrey	Sunnyside
Tripp Eure	MBF Architects, PA
Janet Kelly-Scholle	NCDPS
Amanda Martin	NCDPS
Sabrina Bengel	B.of.Alder., Ward 1

Flood Vulnerability Assessment Group:

Samantha Burdick	NC DCM
Bart Rovins	Taberna
Maggie Battaglin	NCORR
Don Baumgardner	Resiliency, County
Jason Glazener	USACE/Wilmington
Danielle Costantini	NCDENR
Grace Maze	USACE/Wilmington
Greer Shivers	UNCW
Sushma Masemore	NCDEQ

Public Outreach Group:

Eryn Futral	NFIP/NCEM
Maria Cho	Res. Council
David Daniels	NB Police Dept.
Tiffany Dove	Pembroke
Katy Hunt	Neuse Riverkeeper
Tharesa Lee	NB Housing Auth.

Engineering / Nature-Based Solutions:

Christina Kopitopoulou	UNC-EPIC
Dr. Bill Hunt	NCSU
Jeff Ruggieri	NB Dev. Services
Kimberly Ostrom	NB City Grants
Dr. Narcisa Pricope	UNCW
Millie Chalk	Duke Energy Foun.
Steve Bevington	NCLWF
Kip Peregoy	NB Redev. Comm.
Steve McGugan	NCEM

Word of welcome from Mike – this is the second part of a two-session stakeholder engagement series.

- **Welcome and Overview (Amanda Ohlensehlen)**
  - New Bern's resilience goals for 2021 and beyond were discussed. The City is looking to build upon proactive steps and place strong emphasis on implementing programs and projects. Educational outreach to help citizens and businesses be better prepared and more resilient as well as seeking funding for engineering and nature-based solutions are two top priorities.
  - Methods of achieving these initiatives include coordinating efforts to share information, aligning goals with statewide and regional resiliency initiatives, and actively seeking funding and guidance for next steps. This is a dynamic process.

- **The Path Forward: A Recap of Stakeholder Meeting #1 Takeaways (Mike Robinson)**
  - Each of the five breakout room topics discussed their key takeaways from Monday's session.
- **Breakout Room Discussion (Amanda Zullo)**
  - The stakeholders were now going to segway into their designated breakout room discussions. Based on Monday's discussion, two of the rooms merged to create four topics:
    - Historic Preservation – led by Lisa Craig, The Craig Group
    - Flood Vulnerability Assessment – led by Matt Hutchins, NEMAC+FernLeaf
    - Public Outreach & Education – led by Amanda Zullo, Moffatt & Nichol
    - Engineering Solutions and The Environment and Nature-Based Solutions – led by Jeff Crump and Dawn York, Moffatt & Nichol
  - Each of the breakout rooms have separate meeting minutes, which will accompany these meeting minutes.
- **Conclusion (Mike Robinson)**
  - Each of the breakout groups shared in their key takeaways.
  - Housekeeping items were discussed, including ongoing meetings, web-based resources, and next steps.
  - Mike mentioned the project contact information for follow-on discussion.

If you have any questions, please do not hesitate to contact Amanda Ohlensehlen at ohlensehlena@newbernnc.gov.

Name	Email	Affiliation
Bill Faulkenberry	faulkenberry@mbfarchitects.com	MBF Architects, PA
Mary Hogan	HoganM@newbernnc.gov	New Bern Finance Director
Kimberly Ostrom	OstromK@newbernnc.gov	New Bern City Grants Office
Chris Crew	john.crew@ncdps.gov	NCEM/SHMO
Narcisa Pricope	pricopen@uncw.edu	UNCW
Eryn Futral	eryn.futral@ncdps.gov	NFIP/NCEM
Millie Chalk	millie.chalk@duke-energy.com	Duke Energy Foundation
Samantha Burdick	samantha.burdick@ncdenr.gov	NC DCM
Maria Cho	mariacho.nb@gmail.com	Historic Downtown Residents Council, CARE
Jim Morrison	jmorrison00@gmail.com	Greenbrier
Bart Rovins	bart.rovins@gmail.com	Taberna
Christina Kopitopoulou	Christina.k@uncc.edu	UNC-EPIC
Maggie Battaglin	maggie.battaglin@ncdps.gov	NCORR
Greer Shivers	gcs7294@uncw.edu	UNCW
Don Baumgardner	dbaumgardner@cravencountync.gov	Resiliency Hazard Mitigation, County
Chad Strawn	cstrawn@cravencountync.gov	Resiliency Hazard Mitigation, County
William Hunt	wfhunt@ncsu.edu	NC State
Sabrina Bengel	bengels@newbernnc.gov	Board of Aldermen, Ward 1
John Wood	john.p.wood@ncdcr.gov	NC SHPO
Rob Cox	robert.cox@uncc.edu	UNCC
Trip Cure	eure@mbfarchitects.com	HPC
Tharesa Lee	tchadwicklee@newbernha.com	New Bern Housing Authority / New Bern Redevelopment Commission
Jason Glazener	jason.s.glazener@usace.army.mil	USACE / Wilmington
Steve McGugan	steve.mcgugan@ncdps.gov	NCEM
Melissa Riggle	executivedirector@visitnewbern.com	New Bern Convention & Visitors Bureau, TDA Executive Director
David Daniels	danielsd@newbernnc.gov	New Bern Police Department, Captain
Steve Bevington	steve.bevington@ncdcr.gov	NCLWF
Tiffany Dove	tddove@embarqmail.com	Pembroke
Kip Peregoy	kperegoy@carolinacolours.com	New Bern Redevelopment Commission
Kennail Humphrey	sunnyside.newbern@gmail.com	Sunnyside
Katy Hunt	lowerneuserk@soundrivers.org	Neuse Riverkeeper
Marlena Byrne	marlena.byrne@ncdps.gov	NCORR
Amanda Martin	amanda.martin@ncdps.gov	NCORR
Janet Kelly-Scholle	janet.kelly-scholle@ncdps.gov	NCORR
Sushma Masemore	sushma.masemore@ncdenr.gov	NCDENR
Danielle Costantini	danielle.costantini@ncdenr.gov	NCDENR
Can't Attend but interested in providing input		
Steve Garrett	steve.garrett@ncdps.gov	NCEM / NCIP
Lovay Singleton	lovayw@gmail.com	
Anne Schout	anneschout@gmail.com	

RESILIENCY AND HAZARD MITIGATION PLAN



moffatt & nichol | 75 Years

NEW BERN RESILIENCE

Resiliency comes together here

STAKEHOLDER MEETING: DAY 1

Planning for a More Resilient New Bern

February 2021

Agenda

- 9:00 – 9:30 AM — Introduction and Overview
- 9:30 – 10:15 AM — Breakout Room Discussions
- 10:15 – 11:00 AM — Report-outs and Wrap-up
- 11:00 – 11:30 AM — Open Discussion with City *(Optional)*



- **Mike Robinson, Moffatt & Nichol**

Welcome and Overview



- **Amanda Ohlensehlen**
  Community & Economic Development Manager



Path to Resilience

2013
- Developed a partnership with NCSU to initiate hazard mitigation efforts

2014
- Completed the Jack Smith Creek Wetlands & Stormwater Management Project

2015
- Installation of monitoring stations for the Jack Smith Creek Wetlands

2016
- Active participant of the Craven County Long Term Recovery Group

2017
- Established a Redevelopment Commission comprised of citizen representatives to address equity and reinvestment
- Supported the development of the Hurricane Matthew Resilient Re-Development Plan for Craven County

2018
- Recognized the need to develop a Hazard Mitigation and Resiliency Plan
- Advocate in D.C. with federal resiliency leaders

2019
- The CARES Committee hosted multiple subject matter experts on resiliency
- Award of $$ from multiple granting agencies to establish a holistic resiliency plan

2020
- Award of $328,500 from NCORR to assist with storm resiliency, recovery, and mitigation projects
- Initiated the development of a Resiliency and Hazard Mitigation Plan
- Released an updated Final Flood Hazard Determinations



- City of New Bern has been actively working towards becoming a more resilient city
- Success is a process and requires commitment from all levels
- Grant funding is a testimony to the importance of the City's dedication and commitment to this plan

Overall Project Objectives

- **Create a resiliency framework**
  - Avoid hazards
  - Withstand future events
  - Support recovery
  - “Build Back Better” at the citizen, business, and municipal levels
- **Develop strategy initiatives**
  - Routine activities
  - Highly feasible solutions
  - Ambitious solutions



- **Social and community health programming**
- **Land-use regulatory changes**
- **Large-scale infrastructure projects**
- **Green infrastructure practices and projects**

Specific Focus Areas

- Underserved and socially vulnerable populations
- Historic structures
- Green and hybrid infrastructure solutions
- Structural and economic resilience in historic main street and commercial areas
- Less reliance on Federal funding following future disasters
- Land use changes to improve resiliency
- Coordination within and beyond the corporate limits of New Bern
- CRS participation under the NFIP



- **Regional Resilience Tool Kit**
- **12 North Carolina State Disaster Recovery Framework Recovery Support Functions**
- **6 FEMA Recovery Support Functions**

The Path Forward:

An Overview of the Current Resiliency Planning Effort

- Project Schedule
- Public Outreach and Stakeholder Engagement
- Local Capability Assessment
- Flood Vulnerability Assessment
- Resilience and Mitigation Strategy Development

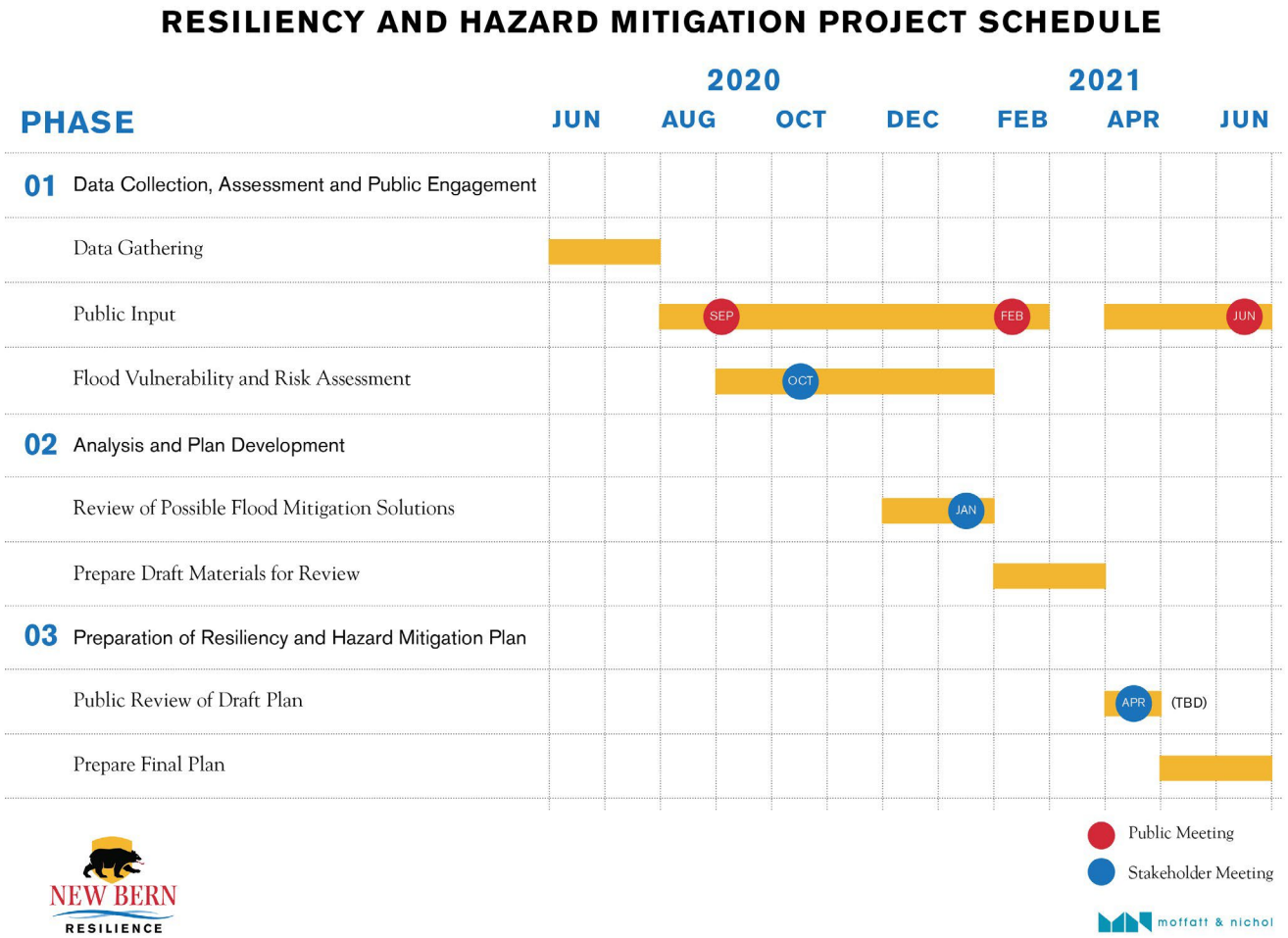
Goal is to develop a citywide* Resiliency and Hazard Mitigation Plan *to increase community resilience to the flood hazard, including sea level rise and climate change



- **Mike Robinson, Moffatt & Nichol**

The Path Forward:

Overall Project Schedule





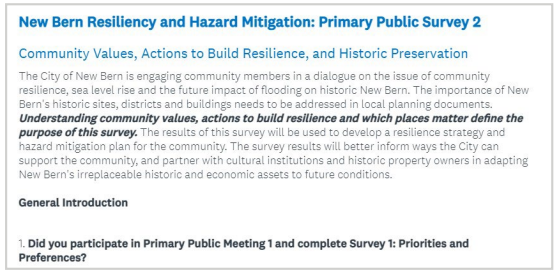
- Divided into 3 phases, each with multiple tasks
- Flexible to allow for changing dynamics
- Pivot to virtual meetings and remote participation due to Covid-19
- On track for completed plan Summer 2021

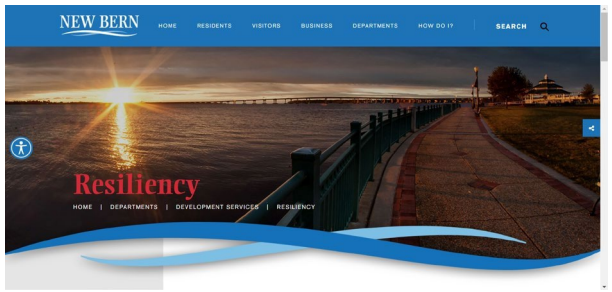
The Path Forward:

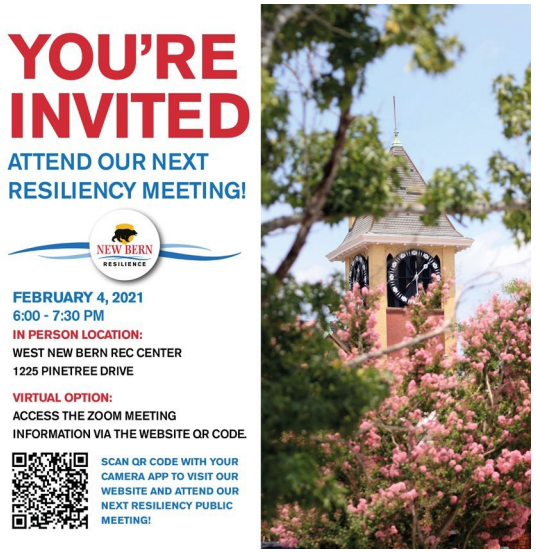
Public Outreach and Stakeholder Engagement











- Public Involvement
- Public Meetings (3)
- Project Information Website
- Public Participation Surveys (2)
- Social Media
- Stakeholder Engagement Meetings (2)

- www.newbernnc.gov/resiliency

The Path Forward:

Local Capability Assessment

- ***Literature Review***
  - Existing plans, studies and reports
  - Existing policies, procedures and practices
  - Other relevant documents
- ***Data collection***
  - Geospatial, tabular, narrative, other

- Used to better ***inform*** the overall process
- Will result in a better understanding of local capability to ***implement*** resilience activities



- **It is important to identify resilience goals and activities that are *realistic* for the community**

The Path Forward:

Flood Vulnerability Assessment

- Focuses on multiple types of ***flooding*** (coastal, riverine, stormwater, storm surge, heavy precipitation)
- Uses an assessment ***framework*** to understand exposure, vulnerability and risk
- Municipal boundaries, surrounding areas
  - Parcel boundaries and building footprints
- Is solutions-oriented and informs targeted use of limited resources



- **Many times there is a disconnect between risk assessments and the projects identified for implementation**
- **Need to identify risk-based solutions**
- **Builds on and integrates with the City's existing planning efforts**
- **Pre-positions for future funding opportunities**
- **The project team will be seeking help from you to make smart connections**

The Path Forward:

Flood Vulnerability Assessment

- Takes into account a wide range of ***community assets*** and resources
- Models various types of ***impacts***
- ***Historical*** occurrences and observations
  - Major floods and hurricanes
  - “Nuisance” flooding
  - Emergency (911) calls
  - Floodplain management practices



- **Direct physical damage from flooding**
- **Social and economic vulnerabilities**
- **Transportation/mobility**
- **Emergency services and public safety**
- **Historic preservation**
- **Recreational areas**
- **Natural areas and the environment**

The Path Forward:

Resilience and Mitigation Strategy Development

- Resilience ***goals***, ***objectives*** and ***actions*** (i.e., projects and activities)
- Long-term vision but also short-term results
  - The strategy should be flexible and evolve as risk factors change over time but should serve as a ***roadmap*** to achieve the City's resilience goals



- **Especially when thinking about climate change adaptation, we need to think *long-term***
- **This includes taking into account potential changes to hazard risk, potential changes to development, and the potential for overall higher standards**

Breakout Room Discussion



Lisa Craig,
The Craig Group

Historic Preservation



Matt Hutchins,
NEMAC+FernLeaf

Flood Vulnerability Assessment



Amanda Zullo,
Moffatt & Nichol

Public Outreach & Education



Jeff Crump,
Moffatt & Nichol

Engineering Solutions



Dawn York,
Moffatt & Nichol

The Environment & Nature-Based Solutions

Today's Activities:

Lead-in to Breakout Group Discussions



- We will now segway into the "Breakout Group Discussions"
- You will automatically be placed in your session; you will not be allowed to shift into another session
- Please remain in your session for the full 45-minute time period (will end at 10:15 am)
- If your group finishes early, you may take a quick break
- You will see a "10 second countdown" which will close the breakout room and bring you back into the main room

Conclusion

Report Out from Each Breakout Group

- **Each Breakout Group to Share *(5-8 minutes each):***
  - What was Discussed
  - Key Takeaways

- **Housekeeping Items**
  - Upcoming meeting schedule
    - February 24, 2021 1:00 – 3:00 PM (same Zoom link)
  - Project contact information

- **Reinforcement of Homework Assignments** *(from breakout groups)*



Project Contacts

Amanda Ohlensehlen
ohlensehlena@newbernnc.gov
Mike Robinson (M&N)
mrobinson@moffattnichol.com

Open Discussion with City (Optional)

Open Discussion with City (Optional)



- **Q&A Opportunity**
- What “big picture” questions do you have regarding New Bern and overall City resiliency efforts?

THANK YOU



Moffatt & Nichol
4700 Falls of Neuse Road
Suite 300
Raleigh, NC 27609
Tel: 919.781.4626

moffattnichol.com

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RESILIENCY AND HAZARD MITIGATION PLAN



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NEW BERN RESILIENCE

Resiliency comes together here

STAKEHOLDER MEETING: DAY 2

Planning for a More Resilient New Bern

February 2021

Agenda

- 1:00 – 1:30 PM Introduction
- 1:30 – 2:15 PM Breakout Room Discussion
- 2:15 – 3:00 PM Conclusion



- **Mike Robinson**
  Moffatt & Nichol

Welcome and Overview



- **Amanda Ohlensehlen**
  Community & Economic Development Manager



The Road to Resilience:

A Brief Overview of New Bern's Goals for 2021 and Beyond

- The City of New Bern is looking to the ***future***
- ***Proactive steps*** already underway to begin the next phases of this work
- Heavy emphasis on ***implementing*** programs and projects
  - From educational outreach to help individual citizens and businesses be better prepared and more resilient
  - To seeking funding for engineering and nature-based solutions



- **Duffyfield Stormwater Enhancement Project Example**



The Road to Resilience:

A Brief Overview of New Bern's Goals for 2021 and Beyond

- ***Coordinating efforts*** to share information
- ***Aligning goals*** with statewide and regional resiliency initiatives
- Not a static process but a ***dynamic one***
- Actively seeking ***funding and guidance*** for next steps



- **National Fish and Wildlife Foundation (NFWF) funding**
- **Future implementation of site-specific projects**
- **Better enable the City to withstand future storm events**
- **Ongoing efforts to acquire coastal resiliency grant funding to further progress the City's strategy**
- **Planning and grant development needs to begin a minimum of 1 year prior to initiation of a project**

The Path Forward:

A Recap of Stakeholder Meeting #1 Takeaways

- Historic Preservation
- Flood Vulnerability Assessment
- Outreach and Education
- Engineering Solutions
- Nature-based Solutions



- **Mike Robinson**
  Moffatt & Nichol

The Path Forward:

A Recap of Stakeholder Meeting #1 Takeaways

- Key thoughts on ***Historic Preservation***
- Need for a ***multi-disciplinary team***
  - Common methodology for scoring properties and situations evenly
  - Alderman-appointed team member from each Ward
  - Utilize the NC CREST (Cultural Resources Emergency Stabilization Team) for advice and training
  - Meet semi-regularly
- ***Community outreach*** should include:
  - Promoting public awareness of flooding risk (Hurricane Preparedness Month or Flood Safety Week) and NFIP
  - Disseminating information on HPC guidance for elevation, basic costs for adaptation, and information on measures not requiring HPC review
- Draft and secure Council Approval for final HPC Elevation Design Guidelines
- Incorporate use of synthetic materials below the design flood elevation and to the rear of properties
- Incorporate design guidance for landscaping / nature-based solutions
- Add a "how-to" component on the various methods of dry and wet floodproofing
- Secure funding to address limited staff capacity to research best practices and develop rules of procedure



- **Top 3 actions the City can launch today for a more resilient historic community**

1. Establish a field team to assist in pre-disaster preparedness and post-disaster recovery
2. Reduce flood risk and flood insurance costs by promoting participation in the NFIP and CRS
3. Develop design guidelines for adapting historic properties to minimize flooding

The Path Forward:

A Recap of Stakeholder Meeting #1 Takeaways

- Key thoughts on ***Flood Vulnerability***
  - Potential loss of ***road access*** during flood events (including in areas of new construction)
  - Understand how the assessment could be used to help inform ***land use planning***, ***zoning***, and ***construction policies***
  - Additional sources of information that may be available soon from federal and state partner agencies
    - Including wave and water level modeling data from the USACE and additional flood extents from NCEM and in coordination with NCDCM



- **The breakout group will focus next on problem statements using the assessment information and brainstorm strategies to address vulnerabilities**

The Path Forward:

A Recap of Stakeholder Meeting #1 Takeaways

- Key thoughts on ***Outreach and Education***
- **Outreach Challenges:**
  - ***Communication***
    - Covid-19
    - Decline in traditional cable and newspaper usage
    - Lack of Internet access
  - ***Pre-disaster***
    - Some have a lack of "seriousness" mindset, despite New Bern's outreach and communication efforts
    - Protection of services / locations people flee to for help
  - ***Post-disaster***
    - Shelter urgency – wait on release of information



- **Outreach Opportunities:**
  - Leverage leaders / ambassadors to spread word in their silos
  - Reach youth through educational programs
  - Communications hub for those looking to relocate to New Bern
  - Include resources / info in welcome baskets
  - SMS/text messaging, Apps, direct mail
  - Share floodplain information via outreach
  - Get shelter / emergency services info out sooner
  - Resiliency Ambassadors, training, marketing, education

The Path Forward:

A Recap of Stakeholder Meeting #1 Takeaways

- Key thoughts on ***Engineering Solutions***
  - Protective ***berms/levees with pump stations*** can provide protection from certain types of events
    - As demonstrated in the Jack Smith Creek area and modeled after the Elizabeth City plan (which share similar flood threat types)
  - Implementation of ***green infrastructure*** interspersed where possible throughout the City
    - Improve management of stormwater runoff for frequent flood events from localized rainfall (not large-scale events from tropical systems or from swelling rivers due to events in the upstream watersheds)
    - Improve water quality and can provide community amenities/aesthetics
  - Importance of ***transportation facilities*** and their interaction with and relation to other facilities
    - Highlighted by the need for evacuation routes and emergency vehicle access during large events that may not be possible to mitigate



- **Important to understand and quantify the risks of flooding hazards compared to the solutions that are being proposed as well as the lifespan of those solutions**
- **For all projects, it is important to identify and/or create co-benefits with mitigation solutions that provide community amenities and/or aesthetic benefits beyond simple flood protection**

The Path Forward:

A Recap of Stakeholder Meeting #1 Takeaways



- Key thoughts on ***Nature-based Solutions***
  - Nature-based infrastructure is known by different ***terms***, including green infrastructure, natural infrastructure, or "Engineering with Nature" (USACE)
  - Common thread is that nature-based solutions provide ***more value*** than grey infrastructure and yield community and ecosystem benefits
  - Must consider a ***range of nature-based solutions*** that fit many categories based on scale and location including watershed or landscape scale, neighborhood or site scale and coastal areas, such as shoreline stabilization
  - ***Environmental criteria***, such as wetlands, endangered species and water quality, are a few of the criteria to be evaluated for siting nature-based solutions
    - Analysis should also include demographics, flood inundation, SLR, etc.
  - ***Ongoing programs and planning efforts***, such as the Redevelopment Commission and the Choice Neighborhood Initiative, play a significant role in prioritizing where nature-based solutions can protect and reduce flooding in vulnerable communities

- **The biggest selling points for nature-based solutions are its many benefits beyond mitigating the effects of natural hazards**
- **Nature-based solutions can provide short- and long-term environmental, economic, and social advantages that improve a community's overall quality of life**

Breakout Room Discussion



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Conclusion

Report Out from Each Breakout Group

- **Each Breakout Group to Share *(5-8 minutes each):***
  - What was Discussed
  - Key Takeaways
  - Findings and Conclusions
  - Q&A at End

- **Housekeeping Items**
  - Ongoing Meetings (TBD)
  - Web-based Resources
  - Next Steps
  - Project Contact Information



Project Contacts

Amanda Ohlensehlen
ohlensehlena@newbernnc.gov
Mike Robinson (M&N)
mrobinson@moffattnichol.com

THANK YOU



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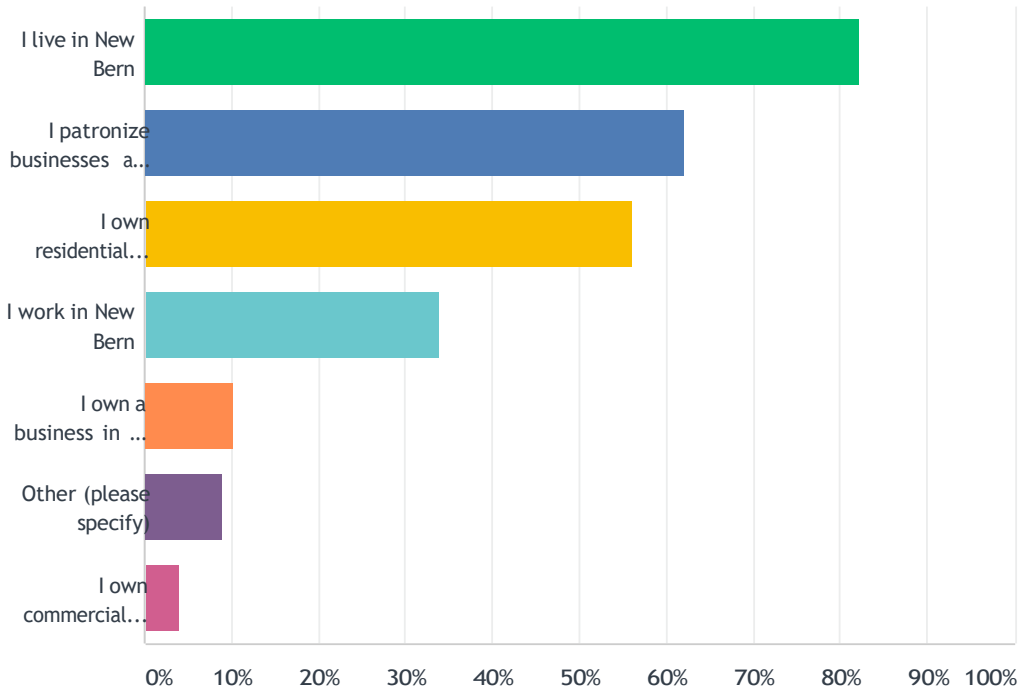
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Q1 What is your relationship to New Bern? (Check all that apply)

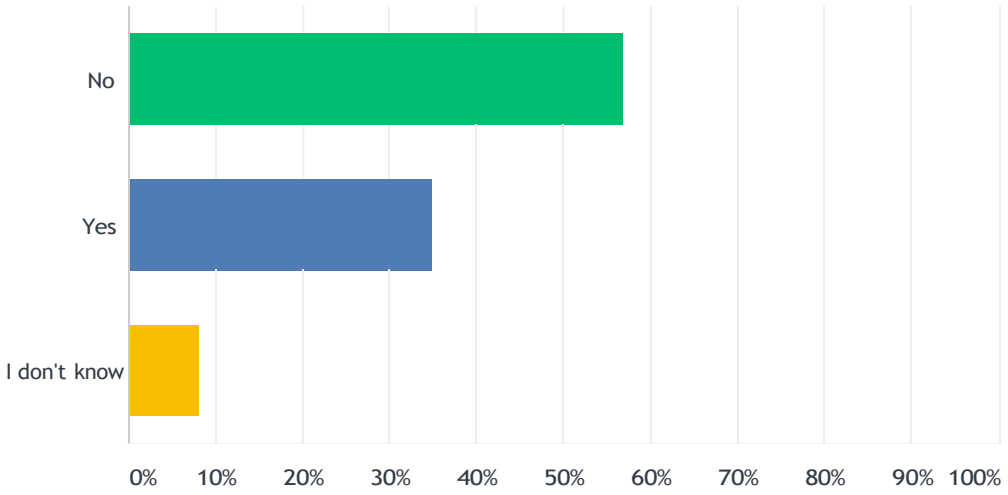
Answered: 275 Skipped: 0



ANSWER CHOICES	RESPONSES	
I live in New Bern	82.18%	226
I patronize businesses and participate in activities occurring in downtown New Bern	62.18%	171
I own residential property in New Bern	56.00%	154
I work in New Bern	33.82%	93
I own a business in New Bern	10.18%	28
Other (please specify)	9.09%	25
I own commercial property in New Bern	4.00%	11
Total Respondents: 275		

Q2 Is your home located in a floodplain? (Choose one option)

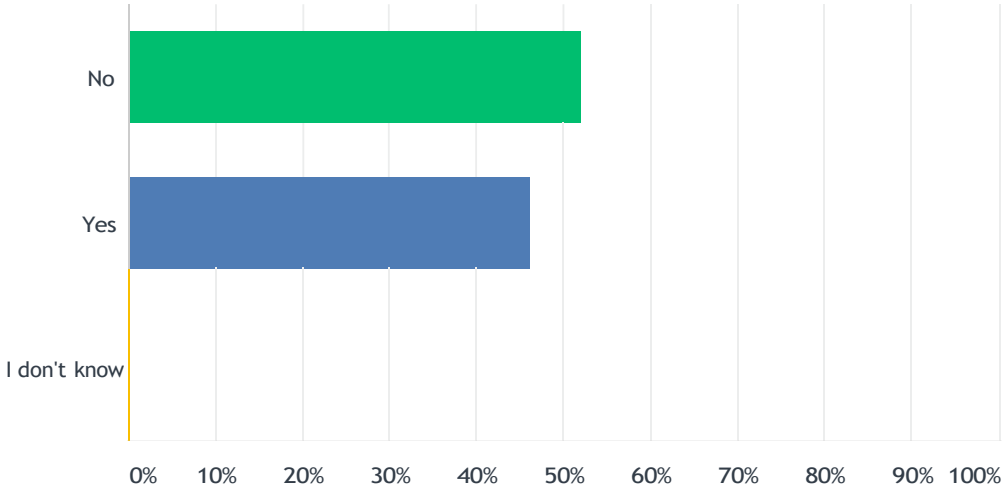
Answered: 272 Skipped: 3



ANSWER CHOICES	RESPONSES	
No	56.99%	155
Yes	34.93%	95
I don't know	8.09%	22
TOTAL		272

Q3 Do you have flood insurance? (Note: remember that homeowner's insurance does not cover flood events)

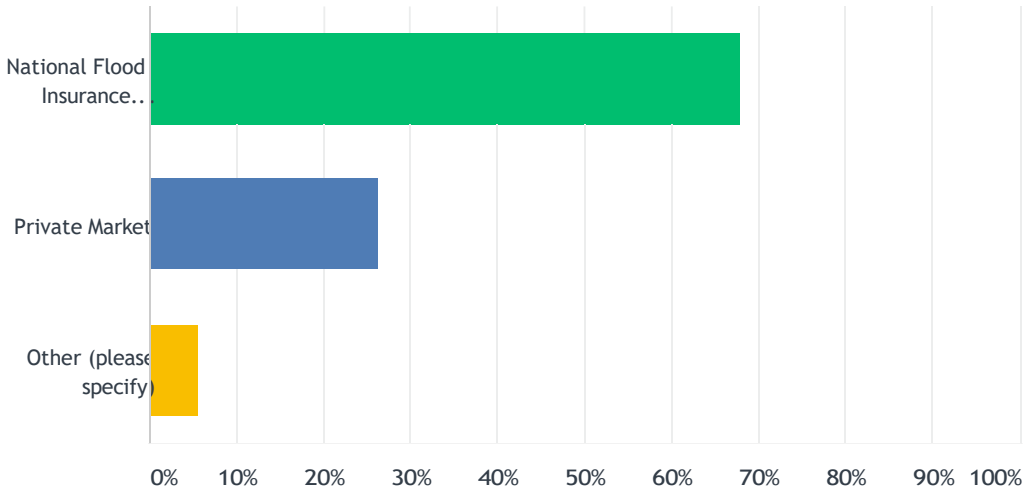
Answered: 273 Skipped: 2



ANSWER CHOICES	RESPONSES	
No	52.01%	142
Yes	46.15%	126
I don't know	1.83%	5
TOTAL		273

Q4 Who is your flood coverage provider? (Choose one option)

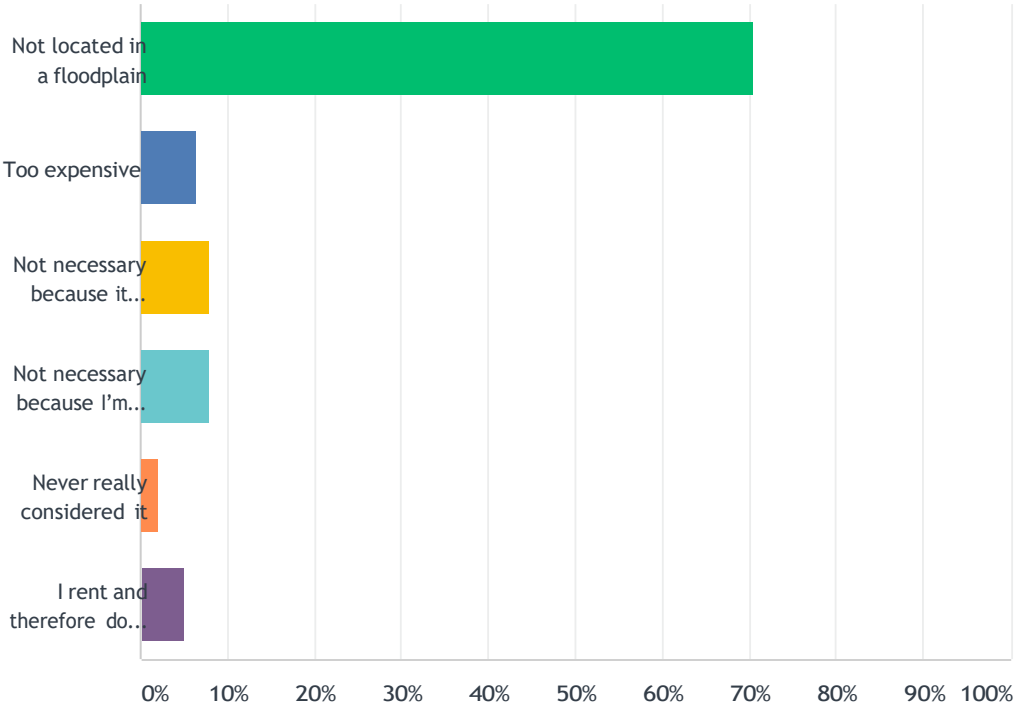
Answered: 125 Skipped: 150



ANSWER CHOICES	RESPONSES	
National Flood Insurance Program - FEMA	68.00%	85
Private Market	26.40%	33
Other (please specify)	5.60%	7
TOTAL		125

Q5 If you do not have flood insurance, please explain why not? (Choose one option)

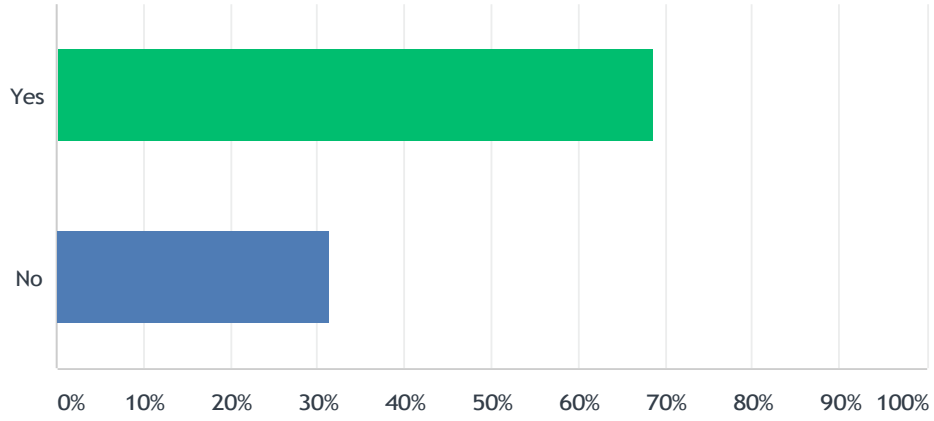
Answered: 139 Skipped: 136



ANSWER CHOICES	RESPONSES	
Not located in a floodplain	70.50%	98
Too expensive	6.47%	9
Not necessary because it never floods	7.91%	11
Not necessary because I'm elevated or otherwise protected	7.91%	11
Never really considered it	2.16%	3
I rent and therefore do not have flood insurance	5.04%	7
TOTAL		139

Q6 Have you ever experienced or been impacted by a flood-related disaster? (Choose one option)

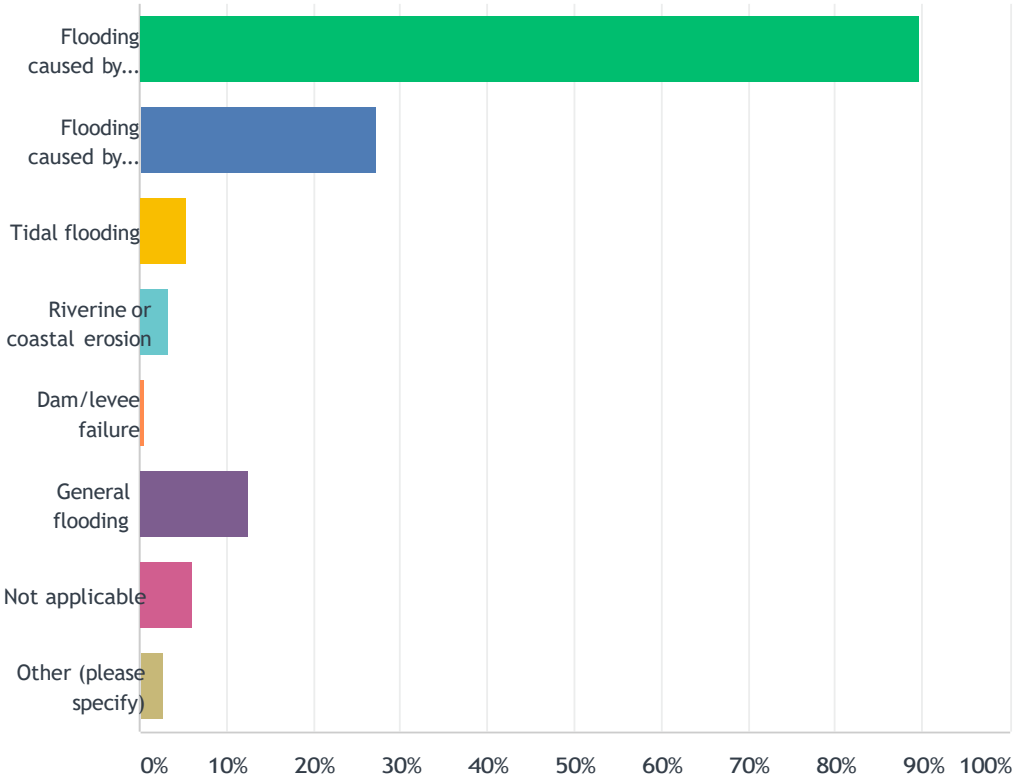
Answered: 267 Skipped: 8



ANSWER CHOICES	RESPONSES	
Yes	68.54%	183
No	31.46%	84
TOTAL		267

Q7 If you have experienced or been impacted by a flood-related disaster, which of these types of flood hazards have you experienced or been impacted by while living or working in New Bern or its vicinity? (Check all that apply)

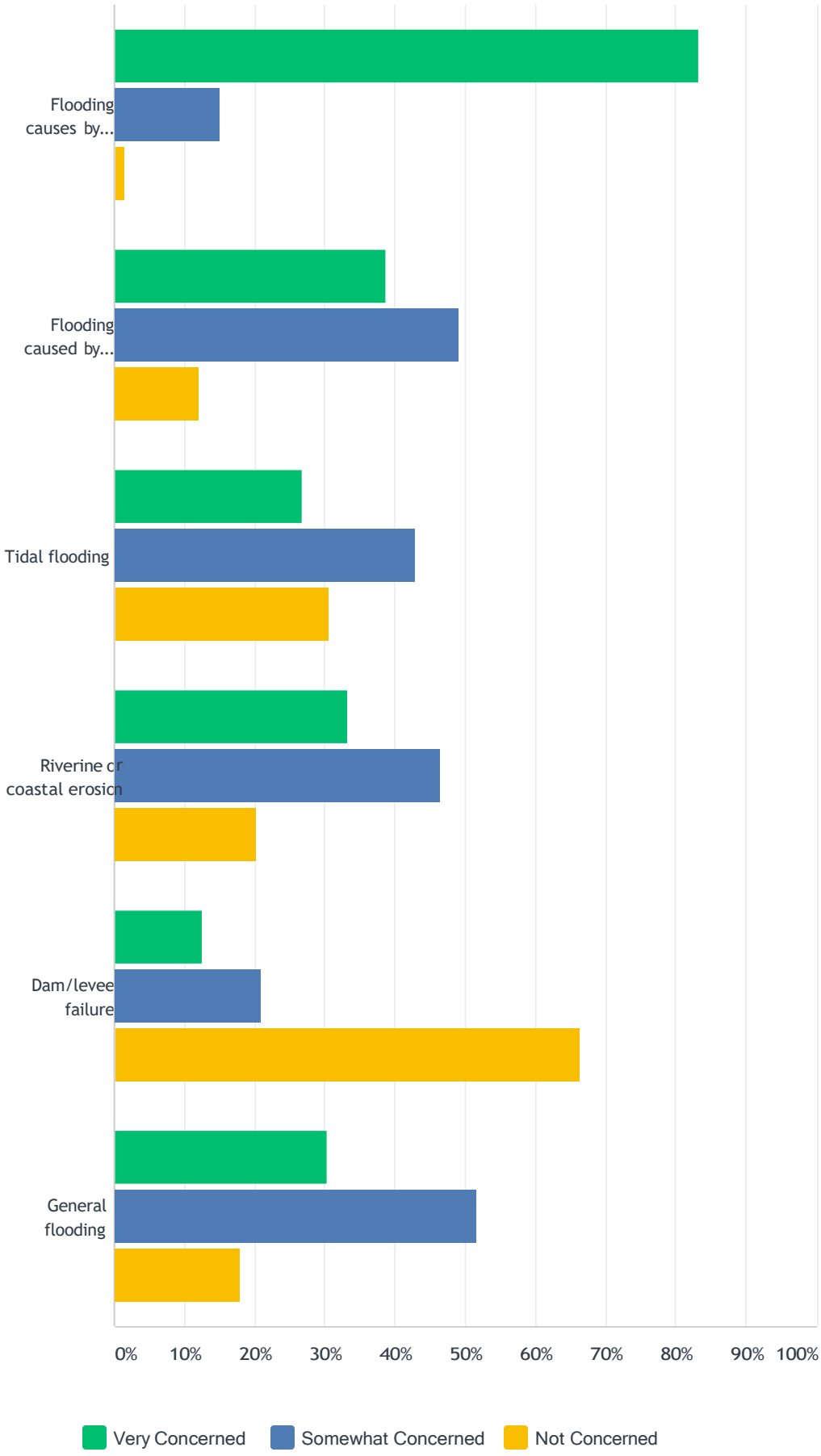
Answered: 184 Skipped: 91



ANSWER CHOICES	RESPONSES	
Flooding caused by hurricanes and tropical storms, including storm surge	89.67%	165
Flooding caused by thunderstorms and heavy rains, including flash flooding	27.17%	50
Tidal flooding	5.43%	10
Riverine or coastal erosion	3.26%	6
Dam/levee failure	0.54%	1
General flooding	12.50%	23
Not applicable	5.98%	11
Other (please specify)	2.72%	5
Total Respondents: 184		

Q8 How concerned are you about the possibility of all of New Bern community being impacted by each of these flood hazards? (Check the corresponding circle for each natural hazard)

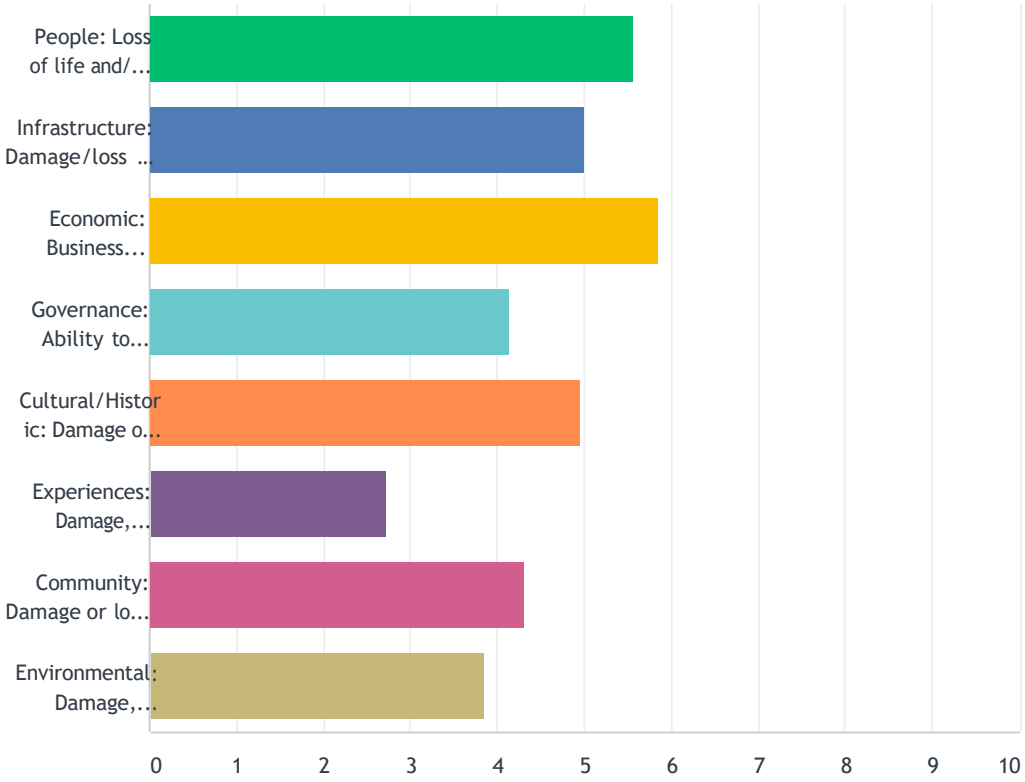
Answered: 258 Skipped: 17


Flooding causes by...
Flooding caused by...
Tidal flooding
Riverine or coastal erosion
Dam/levee failure
General flooding
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Very Concerned
Somewhat Concerned
Not Concerned

Flooding causes by hurricanes and tropical storms, including storm surge	83.33% 215	15.12% 39	1.55% 4	258
Flooding caused by thunderstorms and heavy rains, including flash flooding	38.67% 99	49.22% 126	12.11% 31	256
Tidal flooding	26.75% 65	42.80% 104	30.45% 74	243
Riverine or coastal erosion	33.33% 79	46.41% 110	20.25% 48	237
Dam/levee failure	12.61% 30	21.01% 50	66.39% 158	238
General flooding	30.25% 72	51.68% 123	18.07% 43	238

Q9 In your opinion, which of the following types of assets are most susceptible to flood hazards in your community? (Rank the community assets in order of vulnerability, 1 being most vulnerable and 8 being least vulnerable. Drag and Drop the items to reorder them.)

Answered: 238 Skipped: 37

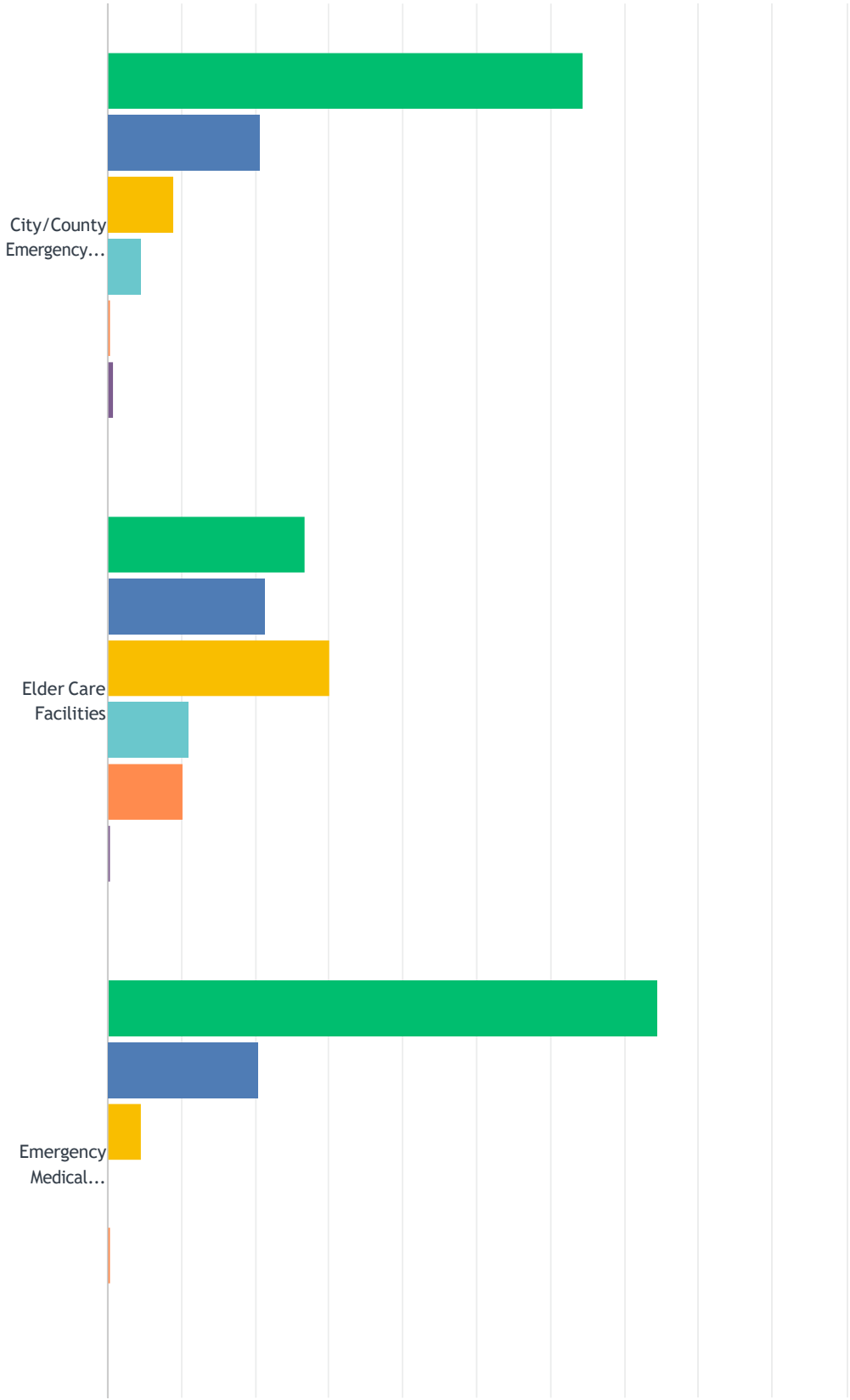


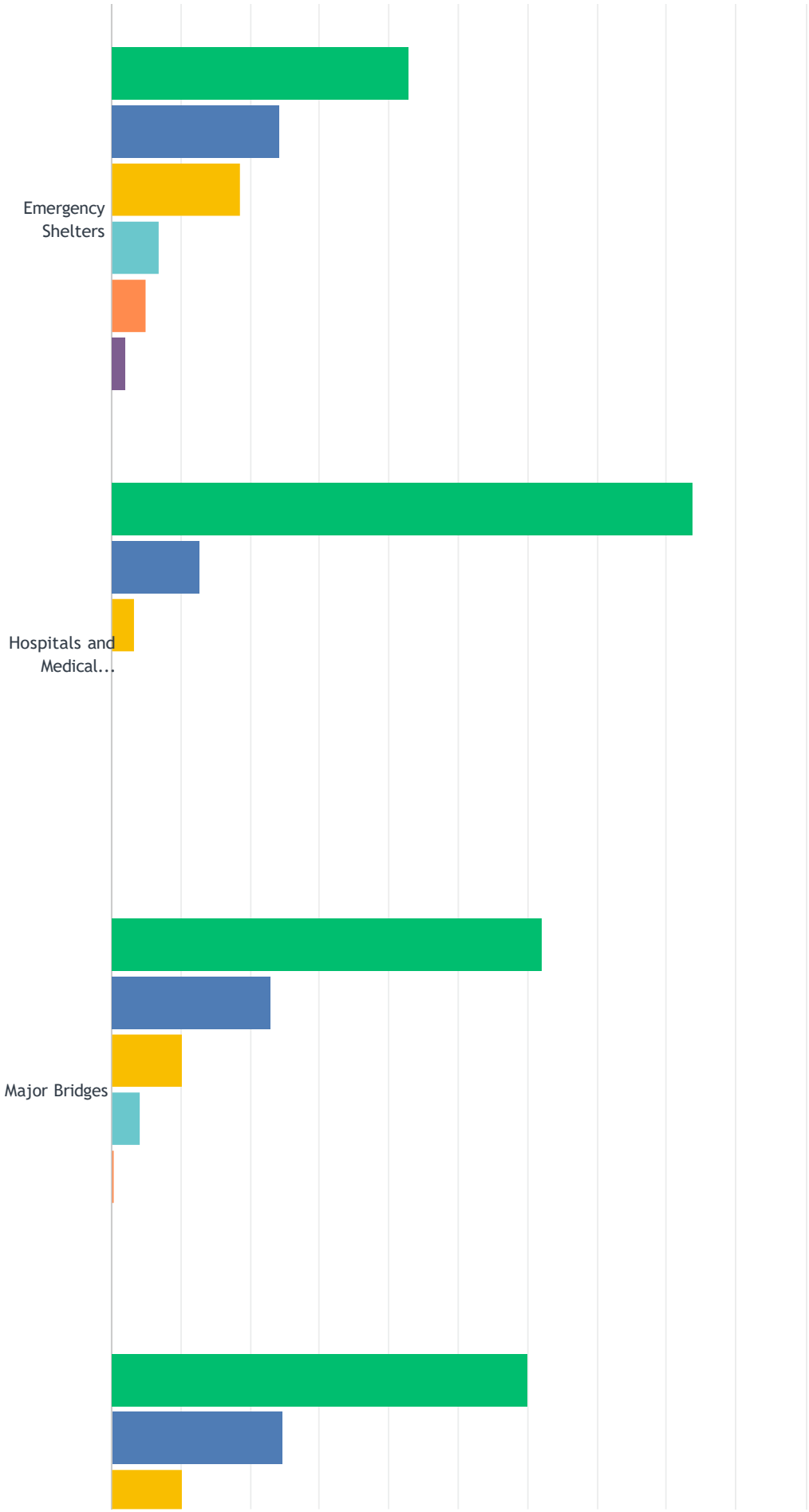
People: Loss of life and/or injuries	46.81% 110	5.11% 12	6.81% 16	5.53% 13	7.66% 18	6.38% 15	6.81% 16	14.89% 35	235	5.57
Infrastructure: Damage/loss of roads, bridges, utilities, schools, etc.	5.65% 13	23.91% 55	16.09% 37	16.96% 39	11.30% 26	11.30% 26	10.87% 25	3.91% 9	230	4.99
Economic: Business interruptions/closures, event cancellations, job losses, etc.	18.06% 41	20.70% 47	23.79% 54	18.06% 41	9.69% 22	6.61% 15	2.20% 5	0.88% 2	227	5.86
Governance: Ability to maintain order and/or provide public amenities and services	3.54% 8	11.06% 25	15.04% 34	15.49% 35	14.60% 33	15.04% 34	11.95% 27	13.27% 30	226	4.14
Cultural/Historic: Damage or loss of libraries, museums, cultural institutions, historic properties and designated sites, etc.	17.04% 38	14.35% 32	15.25% 34	10.76% 24	12.11% 27	11.21% 25	11.21% 25	8.07% 18	223	4.95
Experiences: Damage, contamination or loss of landside and waterside recreation such as docks, marina, trails, etc	1.35% 3	3.14% 7	4.93% 11	5.83% 13	10.76% 24	21.52% 48	20.63% 46	31.84% 71	223	2.72
Community: Damage or loss of visitor's bureau or welcome center, Chamber of Commerce Main Street, city hall & government buildings public parks etc.	3.64% 8	18.64% 41	12.73% 28	10.45% 23	16.36% 36	12.73% 28	14.55% 32	10.91% 24	220	4.32

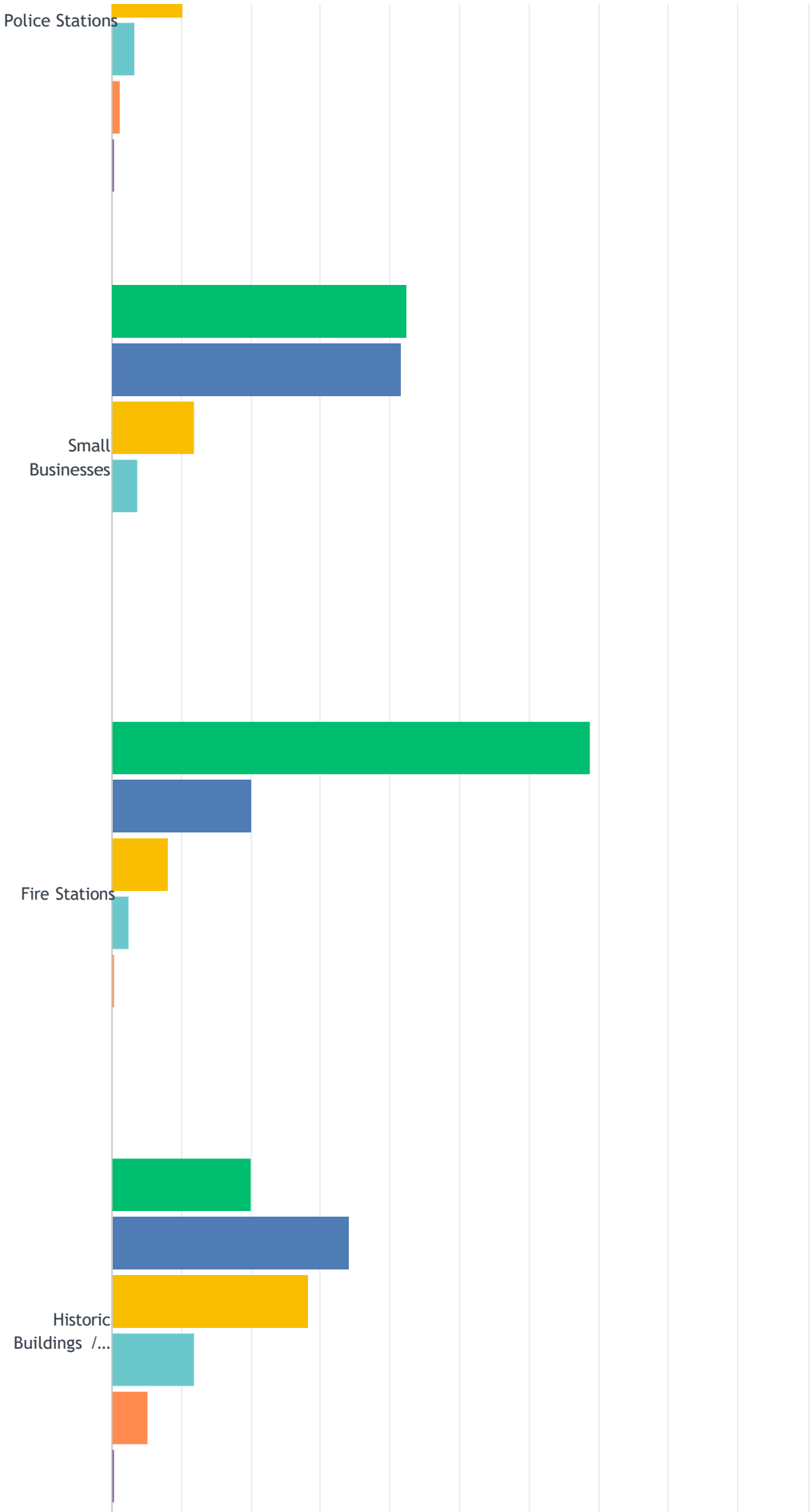
Environmental Damage; contamination or loss of forests, wetlands, waterways, habitats, etc.	12	14	16	42	35	33	41	27	220	3.85

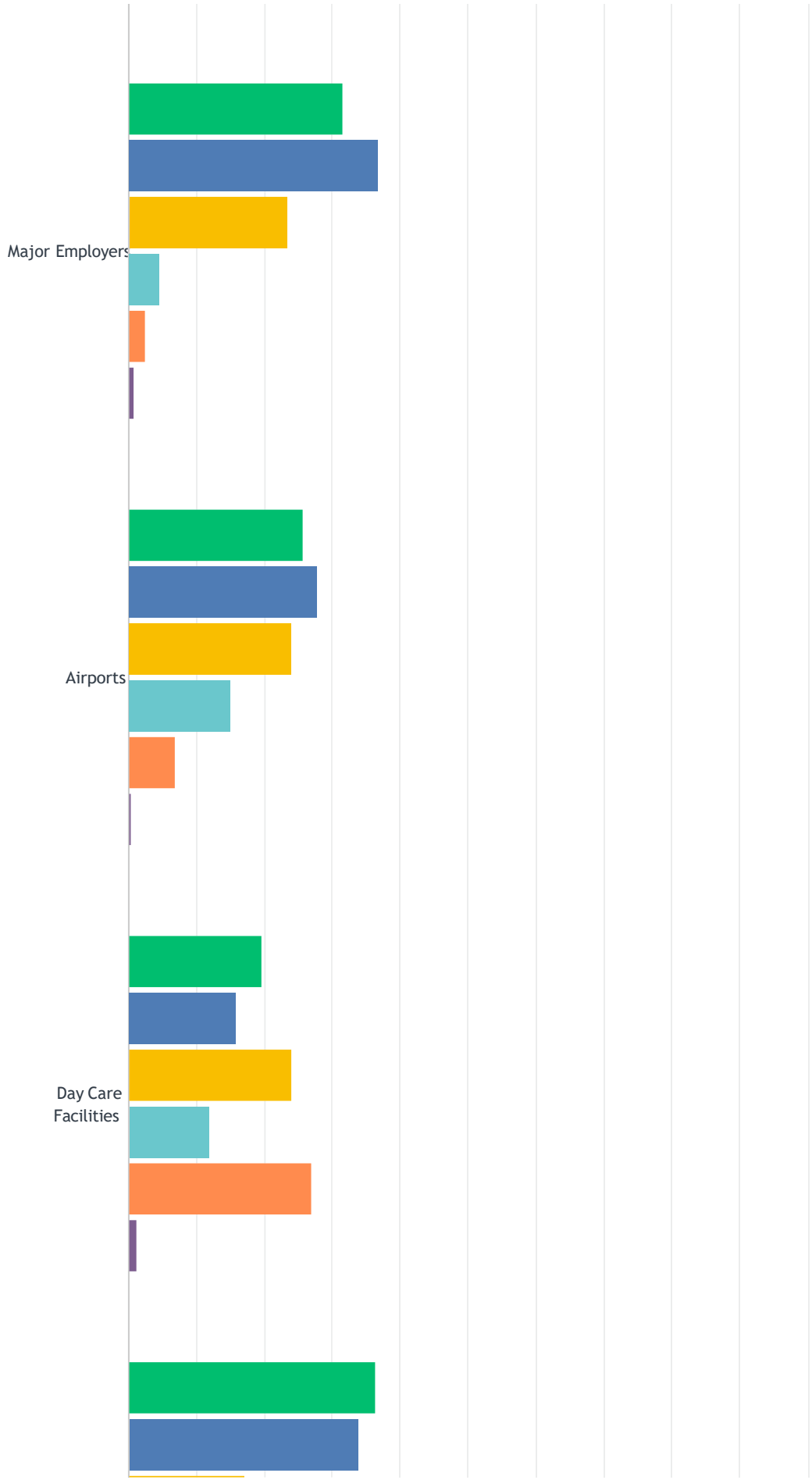
Q10 How important is each of the following specific community assets to you? (Check the appropriate circle for each asset)

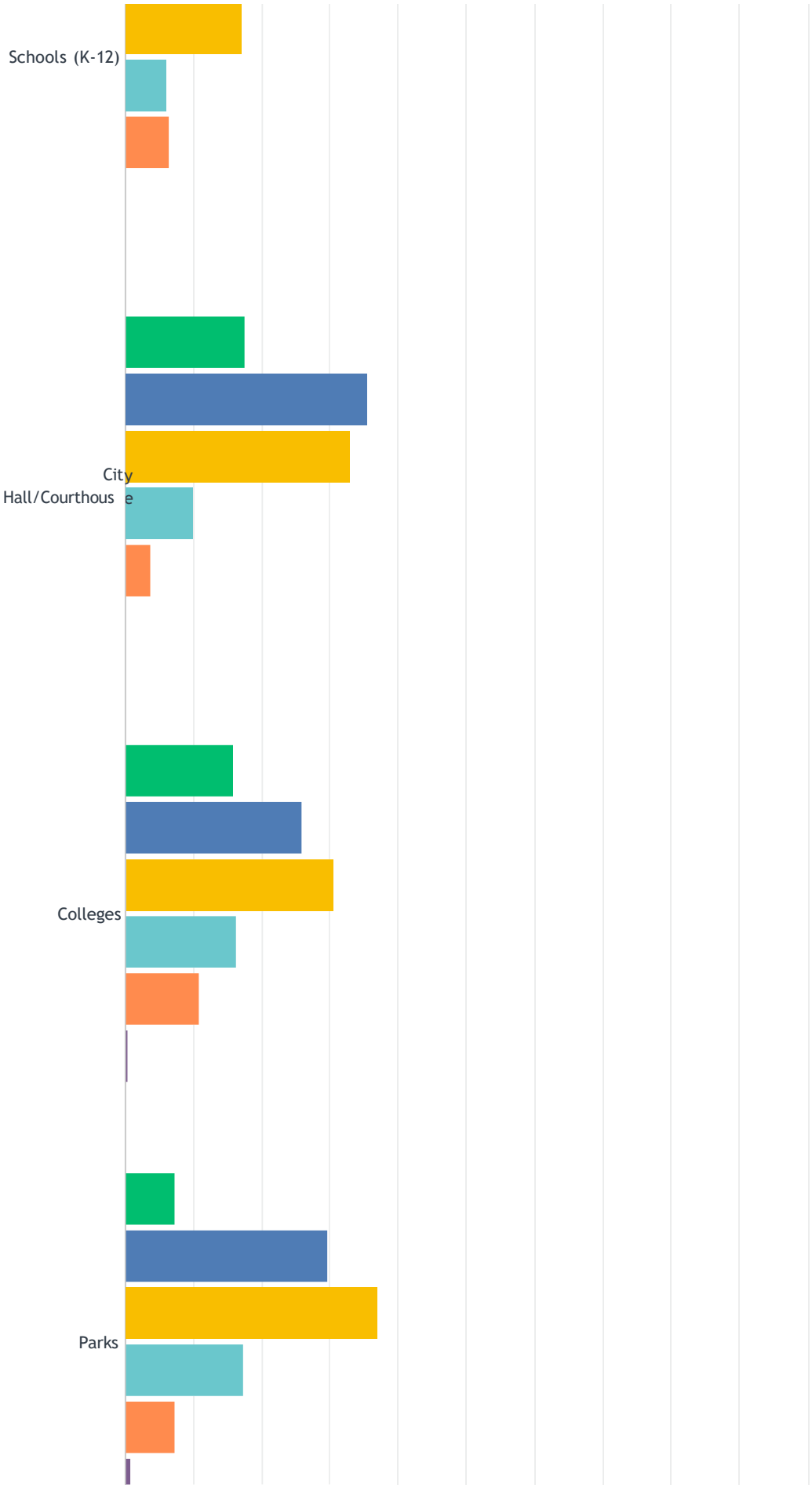
Answered: 236 Skipped: 39

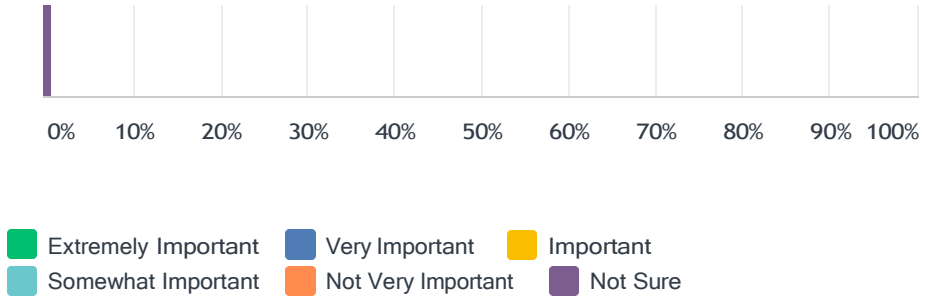



Emergency Shelters
Hospitals and Medical...
Major Bridges


Police Stations
Small Businesses
Fire Stations
Historic Buildings /...


Major Employers
Airports
Day Care Facilities


Schools (K-12)
City Hall/Courthouse
Colleges
Parks

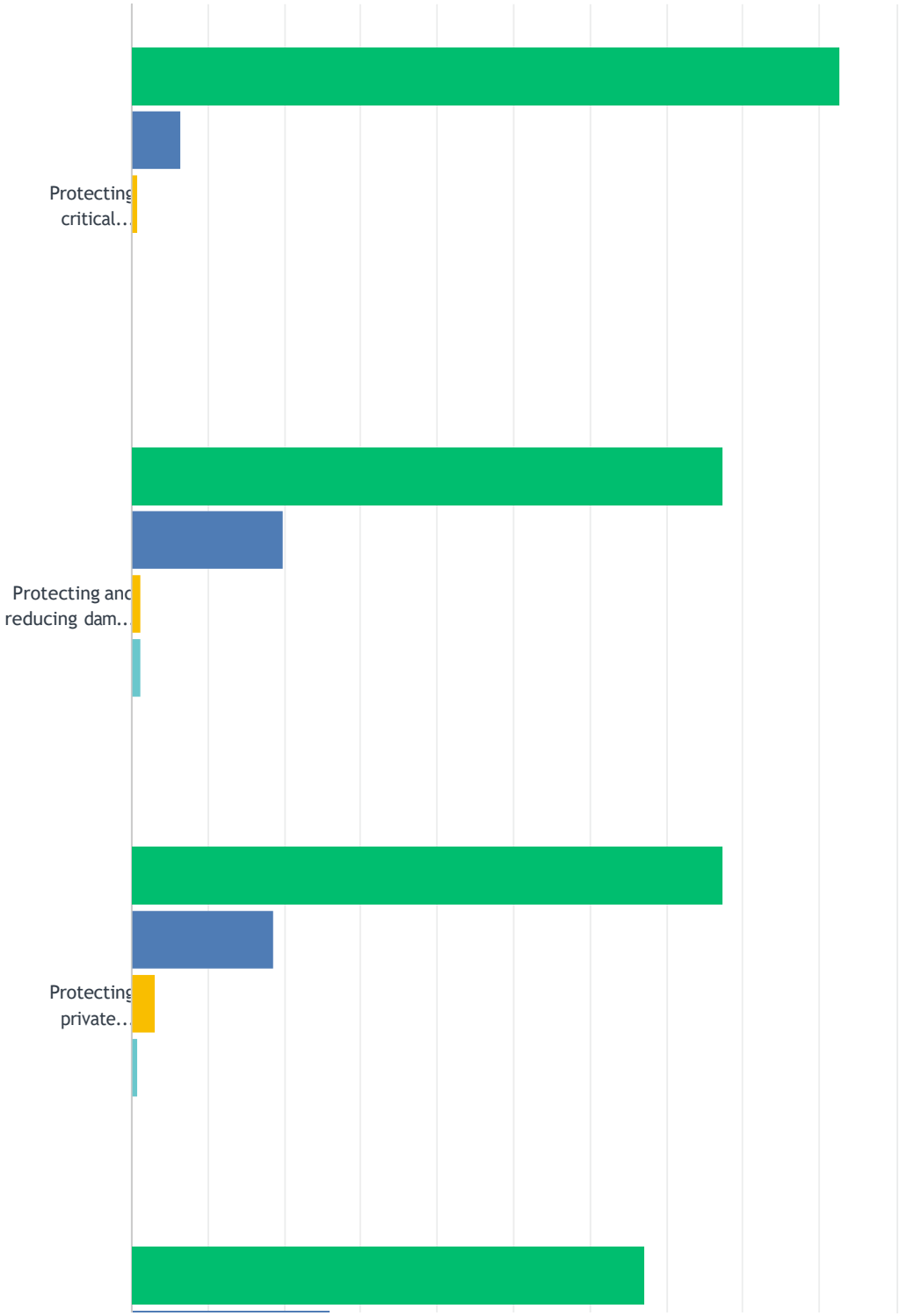


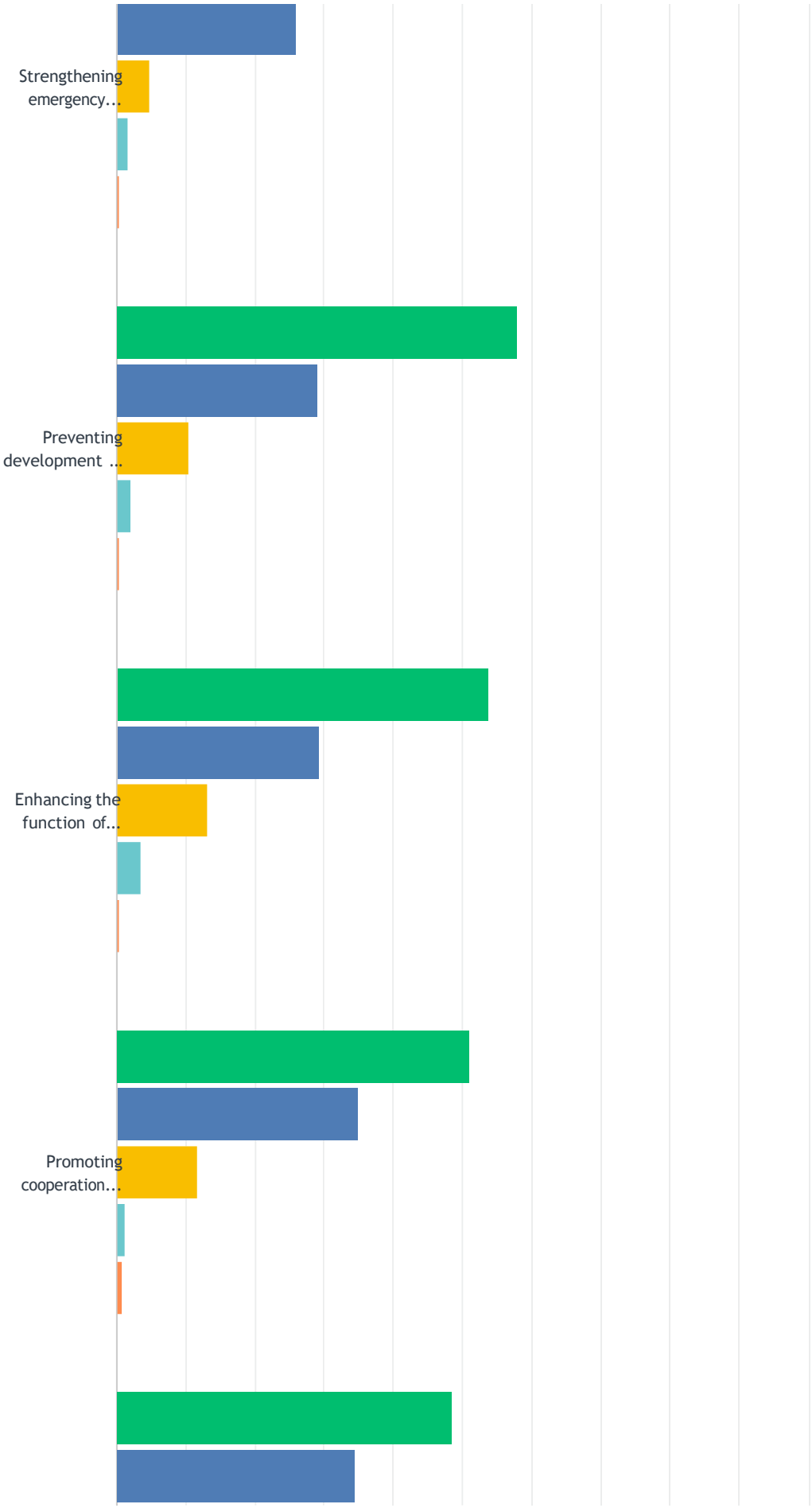
City/County Emergency Operations Centers	64.41% 152	20.76% 49	8.90% 21	4.66% 11	0.42% 1	0.85% 2	236
Elder Care Facilities	26.81% 63	21.28% 50	30.21% 71	11.06% 26	10.21% 24	0.43% 1	235
Emergency Medical Services Facilities	74.47% 175	20.43% 48	4.68% 11	0.00% 0	0.43% 1	0.00% 0	235
Emergency Shelters	42.98% 101	24.26% 57	18.72% 44	6.81% 16	5.11% 12	2.13% 5	235
Hospitals and Medical Facilities	83.83% 197	12.77% 30	3.40% 8	0.00% 0	0.00% 0	0.00% 0	235
Major Bridges	62.13% 146	22.98% 54	10.21% 24	4.26% 10	0.43% 1	0.00% 0	235
Police Stations	60.00% 141	24.68% 58	10.21% 24	3.40% 8	1.28% 3	0.43% 1	235
Small Businesses	42.55% 100	41.70% 98	11.91% 28	3.83% 9	0.00% 0	0.00% 0	235
Fire Stations	68.80% 161	20.09% 47	8.12% 19	2.56% 6	0.43% 1	0.00% 0	234
Historic Buildings / Districts	20.09% 47	34.19% 80	28.21% 66	11.97% 28	5.13% 12	0.43% 1	234
Major Employers	31.62% 74	36.75% 86	23.50% 55	4.70% 11	2.56% 6	0.85% 2	234
Airports	25.75% 60	27.90% 65	24.03% 56	15.02% 35	6.87% 16	0.43% 1	233
Day Care Facilities	19.74% 46	15.88% 37	24.03% 56	12.02% 28	27.04% 63	1.29% 3	233
Schools (K-12)	36.48% 85	33.91% 79	17.17% 40	6.01% 14	6.44% 15	0.00% 0	233
City Hall/Courthouse	17.60% 41	35.62% 83	33.05% 77	9.87% 23	3.86% 9	0.00% 0	233
Colleges	15.95% 37	25.86% 60	30.60% 71	16.38% 38	10.78% 25	0.43% 1	232

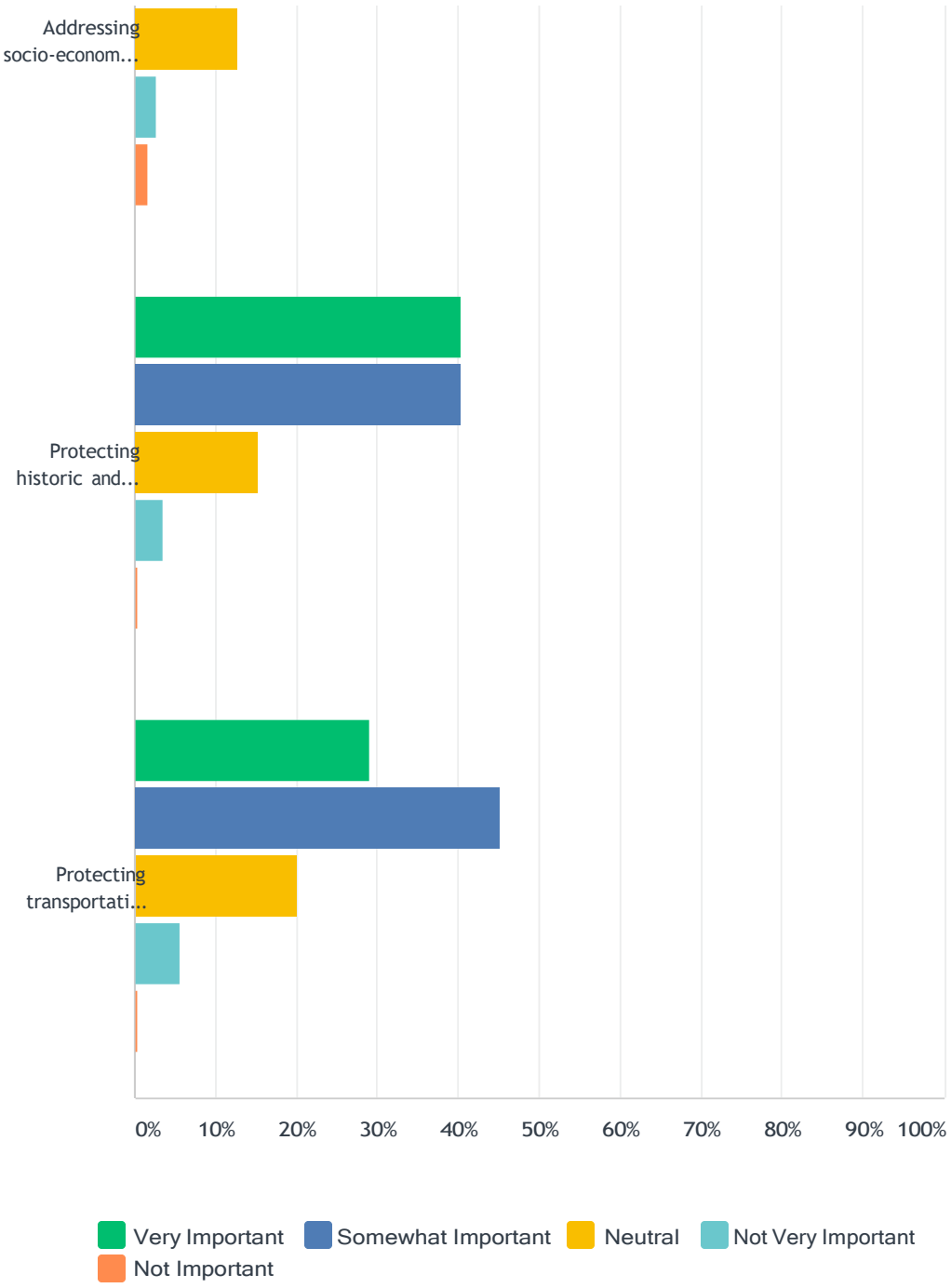
Parks	7.42%	29.69%	37.12%	17.47%	7.42%	0.87%	229
	17	68	85	40	17	2	

Q11 Flood hazards can have a significant impact on a community but planning for these types of events can help lessen the impacts. The following statements will help us determine citizen priorities regarding planning for flood hazards in your community. (Please tell us how important each statement is to you by checking the appropriate circle for each)

Answered: 231 Skipped: 44



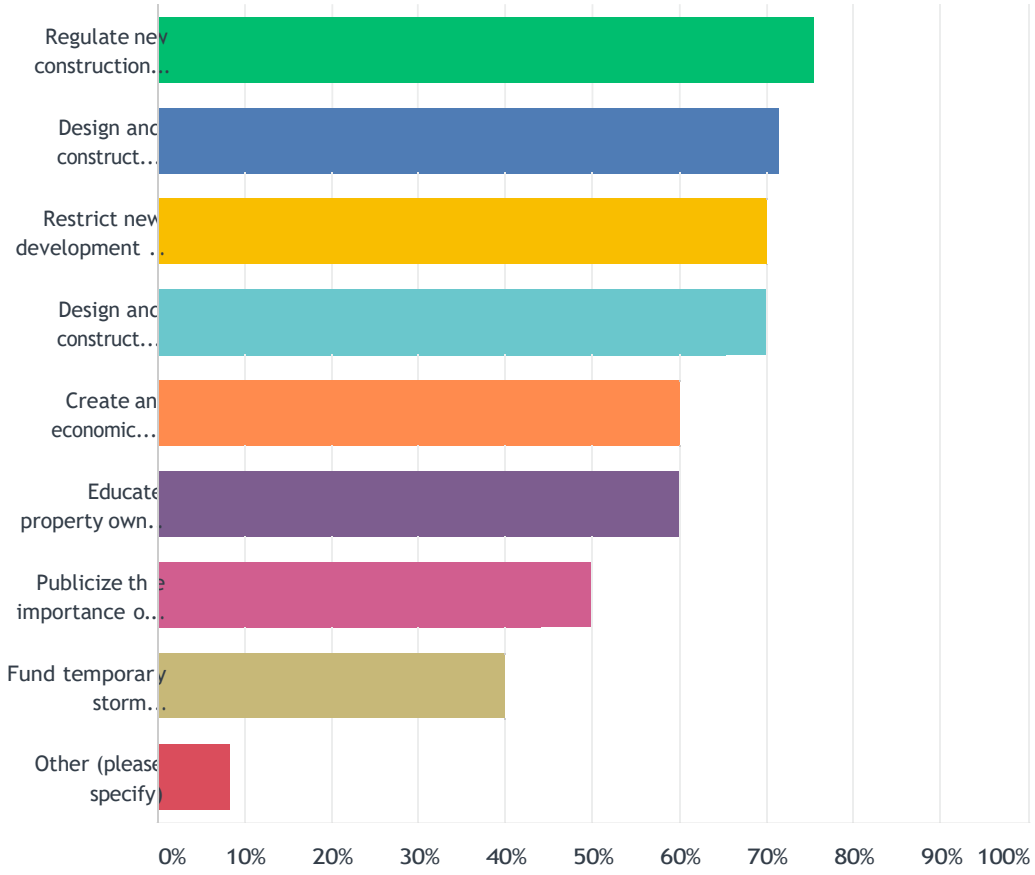

Strengthening emergency...
Preventing development ...
Enhancing the function of...
Promoting cooperation...


Addressing socio-econom...
Protecting historic and...
Protecting transportati...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Very Important
Somewhat Important
Neutral
Not Very Important
Not Important

Protecting critical facilities (for example: hospitals, police stations, fire stations, etc.)	92.64% 214	6.49% 15	0.87% 2	0.00% 0	0.00% 0	231
Protecting and reducing damage to utilities	77.49% 179	19.91% 46	1.30% 3	1.30% 3	0.00% 0	231
Protecting private (residential and commercial) property	77.39% 178	18.70% 43	3.04% 7	0.87% 2	0.00% 0	230
Strengthening emergency services (for example: police, fire, ambulance)	67.10% 155	25.97% 60	4.76% 11	1.73% 4	0.43% 1	231
Preventing development in flood hazard areas	58.01% 134	29.00% 67	10.39% 24	2.16% 5	0.43% 1	231
Enhancing the function of natural features (for example: streams, wetlands, open spaces, etc.)	53.71% 123	29.26% 67	13.10% 30	3.49% 8	0.44% 1	229
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	51.09% 117	34.93% 80	11.79% 27	1.31% 3	0.87% 2	229
Addressing socio-economic disparity in economically distressed neighborhoods & business districts	48.47% 111	34.50% 79	12.66% 29	2.62% 6	1.75% 4	229
Protecting historic and cultural landmarks and districts	40.43% 93	40.43% 93	15.22% 35	3.48% 8	0.43% 1	230
Protecting transportation networks (public transit, rideshare, bike paths, commuter roads, etc.)	29.13% 67	45.22% 104	19.57% 45	5.65% 13	0.43% 1	230

Q12 What are some steps that your local government could take to reduce or eliminate the risk of future flood hazard damages to your neighborhood? (Check all that apply)

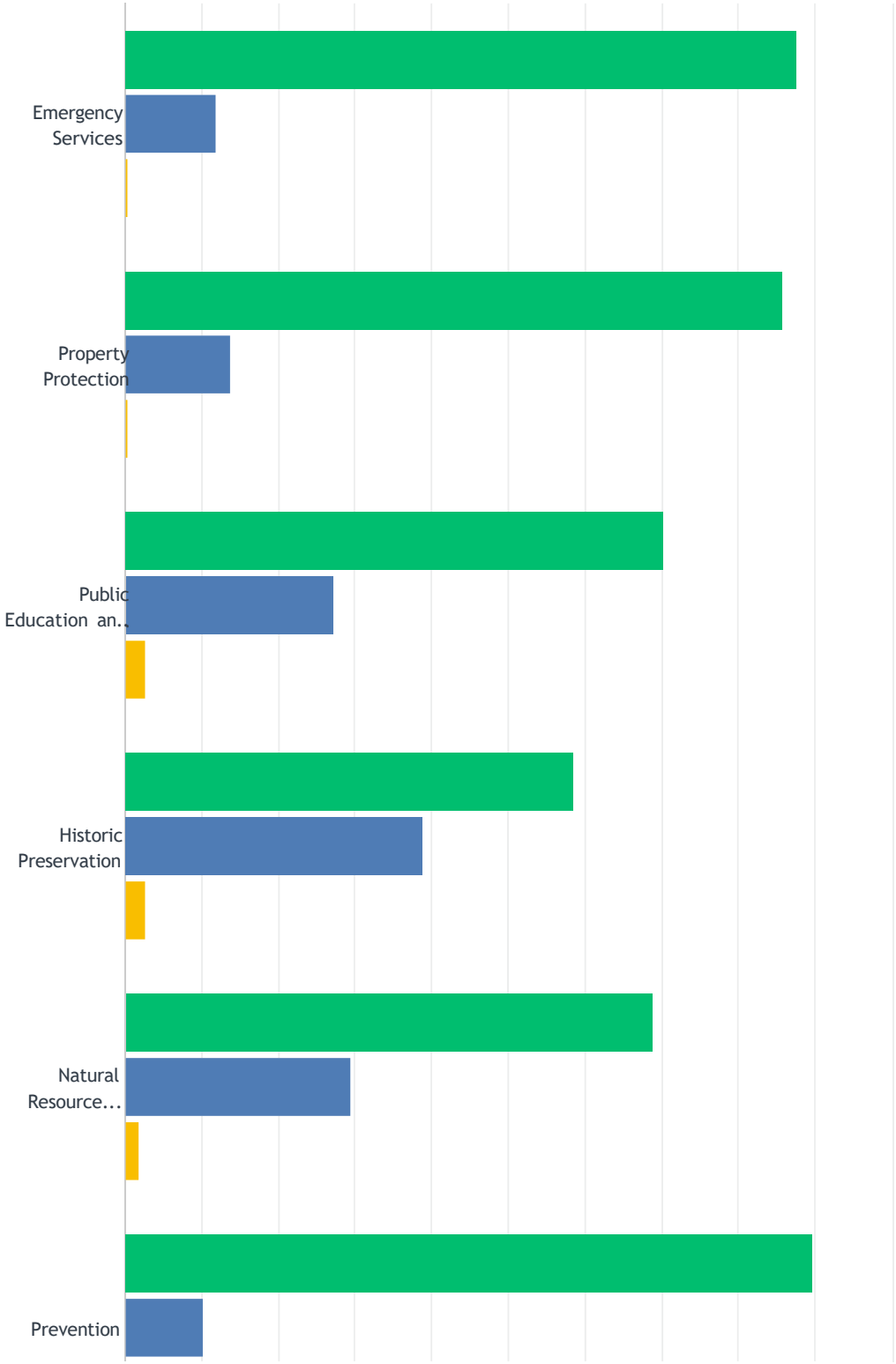
Answered: 229 Skipped: 46

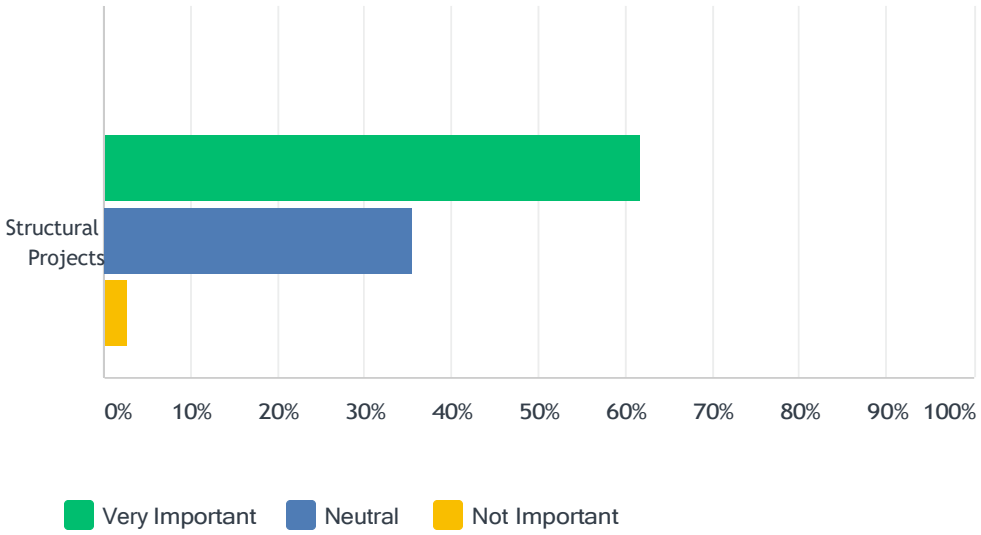


ANSWER CHOICES	RESPONSES	
Regulate new construction / redevelopment to incorporate flood protection measures	75.55%	173
Design and construct permanent structural protection systems (flood walls, flood pumps, backflow preventers, stormwater system upgrades, cisterns, etc.)	71.62%	164
Restrict new development / redevelopment in flood prone areas	70.31%	161
Design and construct nature-based barriers (living shorelines, etc.)	65.50%	150
Create an economic incentive to assist property owners with mitigating or adapting their property to reduce flood risk	60.26%	138
Educate property owners on a variety of wet & dry floodproofing and elevation strategies	59.39%	136
Publicize the importance of property owners acquiring flood insurance	44.10%	101
Fund temporary storm protection systems (flood barriers, sandbags, building wraps) to protect public spaces	40.17%	92
Other (please specify)	8.30%	19
Total Respondents: 229		

Q13 A number of community-wide activities can reduce risk from flood hazards. In general, these activities fall into one of the following six broad categories. (Please tell us how important you think each one is for your community to consider pursuing)

Answered: 229 Skipped: 46

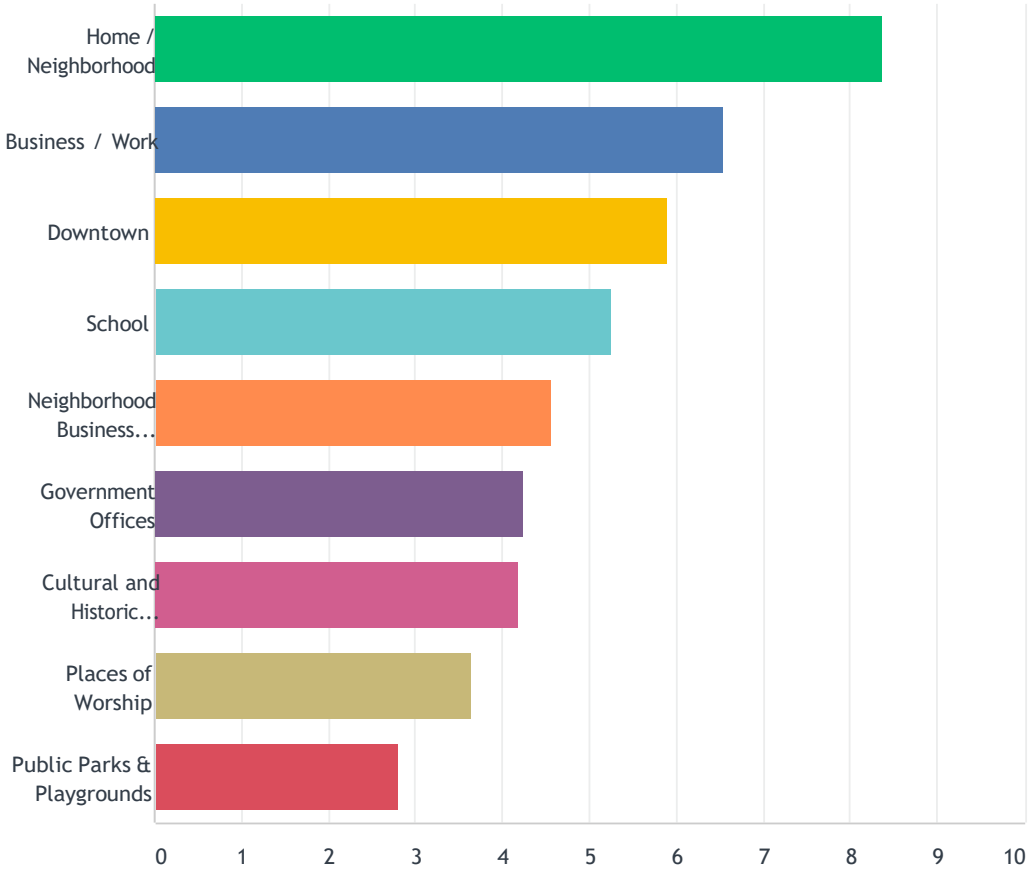




Emergency Services	87.67% 199	11.89% 27	0.44% 1	227
Property Protection	85.78% 193	13.78% 31	0.44% 1	225
Public Education and Awareness	70.22% 158	27.11% 61	2.67% 6	225
Historic Preservation	58.48% 131	38.84% 87	2.68% 6	224
Natural Resource Protection	68.75% 154	29.46% 66	1.79% 4	224
Prevention	89.69% 200	10.31% 23	0.00% 0	223
Structural Projects	61.71% 137	35.59% 79	2.70% 6	222

Q14 Rank the places you are most interested in protecting in order of importance. (Rank the places in order of importance, 1 being most important and 9 being least important. Drag and Drop the items to reorder them.)

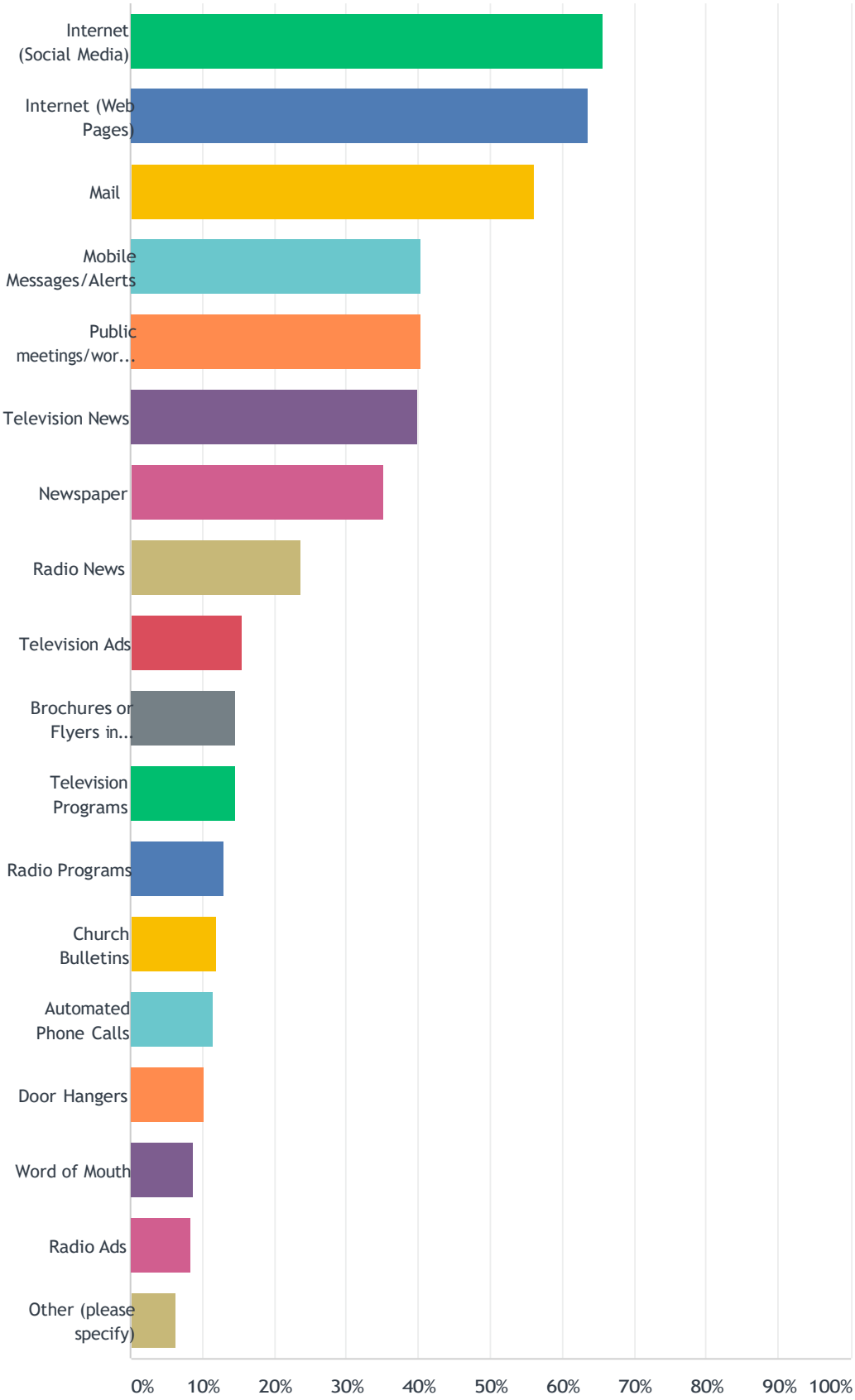
Answered: 225 Skipped: 50



Home / Neighborhood	79.72% 173	6.45% 14	4.61% 10	1.38% 3	2.76% 6	1.38% 3	0.92% 2	1.84% 4	0.92% 2	217	8.36
Business / Work	1.90% 4	41.23% 87	20.85% 44	9.00% 19	11.37% 24	8.53% 18	3.32% 7	2.37% 5	1.42% 3	211	6.54
Downtown	10.33% 22	13.62% 29	15.02% 32	21.13% 45	15.49% 33	12.21% 26	7.51% 16	2.35% 5	2.35% 5	213	5.90
School	1.86% 4	9.30% 20	21.86% 47	17.67% 38	13.02% 28	13.95% 30	12.56% 27	6.51% 14	3.26% 7	215	5.25
Neighborhood Business Districts	1.84% 4	5.99% 13	13.36% 29	16.13% 35	15.21% 33	11.98% 26	14.29% 31	13.82% 30	7.37% 16	217	4.57
Government Offices	2.35% 5	6.10% 13	8.45% 18	12.68% 27	13.62% 29	13.62% 29	18.31% 39	17.37% 37	7.51% 16	213	4.25
Cultural and Historic Properties	3.20% 7	14.16% 31	5.94% 13	10.05% 22	7.76% 17	11.42% 25	11.42% 25	19.18% 42	16.89% 37	219	4.18
Places of Worship	0.96% 2	4.81% 10	9.13% 19	9.13% 19	11.54% 24	11.54% 24	15.38% 32	12.02% 25	25.48% 53	208	3.65
Public Parks & Playgrounds	0.47% 1	1.40% 3	2.79% 6	3.26% 7	9.30% 20	13.95% 30	16.28% 35	21.86% 47	30.70% 66	215	2.80

Q15 What are the most effective ways for you to receive information about how to make your home and neighborhood more resistant to flood hazards? (Check all that apply)

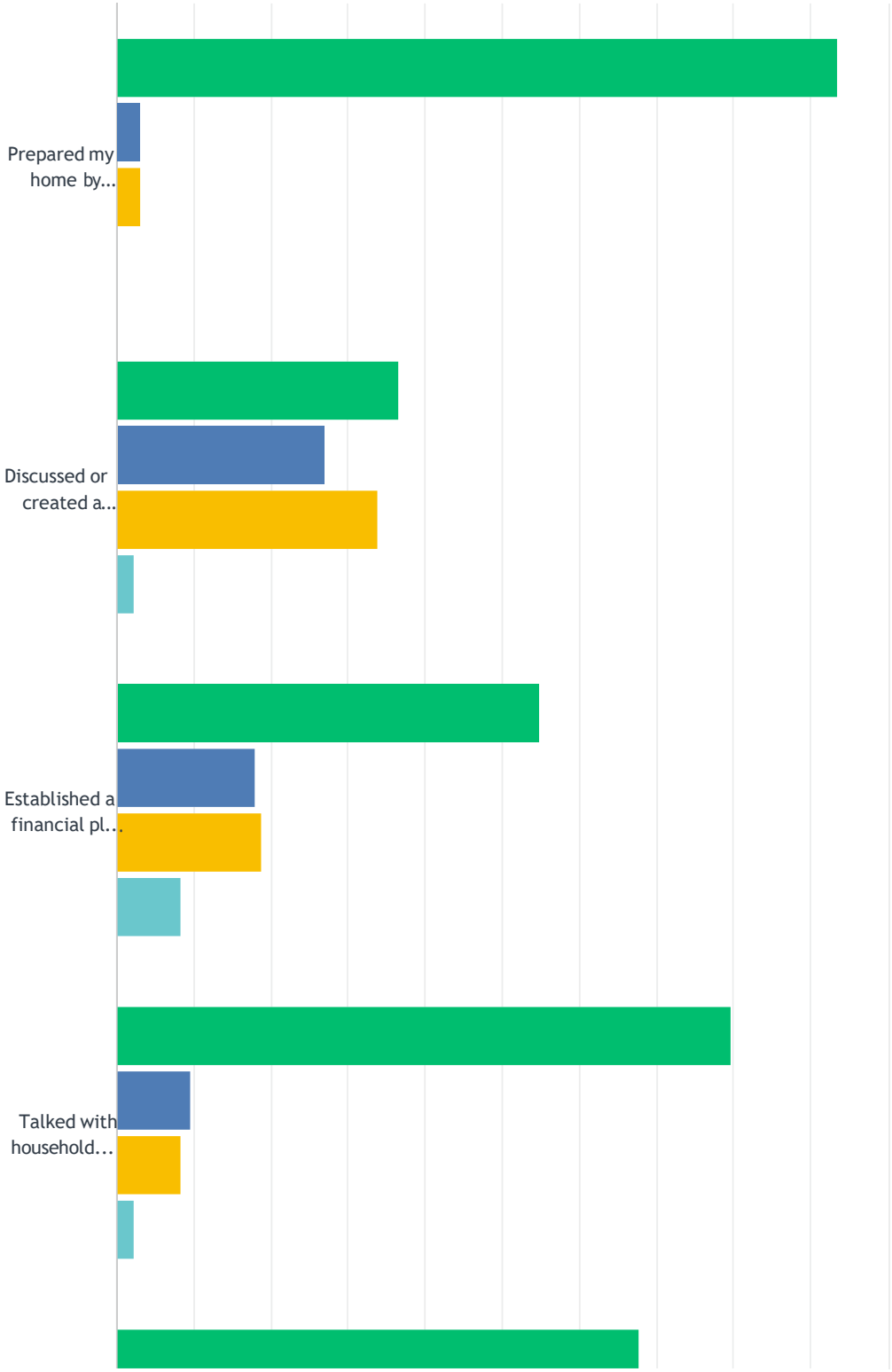
Answered: 225 Skipped: 50

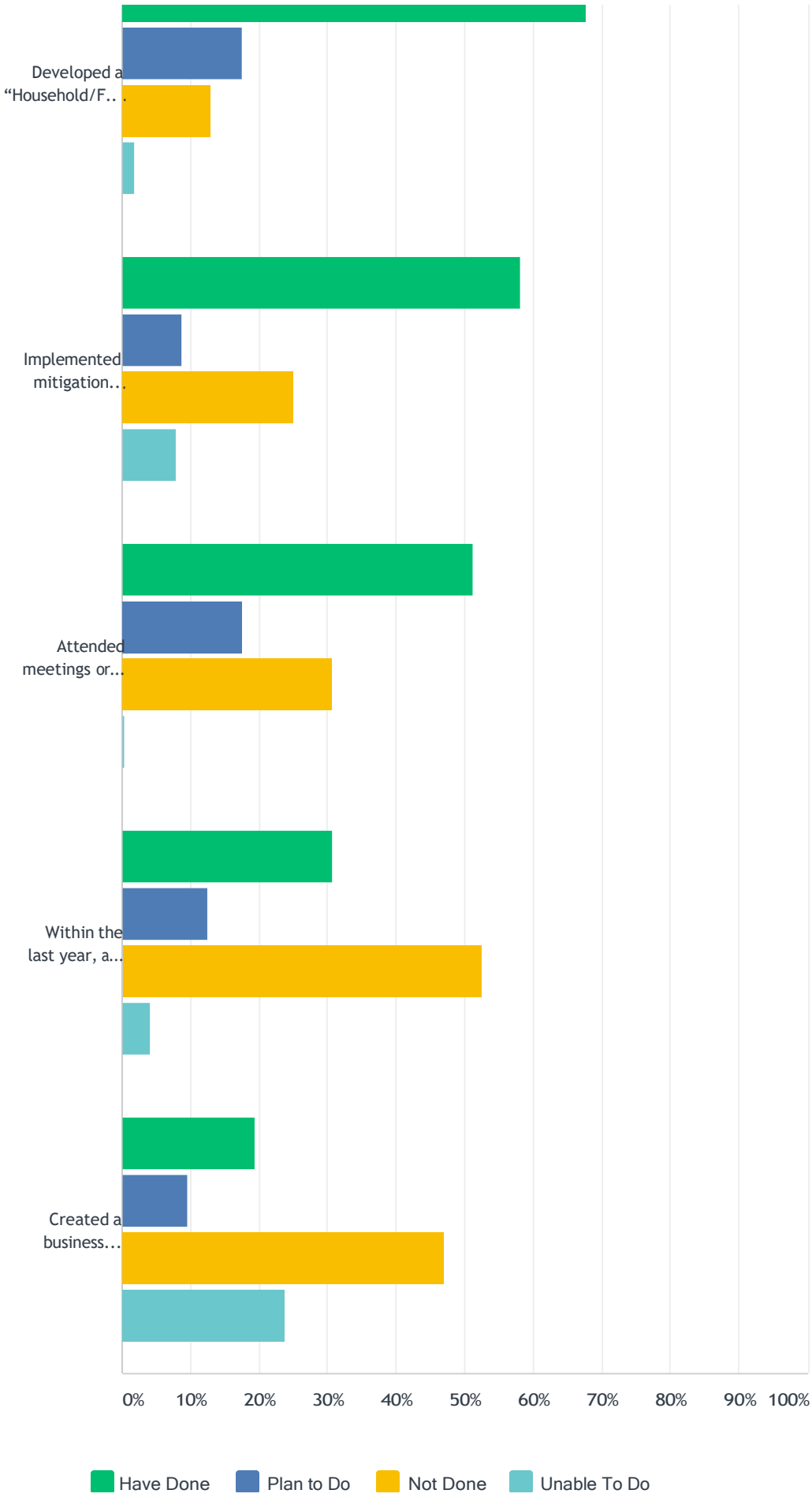

Internet (Social Media)
Internet (Web Pages)
Mail
Mobile Messages/Alerts
Public meetings/wor...
Television News
Newspaper
Radio News
Television Ads
Brochures or Flyers in...
Television Programs
Radio Programs
Church Bulletins
Automated Phone Calls
Door Hangers
Word of Mouth
Radio Ads
Other (please specify)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

ANSWER CHOICES	RESPONSES	
Internet (Social Media)	65.78%	148
Internet (Web Pages)	63.56%	143
Mail	56.00%	126
Mobile Messages/Alerts	40.44%	91
Public meetings/workshops	40.44%	91
Television News	40.00%	90
Newspaper	35.11%	79
Radio News	23.56%	53
Television Ads	15.56%	35
Brochures or Flyers in Public Buildings	14.67%	33
Television Programs	14.67%	33
Radio Programs	12.89%	29
Church Bulletins	12.00%	27
Automated Phone Calls	11.56%	26
Door Hangers	10.22%	23
Word of Mouth	8.89%	20
Radio Ads	8.44%	19
Other (please specify)	6.22%	14
Total Respondents: 225		

Q16 In the following list, please check the disaster preparedness activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. (Please check one response for each preparedness activity)

Answered: 220 Skipped: 55

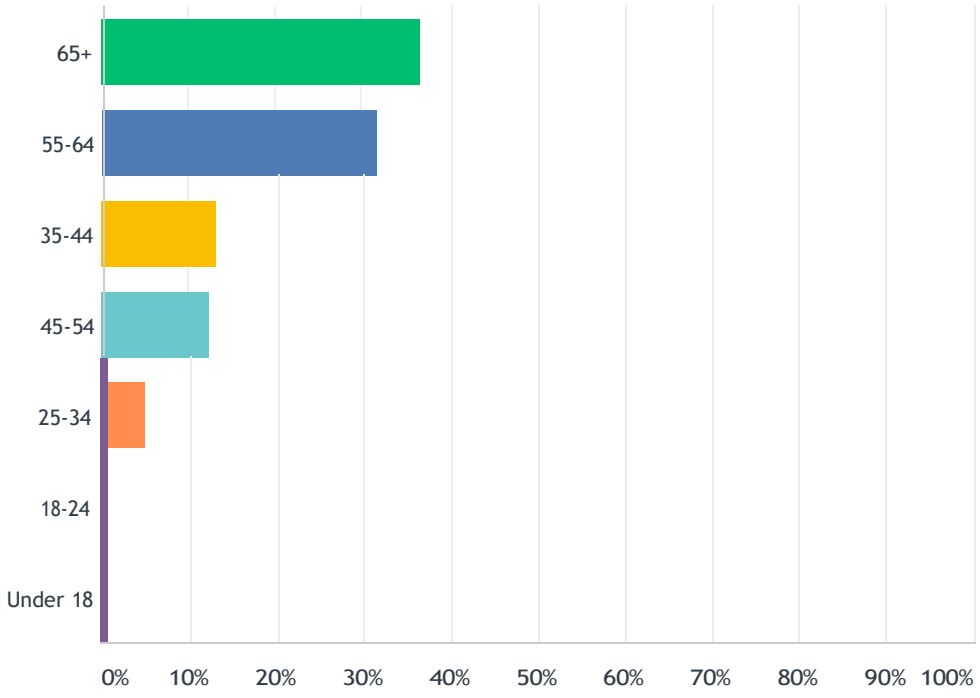



Developed a "Household/F...
Implemented mitigation...
Attended meetings or...
Within the last year, a...
Created a business...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Have Done
Plan to Do
Not Done
Unable To Do

	HAVE DONE	PLAN TO DO	NOT DONE	UNABLE TO DO	TOTAL
Prepared my home by installing smoke detectors on each level of the house	93.58% 204	3.21% 7	3.21% 7	0.00% 0	218
Discussed or created a utility shutoff procedure in the event of a natural disaster	36.70% 80	27.06% 59	33.94% 74	2.29% 5	218
Established a financial plan and/or have a reserve fund set aside for post-disaster recovery in the event there is a flood	54.84% 119	17.97% 39	18.89% 41	8.29% 18	217
Talked with household members about what to do in case of a natural disaster or emergency	79.72% 173	9.68% 21	8.29% 18	2.30% 5	217
Developed a “Household/Family Emergency Plan” in order to decide what everyone would do in the event of a disaster	67.74% 147	17.51% 38	12.90% 28	1.84% 4	217
Implemented mitigation measures to protect my property	58.14% 125	8.84% 19	25.12% 54	7.91% 17	215
Attended meetings or received written information on natural disasters or emergency preparedness	51.16% 110	17.67% 38	30.70% 66	0.47% 1	215
Within the last year, a member of my household was trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)	30.70% 66	12.56% 27	52.56% 113	4.19% 9	215
Created a business continuity plan that addresses future disasters	19.42% 40	9.71% 20	47.09% 97	23.79% 49	206

Q17 What is your age range?

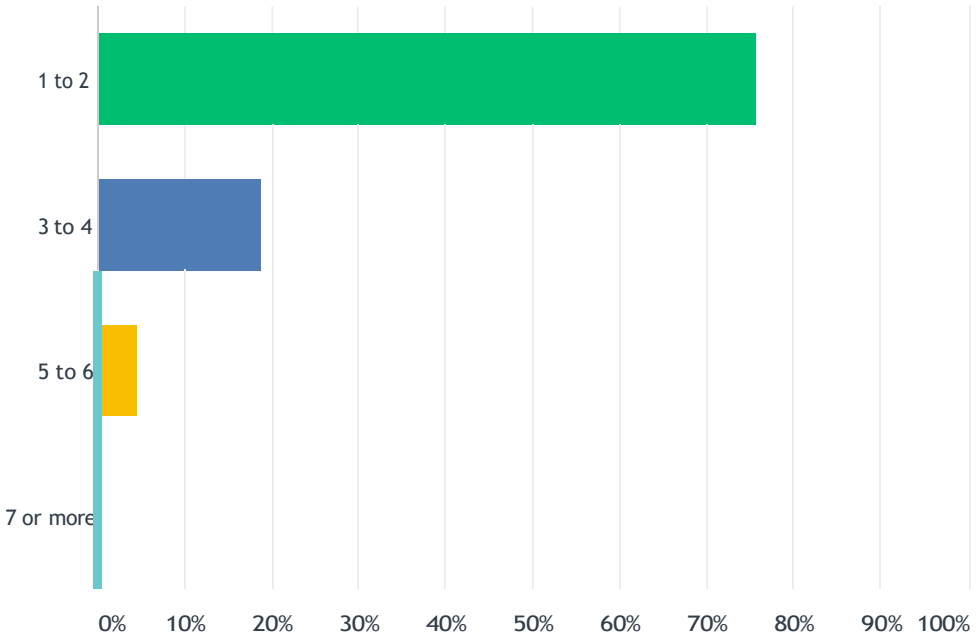
Answered: 223 Skipped: 52



ANSWER CHOICES	RESPONSES	
65+	36.77%	82
55-64	31.84%	71
35-44	13.45%	30
45-54	12.56%	28
25-34	4.48%	10
18-24	0.90%	2
Under 18	0.00%	0
TOTAL		223

Q18 How many people live in your household?

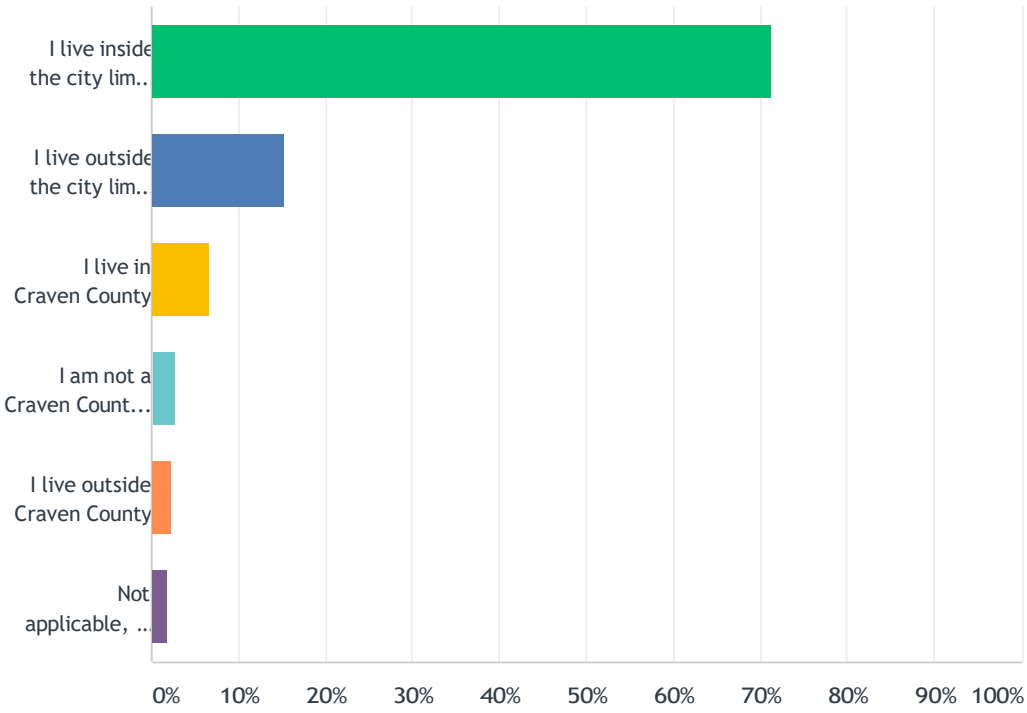
Answered: 222 Skipped: 53



ANSWER CHOICES	RESPONSES	
1 to 2	75.68%	168
3 to 4	18.92%	42
5 to 6	4.50%	10
7 or more	0.90%	2
TOTAL		222

Q19 Where do you live?

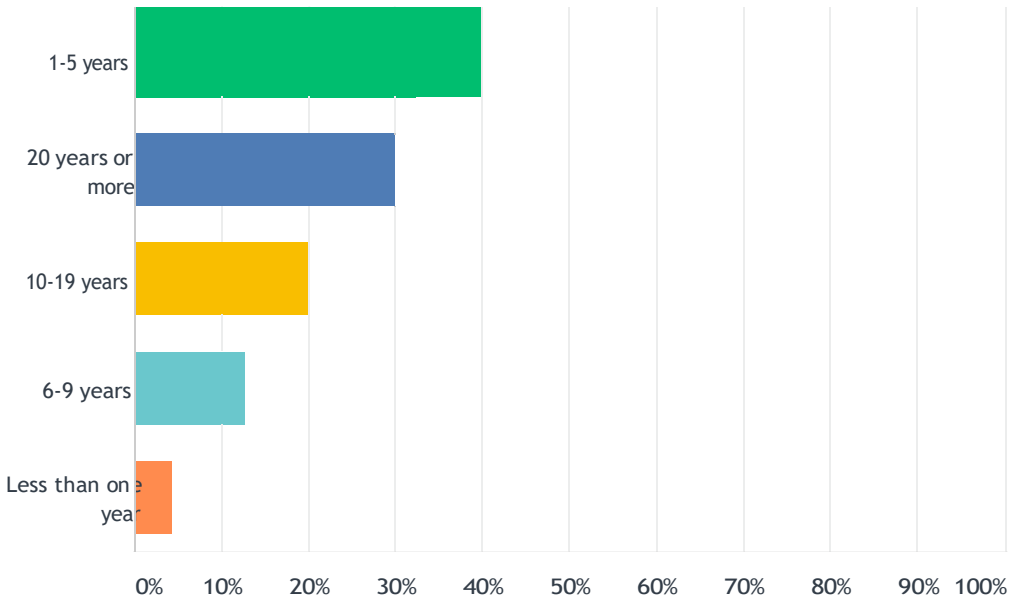
Answered: 223 Skipped: 52



ANSWER CHOICES	RESPONSES	
I live inside the city limits of New Bern	71.30%	159
I live outside the city limits of New Bern	15.25%	34
I live in Craven County	6.73%	15
I am not a Craven County resident	2.69%	6
I live outside Craven County	2.24%	5
Not applicable, I don't live in the vicinity	1.79%	4
TOTAL		223

Q20 How long have you lived in New Bern?

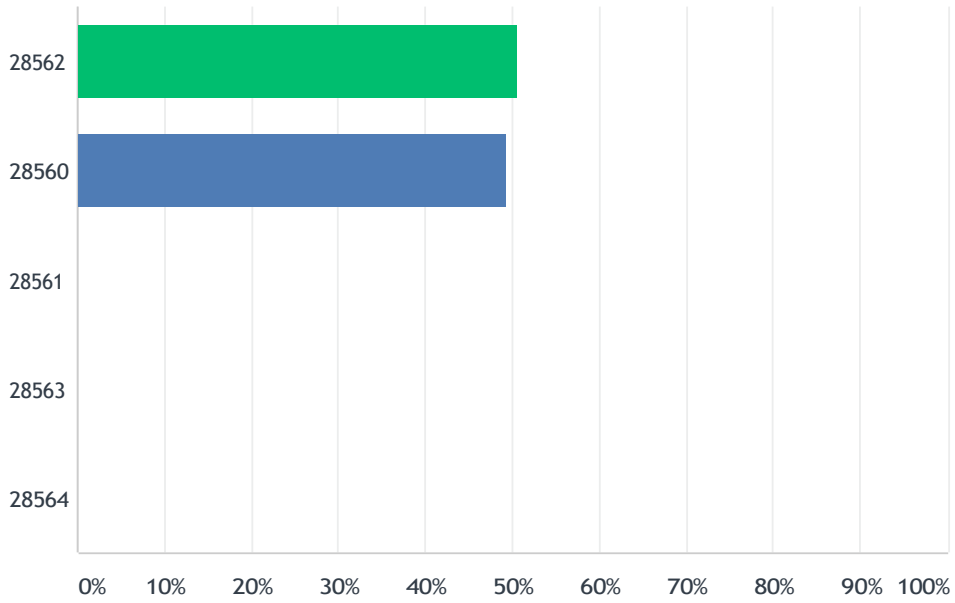
Answered: 157 Skipped: 118



ANSWER CHOICES	RESPONSES	
1-5 years	32.48%	51
20 years or more	30.57%	48
10-19 years	19.75%	31
6-9 years	12.74%	20
Less than one year	4.46%	7
TOTAL		157

Q21 If you live in New Bern, which zip code do you live in?

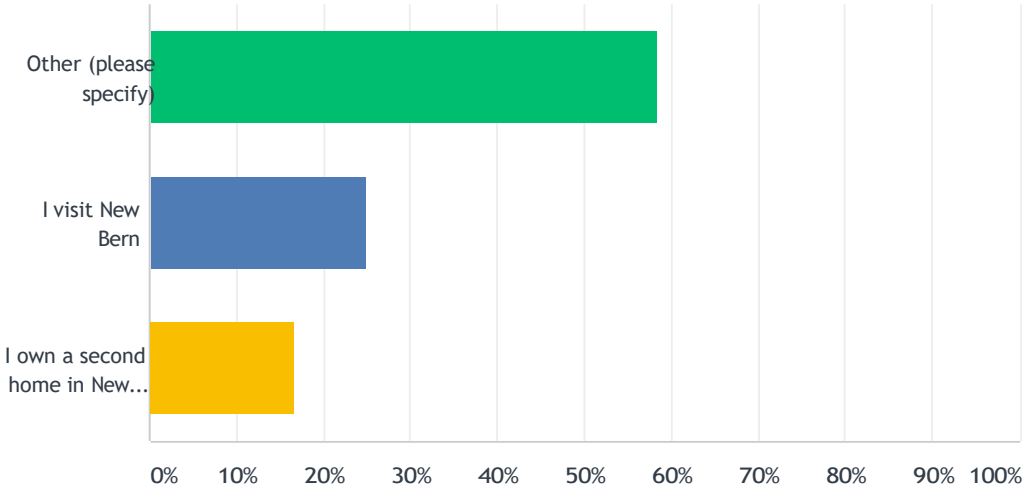
Answered: 156 Skipped: 119



ANSWER CHOICES	RESPONSES	
28562	50.64%	79
28560	49.36%	77
28561	0.00%	0
28563	0.00%	0
28564	0.00%	0
TOTAL		156

Q22 If you don’t live in New Bern full time, which of the following describes your relation to New Bern?

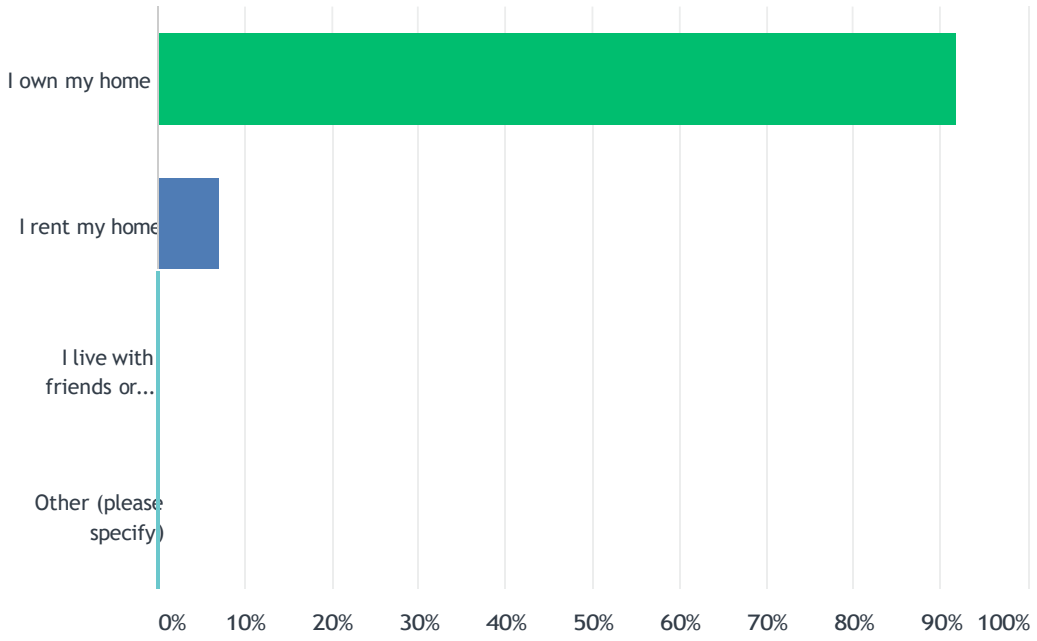
Answered: 36 Skipped: 239



ANSWER CHOICES	RESPONSES	
Other (please specify)	58.33%	21
I visit New Bern	25.00%	9
I own a second home in New Bern	16.67%	6
TOTAL		36

Q23 What is your living situation?

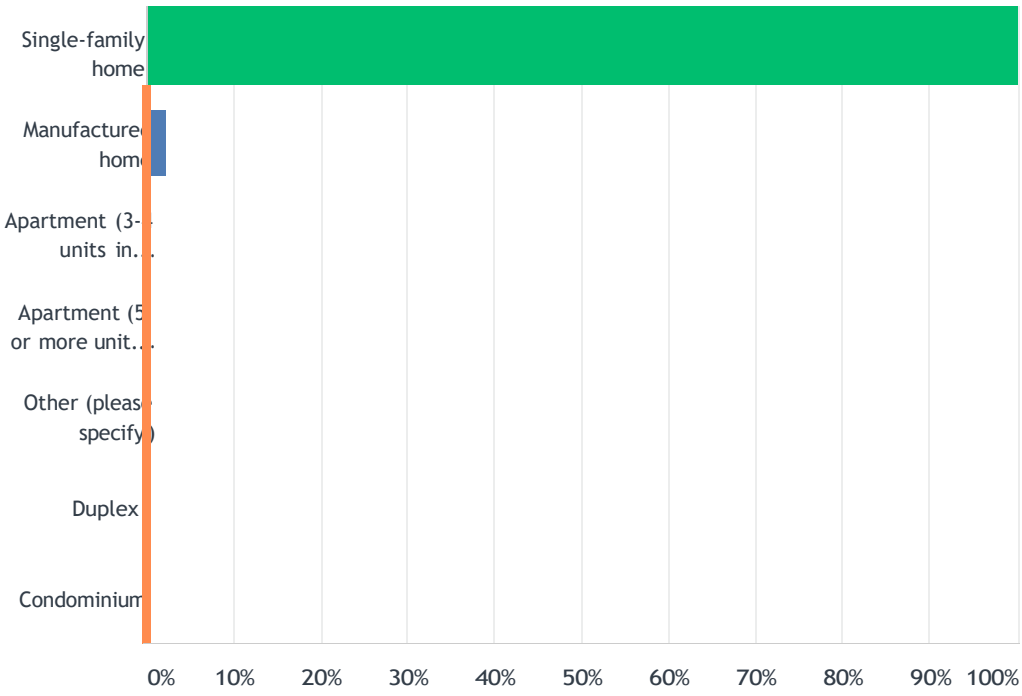
Answered: 222 Skipped: 53



ANSWER CHOICES	RESPONSES	
I own my home	91.89%	204
I rent my home	7.21%	16
I live with friends or family	0.45%	1
Other (please specify)	0.45%	1
TOTAL		222

Q24 What type of building do you live in?

Answered: 222 Skipped: 53



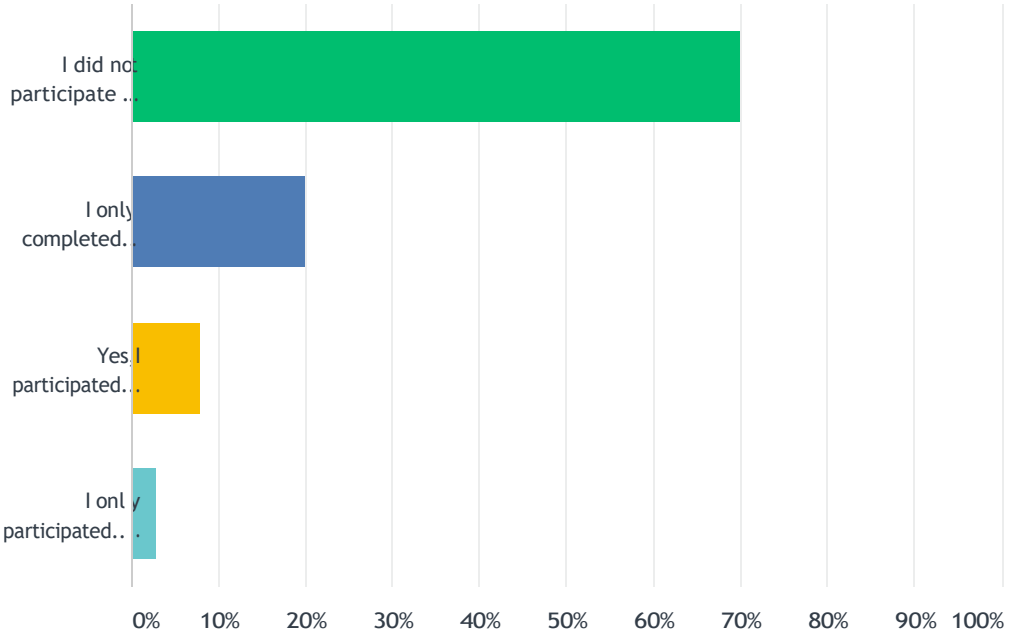
ANSWER CHOICES	RESPONSES	
Single-family home	91.89%	204
Manufactured home	2.25%	5
Apartment (3-4 units in structure)	1.35%	3
Apartment (5 or more units in structure)	1.35%	3
Other (please specify)	1.35%	3
Duplex	0.90%	2
Condominium	0.90%	2
TOTAL		222

Q25 We would like for you to share your concerns. Please complete the following statement: “My greatest concerns about how future flooding and storms will impact New Bern/Craven County are…."

Answered: 124 Skipped: 151

Q1 Did you participate in Primary Public Meeting 1 and complete Survey 1: Priorities and Preferences?

Answered: 276 Skipped: 5



ANSWER CHOICES	RESPONSES	
I did not participate in Primary Public Meeting 1 nor did I complete Survey 1	69.57%	192
I only completed Survey 1 and did not participate in Primary Public Meeting 1	19.57%	54
Yes, I participated in Primary Public Meeting 1 and completed Survey 1	7.97%	22
I only participated in Primary Public Meeting 1 and did not complete Survey 1	2.90%	8
TOTAL		276

Q2 What neighborhood area do you live in?

Answered: 267 Skipped: 14

#	RESPONSES	DATE
1	Craeberne Craeberne Forest	1/29/2021 8:42 AM
2	Riverside Historic Riverside	1/26/2021 11:48 PM
3	Old Town Old Town	1/26/2021 1:29 PM
4	Downtown Historic district Historic Downtown	1/22/2021 6:51 PM
5	Trent Woods Trent Woods	1/21/2021 8:24 AM
6	Downtown Historic district Historic downtown area	1/21/2021 8:23 AM
7	Trent Woods Trent Woods	1/21/2021 8:20 AM
8	River Bend River Bend	1/21/2021 8:19 AM
9	Trent Woods Trent Woods	1/20/2021 11:27 AM
10	Downtown Downtown	1/14/2021 4:23 PM
11	Sunnyside Sunny Side	1/13/2021 11:39 AM
12	Sunnyside Sunnyside	1/13/2021 11:12 AM
13	Trent Woods Trent Woods	1/12/2021 2:59 PM
14	Broad Creek Broad creek rd	1/12/2021 2:08 PM
15	Downtown Downtown	1/12/2021 7:00 AM
16	Brice's Creek Brice’s creek	1/12/2021 6:31 AM
17	Carolina Colours Carolina Colours	1/12/2021 12:20 AM
18	Historic district Historic District	1/11/2021 3:23 PM
19	Ghent Ghent	1/11/2021 10:52 AM
20	Kings Grant Kings Grant (Elizabeth and SIMMONS)	1/11/2021 8:34 AM
21	Greenbrier Greenbrier	1/10/2021 7:36 PM
22	Fairfield Harbour Fairfield Harbour	1/10/2021 7:16 PM
23	Sunnyside Sunnyside	1/10/2021 4:19 PM
24	Lake Tyler Lake Tyler	1/10/2021 2:50 PM
25	Riverside Riverside	1/10/2021 1:06 PM
26	Southgate Southgate	1/10/2021 11:37 AM
27	Bridgeton Bridgeton	1/10/2021 7:25 AM
28	Trent Woods Trent Woods	1/10/2021 12:00 AM
29	Arcadia Village Arcadia village	1/9/2021 11:22 PM
30	Longleaf Pines Longleaf Pines	1/9/2021 10:43 PM
31	Cypress Forest Cypress forest	1/9/2021 9:38 PM
32	North Hills Drive North Hills	1/9/2021 9:30 PM
33	Brice's Creek Brices Creek	1/9/2021 8:46 PM
34	James City James City	1/9/2021 8:30 PM
35	Sherwood Forest Sherwood Forest	1/9/2021 7:32 PM
36	Forest Hills Forest Hills	1/9/2021 6:03 PM
37	Trent Woods Trent woods	1/9/2021 5:09 PM

38	Brice's Creek Brices Creek	1/9/2021 2:19 PM
39	James City James City	1/9/2021 2:06 PM
40	The Meadows The Meadows	1/9/2021 1:18 PM
41	River Bend Riverbend	1/9/2021 12:19 PM
42	Brice's Creek Bryce’s Creek Harbor	1/9/2021 11:53 AM
43	Brice's Creek Brices Creek	1/9/2021 10:33 AM
44	Ghent Ghent	1/9/2021 9:36 AM
45	Downtown Historic district Downtown-Historic	1/9/2021 9:19 AM
46	James City James City	1/9/2021 8:27 AM
47	Carolina Colours Carolina Colours	1/9/2021 8:05 AM
48	Westwood Arms Westwood arms	1/9/2021 2:05 AM
49	Neuse Harbor Neuse harbor	1/9/2021 1:41 AM
50	Brice's Creek River Trace. Brices Creek	1/8/2021 11:12 PM
51	Taberna Taberna	1/8/2021 11:02 PM
52	Halfmoon Halfmoon	1/8/2021 10:59 PM
53	Ghent Ghent	1/8/2021 10:52 PM
54	Bluewater Rise Bluewater Rise	1/8/2021 10:43 PM
55	Kenwood Kenwood	1/8/2021 10:27 PM
56	Old Town Olde Town	1/8/2021 10:07 PM
57	Glenburnie Glenburnie	1/8/2021 9:58 PM
58	Riverside Riverside	1/8/2021 9:40 PM
59	Broad Creek Broad creek	1/8/2021 9:19 PM
60	Lake Clermont Lake clermont	1/8/2021 9:09 PM
61	Riverside Riverside	1/8/2021 9:05 PM
62	Taberna Taberna	1/8/2021 8:46 PM
63	Riverside Riverside	1/8/2021 8:43 PM
64	Longleaf Pines Long leaf pines	1/8/2021 8:41 PM
65	Downtown Downtown	1/8/2021 8:08 PM
66	River Bend River Bend	1/8/2021 7:56 PM
67	Rhems Rhems	1/8/2021 7:47 PM
68	Greenbrier Greenbrier	1/8/2021 7:46 PM
69	James City James city	1/8/2021 6:01 PM
70	Downtown Downtown	1/8/2021 5:42 PM
71	Bridgeton North of Bridgeton	1/8/2021 5:10 PM
72	Riverside Riverside	1/8/2021 4:58 PM
73	Deerfield Deerfield	1/8/2021 4:46 PM
74	Tryon Village Tryon Village	1/8/2021 3:31 PM
75	Brice's Crossing Brices crossing	1/8/2021 2:32 PM

76	Riverside	1/8/2021 2:24 PM
77	Margret Court Margret Court	1/8/2021 1:59 PM
78	DeGraffenried Park DeGraffenreid	1/8/2021 1:41 PM
79	The Meadows The Meadows	1/8/2021 1:12 PM
80	Deerfield Deerfield	1/8/2021 12:30 PM
81	Off Ashland Avenue off of Ashland Ave	1/8/2021 12:20 PM
82	Hardee Farms Hardee Farms	1/8/2021 12:18 PM
83	Lake Tyler Lake Tyler	1/8/2021 12:04 PM
84	River Bend River Bend	1/8/2021 12:03 PM
85	Trent Woods Near trent woods	1/8/2021 11:58 AM
86	Bluewater Rise blue water rise	1/8/2021 11:45 AM
87	Trent Woods Trent Woods	1/8/2021 11:41 AM
88	Carolina Colours Carolina colours	1/8/2021 11:13 AM
89	Woodrow Woodrow	1/8/2021 10:57 AM
90	Gables Run Gables Run	1/8/2021 10:55 AM
91	Forest Run Forest Run	1/8/2021 10:46 AM
92	River Bend River Bend	1/8/2021 10:39 AM
93	Craeberne Craeberne forest	1/8/2021 10:37 AM
94	Taberna Taberna	1/5/2021 3:09 PM
95	Historic district Historic District - East Front Street	1/5/2021 11:52 AM
96	Historic district Historic District	12/28/2020 9:48 AM
97	Woodland Crossing Woodland Crossing	12/27/2020 6:23 PM
98	Historic district historic district	12/27/2020 5:51 PM
99	Downtown downtown	12/26/2020 6:03 AM
100	James City James City	12/24/2020 10:55 AM
101	Oakland Ave Oakland ave	12/17/2020 10:59 PM
102	River Bend River Bend	12/17/2020 6:08 PM
103	Downtown Downtown	12/17/2020 3:40 PM
104	Sandy Point sandy point	12/17/2020 1:58 PM
105	DeGraffenried Park deGraffenreid Park	12/17/2020 1:56 PM
106	Devers Ave Devers Ave, Devers circle	12/17/2020 12:54 PM
107	Kenwood Kenwood New Bern	12/17/2020 11:32 AM
108	Downtown Historic district Downtown historical district	12/17/2020 11:15 AM
109	Taberna Taberna	12/17/2020 9:03 AM
110	Craeberne Craeberne Forest	12/17/2020 8:51 AM
111	Craven County Craven County	12/16/2020 5:12 PM
112	Belle Oaks Belle Oaks	12/16/2020 10:41 AM
113	Duffyfield Duffyfield	12/15/2020 9:16 PM

114	Trent Park	12/15/2020 9:03 PM
115	Sherwood Forest Sherwood Forest	12/15/2020 8:16 PM
116	Brice's Creek Brices Creek	12/15/2020 5:06 PM
117	Fairfield Harbour Fairfield Harbour	12/15/2020 4:35 PM
118	Carolina Colours Carolina Colours	12/15/2020 1:25 PM
119	Pleasant Hill Pleasant Hill	12/15/2020 1:11 PM
120	Woodrow Woodrow	12/15/2020 1:05 PM
121	Towne Woods Towne Woods	12/15/2020 12:41 PM
122	Brice's Creek Brice’s Creek	12/14/2020 7:06 PM
123	Bluewater Rise Bluewater Rise	12/14/2020 6:11 PM
124	Kings Row Kings Row	12/14/2020 4:54 PM
125	Historic district Historic	12/14/2020 4:42 PM
126	Fairfield Harbour Fairfield Harbour	12/14/2020 4:32 PM
127	Greenbrier Greenbriar	12/14/2020 3:44 PM
128	HDRA Change Street HDRA Change Street	12/14/2020 1:06 PM
129	The Meadows The Meadows	12/14/2020 11:21 AM
130	Riverside Riverside	12/14/2020 8:34 AM
131	Old Town Olde Towne	12/14/2020 7:49 AM
132	James City James city	12/14/2020 12:15 AM
133	Ghent Ghent	12/13/2020 10:59 PM
134	Cypress Shores Cypress Shores	12/13/2020 8:19 PM
135	Oakview Oakview	12/13/2020 8:13 PM
136	Brice's Creek Brice’s Creek	12/13/2020 7:49 PM
137	Township 7 Township 7	12/13/2020 7:43 PM
138	Old Town Olde Town	12/13/2020 7:36 PM
139	Wilson Creek Wilson Creek	12/13/2020 7:35 PM
140	Fairfield Harbour Fairfield harbour	12/13/2020 7:16 PM
141	Downtown Historic district Historic Downtown	12/13/2020 7:12 PM
142	Fairfield Harbour Fairfield Harbour	12/13/2020 5:55 PM
143	James City James city	12/13/2020 12:56 PM
144	Downtown Historic district Historic downtown	12/13/2020 12:16 PM
145	Trent Woods Trent Woods	12/13/2020 12:10 PM
146	Longleaf Pines Longleaf Pines	12/13/2020 12:07 PM
147	Riverside Riverside	12/13/2020 10:39 AM
148	Arcadia Village Arcadia Village	12/12/2020 10:17 PM
149	Brice's Creek Brice's Creek area	12/12/2020 10:05 PM
150	Riverside Riverside	12/12/2020 5:38 PM
151	Ghent Ghent	12/12/2020 11:35 AM

152	Hidden Harbor	12/12/2020 11:07 AM
153	Downtown Historic district downtown historic	12/12/2020 10:47 AM
154	Attmore Attmore	12/12/2020 10:26 AM
155	DeGraffenried Park DeGraffenried park	12/12/2020 8:53 AM
156	Downtown Historic district Historic Downtown	12/12/2020 7:51 AM
157	Craeberne Craeburne Forest	12/12/2020 7:01 AM
158	River Bend River Bend	12/12/2020 6:57 AM
159	Ghent Ghent	12/12/2020 6:42 AM
160	Riverside Riverside	12/11/2020 9:43 PM
161	Downtown Downtown New Bern	12/11/2020 9:08 PM
162	Downtown Historic district Down town historic district	12/11/2020 9:06 PM
163	Ghent Ghent	12/11/2020 9:04 PM
164	Downtown Historic district Downtown historic	12/11/2020 8:46 PM
165	Taberna Taberna	12/11/2020 7:17 PM
166	Dryborough Property in Dryborough	12/11/2020 7:10 PM
167	Ghent ghent	12/11/2020 6:48 PM
168	Trolley Run Trolley Run	12/11/2020 6:47 PM
169	Sunnyside Sunnyside	12/11/2020 6:16 PM
170	Downtown Historic district historic downtown	12/11/2020 4:52 PM
171	Duffyfield Duffyfield	12/11/2020 4:50 PM
172	Downtown Historic district Downtown Historic District	12/11/2020 4:44 PM
173	Downtown E. Front St.	12/11/2020 4:30 PM
174	Hunters Ridge Hunters Ridge	12/11/2020 4:29 PM
175	Cypress Shores Cypress Shores	12/11/2020 3:50 PM
176	Downtown Downtown	12/11/2020 3:33 PM
177	Glenburnie S. Glenburnie	12/11/2020 3:09 PM
178	Riverside Riverside	12/11/2020 2:18 PM
179	Trent Woods Trent Woods	12/11/2020 2:16 PM
180	Lake Tyler Lake Tyler	12/11/2020 1:52 PM
181	Downtown Downtown	12/11/2020 1:50 PM
182	Downtown Historic district historic downtown	12/11/2020 1:47 PM
183	Downtown Diwntown	12/11/2020 1:44 PM
184	Downtown Historic district Downtown Historic District	12/11/2020 1:37 PM
185	Historic district Historic	12/11/2020 1:31 PM
186	Downtown Downtown	12/11/2020 1:25 PM
187	Greenbrier Greenbrier	12/11/2020 1:18 PM
188	Woodrow Woodrow	12/11/2020 10:35 AM
189	Trappers Creek Trappers Creek	12/10/2020 8:52 PM

190	None None	12/10/2020 8:49 PM
191	Derby Park Derby Park	12/10/2020 12:28 PM
192	Trent Woods Trent Woods (Bellefern)	12/10/2020 9:18 AM
193	Downtown Down town	12/10/2020 7:19 AM
194	Trent Woods Trent Woods	12/9/2020 6:58 PM
195	Washington Park Washington park	12/9/2020 5:23 PM
196	Bridgeton Near Bridgeton, but address is New Bern.	12/9/2020 4:24 PM
197	Downtown Historic district Downtown Historic District	12/8/2020 9:36 PM
198	Near NB high school near New Bern High school	12/8/2020 11:29 AM
199	Skysail Skysail/rivetfront	12/8/2020 4:32 AM
200	Forest Run Forest Run	12/7/2020 5:01 PM
201	Haywood Farms Haywood Farms	12/7/2020 2:34 PM
202	Historic district Historic district	12/7/2020 10:39 AM
203	Greenbrier Greenbrier	12/7/2020 10:13 AM
204	Fairfield Harbour Fairfield Harbour	12/7/2020 7:04 AM
205	Oakvire Oakvire	12/7/2020 6:38 AM
206	Woodrow Woodrow	12/7/2020 12:10 AM
207	Cypress Shores Cypress Shores	12/6/2020 9:36 PM
208	James City James City	12/6/2020 8:34 PM
209	Ghent Ghent	12/6/2020 8:21 PM
210	Colony Estates Colony Estates	12/6/2020 6:10 PM
211	Taylor Creek Taylor Creek	12/6/2020 5:50 PM
212	Downtown Historic district Downtown Historic Area	12/6/2020 4:34 PM
213	River Bend River Bend	12/6/2020 1:44 PM
214	Hardee Farms Hardee Farms	12/6/2020 1:23 PM
215	Planter's Ridge Planter's Ridge	12/6/2020 10:56 AM
216	Downtown Business district, downtown	12/6/2020 8:54 AM
217	Bridge Pointe Harbour Bridge pointe Harbour	12/6/2020 7:24 AM
218	Riverside Riverside	12/6/2020 6:39 AM
219	Downtown Downtown	12/5/2020 9:32 PM
220	Longleaf Pines Longleafpines	12/5/2020 9:26 PM
221	Downtown Historic district Downtown Historic District	12/5/2020 6:24 PM
222	James City James City	12/5/2020 5:59 PM
223	Ghent Ghent	12/5/2020 5:36 PM
224	Craeberne craeberne	12/5/2020 4:12 PM
225	Ghent Ghent	12/5/2020 11:00 AM
226	River Bend Pier Pointe in River Bend	12/5/2020 10:40 AM
227	Downtown Historic district downtown historic district	12/5/2020 9:40 AM

228	Derby Park Derby park	12/5/2020 9:05 AM
229	Downtown Downtown	12/5/2020 9:05 AM
230	Brice's Crossing Brices Crossing Subdivision	12/5/2020 7:23 AM
231	Downtown Downtown	12/4/2020 11:50 PM
232	Downtown Historic district Historic downtown	12/4/2020 11:45 PM
233	Fairfield Harbour Fairfield Harbour	12/4/2020 9:58 PM
234	West of New Bern West of New Bern	12/4/2020 9:56 PM
235	Downtown Downtown	12/4/2020 8:43 PM
236	Greenbrier Greenbriar	12/4/2020 8:11 PM
237	Downtown E Front Street	12/4/2020 8:08 PM
238	Lake Clermont Lake Clermont	12/4/2020 6:48 PM
239	Historic district historic district	12/4/2020 6:22 PM
240	Downtown Downtown	12/4/2020 6:15 PM
241	Downtown ward 1 - downtown	12/4/2020 4:44 PM
242	Belle Oaks Belle Oaks	12/4/2020 4:20 PM
243	Old Town Old town	12/4/2020 4:04 PM
244	Downtown Downtown	12/4/2020 4:04 PM
245	Downtown Historic district HDRA, downtown	12/4/2020 4:04 PM
246	Historic district Historic	12/4/2020 3:48 PM
247	Fairfield Harbour Fairfield Harbour	12/4/2020 3:28 PM
248	Fairfield Harbour Fairfield Harbour	12/4/2020 3:23 PM
249	Downtown Historic district Historic District	12/4/2020 3:20 PM
250	Oak Island Oak Island NC. We are watching how you do this.	12/4/2020 3:16 PM
251	Trent Woods Trent Woods	12/4/2020 3:05 PM
252	Historic district Historic district	12/4/2020 2:49 PM
253	Greenbrier Greenbrier	12/4/2020 2:49 PM
254	Metcalf Street Metcalf st	12/4/2020 2:45 PM
255	Fairfield Harbour fairfield harbour	12/4/2020 2:44 PM
256	Downtown Historic district Historic Downtown New Bern	12/4/2020 2:33 PM
257	Downtown Historic district Historic Downtown	12/4/2020 2:25 PM
258	Downtown Historic district Historic Downtown	12/4/2020 2:25 PM
259	River Bend River Bend	12/4/2020 2:07 PM
260	Downtown Downtown	12/4/2020 1:55 PM
261	North Hills Drive North hills drive	12/4/2020 1:54 PM
262	James City James City	12/4/2020 1:43 PM
263	Taberna Taberna	12/4/2020 1:42 PM
264	Derby Park Derby Park	12/4/2020 1:03 PM
265	Riverside River Side	12/4/2020 12:23 PM

266	Fairfield Harbour Fairfield Harbour	12/4/2020 12:19 PM
267	Ghent Ghent	12/4/2020 12:01 PM

Q3 What neighborhood area do you work in?

Answered: 259 Skipped: 22

#	RESPONSES	DATE
1	McCarthy Blvd McCarthy	1/29/2021 8:42 AM
2	Medical Park Avenue Medical Park Avenue	1/26/2021 11:48 PM
3	Retired Retired	1/26/2021 1:29 PM
4	Retired Retired but Volunteer Largely Related to Historic Districts	1/22/2021 6:51 PM
5	Commerce Dr Commerce Dr.	1/21/2021 8:24 AM
6	Gleburnie Glenburnie/ Hwy 17 area	1/21/2021 8:23 AM
7	Pollock Street Pollock Street	1/21/2021 8:20 AM
8	Trent Woods Trent Woods	1/21/2021 8:19 AM
9	Retired (retired)	1/20/2021 11:27 AM
10	Downtown Downtown	1/14/2021 4:23 PM
11	Retired Retired	1/13/2021 11:39 AM
12	N/A N/A	1/13/2021 11:12 AM
13	All All	1/12/2021 2:59 PM
14	Vancboro Vancboro	1/12/2021 2:08 PM
15	Downtown Downtown	1/12/2021 7:00 AM
16	Ft Totten Ft totten	1/12/2021 6:31 AM
17	James City James City	1/12/2021 12:20 AM
18	Downtown Downtown	1/11/2021 3:23 PM
19	N/A N/A (out of city)	1/11/2021 10:52 AM
20	Same as above	1/11/2021 8:34 AM
21	Greenbrier Greenbrier	1/10/2021 7:36 PM
22	Retired Retired	1/10/2021 7:16 PM
23	Onslow County Onslow County	1/10/2021 4:19 PM
24	Lake Tyler Lake Tyler	1/10/2021 2:50 PM
25	River side Riverside	1/10/2021 1:06 PM
26	Carolina East Carolina East	1/10/2021 11:37 AM
27	Bridgeton Bridgeton	1/10/2021 7:25 AM
28	Retired Retired	1/10/2021 12:00 AM
29	Arcadia Village Arcadia village	1/9/2021 11:22 PM
30	Downtown Historic district Historic Downtown	1/9/2021 10:43 PM
31	N/A N/A	1/9/2021 9:30 PM
32	Neuse Blvd Neuse blvd	1/9/2021 8:46 PM
33	Cherry Point Cherry Point	1/9/2021 8:30 PM
34	Retired Retired	1/9/2021 7:32 PM
35	Trent Court Trent Court	1/9/2021 6:18 PM
36	All over Various, Craven County	1/9/2021 6:03 PM
37	Havelock Havelock	1/9/2021 2:19 PM

38	Neuse Blvd Neuse Blvd	1/9/2021 2:06 PM
39	Craven DSS Craven DSS	1/9/2021 1:18 PM
40	Downtown Downtown	1/9/2021 12:19 PM
41	N/A None	1/9/2021 11:53 AM
42	N/A na	1/9/2021 10:33 AM
43	Downtown Downtown New Bern	1/9/2021 10:26 AM
44	West Craven West Cravev	1/9/2021 9:36 AM
45	Retired Retired	1/9/2021 9:19 AM
46	James City James City	1/9/2021 8:27 AM
47	Carolina Colours Carolina Colours - work remote	1/9/2021 8:05 AM
48	Retired Retired	1/9/2021 2:05 AM
49	Retired Retired	1/9/2021 1:41 AM
50	Retired Retired	1/8/2021 11:12 PM
51	Craven County Ind. Park Craven industrial park	1/8/2021 10:59 PM
52	Ghent Ghent	1/8/2021 10:52 PM
53	McCarthy Blvd McCarthy Blvd	1/8/2021 10:43 PM
54	Retired Retired	1/8/2021 10:27 PM
55	Olde Town olde Town	1/8/2021 10:07 PM
56	Downtown Downtown	1/8/2021 9:58 PM
57	N/A None.	1/8/2021 9:40 PM
58	N/A N/A	1/8/2021 9:19 PM
59	Same	1/8/2021 9:09 PM
60	River side Riverside	1/8/2021 9:05 PM
61	Trent Woods Trent Woods	1/8/2021 8:46 PM
62	N/A N/A	1/8/2021 8:43 PM
63	Downtown Downtown	1/8/2021 8:08 PM
64	All over All of Craven , Pamlico and Jones County	1/8/2021 7:56 PM
65	James City James city	1/8/2021 7:47 PM
66	Downtown Ghent Downtown/Ghent	1/8/2021 7:46 PM
67	Longleaf Pines Longleaf pines	1/8/2021 7:32 PM
68	Hospital By the hospital	1/8/2021 6:01 PM
69	Downtown Downtown	1/8/2021 5:42 PM
70	Hospital Hospital	1/8/2021 5:10 PM
71	River side Riverside	1/8/2021 4:58 PM
72	James City James city	1/8/2021 4:46 PM
73	Tryon Village Tryon Village	1/8/2021 3:31 PM
74	Downtown Downtown	1/8/2021 2:32 PM
75	Retired Retired	1/8/2021 2:24 PM

76	Near Tryon Palace	1/8/2021 1:59 PM
77	DeGraffenreid DeGraffenreid	1/8/2021 1:41 PM
78	Havelock Havelock	1/8/2021 1:12 PM
79	N/A N/A	1/8/2021 12:30 PM
80	James City James City	1/8/2021 12:20 PM
81	Lake Tyler Lake Tyler	1/8/2021 12:04 PM
82	Trent Woods Trent woods	1/8/2021 12:03 PM
83	Cherry Point Cherry Point	1/8/2021 11:58 AM
84	New Street New St New Bern	1/8/2021 11:45 AM
85	Fairfield Harbour Fairfield Harbour	1/8/2021 11:41 AM
86	Oaks Road Oaks rd	1/8/2021 11:13 AM
87	Retired Retired	1/8/2021 10:57 AM
88	N/A N/A	1/8/2021 10:55 AM
89	Retired Retired	1/8/2021 10:46 AM
90	Downtown Downtown NB	1/8/2021 10:39 AM
91	N/A N/a	1/8/2021 10:37 AM
92	Craven County Ind. Park Craven County Industrial Park	1/5/2021 3:09 PM
93	Historic district Historic District	1/5/2021 11:52 AM
94	Historic district Historic District	12/28/2020 9:48 AM
95	Woodland Crossing Woodland Crossing	12/27/2020 6:23 PM
96	Retired retired	12/27/2020 5:51 PM
97	Downtown downtown	12/26/2020 6:03 AM
98	Havelock Havelock	12/24/2020 10:55 AM
99	Berne Square Berne square	12/17/2020 10:59 PM
100	Retired Retired	12/17/2020 6:08 PM
101	Downtown Downtown	12/17/2020 3:40 PM
102	Retired retired	12/17/2020 1:58 PM
103	same	12/17/2020 1:56 PM
104	Nurse Blvd Nurse blvd	12/17/2020 12:54 PM
105	Retired Retired	12/17/2020 11:32 AM
106	N/A N/a	12/17/2020 11:15 AM
107	Retired retired	12/17/2020 9:03 AM
108	Retired Retired	12/17/2020 8:51 AM
109	Neuse Blvd Neuse blvd	12/16/2020 5:12 PM
110	Belle Oaks Belle Oaks	12/16/2020 10:41 AM
111	Downtown Downtown	12/15/2020 9:40 PM
112	Greenbrier Greenbrier	12/15/2020 9:16 PM
113	Moen Inc Moen Inc	12/15/2020 9:03 PM

114	Sherwood Forest	12/15/2020 8:16 PM
115	Retired Retired	12/15/2020 5:06 PM
116	Gleburnie New Bern - off of Glenburnie	12/15/2020 4:35 PM
117	Retired Retired	12/15/2020 1:25 PM
118	Downtown Downtown	12/15/2020 1:11 PM
119	Retired Retired	12/15/2020 1:05 PM
120	Retired Retired	12/15/2020 12:41 PM
121	Downtown Downtown	12/14/2020 7:06 PM
122	N/A N/a	12/14/2020 6:11 PM
123	Kings Rown Kings Rown	12/14/2020 4:54 PM
124	N/A N/A	12/14/2020 4:42 PM
125	Fairfield Harbour Remote worker - office @ Fairfield Harbour	12/14/2020 4:32 PM
126	Downtown Downtown	12/14/2020 3:44 PM
127	Retired Retired	12/14/2020 1:06 PM
128	Retired Retired	12/14/2020 11:21 AM
129	Downtown Downtown	12/14/2020 8:34 AM
130	Greenbrier Near Community College/Greenbriar	12/14/2020 7:49 AM
131	James City James city	12/14/2020 12:15 AM
132	Downtown Downtown	12/13/2020 10:59 PM
133	N/A N/A	12/13/2020 8:19 PM
134	All over Throughout Craven county	12/13/2020 8:13 PM
135	James City James City	12/13/2020 7:49 PM
136	Five Points Five Points	12/13/2020 7:43 PM
137	Newman Road Newman Road	12/13/2020 7:36 PM
138	N/A N/A	12/13/2020 7:35 PM
139	Fairfield Harbour Fairfield harbour	12/13/2020 7:16 PM
140	Downtown Historic Downtown	12/13/2020 7:12 PM
141	James City James City	12/13/2020 5:55 PM
142	Downtown Downtown	12/13/2020 5:54 PM
143	Havelock Havelock	12/13/2020 12:56 PM
144	Retired Retired	12/13/2020 12:16 PM
145	Camp Lejeune Camp Lejeune	12/13/2020 12:10 PM
146	Longleaf Pines Longleaf Pines	12/13/2020 12:07 PM
147	Retired Retired	12/13/2020 10:39 AM
148	Downtown Downtown	12/12/2020 10:17 PM
149	Pamlico County I work in Pamlico County	12/12/2020 10:05 PM
150	Retired Riverside (retired)	12/12/2020 5:38 PM
151	Retired retired	12/12/2020 11:35 AM

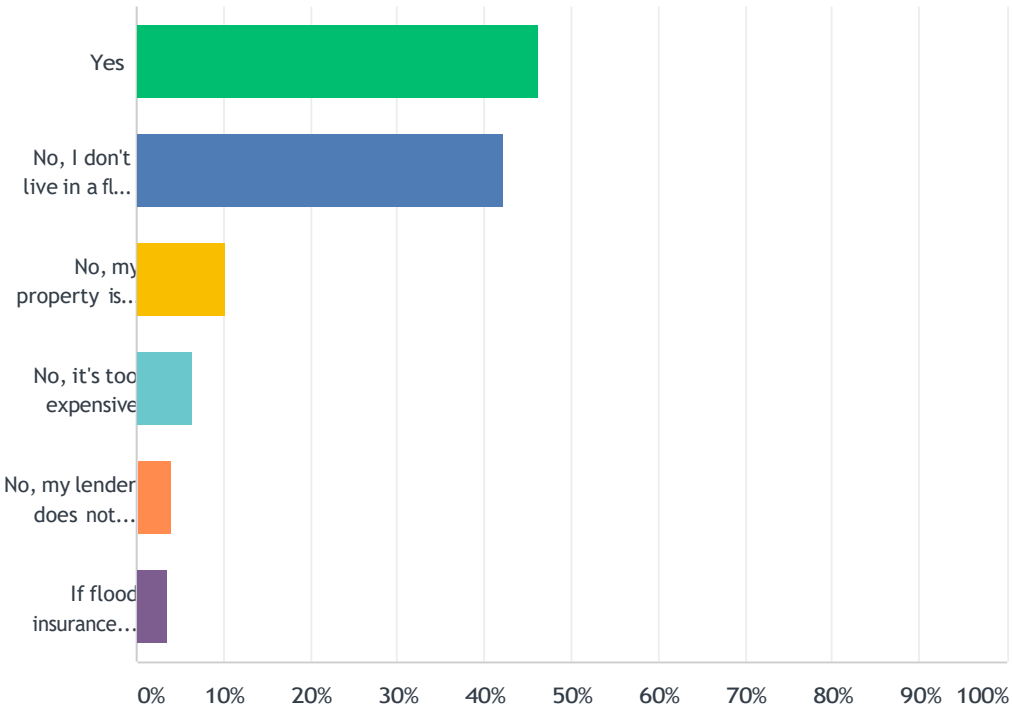
152	N/A	12/12/2020 11:07 AM
153	Tuscarora Tuscarora	12/12/2020 10:26 AM
154	Downtown downtown	12/12/2020 10:16 AM
155	Same	12/12/2020 8:53 AM
156	Retired Retired	12/12/2020 7:01 AM
157	New Bern New Bern	12/12/2020 6:57 AM
158	Ghent Ghent	12/12/2020 6:42 AM
159	Retired Retired	12/11/2020 9:43 PM
160	Downtown Downtown New Bern	12/11/2020 9:08 PM
161	Retired Retired	12/11/2020 9:06 PM
162	Havelock Havelock	12/11/2020 9:04 PM
163	Hospital Hospital	12/11/2020 8:46 PM
164	Retired Retired	12/11/2020 7:17 PM
165	Retired Retired	12/11/2020 7:10 PM
166	MLK Harris Teeter MLK Harris Teeter	12/11/2020 6:48 PM
167	Downtown Downtown	12/11/2020 6:16 PM
168	N/A N/A	12/11/2020 4:50 PM
169	N/A N/A	12/11/2020 4:30 PM
170	Retired Retired	12/11/2020 4:29 PM
171	Five Points Five Points	12/11/2020 3:50 PM
172	N/A Birmingham AL	12/11/2020 3:33 PM
173	S Glenburnie S Glenburnie	12/11/2020 3:09 PM
174	Downtown Historic district Historic Downtoen	12/11/2020 2:40 PM
175	Ghent Ghent	12/11/2020 2:18 PM
176	Trent Woods Trent Woods	12/11/2020 2:16 PM
177	Duffyfield Duffyfield	12/11/2020 1:52 PM
178	Retired Retired	12/11/2020 1:50 PM
179	All over all over	12/11/2020 1:47 PM
180	Retired Retired	12/11/2020 1:44 PM
181	River side Riverside	12/11/2020 1:37 PM
182	Historic district Historic	12/11/2020 1:31 PM
183	Downtown Downtown	12/11/2020 1:25 PM
184	Retired retired	12/11/2020 1:18 PM
185	Work from home Woodrow. Work from home	12/11/2020 10:35 AM
186	Retired Retired	12/10/2020 8:52 PM
187	All over All areas within the city	12/10/2020 8:49 PM
188	Downtown Downtown	12/10/2020 12:28 PM
189	Downtown Downtown (middle st)	12/10/2020 9:18 AM

190	N/A None	12/10/2020 7:19 AM
191	Trent Road Trent Road	12/9/2020 6:58 PM
192	Washington Park Washington park	12/9/2020 5:23 PM
193	Aurora Aurora	12/9/2020 4:24 PM
194	Ghent Ghent	12/8/2020 11:29 AM
195	Same	12/8/2020 4:32 AM
196	Retired Retired	12/7/2020 5:01 PM
197	Hospital Hosital	12/7/2020 10:39 AM
198	Retired Ret	12/7/2020 10:13 AM
199	Ghent Ghent	12/7/2020 7:04 AM
200	Retired Retired	12/7/2020 6:38 AM
201	Woodrow Woodrow	12/7/2020 12:10 AM
202	Downtown Downtown New Bern	12/6/2020 9:36 PM
203	Downtown Downtown New Bern	12/6/2020 8:34 PM
204	Clarks Clarks	12/6/2020 8:21 PM
205	Retired Retired	12/6/2020 6:10 PM
206	All over All	12/6/2020 5:50 PM
207	Industrial area Industrial area between HDRA and Riverside Neighborhood	12/6/2020 4:34 PM
208	James City River Bend River Bend and James City	12/6/2020 1:44 PM
209	N/A N/a	12/6/2020 1:23 PM
210	Planter's Ridge Planter's Ridge	12/6/2020 10:56 AM
211	Hospital Neuse BLVD / Hospital	12/6/2020 8:54 AM
212	N/A N/A	12/6/2020 7:24 AM
213	N/A NA	12/6/2020 6:39 AM
214	Havelock Havelock	12/5/2020 9:32 PM
215	Cherry Point Cherry point	12/5/2020 9:26 PM
216	Downtown Historic district Downtown Historic District	12/5/2020 6:24 PM
217	Outside New Bern Outside of New Bern	12/5/2020 5:36 PM
218	N/A N/a	12/5/2020 4:12 PM
219	Hospital Hospital area	12/5/2020 11:00 AM
220	N/A N/A	12/5/2020 10:40 AM
221	Downtown Historic district downtown historic district	12/5/2020 9:40 AM
222	Retired Retired	12/5/2020 9:05 AM
223	Downtown Downtown	12/5/2020 9:05 AM
224	N/A None	12/5/2020 7:23 AM
225	Retired retired	12/4/2020 11:50 PM
226	Fairfield Harbour Fairfield Harbour	12/4/2020 9:58 PM
227	James City James City	12/4/2020 9:56 PM

228	Havelock Havelock	12/4/2020 8:43 PM
229	Retired I am retired	12/4/2020 8:11 PM
230	N/A N/A	12/4/2020 8:08 PM
231	Hospital CE Hospital	12/4/2020 6:48 PM
232	Historic district historic district	12/4/2020 6:22 PM
233	Retired retired	12/4/2020 6:15 PM
234	Downtown ward 1 - downtown	12/4/2020 4:44 PM
235	Belle Oaks Belle Oaks	12/4/2020 4:20 PM
236	Downtown Downtown	12/4/2020 4:04 PM
237	N/A None	12/4/2020 4:04 PM
238	Retired I'm retired	12/4/2020 4:04 PM
239	N/A ?	12/4/2020 3:48 PM
240	Retired Non, retired	12/4/2020 3:28 PM
241	McCarthy Blvd McCarthy Blvd	12/4/2020 3:23 PM
242	Retired Retired	12/4/2020 3:20 PM
243	N/A n/a	12/4/2020 3:05 PM
244	Retired Retired	12/4/2020 2:49 PM
245	Retired retired	12/4/2020 2:49 PM
246	N/A N/a	12/4/2020 2:45 PM
247	Retired retired	12/4/2020 2:44 PM
248	Broad/Queen Street Broad/Queen Street Corridor	12/4/2020 2:33 PM
249	Retired Retired	12/4/2020 2:25 PM
250	Retired retired	12/4/2020 2:25 PM
251	Trent Woods Trent Woods	12/4/2020 2:07 PM
252	Carolina East CarolinaEast	12/4/2020 1:55 PM
253	McCarthy Blvd McCarthy blvd	12/4/2020 1:54 PM
254	Duffyfield Duffyfield	12/4/2020 1:43 PM
255	Trent Road Trent Road	12/4/2020 1:42 PM
256	Havelock Havelock	12/4/2020 1:03 PM
257	River side River Side	12/4/2020 12:23 PM
258	Downtown Historic district Historic Downtown New Bern	12/4/2020 12:19 PM
259	Havelock Havelock	12/4/2020 12:01 PM

Q4 Do you carry flood insurance? (Check all that apply)

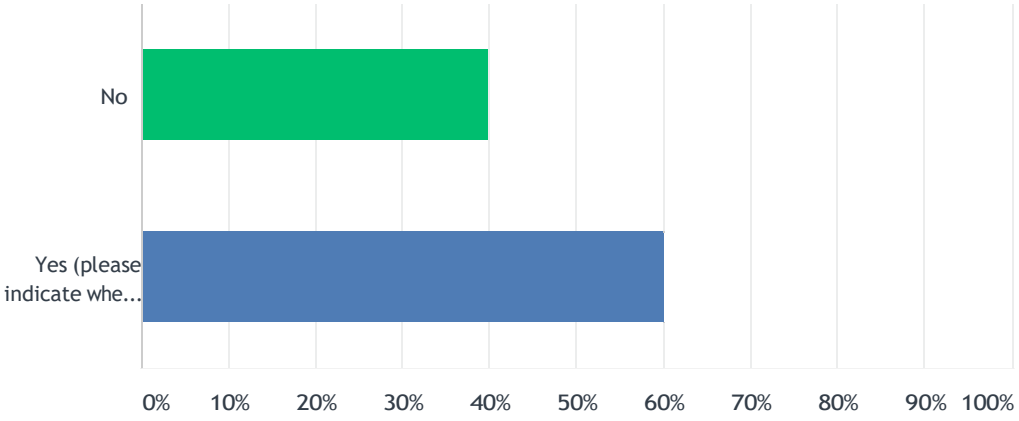
Answered: 275 Skipped: 6



ANSWER CHOICES	RESPONSES	
Yes	46.18%	127
No, I don't live in a flood hazard zone	42.18%	116
No, my property is elevated out of the flood hazard zone	10.18%	28
No, it's too expensive	6.55%	18
No, my lender does not require it	4.00%	11
If flood insurance covered water main breaks or other multi-property flooding events, I would carry it	3.64%	10
Total Respondents: 275		

Q5 Has your home/neighborhood area been affected by flooding in the past?

Answered: 273 Skipped: 8



ANSWER CHOICES	RESPONSES	
No	39.56%	108
Yes (please indicate when was the last time this occurred below)	60.44%	165
TOTAL		273

#	YES (PLEASE INDICATE WHEN WAS THE LAST TIME THIS OCCURRED BELOW)	DATE
1	Hurricane Florence 2018 Hurricane Florence	1/26/2021 11:52 PM
2	Hurricane Florence Hurricane Florence	1/26/2021 1:30 PM
3	Hurricane Florence Hurricane Florence - 2018	1/22/2021 6:51 PM
4	Hurricane Florence Florence	1/21/2021 8:25 AM
5	Hurricane Florence Florence	1/21/2021 8:23 AM
6	Hurricane Florence Hurricane Florence	1/14/2021 4:24 PM
7	Had to replace HVAC, ducks, liner	1/13/2021 11:40 AM
8	2018 2018	1/13/2021 11:12 AM
9	??	1/12/2021 2:59 PM
10	Hurricane Florence Florence 2018	1/12/2021 7:00 AM
11	2018 2018	1/11/2021 3:23 PM
12	Hurricane Florence Florence (basement flooding)	1/11/2021 10:52 AM
13	Hurricane Florence Florence	1/10/2021 7:17 PM
14	Hurricane Florence Hurricane Florence	1/10/2021 4:20 PM
15	Hurricane Florence Hurricane Florence	1/10/2021 1:07 PM
16	Hurricane Florence Florence.	1/10/2021 11:37 AM
17	Hurricane Florence Florence 2018	1/10/2021 7:25 AM
18	Heavy storm The street flash flood	1/9/2021 11:23 PM
19	Heavy storm Street and yard flooding due to heavy rain and poor irrigation. Not due to rising sea levels.	1/9/2021 10:44 PM
20	2008 2008	1/9/2021 9:30 PM
21	Heavy storm Hurricane All the time	1/9/2021 6:18 PM
22	Hurricane Florence Florence	1/9/2021 12:19 PM
23	Hurricane Florence During Florence	1/9/2021 11:53 AM
24	Hurricane Florence 2 years ago, Hurricane Florence	1/9/2021 10:33 AM
25	2018 2018	1/9/2021 10:27 AM
26	Hurricane Florence 2018 - Florence	1/9/2021 9:20 AM
27	Heavy storm The roads flood and block you in but the homes are elevated and haven't flooded.	1/9/2021 8:28 AM
28	Hurricane Florence Florence	1/9/2021 8:05 AM
29	Hurricane Florence Florence	1/9/2021 2:06 AM
30	Hurricane Florence Florence	1/8/2021 11:00 PM
31	Hurricane Florence Florence - Lived on Trappers Trail at the time	1/8/2021 10:27 PM
32	Hurricane Florence Florence	1/8/2021 10:08 PM
33	2018 2018	1/8/2021 9:41 PM
34	Hurricane Florence Florence	1/8/2021 9:09 PM
35	Hurricane Florence Florence	1/8/2021 9:06 PM
36	Hurricane Florence Hurricane Florence Sept 2017	1/8/2021 8:44 PM

37	Hurricane Florence Florence	1/8/2021 7:57 PM
38	2018 2018	1/8/2021 5:42 PM
39	Hurricane Florence Florence 2018	1/8/2021 5:10 PM
40	2018 2018	1/8/2021 4:58 PM
41	Hurricane Florence Hurricane Florence and the 2018 Hurricane	1/8/2021 3:33 PM
42	Heavy storm Hurricane Neighborhood Surrounding areas that didn't allow me to leave my house	1/8/2021 2:32 PM
43	Hurricane Florence Hurricane Florence	1/8/2021 1:42 PM
44	2018 2018	1/8/2021 1:13 PM
45	Hurricane Florence During Florence	1/8/2021 12:18 PM
46	Hurricane Florence I believe the lake received flooding during Florence but I didn't live here then. Just what I heard.	1/8/2021 12:05 PM
47	Hurricane Florence Florence	1/8/2021 11:41 AM
48	Hurricane Florence Florence	1/8/2021 10:57 AM
49	Hurricane Florence Florence. House demolished and rebuilt	1/8/2021 10:39 AM
50	2018 2018	1/5/2021 11:52 AM
51	2018 September 2018	12/28/2020 9:49 AM
52	Hurricane Florence Florence, the condos near me but not this condo	12/27/2020 6:24 PM
53	2018 2018	12/27/2020 5:52 PM
54	Hurricane Florence Hurricane Florance	12/26/2020 6:05 AM
55	Hurricane Floyd Floyd	12/17/2020 10:59 PM
56	Hurricane Florence Florence destroyed our home.	12/17/2020 6:08 PM
57	Hurricane Florence Florence	12/17/2020 3:40 PM
58	Hurricane Florence florence	12/17/2020 1:59 PM
59	Heavy storm Creek flooded its banks last month	12/17/2020 12:55 PM
60	Hurricane Florence Florence	12/17/2020 11:16 AM
61	Hurricane Florence Florence	12/17/2020 9:03 AM
62	Hurricane Florence During Florence	12/16/2020 10:41 AM
63	Hurricane Florence Hurricane Florence	12/15/2020 9:19 PM
64	Heavy storm Heavy rains (like a couple of weeks ago) puts some yards under water	12/15/2020 8:19 PM
65	Hurricane Florence Florence flooded homes on our street, We are higher elevation and not in flood prone area	12/15/2020 5:06 PM
66	Hurricane Florence Florence	12/15/2020 4:35 PM
67	Hurricane Florence Hurricane Florence	12/15/2020 1:06 PM
68	Hurricane Florence Florence	12/14/2020 4:42 PM
69	2011 2018 2011 and 2018	12/14/2020 4:32 PM
70	2018 2018	12/14/2020 1:06 PM
71	Hurricane Florence Florence	12/14/2020 7:50 AM
72	Hurricane Florence In Florence, our neighborhood was not flooded, but our road into town was at Brices Creek/Merchants.	12/13/2020 8:14 PM

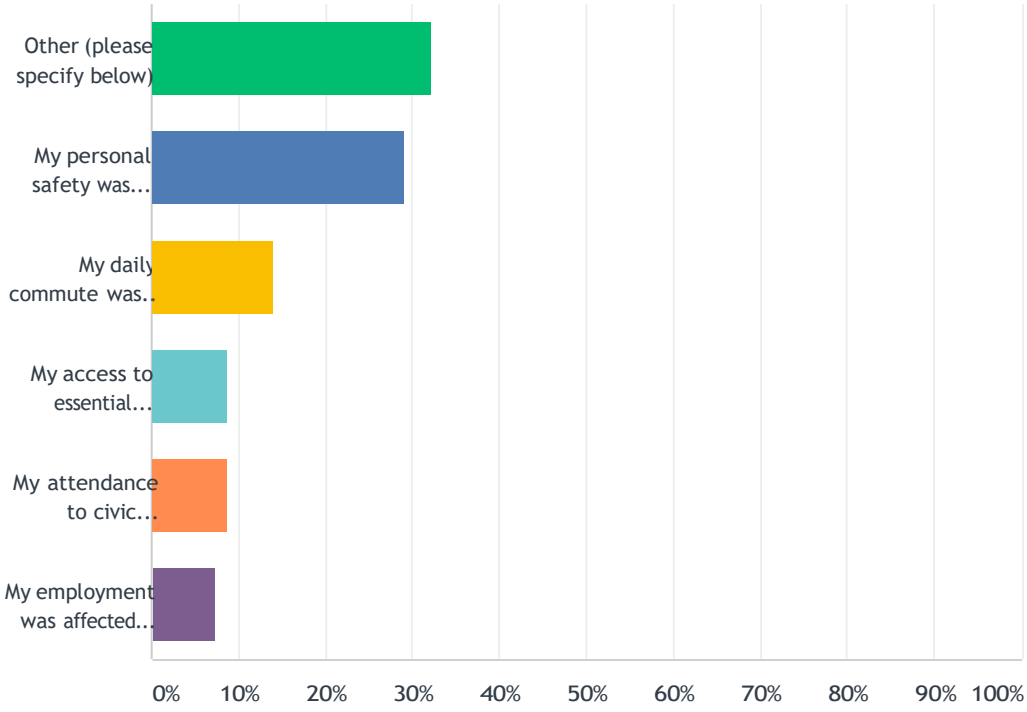
73	2018 9/2018	12/13/2020 7:36 PM
74	Hurricane Florence Florence	12/13/2020 7:35 PM
75	Hurricane Irene Irene	12/13/2020 7:17 PM
76	2018 2018	12/13/2020 7:13 PM
77	Hurricane Florence Florence	12/13/2020 5:55 PM
78	Hurricane Florence Florence	12/13/2020 12:17 PM
79	Hurricane Hazel Apparently by Hurricane Hazel. During aFlorence water into corner of lot, but not in or under house.	12/13/2020 10:40 AM
80	2018 Hurricane Florence 2018 - Hurricane Florence	12/12/2020 5:38 PM
81	2018 September 2018	12/12/2020 11:08 AM
82	2018 2018	12/12/2020 10:47 AM
83	Attmore Attmore	12/12/2020 10:26 AM
84	Hurricane Florence Florence	12/12/2020 7:51 AM
85	Hurricane Florence Hurricane florence	12/12/2020 7:01 AM
86	Hurricane Florence Florence	12/11/2020 9:43 PM
87	Hurricane Florence Hurricane Florence	12/11/2020 9:09 PM
88	Hurricane Florence Hurricane Florence	12/11/2020 9:06 PM
89	2018 Hurricane Florence Florence 2018	12/11/2020 8:47 PM
90	Hurricane Florence Florence	12/11/2020 6:49 PM
91	2018 09/2018	12/11/2020 6:17 PM
92	Hurricane Florence Forence	12/11/2020 4:52 PM
93	Hurricane Florence 6 ft.. water after Hurricane Florence	12/11/2020 4:46 PM
94	2018 Hurricane Florence Hurricane Florence 2018	12/11/2020 4:31 PM
95	Hurricane Florence Florence	12/11/2020 3:34 PM
96	2018 Hurricane Florence Florence 2018	12/11/2020 3:10 PM
97	2018 2018	12/11/2020 2:40 PM
98	Hurricane Florence our home no/neighborhood yes. Florence	12/11/2020 2:19 PM
99	2018 2018	12/11/2020 2:16 PM
100	Hurricane Florence i use to live in Duffyfield and it flooded during hurricane Florence	12/11/2020 1:53 PM
101	2018 2018	12/11/2020 1:50 PM
102	2018 2018	12/11/2020 1:47 PM
103	Hurricane Florence Hurricane Florence	12/11/2020 1:44 PM
104	Hurricane Florence Hurricane Florence	12/11/2020 1:38 PM
105	Lower level in community Neighborhood prone to flooding, our home not in 100 year plain	12/11/2020 1:31 PM
106	2017 2017	12/11/2020 1:26 PM
107	Heavy storm After every big rain storm my back yard floods since the city pipes cannot carry the water away fast enough. The pipes are too small for all the water they need to carry.	12/11/2020 1:19 PM
108	2018 9/2018	12/11/2020 10:36 AM
109	Hurricane Florence Florence	12/10/2020 8:53 PM

110	Hurricane Florence Florence	12/10/2020 8:49 PM
111	2020 2020	12/10/2020 12:28 PM
112	Hurricane Florence Florence	12/10/2020 7:19 AM
113	Hurricane Florence Florence	12/8/2020 9:36 PM
114	Heavy storm after a heavy rain water seeped into the back of my Apartment	12/8/2020 11:30 AM
115	2018 2018	12/8/2020 4:33 AM
116	Hurricane Florence Hurricane Florence	12/7/2020 2:35 PM
117	Hurricane Florence Hurricane Florence	12/7/2020 8:18 AM
118	Hurricane Florence Hurricane Florence	12/7/2020 7:05 AM
119	Hurricane Floyd Floyd	12/7/2020 6:38 AM
120	Hurricane Florence Florence	12/7/2020 12:10 AM
121	Hurricane Florence Hurricane Florence	12/6/2020 9:37 PM
122	Hurricane Florence Florence	12/6/2020 5:50 PM
123	Hurricane Florence Hurricane Florence	12/6/2020 4:35 PM
124	Hurricane Florence Florence	12/6/2020 1:44 PM
125	Hurricane Florence 2018, during hurricane Florence the retention pond overflowed and reached into several houses	12/6/2020 10:58 AM
126	Hurricane Florence 2018 Florence	12/6/2020 8:54 AM
127	Hurricane Florence 2018 Florence	12/6/2020 7:25 AM
128	Hurricane Florence Hurricane Florence	12/6/2020 6:39 AM
129	Hurricane Florence Florence, 2018	12/5/2020 9:33 PM
130	Hurricane Florence Florence(lived in Woodrow)	12/5/2020 9:27 PM
131	Hurricane Florence During hurricane Florence	12/5/2020 5:36 PM
132	Hurricane Florence Florence	12/5/2020 11:00 AM
133	Hurricane Florence Florence	12/5/2020 10:40 AM
134	Hurricane Florence Hurricane Florence	12/5/2020 9:40 AM
135	2020 This year. Flood in street. In a house last hurricane.	12/5/2020 9:07 AM
136	2018 2018	12/5/2020 9:05 AM
137	Hurricane Florence There were homes in Brices Crossing near flooding during Florence	12/5/2020 7:24 AM
138	Hurricane Florence Hurricane Florence	12/4/2020 11:50 PM
139	Hurricane Florence Hurricane Florence	12/4/2020 11:46 PM
140	Hurricane Florence Florence	12/4/2020 9:58 PM
141	Hurricane Florence Florence	12/4/2020 8:44 PM
142	Hurricane Florence Florence	12/4/2020 8:08 PM
143	Lower level in community Lower level in community	12/4/2020 6:49 PM
144	2010 about 10 years ago before I moved here	12/4/2020 6:16 PM
145	Hurricane Florence hurricane Florence	12/4/2020 4:45 PM
146	Hurricane Florence During Florence	12/4/2020 4:21 PM
147	Hurricane Florence Florence	12/4/2020 4:05 PM

148	Hurricane Florence Hurricane Florence	12/4/2020 4:04 PM
149	2018 Sep 2018	12/4/2020 4:04 PM
150	2018 2018	12/4/2020 3:29 PM
151	2018 2018	12/4/2020 3:24 PM
152	Hurricane Florence Florence	12/4/2020 3:20 PM
153	2020 Heavy storm August 3-4	12/4/2020 3:18 PM
154	Hurricane Florence Hurricane Florence	12/4/2020 3:05 PM
155	Hurricane Hurricane	12/4/2020 2:49 PM
156	Hurricane Florence florence	12/4/2020 2:44 PM
157	Neighborhood Neighborhood yes, but not my particular street	12/4/2020 2:34 PM
158	Hurricane Florence Florence 2018	12/4/2020 2:26 PM
159	Hurricane Florence Florence 2+ years ago	12/4/2020 2:25 PM
160	Hurricane Florence Florence 2018	12/4/2020 2:07 PM
161	Hurricane Florence Florence 2018	12/4/2020 1:55 PM
162	2020 Heavy storm November 12	12/4/2020 1:55 PM
163	Hurricane Florence Hurricane Florence 2018	12/4/2020 1:05 PM
164	Hurricane Florence 2018 Florence	12/4/2020 12:23 PM
165	Hurricane Florence Hurricane Florence 2018	12/4/2020 12:20 PM

Q6 Please choose the closest description of how past flooding impacted your home/neighborhood.

Answered: 193 Skipped: 88



ANSWER CHOICES	RESPONSES	
Other (please specify below)	32.12%	62
My personal safety was threatened; flooding forced me to evacuate my home and seek shelter elsewhere	29.02%	56
My daily commute was compromised; flooding impacted my ability to commute as roads were flooded and/or public transportation routes were interrupted	13.99%	27
My access to essential services was halted; flooding impacted my ability to purchase groceries, fill up my gas tank, etc.	8.81%	17
My attendance to civic services was paused; flooding impacted my school, church, etc. and I was not able to attend in person	8.81%	17
My employment was affected; flooding impacted my place of work and we were unable to go into the office	7.25%	14
TOTAL		193

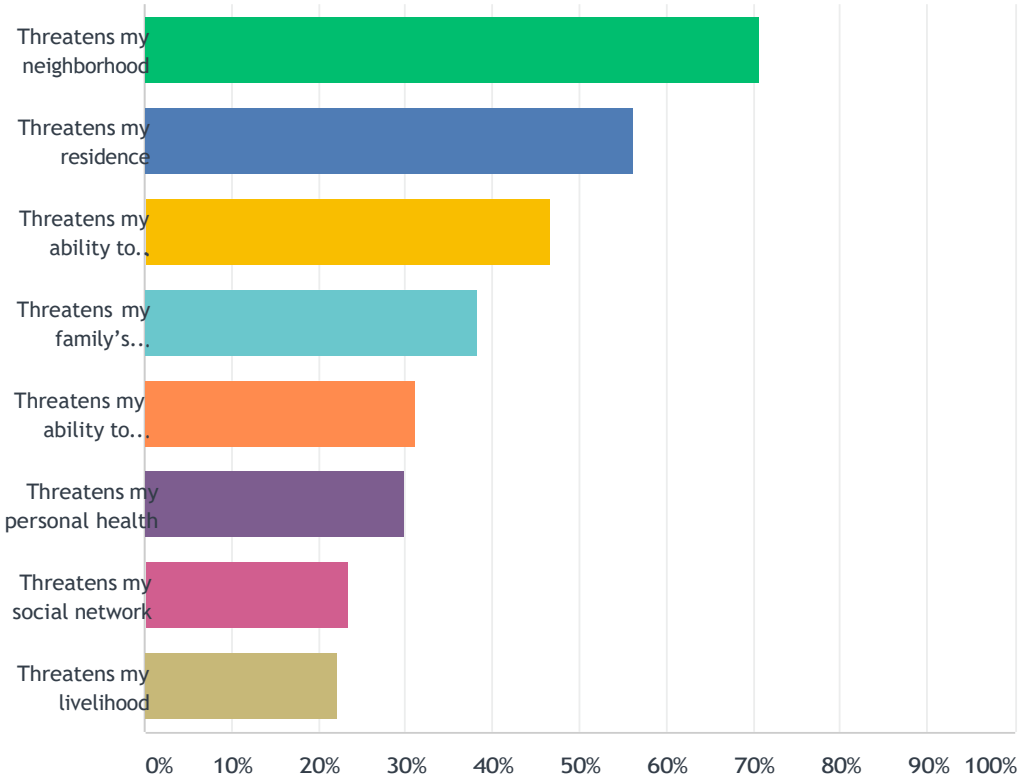
#	OTHER (PLEASE SPECIFY BELOW)	DATE
1	Damage to home Flooded cars Loss of utilities Personal safety Personal safety was impacted. Loss of utilities. Car flooded - totaled. Riverside Neighborhood impacted. Houses torn down, raised abandoned due to flooding, unknown sailboat in neighbors' garage, etc.	1/27/2021 12:01 AM
2	Damage to home Damage to neighbors home Flood remediation for home and neighbors too	1/13/2021 11:19 AM
3	Damage to home Only HVAC in crawl space was damaged and out for two weeks.	1/12/2021 3:20 PM
4	Rental property Lost rental property in Sunnyside	1/12/2021 2:10 PM
5	Damage to home Couldn't move into newly constructed house.	1/10/2021 7:29 AM
6	N/A Just moved here	1/10/2021 12:10 AM
7	Stayed in place Temporarily remained in place until streets were clear.	1/9/2021 10:47 PM
8	N/A Have not lived here long enough to give an accurate account of impact.	1/9/2021 7:35 PM
9	All I experienced most of these. Completely flooded out of my house. Lost work downtown. Most of it.	1/9/2021 12:24 PM
10	N/A N/a	1/8/2021 11:01 PM
11	N/A I did not live here yet.	1/8/2021 9:44 PM
12	All 2,3,4,5	1/8/2021 7:59 PM
13	Loss of utilities Flooding did not directly affect my home or work. We lost electricity both places for several days.	1/8/2021 6:05 PM
14	Loss of utilities Flooding took out lectric power.	1/8/2021 5:44 PM
15	Damage to home Loss of utilities Property damage, disruption of utilities.	1/8/2021 5:12 PM
16	N/A N/A	1/8/2021 10:56 AM
17	Flooded home Home's first floor and crawl space were flooded; also first bullet is applicable	1/5/2021 11:56 AM
18	N/A I did not live here yet. I just heard about the flooding nearby.	12/27/2020 6:28 PM
19	Loss of utilities Power was out for three days	12/17/2020 3:41 PM
20	Flooded home Loss of utilities Some homes flooded. power out.	12/17/2020 2:00 PM
21	Damage to home Damage to neighbors home Difficult to come home Effected business Destroyed my home, my neighbors homes, my employment was affected, had to live elsewhere for nearly a year	12/17/2020 1:01 PM
22	Loss of utilities We were not impacted because we are retired and didnt have to go anywhere. Lack of electricity was our problem	12/17/2020 11:39 AM
23	Damage to home Flooded home Water came up to the house and into our 8' crawl space. We lost our water purification system and our pool pumps.	12/17/2020 9:08 AM
24	N/A I was not impacted	12/15/2020 9:07 PM
25	No flooding Fortunately we were not impacted	12/15/2020 1:31 PM
26	N/A None	12/15/2020 1:16 PM
27	N/A Was not living in the area at the time	12/14/2020 4:45 PM
28	Not impacted Past flooding has not impacted my home or work life	12/14/2020 3:50 PM
29	Damage to home I was away at time of Florence, but would have been forced to evacuate as water was 7 ft. outside and 2 ft. inside house was very distructive.	12/14/2020 1:37 PM
30	Damage to home Difficult to come home Flooded home Home was flooded. Could not occupy.	12/13/2020 7:16 PM
31	Damage to home Flooded home I owned a home in River Bend during Florence and we had	12/13/2020 5:57 PM

	5’ of water in our home	
32	Evacuated While unaffected by flooding, we did evacuate during Florence. Prolonged, strong winds and rain caused three front Windows to fail, thus requiring extensive, though not flood related repairs,	12/13/2020 10:46 AM
33	Flooded cars Replaced HVAC unit The flood water from the Neuse River came within an inch our two of coming into our home but did fill the crawl space. This required the replacement of all duct work and the HVAC unit. We also had about 20" of water in our garage with loss of property and one vehicle was totaled due to flooding. Still, since many homes around us were significantly flooded, we counted blessing rather than losses.	12/12/2020 5:52 PM
34	N/A Recently moved to new Bern	12/12/2020 11:10 AM
35	Loss of utilities Six days without power and only a few neighbors experienced same. Don’t know why	12/12/2020 8:57 AM
36	N/A Did not live here them	12/12/2020 7:54 AM
37	Fear Fear	12/11/2020 7:15 PM
38	Damage to home Difficult to come home Walking around the neighborhood was impeded, had to bail out my crawlspace	12/11/2020 6:51 PM
39	Damage to home Fairly minor damage to HVAC and duct work	12/11/2020 3:35 PM
40	N/A None of the above	12/11/2020 2:21 PM
41	Damage to neighbors home My neighbors evacuated and had damage. I cared for their concerns until they arrived home.	12/11/2020 2:20 PM
42	Rental property Rental properties damaged	12/10/2020 8:52 PM
43	No flooding No flooding	12/9/2020 5:26 PM
44	Not impacted I wasn’t impacted at all.	12/9/2020 4:28 PM
45	Annoyed with cleanup Annoyance, I had to clean the carpets	12/8/2020 11:34 AM
46	N/A N/a	12/7/2020 5:04 PM
47	Difficult to come home Difficult to return home following hurricanes	12/7/2020 10:22 AM
48	Damage to home None of the above. Only damage to home	12/7/2020 8:23 AM
49	Flooded cars Flooded some cars parked on the street	12/6/2020 5:56 PM
50	Damage to home Suffered flood damage -crawl space only	12/6/2020 4:37 PM
51	Damage to home There was damage to some of the houses in the neighborhood that flooded.	12/6/2020 11:28 AM
52	Difficult to come home We were not able to get back home from evacuation due to water in streets.	12/6/2020 7:28 AM
53	Not impacted We weren’t living here yet	12/5/2020 10:45 AM
54	Difficult to come home we had to evacuate our home, work place and flooding impacted our roads	12/5/2020 9:44 AM
55	Effected business Unable to operate businesses due to destruction and power outages	12/5/2020 9:08 AM
56	Damage to home Not impacted We were out of town at time of flooding, This home & neighborhood was flooded with residents evacuating,. We were not directly impacted since we were on a planned 3 week trip.	12/5/2020 12:04 AM
57	Loss of utilities loss of utilities	12/4/2020 4:47 PM
58	Damage to home Our only way into our neighborhood washed out	12/4/2020 4:23 PM
59	Damage to neighbors home Took neighbors in to stay with us when their home was flooded.	12/4/2020 4:11 PM
60	Damage to dock I was lucky. Lost a dock, $12k to replace	12/4/2020 3:22 PM

61	Loss of utilities Cut off of electricity and gas. Had to move out for repairs	12/4/2020 2:29 PM
62	Damage to home My home was flooded with four feet of water	12/4/2020 2:11 PM

Q7 Do you consider yourself and/or your family vulnerable to the impacts of flooding and sea level rise? If so, please indicate in what ways. (Check all that apply)

Answered: 167 Skipped: 114



ANSWER CHOICES	RESPONSES	
Threatens my neighborhood	70.66%	118
Threatens my residence	56.29%	94
Threatens my ability to travel	46.71%	78
Threatens my family's well-being	38.32%	64
Threatens my ability to access medical services	31.14%	52
Threatens my personal health	29.94%	50
Threatens my social network	23.35%	39
Threatens my livelihood	22.16%	37
Total Respondents: 167		

Q8 What key places (e.g. certain businesses, critical services, and cultural institutions) in your neighborhood would you like to see protected and strengthened?

Answered: 150 Skipped: 131

#	RESPONSES	DATE
1	N/A N/A	1/29/2021 8:48 AM
2	Low lying areas Homes in flood zones	1/27/2021 12:01 AM
3	Low income areas The entire neighborhoods in low income areas of the city.	1/26/2021 1:32 PM
4	City Hall Convention Center Downtown district Historic New Bern Riverside Tryon Palace Both Riverside and Downtown Historic Districts including the core downtown business area. Tryon Palace and associated historic properties. Convention Center and convention hotels. City Hall.	1/22/2021 7:00 PM
5	Downtown district Marina Downtown New Bern's waterfront and marina.	1/21/2021 8:27 AM
6	Downtown district Duffyfield Historic New Bern Olde Town Riverside Historic down town New Bern, Duffyfield, Olde Town, and Riverside neighborhoods.	1/20/2021 11:29 AM
7	Convention Center Hotels Union Point Park Union Point park, Convention Center, hotels and bed & breakfasts	1/14/2021 4:33 PM
8	Emergency services Essential businesses Fire Hospitals Internet Police station Power grid Public utilities Roads Schools Utilities Electric, gas, water, roads, internet, police, fire, hospital, schools, fuel, businesses	1/13/2021 11:51 AM
9	Homes i live in a residential neighborhood. no business allowed.	1/12/2021 3:20 PM
10	The Riverwalk The Riverwalk from Change Street to Broad	1/12/2021 7:03 AM
11	Infrastructure Utilities Nothing in immediate neighborhood, but power infrastructure is a priority.	1/11/2021 10:58 AM
12	Commercial areas All commercial areas	1/11/2021 8:43 AM
13	All The entire area	1/10/2021 7:20 PM
14	Emergency services Police station Town Hall Town Hall, Police Station, EMS	1/10/2021 7:29 AM
15	Roadway Storm drains Stormwater All roadways. Water runoff and diversion improvements are needed.	1/10/2021 12:10 AM
16	Homes Roads Housing, roads	1/9/2021 9:33 PM
17	N/A Do not know	1/9/2021 7:35 PM
18	Businesses Downtown district The key businesses seem ok. It's more the personal store and businesses downtown.	1/9/2021 12:24 PM
19	Fire Fire Station	1/9/2021 10:35 AM
20	Downtown district Downtown	1/9/2021 9:21 AM
21	Doctors offices Hospitals Foid markets, medical areas	1/9/2021 1:43 AM
22	Low lying areas Roads Roads, low lying areas	1/8/2021 11:03 PM
23	Power grid Vines and trees on and around power lines but I know we're scheduled to have that taken care of soon.	1/8/2021 11:01 PM
24	Roads Access in and out of the neighborhood	1/8/2021 10:10 PM
25	Emergency services Roads Utilities Emergency services, road access, electricity restoration	1/8/2021 10:00 PM
26	Plan accordingly These floods are only occasional and temporary. Personal Planning and preparing for these events it key.	1/8/2021 9:44 PM
27	Downtown district All of down town area	1/8/2021 7:59 PM
28	Emergency services Grocery stores Hospitals Medical, grocery, government services	1/8/2021 7:48 PM
29	Emergency services Fire Police station Critical services -fire, police, recreation	1/8/2021 7:34 PM
30	Power grid Power grid	1/8/2021 6:05 PM

31	Power grid Electric power grid	1/8/2021 5:44 PM
32	All There's not one key area.	1/8/2021 3:37 PM
33	Roadway Better roadway drainage	1/8/2021 2:34 PM
34	Residences Residences	1/8/2021 2:31 PM
35	All All	1/8/2021 1:43 PM
36	All The city as a whole, we cannot isolate 1 area over another. We must start taking climate change seriously and take steps to reduce our contributions to it. That means improved recycling, benefits for clean energy (like tax credits for solar or wind energy), Benefits for home improvements. We cannot fully address flooding without addressing our contributions to climate change and the need to do better as human beings.	1/8/2021 12:22 PM
37	Emergency services Access to emergency services	1/8/2021 11:44 AM
38	River Bend temp housing River Bend has no where for people temporarily displaced. People were living in tents outside of townhall for weeks.	1/8/2021 10:42 AM
39	Low lying areas Low lying areas in Taberna flood. Common flooding in New Bern will reduce property values and impact New Bern appeal for business and living.	1/5/2021 3:15 PM
40	Homes our homes need to be protected	1/5/2021 11:56 AM
41	5 Points District Businesses Duffyfield Historic New Bern Tryon Palace Historic District Greater Duffyfield and 5 Points District Central Business District Tryon Palace	12/28/2020 11:25 AM
42	DMV Hospitals CarolinaEast Medical Center, Department of Motor Vehicle	12/27/2020 6:28 PM
43	Businesses Downtown district Residences all downtown residents and businesses	12/27/2020 5:56 PM
44	Historical sites Tryon Palace Tryon Palace properties and other historical sites	12/26/2020 6:14 AM
45	Emergency services Fire Fire and EMS	12/24/2020 10:58 AM
46	Homes Homes in river bend	12/17/2020 6:12 PM
47	Homes My home	12/17/2020 1:01 PM
48	Grocery stores Hospitals Hospital, grocery store	12/17/2020 11:39 AM
49	Businesses Emergency services Grocery stores Hospitals Hospitals, first responder units, grocery stores, and everyone's business	12/17/2020 9:08 AM
50	Roads Access roads.	12/17/2020 8:54 AM
51	Roads Road onto neighborhood	12/16/2020 10:42 AM
52	Tryon Palace Tryon Palace	12/15/2020 9:40 PM
53	1st Missionary Baptist Stanley White Stanley White Gymnasium, First Missionary Baptist Church	12/15/2020 9:27 PM
54	Needed sidewalks Sidewalks needed especially along Lori Drive (which is mislabeled on Bing maps) and Pinetree Drive. Many children travel these streets particularly in the summer.	12/15/2020 8:24 PM
55	Storm drains drainage! We are in the county, and there are hit and miss ditches, natural drainage that floods down street areas.	12/15/2020 5:10 PM
56	Businesses Downtown district Work needs to be done in downtown New Bern to protect the businesses there.	12/15/2020 1:31 PM
57	Community center Welcome a Community Center	12/15/2020 1:16 PM
58	Churches Schools Oaks Road Academy, local churches and WCTI 12 television station.	12/15/2020 1:11 PM
59	Residences Roads Residences and roads	12/14/2020 4:45 PM
60	Roads Storm drains Stormwater Utilities About a third of families in Fairfield Harbour were directly impacted by Florence. Community sewer, power, streets, etc were all impacted as was Broad Creek Road - which when flooded prevents escape.	12/14/2020 4:39 PM

61	Churches Historic New Bern Historic churches, churches in general. Hotels and places of commerce that are essential to our tourist industry and economic growth.	12/14/2020 3:50 PM
62	Damaged homes More resources needed Roads Storm drains Communication from City Officials was compromised as phones, computers, streets and information for safety measured as well as available help from state and city non-existent. Found out months later that state had provided limited funds for elevating homes and lost opportunity to be included. Cannot help but feel that the funds were distributed to a chosen few residents, most disconcerting. Debris piled 10 ft high filled streets and affected movement. New Bern was not prepared for this level storm. Yet recognize that Homeowners, employees and volunteers worked their butts off to help those affected. One of most difficult problems was meeting city standards to repair homes and required improved standards were not recognized for reimbursement by FEMA. Short version, those affected even with flood insurance were screwed, bit time.	12/14/2020 1:37 PM
63	N/A None seemed to be threatened by flooding.	12/14/2020 11:25 AM
64	Storm drains The gutter system needs to be cleaned regularly. My husband was thrown about by a tornado during the hurricane saving our neighborhood	12/14/2020 8:39 AM
65	Homes Our immediate neighborhood is residential only.	12/13/2020 8:19 PM
66	Bridges The one bridge that connects Brice's Creek Rd to New Bern. And/or expanding the road way (SR 1004) to poliksvillw	12/13/2020 7:52 PM
67	Roads Road improvements in an effort to mitigate flooding.	12/13/2020 7:45 PM
68	Emergency services Hospitals Medical	12/13/2020 7:39 PM
69	Poa Poa	12/13/2020 7:19 PM
70	Downtown district Historic New Bern Homes/businesses near waterfront in historic downtown most likely effected by flooding	12/13/2020 7:16 PM
71	Homes Homes	12/13/2020 5:57 PM
72	Emergency services Emergency Management for both city and county.	12/13/2020 5:56 PM
73	Storm drains Stormwater Neuse River waterfront erosion and better neighborhood storm water draining	12/13/2020 12:59 PM
74	Infrastructure Stormwater Infrastructure including water and sewer, better infrastructure could lessen flooding impact	12/13/2020 12:19 PM
75	Damaged homes We are purely residential at this point. There are still many homes in lower levels that have not been raised. They create eyesores and hurt property values.	12/13/2020 10:46 AM
76	RCS In this neighborhood, RCS is the most critical for being protected so that it can continue to serve those in need, especially during a crisis. The National Veterans Cemetery took a lot of water during the flooding but I'm not sure there was specific damage.	12/12/2020 5:52 PM
77	Hospitals hospitals	12/12/2020 11:37 AM
78	Utilities electric	12/12/2020 10:49 AM
79	Storm drains Storm drains cleared. Residents ignored them	12/12/2020 8:57 AM
80	Downtown district Historic New Bern All of the historic homes, all downtown businesses	12/12/2020 7:54 AM
81	Grocery stores Hospitals Pharmacies Hospitals, grocery stores, pharmacies	12/12/2020 7:03 AM
82	Utilities Power supply	12/11/2020 9:46 PM
83	Downtown district City business district	12/11/2020 9:10 PM
84	Utilities Electric we still have pole electricity	12/11/2020 9:09 PM
85	Churches Climbers Club Stanley White Historic Churches, Climbers Club, and The recreation center	12/11/2020 7:15 PM
86	Utilities utilities	12/11/2020 6:51 PM

87	Roads Access in and out of my neighborhood.	12/11/2020 6:19 PM
88	Downtown district homes and business in downtown	12/11/2020 4:53 PM
89	Historic New Bern Historic New Bern in general, businesses and private residences since they are such a draw for the area and have an incredible economic impact upon the community.	12/11/2020 4:34 PM
90	Historic New Bern historical structures, churches, homes	12/11/2020 3:57 PM
91	Downtown district Downtown businesses and restaurants	12/11/2020 3:35 PM
92	Roadway Roadway (State operated)	12/11/2020 3:15 PM
93	N/A none presently	12/11/2020 1:55 PM
94	Churches Churches	12/11/2020 1:55 PM
95	N/A None in my immediate neighborhood	12/11/2020 1:49 PM
96	Essential businesses Parks, walking paths, roads, 1st Presbyterian preschool, Dr. Hands dentist, post office, restaurants	12/11/2020 1:35 PM
97	Public utilities Public utilities are aging. Water and sewer lines are vulnerable and prone to fail in high water levels	12/11/2020 10:39 AM
98	Roads Schools Schools Major Roads	12/10/2020 8:55 PM
99	Black areas Black ateas	12/10/2020 8:52 PM
100	All All	12/10/2020 12:30 PM
101	Downtown district Down Town	12/10/2020 7:21 AM
102	Emergency services Public utilities Emergency Services Waste Treatment Center water and sewer	12/9/2020 7:04 PM
103	Emergency services Public utilities Stormwater Ambulance services, ditches and irrigation.	12/9/2020 4:28 PM
104	Historic New Bern Historic properties	12/8/2020 9:41 PM
105	Businesses Residences All residential and business	12/8/2020 4:36 AM
106	Stormwater Drainage maintained	12/7/2020 5:04 PM
107	All Hospital Stingrays restaurant Tryon palace and Museum Lawson park and boat ramps Duffyfield	12/7/2020 10:22 AM
108	Public utilities Stormwater Waste treatment and sewage pumping	12/7/2020 8:23 AM
109	Emergency services medical and mental health	12/7/2020 7:06 AM
110	Downtown district Downtown New Bern	12/6/2020 9:39 PM
111	River shoreline Nurse river shore line	12/6/2020 8:39 PM
112	Essential businesses Grocery store, streets to reach medical facilities, and retail stores.	12/6/2020 6:15 PM
113	Stormwater The storm drainage structures need attention. Mostly Ditches & culverts need cleaning.	12/6/2020 5:56 PM
114	Internet Internet service	12/6/2020 4:37 PM
115	Public utilities access to River Bend took several days to restore. loss of power and all communications as well	12/6/2020 1:52 PM
116	Roads Roads provide access to grocery and hardware stores, hospitals and doctor's offices. Prohibit future construction in flood prone areas. Continue to protect natural shoreline protection (marshes) and prohibit hardened structures (seawalls, etc.). Provide incentives for homeowners and businesses in flood prone areas to relocate.	12/6/2020 11:28 AM
117	Central hubs for support City Hall with generator power, large church or downtown gathering site with power and communication (omega center, Tabernacle Baptist, RCS) to charge phones	12/6/2020 9:01 AM

	and get information	
118	Central hubs for support Convention Center Downtown district Tryon Palace Downtown businesses and homes, convention center, hotels, tryon palace	12/5/2020 9:39 PM
119	History Center Tryon Palace Tryon Palace and History Center Union Point Council Bluff	12/5/2020 6:29 PM
120	Homes Roads Roads and private residences that cane become flooded during extreme weather events	12/5/2020 5:40 PM
121	Stormwater Storm water drainage and runoff from heavy rains	12/5/2020 4:14 PM
122	Berm It might be helpful if we had a berm of some sort between the canal and our house	12/5/2020 10:45 AM
123	Downtown district Downtown New Bern	12/5/2020 9:44 AM
124	Homes People's homes!	12/5/2020 9:12 AM
125	Downtown district Historic New Bern Tryon Palace Downtown through the historic districts and Tryon Palace.	12/5/2020 9:08 AM
126	All It is not enough to focus on certain buildings, and procedures to make them more readily sustain storm related events. Please see my final comments.	12/5/2020 7:33 AM
127	Central hubs for support Downtown district Emergency services Essential businesses In Downtown - protect library, city & county emergency services, convention center, hotels, Duffyfield Community & Stanley White Rec. Center	12/5/2020 12:04 AM
128	Downtown district Downtown	12/4/2020 11:51 PM
129	Emergency services Emergency	12/4/2020 9:59 PM
130	S. Glenburnie Oakland and Ashland Ave. South Glenburnie	12/4/2020 9:59 PM
131	Lake Clermont Lower end of Alexis Dr. In Lake Clermont	12/4/2020 6:51 PM
132	Police station police station, nearest fire station	12/4/2020 6:25 PM
133	Downtown district Basically consider the whole downtown area for flood impact. Consider general recommendations to lessen impact.	12/4/2020 6:23 PM
134	Businesses Homes my home & business	12/4/2020 4:47 PM
135	Businesses Downtown district Our downtown building on broad street that was flooded.	12/4/2020 4:11 PM
136	More resources needed This city lacks the resources to strengthen and protect any key places.	12/4/2020 4:10 PM
137	George Street George Street	12/4/2020 4:08 PM
138	Downtown district Downtown New Bern	12/4/2020 3:38 PM
139	Churches Doctors offices Churches, doctors offices	12/4/2020 3:23 PM
140	Public utilities Roads Primary streets, utilities	12/4/2020 3:22 PM
141	N/A In Greenbrier, none.	12/4/2020 2:51 PM
142	Bridgeport Marina The Bridgeport Marina needs to be re-built.	12/4/2020 2:36 PM
143	Downtown district Historic New Bern The Historic Downtown in general	12/4/2020 2:31 PM
144	Public utilities Utility infrastructure, better coordination between city government and utility companies	12/4/2020 2:29 PM
145	Police station Public utilities Stormwater Water/Sewer Police Town Center	12/4/2020 2:11 PM
146	Downtown district Downtown shops and businesses	12/4/2020 1:58 PM
147	North Hills All of north hills drive area	12/4/2020 1:57 PM
148	Emergency services Emergency services	12/4/2020 1:45 PM
149	Derby Park Derby Park retaining ponds that run under and near roadways (Saratoga Lane,	12/4/2020 1:13 PM

	Church Hill Ct, Fairmont Way, Lombardi Circle) were impacted in 2018.	
150	Downtown district Historic New Bern Historic downtown, hotels and locally owned businesses.	12/4/2020 12:30 PM

Q9 What services or places (e.g. emergency services, community centers, etc.) have you found to be most critical to you and your community during, or in the aftermath of, major flooding events?

Answered: 137 Skipped: 144

#	RESPONSES	DATE
1	City to provide resources Stormwater drains The City coming to flush the storm water drains in our neighborhood has been a great help to our neighborhood. It also gives us peace of mind that a shelter (Ben Quinn) is so close to us in case we are ever in need.	1/29/2021 8:48 AM
2	Emergency services Utilities Emergency Utility services	1/27/2021 12:01 AM
3	Emergency services Emergency services	1/26/2021 1:32 PM
4	City to provide resources Police presence. Inspection and permitting availability. The Historic Properties Commission could have been vastly more helpful in providing some expertise to assist homeowners in making smart decisions following a flood.	1/22/2021 7:00 PM
5	Community centers Insurance Restoration companies Restoration companies, Insurance, donation center's of all kind.	1/21/2021 8:27 AM
6	Electricity Maintaning electrical service	1/20/2021 11:29 AM
7	Communications Electricity Grocery stores Internet grocery stores, consistent internet and electricity, radio and broadcast television services	1/14/2021 4:33 PM
8	Electricity Fire department Gas stations Internet Police Roads Utilities Electric, gas, internet, roads, police, fire, fuel	1/13/2021 11:51 AM
9	N/A none	1/12/2021 3:20 PM
10	Gas stations Grocery stores Grocery Stores and Gas Stations	1/11/2021 10:58 AM
11	Community centers Emergency services All EMS/ 1st Responders, utilities and of utmost importance area shelters. No shelter spaces should ever be closed or limited for any reason other than themselves being out of commission.	1/11/2021 8:43 AM
12	Community centers Fairfield Harbour community Center, Samaritans Purse workers, Red Cross	1/10/2021 7:20 PM
13	Police Town Hall Town Hall, Police Station	1/10/2021 7:29 AM
14	Bank Doctor's office Grocery stores Hospitals Pharmacies Grocery stores, drug stores, medical services, banks.	1/10/2021 12:10 AM
15	N/A Do not know, stay home mostly because of covid	1/9/2021 7:35 PM
16	FEMA FEMA (at Rite Aid on 17. Red Cross.	1/9/2021 12:24 PM
17	Emergency services Fire department Fire and other rescue support	1/9/2021 10:35 AM
18	Doctor's office Hospitals Doctors office	1/9/2021 1:43 AM
19	Electricity Emergency services Road service Electricity restoration and roads being cleared, emergency services	1/8/2021 10:00 PM
20	Electricity Electricity.	1/8/2021 9:44 PM
21	Community centers Salvation Army, Baptist Men, National Guard, other various organizations	1/8/2021 8:48 PM
22	Communications Any communication especially when the power goes out	1/8/2021 7:59 PM
23	Emergency services Emergency services	1/8/2021 7:34 PM
24	Electricity Power	1/8/2021 6:05 PM
25	Grocery stores Hospitals Mostly just grocery stores and the hospital.	1/8/2021 3:37 PM
26	Disaster recovery team Fire department Police Fire, police, rescue	1/8/2021 2:34 PM
27	Electricity Emergency services Internet Electric, internet, emergency service	1/8/2021 2:31 PM
28	Emergency services Emergency services	1/8/2021 1:43 PM
29	Hospitals Potential need for hospital, which was inaccessible from this subdivision during floods.	1/8/2021 12:22 PM

30	Gas stations Grocery stores Restaurants Grocery stores, gas stations, restaurants	1/8/2021 12:00 PM
31	Communications Emergency services Emergency services and local news in order to stay informed	1/8/2021 11:44 AM
32	Community centers Lack of community center	1/8/2021 10:42 AM
33	Construction workers Electricity Supplies Access to supplies, power and construction workers/material.	1/5/2021 3:15 PM
34	FEMA FEMA - city did very little nor the county	1/5/2021 11:56 AM
35	Disaster recovery team Emergency services A centralized Disaster recovery response team for each neighborhood to assess/coordinate needs and provide resources. Reliable and trust worthy Emergency services for flood mitigation as well as IMMEDIATE state historic preservation assistance.	12/28/2020 11:25 AM
36	Businesses all downtown businesses	12/27/2020 5:56 PM
37	Electricity Emergency services city services power, water .....emergency services	12/26/2020 6:14 AM
38	Electricity Getting power restored	12/24/2020 10:58 AM
39	Aftermath recovery Electricity Water Access to water and electricity. Clearing away of debris quickly is critical to safety and health in the community.	12/17/2020 1:59 PM
40	N/A None	12/17/2020 1:01 PM
41	Access roads Emergency services Hospitals Emergency services, hospitals, roads	12/17/2020 9:08 AM
42	Access roads Road service Access roads.	12/17/2020 8:54 AM
43	Emergency services Stanley White Gym Emergency services (evacuation and emergency shelter), Stanley White Gymnasium	12/15/2020 9:27 PM
44	Communications communication, knowing what was going on, what the status of the roads and flooding. when the power should be coming back on line, etc.	12/15/2020 5:10 PM
45	Hospitals There needs to be the ability to access the hospital from the east side of the river. we are fortunate to have a grocery store in the neighborhood.	12/15/2020 1:31 PM
46	Community centers Food distribution centers Community Center to serve as a Shelter, Food Bank and Distribution Center	12/15/2020 1:16 PM
47	Evacuation assistance Evacuation access on Simmons Street and Glenburnie Road	12/15/2020 1:11 PM
48	Access roads Road service Road access and services to clear roads	12/14/2020 4:45 PM
49	Aftermath recovery Utilities All utilities impacted. Many homes were flooded inside 1st floor. All vehicles parked on ground level in the flood zone were flooded.	12/14/2020 4:39 PM
50	Bank Churches Grocery stores Hardware stores Grocery stores, Hardware stores, bank, church	12/14/2020 3:50 PM
51	Aftermath recovery Churches Emergency housing Evacuation assistance Assistance in evacuating homes with limited warning about need to evacuate. Poor reporting of hurricane status and where most likely to impact. A source of updated information for those with no electricity, cell phones coverage, etc. Main roads flooded and unable to return home for 5 days to New Bern from road closures. Most helpful were churches and citizen volunteers. Those affected had difficulty finding temporary and long term housing, while handling repairs and damage to homes and property. Don't know how you could control it, but Vendors often agreed to render service only to neglect time frames while garnering other contracts, unknown by homeowners which greatly delayed service. Also, the service companies reliability was often unknown to owner seeking service and many proved unreliable. Short term message, "It was a mess."	12/14/2020 1:37 PM
52	Hospitals Carolina East Medical Center	12/14/2020 11:25 AM
53	Churches The churches were a great help	12/14/2020 8:39 AM
54	Communications A social network/system for the residents community to communicate needs to one another.	12/13/2020 8:19 PM

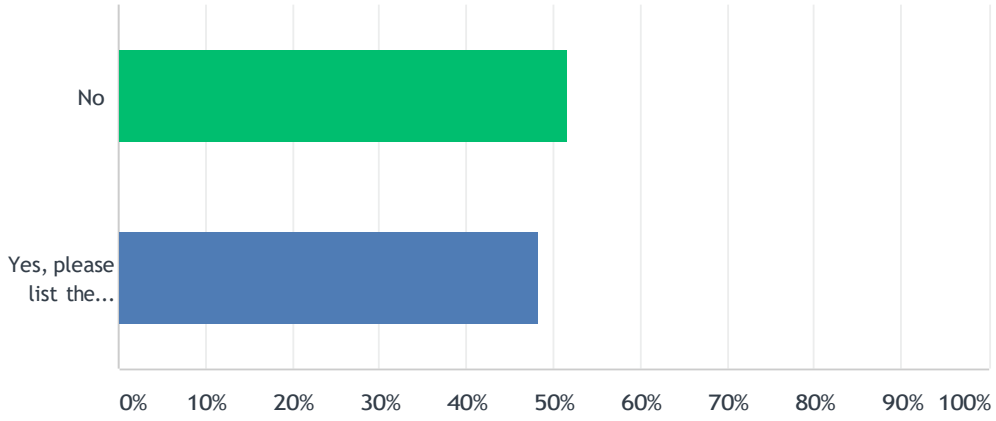
55	Businesses Community centers Gas stations Merchants gas station and neighborhood community. Community pulls together	12/13/2020 7:52 PM
56	Emergency services Fire department EMS & Fire	12/13/2020 7:45 PM
57	Grocery stores Groceries	12/13/2020 7:39 PM
58	Emergency services Gas stations Grocery stores Pharmacies Emergency services if needed, access to grocery store/pharmacy/gas station	12/13/2020 7:37 PM
59	Post office Poa office	12/13/2020 7:19 PM
60	N/A none really	12/13/2020 7:16 PM
61	Businesses Churches Hardware stores Homes Hotels Shelters Homes, churches, shelters, hotels, stores with supplies and necessities	12/13/2020 5:57 PM
62	Emergency services Our emergency hub needs to be central but also protected.	12/13/2020 5:56 PM
63	Grocery stores Hospitals Hospital, hardware, groceries	12/13/2020 12:59 PM
64	N/A N/A	12/13/2020 10:46 AM
65	Electricity Electrical power is the most critical service we required after the flooding, although we were never in any real hardship. A tremendous appreciation for the Water Department that managed no interruption in available services. This City really responded very well with all basic services given the unprecedented circumstances and extent of damages.	12/12/2020 5:52 PM
66	N/A n/a	12/12/2020 11:37 AM
67	Emergency food Emergency services Shelters Food, shelter and emergency medical access	12/12/2020 11:10 AM
68	Emergency food Emergency housing Immediate Housing and food	12/12/2020 10:28 AM
69	Electricity Power!	12/12/2020 8:57 AM
70	Communications Social media, radio	12/12/2020 7:03 AM
71	Police Police	12/12/2020 7:01 AM
72	Essential services Grocery stores Gas stations, stores that sell supplies and food (big chains and small businesses)	12/12/2020 6:44 AM
73	N/A NA - evacuated to Raleigh	12/11/2020 9:46 PM
74	Electricity Utilities Electricity & lack of air conditioning	12/11/2020 9:12 PM
75	Utilities City utilities	12/11/2020 9:10 PM
76	Fire department Police Fireand rescue, police	12/11/2020 9:09 PM
77	Businesses Electricity Grocery stores Internet utilities, groceries, businesses with coffee and wifi	12/11/2020 6:51 PM
78	Grocery stores Hospitals Police Food, medical, police	12/11/2020 6:19 PM
79	Churches Community centers The Omega Center and other area churches and civic groups were instrumental in providing relief and guidance during the very difficult time afterwards.	12/11/2020 4:34 PM
80	Businesses We operate a small training center in the Five Points area and students were unable to come to class because of flooding in the Duffyfield area	12/11/2020 3:57 PM
81	Businesses Restaurants Downtown businesses and restaurants	12/11/2020 3:35 PM
82	Emergency services Emergency services	12/11/2020 2:21 PM
83	Churches Churches	12/11/2020 2:20 PM
84	N/A none presently	12/11/2020 1:55 PM
85	Police Public Works Police; Public Works	12/11/2020 1:49 PM

86	Churches Churches	12/11/2020 1:35 PM
87	Electricity Internet Public Works Electric, water, sewer and internet access	12/11/2020 10:39 AM
88	Shelters Shelters	12/10/2020 8:55 PM
89	Black areas Black areas	12/10/2020 8:52 PM
90	Aftermath recovery Rescue and Clean up	12/10/2020 12:30 PM
91	Emergency services Fire, Rescue, Power, Medical	12/9/2020 7:04 PM
92	Electricity Emergency services Emergency services and electric	12/9/2020 5:26 PM
93	Emergency services Shelters Emergency services, shelters	12/9/2020 4:28 PM
94	Emergency services Essential services First responders, neighborhood gathering spots. Healthcare	12/8/2020 9:41 PM
95	Community centers Emergency services Emergency services and community groups	12/8/2020 4:36 AM
96	Emergency services Emergency services	12/7/2020 5:04 PM
97	Emergency services emergency services	12/7/2020 2:37 PM
98	Aftermath recovery Emergency housing Food distribution centers We didn't require services but we Recognize the need for emergency housing and food for others	12/7/2020 10:22 AM
99	Emergency services Access to emergency services - not limited by flooding but it restricted by power lines down over only access road. Overhead wires should've been underground like rest of River Bend	12/7/2020 8:23 AM
100	Community centers Food distribution centers Police Church, police services, food supply.	12/6/2020 8:39 PM
101	Emergency services Medical and emergency services.	12/6/2020 6:15 PM
102	Electricity Internet Electrical and internet	12/6/2020 4:37 PM
103	Aftermath recovery Emergency housing we evacuated out of craven county for several weeks. We returned wen we could locate temporary housing	12/6/2020 1:52 PM
104	Essential services Grocery stores Hospitals Grocery and hardware stores, banks, doctor's offices, hospital.	12/6/2020 11:28 AM
105	Food distribution centers RCS, Omega Center for product collection and food distribution	12/6/2020 9:01 AM
106	Aftermath recovery Emergency housing I left town and lived in Pamlico County for 22 months during home repair. I know curb side pickup of ruined contents was done very fast.	12/6/2020 6:47 AM
107	Community centers Emergency services Essential services In our situation, the red cross, the blessing bucket church, Jewish Family Services in Raleigh, Tim Jones Allstate office, banks	12/5/2020 9:39 PM
108	Emergency services Emergency Services	12/5/2020 6:29 PM
109	Tree removal Tree removal	12/5/2020 5:40 PM
110	N/A N/A	12/5/2020 10:45 AM
111	Emergency services Emergency services. Can't get in and out of neighborhood. Would have to wade in and out, if you can get in.	12/5/2020 9:12 AM
112	Hospitals CarolinaEast	12/5/2020 9:08 AM
113	Utilities Utility support and clean up operations	12/5/2020 7:33 AM
114	Community centers Emergency services Essential services Grocery stores Emergency Services, library, community center, churches, grocery stores & hardware/lumber and medical services	12/5/2020 12:04 AM
115	Fire department Fire dept	12/4/2020 9:59 PM
116	Keep New Bern safe The Sanctuary of New Bern	12/4/2020 9:59 PM

117	Personal security Safety and security of my property	12/4/2020 8:12 PM
118	Grocery stores Hospitals Pharmacies Hospital, grocery stories, Pharmacy services	12/4/2020 6:51 PM
119	Electricity Public Works electric service and water/sewer repair	12/4/2020 6:25 PM
120	Emergency services Utilities Access to emergency services. Road clearing, restore electricity and other utilities. Trash debris pickup.	12/4/2020 6:23 PM
121	Electricity electricity	12/4/2020 4:47 PM
122	Swiss Bear organization Swiss bear organization	12/4/2020 4:11 PM
123	City to provide resources Emergency services Shelters None. Out of state people rescued my neighbors. The police were more of a hindrance than a help after the storm. The city needs to identify, plan for and provide resources to, a dedicated shelter for residents who are unable to evacuate before a major event.	12/4/2020 4:10 PM
124	Emergency services Emergency services	12/4/2020 4:08 PM
125	Shelters pet friendly shelters	12/4/2020 3:29 PM
126	Public Works Town Hall Town leadership, Public Works, Public Utilities,	12/4/2020 3:22 PM
127	N/A We do not flood in Greenbrier.	12/4/2020 2:51 PM
128	Emergency services Police Access to police and fire department.	12/4/2020 2:36 PM
129	FEMA pop up FEMA aid centers	12/4/2020 2:29 PM
130	Police Town Hall Town Hall for information and Police for protection.	12/4/2020 2:11 PM
131	FEMA Hospitals Pharmacies FEMA, CarolinaEast, pharmacies	12/4/2020 1:58 PM
132	N/A Never used any	12/4/2020 1:57 PM
133	Emergency services Essential services Childcare, emergency services, social services, shelter, foodbank	12/4/2020 1:45 PM
134	Businesses Restaurants Businesses and restaurants	12/4/2020 1:43 PM
135	Emergency services Emergency Rescue services for flooding.	12/4/2020 1:13 PM
136	Emergency services Hospitals Access to hospital and dr	12/4/2020 12:30 PM
137	Community centers Emergency services All the community centers and emergency services. They were a big help.	12/4/2020 12:26 PM

Q10 Have you taken any actions to make your home, business, or neighborhood more resistant to flooding (e.g. installed flood vents, raised mechanical equipment above the base flood elevation, elevated the building, acquired temporary flood barriers)? If yes, please list the actions you have taken.

Answered: 201 Skipped: 80



ANSWER CHOICES	RESPONSES	
No	51.74%	104
Yes, please list the actions you have taken.	48.26%	97
TOTAL		201

#	YES, PLEASE LIST THE ACTIONS YOU HAVE TAKEN.	DATE
1	Flood vents Raised house Raised mechanical equip. Elevated building, engineered flood vents, relocated all mechanical equipment from basement area.	1/26/2021 1:32 PM
2	Converted basement Raised generator Raised heat pump Raised HVAC Raised mechanical equip. Raised water system Followed our insurance consultant's advice to "abandon your basement" and therefore moved all systems (HVAC, hot water) several feet above the highest flood waters. Basement now converted to low value walk-out storage and will qualify for lower insurance rates.	1/22/2021 7:00 PM
3	Flood vents Raised house Raised HVAC Raised our primary residence to be above BFE, installed flood vents on garage doors, raised exterior HVAC equipment	1/14/2021 4:33 PM
4	Blocked door entries Raised HVAC Raised the HVAC, raised a barrier in front of the garage back door, installed a new vapor barrier	1/13/2021 11:51 AM
5	Raised HVAC New HVAC on raised platform.	1/13/2021 11:19 AM
6	N/A NO - it already had all of those things.	1/12/2021 3:20 PM
7	Raised HVAC Raised hvac on rental property not flooded	1/12/2021 2:10 PM
8	Raised mechanical equip. Raised mechanical equipment	1/12/2021 7:03 AM
9	Flood vents Raised mechanical equip. flood vents, raised mechanical equipment,	1/11/2021 3:25 PM
10	Drainage improvements Installed generator Sump pump Installed rain gardens, re-graded around house, rerouted gutters and sump pump. Planning to install power backup for sump (3 day power outage in Florence was direct cause of basement flooding)	1/11/2021 10:58 AM
11	Blocked door entries Mitigate any water entry by way of blocking door entries with plastic/sheathing and sand	1/11/2021 8:43 AM
12	Flood vents Installed FEMA certified flood vents	1/10/2021 7:20 PM
13	Moved away Moved out of the area	1/10/2021 4:20 PM
14	Drainage improvements Flood vents Fit Smart Vents, planning breakwater to diminish surge	1/10/2021 7:29 AM
15	Raised mechanical equip. Icrawl space water barrier. Improve runoff and diversion. Raise mechanical equipment.	1/10/2021 12:10 AM
16	Raised generator Raised HVAC Moved the furnace and venting system through the attic	1/9/2021 9:33 PM
17	Stock up on supplies Temp food	1/9/2021 8:31 PM
18	Raised house It was elevated after Irene to safe levels and then suffered damage in Florence anyhow.	1/9/2021 12:24 PM
19	Raised HVAC Raised HVAC	1/9/2021 9:21 AM
20	Ditch clean up Drainage improvements Raised HVAC Lifted hvac to attic, lifted condenser for hvac outside, deepened ditches	1/8/2021 11:03 PM
21	Added a dry well Drainage improvements Added a dry well and brought in dirt and installed more yard drains .	1/8/2021 7:59 PM
22	Taken personal action Sired up home	1/8/2021 7:34 PM
23	Battery operated equip. Generator Generator, more battery operated health care equipment	1/8/2021 2:31 PM
24	Temp. protection temporary flood barriers like sand bags	1/8/2021 12:22 PM
25	Drainage improvements We're clearing pine trees to allow for the sun to dry the ground faster in the hopes that it won't be already saturated before major storms.	1/8/2021 11:44 AM
26	FEMA raised house House was raised by FEMA	1/8/2021 10:59 AM
27	Rebuilt house on stilts Rebuilt on stilts 12 ft above ground.	1/8/2021 10:42 AM
28	Bought FEMA insurance Raised generator Raised the generated up 3 feet and bought	1/5/2021 3:15 PM

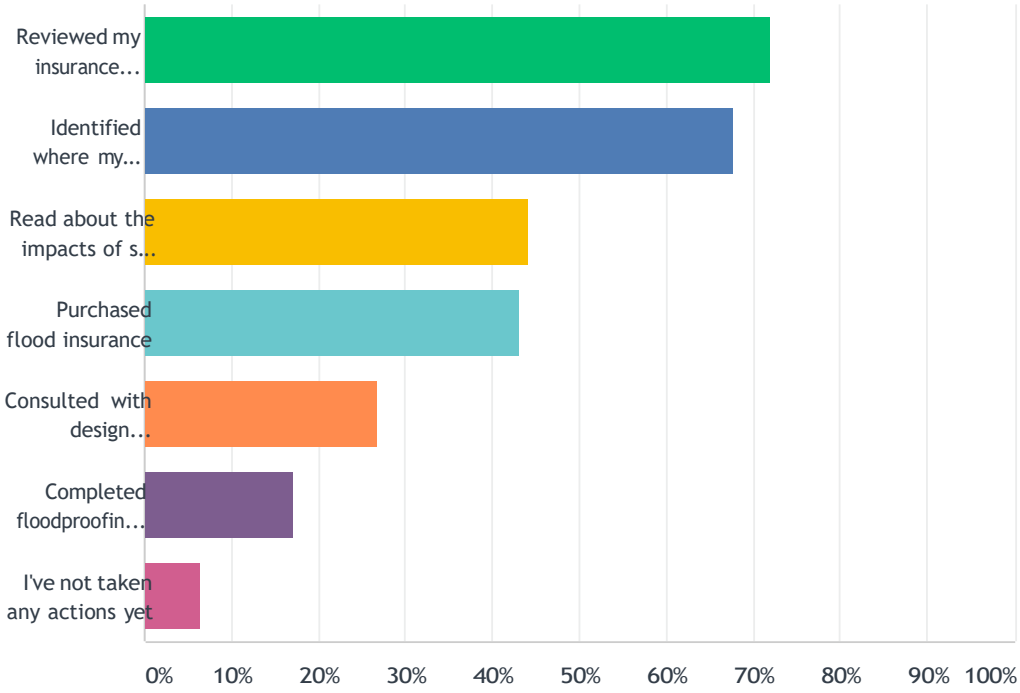
	FEMA insurance although house is not in flood plain.	
29	Need financial incentives Taken personal action We've taken actions on paper to protect our home. However, the state, county, and city should provide financial incentives for further investing in our residence or we'll move. We've already spent over $1 million dollars on purchasing our house and making repairs due to hurricane damage.	1/5/2021 11:56 AM
30	Flood vents Raised generator Raised mechanical equip. Flood Vents Filled basement with sand Elevated Mechanicals Electrical work for future generator	12/28/2020 11:25 AM
31	N/A I chose to live in a second floor apartment when deciding to move here.	12/27/2020 6:28 PM
32	Installed generator Raised mechanical equip. raised mechanical equipment and installed generator	12/27/2020 5:56 PM
33	Installed drainage Installed drainage	12/24/2020 10:58 AM
34	Raised house Our home had been raised before we purchased. We paid cash for the house, so we figured we didn't need insurance.	12/17/2020 6:12 PM
35	Raised mechanical equip. mechanical system craised	12/17/2020 2:00 PM
36	Raised generator Raised heat pump Raised HVAC All ventilation air ducts in attic, heat/ac units raised on platforms, would like to raise house but too expensive	12/17/2020 1:01 PM
37	Raised water system Sealed crawlspace Elevated water system, bagging and tarping entrance to crawl space.	12/17/2020 9:08 AM
38	Drainage improvements Ensure all drainage is free of debris	12/16/2020 10:42 AM
39	Flood vents Raised house Flood vents, elevated my home	12/15/2020 9:27 PM
40	Applied for FEMA grant NC STEP came in early on to make temporary accommodation possible. We have applied for FEMA's Hazard Mitigation Grant Program and are on target to have our home raised. It is currently unlivable as until raised we cannot get a permit from Craven County to complete repairs.	12/14/2020 4:39 PM
41	Enhance flood vents Years ago, I increased flood vents as required by FEMA, have not been able to afford elevation of home raised heating unit to hopefully reduce destruction. Would like to elevate home, but how high? Seems most uncertain at this time.	12/14/2020 1:37 PM
42	Stock up on supplies We keep supplies and generators at hand.	12/14/2020 8:39 AM
43	Raised generator Raised HVAC Raised our generator and HVAC pump	12/13/2020 7:39 PM
44	Raised HVAC Lifted hvac unit	12/13/2020 7:19 PM
45	Sea wall Sea wall	12/13/2020 12:59 PM
46	Raised HVAC Raising hvac systems	12/13/2020 12:19 PM
47	Strengthened foundation The foundation of my home was brick lattice. Crawl space was not flooded by river, but water from heavy rains got under house, Have now fully bricked the foundation.	12/13/2020 10:46 AM
48	HVAC Raised HVAC Two HVAC units were replaced and installed on higher platforms above anticipated flooding that may occur in the future.	12/12/2020 5:52 PM
49	Flood vents Flood vents	12/12/2020 11:10 AM
50	New doors/windows New pump New roof Whole house generator, roof improvements, storm Windows fortified	12/12/2020 8:57 AM
51	Enhance flood vents Filled basement and installed breakaway flood vents	12/12/2020 7:54 AM
52	Sealed crawlspace Sealed crawlspace	12/11/2020 9:46 PM
53	Repaired damage Repaired water damaged areas of our home. Installed waterproof flooring	12/11/2020 9:12 PM
54	More venting More venting, Sevareid mechanical systems	12/11/2020 9:10 PM
55	Flood insurance flood insurance temporary flood barriers	12/11/2020 6:51 PM

56	Raised HVAC Raised HVAC unit, raised shed	12/11/2020 6:19 PM
57	Enhance flood vents Raised mechanical equip. Installed flood vents, raised mechanical equipment	12/11/2020 4:50 PM
58	Raised mechanical equip. Raised mechanical equipment	12/11/2020 4:34 PM
59	Ditch clean up We constantly monitor ditches for trash and debris that would clog the free flowing water	12/11/2020 3:57 PM
60	N/A Its was built to meet flood requirements in 2004.	12/11/2020 3:15 PM
61	Enhance flood vents Raised mechanical equip. Removed all mechanicals and ductwork from crawl space; installed flood vents; installed emergency home generator	12/11/2020 1:49 PM
62	Raised HVAC Put the heating and air conditioning in the attic, Repaired the fence.	12/11/2020 1:46 PM
63	New roof Raised HVAC Moved hvac out of lower area. New roof and improved flood gate/spacing in lower level garage area	12/11/2020 10:39 AM
64	Enhance flood vents Raised heat pump Flood vents elevated heat pump	12/10/2020 8:55 PM
65	Flood insurance Flood insurance	12/10/2020 8:52 PM
66	Sump pump Sump pump raised the basement entrance	12/10/2020 7:21 AM
67	Raised house Elevated our home.	12/9/2020 4:28 PM
68	Rebuilt home Rebuilt	12/8/2020 9:41 PM
69	Raised mechanical equip. Temp. protection Purchased sand bags, elevated m chain also equipment	12/7/2020 10:41 AM
70	N/A None required.	12/6/2020 6:15 PM
71	Raised mechanical equip. Raised mechanical equipment	12/6/2020 4:37 PM
72	Changed appliances New doors/windows We rebuilt using waterproof walls and changed to natural gas hvac/appliances	12/6/2020 1:52 PM
73	Raised mechanical equip. Temp. protection Temporary flood barriers, elevated electrical equipment	12/6/2020 9:01 AM
74	Raised HVAC Raised mechanical equip. Raised all HVAC and gas water heater all mechanical outside	12/6/2020 7:28 AM
75	Raised HVAC Hot water heater is Rinnai on outside of home, HVAC is in the attic, condenser is on raised platform	12/6/2020 6:47 AM
76	Raised HVAC Replaced HVAC platforms at higher level. Already had flood vents	12/5/2020 9:39 PM
77	Strengthened foundation Strengthened foundation/ crawl space	12/5/2020 6:29 PM
78	Raised mechanical equip. Elevated equipment carry flood insurance even though we aren't in a flood zone	12/5/2020 5:40 PM
79	Enhance flood vents Raised mechanical equip. raised mechanical equipment, raised basement level and added flood vents	12/5/2020 9:44 AM
80	Drainage improvements New doors/windows New roof overflow drains, new doors and windows.	12/5/2020 9:08 AM
81	Floodplain mapping I have carefully evaluated two floodplain maps, one that came out very recently with meticulous evaluation of the whole East Coast. While my home is not in the flood plain in either of those maps, there are homes nearby that are. Brices Creek poses ongoing concerns.	12/5/2020 7:33 AM
82	Raised mechanical equip. raised mechanical equipment	12/5/2020 12:04 AM
83	Raised mechanical equip. In my Church, we have raised electric components. In addition have installed a dehumidifier in crawl	12/4/2020 9:59 PM
84	Raised house Raised our house	12/4/2020 8:12 PM

85	Raised HVAC raised HVAC	12/4/2020 6:25 PM
86	Temp. protection temporary protection of doors and windows with plywood. Move items higher on first floor.	12/4/2020 6:23 PM
87	Raised mechanical equip. Moved electrical connections to first floor. Purchased a short-term generator	12/4/2020 4:47 PM
88	Drainage improvements Ensured that run-off ponds are maintained as well as drainage	12/4/2020 4:23 PM
89	Enhance flood vents Raised HVAC Raised HVAC components, enhanced flood vents.	12/4/2020 4:10 PM
90	Raised mechanical equip. Raised mechanical equipment	12/4/2020 3:38 PM
91	Raised mechanical equip. raised mechanical equipment	12/4/2020 3:29 PM
92	Raised mechanical equip. Yes raised mechanical equipment	12/4/2020 3:23 PM
93	Sump pump New sump pump	12/4/2020 2:51 PM
94	Raised mechanical equip. Raised mechanical equipment to some degree	12/4/2020 2:31 PM
95	Raised HVAC Replaced and raised hvac, maintain working sump pump	12/4/2020 1:58 PM
96	Raised mechanical equip. Home and all mechanical equipment raised	12/4/2020 1:57 PM
97	Ditch clean up Spoken with HOA; cleaned out ditches; spoken with City about ditches.	12/4/2020 1:13 PM

Q11 What actions have you taken to protect your property against flooding? (Check all that apply)

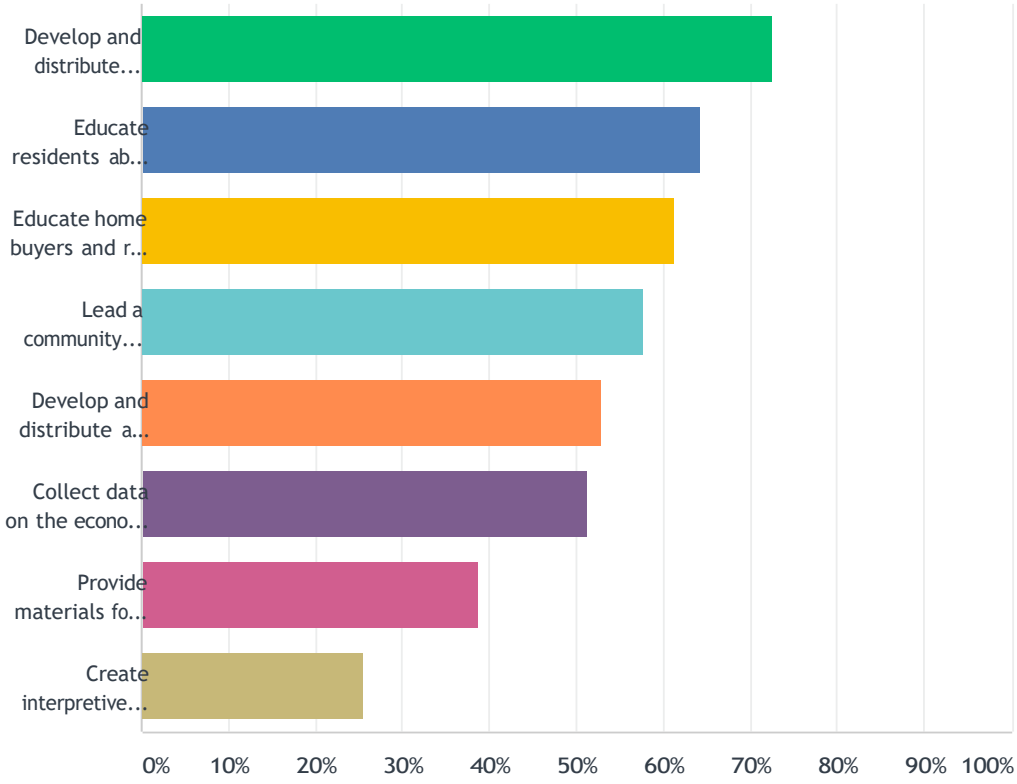
Answered: 93 Skipped: 188



ANSWER CHOICES	RESPONSES	
Reviewed my insurance coverage	72.04%	67
Identified where my property is located relative to flood hazard zones	67.74%	63
Read about the impacts of sea level rise on my property / community	44.09%	41
Purchased flood insurance	43.01%	40
Consulted with design professionals or contractors on floodproofing my property	26.88%	25
Completed floodproofing my property	17.20%	16
I've not taken any actions yet	6.45%	6
Total Respondents: 93		

Q12 The City of New Bern can increase public awareness and educate the community on flood risks and flood adaptation measures specific to historic properties through the following activities. Please indicate the top 5 projects that would benefit historic properties in New Bern. (Check 5)

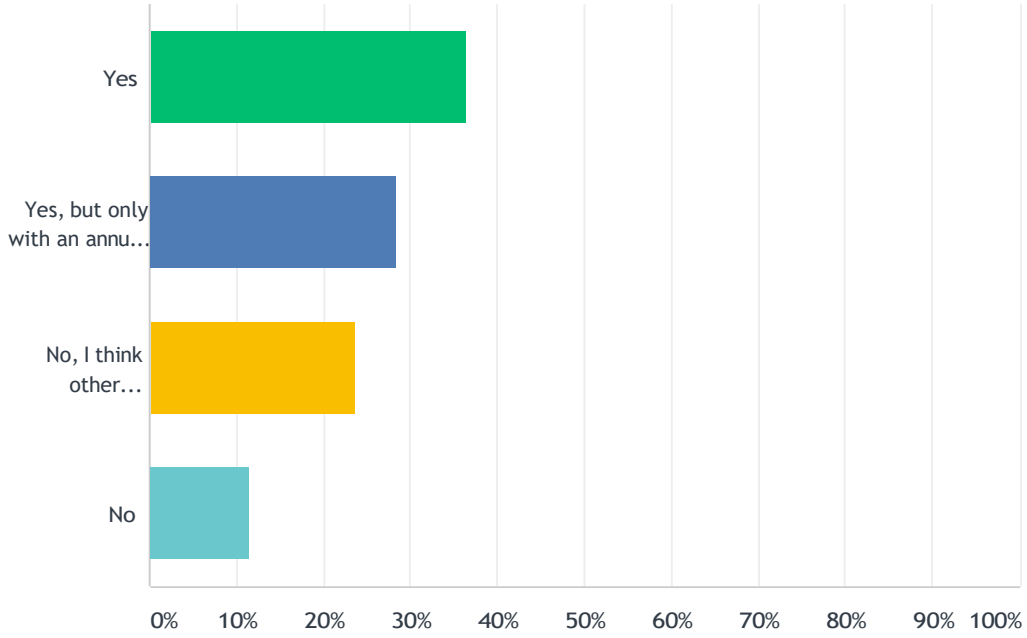
Answered: 168 Skipped: 113



ANSWER CHOICES	RESPONSES	
Develop and distribute design guidelines for adapting properties to minimize flood risk	72.62%	122
Educate residents about financial and insurance benefits of natural disaster preparedness	64.29%	108
Educate home buyers and real estate professionals about floodplains	61.31%	103
Lead a community design workshop to develop flood adaptation alternatives for New Bern’s historic properties	57.74%	97
Develop and distribute a disaster-preparedness toolkit specific to historic properties and cultural institutions	52.98%	89
Collect data on the economic impact of flooding on city and business revenues	51.19%	86
Provide materials for business owners on flood preparedness	38.69%	65
Create interpretive plaques to educate residents and visitors about past flood events and future sea level rise	25.60%	43
Total Respondents: 168		

Q13 Should the City of New Bern offer a financial incentive for historic district property owners to make flood improvements sensitive to historic preservation design standards? (Check one)

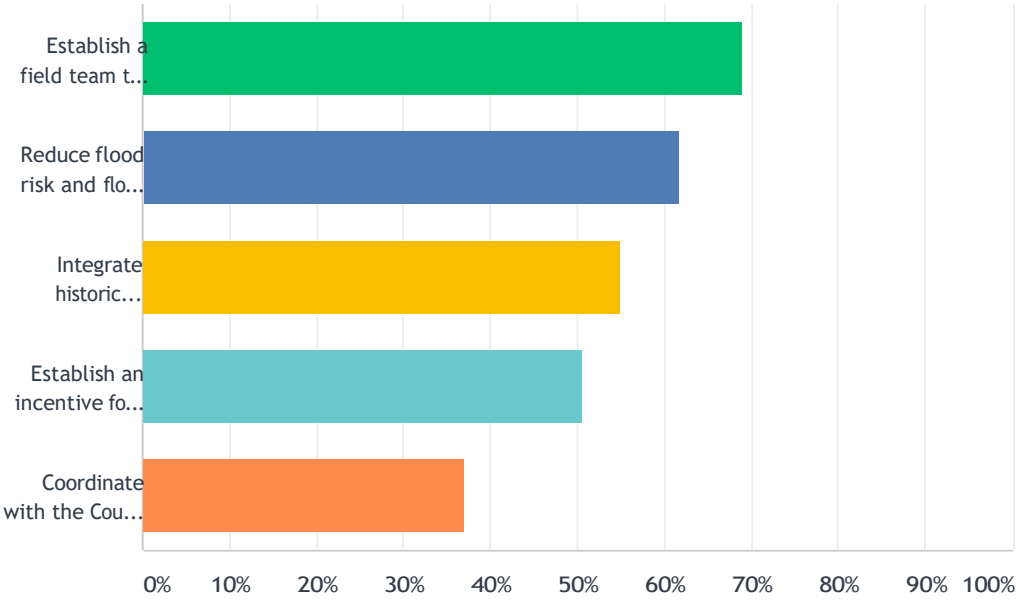
Answered: 165 Skipped: 116



ANSWER CHOICES	RESPONSES	
Yes	36.36%	60
Yes, but only with an annual program cap	28.48%	47
No, I think other non-financial incentives should be explored	23.64%	39
No	11.52%	19
TOTAL		165

Q14 The City of New Bern can lead resilience efforts related to flood adaptation for historic properties through the following activities. (Check your top 3)

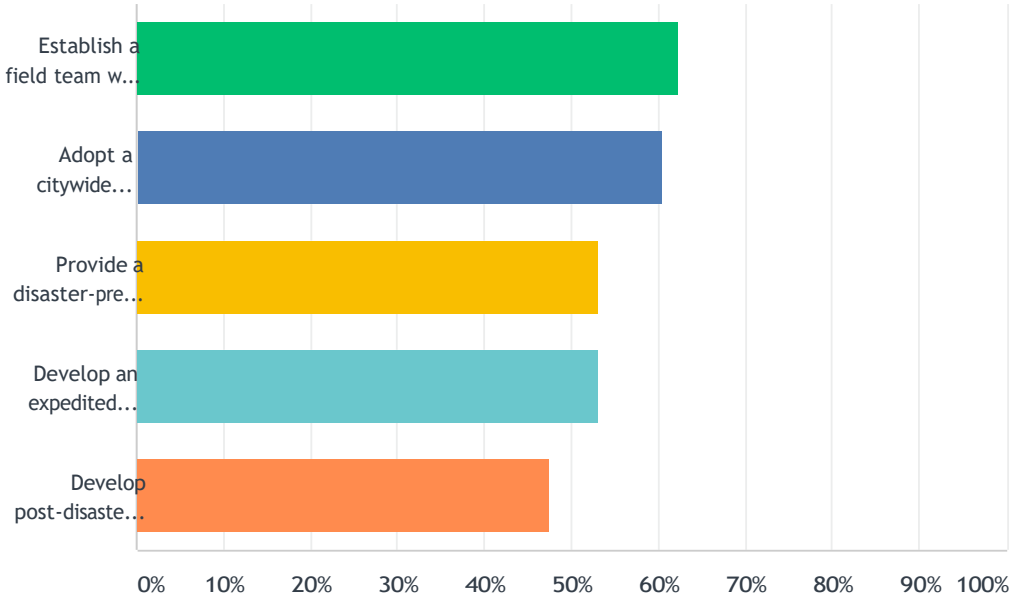
Answered: 162 Skipped: 119



ANSWER CHOICES	RESPONSES	
Establish a field team to assist in pre-disaster preparedness and post-disaster recovery	69.14%	112
Reduce flood risk and flood insurance costs by promoting individual property owner participation in the National Flood Insurance Program	61.73%	100
Integrate historic properties and cultural resources into the County's Hazard Mitigation Plan update	54.94%	89
Establish an incentive for flood adaptation at the local policy level	50.62%	82
Coordinate with the County to conduct annual training for government staff on flood mitigation, risk reduction and disaster response	37.04%	60
Total Respondents: 162		

Q15 The City should develop a flood disaster recovery plan and response capability to rebuild better through the following activities. (Check your top 3)

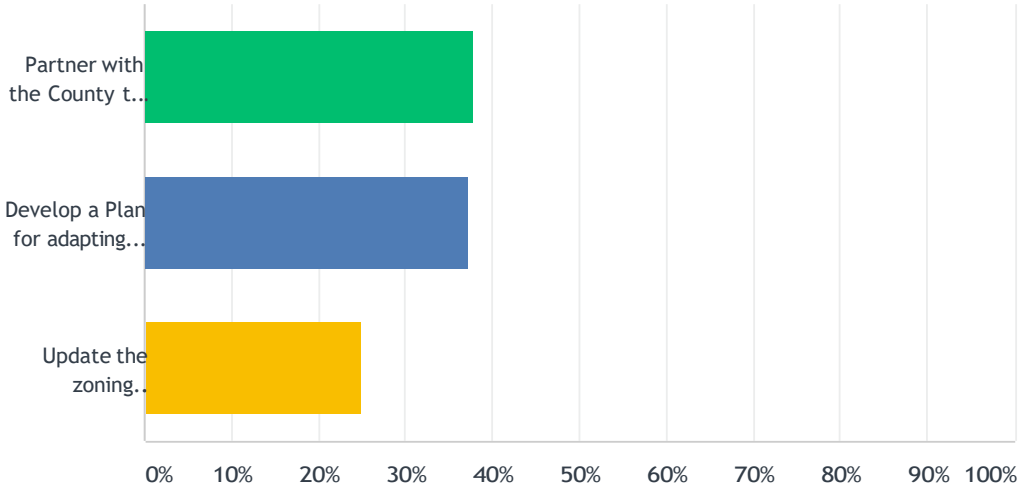
Answered: 162 Skipped: 119



ANSWER CHOICES	RESPONSES	
Establish a field team with expertise in historic properties to assist in post-disaster recovery	62.35%	101
Adopt a citywide post-disaster redevelopment plan that takes historic places into consideration	60.49%	98
Provide a disaster-preparedness toolkit to historic property owners in areas prone to flooding	53.09%	86
Develop an expedited post-disaster design review process	53.09%	86
Develop post-disaster redevelopment standards for historic districts	47.53%	77
Total Respondents: 162		

Q16 The City's update of the Comprehensive Plan should prioritize which one of the following for the greatest benefit of historic properties? (Check one)

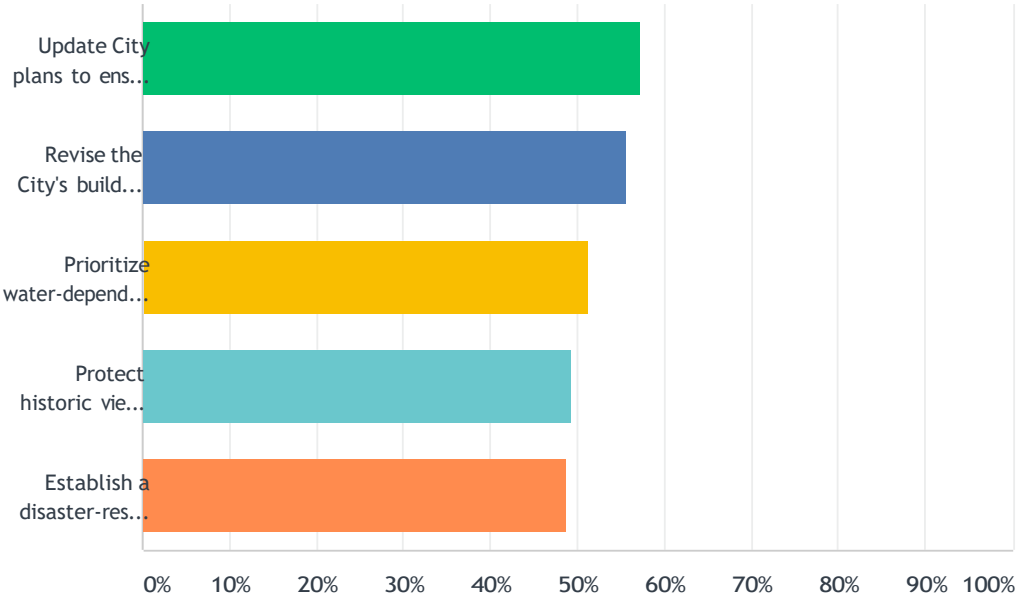
Answered: 164 Skipped: 117



ANSWER CHOICES	RESPONSES	
Partner with the County to develop a floodplain management plan	37.80%	62
Develop a Plan for adapting to sea level rise	37.20%	61
Update the zoning ordinance to encourage and incentivize flood adaptation measures	25.00%	41
TOTAL		164

Q17 The City should integrate flood adaptation actions into city policies, aligning with state and federal plans through the following activities. (Check your top 3)

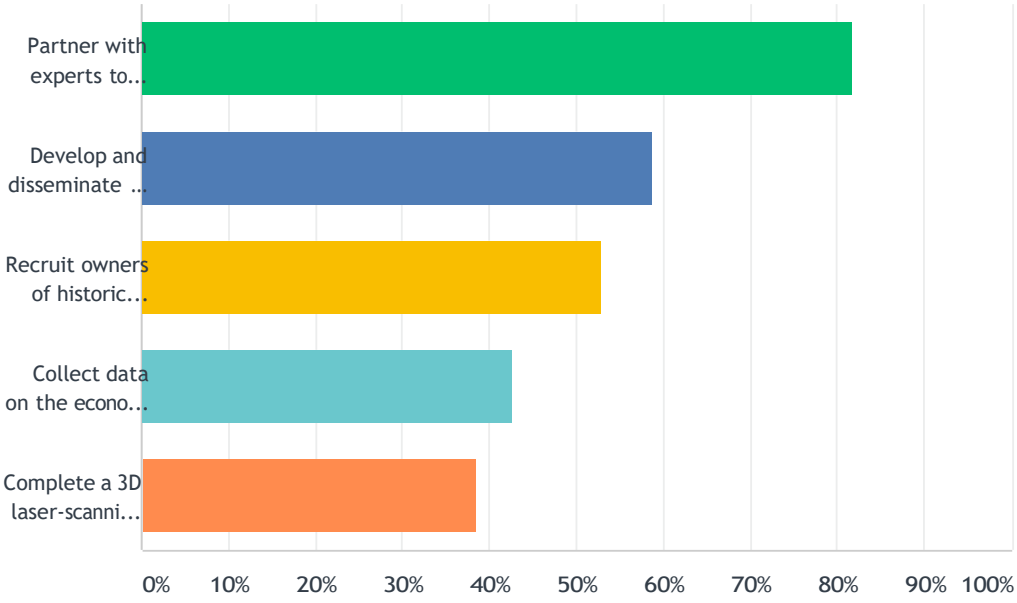
Answered: 162 Skipped: 119



ANSWER CHOICES	RESPONSES	
Update City plans to ensure consistency with State plans which address flooding hazards	57.41%	93
Revise the City's building code to require preservation-sensitive flood adaptation of historic properties	55.56%	90
Prioritize water-dependent uses and public open space for low-lying areas prone to flooding	51.23%	83
Protect historic view sheds through imposing limitations on construction in areas prone to flooding with scenic vistas	49.38%	80
Establish a disaster-response team to triage historic properties after a flooding disaster	48.77%	79
Total Respondents: 162		

Q18 The City should develop and share tools and leading practices for minimizing flood risk through the following activities. (Check your top 3)

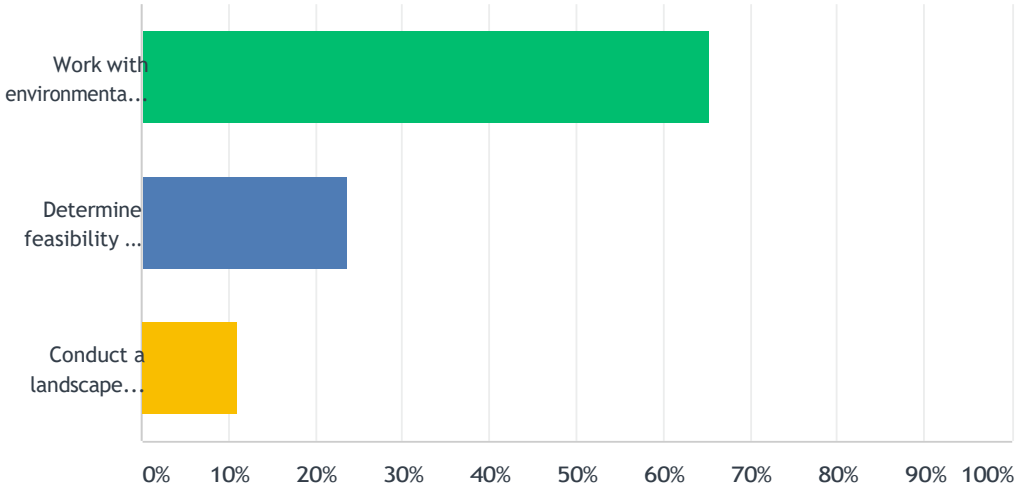
Answered: 138 Skipped: 143



ANSWER CHOICES	RESPONSES	
Partner with experts to identify cost effective and feasible adaptation measures for New Bern's historic places	81.88%	113
Develop and disseminate a "how-to" workbook on adapting historic properties for flooding and sea level rise	58.70%	81
Recruit owners of historic properties in the areas prone to flooding and seek funding for model flood adaptation designs	52.90%	73
Collect data on the economic impact of flooding on employees and businesses in areas prone to flooding	42.75%	59
Complete a 3D laser-scanning project to create a visual record of current flooding and future sea level rise impacts	38.41%	53
Total Respondents: 138		

Q19 The City should determine feasibility of using natural resource protection measures for minimizing flood risk through the following activities. (Check one)

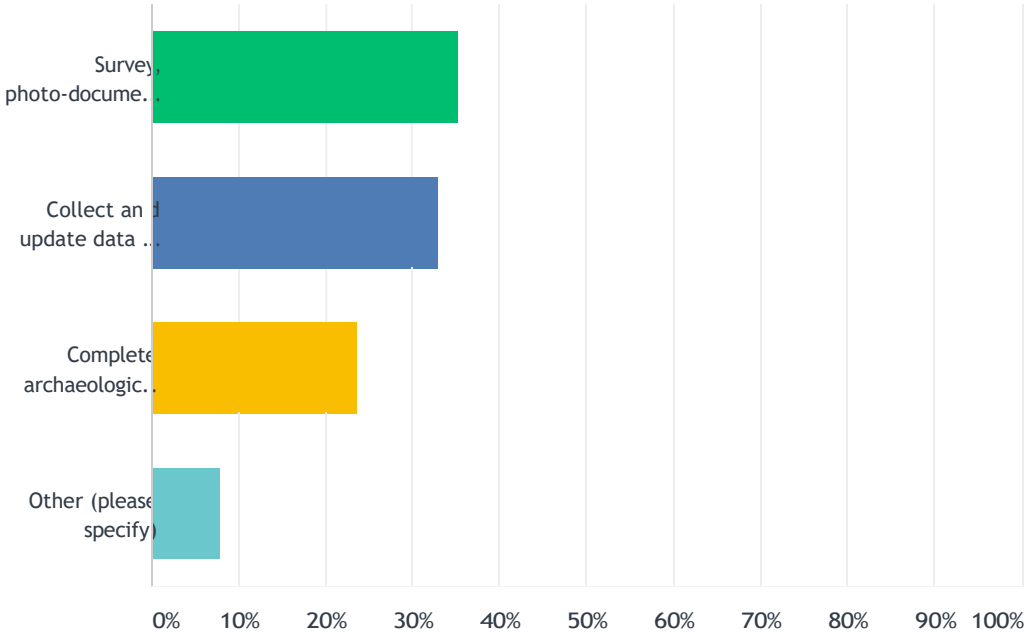
Answered: 135 Skipped: 146



ANSWER CHOICES	RESPONSES	
Work with environmental and economic experts to determine cost effective and feasible natural resource adaptation alternatives to address flooding and sea level rise	65.19%	88
Determine feasibility of using natural barriers to adapt public spaces to flooding	23.70%	32
Conduct a landscape design workshop to develop flooding adaptation strategies for public space	11.11%	15
TOTAL		135

Q20 The City should build, update, and maintain a GIS database and documentation to support informed decisions for flood risk management to prioritize the following activities. (Check one)

Answered: 127 Skipped: 154

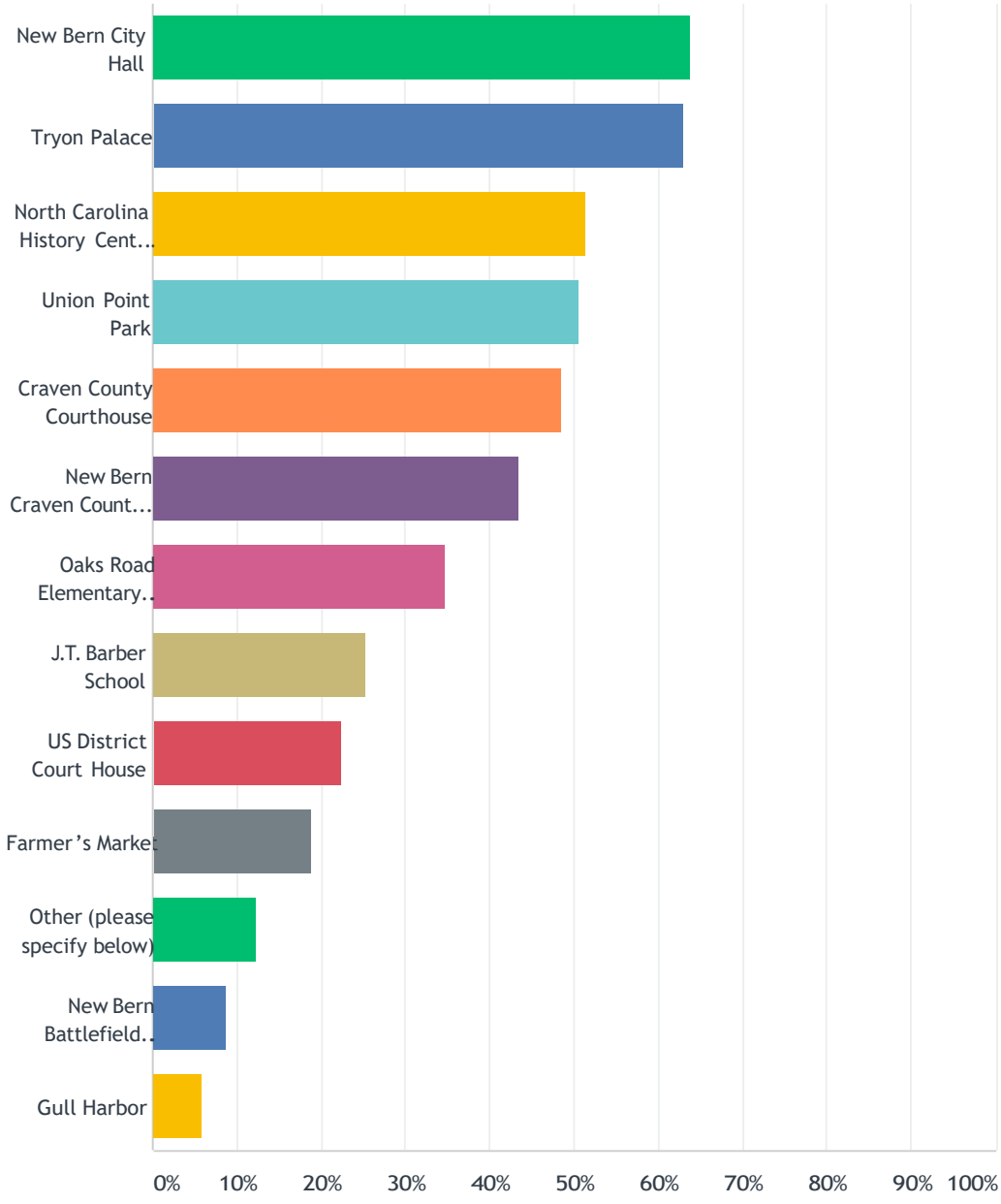


ANSWER CHOICES	RESPONSES	
Survey, photo-document and laser-scan the most vulnerable historic properties in areas prone to flooding	35.43%	45
Collect and update data on economic impacts of flooding on historic properties	33.07%	42
Complete archaeological survey for vulnerable sites in areas prone to flooding	23.62%	30
Other (please specify)	7.87%	10
TOTAL		127

#	OTHER (PLEASE SPECIFY)	DATE
1	Flood plain maps flood risk management is provided by flood plain maps	1/12/2021 3:31 PM
2	Public vs private dollars City should not spend money on personal homes or property	1/9/2021 8:37 PM
3	Focus on the whole city Stop worrying about only the historic distict and consider the city as a whole.	1/8/2021 12:29 PM
4	Request for other options Options not great here	12/24/2020 11:16 AM
5	Evaluate property value Determine value and existence of Historic homes to New Bern and Craven Co. If positive move to protect area.	12/14/2020 2:43 PM
6	Build a sea wall Build a sea wall like Charleston, SC	12/12/2020 8:19 AM
7	Focus on Duffyfield Promote home ownership Focus on Duffyfield it is a low lying district that I consider historic though I doubt it is considered historic by the tourist commission. Landlord that do not raise buildings or do other flood mitigation should ha thier properties condemned. Promote home ownership. Assist with new construction so that single family affordable homes meets the stricted flood standards.	12/8/2020 12:09 PM
8	Prioritize flood areas Survey, photo-document and laser-scan the most vulnerable historic, civic and business properties in areas prone to flooding	12/5/2020 7:39 AM
9	Provide grants to assist Provide grants for flood resistance	12/4/2020 2:39 PM
10	Prioritize flood areas Collect, catalogue flood risk areas for prioritization.	12/4/2020 1:24 PM

Q21 Besides your own property, select from the list below five (5) publicly accessible buildings, sites, or points of interest with the greatest vulnerability to flooding that you would like to see better protected against a flooding or weather-related disaster.

Answered: 138 Skipped: 143

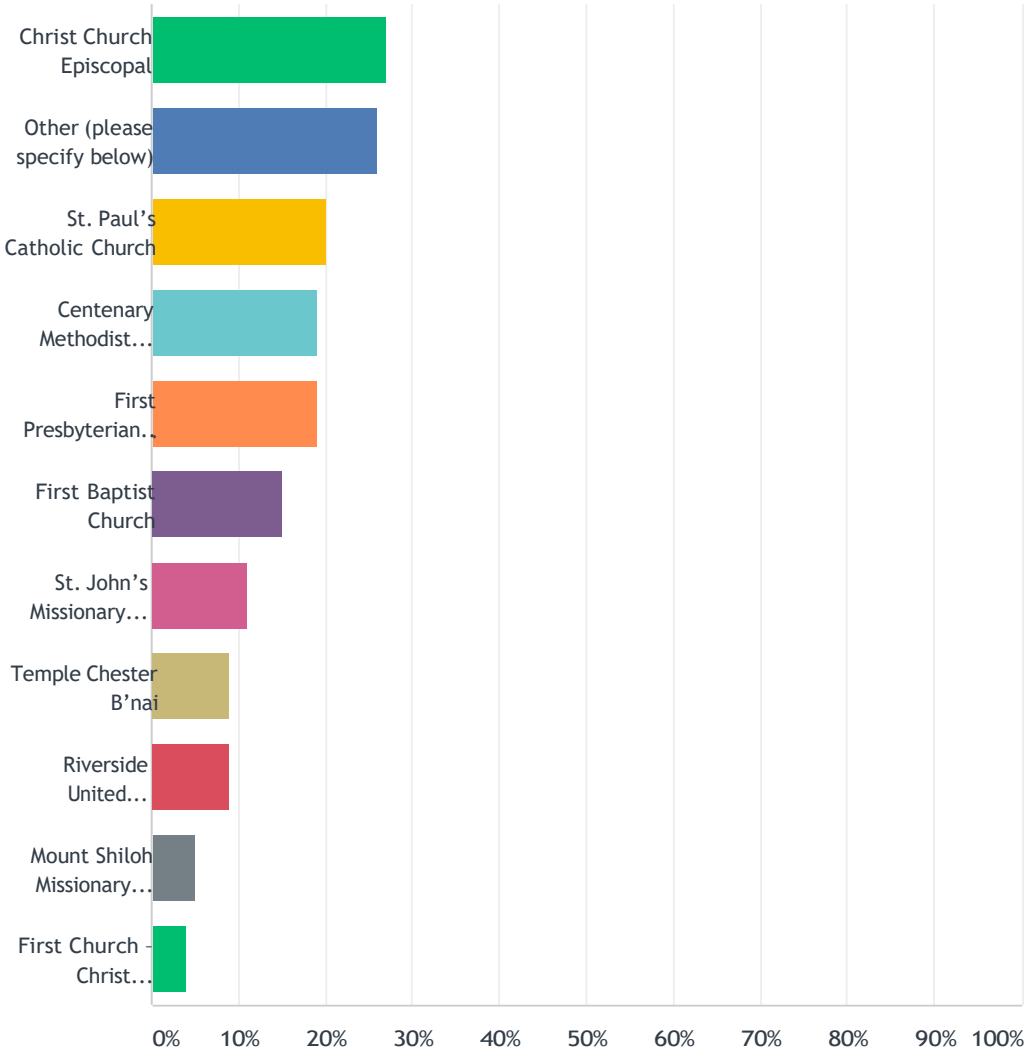


ANSWER CHOICES	RESPONSES	
New Bern City Hall	63.77%	88
Tryon Palace	63.04%	87
North Carolina History Center at Tryon Palace	51.45%	71
Union Point Park	50.72%	70
Craven County Courthouse	48.55%	67
New Bern Craven County Library	43.48%	60
Oaks Road Elementary School	34.78%	48
J.T. Barber School	25.36%	35
US District Court House	22.46%	31
Farmer's Market	18.84%	26
Other (please specify below)	12.32%	17
New Bern Battlefield Site	8.70%	12
Gull Harbor	5.80%	8
Total Respondents: 138		

#	OTHER (PLEASE SPECIFY BELOW)	DATE
1	Convention Center Hotels The Convention Center, Hotels	1/21/2021 8:46 AM
2	Sudan building Sudan Temple	1/20/2021 11:39 AM
3	Most vulnerable areas Any area that is primarily inhabited by our most vulnerable and who can least afford recovery on their own.	1/11/2021 8:59 AM
4	Convention Center New Bern convention center	1/10/2021 7:35 PM
5	Downtown Downtown businesses. All five answers are downtown businesses. Loosen up the restrictions on material that can be used on downtown house. Vinyl siding with a genuine wood look, ect.	1/9/2021 12:36 PM
6	Convention Center Doubletree Convention center and Doubletree	1/8/2021 10:27 PM
7	N/A when flooded all of these don't matter if the city is flooded either thru sea level rise or hurricances	1/5/2021 12:32 PM
8	Convention Center Restaurants Sudan building Convention Center, Sudan bldg., restaurants.	12/17/2020 6:20 PM
9	Downtown Downtown businesses	12/17/2020 9:14 AM
10	Convention Center Convention Center	12/15/2020 9:48 PM
11	Stanley White Stanley White Recreational Center	12/15/2020 1:35 PM
12	Convention Center Convention Center	12/14/2020 5:09 PM
13	Convention Center New Bern Convention Center	12/14/2020 2:43 PM
14	County facilities Craven County Administration, Craven County Emergency Management, Craven County Tax/Register of Deeds Offices	12/13/2020 6:03 PM
15	Downtown All downtown area	12/6/2020 8:49 PM
16	National Cemetery National Cemetery	12/6/2020 7:07 AM
17	List not accurate Six of the properties listed above are not threatened by flooding.	12/4/2020 4:49 PM

Q22 Sacred places are critical community resources. From which of the following historic churches with the greatest vulnerability to flooding do you, your family, or your community receive services?

Answered: 100 Skipped: 181

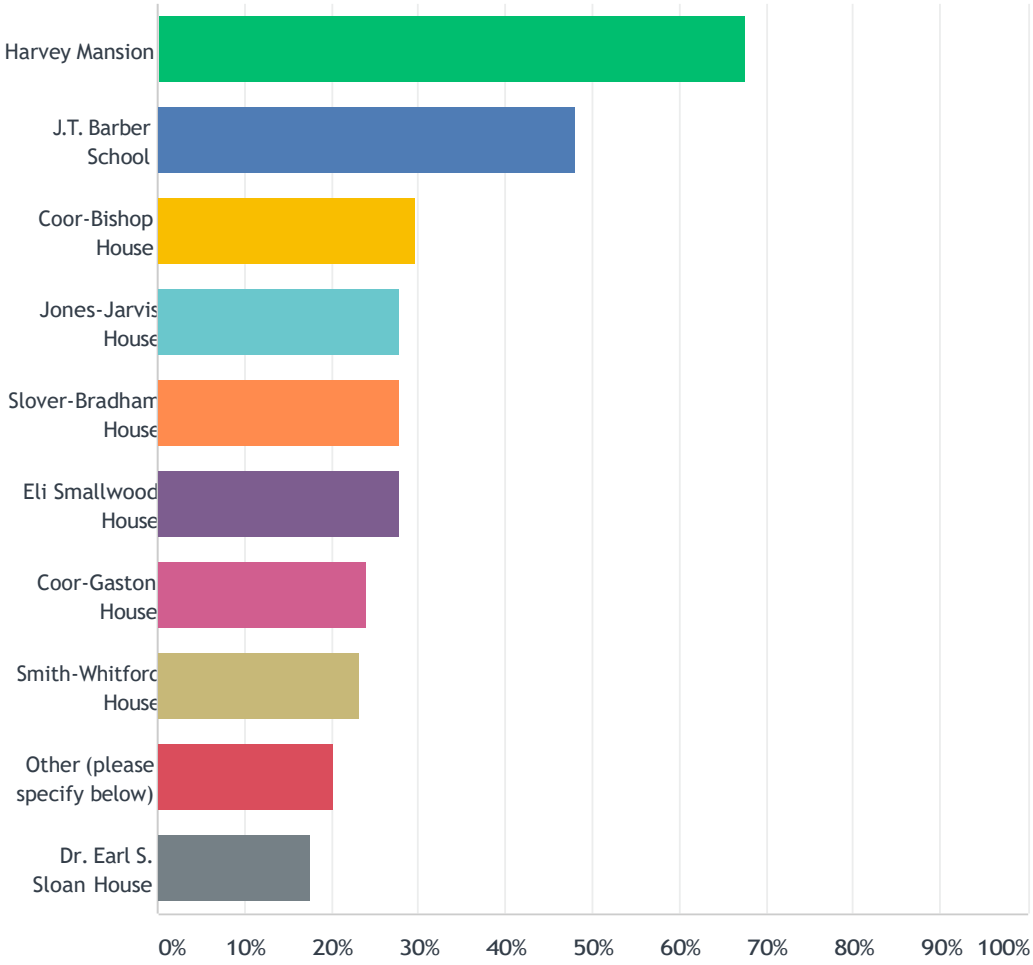


ANSWER CHOICES	RESPONSES	
Christ Church Episcopal	27.00%	27
Other (please specify below)	26.00%	26
St. Paul's Catholic Church	20.00%	20
Centenary Methodist Church	19.00%	19
First Presbyterian Church	19.00%	19
First Baptist Church	15.00%	15
St. John's Missionary Baptist Church	11.00%	11
Temple Chester B'nai	9.00%	9
Riverside United Methodist	9.00%	9
Mount Shiloh Missionary Baptist Church	5.00%	5
First Church – Christ Scientist	4.00%	4
Total Respondents: 100		

#	OTHER (PLEASE SPECIFY BELOW)	DATE
1	Only if they offer help Unless they are willing to open their doors as places of shelter and meals I would have them at the bottom of my list	1/11/2021 8:59 AM
2	Kingdom Impact Kingdom Impact	1/10/2021 7:35 PM
3	Tabernacle Baptist Tabernacle Baptist	1/9/2021 7:45 PM
4	Tabernacle Baptist Tabernacle Baptist	1/8/2021 6:24 PM
5	List too Christian I think this list is too Christian - centric	1/5/2021 12:32 PM
6	None N/A	12/27/2020 6:41 PM
7	New Song UMC New Song UMC	12/24/2020 11:16 AM
8	First Mission Baptist First Missionary Baptist Church	12/15/2020 9:48 PM
9	None None	12/15/2020 1:40 PM
10	Council Bluffs Council Bluffs along Neuse	12/14/2020 2:43 PM
11	None no affiliation	12/13/2020 7:30 PM
12	None NA	12/12/2020 6:05 PM
13	Pollocksville Presby Pollocksville Presbyterian Church	12/12/2020 7:18 AM
14	None NA	12/11/2020 10:00 PM
15	None None	12/11/2020 9:22 PM
16	Temple Baptist Church Temple Baptist Church,	12/11/2020 7:36 PM
17	None none of the above	12/11/2020 7:03 PM
18	1st Missionary Baptist First Missionary Baptist Church	12/11/2020 4:09 PM
19	Abundant Life Miracle Abundant Lif Miracle Center	12/11/2020 2:05 PM
20	None None	12/9/2020 4:38 PM
21	All downtown churches basically all the downtown churches	12/8/2020 12:09 PM
22	Garber Garber	12/5/2020 6:36 PM
23	Broad Street Christian Broad Street Christian Church	12/4/2020 8:24 PM
24	None none	12/4/2020 4:56 PM
25	None None	12/4/2020 4:49 PM
26	None None	12/4/2020 4:17 PM

Q23 Besides your own property, select from the list below five (5) locally significant historic buildings, sites or points of interest with the greatest vulnerability to flooding that you would like to see better protected against a flooding or weather-related disaster.

Answered: 108 Skipped: 173



ANSWER CHOICES	RESPONSES	
Harvey Mansion	67.59%	73
J.T. Barber School	48.15%	52
Coor-Bishop House	29.63%	32
Jones-Jarvis House	27.78%	30
Slover-Bradham House	27.78%	30
Eli Smallwood House	27.78%	30
Coor-Gaston House	24.07%	26
Smith-Whitford House	23.15%	25
Other (please specify below)	20.37%	22
Dr. Earl S. Sloan House	17.59%	19
Total Respondents: 108		

#	OTHER (PLEASE SPECIFY BELOW)	DATE
1	Wooten House Wooten House (519 E Front Street)	1/29/2021 9:46 AM
2	All historic homes Al historic homes in danger of flood damage	1/27/2021 12:31 AM
3	Request for site photos Photos of these homes would have been helpful in deciding.	1/22/2021 7:13 PM
4	Those impacted If they are willing then I think those who would be least likely to be impacted by high waters should be at the top of the list.	1/11/2021 8:59 AM
5	Not familiar with these would help to know their street address	1/5/2021 12:32 PM
6	Salter's Store Salter's Store 604 East Front Street	12/28/2020 11:49 AM
7	All All	12/27/2020 6:41 PM
8	Stanley White Stanley White Gymnasium	12/15/2020 9:48 PM
9	All school All Craven County Schools	12/15/2020 1:35 PM
10	Religious locations Salvation Army Stanley White Salvation Army on Queen st., Religious Community Services on George st., Centenary Methodist Ch. and Stanley White ctr. relocation.	12/14/2020 2:43 PM
11	None None	12/13/2020 8:00 PM
12	Not familiar with these Don't know these specific houses by name	12/12/2020 6:05 PM
13	Not familiar with these Not familiar with these	12/11/2020 10:00 PM
14	Gertrude Carroway house Gertrude Carroway's house on Broad St.	12/11/2020 7:44 PM
15	Jasper Hayes Center West Street Library Jasper Hayes Center, West Street Library	12/11/2020 7:36 PM
16	Narrow focus don't know enough about the others, but Harvey Mansion has already been closed - I wouldn't focus on a building that hasn't come back after Florence	12/11/2020 7:03 PM
17	Request for site photos Would be better if pictures or addresses associated with each site	12/11/2020 1:48 PM
18	Fireman's Museum Fireman’s Museum	12/6/2020 7:05 PM
19	We all need to relocate This question seems moot to me. The ultimate answer may be that they all will need to be relocated.	12/5/2020 7:39 AM
20	Rudolf Ulrich House Rudolf Ulrich House	12/4/2020 4:56 PM
21	Owners responsibility Why should any of these privately owned structures receive any priority? Privately owned historic properties are the responsibility of the owners.	12/4/2020 4:49 PM
22	Sparrow House Sparrow House	12/4/2020 2:44 PM

Q24 What are your general thoughts regarding nuisance flooding, sea level rise, and adaptation strategies for historic properties in New Bern?

Answered: 86 Skipped: 195

#	RESPONSES	DATE
1	City provide leadership Take action! The city of New Bern needs to provide leadership not avoid doing whatever it takes to protect New Bern. If a 10 ft wall around New Bern is one idea at least talk about it even though it is probably unrealistic. Don't dismiss ideas out of hand. It's been well over 2 years since the last storm and this survey, the planning process and prevention measures should have been well underway within 30 days of that disaster. If it had not been for a group of New Bern folks, the city would probably still be avoiding actually dealing with the issue.	1/27/2021 2:43 PM
2	Take action! Important	1/27/2021 12:31 AM
3	City to educate citizens Need a point person We need an ongoing proactive focus from City and County government with at least one high level person who is knowledgeable about making Craven/New Bern more resilient and how can lead our community's resiliency efforts.	1/22/2021 7:13 PM
4	Focus on tourism sector There's no stopping it, but we need to focus our efforts on the buildings and businesses that drive the tourism economy of downtown New Bern. At the end of the day, its this cashflow and the fact that I-42 has to utilize the Trent River bridge that keeps downtown Historic New Bern alive. As an insurance agent who works with the businesses downtown, the comment that I kept hearing after Florence was "I wish the convention center and the hotels were open". These buildings bring in a large amount of revenue for the city.	1/21/2021 8:46 AM
5	This is inevitable It's going to happen	1/13/2021 12:08 PM
6	Ownership responsibility Just as homes that are destroyed in mudslides because they were built in a risky place, the individual owner, not me, is responsible for his property.	1/12/2021 3:31 PM
7	This is inevitable Not if but when	1/12/2021 2:17 PM
8	Protect historic prop. It is vital to protect New Bern's historic properties as they are critically important to the tourism economy New Bern needs. Doing this will require an efficient use of a combination of immediate measures to stem the impacts of flooding now, and addressing the root cause of flooding events in the long-term by taking measures to combat sea level rise etc.	1/12/2021 7:14 AM
9	This is inevitable It's going to happen. Raleigh will once again be coastal. So the only thing we really can do is acknowledge that fact and deal with the rising seas as best we can and knowing nothing we can do will stop it from happening.	1/11/2021 8:59 AM
10	Alter roads Alter Hwy 17 to 4 lanes from Bridgeton to Greenville	1/10/2021 7:41 AM
11	Construct flood wall Flood wall construction?	1/9/2021 9:43 PM
12	Public vs. private dollar New Bern should not spend city money on private property	1/9/2021 8:37 PM
13	Broad solutions It happens in lots of cities. Record and tract it	1/9/2021 7:45 PM
14	Broad solutions Unless you start letting people use water resistant siding, windows, ect. they'll be spending absurd amounts of money each time it floods.	1/9/2021 12:36 PM
15	Stormwater plan Hwy 70 has poor drainage resulting in risk of hydro-planing even with normal rains	1/9/2021 8:20 AM
16	Preventative planning Natural prepare	1/8/2021 7:37 PM
17	Ownership responsibility Public vs. private dollar The bulk of the strategy costs should be borne by the people who choose to live in flood prone areas, not the citizens who do not live in those areas.	1/8/2021 6:24 PM
18	Ownership responsibility Public vs. private dollar New Bern has been flooding since 1710. The damage to historic properties occurred largely where lime plaster was replaced with sheetrock and windows were sealed shut, preventing drying out. The historic structures that flooded in Florence had all been flooded before. No tax expenditure necessary.	1/8/2021 5:50 PM
19	City to educate citizens The city needs to do more to educate residents	1/8/2021 2:59 PM
20	Not rebuilding threat Threat of not rebuilding	1/8/2021 2:38 PM
21	All are affected Broad solutions Stop worrying about the historic properties and focus on the city as a whole. The city is much more than just the historical buildings. By putting	1/8/2021 12:29 PM

	emphasis on only the historical district, you are implying the rest of the city isn't worth protecting.	
22	Historic flood info I would like to see the actual historical flood information for New Bern going back as far as records allow and compare them to today's risks and water levels. This can be used as a projection for the future and we can plan accordingly.	1/5/2021 3:27 PM
23	Financial support Preventative planning Take action! This is inevitable It's inevitable and will happen sooner than county and city governments expect. Need planning and financial assistance now not afterwards because many of us in the historic district will move rather than invest more dollars in a dying city.	1/5/2021 12:32 PM
24	Take action! This is inevitable The City of New Bern needs to embrace the reality of sea level rise and sustainability- without that, concerns from owners of historic properties falls on deaf ears- there is a total resistance and lack of empathy- It's frustrating	12/28/2020 11:49 AM
25	Financial support Low income concern Preventative planning I think it is really important to help owners of historic properties raise up out of the floodplain while maintaining the historic character of the property and neighborhood. Especially historic areas in predominantly Black neighborhoods.	12/27/2020 6:41 PM
26	Modify historic rules Preventative planning Many downtown streets were created by backfilling wet areas. The money isn't there to erect flood gates, but requiring new historic building construction to be sensitive to this new reality will decrease taxpayers from having to pay for the maintenance of these historic structures through handouts to those that can afford to live and work in those areas.	12/24/2020 11:16 AM
27	Open space along water This is inevitable Sea level rise and the associated flooding is unavoidable. The best plan is to accept that and to plan for that. Places that flood easily should be turned into parks so that damage is minimized. For example, the land near Tryon Palace with the public housing that flooded should be turned into a park... I would love to see a place to store rowing skulls at the waterfront (either there or at the old Maola land) and the development of rowing teams and clubs. More public access and more waterfront activities would be a way to turn lemons into lemonade ..... The historic buildings of New Bern add to the charm and livability of New Bern but if they are in areas that flood easily it may be futile to try to save them....	12/17/2020 2:15 PM
28	Stormwater plan City of new bern needs to do more to create better drainage solutions and actually maintain and USE THE PUMPS THEY INSTALLED	12/17/2020 1:05 PM
29	Buyer beware People need to be advised strongly of flooding risks before buying property in at- risk areas	12/17/2020 11:52 AM
30	All are affected Broad solutions Financial support Flood zones will flood Long term strategy More should be done to protect our buildings and residents. Hurricanes are becoming more frequent and stronger. More needs to be done in our flood prone areas. Many of our residents cannot afford to evacuate every times a storm hits New Bern.	12/15/2020 9:48 PM
31	Regional strategy Combined efforts of the City and County	12/15/2020 1:35 PM
32	Flood zones will flood Managed retreat By 2100, projected sea level rise in NorthCarolina is very likely to be between 42 and 132cm - reflecting a high-end emissions scenario (RCP8.5). All the mitigation strategies listed above in this survey can do is delay inevitable inundation. In the long term, this entire region needs to begin accepting a plan of Managed Retreat.Managed retreat is not defeat - in fact its the only strategy that will provide significant net benefits. Rather than focusing so much on saving "trophy" buildings the City and County need to be prioritizing the relocation of the 4,800 people in New Bern who live on exposed land below 7 ft - many of whom are socially vulnerable. Once that's done you can spend some of the tax money that's left on relocating historic buildings - and create a New Bern of yesteryear Theme Park.	12/14/2020 5:09 PM
33	Act now! Being proactive is much better than reactive	12/14/2020 4:54 PM
34	Stormwater plan After much study was most disturbed, to find that Change St. is the dumping ground for flood waters in the Historic District, along the Neuse River. Would like to see drains reworked in surrounding streets to redirect flood water from Change, which is most frequently flooded street in the area.	12/14/2020 2:43 PM
35	Long term strategy Preventative planning It's important for our beautiful waterfront town to	12/13/2020 8:31 PM

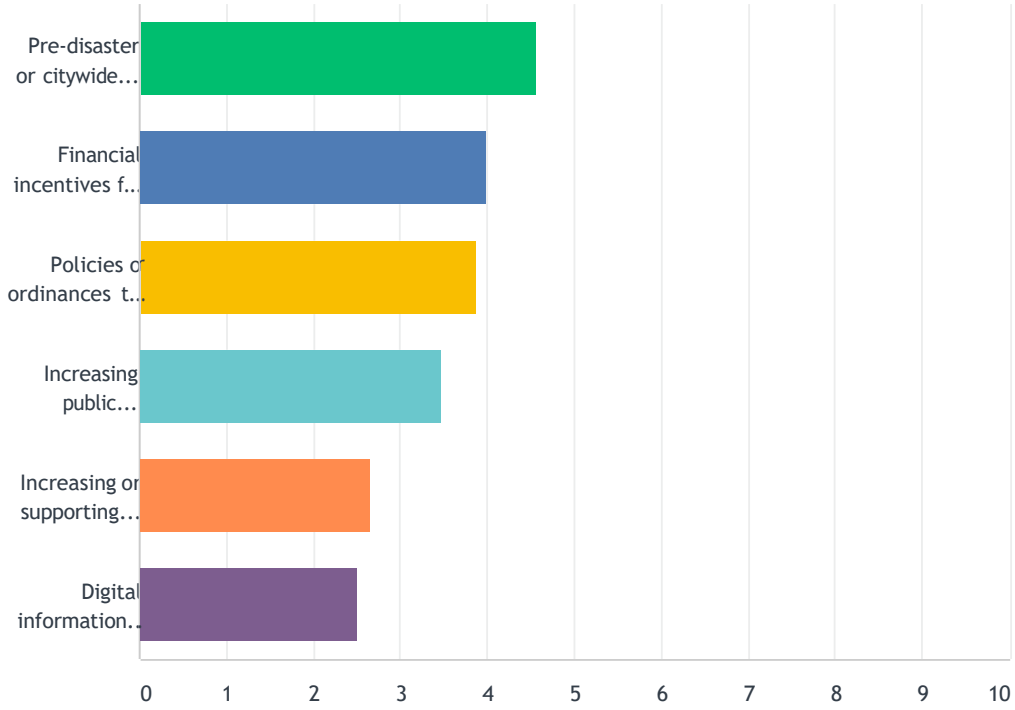
	be proactive on planning for both long term gradual sea level rise and disaster/flood response, for the sustainability of these communities. I am hopeful that this seems to be a priority.	
36	Ownership responsibility Any buildings in flood area or low lying should be raised at owner expense. With the exception of schools. Those should be torn down.	12/13/2020 8:00 PM
37	Preventative planning Take action! The city taxes homeowners in the historic district at a hefty rate. Yet they have not devised a plan to address sea level rise in this area. Get busy on this plan or these historic property owners will vacate their properties.	12/13/2020 7:30 PM
38	Broad solutions Financial support Long term strategy Natural barrier Maintain the historical feature of the city while creating sea walls, raising buildings/homes and helping the community with affordable flood insurance.	12/13/2020 6:03 PM
39	All are affected I believe the prospects are grim. There is not enough money to provide comprehensive flood protection. I'm not sure protecting a historic property is more important than protecting a property that is someone's home. Very difficult issue.	12/13/2020 10:54 AM
40	Take action! I understand that it is going to be a challenging but critical exercise for our community and I'm glad the City is taking it seriously.	12/12/2020 6:05 PM
41	Natural barrier How can we naturally prevent flooding?	12/12/2020 11:45 AM
42	Broad solutions Preventative planning Follow the city of Alexandria Virginia on how NOT to plan for flooding impact! Alexandria, much like New Bern has a public/private interest in maintaining and preserving the historically significant architecture. Alexandria, perhaps unlike New Bern has been governed by builders influence and the city by potential tax payer bounty's. The results are no accountability to the taxpayers and residents. The city has not required new development impacts on the city's aging infrastructure. Nor have they held builders accountable for the resultant storm runoff to the aging drainage system infrastructure. Google Alexandria flooding to witness what damage a good rain storm can accomplish in a span of 90 minutes.	12/12/2020 11:29 AM
43	Long term strategy Preventative planning Need to prepare	12/12/2020 7:18 AM
44	Open space along water I don't see why New Bern allows building right on waterfront, less open space means less ways for water to seep into ground.	12/12/2020 6:49 AM
45	This is inevitable Flooding is inevitable and sea levels are rising.	12/11/2020 10:00 PM
46	Act now! Long term strategy Preventative planning This is inevitable In order for historic New Bern and its outlying areas to survive what are now more common weather and climate-related disasters, it needs to in the near future, proactively create a plan to mitigate the effects of flooding and sea level rise in order to still be around in the next century. There is too much history to be lost and additional damaging storms would be detrimental to New Bern, Craven County and its citizens.	12/11/2020 7:44 PM
47	We're doomed What can be done? Will properties continue to suffer?	12/11/2020 7:36 PM
48	All are affected Ownership responsibility In most cases, I'd expect private property owners (historic or not) to be responsible for their own properties. They should have performed due diligence before buying, same as I was responsible for. For community property, we need to do what's necessary to protect the public interest.	12/11/2020 7:03 PM
49	Stormwater plan Install urn river return grates. My house floods from back street Li nden. Yard filled with water up to 6' brick wall.xx	12/11/2020 5:16 PM
50	All are affected Long term strategy Tourism is a major contribution to the economies of New Bern. We should learn from past flooding events.	12/11/2020 4:09 PM
51	Modify historic rules The rise of sea level will happen regardless of anything New Bern can and will do. Historic District guidelines/requirements can be modified to encourage homeowners to make improvements	12/11/2020 2:04 PM
52	Act now! Preventative planning Take action! New Bern could easily do more preventative planning and design for Union Point but instead has chosen to repair after every single storm, must add up each year.	12/11/2020 1:48 PM
53	Modify historic rules Historical commission should relax some rules to make it easier for owners to mitigate flood damage Example-allow owners to build concrete docks. Commission	12/11/2020 10:48 AM

	is overreaching their authority on issues beyond property lines and in the water	
54	Efficient solutions Need to look for efficient and effective ways to reduce flooding	12/9/2020 7:19 PM
55	Act now! Take action! Sooner rather than later	12/8/2020 9:46 PM
56	All are affected Flood zones will flood Low income concern Take action! Strict zoning for new construction, Build new public housing out of flood prone areas, Create Retention pond/ marsh at site of Walt Bellamy homes to protect Tryon palace. Bocus on Low income properties, Buy out properties that consistently flood convert to park land or marshes that help mitigate floods. build affordable housing and apartments near MLK Junior Drive To house workers in the service and retail industry. annex land on the out skirts of town so the city has room to move and grow. Annex James city and include it in flood mitigation plans.	12/8/2020 12:09 PM
57	All are affected Long term strategy Planning and making changes now will impact future disasters - we are all in this together .	12/8/2020 4:47 AM
58	Stormwater plan much of flooding impact could be negated by better stream management and updating city/county drains	12/7/2020 2:46 PM
59	All are affected Flood zones will flood Long term strategy Flooding is only going to get worse. Develop plans with this in mind. History is valuable but so are the lower income neighborhoods	12/7/2020 10:57 AM
60	Take action! It is all threatening.	12/6/2020 8:49 PM
61	Stormwater plan Include in plan infrastructure city's drainage and storm water management systems, land usage and growth patterns, encourage creation of more wetlands and green spaces, temporary and permanent flood barriers.	12/6/2020 7:05 PM
62	Financial support Money to help people elevate their structures would help	12/6/2020 6:20 PM
63	Temp. housing plan We need a plan for temporary housing. We were nomadic for 11 months !	12/6/2020 2:02 PM
64	Financial support Long term strategy Sea level rise is occurring, more, and stronger storms are affecting New Bern, we need to plan for the long term by providing incentives to relocate buildings out of flood prone areas and protecting and restoring natural riparian buffers.	12/6/2020 11:55 AM
65	Modify historic rules Update codes Codes need to be changed to permit historic restoration with more modern, flood resistant materials	12/6/2020 9:12 AM
66	Flood zones will flood Long term strategy Take action! It appears that sea level rise is indeed a real environmental concern. My home is 100 years old. Flood waters surrounded it during Hazel I believe and not again until Florence. Significant dollars would be needed to raise homes/buildings above expected flood levels. Homes/buildings will be lost due to the extreme cost of elevation of these properties. It appears that the water will win one day. Owners will not be able to continue to "fix" properties due to the cost.	12/6/2020 7:07 AM
67	Natural barrier I was very close to the flooding and am very concerned for future hurricanes. I would like to see a natural barrier to protect our homes and businesses.	12/5/2020 6:36 PM
68	All are affected Broad solutions Flood zones will flood Anything that can be done to protect historic sites from flooding will likely have spillover benefits to other properties so I am in favor of pursuing broad solutions. I do think there needs to be additional thought given to areas that are on the peripheral of flood zones that are likely to be impacted by extreme flooding which will certainly be more common in the coming years.	12/5/2020 5:49 PM
69	All are affected Flood zones will flood Continue to also look at storm drainage/runoff around the whole city, not just the historic areas	12/5/2020 4:23 PM
70	No opinion Not educated enough on the subject	12/5/2020 10:59 AM
71	Flood zones will flood Sea level is rising and flooding will increase. Do not continue to build housing developments in areas that are low lying or take up run off areas with new building. Too much building— too dense. That is when flooding started in old Derby Park—after more houses were built and filling in drainage area.	12/5/2020 9:40 AM
72	Financial support Flood zones will flood Long term strategy Without barriers to reduce flooding New Bern will never reach it's potential. There are so many blighted areas in New Bern	12/5/2020 9:23 AM

	that shouldn't be but without economic stability no one will invest in those areas.	
73	Long term strategy By 2040 there is going to be regular non storm related king tide flooding of downtown streets. This strategy needs to assess how and or if the downtown, including residential areas, of New Bern can be can be maintained over the next century.	12/5/2020 7:39 AM
74	It is	12/4/2020 7:13 PM
75	Act now! Take action! New Bern's historic district architecture is "timeless;" immediate action is "timely."	12/4/2020 6:43 PM
76	Long term strategy Take action! The city and county should plan and implement efforts to protect our city and county	12/4/2020 6:34 PM
77	Long term strategy Take action! The risk will increase with time and government needs to take more economic responsibility for mitigation.	12/4/2020 4:56 PM
78	Long term strategy The city needs to hire outside experts, and not current staff, to help staff address flood strategies. Unless the city can help historic property owners obtain funding to assist in flood mitigation efforts, only those with exceptional means will be able to take steps necessary to preserve historic structures. Raising a property above flood level is beyond most owner's means, even with FEMA assistance.	12/4/2020 4:49 PM
79	Long term strategy Take action! We are already adapting to updated state flood plains and rising sea level	12/4/2020 4:30 PM
80	Long term strategy Flooding will continue to happen so we must try to mitigate it's impact on the community	12/4/2020 4:17 PM
81	Long term strategy It is important to understand what the town will look like in 25 50 and 100 years from now.	12/4/2020 3:44 PM
82	Flood zones will flood When you buy property in a flood zone you have to be prepared for it to flood.	12/4/2020 2:44 PM
83	Act now! This survey process is wasting time. We need to get down to program availability, funding options, and get some serious programs on flood mitigation.	12/4/2020 2:39 PM
84	Reputable contractor list I would really like a list of reputable flood mitigation contractors that are licensed. I have looked online and can't find any. I would invest in protecting my property but don't know who to call	12/4/2020 2:07 PM
85	All are affected I think that you shouldn't only worry about historic properties and realize that there are regular, hard working people who are affected in their own non historic neighborhoods	12/4/2020 2:05 PM
86	Take action! An action plan developed and implemented. Take action on all studies.	12/4/2020 1:24 PM

Q25 Which of the following do you think would be most effective for increasing resilience to flooding in your community? Please rank the following statements, from most important to least important.

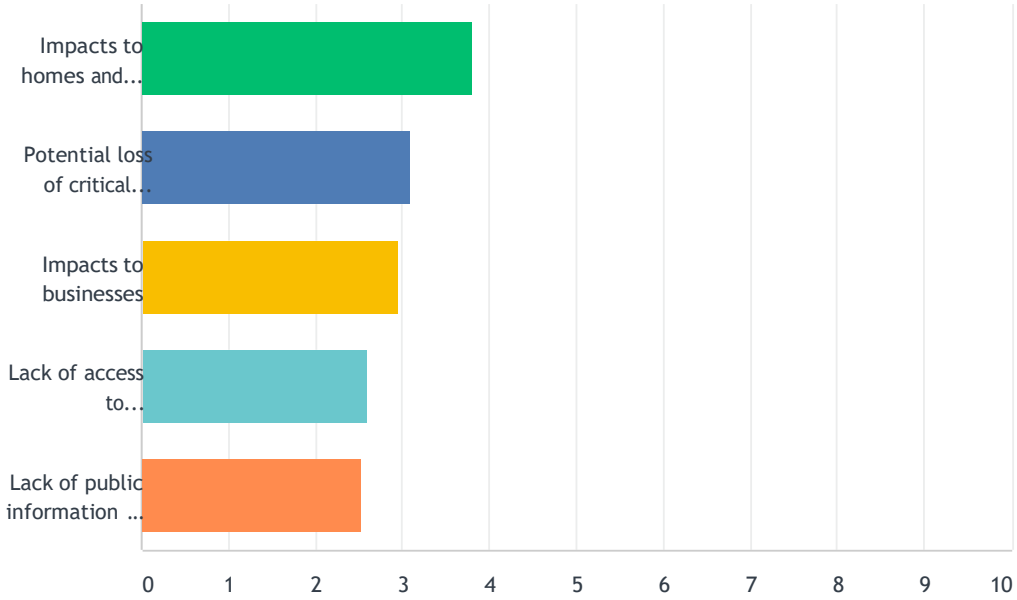
Answered: 129 Skipped: 152



Pre-disaster or citywide planning efforts (e.g. comprehensive planning, Sea Level Rise Plan)	34.38% 44	24.22% 31	18.75% 24	10.94% 14	10.16% 13	1.56% 2	128	4.57
Financial incentives for property owners to build resilience	32.26% 40	14.52% 18	16.13% 20	12.90% 16	6.45% 8	17.74% 22	124	4.00
Policies or ordinances that require more resilient land uses and development practices	10.32% 13	32.54% 41	19.05% 24	19.84% 25	9.52% 12	8.73% 11	126	3.88
Increasing public awareness and education	16.00% 20	13.60% 17	20.00% 25	20.00% 25	12.80% 16	17.60% 22	125	3.47
Increasing or supporting access to critical community services	4.03% 5	9.68% 12	16.13% 20	18.55% 23	20.97% 26	30.65% 38	124	2.65
Digital information resources or tools with flood risk information	4.00% 5	6.40% 8	11.20% 14	16.80% 21	39.20% 49	22.40% 28	125	2.52

Q26 What do you see as the key issues or challenges related to flooding that need to be addressed? Please rank the following statements, from most important to least important.

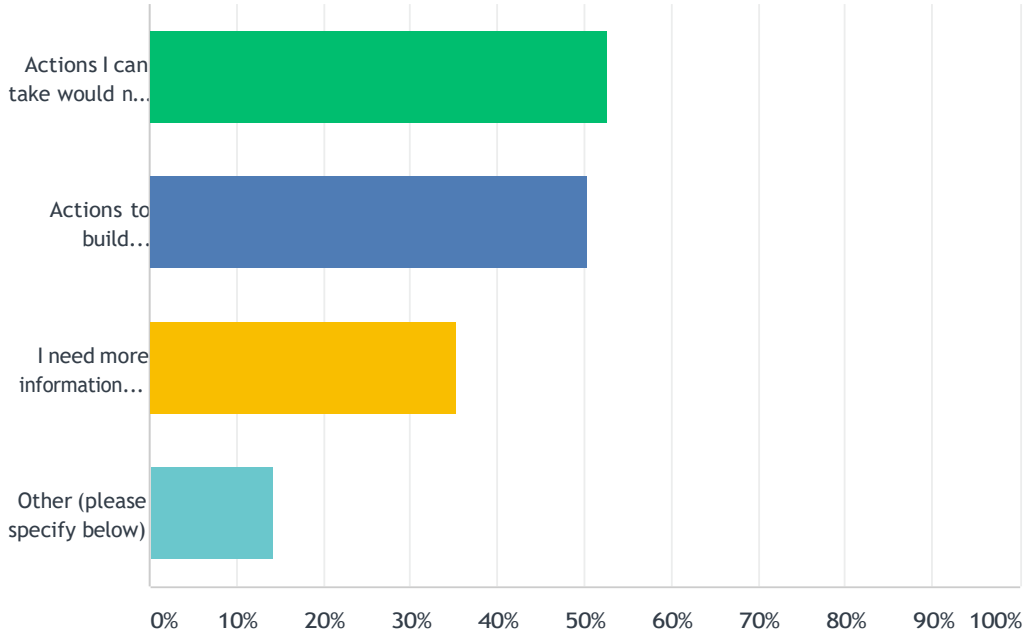
Answered: 126 Skipped: 155



	1	2	3	4	5	TOTAL	SCORE
Impacts to homes and personal property	41.94% 52	20.16% 25	18.55% 23	14.52% 18	4.84% 6	124	3.80
Potential loss of critical services (access to food, schools, community centers)	20.00% 25	13.60% 17	33.60% 42	22.40% 28	10.40% 13	125	3.10
Impacts to businesses	7.32% 9	34.15% 42	21.14% 26	20.33% 25	17.07% 21	123	2.94
Lack of access to transportation and ability to evacuate from storms	13.01% 16	17.07% 21	15.45% 19	24.39% 30	30.08% 37	123	2.59
Lack of public information on flooding risk and future sea level rise	17.21% 21	14.75% 18	11.48% 14	18.03% 22	38.52% 47	122	2.54

Q27 What do you see as the greatest challenges to building resilience personally, in your community or for your personal property? (Check all that apply)

Answered: 127 Skipped: 154

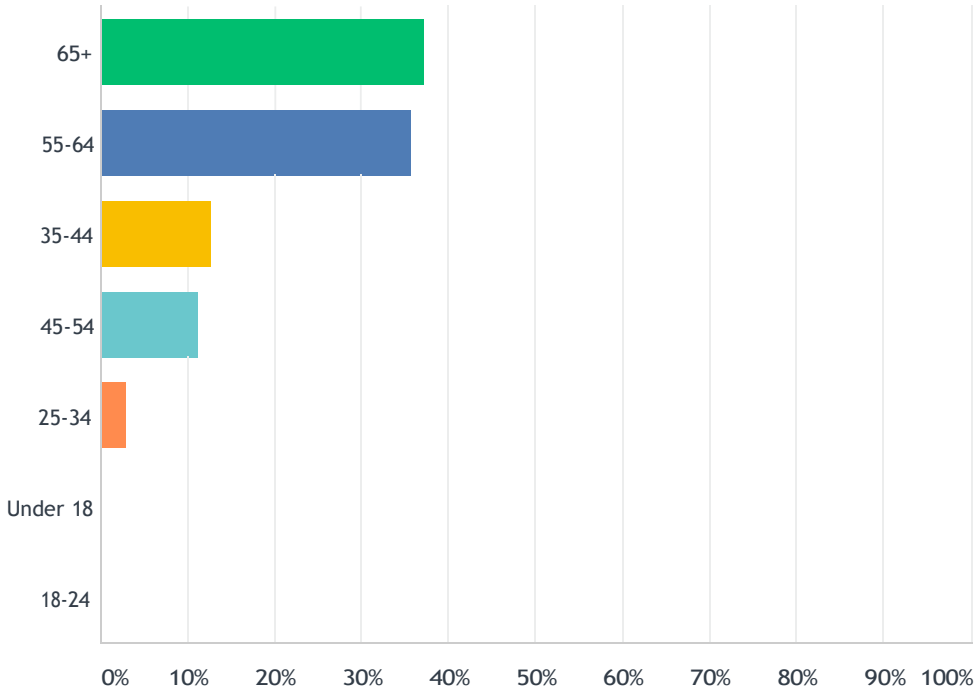


ANSWER CHOICES	RESPONSES	
Actions I can take would not be enough to mitigate the severity of future flooding	52.76%	67
Actions to build resilience are too costly or would not be financially feasible	50.39%	64
I need more information about what actions I can take	35.43%	45
Other (please specify below)	14.17%	18
Total Respondents: 127		

#	OTHER (PLEASE SPECIFY BELOW)	DATE
1	Can't control nature Again I will say that it is going to happen, we are coastal and much as we think we are in control history has proven that we cannot control Mother Nature. The best I can do is do the best I can.	1/11/2021 9:05 AM
2	Mitigate storm runoff Since we are downstream, we are very dependent on how the communities upstream handle their responsibilities. Mitigating storm runoff upstream can have significant impacts for us. For winds driven floods, there is a need to create natural barriers to slow down the water.	1/8/2021 10:33 PM
3	Not affected Not in a flood zone	1/8/2021 6:28 PM
4	Not affected At 15 feet, my house is not subject to flood.	1/8/2021 5:51 PM
5	Climate change education Education of climate change precipitating the rising sea levels and confrontation of anti-science notions that have hindered our ability to get ahead of this and stem the tide.	1/8/2021 12:31 PM
6	CAT 3-5 hurricane storm According to NOA a CAT 3-5 storm will bring 10-20 foot flooding. This would be devastating to New Bern and surrounding area. My biggest fear is this type of storm.	1/5/2021 3:42 PM
7	Loop in USACE Maintain watersheds Regional strategy needed For changes that really would impact the severity of storm surge, the Army Corp of Engineers need to become involved and atleast maintain the watersheds so surge waters could be directed "upstream" , instead of flowing in the typical direction to handle storm runoff	12/24/2020 11:26 AM
8	We're doomed Really don't think much can realistically be done....	12/17/2020 2:19 PM
9	Government concern About 490 people in Fairfield Harbour live on exposed land below 4 ft but in part because Fairfield Harbour is not an incorporated town with taxation authority it has limited direct representative access to NC legislators or to FEMA planning or financial resources. For example it cannot (or will not) access FEMA's acquisition/buyout mitigation activities which otherwise might help the community purchase flood-prone properties, remove the buildings, and maintain the land as open space.	12/14/2020 5:20 PM
10	Funding assistance Available funds to provide protection from flooding.	12/14/2020 2:52 PM
11	Funding assistance Personally the cost to elevate my home would be cost-prohibitive.	12/11/2020 7:50 PM
12	Regional strategy needed Even if one home is fixed, not enough if entire neighborhood doesn’t take corrective action	12/11/2020 1:55 PM
13	Higher landlord standards I rent, Landlords should be held to high standards for flood mitigation.	12/8/2020 12:14 PM
14	Regional strategy needed Any action is futile unless an entire watershed becomes involved	12/7/2020 2:49 PM
15	Constructed riverwalk I’ve done all I can. New Bern should have a river walk constructed with the ability to add flood barriers as a sea wall when hurricanes come.	12/5/2020 9:26 AM
16	Global strategy needed Only a very coordinated consistent global strategy with significant expenditures is going to save the down town area of New Bern	12/5/2020 7:42 AM
17	Protect historic property The historic preservation commission needs to allow homeowners the ability to protect their property	12/4/2020 4:21 PM
18	Funding assistance Funding assistance for elevation	12/4/2020 2:41 PM

Q28 What is your age?

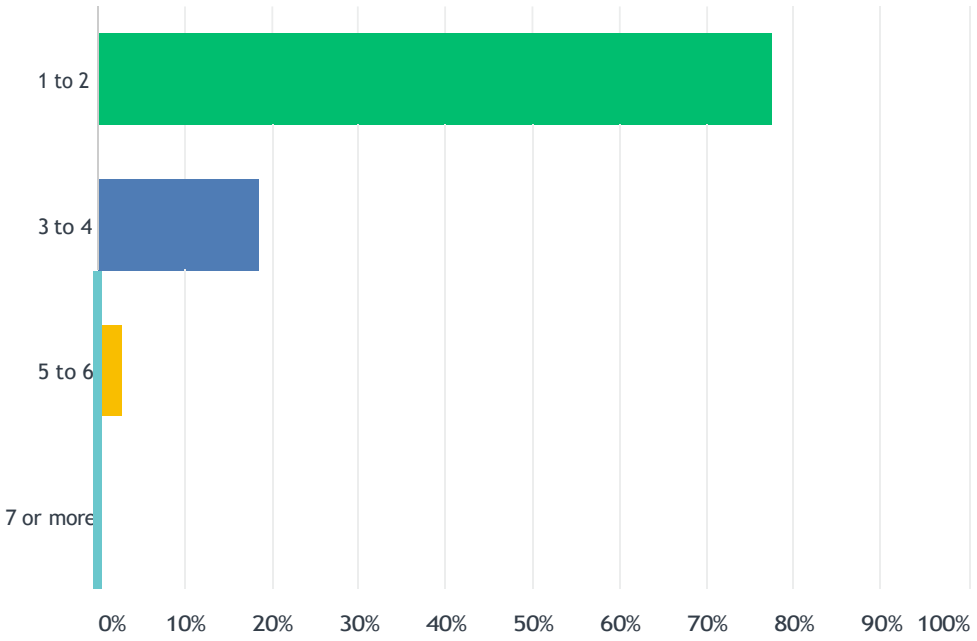
Answered: 134 Skipped: 147



ANSWER CHOICES	RESPONSES	
65+	37.31%	50
55-64	35.82%	48
35-44	12.69%	17
45-54	11.19%	15
25-34	2.99%	4
Under 18	0.00%	0
18-24	0.00%	0
TOTAL		134

Q29 How many people live in your household?

Answered: 134 Skipped: 147



ANSWER CHOICES	RESPONSES	
1 to 2	77.61%	104
3 to 4	18.66%	25
5 to 6	2.99%	4
7 or more	0.75%	1
TOTAL		134

Q30 What is your personal residence/business zip code?

Answered: 133 Skipped: 148

#	RESPONSES	DATE
1	28562 28562	1/27/2021 2:44 PM
2	28560 28560	1/27/2021 12:42 AM
3	28560 28560	1/22/2021 7:22 PM
4	28560 28560	1/22/2021 11:57 AM
5	28562 28562	1/21/2021 8:56 AM
6	28562 28562	1/20/2021 11:42 AM
7	28560 28560	1/13/2021 12:17 PM
8	28562 28562	1/12/2021 3:33 PM
9	28560 28560	1/12/2021 2:21 PM
10	28560 28560	1/12/2021 7:17 AM
11	28560 28560	1/11/2021 3:34 PM
12	28562 28562	1/11/2021 9:07 AM
13	28562 28562	1/10/2021 8:32 PM
14	28560 28560	1/10/2021 7:38 PM
15	28560 28560	1/10/2021 1:21 PM
16	28519 28519	1/10/2021 7:44 AM
17	28562 28562	1/9/2021 9:47 PM
18	28560 28560	1/9/2021 8:38 PM
19	28562 28562	1/9/2021 7:48 PM
20	28562 28562	1/9/2021 2:09 PM
21	28562 28562	1/9/2021 10:43 AM
22	28560 28560	1/9/2021 9:29 AM
23	28562 28562	1/9/2021 8:22 AM
24	28560 28560	1/9/2021 1:51 AM
25	28560 28560	1/8/2021 11:11 PM
26	28562 28562	1/8/2021 10:33 PM
27	28560 28560	1/8/2021 8:04 PM
28	28562 28562	1/8/2021 7:59 PM
29	28562 28562	1/8/2021 7:40 PM
30	28562 28562	1/8/2021 6:29 PM
31	28562 28562	1/8/2021 5:51 PM
32	28560 28560	1/8/2021 3:09 PM
33	28562 28562	1/8/2021 2:41 PM
34	28562 28562	1/8/2021 1:33 PM
35	28562 28562	1/8/2021 12:32 PM
36	28562 28562	1/8/2021 12:11 PM
37	28562 28562	1/8/2021 10:46 AM

38	28562 28562	1/5/2021 3:47 PM
39	28560 28560	1/5/2021 12:38 PM
40	28560 28560	12/28/2020 12:09 PM
41	28562 28562	12/27/2020 7:04 PM
42	28562 28562	12/26/2020 6:29 AM
43	28562 28562	12/24/2020 11:30 AM
44	28560 28560	12/17/2020 6:25 PM
45	28560 28560	12/17/2020 3:54 PM
46	28560 28560	12/17/2020 2:26 PM
47	28560 28560	12/17/2020 1:10 PM
48	28562 28562	12/17/2020 12:03 PM
49	28560 28560	12/17/2020 11:29 AM
50	28562 28562	12/17/2020 9:16 AM
51	28562 28562	12/17/2020 9:15 AM
52	28562 28562	12/16/2020 10:47 AM
53	28560 28560	12/15/2020 9:53 PM
54	28562 28562	12/15/2020 1:43 PM
55	28560 28560	12/15/2020 1:39 PM
56	28560 28560	12/14/2020 5:28 PM
57	28560 28560	12/14/2020 4:58 PM
58	28560 28560	12/14/2020 3:07 PM
59	28562 28562	12/14/2020 11:37 AM
60	28562 28562	12/13/2020 8:37 PM
61	28562 28562	12/13/2020 8:01 PM
62	95000 95000	12/13/2020 7:50 PM
63	28562 28562	12/13/2020 7:44 PM
64	28560 28560	12/13/2020 7:33 PM
65	28560 28560	12/13/2020 7:27 PM
66	28560 28560	12/13/2020 6:05 PM
67	28560 28560	12/13/2020 12:28 PM
68	28560 28560	12/13/2020 10:59 AM
69	28550 2850	12/12/2020 6:10 PM
70	28560 28560	12/12/2020 11:50 AM
71	28562 28562	12/12/2020 11:33 AM
72	28560 28560	12/12/2020 8:25 AM
73	28562 28562	12/12/2020 7:24 AM
74	28560 28560	12/12/2020 6:51 AM
75	28560 28560	12/11/2020 10:04 PM

76	28560 28560	12/11/2020 9:27 PM
77	28560 28560	12/11/2020 7:51 PM
78	28562 28562	12/11/2020 7:43 PM
79	28560 28560	12/11/2020 7:09 PM
80	28560 28560	12/11/2020 6:29 PM
81	28562 28562	12/11/2020 4:12 PM
82	28560 28560	12/11/2020 2:32 PM
83	28560 28560	12/11/2020 2:28 PM
84	28560 28560	12/11/2020 2:08 PM
85	28560 28560	12/11/2020 2:06 PM
86	28560 28560	12/11/2020 1:59 PM
87	28560 28560	12/11/2020 1:58 PM
88	28560 28560	12/11/2020 10:52 AM
89	28560 28560	12/10/2020 9:00 PM
90	28562 28562	12/10/2020 12:38 PM
91	28560 28560	12/10/2020 7:31 AM
92	28562 28562	12/9/2020 7:25 PM
93	28560 28560	12/9/2020 5:41 PM
94	28560 28560	12/8/2020 9:50 PM
95	28562 28562	12/8/2020 12:26 PM
96	28550 28550	12/8/2020 4:50 AM
97	28562 28562	12/7/2020 5:16 PM
98	28562 28562	12/7/2020 2:50 PM
99	28562 28562	12/7/2020 11:05 AM
100	28560 28560	12/7/2020 10:50 AM
101	28560 28562 28562/28560	12/6/2020 9:50 PM
102	28560 28560	12/6/2020 8:53 PM
103	28560 28560	12/6/2020 6:23 PM
104	28562 28562	12/6/2020 2:10 PM
105	28562 28562	12/6/2020 12:01 PM
106	28560 28562 28560/28562	12/6/2020 11:28 AM
107	28560 28560	12/6/2020 7:16 AM
108	28560 29560	12/5/2020 6:39 PM
109	28560 28560	12/5/2020 5:52 PM
110	28562 28562	12/5/2020 4:26 PM
111	28562 28562	12/5/2020 11:02 AM
112	28560 28560	12/5/2020 10:02 AM
113	28562 28562	12/5/2020 9:50 AM

114	28560 28560	12/5/2020 9:29 AM
115	28562 28562	12/5/2020 8:02 AM
116	28560 28560	12/5/2020 12:02 AM
117	28560 28560	12/4/2020 8:28 PM
118	28562 28562	12/4/2020 7:17 PM
119	28562 28562	12/4/2020 6:45 PM
120	28560 28560	12/4/2020 6:37 PM
121	28560 28560	12/4/2020 5:05 PM
122	28560 28560	12/4/2020 4:59 PM
123	28562 28562	12/4/2020 4:32 PM
124	28560 28560	12/4/2020 4:21 PM
125	28560 28560	12/4/2020 3:49 PM
126	28560 28560	12/4/2020 3:47 PM
127	28560 28560	12/4/2020 3:00 PM
128	28560 28560	12/4/2020 2:43 PM
129	28562 28562	12/4/2020 2:24 PM
130	28562 28560	12/4/2020 2:09 PM
131	28562 28562	12/4/2020 2:08 PM
132	28562 28562	12/4/2020 2:07 PM
133	28562 28562	12/4/2020 1:34 PM

Q31 Please provide any additional comments or concerns regarding your thoughts on New Bern’s community values, actions to build resilience, and historic preservation.

Answered: 44 Skipped: 237

#	RESPONSES	DATE
1	Want to learn more Would like to see more flood and natural disaster education for homeowners within Historic Riverside. Will reach out to others within the neighborhood so they can participate and find out more about this program.	1/27/2021 12:42 AM
2	Collaborate with County Need experts to guide us This project is a great first step in making New Bern more resilient. We need experts ready for small and large flooding events so both local government and business owners/homeowners can make smart decisions to prepare for and respond to events. The insurance industry should be one major source of helping us become a model community adapting to sea level rise so let's get them engaged with us. The National Trust for Historic Preservation, the State Historic Preservation Office, and the New Bern Historic Properties Commission along with NC State's College of Design should help us in an ongoing way with historic properties and best methods of preparing for and recovering from flood events that affect historic properties. Thanks.	1/22/2021 7:22 PM
3	Merge park efforts Merge the State Park effort with completing the park at the Martin / Merietta Park . Will provide greater return on investment than any other project envisioned.	1/13/2021 12:17 PM
4	Protect elderly Protect low-income Just make sure that our most vulnerable are not second thought actions.	1/11/2021 9:07 AM
5	Flood wall construction Flood wall construction	1/9/2021 9:47 PM
6	Want to learn more Interested in receiving more information as plans develop	1/9/2021 7:48 PM
7	Collaborate with County Let’s work together to get this done. Our community is in need of this	1/8/2021 7:40 PM
8	Don't raise taxes Don’t raise taxes!	1/8/2021 6:29 PM
9	Preservation for all Prioritize science Prioritize science and knowledge over things. Preserving people, knowledge and wisdom has far greater benefit to a society and a community than protecting "things".	1/8/2021 12:32 PM
10	Low lying areas in danger Living along any coastal area has its risks. My concern is water and wind in ENC. Being prepared is important, but any low lying areas will eventually have no choice but to move if rising waters make living/working impossible due to constant flooding. I hope this is many decades off, but planning/mitigating now and preventing building in low lying areas may help prevent more problems in the future.	1/5/2021 3:47 PM
11	Financial incentives Update historic policies 1. Financial incentives and assistance need to be implemented sooner than later. 2. New Bern's Historic Preservation Commission and Guidelines are obsolete and often incompatible with the consequences of climate change, sea level rise, catastrophic weather incidents, and financial realities for many homeowners.	1/5/2021 12:38 PM
12	Protect elderly Protect low-income I am very happy that New Bern is being so foreword thinking. I think New Bern needs to look at their combined risks from sea level rise, storm surge, and stormwater flooding. I also think New Bern needs to protect socially vulnerable and marginalized people like the elderly and people of color.	12/27/2020 7:04 PM
13	Mitigate surge flows The Martin Marietta park is within the 100 yr flood plain, but for immediate storm surge water shunting, perhaps a canal connecting the barge channel from bachelor Creek into the park waters could be a small step mitigating surge flows on the oaks road neighborhood.	12/24/2020 11:30 AM
14	Preservation for all We need to be focused on much more than the historic area. Preservation of EVERYONE's home, health and safety needs to be a priority.	12/17/2020 3:54 PM
15	Post Disaster Recovery The best response/plan for any future flooding is how to help people to evacuate (such as extra gas for filling up or buses to help those without cars) and to have a good after incident plan for clean up and safety. New Bern cleaned up downtown quickly after Florence. It was very impressive.	12/17/2020 2:26 PM
16	Take action! City of new bern does little or nothing to mitigate flooding of my neighborhood. Creek flooded just yesterday.	12/17/2020 1:10 PM
17	Take action! Great historic water community which needs to be more aware of how dangerous flooding and hurricanes will destroy its existence.	12/17/2020 9:15 AM

18	Collaborate with County Combined efforts to work with Craven County	12/15/2020 1:43 PM
19	Managed retreat Managed retreat (“the purposeful, coordinated movement of people and assets out of harm’s way”) is the only viable long term option. There's historic precedent: The earliest well-documented relocation of an entire town in the United States dates back to 1881. Residents of Niobrara, Missouri, used oxen and horses to pull their buildings a mile and a half to higher ground after a major flood. Since then, some two dozen communities in the United States, including Niobrara again in 1971, have pulled up stakes to head for safer terrain. Although moving a group of people is not a new concept, managed retreat presents numerous complex challenges - legal, logistical, ethical, political, financial, and architectural. Communities, and community cultures, aren’t easily transported and retained. But all indications are that researchers, policymakers, and the general public will need to confront these challenges with increasing frequency in the coming decades. That, in essence, is your challenge and your way forward. To make this happen the local government will need to have a plan that literally outlives those who create it. Give that some thought, then get started. Nature isn't going to wait.	12/14/2020 5:28 PM
20	Preserve tourism efforts Take action! I love this community and feel that the Historic District is most important to the future of our City/County. It would be extremely negligent to ignore the problem. Would like to know current history of climate change compared to the past several hundred years. While I believe this is a natural phenomenon we would be foolish to ignore the potential consequences of any future change.	12/14/2020 3:07 PM
21	Maintain storm drains Storm drains need attention. While not much use on severe flood, perpetual clogging can turn a non-event into one much more troublesome. Good luck with this project.nit is needed, with 2021 already being forecast as "active."	12/13/2020 10:59 AM
22	Thank you! Thank you for undertaking this project!	12/12/2020 6:10 PM
23	Preserve tourism efforts Much of New Bern's income is from tourism. Historic sites, homes, attractions, etc. must be kept safe from natural disasters. We've been here 300 years. It's time to do something.	12/12/2020 11:50 AM
24	See my prior comments	12/12/2020 11:33 AM
25	Building height restrict More open space on water Not storm related new homes/businesses or renovations should allow properties/buildings to be over 2 stories. Need more open space, not more building along the riverfront.	12/12/2020 6:51 AM
26	Take action! We need to take immediate action to prepare for subsequent storms since it's no longer of matter of it but when.	12/11/2020 7:51 PM
27	Ownership responsibility While I love supporting my community, I feel that people buying into historic properties or areas prone to flooding should bear responsibility for their actions. I shouldn't have to bail someone out who can afford those properties, when they wouldn't do the same for me.	12/11/2020 7:09 PM
28	Code enforcement Place more emphasis on code enforcement and addressing negligent owners. Too many issues remain since Florence that are not done or being handled	12/11/2020 10:52 AM
29	Disaster Response Teams Create Local Disaster Response Teams	12/9/2020 7:25 PM
30	Reclaim land for parks The wealthy can fend for themselves. support the middle class and the poor. Whenever possible reclaim as much private land near the rivers and convert it to marsh and parks. for example Chicago has 8 Miles of parks along the lakeshore. They started the reclamation after the fire in 1871 and consistently bought land when it became available. Public land along the rivers would be a be an economic attraction. Private property costs more money to insure and defend.	12/8/2020 12:26 PM
31	Encouraging development The development going on in the 5 points area is extremely encouraging	12/7/2020 11:05 AM
32	Better coordination better coordination of resources for restoration and assistance for all in need of help	12/6/2020 2:10 PM
33	Retrofit historic rebuild Historic preservation without requiring historic materials will go a long way in flood mitigation/recovery	12/6/2020 11:28 AM
34	Take action! Unfortunately, it may be necessary to lose many historical places but New Bern	12/6/2020 7:16 AM

	can survive. Now is the time to take action. Tomorrow is too late. Thank you for allowing me to add my thoughts to this issue.	
35	Take action! Flooding is only going to become more severe and more frequent. Get to work!	12/5/2020 9:50 AM
36	Sea level rise adaptation Construct a river walk from Riverside to Lawson Creek Park with the ability to install sea wall panels or inflatable barriers for hurricanes.	12/5/2020 9:29 AM
37	Comp. flood review Based on personal observations of non-storm related King Tides already flooding waterfront streets in Beufort, NC, it is my opinion that there will be regular non storm related flooding of downtown NB streets by 2040. The critical first step must be to have a comprehensive flood review based on current metrics and to evaluate IF the downtown area is salvageable, and what sort of construction would be needed to buttress the long low river front surrounding downtown New Bern on three sides to prevent ongoing flooding over say the next 100 years. This entire Resiliency Program may be missing the real criticality, that being the down town area must be largely relocated, to say the Hwy 43 Interchange to stabilize this community indefinitely.	12/5/2020 8:02 AM
38	Thank you! Thank you for seeking my input	12/4/2020 7:17 PM
39	Thank you! thank you for this survey to gather information	12/4/2020 6:45 PM
40	Take action! We have enough resources City staff and aldermen have been resistant to bringing in outside expertise to address resiliency issues. Hiring a consultant to conduct resiliency studies will provide information that Captain Obvious could have provided. The city should do more to help communities like Duffyfield deal with recurrent flooding than helping historic property owners, like myself, in flood mitigation. We have access to information and resources that many in other parts of the city do not. Infrastructure improvements - street redesign, pump and sewer improvements, etc - will do more to mitigate flooding than spending money on education programs.	12/4/2020 5:05 PM
41	None none	12/4/2020 4:59 PM
42	Take action! For god's sake move to an action plan. Other cities have dealt with this and we should learn from best practices. Some of the ranking question were not clear about 1 to 6.	12/4/2020 2:43 PM
43	Thank you! Thank you for all you are doing!	12/4/2020 2:08 PM
44	Take action! When action is shown to be prudent, take action. No more studies.	12/4/2020 1:34 PM

APPENDIX D

FLOOD HAZARD HISTORY (NCDC)

NOAA National Climatic Data Center Storm Events Database						
City of New Bern Related Events - Craven County, North Carolina						
Event Type	**Date**	**Time**	**Number of Deaths**	**Number of Injuries**	**Property Damage**	**Crop Damage**
Coastal Flood	10/4/2015	11:00 a.m.-2:00 p.m.	0	0	0.00K	0.00K
Narrative	Low pressure south of eastern North Carolina combined with strong high pressure to the north producing strong onshore flow October 2nd through the 5th. These onshore winds led to locally heavy rain and significant coastal flooding in many areas. Large swells from distant Hurricane Joaquin also enhanced waves along the coast leading to very rough surf. *Persistent northeast flow led to coastal flooding for areas adjacent to the Pamlico Sound and Neuse River, including parts of the New Bern waterfront.* Water levels rose 4.5 to 5.5 feet above normal at times adjacent to the Pamlico Sound flooding many roads and making them impassable. *Waterfront roads were also flooded and closed at times in New Bern.* High water at times entered a few residences and businesses, however, no significant damage was reported.					
Drought	6/1 to 6/30/2011	12:00 a.m. to 11:59 p.m.	0	0	0.00K	0.00K
Narrative	Severe drought (D2) began impacting Eastern North Carolina in early June. Since last winter, the region has received well below normal precipitation. Stream flows over Eastern North Carolina were well below normal with several sites showing less than ten percentile range of streamflow. Groundwater conditions were listed as much below to record low levels across the region. *As of June 1st, Local Climatological Data Sites in New Bern and Cape Hatteras observed fifty-one and seventy-seven percent of normal precipitation, respectively.* As a result of these conditions, the North Carolina Department of Environment and Natural Resources banned open burning in Eastern North Carolina. Hot and dry conditions also helped maintain wildfires in Onslow and mainland Dare Counties. Severe drought (D2) designation began for Craven County in early June 2011. No significant precipitation occurred during the month with only typical summertime afternoon showers and thunderstorms.					
Drought	7/1 to 7/31/2011	12:00 a.m. to 11:59 p.m.	0	0	0.00K	0.00K
Narrative	Severe drought (D2) began impacting Eastern North Carolina in early June. Since last winter, the region has received well below normal precipitation. Stream flows over Eastern North Carolina were well below normal with several sites showing less than ten percentile range of streamflow. Groundwater conditions were listed as much below to record low levels across the region. *As of June 1st, Local Climatological Data Sites in New Bern and Cape Hatteras observed fifty-one and seventy-seven percent of normal precipitation, respectively.* As a result of these conditions, the North Carolina Department of Environment and Natural Resources banned open burning in Eastern North Carolina. Hot and dry conditions also helped maintain wildfires in Onslow and mainland Dare Counties. Severe drought (D2) designation began for Craven County in early June 2011. No significant precipitation occurred during the month with only typical summertime afternoon showers and thunderstorms.					

Event Type	Date	Time	Number of Deaths	Number of Injuries	Property Damage	Crop Damage
Drought	8/1 to 8/31/2011	12:00 a.m. to 11:59 p.m.	0	0	0.00K	0.00K
Narrative	Severe drought (D2) began impacting Eastern North Carolina in early June and worsened to extreme drought (D3) by early July for several extreme eastern North Carolina counties. *As of mid-August, and prior to Hurricane Irene, Local Climatological Data Sites in New Bern and Cape Hatteras observed fifty-three and seventy-six percent of normal precipitation, respectively*. Hurricane Irene brought a much needed 7 to 14 inches of precipitation to the region in late August, which diminished drought impacts below D0 for all counties, except Duplin that remains abnormally dry (D0). Prior to Hurricane Irene, the region had received well below normal precipitation since last winter. As a result of these conditions, the North Carolina Department of Environment and Natural Resources banned open burning in Eastern North Carolina through early August but lifted the ban by mid-month.Extreme drought (D3) designation continued for Craven County through late August 2011 just prior to Hurricane Irene. Significant rainfall occurred across the county with the passage of Hurricane Irene. *Storm total rainfall from Hurricane Irene at New Bern (14.79 inches).* Havelock (12.64 inches), and Trent Woods (10.94 inches) indicated sufficient precipitation to remove drought designation for Craven County.					
Flash Flood	9/16/1999	3:51 a.m. - 10:00 a.m.	0	0	Not reported.	Not reported.
Narrative	Heavy rains continued to fall over eastern North Carolina in association with Hurricane Floyd. *Widespread heavy rain fell west of a line from Beaufort to Columbia.* Doppler Radar estimated 4 to 8 inches of rain with local amounts of 6 to 10 inches. New River Marine Corp Air Station reported a storm total precipitation amount of 8.26 inches. Tropical Storm Dennis left most rivers and streams in eastern North Carolina swollen and near flood stage. The additional runoff from Hurricane Floyd produced some of the worst flooding of the century. Many rivers rose to over 15 feet above flood stage.					
Flood	9/12/2014	6:19-6:55 p.m.	0	0	0.00K	0.00K
Narrative	Numerous showers and scattered thunderstorms along a slow moving cold front crossed eastern North Carolina during the afternoon and evening of September 12th, 2014. Very heavy downpours led to several reports of flooding over the southern parts of the region. *Heavy rain northwest of New Bern led to flooding along Asbury Road. Logs were reported to be floating in the road.*					
Heavy Rain	8/18/2014	4:25 p.m.	0	0	0.00K	0.00K
Narrative	A stalled frontal boundary over eastern North Carolina combined with an approaching mid-level disturbance to produce strong thunderstorms across the area. Some storms became severe with a few hail reports. *Heavy rain report from a CoCoRaHS observer near New Bern reported 1.47 inches of rain in 30 minutes resulting in minor flooding of low-lying areas.*					
Heavy Snow	12/03 to 12/04/2000	7:00 a.m. to 4:00 p.m.	0	0	Not reported.	Not reported.
Narrative	A heavy snow event unfolded over eastern North Carolina as a Northeaster developed off the North Carolina coast. An average of six inches of snow fell across much of the Coastal Plain. Reports of 9 to 13 inches of snow were not uncommon across Pitt and Martin counties. *The heavy snow fell as far east as Plymouth, Washington, New Bern, and Jacksonville.*					

Event Type	Date	Time	Number of Deaths	Number of Injuries	Property Damage	Crop Damage
Hurricane	07/12 to 07/13/1996	10:00 a.m. to 6:00 a.m.	0	0	12M	16M
Narrative	Hurricane Bertha slammed into the North Carolina coastline between Surf City and North Topsail Beach causing severe damage to property, utilities, and roads. Hardest hit were agricultural crops which suffered losses in excess of $126 million. Heaviest damage was in Topsail Beach and all of Onslow County and up the coast to Emerald Isle in Carteret County. In Onslow alone, 199 structures were destroyed (117 were mobile homes). An 8-10 foot storm surge struck Swansboro and Emerald Isle. Several businesses were flooded. Water flowed through the streets of Belhaven in Beaufort County where the surge was around 7 feet. *In New Bern, numerous boats were sunk or damaged at 3 private marinas*. Fishing piers were demolished all along the coast. New River (Marine Corps Air Station in Jacksonville) reported a peak wind gust of 108 mph. Rainfall across the region ranged from 8 inches in the Hofman Forest (Onslow) to 6 1/2 inches in Broad Creek to over 5 1/2 in Snow Hill and Washington.					
Hurricane	09/04 to 09/06/1996	6:00 p.m. to 5:00 p.m.	0	0	10M	TBD
Narrative	Hurricane Fran moved onshore near Cape Fear Thursday evening (9/6) and raced north toward Raleigh cutting a swath of destruction. The Category 3 hurricane destroyed or damaged 90% of the homes in North Topsail Beach. The town hall and police station were destroyed. A 15 foot storm surge cut a 100-foot-wide inlet through the middle of the island. A Camp Lejeune-based Marine lost his life when he and two others mistakenly drove onto the island at the height of the storm. State Route 1568 was washed out and NC 210 was covered with sand. Damage in North Topsail and Onslow County alone exceeded $500 million as 6,688 structures were destroyed or damaged. In Carteret County, Emerald Isle reported 67 homes destroyed and 409 with major damage. Thirty-three mobile homes were destroyed. The Emerald Isle fishing pier was destroyed and Bogue Sound Pier lost 150 feet. Erosion along the dunes ranged from 5 to 20 feet. Winds gusted to 100 mph at Atlantic Beach. Storm surge in Swansboro was measured at 10 feet. Several businesses along the waterfront were destroyed and water covered Main Street. Storm surges approaching 9 feet flooded portions of Washington and Belhaven. The storm surge in Washington was the highest since the September 3, 1912 unnamed hurricane. *New Bern had a storm surge on the Neuse River of 10 feet. One bridge was closed when an approach road collapsed.* Other bridges were out near Stella and Swansboro. One man was killed near Greenville when his car struck a tree. In Duplin County, near Rose Hill, a woman perished when her chimney collapsed through the house. A woman died when a tree fell through her trailer in Catherine Lake, Onslow County. Wind gusts measured included 94 mph at the New River Marine Corps Air Station in Jacksonville and 92 mph at Duke Marine Labs in Beaufort.					

Event Type	Date	Time	Number of Deaths	Number of Injuries	Property Damage	Crop Damage
Hurricane	08/30 to 08/31/1999	12:00 a.m. to 11:59 p.m.	0	0	TBD	TBD
Narrative	Hurricane Dennis, a minimal Category II Hurricane, approached the coast of North Carolina on August 30th. By 5 a.m. the hurricane was about 100 miles south southwest of Cape Lookout. By 1 p.m. the hurricane quickly moved to 75 miles south of Cape Hatteras and was downgraded to a Category I Hurricane. By 11 p.m. Tuesday, August 31st the hurricane was downgraded to a tropical storm with a position of about 105 miles west of Cape Hatteras. Tropical Storm Dennis was drifting at 4 mph and would remain in this quasi-stationary position for the next few days...only to return to eastern North Carolina and make landfall on September 4th along the Core Banks just north of Cape Lookout. For most counties Hurricane Dennis left relatively little in its wake although on the Outer Banks beach erosion and the storm tide effects were extreme. Unfortunately, the hurricane approached eastern North Carolina during one of the highest astronomical tides of the month. The dune structure on Hatteras Island was breeched in numerous locations. Just north of Buxton...a 3,000 foot long section of Highway 12 was completely lost. Ocean storm surges were 3 to 4 feet above normal. *Along the Neuse River...tides were 8 to 10 feet above normal.* Numerous homes were flooded in the Harlowe...Adams Creek...and the Club Foot Creek area. Many reported this was the highest water levels they had ever seen. *In the New Bern area near the Trent River...6 feet of water was reported.* Oriental in Pamlico County reported tides 6 to 8 feet above normal. Residents of Cedar Island in Carteret County...Ocracoke in Hyde County...and others in Pamlico County reported this was the highest water since 1933. The most damaging winds were found along the Outer Banks. The Cape Lookout C-Man station reported sustained winds of 70 mph with gusts up to 91 mph. The greatest rainfall occurred over Carteret...southern Craven...Outer Banks Hyde...and Outer Banks Dare County. Doppler radar estimates were near 6 to 8 inches with isolated areas of 8 to 10. A cooperative observer in Morehead City reported 7.83 inches. No tornadoes were reported and only minor freshwater flooding was reported. No fatalities were reported in direct relationship to Hurricane Dennis. See the September storm data statistics for more information and damage estimates.					

Event Type	Date	Time	Number of Deaths	Number of Injuries	Property Damage	Crop Damage
Hurricane	9/14 to 9/16/1999	11:00 p.m. to 1:00 p.m.	2 (Direct)	0	1.5M	2M

Narrative

Hurricane Floyd caused the largest peace time evacuation in the nation's history. Floyd also caused massive record flooding across inland sections of eastern North Carolina. At one time Floyd was classified as a category 4 hurricane on the Saffir/Simpson scale and will likely be categorized as one of the nation's most costly hurricanes in the 20th century.

Tropical Depression number eight was detected by the National Hurricane Center at 16:00 EST on September 7th. The broad center was nearly 1,000 miles west of the Lesser Antilles. At that time, the depression was moving toward the west at 14 mph with maximum sustained winds of 30 mph. Within 12 hours the depression gained strength, became a tropical storm, and was named Floyd. As it neared the Virgin Islands on the afternoon of September 10th, just 415 miles west of San Juan, Floyd became a hurricane. Hurricane Floyd rapidly intensified and by the evening of September 12th was classified as a category 4 hurricane. The hurricane continued to intensify. At its peak on the morning of September 13th, the winds increased to 155 mph and the central pressure bottomed-out at 921 mb. The position was 525 miles east-southeast of Miami and moving west at 14 mph.

Fortunately for Floridians, Hurricane Floyd soon made the expected turn to the north. By 17:00 EST on September 14th the entire North Carolina coast was under a hurricane watch and at midnight up-graded to a hurricane warning. That same night the first outer rainbands began affecting eastern North Carolina and in turn, reports of flooding began filtering into the National Weather Service office in Morehead City/Newport (MHX). At least 40 official shelters were open across the county warning area.

Severe weather and rainfall preceded landfall. By Wednesday night, September 16th, 20 tornado warnings had been issued with over half being verified. The greatest rainfall estimates from the MHX Doppler radar were over Duplin...Jones...Lenoir...Greene...Pitt...Martin...Craven...and Onslow Counties. Estimates were near 6 to 10 inches with isolated areas of 12 to 15 inches. The greatest rainfall report was from a cooperative observer in Washington...15.48 inches. Tyrrell...eastern Carteret...eastern Pamlico... Hyde...and Dare Counties all had estimates less than 3 inches.

Hurricane Floyd made landfall on the morning of September 16th near North Topsail Beach as a category 2 hurricane. The eye moved northeast over Jacksonville...New Bern...Washington...Plymouth and continued over the eastern shores of Virginia. As the hurricane moved over the eastern coast of North Carolina, it accelerated and weakened. It lost its tropical characteristics early on the 17th. The University of Oklahoma Doppler-On-Wheels (DOW) team was positioned at Topsail Beach. Around 02:00 EST the DOW recorded a sustained wind of 81 mph with gusts to 105 mph. The peak inland report in the MHX 15-county warning area was 82 mph at Cherry Point Marine Corp Air Station (NKT). The peak offshore report was 96 mph at Duck Pier. Similar to rainfall, the strongest ocean storm surges occurred west and northwest of the eye. Ocean storm surges were about 4 to 6 feet above normal...generally affecting Onslow...Carteret...and Hyde Counties. This caused extensive beach erosion on the south facing beaches. Ocracoke Island officials reported at least 10 new dune breaks along Highway 12. In Carteret County, Pine Knoll Shores lost some 50 feet of beach. Emerald Isle lost an average of 14 feet and 52 public beach access walkways. The Oceanana Pier on Atlantic Beach lost a 200 foot section and the remaining 200 foot section of Iron Steamer Pier that Hurricane Bonnie spared was also wiped out. Along the Albemarle Sound...storm tides were about 5 to 6 feet above normal. The Pamlico River storm tides were around 6 to 8 feet above normal. Water levels were especially high in Hyde County...Sladesville and Scranton. *Along the Neuse River storm tides were also near 6 to 8 feet above normal...especially in the Core Creek area.* Extreme flooding was experienced across most counties. Inland flooding exceeded Hurricane Bertha...Fran...Bonnie... and Dennis combined. Most counties reported their worst flooding ever. The Tar River in Greenville and the Neuse River in Kinston were nearly 15 feet above their flood stages of 13 and 14 feet, respectively. The Tar River remained above flood stage for nearly two weeks while the Neuse River remained above flood stage for over a month. The Northeast Cape Fear River in Chinquapin was 8 to 10 feet above the flood stage of 13 feet. The Roanoke River in Williamston rose to nearly 3 feet above its flood stage. Unbelievable numbers of homes were covered with water and over half a million customers throughout the county warning area were without power. In Greenville alone a 100 acre parcel of land would be needed to store all the mobile homes that were destroyed due to flooding. Unofficially the flooding from Hurricane Floyd has been compared to a 500 year flood. At least 13 fatalities have been reported during the event in the 15 county warning area. Unfortunately, a majority of the deaths could have been avoided had the victims not driven through flooded roadways. As with most hurricanes, inland flooded is now responsible for the largest percentage of fatalities.

Event Type	Date	Time	Number of Deaths	Number of Injuries	Property Damage	Crop Damage
Storm Surge/Tide	4/15/2005	12:00 p.m. to 6:00 p.m.	0	0	25K	TBD
Narrative	A Nor'easter affected eastern North Carolina during the middle of the month resulting in persistent strong wind gusts measured from near 40 mph to slightly over 60 mph. This in combination with large ocean swells resulted in coastal flooding and high surf from north of Hatteras on the ocean side in Dare county, *and sound-side flooding along western portions of the Pamlico sound including the Neuse and Trent Rivers, affecting Craven, Pamlico, and eastern Carteret counties.* Water level rises between 3 to 5 feet resulting in many road closures and some property damage.					
Tropical Storm	10/08 to 10/09/2016	9:00 a.m. to 6:00 p.m.	0	0	TBD	TBD
Narrative	Hurricane Matthew moved northeast offshore of the North Carolina coast late on October 8th through October 9th. Widespread heavy rain developed on October 8th and continued through the morning on October 9th as Matthew approached and moved offshore of the coast. Rainfall ranged from 2 to 4 inches on the southern beaches to 8 to 12 inches inland. This rain led to significant flash flooding over much of eastern North Carolina during the afternoon of October 8th through the morning of October 9th. Many roads were washed out and impassable for days from the serious flash flooding. Devastating river flooding then occurred several days after Matthew as most main-stem rivers exceeded major flood levels. Strong winds of 40 to 60 mph inland and 60 to 80 mph along the coast occurred as Matthew passed offshore mainly during the evening of October 8th through the morning of the 9th. These winds led to numerous downed trees and power lines across the region with widespread power outages that lasted several days in some areas. Storm surge inundation was mainly 1 to 3 feet above ground level along the coast; however, inundation of 3 to 5 feet above ground level was observed on the sound side of the Outer Banks.There were six confirmed fatalities across the area with five in Lenoir County and one in Pitt County. Dollar damages totals have not been completed but will likely exceed 200 million dollars with significant agricultural losses.Widespread heavy rain and strong winds developed over the region from mid-morning on October 8th through the morning of October 9th. *Rainfall was generally 3 to 5 inches over the southern part of the county to 5 to 8 inches over the north, with a storm total of 7.85 inches reported west of New Bern.* This heavy rain led to local flash flooding over much of the county. Major river flooding developed on the Lower Neuse River days after the hurricane. The river crested at 20.51 feet on October 15th at Fort Barnwell...flood stage is 12.5 feet. Significant flooding also occurred along Swift Creek. *Numerous roads were closed across the northern part of the county with many homes and businesses flooded*. Peak wind gust of 62 mph was recorded at the Cherry Point ASOS at 1254 am on October 9th with a low pressure of 993.4 mb at the Cheery Point ASOS. Storm surge inundation of 1 to 3 feet above ground occurred along the lower Neuse River impacting several roads and a few structures.					

Event Type	Date	Time	Number of Deaths	Number of Injuries	Property Damage	Crop Damage
Tropical Storm	9/18/2018	12:00 a.m.	1 (Indirect)	0	TBD	TBD
Narrative	Hurricane Florence was a long-lived Cape Verde hurricane and the wettest tropical cyclone on record in the Carolinas. The sixth named storm, third hurricane, and the first major hurricane of the 2018 Atlantic hurricane season, Florence originated from a strong tropical wave that emerged off the west coast of Africa on August 30, 2018. Florence became a tropical depression near Cape Verde on August 31st and progressed west-northwest, becoming a tropical storm on September 1. Florence strengthened rapidly on September 4th-5th, becoming a Category 4 storm on the Saffir-Simpson wind scale with maximum sustained winds of 130 mph. Florence weakened to a tropical storm by September 7th, but the system regained hurricane strength on September 9 and major hurricane status with winds of 140 mph on September 10. However, increasing wind shear caused the storm's winds to gradually weaken over the next few days. However, the storm's wind field continued to grow. By the evening of September 13th, Florence had been downgraded to a Category 1 hurricane. Hurricane Florence made landfall near Wrightsville Beach early on Saturday September 15th and weakened further as it slowly moved inland. Florence produced extensive wind damage along the North Carolina coast from Cape Lookout, across Carteret, Onslow, Pender, and New Hanover counties. Thousands of downed trees caused widespread power outages to nearly all of eastern North Carolina. The historic legacy of Hurricane Florence will be record breaking storm surge of 9 to 13 feet and widespread devastating rainfall of 20 to 30 inches, locally up to 36 inches, which produced catastrophic and life-threatening flooding. *The hardest hit areas included New Bern, Newport, Belhaven, Oriental, North Topsail Beach and Jacksonville, along with Down east Carteret County, or basically south of a line from Kinston to Cedar Island.* A storm total rainfall of 34.00 inches was reported in Swansboro, while the NWS office in Newport recorded 25.20 inches. Wind gusts of 106 mph were reported at Cape Lookout with 105 mph at Fort Macon. A 67 year old male fell and fractured his neck while cleaning storm debris.					
Tropical Storm	8/4/2020	1:00 a.m. to 6:30 a.m.	0	0	TBD	TBD
Narrative	Hurricane Isaias originated from a vigorous tropical wave off the coast of Africa that was first identified by the National Hurricane Center on July 23, 2020. The tropical wave gradually became more organized and became Tropical Storm Isaias on July 30. Isaias marked the earliest ninth named storm on record, surpassing 2005's Hurricane Irene by eight days. Isaias strengthened into a Category 1 hurricane the next day, reaching a peak intensity of 85 mph. On August 1st, the storm made landfall on North Andros, Bahamas and subsequently weakened to a tropical storm before paralleling the east coast of Florida and Georgia. As it approached the Carolina coastline, it re-intensified to a hurricane shortly before making landfall near Ocean Isle Beach, North Carolina, at 11:10 PM EST on August 3rd as a Category 1 hurricane and proceeded to accelerate up the East Coast of the United States. Across eastern North Carolina, Isaias produced tropical storm force winds, pockets of heavy rainfall, minor storm surge and tornadoes.Tropical storm force wind gusts afflicted the area during the overnight hours. A wind gust of 61 mph was recorded at Cherry Point MCAS at 3:46 AM EDT, *and a wind gust of 59 mph was recorded at New Bern Airport at 2:49 AM EDT. Sporadic power outages occurred due to downed trees and powerlines. Storm surge inundated parts of New Bern adjacent to the Neuse River. Values were generally 2 to 3 feet.*					

APPENDIX E

ADOPTION RESOLUTIONS

PROJECT CONTACT

Development Services (252) 639-7580 www.newbernnc.gov/resiliency