

NASSAU COUNTY LOCAL MITIGATION STRATEGY



2021-2025

A Multi Jurisdiction Mitigation Plan for the City of Fernandina Beach, Town of Callahan, Town of Hilliard and Nassau County. Developed by Nassau County Emergency Management Planners and the Nassau County LMS Task Force

The LMS Task Force's Mission is to Reduce Vulnerabilities to Natural Hazards, Improve Health and Safety, and Create a Disaster Resilient Community through Local and Regional Public-Private Partnerships.

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Promulgation Resolutions

The governing bodies below have read this document and accept it as the 2021-2025 Local Mitigation Strategy for Nassau County and its municipalities. It is understood that this is a living document, to which additional mitigation project proposals, once they are evaluated and ranked by the Nassau LMS Task Force, may be added at any time during the LMS life cycle. Likewise, project proposals may be removed from the prioritization list at the request of the submitter, upon completion, or if community needs and priorities change.

Nassau County

County Manager and Board of County Commissioners

Date: January 7 2022

City of Fernandina Beach

City Manager and City Commissioners

Date: January 13 2022

Town of Callahan

Mayor and Town Council

Date: May 20 2021

Town of Hilliard

Mayor and Town Council

Date: June 23 2021

Florida Division of Emergency Management

Letter recognizing formal adoption by unincorporated Nassau and all three municipalities

Mitigation Bureau Chief

Date: March 2 2022

Executive Summary

Nassau County, Florida, faces a variety of natural and man-made hazards that could affect the lives and property of the community and visitors. This report investigates natural and man-made hazards to seek an understanding of their effects and propose mitigation strategies that would reduce or eliminate these effects.

This Local Mitigation Strategy (LMS) is an organized and coordinated process of assessing potential hazards and identifying cost-effective actions that will reduce or eliminate the impacts of these hazards. Nassau County has identified a number of hazards that the County is susceptible to, and evaluated the relative risk, frequency, and vulnerability of those hazards. The LMS and emergency management team acknowledge that some hazards may impact other areas both in the State of Florida and nationally, but do not have any effect on the county. Should any of these hazards cause a change in the future, the LMS Working Group will incorporate said changes post disaster. Hurricanes are the most common natural hazard in Nassau County and they have greatest potential for significant financial and human impact. However, the other hazards can also result in significant losses. Loss of life and other irreplaceable impacts would also be expected from these hazards. Potential impacts for these other hazards are also outlined in the plan.

The LMS Working Group identified and prioritized project-planning goals following the completion of the hazard vulnerability assessment. These goals represent the County's mission for reducing vulnerabilities caused by these hazards.

The plan also prioritizes the mitigation proposals and identifies the entities responsible for implementing the action, including State and Federal agencies, the county, municipal officials, property owners and others. Sources of potential funding are also identified in the plan. The action items contained in the plan are expected to be implemented in voluntary cooperation with property owners and other entities. The plan contains guidance for evaluating and maintaining the plan over time, including opportunities for revising the plan's contents.

Since Nassau is a small-medium sized county with a very small tax base and scant resources for mitigation, the completion of proposed projects will be dependent on identifying external (i.e. federal, state, and private) funding sources. Understanding that the vast majority of mitigation grant programs require local “matching funds” or are provided only on a “contract reimbursement” basis, county and municipal government agencies will need to budget for the local portion of the mitigation strategy. The effectiveness of this comprehensive mitigation strategy will be determined by the successful funding and completion of the projects proposed to reduce losses to natural hazard impacts and support health and safety of the community, its infrastructure and resources.

Introduction and Planning Process

Authorities and Scope

The *Robert T. Stafford Disaster Relief & Emergency Assistance Act* was amended in 2000 by the *Disaster Mitigation Act*, requiring local governments to adopt comprehensive multi-hazard mitigation plans to reduce emergency assistance expenses and as a condition for receipt of federal grants that support mitigation projects.

The reduction of property damage, injuries, deaths, and disaster recovery costs by lessening the impact of natural hazards is a component of the National Incident Management System (NIMS) and one of the five mission areas described in the National Preparedness Goal published in 2011: “A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.” The Code of Federal Regulations (**44 CFR ss201.6**) specifies standards that must be met before the Federal Emergency Management Agency will approve a local hazard mitigation plan, and section **252.38(2)** of the Florida Statutes and **27P-6.0023** of the Florida Administrative Code require mitigation as a component of every Florida county’s Comprehensive Emergency Management Plan (CEMP).

Understanding that it is more cost-effective to prevent losses than to repair and recover, Nassau County Emergency Management advocates proactive hazard mitigation policies and actions at the municipal and county levels to reduce vulnerabilities and improve disaster resilience as an investment in the community’s long-term sustainability and future economic growth. Utilizing the Nassau County Threats, Hazards, Impacts, and Risks Assessment (*THIRA – an internal, security-sensitive document, not publicly distributed*), representatives from the public and private sector identifies current and future vulnerabilities and suggests projects to address those issues.

This Local Mitigation Strategy (LMS) addresses the risk-reduction strategies stakeholders in Nassau County, the City of Fernandina Beach, Town of Callahan, and Town of Hilliard consider priorities for the next five years.

Planning Process

The Nassau County LMS was first developed in 1998 and has been updated every 5 years with contributions from various subject matter experts. The hazard mitigation and disaster preparedness planning processes are cyclical and the LMS is a living document. It is continuously reviewed by stakeholders and discussed at quarterly meetings in order to align with the State of Florida’s update manual guidelines. Nassau County Emergency Management

regularly publishes preparedness and mitigation articles in local print and electronic media in order to engage the public and encourage participation in planning.

Nassau County Emergency Management (NCEM) staff have assumed sole responsibility for facilitation of LMS Task Force meetings, correspondence, recording of meeting minutes, and the distribution of project proposals to reviewers, maintenance of the project priority list as ranked by the Task Force members, and coordination of regular reviews and updates to the LMS. Each constitutional jurisdiction participated in the assessment and revision of the current document. Similarly to the plan drafted in 2015, this new revised LMS will be approved by the State of Florida Division of Emergency Management and Federal Emergency Management Agency, and then it will be presented to the three municipalities' Town Councils and Nassau's Board of County Commissioners for adoption and promulgation.

The task force for the LMS consists of county and municipal government officials, non-governmental agency officials and private stakeholders. **Appendix A** summarizes the list of members who participated and their affiliations. Neighboring counties also provide subject matter expertise and contribute ideas for the best-practices throughout the mitigation planning cycle. Additional members are recruited through word of mouth, civic networks and is also open to all residents interested in disaster preparedness and mitigation.

Nassau County Emergency Management maintains an email distribution list of stakeholders, and interested members of the public. Email invitations are sent to everyone on this distribution list inviting them to attend and participate in the regular LMS meetings. All LMS meetings are open to the public and are also advertised through various social media platforms and public announcements in Nassau County's official online public newsletter, *The County Insider*. (See examples in **Appendix B.**)

Members of the task force meet quarterly at the Emergency Operations Center to update and discuss the current mitigation strategies. Due to unforeseen circumstances such as hurricanes or the COVID-19 pandemic, some regularly scheduled meetings were cancelled. The task force also meets in person, by phone, via email and video chat to collaborate and develop new projects in between the regularly scheduled meetings. *The County Insider*, Nassau County's online public newspaper, and the Nassau County Emergency Management social media pages have regularly published articles about preparedness and mitigation, with examples located in **Appendix C.**

LMS meetings include participants from a variety of areas, including governmental agency planners, flood plain managers, building officials, public works and utility company planners,

and private stakeholders (see **Appendix D** for examples of meeting agendas, minutes and participant lists), as well as members of the public. Subject matter experts from neighboring counties and the Florida Division of Emergency Management’s Mitigation and Community Rating System departments provided overviews of the program from their perspectives and answer attendee’s questions. The Nassau County LMS Task Force members were then charged with identifying vulnerabilities to natural hazards, assessing local programs and policies that affect mitigation, and proposing changes or new projects to protect and harden susceptible structures and systems critical to the public’s health, safety, and welfare.

Mitigation workshops and public appeals for input on a variety of topics including hazard concerns, mitigation project ideas and discussion workshops were used to assess the multiple threats that could impact the area. Increased efforts were made to solicit ideas, comments, and information from the general public. These efforts include providing access to the Local Mitigation Strategy via the Nassau County website, allowing the public an opportunity to attend and comment at regular LMS meetings, public information workshops, presentations at County Commission Meetings as well as a number of public outreach events throughout the year. Any feedback received from these events is presented to the LMS Working Group for review of applicability of inclusion into the Nassau County LMS.

Use and Incorporation of Existing Documents

Nassau County’s year-long Threat and Hazard Incidence Risk Assessment (THIRA – not publicly distributed) process identified many preparedness and mitigation weaknesses (although not necessarily related to natural hazards) such as emergency medical and hospital capacity for mass casualty incidents, rural and water-based fire-fighting capacity, hazmat decontamination equipment and protocols, public information and risk communications capabilities, active shooter response and recovery plans, and many other weaknesses that could be addressed.

Nassau County also undertook a Vulnerability Assessment, with funding through a Florida DEP Resilient Coastlines Program Grant. This grant work followed the Peril of Flood amendments to the Comprehensive Plan. The results of this assessment guided the LMS taskforce and a summary of the report findings is given in **Appendix E**.

The Local Mitigation Strategy Update Manual from the Florida Division of Emergency Management was also used along with the Florida Hazard Mitigation Plan for additional sources and guidance on updating the mitigation plan. Governing documents for each jurisdiction such as local policy documents and a variety of internet sources that detail historical occurrences were utilized as well. Sub-committees were also formed to concentrate on identification of

other local risks and vulnerabilities to natural hazards and to develop potential mitigation initiatives.

Plans, Studies, Reports and Other Documents Reviewed

- Nassau County Comprehensive Plan
- Nassau County Emergency Management Comprehensive Emergency Management Plan (CEMP)
- NCEM Threat and Hazard Incidence Risk Assessment (THIRA)
- FDEM Enhanced State Hazard Mitigation Plan
- FDEM Local Mitigation Strategy Update Manual.
- NE Florida Regional Council Statewide Regional Evacuation Study
- Western Nassau Heritage Preservation Vision Book
- Vulnerability Assessment Florida DEP Resilient Coastlines Program Grant

These documents were used to obtain the goals, objectives and policies that are incorporated into the LMS document as guiding principles. Efforts are made in current and future planning activities to review new documents and documents not previously reviewed in order to cover the wide spectrum of plans within the County and State. There are always new plans and studies being written and developed that have not yet been reviewed and incorporated into the LMS, but as the LMS is a living document they will be incorporated in the current planning cycle and future reviews of the LMS.

County Profile, Demographics and Land Use

Development and Projected Use

Nassau County has been inhabited since approximately 1000 AD, when the native Timucuan Indians occupied the area. The French arrived in 1562 and were quickly taken over by the Spanish, who established a Franciscan mission on the south end of the island. The British invaded in 1702 and held the coastal area until the Spanish took the land again in 1783. For a brief period of time, Amelia Island was claimed in the name of the Scottish and later by Mexico before being held by the U.S. in trust for Spain. Construction of the pentagonal Fort Clinch began in 1847 as a Third System Defense structure. The Confederate Army took control during the Civil War until Federal troops captured it in 1862. In the 1900s Amelia Island saw its first tourist boom and soon after residents began commercial fishing and shrimping operations, and the paper mill industry gained a foothold.

Nassau County is mostly rural and located in the northeastern most corner of Florida, on the border of Georgia. It occupies a total area of 726 square miles, 652 of which are land. This also includes a heavily populated barrier island. The county features beaches in the east, while having timberland and marshes in the west. There are year-round opportunities for outdoor activities along and Amelia Island offers a state park, historic charm and large resorts.

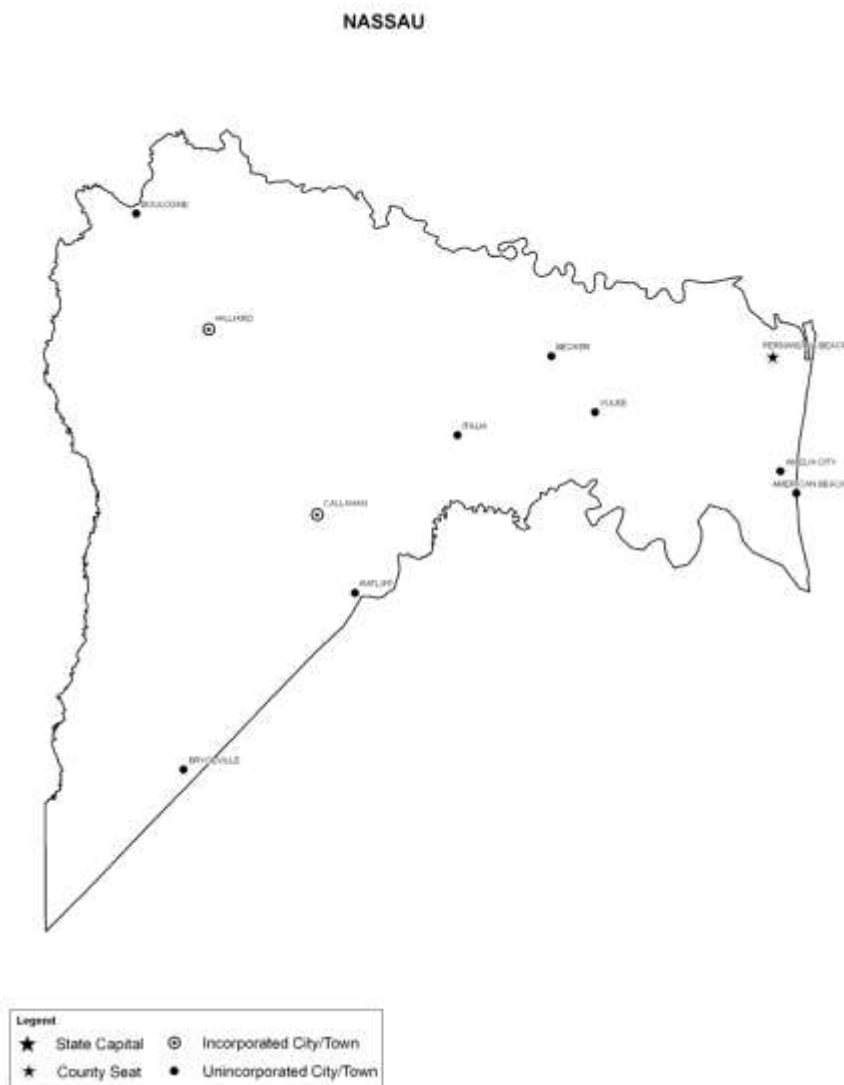
The concave shoreline accompanied with the location on the Atlantic Ocean makes the coast of Nassau County extremely vulnerable to storm tide flooding. A natural border is created between Georgia and Florida in the north and northwest by the St. Mary's River. The inlet to the river has been stabilized and maintained by jetties and dredging operations since the late 1800's. The depth and width of the channel are 51 ft and 500 ft respectively. Nassau/Sound River separate Nassau and Duval counties, with no jetties or active dredging. There are frequent changes in shoreline configuration.

The largest tributary of the Nassau River is Thomas Creek, which also creates a part of the Nassau and Duval County border. The creek is surrounded by 5540 acres of swampy, state conservation land. Half of these 5540 acres is set aside for wildlife management. These surrounding marshes are also one of the 41 aquatic preserves for the State of Florida.

Bordered to the south by Duval County (the city of Jacksonville), Nassau County has grown from 76,619 people in 2014 to an estimated 85,832 people in 2018. The county is predicted to outpace growth in the regional center of Jacksonville Metropolitan Statistical Area over the next 15 years. While growth is a concern, hazard vulnerabilities associated with population

concentrations along the main waterways in the county, the Atlantic Ocean, St. Mary's River, Nassau River and the Intracoastal Waterway, are a concern to emergency management.

There are three incorporated municipalities in the county, two of which are small rural communities. The Town of Callahan in the inland southwest has an approximate population of 1,353 as of 2018. In the inland northwest, the Town of Hilliard has a population of 3,209 as of 2018. The City of Fernandina Beach has a population of 12,062 in 2018, a small increase from 2014. Fernandina Beach has a median owner occupied home value of \$316,500 and is located on the north end of Amelia Island. It attracts more than 500,000 tourists a year with its beach resorts, municipal airport, recreational facilities, historic national sites and aquatic preserve.



Nassau’s population density is approximately 124 people per square mile, with the majority of residents living in the unincorporated areas of the county. However, a large number of people occupy the coastal and waterway frontage areas. 88% of Nassau County’s 39,981 housing units were built more than 10 years ago. 21.2% of the dwellings in the county are mobile homes, which are common in the rural inland areas. Amelia Island does have four of the eleven mobile home parks, which only further increases their vulnerabilities to wind and flood hazards. These prefabricated homes are more vulnerable to hail, wind, lightning, and water hazards than those built to current code standards. Rural residents throughout the county live in close proximity to forest land, making them more susceptible to droughts and wildfires. Other than Fort Clinch, there are no specific community assets that are more at risk than any privately owned business or residential building. Consequences from hazards such as severe thunderstorms (i.e. strong winds, rain inundation, lightning strikes, and hail) are possible anywhere in the county; the inconveniences and potential losses (e.g. power outages, roof damage) are proportional to the operation or economic situation of the resident. For instance, a lightning strike causing electrical surge damage at a large fiber mill can be quite costly when lost income is factored in with repairs, but would have less of an impact to its owners than the out-of-pocket costs a resident who lives paycheck-to-paycheck incurs to repair lightning damage to their home and replace appliances.

According to the Florida Department of Transportation there are five recognized dams in the county, all of which are privately owned. The Walker Dam and Hercules Lake Dams 1, 2 and 3 on Pigeon Creek, and the First Baptist Church Retreat Camp Dam are all in good to excellent condition according to inspections (reports on file with Nassau County Emergency Management). Flood vulnerabilities downstream from these private agricultural dams are minimal because development in those areas is sparse.

The most recent Flood Insurance Study (FIS) of Nassau County was published by FEMA in August of 2017 (FEMA Document FIS#12089CV001B). As of 19 November 2019, the FEMA National Flood Insurance Program (NFIP) reported 10,770 policies in force throughout Nassau County: 7,381 in unincorporated areas, 3348 in the City of Fernandina Beach, 28 in the Town of Callahan and 13 in the Town of Hilliard. Based on their jurisdiction’s active participation in the Community Rating System (CRS). NFIP policy holders in the City of Fernandina Beach and Unincorporated Nassau County receive premium discounts as indicated by the table below.

Table 1.
How much discount property owners in your community can get

Rate Class	Discount for SFHA*	Discount for Non-SFHA**	Credit Points Required
1	45%	10%	4,500 +
2	40%	10%	4,000-4,499
3	35%	10%	3,500-3,999
4	30%	10%	3,000-3,499
5	25%	10%	2,500-2,999
6	20%	10%	2,000-2,499
7	15%	5%	1,500-1,999
8	10%	5%	1,000-1,499
9	5%	5%	500-999
10	0	0	0-499

* Special Flood Hazard Area

** Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. Although they are in SFHAs, Zones AR and A99 are limited to a 5% discount. Premium reductions are subject to change.

Source: FEMA B 573 /2018 National Flood Insurance Program Community Rating System.

The 2018 U.S. census estimates the median household income at \$66,297; 10.4% of the population lives in poverty and 11.3% have no health insurance. This population is more likely to need public assistance during disaster response and recovery, which is why they are at more concern to policy makers.

Population		Housing	
Total Population	88,625	Total Housing Units	39,981
Population in Households	84,882	Owner-Occupied Units	25,882
Population in Families	71,859	Renter-Occupied Units	6,802
Total Households	32,624	Vacant Housing Units	7,357
Median Household Income	\$66,297	Median Home Value	\$225,300
Per Capita Income	\$35,335	Median Rent Value	\$1,058

The Florida Population Study conducted in January 2020 by the University of Florida’s Bureau of Economic and Business Research used a combination of linear, exponential, share-of-growth, shift-of-share, and constant population techniques to project, in five-year increments, the following scenarios for increases in the permanent Nassau County resident base from 2020 through 2045:

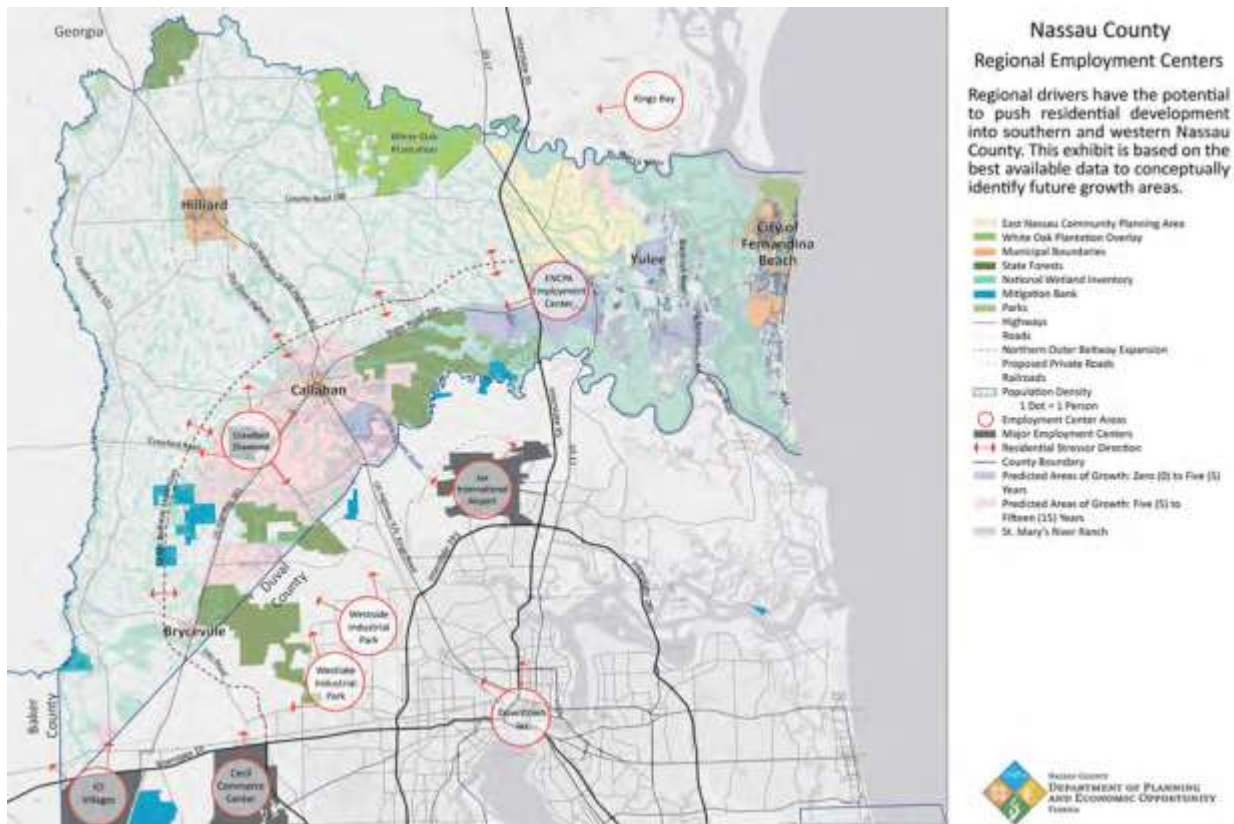
Nassau Co. Population Estimates	2020	2025	2030	2035	2040	2045
Low	81600	86200	89400	91200	92100	92500
Medium	86900	95800	103100	109100	114300	118900
High	92100	104300	116100	127200	137500	148000

Land Use and Development Trends

Nassau County is a regional commerce hub with a commercial port on the Intracoastal Waterway as well as numerous Seaboard Coastline Railway tracks crisscrossing through the county. Rayonier's Terra Pointe real estate subsidiary operates the 1,814 acre Crawford Diamond Industrial Park in Callahan. It features dual Class I (CSX and Norfolk Southern) rail frontage, and is zoned for up to 10.5 million square feet of industrial use as an intermodal inland logistics center, including manufacture, assembly, warehouse and distribution operations. Enterprise Florida, the state's economic development agency, supports its expansion as a certified "mega-site." No physical development of Crawford Diamond has taken place at the time of writing this LMS update but the LMS taskforce will be considering the impacts of future development in this area in upcoming plan updates.

Designated at the heart of the county is the East Nassau Community Planning Area (ENCPA), a 23,000+ acre multi-sector mixed-use development along northeast I-95 and the St. Mary's River, which is also owned and managed by Rayonier/TerraPointe. This planned community known as Wildlight is a long-term project, through 2030 and beyond, will be established in phases. State Law requires Detailed Specific Area Plans (DSAPs) to be consistent with the long term master plan. The first approved DSAP features an Employment Center that will eventually boast 7.1 million square feet of office, commercial, educational, and medical facilities, light to medium industrial accommodations, plus more than 4,000 residential units. Maximum planned build-out for the ENCPA Sector is 24,000 dwelling units and 11 million square feet of non-residential facilities, which will require approval of additional DSAPs over time. Since the last update of the LMS the amount of development of this area has been small however the LMS Task Force will be considering the impacts of future development in this area in upcoming plan updates.

Nassau Crossing Industrial Park in nearby Yulee is an emerging 130 acre site paralleling 4000 linear feet of rail line. According to the Nassau County Economic Development Board, the site has plans to add over 1.5 million square feet of warehouse and cross-dock space to accommodate an anticipated increase in demand for distribution and logistics services in the near future. Blue Linx (formerly the Nassau Tradeplex), also in Yulee, is a 200 acre industrial park housing Georgia Pacific Railroad's Northeast Florida Distribution Center along with several manufacturing and machining enterprises. Additional business and logistics centers are planned, such as the 92 acre light industrial site near the intersection of Interstate 95 and US Highway 17. Each of these operations will require frequent transportation of potentially hazardous materials.



The county's electric, natural gas, and water services are provided by multiple companies, some with lines that extend from neighboring counties: Florida Power & Light (Yulee/Callahan; see map below), Florida Public Utilities and Nassau-Amelia Utilities (Fernandina Beach/Amelia Island), and Okefenokee Rural Electric (Hilliard). Water treatment and waste-water treatment plants are located on the barrier island, as well as inland.

Although the two largest employers in Nassau County are local government and the A-rated school district (administrative offices located on Amelia Island), the West Rock Fernandina Beach Pulp Mill employs as many as 1000 personnel and contractors, and is the second-largest producer of containerboard in North America. Rayonier also processes pulp and employs up to 400 workers. Each facility utilizes large quantities of caustic chemicals. Based on the Environmental Protection Agency's CAMEO modeling software, a release of Extremely Hazardous Substances (EHS) from either of these facilities' largest containers could seriously affect population, environment, and critical facilities up to 13 miles in any direction. Although not a "natural hazard", Hazardous Materials release is discussed later in this document.

Rayonier Performance Fibers, headquartered in Fernandina Beach, produces thousands of metric tons of high-purity wood pulp, chemical cellulose, and industrial polymers annually. Their forest resources group manages 2.3 million acres of timberland across ten states;

134,611 acres of those predominantly pine forest in Nassau. The operation is surrounded by waterways protected from hazardous materials spills by a two foot soil berm. The Rayonier fiber mill on the island operates a dedicated stand-alone industrial wastewater treatment system for its liquid wastes. It also operates eight different high-efficiency scrubbers to treat air emissions.

The county's only hospital, 62-bed Baptist Medical Center Nassau, is also located on Amelia Island making it extremely vulnerable to storm surge flooding. The medical center's plan in the event of a tropical cyclone forecast is to completely evacuate well in advance of landfall, before high winds prohibit travel across the Shave Bridge. Other emergency services (i.e. law enforcement and fire rescue) would be forced to evacuate the island as well.

It is expected that by 2030 nearly 80% of the population will live in unincorporated Nassau County. Growth is expected to accelerate in the vacant areas close to critical waterways, wetlands, forests, and other important natural resources, and Nassau County realizes the importance of preserving the network of open space, woodlands, wildlife habitats, and parks. Officials are investigating partnerships with public and non-governmental organizations to coordinate conservation efforts and increase the county's "green infrastructure".

In addition to rural expanses and wetland conservation areas, in the northwest end of the county the Town of Hilliard is surrounded by timberland and is home to a major Federal Aviation Administration Air Traffic Control Center (AAATCC) which coordinates most of the southeastern U.S.'s commercial and civilian air traffic. Hilliard also has a small unpaved municipal airstrip (Hilliard Air Park) and rail lines which run through the center of the jurisdiction.

As land on Amelia Island, the "urban center" of the county, has become scarce, infrastructure and housing development is escalating in the central areas of the county east of I-95 along the State Road 200/A1A corridor. This trend is expected to continue as the county attempts to discourage urban sprawl and attract an appropriate mix of residences and businesses to the center of the county and promote financially sustainable land use patterns. The county's Future Land Use 2030 Projection Map (see **Appendix F**) illustrates a master plan for new development that integrates transportation, high value regional economic opportunity, and low cost public services while preserving valuable open space. The St Johns River Water Management District 2012 Land Assessment Implementation Plan recommended retaining all 16,008 acres of conservation land in the county (see map in **Appendix F**). Nassau is incorporating these design concepts into the county's Land Development Code and Economic

Development Program to promote coordinated resident and business-friendly centers with efficient transportation routes while continuing to protect its unique environmental assets.

Realizing that the U.S. is actively planning to expand offshore oil and gas exploration as nearby as 50 miles off the Nassau County shore (see diagram below of Proposed Oil and Gas Lease Program Areas), the Nassau LMS Task Force has considered impacts of seismic air-gun testing to marine wildlife and the potential consequences of a disaster akin to the BP oil spill if commercial off-shore drilling begins. Although the strong flow of the Gulf Stream could carry petroleum away from the beach, a spill would upset the fragile ecosystem and could damage the breeding and nesting grounds of protected species (e.g. sea turtles). However, no mitigation projects to address the hazard have been proposed at this time.



Hazard Risk and Vulnerability Assessments

Hazard Identification

The identification of natural hazards with the likelihood of impacting Nassau County and its Municipalities is a crucial step in the process of creating and maintaining a Local Mitigation Strategy. Task Force members reviewed historical weather, disease, fire, flood, and repetitive loss data. By determining the populations and properties most vulnerable to these natural hazards, projects can be developed to help prevent or reduce the resulting damage and losses. This section describes the natural hazards likely to impact Nassau County as well as potential effects and resulting losses the area could expect without mitigation. Some cross-cutting hazards, such as floods may occur in tandem with others (e.g. tropical cyclones, severe thunderstorms, storm surge, dam failure, tsunami, and sea-level rise can all result in flooding) and for simplification may be considered together when discussing impacts or mitigation strategies.

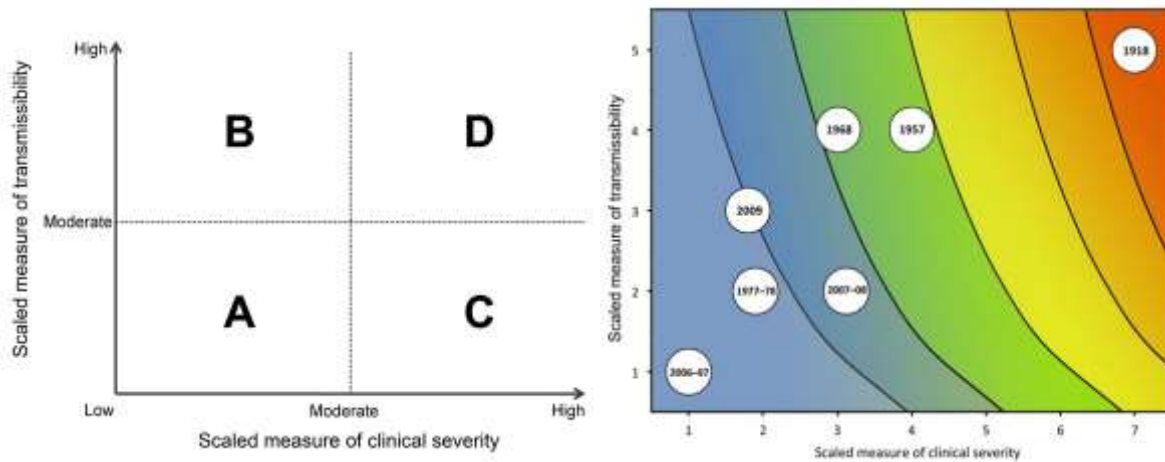
The LMS Task Force determined the following natural hazards serious or likely threats to Nassau County (Infectious Disease, Extreme Temperatures, Drought, Wildfires, Tornados, Floods/Flooding, Tropical Cyclones and Storm Surge, Coastal Erosion, Sea Level Rise, & Severe Thunderstorms). These hazards have the potential to create damage to infrastructure, personal or public property loss, economic failure, injury, illness, or death. Hazards that might be prevalent elsewhere but are not likely to significantly impact Nassau County are not included in this mitigation strategy. Specifically, because of Florida's flat terrain, avalanche and landslides are not considered an issue for Nassau County. Likewise, coastal northeast Florida is not predisposed to sinkhole incidents like the interior of the state experiences; nor is it subject to volcanic eruptions or significant earthquakes.

Infectious Disease

The 2009 H1N1 Influenza pandemic, 2013-14 Tuberculosis outbreak in NE Florida, the 2014 Ebola scare and the 2020 COVID-19 global pandemic bring to light the very real infectious disease hazard. Due to the ongoing 2020 COVID-19 global pandemic along with other factors such as population density, climate change, Amelia Island's attraction to tourists from all over the world, and the recent "Anti-Vaxx" movement, a mitigation strategy for infectious diseases is important to identify.

The Centers for Disease Control and Prevention (CDC) have developed a Pandemic Severity Assessment Framework (PSAF) in an attempt to judge the severity of a pandemic in the early

stages. The PSAF uses measures of transmissibility and clinical severity to provide an assessment of a pandemic.



https://wwwnc.cdc.gov/eid/article/19/1/12-0124_article

Recent exercise scenarios and real-world events have identified biosafety and healthcare needs/gaps in Nassau County: a joint public information and emergency alert/notification system and public health education programs were highest on the list, emergency personal protective equipment and supply caches, responder training, drills, and functional exercises of decontamination and disease control protocols followed as a close second.

Vaccination rates and case numbers of influenza have been well within the expected seasonal average throughout the years since the last LMS update. Although no case of Ebola virus was identified in Nassau County during the 2014 global scare, a local Public Health IMT was stood up to monitor disease status for several months and conducted training and exercises to ensure that all 911 call takers, health care providers, and EMS technicians were prepared to safely screen patients for possible infection.

Nassau County residents and visitors are not the only ones that could be affected by disease outbreaks. Rabies is an endemic problem throughout Florida, with at least 2 reported animal cases in 2020 in nearby Duval County and 2 animal cases in Nassau County in 2019. The climate and large wildland/urban interface make the spread of animal diseases easy as well. Small mammals and larger wildlife can be seen frequently throughout the county. Novel Influenza H7N9 and other high-pathogen avian influenza strains that might be carried by migratory waterfowl could affect both “back-yard” and native wild bird populations. Consistent biosafety practices and vaccination programs can mitigate the spread of animal diseases and zoonotics.

On March 1st, 2020 the Governor of Florida issued a Public Health Emergency for the state, followed by a State of Emergency on March 9th. This was after COVID-19 cases in the United States and the World started rising. On March 13th the schools were closed until spring break, which was further extended for the rest of the school year. All non-essential businesses such as restaurants, shopping malls and bars were closed along with many public spaces such as beaches. On the 25th September 2020 the Governor of Florida issued Executive Order 20-244 which moved Florida into phase 3 of recovery, essentially removing all Covid-19 related restrictions. As of September 25th, 2020 Nassau County had 2075 cases reported and 42 deaths.

Infectious diseases can have substantial economic impact. A major source of income for the county is tourist related. A reduction in visitors to the county due to an infectious disease outbreak either within the county or more widespread (e.g. SARS-CoV2) would cause a drop in revenue for the county and impact the level of services it can provide. A large outbreak of an infectious disease could have a significant impact on the county's one small 62 bed hospital and the health system in general. Nassau County is also home to a large population of retirees, so an infectious disease that disproportionately affects the elderly would also have a significant impact to the county's health system.

Nassau County attracts more than 500,000 tourists a year, mostly to the eastern part of the county, however workers within the tourist industry live throughout the county. Infectious diseases can be spread as infected individuals move around the county for work and personal reasons as such all jurisdictions are vulnerable to the impacts of infectious disease.

All areas of Nassau County are equally susceptible to infectious disease; as such a map of susceptible areas was excluded.

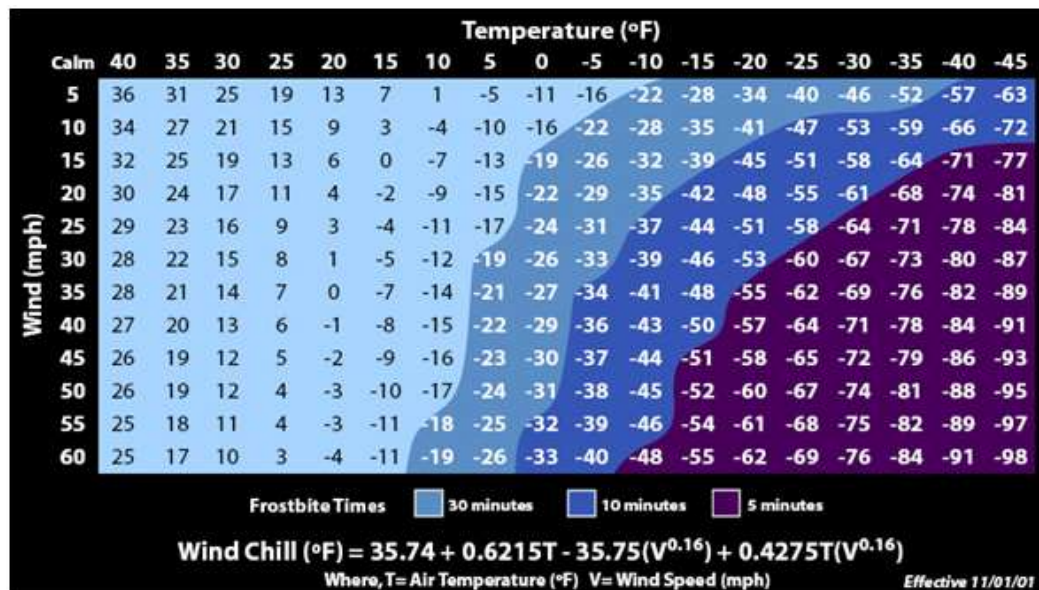
Extreme Temperatures

Cold

Freezes in Florida create a threat to the agricultural industry and homeless populations. Although north Florida experiences freezing temperatures during the winter months, including periodic "hard freezes" when temperatures dip to 25 degrees or less for sufficient time to freeze water pipes (typically four or more hours), Nassau County is not subject to "winter storm" conditions and the sighting of snowflakes, such as those filmed at the Nassau County EOC in early January 2015, is a relatively rare occurrence. Cold temperatures on the island are slightly less extreme than those inland, temperatures do not vary more than a couple of

degrees from one part of the county to another. Nassau only averages about 15 freezes per year, but overnight freezing temperatures can create a threat to the vulnerable “4 Ps”: people, pets, plants, and pipes; public advisories are issued in these situations. Nassau EM pushes the National Weather Service (NWS) warnings out via the Everbridge Emergency Alert Notification System and popular social media outlets like Facebook and Twitter. Nassau EM’s social media postings also help publicize shelter openings for those without a warm place to pass the night when temperatures are expected to drop below 45 degrees Fahrenheit. As illustrated in the NWS’s Wind Chill and Frostbite Chart below, freezing temperatures become even more dangerous to living things when wind is present.

Frost and ice accumulations can create enough weight to snap branches and bring down exposed power and communication lines; icy bridges and roadways can put drivers at risk. Freezing temperatures can impact the county by causing damage to agricultural crops, leading to economic hardship and causing burst water pipes in homes and buildings. Extended periods of low temperatures could also have an impact on the health and wellbeing of the elderly, the young and those with medical conditions.



Additional risks to health, safety, and property arise when space heaters, fireplaces, and generators are put into use without sufficient care and precautions. Since the past update to the LMS in 2015, there have been 54 instances of extreme temperatures, hot or cold, including Winter Storm Grayson. While these events have a very high chance of occurring, they pose a relatively low risk to the overall health of the county.

All areas of Nassau County are equally susceptible to extreme cold; as such a map of susceptible areas was excluded.

Heat

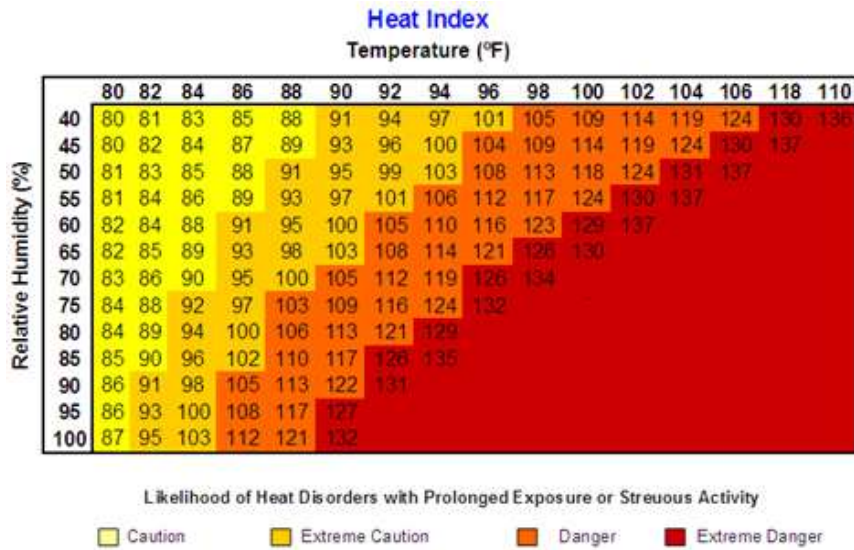
All Florida counties experience high temperatures throughout the late spring, summer, and early fall months, and Nassau County is no exception. Summer temperatures throughout the county regularly reach the well into the 90s, combining with humidity levels to generate heat indices reaching 105-115 degrees. (See National Weather Service Heat Index Chart next page.) As recently as July 2015, mid-day temperatures have reached 100+ degrees Fahrenheit across the area. Even with accompanying high humidity and flooding deluges brought by late afternoon thunderstorms, the dead vegetation from prolonged extreme heat provides good fuel for wildfires sparked by lightning. While high temperatures may feel slightly less extreme on Amelia Island or at the beach due to the sea breezes, the impacts of high heat and humidity affect humans, animals, plants, and public utilities service demand equally across the county.

Throughout northeast Florida “heat waves” occur most frequently between May and October. In 2014 David Keellings and Peter Waylen published a paper in *Applied Geography* (Volume 46, pages 90-97) describing the increased risk of heat waves in Florida using bivariate extreme value analysis. Their findings suggest upward trends in future heat wave risk with both incidence frequency and event intensity increasing throughout much of the state.

Impacts to structures and infrastructure are insignificant, although electricity system overloads from excessive air conditioning use can occur. Residents and visitors (especially the very young and elderly) who aren’t aware of the hazard or don’t take precautions are at risk for dehydration, heat exhaustion, heat stroke, or death. Health complications from heat waves and high humidity can strain the county’s scarce emergency medical service resources and its one small 62 bed hospital.

While July is the hottest month for Nassau County, the costal environment keeps the temperatures at an average of 92 degrees, compared to other counties in the state which can average 100+. The heat index, which factors in other things such as humidity, can hit around 110 degrees for Nassau County, which occurring in August of 2019 along with surrounding cities such as Jacksonville. These events are highly likely, and occur multiple times during the summer months.

All areas of Nassau County are equally susceptible to extreme heat; as such a map of susceptible areas was excluded.



Drought

Although humid, areas in North East Florida can experience periods of prolonged, abnormally dry weather which can cause a serious hydrologic imbalance in the affected area. Long-term lack of rainfall can endanger the agricultural industry, water supply, and tourism. A prolonged drought increases the natural fuel and risk for wildfires. Other environmental impacts to the coastal community are also a concern during drought conditions, with an escalating demand for irrigation water to offset the lack of rainfall and the resulting saltwater intrusion into the aquifer.

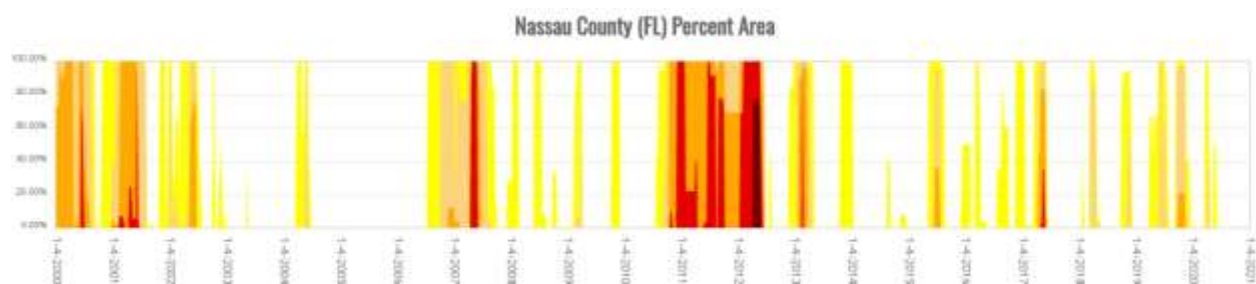
The US Drought Monitor Scale identifies areas of drought and labels them by intensity D0 to D4. Drought is defined as a moisture deficit bad enough to have a social, environmental or economic effects.

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Index (Percentiles)
D0	Abnormally Dry	Going into drought: <ul style="list-style-type: none"> • short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> • some lingering water deficits • pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> • Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> • Crop or pasture losses likely • Water shortages common • Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> • Major crop/pasture losses • Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> • Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

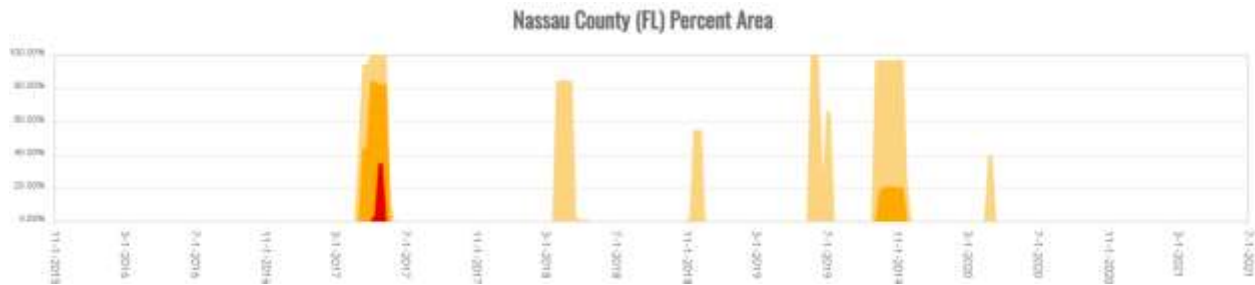
Source: <https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx>

The following graph shows the percent of Nassau County land mass experiencing drought conditions, from “D0/Abnormally Dry” (yellow) to “D4/Exceptional Drought” (maroon), over the twenty year period preceding this update of the LMS. The probability for recurrence is high.

Only on the island are the effects of drought on the flora and fauna somewhat lessened due to the high human population density and predominance of sandy beaches and brackish marshland. However, drought conditions can detrimentally affect the entire county’s economy by damaging crops, stressing available water supplies, and raising utility costs. Direct damage to structures, or critical infrastructure, is not a foreseeable issue.



Since the last LMS update, there have only been only 6 periods of drought in the county (see graph below). While a small number occurred, they can have lasting impact on health for both people and the environment. While moderate droughts can and have occurred, the county is not at high risk for extreme droughts due to the coastal climate.

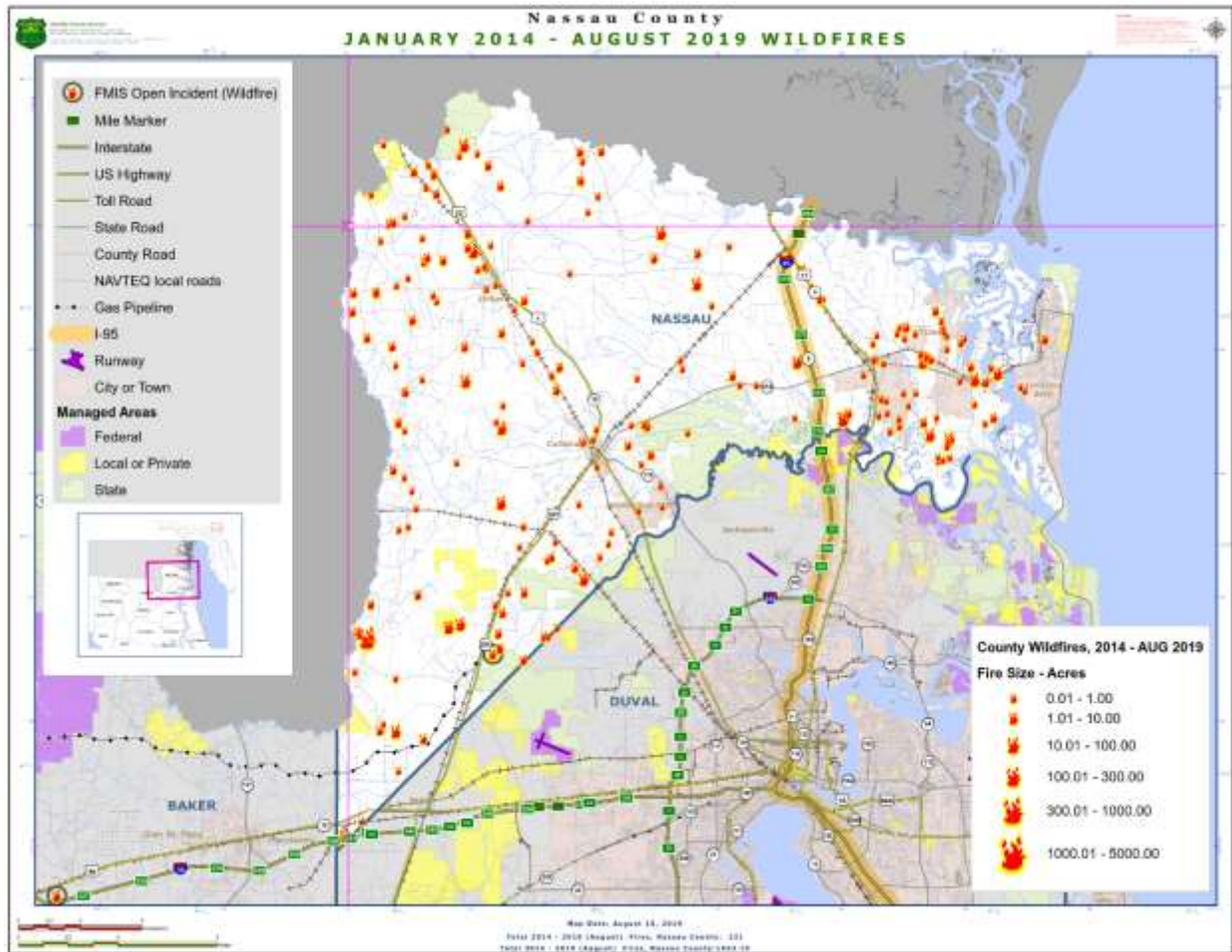


Source: <https://droughtmonitor.unl.edu/Data/Timeseries.aspx>

All areas of Nassau County are equally susceptible to drought; as such a map of susceptible areas was excluded.

Wildfires

During the period 2016-2020 Nassau County experienced 171 wildfires, an average of 34-35 wildfires annually, consuming a total annual average of more than 285 acres. As a predominantly rural county with a large percentage of its land area devoted to agricultural, agroforestry, or conservation uses and nearly three quarters of its area still covered in natural forest, much of the unincorporated area of Nassau are vulnerable to wildfire, as are the townships. Development in the county's wildland/urban interface, where communities border natural vegetation, exacerbates the fire-vulnerability for two reasons. Wildfires in these areas have a greater chance of damaging residential structures, and the higher concentration of humans increase risk of accidental ignition from carelessness (e.g. yard fires for debris burning, tossed cigarettes, etc.) Long periods of dry conditions increase the fuel load for wildfires, elevating risk in both frequency and severity.



Wildfire suppression is an arduous and time-consuming operation, and interface fires are typically fast moving requiring lots of personnel and equipment to protect local homes. The cost of these operations grows proportionally with their complexity. Development projections indicate more homes constructed in the urban/wildland interface, meaning more homes will be threatened by wildfire and the potential for life and property losses will rise, as will the costs associated with fire suppression unless effective mitigation strategies are implemented throughout Nassau County. Having defensible space free from flammable vegetation around homes and providing access for emergency response vehicles are extremely important aspects of wildfire protection.

Florida’s Division of Forestry (DOF) has identified several interface areas, especially surrounding the Towns of Hilliard and Callahan and developments in Yulee, where brush clearing or controlled burns are needed to reduce the likelihood of wildfires spreading. (Supplemental information, including descriptions of local resources and additional mitigation efforts being pursued by Florida’s Division of Forestry, can be found in their 2015 Nassau County Community

Wildfire Protection Plan.) The Nassau Oaks community near Callahan is the only recognized FireWise Community in the county. Residents there have invested thousands of hours evaluating their wildfire vulnerabilities and implementing risk-reduction projects such as neighborhood tree trimming and vegetation clearing around homes.

From 2016-2020, 171 wildfires had been reported. The largest of which was on March 22nd, 2017 when a fire burned 700 acres along Garfield Rd in Bryceville. 2 homes were destroyed and a further 6 were damaged and 19 other structures were severely damaged in the fire. The cause of the fire was determined to be an out of control unauthorized burn pile.

Fires by Cause – Nassau County 01/01/16 to 09/29/20

Cause	Fires	Percent	Acres	Percent
Campfire	3	1.75	0.3	0.02
Children	3	1.75	1.2	0.08
Debris Burn--Auth--Broadcast/Acreage	3	1.75	106.4	7.48
Debris Burn--Auth--Piles	2	1.17	2.0	0.14
Debris Burn--Auth--Yard Trash	19	11.11	14.5	1.02
Debris Burn--Nonauth--Broadcast/Acreage	3	1.75	14.5	1.02
Debris Burn--Nonauth--Piles	23	13.45	775.5	54.54
Debris Burn--Nonauth--Yard Trash	14	8.19	6.6	0.46
Equipment--Agriculture	3	1.75	1.2	0.08
Equipment--Logging	1	0.58	11.0	0.77
Equipment--Recreation	0	0	0.0	0
Equipment--Transportation	0	0	0.0	0
Incendiary	38	22.22	186.7	13.13
Lightning	38	22.22	239.4	16.84
Miscellaneous --Breakout	0	0	0.0	0
Miscellaneous --Electric Fence	0	0	0.0	0
Miscellaneous --Fireworks	0	0	0.0	0
Miscellaneous --Power Lines	3	1.75	2.4	0.17
Miscellaneous --Structure	0	0	0.0	0
Miscellaneous--Other	3	1.75	1.1	0.08

Railroad	14	8.19	58.7	4.13
Smoking	0	0	0.0	0
Unknown	1	0.58	0.3	0.02
TOTALS	171		1422	

Source: <http://fireinfo.fdacs.gov/fmis.publicreports/FiresByCause.aspx>

The National Weather Service (NWS) designates “Critical Fire Weather Areas” when “dry” thunderstorms producing very little rain (less than a tenth of an inch) occur where dried vegetation fuel exists, or when strong winds and low relative humidity levels in areas of dried fuel can contribute to the rapid spread of fire. These situations result in local NWS Fire Weather Watches and Red Flag Warnings. Fire ordinances in Nassau County restrict permitted outdoor fires to areas well away from combustible structures or flora, and prohibit all campfires and debris burning during fire weather conditions. The consequences of wildfire range from threats to health and safety to environmental damage and economic losses: air and water pollution, habitat loss, debris clean-up, soil erosion, destruction of agricultural crops, timber, and endangered native plant species, as well as damage to power, water, natural gas, transportation or communication infrastructure, and out-of-pocket costs associated with fire suppression, property losses, business disruption. Nassau County Fire Rescue (NCFR) ensures that each of their firefighters is S130/190 wildland firefighting qualified but they lack full brush fire gear ensembles. The agency has only two Type VI brush trucks and one 2500 gallon tender to support wildfire suppression throughout the county.

Tornado

A tornado is a violently rotating column of air extending from a thunderstorm to the ground; maximum speeds of the rotating winds can exceed 200 mph. Tornadoes forming over warm water create waterspouts which can move onshore and behave just like standard tornadoes. These weather phenomena are common in the southeastern U.S., with Florida ranking third in the country for highest average number of tornadoes per year.

Although they often occur in concert with a thunderstorm or tropical system, the unpredictability of tornadoes makes them serious threats to life and property, especially when they occur overnight. Tornadoes may appear nearly transparent until sufficient dust and debris are picked up by the funnel; they can be virtually invisible in the dark. Tornadoes are capable of completely destroying well-made structures, uprooting trees, and hurling objects through the air creating deadly missiles.

Tornadoes are described according to the “Enhanced Fujita Scale” which incorporates post-event damage assessments and estimated wind speeds to classify tornado intensities. Based on historical data, EF-0, 1, and 2 tornados have the greatest potential to impact Nassau County.

Enhanced Fujita Scale for Tornado Intensity

Size	Wind Speed (mph)	Damage	Damage Assessment
EF-0	65–85	Light Damage	Peels surface off some roofs, some damage to gutters or siding, branches broken off trees, shallow-rooted trees pushed over
EF-1	86 – 110	Moderate Damage	Roofs severely stripped, mobile homes overturned or badly damaged, loss of exterior doors, windows and other glass broken.
EF-2	111 – 135	Considerable Damage	Roofs torn off well-constructed houses, foundations of frame homes shifted, mobile homes completely destroyed, large trees snapped or uprooted, light-object missiles generated, cars lifted off ground
EF-3	136 – 155	Severe Damage	Entire stories of well-constructed houses destroyed, severe damage to large buildings such as shopping malls, trains overturned, trees debarked, heavy cars lifted off the ground and thrown, structures with weak foundations blown away some distance
EF-4	166 – 200	Devastating Damage	Well-constructed houses and whole frame houses completely leveled, cars thrown and small missiles generated
EF-5	> 200	Incredible Damage	Well-constructed, strong frame houses leveled off foundations and swept away, automobile-sized missiles fly through the air in excess of 300 ft., steel reinforced concrete structure badly damaged, high-rise buildings have significant structural deformation, catastrophic damage and loss-of-life potential

Source: NOAA Storm Prediction Center

According to the “Tornado History Project”, Nassau County has experienced 29 tornado touchdowns (note: individual tornadoes can “skip” creating multiple touchdowns) since March 1961 resulting in four injured individuals, no deaths. The longest tornado ground-path ran more than 12 miles, and the widest tornado spanned 100 yards. Two tornado touchdowns took

place 21 January 2010 on the west side of the county near Callahan but generated no reported injuries or damage to personal property. On 6 June 2013 an unconfirmed microburst damaged the roof of a Fletcher Drive home and broke large tree limbs on Highland Drive and Atlantic Avenue which destroyed a wood shed and section of wooden fence.

An EF 1 tornado touched down in Yulee in August of 2016 damaging 40 – 50 residences and flipping tractor trailers along State Road 200.



Two EF 0 tornadoes also occurred on 9/11/20. During the period 2015-2020, there were 17 other tornado warnings issued in the county.

Even if the winds do not emanate from a rotating funnel cloud, high straight-line winds or rapid “microburst” down-drafts associated with thunderstorms can be >100 mph and very destructive. Nassau County’s thick tree canopy can contribute to debris becoming missiles, as well as branches or entire trees falling onto buildings, vehicles, or even people.

While the entire county is susceptible to tornadoes and other extreme wind events, above-ground critical infrastructure (i.e. power and communications lines and towers throughout the county), densely populated areas (the three municipalities and unincorporated Yulee), pre-fabricated or mobile homes, eleven small trailer parks located throughout the county, and many manufactured homes both in Callahan, Hilliard and throughout unincorporated Nassau, are at greatest risk.

Flood/Flooding

Nassau County experiences significant seasonal variation in monthly rainfall, annual precipitation of just over 50 inches. The wet season lasts from June to September and the dry

season lasts from October to May. A multitude of waterways, marshland, and so much land area at or near sea-level combine to produce frequent rises in water which inundate normally dry land. Flood or flooding is defined as a general and temporary condition of partial or complete inundation of normally dry land areas from: (1) the overflow of inland or tidal waters; (2) the unusual and rapid accumulation or runoff of surface waters from any source; (3) mudslides (mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current. Floodplains are defined as any land areas susceptible to being inundated by water from any flooding source.

Nassau County and the City of Fernandina Beach are exposed to flooding from hurricanes, tropical storms, storm water runoff, and storm surges that impact the entire coastline of the County from the Atlantic Ocean as well as from Alligator Creek which can impact from the 983' downstream of US Hwy 1 and Hwy 23 to 0.4 miles upstream of the Railroad.

Nassau County's multiple waterways, marshlands, and near sea-level land area combine to produce frequent rises in water which inundate normally dry land. Around 8,000 properties are at risk of flooding from a major storm in Nassau County, FL. County roadways that have historically experienced flooding include: Plummer Creek Road, sections of U.S. Hwy 301, Pages Dairy Road, A1A/SR-200 (the primary east-west artery and evacuation route) near Lofton Creek, sections of A1A on Amelia Island, quite a few sections of Sadler Road, North and South Fletcher Avenue, and several areas of downtown Fernandina Beach.

The Encroaching Tides report from the Union of Concerned Scientists indicates Fernandina Beach's average flooding events a year could increase from its current two per year to eight per year by 2030, and 37 by 2045.

NOAA's storm events database shows 8 significant flooding events between 01/01/2015 and 07/31/2020. (see figure below).

Storm Events Database
 Search Results for Nassau County, Florida

Event Types: Coastal Flood, Flash Flood, Flood, Lakeshore Flood

Nassau county contains the following zones:
 'Island Nassau', 'Coastal Nassau'

0 events were reported between 01/01/2015 and 09/30/2020 (2100 days)

Summary Info:

Number of County/Zone areas affected:	2
Number of Days with Event:	8
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	3

Column Definitions:
 'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Click on **Location** below to display details.
 Available Event Types have changed over time. Please refer to the [Database Details](#) for more information.

Sort By: **Date/Time (Oldest)**

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:							0	0	0.00K	0.00K	
COASTAL NASSAU (ZONE)	COASTAL NASSAU (ZONE)	FL	09/26/2015	19:45	EST-5	Coastal Flood	0	0	0.00K	0.00K	
COASTAL NASSAU (ZONE)	COASTAL NASSAU (ZONE)	FL	10/27/2015	10:18	EST-5	Coastal Flood	0	0	0.00K	0.00K	
FERNANDINA BEACH ARP	NASSAU CO.	FL	10/07/2016	15:00	EST-5	Flash Flood	0	0	0.00K	0.00K	
COASTAL NASSAU (ZONE)	COASTAL NASSAU (ZONE)	FL	11/13/2016	07:36	EST-5	Coastal Flood	0	0	0.00K	0.00K	
HELLIARD	NASSAU CO.	FL	09/11/2017	06:00	EST-5	Flash Flood	0	0	0.00K	0.00K	
COASTAL NASSAU (ZONE)	COASTAL NASSAU (ZONE)	FL	11/23/2018	08:48	EST-5	Coastal Flood	0	0	0.00K	0.00K	
COASTAL NASSAU (ZONE)	COASTAL NASSAU (ZONE)	FL	08/29/2019	20:00	EST-5	Coastal Flood	0	0	0.00K	0.00K	
INSLE	NASSAU CO.	FL	06/13/2020	16:51	EST-5	Flood	0	0	0.00K	0.00K	
Totals:							0	0	0.00K	0.00K	

Source: <https://www.ncdc.noaa.gov/stormevents/>

While many underestimate the severity of floods, loss of life and property are real threats. According to the NOAA National Climatic Data Center (NCDC), Nassau County experienced multiple significant heavy rain events over the past ten years, with flash flooding and large scale flooding of tributary systems creating property damage and necessitating road closures. Flooding may result from heavy rainfall associated with routine thunderstorms or tropical cyclone rain bands creating standing water which cannot drain efficiently, overflow of lakes, rivers, streams or ditches and retention ponds, or failure of dams and levees.

Floods can damage structures, property, roadways, and natural vegetation, ruin crops, erode soil, and contaminate water supplies. Flooding can inundate potential evacuation routes, creating unsafe conditions for drivers and preventing evacuees from reaching safety. The main evacuation route from the most densely populated part of Nassau County is west along SR200 to Interstate 95, parts of this route are prone to flooding, particularly in the Lofton Creek area. Numerous areas throughout the mainland and on the island experience periodic flooding from heavy rainfall. Flood impacts can create impassible roadways, bridge wash-outs, and damage

to structures. Amelia Island which includes the City of Fernandina Beach (the ‘urban center’ of Nassau County) and its only hospital is connected to the main land by two bridges. In addition flooding can impact local agriculture, commerce, and ecosystems. Standing flood waters and surface ponding provide ideal conditions for the spawning of mosquito larvae; both a nuisance and potential health hazard.

The risk of flood in the coastal areas of the county as well as inland areas surrounding tidally-influenced water bodies increases when significant rain events occur during high tides. Low lying or poorly drained land can accumulate rainfall causing “surface ponding” and river bank overflow. Designated “floodplain” areas naturally flood from runoff generated by episodes of heavy rainfall, thunderstorms, or as a result of a tropical cyclone event to help to store water within confined areas for eventual release into the aquifer. Nassau’s dozens of pristine small lakes and creeks appeal to homeowners and increasing population in the areas surrounding these waterways contributes to local flood risk.

A dominant feature of Nassau County is the expansive marsh between the mainland and Amelia Island. Many of the drainage systems on Amelia Island need updating to prevent fresh water contamination or road and building damage that occurs during even minor flood events. Since site restrictions and improved construction standards are relatively recent additions to Nassau’s building code, a large number of older non-elevated residences and associated utility lines in this area are susceptible to damage from flood waters. Heavy rainfall is known to cause Thomas Creek and Alligator Creek to routinely breach their banks in the western portion of the county, making flood insurance important in both the coastal and inland sectors of the county. FEMA’s 2010 National Flood Insurance Program (NFIP) maps show nearly one-third of Nassau County’s land area within 100-year or 500-year flood zones (see **Appendix F**). Nassau County’s floodplains are associated with the St. Mary’s and Nassau Rivers, their tributaries, and the Intracoastal Waterway. The Army Corps of Engineers’ comprehensive study of the Nassau River Basin found it 92% undeveloped, with water and wetlands accounting for 38% and tree plantations covering 36% of the total basin area. Their study provided estimates of the depth of local waterways in flood-stage at 10, 25, and 100 year incident conditions (see table below).

Reach/Creek Name and Comments	River Mile above Nassau River mouth	Distance above mouth (ft)	33 Year Flood Discharge (cfs)	33 Year Flood Water Surface Elevation (ft. MVD)	25 Year Flood Discharge (cfs)	25 Year Flood Water Surface Elevation (ft. MVD)	100 Year Flood Discharge (cfs)	100 Year Flood Water Surface Elevation (ft. MVD)
Nassau River								
Confluence with Alligator and Boggy Creeks	31.961	168763	4810	4.63	7994	5.30	13390	7.46
Upstream of confluence with Thomas Creek	34.356	128604	5495	3.94	9278	4.20	15307	5.53
Downstream of confluence with Thomas Creek	34.356	128604	8827	3.82	11213	4.25	23141	5.48
Upstream face of Interstate 80	32.871	120754	9278	3.51	10419	3.86	20508	4.87
Upstream face of Railroad Crossing	19.819	105188	3598	3.40	10982	3.71	20548	4.40
Upstream face of U. S. Highway 17	18.804	99582	9586	3.37	10980	3.64	30548	4.25
Upstream face of Highway A-1-A	0.807	4267	21897	3.18	30951	3.20	48814	3.20
Mouth of Nassau River	0.000	0	22211	3.19	32271	3.19	48880	3.19
Boggy Creek								
Upstream end of reach	38.913	47384	1883	5.80	3321	7.33	8878	9.38
Upstream face of S. R. 203	38.857	43264	1853	5.48	3281	7.22	3678	9.17
Confluence with Nassau River and Alligator Creek	31.961	0	1885	4.68	3502	5.94	8074	7.50
Thomas Creek								
Upstream end of reach	43.825	101745	2501	11.48	4840	14.21	7489	16.87
Upstream face of U. S. Highway 1	43.526	101385	2581	11.26	4640	14.12	7489	16.58
Upstream face of S. R. 115	41.425	82077	2820	10.52	5054	13.10	8214	15.52
Upstream of confluence with Little Mills Creek	41.388	81854	2970	9.86	5054	13.89	8214	13.19
Downstream of confluence with Little Mills Creek	43.453	63654	2971	8.81	5278	11.03	8214	13.23
Confluence with Nassau River	24.354	0	3118	3.93	5401	4.76	8887	5.48
Alligator Creek								
Upstream end of reach	44.801	88332	989	18.05	1520	19.30	1904	20.38
Upstream face of Seaboard Railroad	44.483	88134	989	17.28	1520	18.54	1906	19.61
Upstream face of U. S. Highway 1	44.231	84791	989	14.83	1520	16.05	1906	17.17
Upstream of confluence with Little Mills Creek	43.453	63654	989	13.21	1520	12.16	1906	14.00
Downstream of confluence with Little Mills Creek	43.453	63654	1423	13.42	2418	12.23	3234	14.24
Upstream face of Seaboard Coastline Railroad	43.173	57187	1478	9.94	2547	11.81	3209	13.10
Upstream face of S. R. 203	42.879	56775	1478	9.19	2547	10.80	3209	12.14
Upstream of confluence with Cushing Creek	42.725	56836	1478	8.79	2547	10.20	3209	12.23
Downstream of confluence with Cushing Creek	42.725	56836	2546	8.77	4009	10.34	5445	12.21
Confluence with Boggy Creek and Nassau River	31.961	0	2403	4.86	4247	5.94	8854	7.51
Cushing Creek								
Upstream face of Seaboard Railroad	45.779	16681	891	15.58	2223	19.90	1902	17.42
Upstream face of U. S. Highway 1	45.589	15488	541	13.79	2214	14.88	1981	16.32
Upstream of confluence with Cushing Creek Tributary	43.831	6268	1015	11.41	1481	12.82	2232	14.72
Downstream of confluence with Cushing Creek Tributary	43.831	6268	1071	11.20	1529	12.75	2280	14.70
Upstream face of S. R. 115	43.737	5344	1071	10.81	1529	12.26	2286	14.51
Upstream face of Station Road	43.184	3426	1071	9.42	1529	10.81	2286	13.23
Confluence with Alligator Creek	42.725	0	1089	8.77	1581	10.23	2440	12.21
Little Mills Creek								
Upstream face of Seaboard Railroad	44.138	11750	35	15.43	20	18.01	142	17.88
Upstream face of U. S. Highway 1	43.384	11708	116	15.27	187	16.88	208	16.94
Upstream face of S. R. 115	41.507	5802	273	13.88	416	13.89	682	15.94
Confluence with Thomas Creek	43.389	0	379	8.80	505	11.04	718	13.24
Cushing Creek Tributary								
Upstream end of reach	44.728	4187	171	13.28	382	13.76	570	15.48
Upstream face of U. S. Highway 1	44.247	1820	245	11.57	470	13.14	528	15.24
Confluence with Cushing Creek	43.831	0	247	11.42	458	12.82	588	14.75
Little Mills Creek								
Downstream face of Seaboard Railroad	44.142	4198	819	15.80	1146	16.78	1680	18.07
Upstream face of U. S. Highway 1	43.768	1982	819	12.89	1149	14.46	1680	16.98
Confluence with Alligator Creek	23.458	0	819	10.21	1148	11.18	1680	14.03

Property and dwellings surrounding any of Nassau’s waterways can experience flood water intrusion rendering roads impassable and properties inaccessible, threatening health and safety. County planners are interested in acquiring properties which flood frequently, especially those properties located near or adjacent to existing county- owned parks, to create water accumulation points that would assist with natural drainage and could be used for general recreation during dry times.

The NFIP encourages proactive floodplain management, responsible building practices, and insurance policies for all structures within 100-year floodplain areas. The NFIP Community Rating System (CRS) is a voluntary program incorporating various educational and mitigation activities, which provides discounts on the NFIP-backed flood insurance premiums as an incentive to residents of participating communities. The City of Fernandina Beach is a CRS-rated (Class 6) community and Nassau County is a CRS rated (Class 8) community.

Community	Flood Zone(s)
Callahan, Town of	A, AE, X
Fernandina Beach, City of	AE, AO, VE, X
Hilliard, Town of	A, X
Nassau County, Unincorporated Areas	A, AE, VE, X

Flood Zone Designations by Community.

Dams

Nassau County has no major dams or man-made levees. There are six small privately- owned low-level dams used primarily for agroforestry operations (*listed below*). Five of those dams are located in very close proximity to each other. Inspections conducted in 2015 found that all of these dams were structurally sound and well maintained.

Dam:	Longitude:	Latitude:	Waterway:
Walker Dam	-81.971000	30.778000	Pigeon Creek
Hercules Lake Dam 1	-81.960000	30.760000	Pigeon Creek
Hercules Lake Dam 2	-81.960000	30.760000	Pigeon Creek
Hercules Lake Dam 3	-81.950000	30.760000	Pigeon Creek
Lake Hampton Dam	-81.970000	30.777000	Pigeon Creek
FBC Retreat Dam	-82.041000	30.672000	FBC Retreat Creek

Repairs to spillway damage sustained by the Lake Hampton Dam during the excessive rainfall associated with TS Fay in 2008 were funded through a grant from the Natural Resources Conservation Service (NRCS) and completed September 2011. While dam failures due to structural problems, heavy rains, or sabotage have the potential to release large amounts of water and cause flood damage to properties located to the periphery, no other instance of property damage due to dam failure has been recorded.

Tropical Cyclones and Storm Surges

One of the most destructive natural hazards in Florida is a tropical cyclone. A tropical cyclone is defined as a rapid rotating storm originating over tropical oceans. A tropical cyclone brings violent winds, torrential rain, high waves, and in some cases, storm surges and coastal flooding. Hurricanes cause major damage because of storm surge, wind damage, and flooding. They can happen along any U.S. coast or in any territory in the Atlantic or Pacific oceans. The Atlantic Hurricane Season is from June 1 to November 30.

Depending on the cyclone’s maximum sustained wind speed, they are referred to differently. A tropical depression refers to a storm system with maximum sustained wind speeds less than 39 mph. A tropical storm refers to storm systems with maximum sustained wind speeds more than 39 mph. These storm systems are also assigned a name by the National Oceanic and Atmospheric Administration's (NOAA) National Hurricane Center. A hurricane (also known as a typhoon, severe tropical cyclone, severe cyclonic storm or a tropical cyclone in different areas) refers to storm systems with a maximum sustained wind speed of more than 74 mph. Based on the storm’s intensity, the impacts can vary from minor structural damage to catastrophic destruction. Using the Saffir-Simpson Hurricane Wind Scale, hurricanes are classified by sustained wind speeds and their impacts can be predicted (see graphic below).

Hurricane Category	Sustained Winds	Expected Damage Due to Hurricane Winds
1	74-95 mph	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.

3	111-129 mph	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof-decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4	130-156 mph	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the low-lying, coastal surge areas will be uninhabitable for weeks or months.
5	157 mph or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: NOAA National Hurricane Center

Tropical cyclones may approach the county from easterly or westerly directions, although in NE Florida they are most frequently initially associated with Atlantic shore- area impacts. The destruction created by tropical cyclones can occur anywhere in Nassau County, but significant losses are most likely in the areas of residential and business development: Amelia Island/Fernandina Beach, Yulee, and the incorporated municipalities.

The risk of property damage near the Atlantic and Intracoastal shorelines as well as inland comes from the high winds and flooding associated with tropical cyclones. Powerful storm surge can destroy buildings, sweep vehicles away, and uproot vegetation. Water intrusion can make homes unlivable. High winds can uproot trees, blow down power lines, roofs, and entire structures, scattering debris, creating missile- like projectiles, and blocking roads. Severe environmental, agricultural, and economic impacts can also be expected. Based upon previous occurrences, Nassau County is most likely to be impacted by tropical depressions, tropical storms, and hurricanes rated up to Category 3. As an Atlantic Basin coastal county, Nassau could find itself in the path of a major Category 4 or 5 hurricane; and although less likely, the wind and flood damages from even a glancing blow of one of these powerful storms could be catastrophic.

Listed below are the tropical storms and hurricanes that have impacted Nassau County from 2015 to 2020.

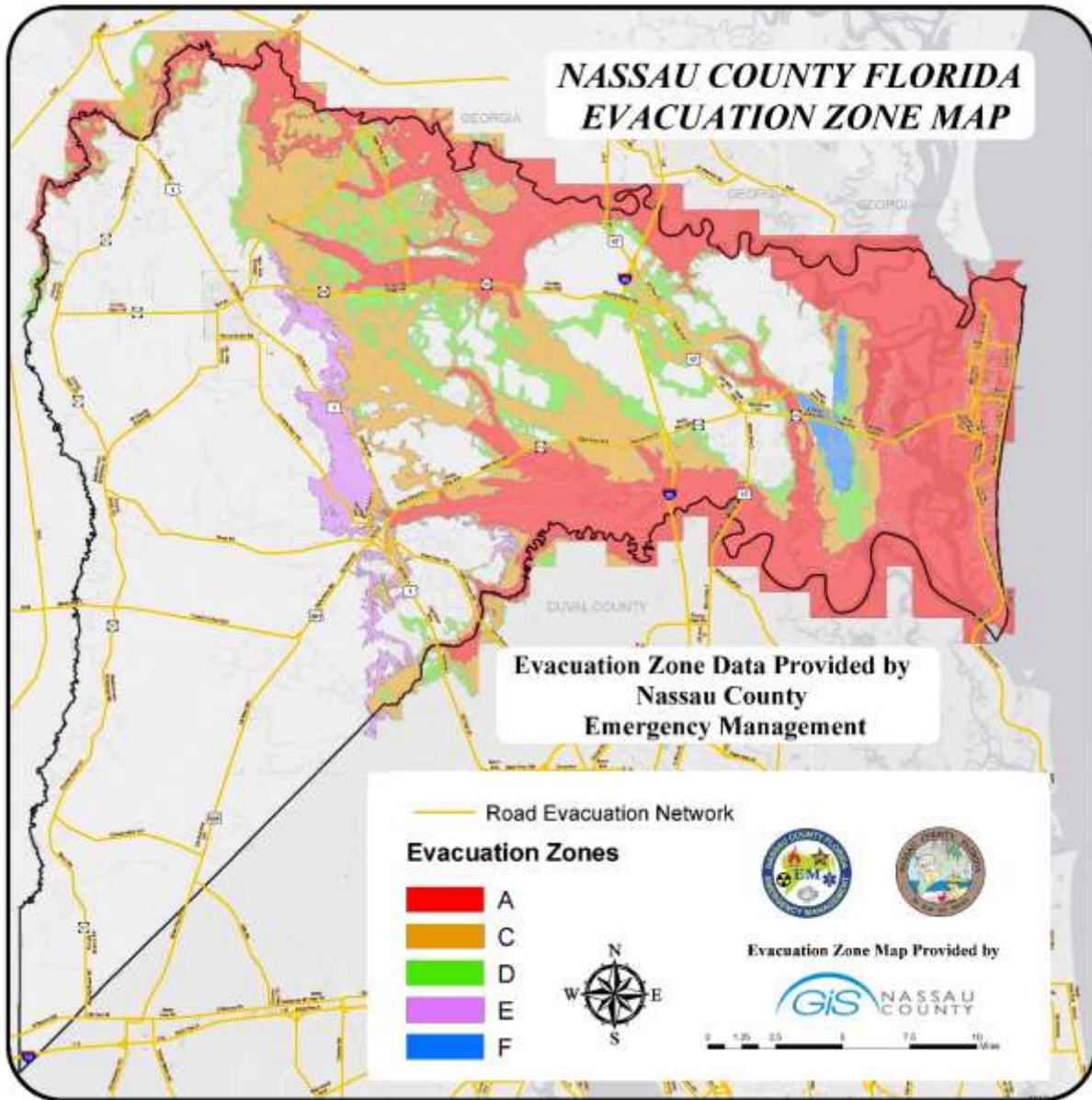
Date	System	Reported Conditions and Associated Damages
06/06/16	Tropical Storm Colin	Colin produced heavy local rainfall over N and Central Florida but minor coastal flooding in NE Florida occurred. An EF-1 tornado was confirmed in Duval County, Florida. 1-3 inches of rainfall. Minor overall damage. No direct deaths occurred.
09/02/16	Hurricane Hermine	Category 1 Hurricane. Minor coastal flooding occurred along the coasts of NE Florida. 1-3 inches of rainfall. Produced ten total hurricanes. One direct and indirect death. 1,600 homes and businesses in the state were damaged and rendered uninhabitable. NOAA National Centers for Environmental Information (NCEI) estimates wind and water damages totaling \$550 million.
10/06/16	Hurricane Mathew	Category 5 Hurricane. Rainfall 7-15 inches. Max inundation levels were 3-5 ft above ground level. Nassau County and Fernandina Beach measured a storm tide of 4.17 ft above MHHW. Torrential rainfall. Two EF0 tornadoes occurred. 2 of 34 deaths in the United States happened in Florida. Wind damage was minor but moderate to severe structural damage occurred due to storm surge. \$10.0 billion worth of wind and water damage.
07/31/17	Tropical Storm Emily	No casualties, approximately \$10 million in total damages, EF-0 tornado destroyed 2 barns, greenhouses, and toppled an engineered wall in Manatee County. Less than 3 inches of rainfall in Nassau County.

Date	System	Reported Conditions and Associated Damages
09/11/17	Hurricane Irma	Seven landfalls (4 occurred as a Category 5). Made landfall in FL as a Category 4 and struck SW FL as a Category 3. Flooding of rivers in Nassau County. Fernandina Beach and Mayport measured peak water levels of 3.6 ft MHHW. Hurricane force wind gusts caused structural damage to homes and businesses, widespread tree and power line damage. 3-5 ft storm surge inundation, 7-15 in of observed rainfall in Nassau County. 25 confirmed tornadoes, 10 direct deaths in the US, 77 of 82 indirect deaths in the US were in FL. 6 million residents of FL evacuated coastal areas. \$50.0 billion in US water and wind damages.
05/26/18	Tropical Storm Alberto	Made landfall on the coast of Florida Panhandle, moving N into MI. 1-3 in of rainfall in Nassau County. 8 casualties in the US, \$125 million in wind and water damages.
09/09/18	Hurricane Florence	Category 4 Hurricane. 22 direct deaths and 30 indirect fatalities. \$24 billion in wind and water damages, 9th most destructive hurricane to affect the US.
10/07/18	Hurricane Michael (support)	Category 5 Hurricane. 16 deaths, \$25 billion in damage in US, 2 confirmed tornados in FL, minimal rainfall in Nassau County.
09/02/19	Hurricane Dorian	Category 5 Hurricane. Made landfall over Barbados, highest observed wind speed in FL at 60 kt gust, 21 total tornadoes, 3 indirect deaths in FL, \$1.6 billion in total damages in the US. Up to 3 ft of inundation in NE FL, 1-3 in of rainfall and extensive damage in NW Bahamas.

Source: National Hurricane Center Tropical Cyclone Reports

Tropical cyclones are one of the biggest threats to life and property even in their formative stages. A direct hit from even a minor tropical cyclone or a glancing blow from a hurricane could cause a storm tide that would immerse much of the island. The NE Regional Planning Council’s 2013 Northeast Florida Regional Evacuation Study and 2014 Storm Tide Atlas

graphically depict the potential for inundation throughout the county (see representative maps in **Appendix F**). Data from these studies were used to develop the current evacuation zones and create evacuation route maps for the county, and have been included as optional layers on the Nassau County Property Appraiser’s interactive mapping website.



2019 marked the ninth consecutive year with eight or more billion-dollar disasters in the United States, and was the fifth consecutive year in which 10 or more billion-dollar weather and climate disaster events affected the United States. Of the 246 (as of April 2019) weather disasters since 1980, tropical cyclones have caused the most damage: \$927.5 billion total, with an average cost of almost \$22 billion per event.

Nassau County Emergency Management has implemented a robust “Citizen Alerts” opt-in mass notification system that provides real-time automatic warnings via voice message, text, and e-mail directly from the National Weather Service for a variety of weather-related conditions, including areal, coastal, and riverine flooding, severe storms, tornadoes, dense fog, and extreme temperatures. While residents can select weather conditions for which they wish to be directly notified, Emergency Management officials can also use geo-fencing to push out alert notifications regarding imminent conditions that impact life safety to residents in specific areas.

According to the National Weather Service, the most deadly consequence of tropical cyclones is the associated storm surge. It is produced when strong winds from a tropical cyclone push water toward shore. The height of storm tide along a stretch of coastline is dependent upon wind speed, velocity of the storm system, coastline shape, the slope of the continental shelf, and depth of the ocean bottom. Storm surge accounts for nearly 90% of all tropical cyclone deaths.

The risk of property damage near the Atlantic and Intracoastal shorelines as well as inland comes from the high winds and flooding associated with tropical cyclones. Powerful storm surge can destroy buildings, sweep vehicles away, and uproot vegetation. Water intrusion can make homes unlivable. High winds can uproot trees, blow down power lines, roofs, and entire structures, scattering debris, creating missile-like projectiles, and blocking roads. Severe environmental, agricultural, and economic impacts can also be expected.

Based upon previous occurrences, Nassau County is most likely to be impacted by tropical depressions, tropical storms, and hurricanes rated up to Category 3. As an Atlantic Basin coastal county, Nassau could find itself in the path of a major Category 4 or 5 hurricane; and although less likely, the wind and flood damages from even a glancing blow of one of these powerful storms could be catastrophic. It should be recognized that climate change is expected to exacerbate extreme weather, generating the opportunity for more frequent and more intense events.

Nassau’s position on the Atlantic Coast of Florida makes it vulnerable to tropical cyclone systems and their associated storm surge. Nassau County records from 2015 to 2020 shows that Nassau County has several close calls with tropical cyclone impacts (within 75 nautical miles). However, with these enormous storms often reaching more than one hundred miles in diameter, wind, rain, and surge impacts are likely even without a direct hit. Nassau County has also been impacted by several significant tropical storms which can generate widespread flooding.

Areas of particular vulnerability to storm surge inundation include the entire eastern border of the county, along the Intracoastal Waterway and the Atlantic Ocean. Like all coastal counties in Florida, Nassau is likely to experience storm tides associated with tropical cyclone events. Storm surge will also affect the St. Mary's and Nassau Rivers, which are relatively shallow and strongly influenced by Atlantic tides. These areas are at or near sea-level and although building codes require elevation of structures, roadways could become inaccessible due to flooding and debris-wash, including those critical for emergency services, those accessing the bridge to the island, sites such as schools, utilities, public buildings, and the county's single hospital.

Multiple structures within the county are not hardened against winds of these intensities, including critical infrastructure such as NCFR headquarters and several fire stations, the Nassau County Sheriff's Office facilities, City of Fernandina Beach Police and Fire stations, and many municipal buildings.

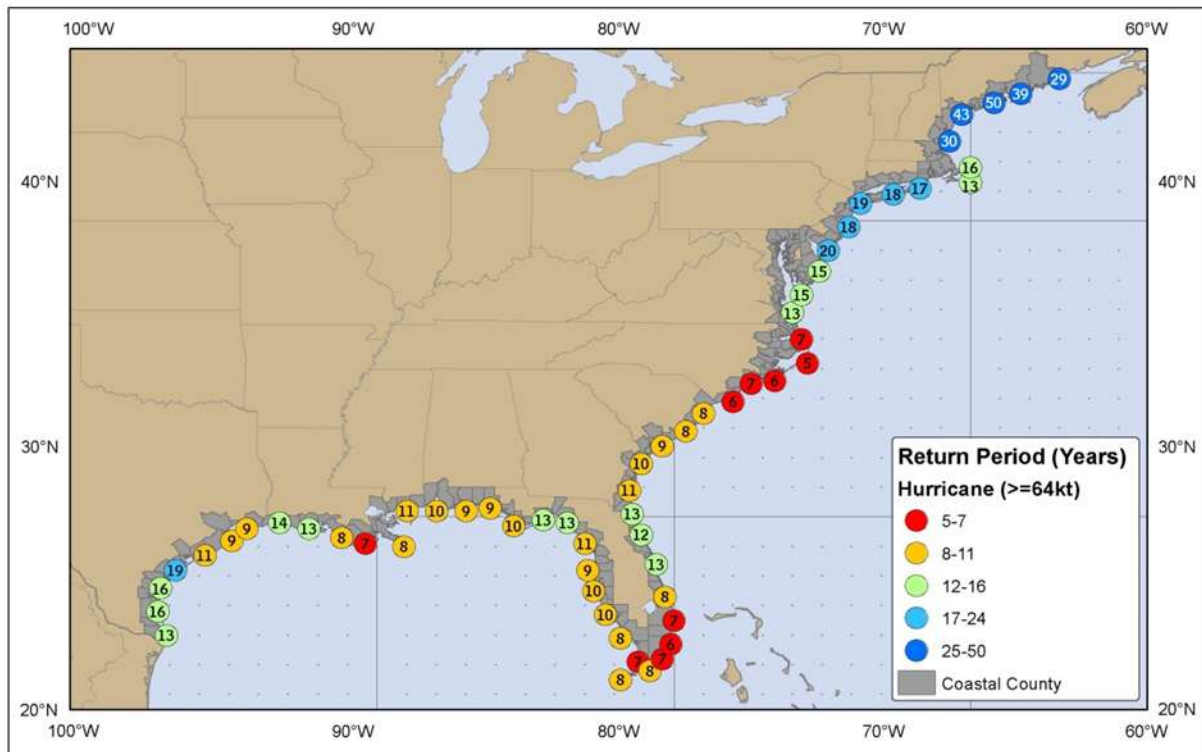
Specific vulnerabilities to tropical cyclones and surge-related flooding include difficulty evacuating residents and the tourist population from the barrier island, and significant long-term damage to infrastructure. Ingress and egress for the 18.2 square mile Amelia Island is limited to two points that generate choke-points hindering evacuation efforts: the Shave Bridge on SR-200/A1A mid-island and the Hecksher Drive Bridge on the south end. In addition to the 12,000 full-time residents on the island, two world class resorts and numerous rental facilities add a significant tourist population (about 500,000 per year): the Ritz Carlton with 446 guest rooms and event facilities, and the Omni Amelia Island Plantation Resort with 404 guest suites and event rooms. The city-owned public-use Fernandina Beach Municipal Airport has three paved runways, and averages 128 primarily single-engine aircraft operations per day.

Since 2010 FEMA technical experts have been re-mapping the coastal area of NE FL to determine more accurate coastal flood and storm surge risk. Data have not been updated in the 30 years preceding this LMS revision; new LIDAR, topographic, bathymetric, climate, and elevation data are being used along with new modeling techniques which incorporate still-water elevations, wave setup, wave height above surge elevation, and wave run-up, plus the April 2014 updated storm surge analysis. These calculations of hundreds of hypothetical storms at thousands of nodes including the modeling of 100 year significant events will provide higher resolution maps indicating the one percent annual chance for the limit of moderate wave action (LiMWA). Areas of the county that can be impacted by both coastal and riverine flood waters should also be represented in the new Flood Insurance Rate Maps (FIRM).

The tidally-influenced Nassau River flows along the southern edge of the county; its basin puts the Town of Callahan at risk to flood according to surge projections for major hurricane events. The St. Mary's River and Lofton Creek are also tidally influenced and therefore, create flood

concerns during tropical cyclone events. Non-elevated homes, water/sewer utilities, roadways, and other waterways are also at risk from surge impacts.

Probability estimates for the frequency of hurricane conditions (i.e. high winds, precipitation, and surge) returning to coastal regions have been created by the National Oceanic and Atmospheric Administration (NOAA) Hurricane Center using their own climatology data. The following graphics illustrate those estimated hurricane return periods. It should be recognized that climate change is expected to exacerbate extreme weather, generating the opportunity for more frequent and more intense hazards and adverse events.



Estimated return period in years for hurricanes passing within 50 nautical miles of various locations on the U.S. Coast (NOAA Tropical Cyclone Climatology 2015)

Coastal Erosion

Erosion is a natural and constant process by which sediments are moved from location to location through wind, surf, rain, and tropical cyclone events. Coastal erosion is the loss of coastal lands due to the net removal sediments or bedrock from the shoreline. Coastal erosion is the result of natural processes such as waves, winds, and tides, or even human interference. Coastal erosion may result in temporary redistribution or long-term loss of sediments and rocks. Sometimes, this natural process is interrupted by humans for economic or recreational

reasons; for instance deepening of coastal inlets to allow commercial shipping or recreational boating access, or the creation of jetties to help keep these inlets clear of sediment which often creates erosion issues at some other location. Specific occurrences are difficult to track due to the continuity of erosion; however, a significant amount of coastal erosion in Florida is directly attributable to the construction and maintenance of navigation inlets. The mouth of the St. Mary's River was dredged during the past five years to allow boat access, causing erosion at beach areas on both the north and south ends of Amelia Island.

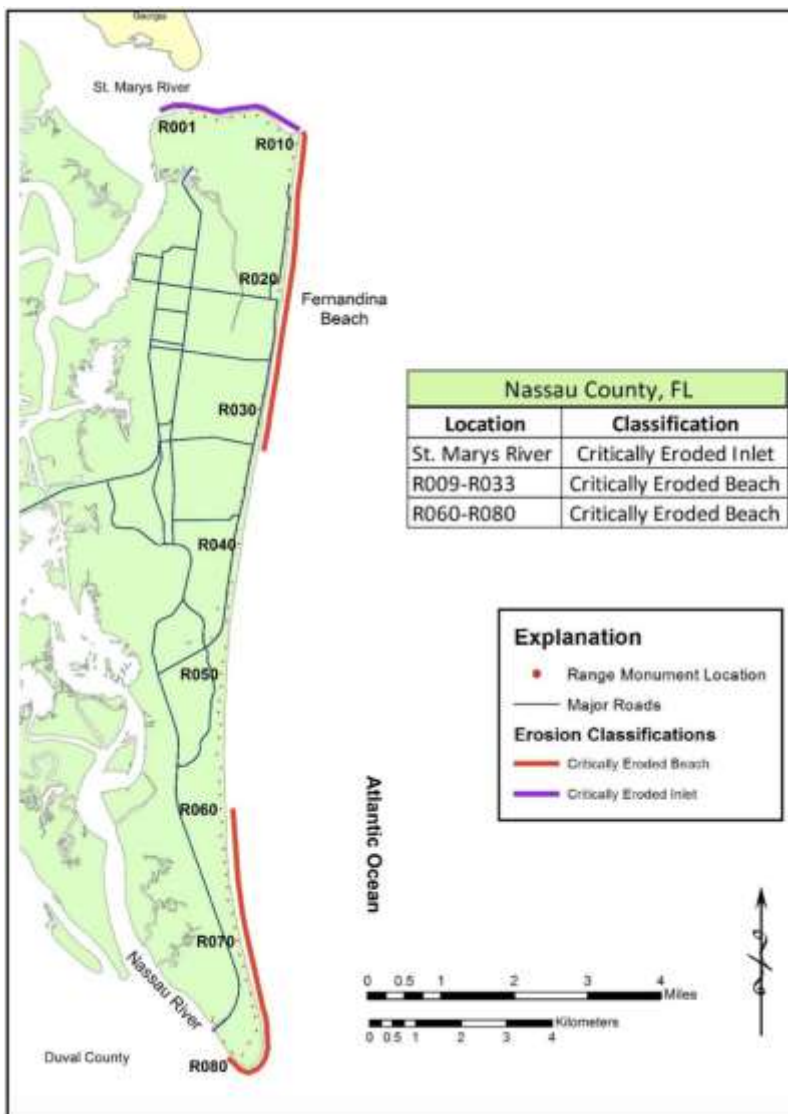
The 2020 report, *The Effects of Climate Change on Florida's Ocean and Coastal Resources*, noted the following regarding environmental changes and impacts to beaches, barrier islands, and inlets: "Beaches and inlets are regional systems of sediment deposition, erosion, and transport. These processes are profoundly affected by changes in sea level and rates of sea level change, as well as storm events. Scientists and resource managers will be challenged to separate the effects of sea level changes from the effects of storms and the alterations resulting from beach and inlet management actions."

Pictured below are statewide areas of critically and non-critically eroded shoreline



Source: ROSSI database.

In 2009, there were two critically eroded beach areas (7.7 miles) and one critically eroded inlet shoreline area (2.5 miles) in Nassau County. The inlet shoreline erosion area (2,500 feet west of R1 – R9) extends 2.5 miles along the south shoreline of the St. Marys River entrance on Amelia Island. Threatened are the historic Fort Clinch and recreational beaches of Fort Clinch State Park. The northern 4.4 miles of Atlantic Ocean fronting beaches of Amelia Island (R9 – R33) are critically eroded. This area falls within the jurisdiction of the City of Fernandina Beach and has an ongoing beach management project involving the transfer of sand dredged from the St. Marys River Entrance to the eroded beaches. Development and recreational interests along Fernandina Beach and Fort Clinch State Park are threatened. The southern 3.3 miles of Atlantic Ocean fronting beaches of Amelia Island (R60 – R80) (within the jurisdiction of unincorporated Nassau County) are critically eroded, threatening development and recreational interests. A beach restoration project has been constructed along much of this area. A terminal groin has been constructed at R80 and a nearshore breakwater has been constructed south of R75.



Critically eroded shorelines within Nassau County.

Source: Florida Department of Environmental Protection, 2019

County	Eroding Shoreline Location (by R monument or inlet name)	Erosion Condition	Critically Eroded Beach (miles)	Non-Critically Eroded Beach (miles)	Critically Eroded Inlet (miles)	Non-Critically Eroded Inlet (miles)
Nassau	St. Marys River	Critical Inlet Shoreline	0	0	2.5	0
Nassau	R9 – R33	Critical	4.4	0	0	0
Nassau	R60 – R80	Critical	3.3	0	0	0
Nassau	Total Eroding Shoreline		7.7	0	2.5	0

Locations of critically eroded beach and inlet shoreline, and non-critically eroded beach and inlet shoreline, in Nassau County, as of June 2019.

Source: Florida Department of Environmental Protection, 2019

Coastal counties like Nassau must begin planning for rising sea-levels. Initial vulnerability assessments show critical infrastructure and community assets such as schools, health care facilities, police and fire stations, water and power facilities at risk. Interdisciplinary and intergovernmental coordination is needed to begin planning for a long-term strategy to accept, mitigate, or adapt to rising sea levels and related impacts of climate change. Existing beach renourishment projects should help mitigate sea level rise on the ocean side, but continued support and program enhancements to address inland waterways are imperative. Identifying physical vulnerabilities and mitigating damage to property and infrastructure, as well as the economic and social impacts, are common strategies to adapt to impending sea level rise.

Dunes and beaches serve as a natural buffer for more inland areas; they give some protection from high winds and storm surge associated with tropical cyclones. They are home to many species of birds, reptiles, amphibians, and mammals dependent on these areas for breeding and nesting. To protect natural habitat, historical sites, tourism and private property interests, current planning suggests the need for additional comprehensive beach restoration activities every five years. Restoration of these systems has been addressed in the City of Fernandina Beach’s Comprehensive Plan, Conservation and Coastal Management Element. The Department of Environmental Protection’s Coastal Construction Control Line (CCCL) establishes limits to protect the beach and dune systems from imprudent construction that could weaken, damage, or destroy their integrity.

Through a mix of legislation, controls and regulations, and growth management, the threat from catastrophic coastal erosion has been lessened in the past few years. The State of Florida has passed legislation that establishes setback controls, or the distance that a structure must be

from the coast. However, Sea-Level-Rise may force the DEP to consider more strict limits and extend set-back lines and community development planners and transportation officials may have to consider new technology such as rapid-transport people-movers to provide the public elevated routes to traverse the island and additional evacuation options.

Sea Level Rise

Since 1880, the average sea levels have risen by 8 inches (23cm) and the sea rises 0.13 inches (3.2 mm) each year. Changes in sea level are the result of the thermal expansion of water, melting glaciers, and the loss of Greenland and Antarctica's ice sheets. Relative sea level (RSL) is a combination of the sea level rise and the local vertical land motion.

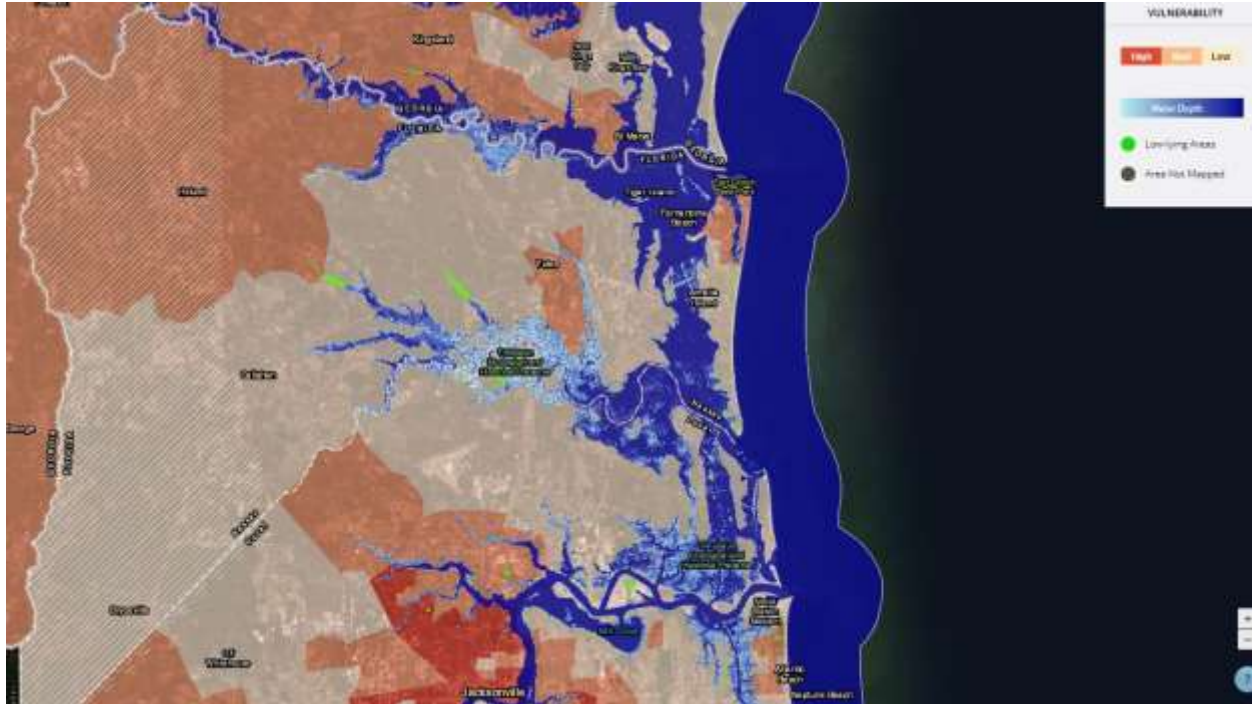
Around Florida, relative sea level (RSL) has been rising at a slow but constant rate, about an inch or less per decade. Nassau County is fortunate to have a NOAA tide gauge data station with over 100 years of records. National Oceanic and Atmospheric Administration historical and technical reports from 1897 to 2014 indicate a +0.67 foot historical change in sea level absent the exacerbating effects of climate change. The RSL trend for Fernandina Beach, FL is 2.15mm/year (0.085 in/year) with a 95% confidence interval of +/- 0.18 mm/year, about a change of 0.71 feet in 100 years.

Rising sea levels will have impacts on infrastructure, development, community health, and the economy. The beaches in Nassau County (both unincorporated Nassau County and the City of Fernandina Beach have beaches within their respective jurisdictions) are a major tourist destination and thus have a high economic value to the area. Sea level rise can cause increased coastal erosion and instability of these beaches, with the potential for loss of coastal property. These beaches also provide critical habitat for marine animals: for example, nesting sites for sea turtles. Additional impacts of sea level rise are increased stresses on or losses of tidal wetlands, changes to the landforms of estuaries, tidal wetlands, and tidal rivers. Sea level rise exacerbates the impacts of storm surge during a tropical storm or hurricane as the surge is on top of an increased water level causing an increased flooding and related damage.

Sea level rise impacts Nassau County's fresh water supplies. The Floridian Aquifer is the major source of water for municipal and industrial use in Nassau County and as sea levels rise and submerge low lying areas of the county, portions of this aquifer could become saline.

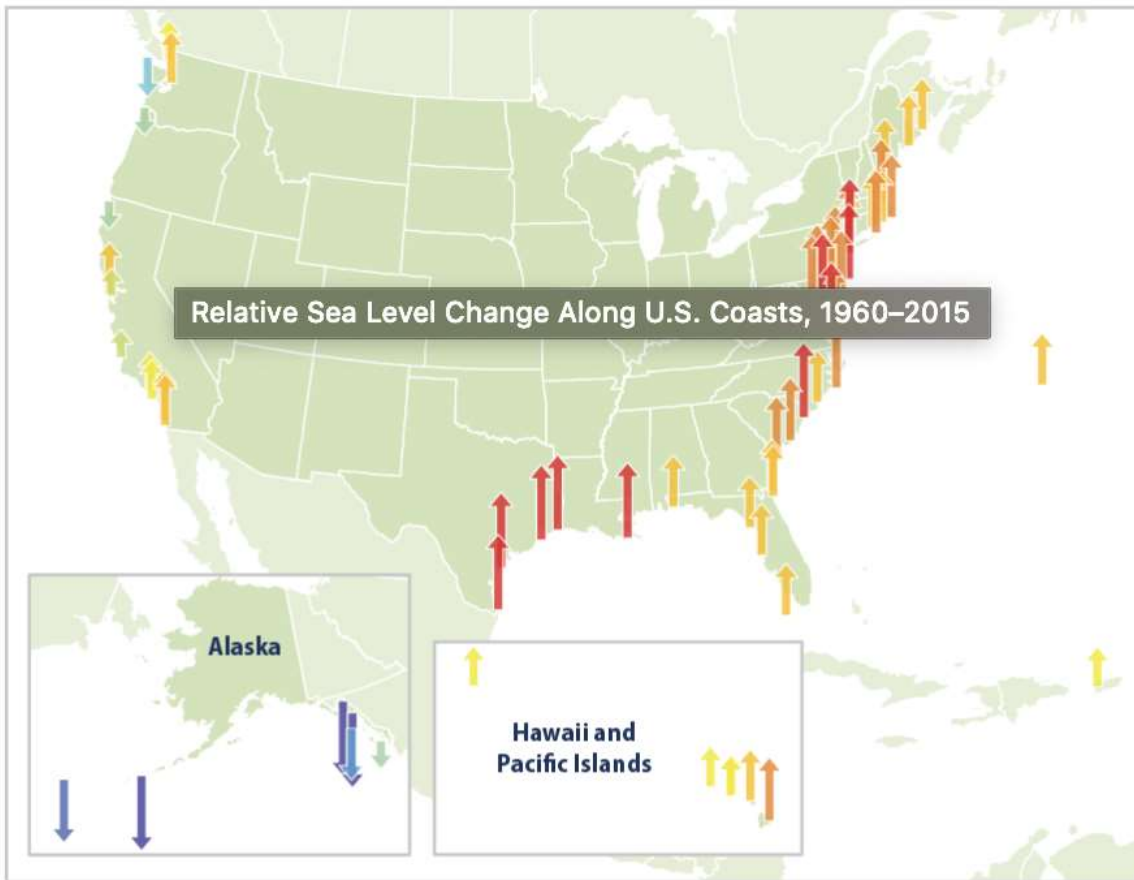
The figure below, taken from a sea level rise viewer product provided by NOAA Office for Coastal Management shows vulnerable areas of Nassau County to sea level rise. Fort Clinch State Park at the northern end of Amelia Island is located within an area designated as having

medium vulnerability to sea level rise, as is most of the ‘urban center’ of the county in downtown Fernandina Beach. Areas most vulnerable to sea level rise are located on the barrier island of Amelia Island. The northern areas of Amelia Island fall under the jurisdiction of the City of Fernandina Beach while the rest of the island is unincorporated Nassau County.

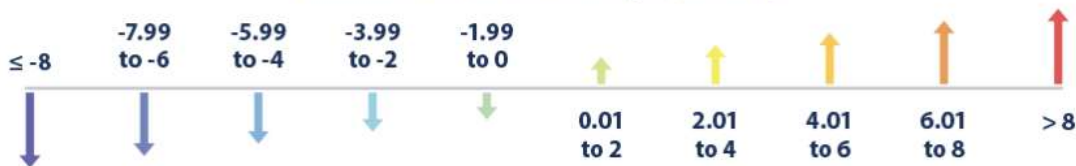


<https://coast.noaa.gov/digitalcoast/tools/slr.html>

The Encroaching Tides report from the Union of Concerned Scientists indicates Fernandina Beach’s average flooding events a year could increase from its current two per year to eight per year by 2030, and 37 by 2045. However, mitigation actions taken in the near-term to address flooding vulnerabilities can lessen the effects of future Sea-Level Rise.



Relative sea level change (inches):



Relative Sea Level Change along U.S. Coasts, 1960-2015 - Source: NOAA, 2016

Local comprehensive land use plans should be updated to:

- Include strategies to reduce coastal flood risks resulting from high-tide events, storm surge, flash floods, storm-water runoff, and related impacts of sea level rise.
- Encourage development and redevelopment strategies that result in the removal of coastal real property from flood zone designations established by FEMA.
- Identify site development techniques that may reduce flood losses and resulting flood insurance claims.
- Be consistent with, or more stringent than, the flood-resistant construction requirements in the Florida Building Code and applicable floodplain management regulations set forth in 44 C.F.R. Part 60.

- Require that any construction activities seaward of the established coastal construction control lines be consistent with Chapter 161.
- Encourage increased participation in the NFIP Community Rating System (CRS) to achieve higher flood insurance premium discounts for residents in unincorporated Nassau County (currently class 8) and the City of Fernandina Beach (currently class 6).

Severe Thunderstorm

A severe thunderstorm produces one or both of the following: hail that is one inch in diameter or larger and/or winds of 58 mph or greater. Lightning is one of the most dangerous aspects of a thunderstorm. However, lightning does not constitute a severe thunderstorm, as lightning is present in every thunderstorm. Hail is defined by small particles and super cooled water droplets that fall to the Earth. Winds from thunderstorms can come in two forms, tornadoes or straight-line winds.

The table below shows the Combined NOAA /Torro Hailstorm Intensity Scale which outlines the typical damage impacts based on hail intensity.

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H0	Hard Hail	up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33 - 0.60	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60 - 0.80	Dime or grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80 - 1.20	Nickel to Quarter	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1.2 - 1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.6 - 2.0	Silver dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0 - 2.4	Lime or Egg	Aircraft bodywork dented, brick walls pitted
H7	Very destructive	2.4 - 3.0	Tennis ball	Severe roof damage, risk of serious injuries
H8	Very destructive	3.0 - 3.5	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.5 - 4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

H10	Super Hailstorms	4+	Softball and up	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
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The table below illustrates the Beaufort Wind Force Scale’s effects on land which is an empirical measure of related wind speed to observed conditions at sea or on land.

Force	Wind (Knots)	Classification	Appearance of Wind Effects on Land
0	<1	Calm	Calm, smoke rises vertically
1	1 - 3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4 – 6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	7 - 10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	11 – 16	Moderate Breeze	Dust, leaves, and loose paper lifted; small tree branches move
5	17 – 21	Fresh Breeze	Small trees in leaf begin to sway
6	22 – 27	Strong Breeze	Larger tree branches moving, whistling in wires
7	28 – 33	Near Gale	Whole trees moving, resistance felt walking against wind
8	34 – 40	Gale	Twigs breaking off trees, generally impedes progress
9	41 – 47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	48 – 55	Storm	Seldom experienced on land, trees broken or uprooted
11	56 – 63	Violent Storm	Widespread damage
12	64+	Hurricane	Structural damage

Severe thunderstorms move across northeast Florida with relative frequency during the spring and summer months as well, leaving no area of the county exempt from their impacts. According to NOAA’s storm event database, Nassau County experienced 44 recorded severe thunderstorms between Jan 2016 and Sept 2020. Lightning strikes are extremely common in the southeast, and Nassau County is no exception with a range of 12-28 flashes per square mile each year throughout the area. Lightning strikes can ignite wildfires or structure fires, create power outages, and cause injuries or death to livestock, pets, and humans. According to the National Weather Service, Florida ranks number one in lightning fatality risk.

Excessive rainfall from thunderstorms may lead to deadly flash flooding, but heavy rain is not a “severe” criterion either. Wind gusts from severe thunderstorms can do as much or more damage than even tornadoes. Extended power outages, downed trees, and extensive damage to roofs, doors, and windows can all occur from straight-line gusts or downbursts of wind anywhere in Nassau County. Although not necessarily associated with severe storms, rip currents are another deadly coastal hazard to consider.

Hail occurs in thunderstorms when raindrops, pushed upward by strong currents of air, freeze into larger and larger “stones” as they repeatedly cycle through the cold tops of storm clouds. This continues until the weight of the hailstones can no longer be carried by the storm’s updraft and they fall to the ground. Depending on the size of the hailstones, injuries to people and animals and serious damage to automobiles, structures, crops can take place. Minor damage to vehicles occurs during these storms; impacts are most likely to be realized by drivers

on the road, and to roofs of vehicles, homes and businesses in the populated municipalities and unincorporated areas of the county. A damaged roof shingle may allow water to seep through, causing additional damage to the roof deck, support structure, interior walls, or windows. Leaking, in turn, causes interior flooding, staining on walls, and a moist environment for mold growth.

Impacts from severe storms could include damage to homes, businesses, infrastructure and services to the community. There is a possibility that some of the population could suffer severe injuries or death.

At this time, public awareness and timely warnings are the only prevention and mitigation strategies available. Mitigation of losses and injuries from the hazards found accompanying severe thunderstorms (i.e. high wind gusts, lightning, hail, and surface ponding) involves heeding timely public warnings to secure loose property, seek shelter inside a substantial structure (e.g. a large building) or remain in a fully-enclosed metal-roofed vehicle for the duration of the storm's effects, and not to drive through water covering roadways.

All areas of Nassau County are equally susceptible to severe thunderstorms; as such a map of susceptible areas was excluded.

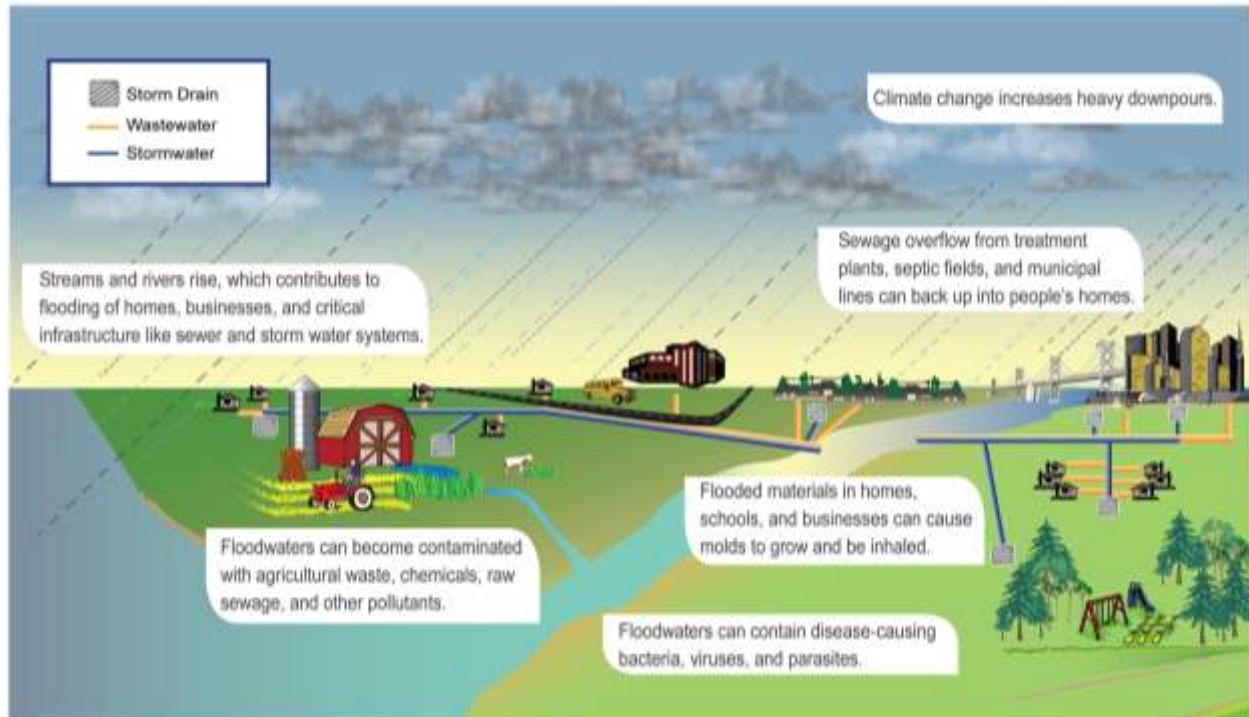
Impact of Climate Change on Natural Disasters

According to the U.S. Environmental Protection Agency (EPA), Climate Change can have significant effects on weather and other natural hazards. Northeast Florida's climate is generally warm and wet. Measurements have shown that the average annual temperature has increased almost two degrees in the past 40 years, and projections indicate that it will increase somewhere between four and nine degrees by 2080. The major aspects of climate change projected to affect Florida are increasing greenhouse gases, increasing air temperature and water vapor, increasing ocean temperature, and increasing sea level. Results of these changes include increased ocean acidification, altered rainfall patterns, increased frequency and intensity of tropical storms and hurricanes, loss of marine life, changes in species and nutrient supply, and increased algal blooms.

Climate models suggest episodes of heavier downpours with increased dry periods between storms, raising the risk of flooding and drought. The gradual warming of the climate is expected to exacerbate the effects of sea-level rise, stronger tropical cyclone systems, and greater storm surge. Low-lying areas throughout Nassau County, including transportation infrastructure and fragile ecosystems, could be flooded more frequently; some property could

be permanently lost. Higher temperatures increase evaporation, raising the frequency, duration, and intensity of drought and wildfire occurrences, pest and disease outbreaks, livestock deaths, and crop failure.

The figure below, from the *Cooperative Institute for Climate and Satellites in North Carolina*, illustrates how heavy downpours increase exposure to disease.



Public health, too, can be negatively impacted by climate change's disruption of physical, biological, and ecological systems. The EPA, National Center for Environmental Health, and Centers for Disease Control and Prevention point out that higher temperatures and more frequent heat waves could cause a surge in heat stress and respiratory illnesses, as well as a proliferation of bacteria species (e.g. Cholera, Vibrio, MRSA), allergies, and more opportunities for transmission of deadly diseases such as Dengue Fever, Malaria, West Nile Virus, and Equine Encephalitis, via insect vectors that thrive in warmer wet environments (e.g. mosquitoes, ticks) in a wider geographic area.

Vulnerability Assessment

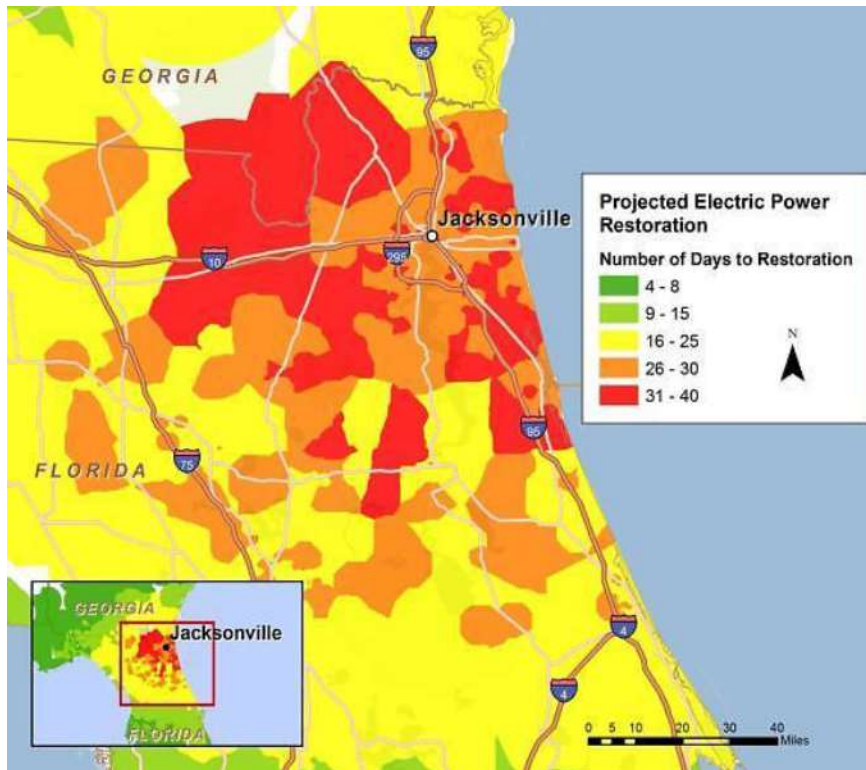
The previously identified hazards can each bring different consequences to Nassau County, to its structures, infrastructure and utilities, transportation networks, its economy, and its

environment. Nassau County has a rich history and many National Historic Sites vulnerable to multiple hazards. The island has two historic districts founded in the early 1800s. Other notable historic sites include the Amelia Island Lighthouse, Peck High School, John Denham Palmer House, Florida's oldest courthouse in continuous use, the oldest continuously operating hotel (Florida House Inn), and the oldest continuously operating public tavern in the state (Palace Saloon).

Nassau's location, elevation, and dependence on power (gas and electric) from sources outside of the county make the area's critical infrastructure vulnerable to multiple hazards. In addition, the county's reliance on the agroforestry industry and tourism as its financial base, makes the local economy vulnerable to any natural hazard that might disrupt those operations, i.e. infectious disease outbreak, hazardous materials release, extreme temperatures, drought, wildfire, hail, flooding or damaging winds of any origin.

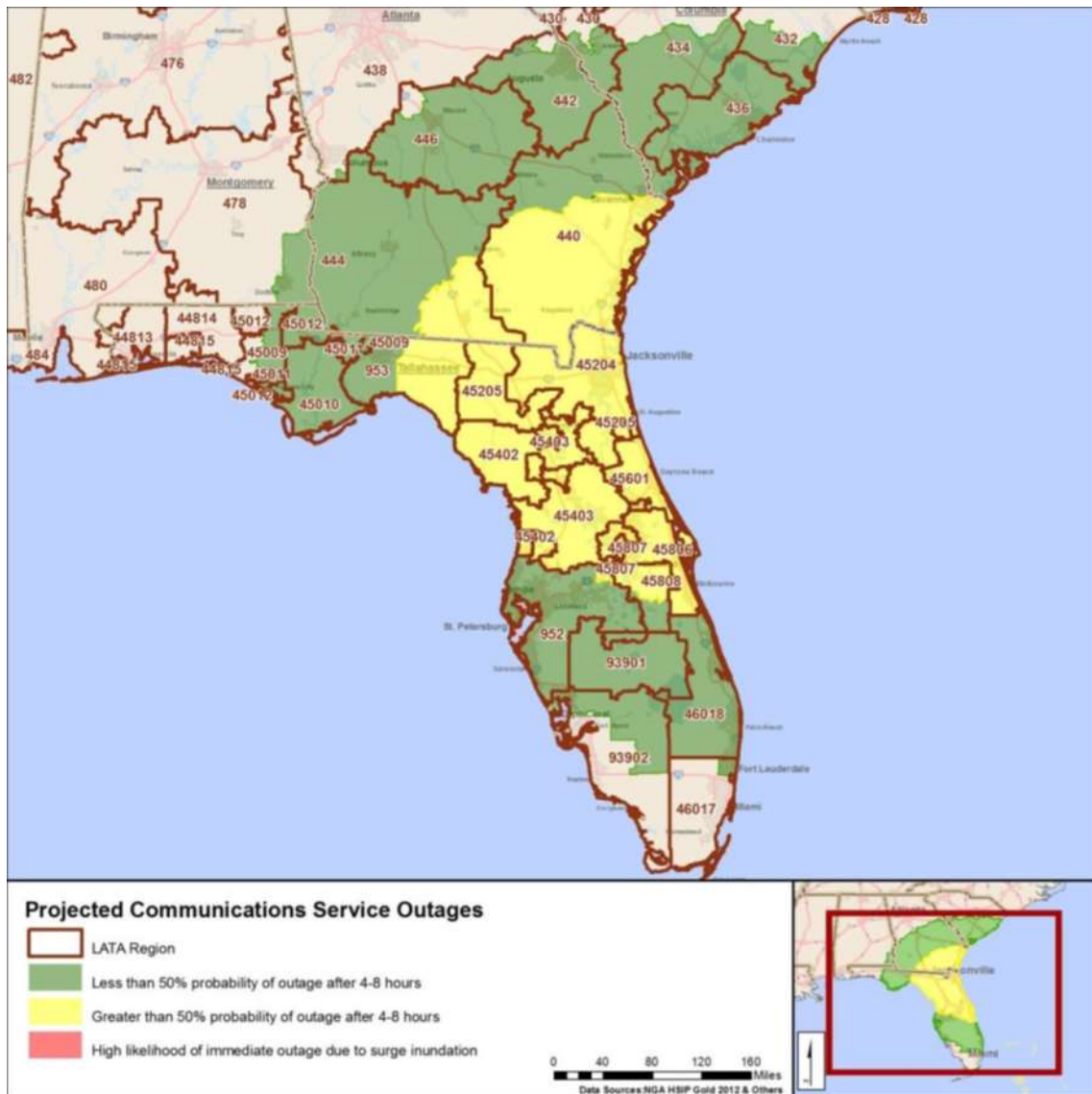
In February 2015 the Department of Homeland Security's National Protection and Programs Directorate Office of Cyber and Infrastructure Analysis (DHS-OCIA) released their assessment of a simulated hurricane impact to northeast Florida (Jacksonville Region), which was supported by modeling performed by the National Infrastructure Simulation and Analysis Center (NISAC). The report indicates significant impacts in all projected storm surge inundation areas: substantial wind damage to structures, widespread long-term electric power outages, rainfall-runoff flooding in excess of one foot, sizeable losses to agricultural and animal operations, local fuel shortages, as well as community-wide economic losses associated with business closures resulting from storm surge flooding and lack of power. The destruction would be even more devastating with tornadoes secondary to the tropical cyclone.

The image below shows the estimated time to restore electrical service to customers in the Jacksonville metropolitan area, into which Nassau falls. Given the DHS-OCIA scenario's damaging high wind speeds, it will take up to 40 days to repair the downed lines and flooded substations necessary to completely restore power.



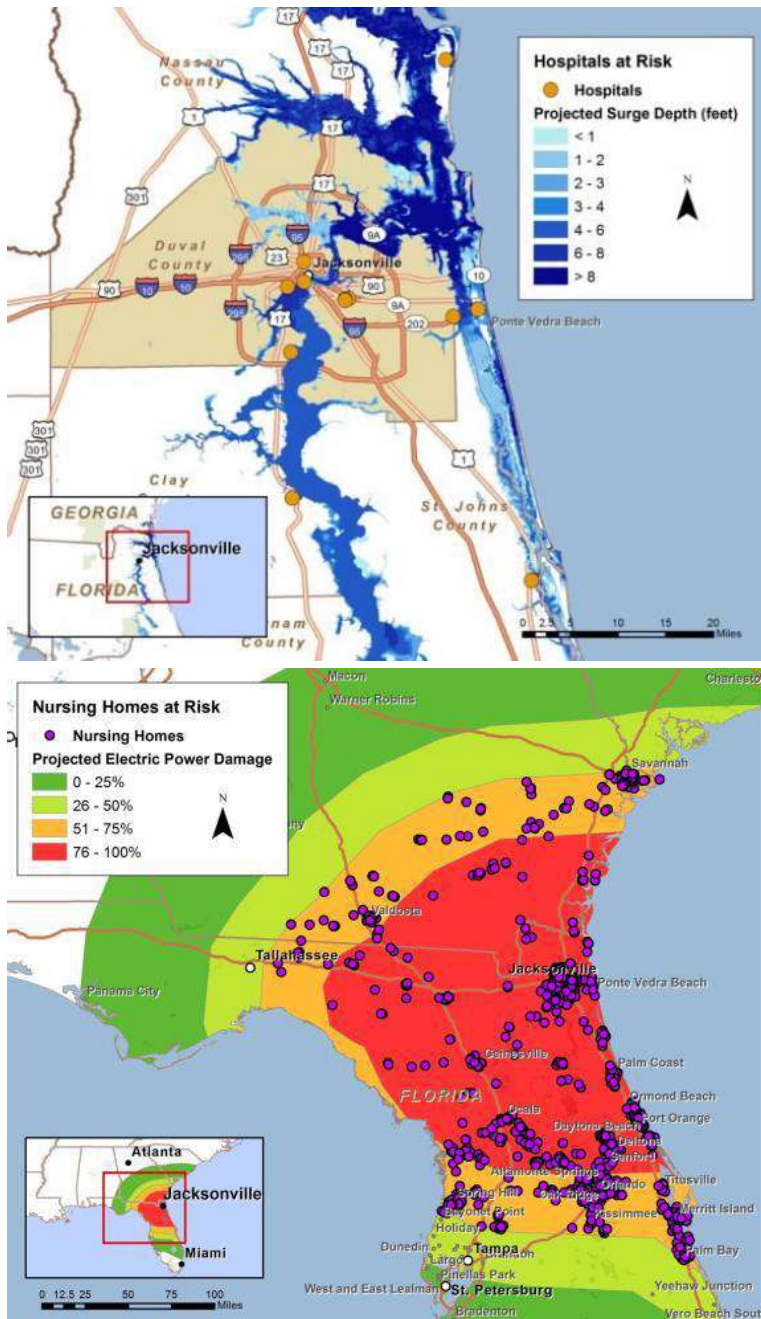
Estimated Electric Power Restoration Time Sequence for NE Florida – Source DHS-OCIA 2015

Storm damage and power outages to the wireline wire centers puts communication services at risk. Despite the frequent testing and maintenance most telecommunications companies conduct, some percentage of generators will fail. Cellular base stations with backup battery systems will see significant performance degradation as those batteries begin to fail in prolonged outages. Without the ability to refuel generators, wire centers are also at risk. Even with the network operating, individuals dependent on Voice over Internet Protocol (VoIP) or cordless land-line handsets will be unable to access service unless they have battery back-up systems in place.



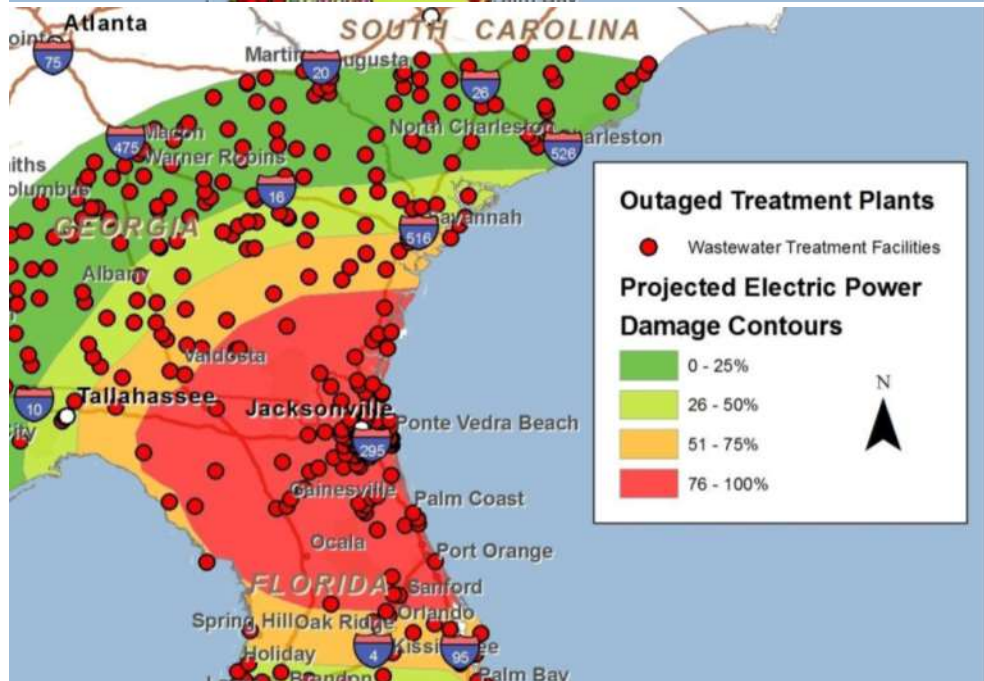
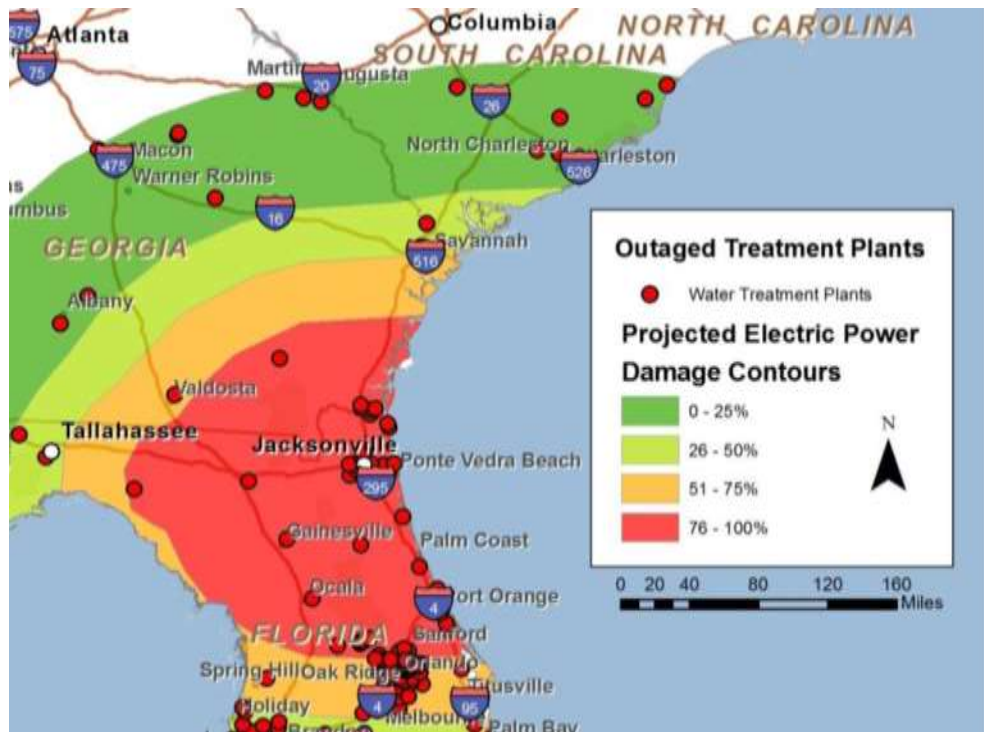
Source DHS-OCIA 2015

Baptist Medical Center Nassau is at high risk for any hazard involving storm surge, coastal flooding, or high winds. Its location on the island makes it inaccessible via bridge during high winds. The hospital has to completely evacuate when a tropical cyclone is anticipated, and although it is part of the Baptist Medical System, more than one of its sister-facilities in Jacksonville is also located in at-risk areas that are forced to evacuate to some degree when these storms are looming. Additionally, the DHS-OCIA report notes that the county’s medical facility as well as multiple nursing homes are within the 76- to 100-percent electric power outage area and, following a direct hit by a hurricane, may be without power for several weeks.



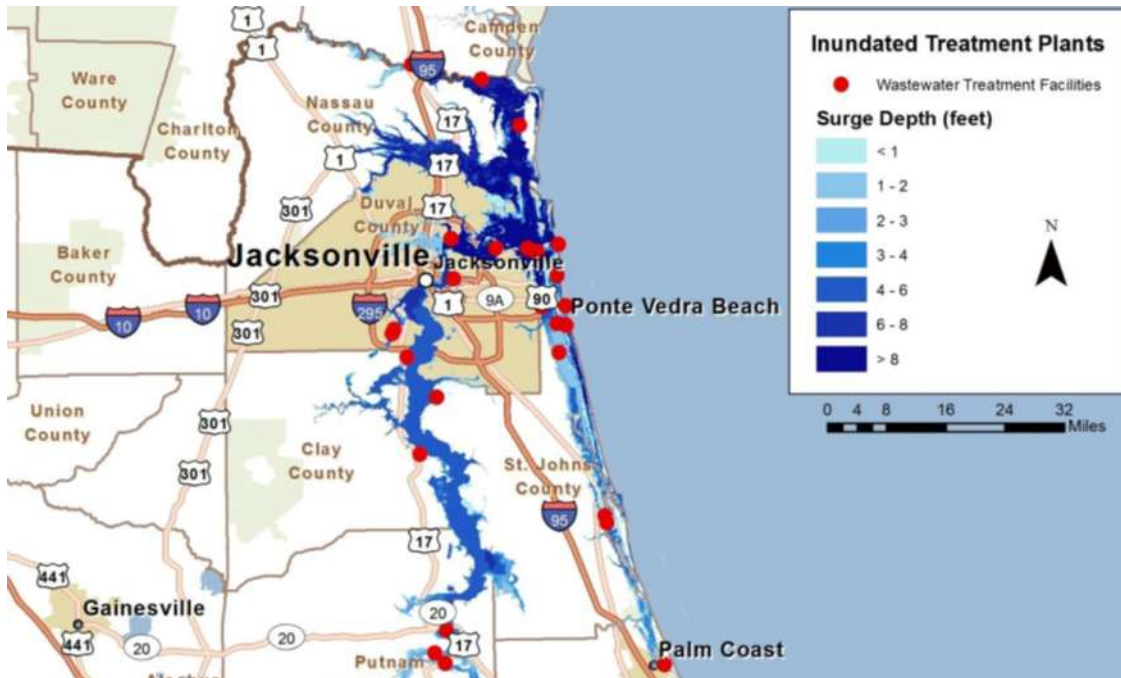
Source DHS-OCIA 2015

Sanitation systems for drinking water and sewage treatment are vulnerable critical facilities in Nassau County; if these services are unavailable, residents may not be able to return home and many businesses will be unable to reopen following a tropical cyclone. High winds and flooding from any source can damage infrastructure that supports water treatment plants (e.g., electric power and telecommunications).



Source DHS-OCIA 2015

Electrical components of water plants can also be damaged, as well as worker access and safety limited, by rainfall flooding, surge inundation, or debris flows.



At least some areas of Nassau County are potentially vulnerable to all of the listed natural hazards, regardless of likelihood or severity of impact. Determining areas of the county most at risk to specific hazards helps the Local Mitigation Strategy Task Force propose and evaluate initiatives to prevent property destruction, protect critical infrastructure, and reduce personal property losses. These types of improvement projects have both near-term and long term benefits. They will make the community more resilient and self-sufficient, lowering the number of individuals who rely solely on public assistance to recover from natural disasters.

The LMS Task Force has identified the following hazards with potential for disastrous effects if mitigation actions are not initiated:

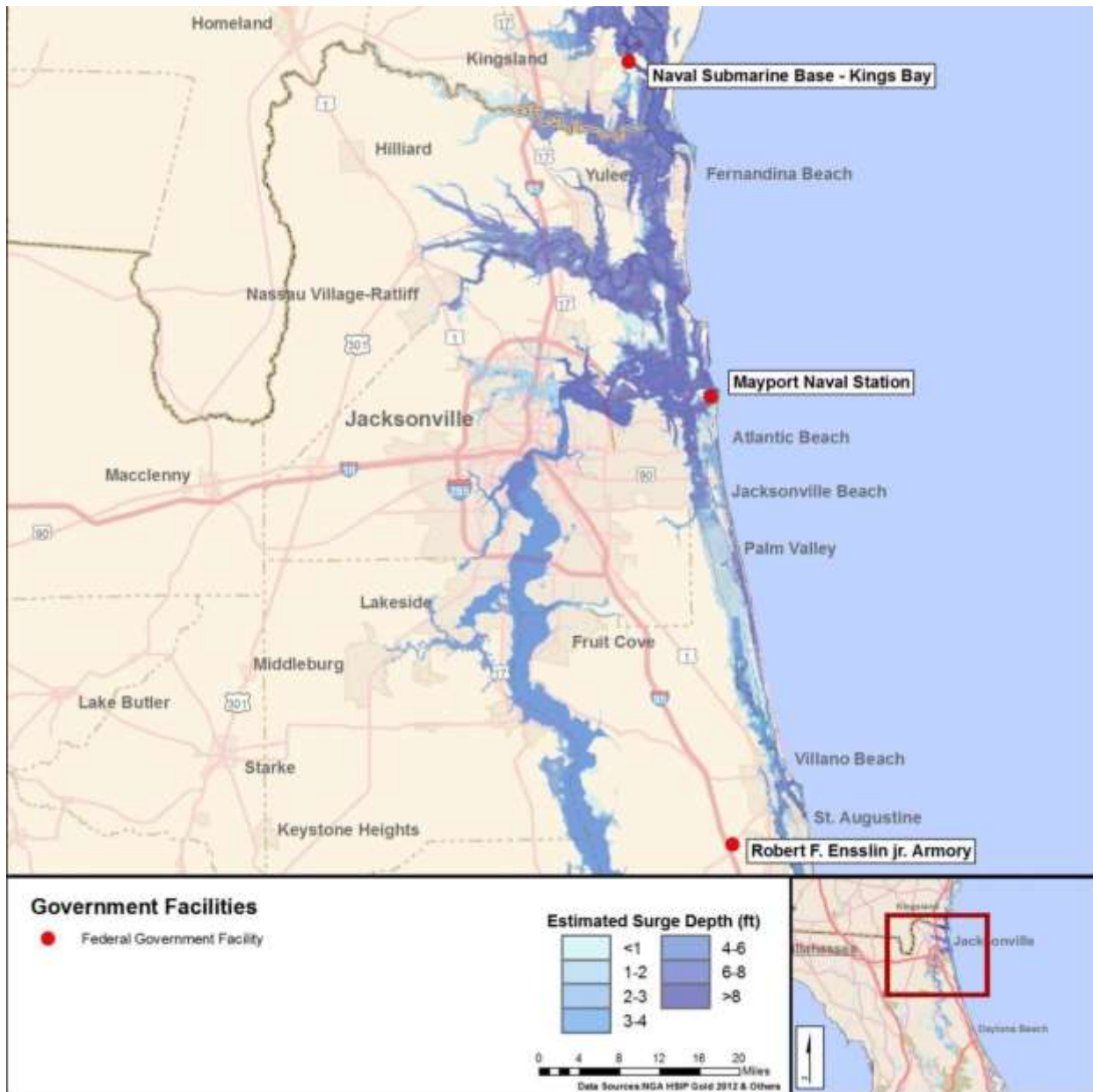
- Infectious disease
- Extreme temperatures
- Drought
- Wildfires
- Tornado
- Flooding
- Tropical Cyclones
- Coastal Erosion
- Sea Level Rise
- Severe Thunderstorms

Widespread disease outbreaks or epidemics created by natural mutations and spread of a novel virus, multi-drug resistant bacteria, or even intentional release of a pathogen can overwhelm

healthcare systems and cripple the economy. It is estimated that an epidemic of a novel influenza strain could reduce the workforce by at least a third and require self-isolation and home-care for the ill. Projects are needed to better identify vulnerable populations, develop alternate sites of care, enhance mass prophylaxis capabilities, and improve public education and emergency dissemination of life-safety information.

Extreme temperatures, especially heat waves accompanied by drought conditions, create prime conditions for wildfires each year in Nassau, which in turn cause damage to wildland, crops, and structures, and require substantial resources to control. Anticipating and mitigating drought and fire damage can reap long-term rewards to the natural landscape, agriculture, and community economy. Severe thunderstorms are prevalent in Nassau County, especially during the summer months. Lightning strikes can start wildfires and produce damaging hail. Tornadoes are infrequent, but they can appear with very little warning and combined with their extreme wind forces, can cause catastrophic losses of life and property. Direct hits by tropical cyclones or hurricanes are not common in the northeast corner of Florida, but numerous tropical systems have come close enough to cause flooding and damaging high winds within Nassau County. Localized flooding also occurs from time to time along the St. Mary's River, the Nassau River, and their tributaries, as well as in isolated pockets of low-lying areas.

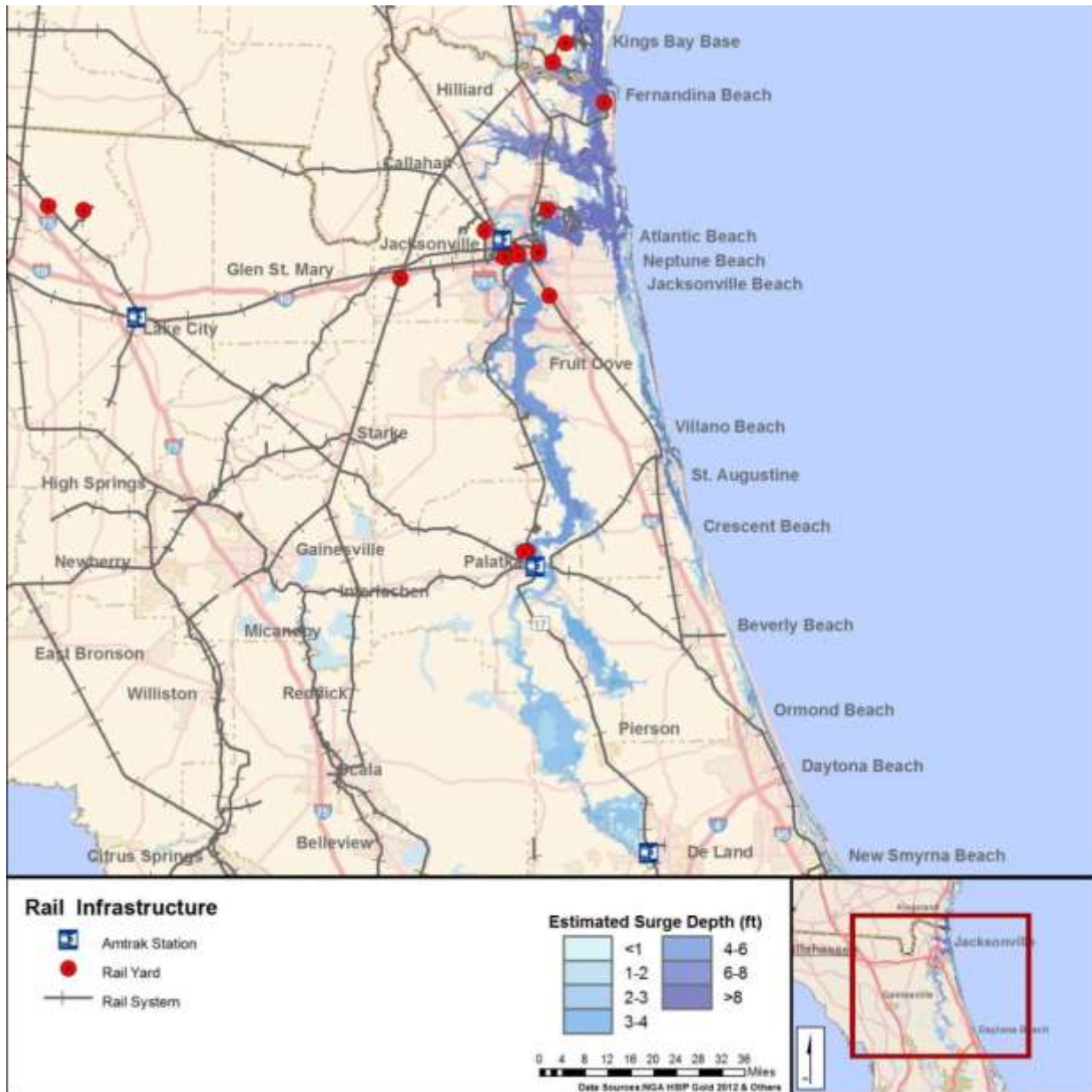
According to the Florida Division of Emergency Management, critical facilities are the structures from which essential services and functions for victim survival, continuation of public safety actions, and disaster recovery are performed or provided, as well as the infrastructure essential to the mission of those critical facilities. Although the "public safety and security sensitive" nature of Nassau County THIRA exempts it from public disclosure, information gleaned from the assessment confirms the county houses facilities in each of the following critical infrastructure sectors, many in areas vulnerable to flood and wildfire: Commercial, Communications, Emergency Services, Energy, Food & Agriculture, Government Facilities, Healthcare & Public Health, Information Technology, Transportation, Water & Wastewater. The Mayport and Kings Bay Naval Stations are part of the Defense Industrial Base Sector, and although not within the county borders, are located in close proximity to Nassau.



Source: DHS-OCIA 2015

Another critical military and transportation asset, the Federal Aviation Administration’s Jacksonville Air Route Traffic Control Center (Jax ARTCC), was relocated from its original Imeson Airfield site to Hilliard in 1961. The facility is one of only 20 enroute air traffic control facilities in the country and responsible for the airspace over five states, including 20 military airports and 225 civilian airports. Because Jacksonville is home to three Navy bases, the city was considered a potential target during the Cold War; therefore, the southeastern region’s Jax ARTCC was moved well to the northwest of the potential “ground zero”. The secure facility was built several feet above the local floodplain standard and hardened to withstand military

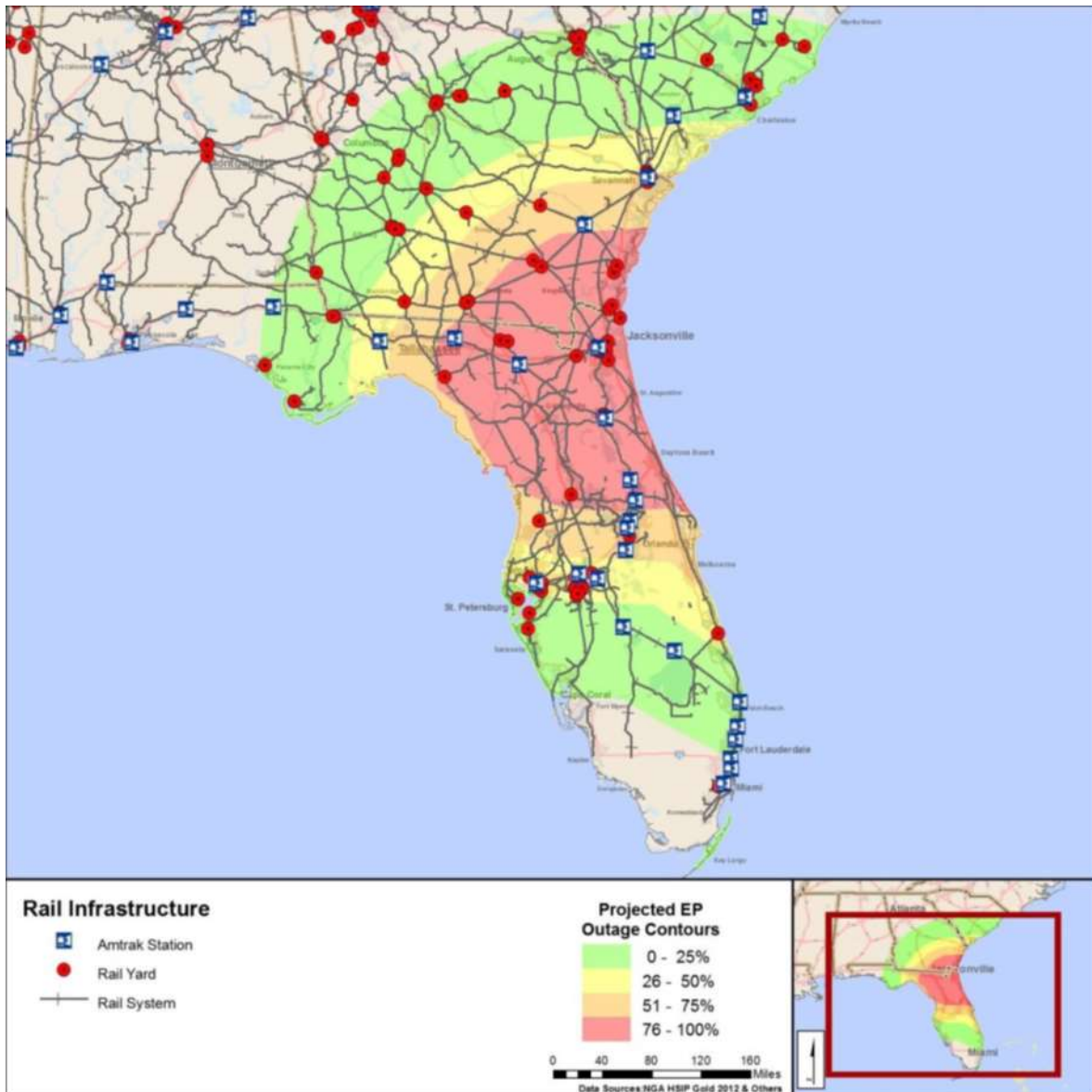
assault. It is operational 24 hours a day every day of the year but could provide space for an alternate site for continuity of county emergency operations in a catastrophic disaster.



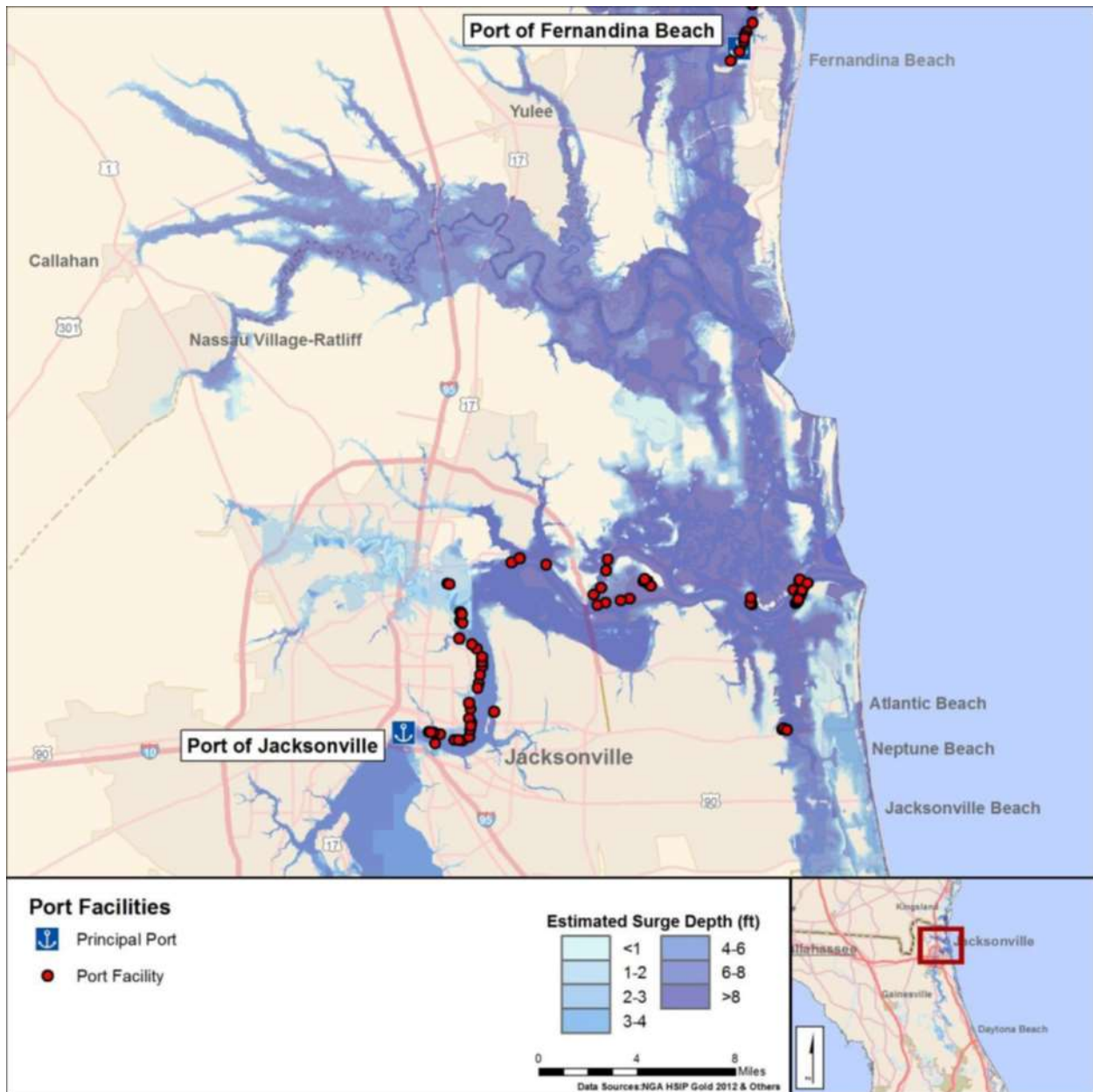
Source: DHS-OCIA 2015

Under the hurricane scenario proposed in the 2015 DHS-OCIA report, emergency service facilities in the county would be affected both by storm surge and inland flooding; many would be in the electric power outage and wind damage areas, and emergency response would certainly be hindered by local flooding, debris on the roadway, and communications challenges. Baptist Medical Center Nassau would be evacuated. Both Mayport Naval Station and Naval

Submarine Base Kings Bay are located in close proximity to Nassau’s coast and could incur significant damage due to storm surge, wind damage, and electrical outage. The release of hazardous materials as a result of a transportation accident or natural disaster worsens the impact of the tragedy. Railroad lines, the Port of Fernandina, and Rayonier facility in Fernandina Beach lie within the projected tropical storm rainfall-runoff flood area and would be affected by storm surge and long-term power outage in the event of a hurricane coming ashore even miles south. (Damage to rail lines and bridges resulting from Hurricane Katrina took at least five months to repair.) At minimum, the transportation and industrial sites, water and waste water treatment facilities on the island, along with their associated chemical supplies, are at risk to acute storm damage and long-term power outages.

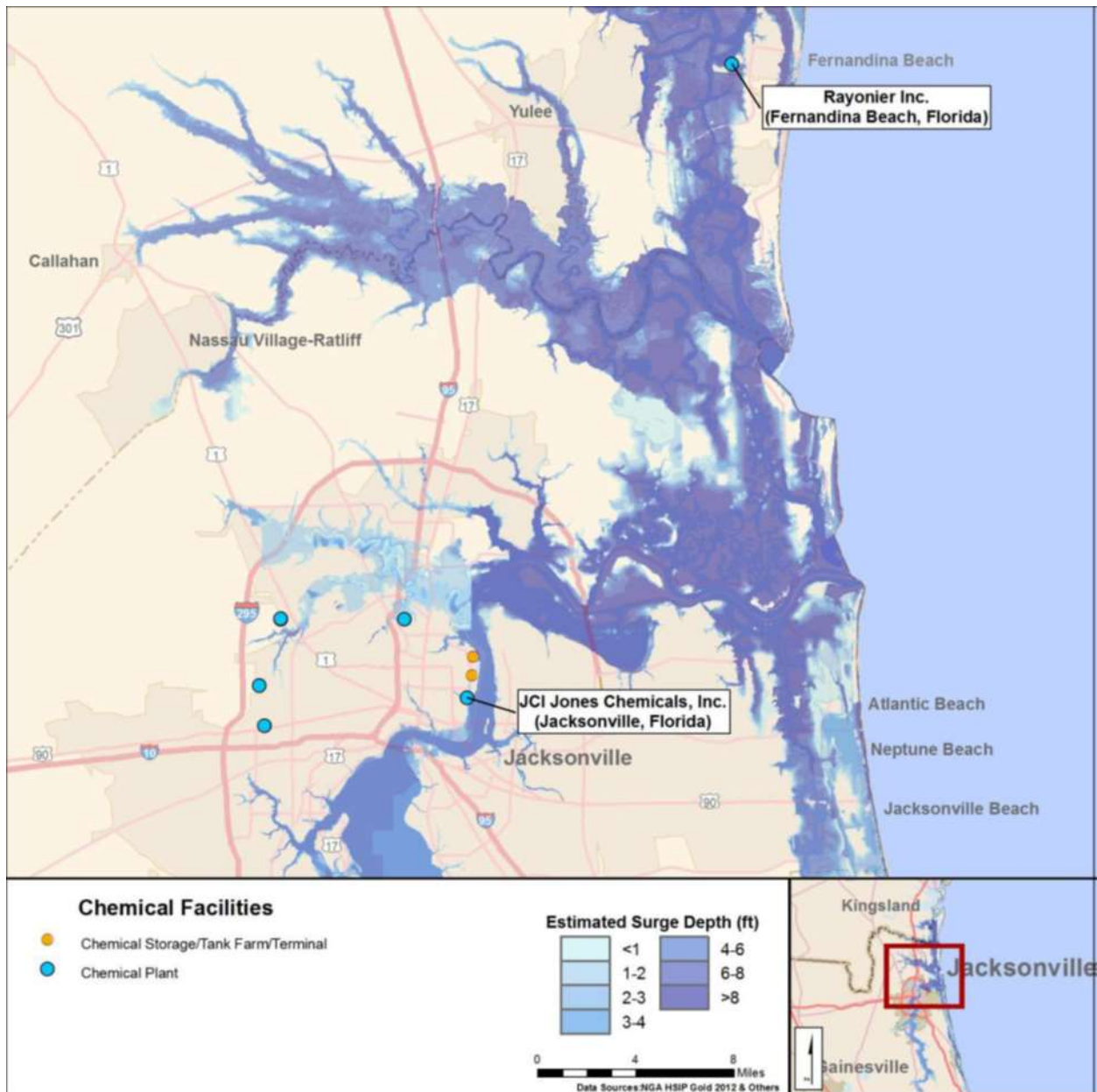


Source: DHS-OCIA 2015



Source: DHS-OCIA 2015

Note that Kinder-Morgan manages the principal Port of Fernandina, “Kinder Morgan Nassau Terminals”, and has multiple port facilities located along Nassau County’s Intracoastal Waterway within the >8 feet estimated surge depth zone.



Source: DHS-OCIA 2015

Note that both the Rayonier and West Rock plants on Amelia Island have chemical storage facilities and store significant quantities of potentially hazardous materials, including those classified “Extremely Hazardous Substances”, in the >8 feet estimated surge depth zone.

The following charts summarize and assess the county’s vulnerability to the presented hazards. Additionally these charts show probability of occurrence. These are rated as **not likely** (less than 5% chance of occurring), **likely** (between 5% and 15% chance of occurring) and **very likely** (more than 15% chance of occurring).

Floods				Overall Vulnerability	
Overview					
<p>Flood or flooding is defined as a general and temporary condition of partial or complete inundation of normally dry land areas from: (1) the overflow of inland or tidal waters; (2) the unusual and rapid accumulation or runoff of surface waters from any source; (3) mudslides (mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.</p>				HIGH	
Frequency	Probability	Magnitude			
Very Likely	Very Likely	Injuries/Deaths	Infrastructure		Environment
		High	High		High

Tropical Cyclones				Overall Vulnerability	
Overview				HIGH	
<p>A tropical cyclone is defined as a rapid rotating storm originating over tropical oceans. A tropical cyclone brings violent winds, torrential rain, high waves, and in some cases, storm surges and coastal flooding. Hurricanes cause major damage because of storm surge, wind damage, and flooding. The Atlantic Hurricane Season is from June 1 to November 30.</p>					
Frequency	Probability	Magnitude			
Likely	Likely	Injuries/Deaths	Infrastructure		Environment
		High	High		High

Coastal Erosion				Overall Vulnerability	
Overview				HIGH	
Coastal erosion is the loss of coastal lands due to the net removal sediments or bedrock from the shoreline. Coastal erosion is the result of natural processes such as waves, winds, and tides, or even human interference. Coastal erosion may result in temporary redistribution or long-term loss of sediments and rocks.					
Frequency	Probability	Magnitude			
Very Likely	Very Likely	Injuries/Deaths	Infrastructure		Environment
		Low	Medium		High

Sea Level Rise				Overall Vulnerability	
Overview				HIGH	
Changes in sea level are the result of the thermal expansion of water, melting glaciers, and the loss of Greenland and Antarctica's ice sheets.					
Frequency	Probability	Magnitude			
Very Likely	Very Likely	Injuries/Deaths	Infrastructure		Environment
		Low	Medium		High

Severe Thunderstorms (lightning, hail, wind)				Overall Vulnerability
Overview				HIGH
A severe thunderstorm produces one or both of the following: hail that is one inch in diameter or larger and/or winds of 58 mph or greater. Lightning is one of the most dangerous aspects of a thunderstorm. However, the presence of lightning does not constitute a severe thunderstorm, as lightning is present in every thunderstorm. Hail is defined by small particles and super cooled water droplets that fall to the Earth. Winds from thunderstorms can come in two forms, tornadoes or straight-line winds.				
Frequency	Probability	Magnitude		
Very Likely	Very Likely	Injuries/Deaths	Infrastructure	
		Medium	Medium	Low

Tornadoes				Overall Vulnerability	
Overview				HIGH	
Tornados are rotating columns of wind, up to 300 miles per hour, usually accompanied by severe thunderstorms. They can damage upwards of a mile wide from the center and can travel far distances. They are rapidly developing storms and can also disappear quickly. They cause substantial damage to infrastructure.					
Frequency	Probability	Magnitude			
Likely	Likely	Injuries/Deaths	Infrastructure		Environment
		High	High		Low

Extreme Temperatures				Overall Vulnerability	
Overview					
<p>Temperatures above 10 degrees of the average high temperature are considered extreme heat. These temperatures last for days and can be considered a heat wave if they linger long enough. These temperatures can contribute to droughts, wildfires and other dangerous situations for humans and animals.</p> <p>Extreme cold is temperatures that stay below freezing for extended periods of time. This can damage both crops and wildlife. Infrastructure can also be damaged with freezing pipes and cracked roads.</p>				Low	
Frequency	Probability	Magnitude			
Very Likely	Very Likely	Injuries/Deaths	Infrastructure		Environment
		High	Low		Low

Drought				Overall Vulnerability	
Overview					
Drought is defined as a prolonged period of low rainfall. Droughts cause plants and other wildlife to die and can also lead to wildfires. It can also cause streams, rivers and lakes to have lower water and prevent the flow.				MEDIUM	
Frequency	Probability	Magnitude			
Likely	Likely	Injuries/Deaths	Infrastructure		Environment
		Low	Low		Medium

Wildfires				Overall Vulnerability	
Overview					
<p>A wildfire is a large, destructive fire that spreads quickly through woodlands and brush. They are uncontrolled and can have natural or man-made causes. They can result in a large loss of foliage and soil damage. This can cause severe erosion to occur.</p>				HIGH	
Frequency	Probability	Magnitude			
Likely	Very Likely	Injuries/Deaths	Infrastructure		Environment
		Medium	Medium		High

Infectious Disease (human and animal)				Overall Vulnerability	
Overview					
<p>Infectious Diseases are illnesses caused by pathogens such as viruses or bacteria. They have the possibility to cause severe illness in both humans and animals. Transmission can be person to person, animal to person and animal to animal. Insects and contaminated food or water can also cause an infectious disease.</p>				MEDIUM	
Frequency	Probability	Magnitude			
Likely	Likely	Injuries/Deaths	Infrastructure		Environment
		High	Low		Low

Mitigation Strategies and Initiatives

Mitigation Goals

The concept of this Local Mitigation Strategy is to provide guidance to reduce impacts of natural hazards and build a safer, more resilient community. The county has a diverse economic base that includes a seaport, tourist resorts, agriculture, and fiber and paper production. Population is expected to increase dramatically throughout the area and public recommendations from the Nassau Vision 2032 exercise identified several “essential outcomes”: effective growth management and a strong land development code, a strategy for acquisition and management of public lands, a financially stable community, and a first class parks and recreation system.

As part of the Local Mitigation Strategy update, the LMS Taskforce reviewed public input provided for the Nassau County 2010-2030 Comprehensive Plan, and the mitigation goals from the 2016-2020 approved LMS. The LMS Task Force then agreed that the goals of the 2016-2020 approved LMS were still applicable and valid. The goals of this updated LMS therefore remain unchanged from the previously approved LMS.

The following economic, social, and environmental concerns that must be incorporated into the Mitigation Strategy and all projects recommended by this Strategy must meet one or more of these goals.

- 1. Protect the health and safety of the residents of Nassau County**
- 2. Minimize personal and public property losses from natural hazards**
- 3. Encourage efficient population growth and preserve environmental resources**
- 4. Improve infrastructure and public services**
- 5. Protect areas of special concern, including water resources and coastal environment, wildlife corridors, agriculture, facilities and residences**
- 6. Improve regional coordination and partnerships among public, private, and non-governmental entities.**

Guiding Principles

The Guiding Principles for mitigation in Nassau County include incorporation of hazard mitigation in all post-disaster rebuilding and new construction. They were been compiled from existing County, City, and Town Comprehensive Plans, Policies, and Ordinances, as well as other regional documents that address hazard mitigation and long-term recovery and approved by the LMS Task Force as part of the established planning cycle (plan, train,

exercise, evaluate, improve). Nassau County's Comprehensive Emergency Management Plan and the Bylaws of the Emergency Management Program's Advisory Council describe the composition of the Council and Executive Policy Group, their meeting schedules and planning processes or mechanisms. They specify that each has representation of their Whole Communities: key partners, public and private civic stakeholders, and the general public; and document the importance of ongoing hazard assessments and integrating mitigation in their built environments and conservation efforts. Each jurisdiction within Nassau County has representation on the county-wide LMS Task Force as well as their own planning departments and/or subcommittees to ensure that local hazard information and potential mitigation actions are incorporated in their normal planning processes.

Local resolutions promulgating the LMS demonstrate Nassau's county and municipal governing commissions' unanimous intent to continue to address natural hazard mitigation during short- and long-term disaster recovery whenever possible or appropriate. These jurisdictional commissions operate under their own rules and policies but each has adopted guidelines which control growth and direct urban development away from hazardous or sensitive areas within their jurisdictions. For example, both Nassau and the City of Fernandina Beach enforce building restrictions in the Coastal High Hazard Areas (CHHA); (see maps in **Appendix F**). Normal permitting procedures prohibit building when the structure's impact on storm water dispersal is not adequately addressed. Prohibitions on improvements that increase off-site flooding or do not provide adequate drainage are common throughout Nassau County. Additionally, the municipal and county public works, building, and comprehensive planning professionals have come together with the North East Florida Regional Planning Council to evaluate new surge data obtained with the latest technology and use that information to develop new evacuation zones that include and discriminate between coastal and riverine flood areas. These new data sets will also be used to generate ideas for potential flood mitigation.

The inclusion of mitigation tenets as Guiding Principles is not intended to provide a fixed master plan for the development or revision of jurisdictional policies. Rather, the Guiding Principles stem from the community's vision for Nassau County. The LMS supports the intent of State and Federal mandates to encourage local jurisdictions to undertake a coordinated and effective program that will reduce vulnerabilities to the effects of natural disasters. When these Guiding Principles are combined with projects identified by the LMS, Nassau County and its municipalities will have a unified and functioning approach to hazard mitigation.

Incorporation of Local Mitigation Strategies into Governing Documents

Information from the promulgated Local Mitigation Strategy is referenced and incorporated into county and municipal Comprehensive Management and Land Use plans, strategic regional policies, land development and building codes, community wildfire prevention plans, and beach re-nourishment and historic preservation programs. The working groups responsible for the development, evaluation, revisions and maintenance of these plans refer to the currently approved LMS during each stage of the plan cycle and incorporate the LMS concepts, goals, and guiding principles into these documents. For example information obtained during the vulnerability analysis and risk assessment phase of the LMS rewrite is used to update Nassau County's Comprehensive Emergency Management Plan (CEMP). The CEMP is a multi-jurisdictional plan for Nassau County and its jurisdictions.

Two planning documents in particular are tied closely with the LMS: Nassau County's Comprehensive Emergency Management Plan and the Post-Disaster Recovery & Redevelopment Plan, both written by working groups coordinated by Nassau County Emergency Management and applicable to Nassau County and its jurisdictions. Due to the small size of Nassau County there is a lot of overlap in working group membership. Having LMS working group members on other plan working groups allows mitigation strategies to be integrated in these plans where appropriate. Including mitigation strategies in local comprehensive plans and community ordinances increase support for coordination of projects, reduces duplicative efforts, and encourages efficient use of scarce resources.

The LMS is used extensively by both the flood plain managers for the City of Fernandina Beach and Nassau County with their respective Community Ratings System (CRS) planning. The incorporation of the LMS into the Community Rating System evaluation assisted Fernandina Beach in receiving a Class 6 rating and Nassau County to receive a Class 8 rating.

The tables on the following pages describe each jurisdictions existing authorities, policies, programs and resources available to accomplish hazard mitigation in Nassau County and its jurisdictions. The tables also show the division of shared responsibilities among local agencies and integration of mitigation strategies with local policies and ordinances. It is not intended that the inclusion of these policies in the Local Mitigation Strategy will provide a fixed master plan for the future development or revision of policies by the County or its jurisdictions, but that they when viewed as a whole represent a community policy statement relating to future development in Nassau County. They are intended to provide the guidelines for revision of development regulations and to focus future policy development in keeping with the stated

goals of the LMS. As plans and policies are rewritten or updated these guidelines will be expanded and improved upon, by the County and its jurisdictions.

Coordination and Distribution of Local Mitigation Strategy Activities

AGENCY	MITIGATION FUNCTIONS
Florida Division of Emergency Management	Provides technical assistance with planning and funding opportunities
Nassau County Board of County Commissioners	Jurisdictional regulatory authority
Nassau County Emergency Management	Chairs the Local Mitigation Strategy Task Force; facilitates meetings, project reviews, and LMS plan management; advises stakeholders of mitigation funding opportunities; provides public information and education
Nassau County School District	Provides staff to participate on LMS Task Force; staffs and manages Emergency Public Shelters
City of Fernandina Beach	Provides staff to participate on LMS Task Force; enforces local land use and building ordinances
Town of Callahan	Provides staff to participate on LMS Task Force; Enforces local land use and building ordinances
Town of Hilliard	Provides staff to participate on LMS Task Force; Enforces local land use and building ordinances
Nassau County Sheriff's Office	Provides staff to participate on LMS Task Force, law enforcement, traffic control, and public safety
County and Municipal Fire Rescue Departments	Provides staff to participate on LMS Task Force, structure fire suppression, building fire safety inspections, emergency medical services, and hazardous materials expertise
Nassau County Engineering Department	Provides staff to participate on LMS Task Force; Implements the accepted Engineering Standards and ensures compliance
Nassau County Building Department	Provides staff to participate on LMS Task Force; Implements the Building Codes and ensures compliance

AGENCY	MITIGATION FUNCTIONS
Nassau County Property Appraiser's Office and GIS Services	Provides subject matter expertise and technical data regarding property values and zone mapping
Nassau County Road Department	Provides staff to participate on LMS Task Force; Implements the County's requirements for building and maintaining roadways, ditches, and drainage basins within its jurisdictions
City of Fernandina Beach Community Development Department	Provides staff to participate on LMS Task Force; Provides a full range of public safety services related to planning, building, and code compliance, historic preservation, public outreach and mapping
City of Fernandina Beach Public Works Department	Provides staff to participate on LMS Task Force; Provides water and sewer service within and surrounding the City limits
City of Fernandina Beach Building Department	Provides staff to participate on LMS Task Force; Follows and implements the City's Building Codes.
Florida Department of Agriculture & Consumer Services, Forestry Service	Provides staff to participate on LMS Task Force;
Florida Department of Transportation	Maintains state roadways and associated ditches and drainage basins
Northeast Florida Regional Planning Council	Provides interface between LMS Task force and the region's Local Emergency Planning Committee (LEPC), technical assistance for modeling disaster scenarios, evacuation studies, surge and inundation maps

Alignment of Strategies with Local and State Policies

Category	Policy	Source
General	New development may be constructed only in those areas where drainage and soil can support septic tanks or where Town (Callahan) utility services are available.	Town of Callahan Comprehensive Plan Future Land Use Policy A.1.2.1
General	The Callahan Planning and Zoning Board shall review all future building and subdivision applications for development compatibility with topography, soil conditions for structural stability, and natural resources for intrusion on habitat as well as compliance with existing subdivisions and fire safety regulations regards roads and water pressure.	Town of Callahan Comprehensive Plan Future Land Use Policy A.1.2.3
General	Require new developments to provide sound engineered drainage systems which are coordinated with the systems of the City and County and meet standards of the St. Johns River Water Management District.	Fernandina Beach Comprehensive Plan Storm Water Element Policy 4.05.02
General	Finished floor elevations shall be constructed as a level one foot or greater than the 100-year flood level. Buildings located in special flood hazard areas shall meet the requirements of the Federal Emergency Management Agency and related regulations. Unless greater finished floor elevations have been specified within an approved drainage master plan, floor slab elevations shall be constructed a minimum of eighteen inches above the centerline elevation of adjacent roadways on lots one acre or less in size. In all cases, the 100-year flood elevation as established by FEMA shall be the controlling minimum elevation	Nassau County Code of Ordinances Section 10.8
General	The County will establish criteria for the location of manufactured homes in the LDR.	Nassau County Comprehensive Plan Future Land Use Element Policy 1.03.05

Category	Policy	Source
Flood Plain Management	To discourage development in the FEMA 100-year flood hazard zone, the Town (Callahan) land development regulations require new construction to meet FEMA regulations pertaining to floor level/floodplain level and which reduce allowable densities for residential development and Flood/Area Ratio's for commercial/industrial development unless the proposed development includes off-setting design and development techniques which will minimize adverse impacts from potential flooding.	Town of Callahan Comprehensive Plan Future Land Use Policy A.1.2.4
Flood Plain Management	Development within the 100-year floodplain will be controlled through implementation of the following policies: A. Callahan's Floodplain Land Development Regulations establish minimum first floor level above the FEMA 100-year floodplain elevation. B. Land Development Regulations reduce allowable variances to construction in floodplain areas.	Town of Callahan Comprehensive Plan Conservation Element Objective E.1.4, Policy E.1.4.1, Policy E.1.4.2
Flood Plain Management	Conservation Land Use shall be designated for land areas within the 100-year floodplain and wetlands. These are areas which are ecologically significant and so must be protected, but are not always under public ownership.	Town of Hilliard Comprehensive Plan Future Land Use Policy A.1.1.3(F)
Flood Plain Management	Development orders shall be designed to protect the type, nature, and function of floodplains, wetlands, waterways, inlets, estuaries and lakes by limiting encroachment, removal of native vegetation, pollution discharge, dredge and fill, drainage, or other impacts associated with development	Fernandina Beach Comprehensive Plan Coastal Conservation Element Policy 5.14.08
Storm Water Management	All storm water storage facilities shall be designed to recover sufficient volume to satisfy state water quality discharge standards with total volume recovery within seven to fourteen days following the design storm event	Nassau County Code of Ordinances Section 10.6.3.5

Category	Policy	Source
Storm Water Management	Roadway storm sewer systems shall be designed to transport storm water runoff resulting from a 5-year frequency storm event using the FDOT Zone 4 intensity-duration-frequency curves.	Nassau County Code of Ordinances Section 10.6.4.2
Storm Water Management	The Town shall adopt a Storm-water Master Drainage Plan which identifies current drainage problems and sets short and long term procedures for correcting deficiencies and anticipating projected needs.	Town of Callahan Comprehensive Plan Public Facilities Policy Element Policy D.2.2.2
Storm Water Management	The Town should provide adequate drainage of storm waters and seek opportunities to minimize water pollution from runoff pollutants, by installing additional culverts and ditches, and by properly aligning existing culverts.	Town of Hilliard Comprehensive Plan Conservation Element Policy E.1.2.2
Storm Water Management	The Town shall implement a routine maintenance program of all ditches, costs of which are incorporated into the Town's operating budget.	Town of Hilliard Comprehensive Plan Conservation Element Policy E.1.4.3
Storm Water Management	The City residents currently using septic tank systems shall be required to tie into public sewer systems serving residents once that system becomes available within 150 feet. New subdivisions shall be required to hook up when the system is within a ½ mile radius.	Fernandina Beach Comprehensive Plan Wastewater Treatment Element Policy 4.02.02

Category	Policy	Source
Storm Water Management	Illegal development in wetland areas shall be reported to the appropriate state agency(s) including FDEP and SJRWMD. It will be required that these areas be restored and/or mitigated under these actions.	Fernandina Beach Comprehensive Plan Floodplains, Wetlands, and Upland Communities Element Policy 5.08.12
Hazardous Materials Management	Support the preparation and implementation of hazardous materials programs, including the Local Emergency Planning Committee, that are protective of public safety, public health and the environment. Pillar: Civic and Governance Systems, SCP: 187.201(12)(a)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 14
Hazardous Materials Management	Support the Regional Domestic Security Task Force and its objectives to increase safety, coordinate response, and provide seamless communication in the Region. Pillar: Civic and Governance Systems, SCP: 187.201(6)(a)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 15
Hazardous Materials Management	Support public education and outreach initiatives that promote hazardous materials awareness, such as Hazardous Materials Awareness Week. Pillar: Civic and Governance Systems, SCP: 187.201(12)(a)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 16
Hurricane Evacuation Shelter Facilities	Define various categories of special needs populations to include: <ul style="list-style-type: none"> • Residents outside the traditional definition • Residents of the Region that do not have access to a private vehicle in the event of an emergency • Residents without the resources to adequately prepare for an emergency Include these populations as vulnerable on the maps and in planning for emergencies. Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 2

Category	Policy	Source
Hurricane Evacuation Shelter Facilities	Encourage the annual registration of special needs populations as defined by the Americans with Disabilities Act (ADA), and assist with education of the general public on procedures and options for them in case of emergencies. Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 3
Hurricane Evacuation Shelter Facilities	The Region strives for evacuation routes that are identified and clearly designated and are at the capacity and quality needed to safely carry the expected number of evacuating vehicles within acceptable clearance times and plans for safe re-entry. Pillar: Quality of Life and Quality Places, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 12
Hurricane Evacuation Shelter Facilities	The Region supports assessment of the ability of existing structures to withstand emergencies, including wind events, flooding, and fire and encourages local governments to address deficiencies by creating building codes to increase disaster survivability in new construction and renovation. The Region supports programs to assist owners of structures that were built to less rigorous standards to update for safety. Pillar: Quality of Life and Quality Places, SCP: 187.201(6)(b)(23)F.S, 187.201(8)(a)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 21
Hurricane Evacuation Shelter Facilities	NEFRC should maintain access to vulnerability maps and the best available data for the Region including: <ul style="list-style-type: none"> • Identification of land areas with the potential for fire, flooding due to storm events, or long term changes in sea level, • Data that addresses the potential for coastal impacts of storm surge based on storm strength, • Data on communities that are vulnerable because of linguistic challenges or lack of access to resources or personal vehicles • Any other data that can assist with planning for the safety of residents and businesses. Pillar: Civic and Governance Systems, SCP 187.201(6)(b)(23)F.S, 187.201(8)(a)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 22

Category	Policy	Source
Hurricane Evacuation Shelter Facilities	Policy 23: The Region supports limiting new construction, rebuilding, and renovation in the most vulnerable areas as identified by the vulnerability maps. STRATEGIC REGIONAL POLICY PLAN Emergency Preparedness and Resiliency January 16, 2014 3D-15 Pillar: Quality of Life and Quality Places, SCP: 187.201(6)(b)(23)F.S, 187.201(8)(a)F.S.	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 23
Hurricane Evacuation Shelter Facilities	Policy 4: The Region encourages partnerships to provide additional shelters able to accommodate pets. Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 4
Hurricane Evacuation Shelter Facilities	The NEFRC supports local governments building public buildings to public shelter standards whenever feasible. As long as there is a deficit in public shelter capacity in the Region, the Region will encourage shelter construction in appropriate locations to mitigate the impacts of development. Pillar: Quality of Life and Quality Places, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Policy 5
Hurricane Evacuation Shelter Facilities	Shelter capacity, as both a local and regional asset, should be considered at an annual, seven-county meeting. Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 6
Hurricane Evacuation Shelter Facilities	Existing evacuation routes will be given special consideration for improvement over other transportation facilities.	Fernandina Beach Comprehensive Plan Future Land Use Element Policy 5.03.02

Category	Policy	Source
Hurricane Evacuation Shelter Facilities	Provide a hurricane guides showing evacuation routes, hurricane hazards, safety procedures, shelters, and other pertinent information for its citizens.	Fernandina Beach Comprehensive Plan Future Land Use Element Policy 5.03.04
Hurricane Evacuation Shelter Facilities	Establish the evacuation time of the coastal areas.	Nassau County Comprehensive Plan Future Land Use Element Policy FL.06.01
Hurricane Evacuation Shelter Facilities	The evacuation time of the coastal areas will be coordinated with the major hurricane evacuation corridors.	Nassau County Comprehensive Plan Future Land Use Element Policy 1.05.02
Wetlands Dune Management	The Town shall adopt Land Development Regulations which require that no permit or other development order shall be issued for development in wetlands unless all of the following conditions prevail.	Town of Callahan Comprehensive Plan Future Land Use Policy A.1.2.1
Wetlands Dune Management	A Dune Management program will be established which will strictly limit excavation and destruction of native vegetation and other activities which interfere with the normal transport of dune sediments.	Fernandina Beach Comprehensive Plan Dune Preservation Element Policy 5.02.02

Category	Policy	Source
Wetlands Dune Management	The City shall adopt standards for dune stabilization and restoration.	Fernandina Beach Comprehensive Plan Dune Preservation Element Policy 5.02.02
Wetlands Dune Management	The City will seek professional evaluation before permitting any coastal structure proposed for controlling beach erosion.	Fernandina Beach Comprehensive Plan Dune Preservation Element Policy 5.02.06
Wetlands Dune Management	<p>The LDR's shall include regulations governing the location, construction and maintenance of development adjacent to the Atlantic shoreline and include design standards which would not adversely affect the contours and topography 1,000 feet landward of the CCCL. LDR's shall specify seaward of the Nassau County CCCL which addresses the following:</p> <ul style="list-style-type: none"> a. Preserving existing vegetation b. Maximum impervious surface c. Allowance of shore hardening structures d. Setbacks for shoreline protection e. Construction standards in hurricane vulnerability zones f. Reconstruction of existing hard erosion control structures g. Underground storage tanks h. Location of septic tanks 	Fernandina Beach Comprehensive Plan Dune Preservation Element Policy 5.02.09

Category	Policy	Source
Wetlands Dune Management	Docks and piers shall not obstruct or alter natural water flow or restrict navigation.	Fernandina Beach Comprehensive Plan Coastal Conservation Element Policy 5.06.04
Wetlands Dune Management	Public expenditures that subsidize development in high hazard coastal areas will be limited to those improvements required to ensure public health, welfare, safety and access to recreation areas.	Fernandina Beach Comprehensive Plan Coastal Conservation Element Policy 5.04.03
Wetlands Dune Management	Criteria shall be included in the LDR to include incentives to preserve/replace the natural/native vegetation along County waterways to maintain the natural beauty of the area, to control erosion, and retard runoff.	Nassau County Comprehensive Plan Future Land Use Element Policy FL.02.01
Emergency Management Disaster Planning	To facilitate orderly and compliant evacuation, the Region encourages mechanisms for a well-informed and well-prepared public. Mechanisms include a constantly evolving set of information tools that remain current with the prevailing communication mediums. Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 8
Emergency Management Disaster Planning	The Region supports all efforts to ensure that the Regional population is prepared for long-term survival after a disaster, including health, hygiene, and the security of people and property. Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 9

Category	Policy	Source
Emergency Management Disaster Planning	<p>The Region supports assessment of the ability of existing structures to withstand emergencies, including wind events, flooding, and fire and encourages local governments to address deficiencies by creating building codes to increase disaster survivability in new construction and renovation. The Region supports programs to assist owners of structures that were built to less rigorous standards to update for safety.</p> <p>Pillar: Quality of Life and Quality Places, SCP: 187.201(6)(b)(23)F.S, 187.201(8)(a)F.S</p>	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 21
Emergency Management Disaster Planning	<p>The Region completes emergency-related, post-disaster redevelopment and economic recovery as quickly as possible while mitigating future risk.</p> <p>Pillar: Civic and Governance Systems, SCP: 187.201(6)(b)(23)F.S</p>	Strategic Regional Policy Plan – Emergency Preparedness Element Section 3D, Policy 13
Emergency Management Disaster Planning	Local governments are required to safeguard lives and property of all residents, visitors and transient populations within the county.	Florida Statutes, Chapter 252
Emergency Management Disaster Planning	Maintain a properly appointed Emergency Management Director. The EMD will officially be identified to the Florida Department of Emergency Management. The EMD will coordinate all activities, services and programs for the local governments and DEM.	Florida Statutes, Chapter 252
Emergency Management Disaster Planning	Perform emergency management functions within the County. Furnish mutual aid assistance if requested, and capable of doing so.	Florida Statutes, Chapter 252

Category	Policy	Source
Emergency Management Disaster Planning	Establish one or more Emergency Operations Centers (EOCs)	Florida Statutes, Chapter 252
Emergency Management Disaster Planning	Ensure resources are available to support emergency operations.	Florida Statutes, Chapter 252
Emergency Management Disaster Planning	The Recovery Task Force will be involved pre- or post-disaster event. The Chairperson will ensure that Task Force representation includes private sector and volunteer groups as well as government. While in the response phase, the Recovery Task Force will evaluate short term and long term recovery needs. It will develop a plan for managing short and long term recovery. It will initiate coordination with on-site representatives of the State and/or Federal government regarding Recovery and Disaster Relief Issues.	Nassau County Comprehensive Emergency Management Plan

Mitigation Ideas

The purpose of this section is to provide a resource to the community to identify a range of mitigation actions that could be taken to reduce the risk from natural hazards in Nassau County. These ideas are intended as a starting point for the community to identify innovative and different ideas for reducing risks to the identified hazards. Inclusion of an idea on this list does not commit any local jurisdiction from implementing it as a mitigation project.

Extreme Temperature Mitigation Ideas

- Increase public awareness of steps that can be taken to protect themselves, pets, plants, and property from extreme heat or cold.
- Require maximum/minimum temperatures in public buildings and housing/landlord codes.

Drought Mitigation Ideas

- Establish a regular schedule to monitor local drought indicators such as precipitation, temperature, soil moisture, and river/lake water levels to provide an early warning for the policymakers who may need to take action such as limiting municipal and household water usage.
- Monitor the water supply to rapidly identify leaks or other system failures and upgrade existing infrastructure to minimize losses.
- Protect critical water supplies for emergency situations by encouraging xeriscape practices and restricting non-essential public water use for activities such as landscaping and car washing.

Sea-Level Rise Mitigation Ideas

- Utilize computer-modeling to estimate future conditions and identify local vulnerabilities and risks; inventory public facilities and infrastructure that might be impacted and determine mitigation actions such as relocation, acquisition and demolition.
- Require all new critical facilities be built at least one foot above the 500-year flood elevation or predicted rise in sea level, whichever is greater.
- Promote conservation of natural buffers, open-space, and wetlands likely to be impacted by sea-level rise.
- Prohibit redevelopment of areas destroyed by storm flooding or chronic erosion to prevent future losses from sea-level rise.

- Require real estate brokers and permitting officials disclose the levels of predicted sea-level rise to potential buyers.

Coastline Erosion Mitigation Ideas

- Use drone footage and Geographic Information Systems to map, document, and monitor at-risk areas.
- Stabilize shoreline with beach renourishment, sand scraping, dune management, sediment mounds, and bioengineering techniques such as terracing or adding artificial reefs or low-profile rock combined with vegetation; prohibit removal of natural vegetation.
- Create no-building coastal buffer zones and employ natural protections like sea grass and dunes.
- Require site and building design standards like deep or open foundation systems that minimize erosion risks.
- Construct seawalls, groins to trap and retain sand, install geotextile sand tubes to protect beachfront, build coastal berm to absorb waves, build a storm berm to keep rock protection in place and promote sediment in the coastal system, plant mature trees in the coastal riparian zone to assist dissipation of wind force in the wave-breaking zone.

Flood Mitigation Ideas

- Adopt and enforce acceptable land use codes to limit the built environment in flood hazard areas.
- Educate the public about the importance of clear water pathways and prohibit dumping into rivers, streams, and ditches; educate property owners about flood mitigation measures they can take.
- Adopt green infrastructure practices to expand and link existing parks, preserves, and greenways that serve as natural water system recharge areas.
- Assemble a steering committee comprised of local government, businesses, and citizens to identify neighborhoods with repetitive flood issues and prioritize actions that provide long-term solutions, including re-engineering or acquisition and demolition.
- Limit population density and the building of impervious surfaces; prohibit development in floodplains to ensure they remain open space.
- Increase the minimum design flood elevation to above the historical high water mark; extend the freeboard requirement past the mapped floodplains to include all equivalent land elevations.
- Adopt policies that include a “natural runoff” or “zero discharge” requirement for storm water in subdivision designs; encourage the use of permeable driveways.

- Require more tree preservation and mature trees in subdivision landscape design to reduce storm water runoff.
- Require developers to construct on-site storm water retention basins that can double as a firefighting water source.
- Encourage the use of porous pavement conformed to natural land contours and include vegetative buffers and islands in large parking areas.
- Revise the jurisdiction’s floodplain ordinances to manage local floodplains beyond minimum requirements; adopt the ASFPM’s “No Adverse Impact” policy to improve NFIP compliance and increase CRS rating for the jurisdiction.
- Flood-proof non-residential structures by hardening envelopes, elevating generators and HVAC system units, using waterproof compounds and paints, and including plastic sheeting in walls to repel water.
- Protect critical facilities (e.g. government buildings, pumping stations, electrical components of lift stations) by requiring them to be located outside of flood-prone areas and elevated above the historical high-water mark; install back-up generators and upgraded switching gear, alarms, meters, and remote controls.
- Impose impact fees to support public flood mitigation projects, drainage system maintenance, and capital improvements.

Severe Thunderstorm Mitigation Ideas

Components (excessive precipitation, lightning, high winds, potential for hail and/or tornadoes)

- Mitigate Flash Flooding hazards created by rapid accumulation of precipitation through public information and warning signs to reinforce “Turn Around, Don’t Drown.”
- Install lightning detection equipment in recreational areas and protection devices such as lightning rods, grounding, and surge protectors on critical facilities and communication infrastructure; provide public information and erect warning signs to reinforce “When Thunder Roars, Go Indoors.”
- Include hail-resistant roofing, flashing, and siding as well as shutters and impact resistant windows during new and replacement construction to harden the envelopes of critical facilities.

Tornado and High Wind Mitigation Ideas

- Require appropriate engineering design during new and replacement construction to harden their envelopes, including structural bracing, straps, clips, anchor bolts, shutters, impact-resistant glass, passive ventilation, wind-resistant roof shapes, and interlocking shingles.

- Retrofit existing critical facilities such as the Emergency Operations Center to FEMA 361 standards; upgrade and harden repurposed buildings that will house these types of critical facilities.
- Upgrade overhead utility lines (e.g., pole sizes, span widths, line strength) and bury powerlines where practical; install redundancies and loop-feeds, upgrade designs to allow lines to fail in small sections to enable faster power restoration; convert traffic light wire-runs to mast arms.

Tropical Cyclone and Associated Storm Surge Mitigation Ideas

- Incorporate measures outlined in the mitigation ideas for Severe Thunderstorms, Flooding, Tornadoes and High Wind
- Require new and replacement construction, additions and repairs to meet or exceed building code requirements set forth in the most current Florida Building Code, ASCE-24 (American Society of Civil Engineers Flood Resistant Design and Construction Standards), TAS 201 (Large and Small Missile Test Standards), TAS 202 (Uniform Structural Load Standards), TAS 203 (Uniform Cyclic Pressure Test Standards)
- Adopt coastal zone management regulations, shoreline setback regulations, and coastal setback lines; eliminate all obstructions in areas along the coast subject to surge inundation
- Prohibit development in areas along the coast subject to inundation by the one-percent-annual-chance flood event and storm-induced waves (i.e. the V-zone on the FIRM)
- Relocate existing critical facilities out of the coastal area vulnerable to storm surge.

Wildfire Mitigation Ideas

- Work with Florida Forestry Service wildfire mitigation specialists to identify areas of vulnerability (e.g. wildland-urban interface) and adopt zoning and code restrictions for development in those areas.
- Adopt specific design guidelines, site plan reviews, and fire protection criteria (e.g., use of non-combustible and ignition-resistant materials) for new or replacement construction in hazard areas.
- Require safe access for fire apparatus to wildland-urban interface neighborhoods.
- Reduce flammable vegetation and cut back tree branches to create a buffer zone of defensible space around structures.
- Provide public information and neighborhood-level training about mitigation measures homeowners can take, pursuant to the county's Firewise and Ready-Set-Go programs.

Infectious Disease Mitigation Ideas

- Improve public awareness about public health and contagious diseases

- Promote prevention and control measures such as, health screenings, good hand hygiene practices, respiratory etiquette, cleaning and disinfection of frequently touched surfaces, and staying home whenever sick
- Encourage childhood inoculations for vaccine preventable diseases and annual influenza vaccinations for adults and children.
- Monitor prevalence of arthropods and arboviruses; promote environmental cleanup to eliminate mosquito breeding areas.

Mitigation Initiatives

Initiatives proposed to mitigate damage from all hazards will be considered by the Task Force. Potential projects include activities necessary to qualify for the Community Rating System (CRS), posting current inundation projection maps on public websites, limiting development in flood prone areas, adopting building codes requiring wind and flood mitigation, including “freeboard” elevation requirements in the local floodplain management ordinance, encouraging investment in flood insurance regardless of property location, removing existing structures from flood-prone areas, hardening public safety facilities, increasing evacuation shelter sites, building in redundant communication systems, elevating transportation infrastructure, constructing flood control structures, or installing one-way valves to prevent back-flow contamination.

Project proposals may be submitted for evaluation and ranking by the Nassau LMS Task Force, by any local entity including private home-owners, business owners, faith-based organizations, government, and non-government agencies. Legislation enabling Nassau to address its infrastructure needs through innovative public private partnerships was passed during the 2013 Florida State Legislative Session and approved by Governor Rick Scott, so private entities are encouraged to work with local planners to harden critical sectors and mitigate hazard losses.

A project’s inclusion in the local mitigation strategy is based upon the streamlined guidance and scoring criteria adopted by the LMS Task Force members in 2015. (See **Appendix G**) Although scoring criteria have been quantified to allow project ranking, the Task Force also considers the community’s prevailing social and political climate when reaching a consensus and ranking proposals. The initial costs of a project, although considered by the Task Force, are not considered a priority in ranking the importance of projects which will improve public health and safety, although a project expected to cost an exorbitant amount without significant short- or long-term benefit will not rank as high as proposals that are more important to the county’s constituency and in line with local long-term goals.

Cost Benefit Analysis are completed only when a project has been identified for specific funding availability due to the extensive process involved in creating a cost benefit analysis. Only projects that meet the cost benefit analysis will be submitted for funding.

As the Nassau County LMS is a living document describing the needs of the community and desires of its residents, with a continuous improvement goal, the Task Force has declared that additional proposals may be submitted for consideration and added to the LMS project list at any time during the cycle. Likewise, proposals may be withdrawn and the ranking of projects on the list may change based on local circumstances, proposal additions, or if a proposal is withdrawn temporarily or permanently for any reason.

Entities submitting proposals for mitigation projects are responsible for completing grant applications for project funding as they become available, implementing the funded projects, and seeing them through to completion according to specific grant guidance. The Nassau County Emergency Management office publicizes mitigation funding opportunities as they are announced, and NCEM planners facilitates the grant application process as they are able. The project list that follows consists of current proposals as it stands as of September 2020. A list of all previously included projects from the last approved LMS (2015) is also included, showing the current status of the project. The project list is expected to change during the five-year life of this particular document.

Current Project List

(List is current as of September 2020)

Proposed Project Title/Description	Proposed By	Jurisdiction	Estimated Cost	Initial Score (34 max)	Current Status/Disposition	Potential Funding Sources	Estimated Time for Completion	Addresses New or Existing
All Hazards Public Awareness and Public Outreach Programs	NCEM	All	n/a	n/a	Ongoing public outreach carried out as part of each jurisdictions regular operations.	Regular Budget(s)	Ongoing	Both
Lisa Ave Drainage Improvement Local Flood Mitigation	CoFB, Andre Desilet	CoFB	\$325,000	23.0	CoFB working with DEP to move forward with plans	Match funds available via storm water utility fees. Submitted for SJRWMD REDI cost-share funding FY17-18	2 years	Existing
Fernandina Downtown Shoreline Stabilization	CoFB, Vice-Mayor	CoFB	\$5,850,000	22.0	IN PROGRESS: Flood Protection Feasibility Study underway	PDM, Capital Improvements	3 years	Existing
Create Building/Structure GIS Database for Improved Evacuation Zones	NC Property Appraiser GIS - Jason Gregory	Nassau County	\$ 6,000	21.6	Considering combining with another project in-house	FMA, HMGP, PDM	1 year	Existing
Thomas Creek Flood Management Project	NC BOCC, Engineering	Nassau County	\$10,000,000	21.0	Evaluate watershed and recommend flood management improvements; study to be conducted by USACE: scope has been approved and is now under review in Atlanta by their corporate	FMA, HMGP, PDM	5+ years	Existing
Retrofit School-based Evacuation Sites with Storm Shutters and Switching Gear	NC School District/Board	Nassau County	\$1,600,000	20.0	Sept 2019: still PENDING School District's acceptance and contract	\$1.8M State Funds Available and Offered 2017, 2018, and 2019 Shelter Retrofit Grant	<1 year	Existing
Area 1 Drainage Improvement Flood Risk Mitigation N 15th St - Oak Marsh Dr	CoFB, Andre Desilet	CoFB	\$326,667	19.5	IN PROGRESS	SJRWMD REDI grant, as of September 2018 \$412,000 pending	2 years	Both

Proposed Project Title/Description	Proposed By	Jurisdiction	Estimated Cost	Initial Score (34 max)	Current Status/Disposition	Potential Funding Sources	Estimated Time for Completion	Addresses New or Existing
Area 2 Drainage Improvement Flood Risk Mitigation Highland Dr near N 19th St	CoFB, Andre Desilet	CoFB	\$498,706	19.5	Reduced priority	Match funds available via storm water utility fees FMA, HMGP, PDM, Capital Improvement	2 years	Existing
Area 4 Drainage Improvement Flood Risk Mitigation Beech St btwn S 9th & S 14th	CoFB, Andre Desilet	CoFB	\$773,145	19.5	On 5-year capital improvement plan, 1st phase to begin in 2020	Match funds available via storm water utility fees. Capital Improvement	2 years	Existing
Area 5 Drainage Improvement Flood Risk Mitigation Broome & Alachua; 6th St to Amelia River	CoFB, Andre Desilet	CoFB	\$1,241,362	19.5	IN PROGRESS	FMA, HMGP, PDM	2 years	Both
Area 7 Drainage Improvement Flood Risk Mitigation Fir St & Gum St; N 8th to Amelia River	CoFB, Andre Desilet	CofB	\$1,284,784	19.5	CoFB is still pursuing other funding sources	Match funds available via storm water utility fees Submitted for SJRWMD REDI cost-share funding FY17-18	2 years	Both
Area 9 Drainage Improvement Flood Risk Mitigation 1st Ave; Allen Ave to S Casino Ave	CoFB, Andre Desilet	CoFB	\$555,202	19.5	On 5-year capital improvement plan, 1st phase to begin in 2020	Match funds available via storm water utility fees. Capital Improvement	2 years	Existing
Peck Center Generator and Switching Gear Retrofit	CoFB, Jeremiah Glisson	CoFB	\$100,000	13.1	Reduced priority	Match funds available via storm water utility fees	2 years	Existing
Trailer Mounted Emergency Generator	FBFR Chief Silcox	CoFB	\$ 80,000	12.0	Still trying to get included with capital improvement projects	Match funds available via storm water utility fees Capital Improvement	1 year	n/a

Previously submitted projects (table taken from 2016 Approved LMS)

Significant local personnel turn-over led the LMS Task Force to decide to extensively cull the project list and a large number of prior project proposals have been withdrawn/deleted. A number of drainage projects for the City of Fernandina Beach were combined into new projects listed on the current list.

Proposal Title	Estimated Costs	Affected Jurisdiction	Responsible Agency	Current Status	Reason for Deletion
Address Repetitive Loss Properties	TBD	City of Fernandina Beach	CoFB	DELETED	Project to be split into specific areas of concern rather than a city wide project. Smaller projects to be submitted as necessary
Air Quality Review	TBD	Amelia Island	CoFB	DELETED	No longer deemed a priority due to limited funds
Beach Renourishment	TBD	Amelia Island	CoFB	COMPLETED	n/a
Beech St to Egans Creek C-2B/9	\$3,830,977	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Code-Plus Hardening Fire/EMS Infrastructure	\$12,000,000	County-wide, incl. all municipalities	NCFR	DELETED	No longer deemed a priority due to limited funds
Communication Infrastructure Hardening	\$50,000	County-wide	NCSO	DELETED	No longer deemed a priority due to limited funds
Downtown C-13	\$2,387,755	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Downtown Flood Mitigation Study	TBD	Amelia Island	CoFB	On current list	n/a
Elevated Transit Evac Feasibility Study	\$1,000,000	Amelia Island	P3 Pub-Priv Partners	DELETED	No longer a strategy being considered.
Elm St C-11D	\$39,396	Amelia Island	CoFB	COMPLETED	n/a
Elm St C-2C	\$185,284	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Evacuation Route Study SR 200	\$25,000	Unincorporated Nassau County	NCSO	DELETED	Will be reevaluated after major roadwork construction completed
Fir St C-3	\$3,770,910	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Fir St C-6	\$252,137	Amelia Island	CoFB	DELETED	Combined into a bigger project.

Proposal Title	Estimated Costs	Affected Jurisdiction	Responsible Agency	Current Status	Reason for Deletion
Fire Rescue HQ Code-Plus Hardening w/Alt EOC	\$5,000,000	County-wide, incl. all municipalities	NCSO	DELETED	No longer deemed a priority due to limited funds
First Ave C-10	\$1,582,108	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Generator at Peck Center	\$5,000	City of Fernandina Beach	CoFB	On Current List	n/a
GIS Building Footprint Dataset	\$6,000	County-wide, incl. all municipalities	NCPA	DELETED	Combined with a larger in house project
Gum St C-12	\$25,239	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Highland Drive C-11A	\$55,604	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Marine/Air Fire Rescue Station Code-Plus Hardening	\$2,500,000	Amelia Island	FBFR	DELETED	No longer deemed a priority due to limited funds
Mitigation Education in Public Schools	TBD	County-wide, incl. all municipalities	NCSB	DELETED	Now part of ongoing public outreach activities
Manage Fuel Reduction for Four Creek State Forest and Shug Rd	\$1,000	Hilliard neighborhood	FL Forest Service	COMPLETE	n/a
Manage Fuel Reduction in Yulee Hills	\$1,000	Yulee neighborhood	FL Forest Service	COMPLETE	n/a
Manage Fuel Reduction Jax Gun Club Area	\$1,000	Bryceville neighborhood	FL Forest Service	COMPLETE	n/a
Manage Fuel Reduction Rayonier Urban Interface	\$1,000	Unincorporated Nassau County	FL Forest Service	COMPLETE	n/a
Manage Fuel Reduction Nassau County EOC	\$1,000	Yulee	FL Forest Service	COMPLETE	n/a
Manage Fuel Reduction Timber Creek	\$1,000	Yulee	FL Forest Service	COMPLETE	n/a
N 15th St C-4	\$440,107	Amelia Island	CoFB	DELETED	Combined into a bigger project.
N Fletcher Ave C-1, Dolphin to W 9th St	\$776,903	Amelia Island	CoFB	COMPLETE	n/a

Proposal Title	Estimated Costs	Affected Jurisdiction	Responsible Agency	Current Status	Reason for Deletion
N Fletcher Ave C-7, Giselle to Kimberly St	\$336,541	Amelia Island	CoFB	COMPLETE	n/a
Nassau Oaks Flood Mitigation	TBD	Neighborhood	Callahan	DELETED	No longer deemed a priority due to limited funds
Old Town Bluff Stabilization - Marine St	TBD	City of Fernandina Beach	CoFB	DELETED	No longer deemed a priority due to limited funds
Port Area Drainage	TBD	Nassau & AI Waterways	FBFR	DELETED	No longer deemed a priority due to limited funds
Remote Marine HazMat Fire Mitigation	\$8,000	Nassau & AI Waterways	NCFR	DELETED	No longer deemed a priority due to limited funds
Regional Drainage & Ret. Pond – Alligator, Cushing, Mills Creeks	\$7,000,000	Town of Callahan	Callahan	DELETED	May be resubmitted in phases during upcoming years.
Residential Area Flood Retrofits	TBD	City of Fernandina Beach	CoFB	DELETED	No longer deemed a priority due to limited funds
S 12th St C-11C	\$35,382	Amelia Island	CoFB	DELETED	Combined into a bigger project.
S 9th St C-2A, Beech St to Fir St	\$574,397	Amelia Island	CoFB	DELETED	Combined into a bigger project.
School-based Evacuation Shelter Shutters	\$5,000,000	Entire County, incl. municipalities	NCSB	On Current List	n/a
Sea-Level Rise Planning	\$5,000	Amelia Island	CoFB	DELETED	No longer deemed a priority due to limited funds
Stanley Drive C-11	\$16,408	Amelia Island	CoFB	DELETED	Combined into a bigger project.
Storm-Harden Wastewater Treatment Plant	\$500,000	Amelia Island	CoFB	COMPLETED	n/a
Street Resurfacing	TBD	City of Fernandina Beach	CoFB	DELETED	No longer deemed a priority due to limited funds

National Flood Insurance Program and Compliance

As of November 2019, FEMA National Flood Insurance Program (NFIP) reports 10,770 policies in force throughout Nassau County: 7381 in unincorporated areas, 3348 in the City of Fernandina Beach, 28 in the Town of Callahan and 13 in the Town of Hilliard. The policy holders in the City of Fernandina Beach and unincorporated Nassau County receive premium discounts based on the jurisdiction’s participation in the Community Rating System (Fernandina Beach Class 6, Nassau County Class 8).

All jurisdictions in Nassau County continue to operate in compliance with NFIP standards, maintaining active floodplain management programs, enforcing foundation elevation standards and building codes. In addition, each the county and municipalities have embraced the following efforts:

- Public information regarding changes to FEMA’s Flood Insurance Rate Maps, Special Flood Hazard Areas, local floodplain ordinances, or building regulations
- Floodplain Maps, Flood Insurance Rate Maps, and Permits Issued pertaining to
- Development in floodplain areas are available for public inspection
- Promotion of mitigation actions for repetitive loss structures
- Promotion of flood insurance for properties in all low-lying areas
- Promotion of the Community Rating System county-wide

Repetitive Loss Properties

Within Nassau County there are 40 repetitive loss properties, all properties are residential. As per the Privacy Act of 1974 no addresses are provided but a map showing the approximate areas of repetitive loss proper is in **Appendix F**

Jurisdiction	Residential	Commercial	Institutional	Other
Nassau County (unincorporated)	33	0	0	0
City of Fernandina Beach	7	0	0	0
Town of Callahan	0	0	0	0
Town of Hilliard	0	0	0	0

Plan Evaluation and Maintenance

The LMS is a living document, so information will be updated over time as changes within the community affect hazard vulnerability and potential risks faced. This update process requires continued participation of government, subject matter experts, and the public. In order for the LMS to remain updated and current LMS meetings open to the public are held quarterly. These provide a forum for the exchange of new information and mitigation ideas. During the quarterly meetings changes to the project list are reviewed and voted on by the LMS working group. The LMS is reviewed a minimum of once a year, to determine if any updates or corrections are necessary. Updates may include new issues, changes to threats and hazards, new projects, changes or removal of existing projects, changes in project priority or changes to the mitigation strategy itself. Any changes to the LMS are then voted on by the LMS working group at a publicly noticed meeting.

Any entity or citizen can propose a mitigation project, which in turn can be submitted for consideration by the LMS task force to Nassau County Emergency Management at any time. **Appendix G** details the process for project proposal, review and ranking. The project list is reviewed quarterly by the Task Force, which allows for new projects to be prioritized and others to be removed. Changes to community-preferred strategies and completion of mitigation projects will be reflected in periodic reports and the five-year full update iterations of the LMS.

Nassau County is a small-medium sized county with a very small tax base and scant resources for mitigation. The completion of proposed projects will be dependent on identifying external (i.e. Federal, State, and private) funding sources. Understanding that the vast majority of mitigation grant programs require local “matching funds” or are provided only on a “contract reimbursement” basis, county and municipal government agencies will need to budget for the local portion of the mitigation strategy. The effectiveness of this comprehensive mitigation strategy will be determined by the successful funding and completion of the projects proposed to reduce losses to natural hazard impacts and support health and safety of the community, its infrastructure and resources.

Open meetings for the public and LMS task force are regularly scheduled in order to maintain and revise the plan regularly. Mitigation planning should be kept in the forefront among stakeholders and the general public, so NCEM promotes the county’s StormReady and FireWise programs at local civic events, festivals, and corporate safety and disaster preparedness expositions. Articles are also shared to show the importance of mitigation and the best practice ideas through many media sources such as an email distribution list, Facebook and local print (Examples are found in **Appendix C**). This helps the discussions at meetings be informed discussions while also keeping mitigation at the forefront for the public.

The LMS is maintained by the LMS Working Group (details of the group can be found in **Appendix A**) with the Nassau County Emergency Management Mitigation Coordinator acting as the Working Group Chair.

The LMS is updated yearly as required by Florida Administrative Code 27P-22.004. A full update of the LMS is carried out every 5 years as required by Chapter 44 of the Code of Federal Regulations Part 201.6. The Nassau County Emergency Management Mitigation Coordinator acting as the Working Group Chair is responsible for monitoring the plan and required changes to the plan. The Mitigation Coordinator is also responsible for both the yearly and 5 yearly updates submitted to the State Hazard Mitigation Officer. The five year update process begins 12 to 18 months before the expiration date of the current plan and all aspects of the plan are reviewed and updated as necessary.

Overview of Hazard Mitigation Assistance Opportunities

Effective mitigation provides long-term or permanent solutions to damage or losses resulting from severe weather and other natural hazards. The Florida Division of Emergency Management (FDEM) Bureau of Mitigation <https://www.floridadisaster.org/dem/mitigation/> is tasked with helping communities reduce the local impacts and associated costs of disasters. It provides technical assistance for mitigation planning and project development, and administers one state-funded hazard mitigation program, the Hurricane Loss Mitigation Program (HLMP). Funded through the Florida Hurricane Catastrophe Trust Fund, the HLMP allows FDEM to promote wind mitigation, fund wind mitigation research, and provide hazard mitigation upgrades to residences. Funded activities include retrofits, inspections, and construction or modifications designed to increase a structure's ability to withstand hurricane-force winds. Florida Building Code is used as the standard for all retrofitting.

The FDEM Bureau of Mitigation also administers three federal Hazard Mitigation Assistance (HMA) grant programs:

1. Post-disaster Hazard Mitigation Grant Program (HMGP)
2. Pre-Disaster Mitigation (PDM) Program
3. Flood Mitigation Assistance (FMA) Program

Project proposals submitted for any HMA grant program must conform to accepted engineering practices, established codes, standards, modeling techniques, and best practices. Local governments are considered HMA "sub-applicants" and must apply to the State to request HMA funding support. Individual homeowners, businesses, and private non-profits must apply for this mitigation funding through their local governments. All proposed HMA projects get reviewed to determine if they are in or impact the floodplain or a wetland. Actions that increase the base flood elevation or adversely affect a wetland trigger the requirement to complete the 8-step decision-making process outlined in 44 CFR Section 9.6.

Not all proposals are approved for funding or reimbursement. HMA project proposals must comply with environmental regulations and meet the program-specific criteria published in the Notice of Funding Opportunity (NOFO). Every proposed project must be cost-effective. An expedited cost-effectiveness methodology (the substantial damage waiver) is available for property acquisition projects under all HMA programs when certain conditions are met (this was previously limited to HMGP); open green-space and riparian area benefits can be included in the benefit cost ratio (BCR) once the project BCR reaches 0.75 or greater. Proposed costs are also reviewed to ensure that they are necessary and reasonable for the project's scope. HMA grants do not provide "up front" funding and have a "shared cost" component, meaning the granting agency only agrees to reimburse a portion of a project's total cost.

HMGP – The Hazard Mitigation Grant Program is authorized through the Stafford Act to provide states the opportunity to reduce future life and property losses during their post-disaster reconstruction period. Funds become available when authorized by Congress following a Presidential “Major Disaster Declaration.” The amount of post-disaster mitigation funding allocated is based on the amount of assistance provided by FEMA during the Major Disaster response and recovery operations. Projects proposed for HMGP funding must have been previously identified and considered a priority by the Local Mitigation Strategy (LMS) Task Force and must be included in the jurisdiction’s adopted LMS five-year plan. HMGP has a shared cost – 75% Federal and 25% local/non-Federal. HMGP-eligible project activities include:

- Property Acquisition and Structure Demolition/Relocation – Land acquired under this program must be deed-restricted in perpetuity to “open green-space” partly or completely covered with grass, trees, shrubs, or other vegetation such as parks, community gardens, cemeteries, playgrounds, public plazas and seating areas, or vacant lots – to restore and conserve the natural floodplain functions.
- Structure Elevation
- Mitigation Reconstruction
- Dry Flood-proofing of Historic Residential Structures
- Dry Flood-proofing of Non-residential Structures
- Minor Localized Flood Reduction Projects
- Structural Retrofitting of Existing Buildings
- Non-Structural Retrofitting of Existing Buildings
- Elevation of Utilities
- Community Safe-Room Construction (see FEMA P-361) – includes the acquisition of land and installation of fire suppression sprinklers, ventilation, heating, and air-conditioning for the safe-room.
- Wind Retrofit for One-and Two-Family Residences
- Infrastructure Retrofit
- Soil Stabilization
- Wildfire Mitigation
- Post-Disaster Code Enforcement
- Generators – the purchase and installation of stand-alone fixed generators are eligible under regular HMGP funding if they protect a critical facility and meet all other program eligibility criteria. Generators and generator hook-ups that are not stand-alone are only considered eligible when:
 - 1) included as part of a more comprehensive project, and
 - 2) the generator and related equipment directly relate to the hazard being mitigated.

PDM – Pre-Disaster Mitigation grants have now been replaced by **Building Resilient Infrastructure and Communities (BRIC)**.

BRIC will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program.

The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

On September 30, 2020, FEMA opened the application period for the FY20 Hazard Mitigation Assistance (HMA) Notices of Funding Opportunities (NOFOs) for the new BRIC pre-disaster mitigation grant program and the Flood Mitigation Assistance (FMA) grant program.

FMA – Flood Mitigation Assistance is authorized through the National Flood Insurance Act to provide states the opportunity to “reduce or eliminate long-term flood risk to NFIP-insured structures.” Funding is appropriated by Congress annually, and the NOFO with a given year’s specific proposal criteria is generally posted on www.Grants.gov in July. Local mitigation planning and project sub-applications may be submitted to the State during an open application cycle. After reviewing applications to determine if they meet the program’s requirements, the State prioritizes and forwards applications to the FEMA Regional Office. FMA is a competitive grant program. FEMA chooses the applications to be funded based the NOFO’s stated priorities, each state’s ranking of their projects, and the cost-effectiveness of the proposals. (The Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the Repetitive Flood Claims Grant Program and Severe Repetitive Loss Grant Program, removed the limits on FMA funds allotted per state, removed the limit on “in-kind” (i.e. non-cash) contributions for the non-federal FMA cost-share, and added mitigation reconstruction as an eligible FMA project activity.)

Appendices

Appendix A - LMS Task Force Membership

ROLE	AGENCY	NAME	E-MAIL	VOTING
Chamber President	AIFBY Chamber of Commerce	Regina Duncan	regina@aifby.com	
Chamber Development	AIFBY Chamber of Commerce	Stacy Cruikshank	stacy@aifby.com	
AIMC Director	Amelia Is. Mosquito Control	Bruce Hyers	bhyers@aimcd.org	
AIPC Executive Assistant	Amelia Is. Plantation	AnneMarie Quinones	aquinones@castlegroup.com	
AIPC Liaison	Amelia Is. Plantation	Buz Stevenson	buzstevenson@aol.com	
AIPC General Manager	Amelia Is. Plantation	Patty Stewart	pstewart@aipca.net	
BMC Emergency Preparedness	Baptist Medical Center Nassau	Jenny Kingery	Jenny.Kingery@bmcjax.com	
City Manager	COFB	Dale Martin	dmartin@fbfl.org	
Recreation Program Supervisor	COFB Arts & Culture Nassau	Scott Mikelson	smikelson@fbfl.org	
Administrative Coordinator	COFB Building Dept	Angie Lester	alester@fbfl.org	
Code Compliance Officer	COFB Building Dept	Michelle Forstrom	mforstrom@fbfl.org	
Building Official/Director	COFB Building Dept	Stephen Beckman	sbeckman@fbfl.org	
City Clerk	COFB Clerks Office	Caroline Best	cbest@fbfl.org	
City Commissioner Group 3	COFB Commission	Chip Ross (2017-2020)	cross@fbfl.org	
City Commissioner Group 1	COFB Commission	Johnny Miller (2016-2020)	jmiller@fbfl.org	
City Commissioner Group 5	COFB Commission	Len Kreger (2015-2018)	lkreger@fbfl.org	
City Commissioner Group 4	COFB Commission	Mike Lednovich (2018-2020)	mlednovich@fbfl.org	
City Commissioner Group 2	COFB Commission	Philip Chapman (2017-2020)	pchapman@fbfl.org	
Comptroller	COFB Finance Department	Pauline Testagrose, CPA	ptestagrose@fbfl.org	
Fire Chief	COFB Fire Rescue	Ty Silcox, MPA	tsilcox@fbfl.org	Y
Grants Administrator	COFB Grants Administrator	Lorelei Jacobs	ljacobs@fbfl.org	
Marina Manager	COFB Marina	Joe Springer	jspringer@fbfl.org	
Parks Director	COFB Parks & Rec Advisory	Nan Voit	nvoit@fbfl.org	
Planner	COFB Planning Department	Jake Platt	jplatt@fbfl.org	Y
Senior Planner	COFB Planning Department	Kelly Gibson	kgibson@fbfl.org	
Police Chief	COFB Police	Jim Hurley	jhurley@fbfl.org	
Deputy Police Chief	COFB Police	Mark Foxworth	mfoxworth@fbfl.org	
Storm Water Engineer	COFB Storm Water	Andre Desilet	adesilet@fbfl.org	Y
Maintenance Director	COFB Streets Maintenance	Rex Lester	rl Lester@fbfl.org	Y
Utilities Director	COFB Utilities Department	John Mandrick	jmandrick@fbfl.org	
Manager	FAA	Don Dawkins	donald.dawkins@faa.gov	
Manager	FAA	Evans Fallin	evans.fallin@faa.gov	
Regional Coordinator	FDEM	Gina Lambert	Gina.Lambert@em.myflorida.com	
Preparedness Planner	FDOH Nassau	Jason Miller	jason.miller@flhealth.gov	
Drainage Engineer	FDOT District 2	Douglas Dycus	douglas.dycus@dot.state.fl.us	
Account Manager	FPL	Danielle Mousseau	danielle.mousseau@fpl.com	
Government Relations	FPU	Ramiro Sicre	rsicre@fpuc.com	
General Public	Island Bluff Community	Donna Carine	ScanMe2@bellsouth.net	
General Public	Island Bluff Community	Janet Miller	FamilyStyles1006@gmail.com	
EOC Liaison	JEA	Jennifer Johns	johnsj@jea.com	
Terminal Manger	Kinder Morgan	Brian Long	brian_long@kindermorgan.com	
Fire Chief	Nassau Oaks Vol Fire Dept.	Craig Herr	nassauoaksvfd@windstream.net	
Public Private Partnership	Nassau P3 Partnership	Stephanie Estep	info@nassaup3.org	
NCAS Director	NC Animal Services	Tim Maguire	tmaguire@nassaucountyfl.com	
Commissioner District 2	NC BOCC	Aaron Bell (2018-2022)	acbell@nassaucountyfl.com	
Commissioner District 1	NC BOCC	Daniel Leeper (2016-2020)	dleeper@nassaucountyfl.com	
Commissioner District 5	NC BOCC	Justin Taylor (2016-2020)	jtaylor@nassaucountyfl.com	
County Manager	NC BOCC	Mike Mullin	mmullin@nassaucountyfl.com	
Commissioner District 3	NC BOCC	Pat Edwards (2016-2020)	pedwards@nassaucountyfl.com	
County Manager, Assistant	NC BOCC	Taco Pope	tpope@nassaucountyfl.com	
Commissioner District 4	NC BOCC	Thomas Ford (2018-2022)	tford@nassaucountyfl.com	
Admin Assistant	NC BOCC - Public Information	Sabrina Robertson	srobertson@nassaucountyfl.com	
Building Official, CFM	NC Building Dept	Keith Ellis	kellis@nassaucountyfl.com	Y

ROLE	AGENCY	NAME	E-MAIL	VOTING
Supervisor	NC Building Dept	Roosevelt Morris	rmorris@nassaucountyfl.com	
Clerk of Courts & Comptroller	NC Clerk of Courts System	John Crawford	jcrawford@nassauclerk.com	
Code Compliance Officer	NC Code Enforcement	Janet Wylie	jwylie@nassaucountyfl.com	Y
Operations Administrator	NC Economic Development Board	Shelley Hirsch	Shelley@NassauFlorida.com	
Fiscal & Admin Specialist	NC Emergency Management	Chelle Mellecker	mrmellecker@nassauso.com	
EM Director	NC Emergency Management	Greg Foster	gfooster@nassauso.com	
Mitigation Coordinator	NC Emergency Management	Mark Wilson	MLWilson@nassauso.com	
Senior Planner	NC Emergency Management	Martha Oberdorfer	MLOberdorfer@nassauso.com	
Volunteer Coordinator	NC Emergency Management	Paula Selleck	pisellek@nassauso.com	
T&E Planner	NC Emergency Management	Sid Beckom	sdbeckom@nassauso.com	
Storm Water Engineer	NC Engineering Services	Katie Peay, PE CFM	kpeay@nassaucountyfl.com	
Fire Chief	NC Fire Rescue	Brady Rigdon	brigdon@nassaucountyfl.com	Y
Deputy Fire Chief	NC Fire Rescue	Greg Roland	groland@nassaucountyfl.com	
NCHS Manager	NC Humane Society	Christina Sutherin	csutherin@nassauhumane.org	
NCHS Executive Director	NC Humane Society	Jackie McDonald	info@nassauhumane.org	
Director	NC OMB	Megan Diehl	Mdiehl@nassaucountyfl.com	
Program Manager	NC Parks & Recreation	Jeff Little	j.little@nassaucountyfl.com	Y
Director	NC Planning & Econ Opp	Adrienne Burke, JD	aburke@nassaucountyfl.com	Y
Planner (CRS)	NC Planning & Econ Opp	SueAnn Alleger	salleger@nassaucountyfl.com	
Assistant Director	NC Planning & Econ Opp	Valerie Feinberg	vfeinberg@nassaucountyfl.com	
GIS Manager	NC Property Appraiser	Jason Gregory	jgregory@nassauflpa.com	
Property Appraiser	NC Property Appraiser	Mike Hickox	mhickox@nassauflpa.com	
Director	NC Public Works	Doug Podiack	dpodiack@nassaucountyfl.com	Y
Supervisor	NC Road & Bridge Dept	Cameron Hansen	chansen@nassaucountyfl.com	Y
Engineer	NC Road & Bridge Dept	David Hearn	dhearn@nassaucountyfl.com	
Engineer	NC Road & Bridge Dept	George Aviles	gaviles@nassaucountyfl.com	
Transportation Director	NC School Board	Brad Underhill	brad.underhill@nassau.k12.fl.us	
Construction Supervisor	NC School Board	David Kramer	david.kramer@nassau.k12.fl.us	
School Safety Director	NC School Board	Glenn Virdin	VirdinGL@nassau.k12.fl.us	
Facilities Director	NC School Board	Jeffrey Bunch	jeffrey.bunch@nassau.k12.fl.us	
Superintendent	NC School Board	Kathy Burns, PhD	kathy.burns@nassau.k12.fl.us	
Executive Director	NC School Board	Mark Durham	mark.durham@nassau.k12.fl.us	
School Safety Planner	NC School Board	William Schmelling	schmellingwi@nassau.k12.fl.us	
Admin Captain	NC Sheriff's Office	Jon Slebos	jslebos@nassauso.com	
Ops Captain	NC Sheriff's Office	Ryan Vantassell	rvantassell@nassauso.com	
Staff	NC Soil & Water Conservation Dist.	Cari Cahill	ncswcd@gmail.com	
Supervisor of Elections	NC Supervisor of Elections	Vicki Cannon	vcannon@votennassau.com	
Tax Collector	NC Tax Collector	John Drew	jdrew@nassautaxes.com	
Ocean Highway & Port Authority	Ocean Highway & Port Authority	Franklin Carrol	franklincarrol@yahoo.com	
General Public	Ratliff Community	Claudia Witcher	cworlfl@gmail.com	
General Public	Ratliff Community	Ken Colsen	K_Colsen@yahoo.com	
General Public	Ratliff Community	Linda Colsen	L.Colsen@me.com	
Occupational Health Specialist	Rayonier Advanced Materials	Becky Williamson	becky.williamson@rayonieram.com	
Safety Director	Rayonier Advanced Materials	Matt Gelston	matt.gelston@rayonier.com	
Sr Environmental Engineer	Rayonier Advanced Materials	Tom Faltemier	tom.faltemier@rayonieram.com	
Disaster Program Manager	Red Cross of North Florida	Donna Lee	donna.lee@redcross.org	
Coordinator	Salvation Army / Homeless Coalition	Mary Moore	mary.moore@uss.salvationarmy.org	
Liaison	St. Johns River Water Mgmt District	Geoffrey Sample	gsample@sjrwdm.com	
Planning & Zoning Commissioner	Town of Callahan	David Mellecker	admin@townofcallahan-fl.gov	
Street Commissioner	Town of Callahan	Janet Shaw	streetcomm@townofcallahan-fl.gov	
Council President & Fire Comm.	Town of Callahan	Ken Bass	councilpres@townofcallahan-fl.gov	
Town Mayor	Town of Callahan	Marty Fontes	mayor@townofcallahan-fl.gov	Y
Manager/Public Works Director	Town of Callahan	Michael Williams	pwd@townofcallahan-fl.gov	Y

ROLE	AGENCY	NAME	E-MAIL	VOTING
Water Commissioner	Town of Callahan	Shirley Graham	wscomm@townofcallahan-fl.gov	
Town Clerk	Town of Callahan	Stephanie Knagge	clerk@townofcallahan-fl.gov	
Town Mayor	Town of Hilliard	Floyd Vanzant	fvanzant@townofhilliard.com	
Public Works Director	Town of Hilliard	Greg Grooms	ggrooms@townofhilliard.com	
Town Clerk	Town of Hilliard	Lisa Purvis	lpurvis@townofhilliard.com	Y
Manager/Public Works Director	Town of Hilliard	Richie Rowe	rrowe@townofhilliard.com	Y
Community Relations Manager	WestRock	Eric Schmidt	eric.schmidt@westrock.com	
Environmental Manager	WestRock	Michele Rundlett	michele.rundlett@westrock.com	
EOC Liaison	WestRock	Skip Hogeboon	skip.hogeboon@westrock.com	
Security	White Oak Plantation	Steve Brewer	sbrewer@white-oak.org	

Appendix B - LMS Task Force Meeting Announcements

Notices of meetings are posted by the county and are also posted to social media.

Copy of notice posted by county follows:

Location: _____

Posted: _____

Removed: _____

NOTICE OF MEETING OF THE NASSAU COUNTY LOCAL MITIGATION STRATEGY TASK FORCE

DATE: TUESDAY, 10 December 2019

TIME: 10:30 AM

PLACE: NASSAU COUNTY EMERGENCY OPERATIONS CENTER
77150 CITIZENS CIRCLE, YULEE, FLORIDA 32097

PURPOSE: QUARTERLY MEETING OF THE LOCAL MITIGATION STRATEGY TASK FORCE

The public is invited to be present and to discuss hazard vulnerabilities and contribute mitigation project ideas. Meetings are held at least quarterly (typically March, June, September, and December).

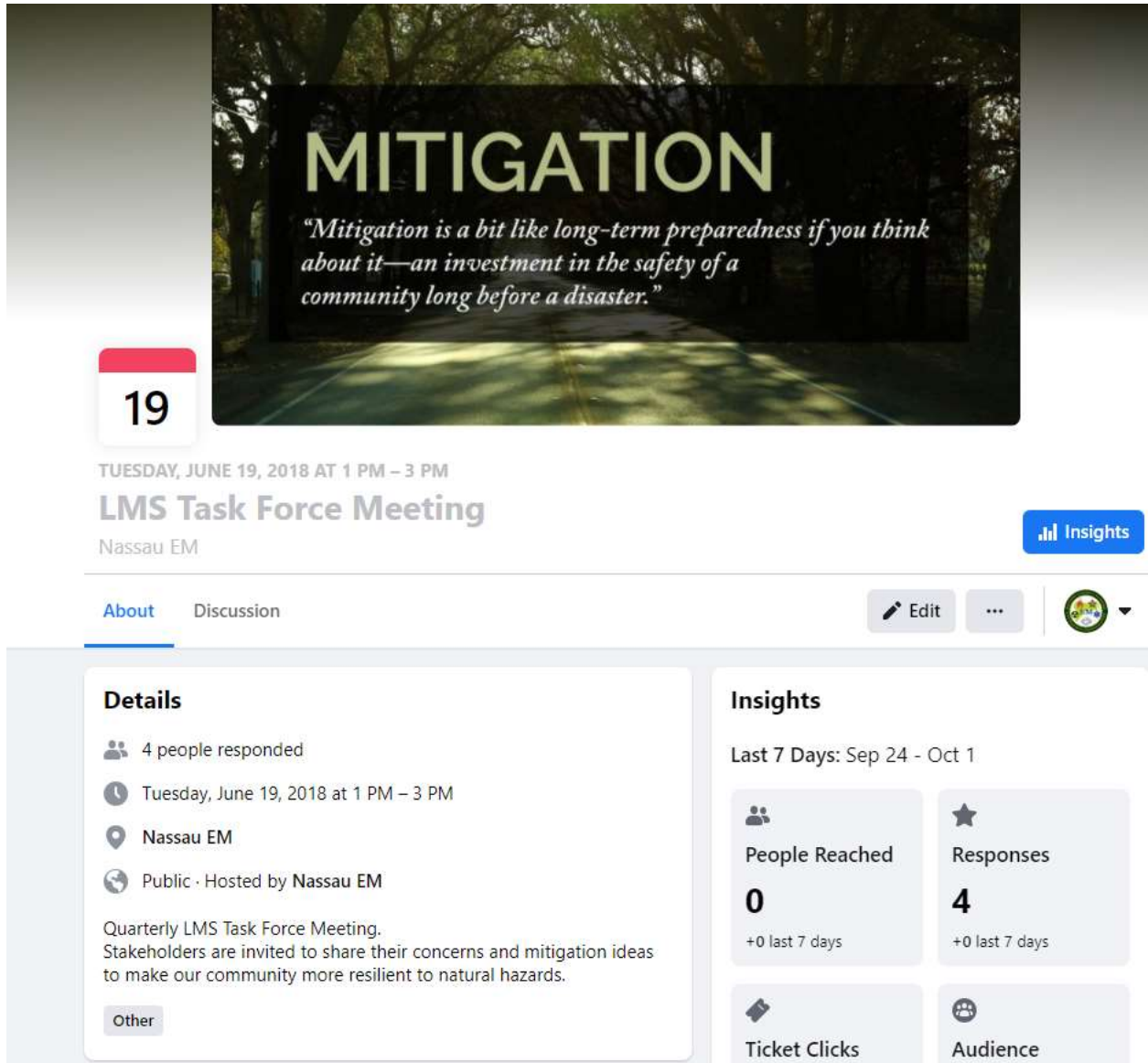
Individuals with disabilities needing a reasonable accommodation in order to participate in the program or activity should contact the office of the Ex-Officio Clerk at 904-548-4660 or if hearing impaired, the Florida Relay Service at 1-800-955-8770 (voice) or 1-800-955-8771 (TDD) at least seventy-two hours in advance to request such accommodation.

ATTEST: BOARD OF COUNTY COMMISSIONERS
NASSAU COUNTY, FLORIDA

JOHN A. CRAWFORD
EX-OFFICIO CLERK

DANNY LEEPER, CHAIRMAN

Example of Social Media Announcement



MITIGATION
“Mitigation is a bit like long-term preparedness if you think about it—an investment in the safety of a community long before a disaster.”

19
TUESDAY, JUNE 19, 2018 AT 1 PM – 3 PM
LMS Task Force Meeting
Nassau EM

[About](#) [Discussion](#) [Edit](#) [Insights](#)

Details
4 people responded
Tuesday, June 19, 2018 at 1 PM – 3 PM
Nassau EM
Public · Hosted by Nassau EM
Quarterly LMS Task Force Meeting. Stakeholders are invited to share their concerns and mitigation ideas to make our community more resilient to natural hazards.
[Other](#)

Insights
Last 7 Days: Sep 24 - Oct 1

People Reached 0 +0 last 7 days	Responses 4 +0 last 7 days
Ticket Clicks	Audience

Appendix C – Mitigation Outreach Articles

Nassau EM regularly posts public outreach articles to social media, examples of which follow:

Nassau EM is sharing a COVID-19 Update. 2d · 🌐

These graphics depict the timeline for the Novel SARS-CoV-2 Virus' Infectious Period and provide instructions for people in Quarantine (a full 14 days of segregation after exposure to a positive case, waiting to see if infection develops) or Isolation (at least ten days of segregation from others after the first sign/symptom of infection, while contagious so that others don't catch it.)

WORD OF THE DAY
Infectious Period — the time during which a “case” can transmit the virus to other people.
The Infectious Period for Novel SARS-CoV-2 starts 10 days after the onset of COVID-19 incubation period, most often about 5 days after the start of any signs/symptoms.

CALENDAR DAYS: 10 11 12 13 14 15 16 17 18 19 20 21

Signs and symptoms: (onset illness, about 10 days)

Infected Contact: (5 day incubation)

Learning, Johns Hopkins Bloomberg School of Public Health

3,684 People Reached 493 Engagements [Boost Post](#)

16 8 Comments 7 Shares

Nassau EM 2d · 🌐

Do you have Flood Insurance? You should! Almost everywhere in Nassau County is at risk for some type of flooding - Coastal, Fluvial (riverine flooding), or Pluvial (areal or flash flooding).

Did you know that both the City of Fernandina Beach and unincorporated Nassau County are part of the National Flood Insurance Program's Community Rating System? That means homeowners in either of these jurisdictions are entitled to a discount on their flood insurance. ... [See More](#)

YOUTUBE.COM

Second Home Coverage Myth
 Protect your investment property with flood insurance. FEMA Individ...

2,591 People Reached 78 Engagements [Boost Post](#)

Nassau EM
September 18 at 9:19 AM · 🌐

Everyone over six months old who can get a flu shot should get one each year.
The annual vaccination ensures your body has antibodies to multiple influenza strains. So, even if you are exposed to an influenza strain that isn't in this year's vaccine, your body won't treat it as completely novel and your reaction (i.e. illness) won't be as bad!
Don't spread respiratory viruses!
You still need to remember to keep your hands away from your face, wash your hands well frequentl... See More

STAY FLU-FREE

5 REASONS YOU SHOULD GET THE FLU SHOT

- 1 FEWER SICK DAYS.** It protects you against the flu and lessens the severity if you do catch it.
- 2 SAVES YOU MONEY.** Avoid a flu-associated hospital or doctor visit.
- 3 PROTECTS THOSE**
- 4 HELPS THOSE WITH HEALTH ISSUES.** The chance of flu-related complications for those with cardiac conditions, diabetes or chronic lung disease are lessened.

6,510 People Reached 297 Engagements [Boost Post](#)

👍👎 24 3 Comments 11 Shares

Nassau EM
September 1 · 🌐

Continuing our mission to deconflict terminology and promote #OneNassau #NassauSafe, today's words have to do with the Contact Tracing.

WORD OF THE DAY

Contact Tracing — the process of identifying Contacts through interviews with the Case, then interviewing those Contacts to determine their status, provide education, and coordinate necessary support services to control the spread of communicable disease; the process continues until there are no new Cases to investigate.

Confirmed Case — one who has had a positive diagnostic test for the disease.

Suspect or Probable Case — one who has been exposed to a confirmed case and has developed symptoms of the disease, but have not yet been tested.

Contact — a well person who has been exposed to a Case, either through direct contact (physical), close contact (less than six feet apart for 10-15 minutes), or proximate contact (16 ft. for an extended period). For Novel SARS-CoV-2, that would be during the time the Case had signs/symptoms of illness, or up to two days before their symptoms developed.

👍 14 6 Comments 5 Shares

👍 Like 💬 Comment ➦ Share

Nassau EM
September 14 at 10:15 AM · 🌐

September is always a busy month for tropical systems. The Atlantic is hot this week - five named tropical cyclones! TD #21 is now "Vicky"

The prior record for named storm formations in the first two weeks of September was five - 1869, 1949, 1961, 1998, 2010, and 2018.

Atlantic Basin Satellite Image
Chance of development: None, Low, Medium, High

👍👎👏 32 7 Comments 34 Shares

👍 Like 💬 Comment ➦ Share

Appendix D - LMS Meeting Documentation



Nassau County Local Mitigation Strategy Task Force

4th Quarterly Meeting Agenda – 10 December 2019

1030 hrs. – Sign-in, Welcome, Housekeeping

Old Business:

- Adoption of prior meeting's minutes – *distributed to LMS TF via e-mail and Dropbox*.

Standing Agenda Items:

- Mitigation Project List Status Review: Status Updates from Task Force Members, Deletions, Additions, Reprioritizations, (master list is in LMS TF Dropbox folder)

New Business:

- Discussion of Hazard Vulnerability Analysis Workbook Results (attached to agenda)
- Local Mitigation Plan re-write project – current plan is in the shared LMS TF Dropbox as are the federal requirements and **NEW Guidance from FDEM** – LMS Components:
 - Review of Geography
 - Demographics and Trends
 - Comprehensive Development Plan (need from County)
 - Identification of local hazards and risks (must tie in with the statewide list of natural, man-made, and technological hazards).
 - Identification of local Ordinances and Regulations that support mitigation (references and brief description – need from planning, building, code enforcement, and public works departments – county and municipal)
 - Identification of past and ongoing mitigation goals, activities, progress, and achievements (need narratives for CRS, training, code enforcement, etc.)
 - Identification and prioritization of the actions Nassau wants to take to mitigate each of our identified Hazards

- Open Forum

1130 hrs. – Adjourn



Nassau County Local Mitigation Strategy Task Force

Meeting Minutes – 10 December 2019

Meeting Called to Order at 1030 hrs.

Director Foster thanked everyone for attending the meeting to participate in the Task Force’s mitigation work and introduced the new NCEM Mitigation Coordinator Mark Wilson.

LMS TF Working Group/Voting Members in Attendance:

NCEM (Ex Officio) – TF Chair	Mark Wilson	CoFB Storm Water Mgmt	Andre Desilet
Callahan Admin	Marty Fontes	CoFB Fire Rescue	- Absent
Callahan Public Works	- Absent	County Building Dept	Roosevelt Morris
Hilliard Admin	- Absent	County Code Enforcement	- Absent
Hilliard Public Works	- Absent	County Planning Dept	- Absent
CoFB Building Dept	- Absent	County Facilities Mgmt	- Absent
CoFB Planning Dept	- Absent	County Road & Bridge Dept	- Absent
CoFB Streets Dept	- Absent	County Fire Rescue	- Absent

Also in attendance: NC Director of Emergency Management, **Greg Foster**; Fernandina Beach Vice Mayor: **Len Kreger**; CoFB Grants Manager, **Lorelei Jacobs**; Nassau P&EO CRS Manager, **SueAnn Alleger**; VOAD/Nassau P3, **Stephanie Estep**; NCSB, **Jeffrey Bunch**; NC Engineering Services, **Katie Peay**; NC Property Appraisers, **Jason Gregory**

Old Business:

- Due to the large number of absentee voting members there was no motion made to accept minutes of the prior meeting’s business. The minutes are available in the Dropbox folder.
- Previously requested documents to assist in the LMS rewrite were provided by County Building, NC Planning & Economic Opportunity and also by Nassau County Engineering Services.

Standing Agenda Items:

Mitigation Project List Status Review

- An updated master list of projects was provided to Task Force Members. This list includes all projects on the approved LMS as well as any projects added during the required yearly updates to the LMS, each project is now given a number for ease of reference.
- No deletions, additions, or reprioritizations were proposed during the meeting, however NCEM asked that that a full review of all projects on the list be undertaken by the taskforce to ensure that the status of all projects is recorded accurately. This included a separate list of projects that have appeared at some point in the LMS but no information on their status was readily available.



Nassau County Local Mitigation Strategy Task Force

- A discussion was held about increasing the number of projects on the master list. NCEM emphasized that the master list is not a 'grant wish list' but shows how Nassau County is mitigating against hazards. Ongoing mitigation efforts funded locally, including public outreach programs are suitable projects to be included in the master list as they show how Nassau County is working to mitigate hazards.

Re-Write of Nassau's Local Mitigation Plan

- The LMS plan rewrite has begun and the results of the hazard and vulnerability analysis were discussed. A list of 10 hazards to be profiled in the LMS rewrite was shared with the taskforce. These hazards are: Flooding, Tropical Cyclones, Severe Storms, Tornados, Wildfire, Erosion and Sea Level Rise, Drought, Extreme Temperatures, Hazardous Materials Incidents, Infectious Disease Outbreaks.
- NCEM informed the taskforce that the new guidance from FDEM states that each hazard profiled needs a mitigation project from each jurisdiction. Projects can cover multiple hazards and/or multiple jurisdictions.
- NCEM showed the taskforce a FEMA publication – Mitigation Ideas (available from <https://www.fema.gov/media-library/assets/documents/30627>) that presents some ideas for mitigation projects based on hazard type.

New Business:

- Nassau County Engineering Services (Katie Peay) agreed to provide NCEM with an updated list of Thomas Creek projects, as the ones listed on the current master project list may not be complete or accurate.
- NCEM agreed to email the 2 page project proposal form to all task force members. Scoring of projects will only be necessary if and when the project is to be submitted for grant applications.
- NCEM stated they are looking into the possibility of grant writing workshops in the new year.

1130 hrs. – Adjourn

Appendix E –Vulnerability Assessment Summary Report

Vulnerability Assessment:

On January 28th 2019, the Nassau County Board of County Commissioners accepted a \$40,000 Florida Department of Environmental Protection (DEP) grant award to complete a Vulnerability Assessment for certain parts of the County. A Vulnerability Assessment reviews future exposure to existing developed areas and future areas of development, financial exposure, and risks to significant environmental and cultural resources. This project will specifically help the County assess the overall environmental and economic vulnerabilities related to flooding and sea level rise risks.

Flooding, storm water, drainage are top of mind with elected officials and the community based on storm events like Matthew and Irma, but also because of everyday flooding after typical thunderstorms. It is not uncommon to hear on a weekly basis from citizens in the County regarding road flooding issues or that they have been dropped from their flood insurance. The community has indicated they are ready for action. A Vulnerability Assessment for rapidly growing areas, and areas with demonstrated existing flooding issues, will help Nassau County be better prepared.

The two areas that will be studied in this first phase are: 1) east of I-95 on the mainland, and 2) west of I-95 south and west of A1A/SR 200/301. These areas represent portions of the County experiencing rapid growth and development pressures, and lands that are highly vulnerable due to extensive floodplain and wetland areas. Long-range planning efforts are currently being conducted for these regions of the County, and a vulnerability assessment will help inform these efforts and future planning. The County has a goal of holistically incorporating resiliency planning into all planning activities, instead of treating it as a siloed, separate planning exercise.

The grant award did not require a match from the County. The Balmoral Group was selected to complete the Vulnerability Assessment, and work took place during Spring 2019. In November 2019 - The County's Planning and Economic Opportunity Department was awarded a second Department of Environmental Protection grant to have the assessment completed for the remainder of the County, including Amelia Island. The Balmoral Group was selected to complete the project, which is now complete.

Findings of Vulnerability Assessment

Nassau County conducted a vulnerability assessment focused on issues relating to flooding, drainage, storm events and sea level rise in two areas of the County: Amelia Island, and west of Interstate 95 on the mainland, north and west of State Road 200/US301. Both areas have additional development planned for locations that maybe vulnerable to increased hazards.

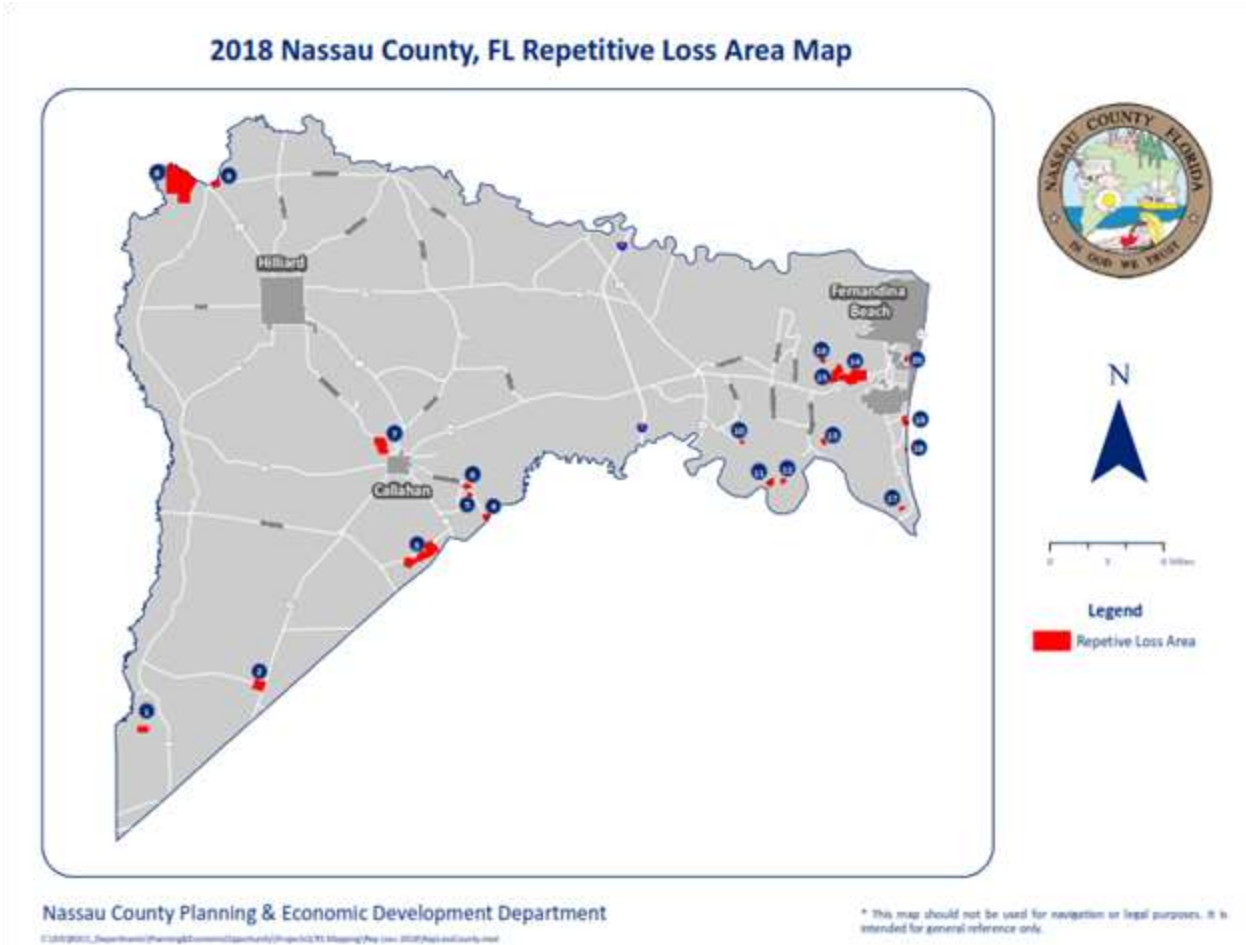
The maps included in the vulnerability assessment reflect several overriding themes:

1. Much of Amelia Island is affected by the highest probability scenarios, including Category I storms and minimal sea level rise (1 ft.), including areas that are reasonably distant from the coastline. This may serve as a surprise to some residents and may begin a dialogue on measures that are needed to protect these areas from future damages.

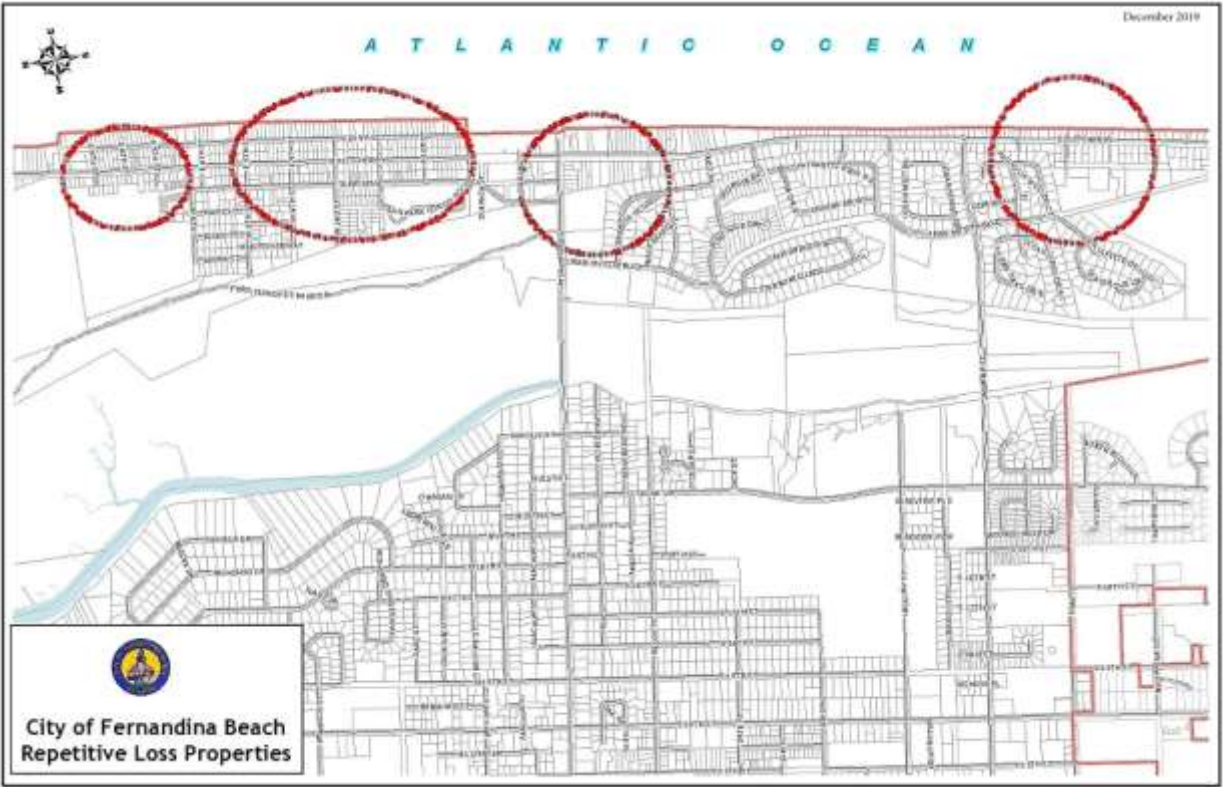
2. Large areas that are served by septic tanks and drainfields are vulnerable to impacts from even minimal storm surge and sea level rise.
3. Vulnerable populations (elderly, poor, disabled) appear to be disproportionately affected by Cat I storm effects and minimal sea level rise.
4. Data reflecting increased water frequency shows concentrated impacts in areas with disproportionately high rates of poverty.

Appendix F – Maps

Repetitive Loss Areas – 33 properties in 20 different areas.



City of Fernandina Beach Repetitive Loss Areas – 7 properties in 4 different areas



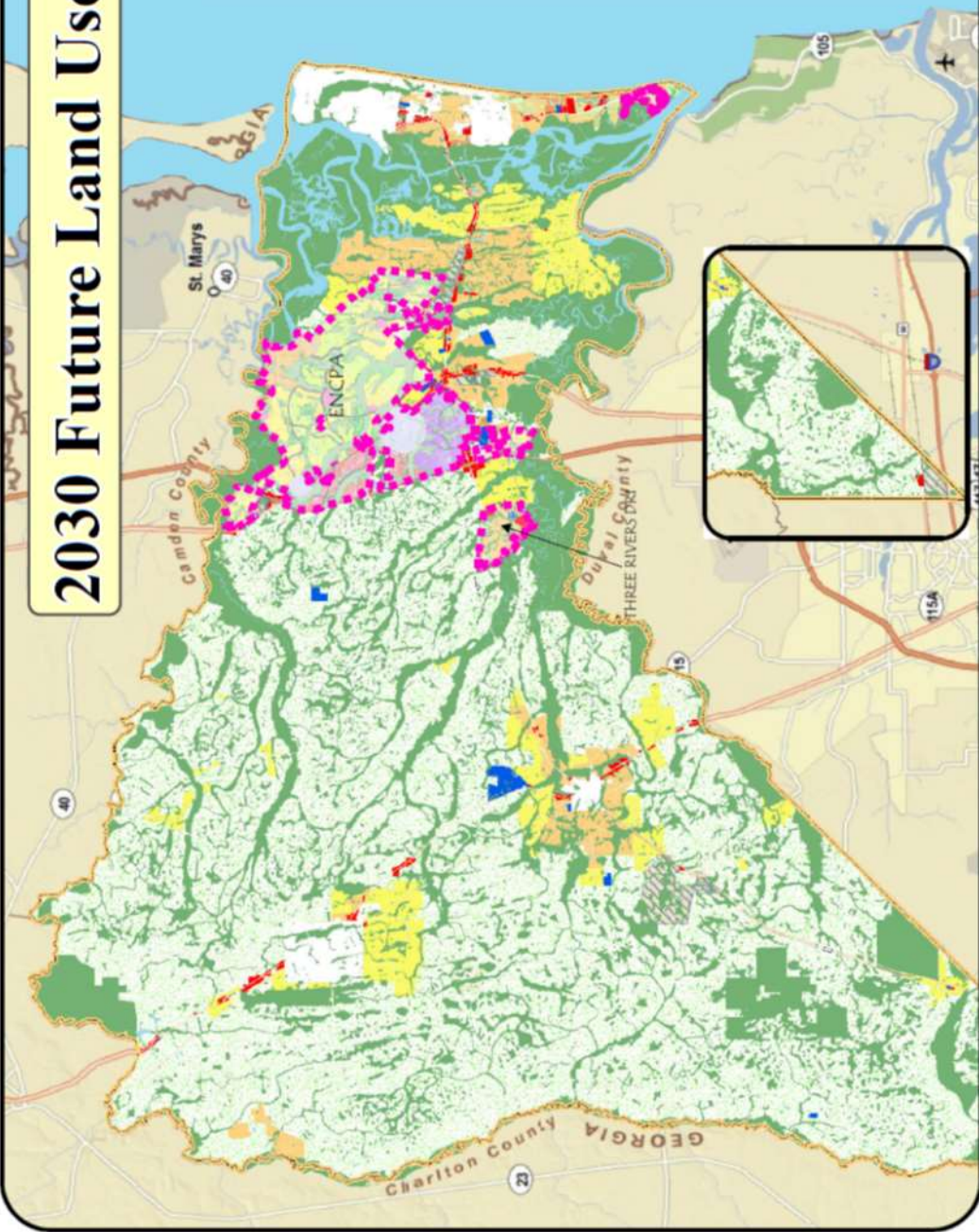
2030 Future Land Use Map

Future Land Use Map Series FLUMS-1

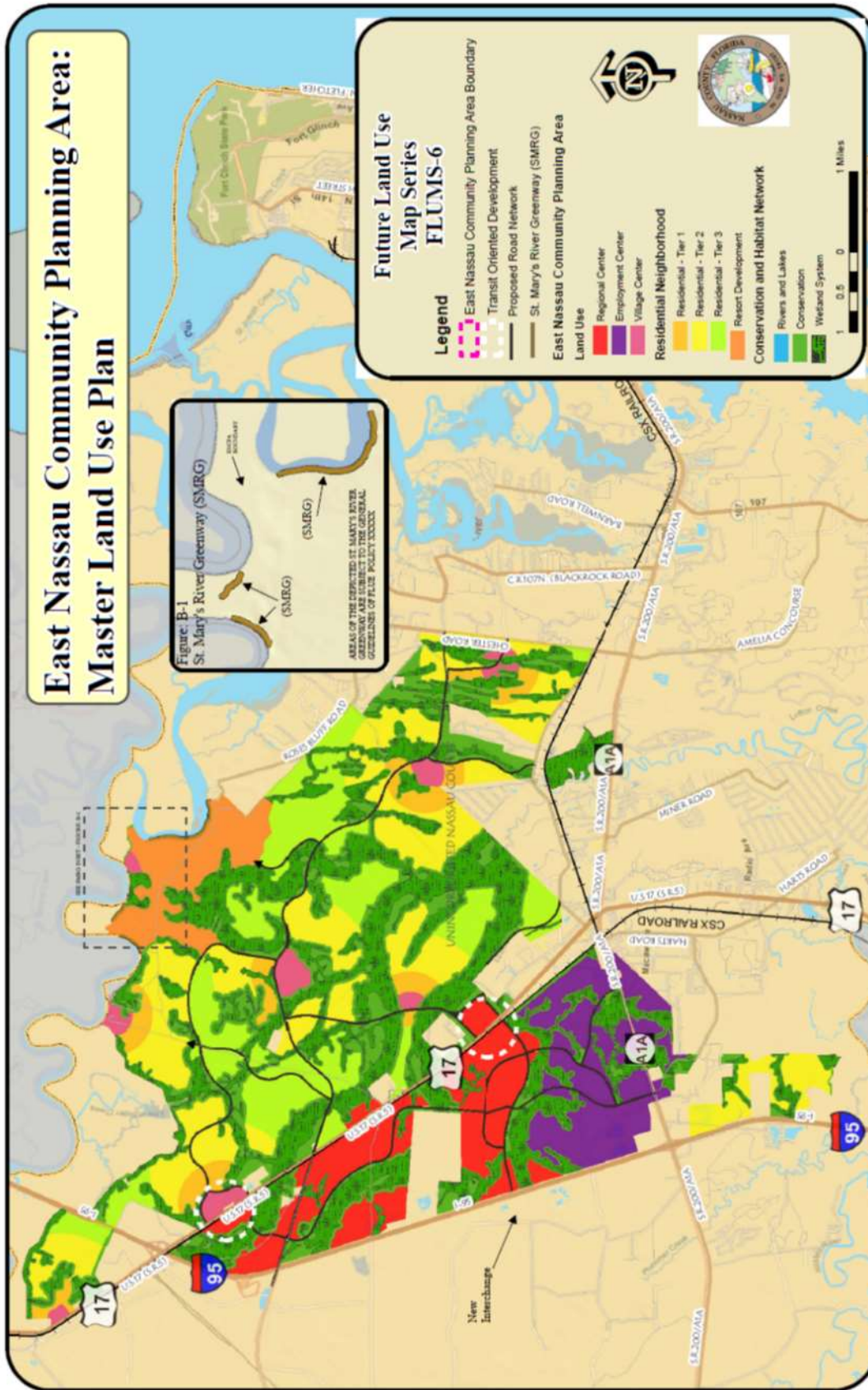
- Legend**
- CONSERVATION I and II
 - MULTI-USE
 - AGRICULTURAL
 - COMMERCIAL
 - HIGH DENSITY
 - INCORPORATED
 - INDUSTRIAL
 - LOW DENSITY
 - MEDIUM DENSITY
 - PUBLIC BUILDING FACILITIES
 - RECREATION
 - WATER

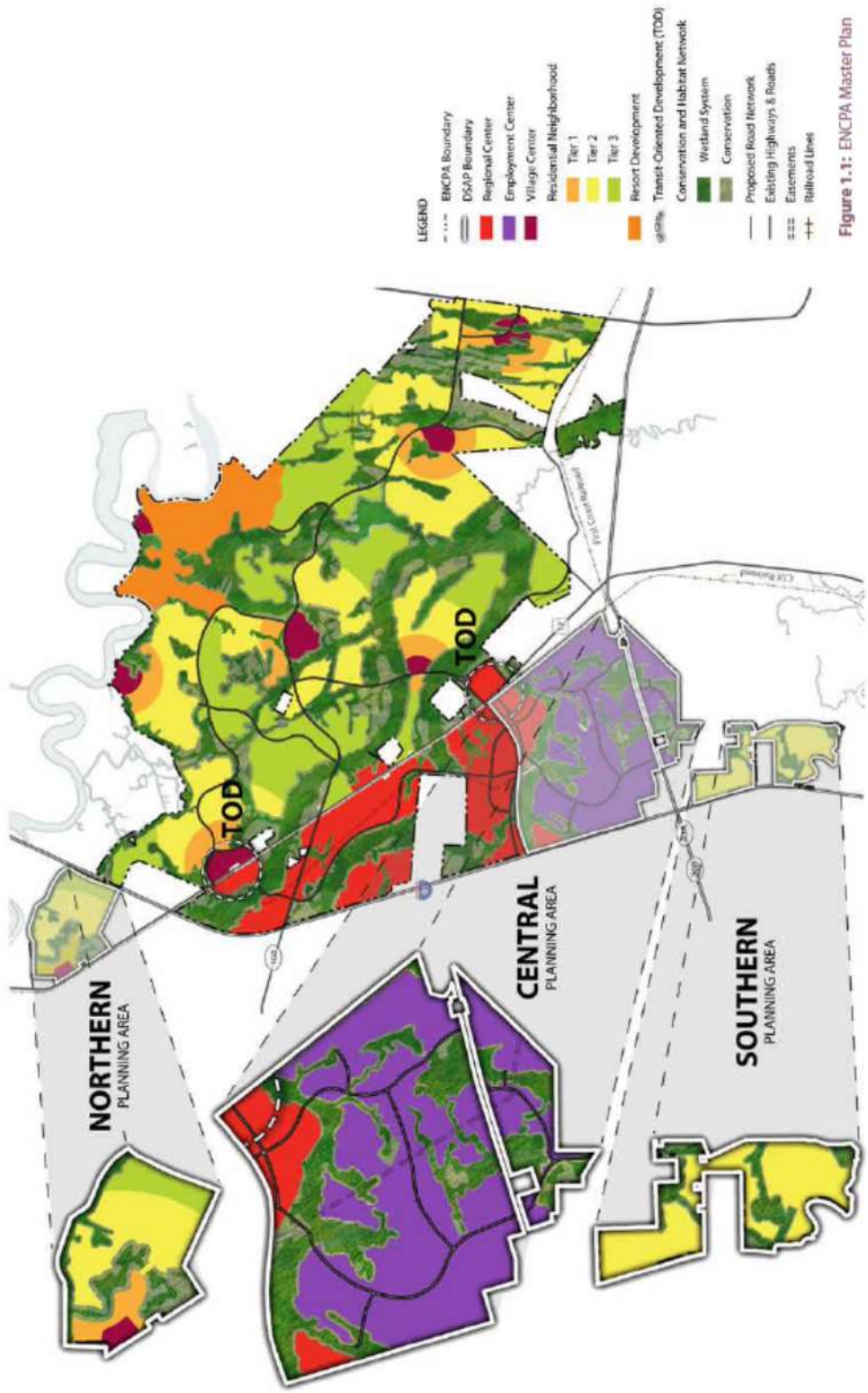


2 1 0 2 Miles



East Nassau Community Planning Area: Master Land Use Plan



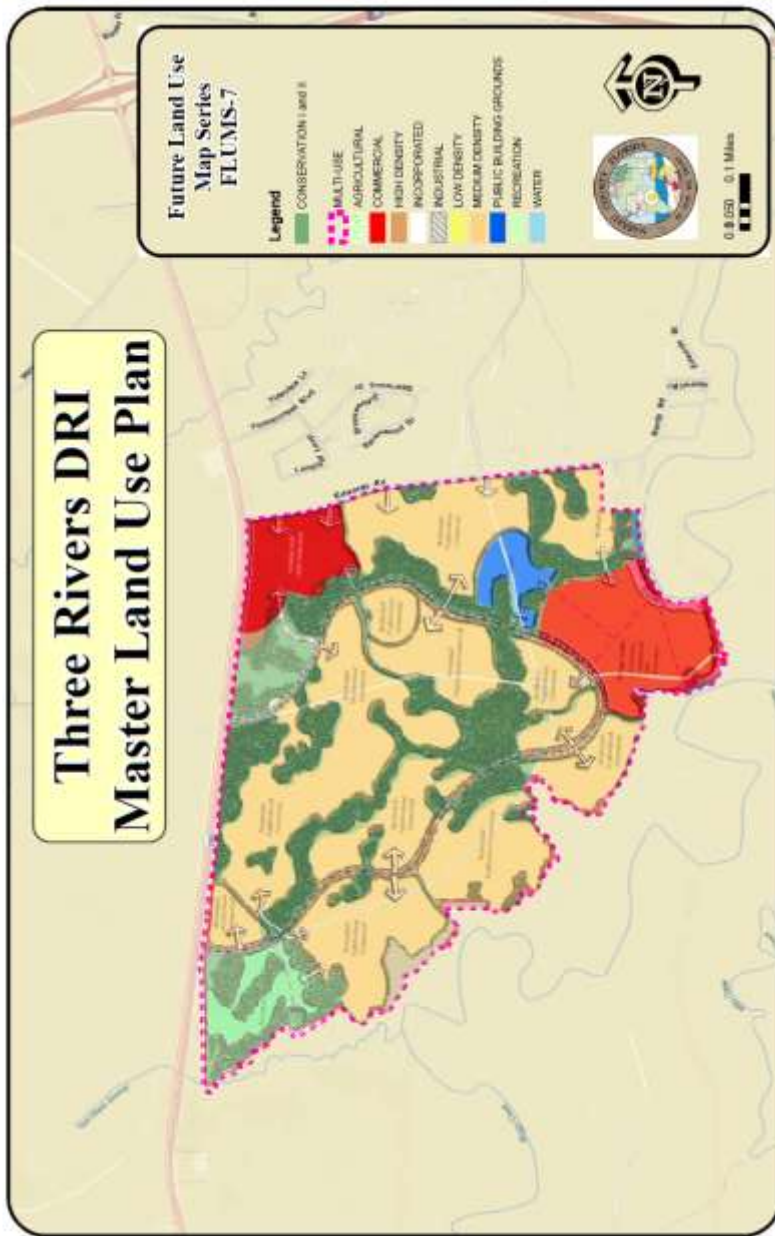


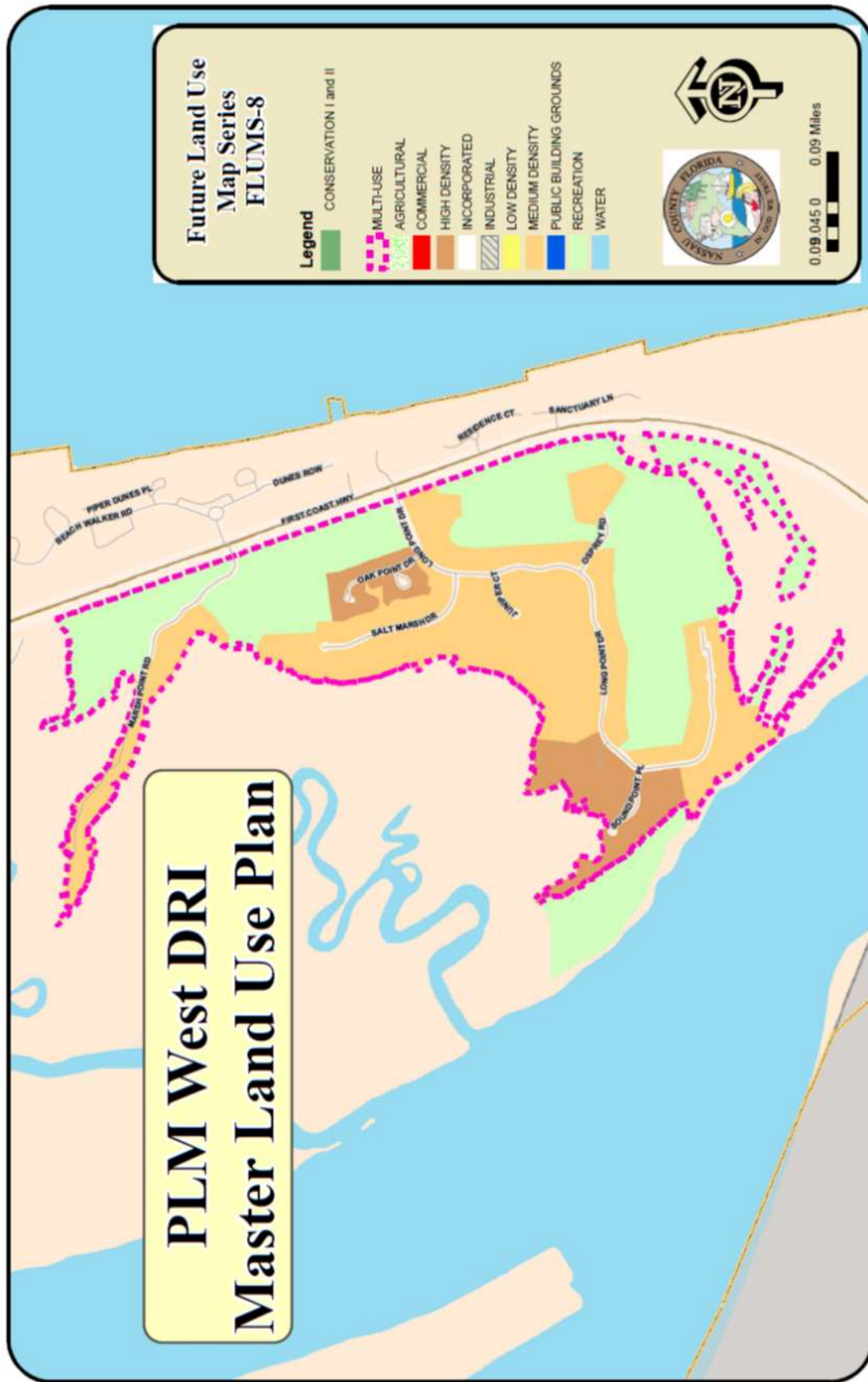
- LEGEND**
- - - ENCPA Boundary
 - DSAP Boundary
 - Red Regional Center
 - Purple Village Center
 - Residential Neighborhood
 - Orange Tier 1
 - Yellow Tier 2
 - Light Green Tier 3
 - Dark Green Resort Development
 - Light Blue Transit Oriented Development (TOD)
 - Dark Green Wetland System
 - Light Green Conservation
 - Black Proposed Road Network
 - Grey Existing Highways & Roads
 - Red Easements
 - Black Railroad Lines

Figure 1.1: ENCPA Master Plan

Detailed Specific Area Plan: East Nassau Employment Center

Three Rivers DRI Master Land Use Plan

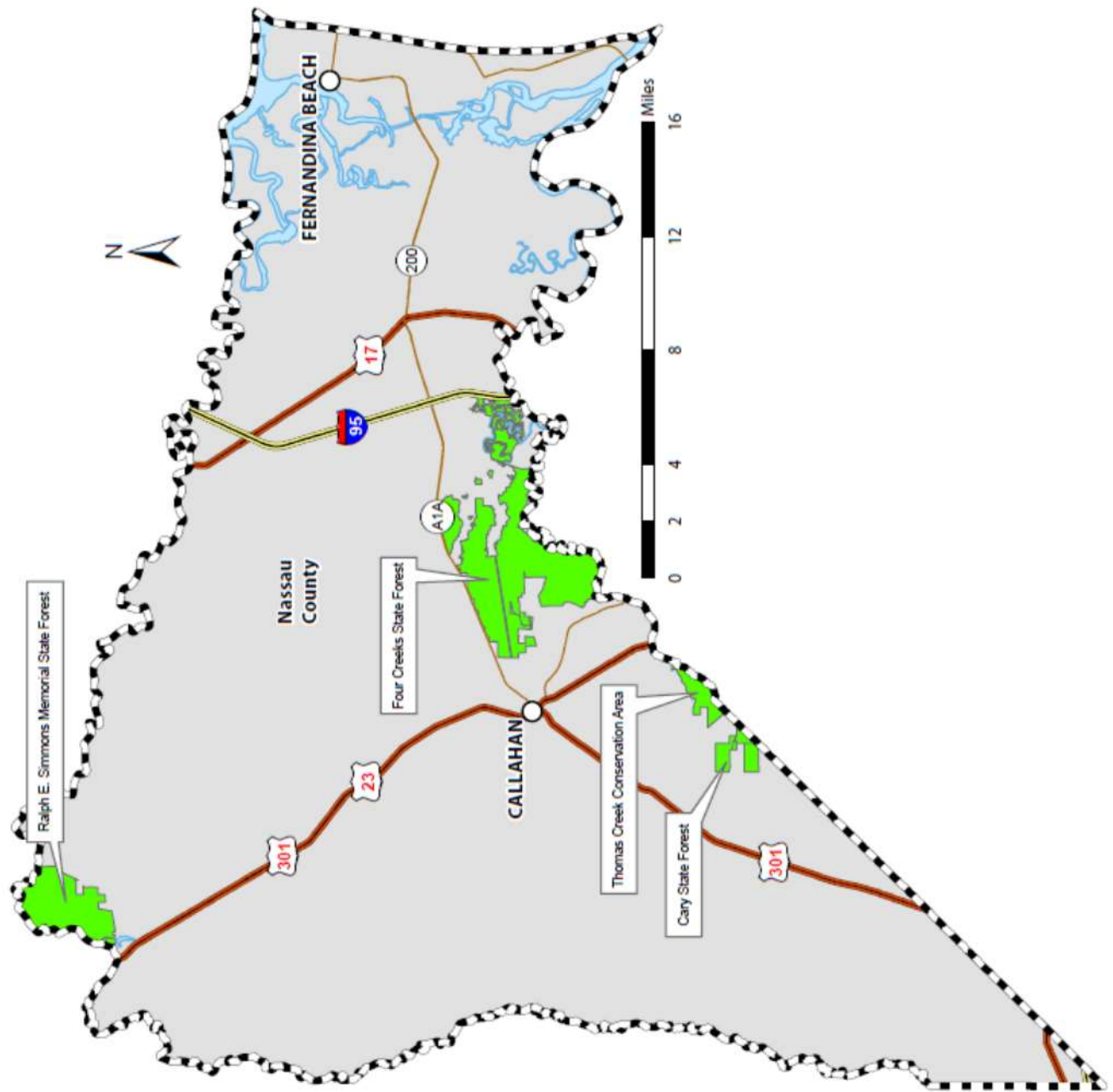


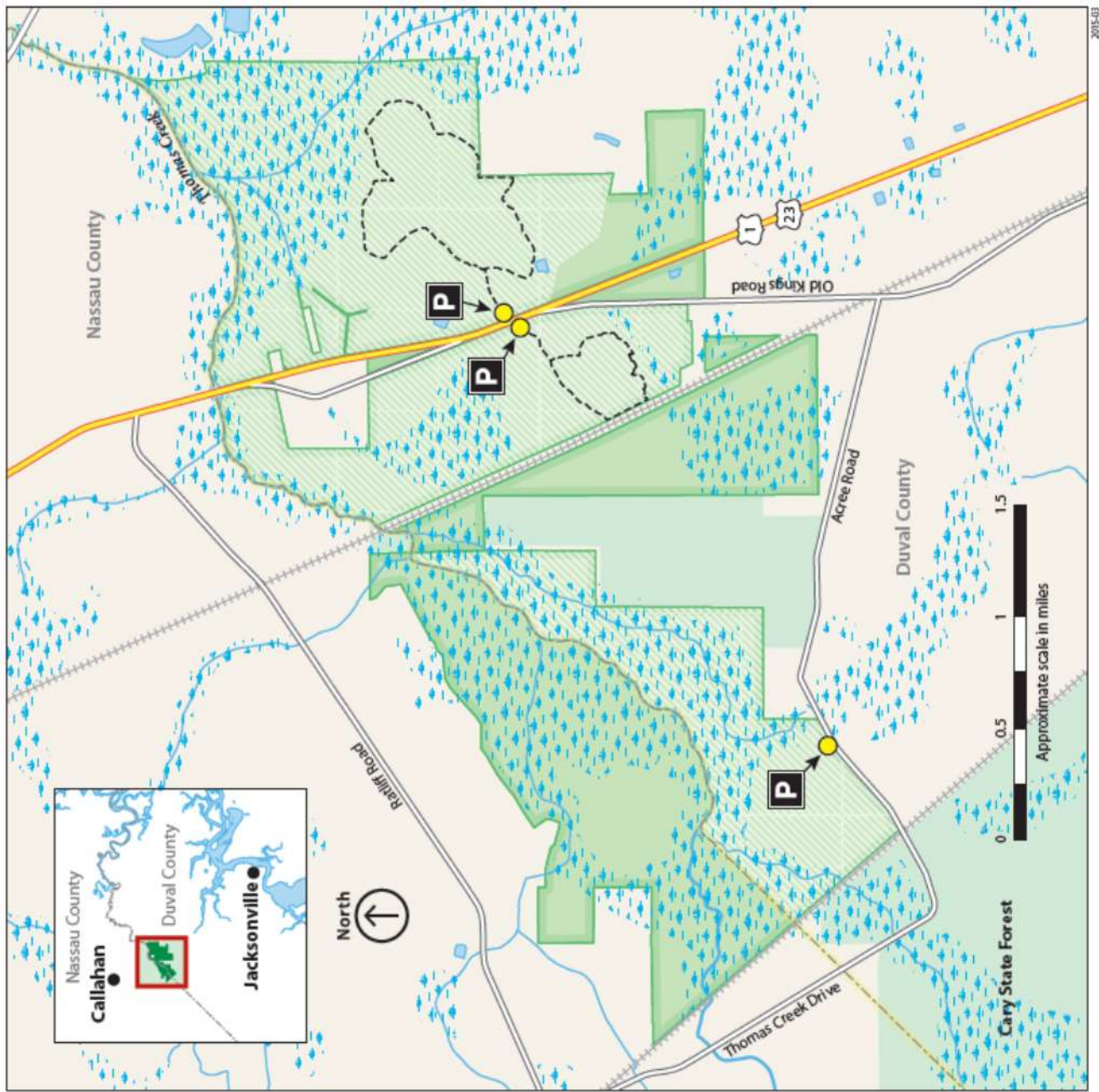


**St. Johns River
Water Management District
Lands Assessment
Implementation Plan
Nassau County**

Legend

- Retain
- Donate to local government with conservation easement
- Sell with conservation easement
- Surplus for sale/exchange
- Alternative use





Thomas Creek

Conservation Area

Legend

- Access/entry to property
- Parking area
- Trail
- Property
- Wildlife Management Area

Activities allowed

- Wildlife viewing
- Hiking
- Horseback riding
- Bicycling
- Seasonal hunting

Notice: Wildlife Management Area. Hunt season caution.

This map is not intended for navigational purposes; it provides only the general location of each area.



**St. Johns River
Water Management District**
floridaswater.com/recreation

Appendix G – Project Guidance and Project Scoring

Purpose

This document describes the Nassau LMS Task Force composition, priorities, procedures, and project evaluation process. It also provides guidelines to standardize the evaluation of proposed mitigation projects. State statutes (163.3178 F.S.), administrative code, local land use plans and ordinances restrict development in at-risk areas and outline principles for hazard mitigation and protection of human life against the effects of natural disaster. The Nassau County Local Mitigation Strategy (LMS) Task Force functions as the county’s “Local Mitigation Strategy Working Group” in compliance with *Florida Administrative Code 27P-22 – Hazard Mitigation Grant Program* requirements. On an annual basis, quarterly meetings (at a minimum) afford LMS Task Force members a chance to discuss local development trends, zoning, and infrastructure vulnerabilities, proposed hazard mitigation projects (e.g., facility hardening, flood-proofing, wind-retrofitting, storm water drainage, acquisition and demolition) and their benefits to the community. Using a standardized method to evaluate and rank proposed projects will ensure LMS Task Force members perform equitable comparisons and assure stakeholders that mitigation project prioritization is conducted in an objective and consistent manner.

Task Force Composition

Nassau County LMS Task Force membership is open to representatives from government, private sector, and community-based organizations. Nassau County Government/Board of County Commissioners, the City of Fernandina Beach, the Town of Hilliard, and the Town of Callahan support the Local Mitigation Strategy by appointing public safety and public works subject-matter experts to participate on the LMS Task Force as voting members and to evaluate proposed mitigation projects. In addition to serving as Task Force Members for the duration of the strategic plan, individuals representing municipal and county government agencies are expected to participate in the development of the 5-year LMS, attend at least three of the four mandatory quarterly meetings each year, and review and score proposals as assigned by the LMS Task Force Chair. If a Task Force Member is unable to continue for the entire term, an agency may replace their representative with an alternate who is able to fill the role. As provided for in the promulgated Nassau County Comprehensive Emergency Management Plan, administrative functions of the LMS Task Force are facilitated through Emergency Management (EM); the LMS Task Force is coordinated by the EM Mitigation Coordinator.

Public input regarding the LMS and potential projects is encouraged. All LMS meetings are well publicized via electronic and print media, and are held in an open forum. To further promote community participation in the mitigation strategy, the Emergency Management staff routinely reaches out to private sector partners with opportunities for emergency preparedness and hazard mitigation education and planning assistance, and distributes informational materials at public events such as festivals and weekend civic events.

Local Mitigation Strategy Goals and Priorities

The LMS Task Force is committed to cost-effective environmentally sound projects that reduce or eliminate long-term risk to lives and property from natural and man-made hazards. The goal

is to make improvements in vulnerable areas (e.g., flood-prone, erosion-susceptible, high fire-fuel, poor access to EMS and Fire-fighting resources, older neighborhoods with poor infrastructure or non-wind-rated structures) that will make Nassau County more disaster resilient and lessen the time and costs associated with response and recovery. Ideally, projects will provide benefits to the community even in the absence of disaster. Nassau County's LMS goals are to ensure:

- 1) Life Safety
- 2) Continuity of Critical Operations
- 3) Economic Vitality
- 4) Infrastructure Hardening, and
- 5) Preparedness Activities.

Specifically important are mitigation projects affecting repetitive loss properties, infrastructure, and properties most vulnerable to the natural hazards identified in the Comprehensive Emergency Management Plan and validated through the Nassau County Threat & Hazard Incidence Risk Assessment (THIRA). Scoring and ranking of proposals will reflect these priorities.

Project Review Process

The LMS Task Force reviews its ranked list of scored project proposals at each quarterly meeting or whenever a funding opportunity for mitigation projects is announced. If there is a concern about the order in which projects are ranked, with a two thirds majority LMS Task Force members can vote to change the order of the list.

Proposal Submission and Assignment to Primary Reviewers

Project proposals are detailed on the Nassau County LMS Project Proposal Form and submitted to the LMS Chair c/o Nassau County Emergency Management, 77150 Citizen's Circle, Yulee, for consideration. They are assigned a project identification number based upon the date of receipt. Proposals are then assigned by the LMS Chair to two Task Force Members (Primary Reviewers), who have no vested interest in the project, for review and scoring. Primary Reviewers are given one month to evaluate the assigned proposal and return their score sheets to the LMS Chair. Reviewed projects are included on the agenda for discussion at the next scheduled meeting.

Scoring, Ranking, and Prioritization

The approach adopted for scoring and ranking proposals, and thus prioritizing projects for funding, utilizes quantifiable criteria and incorporates the following considerations:

1. Decreased risk of damage or loss from a particular hazard(s)
2. Portion of population that will benefit
3. Contribution to local health, safety, and environment (disaster and non-disaster)
4. Consideration of future changes in development or environment
5. Feasibility of implementation, including "match" funds

Reviewers' scores in each category are combined and averaged, then the mean category scores are combined to reach the proposal's total score. With the assent of a majority of the Task Force Members, which can be accomplished via e-mail or during the scheduled meeting, reviewed projects are ranked among others on the LMS Project List according to their scores. Those ranked highest on the LMS Project List are prioritized for pre-disaster and post-disaster mitigation funding as it becomes available; *projects must be included on the current LMS Project List in order to be considered for mitigation funding.* Project descriptions for LMS ranking purposes do not necessarily include the specific application details that might be requested by a funding agency. Project points of contact will still need to complete and submit the agency-specific grant proposal application to the State before the deadline stated in the agency's Notice of Availability (NOFA).

Public Records and Exemptions

All proposals and supporting documentation submitted for consideration by the LMS Task Force are considered a public records subject to inspection and copying upon request, as described in Section 119.07 F.S. If the submitting entity contends that all or part of their project proposal is exempt from inspection and copying, they must state the basis of their claim and provide citation of an exemption created or afforded by Florida Statute. Requests to inspect or copy a submitted proposal will be acknowledged in good faith. If it is asserted that an exemption applies to any part of a submitted project proposal, the LMS Task Force Chair will redact the portion to which an exemption validly applies and produce the remainder of the document requested.

Scoring Matrix for LMS Project Proposals

Category					Score
Addresses Hazard Vulnerability	3 More than two hazards or threats	2 Two hazards or threats	1 One hazard or threat		
Population at Risk	3 County-wide or multi-jurisdiction	2 Single jurisdiction (e.g., city or town)	1 < 100% of a jurisdiction (e.g., neighborhood or individual)		
Improves Health & Safety	4 >1000 individuals	3 100 – 999 people	2 10 – 99 individuals	1 < 10 people	
Environmental Impact	2 Improvement	0 No Impact	-2 Risk of Damage		
Consistent with Local Plans (e.g., comprehensive use, development, improvement, etc.)	4 Project need or gap is identified or described in multiple plans	3 Project need or gap is described in two other plans	2 Project need or gap has been identified in one other plan	1 Not previously identified in a local plan	
Decreases Risk of Future Damage	4 Existing High Risk	3 Moderate Risk situation	2 Low Risk situation	1 Very Low Risk situation	
Addresses Future Environmental Changes (e.g., Sea-Level Rise)	2 Yes, Imminent changes	1 Yes, Distant changes	0 No		
Community Rating System Activity Credit	4 Accrues >100 points	3 Earns 50–99 points	2 Earns >50 points	1 No CRS points	
Affects a Repetitive Loss (RL) Structure	4 Two or more Severe RL structures	3 Two or more RL structures	2 One Severe RL structure	1 One RL structure	
Affects Essential Services or Critical Infrastructure	2 >1 Critical Infrastructure Facility	1 One Critical Infrastructure Facility	0 No Critical Infrastructure or Services		
Jurisdictional and/or Political Buy-in	1 Popular project with organizational support	0 Unpopular or no organizational support			
Feasibility, Match Availability	1 Financial or in-kind match available	0 No match identified			

Proposal Title: _____

Submitting Entity: _____ Date: _____

Point of Contact: _____ Office # _____

E-mail Address: _____ Cellular # _____

Meets Public Records Exemption requirements as described in 119.07(3) F.S.? NO YES

The following information is required for LMS Scoring – Reviewers may request additional information.

(This form does not replace the funding application required under a particular Notice of Availability)

On the reverse or a separate sheet, in 300 characters or less, please describe the project and why it should be included in the Nassau County LMS Project List for funding consideration.

Project Location/Address: _____

Affected Jurisdiction & Population #: _____

Health & Safety Benefits: _____

Timeframe for Completion (e.g., # months, phases) _____

Estimated Costs for Planning and/or Execution: _____

Has “Match” been identified? NO YES (describe) _____

Is Critical Infrastructure involved? NO YES (describe) _____

Are any Repetitive Loss Structures involved? NO YES How many? _____

Are any Severe RL Structures involved? NO YES How many? _____

Will the project earn CRS Credit Points? NO YES How many? _____

Is there potential Environmental or Historical site impact? NO YES (describe) _____

Gap/risk analysis, land use, preservation, improvement plans, etc. that support this project:

Project Proposal ID# _____ Date Assigned: _____

Assigned Reviewer #1 _____ Reviewer #1 Score: _____

Assigned Reviewer #2 _____ Reviewer #2 Score: _____

Total of Scores = _____ Divided by 2 = **LMS Score for Ranking** _____