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North Carolina Resilient Coastal Communities Program (RCCP)

Phases I and II - Hatteras Island Dare County, NC

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Executive Summary

Dare County underwent a thorough planning process to review coastal hazards for Hatteras Island and identify potential solutions that provide community resilience for the future. This process followed the guidelines for Phases 1 and 2 of the North Carolina Resilient Coastal Communities Program; a four-phase program to help communities maintain quality of life and build resilience to natural hazards. The four phases are summarized below:

Phase 1 – Community engagement, risk and vulnerability assessment

Phase 2 – Planning, Project Identification, and Prioritization

Phase 3 – Engineering and Design

Phase 4 – Implementation

This study describes the process and results of the Phases 1 and 2 implementations. Phase 1 aimed to engage the community through the creation of a Community Action Team (CAT) and to solicit active input and involvement from local citizens. Based on this input, as well as from prior studies and publicly available data, an identification and vulnerability assessment were performed to classify risk of critical infrastructure on Hatteras Island. Phase II leveraged that analysis and public input to generate a list of potential resiliency projects. Identified projects included potential future projects as well as projects that have been recently implemented or are ongoing. Additional input from the community was received for ranking and prioritization. Potential projects were classified into one of three categories to describe implementation time horizon: In-Progress, Near-Term, and Long-Term. Finally, of the 28 identified projects, a portfolio of 13 projects was created to describe the prioritized projects. Those projects are summarized below:

Table 1 - Project Portfolio Summary (Part I of 3)

Priority Rating	Project Name	Description
High	County Stormwater Funding/Utility Study	To implement many of the other projects and the sheer number and scale of projects that will be needed, as well as on-going maintenance, additional funding will be needed. This project would serve to study different funding options, such as implementing a stormwater utility fee or additional apportionment from the general fund and make a recommendation to the county. Identifying funding to improve stormwater drainage and land management preparation for flooding was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR1).
High	Dune Restoration	Projects to plant and stabilize dunes and enforce "keep off the dunes" during peak visitor times, across the island. Installing plantings and sand fencing on dunes on public lands and establish grant programs to support installation of similar projects on private land. Initial installation could occur immediately and then will require ongoing maintenance. This project was ranked the highest by the citizen survey.
High	Storm Drainage Study and Improvements - Avon	Drainage study and improvement of roadside swales, culverts, and grading along NC 12 from the post office to Ace Hardware. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway. There is also potential for the inclusion of nature-based solutions. As a result of the well known and frequent drainage issues in this area, this project was given high priority.



Table 2 - Project Portfolio Summary (Part 2 of 3)

Priority Rating	Project Name	Description
Medium	Storm Drainage Maintenance (Ditch Maintenance)	Work with private landowners and NCDOT to ensure maintenance of drainage ditches and maximize the capability of existing drainage systems and minimize flooding from rainfall and poor drainage. This was identified in the Outer Banks Hazard Mitigation Plan (Action # DAR11) and was identified as a common concern in the citizen survey.
Medium	Backup Communications	Establish redundant communications paths that do not rely on ground-based fiber optic cables. Solutions might include acquisition and installation of satellite equipment to allow cellular providers to maintain service, installation of commercial satellite equipment to provide data transmission capabilities, and access to satellite based internet service from companies like Starlink. Nonterrestrial solutions like these will provide connectivity with the mainland to provide backup communications when service from the single CenturyLink fiber is disrupted. Damage to the fiber line is especially disruptive on Hatteras Island because repairs cannot occur until flooding has receded. Reliable non terrestrial communications are vital not only for emergency response but also to the economy.
Medium	Engineered Wetland - Buxton	Building a constructed wetland to provide additional flood storage and water quality treatment in the Buxton watershed and alleviate some strain on the storm drainage system.
Medium	Establish County Stormwater Management Taskforce	Establishing a public/private taskforce to focus on stormwater issues, including rainfall flooding, and to address stormwater improvements and projects from a joint perspective. It is critical that this taskforce include representatives from NCDOT and the county planning department as significant coordination and cooperation will likely be needed from both parties to address some of the most pressing issues of flooding along NC 12.
Medium	Establish Resilience Hubs	Establish sites that are well known and trusted by the community and have resilient energy and communications systems, and are able to provide programs and services needed to sustain the community before, during and after a disaster. These Hubs could be fully developed at fire stations, county facilities, or faith based locations that are well known and protected during extreme weather events.
Medium	Living Shorelines - Cape Hatteras Secondary School	Living shorelines use plantings and other natural elements such as oyster bags or rock to stabilize the shoreline. This project proposes to design and install approximately 300 LF of living shoreline adjacent to Cape Hatteras Secondary School in Buxton. A living shoreline at this location can also be utilized as a teaching tool and public education resource. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).



Table 3 - Project Portfolio Summary (Part 3 of 3)

Priority Rating	Project Name	Description
Medium	Living Shorelines – Frisco to Hatteras Village	Living shorelines use plantings and other natural elements such as oyster bags or rock to stabilize the shoreline. This project proposes to design and install approximately 1,400 LF of living shoreline along NC 12 between the communities of Frisco and Hatteras Village. A living shoreline at this location serves to protect the soundside of a vulnerable section of NC 12, that was also identified as a hotspot in the citizen survey. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).
Medium	Storm Drainage Study and Improvements - Buxton	Drainage study and improvement of roadside swales, culverts, grading along the turn in NC 12 and Old Lighthouse Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Medium	Storm Drainage Study and Improvements – Hatteras Village	Drainage study and improvement of roadside swales, culverts, grading throughout Hatteras Village, specifically along NC 12, Eagle Pass Road, and Pole Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Medium	Storm Drainage Study and Improvements – Tri-Villages (Rodanthe, Waves, and Salvo)	Drainage study and improvement of roadside swales, culverts, grading along NC-12 through the Tri-Villages and specifically in the Wind Over Waves area. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.



Acknowledgements

The view and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Government or the National Fish and Wildlife Foundation and its funding sources. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Government, or the National Fish and Wildlife Foundation or its funding sources.





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Appendix B – OBX Hazard Mitigation Plan

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Map 2: Critical Assets

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Map 5: 80 cm Sea Level Rise Inundation Areas

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GIS Maps and Data

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Introduction

The North Carolina Resilient Coastal Communities Program is a four-phase program to support communities in planning for and creating greater resiliency to coastal hazards. This report summarizes the efforts of phases one and two of the program. This included community engagement and a risk and vulnerability assessment in phase 1 and planning, project identification and prioritization in phase 2. Phases 3 and 4 are planned for the future and include engineering, design, and implementation of select priority projects.

Resiliency is vital to the health, safety, and prosperity of North Carolina’s coastal communities as increasingly intense storm events and sea level rise become more prevalent. Planning to strengthen our coastal community’s ability to withstand storm events and reduce flooding risk requires a multipronged and multidisciplinary approach to identify risks on a local level and developing solutions that mitigate risk and enable communities to respond and recover more quickly.

Dare county elected to focus the program on Hatteras Island and the communities located there. Hatteras Island faces extreme vulnerability to natural hazards due to its location as a barrier island in the Atlantic Ocean, the scarcity of uplands along the island, the naturally shifting shores, and limited access. There is one road, NC-12, that serves as the primary road through much of the island and has been breached or otherwise made impassible in many storm events, cutting off access to portions of the island. Hatteras Island has a population of about 4,500 people. Hatteras Island is also home to Cape Hatteras National Seashore and Pea Island National Wildlife Refuge.

Phase 1

Step 1: Develop a Community Action Team

The community action team (CAT) was selected to represent a diverse group of stakeholders with extensive experience responding to the hazards faced by Dare County. The team includes county employees and elected officials who serve to represent the community and are intimately aware of the specific needs of the community. County employees also assisted in recommending other individuals to join the CAT. Representatives from utility services and the department of transportation were included because of the importance of their services during times of disaster and the high vulnerability that they face. A large percentage of Hatteras Island is federally protected lands so representatives of the federal agencies were included as well. Finally, because a focus of this program is on creating nature-based resiliency solutions, representatives of environmental organizations working in the area were included.

Table 4 - Community Action Team (Part 1 of 2)

Name	Organization	Position
Barton Grover	Dare County - Planning	Grants & Waterways Administrator
Donna Creef	Dare County - Planning	Planning Director - Retired
Drew Pearson	Dare County - Emergency Management	DCEM Director
James Wooten	Dare County - Emergency Management	DCEM Planner
Danny Couch	Dare County	County Commissioner
Win Bridgers	NCDOT Division One	Deputy Division Engineer
Ronnie Sawyer	NCDOT Division One	Division Maintenance Engineer
Catherine Peele	NCDOT Ferry Division	Planning and Development Manager
David Hallac	National Park Service	Superintendent, Cape Hatteras NS
Mark Dowdle	National Park Service	Deputy Superintendent, Outer Banks Group



Table 5 - Community Action Team (Part 2 of 2)

Name	Organization	Position
Michael Barber	National Park Service	Public Affairs Specialist, Outer Banks Group
Scott Lanier	Fish and Wildlife	Refuge Manager, Alligator River NWR
Arthur Beyer	Fish and Wildlife	Field Coordinator, Alligator River NWR
Sarah Toner	Fish and Wildlife	Wildlife Refuge Specialist
Susan Flythe	Cape Hatteras Electric Cooperative	EVP & GM
Pat Irwin	Dare County Water Department	Public Utility Director
Erin Fleckenstein	Coastal Federation	Coastal Scientist and Regional Manager
Lora Eddy	The Nature Conservancy/Dare Soil & Water	Community Resilience Specialist

The CAT had three formal meetings during the development of this report. Meeting agendas and attendance lists can be found in Appendix A. The meetings were held on the following dates.

- October 7, 2021 – *Virtual*
- October 26, 2021 – *In Person at Dare County Emergency Management Office, with Virtual Option*
- February 2, 2022 – *Virtual*

Step 2: Set Vision and Goals

The community action team collaborated to develop a community vision and goals for the risk and vulnerability assessment efforts. The vision was developed with the intent to capture not only the natural hazards and challenges that Hatteras Island faces but also to celebrate the things that make the island a desirable place to live now and in the future.

VISION STATEMENT: A RESILIENT HATTERAS ISLAND IS A MIX OF NATURAL AND BUILT COMMUNITIES WHERE THE PEOPLE, ECONOMY, AND ECOSYSTEMS ARE BETTER ABLE TO RECOVER, POSITIVELY ADAPT TO, AND THRIVE AMID CHANGING CONDITIONS AND CHALLENGES, INCLUDING DISASTERS AND CLIMATE CHANGE; TO MAINTAIN QUALITY OF LIFE, HEALTHY GROWTH, AND DURABLE INFRASTRUCTURE SYSTEMS; WHILE CONSERVING RESOURCES FOR PRESENT AND FUTURE GENERATIONS.

The following goals were established to guide the development of potential projects to support the creation of projects that will not only serve the community but also meet the program intent and lend themselves to future grant efforts.

GOALS:

- IDENTIFY AREAS OF CONCERN IN RELATION TO SEA LEVEL RISE AND CRITICAL INFRASTRUCTURE. USING 1 FT AND 80CM (ROUGHLY 2.5') PROJECTED RISE.
- DEVELOP PLAN TO MINIMIZE INFRASTRUCTURE VULNERABILITIES AND PROVIDE REDUNDANCY IN CRITICAL INFRASTRUCTURE
- INCORPORATE THE USE OF NATURE-BASED SOLUTIONS TO MITIGATE THE IMPACT OF NATURAL HAZARDS BY CONSIDERING A NATURE-BASED COMPONENT IN EACH PROJECT, TO BE IMPLEMENTED AS DETERMINED TO BE ECONOMICALLY FEASIBLE



- IDENTIFY POPULATIONS AND LOCATIONS WITH HEIGHTENED VULNERABILITY TO FUTURE NATURAL HAZARDS, DEVELOP ENGAGEMENT AND EDUCATION STRATEGIES FOR THESE GROUPS, AND INCORPORATE THIS FEEDBACK INTO THE RESILIENCY PLAN
- RANK AND PRIORITIZE LONG TERM VIABILITY OF PROJECTS
- PRIORITIZE PUBLIC OUTREACH, EDUCATION, AND AWARENESS

Step 3: Review Existing Local Plans and Efforts

The Outer Banks Regional Hazard Mitigation Plan (OBXHMP) was recently completed in 2020 and was utilized as the basis for much of the risk assessment. The planning area for the Outer Banks Regional Hazard Mitigation Plan covers Currituck County and Dare County, including the incorporated towns. The hazards identified in the Outer Banks plan include natural and man-made disasters and risks. For the purpose of this resiliency study, a focus was placed on the natural disasters profiled in the plan. An excerpt from the Outer Banks Regional Hazard Mitigation Plan is attached in Appendix B.

In addition, Table 6 presents a complete list of documents that were reviewed as part of this effort.

Table 6 - Resource List (Part 1 of 2)

Document	Publication Date
Shoreline Erosion Assessment and Alternatives for the Avon Beach Restoration	November 2020
2009 Dare County Land Use Plan Update	February 24, 2011
Hatteras Island Economic Impact	June 20, 2013
A Study of the Economic Impacts of Oregon Inlet Navigability to Dare County, the Surrounding Region, and the state of North Carolina	May 2014
North Carolina Sea Level Rise Assessment Report	March 31, 2015
Dare County Repetitive Loss Area Analysis	December 2015
North Carolina 2019 Oceanfront Setback Factors & Long-Term Average Annual Erosion Rate Update Study	January 16, 2019
Dare County 2020 Economic Development & Diversification Strategic Plan	December 19, 2016
Dare County Repetitive Loss Area Analysis 2020 Update	September 21, 2020
Shoreline Erosion Assessment and Plan for Beach Restoration Rodanthe and Buxton Areas	November 2013
Coastal Vulnerability Assessment of Cape Hatteras National Seashore (CAHA) to Sea-Level Rise	
Dare County Stormwater Master Plan	June 4, 2001
Dredging Study	April 2018
Beach Nourishment Executive Summary	November 2016
The Economic Impacts of the Recreational Bluefin Tuna Fishery in Hatteras, North Carolina	February 2002
Economic Value and Impact of Visitation to Cape Hatteras National Seashore: Addressing Onsite Sampling	
Dare County Regional Airport Economic Impact Assessment	June 2019
Hatteras Village Resilience Evaluation and Needs Assessment	April 2018
Hurricane Matthew Resilient Redevelopment Plan - Dare County	May 2017
Inventory of Coastal Engineering Projects in Cape Hatteras National Seashore	March 2013
Report on Costs, Benefits, and Management Issues related to Maintaining North Carolina's Shallow Draft Navigation Channels	November 2005
NC 12 Feasibility Study Hatteras Village	February 2016



Table 7 - Resource List (Part 2 of 2)

Document	Publication Date
A Multi-Hazard Vulnerability Assessment of Coastal Development along Cape Hatteras National Seashore	September 2016
Outer Banks Regional Hazard Mitigation Plan	June 2020
Assessing coastal community resilience: a pilot project in North Carolina	May 2018
Identify Cultural Resources Sites Affected by Sea Level Rise at Cape Hatteras National Seashore	
Cape Hatteras National Seashore Sediment Management Framework Final Environmental Impact Statement	March 2021
Channel Maintenance and Dredge Material Report: Dare County, North Carolina	March 2021

Step 4: Develop a Community Engagement Strategy

The Hatteras Island community is an unincorporated area of Dare County, made up of seven villages- Rodanthe, Waves, Salvo, Avon, Buxton, Hatteras, and Frisco. The initial plan was to hold town hall style in person meetings to gather community input regarding opinions on different resiliency approaches and areas in which resiliency efforts are most needed. However, due to the COVID-19 pandemic, it was decided that in person meetings were not a viable option. There was successful in-person community engagement in the development of the Outer Banks Hazard Mitigation Plan, which occurred prior to the COVID-19 pandemic, and was heavily relied upon in this assessment report. In an effort to prevent redundancy and in response to the pandemic, surveys were utilized to get maximum community insight with minimal public health risk and effort required of community members.

An initial survey was conducted to gather community insight as to what hazards are most important to the community as well as general attitudes regarding potential resiliency efforts and types of projects. The survey was promoted via email list-serv, the Dare County website, flyers in public locations, local publications, and a geo-targeted Facebook ad campaign.

The survey was published November 24th, 2021 and closed December 17th, 2021. A total of 1,121 responses were received with 819 of those being permanent residents of Dare County, 314 permanent residents of Hatteras Island, and 212 non-resident Hatteras Island property owners. See Appendix C for the full survey and results. Some key learnings from the survey included

- ~40% of residents/property owners unsure if property has a FEMA elevation certificate.
- ~41% of residents/property owners unsure if structure is elevated above the FEMA Base Flood Elevation
- The three most significant threats (per public perception) are Beach Erosion, Tropical Weather Systems, and Flooding – Heavy Precipitation
- The three least significant threats (per public perception) are Extreme Temperatures, Drought, and Saltwater Intrusion
- Ability of Hatteras Island to withstand and recover from minor storms and limited flooding
 - ~79% able or completely able
 - ~15% unable or somewhat unable
- Ability of Hatteras Island to withstand and recover from major storms and extensive flooding
 - ~47% able or completely able
 - ~33% unable or somewhat unable
- Demographic Summary
 - ~82% older adults
 - ~15% low-income individuals
 - ~13% People with disabilities
 - ~3% People of racial or ethnic minorities



- An open-ended question asking which areas are most affected by environmental issues was used to identify hot spot locations. There was a total of 710 responses. Locations that were located on Hatteras Island and received at least 5 mentions are listed below.
 - Ocean View Drive Avon
 - Mirlo Beach
 - NC 12 - Entering Hatteras Village
 - Buxton Motels
 - NC 12 - south of Basnight Bridge
 - NC 12- near the Food Lion in Avon/Kinakeet
 - Entrance to Wind Over Waves
 - Cottage Ave/Tower Circle/Ocean Drive/Old Lighthouse Rd
 - Eagle Pass Rd
 - NC 12 - between Hatteras and Frisco
 - Pole Road to Hatteras Inlet
 - NC 12 - S Curves/North of Rodanthe
- The five most effective flood protection measures (per public perception) are Elevating Structures, Resilient Construction Standards, Utilities Redundancy & Backup, Resiliency Hubs for post-storm power and supplies, and Land Use Planning
- The five least effective flood protection measures (per public perception) are Shallow Groundwater pumping, Engineered Beach (Beach nourishment), Low Impact Development (LID), Enhanced shoreline revetments (rock/concrete erosion protection), Stormwater wetlands and ponds (SCMs)
- Another open-ended response was given for citizens to express any additional concerns. There was a total of 216 individual responses, with the following themes
 - Development – overcrowding
 - Taxes & affordable housing
 - Septic systems & fill on new construction lots
 - Beach nourishment
 - Rising groundwater
 - Assistance raising structures and bringing older structures to code
 - Drainage ditch maintenance
 - NC 12 – maintenance, replace with bridge sections

Following development of the project list by the CAT, a second citizen survey was conducted for further public input on prioritization of the proposed project list. Individuals who submitted their contact information at the end of the first survey were sent this second follow up survey. The survey was opened March 1st, 2022 and closed March 9th, 2022. A total of 134 responses were received. The survey listed each project idea and asked respondents to rank them as Lowest Priority, Low Priority, Neither Low Priority nor High Priority, High Priority, or Highest Priority. See Appendix C for the full survey and results. Discussion of the results is included in the following Phase 2 Project Prioritization section.



Step 5: Map Critical Assets and Natural Infrastructure

The critical assets selected for mapping included public buildings, emergency response facilities, and critical infrastructure. A shapefile of critical assets that were identified in the Outer Banks Hazard Mitigation Plan was obtained and used as the basis of the critical asset inventory. Additional critical assets were added from information obtained via NC OneMap, critical transportation features, and natural features that are at the core of the tourism industry Hatteras Island relies upon. A full list of critical assets and infrastructure mapped is included in Table 8, below, and mapped on Exhibit 2 found in Appendix D.

Table 8 - Critical Assets (Part 1 of 3)

Asset ID #	Asset Type	Location	Village	Owner ship	Hazards	Estimated Value	100-yr flood plain	500-yr flood plain	1' Sea Level Rise	80 cm Sea Level Rise
1	NC Highway 12			Public	flooding, ocean over wash, unable to travel		n/a	n/a	n/a	n/a
2	Cape Hatteras Reverse Osmosis and Anion Exchange Water Plant	50225 Water Association Rd	Frisco	Public	flooding, high winds	\$1.2 million	no	no	no	no
3	Joseph "Mac" Midgett Reverse Osmosis Water Plant	23697 NC 12 Hwy	Rodanthe	Public	flooding, high winds	\$989,858	no	no	no	no
4	Cape Hatteras Elementary School	47500 Middle Ridge	Buxton	Public	flooding, high winds	\$8.95 million	no	no	no	no
5	Cape Hatteras Secondary School	48576 Highway 12	Buxton	Public	flooding, high winds	\$18.53 million	yes	yes	no	yes
6	East Albemarle Regional Library - Hatteras Branch Library	57709 Highway 12	Hatteras	Public	flooding, high winds	\$1.06 million	yes	yes	no	yes
7	Avon Volunteer Fire Department, Inc.	40159 Harbor Rd.	Avon	Public	flooding, high winds	\$1.85 million	no	no	no	no
8	Buxton Fire Prevention Association, Inc.	47152 NC Hwy 12	Buxton	Public	flooding, high winds	\$1.24 million	no	no	no	no
9	Chicamacomico Banks Fire Department/Dare County Emergency Medical Services Station 6	24297 Atlantic Dr.	Rodanthe	Public	flooding, high winds	\$1.56 million	yes	yes	no	yes
10	Chicamacomico Banks Fire Department/Salvo Fire Department Station 48	27209 Roth Rd.	Salvo	Public	flooding, high winds	\$957,229	no	yes	no	no
11	Frisco Fire Prevention Association, Inc.	52470 NC Hwy 12	Frisco	Public	flooding, high winds	\$485,231	yes	yes	no	yes
12	Hatteras Fire Protective Association, Inc./Dare County Sheriff's Department - Hatteras Substation	57717 NC Hwy 12	Hatteras	Public	flooding, high winds	\$378,018	yes	yes	no	yes
13	Hatteras Island Rescue Squad Station 35	48103 NC Hwy 12	Buxton	Public	flooding, high winds	\$495,420	no	no	no	no
14	Dare County Emergency Medical Services Station 3	50346 NC Hwy 12	Frisco	Public	flooding, high winds	\$510,539	no	no	no	no



Table 9 - Critical Assets (Part 2 of 3)

Asset ID #	Asset Type	Location	Village	Ownership	Hazards	Estimated Value	100-yr flood plain	500-yr flood plain	1' Sea Level Rise	80 cm Sea Level Rise
15	US Coast Guard Station Hatteras	59248 Coast Guard Rd	Hatteras	Public	flooding, high winds	\$2.08 million	no	no	no	no
16	NC DOT Ferry Division Hatteras Terminal	59063 NC 12 Hwy	Hatteras	Public	flooding, high winds, erosion	\$858,137	no	yes	no	yes
17	Hatteras Village Clinic/Helo Landing Pad	57635 NC 12 Hwy	Hatteras	Public	flooding, high winds	\$582,026	yes	yes	no	yes
18	Hatteras Village Water Tower	56170 Odens Ct	Hatteras	Public	flooding, high winds	\$530,200	yes	yes	no	yes
19	Hatteras Community Center	56658 NC 12 Hwy	Hatteras	Public	flooding, high winds	\$623,657	yes	yes	no	no
20	NPS Billy Mitchell Airstrip	53252 Billy Mitchell Rd	Frisco	Public	flooding, high winds	\$487,200	no	no	no	no
21	Frisco Well Head/Pumping Station	51512 NC 12 Hwy	Frisco	Public	flooding, high winds	\$91,400	yes	yes	no	yes
22	Frisco Pump Station	51212 NC 12 Hwy	Frisco	Public	flooding, high winds	\$107,600	yes	yes	no	yes
23	Frisco Satellite Offices - DC	50347 NC 12 Hwy	Frisco	Public	flooding, high winds	\$955,400	yes	no	no	no
24	Buxton Water Tower and Treatment Plant	49815 NC 12 Hwy	Buxton	Public	flooding, high winds	\$912,449	yes	yes	no	no
25	Buxton Public Works Yard	47027 Buxton Back Rd	Buxton	Public	flooding, high winds	\$81,220	yes	yes	no	no
26	Fessenden Annex	47017 Buxton Back Rd	Buxton	Public	flooding, high winds	\$140,562	yes	yes	no	no
27	Fessenden Center	46830 NC 12 Hwy	Buxton	Public	flooding, high winds	\$724,924	yes	yes	no	no
28	Avon Water Tower and Pump Station	40162 Harbor Rd	Avon	Public	flooding, high winds	\$630,100	yes	yes	no	no
29	Rodanthe Water Well/Pump	24203 Seabreeze Ct	Rodanthe	Public	flooding, high winds	\$112,800	yes	yes	no	no
30	Rodanthe Water Tower	24034 NC 12 Hwy	Rodanthe	Public	flooding, high winds	\$223,711	yes	yes	no	no
31	Emergency Ferry Dock/Helo LP - Rodanthe	23170 Myrna Peters Rd	Rodanthe	Public	flooding, high winds	\$496,000	yes	yes	no	yes
32	RWS Community Center and Jug Handle Bridge Approach	23646 NC 12 Hwy	Rodanthe	Public	flooding, high winds, erosion	\$361,860	yes	yes	no	no
33	Beach Shoreline			Public/Private	flooding, erosion		n/a	n/a	n/a	n/a
34	Soundside Marshes			Public/Private	flooding, erosion		n/a	n/a	n/a	n/a
35	Dunes			Public/Private	flooding, erosion		n/a	n/a	n/a	n/a
36	Basnight Bridge			Public	high winds	\$252 million	n/a	n/a	n/a	n/a
37	Oregon Inlet			Public	inlet filling in		n/a	n/a	n/a	n/a



Table 10 - Critical Assets (Part 3 of 3)

Asset ID #	Asset Type	Location	Village	Ownership	Hazards	Estimated Value	100-yr flood plain	500-yr flood plain	1' Sea Level Rise	80 cm Sea Level Rise
38	Hatteras Inlet			Public	inlet filling in		n/a	n/a	n/a	n/a
39	Rodanthe "Jug Handle" Bridge			Public	high winds	\$145.33 million	n/a	n/a	n/a	n/a
40	Drainage Channel/Ditches			Public/Private	flooding		n/a	n/a	n/a	n/a
41	CenturyLink Fiber connection			Private	flooding, high winds		n/a	n/a	n/a	n/a
42	National Park Service - Hatteras Island Visitor Center	46500 Lighthouse Road	Buxton	Public	flooding, high winds	\$7.71 million	yes	yes	no	no

Step 6: Conduct a Risk and Vulnerability Assessment

Physical Vulnerability

The Outer Banks Regional Hazard Mitigation Plan identified 23 different hazards. The community action team chose to focus on the hazards of flooding, storm surge, sea level rise, and erosion. Flooding hazards were determined by the Special Flood Hazard Areas mapped by FEMA as part of the National Flood Insurance Program and maintained in North Carolina by the North Carolina Floodplain Mapping Program. The current flood maps for Hatteras Island were made effective 6/19/2020. Storm surge was assessed as the storm surge inundation associated with a category 2 hurricane in the National Storm Surge Hazard Maps - Version 2 by NOAA's National Hurricane Center. Sea level rise data was derived from two sources, the NOAA Sea Level Rise Viewer and the North Carolina Sea Level Rise Impact Study. NC Division of Coastal Management 2020 Erosion and Accretion rates were used for erosion mapping. These hazards were mapped with the critical assets and large-scale exhibits are included in Appendix D.

Social Vulnerability

The Centers of Disease Control and Prevention (CDC) Agency for Toxic Substances and Disease Registry (ATSDR) develops a Social Vulnerability Index (SVI) based off fifteen census-derived factors. The purpose of the SVI is to help identify communities that may be more vulnerable and require more assistance in responding to disaster. The SVI has four themes, Socioeconomic Status, Household Composition, Race/Ethnicity/Language, and Housing/Transportation. Socioeconomic status is determined by the factors of poverty, unemployed, per capita income, and no high school diploma. Household composition/disability is comprised of the factors of aged 65 and over, aged 17 and younger, single-parent household, and aged 5 and over with a disability. Race/Ethnicity/Language is determined by the factors of minority and English language ability. Housing type/Transportation is comprised of the factors of multi-unit, mobile homes, crowding, no vehicle, and group quarters. The prepared Dare County Map can be found in Appendix E.

The SVI is prepared by census tract and Hatteras Island is comprised of one census tract. The CDC overall SVI score for Hatteras Island is 0.7481 (moderate to high vulnerability). For the socioeconomic theme Hatteras Island scores 0.7299 (moderate to high vulnerability), household composition/disability theme scores 0.808 (high vulnerability), minority language theme score is 0.2948 (low to moderate vulnerability), and housing/transportation score is 0.8015 (high vulnerability). The SVI scores are supported by the self-identified demographics in the citizen survey and known hazards of living on a barrier island. Natural disaster is a significant source of vulnerability that affects everyone on Hatteras Island. Older age was also a significant factor that was shared by many of the respondents in the survey. Additionally, based on the citizen survey, continued availability of affordable housing for permanent residents and support for longtime residents to stay in the face of increased development and rising taxes are two specific concerns of social vulnerability.



Critical Asset Vulnerability Assessment

In addition to determining the overall social vulnerability of the island population, the vulnerability of each critical asset was assessed using a vulnerability index, combining exposure, sensitivity, and adaptive capacity. The table below documents the vulnerability score of each asset. The vulnerability score is calculated by adding the exposure score and sensitivity score and subtracting the adaptive capacity.

Exposure – all of HI is vulnerable and highly exposed to the hazards of concern, so the exposure score is relative. Exposure was determined based on the FEMA flood zones and sea level rise. An exposure score of 0 was assigned to assets located entirely outside of the flood zones and not impacted by sea level rise up to 80 cm. A value of 1 was assigned to assets in the 500-year flood zone, 2 was assigned to assets in the 100-year flood zone, 2.5 was assigned to assets in the 100-year flood zone and 80 cm of sea level rise, and 3 was assigned to assets in the 100-year flood zone and 1' of sea level rise.

Sensitivity – the sensitivity score seeks to quantify to what degree an asset is impacted by the hazards. The scores were primarily determined by the sensitivity to flooding (from any source, i.e. rainfall, tropical storm, storm surge) and typical design standards per service use classification. A score of 1 was given to assets that were not likely to experience damage or a service disruption in a flooding event, a 2 for assets that may be affected, and a 3 for assets that would likely be damaged or have a service disruption in a flooding event. No assets were given a score of 0 due to the unique nature of Hatteras Island.

Adaptivity – man made infrastructure tends to be static and natural infrastructure is typically much more dynamic, the adaptivity score seeks to capture the ability of assets to change in response to a hazard. No consideration was given to the likelihood or frequency of being impacted by a hazard, but rather the asset's ability to respond to the hazard. Natural infrastructure was scored the highest with large or extensive man-made infrastructure scoring the lowest.

Table 11 - Critical Asset Vulnerability Assessment (Part 1 of 2)

Asset ID #	Asset	Exposure Score (0-3)	Sensitivity Score (0-3)	Adaptive Capacity (3-0)	Vulnerability Score (0-6)
1	NC Highway 12	3	3	1	5
2	Cape Hatteras Reverse Osmosis and Anion Exchange Water Plant	0	2	1	1
3	Joseph "Mac" Midgett Reverse Osmosis Water Plant	0	2	1	1
4	Cape Hatteras Elementary School	0	3	1	2
5	Cape Hatteras Secondary School	2.5	3	1	4.5
6	East Albemarle Regional Library - Hatteras Branch Library	2.5	3	1	4.5
7	Avon Volunteer Fire Department, Inc.	0	3	1	2
8	Buxton Fire Prevention Association, Inc.	0	3	1	2
9	Chicamacomico Banks Fire Department/Dare County Emergency Medical Services Station 6	2.5	3	1	4.5
10	Chicamacomico Banks Fire Department/Salvo Fire Department Station 48	1	3	1	3
11	Frisco Fire Prevention Association, Inc.	2.5	3	1	4.5
12	Hatteras Fire Protective Association, Inc./Dare County Sheriff's Department - Hatteras Substation	2.5	3	1	4.5
13	Hatteras Island Rescue Squad Station 35	0	3	1	2



Table 12 - Critical Asset Vulnerability Assessment (Part 2 of 2)

Asset ID #	Asset	Exposure Score (0-3)	Sensitivity Score (0-3)	Adaptive Capacity (3-0)	Vulnerability Score (0-6)
14	Dare County Emergency Medical Services Station 3	0	3	1	2
15	US Coast Guard Station Hatteras	0	2	1	1
16	NC DOT Ferry Division Hatteras Terminal	2.5	1	1	2.5
17	Hatteras Village Clinic/Helo Landing Pad	2.5	3	1	4.5
18	Hatteras Village Water Tower	2.5	1	1	2.5
19	Hatteras Community Center	2	3	1	4
20	NPS Billy Mitchell Airstrip	0	2	1	1
21	Frisco Well Head/Pumping Station	2.5	2	1	3.5
22	Frisco Pump Station	2.5	2	1	3.5
23	Frisco Satellite Offices - DC	2	3	1	4
24	Buxton Water Tower and Treatment Plant	2	1	1	2
25	Buxton Public Works Yard	2	2	1	3
26	Fessenden Annex	2	3	1	4
27	Fessenden Center	2	3	1	4
28	Avon Water Tower and Pump Station	2	2	1	3
29	Rodanthe Water Well/Pump	2	2	1	3
30	Rodanthe Water Tower	2	1	1	2
31	Emergency Ferry Dock/Helo LP - Rodanthe	2.5	1	1	2.5
32	RWS Community Center and Jug Handle Bridge Approach	2	3	1	4
33	Beach Shoreline	3	3	3	3
34	Soundside Marshes	3	3	3	3
35	Dunes	3	3	3	3
36	Basnight Bridge	3	1	0	4
37	Oregon Inlet	3	2	2	3
38	Hatteras Inlet	3	2	2	3
39	Rodanthe "Jug Handle" Bridge	3	1	0	4
40	Drainage Channel/Ditches	3	3	2	4
41	CenturyLink Fiber connection	3	1	0	4
42	National Park Service - Hatteras Island Visitor Center	2	3	2	3

An asset inventory summarizing critical infrastructure and asset values by sector was prepared from the NC Buildings Footprint dataset from the North Carolina Floodplain Mapping Program. Note that the building footprint dataset counts each structure as an individual asset, where a facility is comprised of several buildings each building has been counted individually.



Table 13 - Estimated Asset Values

Sector	# of Critical Assets at Risk	Asset Value
Food and Agriculture	0	---
Banking and Finance	8	\$4,048,509
Chemical and Hazardous	0	---
Commercial	323	\$75,624,242
Communications	0	---
Critical Manufacturing	24	\$1,810,599
EM	0	---
Healthcare	6	\$2,103,984
Government Facilities	31	\$2,756,582
Nuclear Reactors, Materials and Waste	0	---
Postal and Shipping	0	---
Transportation Systems	0	---
Energy	7	\$289,387,377
Emergency Services	10	\$2,397,892
Water	26	\$3,640,001
Education	5	\$28,156,000

Phase 2

Potential Solutions

Through a review of the resources and previous studies, initial potential resiliency projects were identified. Then the Community Action Team brainstormed additional project ideas and finally the citizen survey results were used to guide the chosen implementation locations and prioritization of projects. Timelines of Long-Term, Near-Term, and currently In-Progress were assigned to each project. Currently in progress projects were included in the initial project list because they play an important role in developing resiliency on Hatteras Island and many of them have not been in progress long enough for the effect of the efforts to be evident yet. The initial project list sorted by time horizon is listed below.

Table 14 -Project List (Part 1 of 4)

Time Horizon	Project Name	Project Description
In-Progress	Beach Nourishment - Avon & Buxton	Beach nourishment for Avon beach and renourishment for Buxton, project is coming up summer 2022.
In-Progress	Elevate Structures	Provide assistance to elevate structures and homes that are currently below the BFE or are repetitive loss properties, to meet current ordinance requirements and protect against flooding and sea level rise. Repetitive loss areas are identified in the 2020 Dare Repetitive Loss Area Analysis Update. Fourteen homes on Hatteras Island are anticipated to be elevated over the next two years through FEMA’s Hazard Mitigation Grant Program. An additional twenty-two home elevation applications have been submitted by Dare County for Hatteras residents.



Table 15 - Project List (Part 2 of 4)

Time Horizon	Project Name	Project Description
In-Progress	Flood Gauges	Install flood gauges at each village and areas subject to frequent flooding in order to better monitor and alert individuals to changing conditions. This project was identified in the Outer Banks Hazard Mitigation Plan (Action #DAR9). Dare County will be installing five new flood gauges on Hatteras Island during 2022 to add to the existing four flood gauges already located on the island.
In-Progress	Stormwater Master Plan Study	Update the 2001 Dare County Stormwater Master Plan with a focus on the Hatteras Island Villages. This was identified in the Outer Banks Hazard Mitigation Plan (Action #DAR3). Dare County will begin updating the Stormwater Master Plan in 2022.
In-Progress	Stormwater/Flood Ordinance Review	Review and recommendation of stormwater ordinances for unincorporated Dare County. Dare County will review and recommend updates to stormwater ordinance as part of the Stormwater Master Plan update.
In-Progress	Flood Insurance Education and Outreach Program	In the citizen survey 11% of respondents indicated that their residence was not elevated above the BFE and 41% were unsure; an education and outreach program seeks to educate those who are unsure. Dare County currently educates the public on flood insurance via the “Low Risk is not No Risk” campaign, which informs the public about flood risk and flood insurance via social media, traditional forms of media, and other forms of public outreach.
Near-Term	County Stormwater Funding/Utility Study	To implement many of the other projects and the sheer number and scale of projects that will be needed, as well as on-going maintenance additional funding will be needed. This project would serve to study different funding options and recommend to the county. Identifying funding to improve stormwater drainage and land management preparation for flooding was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR1)
Near-Term	Storm Drainage Study/Improvement - Avon	Drainage study and improvement of roadside swales, culverts, grading along NC 12 from the post office to Ace Hardware. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Near-Term	County Resiliency Staff Position	Establish a full time staff position to promote resiliency efforts, seek funding, and provide support for projects.
Near-Term	Engineered Wetland - Peter's Ditch Area	Building a constructed wetland to provide additional flood storage and water quality treatment in the Peter's Ditch watershed and alleviate some strain on the storm drainage system.
Near-Term	Establish County Stormwater Management Taskforce	Establishing a public/private taskforce to focus on stormwater issues, including rainfall flooding, and to address stormwater improvements and projects from a joint perspective.



Table 16 - Project List (Part 3 of 4)

Time Horizon	Project Name	Project Description
Near-Term	Establish Resilience Hubs	Establish sites that are well known and trusted by the community and have resilient energy and communications systems, and are able to provide programs and services needed to sustain the community before, during and after a disaster. These Hubs could be fully developed at fire stations, county facilities, or faith-based locations that are well known and protected during extreme weather events
Near-Term	Living Shorelines - Cape Hatteras Secondary School	Adjacent to Cape Hatteras Secondary School- a living shoreline at this location can also be utilized as a teaching tool and source of public education. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).
Near-Term	Living Shorelines- Frisco/Hatteras Village	Between Frisco and Hatteras Village - a living shoreline at this location serves to protect the soundside of a vulnerable section of NC 12 that was also identified as a hotspot in the citizen survey. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).
Near-Term	Living Shorelines- Rodanthe Harbor	Rodanthe Harbor - a living shoreline at this location provides some additional stabilization and protection at the emergency ferry route and helipad. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).
Near-Term	Storm Drainage Improvement - Buxton	Drainage study and improvement of roadside swales, culverts, grading along the turn in NC 12 and Old Lighthouse Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Near-Term	Storm Drainage Improvement - Tri-Villages (Rodanthe, Waves, Salvo)	Drainage study and improvement of roadside swales, culverts, grading along NC-12 through the Tri-Villages and specifically in the Wind Over Waves area. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Near-Term	Storm Drainage Maintenance (Ditch Maintenance)	Work with private landowners and NCDOT to ensure maintenance of drainage ditches and maximize the capability of existing drainage systems and minimize flooding from rainfall and poor drainage. This Drainage study and improvement of roadside swales, culverts, grading along NC-12 through the Tri-Villages and specifically in the Wind Over Waves area. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.was identified in the Outer Banks Hazard Mitigation Plan (Action # DAR11) and was identified as a common concern in the citizen survey.



Table 17- Project List (Part 4 of 4)

Time Horizon	Project Name	Project Description
Near-Term	Storm Drainage Study/Improvement - Hatteras Village	Drainage study and improvement of roadside swales, culverts, grading throughout Hatteras Village, specifically along NC 12, Eagle Pass Road, and Pole Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Near-Term	Property Buyout	Property buyouts of repetitive loss properties located throughout Hatteras Island. Properties bought out through the FEMA buy-out program can be used for limited purposes and would primarily serve as land returned to an open space condition and associated increased infiltration and natural floodplain function. Areas are identified in the 2020 Dare Repetitive Loss Area Analysis Update.
Near-Term	Public Education and Outreach Program	A targeted education and outreach program to encourage property buyout or granting of conservation easements.
Near-Term	Dune Restoration	Projects to plant and stabilize dunes and enforce "keep off the dunes" during peak visitor times, across the island.
Near-Term	Backup Communications	Establish redundant communications paths that do not rely on ground-based fiber optic cables. Solutions might include acquisition and installation of satellite equipment to allow cellular providers to maintain service, installation of commercial satellite equipment to provide data transmission capabilities, and access to satellite-based internet service from companies like Starlink. Non-terrestrial solutions like these will provide connectivity with the mainland to provide backup communications when service from the single CenturyLink fiber is disrupted. Damage to the fiber line is especially disruptive on Hatteras Island because repairs cannot occur until flooding has receded. Reliable non terrestrial communications are vital not only for emergency response but also to the economy
Long-Term	Beach Nourishment - Frisco to Hatteras Village	Beach nourishment along NC 12 between Frisco and Hatteras Village is an option for protection of NC 12 presented in the NC 12 Feasibility Study for Hatteras Village.
Long-Term	Bridge NC 12- Hatteras Village Frisco	Replace a section of NC 12 between the towns of Frisco and Hatteras Village with a bridge. This area was identified as a hot spot location in the citizen survey and the solution was presented as an option in the NC 12 Feasibility Study for Hatteras Village.
Long-Term	Utilities Interconnections	Connecting the Rodanthe and South Hatteras Water Systems so in the case of failure in one of the systems, redundancy exists.
Long-Term	Sewer Feasibility Study	A feasibility study of the possibility, potential cost, and funding options for a municipal sewer system to replace septic systems. With rising ground water levels and increased development, the reliance on septic is unsustainable and was also recognized as a concern in the citizen survey.



Projects were then prioritized through two surveys, one sent to the CAT and one to the citizens who indicated a desire to remain involved and receive updates in the initial citizen survey. The survey listed each project idea and asked respondents to rank them as Lowest Priority, Low Priority, Neither Low Priority nor High Priority, High Priority, or Highest Priority, which was then assigned a numeric value of 1-5 respectively. See Appendix C for the full surveys and results. The projects were then sorted by average score and ranked. To assign priority, the top five projects were ranked high priority, the bottom five were ranked low priority, and the remainder were ranked medium priority. This process was followed for both the CAT survey results and the second citizen survey results. Consideration of the CAT priority, Citizen priority, and additional factors such as cost, effort required, and alignment with program goals was made and an overall priority assigned to each project.

Table 18 - In-Progress Project Prioritization

Project	CAT Average	CAT Ranking	CAT Priority	Citizen Average	Citizen Ranking	Citizen Priority	Overall Priority
Beach Nourishment - Avon & Buxton	4.33	1	High	3.94	5	High	High
Stormwater Master Plan Study	3.89	4	High	4.02	3	High	High
Elevate Structures	3.67	12	Medium	3.68	16	Medium	Medium
Flood Gauges	3.33	18	Medium	3.64	17	Medium	Medium
Stormwater/Flood Ordinance Review	3.50	16	Medium	3.58	21	Medium	Medium
Flood Insurance Education and Outreach Program	3.00	26	Low	3.36	26	Low	Low

Table 19 - Long-Term Project Prioritization

Project	CAT Average	CAT Ranking	CAT Priority	Citizen Average	Citizen Ranking	Citizen Priority	Overall Priority
Beach Nourishment - Frisco to Hatteras Village	4.00	2	High	3.73	12	Medium	High
Bridge NC 12- Hatteras Village Frisco	3.22	22	Medium	3.46	25	Low	Medium
Utilities Interconnections	3.78	7	Medium	3.75	11	Medium	Medium
Sewer Feasibility Study	2.56	27	Low	3.59	19	Medium	Low

Table 20 - Near-Term Project Prioritization (Part 1 of 2)

Project	CAT Average	CAT Ranking	CAT Priority	Citizen Average	Citizen Ranking	Citizen Priority	Overall Priority
County Stormwater Funding/Utility Study	4.00	2	High	3.71	15	Medium	High
Dune Restoration	3.78	7	Medium	4.41	1	High	High
Storm Drainage Maintenance (Ditch Maintenance)	3.56	14	Medium	4.11	2	High	High
Backup Communications	3.67	12	Medium	3.90	7	Medium	Medium
County Resiliency Staff Position	3.33	18	Medium	3.52	23	Low	Medium



Table 21 - Near-Term Project Prioritization (Part 2 of 2)

Project	CAT Average	CAT Ranking	CAT Priority	Citizen Average	Citizen Ranking	Citizen Priority	Overall Priority
Engineered Wetland - Buxton	3.33	18	Medium	3.73	12	Medium	Medium
Establish County Stormwater Management Taskforce	3.78	7	Medium	3.63	18	Medium	Medium
Establish Resilience Hubs	3.56	14	Medium	3.72	14	Medium	Medium
Living Shorelines - Cape Hatteras Secondary School	3.11	23	Low	3.53	22	Medium	Medium
Living Shorelines- Frisco/Hatteras Village	3.44	17	Medium	3.97	4	High	Medium
Living Shorelines-Rodanthe Harbor	3.33	18	Medium	3.59	19	Medium	Medium
Storm Drainage Study/Improvement - Avon	3.89	4	Medium	3.78	9	Medium	Medium
Storm Drainage Study/Improvement - Buxton	3.78	7	Medium	3.78	9	Medium	Medium
Storm Drainage Study/Improvement - Hatteras Village	3.78	7	Medium	3.91	6	Medium	Medium
Storm Drainage Study/Improvement - Tri-Villages (Rodanthe, Waves, Salvo)	3.89	4	High	3.89	8	Medium	Medium
Property Buyout	3.11	23	Low	3.49	24	Low	Low
Public Education and Outreach Program	3.11	23	Low	3.19	27	Low	Low

Project Portfolio

From the initial project list, 13 projects have been further developed for inclusion in the project portfolio. All the projects selected are in the near-term time horizon and were given a priority ranking of either high or medium. Only near-term projects were included in the portfolio to best align with Phase 3 and 4 of the program. However, that does not preclude further development of any of the remaining projects included on the near term or in-progress lists, nor does it mean some of the long term projects are not important to further develop and pursue.



Table 22 - Portfolio Project #1

Project Name	County Stormwater Funding/Utility Study
Project Description	In order to implement many of the other projects and the sheer number and scale of projects that will be needed, as well as on-going maintenance, additional funding will be needed. This project would serve to study different funding options, such as implementing a stormwater utility fee or additional apportionment from the general fund, and make a recommendation to the county. Identifying funding to improve stormwater drainage and land management preparation for flooding was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR1).
Hazard(s) Addressed by Project	Flooding
Type of Solution	Funding Source
Project Estimated Cost	\$50,000 - \$100,000
Potential Implementation Funding Sources	General Fund
Projected Estimated Timeline	1 year
Priority Rating	High
Project Map	N/A

Table 23 - Portfolio Project #2

Project Name	Dune Restoration
Project Description	Projects to plant and stabilize dunes and enforce "keep off the dunes" during peak visitor times, across the island. Installing plantings and sand fencing on dunes on public lands and establish grant programs to support installation of similar projects on private land. Initial installation could occur immediately and then will require ongoing maintenance. This project was ranked the highest by the citizen survey.
Hazard(s) Addressed by Project	Flooding, Sea Level Rise, Hurricane and Tropical Storms
Type of Solution	Nature Based
Project Estimated Cost	\$500 per LF
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	1 year to establish, then ongoing
Priority Rating	High
Project Map	N/A



Table 24 - Portfolio Project #3

Project Name	Storm Drainage Maintenance (Ditch Maintenance)
Project Description	Work with private landowners and NCDOT to ensure maintenance of drainage ditches and maximize the capability of existing drainage systems and minimize flooding from rainfall and poor drainage. This was identified in the Outer Banks Hazard Mitigation Plan (Action # DAR11) and was identified as a common concern in the citizen survey.
Hazard(s) Addressed by Project	Flooding
Type of Solution	Plans and Policies, Infrastructure
Project Estimated Cost	\$50,000 - \$100,000 annually
Potential Implementation Funding Sources	General Fund, Grant Funds, Tax or Tax Incentive Program
Projected Estimated Timeline	1 year to establish, then ongoing
Priority Rating	Medium
Project Map	N/A - all of Hatteras Island

Table 25 - Portfolio Project #4

Project Name	Backup Communications
Project Description	Establish redundant communications paths that do not rely on ground-based fiber optic cables. Solutions might include acquisition and installation of satellite equipment to allow cellular providers to maintain service, installation of commercial satellite equipment to provide data transmission capabilities, and access to satellite-based internet service from companies like Starlink. Non-terrestrial solutions like these will provide connectivity with the mainland to provide backup communications when service from the single CenturyLink fiber is disrupted. Damage to the fiber line is especially disruptive on Hatteras Island because repairs cannot occur until flooding has receded. Reliable non terrestrial communications are vital not only for emergency response but also to the economy.
Hazard(s) Addressed by Project	Hurricane and Tropical Storms
Type of Solution	Infrastructure
Project Estimated Cost	\$200,000 - \$2,000,000
Potential Implementation Funding Sources	Grant Funds, FEMA
Projected Estimated Timeline	Dependent on solution selected
Priority Rating	Medium
Project Map	N/A



Table 26 - Portfolio Project #5

Project Name	Engineered Wetland - Buxton
Project Description	Building a constructed wetland to provide additional flood storage and water quality treatment in the Buxton watershed and alleviate some strain on the storm drainage system.
Hazard(s) Addressed by Project	Flooding, Sound Water Quality
Type of Solution	Nature Based Infrastructure
Project Estimated Cost	\$100,000 - \$200,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	1 year
Priority Rating	Medium
Project Map	



Table 27 - Portfolio Project #6

Project Name	Establish County Stormwater Management Taskforce
Project Description	Establishing a public/private taskforce to focus on stormwater issues, including rainfall flooding, and to address stormwater improvements and projects from a joint perspective. It is critical that this taskforce include representatives from NCDOT and the county planning department as significant coordination and cooperation will likely be needed from both parties to address some of the most pressing issues of flooding along NC 12.
Hazard(s) Addressed by Project	Flooding
Type of Solution	Planning & Policy
Project Estimated Cost	\$0
Potential Implementation Funding Sources	General Fund
Projected Estimated Timeline	1 year to establish, then ongoing
Priority Rating	Medium
Project Map	N/A

Table 28 - Portfolio Project #7

Project Name	Establish Resilience Hubs
Project Description	Establish sites that are well known and trusted by the community and have resilient energy and communications systems, and are able to provide programs and services needed to sustain the community before, during and after a disaster. These Hubs could be fully developed at fire stations, county facilities, or faith based locations that are well known and protected during extreme weather events
Hazard(s) Addressed by Project	Flooding, Hurricane and Tropical Storms
Type of Solution	
Project Estimated Cost	\$250,000 per hub
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	1 year
Priority Rating	Medium
Project Map	N/A



Table 29 - Portfolio Project #8

Project Name	Living Shorelines – Cape Hatteras Secondary School
Project Description	Living shorelines use plantings and other natural elements such as oyster bags or rock to stabilize the shoreline. This project proposes to design and install approximately 300 LF of living shoreline adjacent to Cape Hatteras Secondary School in Buxton. A living shoreline at this location can also be utilized as a teaching tool and public education resource. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).
Hazard(s) Addressed by Project	Soundside erosion, Sound water quality, Storm Surge
Type of Solution	Nature Based
Project Estimated Cost	\$50,000 - \$100,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	1 year
Priority Rating	Medium
Project Map	



Table 30 - Portfolio Project #9

Project Name	Living Shorelines – Frisco to Hatteras Village
Project Description	Living shorelines use plantings and other natural elements such as oyster bags or rock to stabilize the shoreline. This project proposes to design and install approximately 1,400 LF of living shoreline along NC 12 between the communities of Frisco and Hatteras Village. A living shoreline at this location serves to protect the soundside of a vulnerable section of NC 12, that was also identified as a hotspot in the citizen survey. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).
Hazard(s) Addressed by Project	Soundside erosion, Sound water quality, Storm Surge
Type of Solution	Nature Based
Project Estimated Cost	\$250,000 - \$300,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	1 year
Priority Rating	Medium
Project Map	



Table 31 - Portfolio Project #10

Project Name	Storm Drainage Study and Improvement - Avon
Project Description	Drainage study and improvement of roadside swales, culverts, and grading along NC 12 from the post office to Ace Hardware. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway. There is also potential for the inclusion of nature-based solutions. As a result of the well-known and frequent drainage issues in this area, this project was given high priority.
Hazard(s) Addressed by Project	Flooding
Type of Solution	Infrastructure
Project Estimated Cost	\$50,000 - \$1,000,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	2-5 years (1 year drainage study and 1-4 years implementing recommended improvement)
Priority Rating	High
Project Map	



Table 32 - Portfolio Project #11

Project Name	Storm Drainage Study and Improvement - Buxton
Project Description	Drainage study and improvement of roadside swales, culverts, grading along the turn in NC 12 and Old Lighthouse Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Hazard(s) Addressed by Project	Flooding
Type of Solution	Infrastructure
Project Estimated Cost	\$50,000 - \$1,000,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	2-5 years (1 year drainage study and 1-4 years implementing recommended improvement)
Priority Rating	Medium
Project Map	



Table 33 - Portfolio Project #12

Project Name	Storm Drainage Study and Improvement – Hatteras Village
Project Description	Drainage study and improvement of roadside swales, culverts, grading throughout Hatteras Village, specifically along NC 12, Eagle Pass Road, and Pole Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Hazard(s) Addressed by Project	Flooding
Type of Solution	Infrastructure
Project Estimated Cost	\$50,000 - \$1,000,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	2-5 years (1 year drainage study and 1-4 years implementing recommended improvement)
Priority Rating	Medium
Project Map	



Table 34 - Portfolio Project #13

Project Name	Storm Drainage Study and Improvement - Tri-Villages (Rodanthe, Waves, and Salvo)
Project Description	Drainage study and improvement of roadside swales, culverts, grading along NC-12 through the Tri-Villages and specifically in the Wind Over Waves area. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.
Hazard(s) Addressed by Project	Flooding
Type of Solution	Infrastructure
Project Estimated Cost	\$50,000 - \$1,000,000
Potential Implementation Funding Sources	General Fund, Grant Funds
Projected Estimated Timeline	2-5 years (1 year drainage study and 1-4 years implementing recommended improvement)
Priority Rating	Medium
Project Map	



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Appendix A: CAT Meeting Agendas & Attendance List

- ◆ CAT Meeting #1 Agenda 2021-10-07
- ◆ CAT Meeting #2 Agenda 2021-10-26
- ◆ CAT Meeting #3 Agenda 2022-02-02
- ◆ CAT Meeting Attendance List

North Carolina Resilient Coastal Communities Program Dare County

Community Action Team

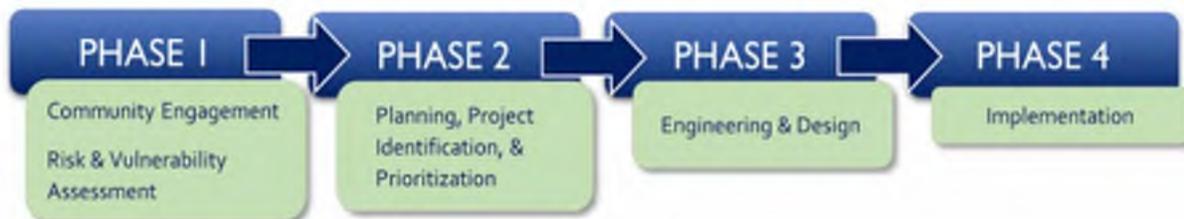
Meeting 1 – October 7, 2021

1. Introductions

- Contact List
https://docs.google.com/spreadsheets/d/12PxGSPa9ydjnDJU2RJ6ZEVDdme-QWRprMyQVi2V_MAg/edit#gid=0
- Project Google Folder
<https://drive.google.com/drive/folders/1I9LmZxsZuc936s72xN-bEyh2AiGFNQaR?ths=true>

2. RCCP Program Overview

- Administration
- Phases



- Goals & Objectives
 - i. Perform Data and Community driven risk and vulnerability assessment
 - ii. Develop a portfolio of planned and prioritized solutions
- Map critical assets, infrastructure, and natural resources
- Funding Opportunities. Proposed coastal investments in Congress:
 - i. \$207 million for grants to States and Territories to implement coastal and Great Lakes habitat restoration projects which will provide ecosystem and community resilience benefits.
 - ii. \$160 million to address working waterfront infrastructure.

- iii. \$845 million for National Estuaries Programs and other EPA Geographic programs to help coastal communities protect and restore habitat and make on-the-ground improvements for clean and safe water.
- iv. \$1 billion for FEMA Pre-disaster Hazard Mitigation Assistance to help communities—both coastal and non-coastal—adapt to changing conditions and reduce their vulnerabilities so they can withstand and rapidly recover from hazards.
- v. \$500 million for the FEMA Hazard Mitigation Revolving Loan Fund to help communities to mitigate the impacts of future hazard events.
- vi. \$492 million for competitive grants for coastal natural infrastructure projects under the National Oceans and Coastal Security Fund to benefit fish and wildlife and to reduce the impacts of coastal flooding.
- vii. \$491 million for competitive grants for Community-Based Habitat Restoration projects that restore marine, estuarine, coastal, and Great Lakes or protect or construct features that protect coastal communities from flooding or coastal storms.
- viii. \$465 million for USACE projects for streambank and shoreline protection, sediment management, small flood control project, and other purposes.
- ix. \$9.5 billion to NOAA to provide funding and technical assistance for the purposes of restoring a marine, estuarine, coastal, or Great Lake habitat; or providing adaptation to climate change, including by protecting, restoring, or establishing ecological features that protect coastal communities from sea-level rise, coastal storms, or flooding; or designing or implementing blue carbon projects.
- x. \$500M to address coastal flooding and sea-level rise.
- xi. \$50M for insular coastal hazards.
- xii. **Total = \$14.2 Billion**

3. Vision

- Prepare a community-driven plan to identify, assess, and mitigate hazards by identifying and prioritizing “shovel-ready” projects that enhance community resilience to coastal hazards. Future, recovery, all natural hazards. Broader. Where we are, want to go? Physical, human, economic infrastructure. Time horizon on vision statement

4. Project Identification & Prioritization

- Types of projects
 - i. Physical projects i.e. roads, pipes, ditches, pump stations
 - ii. Nature based project i.e. living shoreline (Required at least 1)

- iii. Outreach and education
- iv. Policy based
 - 1. Building Code revision
 - 2. Program to cost-share structure raising or floodproofing
- v. Disaster aid and planning
- Identification of vulnerable populations, infrastructure, assets, and natural resources
- Previous studies
- Known projects needing funding

5. Community Engagement Strategy

- Step 1 – Surveys for general goals and objectives
 - i. Geotargeted ads
 - ii. Library and public works fliers
 - iii. Other public facilities
- Step 2 - Follow-up survey for citizen ranking of projects
- Step 3 - Charrettes.
 - i. Finalize prioritization and ranking

6. Next-Steps

- CAT Meeting #2
 - i. In 3 weeks
 - ii. Dare County EOC (370 Airport Rd, Manteo)
 - iii. Oct 28 9:30-11:30am

North Carolina Resilient Coastal Communities Program Dare County

Community Action Team

Meeting 2 – October 26, 2021

1. Welcome and Introductions

2. Discuss and Vote Vision Statement

- A resilient Hatteras Island is a mix of natural and built communities where the people, economy, and ecosystems are better able to recover, positively adapt to, and thrive amid changing conditions and challenges, including disasters and climate change; to maintain quality of life, healthy growth, and durable infrastructure systems; while conserving resources for present and future generations.
- Vote on Vision Adoption

3. Goals and Objectives

- Goals
 - Identify areas of concern in relation to sea level rise and critical infrastructure. Using 1 ft and 2.5 projected rise.
 - Develop plan to minimize infrastructure vulnerabilities and provide redundancy in critical infrastructure
 - Incorporate the use of nature based solutions to mitigate the impact of natural hazards by identifying at least 1 prioritized nature based project wherever feasible (set criteria for feasibility)
 - Identify vulnerability to future natural hazards (everyone is vulnerable), develop engagement and education strategies, and incorporate this feedback into the resiliency plans
 - Rank and prioritize long term viability of projects
 - Prioritize public outreach, education, and awareness
- Vote on Goals Adoption

4. Discuss Vulnerability and At-Risk Locations with CAT throughout Hatteras Island

5. Discuss Potential Projects

- Virginia Beach Sea Level Wise Adaptation Strategy as example of project types
 - i. Natural Mitigations
 - ii. Engineered Defenses
 - iii. Adapted Structures
 - iv. Prepared Communities
- Discuss specific opportunities

North Carolina Resilient Coastal Communities Program Dare County

Community Action Team

Meeting 3 – February 2, 2022

1. Survey Results

- Overall Statistics
 - i. 819 of 1,121 – 73% permanent residents of Dare County
 - ii. 314 of 818 – Permanent resident of Hatteras Island
 - iii. 212 of 249 – Nonresident property owner in Hatteras Island
- Key Findings
 - i. ~40% of residents/property owners unsure if property has a FEMA elevation certificate.
 - ii. ~41% of residents/property owners unsure if structure is elevated above the FEMA Base Flood Elevation
 - iii. Most significant threats
 - 1. Beach Erosion
 - 2. Tropical Weather Systems
 - 3. Flooding – Heavy Precipitation
 - iv. Least significant threats
 - 1. Extreme Temperatures
 - 2. Drought
 - 3. Saltwater Intrusion
 - v. Ability of Hatteras Island to withstand and recover from minor storms and limited flooding
 - 1. ~79% able or completely able
 - 2. ~15% unable or somewhat unable
 - vi. Ability of Hatteras Island to withstand and recover from major storms and extensive flooding
 - 1. ~47% able or completely able
 - 2. ~33% unable or somewhat unable
 - vii. Demographic Summary
 - 1. ~82% older adults

2. ~15% low-income individuals
 3. ~13% People with disabilities
 4. ~3% People of racial or ethnic minorities
- viii. Environmental Issues affect disproportionate sectors of the community
1. Largely Yes to Low-income individuals, Older adults, and people with disabilities
 2. No to People of racial or ethnic minorities
- ix. Which areas are most affected by environmental issues? Open-ended
1. 710 Individual responses
 2. Compiled summary of responses
 - a. Ocean View Drive Avon
 - b. Mirlo Beach
 - c. NC 12 - Entering Hatteras Village
 - d. Buxton Motels
 - e. NC 12 - south of Basnight Bridge
 - f. NC 12- near the Food Lion in Avon/Kinakeet
 - g. Entrance to Wind Over Waves
 - h. Cottage Ave/Tower Circle/Ocean Drive/Old Lighthouse Rd
 - i. Eagle Pass Rd
 - j. NC 12 - between Hatteras and Frisco
 - k. Pole Road to Hatteras Inlet
 - l. NC 12 - S Curves/North of Rodanthe
- x. Effectiveness of Flood Protection Measures
1. Top 5
 - a. Elevations Structures 4.42/5
 - b. Resilient Construction Standards 4.35/5
 - c. Utilities Redundancy & Backup 4.35/5
 - d. Resiliency hubs for post-storm power and supplies 4.29/5
 - e. Land Use Planning 4.19/5
 2. Bottom 5
 - a. Shallow Groundwater pumping 3.41/5
 - b. Engineering Beach (Beach nourishment) 3.44/5
 - c. Low Impact Development (LID) 3.73/5
 - d. Enhanced shoreline revetments 3.74/5
 - e. Stormwater wetlands and ponds (SCMs) 3.8/5
- xi. Additional Concerns

1. 216 individual responses
2. Common concerns
 - a. Development – overcrowding
 - b. Taxes & affordable housing
 - c. Septic systems & fill on new construction lots
 - d. Beach nourishment
 - e. Rising groundwater
 - f. Assistance raising structures and bringing older structures to code

xii. E-mail Follow-ups

1. 318 individuals

2. Critical Asset inventory and Vulnerability Index

- Vulnerability Index
 - i. Exposure Score (0-3): Probability of physical contact between an asset and hazard
 1. HI – Nothing has no/low exposure so 0 & 1 was excluded
 2. If not located in 100-yr floodplain
 3. Located in 100-yr floodplain
 - ii. Sensitivity (0-3): Degree to which an asset is impacted by a hazard
 0. Not considered due to uniqueness of Hatteras Island
 1. Damage & service not likely to be disrupted due to flooding
 2. Damage & service may be disrupted due to flooding.
 3. Damage & service likely to be disrupted due to flooding
 4. Additional consideration given for service use classification
 - iii. Adaptive Capacity (0-3): Ability of an asset to change its characteristics or behavior in response to a hazard
 0. Large or extensive infrastructure
 1. Buildings
 2. Inlets
 3. Natural infrastructure
 - iv. Vulnerability Score (0-6): Exposure + Sensitivity – Adaptive Capacity
- Please review. If you feel differently regarding scoring, markup excel file and e-mail to Steve Marks (smarks@withersravenel.com) and Barton Grover (barton.grover@darenc.com)

3. Project Portfolio

- Backup Communications
- Utilities Interconnections
- Living Shorelines – Cape Hatteras Secondary School
- Living Shorelines – Kite Point/Canadian Hole
- Living Shorelines – Frisco/Hatteras Village
- Living Shorelines – Rodanthe Harbor
- Beach Nourishment – Avon & Buxton
- Beach Nourishment – Frisco to Hatteras Village
- Storm Drainage Improvement – Avon
- Storm Drainage Improvements – Buxton
- Flood Insurance Education and Outreach Program
- Sewer Feasibility Study
- Engineered Wetland – Peter’s Ditch Area
- Storm Drainage Maintenance (Ditch Maintenance)
- Elevate Well Houses
- Stormwater Management Plan Study
- Dune Restoration
- Property Buyout
- Public Education and Outreach Program
- Stormwater Flood Ordinance Review
- Elevate Structures
- Establish County Resilience Taskforce or Department
- County Stormwater Funding/Utility Study
- Establish Resilience Hubs
- Bridge NC-12 Hatteras Village Frisco

CAT Meeting #1 Attendance

Individual	Organization
Steve Marks	WithersRavenel
Katherine Knight	WithersRavenel
Donna Creef	Dare County - Planning
Barton Grover	Dare County - Planning
Drew Pearson	Dare County - Emergency Management
Michael Barber	National Park Service
David Hallac	National Park Service
Pat Irwin	Dare County Water Department
Lora Eddy	The Nature Conservancy/Dare Soil & Water
Catherine Peele	NCDOT Ferry Division
Erin Fleckenstein	Coastal Federation
Susan Flythe	Cape Hatteras Electric Cooperative
James Wooten	Dare County - Emergency Management
Mark Dowdle	National Park Service
Win Bridgers	NCDOT Division One
Ronnie Sawyer	NCDOT Division One
Art Beyer	Fish and Wildlife

CAT Meeting #2 Attendance

Individual	Organization
Steve Marks	WithersRavenel
Katherine Knight	WithersRavenel
Donna Creef	Dare County - Planning
Barton Grover	Dare County - Planning
Drew Pearson	Dare County - Emergency Management
Danny Couch	Dare County Board of Commissioners
Sarah Toner	US Fish and Wildlife Service
Pat Irwin	Dare County Water Department
Lora Eddy (Virtual)	The Nature Conservancy/Dare Soil & Water
Mackenzie Todd (Virtual)	NCDEQ Coastal Management
Erin Fleckenstein	Coastal Federation
Susan Flythe	Cape Hatteras Electric Cooperative
James Wooten	Dare County - Emergency Management
Ronnie Sawyer	NCDOT Division One

CAT Meeting #3 Attendance

Individual	Organization
Steve Marks	WithersRavenel
Katherine Knight	WithersRavenel
Barton Grover	Dare County - Planning
Pat Irwin	Dare County Water Department
Lora Eddy	The Nature Conservancy/Dare Soil & Water
Catherine Peele	NCDOT Ferry Division
Erin Fleckenstein	Coastal Federation
Susan Flythe	Cape Hatteras Electric Cooperative
Mackenzie Todd	NC Division of Coastal Management
Ronnie Sawyer	NCDOT Division One
Danny Couch	Dare County



Appendix B: OBX Hazard Mitigation Plan

Annex B Dare County Unincorporated Areas

B.1 PLANNING PROCESS

The table below lists the HMPC members who represented Dare County unincorporated areas.

Table B.1 – HMPC Members

Representative	Agency/Department	Position or Title
Drew Pearson	Emergency Management	Director, Dare County Emergency Management
Donna Creef	Planning	Planning Director
Noah Gillam	Planning	Planner
Pat Weston	Citizen-Hatteras Island	Homeowners Association President, engaged citizen and community volunteer
Glenn Rainey	Citizen-Colington	Volunteer Fire Department Chief
Buddy Shelton	Citizen-Mainland Dare	Engaged Citizen and building inspector
John Finelli	Citizen-Martin Point	Homeowners Association member and planning board

B.2 COMMUNITY PROFILE

Geography

Dare County is located in the northeastern corner of the Coastal Plain of North Carolina. Its land area encompasses mainland, Roanoke Island, and barrier islands. The County comprises a total land area of 383.23 square miles, 354.64 square miles is unincorporated.

According to data from the U.S. Fish and Wildlife Service’s National Wetlands Inventory, there are approximately 6,895 acres of wetlands in the unincorporated areas of Dare County.

Figure A.1 shows a base map of Dare County.

Figure B.1 – Location Map, Dare County



Source: U.S. Census Bureau

ANNEX B: DARE COUNTY UNINCORPORATED AREAS

Population and Demographics

Table B.2 provides population counts and growth estimates for Dare County's unincorporated areas as compared to the Region overall. Table B.3 provides demographic information for Dare County's unincorporated areas as compared to the Region.

Table B.2 – Population Counts, Unincorporated Dare County, 2010-2017

Jurisdiction	2000 Census Population	2010 Census Population	2017 ACS Population Estimate	Total Change 2010-2017	% Change 2010-2017
Region Total	48,157	57,467	60,659	3,192	5.55%
Unincorporated Dare County	15,126	16,691	17,312	621	3.72%

Source: US Census Bureau Decennial Census 2000, Decennial Census 2010; American Community Survey 2013-2017 5-Year Estimates

Note: Unincorporated areas statistics calculated by subtracting jurisdiction counts from the county total.

Table B.3 – Racial Demographics, Unincorporated Dare County, 2017

Jurisdiction	White, %	Black, %	Asian, %	Other Race, %	Two or More Races, %	Persons of Hispanic or Latino Origin*, %
Region Total	91.0	3.5	0.5	2.2	2.7	5.7
Unincorporated Dare County	97.2	1.3	0.6	3.1	2.4	6.2

Source: US Census Bureau, American Community Survey 2013-2017 5-Year Estimates

*Persons of Hispanic origin may be of any race, so also are included in applicable race categories

Asset Inventory

The following tables summarize the Critical Infrastructure and Key Resources (CIKR) and high potential loss facilities identified in IRISK for Dare County. Critical facilities, which include a subset of identified assets from the CIKR dataset as well as facilities identified by the HMPC, are shown in Figure B.2 on the following page and summarized in Table B.6. The County provided information is not included in IRISK vulnerability assessments. Note that the IRISK counts are by building; where a critical facility identified by IRISK comprises a cluster of buildings, each building is counted and displayed.

Table B.4 – Critical Infrastructure & Key Resources by Type

Jurisdiction	Food and Agriculture	Banking and Finance	Chemical & Hazardous	Commercial	Communications	Critical Manufacturing	EM	Healthcare	Government Facilities	Nuclear Reactors, Materials and Waste	Postal and Shipping	Transportation Systems	Energy	Emergency Services	Water	Total
Dare County	18	14	0	553	0	100	1	11	101	1	1	51	5	10	13	879

Source: NCEM Risk Management Tool

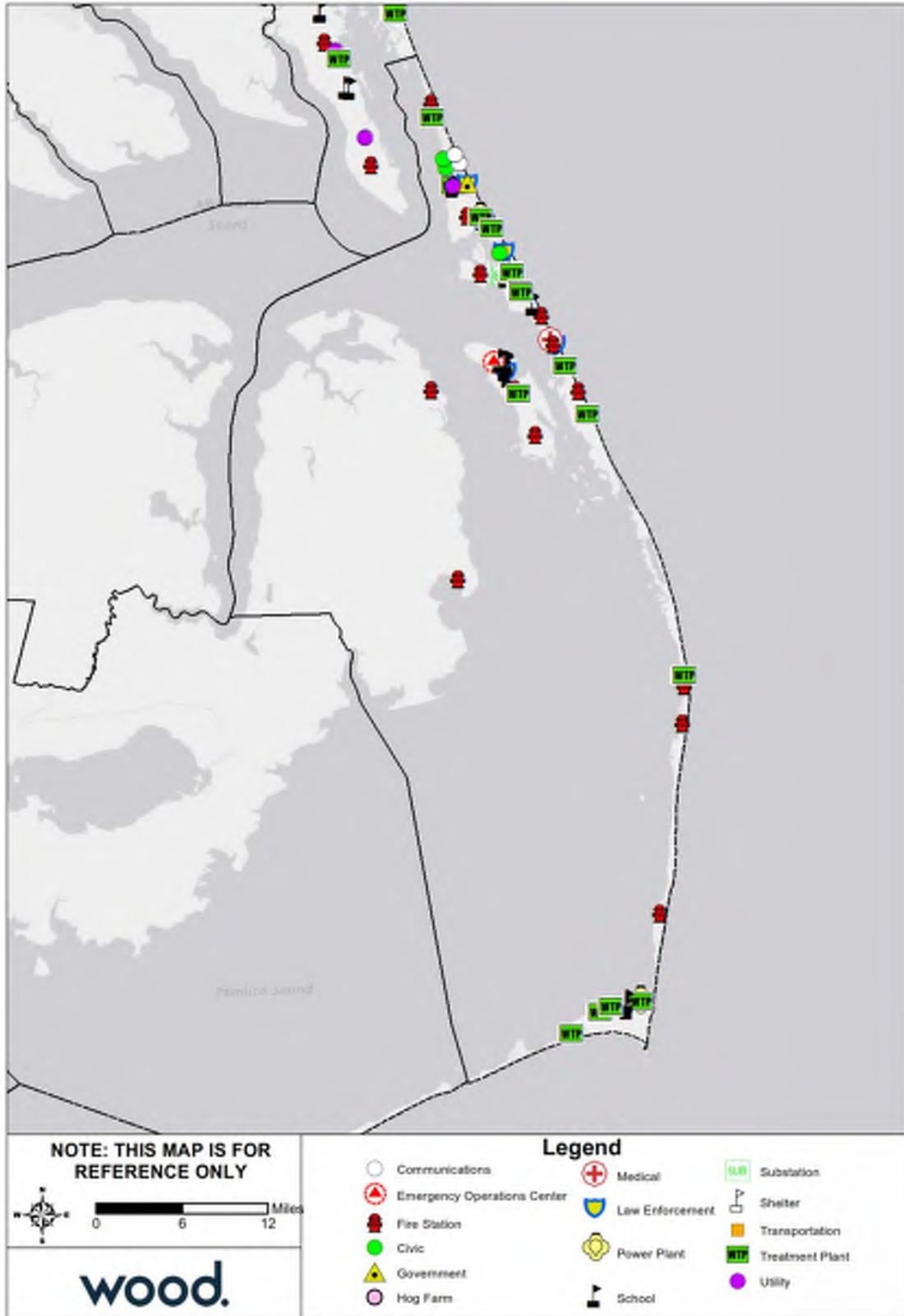
Table B.5 – High Potential Loss Facilities by Use

Jurisdiction	Residential	Commercial	Industrial	Government	Agricultural	Religious	Utilities	Total
Dare County	37	15	0	12	0	1	2	67

Source: NCEM Risk Management Tool

Outer Banks

Figure B.2 – Critical Facilities, Unincorporated Dare County



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table B.6 – Critical Facilities, Unincorporated Dare County

Facility Type	Count
Emergency Operations Center	2
Fire Station	11
Power Plant	1
School	5
Treatment Plant	14
Total	33

Source: NCEM IRISK Database, HMPC input, GIS Analysis

To supplement the asset inventory and provide a clearer picture of the current asset exposure in Unincorporated Dare County, current parcel data was evaluated to identify recent development not included in NCEM’s IRISK database. Based on this assessment, Dare County has experienced nearly a 9 percent increase in building value exposure compared to IRISK estimates.

Table B.7 – Recent Development Not Included in IRISK, Unincorporated Dare County

Recent Improved Parcels		IRISK Buildings		Percent Change	
Count	Value	Count	Value	Building Count	Building Value
945	\$207,054,100	13,634	\$2,386,317,125	6.9%	8.7%

Source: County parcel data, retrieved November 2019; IRISK database building footprints

Note: This information is not incorporated into the risk assessment, which was prepared using IRISK. However, this summary of recent development provides some context to understand the degree to which the IRISK exposure and vulnerability numbers differ from current conditions.

There are 15 listings on the National Register of Historic Places for Dare County unincorporated areas, including one historic district. These sites are listed in the table below.

Table B.8 – Historic Properties, Unincorporated Dare County

Ref#	Property Name	Status Date	Category	City
01000558	Ballance, Ellsworth and Lovie, House	5/25/2001	Building	Hatteras
09000847	Midgett, Rasmus, House	10/21/2009	Building	Waves
13000780	E.M. CLARK (shipwreck and remains)	9/25/2013	Site	Cape Hatteras
13000781	DIXIE ARROW (shipwreck and remains)	9/25/2013	Site	Ocracoke
13000782	EMPIRE GEM (shipwreck and remains)	9/25/2013	Site	Cape Hatteras
15000541	LIGHT VESSEL 71 (shipwreck)	8/19/2015	Site	Buxton
15000806	U-701 (submarine) shipwreck and remains	11/12/2015	Site	Buxton
15000864	U-576 and BLUEFIELDS (shipwrecks and remains)	12/8/2015	Site	Hatteras
74002299	USS MONITOR	10/11/1974	Site	Cape Hatteras
75001253	Oregon Inlet Station	12/23/1975	Building	Rodanthe
76000164	Chicamacomico Life Saving Station	12/12/1976	Building	Rodanthe
78000266	Cape Hatteras Light Station	3/29/1978	District	Buxton
78000268	Hatteras Weather Bureau Station	2/17/1978	Building	Hatteras
93000997	Salvo Post Office	9/23/1993	Building	Salvo
100002802	C.S.S. CURLEW (side-wheel steamer)	8/31/2018	Structure	Mann's Harbor

Source: National Parks Service, National Register of Historic Places, October 2018

ANNEX B: DARE COUNTY UNINCORPORATED AREAS

Housing

The table below details key housing statistics for Dare County unincorporated areas as compared to the Region overall. Growth in housing units as a percent change was greater in the unincorporated areas as compared to the Region overall.

Table B.9 – Housing Statistics, Unincorporated Dare County, 2010-2017

Jurisdiction	Housing Units (2010)	Housing Units (2017)	Housing Units Percent Change (2010-2017)	Owner-Occupied, % (2017)	Vacant Units, % (2017)	Median Home Value (2017)
Region Total	47,945	49,616	3.5%	74.5	49.6	\$285,000
Unincorporated Dare County	12,351	13,052	5.7%	70.2	43.7	--

Source: U.S. Census Bureau 2010 Decennial Census, American Community Survey 2013-2017 5-Year Estimates

Note: Owner-Occupied and vacant-unit measures are reported as a percent of the total number of housing units.

Economy

The following tables present key economic statistics for Dare County unincorporated areas as compared to the Region overall.

Table B.10 – Employment Statistics, Unincorporated Dare County, 2017

Jurisdiction	Population in Labor Force	Percent Employed* (%)	Percent Unemployed* (%)	Percent Not in Labor Force* (%)	Unemployment Rate (%)
Region Total	32,463	61.7	3.3	34.4	5.0
Dare County	19,503	63.0	3.5	33.3	5.2

Source: U.S. Census Bureau, American Community Survey 2013-2017 5-Year Estimates

Note: This table reports only the civilian labor force. The labor force in armed services accounted for 0.6% of the population 16 and over across the region. *Population employed, population unemployed, and Population not in labor force are reported as a percent of the total population aged 16 years and older.

Table B.11 – Percent of Employed Population by Occupation, Unincorporated Dare County, 2017

Occupation	Management, business, science and arts (%)	Service (%)	Sales and Office (%)	Natural Resources, Construction, and Maintenance (%)	Production, transportation, and material moving (%)
Region Total	30.6	18.7	27.8	14.0	8.9
Dare County	30.9	19.8	28.0	12.5	8.8

Source: U.S. Census Bureau, American Community Survey 2013-2017 5-Year Estimates

Land Use and Future Development

The Dare County Planning Department is responsible for land-use planning in the unincorporated areas of the County. The County is currently updating their Land Use plan as of January 2020 and it has not yet been made available to the public. Current and future land use and development information provided below came from the 2009 Land Use Plan Update.

Current Land Use

Since the County has island geography and narrow strips of land, much of the development is located around the main transportation corridors. This resulted in the creation of multiple villages within unincorporated areas. There are 15 unincorporated “village” areas addressed in the 2009 Land Use Plan Update. These include Avon, Buxton, Frisco, Hatteras, Rodanthe, Waves, Salvo, Martin’s Point, Colington, Roanoke Island, Wanchese, Manns Harbor, Mashoes, East Lake and Stumpy Point. The County is currently

Outer Banks

divided into six land use categories. These categories are shown below with their total acreage in Table B.12.

Table B.12 – Land Use, Unincorporated Dare County

Land Use	Total Acres	Percent of County (%)
Residential	6,814	3.20
Commercial	1,057	0.50
Industrial	91	0.05
Institutional	2,056	0.97
Public	186,176	87.45
<i>Total Developed</i>	<i>196,195</i>	<i>92.17</i>
Undeveloped	16,681	7.83
Total	212,876	100

Source: Dare County 2009 Land Use Plan Update

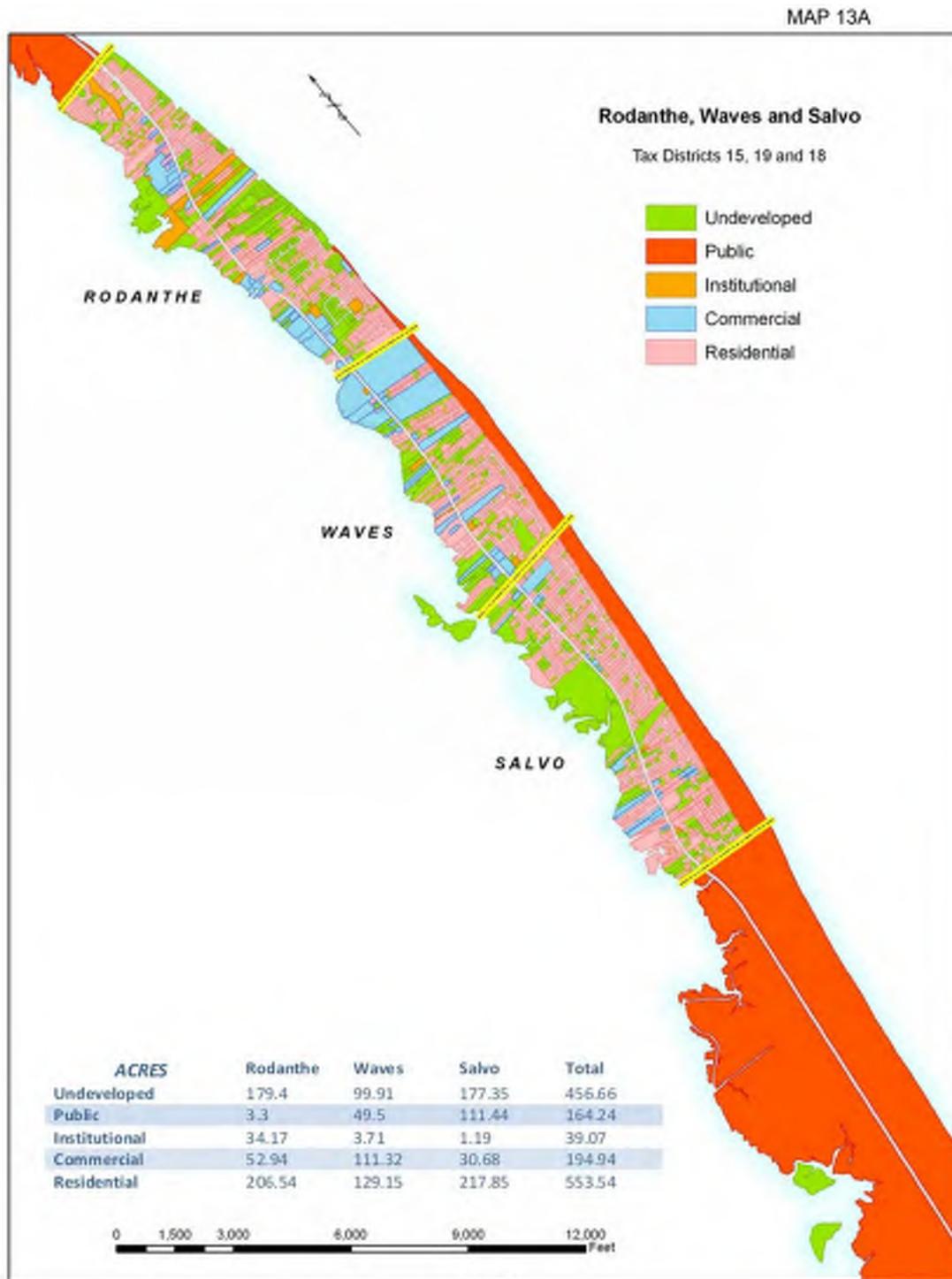
Public land is undeveloped Federal, State, or County property. Institutional land use includes locations such as churches, hospitals, and schools. Most of the County is developed (92%) with 87 percent of the County land classified as public. Since most of the County is public land, there is competition for the remaining 13 percent. Much of the privately-owned land has already been developed.

Future Development

As mentioned in the 2009 Land Use Plan Update, development will continue into the coming years with an emphasis on residential structures and limited commercial development. There is some re-development potential for some properties but that is difficult to predict. Development on Hatteras Island will most likely continue to outpace development in other areas of unincorporated Dare County.

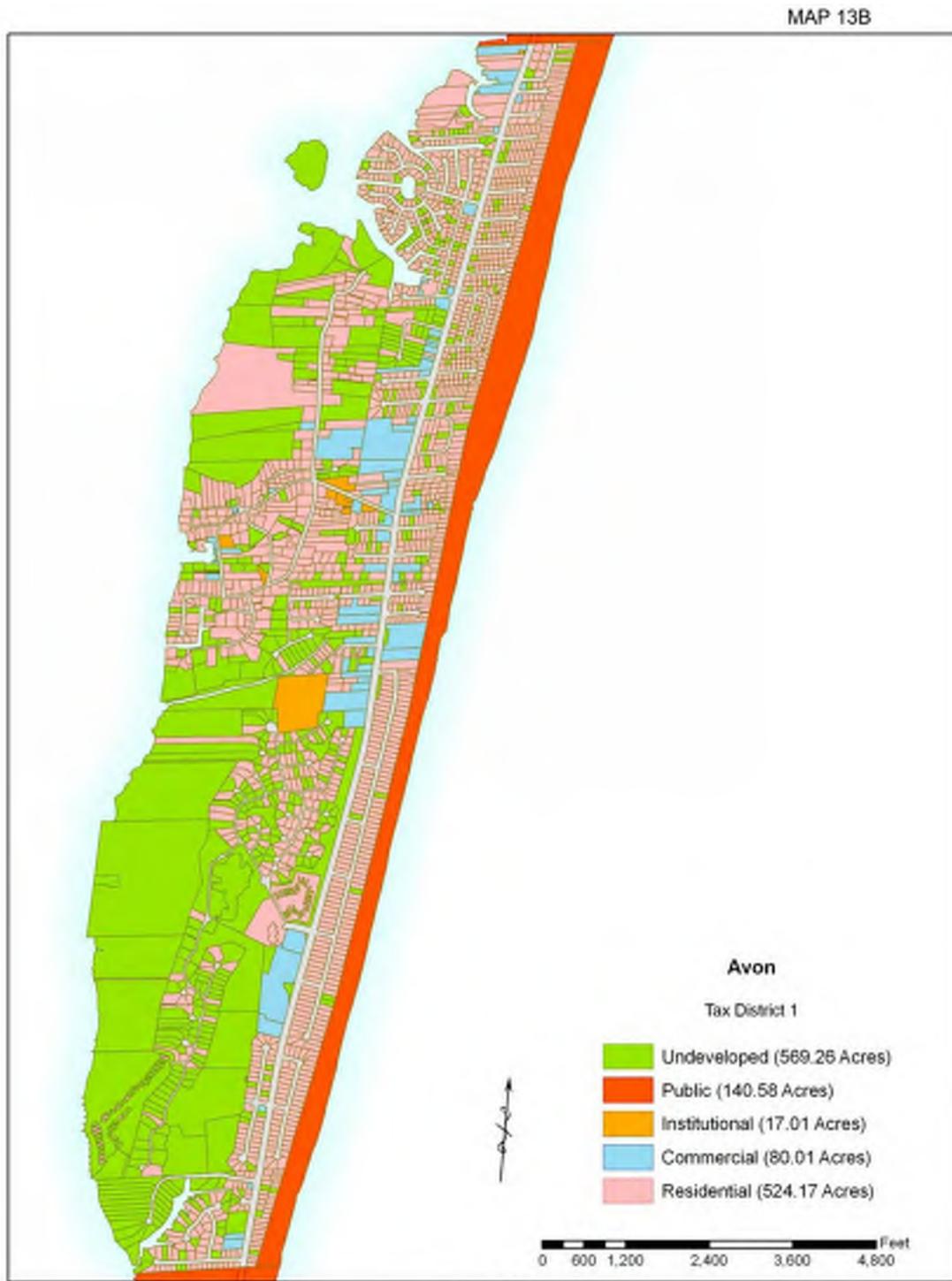
Future development within the county will use the same six classifications as it already uses. Figure B.3 through Figure B.13 on the following pages show the future land use maps of unincorporated Dare County as envisioned in the 2009 Land Use Plan Update.

Figure B.3 – Dare County Future Land Use Map, Rodanthe, Waves, and Salvo



Source: Dare County 2009 Land Use Plan Update

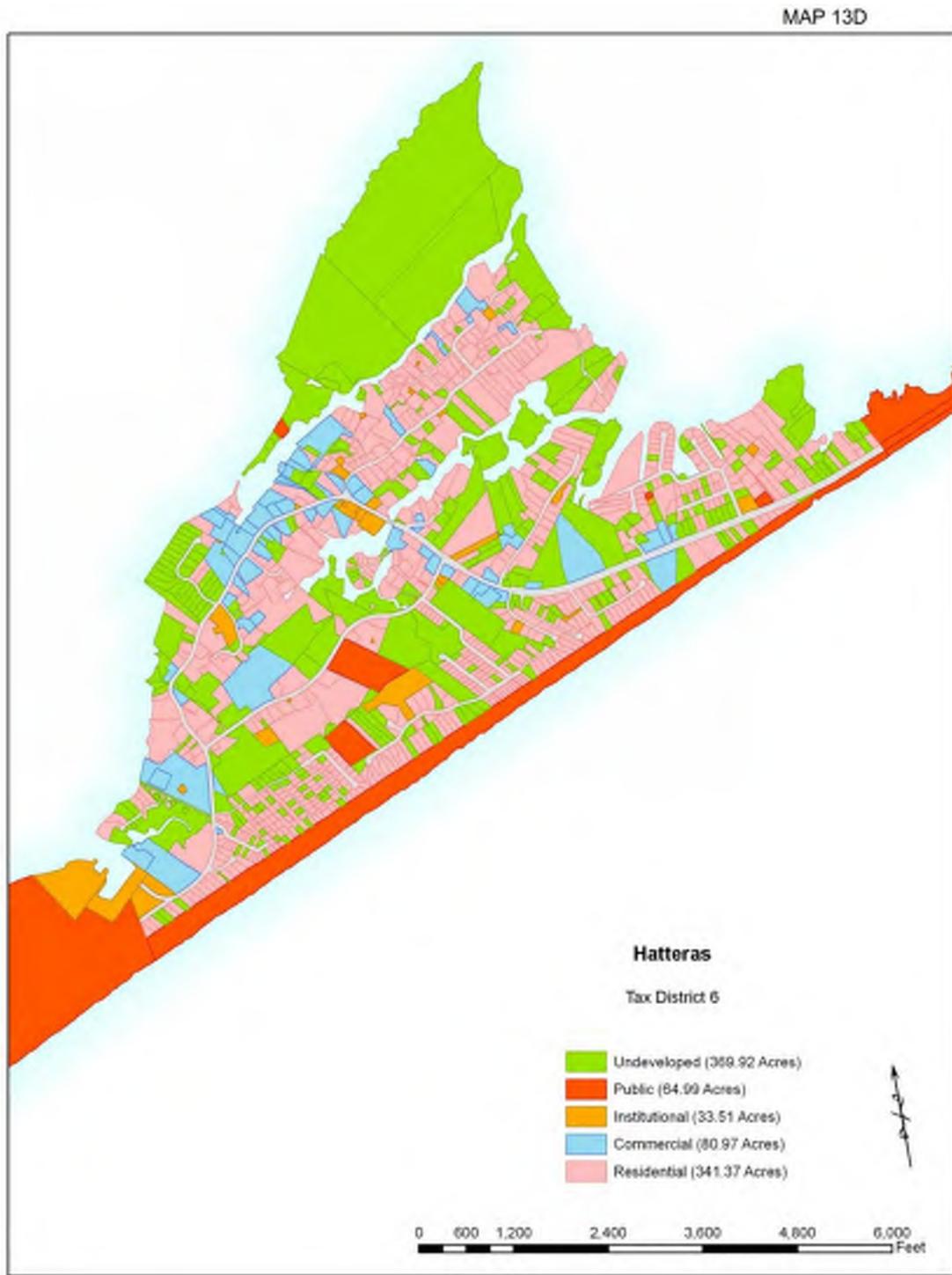
Figure B.4 – Dare County Future Land Use Map, Avon



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Source: Dare County 2009 Land Use Plan Update

Figure B.5 – Dare County Future Land Use Map, Hatteras



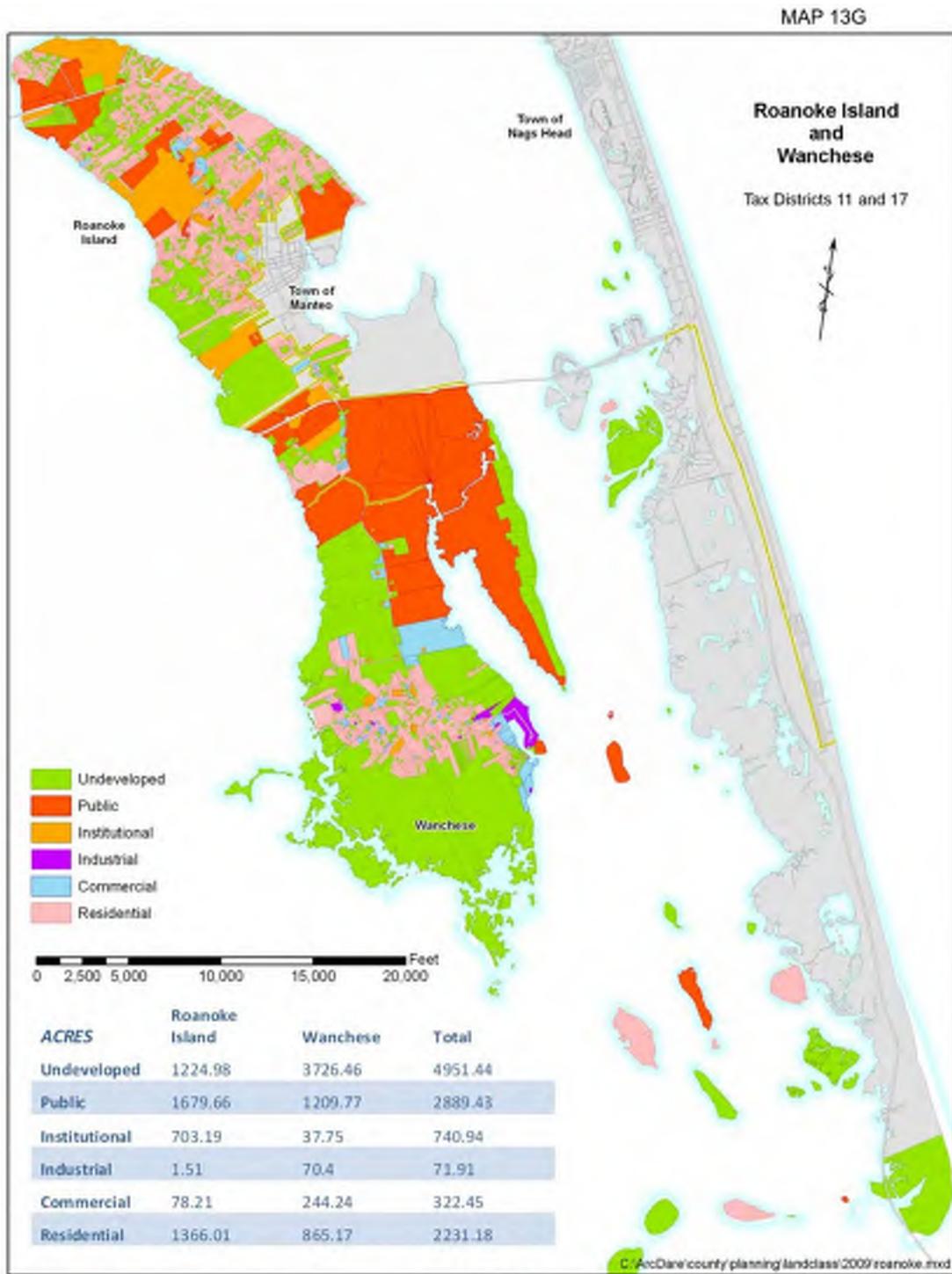
Source: Dare County 2009 Land Use Plan Update

Figure B.6 – Dare County Future Land Use Map, Martin’s Point



Source: Dare County 2009 Land Use Plan Update

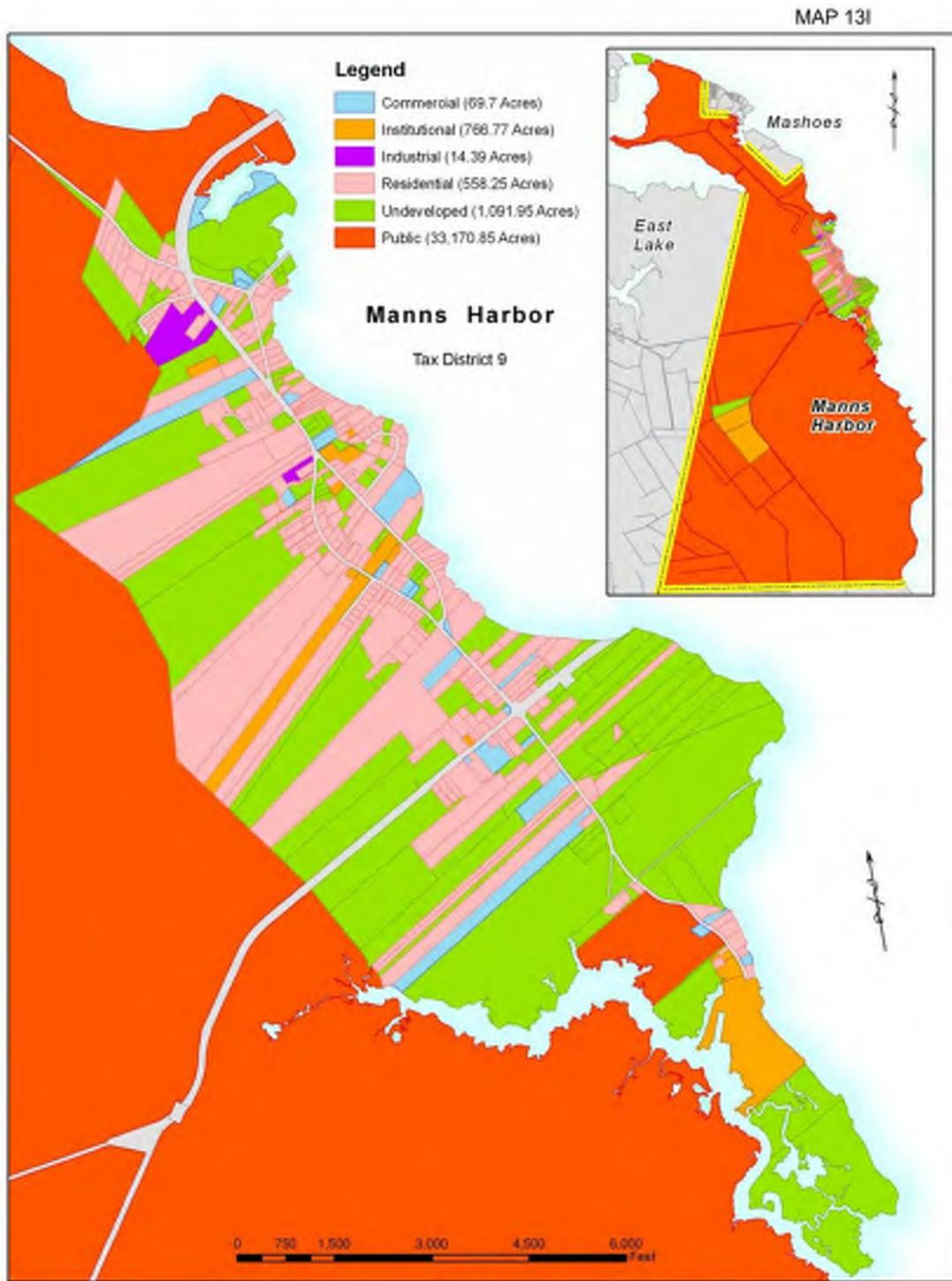
Figure B.7 – Dare County Future Land Use Map, Roanoke Island and Wanchese



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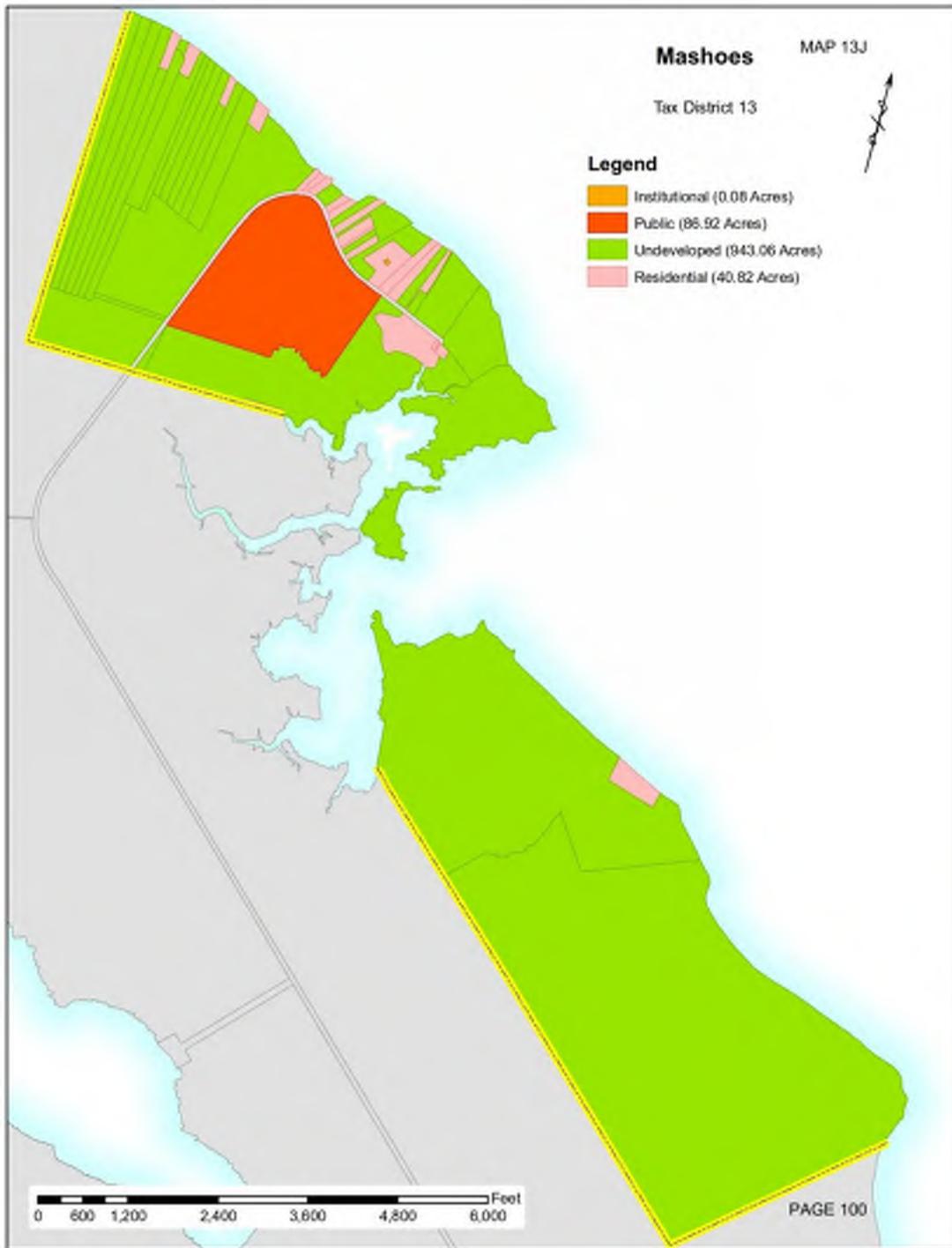
Source: Dare County 2009 Land Use Plan Update

Figure B.8 – Dare County Future Land Use Map, Manns Harbor



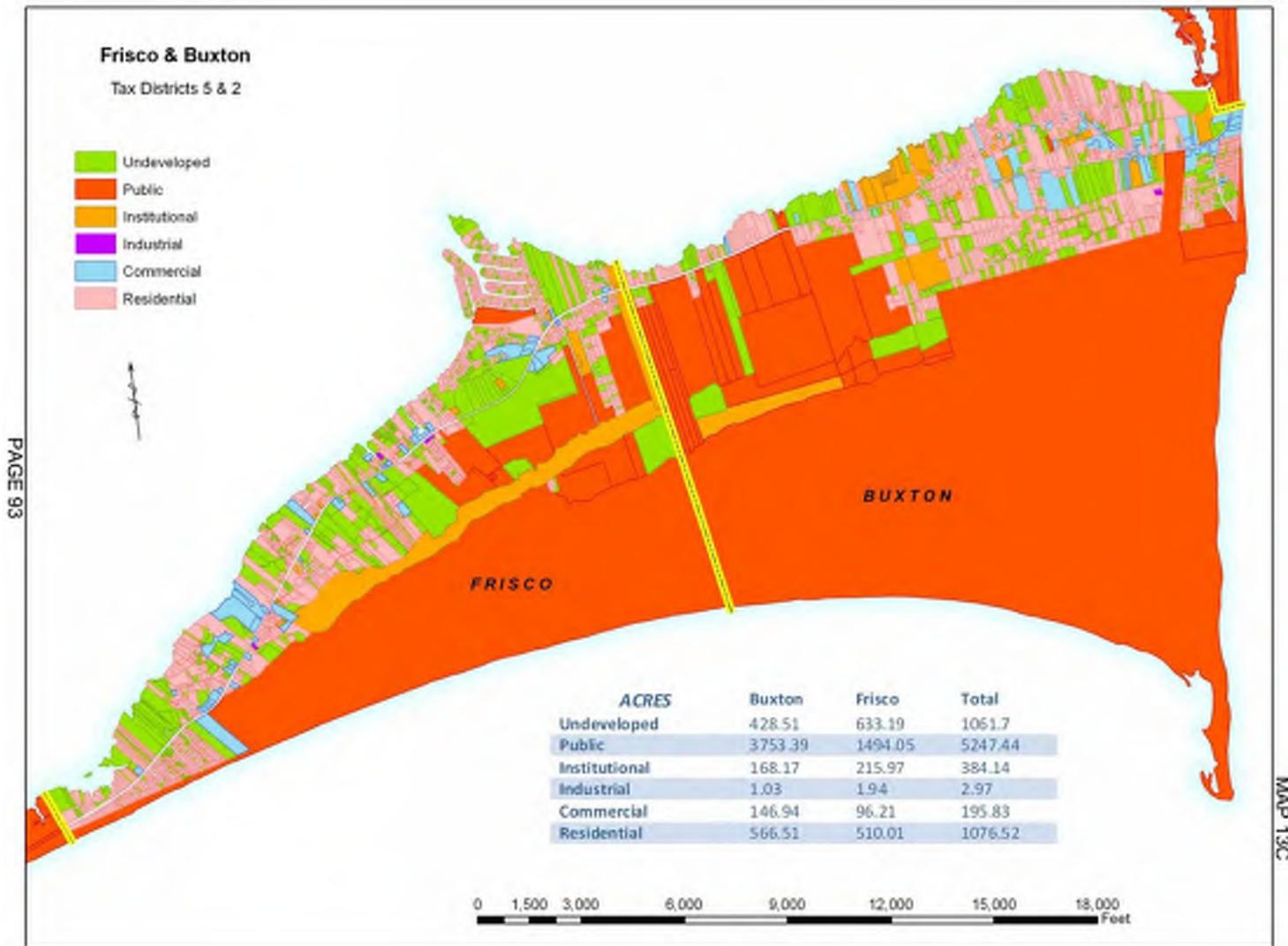
Source: Dare County 2009 Land Use Plan Update

Figure B.9 – Dare County Future Land Use Map, Mashoes



Source: Dare County 2009 Land Use Plan Update

Figure B.10 – Dare County Future Land Use Map, Frisco and Buxton

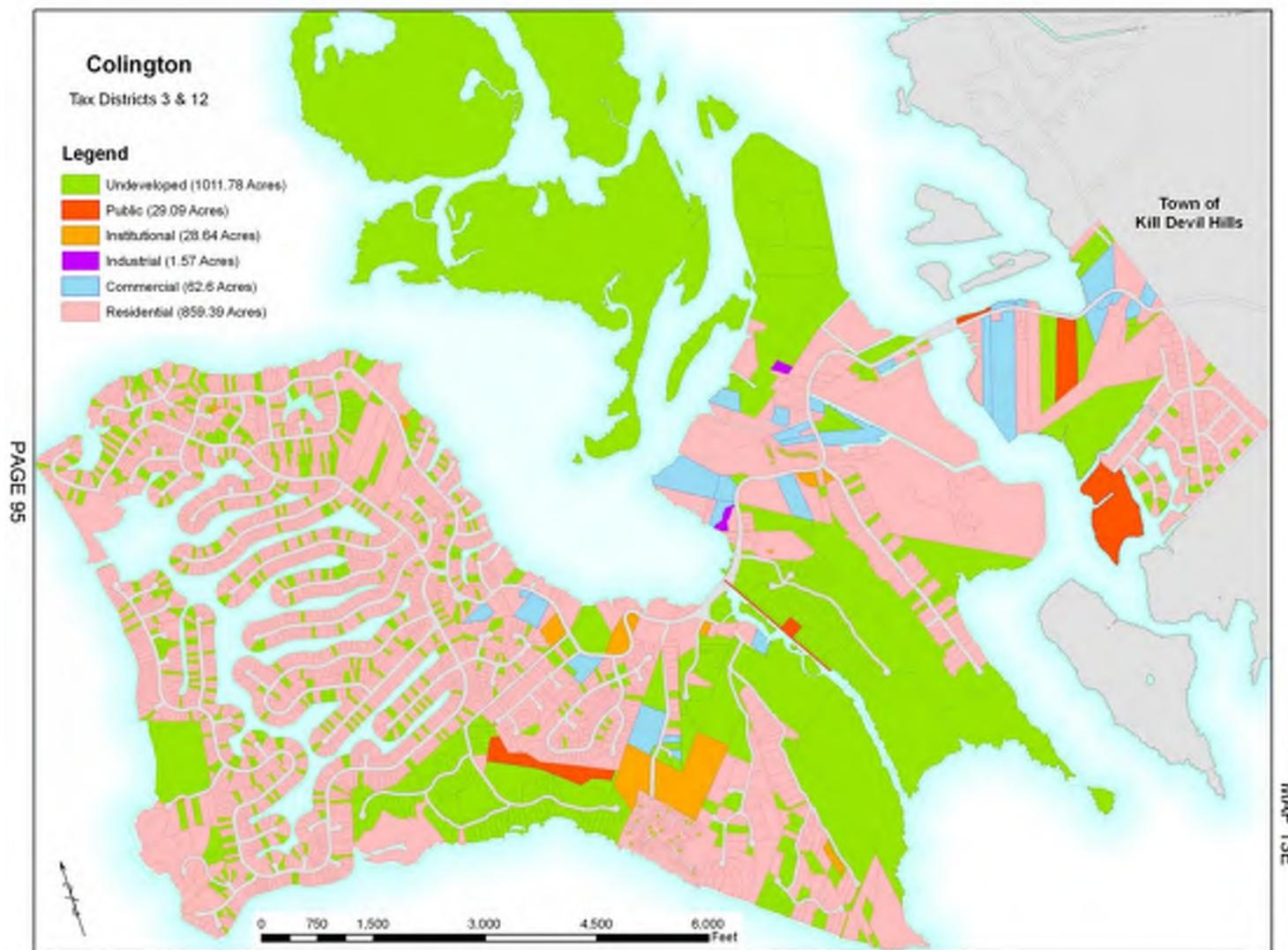


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MAP 13C

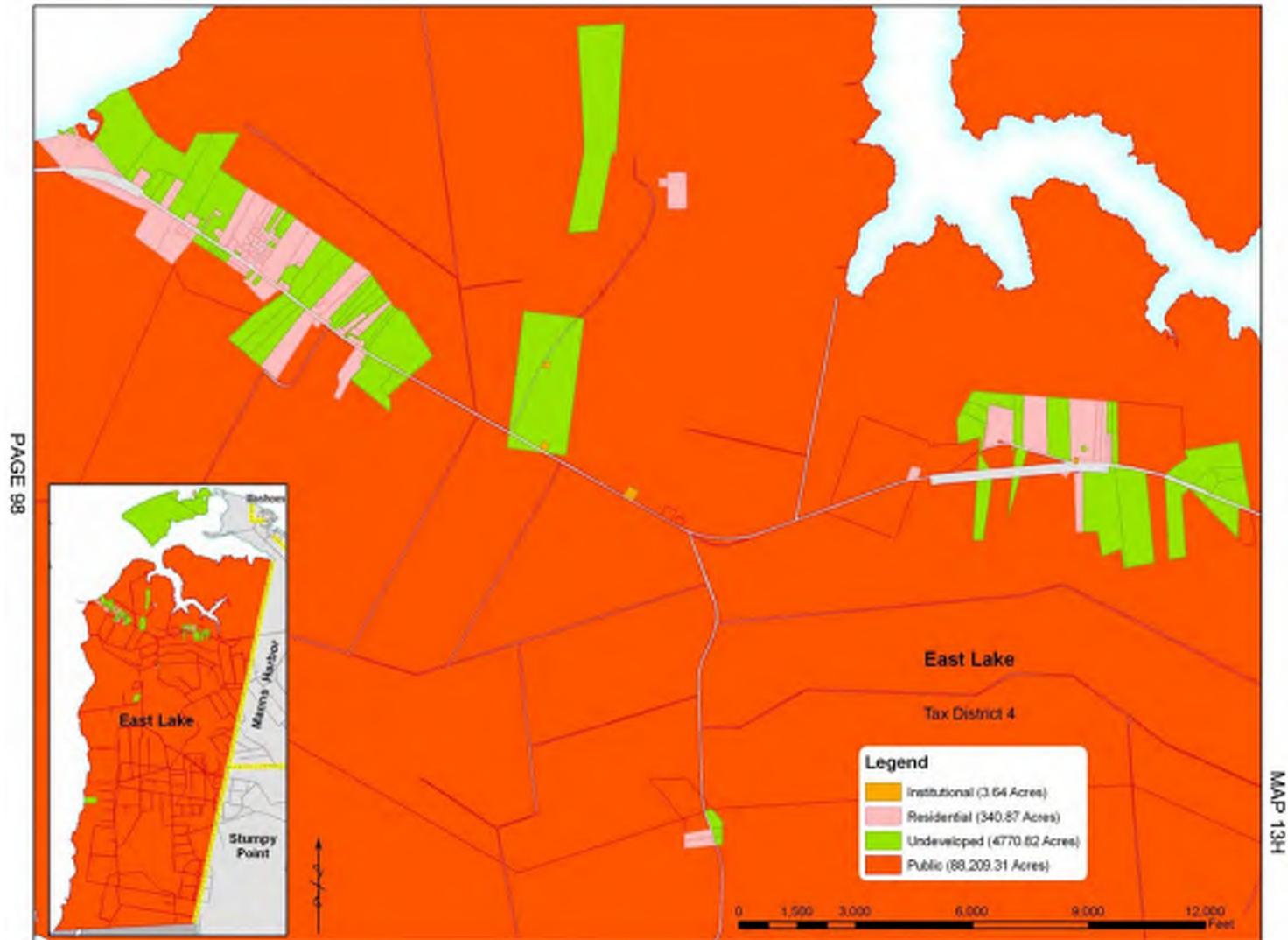
Source: Dare County 2009 Land Use Plan Update

Figure B.11 – Dare County Future Land Use Map, Colington



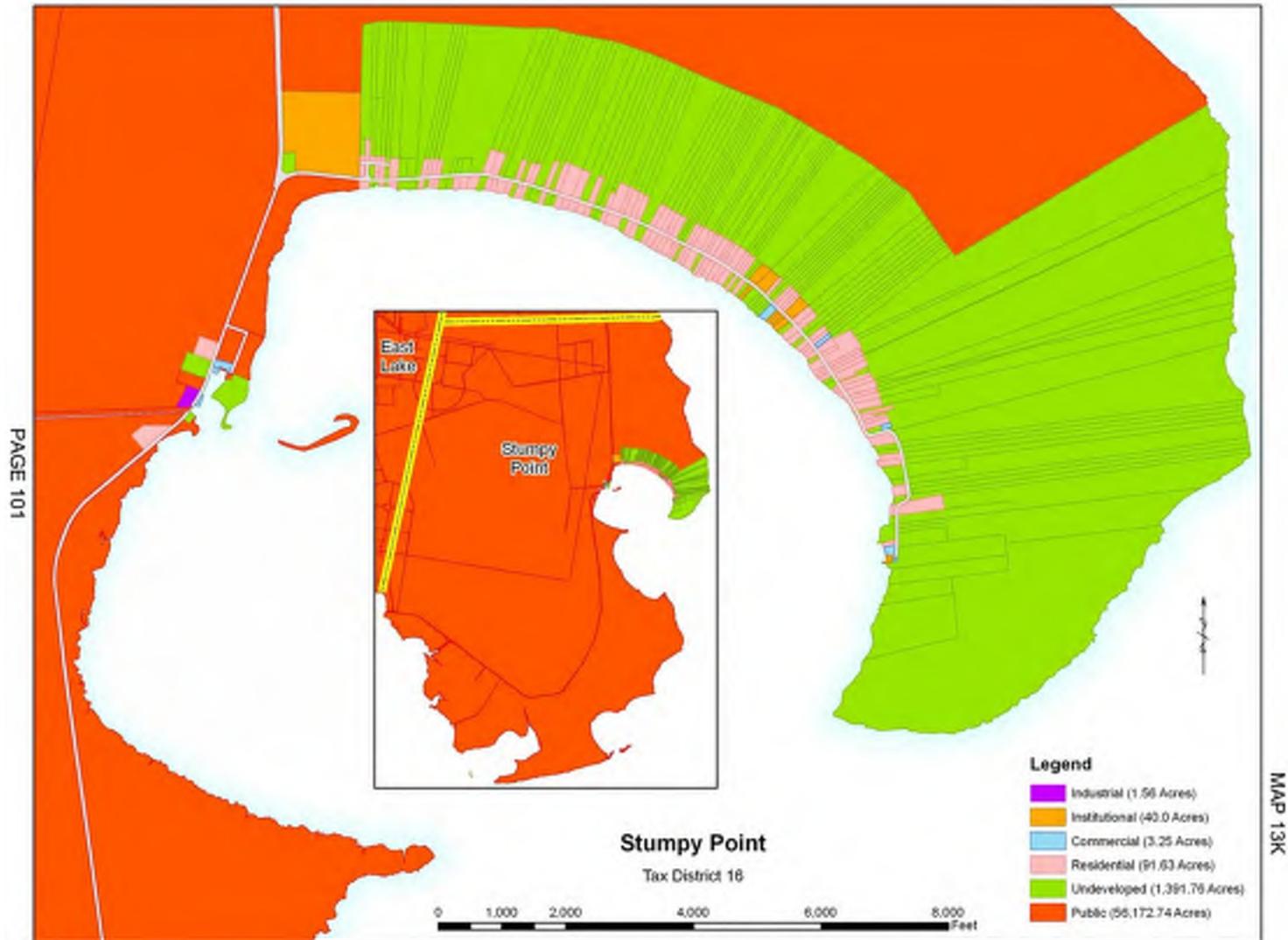
Source: Dare County 2009 Land Use Plan Update

Figure B.12 – Dare County Future Land Use Map, East Lake



Source: Dare County 2009 Land Use Plan Update

Figure B.13 – Dare County Future Land Use Map, Stumpy Point



Source: Dare County 2009 Land Use Plan Update

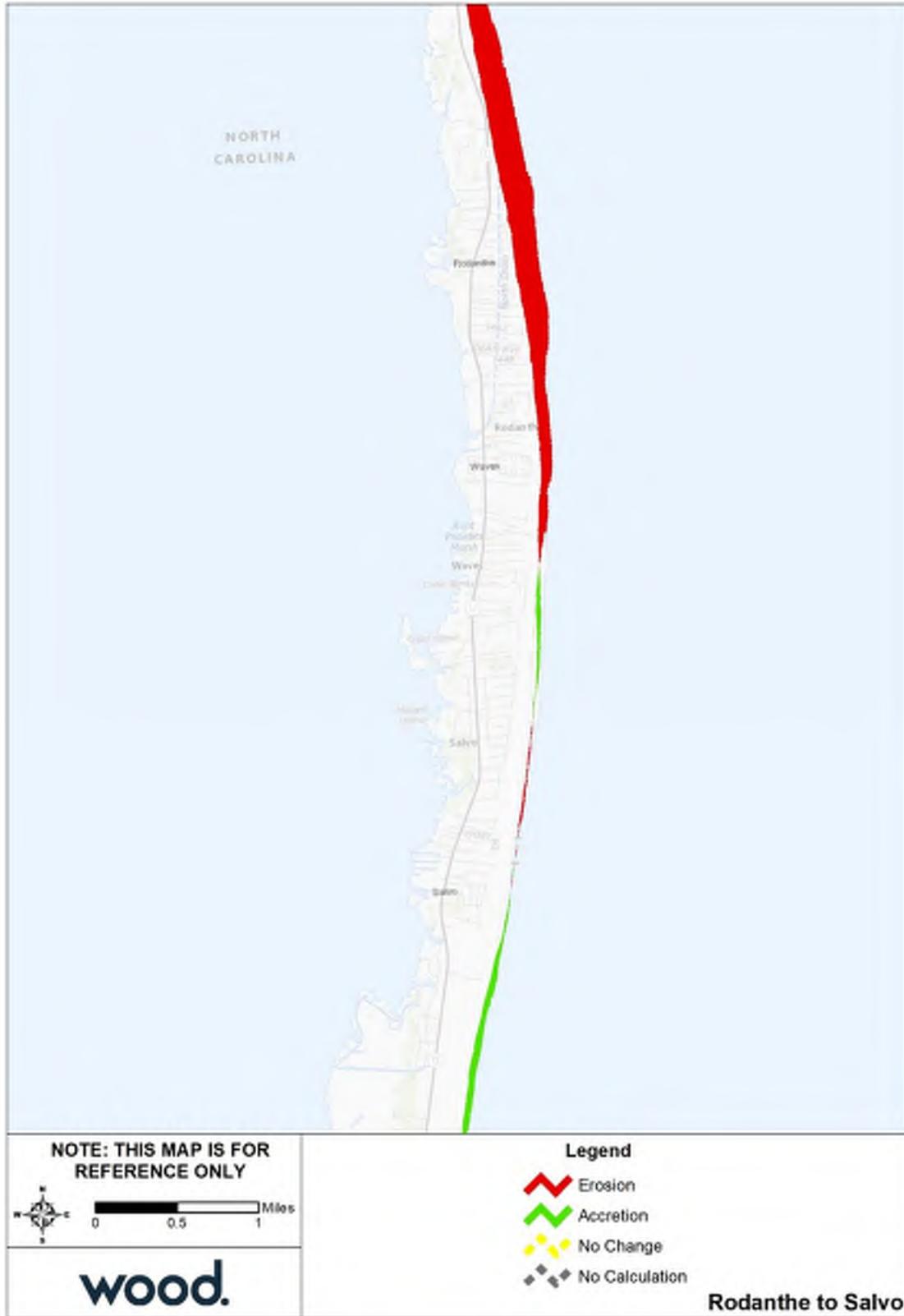
B.3 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority for Dare County unincorporated areas than for the Outer Banks Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are Coastal Hazards, Flood, and Wildfire.

B.3.1 Coastal Hazards

Figure B.14 and Figure B.15 on the following page shows coastal erosion rates along developed areas of unincorporated Dare County oceanfront coastline according to data from the DCM 2019 Long-Term Average Annual Erosion Rate Update Study. Erosion is most severe along the oceanfront coastline of Rodanthe and Waves, the east-facing oceanfront coast near Buxton, and the south-facing oceanfront coast near Hattaras.

Figure B.14 – Erosion Rates, Rodanthe to Salvo



Source: North Carolina Division of Coastal Management

Figure B.15 – Erosion Rates, Hattaras Island



Source: North Carolina Division of Coastal Management

B.3.2 Flood

Table B.13 details the acreage of unincorporated Dare County’s total area by flood zone on the effective DFIRM. Per this assessment, over 50 percent of the unincorporated area in the County falls within the mapped 1%-annual-chance floodplains.

Table B.13 – Flood Zone Acreage in Unincorporated Dare County

Flood Zone	Acreage	Percent of Total (%)
Zone A	25.2	0.0%
Zone AE	268,267.62	34.1%
Zone VE	126,595.88	16.1%
Zone X (500-year)	20,904.54	2.7%
Zone X Unshaded	21,814.31	2.8%
Open Water	348,447.44	44.3%
Total	786,054.99	--

Source: FEMA 2006 DFIRM

Figure B.16 reflects the effective mapped flood hazard zones for Dare County, and Figure B.17 displays the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.

To supplement the IRISK assessment of property at risk from the 1% annual chance flood event in Section 4 and provide a clearer picture of the current property at risk in the unincorporated Dare County, recent development not included in IRISK was analyzed using GIS to determine additional exposure to flood risk. Improved parcels in contact with the SFHA were considered at risk to the 1 percent annual chance flood. The count and total value of these parcels are summarized below. Note that this assessment does not account for the degree of exposure, so the result is a maximum exposure estimate for the modeled 1 percent annual chance flood. According to this assessment, nearly 70 percent of recent development in Dare County is located in or near the SFHA.

Table B.14 – Recent Development at Risk to Flood, Dare County

Recent Development at Risk		Percent of Total Recent Development	
Count of Parcels	Value of Parcels	Percent of Parcels	Percent of Values
660	\$152,695,400	69.8%	73.7%

Source: Parcel data retrieved November 2019; FEMA 2006 DFIRM

This assessment does not evaluate flood impacts or provide damage estimates. However, this summary of recent development in or near the floodplain provides some context to understand the degree to which the IRISK exposure and vulnerability numbers differ from current conditions.

Table B.15 provides building counts and estimated damages for Critical Infrastructure and Key Resources (CIKR) buildings by sector for the 1% annual chance flood event in the unincorporated areas of Dare County. Table B.16 provide building counts and estimated damages for High Potential Loss Properties exposed to the 1% annual chance flood.

Table B.15 – Critical Facilities Exposed to Flooding, Unincorporated Dare County

Sector	Number of Buildings at Risk	Estimated Damages
Banking and Finance	6	\$202,348
Commercial Facilities	356	\$12,986,197
Critical Manufacturing	40	\$604,424
Defense Industrial Base	1	\$1,490

ANNEX B: DARE COUNTY UNINCORPORATED AREAS

Sector	Number of Buildings at Risk	Estimated Damages
Emergency Services	5	\$405,993
Energy	4	\$698,943
Food and Agriculture	9	\$78,267
Government Facilities	21	\$498,574
Healthcare and Public Health	4	\$224,443
Transportation Systems	31	\$1,070,446
Water	1	\$1,227
All Categories	478	\$16,772,352

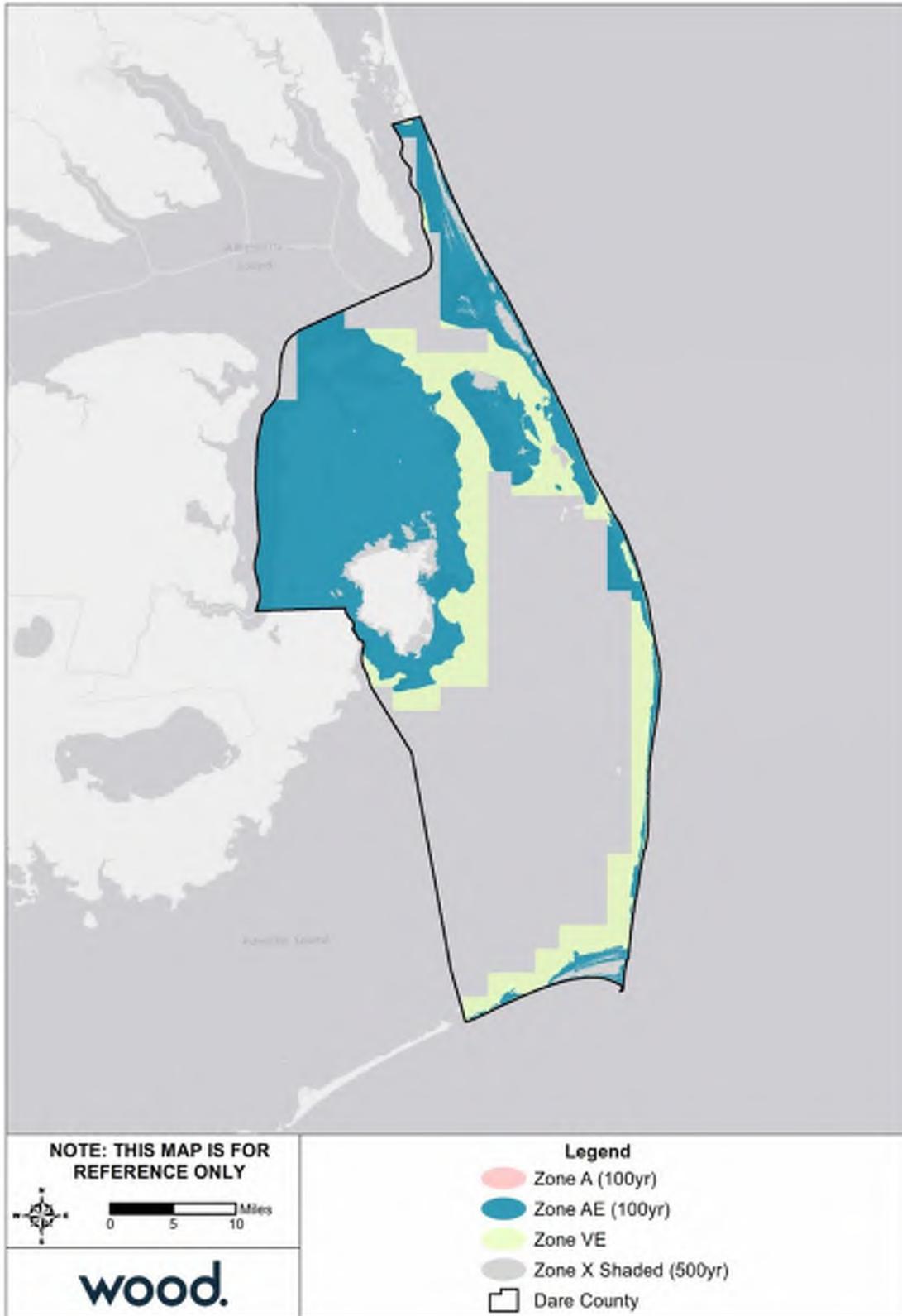
Source: NCEM Risk Management Tool

Table B.16 – High Potential Loss Properties Exposed to Flooding, Unincorporated Dare County

Sector	Number of Buildings at Risk	Estimated Damages
Commercial	6	\$485,306
Government	1	\$845,904
Religious	1	\$137,950
Residential	15	\$2,203,150
Utilities	1	\$682,025
All Categories	24	\$4,354,335

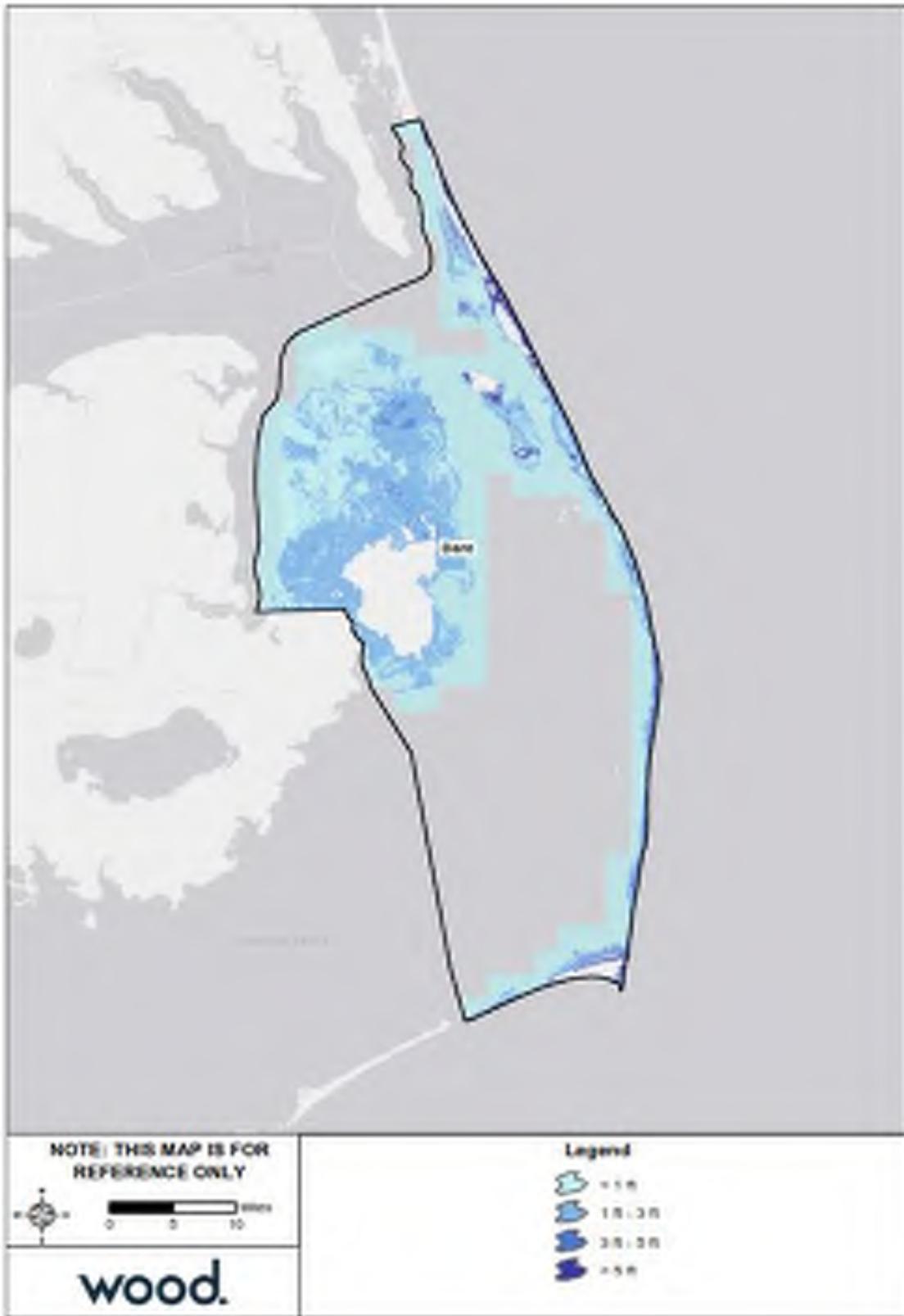
Source: NCEM Risk Management Tool

Figure B.16 – FEMA Flood Hazard Areas, Unincorporated Dare County



Source: FEMA Effective DFIRM

Figure B.17 – Flood Depth, 1%-Annual-Chance Floodplain, Unincorporated Dare County



Source: FEMA 2006 DFIRM

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In 2015, Dare County prepared a Repetitive Loss Area Analysis (RLAA) to identify and evaluate all properties with multiple NFIP claims as well as surrounding properties with one historical NFIP claim and/or similar flood conditions. In total, the RLAA identifies 92 repetitive loss areas containing 314 unmitigated repetitive loss properties as well as 1,374 additional properties. The RLAA report contains maps of all repetitive loss area locations as well as a set of mitigation recommendations being pursued for these properties.

B.3.3 Wildfire

Table B.17 summarizes the acreage in unincorporated Dare County that falls within the Wildland Urban Interface (WUI), categorized by housing density. Areas in the WUI are those where development may intermix with flammable vegetation. Over 96 percent of unincorporated Dare County is not included in the WUI.

Table B.17 – Wildland Urban Interface Acreage, Unincorporated Dare County

	Housing Density	Total Acreage	Percent of Total Acreage
	<i>Not in WUI</i>	756,645.2	96.2%
	LT 1hs/40ac	2,795.3	0.4%
	1hs/40ac to 1hs/20ac	1,509.5	0.2%
	1hs/20ac to 1hs/10ac	2,243.9	0.3%
	1hs/10ac to 1hs/5ac	2,942.5	0.4%
	1hs/5ac to 1hs/2ac	5,795.7	0.7%
	1hs/2ac to 3hs/1ac	12,749.7	1.6%
	GT 3hs/1ac	2,187.1	0.3%
	Total	786,868.9	

Source: Southern Wildfire Risk Assessment

Figure B.18 depicts the WUI for unincorporated Dare County. The WUI is the area where housing development is built near or among areas of vegetation that may be prone to wildfire. Figure B.19 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure B.20 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Much of mainland Dare County has high potential fire intensity and moderate burn probability. There is minimal WUI in this area, but it is at significant risk. Along the barrier island, potential fire intensity is greatest on the soundside. There is a significant overlap of WUI, moderate to high fire intensity, and burn probability in Frisco, Buxton, and Avon.

Table B.18 provides building counts and estimated damages for Critical Infrastructure and Key Resources (CIKR) buildings by sector at risk to wildfire hazard. Table B.19 provides counts and estimated damages for High Potential Loss Properties in unincorporated Dare County.

Table B.18 – Critical Facilities Exposed to Wildfire, Unincorporated Dare County

Sector	Number of Buildings at Risk	Estimated Damages
Banking and Finance	4	\$2,906,134
Commercial Facilities	249	\$108,920,857
Critical Manufacturing	80	\$22,249,332

ANNEX B: DARE COUNTY UNINCORPORATED AREAS

Sector	Number of Buildings at Risk	Estimated Damages
Defense Industrial Base	1	\$149,040
Emergency Services	7	\$4,959,551
Energy	1	\$176,944
Food and Agriculture	14	\$973,345
Government Facilities	52	\$46,782,262
Healthcare and Public Health	6	\$3,940,135
Postal and Shipping	1	\$58,746
Transportation Systems	30	\$7,521,481
Water	10	\$2,034,108
All Categories	455	\$200,671,935

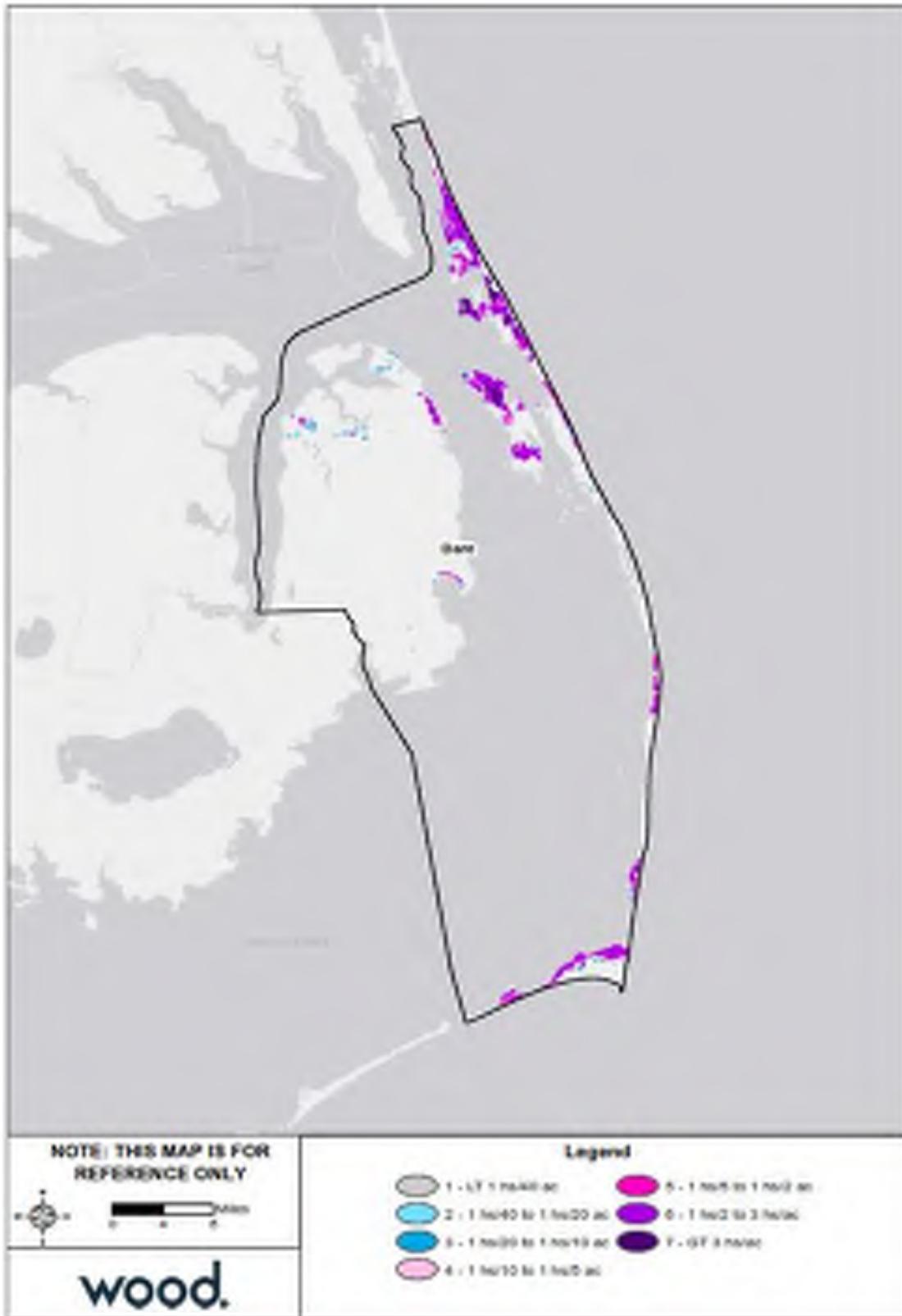
Source: NCEM Risk Management Tool

Table B.19 – High Potential Loss Properties Exposed to Wildfire, Unincorporated Dare County

Category	Number of Buildings at Risk	Estimated Damages
Commercial	4	\$13,626,678
Government	10	\$54,826,421
Residential	9	\$12,031,142
All Categories	23	\$80,484,241

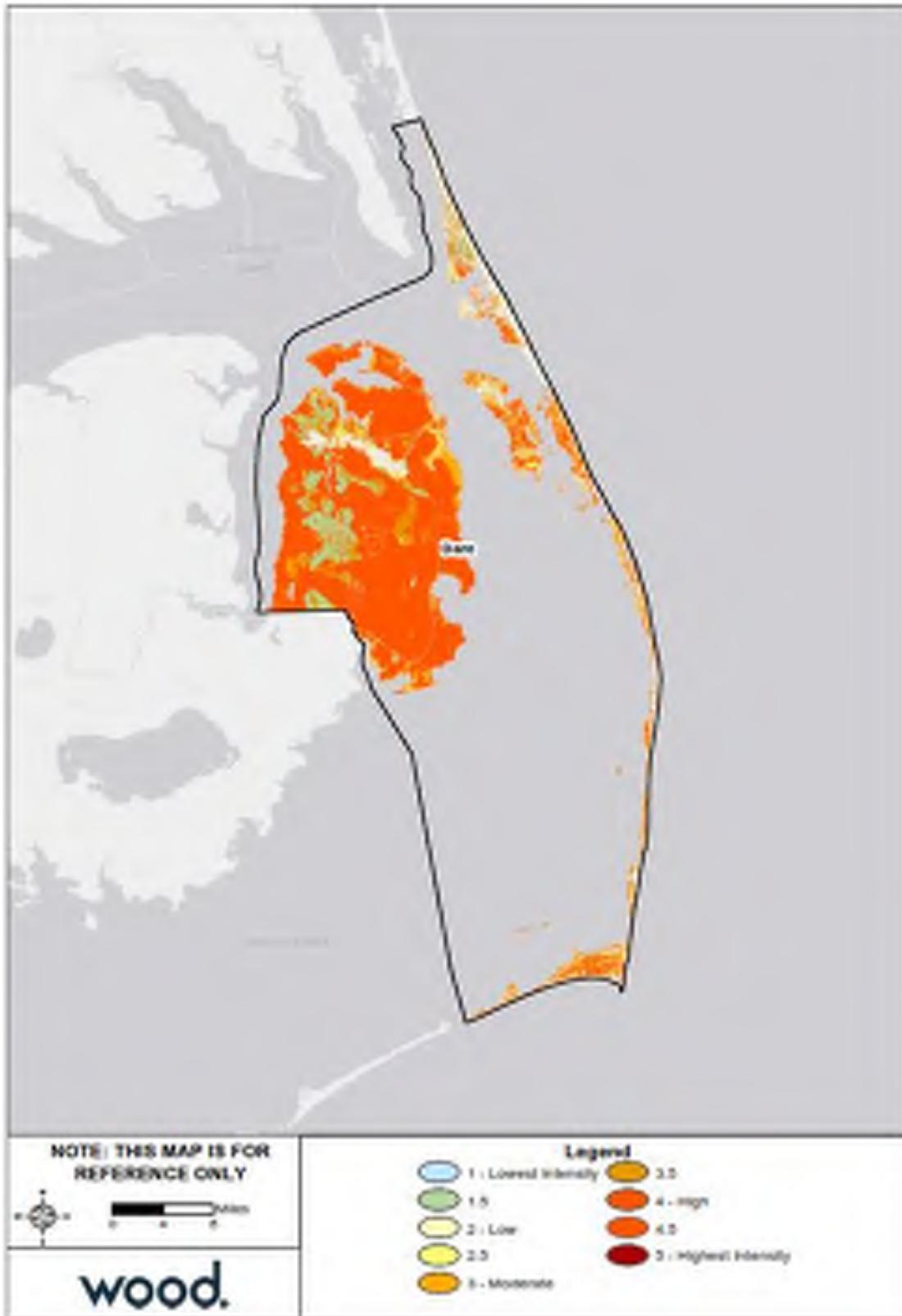
Source: NCEM Risk Management Tool

Figure B.18 – Wildland Urban Interface, Unincorporated Dare County



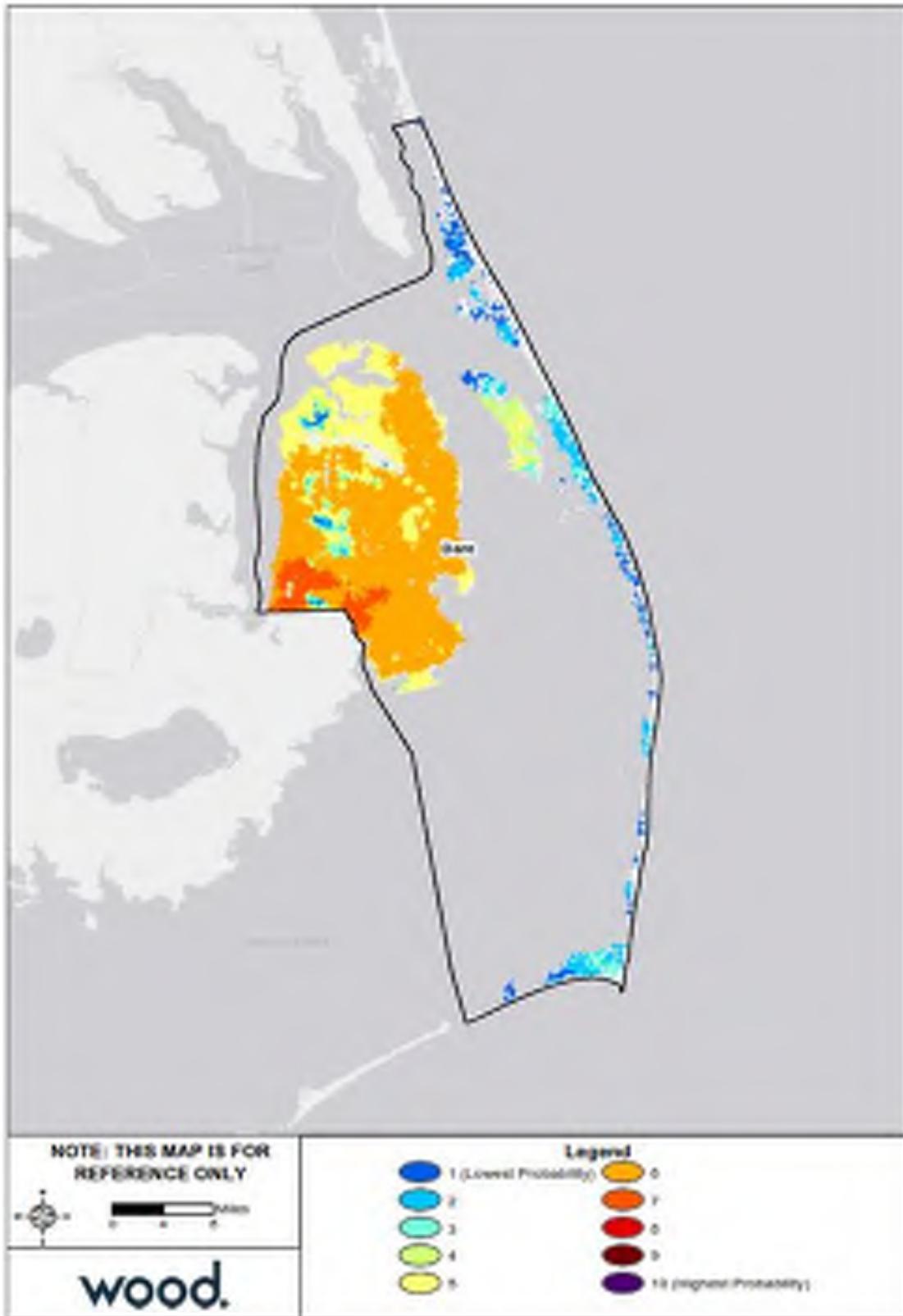
Source: Southern Wildfire Risk Assessment

Figure B.19 – Fire Intensity Scale, Unincorporated Dare County



Source: Southern Wildfire Risk Assessment

Figure B.20 – Burn Probability, Unincorporated Dare County



Source: Southern Wildfire Risk Assessment

B.4 CAPABILITY ASSESSMENT

B.4.1 Overall Capability

Details on the tools and resources in place and available to Dare County were provided by the County’s HMPC representatives and are summarized in Section 5 Capability Assessment. Based on that information and using the scoring methodology detailed in that section, Dare County has an overall capability rating of Moderate. The County’s Self-Assessment of key capability areas is summarized in Table B.20 below.

Table B.20 – Capability Self-Assessment, Unincorporated Dare County

Capability Area	Rating
Plans, Ordinances, Codes and Programs	High
Administrative and Technical Capability	High
Fiscal Capability	High
Education and Outreach Capability	High
Mitigation Capability	High
Political Capability	High
Overall Capability	High

B.4.2 Floodplain Management

Dare County joined the NFIP emergency program in 1971 and has been a regular participant in the NFIP since October 1978. The following tables reflect NFIP policy and claims data for the County categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table B.21 – NFIP Policy and Claims Data by Structure Type

Structure Type	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Single Family	7,393	\$4,693,844	\$1,877,385,300	5,972	\$82,347,519.32
2-4 Family	123	\$85,259	\$27,052,000	192	\$4,967,396.88
All Other Residential	570	\$178,514	\$85,229,100	133	\$5,630,022.38
Non-Residential	485	\$917,716	\$168,608,200	1,219	\$35,224,122.18
Total	8,571	\$5,875,333	\$2,158,274,600	7,516	\$128,169,060.76

Source: FEMA Community Information System, accessed December 2019

Table B.22 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	7,614	\$4,785,038	\$1,935,698,600	6,012	\$107,888,383.09
A Zones	49	\$57,511	\$11,510,600	441	\$5,420,802.15
AO Zones	88	\$67,894	\$28,144,200	26	\$307,917.32
V01-30 & VE Zones	116	\$393,718	\$24,599,700	229	\$3,484,451.01
V Zones	1	\$1,732	\$277,600	320	\$4,064,339.37
B, C & X Zone					
Standard	508	\$478,188	\$100,568,200	403	\$6,121,791.14
Preferred	172	\$77,452	\$56,673,000	56	\$745,122.28
Total	8,548	\$5,861,533	\$2,157,471,900	7,487	\$128,032,806.36

Source: FEMA Community Information System, accessed December 2019

ANNEX B: DARE COUNTY UNINCORPORATED AREAS

Table B.23 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	971	\$1,186,450	\$197,477,400	1,995	\$50,345,634.49
A Zones	11	\$24,816	\$2,460,700	288	\$3,748,951.21
AO Zones	1	\$956	\$250,000	2	\$11,219.15
V01-30 & VE Zones	36	\$110,701	\$5,248,100	131	\$1,747,868.29
V Zones	0	\$0	\$0	302	\$3,961,221.28
B, C & X Zone	59	\$66,134	\$16,919,800	235	\$3,850,472.04
Standard	31	\$53,741	\$8,851,800	231	\$3,822,228.34
Preferred	28	\$12,393	\$8,068,000	4	\$28,243.70
Total	1,078	\$1,389,057	\$222,356,000	2,953	\$63,665,366.46

Source: FEMA Community Information System, accessed December 2019

Table B.24 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	6,643	\$3,598,588	\$1,738,221,200	4,017	\$57,542,748.60
A Zones	38	\$32,695	\$9,049,900	153	\$1,671,850.94
AO Zones	87	\$66,938	\$27,894,200	24	\$296,698.17
V01-30 & VE Zones	80	\$283,017	\$19,351,600	98	\$1,736,582.72
V Zones	1	\$1,732	\$277,600	18	\$103,118.09
B, C & X Zone	621	\$489,506	\$140,321,400	223	\$3,016,250.38
Standard	477	\$424,447	\$91,716,400	171	\$2,299,371.80
Preferred	144	\$65,059	\$48,605,000	52	\$716,878.58
Total	7,470	\$4,472,476	\$1,935,115,900	4,533	\$64,367,248.90

Source: FEMA Community Information System, accessed December 2019

B.5 MITIGATION STRATEGY

Action #	Action Description	Hazard(s) Addressed	Goal & Objective Addressed	Priority	Lead Agency / Department	Potential Funding Source	Implementation Timeline	2020 Status	2020 Implementation Status Comments
Prevention									
DAR1	Identify Funding to improve stormwater drainage and land management preparation for flooding	Hurricane & Tropical Storm, Flood, Coastal Hazards	3.3	7-High	Dare County Planning	General Fund, Grant Funds	1-3 years	Carry Forward	Group saw need to expand participants to include adding Soil and Water staff to help identify funding sources.
DAR2	Expand the number of lifeguarded beaches in unincorporated Dare to bring lifeguards to all villages in addition to ocean rescue response personnel.	Coastal Hazards	3.3	3-Medium	National Park Service Dare County	General Fund, Grant Funds	2-3 years	New	N/A
DAR3	Update Dare County's 2001 comprehensive stormwater management plan.	Hurricane & Tropical Storm, Flood, Coastal Hazards, Severe Weather, Transportation Infrastructure Failure	3.1	6-High	Dare County Planning	General Fund, Grant Funds	1-3 years	New	N/A
DAR4	Grow Local Emergency Planning Committee membership by expanding industry participation while fully implementing Community Right to Know reporting requirements to enhance knowledge of hazardous material risk across the region	Radiological Emergency, Hazardous Materials Incident	3.3	5-High	Dare County Emergency Management	General Fund, Grant Funds	1-2 years	New	N/A
DAR5	Expand involvement with the North Carolina Information Sharing and Analysis Center to ensure actionable intelligence on immediate and emerging threats to the region are identified and shared with first responders, private sector, emergency management, local law enforcement and other partner agencies in a timely manner.	Terrorism, Radiological Emergency	4.2	3-Medium	Dare County Emergency Management, Dare Sheriff's office	General funds	1-3 years	New	N/A
Property Protection									
DAR6	Utilize existing post storm information and GIS mapping to identify the most vulnerable structures in the County.	Hurricane & Tropical Storm, Severe Weather, Coastal Hazards, Flood	3.3	5-High	Dare County Planning, Dare County Emergency Management	General Fund, Grant Funds	1 year	Carry Forward	Group saw the need to revisit this effort.
DAR7	Become a FIREWISE Community that is able to protect people, property, and natural resources from wildland fire.	Wildfire	3.3	7-High	Dare County Emergency Management, Fire Marshal, US Fish & Wildlife, NC Forestry	Grant funds, General Fund	1-3 years	New	N/A
DAR8	Maintain or increase the number of flood insurance policies in place across Dare County when new flood hazard maps become effective and many properties are reclassified as Shaded X and/or X zone no longer requiring flood insurance associated with a federally insured mortgage.	Hurricane & Tropical Storm, Severe Weather, Coastal Hazards, Flood	3.3	5-High	Dare County Planning, Emergency Management	General Fund	1-2 years	New	N/A
DAR9	Pursue the installation of flood gauges at all towns and villages. Have those gauges tied into the county alert and notification system allowing users to be alerted to changing conditions as they occur.	Hurricane & Tropical Storm, Severe Weather, Coastal Hazards, Flood	2.2	5-High	Dare County Emergency Management	Grant Funds, NC Emergency Mgmt.	2 years	New	N/A

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Action #	Action Description	Hazard(s) Addressed	Goal & Objective Addressed	Priority	Lead Agency / Department	Potential Funding Source	Implementation Timeline	2020 Status	2020 Implementation Status Comments
DAR10	Complete a cybersecurity risk assessment from an external subject matter expert. Based on risk assessment outcomes develop and require all employees, volunteers and elected officials to complete cybersecurity awareness training before being given access to county information technology systems. Develop and offer cybersecurity awareness training for citizens. Develop and conduct cybersecurity exercises.	Terrorism, Cyber Attack	3.3	5-High	Dare County Emergency Management Dare County Information Technology	General Fund	2 years	New	N/A
DAR11	Work with all landowners including federal, state, and private to ensure proper maintenance and use of existing drainage systems to minimize impacts and reduce standing water on all property.	Hurricane & Tropical Storm, Flood, Coastal Hazards, Transportation Infrastructure Failure	1.1	7-High	Dare County Planning -- Soil and Water Conservation Board	Grants, tax or tax incentive program	1-3 years	New	N/A
Natural Resource Protection									
DAR12	Study and document sound side erosion rates and water level changes	Hurricane & Tropical Storm, Severe Weather, Coastal Hazards, Flood	3.2	3-Low	NC Division of Coastal Mgmt.	Grants, Volunteer	3- 5 years	New	N/A
DAR13	Encourage the use of natural barriers over hard structure to control shoreline erosion and protect built infrastructure.	Hurricane & Tropical Storm, Flood, Coastal Hazards, Transportation Infrastructure Failure	3.3	4-Medium	Dare County Planning -- Soil and Water Conservation Board	General Fund	3-5 years	New	N/A
DAR14	Protect natural floodplain function and resilient areas as open space to provide flood and coastal hazard risk reduction and potentially increase CRS 420 open space credit	Hurricane & Tropical Storm, Severe Weather, Coastal Hazards, Flood	3.2	4-Medium	Dare County Planning -- Soil and Water Conservation Board	General Fund	1-3 years	New	N/A
Structural Projects									
DAR15	Protect transportation routes and improve traffic flow along NC 12. Improve NC 12 to a two-lane road and coordinate traffic signals.	Hurricane & Tropical Storm, Flood, Coastal Hazards	2.2	7-High	Dare County Planning, Dare County Emergency Management, NCDOT	NCDOT	1 -3 years	Carry Forward	Group saw the need to revisit this effort and reshape the action for the new plan.
DAR16	Advocate the replacement of the Lindsey Warren (Alligator River) Bridge	Hurricane & Tropical Storm, Flood, Coastal Hazards	2.1	7-High	Dare Board of Commissioners, NCDOT	NCDOT	1 year	Carry Forward	Group saw the need to rename this effort and reshape the action for the new plan.
DAR17	Prioritize and Fund Critical Drainage Projects that improve stormwater drainage and land management preparation for flooding.	Hurricane & Tropical Storm, Flood, Coastal Hazards	2.1	7-High	NCDOT, Dare County Planning, Dare Soil & Water Board	Grant Fund, local stormwater assessments	1-3 years	Carry Forward	Group saw the need to refocus this effort and reshape the action for the new plan to include northern Roanoke Island flooding and expanded "pumping plan".
DAR18	Take action on the results of the Moffit-Nicholas/ NCDOT Northern Roanoke Island drainage study.	Hurricane & Tropical Storm, Flood, Coastal Hazards, Transportation Infrastructure Failure	3.3	7-High	Dare Board of Commissioners, NCDOT	Grant Fund, local stormwater assessments	2 years	New	N/A
DAR19	Complete physical security assessment at all public facilities and large crowd (500+ people) gathering venues and events. Based on results, make physical security improvements and/or implement measures to protect lives from likely threats.	Terrorism	3.3	3-Low	Dare County Emergency Management. Dare Sheriff's Office	General fund	1-3 years	New	N/A
DAR20	Improve water supply and delivery systems to save water and reduce drought impacts by eliminating breaks and leaks. Encourage drought-tolerant landscape design to reduce dependence on irrigation. Encourage permeable driveways and surfaces to reduce runoff and promote groundwater recharge.	Drought, Flood	2.1	7-High	Dare County Water Department	Water enterprise fund	3-5 years	New	N/A

ANNEX B: DARE COUNTY UNINCORPORATED AREAS

Action #	Action Description	Hazard(s) Addressed	Goal & Objective Addressed	Priority	Lead Agency / Department	Potential Funding Source	Implementation Timeline	2020 Status	2020 Implementation Status Comments
Emergency Services									
DAR21	Establish secondary water supplies/points for fire protection efforts.	Hurricane & Tropical Storm, Flood, Wildfire	2.2	4-Medium	Dare County Fire Marshal	Grant Funds	3-5 years	Carry Forward	Group saw the need to revisit this effort and reshape the action for the new plan with a focus on improving water utility infrastructure capability and resilience.
DAR22	Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available	All	2.2	5-High	Dare County Fire Marshal, Public Works, Emergency Mgmt.	Grant Funds	1-2 years	Carry Forward	Group saw the need to revisit this effort and develop an actionable critical facility emergency power plan.
DAR23	Study and identify all key secondary roadways used by workforce that flood routinely and develop plans to mitigate flood hazards. These are transit corridors that support year-round resident populations like Colington Road, NC 345, and Kitty Hawk Road.	Hurricane & Tropical Storm, Flood, Coastal Hazards, Severe Winter Storm, Severe Weather, Tornado, Wildfire, Transportation Infrastructure Failure	2.2	5-High	NCDOT, Dare County Planning	General fund	2 years	New	N/A
DAR24	Complete commodity flow study to identify hazardous materials that are routinely transported across the region.	Radiological Emergency, Hazardous Materials Incident	3.3	3-Low	Dare County Emergency Management	Grant funds	3-5 years	New	N/A
Public Education & Awareness									
DAR25	Coordinate with NC Floodplain Mapping on public dissemination of updated floodplain maps	Hurricane & Tropical Storm, Flood, Coastal Hazards	4.2	4-Medium	NC Floodplain Mapping, Dare County Planning	General Fund	1 year	Carry Forward	Group saw the need to retain this effort and reshape the action for the new plan.
DAR26	Lobby State Legislators to require realtors to disclose flood zones.	Hurricane & Tropical Storm, Flood, Coastal Hazards	4.1	3-Medium	Dare County Planning	General Fund	3 years	Carry Forward	Group saw the need to retain this effort and revisit how best to move it forward in the new plan.
DAR27	Maintain or increase the number of flood insurance policies in place across Dare County when new flood hazard maps become effective and many properties are reclassified as Shaded X and/or X zone no longer requiring flood insurance associated with a federally insured mortgage.	Hurricane & Tropical Storm, Flood, Coastal Hazards	3.3	5-High	Dare County Planning, Emergency Management	General Fund	1-2 years	New	N/A
DAR28	Expand hazardous weather awareness to include tornados and winter storms by expanding NWS partnership opportunities to include SKYWARN training and community forums	Hurricane & Tropical Storm, Extreme Heat, Flood, Coastal Hazards, Severe Winter Storm, Severe Weather, Tornado, Wildfire, Drought	1.1	6-High	National Weather Service, Dare County Emergency Management	General Fund	2 years	New	N/A
DAR29	Increase the use of the NWS alert feature of the County mass notification system so that residents and visitors have direct access to all issued weather alerts.	Hurricane & Tropical Storm, Extreme Heat, Flood, Coastal Hazards, Severe Winter Storm, Severe Weather, Tornado, Wildfire, Drought	1.1	6-High	Dare County Emergency Management	General Fund	1 year	New	N/A
DAR30	Expand the "Love The Beach Respect The Ocean" beach safety campaign by expanding participation with the Chamber of Commerce, Property Managers, as well as hotel, restaurant, and beach equipment rental companies	Coastal Hazards	1.1	5-High	Dare County Emergency Management, Public Relations	General Fund	1-3 years	New	N/A
DAR31	Take actions needed to ensure equipment and personnel are readily available to implement the Dare County Emergency Pumping Plan at multiple locations simultaneously.	Hurricane & Tropical Storm, Flood, Coastal Hazards, Severe Weather, Transportation Infrastructure Failure	2.2	7-High	Dare County Planning, Emergency Management, NC Forestry	General Fund, grants	1 year	New	N/A

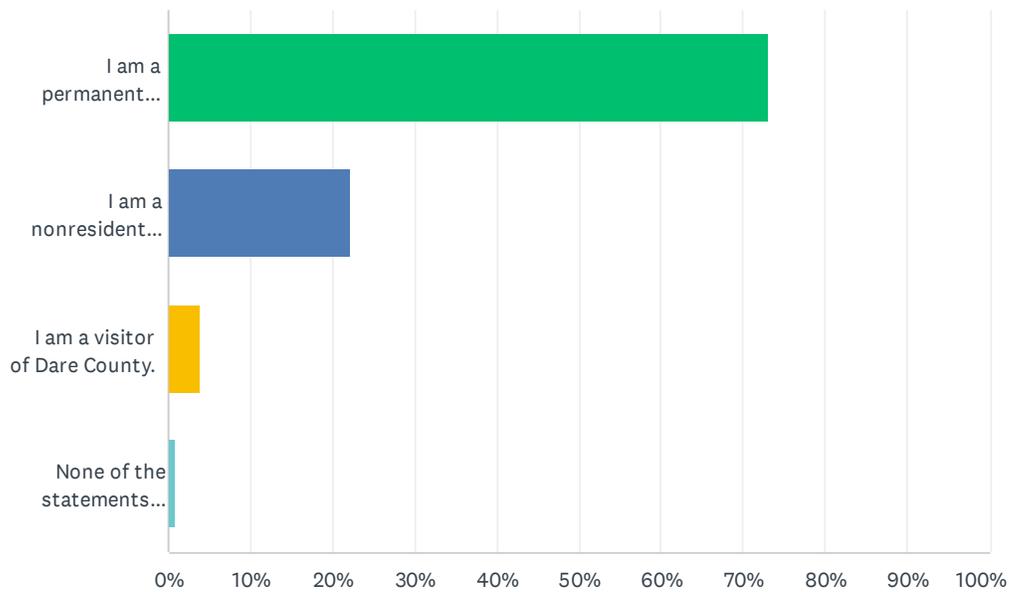


Appendix C: Community Questionnaire Results

- ◆ 1st Questionnaire Results (Community Response)
- ◆ 2nd Questionnaire Results (Community Response)
- ◆ 2nd Questionnaire (CAT Response)

Q1 Select the statement that best describes you.

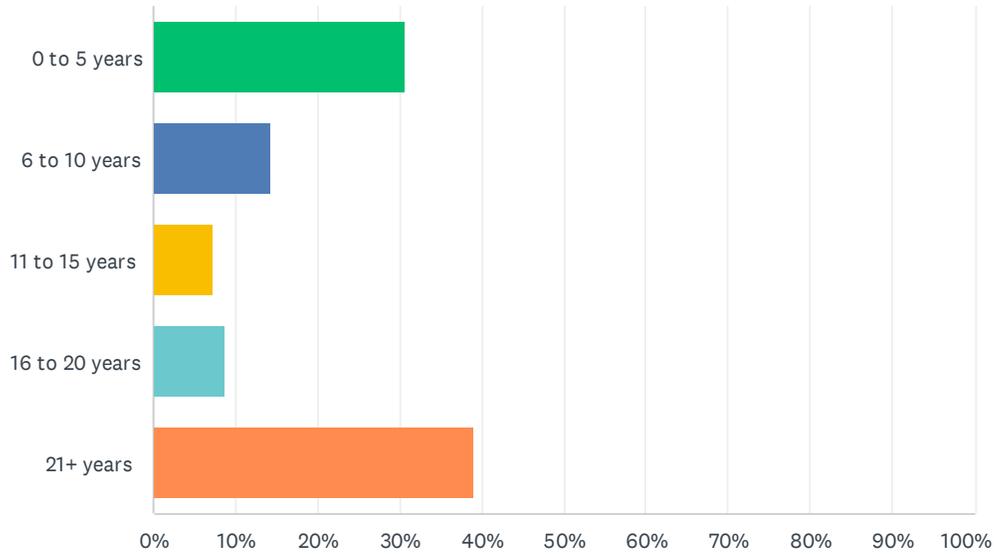
Answered: 1,121 Skipped: 0



ANSWER CHOICES	RESPONSES	
I am a permanent resident of Dare County.	73.06%	819
I am a nonresident property owner in Dare County.	22.12%	248
I am a visitor of Dare County.	3.93%	44
None of the statements above describe me.	0.89%	10
TOTAL		1,121

Q2 You answered, "I am a permanent resident of Dare County." How long have you lived in Dare County?

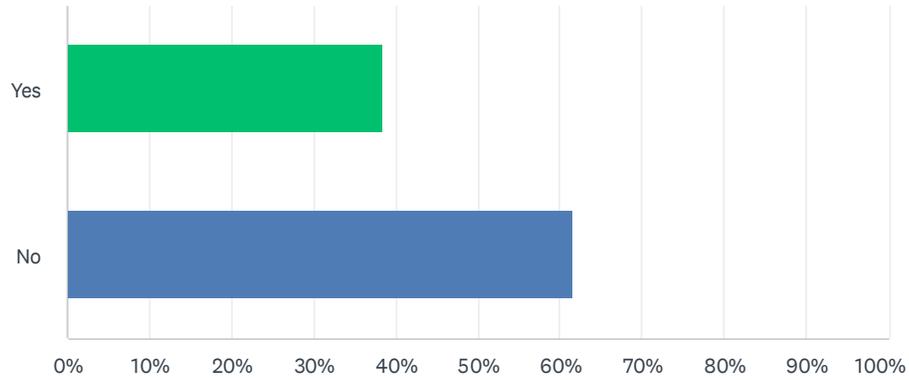
Answered: 818 Skipped: 303



ANSWER CHOICES	RESPONSES
0 to 5 years	30.68% 251
6 to 10 years	14.30% 117
11 to 15 years	7.33% 60
16 to 20 years	8.68% 71
21+ years	39.00% 319
TOTAL	818

Q3 You answered, "I am a permanent resident of Dare County." Are you a resident of Hatteras Island?

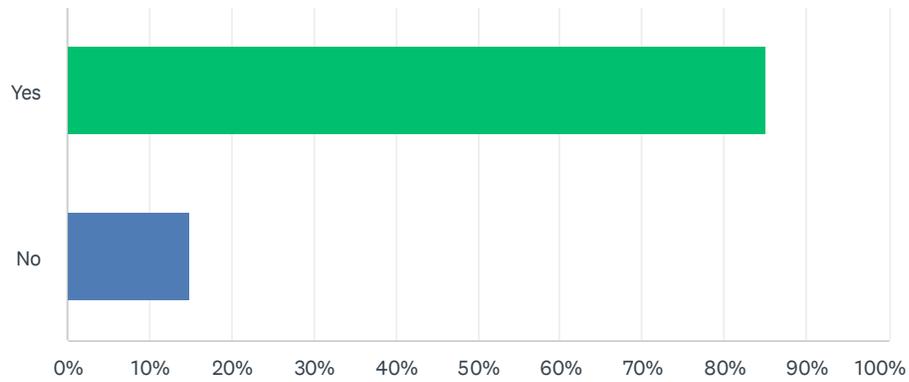
Answered: 818 Skipped: 303



ANSWER CHOICES	RESPONSES	
Yes	38.39%	314
No	61.61%	504
TOTAL		818

Q4 You answered, "I am a nonresident property owner in Dare County." Do you own property on Hatteras Island?

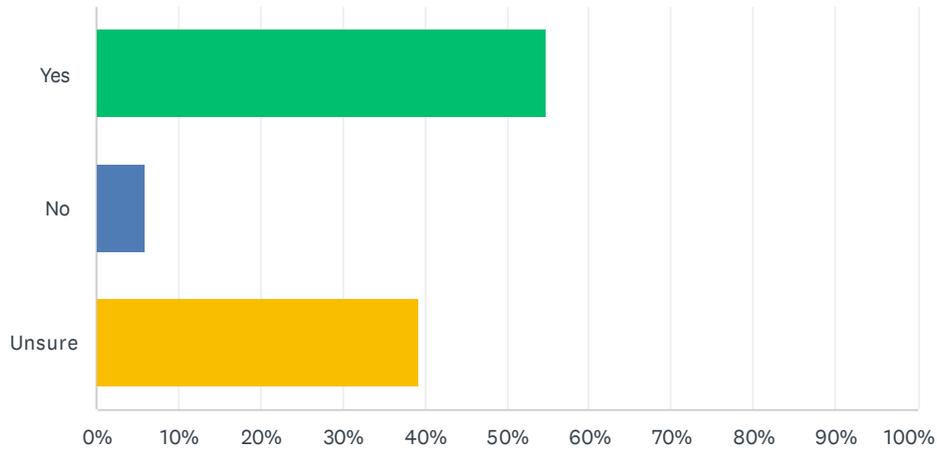
Answered: 249 Skipped: 872



ANSWER CHOICES	RESPONSES
Yes	85.14% 212
No	14.86% 37
TOTAL	249

Q5 You indicated that you are a resident of or own property on Hatteras Island. Does your residence or property on Hatteras Island have an Elevation Certification?

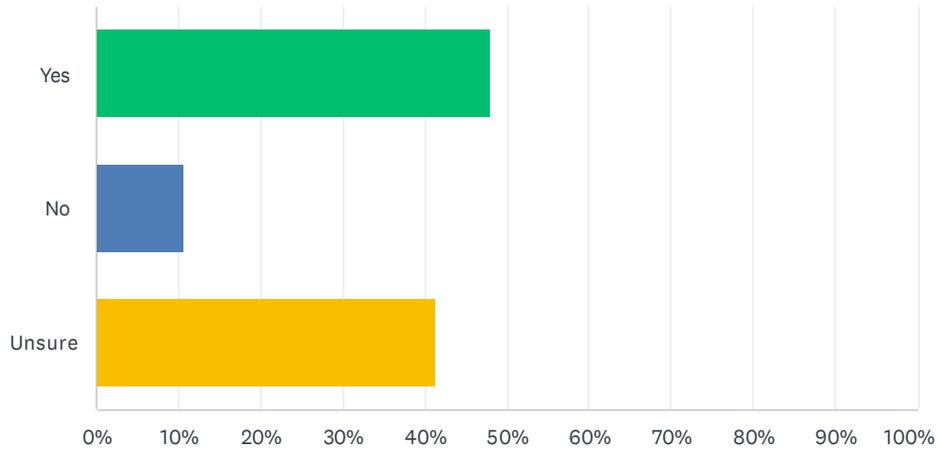
Answered: 489 Skipped: 632



ANSWER CHOICES	RESPONSES	
Yes	54.81%	268
No	5.93%	29
Unsure	39.26%	192
TOTAL		489

Q6 You indicated that you are a resident of or own property on Hatteras Island. Is your residence on Hatteras Island elevated above the FEMA 100-yr Base Flood Elevation (BFE)?

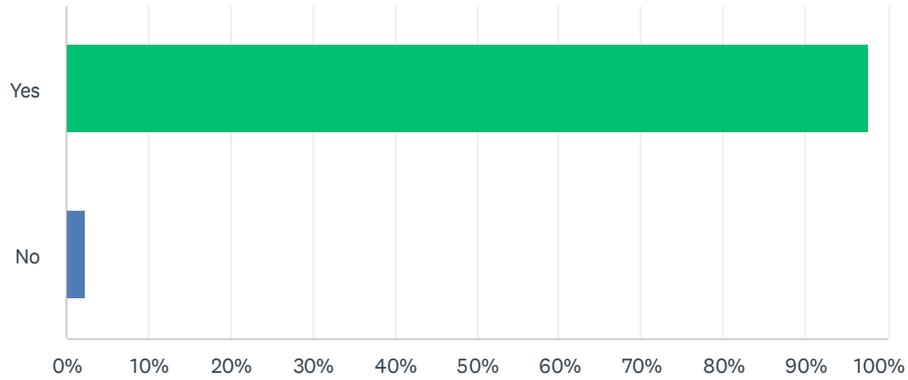
Answered: 489 Skipped: 632



ANSWER CHOICES	RESPONSES	
Yes	48.06%	235
No	10.63%	52
Unsure	41.31%	202
TOTAL		489

Q7 You answered, "I am a visitor of Dare County." Have you visited Dare County within the past year?

Answered: 43 Skipped: 1,078

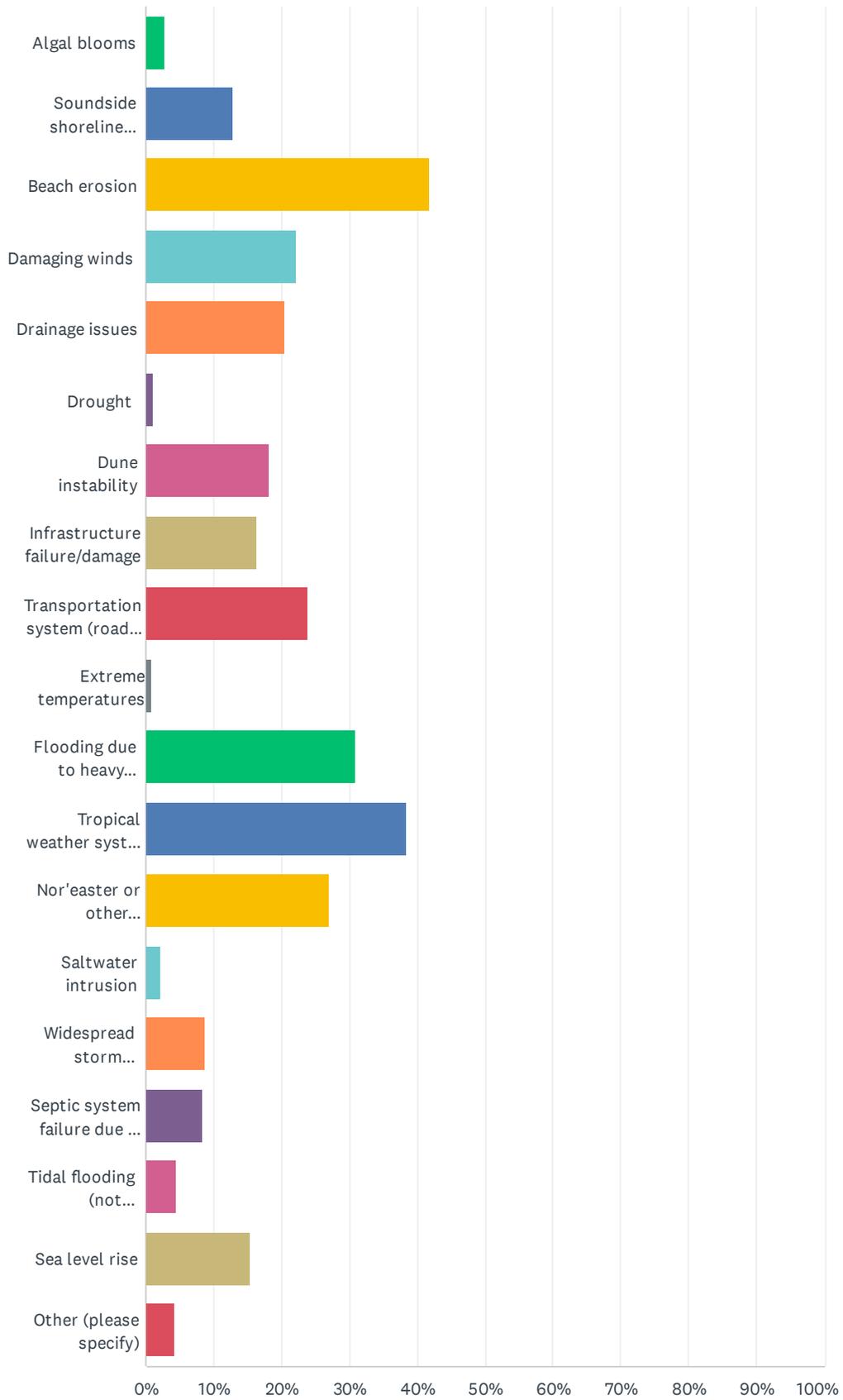


ANSWER CHOICES	RESPONSES
Yes	97.67% 42
No	2.33% 1
TOTAL	43

Q8 Of the following hazards, select 3 that are the most significant or threatening to you.

Answered: 962 Skipped: 159

Coastal Resilience Questionnaire



Coastal Resilience Questionnaire

ANSWER CHOICES	RESPONSES	
Algal blooms	2.70%	26
Soundside shoreline erosion	12.79%	123
Beach erosion	41.89%	403
Damaging winds	22.14%	213
Drainage issues	20.37%	196
Drought	1.14%	11
Dune instability	18.09%	174
Infrastructure failure/damage	16.32%	157
Transportation system (roads and ferries) closures or delays over 12 hours	23.91%	230
Extreme temperatures	0.83%	8
Flooding due to heavy precipitation/stormwater management issues	30.87%	297
Tropical weather systems including depressions, storms, and hurricanes	38.46%	370
Nor'easter or other non-tropical weather systems	27.03%	260
Saltwater intrusion	2.18%	21
Widespread storm inundation	8.73%	84
Septic system failure due to flooding	8.42%	81
Tidal flooding (not storm-related)	4.57%	44
Sea level rise	15.28%	147
Other (please specify)	4.26%	41
Total Respondents: 962		

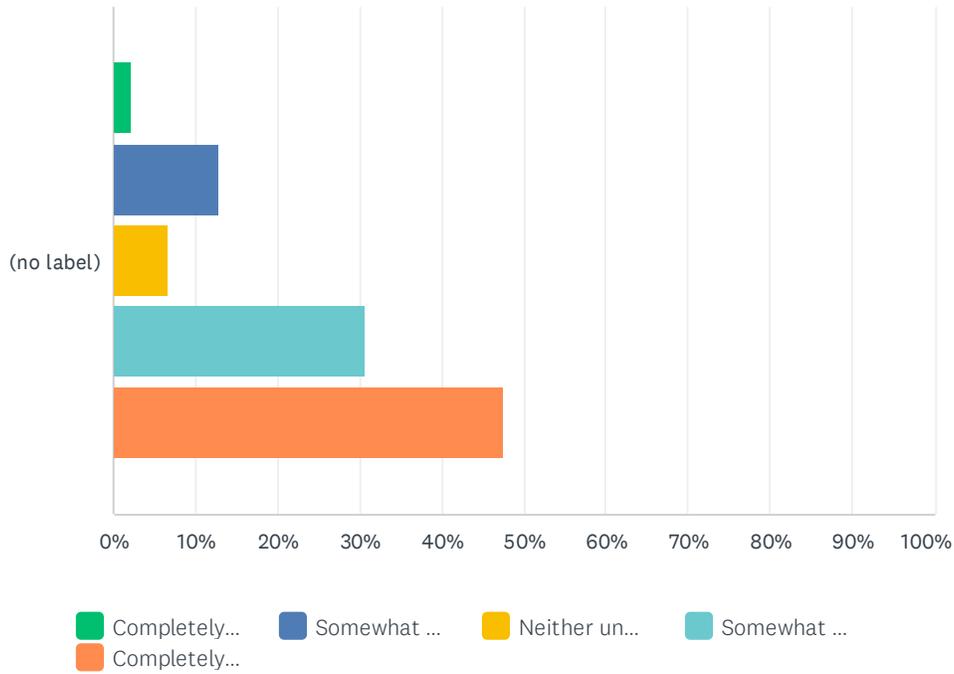
#	OTHER (PLEASE SPECIFY)	DATE
1	Highway speed limit	12/13/2021 8:56 AM
2	Builders cutting ALL trees without trying to save any. Trees are a tremendous way to fight erosion.	12/12/2021 10:47 PM
3	TRAFFIC	12/12/2021 9:39 PM
4	Wasting money trying to stop Mother Nature	12/10/2021 9:24 AM
5	Overdevelopment damage to environment	12/10/2021 7:34 AM
6	Tourists	12/9/2021 2:04 PM
7	Government intrusion	12/8/2021 4:50 PM
8	Fire department response to major emergencies	12/6/2021 6:18 PM
9	The massive influx of people who don't understand the area with a failing infrastructure	12/3/2021 2:51 AM
10	Avon Harbor being abandoned by the county regardless of 2 perpetual easements to maintain the Federal Harbor, basin, channel and spoils site.	12/2/2021 4:55 PM
11	Transportation System North Dare County (Need of additional bridge to the mainline).	12/2/2021 12:09 PM
12	Continued development in vulnerable areas	12/2/2021 10:55 AM
13	Can't access OI with vessel	12/2/2021 6:29 AM

Coastal Resilience Questionnaire

14	Idiots trying to ruin our island life ! Trying to changes our ways!	12/1/2021 10:44 PM
15	Too many tourists	12/1/2021 6:08 PM
16	Self Serving Politicians	12/1/2021 12:15 PM
17	re-entry after evacuation orders	12/1/2021 11:28 AM
18	I sore of a water park in Rodanthe	12/1/2021 10:05 AM
19	Landowner at the back of our neighborhood removed drainage culvert, filled in ditch, resulting in regular flooding of our neighborhood.	12/1/2021 10:05 AM
20	Development trends	12/1/2021 7:50 AM
21	Over development which leads to sound water degradation due to the large number of septic systems which does eventually lead to poor sound water quality.	12/1/2021 12:27 AM
22	None	11/30/2021 4:40 PM
23	The recent unfair tax imposed on property owners in Avon whose property is on the ocean side of highway 12 from Due East and south. We are paying a higher rate than other property owners in Avon, and all are affected by beach erosion and subsequent flooding.	11/30/2021 9:38 AM
24	use of sandbags and bulkheads that help cause erosion	11/30/2021 8:06 AM
25	Pollution	11/29/2021 8:18 PM
26	The bypass design is dangerous	11/29/2021 6:25 PM
27	sound water quality	11/29/2021 6:23 PM
28	soundside flooding	11/29/2021 6:06 PM
29	Offshore drilling	11/29/2021 6:06 PM
30	Overbuilt lots	11/29/2021 2:46 PM
31	Idiot governmental authorities who make bad decision	11/29/2021 8:03 AM
32	Lack of central sewage availability	11/28/2021 8:18 PM
33	Building new lots higher than surrounding homes	11/28/2021 5:20 PM
34	OVER DEVELOPMWNT MAKE SETBACKS MORE THAN 10 FT.	11/28/2021 8:44 AM
35	Tourism eating our housing market	11/28/2021 5:28 AM
36	Over construction	11/27/2021 9:47 PM
37	Affordable housing for local workers	11/27/2021 6:33 PM
38	Too many large houses being built snd to many air b&b in people houses. No year round rentals	11/27/2021 5:10 PM
39	All part of living in Dare County	11/27/2021 12:40 PM
40	Too many people	11/27/2021 9:22 AM
41	# of visitors	11/26/2021 8:21 AM

Q9 On a scale of 1 to 5, where 1 is "completely unable" and 5 is "completely able," how would you rate Hatteras Island's ability to withstand and recover from a minor storm with limited flooding?

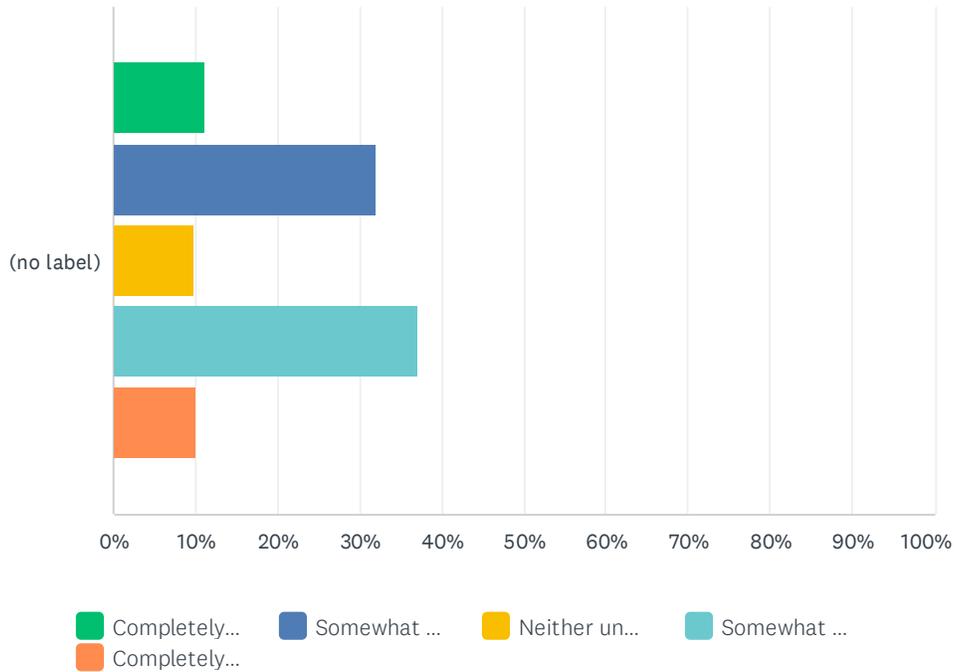
Answered: 962 Skipped: 159



	COMPLETELY UNABLE	SOMEWHAT UNABLE	NEITHER UNABLE NOR ABLE	SOMEWHAT ABLE	COMPLETELY ABLE	TOTAL	WEIGHTED AVERAGE
(no label)	2.08%	12.89%	6.65%	30.77%	47.61%	962	4.07
	20	124	64	296	458		

Q10 On a scale of 1 to 5, where 1 is "completely unable" and 5 is "completely able," how would you rate Hatteras Island's ability to withstand and recover from a major storm with extensive flooding?

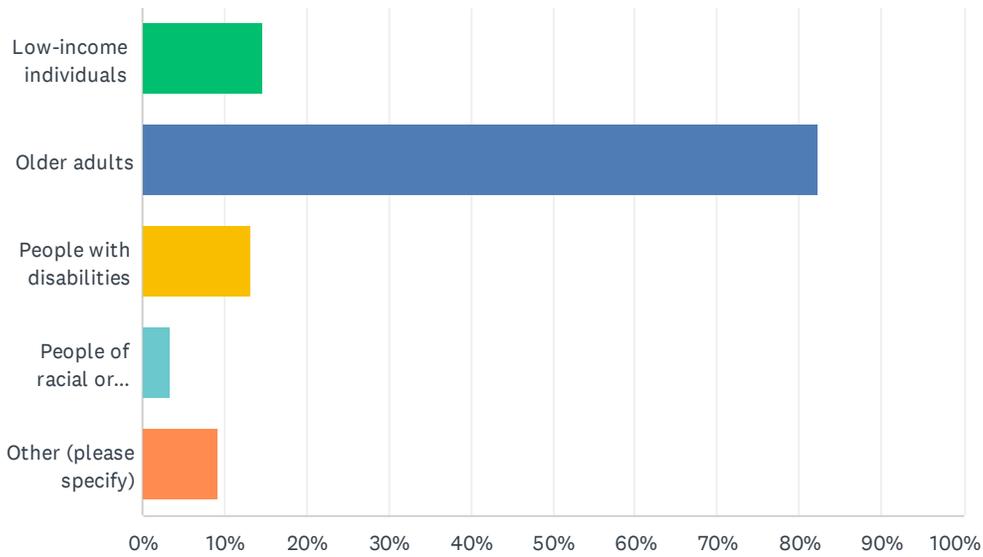
Answered: 962 Skipped: 159



	COMPLETELY UNABLE	SOMEWHAT UNABLE	NEITHER UNABLE NOR ABLE	SOMEWHAT ABLE	COMPLETELY ABLE	TOTAL	WEIGHTED AVERAGE
(no label)	11.02% 106	32.02% 308	9.88% 95	37.01% 356	10.08% 97	962	2.92

Q11 Do you identify with any of these populations?

Answered: 691 Skipped: 430



ANSWER CHOICES	RESPONSES	
Low-income individuals	14.76%	102
Older adults	82.20%	568
People with disabilities	13.17%	91
People of racial or ethnic minorities	3.33%	23
Other (please specify)	9.12%	63
Total Respondents: 691		

#	OTHER (PLEASE SPECIFY)	DATE
1	no	12/12/2021 11:32 AM
2	Middle class	12/11/2021 7:42 PM
3	Business owner	12/11/2021 6:36 PM
4	People with significant health problems	12/11/2021 4:08 PM
5	No	12/10/2021 5:16 PM
6	>	12/8/2021 10:05 PM
7	None of the above	12/7/2021 9:18 AM
8	No	12/6/2021 2:14 PM
9	NA	12/5/2021 7:14 AM
10	age late 60's	12/4/2021 8:31 AM
11	middle aged but in need of medical assistance OFF the island.	12/3/2021 9:35 PM
12	None of your business	12/3/2021 9:00 PM

Coastal Resilience Questionnaire

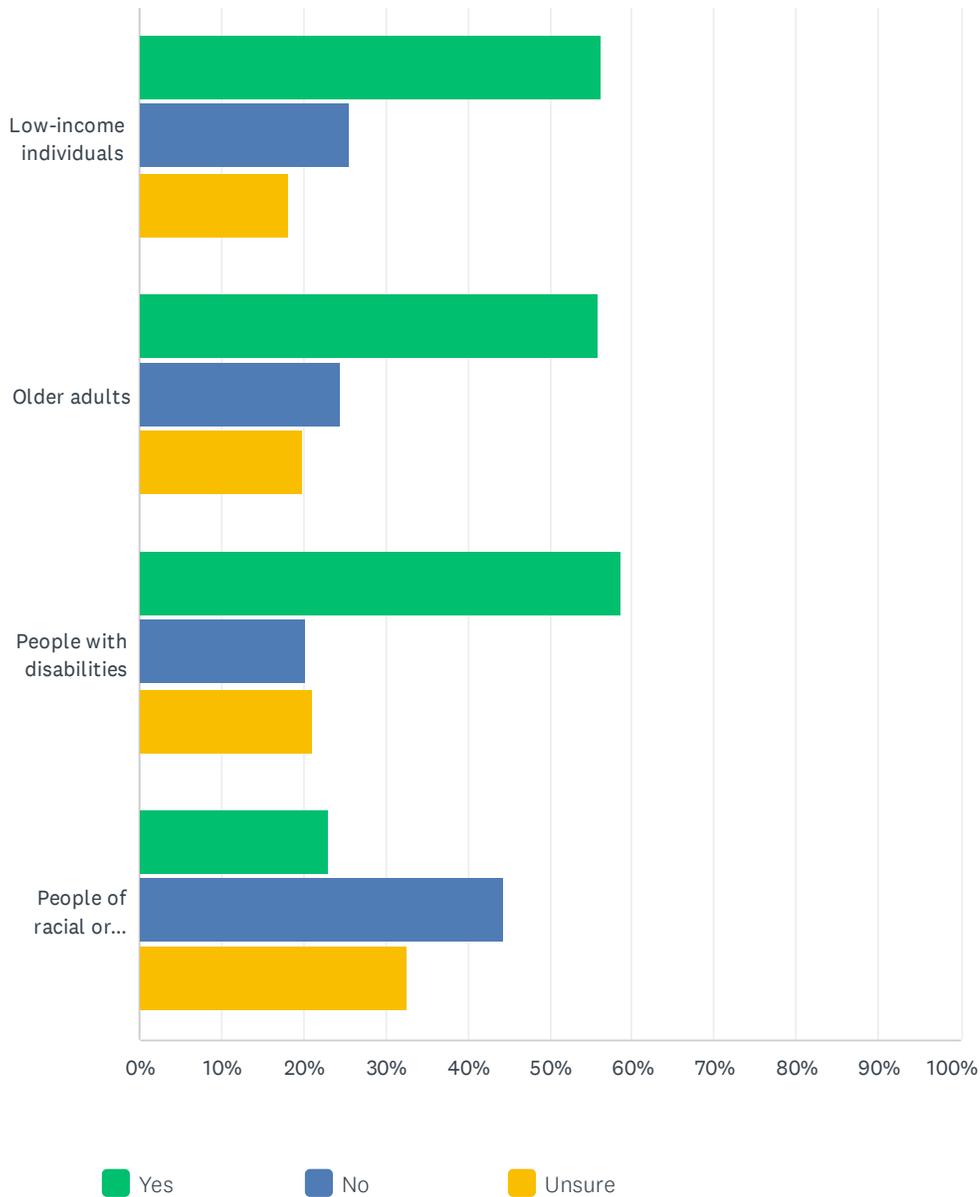
13	People with common sense.	12/3/2021 7:31 PM
14	Immigrants	12/3/2021 11:18 AM
15	na	12/3/2021 10:49 AM
16	Retirees	12/3/2021 8:16 AM
17	Should be of no concern	12/3/2021 7:37 AM
18	Hard working, honest citizen unable to afford decent housing	12/3/2021 2:54 AM
19	Recent retirees	12/3/2021 12:31 AM
20	Medical emergency needs	12/3/2021 12:22 AM
21	Middle class	12/2/2021 10:23 PM
22	63+ Adults	12/2/2021 6:17 PM
23	Medical issues - no care available after the Avon Medical Center is closed. No one "On Call" anymore. Very scary. Hospital is over an hour away in Nags Head.	12/2/2021 3:07 PM
24	Live alone	12/2/2021 12:25 PM
25	Everyone	12/2/2021 12:11 PM
26	Workforce individual	12/2/2021 9:55 AM
27	Why would this be important in the least	12/2/2021 9:35 AM
28	what dose this have to do with this study!	12/2/2021 9:22 AM
29	Middle class worker	12/1/2021 10:44 PM
30	All	12/1/2021 9:30 PM
31	No	12/1/2021 8:15 PM
32	No services for Deaf people	12/1/2021 7:23 PM
33	None of the above	12/1/2021 4:04 PM
34	Middle class, no disabilities	12/1/2021 11:27 AM
35	Child with disabilities	12/1/2021 10:09 AM
36	Retired but not elderly	12/1/2021 9:13 AM
37	no	11/30/2021 7:59 PM
38	I retired from the County of Dare and unable to afford to live here. Taxes are too high for Natives. We were born here as were our ancestors back to the early 1600's. We are being priced out of our homeland.	11/30/2021 4:53 PM
39	Homeless population growing	11/30/2021 3:15 PM
40	Retired with limited income	11/30/2021 9:38 AM
41	RECENT CHSS alumni with plans to keep living on hatteras	11/30/2021 9:03 AM
42	None	11/29/2021 7:25 PM
43	Medical issues	11/29/2021 6:25 PM
44	Property taxes are way too high.	11/29/2021 6:07 PM
45	Adult spending 4 monts in Avon each year	11/29/2021 5:33 PM
46	No	11/29/2021 4:13 PM
47	Older adult and with disabilities	11/29/2021 1:07 PM
48	No	11/29/2021 10:31 AM
49	Normal	11/29/2021 8:04 AM
50	I am middle aged with young child	11/29/2021 7:54 AM

Coastal Resilience Questionnaire

51	Middle class	11/28/2021 8:20 PM
52	Caregivers to older adults	11/28/2021 11:40 AM
53	What kind of question does this answer determine for you	11/28/2021 8:45 AM
54	Working class with two jobs to survive	11/27/2021 10:01 PM
55	No	11/27/2021 8:56 PM
56	Ethnic minority, but non-Hispanic	11/27/2021 7:30 PM
57	No	11/27/2021 6:06 PM
58	No	11/27/2021 7:22 AM
59	Everyone except the elitists and the woke joke fucktards	11/27/2021 1:25 AM
60	Person	11/26/2021 4:13 PM
61	People Alone w/no help	11/26/2021 10:41 AM
62	White adult	11/25/2021 1:28 PM
63	White Male Boomer	11/25/2021 10:48 AM

Q12 In your experience, do environmental issues disproportionately affect the following sectors of the community?

Answered: 942 Skipped: 179



	YES	NO	UNSURE	TOTAL	WEIGHTED AVERAGE
Low-income individuals	56.26% 521	25.59% 237	18.14% 168	926	1.62
Older adults	55.77% 517	24.49% 227	19.74% 183	927	1.64
People with disabilities	58.71% 539	20.15% 185	21.13% 194	918	1.62
People of racial or ethnic minorities	23.11% 208	44.33% 399	32.56% 293	900	2.09

Coastal Resilience Questionnaire

#	OTHER (PLEASE SPECIFY)	DATE
1	Those located on lower elevations	12/12/2021 8:55 AM
2	Children	12/5/2021 7:14 AM
3	low income individuals may living in more vulnerable housing may have more damage in major storms	12/3/2021 9:35 PM
4	Everything is affected when Highway 12 is closed due to over wash.	12/3/2021 10:49 AM
5	Environmental issues affect everyone, a moron wrote this question	12/3/2021 7:37 AM
6	Environmental issues effect Hatteras Island more than up the beach. All the funds usually stay in Nags Head and never make it over the bridge	12/3/2021 2:54 AM
7	a/o	12/3/2021 12:31 AM
8	Doesn't make what color ur skin is it's gonna affect you!	12/2/2021 8:32 AM
9	it affects everyone regardless of age or race or income	12/2/2021 7:08 AM
10	Literally...how does weather affect people of different ethnic ground or minorities?	12/1/2021 7:31 PM
11	I see Hispanic population in temporary housing	12/1/2021 7:23 PM
12	Almost without exception, regardless of ethnicity, health, wealth, or youth, everyone is impacted by the impassability of our lifeline, Hwy 12.	12/1/2021 11:03 AM
13	A storm doesn't care about Race. Neither should you!	12/1/2021 7:39 AM
14	Property owners	12/1/2021 7:04 AM
15	answered yes as environmentalists requirement cost more and make it more difficult to function	11/29/2021 10:16 PM
16	Citizens in each of these categories tend to be poorer, less mobile, more vulnerable to extreme weather, more exposed to pollution, and less able to recover on their own or to access assistance.	11/29/2021 4:44 PM
17	People who depemd on Public Beach and Sound Access for occupational, business, recreational or other economic reasons, needs or considerations..	11/29/2021 4:25 PM
18	Any person, with or without disability, advanced age, income, or ethnicity can work and provide for themselves. The environment we create as a neighborhood, can and will survive	11/28/2021 8:24 AM
19	Wtf	11/27/2021 9:23 AM
20	People	11/26/2021 4:13 PM
21	Given a majority a racial or ethnic minorities are low income individuals, but a majority of low income individuals are Caucasian...this question is leading...	11/25/2021 10:48 AM
22	Recreational and commercial Fishermen	11/25/2021 7:47 AM

Q13 Which areas are most affected by environmental issues? Include street names, neighborhood names, building names, etc.

Answered: 710 Skipped: 411

#	RESPONSES	DATE
1	NC 12 near the Basnight bridge, NC 12 at Mirlo beach, NC 12 at north Buxton and NC 12 at north Hatteras	12/16/2021 2:18 PM
2	RT 12	12/15/2021 11:32 PM
3	Hey 12 entering Hatteras Village, Eagle Pass, Hwy 12 entering from North into Buxton, Hwy 12 North of Rodanthe.	12/15/2021 10:38 AM
4	The northernmost end of the Tri-villages, Avon, Buxton and Hatteras villages are all very vulnerable and unstable even with moderate coastal impacts, and have worsened every year since Hurricane Isabel. We should have approved and constructed a bridge system in the sound with spurs into each village much like the system in the FL Keys when we had the chance. The inlets that would open up would act like relief valves for sound side and coastal flooding.	12/14/2021 4:46 PM
5	South nags head-road flooding West 4th Street/Wright Shores road flooding South 12/Rodanthe-road erosion	12/13/2021 7:18 PM
6	Beaches, inlets (Oregon, Hatteras, Ocracoke)	12/13/2021 1:12 PM
7	Area south of Oregon Inlet and the sound side north of Oregon Inlet	12/13/2021 1:06 PM
8	S-curves. North side of Duck Research Pier. Nags Head.	12/13/2021 10:53 AM
9	South Nags Head, Bay Drive in KDH	12/13/2021 10:02 AM
10	Hatteras Island	12/13/2021 9:19 AM
11	Durham st	12/13/2021 8:57 AM
12	Kitty Hawk or Nags Head	12/13/2021 8:51 AM
13	Unsure	12/13/2021 8:05 AM
14	Our waters, roads	12/12/2021 10:48 PM
15	Hwy 12 southern shores and duck, beach road Nags Head (due to new construction lots built up) hwy158 kitty hawk, kitty hawk rd, Colington road,	12/12/2021 9:43 PM
16	after you cross Marc Basnight Bridge to Ocracoke	12/12/2021 4:30 PM
17	Route 12	12/12/2021 4:28 PM
18	Rt 12 from Rodanthe to Hatteras Village. All dependent on winds and speed of wind to push water from sound or ocean if not protected by elevation or an outlet of water that would release sound water to ocean during storms.	12/12/2021 8:58 AM
19	Highway 12	12/12/2021 2:22 AM
20	Martins Point Ocean Sands, Corolla	12/11/2021 8:32 PM
21	Kitty hawk landing Colington harbour Hatteras Ocracoke	12/11/2021 7:43 PM
22	south of Basnight bridge, moor shore dr, between the highways NH and KDH, dunes near black pelican to sea dunes	12/11/2021 6:39 PM
23	Rodanthe ... parts of Beach Rd in Kitsy Hawk	12/11/2021 4:41 PM
24	Route 12 in Avon, Soundside flooding on Park Drive and Creekside	12/11/2021 4:09 PM
25	Oceanview drive Avon and hatteras colony Avon and Hatteras	12/11/2021 3:24 PM
26	Burnside road area of Manteo nc	12/11/2021 3:04 PM

Coastal Resilience Questionnaire

27	Highway 12	12/11/2021 2:43 PM
28	Colington	12/11/2021 11:22 AM
29	Buxton shoreline motels, hotels and businesses, Rodanthe/Salvo entrance to the island, Avon ocean front properties	12/11/2021 9:29 AM
30	Salvo, Waves, Rodanthe, Frisco, Buxton, Wanchese, Manteo	12/11/2021 6:46 AM
31	Location of wind turbines.	12/10/2021 11:02 PM
32	Hwy12 north,	12/10/2021 10:55 PM
33	Colington, Bay Drive, downtown Manteo, and other soundside areas subject to flooding during storms	12/10/2021 9:47 PM
34	Virginia Dare - Highway 12	12/10/2021 8:22 PM
35	Hatteras Inlet (Pole Road), Sandy Bay (Rt 12), North Buxton and Pea Island	12/10/2021 8:18 PM
36	Oceanfront & dune line	12/10/2021 7:10 PM
37	Kitty Hawk ocean front	12/10/2021 7:06 PM
38	Duck Road, Bay Drive in KDH, between the Highways from KH to NH, beaches in KH	12/10/2021 5:18 PM
39	Beach road in Kitty Hawk, soundside properties	12/10/2021 4:39 PM
40	Hatteras	12/10/2021 4:37 PM
41	Brakewood Rd. , Hwy 64	12/10/2021 1:52 PM
42	Highway 12 in the trim villages	12/10/2021 1:00 PM
43	Colington rd, all of hatteras,	12/10/2021 12:48 PM
44	Colington Road	12/10/2021 12:32 PM
45	OBX including adjacent mainland	12/10/2021 12:21 PM
46	Beaches	12/10/2021 10:04 AM
47	Colington road	12/10/2021 9:37 AM
48	hwy 12	12/10/2021 9:25 AM
49	Rt 12 heading to Hatteras Island. Collington Rd. Wanchese. Just about anything sound side.	12/10/2021 9:14 AM
50	Eagle pass rd in hatteras village. Beach stretch between frisco and hatteras village. Post office and hatteras Methodist church and medical center flooding with rainstorm. There is a plugged drainage pipe there. Flooding on Priscilla curve, flooding in front of Sonny's restaurant, and village marina, Lee Robinson store, and campground on Eagle pass road. Also c. Deering ridge road, in front of civic center on Hwy 12 and just outside the hatteras village on highway 12. When water gets trapped in these areas, there is no where for it to drain.	12/10/2021 8:15 AM
51	Beach erosion all over	12/9/2021 9:47 PM
52	Queen Elizabeth Ave, Sir Walter Raleigh St, Fernando St, ... Manteo	12/9/2021 9:36 PM
53	Hatteras village, Sportsman Frisco, Avon Ocean Dr	12/9/2021 8:59 PM
54	Oregon Inlet and Hatteras Inlet affects every aspect of Dare County. The inability of the government to maintain safe and adequate dredged waterway that provides so much income to county and state is inexcusable. Both inlets need jetties to stabilize the inlets and the shoreline. This keep the north beaches from spending millions in beach nourishment just to wash down the beach into Oregon causing shoaling.	12/9/2021 8:37 PM
55	NC 12. Manteo downtown. Colington Road. Corolla-Corova 4x4 beach.	12/9/2021 6:37 PM
56	Kitty Hawk between MP2 and MP5	12/9/2021 1:45 PM
57	Hatteras Island	12/9/2021 11:19 AM
58	Any place near The water sound side or ocean side	12/9/2021 10:06 AM
59	duck road, colington road, 12 south of Oregon inlet bridge, bay drive, downtown manteo	12/9/2021 6:43 AM

Coastal Resilience Questionnaire

60	3rd St. KDH	12/9/2021 6:33 AM
61	Coastal	12/9/2021 12:10 AM
62	Hwy 12	12/8/2021 11:14 PM
63	Colington rd	12/8/2021 10:05 PM
64	Not applicable	12/8/2021 8:12 PM
65	Sea Rise north NC12 entry to Buxton. NC12 flooding tri-villages.	12/8/2021 6:36 PM
66	Highway 12; Oceanview Boulevard, Frank and Frans Tackle Store	12/8/2021 6:16 PM
67	OBX	12/8/2021 5:12 PM
68	Common sense	12/8/2021 4:51 PM
69	Colington access road	12/8/2021 4:44 PM
70	Avon Hwy 12	12/8/2021 3:21 PM
71	Stumpy Point	12/8/2021 3:09 PM
72	Ivy lane, formerly Landing Drive, Kitty Hawk Landing	12/8/2021 10:57 AM
73	Colingtin harbour	12/8/2021 10:18 AM
74	Highway 12	12/8/2021 9:04 AM
75	All sound side and ocean side properties in duck and kitty hawk	12/8/2021 8:50 AM
76	Hatteras and Collington road	12/8/2021 8:43 AM
77	Areas where mitigation has been compromised or ignored. Entrance to WIND OVER WAVES, Rampart St.. both in Salvo	12/8/2021 6:10 AM
78	Roanoke Island, north end neighborhoods, lower Hatteras Island	12/7/2021 11:00 PM
79	Buxton area, ocean Ave, cottage ave, north tower circle, south tower circle	12/7/2021 8:15 PM
80	Frisco to Hatteras Hwy 12 flooding from ocean over wash. I feel that Hwy 12 is very vulnerable to a break due to how narrow the Island is. The drainage in Hatteras is also very poor.	12/7/2021 7:21 PM
81	Rodanthe, Pea Island. Highway 12 south of Bonner Bridge	12/7/2021 7:19 PM
82	Queen Elizabeth avenue	12/7/2021 6:02 PM
83	Soundside Avalon Beach area	12/7/2021 3:58 PM
84	unsure	12/7/2021 1:25 PM
85	Rodanthe ocean-side	12/7/2021 12:47 PM
86	Ocean view Avon. Oregon inlet south 12, Hatteras Village	12/7/2021 9:19 AM
87	Every town on Hatteras Island	12/7/2021 9:18 AM
88	Avon, buxton, wavesand hatters	12/7/2021 6:27 AM
89	KDH	12/6/2021 10:28 PM
90	Beach and soundfront lications	12/6/2021 9:35 PM
91	Avalon Beach	12/6/2021 9:25 PM
92	Downtown Manteo, Colington, Northern Roanoke Island, Avon, Buxton, Rodanthe	12/6/2021 9:20 PM
93	The ferry system	12/6/2021 8:30 PM
94	Roanoke Island shoreline erosion is very serious.	12/6/2021 7:18 PM
95	Brakewood 3	12/6/2021 6:51 PM
96	I would say all of the beach communities with the most amount of residences and businesses.	12/6/2021 6:45 PM
97	Buxton beachfront, the stretch north of Hatteras village, Southern avon, most of the tri-village, north of Rodanthe in various spots all the way up to the big bridge.	12/6/2021 6:25 PM

Coastal Resilience Questionnaire

98	South of Oregon inlet, sound side of northern dare	12/6/2021 6:19 PM
99	Hey 156	12/6/2021 6:12 PM
100	All of Hatteras Island, NC 12 n KH, NH, and KDH, downtown Manteo, Colington, especially Colington Rd.	12/6/2021 5:37 PM
101	Soundside in all HI Villages.	12/6/2021 4:15 PM
102	Pea Island, Hwy 12 - areas of flooding and overwash	12/6/2021 2:57 PM
103	Pea Island dunes, 12 in Salvo by Surf or Sound realty flooding. 12 in Avon between the stoplights, 12 north as you leave Buxton. Tower Circle Drive	12/6/2021 2:48 PM
104	Colington road flooding	12/6/2021 2:44 PM
105	Mirlo Beach community (Sound side erosion), Ocean side beach erosion (MASSIVE problem)	12/6/2021 12:44 PM
106	Highway 12 Buxton, Avon, S curves, Pea Island	12/5/2021 8:53 AM
107	North Avon, between Food Lion and north of Avon Pier. Buxton by the motel	12/5/2021 8:47 AM
108	Shallow Point Drive and highway 12 floods. I'm also concerned about impacts on the animals, birds, sea life and plant life. I see changes there as well.	12/5/2021 7:19 AM
109	Hatteras island	12/5/2021 6:16 AM
110	Buxton -overwash as you leave the village heading north Highway 12 flooding through Avon, particularly bad near the Food Lion	12/5/2021 6:12 AM
111	North Buxton Hwy 12, all Buxton oceanside, Avon Oceanside, North Rodanthe, Oregon Inlet South side Hwy 12	12/4/2021 6:40 PM
112	NC12 South Avon - Food Lion, Ace Hardware and Avon P.O. Beach front and sound front and side homes in Avon. NC12 roadway between Avon and Buxton. Ocean over wash - NC12 Buxton Motel and in Salvo near Wind over Waves. Sound side flooding from storms.	12/4/2021 11:30 AM
113	Transportation through out	12/4/2021 11:04 AM
114	NC 12 Avon - southern section flooding primarily around Food Lion shopping plaza, Hatteras Realty, Pangea, Post Office, Ace Hardware and beach front and sound side residence roads in southern Avon. Ocean water overwash at Pea Island, S curves, Salvo (Wind over Waver) and northern Buxton (Motel and Fatty's Ice Cream).	12/4/2021 10:34 AM
115	North Buxton and as you come into Hatteras village	12/4/2021 9:18 AM
116	Avon ocean side	12/4/2021 8:40 AM
117	Flooding from Soundside affects RT 12 and homes from Jolly Rodger Rd south to Bluebeard Rd and Colony Drive in Salvo, NC	12/4/2021 8:35 AM
118	wimble shores north waves nc 27982	12/4/2021 6:43 AM
119	Hwy 12 outside of Buxton. Oceanfront houses in Buxton. Food lion north in Avon. Particularly the oceanfront street. Hwy 12 between Hatteras and Frisco.	12/4/2021 12:39 AM
120	Central Avon beach	12/3/2021 10:26 PM
121	Hwy 12 just south of Oregon inlet Hwy 12 north end of Buxton ocean front of Avon south of the pier all ocean front of Buxton	12/3/2021 9:39 PM
122	Street names	12/3/2021 9:07 PM
123	NC 12, Hatteras Village, Buxton, Avon	12/3/2021 9:01 PM
124	Hatteras Inlet	12/3/2021 7:48 PM
125	Wind over Waves, Salvo Sound front Avon ocean front	12/3/2021 7:32 PM
126	HWY 12 coming into Buxton. Between Frisco and Hatteras	12/3/2021 7:06 PM
127	Oramar Dr., Ocean Dr., Cottage Ave, Tower Circle, Route 12 by the North Buxton Hotels	12/3/2021 5:40 PM
128	NC Hwy 12 at the north end of Hatteras Village	12/3/2021 3:29 PM
129	Corbina dr, s curves	12/3/2021 12:09 PM

Coastal Resilience Questionnaire

130	Rodanthe Atlantic Dr	12/3/2021 11:04 AM
131	With one road only, any closure of Highway 12. North Rodanthe, Kinnakeet Shores ocean front in Avon and north Buxton.	12/3/2021 10:51 AM
132	Hatteras Island, Colington, Kitty Hawk, Wanchese, North End of Roanoke Island near Breakwood	12/3/2021 10:11 AM
133	Flooding along Hw 12	12/3/2021 10:01 AM
134	Rodanthe, ocean front, Waves ocean front north of Sea Isle Hills most of the sound front Rodanthe, Waves and Salvo.	12/3/2021 9:50 AM
135	Rodanthe, Avon, Buxton, Frisco, Hatteras. WHOLE ISLAND	12/3/2021 9:18 AM
136	North Buxton, Frisco to Hatteras Beach Road (HWY 12), Tri Villages Sound Side Flooding (HWY 12), South Dock to Ocracoke , Hatteras Village, Avon Villages - Sound side flooding, Buxton - Old lighthouse road	12/3/2021 9:12 AM
137	I am unsure of specific areas but any low-lying area has the potential for extensive impact from global warming-based problems.	12/3/2021 8:25 AM
138	Mirlo Nc12 at Avon pier area NC12 north end Buxton	12/3/2021 8:18 AM
139	Mirlo Beach, Rodanthe	12/3/2021 8:15 AM
140	Colington rd	12/3/2021 8:15 AM
141	NC RT 12, Lighthouse Road, Buxton	12/3/2021 7:38 AM
142	NC 12 South, Beach Rd, Bay Dr	12/3/2021 6:36 AM
143	NC 12 in it's entirety!	12/3/2021 6:06 AM
144	Hatteras Village and Hatteras Inlet	12/3/2021 5:58 AM
145	Ocean overwash in narrow part of hiway 12 between Frisco and Hatteras. Flooding in most of Hatteras village. Erosion on sound and ocean sides of Hatteras Island.	12/3/2021 5:44 AM
146	St hwy 12 in : Hatteras Village, Pea Island near Basnight Bridge, Avon near Food Lion, and Buxton .	12/3/2021 5:18 AM
147	All of Ocean, Cottage and Tower Circle in Buxton. The ocean in front of the these 3 streets are full of dangerous sandbags and broken concrete. If the state and park would work together and fix the jetties it would significantly decrease the erosion. The jetties are just sitting there literally wasting away. This would also help the hotels north of these streets. Between frisco and Hatteras, those dunes will not survive another storm like Dorian. Basically all of Hatteras is effective by the environment in some way	12/3/2021 3:01 AM
148	Frequent road closures of NC 12 in Salvo just north of colony rd due to inadequate storm water drainage and frequent flooding of Collington rd.	12/3/2021 2:27 AM
149	Sound side houses all over. Rodanthe (both sound and ocean side) and Avon (ocean side)	12/3/2021 12:32 AM
150	Nagshead woods, Manteo, kitty hawk woods, watches, southern shores	12/3/2021 12:23 AM
151	NC Hwy 12 sections between Oregon Inlet and the Village of Rodanthe; NC Hwy 12 Mirlo Beach area in Rodanthe including the road Mirlo Beach Dr; Severe Drainage issues during both minor and severe rain events along the entire NC Hwy 12 stretch in the villages of Rodanthe, Waves and Salvo; NC Hwy 12 from Dollar General in Salvo to the NPS Salvo Day Use Area just south of the village of Salvo in particular during Pamlico Soundside flooding events or rainstorms; Portions of NC Hwy 12 between Village of Salvo and Avon and a good majority of the NC Hwy 12 corridor throughout the Avon Village limits; Most concerning to myself, being a multi-generational resident and property owner of Hatteras Island is the damage to, and instability of the dune structure along the Atlantic Ocean from one end of the island to the other. Significant damage to dune structure is occurring on a frequent basis along the S-Curves of NC Hwy 12 north of Mirlo Beach extending south to the Waves Village area.	12/3/2021 12:09 AM
152	Low areas on Hey 12	12/2/2021 10:29 PM
153	Buxton hwy 12 Just south of the Bonner bridge	12/2/2021 10:24 PM
154	12 by colony in Tri-village	12/2/2021 10:03 PM

Coastal Resilience Questionnaire

155	Most of Highway 12 and most of Colington Road	12/2/2021 9:58 PM
156	Avalon area...	12/2/2021 9:57 PM
157	All roads and infrastructure	12/2/2021 9:45 PM
158	Rodanthe and buxton	12/2/2021 9:38 PM
159	North Buxton stretch of 12 between Cape Hatteras Motel and Fatty's; 12 between Frisco Beach and entry to Hatteras Village; North end of Rodanthe	12/2/2021 8:57 PM
160	"Mirlo" in Rodanthe, "Wind over waves" in Salvo, Cape Hatteras Motel & Outer Banks Motel in Buxton,	12/2/2021 8:51 PM
161	Hatteras Hwy 12 just as you come in form the north, Buxton, Hwy 12 where the ocean washes onto Hwy 12 via the driveway of the first hotel: Avon Hwy 12 between Foodlion and the post office.	12/2/2021 8:20 PM
162	cottage avenue buxton	12/2/2021 7:49 PM
163	Basically everything south of Odens Dock and North of Happy Belly become inaccessible when there's a storm or even just a king tide with some wind	12/2/2021 7:41 PM
164	All of highway 12	12/2/2021 7:14 PM
165	Collington road KDH Nags head near saint andrews by the sea beach houses	12/2/2021 7:09 PM
166	old lighthouse road in buxton. the jetties need to be fixed.	12/2/2021 6:53 PM
167	Hatteras Colony Salvo	12/2/2021 6:27 PM
168	Hey 12, HATTERAS, Avon	12/2/2021 5:38 PM
169	Kitty Hawk, Hatteras	12/2/2021 5:27 PM
170	Hatteras Village, South Avon, North Buxton, North Rodanthe to Bassknight bridge	12/2/2021 5:16 PM
171	Avon Harbor, village roads Harbor Rd & CC Gray Circle, Hwy 12, Kinnakeet	12/2/2021 4:58 PM
172	Collington. MP4-6 area.	12/2/2021 4:05 PM
173	All of Hatteras Island. Period.	12/2/2021 3:08 PM
174	Rt 12 at S curve; Rt 12 in front of Sea Whisper at entrance to Hatteras Village	12/2/2021 3:07 PM
175	NC-12 Buxton near motels, NC-12 Rodanthe S-curve, NC-12 dunes approaching new bridge	12/2/2021 2:59 PM
176	Notably Waterfall Park and, occasionally, Mirlo Beach.	12/2/2021 2:43 PM
177	57211 Atlantic View Dr. Hatteras, NC 27941; Lower (Ground Level) Condominiums	12/2/2021 2:34 PM
178	Hwy 12	12/2/2021 2:11 PM
179	Hatteras village beach erosion	12/2/2021 1:48 PM
180	Avon ocean side, particularly from the pier south.	12/2/2021 1:27 PM
181	Wind Over Waves area of Hwy 12 in Waves. Ocean View Drive Avon. South end of Sandy Bay Hatteras.	12/2/2021 1:14 PM
182	northern Rodanthe	12/2/2021 1:11 PM
183	Lighthouse road in buxton highway 12 from Oregon inlet to hatteras inlet, the motels in buxton, houses on ocean view drive in Avon, most of the oceanfront in rodanthe waves salvo,	12/2/2021 1:11 PM
184	Drainage management issues at Avon Highway 12, Cape Point Campground 46700 Lighthouse Road Buxton, NC 27920, Lighthouse road Buxton.	12/2/2021 1:06 PM
185	Ocean View Drive in Avon	12/2/2021 12:45 PM
186	Treacher Lane goes underwater from regular rainfall as do many other areas. Gravity drainage is limited as the canals and ponds fill quickly.	12/2/2021 12:31 PM
187	Avon, Rte 12 near the Post Office and Kinnakeet Shores. Salvo, Rte 12 near Dollar General. Buxton, Rte 12, near Fatty's and Diamond Shoals	12/2/2021 12:27 PM
188	Americas and GA Kohler ct Rodanthe	12/2/2021 12:26 PM

Coastal Resilience Questionnaire

189	Rodanthe	12/2/2021 12:13 PM
190	Hiway 17, Colington Dr, Colington Harbour	12/2/2021 11:41 AM
191	Rte 12 in Buxton, Rte 12 in Avon, North end of Hatteras village	12/2/2021 11:40 AM
192	N/A	12/2/2021 11:40 AM
193	buxton	12/2/2021 11:33 AM
194	buxton motel, s curves, ocean view drive, ferry docks	12/2/2021 11:16 AM
195	Rodanthe, Waves, Salvo, PINWR, Buxton	12/2/2021 11:05 AM
196	Colony south hatteras dunes & pond drainage Nc12 hatteras approach	12/2/2021 10:47 AM
197	Hatteras Island, pirates cove, colington, bay drive	12/2/2021 10:45 AM
198	Rt 12, Trivillages	12/2/2021 10:43 AM
199	Rodanthe, Waves, Salvo, North Buxton, Frisco, Hatteras	12/2/2021 10:38 AM
200	Highway 12 through Rodanthe, Waves, Salvo. Seems nearly all of Salvo has started to be a problem and Waves is rapidly headed that way. The intersection of 12 and Rampart St. The intersection of 12 and Otter Way. The section of 12 immediately south of Duck Village Outfitters - that bridge area seems to fill first if there is tidal flooding.	12/2/2021 10:28 AM
201	Rodanthe	12/2/2021 10:21 AM
202	Ocean front and sound front	12/2/2021 10:14 AM
203	Any areas below @ 6-7 feet elevation and other higher areas that can be cut off and isolated from access to necessities and services by flooding in low lying areas. That's a large part of Hatteras! Particularly worrisome is loss of vital infrastructure leading to the need for projects like the Jug Handle Bridge.	12/2/2021 10:10 AM
204	Clamshell Dr kill devil hills	12/2/2021 9:58 AM
205	North Rodanthe - East Corbina Drive, Seagull Street along Highway 12	12/2/2021 9:58 AM
206	Hatteras island at Mirlo beach Downtown Manteo Bay drive South Old Oregon Inlet Road	12/2/2021 9:56 AM
207	NC 12 in Avon, NC 12 by Wind over Waves in Salvo and NC12 at Buxton motel	12/2/2021 9:53 AM
208	Northern portion of Rodanthe	12/2/2021 9:44 AM
209	Oceanview Dr Avon	12/2/2021 9:42 AM
210	food lion in Avon	12/2/2021 9:41 AM
211	Highway 12, Abon	12/2/2021 9:40 AM
212	Pea island, Rodanthe, Avon, multiple spots along hwy 12	12/2/2021 9:36 AM
213	Neighborhoods that rely on ditches to drain water, Dare has refused to maintain drainage or regulate the filling of ditches.	12/2/2021 9:23 AM
214	Soundside from Rodanthe to Hatteras village	12/2/2021 9:22 AM
215	Soundside flooding in front of the froggy dog in Avon	12/2/2021 9:22 AM
216	Avon oceanside, oceanview drive, all of rodanthe.	12/2/2021 9:10 AM
217	Buxton @ the curve (near Fatty's) due to Nor Easters. Hatteras Village (esp'y areas off of Woodall Rd) due to Sound side flooding after hurricanes.	12/2/2021 9:06 AM
218	HWY 12, N Tower, S Tower, Ocean, Cottage, Old Lighthouse Road	12/2/2021 9:02 AM
219	Route 12, Rodanthe,	12/2/2021 8:57 AM
220	highway 12	12/2/2021 8:55 AM
221	NC-12 and Otter Way	12/2/2021 8:54 AM
222	Pea Island WR	12/2/2021 8:50 AM
223	Buxton: Cottage, Tower rds.	12/2/2021 8:49 AM

Coastal Resilience Questionnaire

224	Rt12	12/2/2021 8:48 AM
225	Mirlo beach, pea Island	12/2/2021 8:47 AM
226	Mirlo Beach; As you entered the town of Buxton from the North	12/2/2021 8:39 AM
227	Highway 12 from Uncle Eddy's Custard north.	12/2/2021 8:39 AM
228	Ocean drive and route 12	12/2/2021 8:37 AM
229	Hatteras avon frisco buxton	12/2/2021 8:36 AM
230	Mirlo beach area, north of KOA campgrounds, pea island area, Hatteras village.	12/2/2021 8:34 AM
231	NC 12 at south end of Oregon Inlet Bridge; NC 12 at Rodanthe S-Curve; NC 12 at north end of Buxton; NC 12 at north end of Hatteras village; Ocean dunes at Mirlo Beach, Avon, and Buxton.	12/2/2021 8:32 AM
232	Mirlo Beach erosion	12/2/2021 8:27 AM
233	Soundside residents, Rodanthe and Avon oceanfronts	12/2/2021 8:21 AM
234	Ocean View Drive, Avon, Buxton Cottage Row and curve into Buxton	12/2/2021 8:19 AM
235	Oceanview Avon. Mirlo Beach, especially once S Curves are abandoned. Pea Island. First few motels in Buxton and few hundred yards of shoreline there. Beach erosion where dune still survives in South Avon near ocean dune loop (formerly bartlik lane). Brigands Bay. Hatteras Village. Entrance to Hattetas	12/2/2021 8:17 AM
236	Buxton facing east, south Avon and Highway 12 just south of the Basnight Bridge -- please note the new Jug Handle does not address the same problem occurring north of the Ethridge temporary bridge just south of the Oregon Inlet Basnight bridge	12/2/2021 8:15 AM
237	NC 12	12/2/2021 8:07 AM
238	1) Storm Drain Flooding on Highway 12 in Waves & Salvo near Wind Over Waves Subdivision. 2) Flooding on the side street near the Blue Whale & on Dory Lane. 3) Flooding in our yard around the pool perimeter & under the house even during a moderate amount of rain over a period of a few days.	12/2/2021 8:00 AM
239	Ocean View Drive, Avon North Buxton Avon Post Office Avon Food Lion	12/2/2021 7:47 AM
240	Highway 12	12/2/2021 7:40 AM
241	Highway 12 especially from the bridge to Rodanthe. All 3 northern villages. Avon	12/2/2021 7:35 AM
242	derelict or un-inhabited houses county wide are an environmental hazard	12/2/2021 7:34 AM
243	Hwy 12-post office area. wind over waves. north buxton.	12/2/2021 7:33 AM
244	Empire Gem Lane	12/2/2021 7:33 AM
245	Soundside, between the highways, areas below 7-foot mean sea elevation	12/2/2021 7:27 AM
246	Hatteras village, the north end of Buxton, Ocean Ave in Avon, tri-villages	12/2/2021 7:25 AM
247	Wind over Waves entrance to Highway 12, Mirlo, Pea Island, Rodanthe, highway 12 stretch in front of Food Lion in Avon, Buxton by the motel	12/2/2021 7:24 AM
248	Tri village area...Rodanthe, Waves and Salvo.	12/2/2021 7:15 AM
249	Avon	12/2/2021 7:09 AM
250	Route 12 Pea Island for sure	12/2/2021 7:09 AM
251	Highway 12 just north of Hatteras Village, Buxton just north of the village and down lighthouse road, Avon oceanfront, Rodanthe S curves we need beach nourishment until bridges can be built	12/2/2021 7:03 AM
252	North Tower Circle Dr Buxton beach	12/2/2021 7:02 AM
253	Cottage Avenue, Buxton, NC	12/2/2021 6:45 AM
254	Avon, Buxton, Rodanthe	12/2/2021 6:45 AM
255	HWY 12 Rodanthe pier and areas north Avon Beach Front Hatteras Colony	12/2/2021 6:34 AM

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256	Avon roads in food lion area	12/2/2021 5:57 AM
257	Hatteras island , Avon , buxton	12/2/2021 5:31 AM
258	Highway 12 Old Lighthouse Rd. Buxton, NC	12/2/2021 5:27 AM
259	North Buxton by Cape Hatteras Motel	12/2/2021 3:58 AM
260	NC12	12/2/2021 2:10 AM
261	Buxton by the Lighthouse Motel, Rodanthe	12/2/2021 1:14 AM
262	Buxton Avon rodanthe	12/2/2021 1:01 AM
263	Oceanview Drive in Avon, the north end of Buxton, Pea Island just south of the Basnight Bridge	12/1/2021 11:44 PM
264	S curves Avon hwy 12 near Kinnakeet shores Buxton hwy 12 by Buxton motel Waves wind over waves	12/1/2021 11:43 PM
265	Ridge trail Buxton	12/1/2021 11:26 PM
266	Heading south - Pea island area, S-curves / Mirlo Beach in Rodanthe, the area along Highway 12 from Wind Over Waves housing development (otter way) until Colony Dr. in Salvo, ocean view in avon, northern buxton in front of Cape Hatteras Motel and also Old Lighthouse Rd., Sandy Bay, the beginning of Hatteras Village, Highway 12 from red and white to past Jeffrey's Seafood	12/1/2021 11:04 PM
267	Okracoke Hatteras	12/1/2021 10:50 PM
268	Frisco piney ridge rd	12/1/2021 10:45 PM
269	Route 12 south of the bridge	12/1/2021 10:31 PM
270	Tri villages	12/1/2021 10:11 PM
271	Ocean Drive Buxton NC Cape Hatteras National Seashore S/D, Hwy 12 Buxton NC	12/1/2021 10:06 PM
272	Salvo Kinnakeet in Avon North Buxtons	12/1/2021 9:50 PM
273	Too many	12/1/2021 9:30 PM
274	Buxton NC12 Avon NC12	12/1/2021 9:28 PM
275	Cottage Avenue, Tower Circle, Ocean Drive Buxton NC	12/1/2021 9:28 PM
276	Middle Avon, Wind over Waves in Salvo.	12/1/2021 9:26 PM
277	Buxton HWY 12 at the curve Avon-Ocean drive and Hwy 12 by pier	12/1/2021 9:14 PM
278	Colington, Rodanthe, duck	12/1/2021 9:05 PM
279	Button	12/1/2021 8:47 PM
280	South of Oregon inlet. South Avon. North buxton.	12/1/2021 8:41 PM
281	Downtown Manteo Highway 1	12/1/2021 8:38 PM
282	Ocean view drive in Avon, NC	12/1/2021 8:22 PM
283	Hatteras inlet area, Mirlo beach area.	12/1/2021 8:00 PM
284	Hatteras Island	12/1/2021 7:36 PM
285	Hatteras Village from flooding	12/1/2021 7:31 PM
286	In Buxton: all Oceanside properties. Cottage Ave and Tower are almost always flooded. Nor easters and rain cause flooding . Dunes are flattened. Overwash occurs frequently from Sept thru April. Sand is constantly having to be moved. This last storm (11/21) devastated oceanfront homes in Buxton.	12/1/2021 7:27 PM
287	Hatters island. Stumpy point	12/1/2021 7:26 PM
288	Indian town subdivision	12/1/2021 7:25 PM
289	Indian town shores	12/1/2021 7:25 PM

Coastal Resilience Questionnaire

290	Pea island, s-curve, dillons corner and sandy bay	12/1/2021 7:19 PM
291	Route 12 South	12/1/2021 7:18 PM
292	Collington Harbour	12/1/2021 7:07 PM
293	Hwy 12 in Avon (Food Lion), Hwy 12 in Salvo. Buxton, Hwy 12 right before stretch to Avon.	12/1/2021 7:05 PM
294	Highway 12 hotspots	12/1/2021 7:04 PM
295	NC 12 salvo, ocean view dr & NC12 Avon, NC 12 north Buxton and side streets off old lighthouse rd. NC 12 north of Hatteras,	12/1/2021 6:54 PM
296	Buxton Beach	12/1/2021 6:40 PM
297	S turns. Buxton hotel. Ocean water on to route 12 through roads like corbina.	12/1/2021 6:40 PM
298	Roanoke Island, all of it	12/1/2021 6:37 PM
299	Varies depending on issue	12/1/2021 6:25 PM
300	Wind Over Waves entrance and just south of Jobob's	12/1/2021 6:09 PM
301	Colington Road	12/1/2021 5:40 PM
302	Tri-villages	12/1/2021 5:37 PM
303	hatteras village stormwater runoff	12/1/2021 5:16 PM
304	Highway 12	12/1/2021 4:57 PM
305	Villages of Buxton, Avon and Hatteras. The motels in the beginning on buxton. And pea island and S turn roads	12/1/2021 4:52 PM
306	greenwood place	12/1/2021 4:45 PM
307	Low areas, areas with small dunes or breached Dunes where you get wash over	12/1/2021 4:44 PM
308	Rodanthe	12/1/2021 4:30 PM
309	Rte12	12/1/2021 4:30 PM
310	Villages soundfront and oceanfront	12/1/2021 4:29 PM
311	North Rodanthe, South of Avon Pier, Southern point of Hatteras Village.	12/1/2021 4:06 PM
312	Tri-Villages- Salvo-hwy 12 Hatteras	12/1/2021 4:03 PM
313	RT 12 entering Rodanthe. Milo Beach.	12/1/2021 3:41 PM
314	hatteras village, buxton, ocean drive avon	12/1/2021 3:37 PM
315	Drainage on Hwy 12 in front of Wind over Waves, Jo Bob's Tradepost area, Ocean View Drive area and NC 12 in Avon, Buxton in front of Lighthouse View Motel, entering Hatteras going south. All are susceptible to flooding.	12/1/2021 3:34 PM
316	Hwy 12 Rodanthe	12/1/2021 3:19 PM
317	Old Lighthouse Rd - Buxton, NC	12/1/2021 3:01 PM
318	Pea Island, Avon Oceanview Rd, Buxton haul-over turn areas in NE storms which limit island access and ability to travel	12/1/2021 2:59 PM
319	highway 12	12/1/2021 2:35 PM
320	Highway 12 through Tri-villages	12/1/2021 2:25 PM
321	Hatteras Village, Buxton, Rodanthe, Pea Island	12/1/2021 2:16 PM
322	Rodanthe, Avon, Buxton and Hatteras village.	12/1/2021 2:07 PM
323	Hatteras Village and RT 12	12/1/2021 2:06 PM
324	Hwy12	12/1/2021 2:02 PM
325	Route 12 before you get to Hatteras. Route 12 before you get to Buxton.	12/1/2021 1:59 PM
326	NC 12	12/1/2021 1:45 PM

Coastal Resilience Questionnaire

327	Bosun and 12 flooding	12/1/2021 1:45 PM
328	Sea Whisper Condos, Hatteras Village	12/1/2021 1:42 PM
329	Frisco	12/1/2021 1:35 PM
330	Highway 12 ditches in each village does not have proper drainage which breeds mosquitoes.	12/1/2021 1:32 PM
331	From mirlo beach to Rodanthe, Avon - northern part of oceanview Dr from Food Lion to Pier.	12/1/2021 1:21 PM
332	Rt. 12, Post Office to Ace Hardware. Ocean View Drive, junction with Rt. 12 to Seaside Drive.	12/1/2021 12:41 PM
333	Avon colony, Avon village kinnakeet shores, 12 in salvo	12/1/2021 12:37 PM
334	Oceanfront properties	12/1/2021 12:37 PM
335	Buxton oceanfront	12/1/2021 12:33 PM
336	Oceanview Dr. In Avon	12/1/2021 12:29 PM
337	Hatteras Inlet	12/1/2021 12:26 PM
338	Homes that are prone to sound flooding and ocean over wash.	12/1/2021 12:24 PM
339	All of Buxton oceanfront homes, businesses and highway 12	12/1/2021 12:22 PM
340	Hatteras village, Frisco, North Buxton near motels and Old Lighthouse road, Avon - Ocean View Dr, and Waves	12/1/2021 12:18 PM
341	HWY 12	12/1/2021 12:17 PM
342	Old Lighthouse Road, Buxton and East	12/1/2021 12:10 PM
343	Rodanthe _ properties oceanward of the dunes north of Rodanthe Pier	12/1/2021 11:57 AM
344	All of Hatteras Village and surrounding neighborhoods	12/1/2021 11:33 AM
345	Ocean view drive in Avon. Highway 12 from Avon post office to Avon ace hardware. Northern Buxton Northern Hatteras	12/1/2021 11:30 AM
346	Rampart Dr & Colony Dr intersection area in Salvo, prone to flooding Route 12 at entrance to Wind over Waves development, prone to flooding	12/1/2021 11:29 AM
347	NC12	12/1/2021 11:29 AM
348	First, some perspective... Hatteras Island lies 30 miles out at sea. Let that sink in a bit (30 miles out at sea). It's a "barrier" island, a constantly changing deposit of sand that lies parallel to our coast and protects the coastal mainland from ocean flooding. At its widest point, the island is about 3.5 miles wide. And it's flat, except for the meager, mostly man-made "dunes", which in a lot of places here are just piles of sand bulldozed up alongside Hwy 12. By the very nature of Hatteras, every area of the island has been and will continue to be adversely affected by flooding from both the Pamlico Sound and the great Atlantic Ocean, depending on which way the wind blows, how strong it blows, and where our homes and businesses are. I live in Frisco woods, neither on the sound side nor the ocean front, and have experienced flooding and flood damage from the sound. And I am not an exception. If the tide is high enough and the storm surge is strong enough, it doesn't matter where we lives on Hatteras. We are affected by flooding to one degree or another just as Hwy. 12 is.	12/1/2021 11:27 AM
349	Highway 12 area by food lion Highway 12 by Buxton Motel	12/1/2021 11:26 AM
350	Buxton Beach	12/1/2021 11:21 AM
351	NC RT. 12 and lighthouse road, Buxton	12/1/2021 11:05 AM
352	Hatteras ferry dock area, boat marinas, commercial areas, Kinnakeet Shores wastewater treatment plant issues, old-safety issues of the condemned waterfall park in Rodanthe	12/1/2021 10:44 AM
353	Highway 12 very hard to get there to see my mom when there is overwash	12/1/2021 10:41 AM
354	Mirlo Beach area of Rodanthe, Buxton, central and north Avon and much of Hatteras Village	12/1/2021 10:36 AM
355	Highway 12 Beach properties Soundside properties	12/1/2021 10:28 AM
356	Rt 12 pea island and waves	12/1/2021 10:25 AM
357	Avon Ocean Drive	12/1/2021 10:23 AM

Coastal Resilience Questionnaire

358	NC 12	12/1/2021 10:22 AM
359	Hatteras Village	12/1/2021 10:21 AM
360	NC Highway 12	12/1/2021 10:14 AM
361	Highway 12	12/1/2021 10:13 AM
362	Rodanthe, Buxton	12/1/2021 10:09 AM
363	Buccaneer/Treacher Ln neighborhood, Frisco. Also flooding on Hwy 12 in north Buxton.	12/1/2021 10:09 AM
364	Rodanthe water park	12/1/2021 10:07 AM
365	Eagle pass rd in Hatteras, HWY coming in and out of Hatteras village and hwy 12 by the motel in buxton	12/1/2021 10:02 AM
366	Coming into buxton. Coming into Hatteras Village	12/1/2021 10:00 AM
367	12 going into Hatteras village Osprey drive community in Frisco and it's intersection with Highway 12	12/1/2021 9:57 AM
368	The major "hot spots" on 12 known: North Buxton, a stretch in Avon, northern Rodanthe/Pea Island, the stretch between Hatteras and Frisco. The homes and business near or adjacent to these seem to be the most frequently impacted.	12/1/2021 9:52 AM
369	Avon, Buxton	12/1/2021 9:52 AM
370	North end of Buxton and Rodanthe	12/1/2021 9:47 AM
371	Pompano Lane Avon	12/1/2021 9:47 AM
372	Mirlo Beach, south Avon, Buxton	12/1/2021 9:38 AM
373	North Rodanthe area (Mirlo Beach), RT12 near Wind over Waves neighborhood & Avon RT 12 flooding (even during rain storms).	12/1/2021 9:35 AM
374	Ocean View Drive in Avon and the Tower Circle area in Buxton.	12/1/2021 9:33 AM
375	Buxton Motel Areas	12/1/2021 9:33 AM
376	Avon hwy 12 by food lion, ocean view area. soundside avon.	12/1/2021 9:33 AM
377	Mirlo Beach	12/1/2021 9:32 AM
378	low lying areas or areas closest to sound and ocean	12/1/2021 9:30 AM
379	Rt 12 between frisco and hatteras village, rt 12 north buxton, pea island just south of Oregon inlet, mirlo beach, south avon, rt 13 through tri-villages.	12/1/2021 9:27 AM
380	Highway 12	12/1/2021 9:25 AM
381	Kinnakeet, Buxton, Waves, Rodanthe	12/1/2021 9:19 AM
382	Route 12 avon	12/1/2021 9:18 AM
383	Ocean View, Avon. Salvo. Buxton at bend.	12/1/2021 9:16 AM
384	Unsure	12/1/2021 9:14 AM
385	Frisco, Hatteras and NC HWY 12	12/1/2021 9:14 AM
386	Soundside Avon, Ocean View Drive in Avon, northern Hatteras, Oceanside Rodanthe, Soundside Salvo, Soundside Frisco, Northern Buxton	12/1/2021 8:05 AM
387	Colington, Nags head soundside	12/1/2021 7:55 AM
388	Hatteras island, kill devil hills	12/1/2021 7:55 AM
389	Downtown Manteo Candela Drive Brakewood Road	12/1/2021 7:42 AM
390	The whole place is IN the ocean. Ocean and soundside flooding, with no drainage in the middle.	12/1/2021 7:41 AM
391	Lindbergh Avenue, Kitty Hawk. Old Oregon Inlet Road, Nags Head. Beach Road, Highway 12	12/1/2021 7:05 AM
392	Base of the "Oregon Inlet bridge", Hwy 12 in Waves, Ocean Blvd. in Avon., Hwy 12 at the	12/1/2021 6:40 AM

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Cape Hatteras Motel in Buxton.		
393	None	12/1/2021 3:55 AM
394	Wind Over Waves development with most houses built there being very large and close to the sound, two of which are mini hotels by most standards. The road leading into it and RT12 floods even with minor rains. Most drainage ditches are small ponds with no water movement.	12/1/2021 12:32 AM
395	Kill Devil Hills, Colington Island, First Flight High School middle school elementary school, Kitty Hawk Road	11/30/2021 10:52 PM
396	Rt 12 beyond 64; Collington, Duck	11/30/2021 9:04 PM
397	Highway 12	11/30/2021 8:33 PM
398	Highway 12	11/30/2021 8:30 PM
399	Danube street cross section with hesperides/ flooding	11/30/2021 7:51 PM
400	I don't know	11/30/2021 7:23 PM
401	Oceanview Drive, Avon	11/30/2021 6:15 PM
402	Baumtown Rd, Wanchese Highway 12 on Hatteras Island The Nags Head Causeway and portions of the Beach Rd	11/30/2021 5:54 PM
403	Kill Devil hills	11/30/2021 5:15 PM
404	Rodanthe, Avon, and Buxton - all oceanfront/oceanside areas.	11/30/2021 5:11 PM
405	all areas south of Oregon Inlet	11/30/2021 5:05 PM
406	The Lane in Wanchese. Herbert Perry Road in Kitty Hawk. Hwy 12 on Hatteras. Colington Road.	11/30/2021 4:54 PM
407	Manteo	11/30/2021 4:08 PM
408	Duck	11/30/2021 4:05 PM
409	If your asking for names in Hatteras, I can't answer that. I live in Nags Head.	11/30/2021 4:05 PM
410	Avon, Rodanthe & Hatteras villages	11/30/2021 3:50 PM
411	Northridge subd	11/30/2021 3:30 PM
412	South part of OBX	11/30/2021 3:28 PM
413	All flooding areas from ocean front to pig farmers inland.	11/30/2021 3:16 PM
414	Soundside properties, Third Street in KDH, Wyandotte Street	11/30/2021 2:42 PM
415	Elizabeth Avenue	11/30/2021 2:22 PM
416	Hatteras Village, Frisco Soundside, Buxton Oceanside, Rodanthe Oceanside	11/30/2021 1:40 PM
417	Hatteras Island Stumpy Point	11/30/2021 1:30 PM
418	KDH. Dock street	11/30/2021 1:15 PM
419	The entire barrier islands. Inland, the rivers are affected by algae blooms	11/30/2021 1:10 PM
420	Downtown Manteo	11/30/2021 12:05 PM
421	Kitty Hawk Va dare/ Wilkins And winks area	11/30/2021 11:55 AM
422	Colington Harbour, and other neighborhoods with small lots that have housing areas below 6' avg ground elevation.	11/30/2021 11:54 AM
423	NC 12 beach road and Hatteras	11/30/2021 11:26 AM
424	The dunes south of Oregon inlet canal zone	11/30/2021 10:48 AM
425	23233 Surfside Drive	11/30/2021 10:47 AM
426	Central Avon, Oceanview drive area, Northern area of Buxton, Hwy 12 north of Rodanthe, parts of the Tri-Villages.	11/30/2021 10:46 AM
427	North End Rd, Hatteras Colony soundside	11/30/2021 10:21 AM

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428	Sound side, oceanside	11/30/2021 10:04 AM
429	Buxton hotels area, Hwy 12, all of Hatteras Village, Avon oceanside, Kinnakeet, Izzy's Inlet area	11/30/2021 10:00 AM
430	Buxton and Avon south of Due East	11/30/2021 9:58 AM
431	Drainage ditches along 12	11/30/2021 9:42 AM
432	Property on marsh	11/30/2021 9:39 AM
433	Highway 12 when flooded and ocean front and sound front properties	11/30/2021 9:38 AM
434	Flooding: Hwy 12 entering Hatteras Village. Eagle Pass in Hatteras Village at Flambeau Rd. Hwy 12 in Avon between Post office and Food lion. Hwy 12 on Hatteras Island south of Oregon Inlet has sand and flooding issues	11/30/2021 9:36 AM
435	Colington Harbor	11/30/2021 9:28 AM
436	As a former resident of Hatteras Island, Highway 12 South of the Basnight bridge. Potential contamination from septic systems with flooding in the villages.	11/30/2021 9:22 AM
437	Hey 12 on Hatteras island, all of collington island	11/30/2021 9:11 AM
438	Oceanfront homes, and people living in trailer parks or similiar efficiencies, due to low budget.	11/30/2021 9:05 AM
439	Hwy 12	11/30/2021 8:31 AM
440	Sound front and ocean front	11/30/2021 8:20 AM
441	Bay drive	11/30/2021 8:18 AM
442	Ocean View Drive, Avon; The S Curve area; Buxton	11/30/2021 8:18 AM
443	hot spots on nc 12 through pea island, rodanthe, avon, north buxton -	11/30/2021 8:16 AM
444	Rodanthe and Hatteras Village	11/30/2021 8:16 AM
445	Ocean overwash on NC 12, particularly near Rodanthe and north of Buxton.	11/30/2021 8:15 AM
446	Frisco and Hatteras villages	11/30/2021 8:15 AM
447	Route 12	11/30/2021 8:09 AM
448	HWY 12 - Southern Shores, Kitty Hawk (Black Pelican), Mirlo Beach, Waves, Avon, Buxton, Frisco, Hatteras 158 - Kitty Hawk, Nags Head South Nags Head near Ramp 1 Bay Drive in Kill Devil Hills Colington Road Downtown Manteo	11/30/2021 8:08 AM
449	Hwy 158	11/30/2021 8:08 AM
450	Highway 12 and Old Lighthouse Road, both in Buxton, NC.	11/30/2021 8:01 AM
451	Highway 12 immediately south of Oregon Inlet and 12 at entrance to Buxton	11/30/2021 7:59 AM
452	Highway 12	11/30/2021 7:56 AM
453	Buxton motels area and stretch to Hatteras Village	11/30/2021 7:47 AM
454	Collington, Ocracoke Island, Hatteras Island	11/30/2021 7:41 AM
455	Avon village and NC 12 between food lion and the Avon pier.	11/30/2021 6:56 AM
456	rt 12 near odens dock	11/30/2021 6:50 AM
457	Beach road in Kitty hawk	11/30/2021 6:06 AM
458	North side of Duck Research Pier (Osprey). Hatteras Island, especially Rodanthe.	11/30/2021 5:01 AM
459	hwy 12 beaches	11/29/2021 11:21 PM
460	Buxton cottage ave.	11/29/2021 11:19 PM
461	Tower Circle Subdivision in Buxton - Ocean, Cottage, N. Tower , S. Tower, Tower roads	11/29/2021 11:14 PM
462	S curves, Avon/Buxton boarder, Ocean View Drive, HWY 12 entrance to Hatteras Village	11/29/2021 10:18 PM
463	Northern facing properties!	11/29/2021 10:09 PM

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464	Most of Hwy 12 All beaches	11/29/2021 9:53 PM
465	Mainly unused marshy areas around. The southern portion of the island	11/29/2021 9:44 PM
466	State Route 12	11/29/2021 9:33 PM
467	Islands	11/29/2021 9:09 PM
468	North Buxton from Hwy 12 to NPS parking lot down Lighthouse Road. Also Avon near Food Lion on Ocean View Ave	11/29/2021 9:00 PM
469	Oregon inlet through Hatteras Village but especially south of Bodie island light house	11/29/2021 8:54 PM
470	Ocracoke, beach road area in kitty hawk, no drainage capability in most neighborhoods in the county.	11/29/2021 8:53 PM
471	Rt 12	11/29/2021 8:40 PM
472	46221 Tower Circle Buxton, NC 27920 "WINDEMERE HOUSE"	11/29/2021 8:40 PM
473	Entrance to Hatteras Village on Rt. 12.	11/29/2021 8:32 PM
474	North Rodanthe and north Buxton	11/29/2021 8:30 PM
475	Downtown Manteo	11/29/2021 8:23 PM
476	Clamshell Dive in Kill Devil Hills	11/29/2021 8:11 PM
477	Flooding in Manteo & Nags Head	11/29/2021 8:10 PM
478	40213 Ocean View Drive, Avon	11/29/2021 8:07 PM
479	Pea island Kitty Hawk by Black Pelican	11/29/2021 8:04 PM
480	North Carolina Highway 12	11/29/2021 7:59 PM
481	Ocean View Drive, Avon. Rodanthe	11/29/2021 7:56 PM
482	South of Oregon Inlet.	11/29/2021 7:53 PM
483	Rain flooding on Hwy 12 at Wind Over Waves, Food Lion area in Avon and at Hatteras Village. Ocean overwash on Tower Circle, Cottage Ave and Ocean Drive in Buxton	11/29/2021 7:49 PM
484	Colington Rd	11/29/2021 7:30 PM
485	Avon - Kinnakeet area Rodanthe Buxton	11/29/2021 7:29 PM
486	Ocean Drive, Rodanthe	11/29/2021 7:26 PM
487	Buxton, Frisco, Hatteras village	11/29/2021 7:19 PM
488	Route12	11/29/2021 7:12 PM
489	All of Hatteras Island	11/29/2021 7:01 PM
490	South of Avon pier at this time	11/29/2021 6:55 PM
491	Areas between Oregon Inlet Bridge and Buxton + Ocracoke	11/29/2021 6:51 PM
492	Colington	11/29/2021 6:48 PM
493	avon around food lion, rodanthe mirlo beach, hatteras village from frisco to the village but beach erosion at the end of the island is extremely worrying	11/29/2021 6:43 PM
494	Route 12	11/29/2021 6:34 PM
495	Route 12 in Kitty Hawk, Rodanthe	11/29/2021 6:30 PM
496	Beulah O'Neal Rd. Rodanthe. We must maintain our road with only a few of us participating in payments. 3-5 homes. With increasing floods and all on us, it is tough.	11/29/2021 6:26 PM
497	Ocean View Drive Hwy 12	11/29/2021 6:22 PM
498	NC Hwy 12	11/29/2021 6:13 PM
499	Avon, Food Lion Grocery store and Ace Hardware areas of Hwy 12 since these areas that will be needed for recovery efforts following a major storm.	11/29/2021 6:09 PM

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500	Buxton. Hwy12 Hatteras. Hwy12	11/29/2021 6:08 PM
501	Avon beachfront	11/29/2021 5:55 PM
502	Ocean View Drive, Avon	11/29/2021 5:52 PM
503	Mirlo Beach, Ocean Dr in Avon, North end of Buxton, North side of Hatteras Village	11/29/2021 5:52 PM
504	Unsure, but nearly all areas are low lying and prone to high wind and flooding damage.	11/29/2021 5:47 PM
505	ocean view street area in Avon and Pea Island overwash. The S-turn overwash will be taken care of soon by the Jug Handle bridge	11/29/2021 5:43 PM
506	Hwy 158 between Kitty Hawk Road and 5th St. Hwy 12 Kitty Hawk, south of Oregon Inlet. Kitty Hawk Road.	11/29/2021 5:43 PM
507	Mirlo Beach, Avon,	11/29/2021 5:42 PM
508	Tritons, Avon, Buxton, Pea Island	11/29/2021 5:42 PM
509	Kitty Hawk	11/29/2021 5:39 PM
510	North end of Buxton	11/29/2021 5:39 PM
511	Pea island coastal highway	11/29/2021 5:37 PM
512	Sound front house	11/29/2021 5:34 PM
513	Duck road between duck and kitty hawk. Rt 12	11/29/2021 5:23 PM
514	Highway 12 past Marc Basnight bridge	11/29/2021 5:22 PM
515	S-turns & pea island visitor center - overwash flooding Wind over waves (nc 12 street flooding) Buxton - ocean overwash A lot of side streets/nc 12 areas due to no proper drainage/storm water system/management	11/29/2021 5:20 PM
516	South Avon and north Buxton... for my property area.	11/29/2021 5:19 PM
517	Hwy 12 south Frisco; Hatteras Village; Rodanthe	11/29/2021 5:17 PM
518	NC Route 12	11/29/2021 5:14 PM
519	Colington Road	11/29/2021 5:10 PM
520	The south side of the point through the hook has experienced unprecedented erosion in the past 3 yrs...jettys need repair in Buxton... Hatteras inlet will fill in completely if a protective jetty is not built...the pole rd area is in a fast forward wash away phase that is caused by the inlet being full of sand...the water will continue to encroach towards Hatteras village if the inlet is not stabilized with jettys and then and only then will dredging be successful. I could care less about beach front homes washing away as they shouldn't have been built anyways...same as the dumbasses that thought a protective dune system would be smart idea. The civilian conservation corps signed the death certificate for the island years ago...but everyone was to hungry for the tourist money to realize it.	11/29/2021 5:08 PM
521	Erosion of Buxton beach	11/29/2021 5:05 PM
522	Highway 12: Avon proper, north end of Buxton, north end of Hatteras and Hatteras proper, pea island.	11/29/2021 5:05 PM
523	Sound side Beaches	11/29/2021 5:00 PM
524	This is a poorly worded question. In general? In NC? On the Outer Banks? In Hatteras? We are all significantly affected.	11/29/2021 4:58 PM
525	Highway 12; Soundside in Rodanthe and Salvo; Oceanside in Avon and Rodanthe.	11/29/2021 4:58 PM
526	Beaches, pea Island	11/29/2021 4:47 PM
527	Hatteras island.	11/29/2021 4:46 PM
528	Anywhere along Slash Creek in Hatteras Village during Pamlico Sound flooding.	11/29/2021 4:46 PM
529	All of Hatteras Island, all soundside and oceanfront businesses and homes, downtown Manteo, Colington Road, Beach Road in Nags Head, Duck Road in Southern Shores, 158 in front of Nolan's in Kitty Hawk, Sportsman Drive in Kill Devil Hills, West Kitty Hawk Road, between the highways in Kitty Hawk (Memorial Drive, I Got Your Crabs), Nags Head/Manteo Causeway	11/29/2021 4:46 PM

Coastal Resilience Questionnaire

530	Rt 12	11/29/2021 4:45 PM
531	The beaches	11/29/2021 4:44 PM
532	Shallowbag Bay	11/29/2021 4:44 PM
533	Soundside properties, Town of Manteo, Rt. 12 southern shores, Hatteras Island, beach road in Kitty Hawk	11/29/2021 4:44 PM
534	Nc 12	11/29/2021 4:42 PM
535	Lighthouse rd. Ocean side captain's beach community beach erosion, dune instability replenishment not thorough from hurricane Isabela. Lost one of the dunes and the remaining dune has seen failure from the October nor'easter	11/29/2021 4:41 PM
536	Rodanthe, northern Buxton, Soundside Hatteras	11/29/2021 4:41 PM
537	Buxton beach erosion and overwatch. Replace decayed jetties, sand dunes, and vegetation.	11/29/2021 4:41 PM
538	In Manteo, it is the area around Shallowbag Bay The area's most recent issues were to the dunes near Rodanthe.	11/29/2021 4:40 PM
539	All along NC12	11/29/2021 4:36 PM
540	Avon South	11/29/2021 4:32 PM
541	NC12 in the tri-villages. NC12 just south of the Basnight Bridge and on Pea Island.	11/29/2021 4:32 PM
542	158 at 4 1/2 to 5 1/2 mile post Collington road	11/29/2021 4:28 PM
543	Hatteras Island.	11/29/2021 4:26 PM
544	Pea Island rest area, Buxton... both on NC12	11/29/2021 4:19 PM
545	Buxton shoreline entrance to Hatteras Village dunes are leaking Lowlying residences	11/29/2021 4:18 PM
546	Highway 12 in Avon	11/29/2021 4:16 PM
547	Downtown Manteo	11/29/2021 4:13 PM
548	Drugs infiltrated onto OBX	11/29/2021 4:10 PM
549	Rt12 Duck	11/29/2021 4:09 PM
550	Oceanview Drive in Avon, Post Office in Avon, Food Lion in Avon, medical facility in Avon - pretty much the southern end of Avon. Major drainage issues throughout Highway 12 in Avon,	11/29/2021 4:09 PM
551	Mirlo Beach	11/29/2021 4:08 PM
552	Hwy 12	11/29/2021 4:06 PM
553	Woodall St. and Eagle Pass in Hatteras (flooding) Rt.12 in Rodanthe and Mirlo Beach	11/29/2021 4:05 PM
554	Mirlo Beach, Oceanview Ave. in Avon, and Hatteras Village.	11/29/2021 4:04 PM
555	NC hwy 12	11/29/2021 4:03 PM
556	North Buxton, Ocean View Drive, Avon	11/29/2021 4:02 PM
557	12 just north of buxton...frequent flooding	11/29/2021 4:00 PM
558	Rodanthe, Pier -to- Ocean Dr . Buxton - North End Avon - Ocean View Dr	11/29/2021 4:00 PM
559	Kohler, Eagle Pass, Tower, Cottage, Ocean, it just depends on severity and wind direction which areas will be affected	11/29/2021 4:00 PM
560	Mirlo and Avon	11/29/2021 3:58 PM
561	Depends on the storm	11/29/2021 3:43 PM
562	In Hatteras Village - flooding issues along Eagle Pass Road, at end of Kohler Road and intersection of Pricilla Curve Road AND along Hwy 12 entering into the village	11/29/2021 3:11 PM
563	south nags head, corolla in whalehead, VA Dare Trail in Kitty Hawk, Colinton Road, etc etc etc	11/29/2021 2:53 PM
564	KDH west side near first flight school	11/29/2021 2:47 PM

Coastal Resilience Questionnaire

565	Shady rest Mobil home park Etheridge Rd and brown road in Manteo	11/29/2021 1:58 PM
566	Hatteras island, section of kitty hawk off kitty hawk Rd, sections of colington harbor, sections of kdH by sound	11/29/2021 1:42 PM
567	Colington Harbour	11/29/2021 1:08 PM
568	Colington Road, Bay Drive, all soundside streets on low to average elevation above sea level, Avon, Rodanthe, soundside flooding of canals. Huge subdivisions that have been cleared of old live oaks and brush and turned into concrete cities.	11/29/2021 1:08 PM
569	Dare County in general	11/29/2021 10:32 AM
570	Areas near water that flood	11/29/2021 10:28 AM
571	All of Cape Hatteras, Stumpy Point, Colington, Kill Devil Hills, Nags Head, Southern Shores, Duck, and Manteo.	11/29/2021 9:46 AM
572	Martins pt, duck, east lake, Hatteras island	11/29/2021 8:05 AM
573	Colington Rd. The neighborhood behind the new Nags Head Food Lion around Abalone St. Moore Shore Rd/Bay Dr. Much of Rodanthe oceanfront.	11/29/2021 7:59 AM
574	Those on the coast, the sound and those south of Pea Island. Also those in lower flood zones.	11/29/2021 7:02 AM
575	Mirlo Beach	11/29/2021 6:54 AM
576	Cemetery in salvo Nc12	11/29/2021 6:40 AM
577	HWY 12 south of Oregon Inlet to Rodanthe. N. Va Dare Trail in northern Kitty Hawk.	11/29/2021 4:41 AM
578	Near Nags Head ocean reascue on beach road, near lucky 12, Colington Rd, beach road by Jolly Roger in KDH, HWy 12 in Avon, pea Island and Hatteras	11/28/2021 11:03 PM
579	South of new brige	11/28/2021 10:18 PM
580	Just south of the Basnight bridge. Rt 12 in front of Wind over Waves subdivision.	11/28/2021 8:38 PM
581	Hatteras island Rt 12 South nags head	11/28/2021 8:22 PM
582	Nc12 south of Oregon inlet bridge. Do a long bridge like key west.	11/28/2021 8:21 PM
583	Pea island, oceanfront in S. Nags Head and Kitty Hawk	11/28/2021 8:21 PM
584	Hwy 12 in Buxton	11/28/2021 7:59 PM
585	The sound side and the sound. The reliance on septic is not sustainable	11/28/2021 7:58 PM
586	Rt 158 in Kitty Hawk in the area by the post office floods terribly with storms. Is impassable after hurricanes and there is no detour	11/28/2021 7:58 PM
587	Trent Drive, Frisco; Highway 12 in Hatteras; Highway 12 Salvo	11/28/2021 7:50 PM
588	Martins Point	11/28/2021 6:46 PM
589	3rd Street	11/28/2021 6:30 PM
590	Ocean Blvd. Duck Road	11/28/2021 6:12 PM
591	Ginguite Trail, Southern Shores Bypass-	11/28/2021 6:00 PM
592	Duck road	11/28/2021 5:59 PM
593	Highway 12 to all of Hatteras Island	11/28/2021 5:50 PM
594	Harbour View Rd.	11/28/2021 5:06 PM
595	Highway 12	11/28/2021 3:46 PM
596	Entrance to Avon The ditch area in Rodanthe North of Pea Island	11/28/2021 3:39 PM
597	Oregon Inlet	11/28/2021 3:30 PM
598	The beaches	11/28/2021 3:27 PM
599	Downtown Manteo	11/28/2021 2:20 PM
600	Duck road flooding during storms	11/28/2021 2:14 PM

Coastal Resilience Questionnaire

601	As you know, damage is dependent on wind direction. West wind gets Avon and Rodanthe. North gets Frisco, Hatteras and Ocracoke.	11/28/2021 12:28 PM
602	Soundside communities in RWS and Avon	11/28/2021 12:15 PM
603	Southside and oceanfront	11/28/2021 11:40 AM
604	Hwy 12	11/28/2021 11:27 AM
605	Hatteras Island	11/28/2021 11:22 AM
606	Downtown Manteo	11/28/2021 11:02 AM
607	Highway 12 where road runs just behind dune.	11/28/2021 10:45 AM
608	Hatteras Island	11/28/2021 10:16 AM
609	Downtown Manteo	11/28/2021 9:59 AM
610	Highway 12 between Hatteras and Frisco	11/28/2021 9:57 AM
611	Meekins Drive and Hwy 64 outside of Manteo. No storm water drainage from damaged/old culverts and poorly graded ditches.	11/28/2021 9:31 AM
612	Why do they pump treated sewage into shallowbag Bay when it is mostly closed off from the tides that go around roanoke Island. Pups it to the west side of the island it would disperse much better. I'm saying this cause of the sign at the waterfront Bridge that mention polluted water	11/28/2021 8:48 AM
613	Hwy 12, Va Dare Trl, any low lying area. We accepted this and CHOOSE to live here anyway. Locals swim. Transplants scream for help.	11/28/2021 8:27 AM
614	Colington road, Kitty Hawk road and surrounding roads, lindburge ave and surrounding roads. All of Hatteras and surrounding villages, Duck road and most surrounding roads as well. Down town manteo, Colington Harbor. Corolla I know it's currituck but still terrible.	11/28/2021 8:04 AM
615	158	11/28/2021 7:38 AM
616	Colington road	11/28/2021 5:29 AM
617	Croatan Sound Cannon Trail	11/28/2021 4:02 AM
618	Burnside Forest	11/27/2021 10:19 PM
619	Hatteras Island Wanchese Colington down town Manteo South Nags Head	11/27/2021 10:06 PM
620	Kitty Hawk between the highways with storm or wash whether nor'easter or hurricane.	11/27/2021 10:04 PM
621	East Dogwood Tr. Southern Schores	11/27/2021 9:51 PM
622	Downtown Manteo	11/27/2021 9:47 PM
623	Ocean side and sound side. Sound side flooding effects locals most. Irene effected many locals from Kitty Hawk to Hatteras and Roanoke island.	11/27/2021 9:10 PM
624	South of Oregon Inlet	11/27/2021 8:22 PM
625	Beach road, Colington road, road to hatteras, south nags head	11/27/2021 8:04 PM
626	Hatteras Island, downtown Manteo, Colington Road, beach road in Kitty Hawk	11/27/2021 7:31 PM
627	Rodanthe Buxton Hatteras Ocracoke	11/27/2021 7:20 PM
628	Hatteras Island at the S curve. Bay dr in Kdh. Manteo waterfront. Colington harbor and Kitty Hawk Village	11/27/2021 6:58 PM
629	Entire Beach road South Nags Head. Anywhere south of the Basnight bridge	11/27/2021 6:54 PM
630	Oceanview Dr., Highway 12 in the tri-villages, Buxton at the Motel/shopping area, Pea Island near the visitor center, Avon Highway 12 from first stop light to Askins Creek quick stop	11/27/2021 6:47 PM
631	Hatteras Island	11/27/2021 6:10 PM
632	Flooding. Colington. Kitty Hawk. Manteo	11/27/2021 6:07 PM
633	Poor drainage on 4th street KDH. Storm drains not maintained.	11/27/2021 5:11 PM

Coastal Resilience Questionnaire

634	Kill Devil hills. Stop the extreme growth and building. These super large homes are not a good thing.	11/27/2021 4:10 PM
635	Rodanthe, Avon, Buxton	11/27/2021 3:14 PM
636	Rt 12 to Hatteras, beach road flooding, Kitty Hawk beach erosion, S. Nags Head beach erosion	11/27/2021 2:27 PM
637	Nc 345 South Town of Manteo Nc12 south	11/27/2021 2:07 PM
638	Hatteras village, Avon	11/27/2021 1:01 PM
639	Beach road.	11/27/2021 1:01 PM
640	Areas over the Basnight bridge, and low lying areas of Kitty Hawk and Kill Devil Hills.	11/27/2021 11:49 AM
641	Hatteras Island	11/27/2021 9:46 AM
642	The usual ones	11/27/2021 9:23 AM
643	Stumpy Point, East Lake, south of Oregon inlet, Wanchese	11/27/2021 9:11 AM
644	South of the village of Hatteras.	11/27/2021 7:28 AM
645	Pond Island	11/27/2021 6:47 AM
646	Pea island	11/27/2021 6:16 AM
647	If you don't already know, then you haven't been following the news.	11/27/2021 1:26 AM
648	Kitty Hawk Village Flood Zones	11/26/2021 10:21 PM
649	Hatteras island	11/26/2021 9:38 PM
650	North end of Buxton	11/26/2021 9:35 PM
651	Dare County	11/26/2021 8:36 PM
652	Ocean front	11/26/2021 7:12 PM
653	NC12 Nags Head	11/26/2021 6:38 PM
654	Nags Head and Kitty Hawk	11/26/2021 5:58 PM
655	Collington	11/26/2021 4:50 PM
656	Old lighthouse road	11/26/2021 4:19 PM
657	Downtown Manteo	11/26/2021 4:14 PM
658	Colington Harbour	11/26/2021 4:11 PM
659	Hatteras, Colington, all beaches , downtown Manteo flooding, Highway 12	11/26/2021 3:12 PM
660	Kitty Hawk Road. Ivy Lane	11/26/2021 2:45 PM
661	Beach stretch outside Hatteras, motel area Buxton, Canal Zone	11/26/2021 2:31 PM
662	Colington Rd, Kitty Hawk and everything south of the Oregon Inlet	11/26/2021 1:43 PM
663	Area of NC 12 from Basnight Bridge to Beacon Rd; intersection of NC 12 and Otter Way in Salvo (approx 1/2 mile in either direction; poor drainage throughout Hatteras Colony subdivision of Salvo; North ends of Buxton and Hatteras; KOA Kampground sound side in Rodanthe; graveyard behind Salvo Day Use Area; Entirety of OBX, really.	11/26/2021 1:00 PM
664	Hey 12 as a whole! No it's not because of rising sea levels!!	11/26/2021 10:57 AM
665	Oceanfront, sound front, downtown & northern end of Manteo.	11/26/2021 10:43 AM
666	Colington Road	11/26/2021 10:01 AM
667	Duck Road and Sanderling area	11/26/2021 9:43 AM
668	North Buxton Avon. Rodanthe Frisco Hatteras Pea Island	11/26/2021 9:05 AM
669	Well obviously all the coastline and soundsides.	11/26/2021 8:58 AM
670	Soundfront, oceanfront, Hatteras island, downtown Manteo, some of Wanchese, Kitty Hawk landing	11/26/2021 8:54 AM

Coastal Resilience Questionnaire

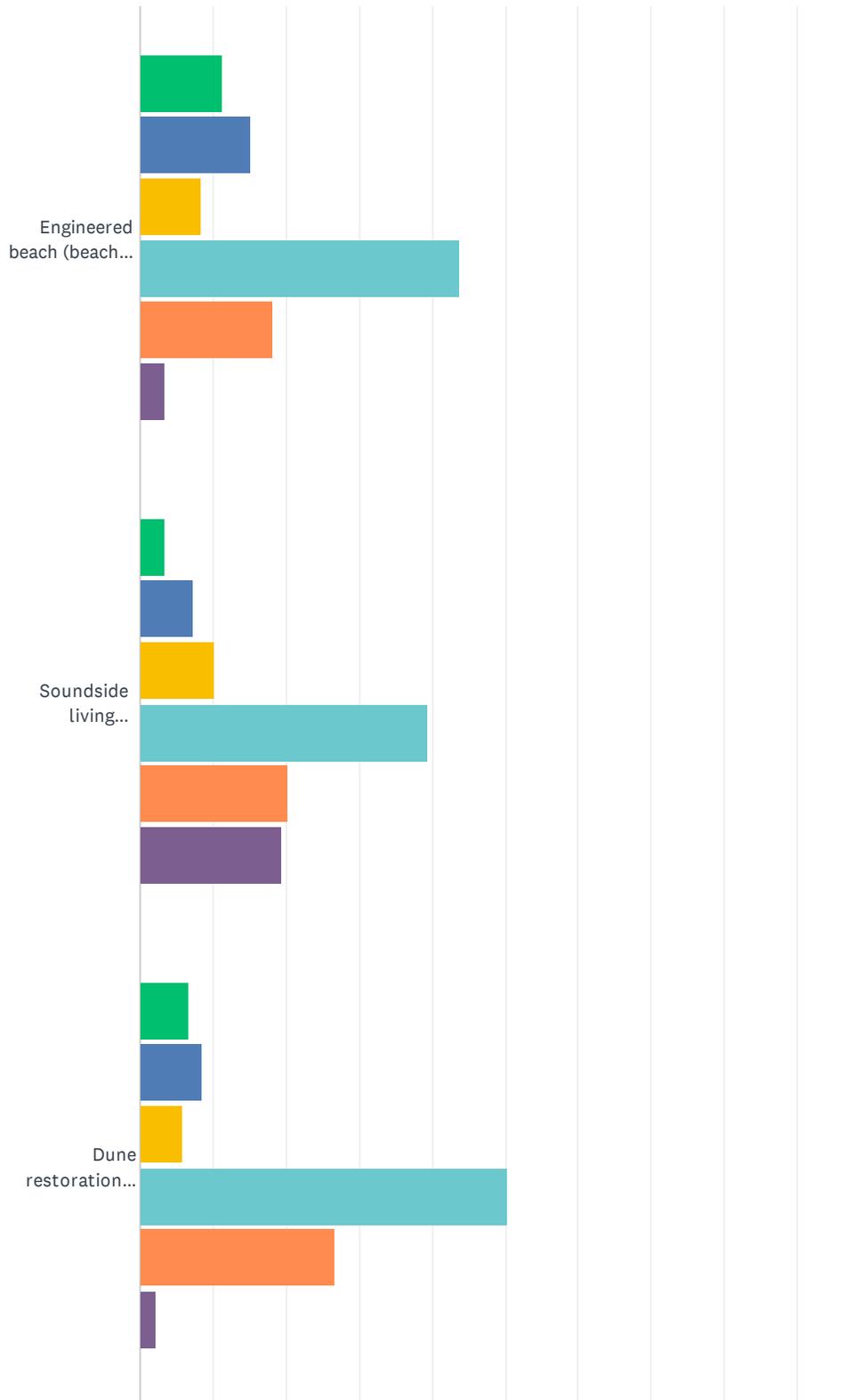
671	Route 12 south of Organ Inlet	11/26/2021 8:23 AM
672	Hatteras island	11/26/2021 7:10 AM
673	Moore Shore, they should have extended Oregon Inlet bridge another 1.5 miles to bypass the part that always washes out	11/26/2021 5:51 AM
674	Highway 12 Eagle pass	11/26/2021 5:21 AM
675	Sound side Kitty Hawk, Kiity Hawk Rd, Barlow Lane, KDH ocean side	11/26/2021 4:04 AM
676	You already know the areas.	11/26/2021 2:43 AM
677	Nc12	11/26/2021 2:39 AM
678	Flooding on the road to Colington, NC 12 to Hatteras	11/26/2021 2:19 AM
679	South of Basnight bridge	11/26/2021 1:14 AM
680	Colington	11/26/2021 1:13 AM
681	Downtown Manteo Highway 12	11/25/2021 10:19 PM
682	Buxton motel and rt12	11/25/2021 10:10 PM
683	All areas	11/25/2021 9:51 PM
684	Highway 12	11/25/2021 9:08 PM
685	I don't know	11/25/2021 8:54 PM
686	Sound side and beach in kitty Hawk	11/25/2021 8:53 PM
687	Avon area	11/25/2021 8:44 PM
688	Hatteras Island	11/25/2021 8:13 PM
689	Hatteras island	11/25/2021 8:08 PM
690	Colington	11/25/2021 7:22 PM
691	Pea Island, North Rodanthe,	11/25/2021 7:17 PM
692	Hatteras village area between Frisco and hatteras 12 in Avon from ocean overwash	11/25/2021 7:06 PM
693	Not sure	11/25/2021 5:09 PM
694	Bay Drive, Hatteras Island	11/25/2021 4:02 PM
695	Colington Road from bridge to little Colington Island to Colinton Cafe.	11/25/2021 3:52 PM
696	All low lying areas of the county.	11/25/2021 3:38 PM
697	Highway12 just outside of Hatteras village and also Slash creek area.	11/25/2021 2:07 PM
698	The whole island floods, depends on wind direction etc. Tri-Village, Avon (Oceanside Drive), entrance to Buxton (Hwy. 12, open stretch to Hatteras	11/25/2021 1:48 PM
699	Depends on the issues, our area has many hazards depending on the environment issue.	11/25/2021 1:42 PM
700	Colington Harbor	11/25/2021 1:28 PM
701	Hwy 12	11/25/2021 1:03 PM
702	-Colington Road -Rt 12 Hatteras Island	11/25/2021 11:57 AM
703	Rt 12, KH, Roadanthe, Avon, Buxton	11/25/2021 11:35 AM
704	Duck	11/25/2021 11:08 AM
705	For year round residents Soundside residences and business, for non resident homeowners, beach erosion and beach road flooding	11/25/2021 10:49 AM
706	All those on the waters edge leaking sewage into the sound and ocean	11/25/2021 10:32 AM
707	All of the islands 7 villages, Buxton being the least vulnerable and Hatteras the most	11/25/2021 10:17 AM

Coastal Resilience Questionnaire

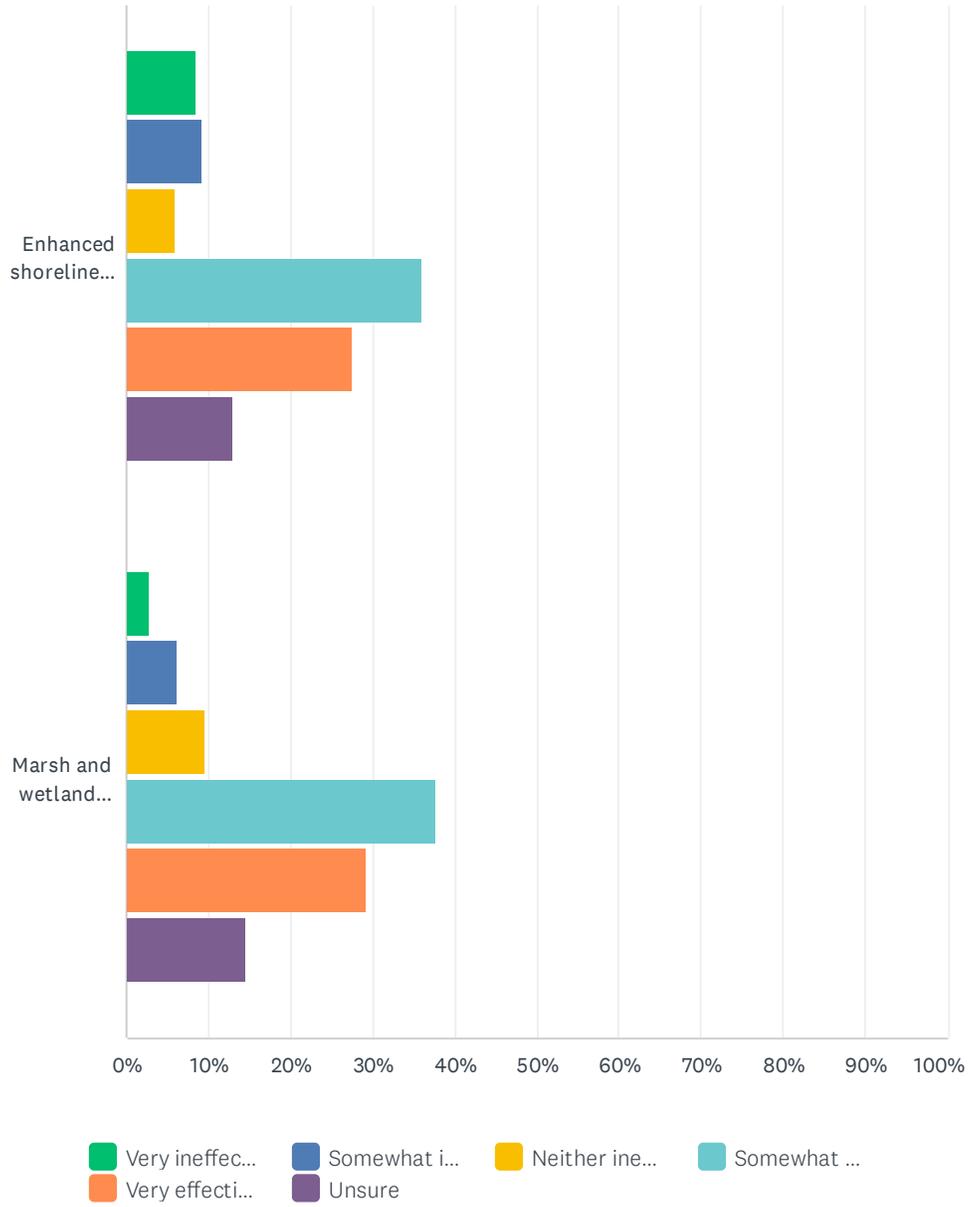
708	Avon Buxton Rt12	11/25/2021 8:17 AM
709	NC 12,	11/25/2021 7:48 AM
710	Piers and beaches	11/25/2021 6:21 AM

Q14 On the scale below, indicate the effectiveness or ineffectiveness of each item in providing flood protection and community resiliency to extreme hazards?

Answered: 844 Skipped: 277



Coastal Resilience Questionnaire

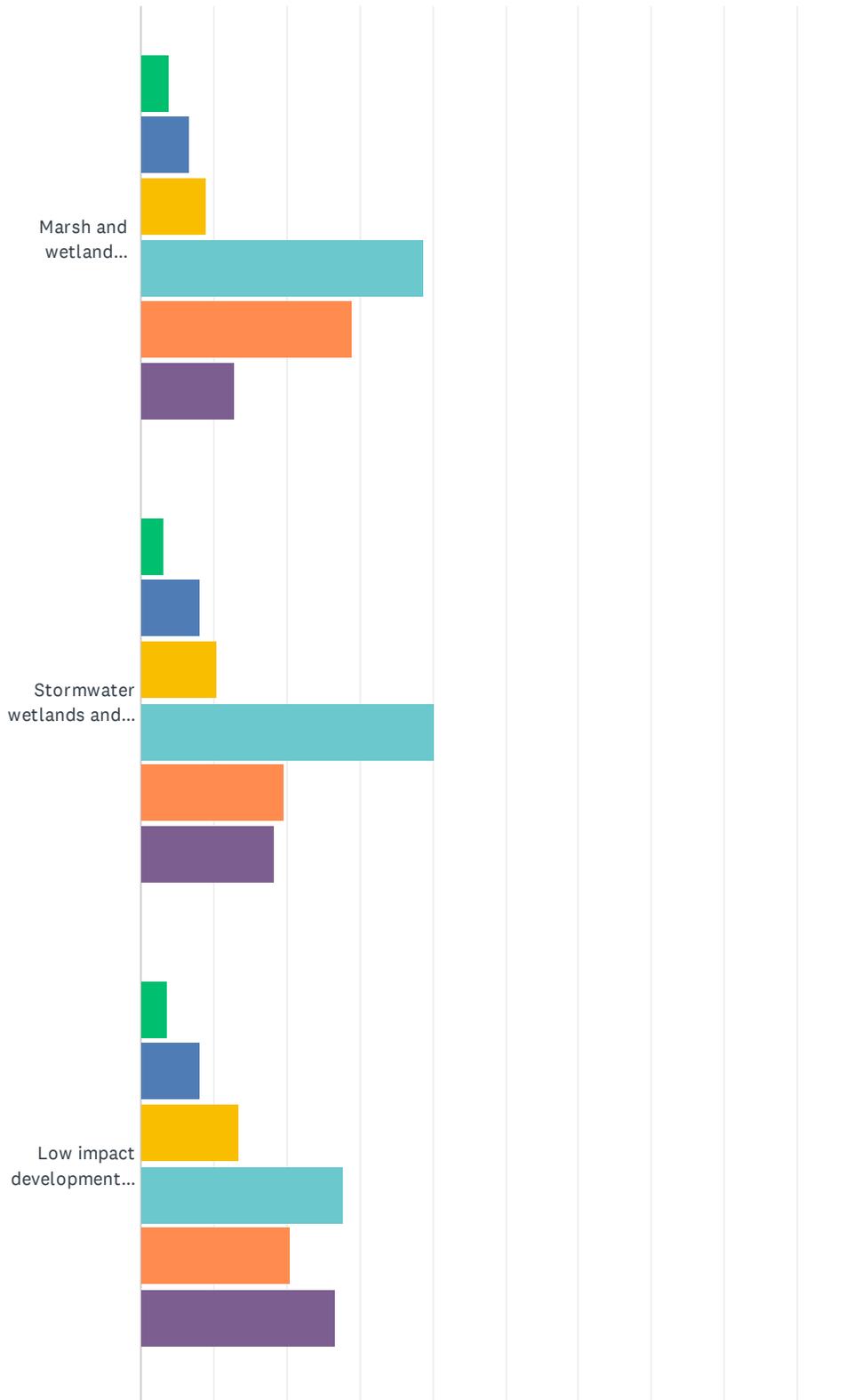


Coastal Resilience Questionnaire

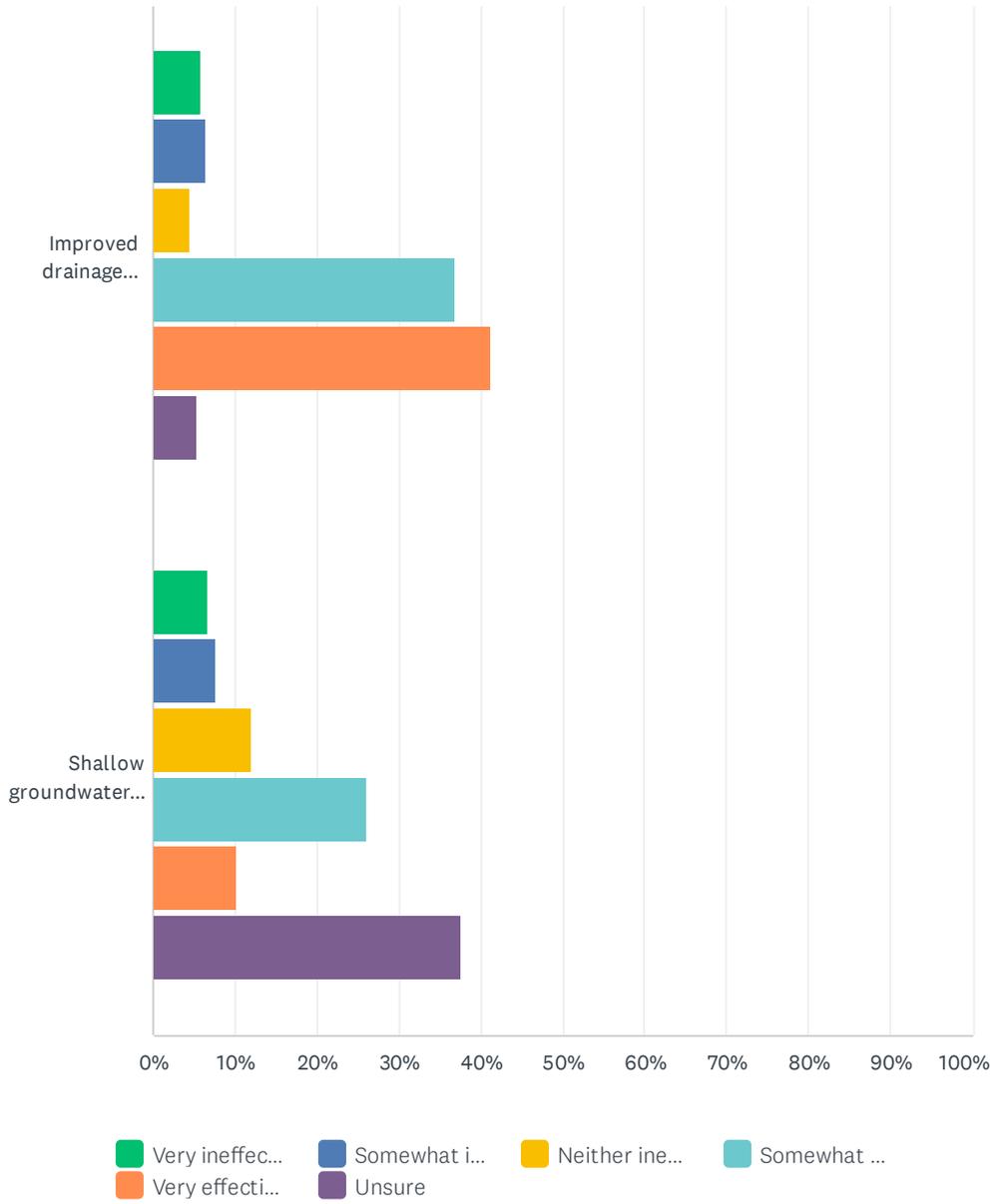
	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEITHER INEFFECTIVE NOR EFFECTIVE	SOMEWHAT EFFECTIVE	VERY EFFECTIVE	UNSURE	TOTAL	WEIGHTED AVERAGE
Engineered beach (beach nourishment)	11.26% 95	15.17% 128	8.41% 71	43.72% 369	18.13% 153	3.32% 28	844	3.42
Soundside living shorelines (marsh sills)	3.33% 28	7.25% 61	10.23% 86	39.36% 331	20.33% 171	19.50% 164	841	3.82
Dune restoration (sand fencing, planting beach grass)	6.53% 55	8.55% 72	5.82% 49	50.36% 424	26.60% 224	2.14% 18	842	3.82
Enhanced shoreline revetments (rock/concrete erosion protection)	8.43% 71	9.26% 78	5.94% 50	35.99% 303	27.43% 231	12.95% 109	842	3.72
Marsh and wetland restoration	2.75% 23	6.21% 52	9.56% 80	37.75% 316	29.15% 244	14.58% 122	837	3.92

Q15 On the scale below, indicate the effectiveness or ineffectiveness of each item in providing flood protection and community resiliency to extreme hazards?

Answered: 844 Skipped: 277



Coastal Resilience Questionnaire

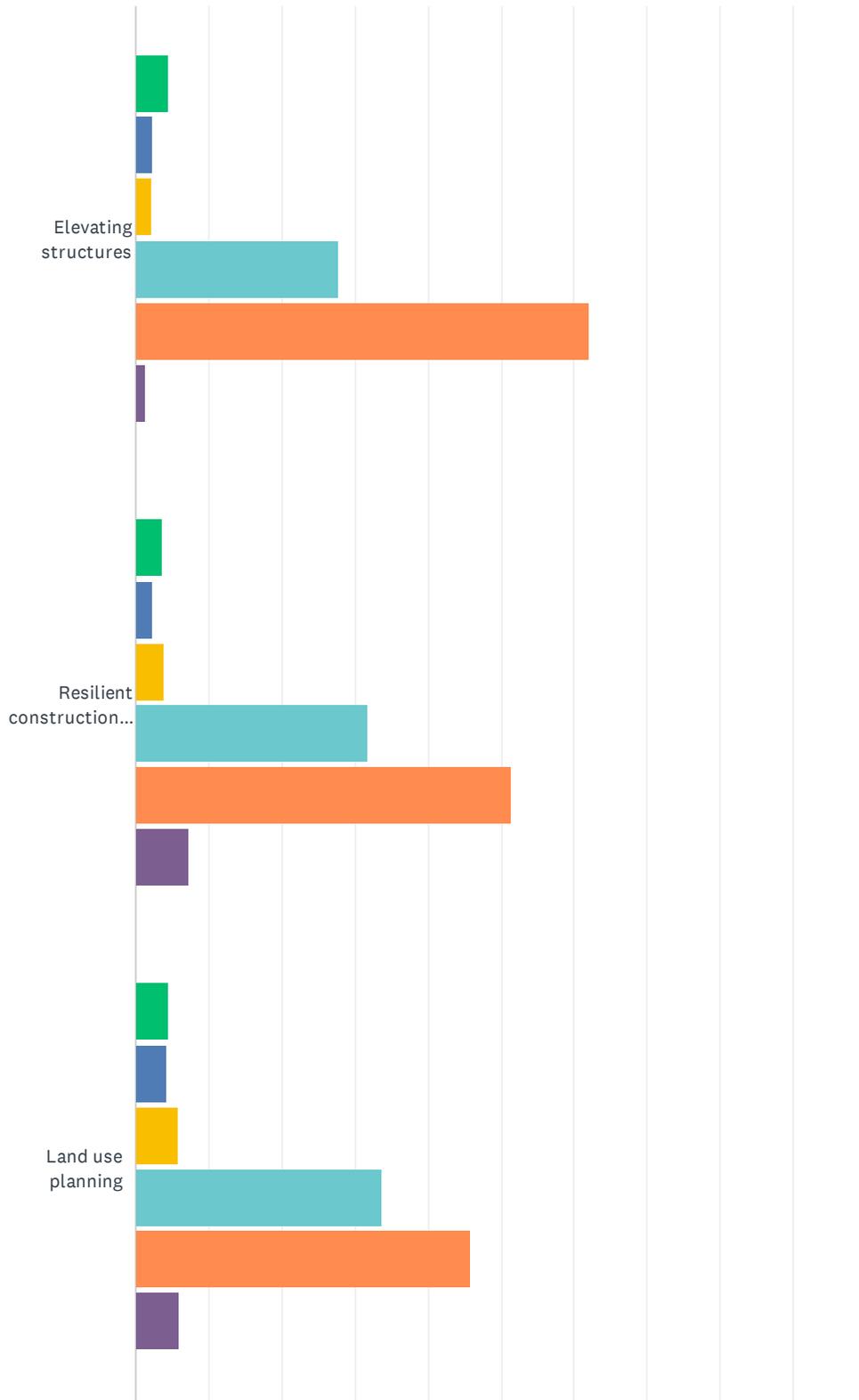


Coastal Resilience Questionnaire

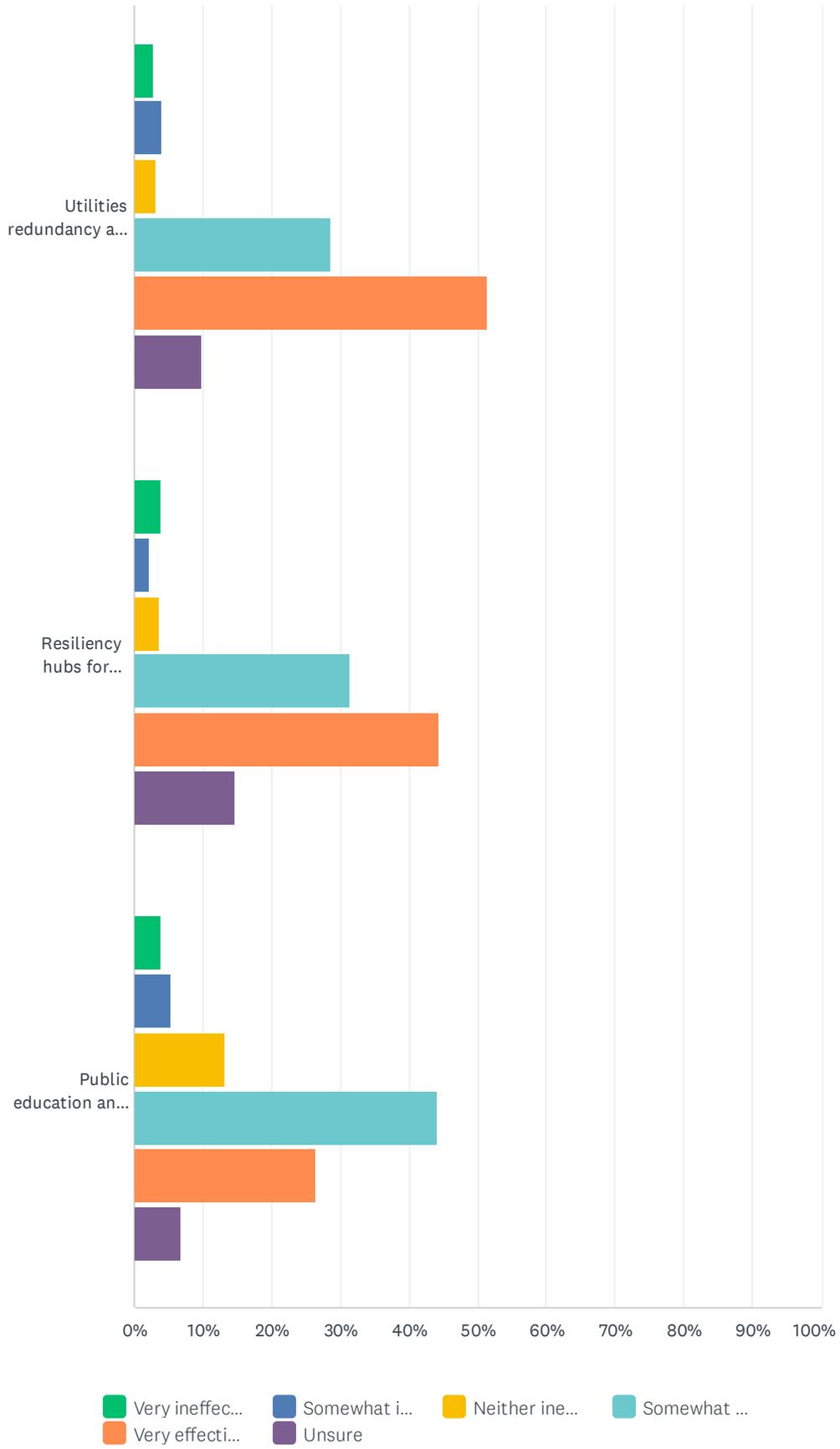
	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEITHER INEFFECTIVE NOR EFFECTIVE	SOMEWHAT EFFECTIVE	VERY EFFECTIVE	UNSURE	TOTAL	WEIGHTED AVERAGE
Marsh and wetland preservation	3.80% 32	6.65% 56	8.91% 75	38.72% 326	29.10% 245	12.83% 108	842	3.95
Stormwater wetlands and ponds (SCMs)	3.21% 27	8.10% 68	10.48% 88	40.24% 338	19.64% 165	18.33% 154	840	3.80
Low impact development (LID)	3.58% 30	8.12% 68	13.50% 113	27.72% 232	20.43% 171	26.64% 223	837	3.73
Improved drainage systems (ditches and pipes)	5.83% 49	6.43% 54	4.52% 38	36.90% 310	41.07% 345	5.24% 44	840	4.07
Shallow groundwater pumping (before storms)	6.69% 56	7.65% 64	11.95% 100	26.05% 218	10.16% 85	37.51% 314	837	3.41

Q16 On the scale below, indicate the effectiveness or ineffectiveness of each item in providing flood protection and community resiliency to extreme hazards?

Answered: 820 Skipped: 301



Coastal Resilience Questionnaire



Coastal Resilience Questionnaire

	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEITHER INEFFECTIVE NOR EFFECTIVE	SOMEWHAT EFFECTIVE	VERY EFFECTIVE	UNSURE	TOTAL	WEIGHTED AVERAGE
Elevating structures	4.52% 37	2.32% 19	2.08% 17	27.75% 227	61.98% 507	1.34% 11	818	4.42
Resilient construction standards	3.55% 29	2.33% 19	3.79% 31	31.70% 259	51.41% 420	7.22% 59	817	4.35
Land use planning	4.55% 37	4.30% 35	5.77% 47	33.66% 274	45.82% 373	5.90% 48	814	4.19
Utilities redundancy and backup	2.81% 23	4.03% 33	3.30% 27	28.61% 234	51.34% 420	9.90% 81	818	4.35
Resiliency hubs for post-storm power and supplies	3.91% 32	2.08% 17	3.67% 30	31.30% 256	44.25% 362	14.79% 121	818	4.29
Public education and outreach	3.81% 31	5.41% 44	13.14% 107	44.23% 360	26.54% 216	6.88% 56	814	3.91

Q17 If you have anything else that you would like to share with us, please let us know!

Answered: 216 Skipped: 905

#	RESPONSES	DATE
1	For the love of god do something immediate about affordable housing. We're bleeding residents.	12/12/2021 10:04 AM
2	If there was a concerted effort to bridge areas that interrupt hwy 12 instead of filling them as the case for the inlet that was formed after the storm Isabelle,it would greatly decrease sound side flooding. Filling that area in and not allowing an outlet for sound water or ocean water,was imho one of the biggest mistakes made in my area by Dare County.	12/12/2021 9:07 AM
3	Let's STOP building more structures/homes and protect what is left of our beautiful land	12/11/2021 7:47 PM
4	Keep ditches clean,trees cut near power lines and raise structures where needed	12/11/2021 3:09 PM
5	Could a plan be put in place to elevate the banks of Colington Road by 2 feet?	12/11/2021 8:19 AM
6	Increase of local hospital services should be a priority. Teaming with a University Medical School should be considered to increase these services.	12/10/2021 11:05 PM
7	Very concerned about new construction lots being built up with mountains of fill which essentially puts older properties in holes and more subject to flooding. I'd also like to see limits on how many trees can be cut down. I'm seeing a lot of land completely cleared which is unsustainable on a sandbar with serious erosion threats.	12/10/2021 9:52 PM
8	I'm not a specialist in these areas so I'm sure of the overall accuracy of my assessment.	12/10/2021 8:25 PM
9	We need groins and jettys	12/10/2021 8:22 PM
10	Drainage of storm water to sound.	12/10/2021 12:25 PM
11	Anytime you build near sea level you have to expect flooding, mother nature is dynamic and desires straight line's, most erosion is where land protrudes into the ocan!	12/10/2021 9:29 AM
12	for future beach nourishment have the added sand at a gradual slope. Last nourishment the water created tidal pools on the flat beach and retained the waters when released washed away the just added sand. #2. make sure local towns woth storm drains have them open before/during storms approach. (Nags Heads during Matthew where left closed and flooded my home that had not flooded in 40+ years)	12/9/2021 6:49 PM
13	Have seen no change in the sea levels in my lifetime at the OBX. Sand moves with storms where sand moves, so be it	12/9/2021 6:37 AM
14	Planning for land use is critical. This is a long range plan, not a zoning gatekeeper.	12/9/2021 12:15 AM
15	Assistance for older homes to meet more modern building codes would be helpful.	12/8/2021 4:56 PM
16	I would like to see more sound side shore line restoration on private property that is not maintained by owners.	12/8/2021 11:04 AM
17	Why are we not pumping sand on the sound side like we do on the ocean side.	12/8/2021 8:53 AM
18	Stop the building of massive homes on the beach. We live on a barrier island that is always shifting and changing. I have lived here since 1988. The one thing I have learned, you build on this sandbar at your own peril. Mother Nature will always win.	12/7/2021 7:40 PM
19	All the things to help with storm and resilience need to be stream lined. Reducing the time it take the bureaucracy of all agencies, will save time,money and lives.	12/7/2021 7:31 PM
20	Rodanthe is in dire need of beach nourishment with some structures already in the water and a lack of dunes with grass. Rodanthe serves as the access point for the islands to the south and an investment should be made for those beaches and to protect the recent investment in the bridge.	12/7/2021 12:52 PM

Coastal Resilience Questionnaire

21	Allow jetties and ground on the Ocean front ...it's illogical and rather unintelligent for taxpayers to pay more for constant erosion problems in locations where the public insists preservation, when jetties and ground could do tremendous good. Either decide to let Hatteras residents lose all property or not....quit letting interagency beauracracy battle against itself at our expense. Non resident public opinion should be at the bottom of the priority list when making decisions....because especially the local community ends up paying more for the ramifications of decisions based on far off environmental lobbies.....	12/7/2021 9:28 AM
22	Some of the concepts being studied here need clear definitions. Not clear.	12/6/2021 7:28 PM
23	put a moratorium on the ridiculous amount of building occurring on the OBX, especially in KDH, shameful	12/6/2021 6:33 PM
24	To protect from Ocean overwatch, pump sand and build jetties.	12/6/2021 6:29 PM
25	Beach nourishment and hardening beaches don't work, are a waste of money and create a false sense of security. Build more bridges. Shame on the community leaders and politicians who killed the 17 mile bridge option from Bodie Island to Rodanthe. Hatteras Island is going to loose access off the island because of a new inlet(s) on Pea Island. Buxton and the villages south of Buxton are going to loose access off the island because of an inlet just north of Buxton. Hatteras Village is going to loose access off the Island because of a new Inlet there. Start building bridges now at those locations. Instead of pushing sand up on Pea Island next to the highway push the sand flat to the ocean. The man sand dune that has been pushed back many times each year does not work. Look at how well the beach repaired and stabilized itself at the new Etheridge bridge. If bridges can't be built create some new ferry terminal in Buxton and the improve ferry terminal in Hatteras.	12/6/2021 4:36 PM
26	Public education about cleaning out septic tank prior to storm season. Public education about planting native species in yards to help with wind and flood issues. Tips about how to plant so the new trees don't pull out when floods happen. Encourage to leave maritime woods in there natural state rather than clearing out to make it look like a park. Thank you for this survey and the work you are doing!	12/5/2021 7:39 AM
27	The reality is that the tides, storms and rising ocean levels along the slender, sand bar 40 miles from the mainland are no match for anything the government or residents can do long term. I have been visiting Hatteras Village multiple times every year since 1971 and our family have been beachfront home owners for half that time. The decision was made to sell both ocean front homes in late 2019. The increasing potential for loss of property and worry about the houses won out. Now when we visit, we rent from others.	12/5/2021 6:28 AM
28	Beach hardening with groims seems most effective in other states. NC needs to protect lives, jobs and property	12/4/2021 6:46 PM
29	Sand, dune management on pea Island section.	12/4/2021 11:36 AM
30	North Carolina should look at artificial reefs in conjunction with beach nourishment. Look into plant vegetation on dunes to help with dune erosion.	12/4/2021 11:31 AM
31	Beach nourishment, dune build-up/preservation and effective flood water drainage are the most critical threats facing Hatteras Island. Please examine artificial reefs to prevent further beach erosion. Doing this potentially prevents future beach erosion and cost will be recovered by less beach nourishment projects.	12/4/2021 10:47 AM
32	Jetties if maintained are more long lasting as just pumping sand on beaches.....	12/3/2021 9:53 PM
33	Beach replenishment should be a top priority to protect the island from further damage.	12/3/2021 9:11 PM
34	The soundside is disappearing. Planting and marsh rebuilding should be a priority. Thanks for your efforts.	12/3/2021 7:37 PM
35	HWY 12 south of Oregon Inlet canal zone needs to be addressed	12/3/2021 7:11 PM
36	If you want to live here, you put up with the inconvenience of storms. It's part of living in paradise!	12/3/2021 5:44 PM
37	There seems to always be beach restoration projects for northern and southern beaches but never anything at all done in Rodanthe specifically to restore some of the beaches. Now with the jug handle bridge ready to open, it's time to give some attention to the tri villages. Just because pea island is a nature preserve doesn't mean the beaches where homes are built should be neglected	12/3/2021 12:12 PM
38	Please do beach replenishment south of Rodanthe Pier. I'd be willing to pay more in taxes.	12/3/2021 11:09 AM

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39	Until you live and work on Hatteras Island, you will not understand just how important keeping our only road open 24/7 actually is.	12/3/2021 10:54 AM
40	Most recent bridge building in Tri Villages was excellent in engineering and execution only to be undermined by a traffic circle that only serves as a bottleneck in any amount of substantial traffic, (hurricane evacuations of summer tourists or influx therein of same).	12/3/2021 9:21 AM
41	Our property is in the elevation process right now but has not been completed. This process is taking a LOT longer than anticipated due to COVID-based supply chain issues and all of the properties in line to be lifted.	12/3/2021 8:30 AM
42	The new bridges were built. But there remains many other vulnerable areas of RT. 12. Hardened structures are need to keep roads open and costs down.	12/3/2021 7:42 AM
43	Although I have only been a permanent resident of Dare County for a short time, I've owned my residence since 1994. I have seen Hatteras Village grow and change over the years. Some changes, I feel, are good and others bad. The attitude of letting Mother Nature take its course over the years by many different organizations has now brought Dare County to this present day crisis. It never seemed to me and other homeowners that Dare county, the state of North Carolina, the NPS and the Federal Government could ever agree in what direction or course of action that should be taken to ensure the preservation of the barrier islands and their natural resources and wildlife habitats. Many homeowners associations have done and are willing to do more to help preserve the dunes and beaches but were met with resistance with the attitude of letting Mother Nature take its course. Now we have a major problem and now everyone is looking for a solution. I feel that reaching out and including homeowners associations and their resources in this process would be beneficial to all parties involved. Richard J. Kirkman President of Hatteras Colony South, Hatteras	12/3/2021 7:12 AM
44	I don't think beach nourishment is financially feasible and it is not wise to build on the oceanfront on the most weather assaulted area of the mid to southern east coast of the US. There will always be a beach just get the left over septic tanks, house pilings, etc. out of the way after houses are made unlivable by ocean side erosion and there will be a nice beach, and if there is no dune the beach will be wider and last longer. Along Hiway 12, the dune serves a good purpose of protecting the road up to mid level storm events, but in major weather events with large waves and high wind the dune becomes a problem when it washes across the road. No easy nor cheap solution here, but it is a fact that dunes accelerate erosion and cause sand to go out of the barrier island system (sand goes to sea rather than be carried up onto and westward of the Island).	12/3/2021 5:59 AM
45	Hurricane Dorian hurt Ocracoke so hard and they got hardly no support from up the beach. I understand they are a separate county but they are our neighbors and deserved better. That being said Dorian was a terrible storm that super saturated HI and now I feel like when it rains everywhere gets flooded. Before Dorian it wasn't like that and since it didn't effect up the beach Dare County has moved on. The smallest storms now cause many areas to flood and people have to move their cars all the time now to avoid being flooded. I don't know the solutions but I do know the dredging is causing WAY MORE HARM than good. I wish I had better solutions but having discussions about issues like this is important and involving as many citizens as you can is also a positive. Many Hatteras Island residents LOVE this tiny piece of sand and want to see it last forever but it is delicate and fragile yet raw and rugged and needs to be treated with care.	12/3/2021 3:10 AM
46	Install county/city sewer pump to mainland(currituck or dare and have spray fields	12/3/2021 1:01 AM
47	I would like to be very much involved in the collaboration and generation of ideas that would greatly help and/or improve the infrastructure of our very fragile Hatteras Island. At this time, we are experiencing a rapid and extremely detrimental degradation of infrastructure and ecosystem, mainly on the Atlantic Ocean-side of our island and time is running out to make some major decisions concerning the preservation of what is left along our eastern-facing beaches. As stated in the survey, I have grown-up and lived on Hatteras Island and was fortunate enough to purchase a home in the Mirlo Beach community of Rodanthe. In the time I've been on Hatteras I've witnessed several hundred feet of beach and a double dune line infrastructure wash away and be destroyed. In my humble opinion, there are many factors that have contributed to the loss and degradation of the dune and shoreline but I would say is mostly caused by rising sea levels and man-made destructive practices. Thank you for taking this initial first step that is going to be crucial to preserving our island for the next generation to come and for accepting my input on these matters. If we could just get guidance and true leadership to make the bold and necessary corrections, I believe we may still have a chance at slowing the erosion rate and drainage issues plaguing Hatteras Island as a whole. It hasn't been hard to truly see that our island is suffering from rising ground water table levels and	12/3/2021 12:32 AM

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more energetic and destructive tropical storm seasons that we have started to experience. However, changes in the way we humans, from residents to visitors, is ultimately going to play the biggest role in how we not only respond to but most of all correct and repair the damages being done to the island. Thank you again for your work and for your time reading the comments above. Kerry Hooper, Jr 23180 Wimble Shoals Dr Rodanthe, NC 27968 Email: Hooperjrk@gmail.com Cell: (252) 305-9233

48	Fix the beaches, put in rock jetties at the inlets so the inlets will stop shoaling up so bad	12/2/2021 10:29 PM
49	oyster beds along the shoreline will help	12/2/2021 8:23 PM
50	beach re-nourishment, jetties, and offshore artificial reef balls to absorb swell energy to help protect vulnerable areas.	12/2/2021 7:55 PM
51	There needs to be a bridge connecting Frisco and hatteras at some point. That stretch of hwy 12 isn't long for this world.	12/2/2021 7:44 PM
52	Storms and flooding will continue. We cannot mitigate this fact. Our biggest threat is the public and the lack of awareness to the fragility of the island. Building monstrous houses on vulnerable areas of the oceanfront (the entire island) should not be allowed. Keep Off The Dunes signs are non-existent. Visitors don't understand how fragile the island is. Outreach needs to be conducted on a huge scale.	12/2/2021 7:34 PM
53	In Salvo the worst problem is storm drainage and sound side overwash. The beach and dunes are stable.	12/2/2021 6:31 PM
54	Beach nourishment appears to be an expensive temporary fix. Although I am not an engineer, breakers would seem to be more effective.	12/2/2021 6:21 PM
55	Did elevating structures apply to buildings or roadways or other infrastructure?	12/2/2021 5:22 PM
56	The new Basnight Bridge empties directly into a washout area on Hatteras Island. Who designed that?	12/2/2021 5:01 PM
57	All other coastal states regularly maintain their beaches with all means necessary to keep everyone safe and to keep their "cash cows" intact. Hatteras Island brings in mega-taxes for Dare County, yet we are always neglected. We are cut off from the mainland at every storm, whether it's a hurricane or a nor'easter or just a long blow. Flooding occurs at the blink of an eye. It was NOT like this when I first moved here 28 years ago. Otherwise, I do not think I would have ever moved here. Our beaches need jetties and underwater sand-pods to catch and hold the sand to build-up our beaches again. This island will need lots of bridges if something isn't done soon. We fought for over 15 years just to get the Bonner Bridge replaced. It was a crime to leave it operational with a rating of 3 out of 100. Many more homes will fall into the sea if action is not taken immediately. And Dare County will start to see a decline in the money their tax coffers so badly need. And the residents of Hatteras Island deserve a safe place to live, with access on and off the island, as needed, for medical emergencies, medical treatments, transportation of supplies to the businesses and stores, and access to wherever we may need to go from time to time. It's not fun wondering whether you will be able to get to that doctor appointment or not. We know the risks of living out here. But we have seen HUGE changes with too many floods and too many road closures in the past decade. HATTERAS ISLAND NEEDS HELP NOW!!!	12/2/2021 3:25 PM
58	local resources for immediate after storm response: fire departments, churches, schools, etc.	12/2/2021 1:25 PM
59	Build Jetties to stabilize beach nourishment projects in the villages on hatteras island. Your pissing away a millions of dollars by simply pumping Sand and not holding it in place with hardened structures extending from the beach.	12/2/2021 1:14 PM
60	Sidewalks along more of NC12 would be great. My fiancé is legally blind and would like to walk around more but the highway is dangerous to walk along without sidewalks. Some areas have them near the busier parts of villages.	12/2/2021 12:41 PM
61	Thank you for recognizing the Dare County "Property Owners, Non-residents". The inclusion of this group is essential in all phases Coastal Resilience Planning .	12/2/2021 12:24 PM
62	Taxing Avon property owners for beach nourishment efforts is unwanted by the residents and is ineffective. Non resident Property owners were counted illegally to establish demand for the MSP by the Dare BOC. Avon residents did not /do not want to pay for this expensive and futile effort for an undertermined amount of time.	12/2/2021 11:47 AM
63	elevate highway S12	12/2/2021 11:38 AM

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64	Considering the science and predicted future of the OBX, It may be time to consider managed retreat.	12/2/2021 11:12 AM
65	Lost some beach side fencing. Part could be reinserted. Can our homeowners association be supported? Dave McKinley 5708474475	12/2/2021 10:57 AM
66	Education on how to work with natural forces instead of against them is critical	12/2/2021 10:48 AM
67	I would like to know about all the areas that I checked unknown.	12/2/2021 10:42 AM
68	Hatteras is a sandbar, not an island. Continued development has stripped the island of the deep-rooted native plants that are responsible for keeping things together. The American tendency to have grass lawns is a problem too as the root systems are very shallow. Areas like this have hearty, deeply rooted plants for a reason. We should show Hatteras some grace and respect by keeping parts of the villages wild, planting native species that would thrive. Every effort should be made to encourage the revival and survival of terrestrial and marine plant life. It always comes back to basics: take care of our island the way she was cared for for thousands of years before the major development projects of the past 70 years. Stop bringing in foreign plants, stop cutting down everything to "prep" a plot of land that may or may not be sold or built on. Stop with lawns. Stop building shoddy houses (looking at you, Saga) that no one can actually live in. Take care of our flora and fauna. They are native here for a dang reason. Oh, and enforcing some sort of system of keeping tourists off the dang dunes. And examining the scalloping that is clearly being caused by the rock jetty at Oregon inlet wouldn't hurt either. But mostly the plants and rebuilding the wetlands thing.	12/2/2021 10:37 AM
69	Stop building on the ocean and sound fronts !	12/2/2021 10:10 AM
70	I think it's wise to look for off shore solutions like artificial reefs because it seems it would provide an estuary for marine life whereas constant beach replenishment is more disruptive to the shoreline creatures and would be very expensive because of sea level rise. An artificial reef could provide more recreational fishing which is good for economy, would be good for wildlife in the sea as well as the land and would be a more cost effective long term solution.	12/2/2021 10:02 AM
71	I believe that long term we will need to service what will become a series of islands with a ferry system that we should be working on now	12/2/2021 9:54 AM
72	Protection of the dunes. Prohibiting people from walking on and climbing on the dunes which weakens them.	12/2/2021 9:47 AM
73	P Island is a huge problem, we put bridges all around it but if that part washes out we're not going anywhere. Hopefully when westerns and some of the other and let's wash open it will relieve the pressure on the island and we will no longer see the sound side flooding.	12/2/2021 9:41 AM
74	thanks for reaching out. my fear w/ this survey is most will focus on their own problems. but this is a good start.	12/2/2021 9:09 AM
75	Even though the jughandle bridge is near completion, we still have flooding at Pea Island which necessitates closing Route 12. This problem has to be addressed immediately for an effective, long-range solution to keep Route 12 open.	12/2/2021 9:00 AM
76	while there are huge natural forces at play man made climate change is a major factor. Beach replenishment seems to be a fools errand. Rehab of Buxton Lighthouse groins would help Buxton but hurt other areas. I notice NOAA projections that bay will threaten Buxton more that dune erosion.	12/2/2021 8:58 AM
77	Vegetation and fencing is needed to maintain strong dune protection	12/2/2021 8:53 AM
78	Priority should be given to stabilizing the dunes at the south end of the Oregon Inlet Bridge to keep that part of NC 12 passable after major storms.	12/2/2021 8:41 AM
79	Summer visitors climbing on oceanfront dunes takes an unaddressed toll on dune restoration efforts and seems to be something the NPS and community rental management companies could address with education, signs, rental notifications etc.	12/2/2021 8:19 AM
80	People just need to be more respectful of the area. Enjoy the OBX for what it is. The natural beauty	12/2/2021 8:12 AM
81	More attention by Dare County on the unique issues effecting Hatteras Island.	12/2/2021 7:43 AM
82	Unless something is done quickly Hatteras Village is destined to erode into the sea. Please help.	12/2/2021 7:38 AM
83	Groundwater levels are rising quicker than SLR per a study being conducted by ECU CSI. This	12/2/2021 7:36 AM

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can cause direct mixing of septic leach field effluent with groundwater with little to no treatment. Specifically homes that are below 7-foot MSE with septic systems are the most vulnerable. This research and information is part of the Town of Nags Head Decentralized Wastewater Management Plan Update.

84	Funding should be provided to raise all structures. Beach nourishment should be planned in perpetuity around hot spots every 5 years elevated roadways/bridges should be planned for the worst sections	12/2/2021 7:08 AM
85	Drainage culverts in Buxton along Old Lighthouse road are not working	12/2/2021 7:06 AM
86	Beach nourishment and dune restoration needed!	12/2/2021 6:50 AM
87	We have built too many man-made structures on Hatteras Island	12/2/2021 5:34 AM
88	We need better long term solutions instead of the typical expensive short term bandaids such as Beach renourishment.. I think If people are willing to pitch in and help pay towards short term solutions, they would be more than willing to pay toward options that would be more effective in the long run!	12/1/2021 11:11 PM
89	Secondary roads are a hazard that will effect fire trucks and ambulances from getting to patients in need of their service cows	12/1/2021 10:50 PM
90	Buxton Beach Renourishment SOON. Repair existing jetties on Buxton Beach NC. Have not had sustainable dune line since Hurricane Sandy in 2012 on Buxton Beach. Or beach grass. Beach Nourishment needs to happen more frequently on Buxton Beach.	12/1/2021 10:17 PM
91	Beach renourishment of North Buxton did not fix the problem!	12/1/2021 9:55 PM
92	I really think jetties and artificial reef systems should be investigated.	12/1/2021 9:32 PM
93	Dare county waited too long to restore Avon's beach and dunes along Ocean View Drive after Hurricane Matthew eroded the landscape. As a result, more and more erosion since then has severely impacted the community along the beach. Action needs to be taken more quickly and frequently by the government and army corps of engineers, including allowing other solutions like hard structures, to sustain our beautiful national seashore.	12/1/2021 8:33 PM
94	Install pier in Frisco/ Hatteras area.	12/1/2021 8:08 PM
95	Dare County (Hatteras) provides the state with enormous amounts of money from tourism. The least that could be done is dependable, reliable cameras and 24/7 road conditions to allow safe passage for both tourists and residents so they can plan accordingly. Too many vehicles get ruined because people end up guessing if the roads are passable. Relying on ncdot website and tide times is not enough.	12/1/2021 7:13 PM
96	Pea island is the new hot spot!!! Need to find ways to drain water off roadways. Hydroplaning is a huge issue especially since there's no lights. I commute early so I can't see standing water, I know from experience where the hot spots usually are.	12/1/2021 7:02 PM
97	the drainage in avon has been cutoff by poor project planning for years, and flooding is the result.	12/1/2021 4:49 PM
98	Beach Nourishment is extremely ineffective and too costly for zero results. Concrete "jacks" and other sturdy man made placements are much more effective at combatting beach erosion as seen in other areas that have been affected by sea water rise.	12/1/2021 2:02 PM
99	I have owned a house in Salvo since 1971	12/1/2021 1:49 PM
100	If beach nourishment was truly effective, I would have no issues with paying higher property taxes, but it has shone to be a very temporary solution. I'm on a fixed income and it's hard.	12/1/2021 1:44 PM
101	Septic systems on the island. Such a small piece of land and too many large homes that are like hotels. Over building. Sewage is not going to have anywhere to go.	12/1/2021 1:38 PM
102	As a property owner in Rodanthe, I'm extremely interested and concerned about the impacts we will experience south of the jug handle bridge once the S turns on NC 12 are no longer maintained.	12/1/2021 1:27 PM
103	What about building jetties to help with beach erosion	12/1/2021 12:42 PM
104	The last beach nourishment did not last. Hopefully the next time it will be done properly.	12/1/2021 12:42 PM
105	Federal Dept of Interior via the NPS should help fund projects on Hatteras to protect property	12/1/2021 12:32 PM

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	adjacent to park areas.	
106	Fix Highway 12	12/1/2021 12:14 PM
107	Experience is the best teacher. Non-resident researchers should come live on Hatteras for a while so they can experience the full impact of storm flooding and destruction for themselves.	12/1/2021 11:34 AM
108	Tax all people fairly. Rental properties west of Old Lighthouse Road should pay the extra tax. Fair is fair	12/1/2021 11:26 AM
109	Topsail Island is putting in permanent structure to protect their Island and water way. It is way past time Hatteras Island do the same. North Carolina is the only state on the East Coast that does not protect waterways and property with permanent structure. This has caused loss of life, commerce and property damage. NC Rt. 12 has many areas, especially after you get off the Bonner Bridge that are easily breached by the ocean and desperately need permanent structure to hold back the ocean. The NPS is an awful steward of the North Carolina Coast. Environmental groups cause more harm than good to Outer Banks. Just North in Virginia, they have protected shoreline very effectively with permanent structures. It's time to take a pragmatic approach and implement the best methods available.	12/1/2021 11:17 AM
110	Hwy 12 transporation hot spot sections identfyied and getting federal infracture money to work on them	12/1/2021 10:53 AM
111	Tidal and storm Flooding is a major issue along rt 12 there needs to be done signage indicating where these high area flooding areas are. especially at night. Blinking Signage or some type of resident alert via text to advise. As well as protocol what yo do in these situations. This is very dangerous I have seen cars almost run head on, spray other cars going fast through flooding etc. the tourists need to know flooding is a factor with the property managers.	12/1/2021 10:31 AM
112	Plastic tourist homes erected repeatedly and carelessly in high risk areas, destruction of salt marsh by building contractors for vacation rentals and stupid crap businesses designed for tourist attractions.	12/1/2021 10:24 AM
113	Please do something with the Rodanthe water park	12/1/2021 10:10 AM
114	More Bridges	12/1/2021 10:01 AM
115	Uninhabitable structures need better oversight. Safety and environmental concerns should be managed with the home owner to reduce risks. Leaving structures to fall in the ocean because of insurance policies is flawed and dangerous.	12/1/2021 9:44 AM
116	Allowing non residents access to their properties immediately after storms is critical to many of these issues.	12/1/2021 9:39 AM
117	Some of the questions did not provide a choice that fit with my ideas.	12/1/2021 9:32 AM
118	There needs to be a moratorium on beach rentals. More housing for permanent residents at affordable cost is needed for resturant, teachers, public employees etc.	12/1/2021 9:24 AM
119	It's impossible to discern the difference between "somewhat able" and "somewhat unable."	12/1/2021 9:20 AM
120	Better planning for the future development is needed.	12/1/2021 8:00 AM
121	Over-development in the way of extremely oversized homes and places with the capacity and purpose to house large numbers of people as in the two large building/businesses in Wind Over Waves. We live in an environmentally fragile area and it seems how much money comes in is the priority over the long-term effects of said developments	12/1/2021 12:40 AM
122	The Outer Banks was never meant to be built up the way that it has. You can't destroy natures natural resources and expect that you won't have problems. We are a barrier island and mother nature will find a way to take back what we destroyed.	11/30/2021 9:11 PM
123	Barrier islands are not intended to me managed by anything much other than "Mother Nature"!	11/30/2021 5:10 PM
124	Jetties should be replaced with cement or rip rap type construction and rip rap barriers should be allowed to protect beachfront homes	11/30/2021 3:57 PM
125	Nope	11/30/2021 3:30 PM
126	If turbines were built offshore, if a build up of a break out to sea, waves would not hit with such force.	11/30/2021 3:24 PM
127	What ever is to be adopted it needs to be ASAP this island is in trouble.	11/30/2021 1:44 PM

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128	Clean the ditches out way before a storm is coming. They should always be cleaned.	11/30/2021 1:18 PM
129	Beach replenishment is not worth it. It's a migrating island and it will always be moving. (Also I'm a former resident. That wasn't an option on the form)	11/30/2021 1:08 PM
130	Good job keep trying to improve day by day	11/30/2021 11:59 AM
131	The developed areas vs the undeveloped areas need to be addressed separately. Wetland areas of course are critical, but Please help out resident homeowners.	11/30/2021 11:58 AM
132	The road in front of our house keeps getting raised with no thoughts of drainage problems for the original homeowners. Constant flooding from rain and small overwashes	11/30/2021 10:54 AM
133	The county need input meetings with Hatteras Island residents.	11/30/2021 10:51 AM
134	Over building on a barrier island is never wise. Sound side flooding and ocean over was will never be address effectively. We are way past the turning point. Future storm and flooding will continue to happen. Allowing building in any area oceanside or soundside will result in loss of property.	11/30/2021 10:14 AM
135	Elevated roadways, such as found in the Key,s are a great long-term solution for sections of Hwy 12 that continually flood.	11/30/2021 10:05 AM
136	Roads that are flooded with salt water and very slow to drain need to be fixed	11/30/2021 9:39 AM
137	I'm concerned about the potential for continued road closures in vulnerable areas of Rt. 12 even after the opening of the new jug handle bridge. Other elevated sections of roadway should be considered for the future.	11/30/2021 8:24 AM
138	Highway 12 north of buxton needs immediate protection near Canadian Hole where the sound is very close	11/30/2021 8:01 AM
139	We should be dredging and placing sand on the sound side in narrow parts of the island as well to protect hey 12 and infrastructure such as water lines, power and hwy12.	11/30/2021 7:02 AM
140	Thank You	11/30/2021 6:55 AM
141	Not at this time...	11/29/2021 11:47 PM
142	Please stop the marsh lands from being filled and built upon as the marsh acts like a sponge and when you build upon it there is no where for the water to run to except to flood.	11/29/2021 11:33 PM
143	Beach nourishment is a must! The erosion has gotten worse in the last few years. We can't help storms, but maybe the island is being overpopulated with tourists who who not take care of the dunes or beaches.	11/29/2021 9:57 PM
144	Timely action/reaction when vulnerable areas are identified to rectify deficiencies is key to ensure the actual problem is identified "real time" for proper resolution.	11/29/2021 9:51 PM
145	Install sewage system and rid septic tank	11/29/2021 9:19 PM
146	All of the drainage ditches need to be free of grass and cleaned out.	11/29/2021 9:05 PM
147	The REAIR OF THE BUXTON JETTIES, near the old lighthouse site, is very necessary to hold the beach nourishment sand. The lack of repaired jetties caused the FAILURE of first beach nourishment in Buxton just a few short years ago. 2017?	11/29/2021 8:56 PM
148	Sea level rise is inevitable. Beach nourishment is a temporary fix. Allowing very large beach house is a mistake as their large septic systems will be compromised in time. Get the bridge to Corolla built so Northern Dare County and Currituck County has less traffic and better ability to evacuate during severe storms.	11/29/2021 8:38 PM
149	It will take a combination of approaches to improve resilience.	11/29/2021 8:15 PM
150	We need storm water drainage systems in kill Devil Hills badly.	11/29/2021 8:14 PM
151	Thank you	11/29/2021 8:09 PM
152	Need to regularly clear weed growth that clogs drainage ditches along Old Lighthouse Road	11/29/2021 7:57 PM
153	None	11/29/2021 7:56 PM
154	None	11/29/2021 7:27 PM
155	Look in to the work Better Beaches OBX has done in Kitty Hawk and Nags Head. Also, hat	11/29/2021 6:54 PM

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Sandy Cross is doing for the Town of Duck. We can make a major impact in regards to OceanSide perils.

156	Colington roads and flooding issues	11/29/2021 6:51 PM
157	The bypass is one of our biggest hazards. Also a lack of affordable housing.	11/29/2021 6:34 PM
158	Requiring children to stand alone on street corners is not smart in today's world. If the kids are alone with no kids nearby they should be picked up at their home for their safety. We need to do all we can to prevent human trafficking. We need to create more fun places for the kids to go ie arcade, Skating rink etc....	11/29/2021 6:14 PM
159	I believe jetties would help	11/29/2021 5:56 PM
160	Still learning, education and public information is useful.	11/29/2021 5:50 PM
161	I drove south about a month ago from pea island to hatteras island. A beautiful drive but the monstrosity of concrete bridges and roadways is a great concern. That infrastructure is unsustainable. That entire area is so volatile and subject to erosion and bad weather. It must be costing a fortune and will only encourage more development with a false sense of security. A money pit if you ask my opinion.	11/29/2021 5:30 PM
162	A stormwater drainage/maintenance program is badly needed for Hatteras island. cursory mowing of the drainage ditches isn't effective. Ditches need to be actively dug out/maintained and connected with outflow capabilities. When hatteras island is cutoff from storm overwash, the attitude seems to be that it is just to be expected instead of looking at ways to prevent it and/or open the roads faster (working more machines/overnight, etc) for people to get to work and continue daily lives (especially bad for low income workers that need to work).	11/29/2021 5:27 PM
163	Use of short term actions are a waste of money. Anyone owning land along a beach needs to accept potential property damage and loss. Fighting nature is just throwing money a way on band aid solutions. Don't build in risk areas! Use methods that work with nature for roads, utilities... rather than fighting battles that will be lost.	11/29/2021 5:24 PM
164	I do want to thank NCDOT workers for all their efforts to keep NC 12 open!	11/29/2021 5:22 PM
165	We continue to wait for the multi use path in Colington. Summer months 158 highway speed should be DECREASED for safety reasons. Attempting to make turns is Hazardous.	11/29/2021 5:18 PM
166	Fix the jetties in Buxton please	11/29/2021 5:08 PM
167	Thank you for doing the survey but it seems of limited benefit unless you are only measuring public perception.	11/29/2021 5:00 PM
168	Do everything you can to protect wetland/shoreline areas from development, protect the tree canopy where it exists and encourage more planting of native trees and shrubs, encourage micro-grid or other resilient energy systems including home/commercial/neighborhood solar and wind generation, and provide readily understood science-based information about the causes, effects, and trajectories of sea level rise and extreme weather; and seek financial and other assistance for residents to raise and harden their homes and businesses.	11/29/2021 4:54 PM
169	I recognize that in the intermediate term (next 100 years) best we can do is postpone the inevitable.	11/29/2021 4:47 PM
170	Utilize and incorporate Civilian Volunteer resources such as CERT into Response Planning, Training, Damage Assessment. and Support of recovery efforts.	11/29/2021 4:36 PM
171	i've been visiting and our family has resided on Hatteras since 1965. The need for jettys/artificial reef is real. To mitigate the loss of sand, the jettys worked for 5 decades !!	11/29/2021 4:24 PM
172	With new construction and LARGE properties being built the drainage is becoming a bigger issue. Some new landowners are BUILDING up their lots 6 feet higher then building. That causes runoff into other properties but more so onto roads causing flooding. Some ZONING needs to take place.... Dare County Planning Mgmt doesn't seem to care... allows unabated development. Smart growth is welcomed, carte blanche is not.	11/29/2021 4:23 PM
173	Overall Impressive Efforts to Preserve The Ecology Bravo	11/29/2021 4:15 PM
174	More speed bumps and housing for seasonal workers	11/29/2021 4:11 PM
175	There are many areas along Rt. 12 that are NOT marked as walk overs. Yet people are always climbing the dunes. Why are the police and/or park services not ticketing the offenders and using the money to help build up and strengthen the dunes.	11/29/2021 4:10 PM

Coastal Resilience Questionnaire

176	no	11/29/2021 4:07 PM
177	I like that Dare County is keeping us informed. With climate change, I feel like we have to think outside the box to protect our shoreline erosion.	11/29/2021 4:05 PM
178	We know that Hatteras Island is vulnerable to extreme hazards and even heavy rainfall. Focus on reducing flood risk to transportation routes and flexible/alternatives and options to get supplies/vehicles/people on/off HI will improve recovery and resilience. The community also must come to grips with how to adapt to new conditions (new bridges across areas or only ferry access) and when to remove structures as areas become too risky.	11/29/2021 3:27 PM
179	Just please stop developing the area, the more you build, the more we will be impacted. The natural landscape absorbs so much, and we're paving it all or building upon it. The more we take, the less we will have. Let's put a cap on development.	11/29/2021 2:57 PM
180	Please stop all of these companies from building massive subdivisions that are right on top of each other. I had to leave a house I loved because of overbuilding.. Ridiculous and just for the money.	11/29/2021 1:14 PM
181	This area is a sandbar with 90% of it below or at sea level. There is always going to be flooding unless it can be pumped to another location and those locations do not exist.	11/29/2021 9:51 AM
182	I would like to results of projects like living shorelines. What are the impacts of higher density neighborhoods on sewer,like Water Oak, versus the adjacent neighborhoods with less density and conventional septic.	11/29/2021 8:11 AM
183	Get rid of the beach nourishment dude is now trying to get a dredge	11/29/2021 8:09 AM
184	Life has progressed and so has the challenges as construction began no one monitored the fill and the small drains were filled. The end results inhibiting the free flow of high tides. New residents filled lots and water stands in the adjacent property. I have been in a grant program since Matthew. My home is beyond repair. It is a travesty to the honest hardworking citizens of Dare County and Morth Carolina. Recovery should not be 6-8 yrs after a disaster.	11/29/2021 1:03 AM
185	Need Less development and more trees to fight erosion and storms and more trees and grass on dunes down south	11/28/2021 11:06 PM
186	Hope this will be published and shared.	11/28/2021 8:42 PM
187	With land subsidence and sea level rise, there is only so much that can be done in the low lying areas. More rigid planning and construction standards are only as good as their implementation. The new Basnight Bridge over Oregon Inlet is only safe and effective for the passage over the current inlet location and immediately transitions to a very ephemeral corridor that provides good trafficability in good weather. Dare Commissioners sold out the Hatteras Island residents 20 years ago when they stopped the "Long Bridge" that was proposed to bypass all the trouble spots on Pea Island. This pushed back the resiliency of Date County so far, I am skeptical of ever having a dependable highway down Hatteras Island.	11/28/2021 6:04 PM
188	Mobility of our residents should be considered as well as flooding and storms. How do we, as a community, help residents without means or support evacuate from a storm? Or return and rebuild? Planning for our vulnerable populations should be ongoing.	11/28/2021 9:40 AM
189	More land between houses please yall to dam greedy 10 ft set back give me a break	11/28/2021 8:52 AM
190	Drainage is an issue due to incorrectly placed snd maintained drainage grates The county has been notified but no corrections made nor attempted	11/28/2021 4:06 AM
191	As opposed to not fining individuals b/c we may loose income, law enforcement should ticket individuals that are breaking the law when observed. Turning heads only proports further unlawfulness. Destroying dunes, digging up dune grass; driving thru red lights, speeding, breakins; being too prone to "who people are" as opposed to what they do, especially when they do wrong, is overlook. Finally, a small bus system is very much needed for the island as well as to Manteo, that runs on a regular schedule. It would free up traffic, allow more individuals to get to jobs not able to be filled & on a regular basis.	11/27/2021 10:26 PM
192	Need to limit these large sized 'homes'. Our island is becoming a pier	11/27/2021 9:51 PM
193	The work of the group "Better Beaches" does a lot to protect our dunes which protect our oceanfront properties which provide the majority of the income that supports our locals and residents soundside. But we need shoreline management that includes soundside too - best practices, incentives for living shorelines etc.	11/27/2021 9:17 PM

Coastal Resilience Questionnaire

194	Focus on the needs of the locals, and the needs of the tourist will be met also. Stop spending money to bring in the tourist we are over populated with, and start preserving the areas we have!	11/27/2021 6:38 PM
195	Roads higher than buildings is the worst problem for common flooding.	11/27/2021 6:13 PM
196	So much is done without planning or concerns for the impacts.	11/27/2021 4:13 PM
197	Beautiful Pirate's Cove..septic smell is very unpleasant at times.	11/27/2021 2:35 PM
198	If you live in Dare County you know flooding is going to happen people buying million Dollars homes I it too. nC DOT can only do so much to keep roads open in Dare county Colington is the same way. Just suck it up. Life on an	11/27/2021 12:52 PM
199	Fewer people	11/27/2021 9:25 AM
200	What investments is the County making for in-house professional staff to manage these critical issues?	11/27/2021 5:55 AM
201	Dedicated regular updates during severe weather or any other community emergency situations via television, radio and social media.	11/26/2021 10:30 PM
202	Looking at the Atlantic Ocean, that's a lot of water and that's just the surface!	11/26/2021 6:48 PM
203	Establish city sewers	11/26/2021 4:22 PM
204	More stringent building codes for larger homes that have a larger environmental impact and footprint; Keeping our existing drainage ditches and culverts clean and clear; limiting development of wetlands and semi wetlands; advocating for flood maps and building codes etc to be based on current science; investing in long term housing solutions, improvements, and subsidies rather than just allowing large developers to buy all the land...	11/26/2021 1:13 PM
205	Partner with CSI and NCSU Coastal Dynamics Design Lab. Excellent design and illustration collaboration, public workshops etc.	11/26/2021 11:14 AM
206	As stated above, to know what is effective is the 1st step, it seems there are times when new building on areas that have a history of flooding are NOT disclosed to new buyers & 1st time home owners. EDUCATION would be the answer before hard earned money is spent on the biggest purchase of someone's lifetime.	11/26/2021 11:02 AM
207	With more new construction, whether on unimproved lots or tear downs, drainage must be improved better due to new home adding lot fill that adds run off to neighboring lots. Mandatory evacuations for hurricanes need to be more strictly enforced. Inspections for new homes or major renovations need to be more rigorous.	11/26/2021 9:06 AM
208	Keep putting sand on the beaches!	11/25/2021 9:56 PM
209	Over building and lack of planning are major contributors to many of the issues raised in this survey	11/25/2021 8:58 PM
210	None	11/25/2021 8:57 PM
211	Beach stabilization, nourishment, dune stablization	11/25/2021 5:13 PM
212	Use some of the resources allocated for beach nourishment to maintain drainage bitches and canals throughout the county. Build living shorelines and restore marsh land.	11/25/2021 3:46 PM
213	When Hwy. 12 closed, please run the ferries from the Rodanthe to Stumpy Point terminals. Please be certain the waterways navigable at all times...dredging etc.	11/25/2021 1:50 PM
214	Need more long range planning not based on attracting tourists. Locals are being ignored.	11/25/2021 1:10 PM
215	Current Land use planning, maintenance and education out reach are in critical need and an all time low. Our current "new" population have not experienced our climate challenges, and have no idea how their home or life will fare as many "young" residents have not experienced meteorological hardship in a while. I suspect the disaster will make "panic" our greatest threat. Better start warning them to prepare now.	11/25/2021 11:01 AM
216	The wealthy are developing the coastline causing pollution and destruction of the natural marsh lands that naturally cleanse the water	11/25/2021 10:35 AM

Q18 If you would like to stay connected with us as this project progresses, provide your name and email address below.

Answered: 319 Skipped: 802

ANSWER CHOICES	RESPONSES	
Name	99.69%	318
Company	0.00%	0
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	98.43%	314
Phone Number	0.00%	0

Responses obscured for privacy

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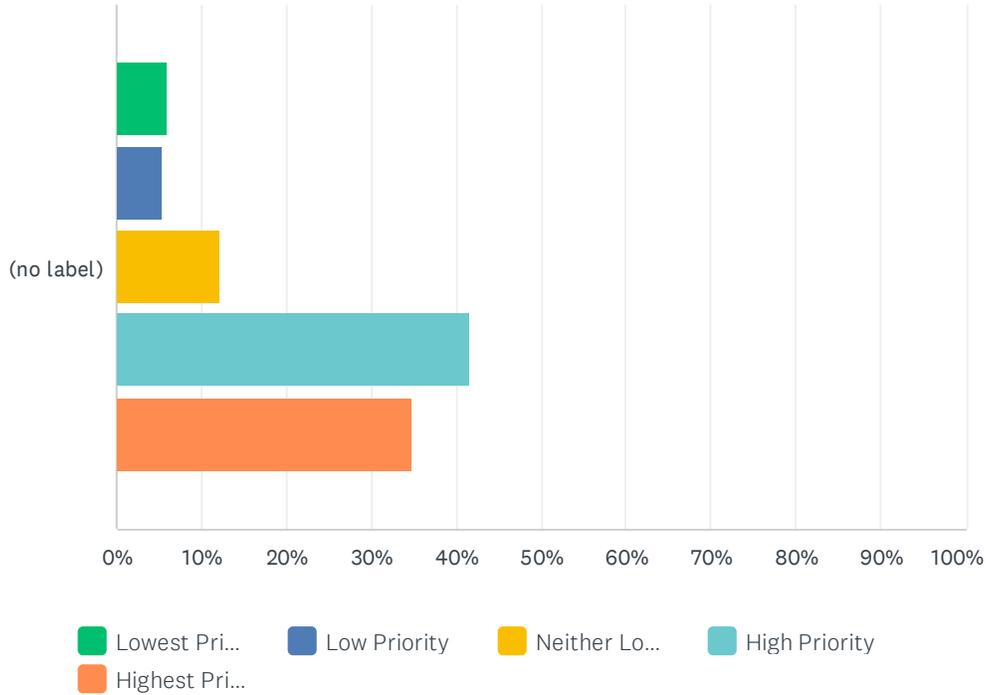
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Q1 Beach Nourishment - Avon & Buxton Beach nourishment for Avon beach and renourishment for Buxton, project is coming up summer 2022.

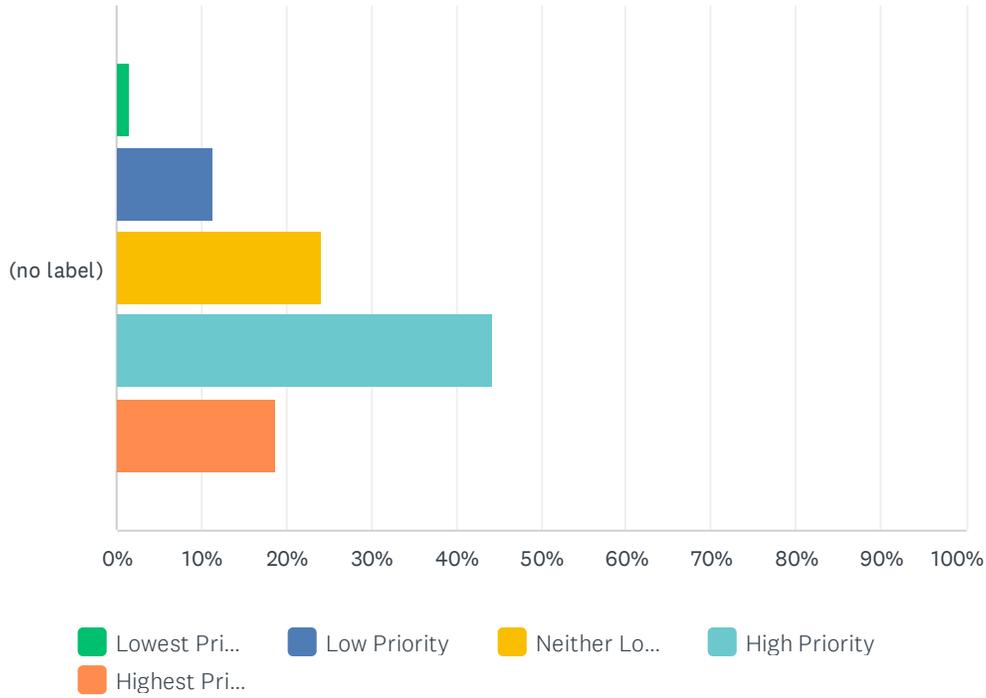
Answered: 132 Skipped: 2



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	6.06%	5.30%	12.12%	41.67%	34.85%	132	3.94
	8	7	16	55	46		

Q2 Elevate Structures Provide assistance to elevate structures and homes that are currently below the BFE or are repetitive loss properties, to meet current ordinance requirements and protect against flooding and sea level rise. Repetitive loss areas are identified in the 2020 Dare Repetitive Loss Area Analysis Update.

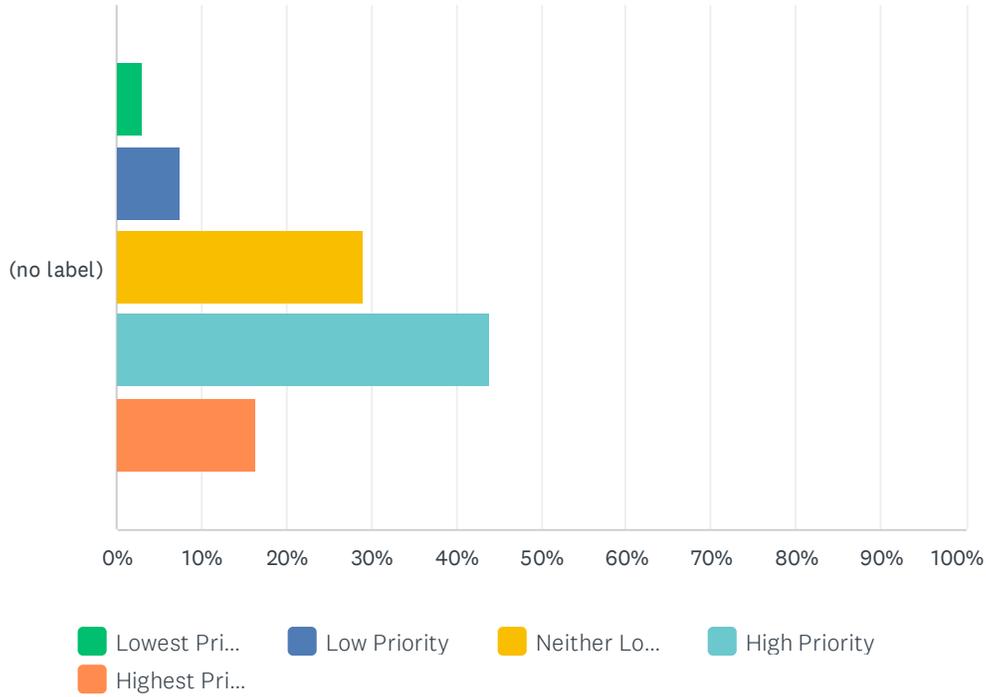
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.50%	11.28%	24.06%	44.36%	18.80%	133	3.68
	2	15	32	59	25		

Q3 Flood Gauges Install flood gauges at each town and areas subject to frequent flooding in order to better monitor and alert individuals to changing conditions. This project was identified in the Outer Banks Hazard Mitigation Plan (Action #DAR9)

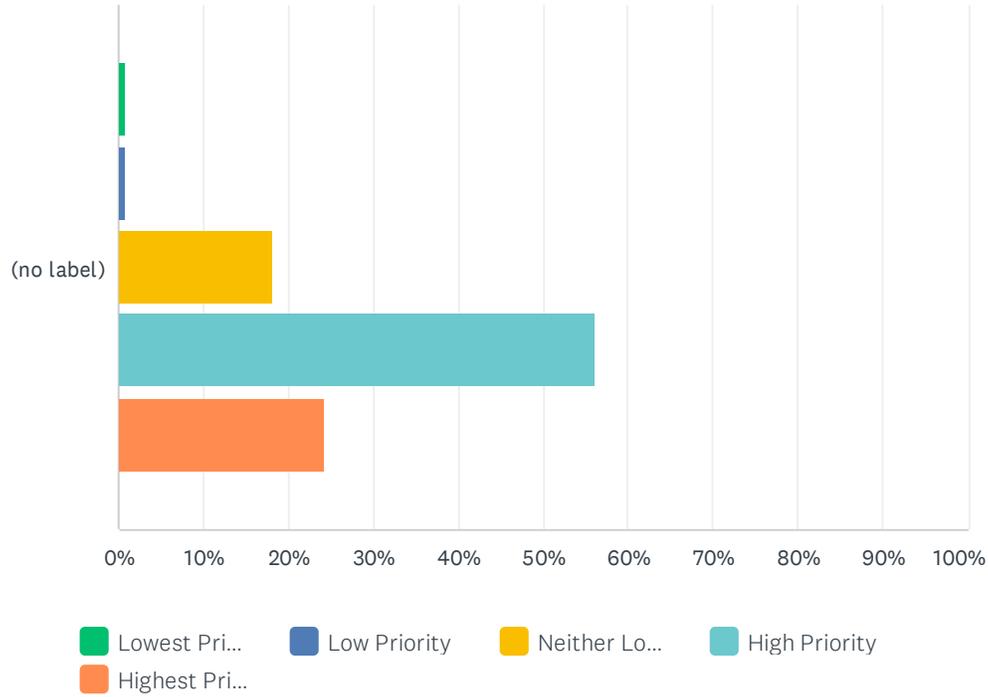
Answered: 134 Skipped: 0



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	2.99%	7.46%	29.10%	44.03%	16.42%	134	3.63
	4	10	39	59	22		

Q4 Stormwater Management Plan Study Update the 2001 Dare County Stormwater Management Plan with a focus on the Hatteras Island Villages. This was identified in the Outer Banks Hazard Mitigation Plan (Action #DAR3).

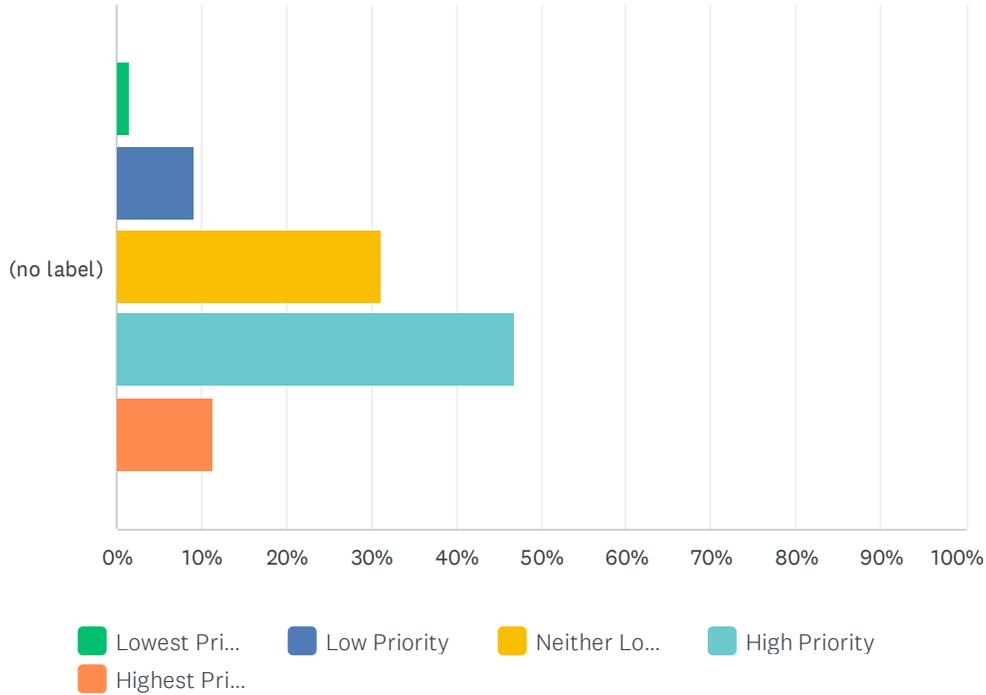
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	0.76%	0.76%	18.18%	56.06%	24.24%	132	4.02
	1	1	24	74	32		

Q5 Stormwater/Flood Ordinance Review and recommendation of stormwater ordinances for unincorporated Dare County.

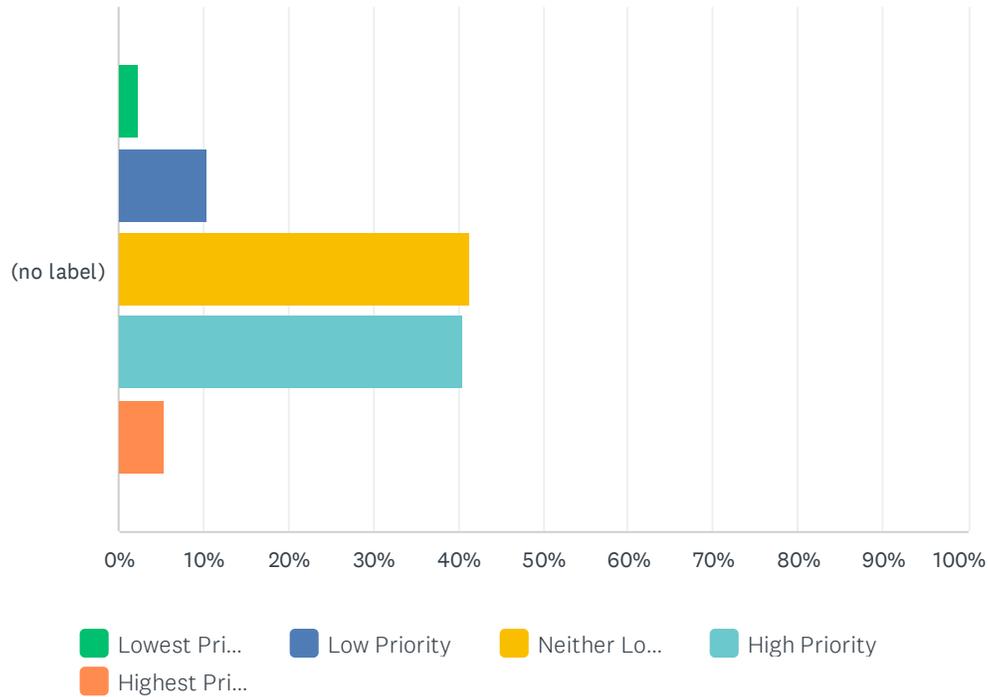
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.52%	9.09%	31.06%	46.97%	11.36%	132	3.58
	2	12	41	62	15		

Q6 Flood Insurance Education and Outreach Program In the citizen survey 11% of respondents indicated that their residence was not elevated above the BFE and 41% were unsure; an education and outreach program seeks to educate those who are unsure.

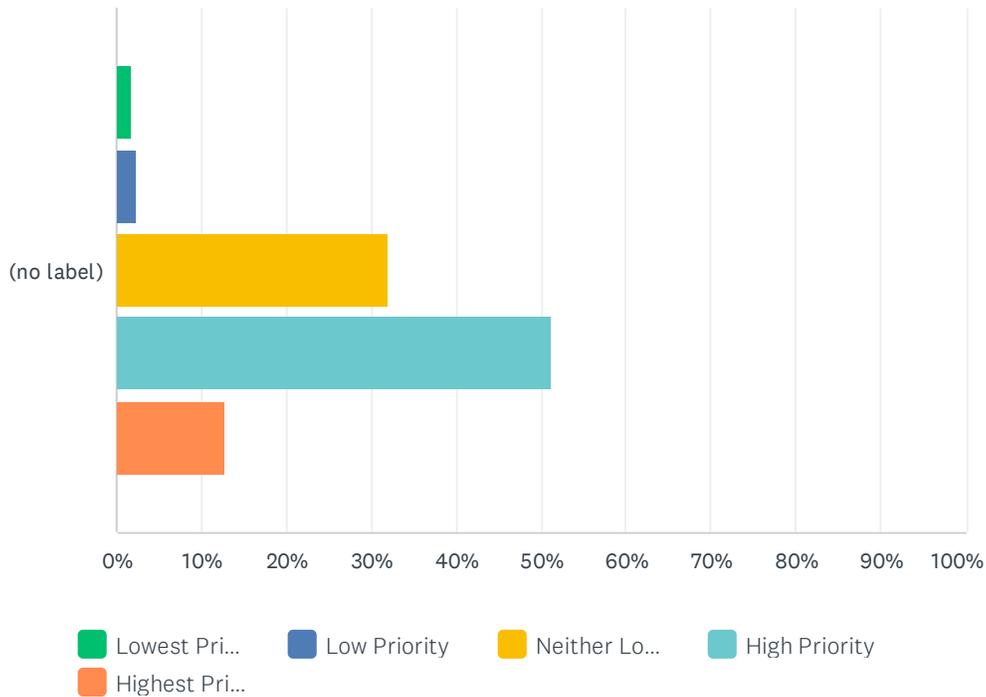
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	2.26%	10.53%	41.35%	40.60%	5.26%	133	3.36
	3	14	55	54	7		

Q7 County Stormwater Funding/Utility Study In order to implement many of the other projects and the sheer number and scale of projects that will be needed, as well as ongoing maintenance additional funding will be needed. This project would serve to study different funding options and recommend to the county. Identifying funding to improve stormwater drainage and land management preparation for flooding was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR1)

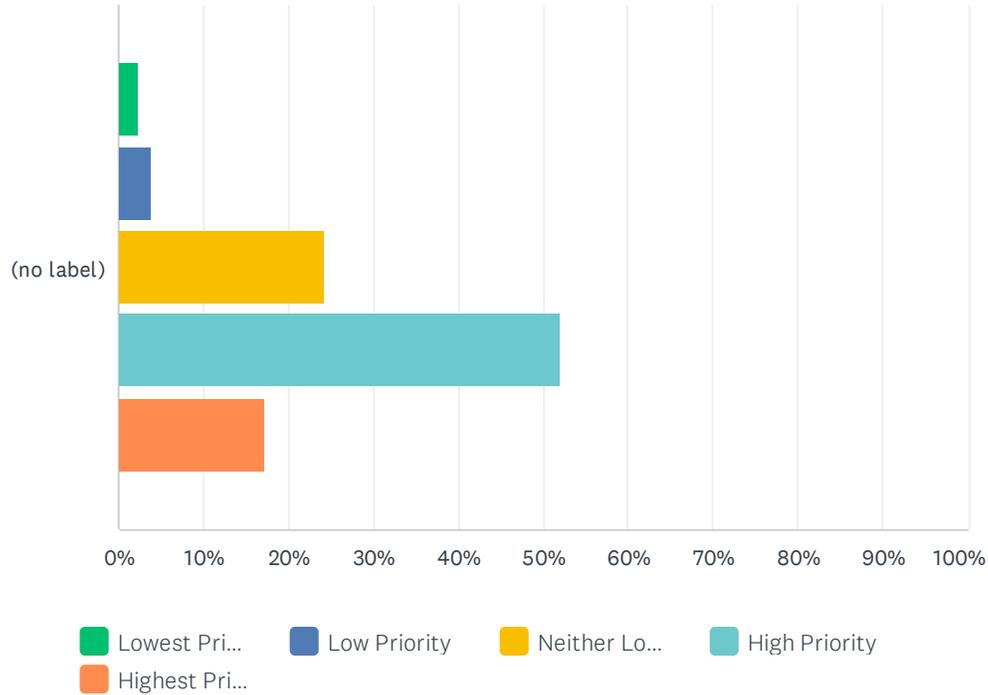
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.60%	2.40%	32.00%	51.20%	12.80%	125	3.71
	2	3	40	64	16		

Q8 Storm Drainage Study/Improvement - AvonDrainage study and improvement of roadside swales, culverts, grading along NC 12 from the post office to Ace Hardware. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.

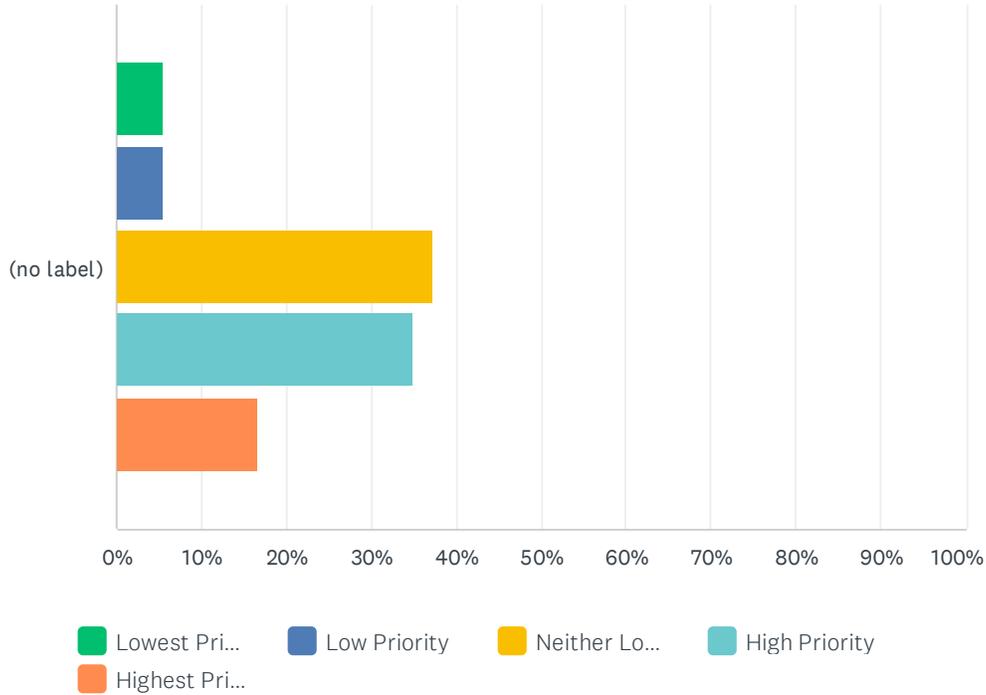
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	2.36%	3.94%	24.41%	51.97%	17.32%	127	3.78
	3	5	31	66	22		

Q9 County Resiliency Staff Position Establish a full-time staff position to promote resiliency efforts, seek funding, and provide support for projects.

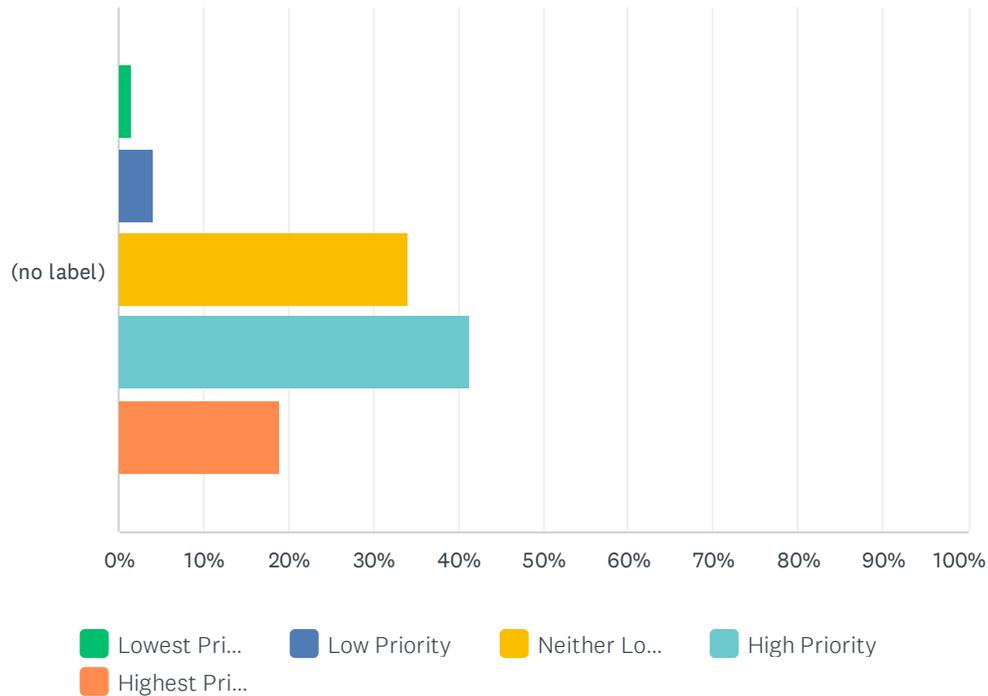
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	5.56%	5.56%	37.30%	34.92%	16.67%	126	3.52
	7	7	47	44	21		

Q10 Engineered Wetland - Buxton Building a constructed wetland to provide additional flood storage and water quality treatment in the Buxton watershed and alleviate some strain on the storm drainage system.

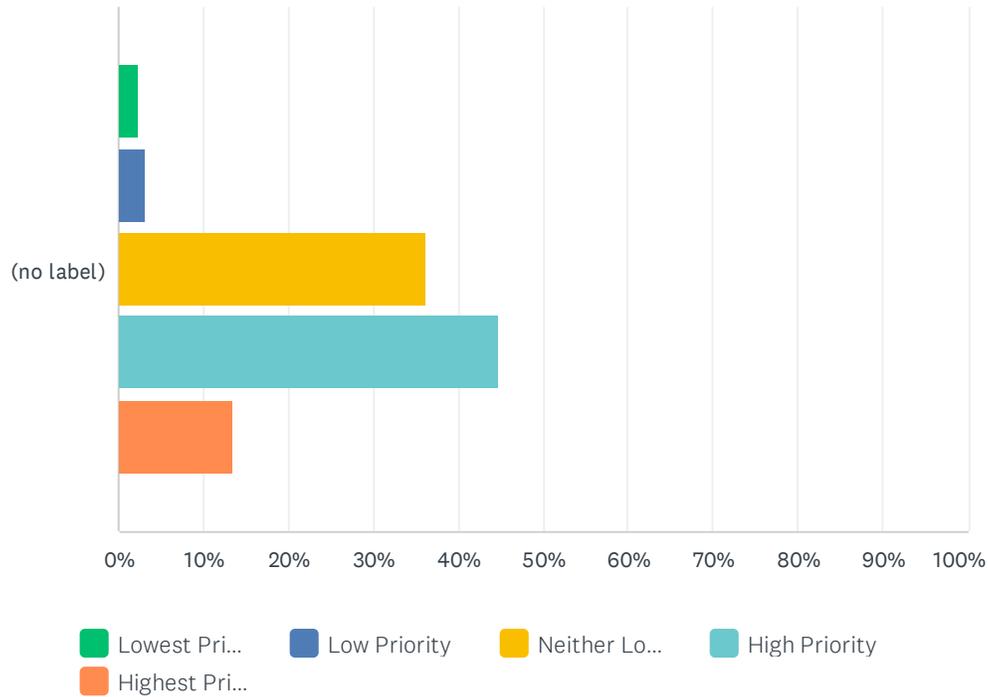
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.59%	3.97%	34.13%	41.27%	19.05%	126	3.72
	2	5	43	52	24		

Q11 Establish County Stormwater Management Taskforce Establishing a public/private taskforce to focus on stormwater issues, including rainfall flooding, and to address stormwater improvements and projects from a joint perspective.

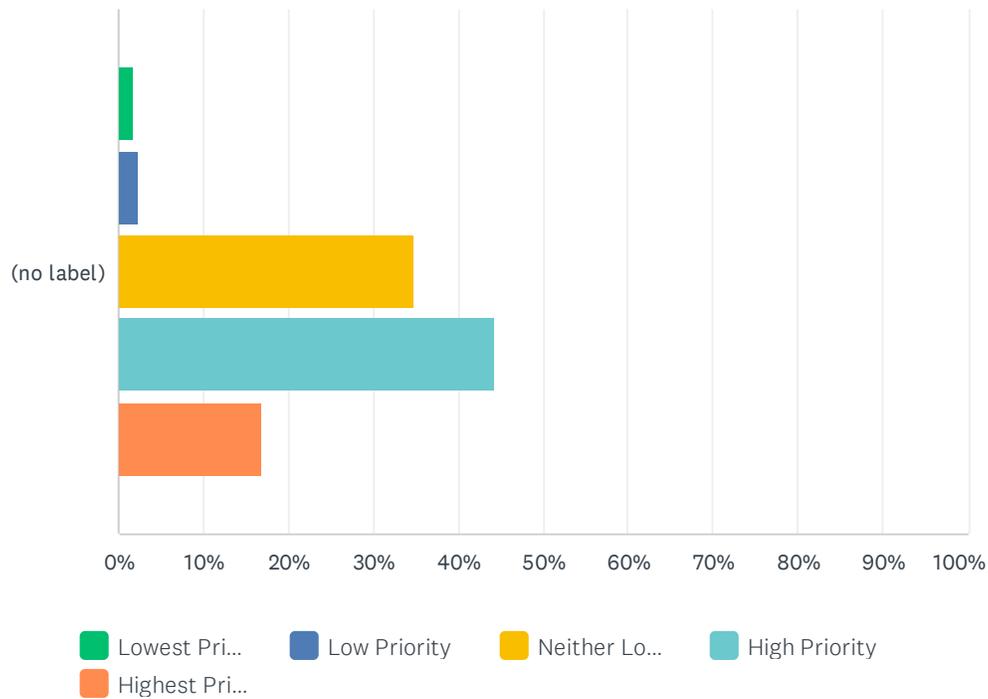
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	2.36%	3.15%	36.22%	44.88%	13.39%	127	3.64
	3	4	46	57	17		

Q12 Establish Resilience Hubs Establish sites that are well known and trusted by the community and have resilient energy and communications systems, and are able to provide programs and services needed to sustain the community before, during and after a disaster. These Hubs could be fully developed at fire stations, county facilities, or faith based locations that are well known and protected during extreme weather events

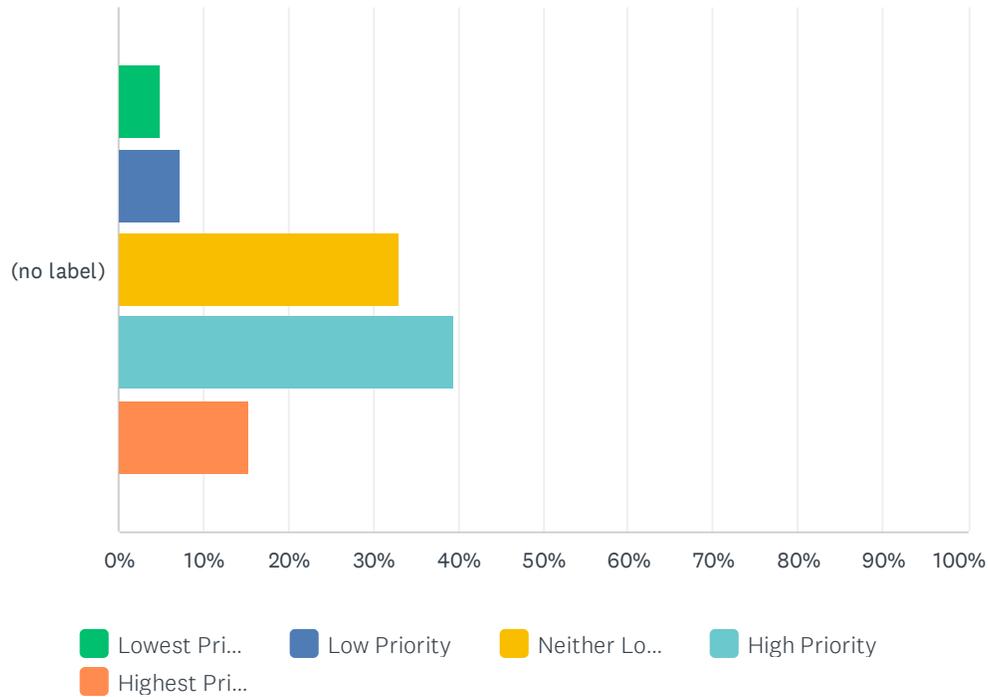
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.61%	2.42%	34.68%	44.35%	16.94%	124	3.73
	2	3	43	55	21		

Q13 Living Shorelines - Cape Hatteras Secondary School Adjacent to Cape Hatteras Secondary School- a living shoreline at this location can also be utilized as a teaching tool and source of public education. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).

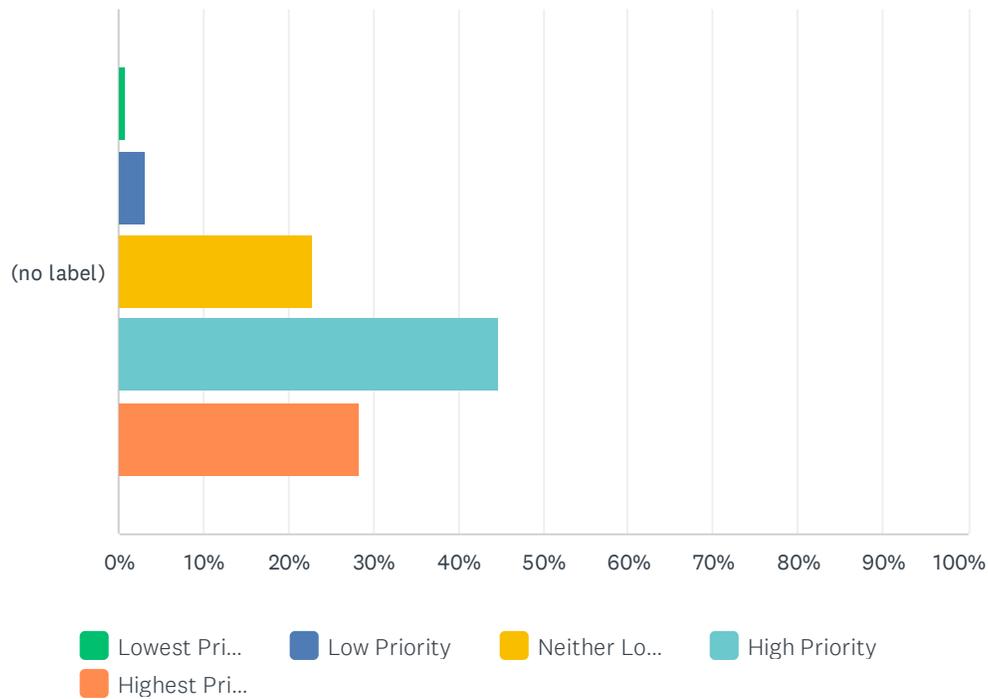
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	4.84%	7.26%	33.06%	39.52%	15.32%	124	3.53
	6	9	41	49	19		

Q14 Living Shorelines- Frisco/Hatteras Village Between Frisco and Hatteras Village - a living shoreline at this location serves to protect the soundside of a vulnerable section of NC 12 that was also identified as a hotspot in the citizen survey. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).

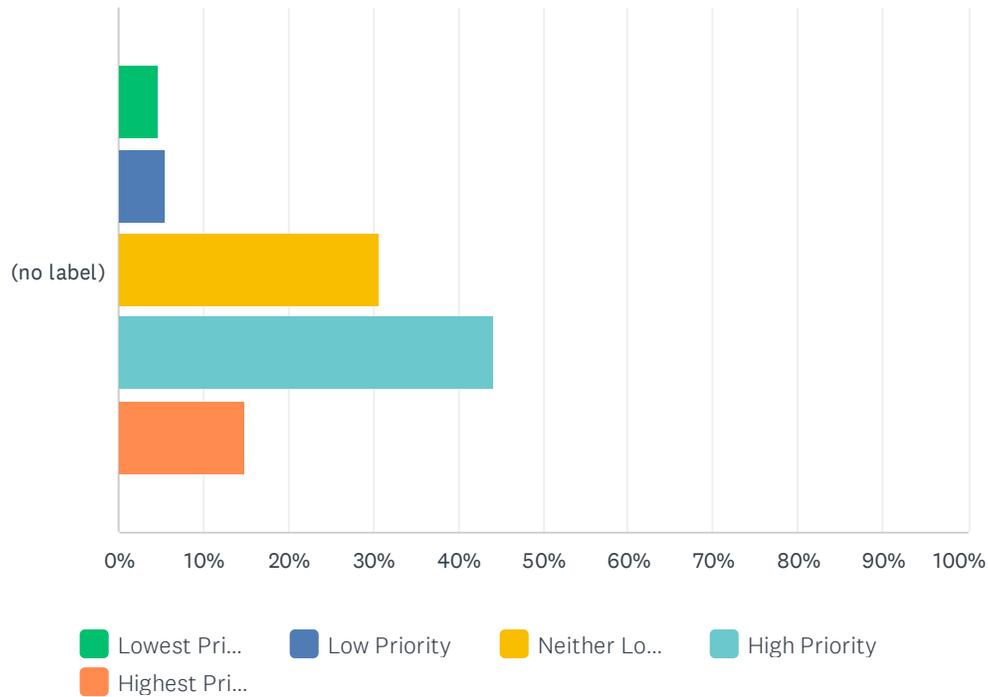
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	0.81% 1	3.25% 4	22.76% 28	44.72% 55	28.46% 35	123	3.97

Q15 Living Shorelines-Rodanthe HarborRodanthe Harbor - a living shoreline at this location provides some additional stabilization and protection at the emergency ferry route and helipad. Encouraging the use of natural barriers over hard structures to control shoreline erosion was also identified in the Outer Banks Hazard Mitigation Plan (Action #DAR13).

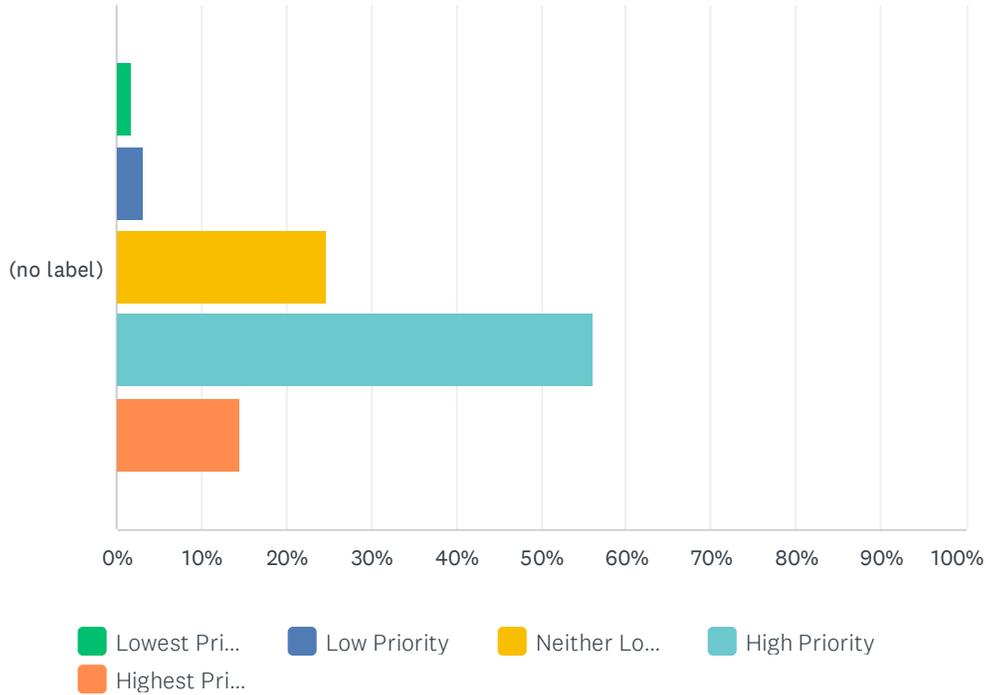
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	4.72% 6	5.51% 7	30.71% 39	44.09% 56	14.96% 19	127	3.59

Q16 Storm Drainage Study/Improvement - Buxton Drainage study and improvement of roadside swales, culverts, grading along the turn in NC 12 and Old Lighthouse Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.

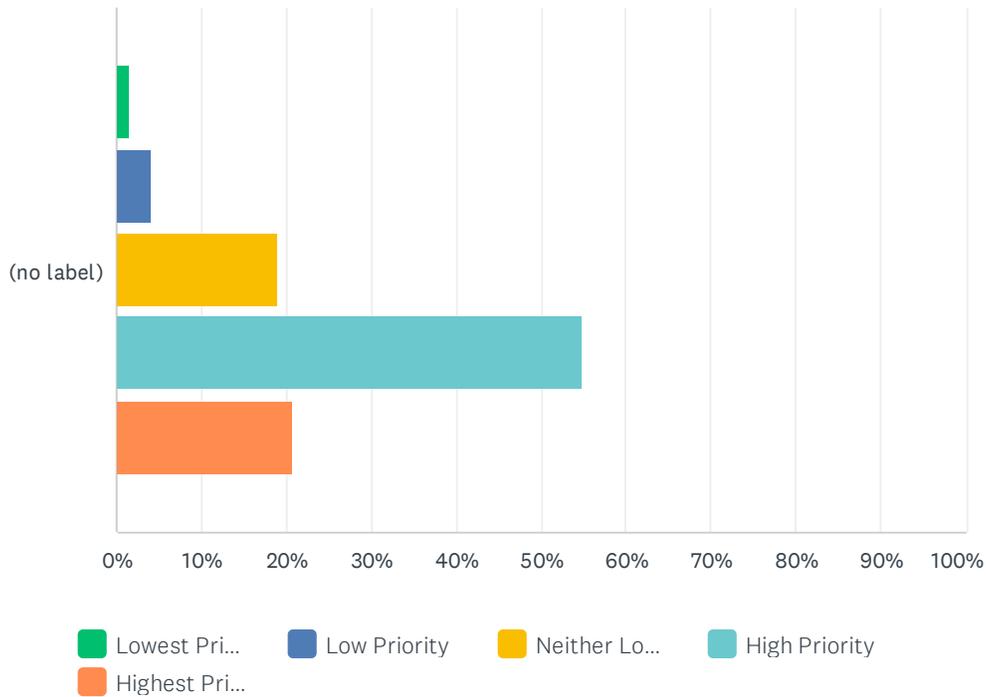
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.60%	3.20%	24.80%	56.00%	14.40%	125	3.78
	2	4	31	70	18		

Q17 Storm Drainage Study/Improvement - Tri-Villages (Rodanthe, Waves, Salvo) Drainage study and improvement of roadside swales, culverts, grading along NC-12 through the Tri-Villages and specifically in the Wind Over Waves area. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.

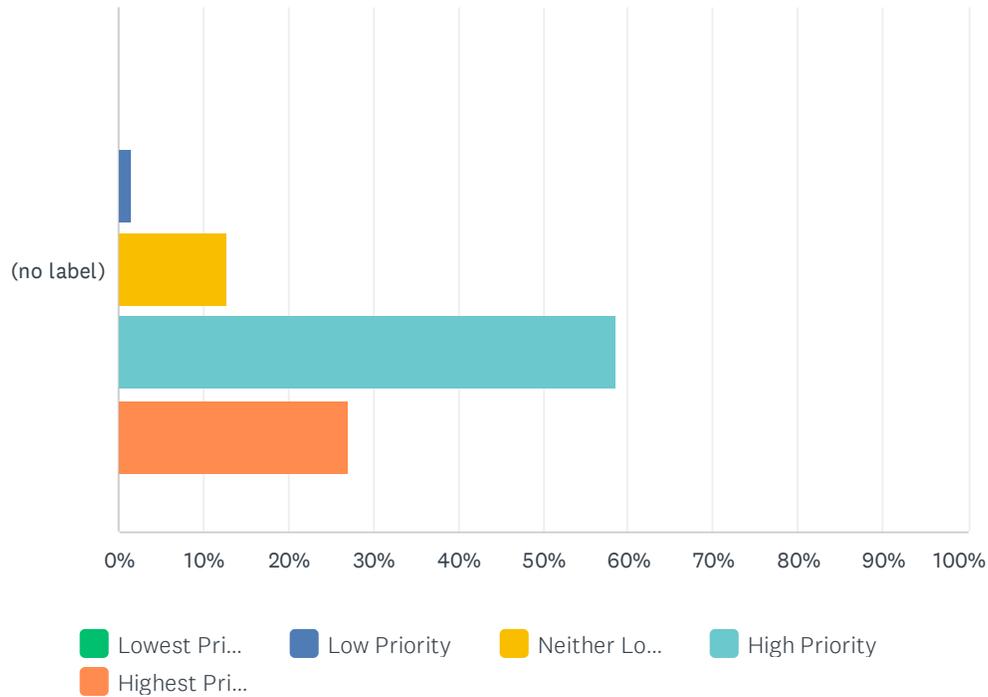
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.59% 2	3.97% 5	19.05% 24	54.76% 69	20.63% 26	126	3.89

Q18 Storm Drainage Maintenance (Ditch Maintenance) Work with private landowners and NCDOT to ensure maintenance of drainage ditches and maximize the capability of existing drainage systems and minimize flooding from rainfall and poor drainage. This was identified in the Outer Banks Hazard Mitigation Plan (Action # DAR11) and was identified as a common concern in the citizen survey.

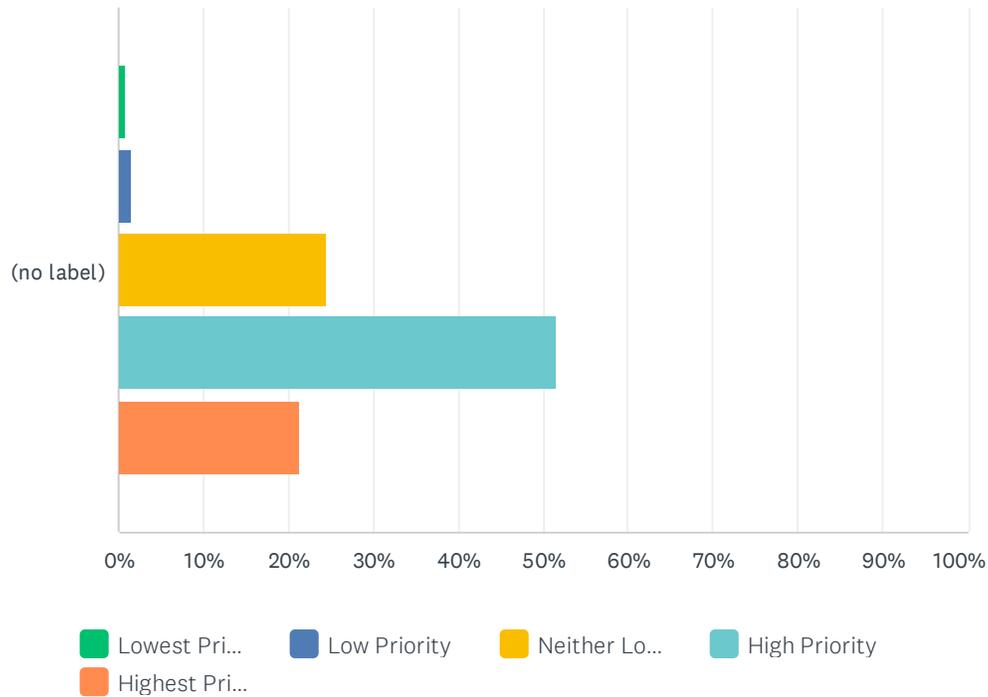
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	0.00% 0	1.59% 2	12.70% 16	58.73% 74	26.98% 34	126	4.11

Q19 Storm Drainage Study/Improvement - Hatteras Village Drainage study and improvement of roadside swales, culverts, grading throughout Hatteras Village, specifically along NC 12 and Eagle Pass Road. This area was identified as a hot spot in the citizen survey and presents a safety hazard with ponding on the roadway.

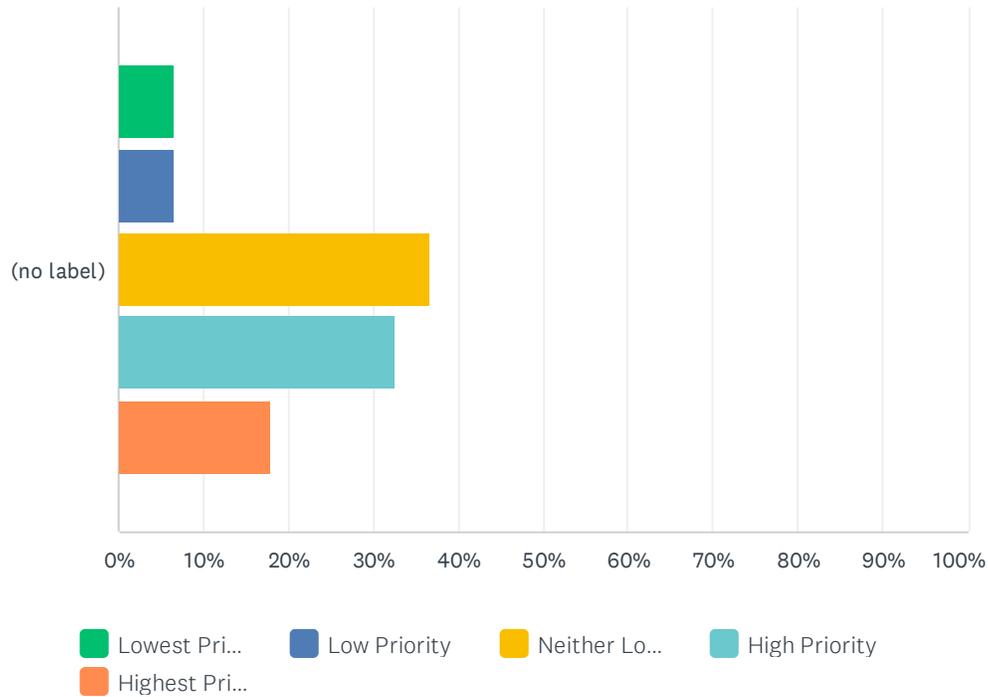
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	0.79%	1.59%	24.60%	51.59%	21.43%	126	3.91
	1	2	31	65	27		

Q20 Property Buyout Property buyouts of repetitive loss properties located throughout Hatteras Island. Properties bought out through the FEMA buy-out program can be used for limited purposes and would primarily serve as land returned to an open space condition and associated increased infiltration and natural floodplain function. Areas are identified in the 2020 Dare Repetitive Loss Area Analysis Update.

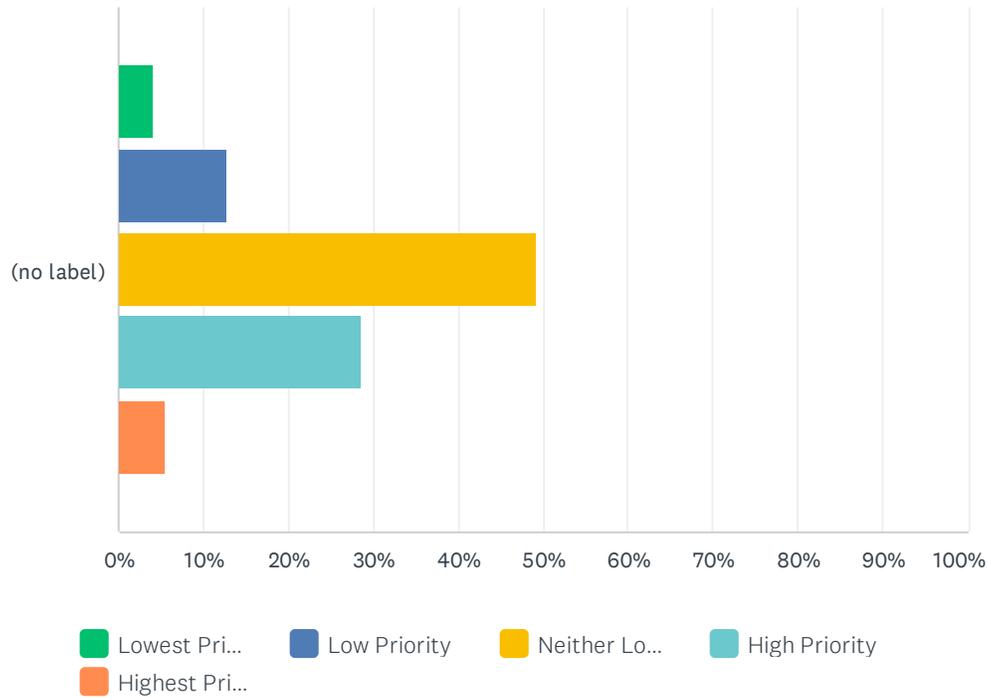
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	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	6.50% 8	6.50% 8	36.59% 45	32.52% 40	17.89% 22	123	3.49

Q21 Public Education and Outreach ProgramA targeted education and outreach program to encourage property buyout or granting of conservation easements.

Answered: 126 Skipped: 8

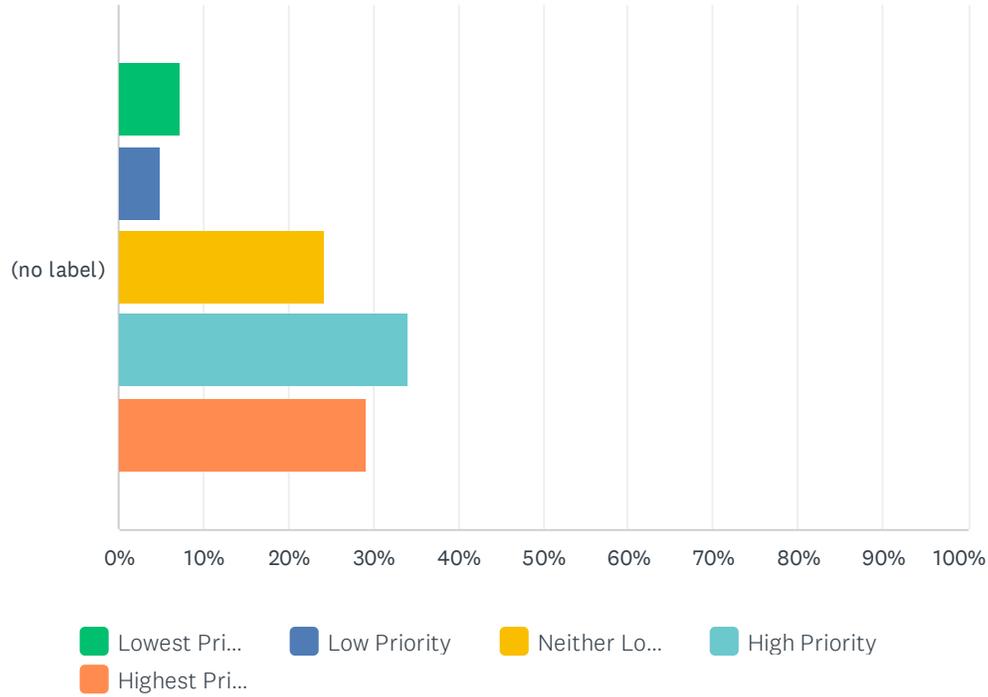


	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	3.97%	12.70%	49.21%	28.57%	5.56%	126	3.19
	5	16	62	36	7		

Q22 Beach Nourishment - Frisco to Hatteras Village

Beach nourishment along NC 12 between Frisco and Hatteras Village is an option for protection of NC 12 presented in the NC 12 Feasibility Study for Hatteras Village.

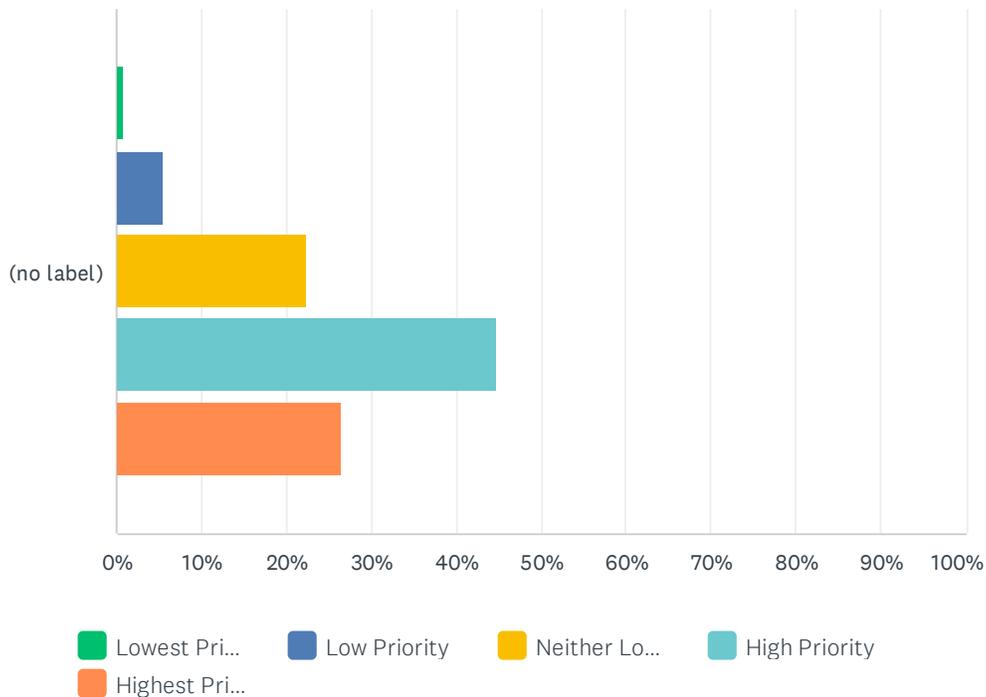
Answered: 123 Skipped: 11



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	7.32%	4.88%	24.39%	34.15%	29.27%	123	3.73
	9	6	30	42	36		

Q23 Backup Communications Establish redundant communications paths that do not rely on ground based fiber optic cables. Solutions might include acquisition and installation of satellite equipment to allow cellular providers to maintain service, installation of commercial satellite equipment to provide data transmission capabilities, and access to satellite based internet service from companies like StarLink. Non terrestrial solutions like these will provide connectivity with the mainland to provide backup communications when service from the single centurylink fiber is disrupted. Damage to the fiber line is especially disruptive on Hatteras Island because repairs can not occur until flooding has receded. Reliable non terrestrial communications are vital not only for emergency response but also to the economy

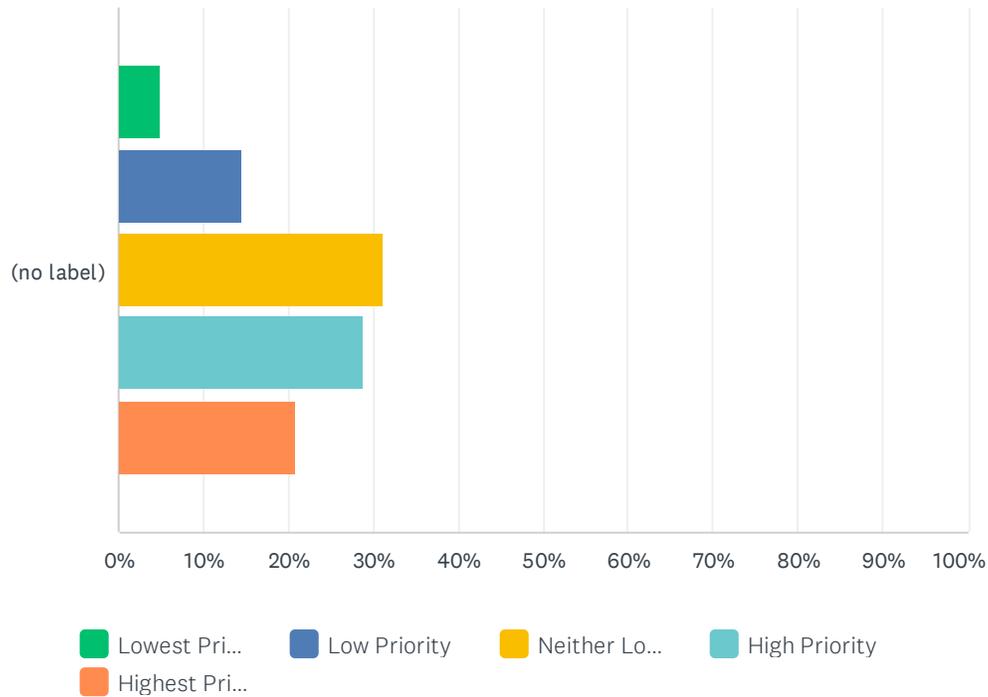
Answered: 125 Skipped: 9



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	0.80%	5.60%	22.40%	44.80%	26.40%	125	3.90
	1	7	28	56	33		

Q24 Bridge NC 12- Hatteras Village Frisco
 Replace a section of NC 12 between the towns of Frisco and Hatteras Village with a bridge. This area was identified as a hot spot location in the citizen survey and the solution was presented as an option in the NC 12 Feasibility Study for Hatteras Village

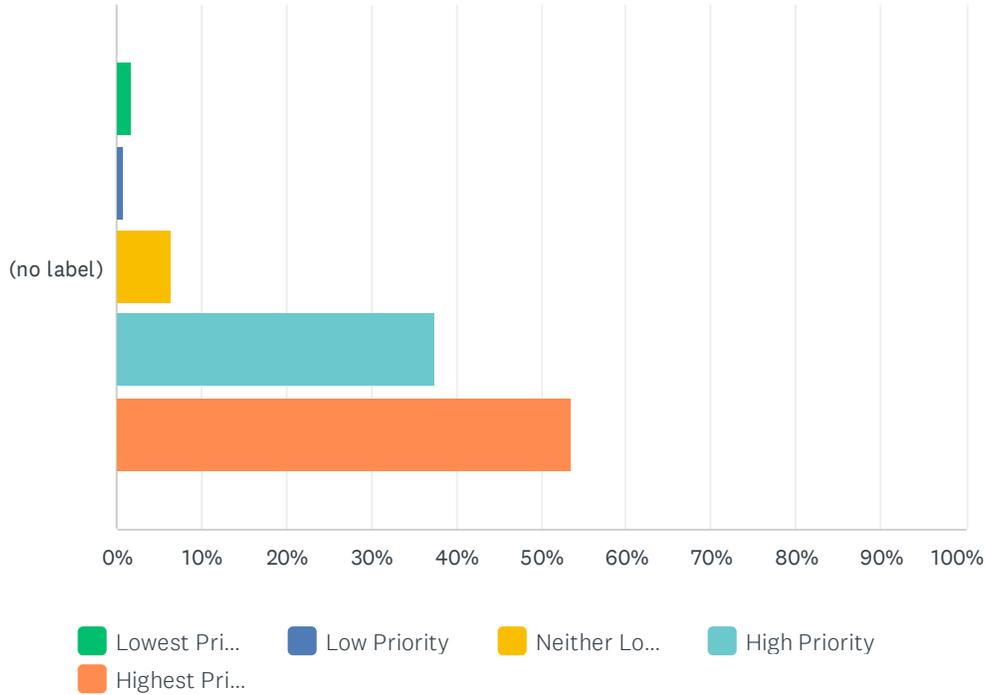
Answered: 125 Skipped: 9



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	4.80% 6	14.40% 18	31.20% 39	28.80% 36	20.80% 26	125	3.46

Q25 Dune Restoration Projects to plant and stabilize dunes and enforce "keep off the dunes" during peak visitor times, across the island.

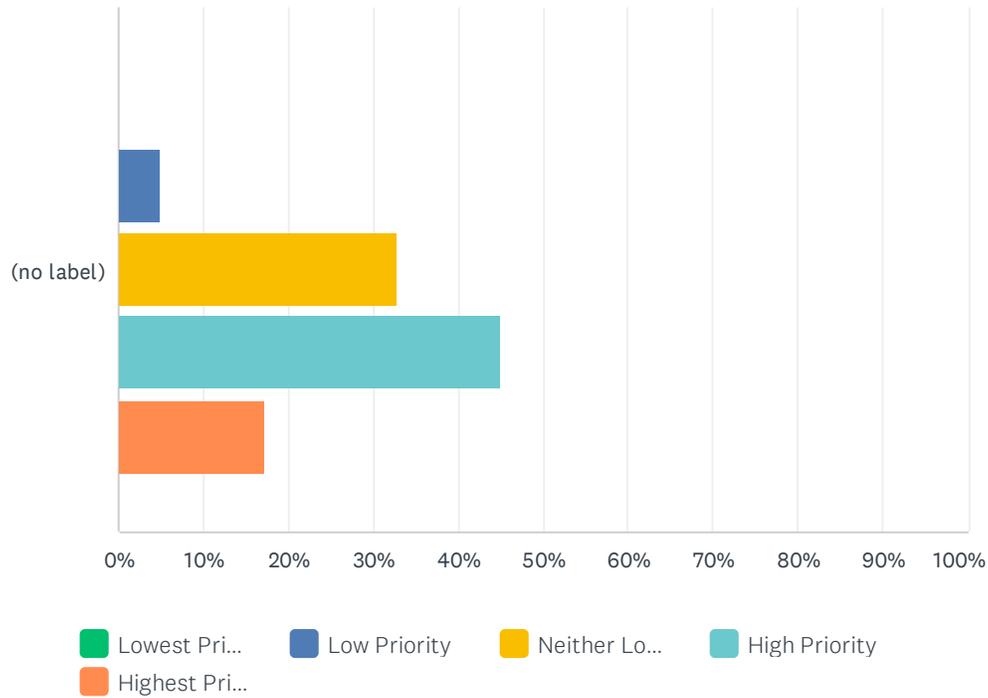
Answered: 125 Skipped: 9



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	1.60%	0.80%	6.40%	37.60%	53.60%	125	4.41
	2	1	8	47	67		

Q26 Utilities Interconnections Connecting the Rodanthe and South Hatteras Water Systems so in the case of failure in one of the systems redundancy exists.

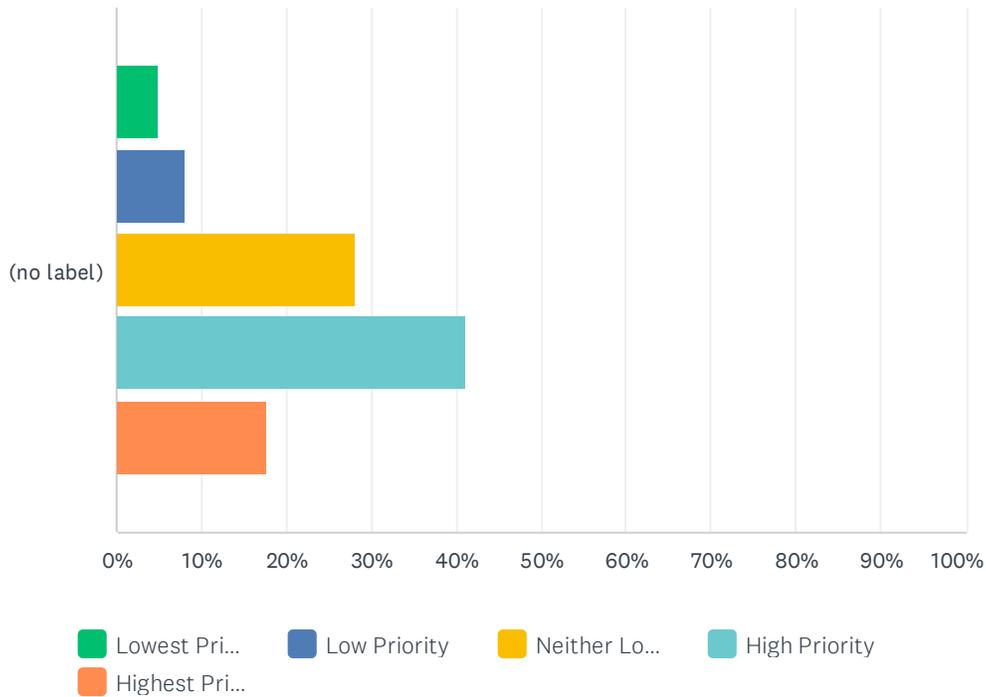
Answered: 122 Skipped: 12



	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	0.00%	4.92%	32.79%	45.08%	17.21%	122	3.75
	0	6	40	55	21		

Q27 Sewer Feasibility Study A feasibility study of the possibility, potential cost, and funding options for a municipal sewer system to replace septic systems. With rising ground water levels and increased development the reliance on septic is unsustainable and was also recognized as a concern in the citizen survey.

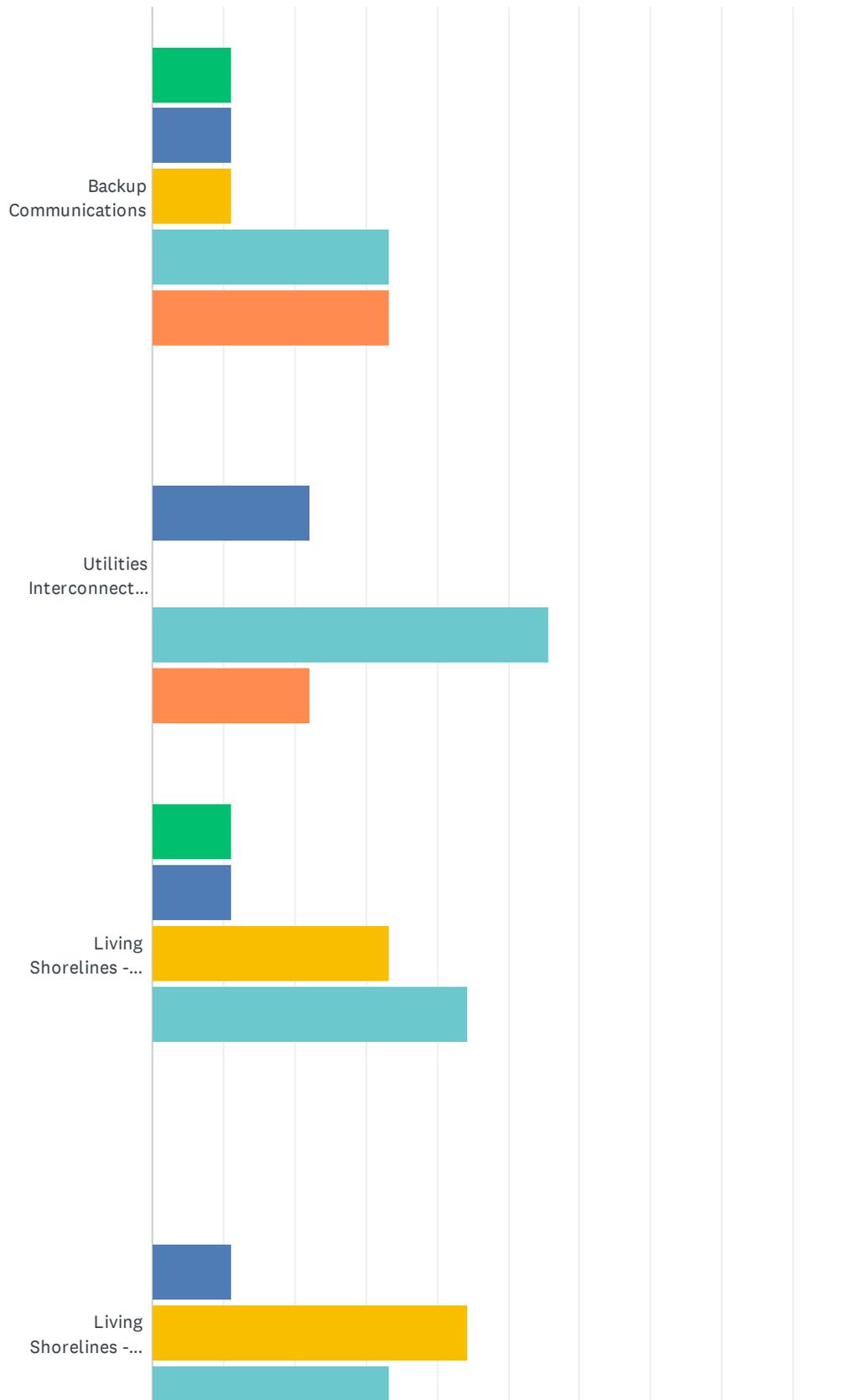
Answered: 124 Skipped: 10



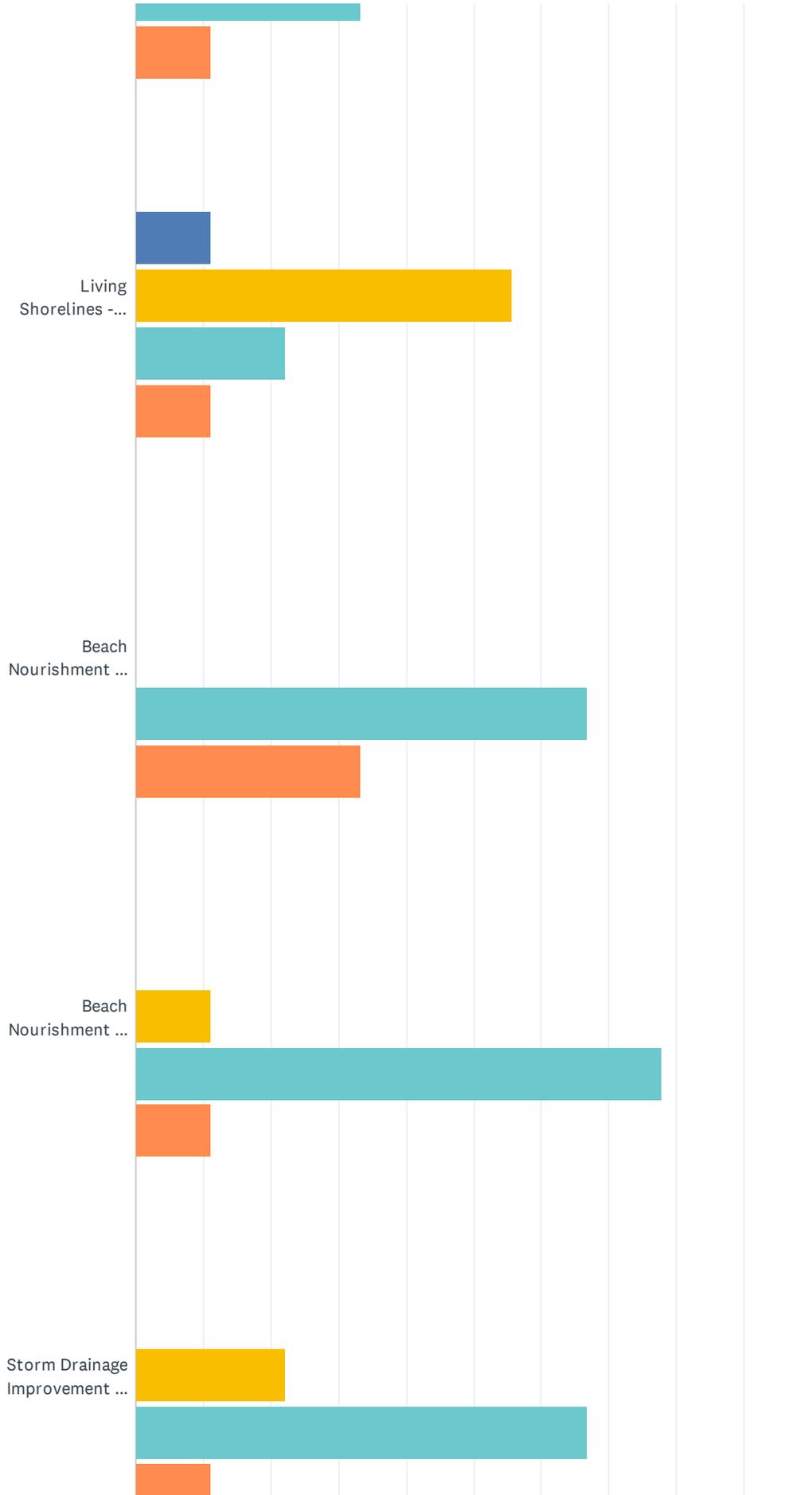
	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
(no label)	4.84% 6	8.06% 10	28.23% 35	41.13% 51	17.74% 22	124	3.59

Q1 Indicate the priority level associated with each project.

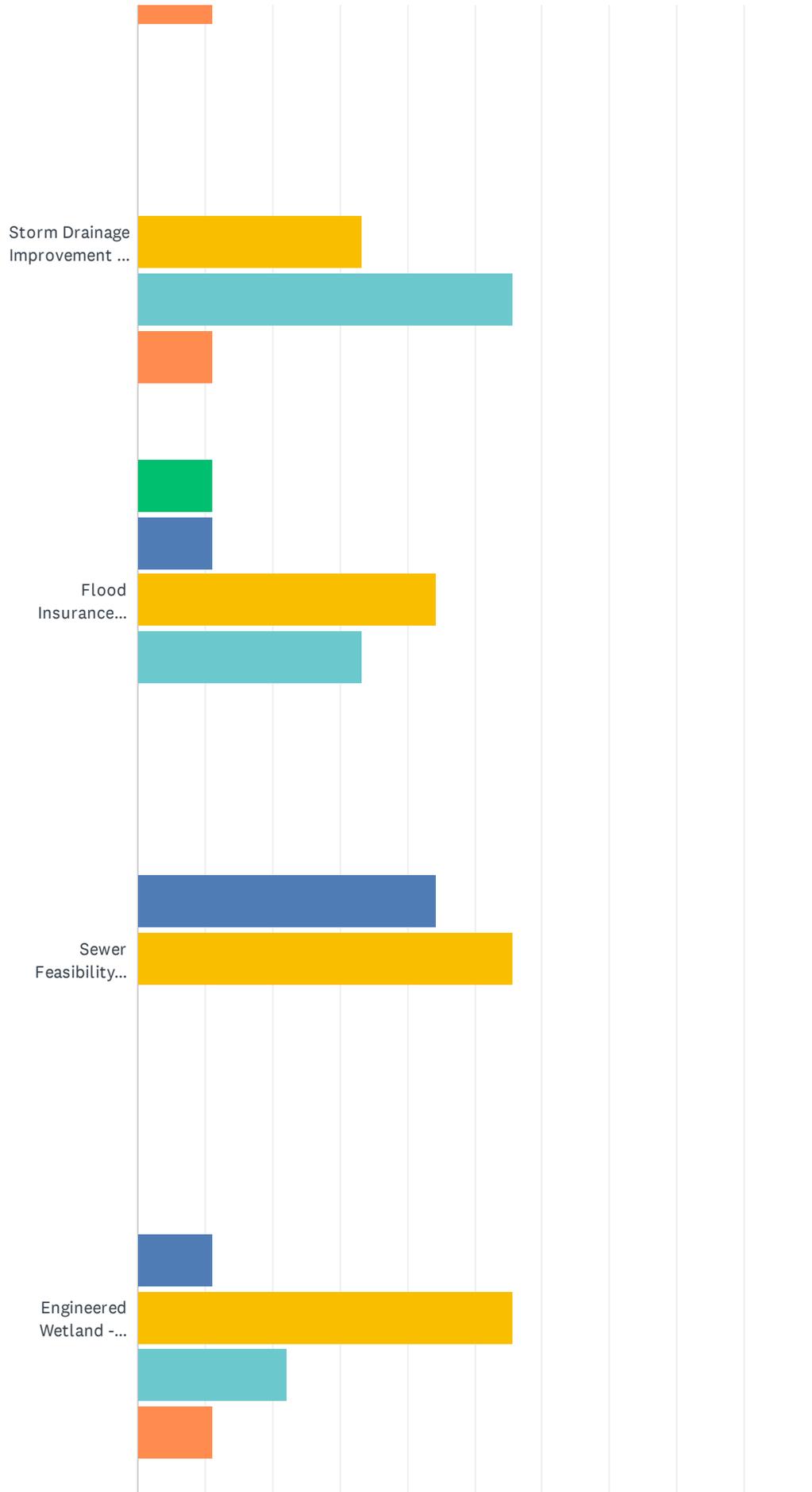
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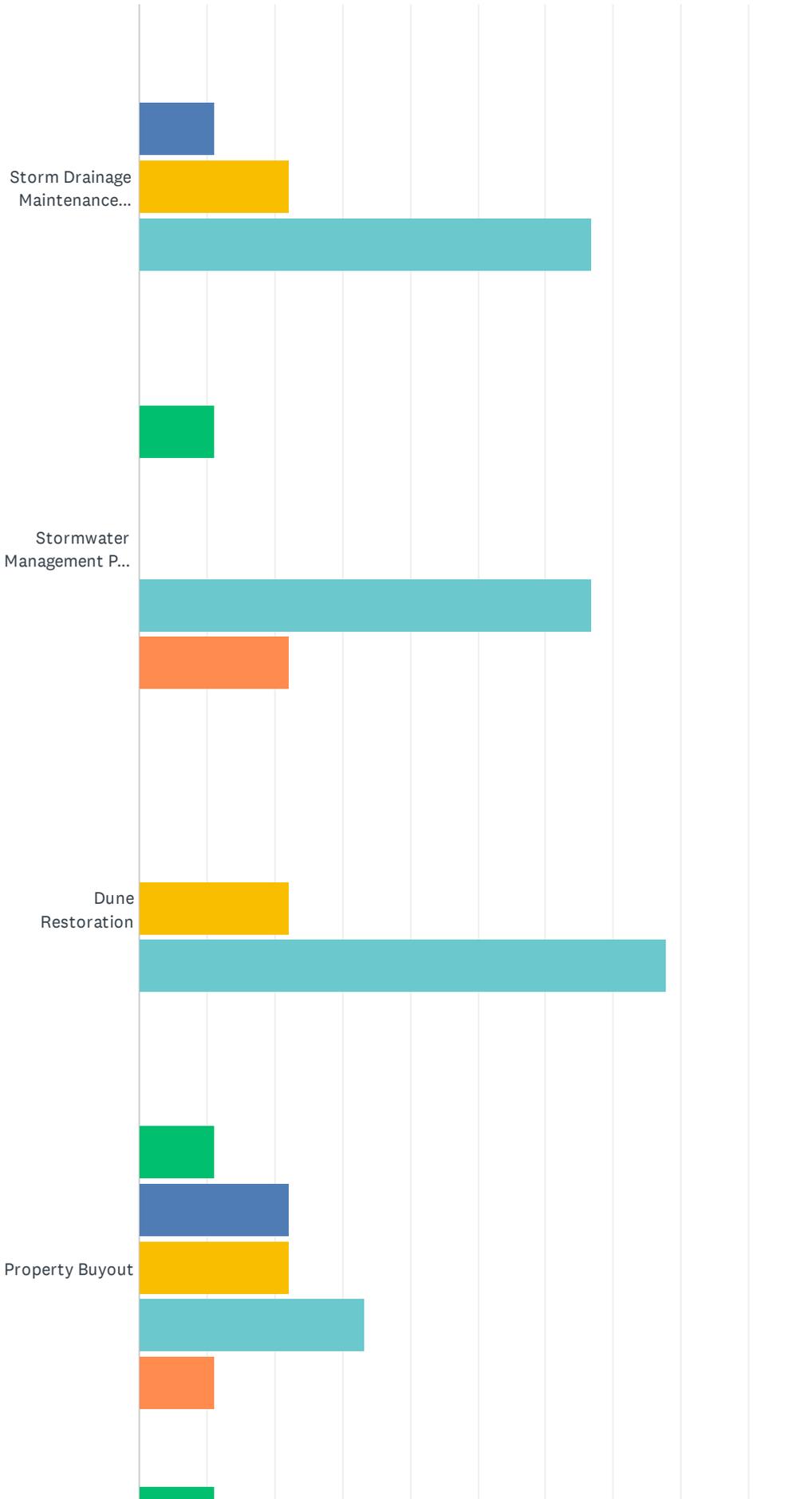
Dare County Priority Projects



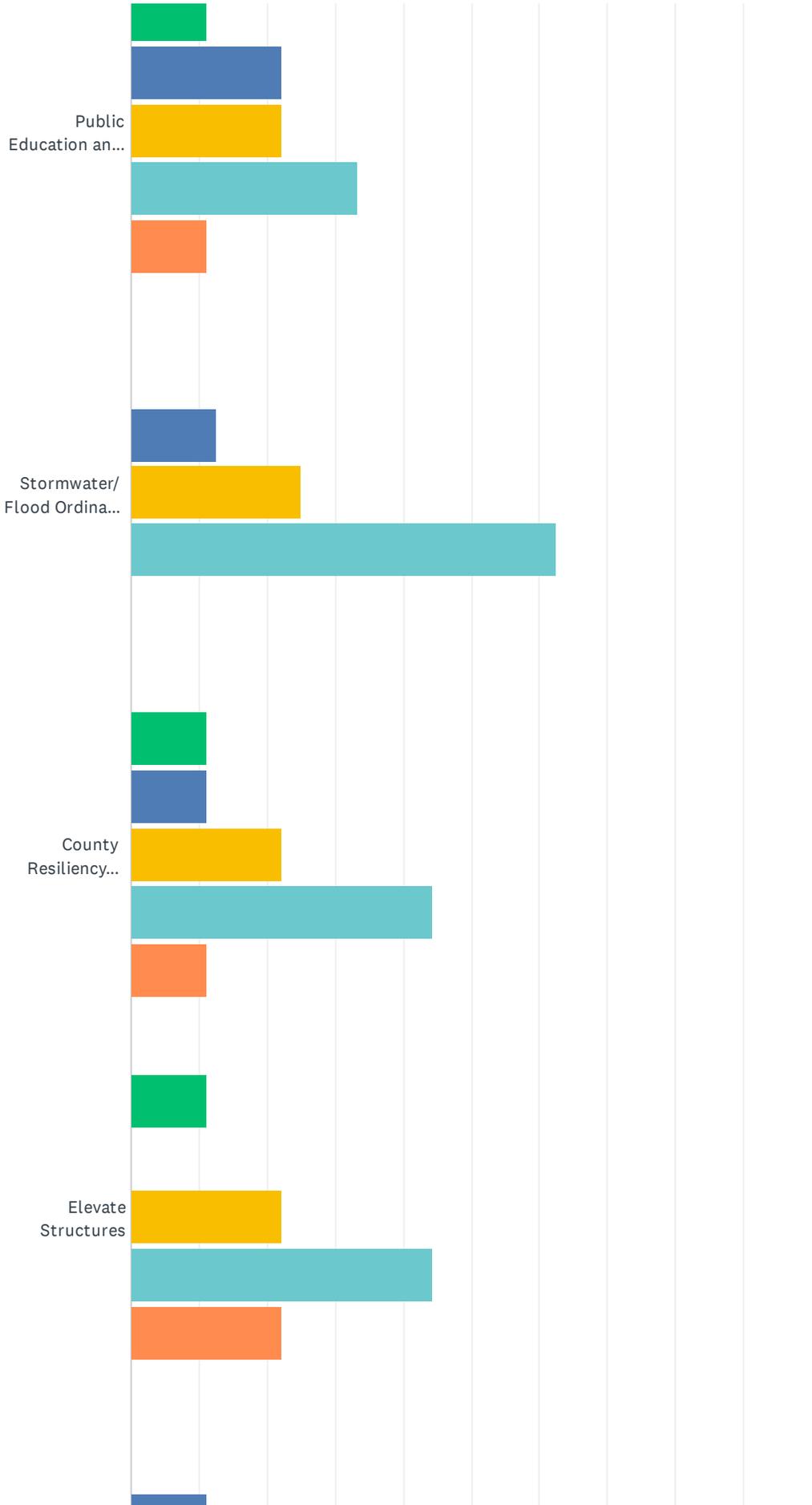
Dare County Priority Projects



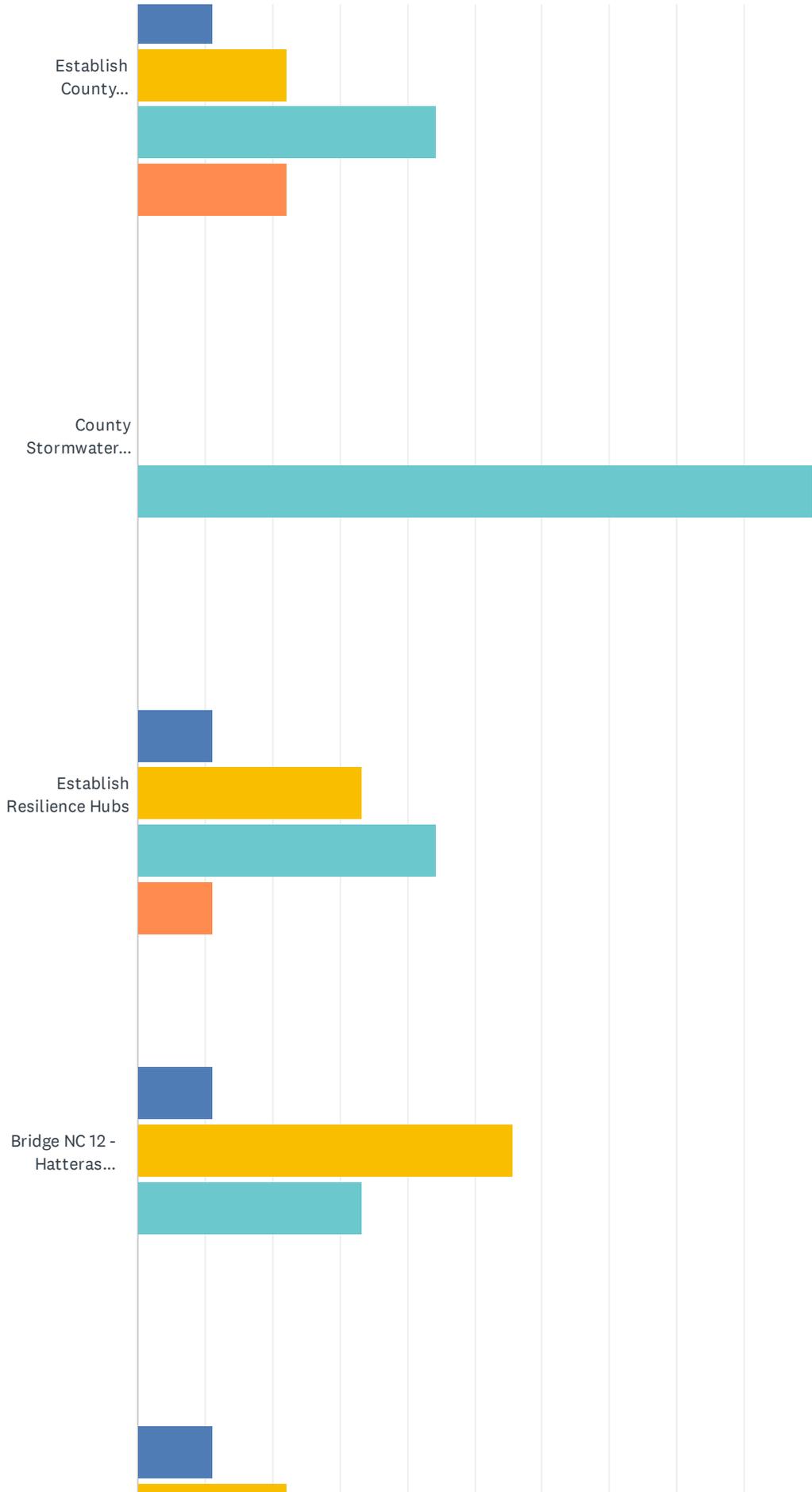
Dare County Priority Projects



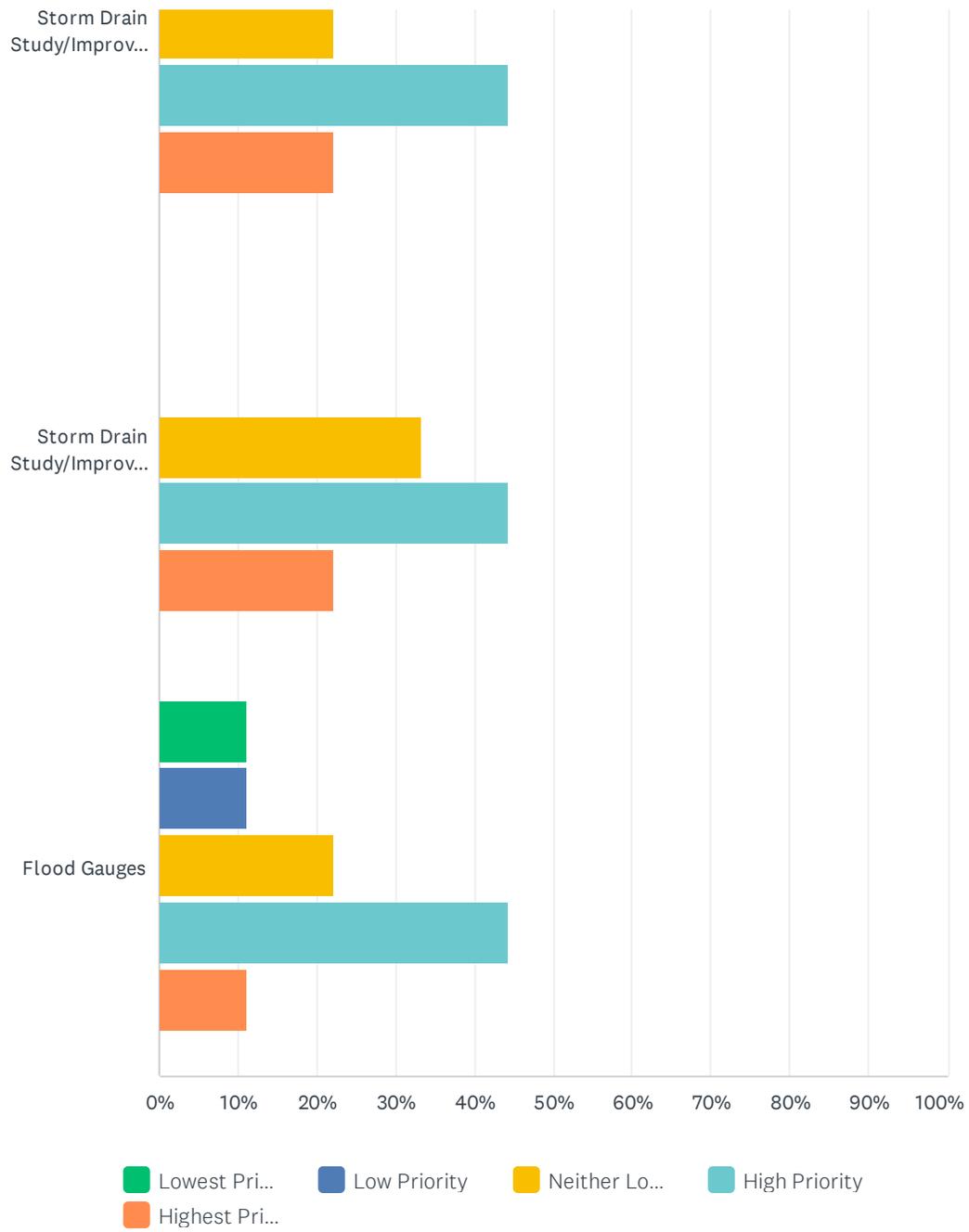
Dare County Priority Projects



Dare County Priority Projects



Dare County Priority Projects



Dare County Priority Projects

	LOWEST PRIORITY	LOW PRIORITY	NEITHER LOW PRIORITY NOR HIGH PRIORITY	HIGH PRIORITY	HIGHEST PRIORITY	TOTAL	WEIGHTED AVERAGE
Backup Communications	11.11% 1	11.11% 1	11.11% 1	33.33% 3	33.33% 3	9	3.67
Utilities Interconnections	0.00% 0	22.22% 2	0.00% 0	55.56% 5	22.22% 2	9	3.78
Living Shorelines - Cape Hatteras Secondary School	11.11% 1	11.11% 1	33.33% 3	44.44% 4	0.00% 0	9	3.11
Living Shorelines - Frisco/Hatteras Village	0.00% 0	11.11% 1	44.44% 4	33.33% 3	11.11% 1	9	3.44
Living Shorelines - Rodanthe Harbor	0.00% 0	11.11% 1	55.56% 5	22.22% 2	11.11% 1	9	3.33
Beach Nourishment - Avon & Buxton	0.00% 0	0.00% 0	0.00% 0	66.67% 6	33.33% 3	9	4.33
Beach Nourishment - Frisco to Hatteras Island	0.00% 0	0.00% 0	11.11% 1	77.78% 7	11.11% 1	9	4.00
Storm Drainage Improvement - Avon	0.00% 0	0.00% 0	22.22% 2	66.67% 6	11.11% 1	9	3.89
Storm Drainage Improvement - Buxton	0.00% 0	0.00% 0	33.33% 3	55.56% 5	11.11% 1	9	3.78
Flood Insurance Education and Outreach Program	11.11% 1	11.11% 1	44.44% 4	33.33% 3	0.00% 0	9	3.00
Sewer Feasibility Study	0.00% 0	44.44% 4	55.56% 5	0.00% 0	0.00% 0	9	2.56
Engineered Wetland - Peter's Ditch Area	0.00% 0	11.11% 1	55.56% 5	22.22% 2	11.11% 1	9	3.33
Storm Drainage Maintenance (Ditch Maintenance)	0.00% 0	11.11% 1	22.22% 2	66.67% 6	0.00% 0	9	3.56
Stormwater Management Plan Study	11.11% 1	0.00% 0	0.00% 0	66.67% 6	22.22% 2	9	3.89
Dune Restoration	0.00% 0	0.00% 0	22.22% 2	77.78% 7	0.00% 0	9	3.78
Property Buyout	11.11% 1	22.22% 2	22.22% 2	33.33% 3	11.11% 1	9	3.11
Public Education and Outreach Program	11.11% 1	22.22% 2	22.22% 2	33.33% 3	11.11% 1	9	3.11
Stormwater/ Flood Ordinance Review	0.00% 0	12.50% 1	25.00% 2	62.50% 5	0.00% 0	8	3.50
County Resiliency Staff Position	11.11% 1	11.11% 1	22.22% 2	44.44% 4	11.11% 1	9	3.33
Elevate Structures	11.11% 1	0.00% 0	22.22% 2	44.44% 4	22.22% 2	9	3.67
Establish County Stormwater Management Taskforce	0.00% 0	11.11% 1	22.22% 2	44.44% 4	22.22% 2	9	3.78
County Stormwater Funding/ Utility Study	0.00% 0	0.00% 0	0.00% 0	100.00% 9	0.00% 0	9	4.00
Establish Resilience Hubs	0.00%	11.11%	33.33%	44.44%	11.11%		

Dare County Priority Projects

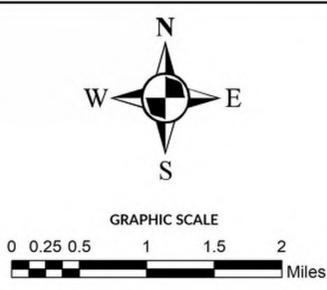
	0	1	3	4	1	9	3.56
Bridge NC 12 - Hatteras Village Frisco	0.00% 0	11.11% 1	55.56% 5	33.33% 3	0.00% 0	9	3.22
Storm Drain Study/Improvements - Hatteras Village	0.00% 0	11.11% 1	22.22% 2	44.44% 4	22.22% 2	9	3.78
Storm Drain Study/Improvements - Tri-Villages (Rodanthe, Waves, & Salvo)	0.00% 0	0.00% 0	33.33% 3	44.44% 4	22.22% 2	9	3.89
Flood Gauges	11.11% 1	11.11% 1	22.22% 2	44.44% 4	11.11% 1	9	3.33



Appendix D: Maps

- ◆ National Wetlands Inventory (NWI)
- ◆ Critical Assets
- ◆ FEMA Special Flood Hazard Areas (SFHA)
- ◆ 1ft Sea Level Rise Inundation Areas
- ◆ 80 cm Sea Level Rise Inundation Areas
- ◆ Storm Surge
- ◆ Erosion Rate - Hatteras Island

FIGURE 1. NATIONAL WETLAND INVENTORY - HATTERAS ISLAND



GRAPHIC SCALE
0 0.25 0.5 1 1.5 2 Miles

LEGEND

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

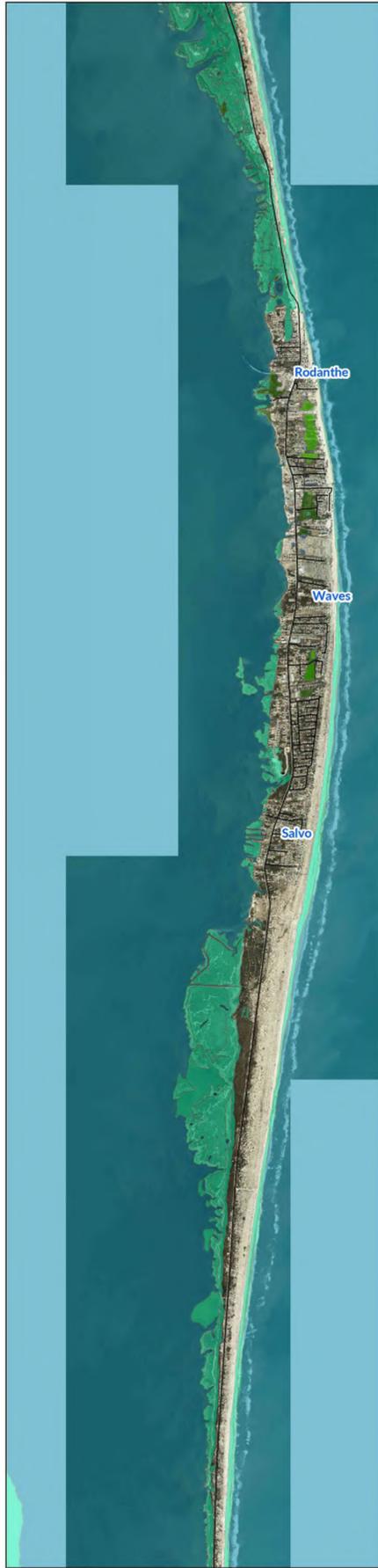
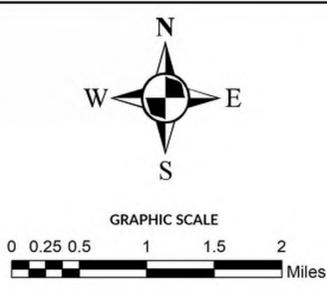
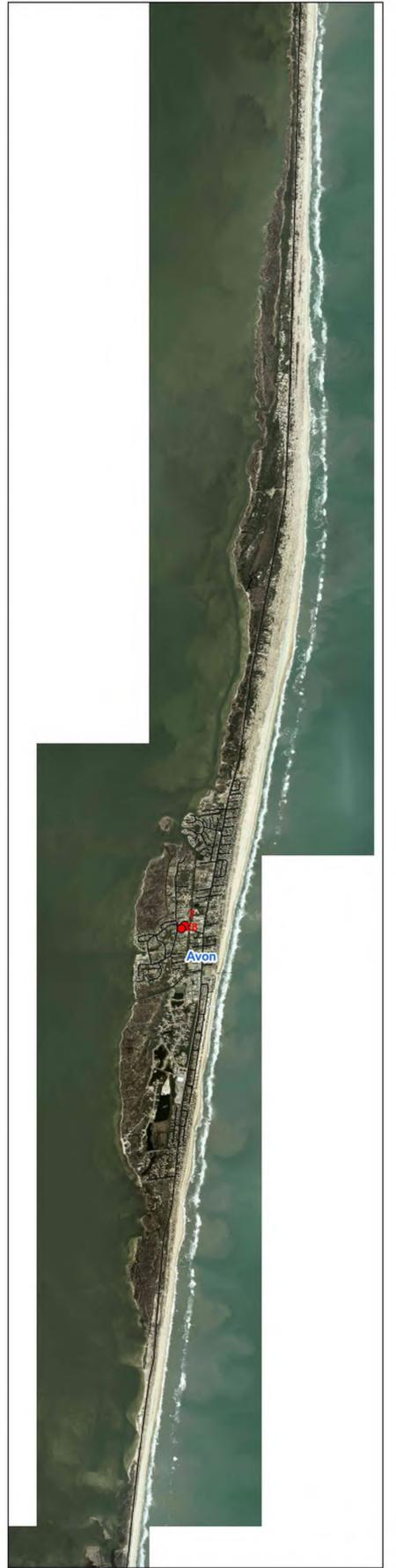
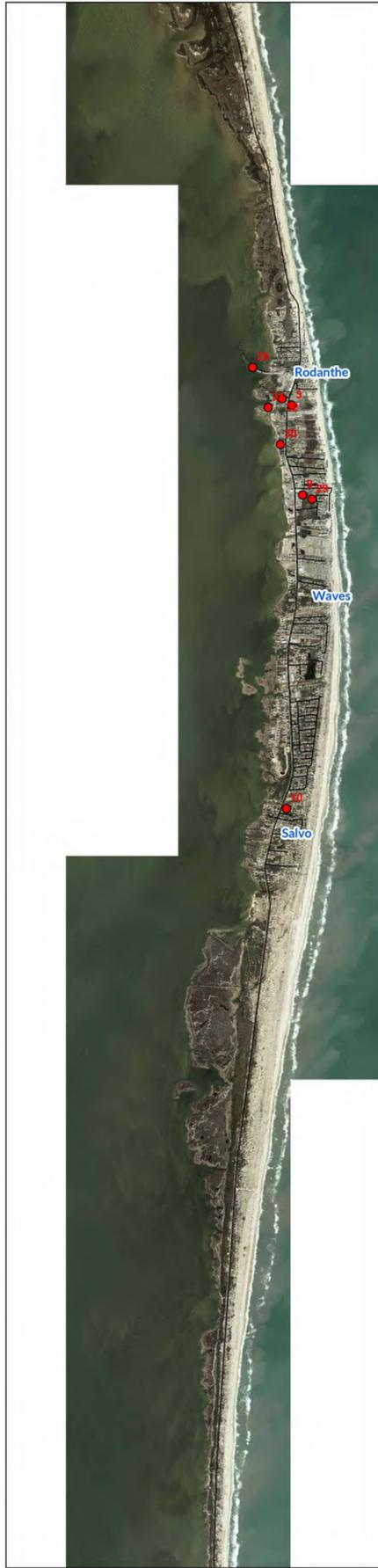


FIGURE 2. CRITICAL ASSETS - HATTERAS ISLAND



LEGEND

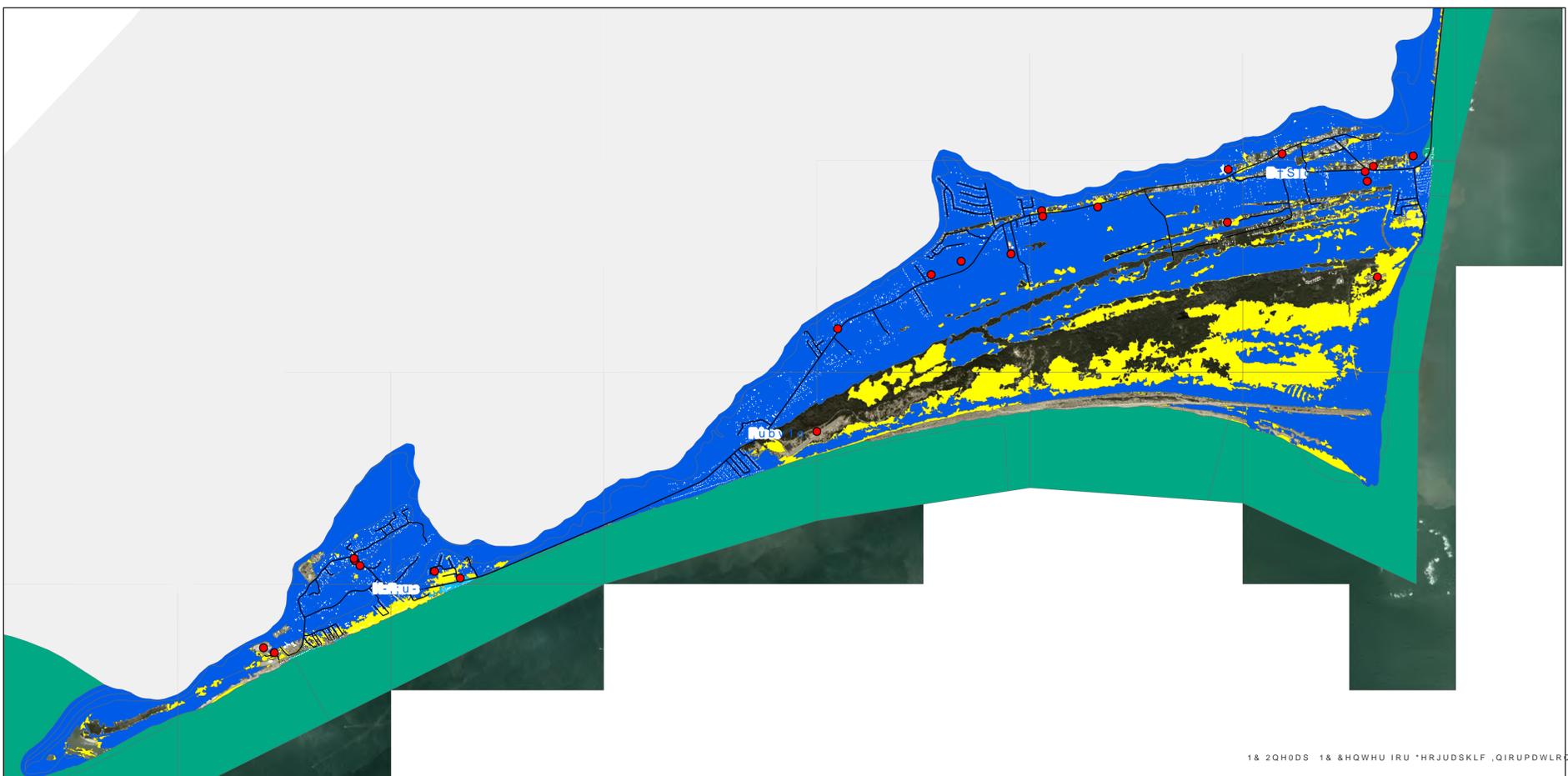
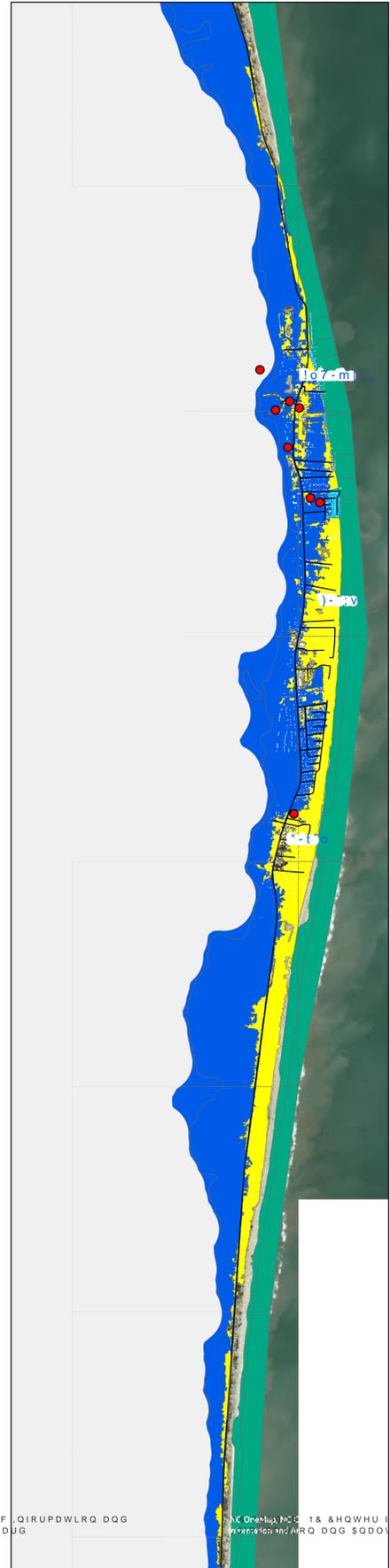
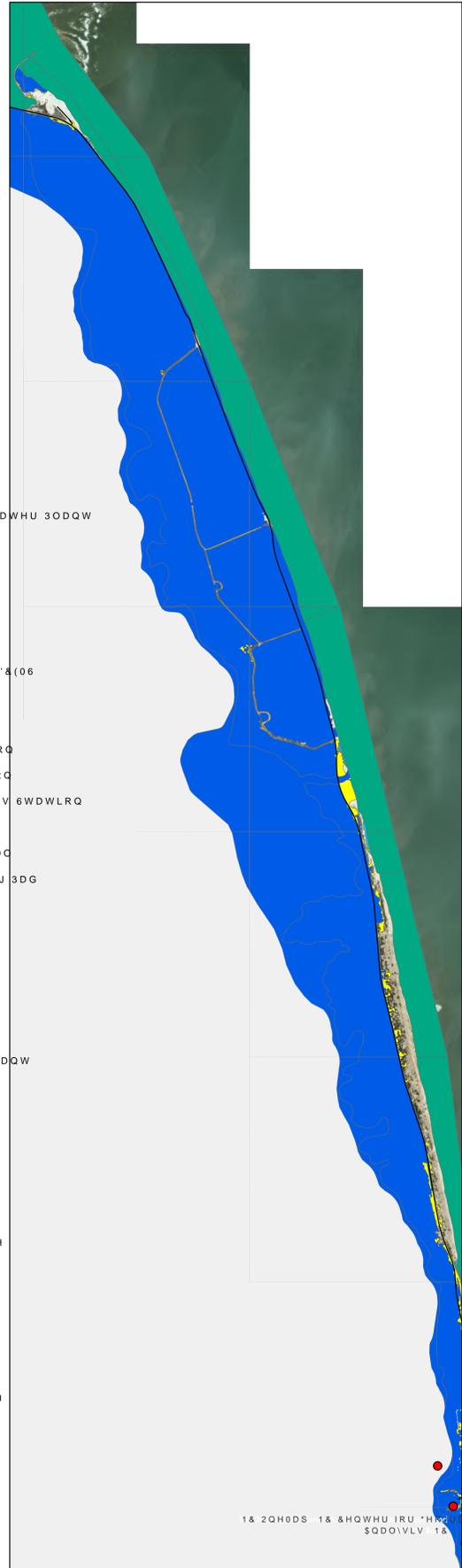
- 2, Cape Hatteras Water Plant
- 3, Joseph "Mac" Midgett Reverse Osmosis Water Plant
- 4, Cape Hatteras Elementary School
- 5, Cape Hatteras Secondary School
- 6, Hatteras Branch Library
- 9, Chicamacomico Banks Fire Department/DCEMS 6
- 10, Salvo Fire Department Station 48
- 13, Hatteras Island Rescue Squad Station 35
- 14, Dare County Emergency Medical Services Station 3
- 15, US Coast Guard Station Hatteras
- 16, NC DOT Ferry Division Hatteras Terminal
- 17, Hatteras Village Clinic/Helo Landing Pad
- 18, Hatteras Village Water Tower
- 19, Hatteras Community Center
- 20, NPS Billy Mitchell Airstrip
- 21, Frisco Well Head/Pumping Station
- 22, Frisco Pump Station?
- 23, Frisco Satellite Offices - DC
- 24, Buxton Water Tower and Treatment Plant
- 25, Buxton Public Works Yard
- 26, Fessenden Annex
- 27, Fessenden Center
- 28, Avon Water Tower and Pump Station
- 29, Rodanthe Water Well/Pump?
- 30, Rodanthe Water Tower
- 31, Emergency Ferry Dock/Helo LP - Rodanthe
- 32, RWS Community Center
- 36, Basnight Bridge
- 37, Oregon Inlet
- 38, Hatteras Inlet
- 39, Rodanthe "Jug Handle" Bridge
- 42, NPS - Hatteras Island Visitor Center



Legend:

- 3&7 \$118\$/ &+\$1&()/22' +\$=\$5'
- \$ (
- \$+
- \$2
- 9(
- 23(1 :\$7(5
- %XLOGLQJV

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- +DWWHUDV ,QOHW
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Legend:

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- White square: %XLOGLQJV
- Black line: 'WHU 3ODQW

Legend items (repeated):

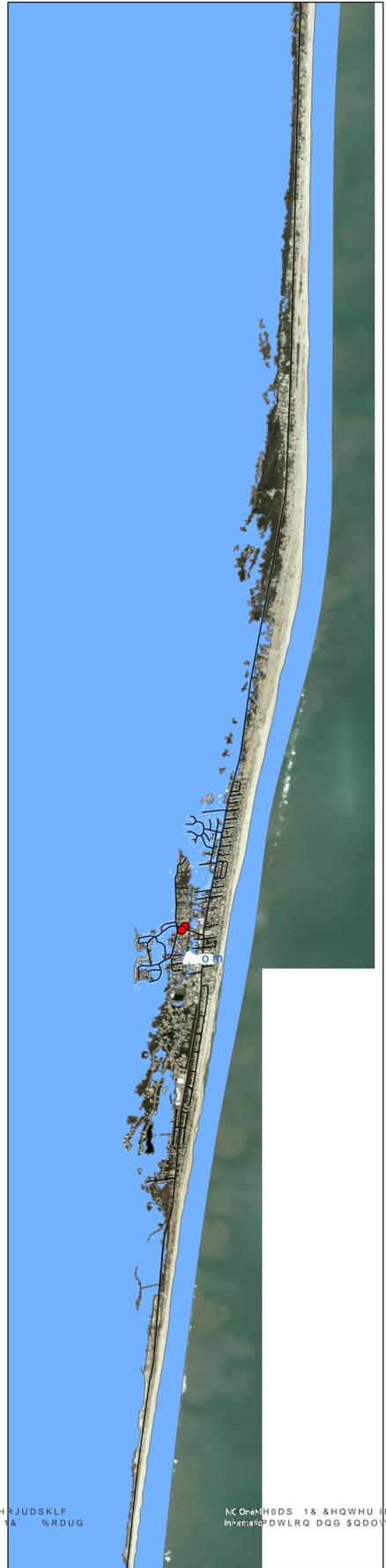
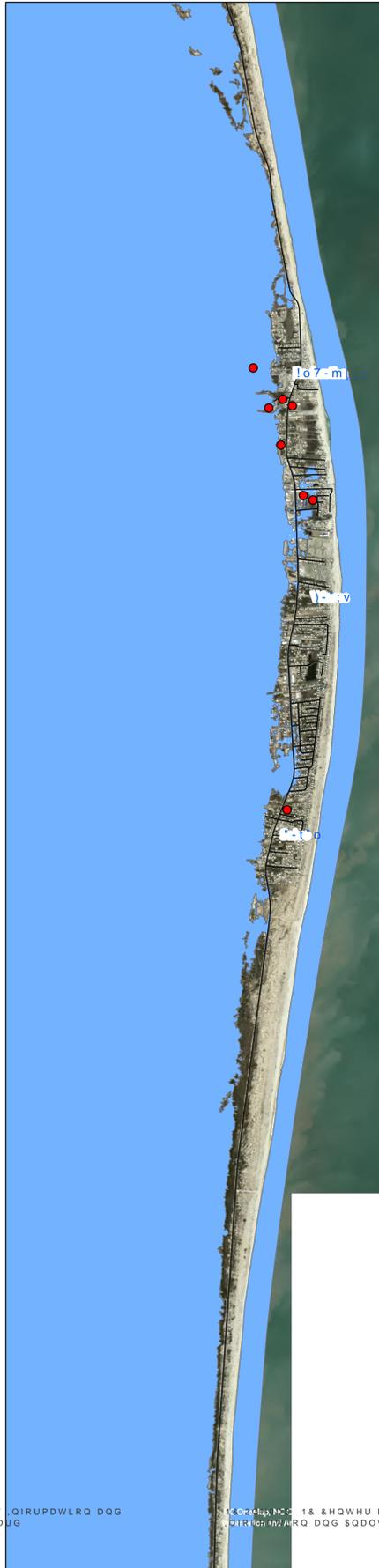
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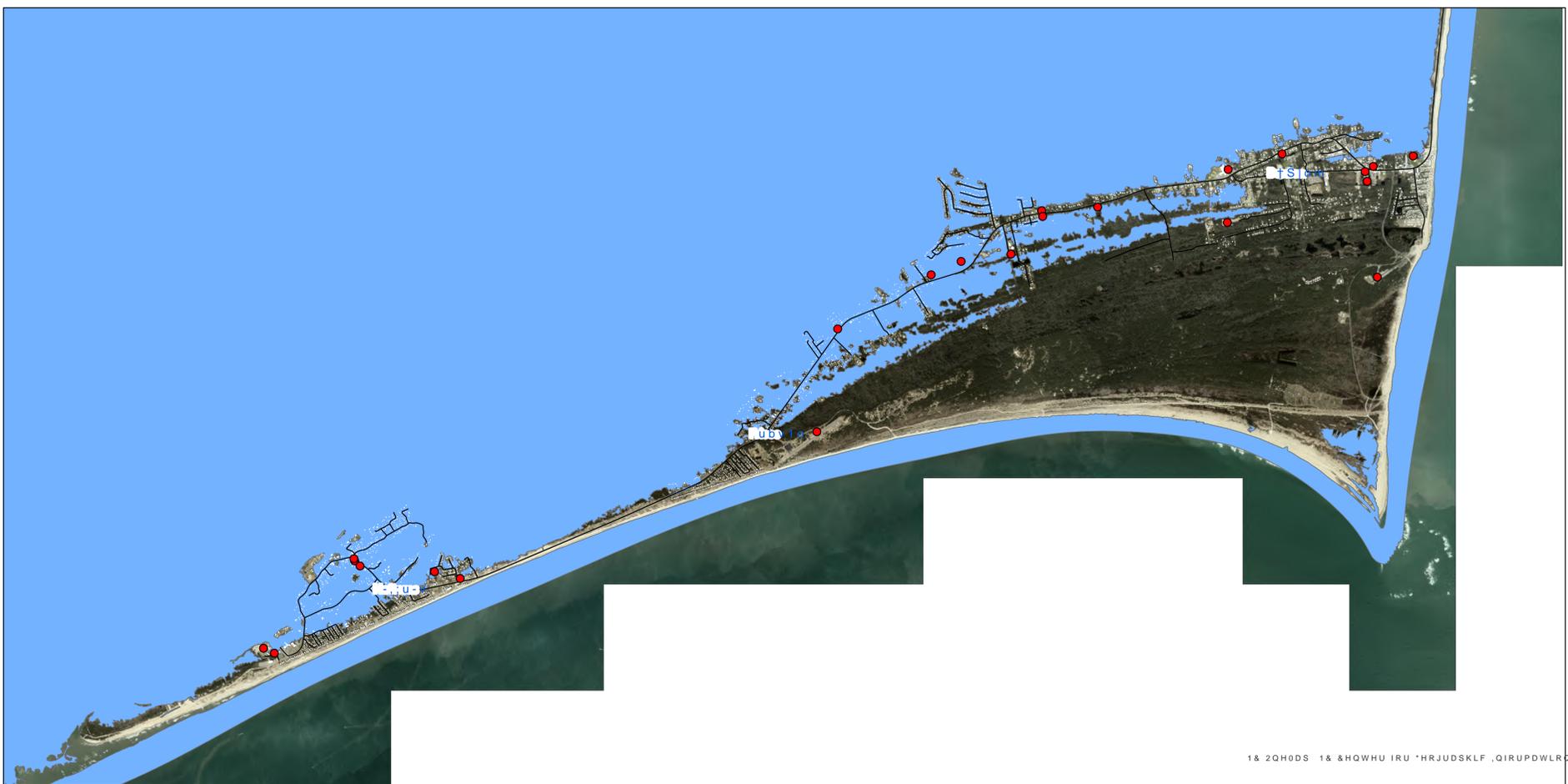
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1 & '27)HUU\ 'LYLVLQJ +DWWHUDV 7HUPLODQ

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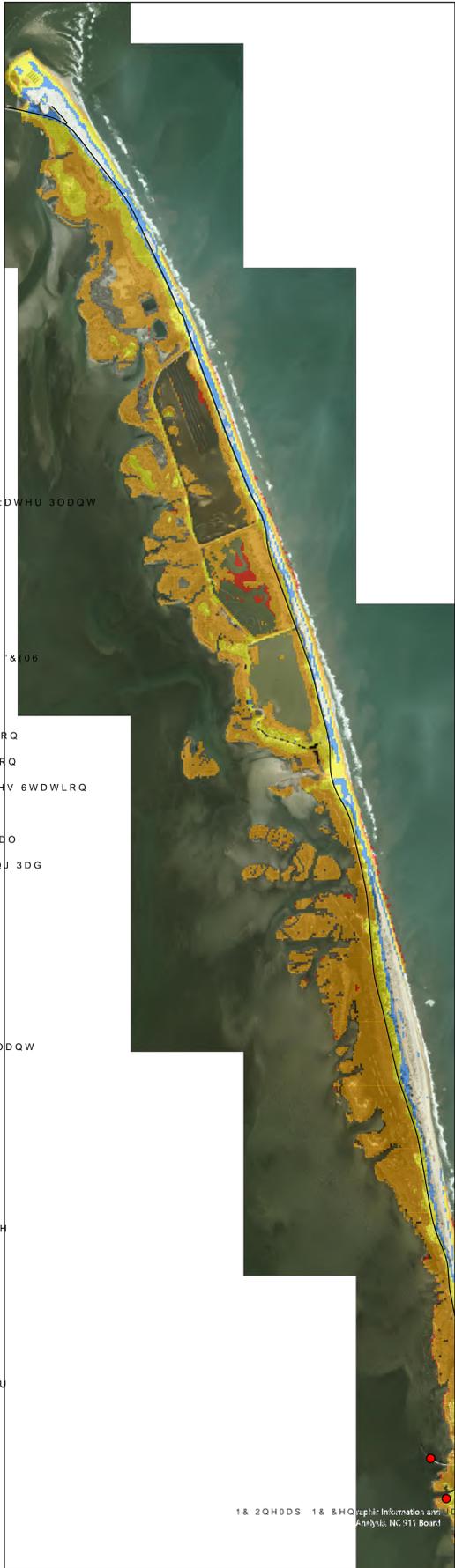




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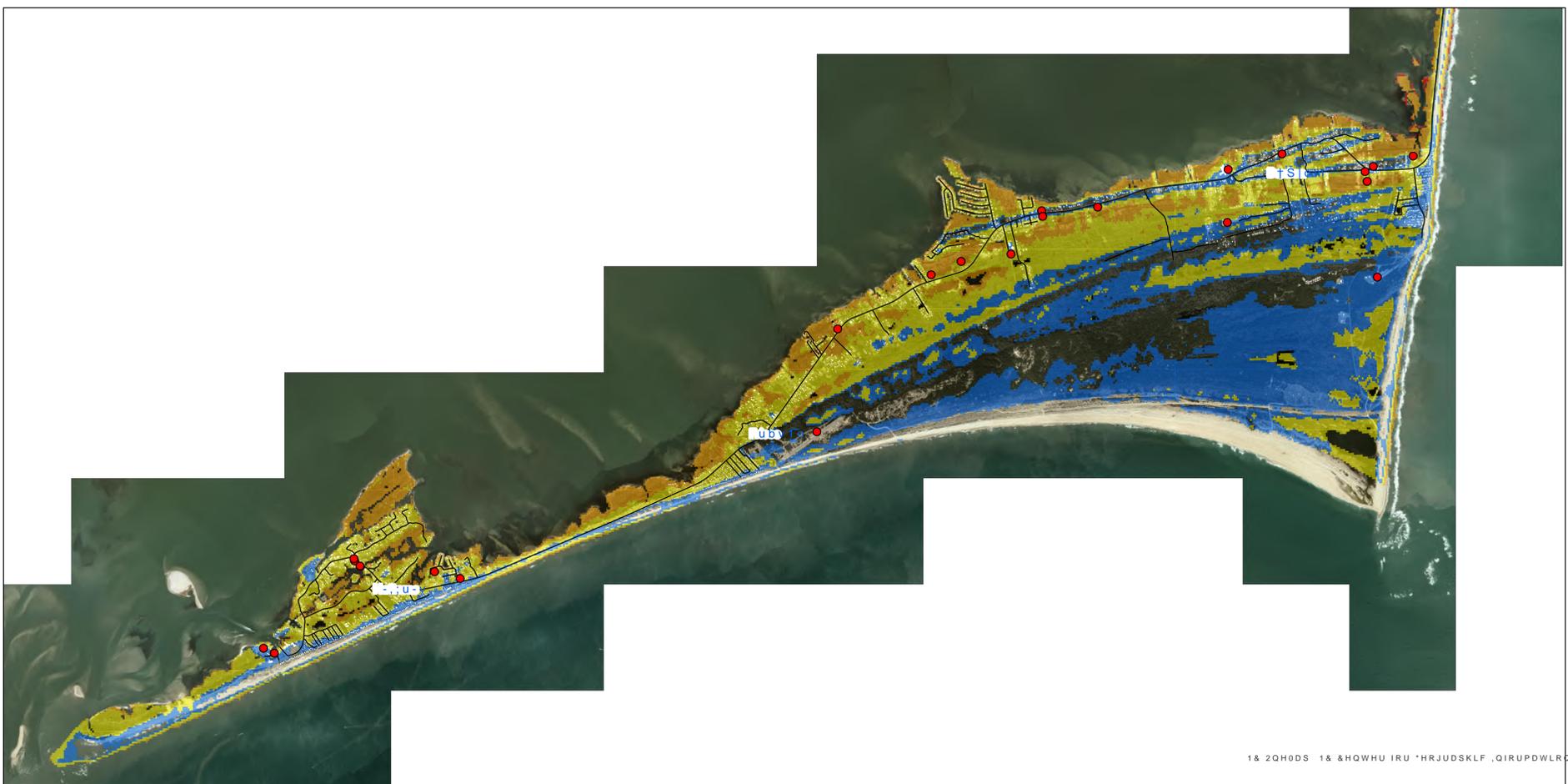
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- +DWWHUDV .VODQG 5HYHUVH 6TXDG 6WDWLQJ
- 'DUH &RXQW\ (PHUJHQF\ 0HGLFD 6HUYLFH 6WDWLQJ
- 86 &RDVW 'XDUG 6WDWLQJ +DWWHUDV
- 1& '27)HUU\ 'LYLVLQJ +DWWHUDV 7HUPHQW
- +DWWHUDV 9LOODJH &OLQF +HOR /DQG 3DG
- +DWWHUDV 9LOODJH :DWHU 7RZHU
- +DWWHUDV &RPPXQLW\ &HQWHU
- 136 %LOO\ 0LWFKHO 5LUVWULS
-)ULVFR :HOO +HDG 3XPS 6WDWLQJ
-)ULVFR 3XPS 6WDWLQJ
-)ULVFR 6DWHOOHW 2IILFHV ' &
- %X[WRQ :DWHU 7RZHU DQG 7UHDWPHQW 3ODQW
- %X[WRQ 3XEOLF :RUNV <DUG
-)HVVHQGHQ \$QQH
-)HVVHQGHQ &HQWHU
- \$YRQ :DWHU 7RZHU DQG 3XPS 6WDWLQJ
- 5RGDQWKH :DWHU :HOO 3XPS
- 5RGDQWKH :DWHU 7RZHU
- (PHUJHQF\)HUU\ 'RFN +HOR /3 5RGDQWKH
- 5:6 &RPPXQLW\ &HQWHU
- %DVQLJKW %ULGJH
- 2UHJRO ,QOHW
- +DWWHUDV ,QOHW
- 5RGDQWKH -XJ +DQGOH %ULGJH
- 136 +DWWHUDV .VODQG 9LVLRU &HQWHU



1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1&

1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1&

1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1& &HQWHU IRU 'HRJUDSKLF .QIRUPDWLRQ DQG \$DQVLYLW\ 1&



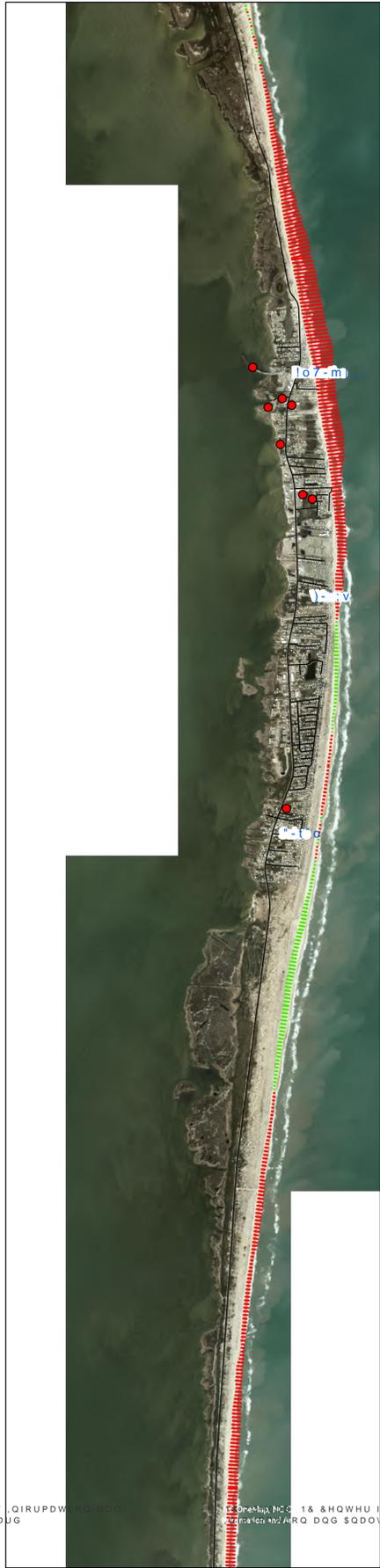
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0LOHV

- SFFUHWLRQ
- (URVLRQ
- 1R &DOFXODWLRQ
- 1R &KDQJH
- %XLOGLQJV
- &DSH +DWWHUDV :DWHU 3ODQW
- -RVHSK 0DF 0LGJHWW 5HYHUVH 2VPRVLV :DWHU 3ODQW
- &DSH +DWWHUDV (OHPHQWU) 6FKRRO
- &DSH +DWWHUDV 6HFRQGDUI 6FKRRO
- +DWWHUDV %UDQFK /LEUDU\
- \$YRQ 9ROXQWHHU)LUH 'HSDUWPHQW
- %X[WRQ)LUH 3UHYHQWLRQ \$VVRFLDWLRQ
- &KLFDPDFRPLFR %DQV)LUH 'HSDUWPHQW '8(06
- 6DOYR)LUH 'HSDUWPHQW 6WDWLRQ
-)ULVFR)LUH 3UHYHQWLRQ \$VVRFLDWLRQ
- +DWWHUDV)LUH 3URWHFWLYH \$VVRFLDWLRQ
- +DWWHUDV ,VODQG 5HYFXH 6TXDG 6WDWLRQ
- 'DUH &RXQW\ (PHUJHQF\ 0HGLFDO 6HUYLFHV 6WDWLRQ
- 86 &RDVV *XDUG 6WDWLRQ +DWWHUDV
- 1& '27)HUU\ 'LYLVRQ +DWWHUDV 7HUPLODO
- +DWWHUDV 9LOODJH &OLQF +HOR /DQGLQJ 3DG
- +DWWHUDV 9LOODJH :DWHU 7RZHU
- +DWWHUDV &RPPXQLW\ &HQWHU
- 136 %LOO\ 0LWFKHOO \$LUVWLS
-)ULVFR :HOO +HDG 3XPSLQJ 6WDWLRQ
-)ULVFR 3XPS 6WDWLRQ
-)ULVFR 6DWHOOHW 2IILFHV '8
- %X[WRQ :DWHU 7RZHU DQG 7UHDWPHQW 3ODQW
- %X[WRQ 3XEOLF :RUNV <DUG
-)HVVHQGHQ \$QQH\
-)HVVHQGHQ &HQWHU
- \$YRQ :DWHU 7RZHU DQG 3XPS 6WDWLRQ
- 5RGDQWKH :DWHU :HOO 3XPS
- 5RGDQWKH :DWHU 7RZHU
- (PHUJHQF\)HUU\ 'RFN +HOR /3 5RGDQWKH
- 5:6 &RPPXQLW\ &HQWHU
- %DVQLJKW %ULGJH
- 2UHJRQ ,QOHW
- +DWWHUDV ,QOHW
- 5RGDQWKH -XJ +DQGOH %ULGJH
- 136 +DWWHUDV ,VODQG 9LVLWRU &HQWHU



1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF ,QIRUPDWLRQ DQG \$QALYVH ,Q 917 Board

1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF ,QIRUPDWLRQ DQG \$QALYVH ,Q 917 Board

1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF ,QIRUPDWLRQ DQG \$QALYVH ,Q 917 Board



1& 2QH0DS 1& &HQWHU IRU 'HRJUDSKLF ,QIRUPDWLRQ DQG \$QALYVH ,Q 917 Board





Appendix E: CDC Social Vulnerability Index

