

Name of Plan: Albemarle Regional Hazard Mitigation Plan**Date Adopted: May 12, 2015****Location where copies are available for review: Town of Duck Administration Offices AND Town of Duck Website**

Action #	Description/Strategy	Hazard(s) Addressed	Relative Priority	Lead Agency / Department	Potential Funding Source	Implementation Status
DCK1	Continue to fund enforcement of current hazard mitigation regulations.	All Hazards	High	Town Council	General Fund	Town Council continues to annually fund Code Enforcement Position and maintain staff with Floodplain Management certification.
DCK2	Improve stormwater drainage in vulnerable areas	Hurricanes, Nor'easters, Flooding	High	Town Council, Town Staff	General Fund	NCDOT drainage study completed. Additional work continues to resolve localized roadway flooding as funding and resources become available. The Town has identified low lying areas through GIS mapping and associated flood risks to those areas resulting from rain events. The Town is working on developing an emergency floodwater management plan for review and consideration by NC WQROS to address these areas. The Town also continues to implement small stormwater management projects along NC12 to mitigate flooding and standing water. Drainage Projects along NC12 between Marlin Drive and Cook Drive, between Snow Geese North and South, between Sound Sea Avenue and Acorn Oak Avenue, and from Flight to Oyster Catcher have been funded and completed. Additional funding is budgeted for fiscal year 2018-2019 with improvement locations TBD.
DCK3	Adopt and apply development policies that balance protection of natural resources and fragile areas with residential and economic development	Hurricanes, Nor'easters, Thunderstorms, Wildfire, Flooding	Medium	Town Council	General Fund	Adopted Town Code amendments including Tree and Vegetation Preservation, Land Disturbing Activities, Beach and Dune Management, Wind and Solar Energy, Ocean and Sound Overlay, Parking, Lot Coverage, Low-impact Development/Stormwater Management, Standards for Fill and establishment of allowances for Living Shorelines.
DCK4	Develop policies that minimize threats to life, property, and natural resources resulting from development located in or adjacent to hazard areas, such as those subject to erosion, high winds, storm surge, flooding, or sea level rise	Hurricanes, Nor'easters, Thunderstorms, Wildfire, Flooding	Medium	Town Council	General Fund	Adoption of revised Flood Insurance Rate Maps and Flood Damage Prevention Ordinance, Local Participation in CAMA LPO program, completed enrollment in FEMA Community Rating System, Enforcement of NC State Building Code Revisions and Amendments including Wind-Borne Debris Provisions. The Town has also revised policies related to oceanfront development including additional setbacks for accessory structures, new dune walkway standards, and remedies for structures encroaching on the ocean beach. Annual beach profile surveys initiated in 2017 to assess changing shoreline patterns.
DCK5	Develop location, density, and intensity criteria for new, existing development and redevelopment including public facilities and infrastructure so that they can better avoid or withstand natural hazards	Hurricanes, Nor'easters, Thunderstorms, Wildfire, Flooding	Medium	Town Council	General Fund	Town Code revisions including lot coverage regulations, limitations on residential dwelling size, increased setbacks for accessory structures, additional elevation requirements for V-Zone structures and incentives for use of permeable and semi-permeable materials for driveways and parking have been adopted. Council consideration and public hearing regarding additional limitations on development through house sf limitations and increased setback requirements expected 9/5/2018.

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DCK6	Identify areas most at risk and investigate strategies to reduce risk from wild land/urban interface fires	Wildfire	Medium	Fire Department, Town Staff	General Fund	Fire department staff will be utilizing resources to include utilizing new GIS mapping tools to identify areas that may be vulnerable in order to determine effective risk reduction strategies.
DCK7	Collaborate with Duck Fire and Town Staff to educate the homeowners, developers and landscapers on designing fire safe communities.	Wildfire	Medium	Fire Department, Town Council	General Fund	Fire department staff is initiating a phased approach with Phase I implementation focusing on education and awareness. Future phases will look at regulatory implementation and a formalized plan.
DCK8	Develop dune maintenance education materials and make available online.	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Staff, Hired Consultant, Division of Coastal Management	General Fund, Grant Fund	Town distributes information regarding proper sand fence installation techniques and native vegetation information; the Town also provides copies of the NC Sea Grant Publication "The Dune Book" upon request. Implementation of volunteer based beach planting program November, 2017 with funding expected to be continued.
DCK9	Provide information on effective construction techniques for coastal communities	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Staff	General Fund	Continue to provide FEMA/NC Department of Insurance publications on Coastal Construction Techniques. Coastal Construction training scheduled 8/2018 and re-work of Floodplain webpage expected to begin 9/2018.
DCK10	Enroll in the FEMA Community Rating System and take advantage of the various mitigation strategies promoted by this program	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council, Town Staff	General Fund	Enrollment in the program has been completed. However, the Town continues to develop actions and strategies that will lower its CRS rating and therefore provide lower flood insurance premiums to property owners within the Town.
DCK11	Research the use and storage of propane and develop an ordinance to regulate these storage tanks	Hurricanes, Nor'easters, Flooding, Erosion	High	Fire Department, Town Staff	General Fund	Since the use and storage of propane is regulated by the NC Dept. of Agriculture it was the consensus of the OBX multi-jurisdictional CRS users group to remove this from proposed changes to model floodplain ordinance and therefore we are recommending removal of this action item.

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DCK12	Mitigate ocean over wash and sound erosion by identifying vulnerable areas, developing public outreach information and disseminating this information to the public.	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	The Town has been monitoring high oceanfront erosion areas by documenting storm damage and taking photos/video. The Town has used GIS information provided by Dare County and the North Carolina Division of Coastal Management to monitor movement of the oceanfront shoreline. Additionally, a beach erosion study has been completed for the Town by the USACOE and Coastal Planning and Engineering which documents erosion patterns and existing conditions. Annual beach profile surveys were initiated in 2017 to assess changing patterns. NCDOT in conjunction with the Towns of Duck and Southern Shores conducted a drainage study on NC 12 to determine areas vulnerable to flooding. The Town still needs to develop a method to track sound side erosion. The Town distributes information regarding proper sand fence installation techniques and native vegetation information; the Town also provides copies of the NC Sea Grant "The Dune Book" upon request. The Town implemented a volunteer based beach planting program November, 2017.
DCK13	Increase the amount of open space throughout the town by seeking land donations or making land purchases. Develop an open space plan to further enhance these areas.	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	The Town purchased an 11-acre park in the center of the Village Commercial area which is partially maintained as open space. The Town is in the process of purchasing a 1.5 acre parcel in the Village Commercial District. Municipal plans for development have not yet been determined, however we may expect a component of open space since environmental stewardship is a key component of the Town's 2027 Vision. Since the Town is 90 percent developed and there are few areas available to purchase and maintain as open space. Town funds for property acquisitions are limited. Future activities in this area will largely depend on the success of the Town in acquiring property with available grants.
DCK14	Support programs and initiatives to annually assess shoreline changes (erosion and accretion)	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	Ongoing – The Town has been monitoring high oceanfront erosion areas by documenting storm damage and taking photos/video. The Town has used GIS information provided by Dare County and the North Carolina Division of Coastal Management to monitor movement of the oceanfront shoreline. Additionally, a beach erosion study has been completed for the Town by the USACOE and Coastal Planning and Engineering which documents erosion patterns and existing conditions. The Town has enacted an additional tax to support beach management activities, and annual beach profile surveys were initiated in 2017 to assess changing patterns. It is anticipated that some of the revenue will be used in future years to collect detailed beach and dune profile information that will allow the Town to track shoreline change.

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DCK15	Develop/Update policies to deal with encroaching development on the Town beaches and to preserve the Towns dune system.	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	The Town has adopted an ordinance to limit the encroachment of structures on the beach. Additionally, new setbacks have been adopted for accessory structures such as pools and dune decks to provide additional protection to the dune system. The Town has also prohibited sandbags. Following the completion of the Town's 1.7 mile beach nourishment project, the Town adopted standard minimizing the use of stairways and beach walkway structures in the nourished beach.
DCK16	Stay informed and involved relative to Federal, State, and/or regional studies and initiatives concerning beach re-nourishment and maintenance	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	The Town participates in the annual program established by the Dare County Shoreline Commission to provide funds for beach maintenance. The Town actively participated in and completed a beach nourishment project in conjunction with Dare County and the Towns of Kill Devil Hills, Kitty Hawk and Southern Shores.
DCK17	Work with and support efforts by CAMA concerning beach re-nourishment and maintenance	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	The Town participates in the CAMA LPO program and issues permits for regulated beach activities. The Town has adopted a Beach and Dune Management ordinance to protect dunes and dune vegetation and has enacted ordinances related to oceanfront development including additional setbacks for accessory structures, new dune walkway standards, and remedies for structures encroaching on the ocean beach. The Town completed a 1.7 mile beach nourishment project in June 2017 and continues to monitor the nourished beach and has implemented passive beach management and stabilization techniques.
DCK18	Seek ways to ensure residents receive information and links to technical assistance from the Division of Coastal Management concerning beach re-nourishment and maintenance activities and options such as sand fencing	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	General Fund	The Town provides information and issues CAMA permits to oceanfront property owners seeking to maintain their primary and frontal dunes. The Town website and social media is used to provide this information as well. Direct email communication is a common method for dissemination of information.

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DCK19	Lobby the NC Board of Transportation and the NC Department of Transportation and NC Turnpike Authority for the construction of the Mid-County Bridge	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council, NCDOT	NCDOT	The Town Council has issued several resolutions to support the construction of the Mid-Currituck Bridge and to identify the Town's preferred design alternative for the project. The Town has sent letters to NCDOT and NC Turnpike Authority Staff providing comments on the project studies that have been underway for several years. The Town frequently discusses the project at regular Town Council meetings and is kept informed of the status of the project by Town staff and residents who serve on a local committee to support construction of the bridge.
DCK20	Identify projects to address drainage issues on NC 12 as applicable	Hurricanes, Nor'easters, Flooding, Erosion	High	Town Council	NCDOT	Engineering has been completed to rectify localized drainage projects on other parts of NC 12 and funding is being provided in the CIP annually. Most recent completed projects include stormwater and Duck Trail improvements NC12 to mitigate flooding and standing water along NC12 between Marlin Drive and Cook Drive, between Snow Geese North and South, between Sound Sea Avenue and Acorn Oak Avenue, and from Flight to Oyster Catcher. Additional funding is budgeted for fiscal year 2018-2019 with improvement locations TBD.
DCK21	Develop an emergency communications network. Maintain a roster of business owners and homeowners associations.	All Hazards	High	Town Council	General Fund	This Town is actively maintaining this information. This information is now also maintained in a web-based format for easy external access.
DCK22	Continue effective public information program to disseminate data on all hazards.	All Hazards	High	Town Council	General Fund	Continue collaboration through the County's Joint Information Center (JIC) and Emergency Management tools such as regroup have improved communication to the general public regarding hazards
DCK23	Continue public education materials to educate beachgoers on beach safety (rip currents, beach holes, beach fires, etc.)	Rip Currents	High	Town Manager, Public Information Officer, Ocean Rescue	General Fund	Annual and in-season evaluations and reviews occur regarding staffing, life-guard stand locations, and effective means to communicate threats; i.e. social media, life guard advisories, use of flag notification systems and signage at beach access locations.

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DCK24	Provide funding for stormwater improvements.	Hurricanes, Nor'easters, Thunderstorms, Flooding	Medium	Town Council	General Fund	Town/NCDOT have completed major stormwater project on NC 12 in South Duck. Engineering has been completed to rectify localized drainage projects on other parts of NC 12 and funding is being provided in the CIP annually. Most recent completed projects include stormwater and Duck Trail improvements NC12 to mitigate flooding and standing water along NC12 between Marlin Drive and Cook Drive, between Snow Geese North and South, between Sound Sea Avenue and Acorn Oak Avenue, and from Flight to Oyster Catcher. Additional funding is budgeted for fiscal year 2018-2019 with improvement locations TBD.
DCK25	Develop good construction materials information.	Hurricanes, Nor'easters,	High	Planning Board	General Fund	Partially Complete – Town maintains links to FEMA and Division of Coastal Management websites regarding NFIP and CAMA. Additional information needs to be provided regarding coastal construction techniques, retrofitting, and anchoring of pools. Coastal Construction training scheduled 8/2018 and re-work of Floodplain webpage expected 9/2018.
DCK26	Identify available property for open space.	Hurricanes, Nor'easters, Coastal Erosion, Wildfire.	High	Town Council	General Fund	The Town purchased an 11-acre park in the center of the Village Commercial area which is partially maintained as open space. The Town is in the process of purchasing a 1.5 acre parcel in the Village Commercial District. Municipal plans for development have not yet been determined, however we may expect a component of open space since environmental stewardship is a key component of the Town's 2027 Vision. Since the Town is 90 percent developed and there are few other areas available to purchase and maintain as open space. Future activities in this area will largely depend on the success of the Town in acquiring property with available grants.
DCK27	Develop and maintain the open space.	Hurricanes, Nor'easters, Coastal Erosion, Wildfire.	High	Town Council	General Fund	The Town drafted a Municipal Property Master Plan in 2004 in order to develop the Town Park property which and this has now been completed. It is anticipated that amendments to this plan will be necessary with the acquisition of the new 1.5 acre parcel that is expected to occur in the summer/fall of 2018. No other open space areas are currently being pursued for acquisition by the Town.
DCK28	Lobby the NC Board of Transportation and the NC Department of Transportation.	Hurricanes.	High	Town Council	NCDOT	NCDOT has completed a project to raise NC 12 in the southern portion of Town to address a flooding issue and continues to work with NCDOT to develop solutions to localized drainage problems. The Town recently completed the installation of Phase I of its Comprehensive Pedestrian Plan which included a sidewalk with both landscaping and stormwater features.
DCK29	Continue to research methods to disseminate information.	Hurricanes, Nor'easters, Tornadoes.	High	Town Council	General Fund	Major improvements have been made to communicate with stakeholders. Use of social media and internet based communication tools has drastically improved the Town's ability to disseminate and receive information.
DCK30	Continue to identify who needs natural hazards information.	Hurricanes, Nor'easters, Tornadoes.	High	Town Council	General Fund	Major improvements have been made to communicate with stakeholders. Use of social media and internet based communication tools has drastically improved the Town's ability to disseminate and receive information.

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DCK31	Continue to develop/disseminate this information (dune protection, wind, erosion).	Hurricanes, Nor'easters, Tornadoes.	High	Town Council	General Fund	Major improvements have been made to communicate with stakeholders. Use of social media and internet based communication tools has drastically improved the Town's ability to disseminate and receive information. Direct email notifications are utilized when applicable along with the County's regroup notification system.
DCK32	Continue to research methods to get information to citizens.	Hurricanes, Nor'easters, Tornadoes.	High	Town Council	General Fund	Major improvements have been made to communicate with stakeholders. Use of social media, internet based communication tools, and the County's regroup notification system has drastically improved the Town's ability to disseminate and receive information.
DCK33	Develop/disseminate hurricane information to provide to tourists.	Hurricanes, Nor'easters, Tornadoes.	High	Town Council	General Fund	Major improvements have been made to communicate with stakeholders. Use of social media and internet based communication tools has drastically improved the Town's ability to disseminate and receive information. Collaboration through the County's Joint Information Center (JIC) and Emergency Management tools such as their regroup notification system have improved communication to visitors.
DCK34	Continue to disseminate the information through realtors and businesses.	Hurricanes, Nor'easters, Tornadoes.	High	Department of Community Development	General Fund	Major improvements have been made to communicate with stakeholders. Use of social media and internet based communication tools has drastically improved the Town's ability to disseminate and receive information. Collaboration with Duck Merchant's Association initiated and maintained.
DCK35	Develop and maintain a database of contact information for oceanfront and soundfront property owners where storm damage is likely to occur.	Hurricanes, Nor'easters, Coastal Erosion.	High	Department of Community Development	General Fund	This information has been collected and is being actively maintained by the Town. <i>New Action Item:</i> Develop soundfront property owner contact information database for rapid distribution
DCK36	Develop a method to post storm damage information on the Town website including property specific damage information.	Hurricanes, Nor'easters, Coastal Erosion.	High	Department of Community Development	General Fund	Property specific data has been posted on the Town's website via spreadsheet as it is collected by Damage Assessment teams. Photos of general damage have been posted to Facebook and other social media outlets to provide a summary of storm impacts. Direct email notifications are utilized when applicable.