

Levy County Local Mitigation Strategy

2016 Update

PLAN AND APPENDICES



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I. INTRODUCTION

Hazards are unpreventable natural events that by their nature may expose the population to the risk of injury or death and may damage or destroy private property, public infrastructure, and agricultural or other resources. Florida, with its large and rapidly growing population centers located in coastal areas, emphasizes the need for all levels of coordination and preparation.

From 1992 to 2015, Florida received 40 major disaster declarations for various events: 22 for tropical cyclones; 16 for a variety or combination of severe storms, tornadoes, and floods; one severe freeze; and one wildfire. FEMA estimates that about 41 percent of Florida is flood prone, the highest percentage of all 50 states. Over three-quarters of Florida's population lives in coastal counties and approximately 33 percent live within a category five storm tide inundation zone. Florida has 1,350 miles of general coastline, and 118,436 miles of tidal shoreline, which includes the outer coast, offshore islands, sounds, bays, rivers and creeks. The population in coastal counties is a mixture of those who have experienced, first hand, the threat of coastal storms and those who have no experience in preparation and evacuation in case of such weather. Furthermore, because of the large concentrated population in these areas, it is important to monitor both natural and man-made coastal threats and hazards as well as the level of preparation being conducted by government and citizens to increase the level of safety to the population at risk.

Historically, Florida residents have dealt with a number of severe weather conditions related to hurricanes. Between 1900 and 2015, Florida was impacted by 66 hurricanes, 31 of which were major hurricanes (Category 3 or higher). In 1985, a series of storms (Elena, Juan, and Kate) jolted the Panhandle, resulting in death, damage to coastal structures, destruction of numerous sea walls, and damage to coastal highways. In August 1992, Hurricane Andrew made landfall in south Dade County. The hurricane was classified as a category 4 storm with sustained wind speeds of 145 miles per hour. The hurricane produced approximately 7 inches of rain and a maximum storm tide of 16.9 feet. A total of 60,000 homes were destroyed and a quarter of a million people were left homeless in Dade County.

Hurricane Andrew cost an estimated \$30 billion in insured and uninsured losses, devastating the environment, entire communities, and the insurance industry. Many families were left homeless and many insurers were left bankrupt. The aftermath of Hurricane Andrew has brought issues of hazard mitigation and preparation, populations at risk along Florida's coast, and personal responsibility to the forefront.

In 1994, two tropical storms (Alberto and Beryl) caused 100-year flooding events in the state's Panhandle. The flooding was so extreme that Presidential declarations of "emergency" and "disaster" were made. Finally, Hurricane Opal in October 1995 hit Florida with Category 4 storm surges that resulted in \$3 billion worth of damage. Levy County locals are also aware of the unnamed storm events, resulting in disaster declarations in 1993, 1998, 2000 and 2003 due to flood damage from rainfall events. Florida again experienced notable hurricane season weather in 2004, as a series of three storms in quick succession hit the State. During 2004, Levy County was impacted by tropical storm conditions yet, due to its flood vulnerability, suffered significant damage as the result of Hurricanes Charley, Francis and Jeanne. More recently Levy County was included in presidential disaster declarations for Tropical Storms Alberto (2006) and Fay (2008) and Debby (2012).

Florida is very susceptible to storm-induced flooding. The average elevation throughout the state is approximately 100 feet above mean sea level (msl). The flooding created by hurricanes is a threat to the life and property of coastal residents. The most critical threat is to those residents within the category 1 surge zone developed with updated Sea, Lake, and Overland Surges from Hurricanes (SLOSH) data by the National Hurricane Center. This zone shows all areas that would be inundated with water from a land falling category 1 hurricane, defined as having sustained winds of 74 to 95 miles per hour. The category 1 hurricane evacuation zone generally includes all of Florida's barrier islands, even those with areas of elevation above the category 1 level. The Coastal High Hazard Area is defined as the category 1 hurricane evacuation zone but as it is designated by the most recent regional evacuation study. The Coastal High Hazard Area is used by the Florida Department of Economic Opportunity (DEO) to review land use issues as part of the Comprehensive Planning process.

As previously stated, populations within the category 1 hurricane surge zone face a greater risk than those outside of this zone due to their immediate vulnerability to low intensity hurricanes. The population at risk includes residential property owners, tourists and visitors who may be using facilities in the coastal area, and the general population residing in mobile homes.

The size of the population in coastal high hazard areas is a good indicator of a potential risk to human health. Additionally, the insured value of property in coastal hazard areas is also an indicator of risk to property. Recent hurricane events demonstrate that insured losses can be significant and create a tremendous burden for homeowners, private insurers, and local, state, and federal governments. As insured value of property in coastal hazard areas rises, the state is faced with increasing responsibility for the fiscal impacts caused by natural disasters. Florida has numerous mobile homes in the coastal areas, all of which are extremely susceptible to the effects of hurricane force winds and thus their location and installation need to be regulated.

The cost of post-disaster recovery has grown at such an alarming rate throughout the United States that the issue of hazard mitigation has gained attention from all levels of government. The Federal Emergency Management Agency (FEMA) has developed a National Mitigation Strategy and the state of Florida has created a Statewide Mitigation Strategy. These strategies view planning for disasters as the way to ensure a safer community and reduce recovery costs. Additional funding is becoming available to support hazard mitigation efforts. This funding will provide mitigation planning opportunities for local governments that have been affected by a disaster or are vulnerable to disasters.

What is Hazard Mitigation?

Hazard mitigation is any action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of hazards. Tools of hazard mitigation include land use planning techniques that limit the infrastructure in high hazard areas and programs for retrofitting existing structures to meet new building codes and standards. Ideally, a community can minimize the effects of future hazards through a mix of code enforcement, planning, and responsible development. The result of incorporating mitigation into development practices will be the creation of safer and more economically resilient communities.

The Hazard Mitigation Strategy

The Local Mitigation Strategy is a plan that a community can develop to promote hazard mitigation and to manage post-disaster recovery. Developing these strategies in Florida is important because the state is

vulnerable to many hazards as discussed previously. Florida is subject both to riverine flooding and coastal flooding. One indication of how vulnerable our communities are to flooding is the high number of National Flood Insurance policies statewide. Florida leads the nation in the number of flood insurance policies- with more than 80 percent of the total number of polices written.

Local governments may use this Strategy as an index to record where criteria items are addressed in existing plans, ordinances, or policies. The Local Mitigation Strategy criteria are based on existing planning requirements, and additional information has been included to further direct the County's mitigation choices and allow the County and its communities to rebuild better after a disaster.

The Local Mitigation Strategy belongs to the community - as government agencies work together, coordinating within and between various city and the county agencies, private sector interests, concerned residents and nonprofit organizations - the community is taking an important step toward becoming more disaster resistant.

Benefits of a Local Mitigation Strategy

Local governments will benefit from preparing a Local Mitigation Strategy in a number of very important ways.

- ***More Funding***

By identifying problems and possible solutions and mitigation activities in advance of a disaster, local governments will be in a better position to obtain post-disaster funding. Local governments will have the chance to initiate changes in their communities that can permanently reduce the risk of future losses--an opportunity that is often lost in the rush to rebuild after a disaster to pre-disaster conditions. By identifying and prioritizing projects prior to a disaster, the local government will gather the kind of information that is typically required on applications for post-disaster funding. Since these local governments will have collected and analyzed that information during "blue skies," they will be able to quickly submit applications for disaster funds should they be impacted by an event.

- ***Faster Recovery***

Through planning and implementation of their local mitigation strategies as well as coordinating among all levels of government, communities will be able to reduce their vulnerability to disasters and identify opportunities for post-disaster mitigation. As a result, communities will be able to recover faster. To provide long-term disaster protection for their communities and to complement the national and state mitigation strategies, it is helpful that local governments have their own mitigation strategies. A Local Mitigation Strategy will reflect the concerns unique to a particular community and will help that community identify mitigation opportunities before the community is impacted by a disaster.

- ***Planning Compliance***

Communities will meet comprehensive planning and other planning requirements and achieve community goals. The mitigation Strategy serves as a bridge between the local government comprehensive growth management plan, the county comprehensive emergency management plan, land development regulations, building codes, and relevant ordinances such as floodplain management and coastal management ordinances. The Strategy integrates mitigation initiatives established through various policies, programs, and regulations into a single document.

The Strategy was developed as a separate working document that compiles hazard mitigation planning, projects and programs from a range of existing sources such as the local comprehensive land use plan, the comprehensive emergency management plan, and other related codes and ordinances. From this point, mitigation initiatives can be identified and prioritized, allowing a community to address mitigation in a manageable way. In the Levy County Local Mitigation Strategy, the various policies, programs and ordinances have been analyzed and included in the *Community Guiding Principles* chapter of this document. A list of mitigation programs and projects included in *Hazard Mitigation Projects and Initiatives* chapter will help local governments more effectively access available funding - both post-disaster and on an ongoing basis.

As a planning tool, local governments, including planners, emergency managers, building officials, public safety directors, public works directors, as well as elected and appointed officials, are encouraged to use this Strategy to develop a comprehensive hazard Mitigation Strategy.

II. LOCAL MITIGATION STRATEGY WORKING GROUP

Importance and Advantages of Public Participation

Public participation in the Local Mitigation Strategy process begins with education about the importance of hazard mitigation. A diverse community of interests will benefit from hazard mitigation planning, particularly when a local government's Mitigation Strategy addresses needs identified by a group that is educated in emergency management issues. Since its inception in 1998, the Levy County Local Mitigation Working Group has participated in various hazard mitigation training sessions conducted by the Florida Department of Community Affairs. The Working Group has maintained quarterly meetings and an active project list.

Public involvement helps to guarantee that the public is knowledgeable of and has worked to establish ownership of the Strategy. The Levy County LMS Working Group meetings are noticed on the Levy County Emergency Management website, www.LevyDisaster.com and are open to the public. The meetings have been attended by area media personnel giving publicity to the Strategy. Several community partners have also participated such as local religious groups and those involved in economic strategy.

The handouts given to the members emphasize the importance of getting information to the public in a timely manner, encouraging citizens to attend public meetings, and putting together wide-ranging outreach projects. The Working Group members were asked to make public presentations in their respective communities and the chamber of commerce representatives were asked to do presentations to their respective business communities.

Involving the public in the planning process succeeds if the right people are involved. The involvement of the public helps support an effective program that better fits their needs as they are able to provide more local knowledge of historical hazard events. Involving the public in the process helps them to become invested in the outcome.

Formation of the Working Group

An initial public education effort is required to ensure that community leaders are informed of the importance of hazard mitigation planning. The next step toward developing the Local Mitigation Strategy is to establish a Working Group to oversee the strategic planning process. The Levy County Working Group typically includes a core of people that represent agencies of local government, including emergency management, community development, public works, building departments, planning department, fire departments and elected officials as well as private sector representatives from three chambers of commerce as a broad-based group tasked to develop the Local Mitigation Strategy. Outreach to local chambers of commerce, businesses, academia and other private sector members was extended for the 2015 update though resulted in very limited participation. The Working Group is created by appointments from the elected officials at the municipal level and the heads of the Building, Planning and Emergency Management Departments at the County level. The Working Group membership is a continuation of these members from the previous and existing strategy members. The Working Group is the heart and soul of the Local Mitigation Strategy.

As a part of the 2015 update, North Central Florida Regional Planning Council staff provided copies of the guidance materials for the Local Mitigation Strategy as provided by Federal Emergency Management Agency and the Florida Division of Emergency Management. The Guidebooks listed several principal

goals for the Working Group to work toward and focus on as part of the development of this document such as:

- Identify policies to establish a local mitigation Working Group to oversee the development of the Local Mitigation Strategy.
- Identify procedures to ensure that a cross-section of the community has input in the planning process.
- Identify procedures to coordinate local government mitigation activities with those of the business communities.
- Identify procedures for formally recognizing the Local Mitigation Strategy, such as through adopting the plans and policies that constitute the Strategy.

The operational Working Group was used to develop procedures encouraging public participation in the development and revision of the Local Mitigation Strategy. The principal task of the Working Group was to identify criteria to rank mitigation projects submitted for inclusion in the LMS and to rank those projects. In addition to guiding the Strategy, the Working Group also took further measures to increase private sector participation through the various chambers of commerce in Levy County including educational materials on developing a Business Continuation Plan to local business owners. The necessary public participation in the mitigation process should be maintained through ongoing educational efforts.

Local Mitigation Strategy Working Group 2015

As with the previous 2009 LMS Working Group, each jurisdiction in Levy County was asked to participate in the 2015 updates of the LMS. The Working Group had been retained from 2009 and with several changes throughout the years, had maintained a functioning Working Group roster and yearly updates. In May 2015, an initial invitation was sent to all Working Group contacts as well as various community partners known to work with Levy County Emergency Management. The invitation to participate in the plan update process was provided through phone calls, email correspondence, and a notice on the County website.

Existing and new members were asked to designate a voting member to the existing Working Group. That person would attend approximately 6-10 meetings at the Levy County Emergency Operations Center in Bronson. During these meetings, members of the Working Group would be responsible for presenting projects from the jurisdiction they represented and consequently vote to rank these projects. Each of the voting members also had the option to appoint an alternate that can perform all of the same duties as the voting member. Each of the jurisdictions was granted 1 voting member and 1 alternate. County departments also had the same opportunity as each jurisdiction to join the Working Group.

The local jurisdictions exist primarily in the same organizational pattern as state and regional bodies. Inclusion of the neighboring communities, regional, state and other interested parties in the LMS is an important goal in Levy County. Coordination came in the form of the North Central Florida Regional Planning Council acting as the facilitators of the Working Group meetings. Meeting attendees included representatives from the majority of cities and towns in the county. No new agencies were present in the Working Group. These representatives were included in the discussion for their expertise in a variety of areas. The meetings were announced on the internet for neighboring counties to be aware of the process. Fanning Springs participated in both the Levy County and the Gilchrist County LMS and served as a

liaison. Lastly, there was not significant participation from the public, despite efforts to reach a broad range of people. The December meeting was placed in public notices in local publication, such as the Levy Journal. As with the past plan, staff of the North Central Florida Regional Planning Council led the development of the plan for Levy County.

Planning Process

All participating agencies, municipalities, interested citizens and organizations represented on the Working Group roster participated were involved in the current planning process. These efforts were led by Levy County Emergency Management Director, John MacDonald who served as chairman for the Local Mitigation Strategy Working Group. In addition to the Chairman and all participating members, staff of the North Central Florida Regional Planning Council was contracted to provide technical services. All Working Group members were also part of the plan review team. Members of the Working Group served as the Plan Review Committee. They provided review, analysis and recommendations for all changes made to the plan during the review process. As each section is updated by staff, a copy of the section is provided out to the Working Group for review and recommendations. All sections of the plan were reviewed and updated for compliance with the latest crosswalk.

Another Working Group meeting was held on November 6, 2015 to discuss resources and methodologies for the 2015 update. In the December 10, 2015 meeting, analysis results were presented and reviewed. Public participation was encouraged by placing notices of the meeting in all local publications, including the Levy Journal, Chiefland Citizen, Williston Pioneer, and HardisonInk.com.

Chapter XII, meeting Minutes and Agendas displays dates and topics discussed for review. It was the decision of the Working Group members and staff to review each section as a group during the regular Working Group meetings to allow all to see and make recommendations. At the end of each meeting a motion was made to adopt all changes made and to allow staff to make necessary changes for the review process. Due to the quality of the 2009 plan, the Working Group found that minimal changes were needed. At all times, the plan is available at both the Levy County Emergency Operations Center in Bronson as well as at the offices of the North Central Florida Regional Planning Council in Gainesville for review by the public. In accordance with Florida sunshine laws members of the Local Mitigation Strategy Working Group are instructed in their behaviors and refraining from outside discussion of agenda items. In addition, all participating local governments will adopt the plan by resolution and make periodic updates to their elected officials at a publically noticed meeting. The Working Group had representation of interested citizen to ensure public input.

In addition to working from a previously approved Local Mitigation Strategy plan from 2009, staff and the Working Group considered many existing plans. Representation from the county planning and building department ensured the county comprehensive plan and land development regulations were both supported by the plan and reflect existing plans and regulatory codes. These plans included the County Comprehensive Plan, Land development Regulations, any existing Floodplain Ordinances or Regulations, Local Building Codes including the Florida Building Code, Utility Codes and Water and Sewer Service ordinances and Authorities. These reviews and the members of the Working Group are critical in the Local Mitigation Strategy fitting into the larger framework of planning mechanisms.

Representation

The following table includes the names, affiliation, and contact information of all participating agencies, municipalities, interested citizens and organizations on the Levy County Local Mitigation Strategy Working Group.

Table II-1. Levy County Local Mitigation Working Group, 2016

<i>Name/Title</i>	<i>Affiliation</i>	<i>Address</i>	<i>Telephone</i>	<i>Email</i>
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<i>Howell Lancaster</i>	<i>City of Fanning Springs Mayor</i>	<i>17651 N.W. 90th Court</i>	<i>463-2855</i>	<i>mayorlancaster@gmail.com</i>

		<i>Fanning Springs, FL 32693</i>		
<i>Appointment Needed</i>	<i>City of Fanning Springs Fire Chief</i>	<i>P.O. Box 367 Trenton, FL 32693</i>	<i>463-3198</i>	
<i>Drinda Merritt*</i>	<i>Town of Inglis Mayor</i>	<i>P.O. Drawer 429 Inglis, FL 34449</i>	<i>447-2203</i>	<i>mayordrindamerritt@gmail.com</i>
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Note: * Indicates Voting Member
(alt.) Indicates Alternate to Voting Member

III. COMMUNITY GUIDING PRINCIPLES

Importance of Community Guiding Principles

One of the most important reasons for having a Local Mitigation Strategy is to help a local government make decisions that will reduce its overall vulnerability to hazards. While many of these decisions are made after a disaster strikes, it is important to have a strategy in place to ensure that these actions reflect prior planning and coordination. The strategy can also help to ensure that the daily activities of a local jurisdiction, such as issuing building permits and approving development plans, promote a safer community.

First In 1999 and again in 2015, the Levy County Working Group and staff developed the Strategy's overall vision for hazard mitigation. The guiding principles that are listed here should work as a road map to assist Levy County and its municipalities in promoting hazard mitigation - before and after a disaster. In recognition of the efforts of the previous assemblies of the Local Mitigation Strategy Working Group, those participating in the 2015 update have chosen to continue with the goals and objectives as adopted by previous members of the Working Group.

The Process

The Levy County LMS Working Group and staff reviewed and referenced the existing Local Mitigation Strategy plan, other existing plans, policies, and ordinances that relate to public safety, hazard mitigation, and long-term recovery. Many of the same ideas, such as public safety and loss reduction are repeated in these documents. When collated together through an indexing process, several common themes were evident. These common themes helped establish the Levy County LMS guiding principles for its Mitigation Strategy.

In order to create a successful LMS the documents, studies and plans that currently exist should be reviewed with each update

SLOSH Models and Atlas

Statewide Regional Evacuation Study

US Census (2010 and 2013 estimates)

County Business Patterns

Bureau of Business and Economic Research (BEER) Economic Outlook

Florida Statistical Abstract

County Tax Assessor

Florida Department of Transportation

Levy County CEMP

Florida Geographic Data Library

Hazardous Materials Emergency Plan for the Withlacoochee Region

County and Municipality Comprehensive Plans

Just as a community's vision has already been defined through its existing goals and policies, most, if not all, of the Local Mitigation Strategy criteria identified by the Working Group are addressed in existing plans, policies, and ordinances. To avoid duplicating the effort that went into preparing these other documents, an index was prepared to show where the Local Mitigation Strategy criteria have been addressed in these existing documents. This indexing process also revealed how a Mitigation Strategy can concurrently address other community goals such as preserving open space, providing public access to the coast, managing growth, prioritizing capital improvements, and protecting natural resources.

The intent of this index is to identify community mitigation goals that already exist and to provide an overview of how hazard mitigation can progress. The compiled index of existing goals, policies, objectives and regulations is 150 pages long and is therefore not included in this document.

A. Goals and Objectives

GOAL 1. Protect the health, safety and welfare of the public.

- Objective 1.1 Inform and educate the public about potential hazards.
- Objective 1.2 Encourage home buyers to research and determine if a property is within a flood-prone area.
- Objective 1.3 Ensure new development and redevelopment complies with all applicable federal, state and local regulations.
- Objective 1.4 Provide adequate shelter for the population at risk.

GOAL 2. Promote hazard awareness and education.

- Objective 2.1 Notify homeowners of property located within a flood-prone area.
- Objective 2.2 Inform and educate the public about potential hazards.
- Objective 2.3 Prioritize and develop a hazard information program.
- Objective 2.4 Educate the public about disaster preparedness, evacuation procedures and shelter availability.
- Objective 2.5 Coordinate to provide public information regarding commercial hazardous materials and educate the public to safely store and dispose of household hazardous materials.

GOAL 3. Develop mitigation initiatives that protect business and industry.

- Objective 3.1 Minimize business interruptions through disaster preparedness and education.

Objective 3.2 Assist business and industry in the preparation of emergency operations plans.

Objective 3.3 Encourage public-private partnerships.

GOAL 4. Ensure intergovernmental coordination in disaster preparedness, response, recovery and mitigation between all applicable local governments.

Objective 4.1 Maintain and update (as necessary) the Comprehensive Emergency Management Plan.

Objective 4.2 Coordinate emergency evacuation procedures.

Objective 4.3 Coordinate inter-jurisdictional resources during recovery efforts.

Objective 4.4 Conduct annual updates and revisions (as necessary) to the Local Mitigation Strategy.

Objective 4.5 Coordinate and prioritize applications for hazard mitigation grants.

GOAL 5. Develop and implement guidelines for post-disaster redevelopment.

Objective 5.1 Expedite post-disaster recovery through the development of a Post-disaster Recovery Ordinance.

Objective 5.2 Enable small businesses to utilize public property in the event of a disaster.

Objective 5.3 Advocate property acquisition in repetitive loss areas.

Objective 5.4 Encourage mitigation initiatives in the Coastal High Hazard Area.

Objective 5.5 Consider options to mitigation initiatives that may result in substantial reduction of the local tax base.

Objective 5.6 Establish and implement a plan for long-term temporary housing.

Objective 5.7 Encourage the diversion of Community Development Block Grant funds to disaster recovery.

GOAL 6. Encourage the protection of natural resources.

Objective 6.1 Participate with the state in the acquisition of lands for environmental protection.

Objective 6.2 Conserve and improve wetlands.

Objective 6.3 Limit discharge and protect natural resources from toxic substances and harmful pollutants.

- Objective 6.4 Protect the functions of natural drainage areas and surficial aquifer recharge areas.
- Objective 6.5 Restrict infrastructure supporting expansion to offshore islands, coastal swamps, marshlands and beaches.
- Objective 6.6 Minimize the impacts of public facilities and utilities on the natural environment.
- Objective 6.7 Mitigate wetland losses to establish an overall net benefit.
- GOAL 7. Encourage the conservation of historic and cultural resources.**
- Objective 7.1 Identify and document historic and cultural resources.
- Objective 7.2 Prioritize funding for post-disaster redevelopment.
- GOAL 8. Encourage the resolution of stormwater problems.**
- Objective 8.1 Develop or maintain a Stormwater Management Plan that identifies and recommends solutions to stormwater problems.
- Objective 8.2 Encourage the creation of a stormwater utility where appropriate.
- Objective 8.3 Maintain and improve existing drainage systems.
- Objective 8.4 Require all new development and redevelopment to regulate the rate and volume of stormwater.
- Objective 8.5 Protect the function of natural drainage features and surficial aquifer recharge areas.
- GOAL 9. Reduce property damage caused by flooding.**
- Objective 9.1 Elevate new construction above the base flood elevation.
- Objective 9.2 Protect and preserve wetlands floodplains and coastal lands.
- Objective 9.3 Identify and correct local flooding conditions.
- Objective 9.4 Ensure compliance with the National Flood Insurance Program.
- Objective 9.5 Participate in or improve ratings under the Community Rating System.
- Objective 9.6 Control development in the 100-year floodplain.
- Objective 9.7 Implement substantial damage provisions.

Objective 9.8 Continue compliance with Floodplain Management Plans.

GOAL 10. Regulate the impacts of development and redevelopment through code enforcement.

Objective 10.1 Prohibit new development of mobile home parks in flood zones.

Objective 10.2 Prohibit development of critical care facilities in the Coastal High Hazard Area.

Objective 10.3 Ensure compliance with the Coastal Construction Code for all construction.

Objective 10.4 Provide and protect open space.

Objective 10.5 Preserve natural vegetation.

Objective 10.6 Ensure new development and redevelopment complies with Federal Flood Insurance regulations.

Objective 10.7 Encourage the inclusion of window and door protection standards in the Building Codes.

Objective 10.8 Require lot grading plans addressing drainage with each building permit.

Objective 10.9 Encourage mitigation for repetitive loss properties.

Objective 10.10 Enforce wellhead protection ordinances.

GOAL 11. Regulate, limit and prioritize the construction of critical facilities.

Objective 11.1 Maintain or improve critical evacuation routes.

Objective 11.2 Prioritize and retrofit existing critical facilities.

Objective 11.3 Control the siting and development of new critical facilities within the Coastal High Hazard Area.

GOAL 12. Establish pre- and post-disaster mitigation initiatives through the Local Mitigation Strategy.

Objective 12.1 Limit public expenditures that support new development in the Coastal High Hazard Area.

Objective 12.2 Encourage capital improvement expenditures for critical evacuation routes.

Objective 12.3 Implement Stormwater Management programs.

- Objective 12.4 Utilize project evaluation criteria developed in the Local Mitigation Strategy for prioritizing mitigation initiatives.
- Objective 12.5 Provide sufficient shelter space to satisfy in-County demand.
- Objective 12.6 Identify and pursue available grant funds and other funding sources for hazard mitigation activities.
- Objective 12.7 Annually review and update projects identified in the Local Mitigation Strategy.

IV. COMMUNITY PROFILES

A. Levy County Profile

Located in North Central Florida, Levy County is bordered on the northwest by Dixie County and the Suwannee River; on the north by Gilchrist County; on the east by Alachua County and on the east and southeast by Marion County; on the south by Citrus County and the Withlacoochee River and on the west by the Gulf of Mexico. This general area has several regional labels such as the “Big Bend Area” or the “Nature Coast.” Levy County is also a part of the Withlacoochee Region.

From west to east Levy County begins as a marshy coastal wetlands area with swampy hammocks drained by the Suwannee, Waccasassa and Withlacoochee Rivers. Central forested flatlands rise to rolling hills and pasture. An inland ridge known as the Brooksville Ridge runs in a generally north and south direction through the eastern part of the County.

The elevation of the County’s topography generally increases from west to east. The area from the Gulf of Mexico to U.S. 19 is typically less than 50 feet above sea level. The majority of the remaining land mass is 50 to 70 feet above sea level. The highest elevations exist around the community of Morriston, approximately 100 feet.

Land use in Levy County is largely agricultural with mixed land uses that include residential, commercial and light industrial areas. Coastal areas also include increased recreational and tourism uses.

The total land area of Levy County is 704,000 acres. As much as 684,000 acres (97.2%) are considered to be “farm” acres. Many farm acres include mixed uses. The breakdown of agricultural land usage is:

- Crops 20%
- Forestry 67%
- Other Agriculture 13%

A more specific breakdown of land use in addition to agriculture include:

- Active Agriculture 434,207 acres (61%)
- Residential 147,176 (21%)
- Conservation 106,000 (15%)
- Vacant 18,389 (3%)
- Public Facilities 5,394 (0.8%)
- Industrial 1,516 (0.2%)
- Recreation 720 (0.1%)
- Commercial 450 (0.06%)
- Historical Resources 200 (0.02%)

From these figures we can conclude that Levy County is a rural, agricultural County. Forestry takes up many acres and wood products are considered a major economic export. Fishing, aquaculture and tourism are also economic interests that are significant. Most of the urban type land uses are divided between the County's eight municipalities. Based on the 2015 BEBR population estimates, the cities and towns of Levy County can all be considered "small towns" as shown in the following population breakdown:

Table IV-1. 2015 Population Estimates

Levy County Total	40,448
Unincorporated Areas	31,199
Bronson	1,187
Cedar Key	696
Chiefland	2,153
Fanning Springs (part)	455
Inglis	1,301
Otter Creek	120
Williston	2,848
Yankeetown	489

Source: April 1, 2015 Population Estimates, Bureau of Economic and Business Research, University of Florida

There are approximately 36 persons per square mile making this one of the least densely populated counties in the state. The Williston to Chiefland corridor along U.S. 27 Alt. is one of the more densely populated areas, along with the U.S. 19 corridor from the Dixie County line to the Citrus County line. Additional population and housing analysis is included in the Vulnerability Assessment portion of this document.

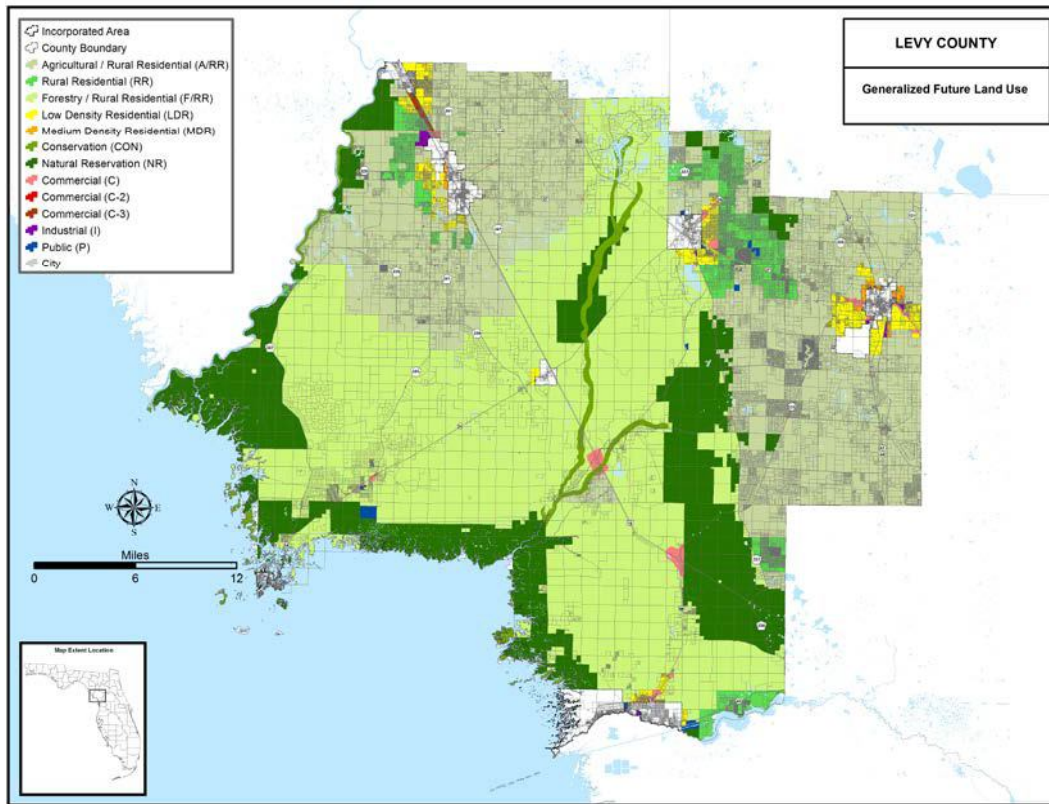
This profile illustrates some of the geographic vulnerabilities of Levy County and infers some of the limited ability to respond to and mitigate emergency situations. Basically Levy County is a large, rural, coastal County with a population that is widely distributed throughout. In addressing the characteristics of the County, this Strategy lists some top projects and initiatives.

Levy County NFIP Flood Insurance Study and Redesignation

Levy County participates in the National Flood Insurance Program. The county shall continue to adopt and enforce floodplain management regulations. This task is handled by the Levy County Planning Department. Annual updates and county efforts continue to be pursued through various mitigation efforts. Due to many low laying areas of the county, the planning department continues to make elevation determinations and make recommendations of zoning based upon vulnerability.

Since the 1999 LMS plan, Levy County has encouraged all its cities to participate in the National Floodplain Insurance program. Based on the 1984 Flood Insurance Rate Maps series, The Cities of Chiefland and Williston did not contain floodplain in their city boundaries. However, since 1984, there has been an update of the Flood Insurance Study and Flood Insurance Rate Maps (effective November 2, 2012), as well as annexations affecting both cities boundaries which do include floodplain areas. For these reasons, each city has policy in place to protect and control development in the floodplain.

Figure IV-1. Levy County Generalized Future Land Use



The Levy County planning department maintains and works with the floodplain management mapping and monitoring process. Each municipality maintains their own compliance with NFIP standards. The actions needed at the municipality level for continued compliance with the NFIP is at the will of the community. With the majority of the county participating in NFIP, the following tasks will ensure continued compliance. The county and each participating municipality will ensure these tasks are completed in compliance with FEMA regulations.

- Continue to enforce their adopted Floodplain Management Ordinance requirements, which include regulation all new development and substantial improvements in Special Flood hazard Areas (SFHA).
- Continue to maintain all records pertaining to floodplain development, which shall be available for public inspection.
- Continue to notify the public when there are proposed changes to the floodplain ordinance of Flood Insurance Rate Maps (FIRM).
- Maintain the map and Letter of Map Change repositories.
- Continue to promote and encourage all property owners to seek and maintain flood insurance.
- Continue their Community Rating System outreach programs

Table IV-2. Community Rating System Eligible Communities (effective May 1, 2014)

Community Number	Community Name	CRS Entry Date	Current Effective Date	Current Class	% Discount for SFHA	% Discount for Non-SFHA	Status
120145	Levy County	10/1/94	05/1/14	9	5	5	C
120146	Town of Fanning Springs	10/1/93	10/1/08	8	10	5	C
120147	Town of Yankeetown	10/1/94	10/1/08	6	20	10	C

Source: FEMA

Table IV-3. NFIP Policy Statistics, Levy County (as of 9/30/2015)

Community Name	Policies In-Force	Insurance In-Force Whole \$	Written Premium In-Force
City of Cedar Key	441	57,755,400	827,764
City of Chiefland	1	28,000	129
Town of Fanning Springs	8	1,390,700	6,324
Town of Inglis	121	24,375,800	89,509
City of Otter Creek	1	142,000	1,017
Town of Yankeetown	168	33,678,500	192,330
Levy County, Unincorporated	376	65,653,400	388,157

Source: FEMA

The county will maintain NFIP compliance as directed by FEMA. Since there is county wide participation in the program, several municipalities have used the LMS for the floodplain management plan as part of the requirements to enter into the Community Rating System (CRS).

Additional Mitigation Projects and Initiatives

The following is a summary of Levy County's top 3 projects:

Levy County 800MHZ Radio Tower- Cedar Key (Rank 1, Score 68.5)

Construction of tower and communications equipment upfit to serve the communications needs of western Levy County.

Problem Statement: Presently there is little to non-existent 800MHZ radio communication ability for the western portion of Levy County.

Mitigation: Protect the life health and safety of the all residents in the County who rely on emergency services in the case of a declared disaster or event.

Funding Source(s): Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding. Community Development Building Grant (CDBG) could also serve as funding source.

Estimated Cost: \$100,000 to 500,000 or more (depending on the need for retrofit measures).

Comments: This opportunity provides the foundation to co-locate cellular telephone equipment to improve communications among both civilian and emergency personnel in the areas of Cedar Key and the surrounding parts of the County. This project can be implemented and administered by Emergency Management in 6 to 12 months as money becomes available.

Hazards Mitigated: All Hazards in all jurisdictions. This project will mitigate existing building and any new construction which would be serviced by this project.

Jurisdiction Mitigated: All

Levy County 800MHZ Radio Upgrade- Williston (Rank 9, Score 63.25)

Upgrade communication equipment to serve the communications needs of The City of Williston and surrounding areas.

Problem Statement: Presently there is a gap in the coverage of the existing 800MHZ radio communication system ability in and around The City of Williston.

Mitigation: Protects the life health and safety of the all residents in the County who rely on emergency services in the case of a declared disaster or event.

Funding Source(s): Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding. Community Development Building Grant (CDBG) could also serve as funding source.

Estimated Cost: \$100,000 to 500,000 or more (depending on the need for retrofit measures).

Comments: The equipment needed could be located on one of the City water towers or be co-located with cellular telephone equipment to improve communications among both civilian and emergency personnel in and around the City of Williston and the surrounding parts of the County. This project can be implemented and administered by Emergency Management in 6 to 12 months as money becomes available.

Hazards Mitigated: All Hazards in all jurisdictions. This project will mitigate existing building and any new construction which would be serviced by this project.

Jurisdiction Mitigated: All

Levy County- Public Outreach- (Rank 13, Score 61.5)

Distribute all hazards information to all communities and residents of Levy County.

Problem Statement: The residents of Levy County and communities do not have one all hazards information resource destination. Currently, obtaining information regarding specific hazards is difficult and not in any one place.

Mitigation: Create a database of online resources and contacts with in the communities and in Levy County for agencies and individuals to assist with each of the hazards specific to each jurisdiction. Once this information is gathered and published via the County Emergency Management website, inform citizens of its availability through advertisements, mailings and press releases on any means deemed appropriate by county staff.

Funding Source(s): Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding.

Estimated Cost: \$5,000 plus publication costs (depending on the methods of distribution).

Comments: Every jurisdiction faces similar and sometimes unique hazards. Education through outreach is some of the most cost effective methods to prevent losses and is the most cost effective means of mitigation. Participation in programs such as Fire Wise and Nation Flood Insurance Program or information as simple as evacuation routes and zones can mitigate losses and save lives. Outreach tailored to each jurisdiction will assist the citizens of Levy County be informed.

Below is a table of jurisdiction and their relative vulnerability to hazards. Education will reach beyond the relative threat as outlined in chapter X. This project can be implemented and administered by Emergency Management staff in 6 to 12 months as money becomes available.

Hazards Mitigated: All Hazards in all jurisdictions. This project will also help to mitigate existing building and any new construction which would be serviced by this project.

Jurisdiction Mitigated: All

B. City/Town Profiles

This document features a short profile of each municipality in Levy County including figures of Future Land Use Maps and a short description. The purpose of this community profile is to spotlight each community to provide information to those who are unfamiliar with Levy County such as the staff of various state agencies that will employ the LMS as a reference for disaster mitigation activities. Additionally, the community profiles will list significant municipal facilities that may not be listed in any other document. Finally, mitigation projects are listed for each community.

In future editions of the LMS updates, to the Community Profiles should be the responsibility of each municipality. Each Community Profile will be used as the format to begin the process of updating nominated projects, critical facilities, other essential public buildings and general community information.

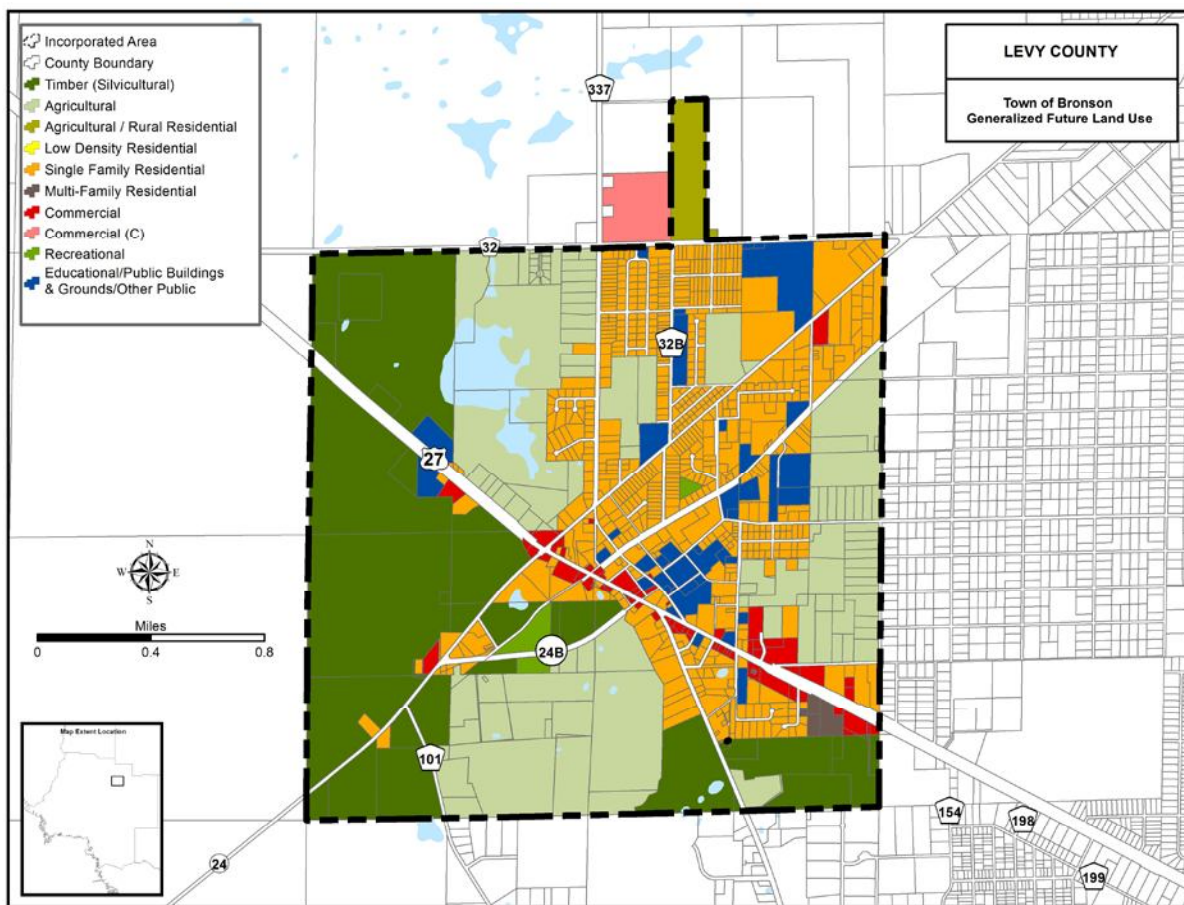
Town of Bronson Profile

As the County seat of Levy County, Bronson was incorporated in 1884 and was named after an early settler. The town's major stakeholders are the County school board and government which are also

major employers in Levy County. Other industries located in Bronson are related to forestry and agriculture. The 2010 US Census list the Bronson population at 1,113 and according to BEBR the 2015 population is estimated at 1,187. It should be noted that the daytime population of Bronson is significantly higher due to schools, the courthouse, and commercial activity. Bronson has residential areas within the 100-year floodplain and areas of undeveloped floodplain that could pose potential problems if developed.

The Town of Bronson participated in the 2015-2016 Local Mitigation Strategy rewrite process. Town working group members recommended and placed two projects on the current project list.

Figure IV-2. Town of Bronson Generalized Future Land Use



Critical Facilities

The Critical Facilities Inventory for the Town of Bronson is located in the Critical Facilities Inventory.

Essential Public Buildings

- Old Town Hall and Bronson Fire Department - 660 E. Hathaway Avenue, Bronson, FL 32621
- Public Works Compound
- Town Hall- 650 Oak Street, Bronson, FL 32621

Town of Bronson Hazard Mitigation Projects and Initiatives**Portable Generator for Lift Station (Rank 14, Score 60.57)**

Purchase emergency portable generator for Lift Station in Bronson

Problem Statement: Bronson currently has no means to power the various lift stations around town. If an emergency situation with loss of power would occur, the lift stations would not be operational, causing raw sewage to back up. Because Bronson has key critical facilities that encompass the center of emergency operations for the county within the town, this project should be considered a very high priority.

Mitigation: The project will allow the various lift stations to remain operational and keep waste water flowing to the sewer plant especially for sites on Bronson's critical facility use list, which would be vital to all emergency operations.

Funding Source: Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding.

Estimated Cost: \$28,000.00

Comments: The purchase for a portable generator can serve all lift stations in the Town and serve alternate uses as needed. This project can be implemented and administered by the municipal public works department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing structures and any additional which would be served by this project.

Jurisdiction Mitigated: Town of Bronson

Storm Drainage on Oak Street (Rank 30, Score 37.43)

Reconstruct sections of Oak Street to prevent flooding conditions.

Problem Statement: Oak Street is a vital link between critical facilities and their roadway access in the Town of Bronson.

Mitigation: Correction of this flood prone road will enable emergency operations to continue to respond to calls both in town and for mutual aid throughout the county, and support Town Hall so staff can stay connected to Levy County EOC, and keep citizens informed while under any type of emergency situation.

Funding Source: Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding. Community Development Building Grant (CDBG) could also serve as funding source.

Estimated Cost: \$50,000 to 150,000 or more dollars depending on extent of needed improvements

Comments: The construction project would aim to improve stormwater runoff and to decrease the pooling of water in and around Oak Street. This project can be implemented and administered by the municipal public works department in 12 to 18 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate new improvements.

Jurisdiction Mitigated: Town of Bronson

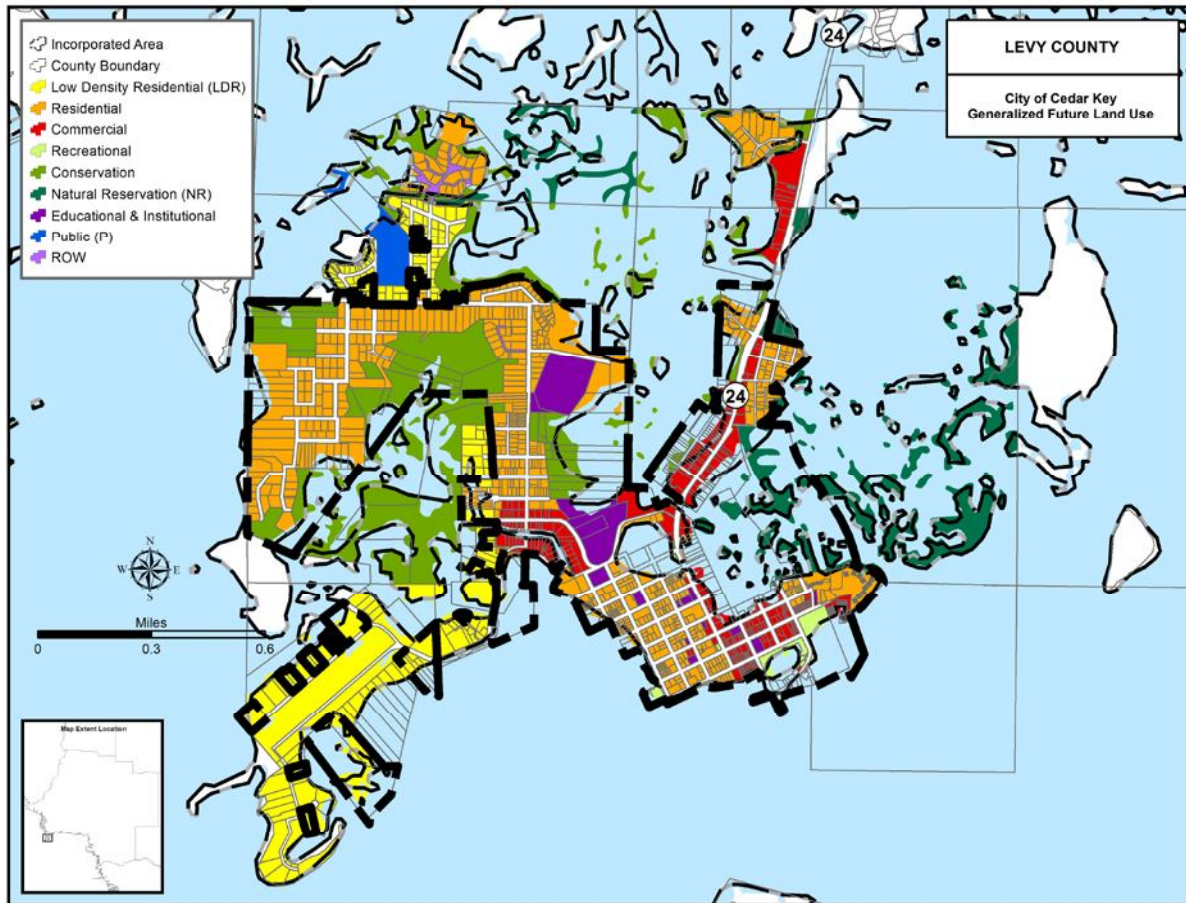
City of Cedar Key Profile

As an early growth center, Cedar Key was an important port that also provided a significant economic link to the regional railroad system. The major industry was the manufacture of pencils which drew upon the community's cedar forests. Senator Yulee constructed one of the state's first railroads, with one terminus at Cedar Key in the present Levy County. As a result of that early development, Cedar Key has a large inventory of historic structures and a local economy based partly on eco/heritage tourism. Major stakeholders are owner-operated, tourism-oriented small businesses and the commercial seafood industry. The 2010 census lists the population at 702 and the 2015 BEBR population estimates list 696 residents. Note that Cedar Key also has a significant seasonal population based on tourism.

Cedar Key is very vulnerable to wind, wave, tidal flooding and evacuation issues due to its isolated coastal location. There may be no practical or cost-beneficial solution to several of the "lifeline" issues due to this remote location.

The City of Cedar Key participated in the 2015-2016 Local Mitigation Strategy rewrite process. City working group members recommended and placed four projects on the current project list.

Figure IV-3. City of Cedar Key Generalized Future Land Use



Critical Facilities

The Critical Facilities Inventory for the City of Cedar Key is located in the Critical Facilities Inventory.

Essential Public Buildings and Facilities

- Airport - Airport Road, Cedar Key 32625
- City Park - "A" Street at the Gulf of Mexico
- Levy County EMS Station 5 - 9991 SW CR 347
- Post Office - 518 2nd Street, Cedar Key 32625
- Public Library - 490 2nd Street, Cedar Key 32625
- City maintenance yard - 490 2nd Street, Cedar Key 32625
- Public pier - end of "C" Street
- Cedar Key Community Center, 809 6th Street, Cedar key 32625

City of Cedar Key Hazard Mitigation Projects and Initiatives

Cedar Key Community Center Generator (Rank 25, Score 47.25)

Procure backup generator for electricity power at the community center, a critical facilities to provide for recovery and assistance to businesses and residents pre and post disaster situations.

Problem Statement: Cedar Key relies on its community center as a point of recovery as well as a safe haven during storms. Without back up power, the structures ability to serve as a base of recovery is greatly diminished.

Mitigation: Providing back up power generation is a cost effective way to insure the viability of the community shelter structure and its ability to support efforts in mitigation and storm recovery.

Funding Source(s): HMGP or EMPA

Estimated Cost: \$25,000 to 50,000 depending on size of unit.

Comments: This project can be implemented and administered by the municipal building and zoning department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Cedar Key and those who seek refuge or services during a emergency.

Hardening of the Cedar Key Community Center (Rank 23, Score 50)

Strengthen the roof, windows and doors of the Center to ensure structural integrity and survivability.

Problem Statement: Hurricane shutters are a cost effective way to strengthen the envelope of every structure. Hardening of the windows and doors will further ensure limited damage as well as a hardened roof structure. Mitigation will come in the form of protecting the structure and its critical ability to serve as a point of recovery.

Mitigation: The project will include hardening of the roof, shuttering of windows and strengthening of all doors. These steps are critical to the survivability of the Cedar Key community center.

Funding Source: EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one for cities only is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources of funding.

Estimated Cost: \$50,000 to 75,000

Comments: This project can be implemented and administered by the municipal building and zoning department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Cedar Key and those who seek refuge or services during a emergency.

Potable water filter for the Cedar Key Community Center (Rank 27, Score 42.75)

Ensure a clean potable water source for the community center so that it may serve as a foundation for recovery and mitigation.

Problem Statement: The community center which is on the critical facilities list and serves the role as point of distribution and recover for the city needs to ensure it has a filtered potable water system. This will ensure the buildings ability to serve in its critical role. Since this building is the only city building outside of the FEMA 100 year floodplain, its role also includes pre staging of supplies as well as distribution of supplies.

Mitigation: The project will further enhance the Cedar Key community center ability to serve its critical role in mitigation and recovery.

Funding Source: EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one for cities only is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources of funding.

Estimated Cost: \$10,000

Comments: This project can be implemented and administered by the municipal building and zoning department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Cedar Key and those who seek refuge or services during a emergency.

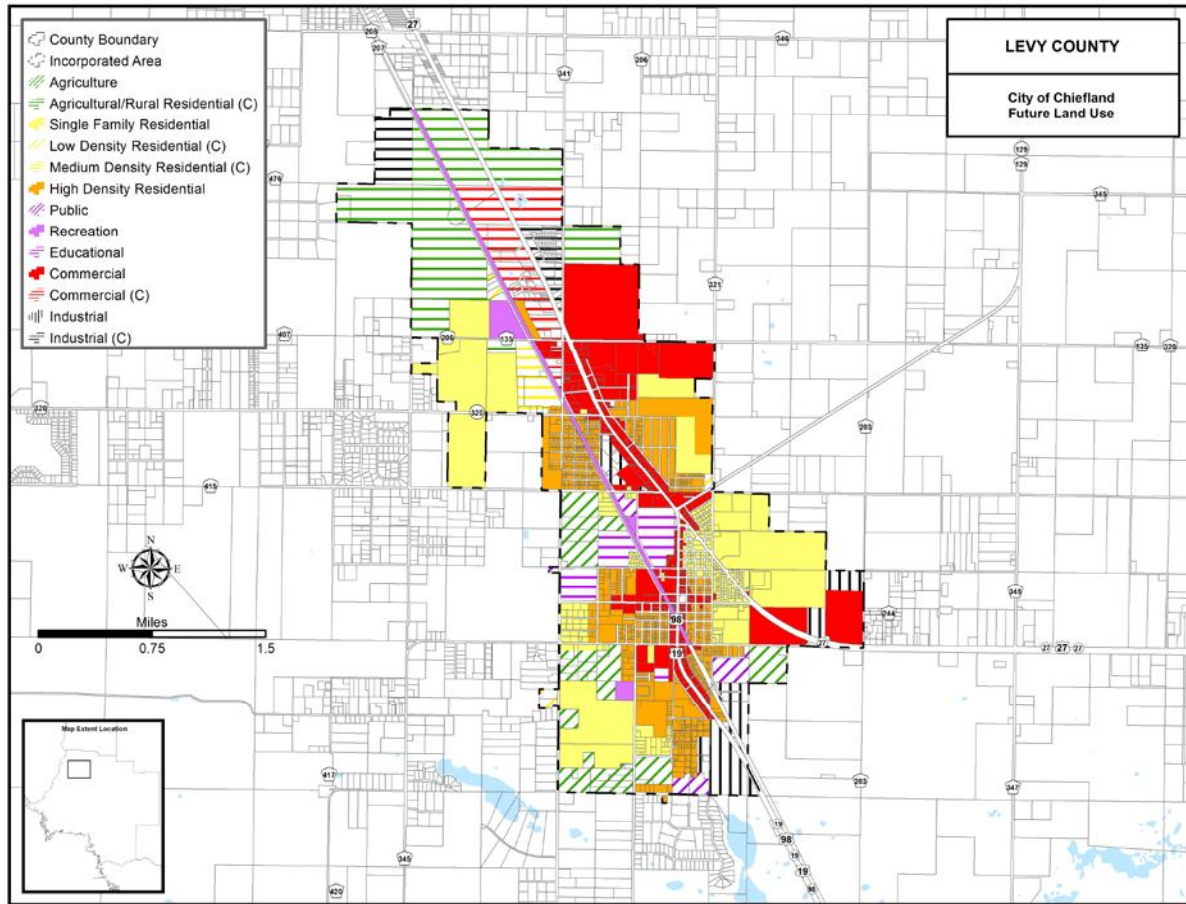
City of Chiefland Profile

City of Chiefland is located in the northern Levy County on the U.S. 19 corridor south of Fanning Springs. Chiefland was historically the center of several Indian settlements and was named by the early white settlers of Florida who called it “Land of the Chiefs.” Today, Chiefland is one of the state’s leading watermelon producing areas. Chiefland is also the economic hub for northern Levy County as well as parts of Dixie and Gilchrist counties. The 2010 U.S. Census lists the population of Chiefland at 2,245 and the 2015 BEBR estimates put the population at 2,153. The daytime population of Chiefland is higher due to schools, employment and commercial activity.

Central areas of Chiefland are vulnerable to localized flooding events from heavy rains. Periods of prolonged rain are known to cause sinkholes in and around Chiefland. This is due to the soil complex of the general region of the county.

The City of Chiefland participated in the 2015-2016 Local Mitigation Strategy rewrite process. City working group members recommended and placed six projects on the current project list.

Figure IV-4. City of Chiefland Generalized Future Land Use



Critical Facilities

The Critical Facilities Inventory for the City of Chiefland is located in the Critical Facilities Inventory.

Essential Public Buildings

- City Hall - 214 East Park Avenue, Chiefland, FL 32626
- Police Department - 14 East Park Avenue, Chiefland, FL 32626
- Fire Department - 16 NE 1st Street, Chiefland, FL 32626
- Train Depot/ The Chamber of Commerce - 17 North Main Street, Chiefland, FL 32626
- Tommy Usher Community Center - 506 SW 4th Avenue, Chiefland, FL 32626
- Luther Callaway Library - 104 NE 3rd Street, Chiefland, FL 32626

City of Chiefland Hazard Mitigation Projects and Initiatives

Storm Shutters for Police and Building Departments (Rank 16/19, Score 57.6/ 54.2)

Purchase and installation of storm shutters for the Police and Building Department structures.

Problem Statement: The Police and Building Department structures serve as vital hubs of dispatch and coordination during a pre and post disaster situation. Currently the buildings do not have storm shutters

and are vulnerable to storm damage. Their ability to withstand storms enable the departments to carry out any mitigation task required.

Mitigation: The project will mitigate public safety issues stemming from the possible interruption of government service in which damage to these buildings would hinder their ability to operate these departments.

Funding Source(s): EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one that is only for cities is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources but funding of equipment is a lower priority.

Estimated Cost: \$11,000

Comments: Hardening these facilities will enable these critical pre and post disaster departments to continue to operate with little to zero interruption in service. This project can be implemented and administered by the municipal building and zoning department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Chiefland and those who seek refuge or services during an emergency.

City Emergency Operations Center Equipment (Rank 24, Score 48.12)

Purchase and installation of computer and telephone equipment for the City Emergency Operations Center.

Problem Statement: Chiefland City Hall acts as the Emergency Management headquarters for the City of Chiefland and surrounding area during declared emergencies. Currently the city has no computer related EOC equipment, and no phone banks for responders to maintain.

Mitigation: The ability to save time and coordinate staff activities in a joint effort will save time, and perhaps even life and property. Coordination between Fire, Police and Utilities Staff can be critical in certain natural disasters. The ability to have a central location for all of these personnel to work would greatly enhance the City's service delivery and ability to restore service and keep order in the event of a natural disaster or declared emergency.

Funding Source(s): Either of the two EMPA competitive grants are appropriate. However, the one that is only for cities is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources but funding of equipment is a lower priority.

Estimated Cost: \$9,000

Comments: The upgrade of this facility will act not only as a center of operations for the City of Chiefland, it can also act as an extension of Levy County Emergency Management. This project can be

implemented and administered by the police department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Chiefland and those who seek refuge or services during an emergency.

City of Fanning Springs Profile

Fanning Springs, originally called Fanning, was named after Colonel Alexander Wilder Campbell Fanning, the leader of a fort established in the area during the Seminole wars. Fanning Springs was incorporated in the mid-1960s and it is located in both Levy and Gilchrist counties. The population of the city (in Levy County) was 486 according to the 2010 census, with an estimated population of 455 in 2015. The U.S. 19 corridor between Chiefland and Fanning Springs is one of the growth areas of the County. The eventual hospital in Chiefland should also impact the U.S. 19 corridor. The City of Fanning Springs will also be included as part of the Gilchrist County LMS.

The Suwannee River makes portions of Fanning Springs vulnerable to flooding during periods of heavy rain and tropical type storms. Heavy rains in north Florida and Georgia greatly impact river levels too.

The City of Fanning Springs participated in the 2015-2016 Local Mitigation Strategy rewrite process. City working group members recommended and placed four projects on the current project list.

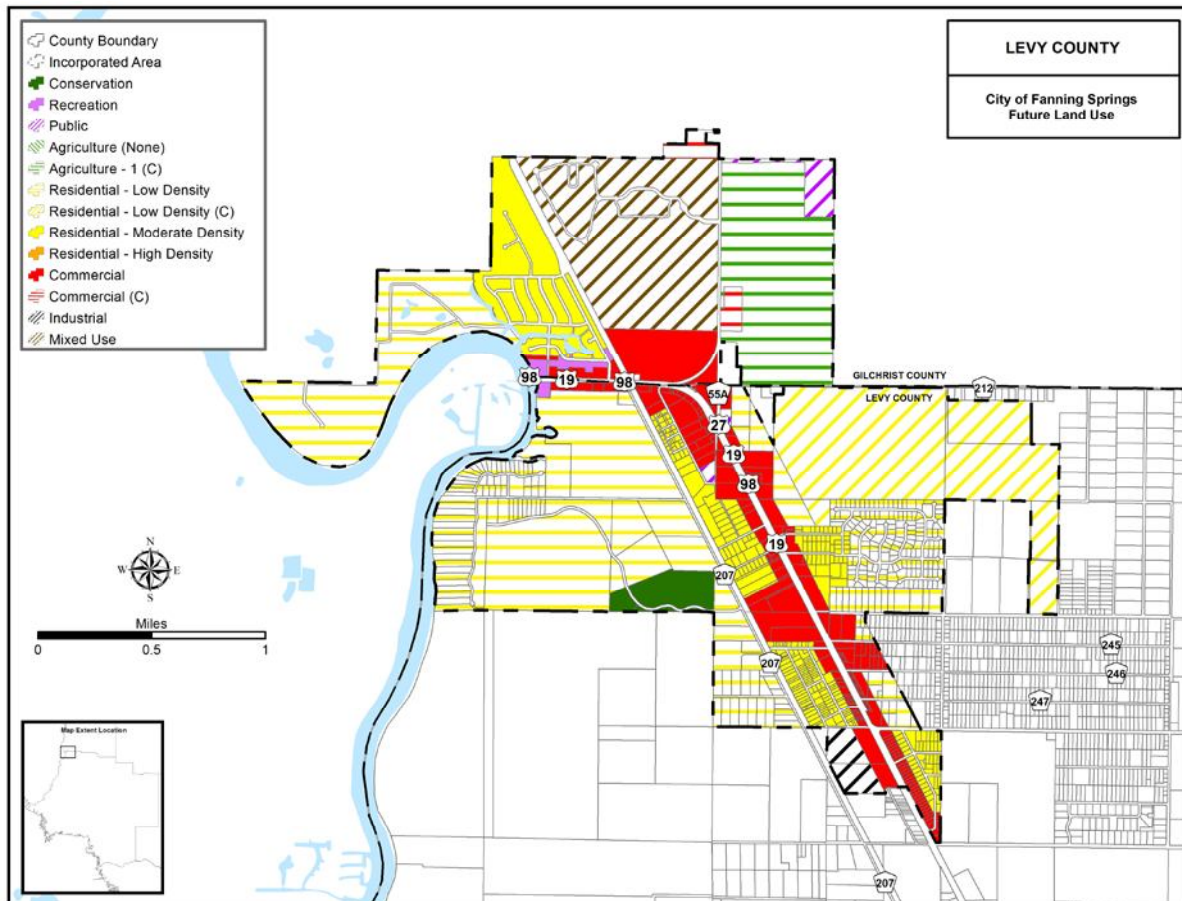
Critical Facilities

The Critical Facilities Inventory for the City of Fanning Springs is located in the Critical Facilities Inventory.

Essential Public Buildings

- City Hall
- Fire Department to include vehicles and equipment
- Water Treatment Facility
- Water Supply Wells (#1, and #2)
- Elevated Water Storage

Figure IV-5. City of Fanning Springs Generalized Future Land Use



City of Fanning Springs Hazard Mitigation Projects and Initiatives

City of Fanning Springs Sewer Project (Rank 28, Score 41.43)

Upgrade and expansion of the sewer system in Fanning Springs to cover existing and future growth.

Problem Statement: The existing sewer system in city covers two counties and a service area that expands past its city boundary. The implementation of an improved and expanded sewer system is crucial to avoid catastrophic failure of the existing system.

Mitigation: The project will mitigate public health problems caused by an aged and potentially inoperable wastewater system. The expansion and improvement of this system will mitigate health threats to the potable water as well should the sewer system fail.

Funding Source: Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding. Community Development Building Grant (CDBG) could also serve as funding source.

Estimated Cost: Phase I- \$4,000,000, Phase II- \$35,000

Comments: Phase I and Phase II will cover the entire city in both counties it lies across and its entire service area. This project can be implemented and administered by the municipal building and zoning department in 24 to 48 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate new and existing infrastructure and any new services which would be provided by these improvements.

Jurisdiction Mitigated: City of Fanning Springs and surrounding service area.

Town of Inglis Profile

The Town of Inglis is located on the Withlacoochee River in the southwest area of Levy County. The population of the Town was 1,325 according to the 2010 census. The Town's 2015 population is estimated by BEBR to be around 1,301.

Inglis is affected by coastal conditions and by flooding on the lower Withlacoochee River. Its vulnerability is in the large amount of 100-year floodplain within the Town limits and the number of unimproved residential streets.

The residents of Inglis and surrounding Levy County rely on the Inglis Fire Station as a center point for information, emergency needs and help with their problems.

The Town of Inglis participated in the 2015-2016 Local Mitigation Strategy rewrite process. Town Working Group members recommended and placed four projects on the current project list.

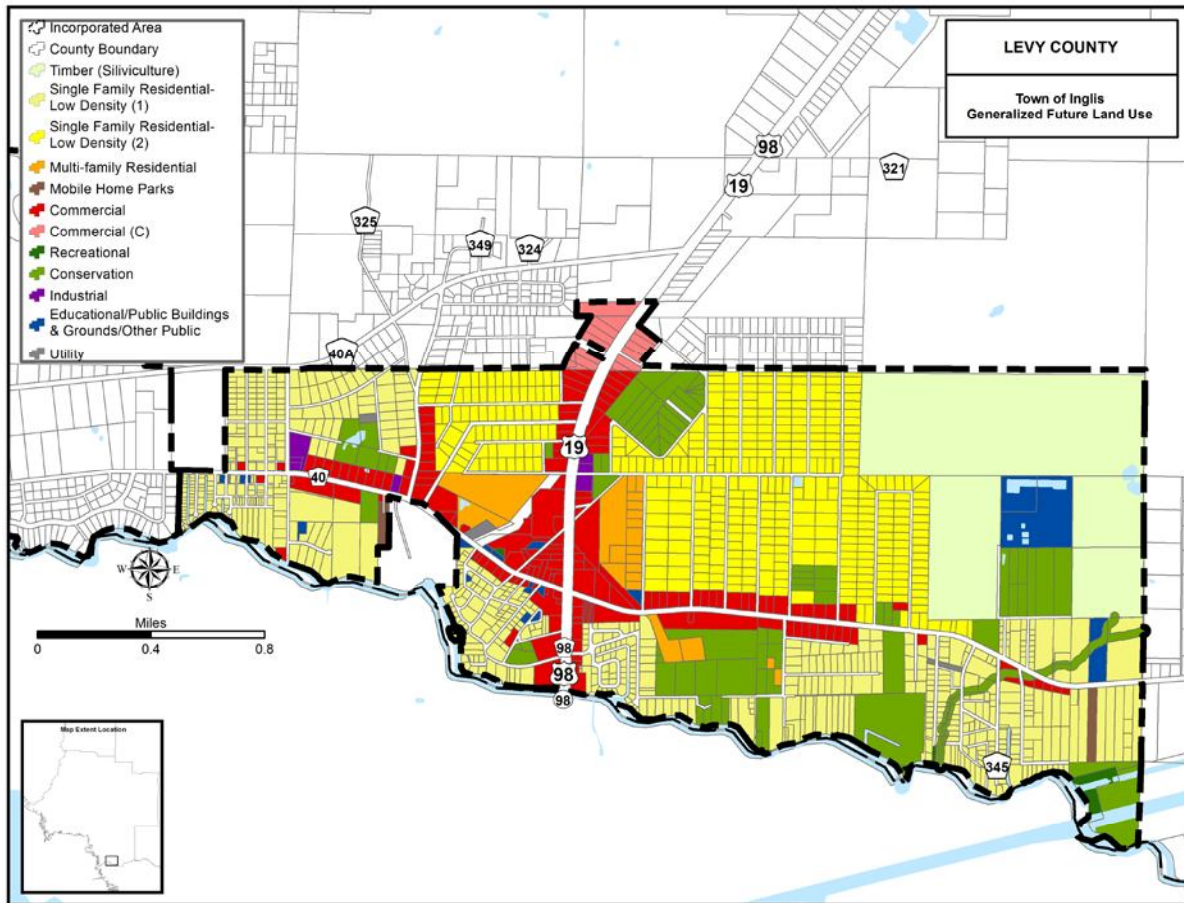
Critical Facilities

The Critical Facilities Inventory for the Town of Inglis is located in the Critical Facilities Inventory.

Essential Public Buildings

- Vehicle and miscellaneous storage building - adjacent to the Police Station
- Building used by EMT and Police for meetings and storage - behind Police Station to the South
- Open Three Bay storage building - behind Police Station to the South
- Inglis Fire Station
- Inglis Community Center
- Bridge at Hudson Street over Harrison Branch
- Bridge at Palm Street over Harrison Branch
- Bridge at Mastadon Street over Harrison Branch

Figure IV-6. Town of Inglis Generalized Future Land Use



Town of Inglis Hazard Mitigation Projects and Initiatives

Inglis - Palm Street Road Improvement (Rank 2, Score 67.25)

Enlarge culverts, widen bridge and provide safety bumpers at Palm Street in Inglis. Pave the road and provide a drainage system that will remove water from low areas.

Problem Statement: The road and the properties in the area flood after heavy rains. Construction with improved drainage capacity will greatly improve this section of roadway.

Mitigation: Project will improve evacuation of residents during flood conditions and enhance emergency response capability. The project will also mitigate issues with standing water and repetitive loss bridge and culvert infrastructure.

Funding Source(s): HMGP, CDBG and Stafford Public Assistance

Estimated Cost: \$50,000 to 100,000

Comments: This is a low and relatively flat location so projects should be accurately engineered to perform as designed. This project can be implemented and administered by the municipal roads department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing homes and buildings and any new structures which would be built in this location.

Jurisdiction Mitigated: Town of Inglis

Paving Critical Evacuation Routes in Inglis (Rank 18, Score 54.25)

Pave the critical limerock roads that connect to existing major roads used as the main evacuation routes for the Town of Inglis. Gladys St. from Hammock Rd. to US 19.

Problem Statement: These roads are in constant need of grading and leveling, especially after a heavy rain or storm. Portions of these roads will hold standing water and impede travel.

Mitigation: Project will improve evacuation of residents during flood conditions and enhance emergency response capability. The project will also mitigate issues with standing water.

Funding Source(s): HMGP, CDBG and Stafford Public Assistance

Estimated Cost: \$ 125,000

Comments: This section of road is flood prone and should be accurately engineered to perform as designed. This project can be implemented and administered by the municipal roads department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing roadways.

Jurisdiction Mitigated: Town of Inglis and those who seek refuge or services during a emergency.

Town of Inglis Sewer System Feasibility Study (Rank 3, Score 65.75)

The town of Inglis has a need for a community wide sewer system. This project would be to assess its feasibility.

Problem Statement: The city currently has no sewer system to serve the community. In the event of profound flooding, its septic systems would cause a serious health threat.

Mitigation: The project will mitigate potential health and safety issues should the septic systems currently fail. Potable water sources will also be at risk as well as the extensive surface water in Inglis.

Funding Source(s): HMGP, CDBG and Stafford Public Assistance

Estimated Cost: \$ 25,000

Comments: This project can be implemented and administered by the municipal building and zoning department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building, potential expansion of service area and any new services which would be provided by this project.

Jurisdiction Mitigated: Town of Inglis and those who in service area.

Construction of Addition at Inglis Fire Station (Rank 11, Score 61.75)

Construct an addition to the existing fire station in Inglis to house central command headquarters for post disaster situations in the town. Provide sufficient space to house command staff and additional equipment required for this service.

Problem Statement: The Town Hall does not currently have a dedicated space to act as a command center in the event of a disaster. This project would allow for the necessary space for the critical coordination of services to take place.

Mitigation: The project will mitigate public safety issues stemming from a potential delay in response services from the town emergency personnel.

Funding Source(s): EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one that is only for cities is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources but funding of equipment is a lower priority.

Estimated Cost: \$100,000 to 150,000

Comments: This project can be implemented and administered by the municipal building and zoning department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: Town of Inglis and those who seek refuge or services during an emergency.

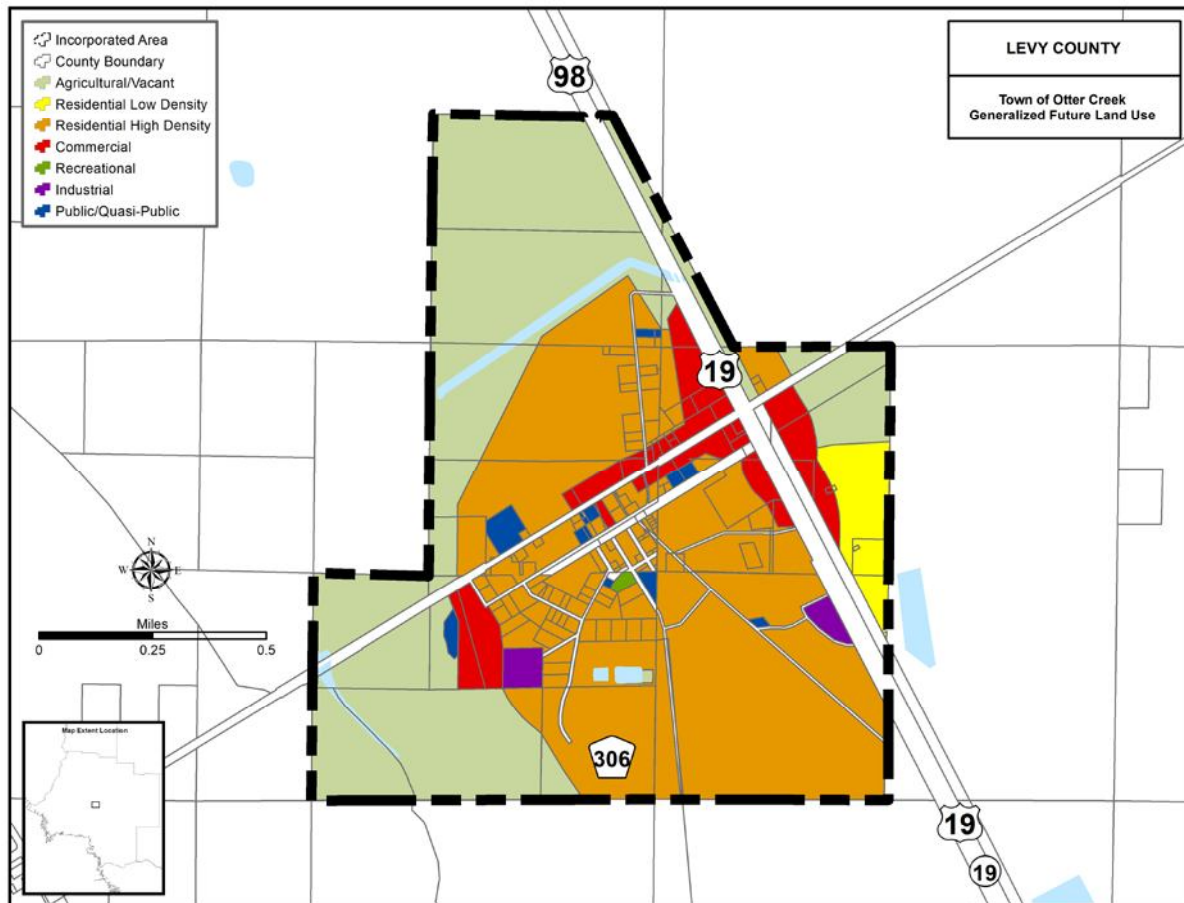
Town of Otter Creek Profile

Otter Creek is the smallest town in Levy County, with a 2010 population of 134 residents and a 2015 population estimate of 120. Situated in the center of Levy County at the crossroads of US Highway 19 and State Road 24, limited commercial activity is highway oriented. The Town's character is highlighted by its historic homes and oak trees.

Local flooding is usually associated with Otter Creek (the creek) and floods an RV park located in the Town. The Town has increased vulnerability to fires since the Volunteer Fire Department can no longer be staffed by local residents. Currently the Town is in a zone covered by Chiefland Fire.

The Town of Otter Creek participated in the 2015-2016 Local Mitigation Strategy rewrite process. No projects have been placed on the current project list on behalf of the town.

Figure IV-7. Town of Otter Creek Generalized Future Land Use



Critical Facilities

The Critical Facilities Inventory for the Town of Otter Creek is located in the Critical Facilities Inventory.

Essential Public Buildings

- School House- 351 SW SR 24, Otter Creek 32683 (houses Levy Assoc. of Retarded Citizens)
- Town Hall- 551 SW 2nd Avenue, Otter Creek 32683
- Post Office- 210 US Hwy. 19 Otter Creek 32683
- Water Plant- SR 24, Otter Creek 32683

City of Williston Profile

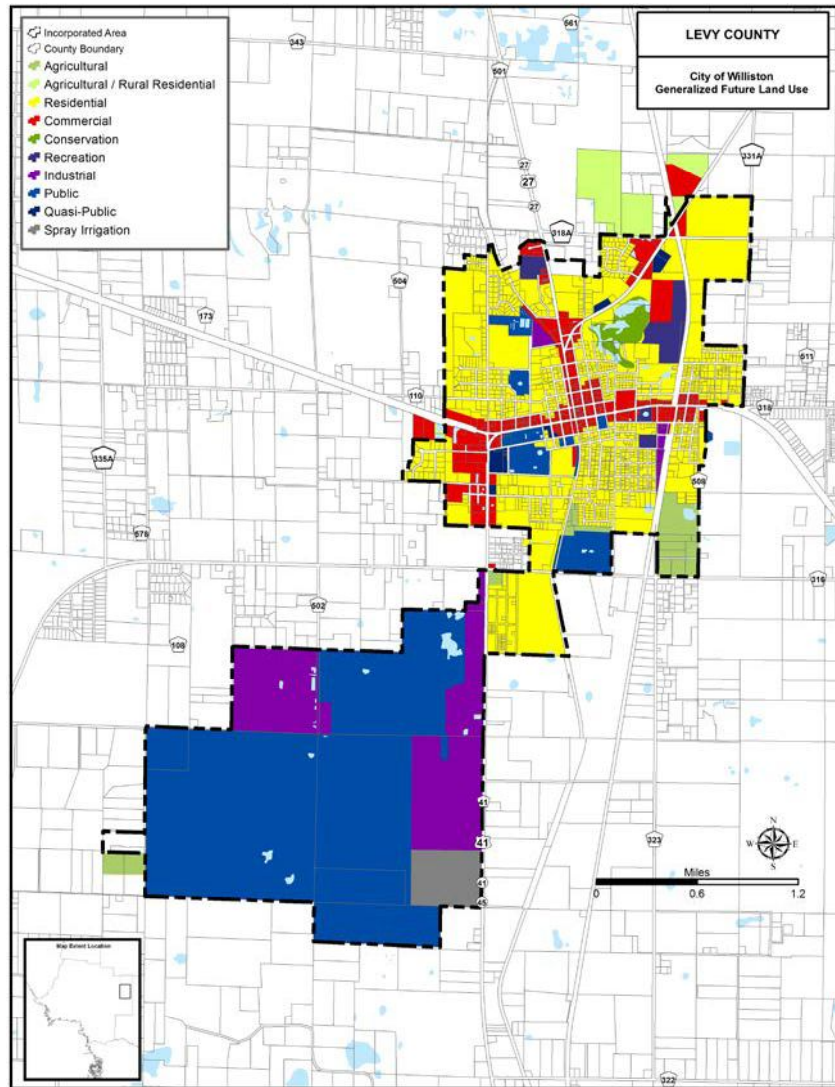
Set in the rolling hills of eastern Levy County, Williston is a center of fishing, hunting, and other outdoor activities. The population of The City of Williston recorded in 2010 by the U.S. Census Bureau was 2,768, and BEBR estimates the population grew to 2,848 in 2015. The major industries of the community

have traditionally been forestry and agriculture. However, the manufacturing sector has seen recent and significant growth. The City of Williston's industrial park has seen major industry growth over the last 15 years, with over 700 thousand square feet manufacturing and sales space added. Williston and Chiefland are the largest cities in Levy County and generally have the most economic activity. The only hospital facility in the County is Nature Coast Regional Hospital in Williston.

Williston does not have the level of vulnerability that the coastal communities do, and the City's new resurfaced runways and new FBO makes it ideal for major distributions and operations after declared emergencies. Williston will also become a host community to coastal evacuees and receive an influx of emergency medical cases. Therefore, continuation of utilities service and sheltering capability is increasingly important. However, there are areas of localized flooding that should be addressed.

The City of Williston participated in the 2015-2016 Local Mitigation Strategy rewrite process. City working group members recommended and placed seven projects on the current project list.

Figure IV-8. City of Williston Generalized Future Land Use



Critical Facilities

The Critical Facilities Inventory for the City of Williston is located in the Critical Facilities Inventory.

Essential Public Buildings

- City Hall - 50 N.W. Main Street, Williston, FL 32696
- Williston City Barn - 25 S.W. 1st Avenue, Williston, FL 32696
- City Electric Department- 15 S.W. 1st Avenue, Williston, FL 32696
- Williston Public Library - 49 E. Noble Avenue, Williston, FL 32696
- City of Williston Annex Building- 607 S.W. 1st Avenue, Williston, FL 32696
- Wastewater Treatment Plant - 540 N.W. 4th Street, Williston, FL 32696

- Okie Dixie Lily Lift Station N.W. 5th Place, Williston, FL 32696
- Hospital Lift Station - S.W. 7th Street, Williston, FL 32696
- Woodfield Lift Station - S.E. 7th Avenue, Williston, FL 32696
- Elementary School Lift Station - S. Main Street, Williston, FL 32696
- Russell Lift Station - S.E. 5th Avenue, Williston, FL 32696
- Acree Lift Station - N.E. 4th Avenue, Williston, FL 32696
- Northwood Shopping Center Lift Station - N.E. 11th Avenue, Williston, FL 32696
- O'Neill Park Lift Station - N.W. 7th Street, Williston, FL 32696
- N.E. 9th Street Lift Station, N.E. 9th Street, Williston, FL 32696
- Williston FBO and Maintenance Hanger
- Williston Horseman's Park and Williston Animal Shelter at the Industrial Park
- Williston Elementary School- 801 SW Main Street, Williston, FL 32696
- Williston High School- 427 W. Noble Ave, Williston, FL 32696
- Williston Middle School- 20550 NE 42nd Place, Williston, FL 32696
- Joyce Bullock Elementary- 130 SW 3rd Street, Williston, FL 32696

City of Williston Hazard Mitigation Projects and Initiatives

Backup Generators for Williston Lift Station at Hospital (Rank 4, Score 65.43)

Acquire backup generator for Sewer plant to be used in case of power failure.

Problem Statement: Currently the Wastewater treatment system has no backup generator system. Without a secondary back up power source, the wastewater system will be inoperable soon after power outage.

Mitigation: The project will mitigate public health issues resulting from lack of Sewer facilities.

Funding Source(s): EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one that is only for cities is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources.

Estimated Cost: \$60,000 (for 100 KW generator)

Comments: As Nature Coast Hospital is the only hospital in Levy County, this is a very critical station. This project can be implemented and administered by the municipal building and zoning department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Williston and those who seek refuge or services during a emergency.

Generators for Williston Lift Stations Williston Elementary School (Rank 7, Score 64.28)

Install back-up generators for Wastewater collection system.

Problem Statement: Wastewater system will be inoperable soon after a power outage.

Mitigation: The project will mitigate public health issues created by lack of public Sewer facilities.

Funding Source(s): EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one that is only for cities is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are alternate sources of funding.

Estimated Cost: \$60,000 (for 100 KW generator)

Comments: Williston Elementary School is a primary shelter during hurricanes and natural disaster emergencies.

Comments: This project can be implemented and administered by the municipal building and zoning department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Williston and those who seek refuge or services during a emergency.

Drainage Improvements at NW 4th St in Williston (Rank 29, Score 38.25)

Remedy the flooding problem at NW 4th Street, beside Oak View Nursing Home.

Problem Statement: This area regularly floods during heavy rains. Though the elevation is high and the property is not in the floodplain, this is the bottom of a large bowl. The street becomes impassible at times.

Mitigation: The project will mitigate traffic problems and enhance emergency response during periods of flooding. The project will also mitigate any issues with standing water especially adjacent to this special needs facility.

Funding Source(s): HMGP will probably be the best source of funding if acquisition of adjacent flooded property is made part of the application. CDBG funds are also a good source of funding for this project, especially for the creation of a retention area.

Estimated Cost: \$50,000 to 150,000 or more dollars depending on extent of needed improvements.

Comments: It may be too far from the existing Drainage system to pump this water out. The project may need to be broken into two phases such as acquisition and construction depending on the grant availability and limitations. This project can be implemented and administered by the municipal roads department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new construction in the area of the project location.

Jurisdiction Mitigated: City of Williston

Backup Generators for Fire and Police with 24 hour Dispatch (Rank 5, Score 65.25)

Acquire backup generator for dispatch center for City Police and Fire in case of power failure.

Problem Statement: Currently the dispatch center has no backup generator system. Without a secondary back up power source, the city dispatch center will be inoperable during outage.

Mitigation: The project will mitigate life safety and recovery mission critical tasks pre and post disaster.

Funding Source(s): EMPA has funded many of these generators for local governments. Either of the two EMPA competitive grants are appropriate. However, the one that is only for cities is assumed to be less competitive. HMGP, CDBG, Stafford 406 or Stafford Public Assistance funding are also appropriate sources.

Estimated Cost: \$60,000 (for 100 KW generator)

Comments: This project can be implemented and administered by the municipal building and zoning department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new services which would be provided by this location.

Jurisdiction Mitigated: City of Williston and those who seek refuge or services during an emergency.

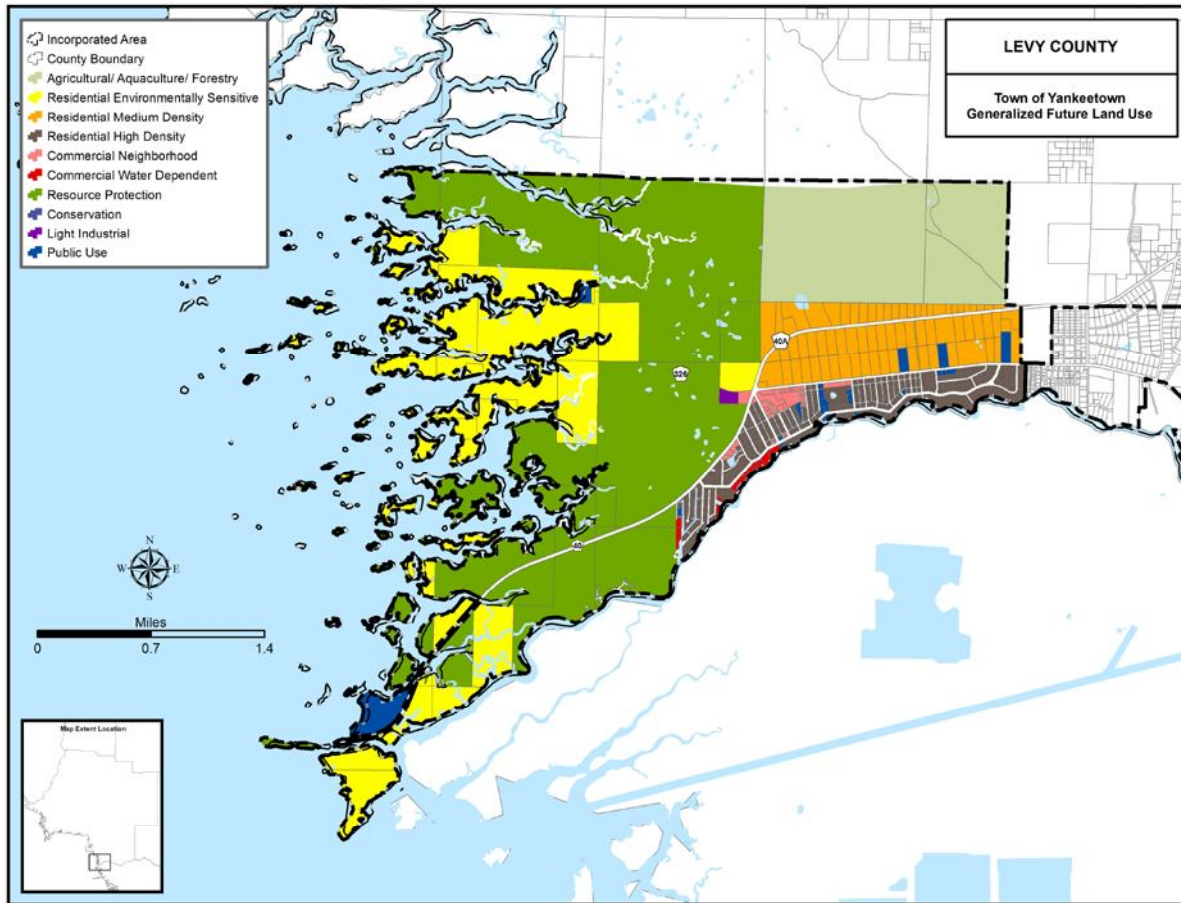
Town of Yankeetown Profile

Yankeetown is a small coastal fishing village located along the north shore of the Withlacoochee River in southwest Levy County. With the Withlacoochee River on the south and the Gulf of Mexico on the west, the town is a center for water-based recreation and commerce. The 2010 population was 502 and the 2015 BEBR estimate lists 489 as the population. Yankeetown also has a seasonal retiree population. Economic activity is mostly from owner-operated small businesses. Many large, shady oak trees and historic homes highlight the Town's character.

Yankeetown is very vulnerable to coastal storms and hurricanes. A large majority of the Town is within the 100-year floodplain and widespread flooding generally occurs when the tidal surge reaches 5 feet above mean high tide.

The Town of Yankeetown participated in the 2015-2016 Local Mitigation Strategy rewrite process. Town working group members recommended and placed three projects on the current project list.

Figure IV-9. Town of Yankeetown Generalized Future Land Use



Critical Facilities

The Critical Facilities Inventory for the Town of Yankeetown is located in the Critical Facilities Inventory.

Essential Public Buildings

- Yankeetown Women’s Club- 5 56th Street, Yankeetown, FL 34498
- Inglis-Yankeetown Lions Club- 59th Street, Yankeetown, FL 34498
- Parsons Memorial Presbyterian Church- 5850 Riverside Drive, Yankeetown, FL 34498
- Church of God- 6006 Hwy. 40 W., Yankeetown, FL 34498
- Izaak Walton Lodge- Riverside Dr. and 63rd Street, Yankeetown, FL 34498
- U.S. Coast Guard Station- Riverside Drive, Yankeetown, FL 34498
- A.F. Knotts Public Library- 11 56th Street, Yankeetown, FL 34498

Town of Yankeetown Hazard Mitigation Projects and Initiatives**Establish Backup Emergency Operations and Preparedness Center (Rank 15, Score 59.71)**

Construct a Backup Emergency Operations and Preparedness Center for use by the Yankeetown Volunteer Fire Rescue.

Problem Statement: Presently there is lack of facility for volunteer fire services of the Town of Yankeetown to be housed.

Mitigation: Protects the life, health and safety of all residents in the town who rely on emergency services in the case of a declared disaster or event.

Funding Source(s): Pre-Disaster Mitigation funds (PDM) or Emergency Management Preparedness Assistance (EMPA) would be the most appropriate source of funding. Community Development Building Grant (CDBG) could also serve as funding source.

Estimated Cost: \$15,000 and up (depending on the need for retrofit measures).

Comments: The location and equipment needed would be located in the Town to improve response to citizens in the town. This project can be implemented and administered by the municipal building and zoning department in 6 to 12 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new construction which would be serviced by this project.

Jurisdiction Mitigated: Town of Yankeetown and those who seek refuge or services during an emergency.

Implementation of Yankeetown Stormwater Management Plan (Rank 8, Score 64)

From the recommendations of the developed plan, engineering and construction of individual sub-projects identified in the Stormwater Management Plan.

Problem Statement: Once a Stormwater Management Plan is complete, Yankeetown lacks the financial resources to implement the plan without funding assistance.

Mitigation: The project will improve evacuation and response functions by draining inundated roadways. Drainage of residential areas will mitigate the potential health problems associated with inundated septic tanks and standing water. Acquisition of repetitive loss properties may be identified as an alternative.

Funding Source(s): HMGP will be the most appropriate funding source in the case of acquisition. CDBG can also be used as a match (the Town qualifies as low to moderate income). The Southwest Florida Water Management District may also participate.

Estimated Cost: \$10,000 and up depending on extent of plan (Implementation will probably be accomplished incrementally).

Comments: Any Drainage improvements in this low and relatively flat location must be thoroughly engineered to perform as designed. This project can be implemented and administered by the municipal building and zoning department in 24 to 36 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new construction which would be serviced by this project.

Jurisdiction Mitigated: Town of Yankeetown

Development of Yankeetown Stormwater Management Plan (Rank 10, Score 62.25)

Engineering and construction of individual sub-projects identified in the Stormwater Management Plan.

Problem Statement: The Town of Yankeetown lacks the financial resources to develop a storm water plan without funding assistance.

Mitigation: The project will improve evacuation and response functions by Draining inundated roadways. Drainage of residential areas will mitigate the potential health problems associated with inundated septic tanks and standing water. Acquisition of repetitive loss properties may be identified as an alternative.

Funding Source(s): HMGP will be the most appropriate funding source in the case of acquisition. CDBG can also be used as a match (the Town qualifies as low to moderate income). The Southwest Florida Water Management District may also participate.

Estimated Cost: \$10,000 and up depending on extent of plan (Implementation will probably be accomplished incrementally).

Comments: Any Drainage improvements in this low and relatively flat location must be thoroughly engineered to perform as designed. This project can be implemented and administered by the municipal building and zoning department in 12 to 24 months or as money becomes available.

Hazards Mitigated: All hazards within the jurisdiction. This project will mitigate existing building and any new construction which would be serviced by this project.

Jurisdiction Mitigated: Town of Yankeetown

V. CRITICAL FACILITIES INVENTORY

The Critical Facilities Inventory from the Levy County Comprehensive Emergency Management Plan (CEMP) has been adopted for use in the LMS to avoid duplication. The CEMP inventory is updated yearly through the Levy County Emergency Management Department. Updates to the Critical Facilities Inventory in this document will only require insertion when completed. It is important that Levy County municipalities understand that the forms to add critical facilities are distributed by the Emergency Management Department but that it is their responsibility to update municipal facilities. The current Critical Facilities Inventory is included in this Chapter.

The definition of a critical facility or the criteria for being a critical facility is generally established by the local government. The importance of a facility is based on the unique characteristics of each community. However, critical facilities can basically be described as facilities that are needed to initiate and sustain an emergency response or those facilities that are important for returning a community to normalcy following a disaster.

Critical facilities are an important factor in the creation of a local mitigation strategy. The facilities that are important in disasters will vary based on the situation but typically include transportation facilities, communications facilities, wastewater treatment plants, hospitals and schools.

Sensitive facilities can be critical from the evacuation standpoint because residents of prisons, nursing homes and hospitals will need extra evacuation support. Emergency managers have established agreements and procedures to address these issues. In Levy County, all the municipal infrastructures of Cedar Key, Otter Creek, Inglis and Yankeetown demonstrate vulnerability to hurricane surge.

These infrastructures are critical in a timely evacuation and need to be functioning at a level of service that supports evacuation and sheltering efforts. The 2015 Critical Facilities list was obtained from the Levy County Emergency Operations Center, and is shown in Table V-1.

Response agencies located in high risk areas are also an important consideration. Municipal buildings can include police and fire stations. A listing of the fire stations was obtained from the Levy County Fire Coordinator, shown on Table V-2. In cases where municipal buildings exist in the surge zones, retrofitting the buildings to increase protection is a needed precaution.

Table V-1. Levy County Critical Facilities - from Levy EOC 2015

Name	Address	City	Zip
City of Chiefland Waste - Water Lift Station	NE 1st Street	Chiefland	32626
City of Chiefland Waste - Water Lift Station	NE 4th St	Chiefland	32626
City of Chiefland Waste - Water Lift Station	NW 11th Dr	Chiefland	32626
City of Chiefland Waste - Water Lift Station	North Young Blvd	Chiefland	32625
City of Chiefland Waste - Water Lift Station	SW 14th St	Chiefland	32626
City of Chiefland Wastewater treatment plant	2216 SW 4th Place	Chiefland	32626
City of Chiefland Well 1	14 NE 1st ST	Chiefland	32626
City of Chiefland Well 2	100 NE 8th Street	Chiefland	32626
City of Chiefland Well 3	926 NW 4th Drive	Chiefland	32626
City of Williston - water tank 1	15 SW 1st Ave	Williston	32696

Name	Address	City	Zip
City of Williston - water tank 2	SW Noble Ave	Williston	32696
FDOT	1820 S Young Blvd	Chiefland	32626
Fugate Lift Station	NW 4th St	Williston	32696
Good Samaritan Ret. Home	507 SE 1st Ave	Williston	32696
Yankeetown Town Hall	Harmony Lane	Yankeetown	34498
Yankeetown Vol. Fire	63rd St	Yankeetown	34498
City of Fanning Springs - City Hall	17651 NW 90th Ct	Trenton	32693
City of Fanning Springs - Well 1	17651 NW 90th Ct	Trenton	32693
City of Fanning Springs - Well 2	16351 NW 80th Ct	Trenton	32693
Fire Department	17651 NW 90th Ct	Trenton	32693
Williston High School	427 West Noble Ave	Williston	32696
Williston Middle School	1345 NE 3rd Ave	Williston	32696
Williston Police	5 SW 1st Ave	Williston	32696
Williston Sewer	Behind Dixie Lilly	Williston	32696
Woodfield Lift Station	SE 7th Ave	Williston	32696
Yankeetown elevated water tower	5110 Riverside Drive	Yankeetown	34498
Yankeetown School	4500 Hwy 40 West	Yankeetown	34498
US Coast Guard Station	5800 Riverside Drive	Yankeetown	34498
Town of Yankeetown water plant	Main St	Yankeetown	34498
Town of Otter Creek City Sewer	Main St	Otter Creek	32683
Williston cell 62	5490 NE 180th Ave	Williston	32696
Williston arms Lift Station	316 Williston Arms Dr	Williston	32696
Williston Elementary	801 South Main	Williston	32696
Williston Fire Department	Main St	Williston	32696
Oakview	300 NW 1st Ave	Williston	32696
Pineridge Lift station	NW 9th Circle	Williston	32696
Russell Lift station	SE 5th Ave	Williston	32696
Main street Lift Station	Main St	Williston	32696
School Board Maintenance	540 Marshburn Drive	Bronson	32621
Town of Bronsons well C-32	360 Ishie Ave	Bronson	32621
Town of Inglis water treatment	171 Elm St	Inglis	34449
Cedar Key Sewer Plant	510 3rd St	Cedar Key	32625
Cedar Key Water Plant	County Rd 347	Cedar Key	32625
Cedar Key Well 3&4	State Road 24	Cedar Key	32625
Chiefland Cell 54	5820 NW 60th St	Chiefland	32626
Chiefland Elementary	1205 NW 4th	Chiefland	32626
Chiefland High	808 North Main Street	Chiefland	32626
Chiefland Middle	811 NW 4th Drive	Chiefland	32626
Acree Lift Station	NE 4th Ave	Williston	32696
Bronson Elementary	State Road 24	Bronson	32621
Bronson High	350 School Street	Bronson	32621
Cedar Key - cell 69	8850 SW CR 347	Cedar Key	32625
Cedar Key - Lift Station 1	1st Street	Cedar Key	32625
Cedar Key - Lift Station 10	Hawthorne Blvd	Cedar Key	32625
Cedar Key - Lift Station 11	Shellcrest Ave	Cedar Key	32625
Cedar Key - Lift Station 12	Paroda Ave	Cedar Key	32625
Cedar Key - Lift Station 13	Indiana Ave	Cedar Key	32625
Cedar Key - Lift Station 14	Point Rd	Cedar Key	32625

Name	Address	City	Zip
Cedar Key - Lift Station 15	Hodges Ave	Cedar Key	32625
Cedar Key - Lift Station 16	Whiddon Dr	Cedar Key	32625
Cedar Key - Lift Station 2	6th Street	Cedar Key	32625
Cedar Key - Lift Station 3	Cedar Cove	Cedar Key	32625
Cedar Key - Lift Station 4	State Road 24	Cedar Key	32625
Cedar Key - Lift Station 5	Cedar Street	Cedar Key	32625
Cedar Key - Lift Station 6	Park Street	Cedar Key	32625
Cedar Key - Lift Station 7	Whiddon Ave	Cedar Key	32625
Cedar Key - Lift Station 8	Little Bridge	Cedar Key	32625
Cedar Key - Lift Station 9	Grett Blvd	Cedar Key	32625
Cedar Key School	600 Whiddon Ave	Cedar Key	32625
Cedar Key City Hall	490 Second Street	Cedar Key	32625
Chiefland City Hall	214 East Park Avenue	Chiefland	32626
Chiefland Fire station 71	16 NE 1st Street	Chiefland	32626
Chiefland Maintenance Facility	920 SE 4th Street	Chiefland	32626
Chiefland Police Dept	14 East Park Ave	Chiefland	32626
Chiefland Tommy Usher - Com Center	506 SW 4th Ave	Chiefland	32626
Chiefland Lift Station	NW 13th Street	Chiefland	32626
Chiefland Lift Station	SW 10th Court	Chiefland	32626
Chiefland Lift Station	SW 2nd Street	Chiefland	32626
Chiefland Lift Station	NW 21st Ave	Chiefland	32626
Chiefland Lift Station	1205 NW 4th	Chiefland	32626
Chiefland Lift Station	NW 14th Street	Chiefland	32626
Chiefland Lift Station	SE 4th Court	Chiefland	32626
Inglis Town Hall	135 Hwy 40 W	Inglis	34449
Joyce Bullock Elementary	130 SW 3rd St	Williston	32696
Lebanon Cell 57	10551 SE Old Lebanon Rd	Lebanon	32693
Levy Co Sheriff Office	9150 NE 80th Ave	Bronson	32621
Levy Co EOC	9010 NE 79th Ave	Bronson	32621
Levy Co School Board Office	480 Marshburn Drive	Bronson	32621
Nature Coast Regional Hospital	125 SW 7th Street	Williston	32696
Levy Lift Station	NE 9th St	Williston	32696
Levy Lift Station	125 SW 7th Street	Williston	32696
Levy Lift Station	Northwood Shopping Center	Williston	32696
Levy Lift Station	NW 5th Place	Williston	32696
LCDPS Headquarters	1251 NE CR343	Bronson	32621
County EMS, Rescue 3	18152 SE Hwy 19	Inglis	34449
County EMS, Rescue 5	9991 SW CR347	Cedar Key	32625
County EMS, Rescue 7	101 SW 2nd Street	Chiefland	32626
County EMS, Rescue 8	17651 NW 90th Court	Fanning Springs	
County EMS, Rescue 9	7851 NE 90th Street	Bronson	32621
County EMS, Rescue 10	800 S Main Street	Williston	32696

Table V-2. Levy County Fire Departments and Law Enforcement

LEVY COUNTY FIRE DEPARTMENTS			
Name	Address	City	Zip
Bronson Volunteer Fire Department	PO Box 266	Bronson	32621
Cedar Key Volunteer Fire Department	2nd Street	Cedar Key	32625
Chiefland Fire Dept	214 E Park Ave	Chiefland	32626
Fanning Springs Volunteer Fire Department	17651 NW 90th Court	Trenton	32693
Fowlers Bluff Fire Rescue	4591 NW County Road 347	Chiefland	32626
Gulf Hammock Volunteer Fire Department	2850 SE CR 326	Gulf Hammock	32639
Inglis Fire Department	141 Highway 40 W	Inglis	34449
Morrison Montbrook Fire Department Business Office	19750 SE 32nd Pl	Morrison	32668
Otter Creek Volunteer Fire Department	PO Box 65	Otter Creek	32683
Rosewood Volunteer Fire Department	9990 SW 63rd Lane	Cedar Key	32625
Williston Volunteer Fire Department	5 SW 1 Ave	Williston	32696
Yankeetown Volunteer Fire Department	6241 Harmony Ln	Yankeetown	34498
LEVY COUNTY LAW ENFORCEMENT			
Name	Address	City	Zip
Cedar Key Police Dept	PO Box 339	Cedar Key	32625
Chiefland Police Dept	15 N Main Street	Chiefland	32626
Williston Police Dept	5 SW First Avenue	Williston	32696
Levy County Sheriff's Office	9150 NE 80th Ave	Bronson	32621

Medical

Presumably persons who reside in hospitals are not capable of evacuating without assistance. The assistance may range anywhere from wheelchairs to oxygen and IVs. Therefore, all medical facilities need to have their own protocols in case they are called upon to evacuate. There is only one hospital facility in Levy County - Nature Coast Regional Hospital. The medical facility is located in Williston and would experience a situation related to other inland county hospitals. The facility would be under duress from the overload of patients coming from the areas closer to the coast and from patients needing immediate care from traveling accidents. All of the medical facilities in the County may be used in a host capacity if a hurricane threatens the Tampa Bay region, so having a plan is imperative. The medical facilities in Levy County are shown on Figure V-1 and reported in Table V-3.

Reviewing the Comprehensive Emergency Management Plan provides a listing of protocols that will provide the appropriate level of preparedness for critical facilities. Each medical facility should have a list of protocols in case of an emergency including but not limited to:

- Procedures available beyond standard first aid
- Preventing communicable diseases
- Maximize staff in a 24-hour capacity
- Obtaining medical equipment not currently at the facility
- Ensure the safety of the emergency responders
- Provide health information to the public
- Ensure potable water and wastewater treatment

- Victim identification
- Collection and destruction of contaminated food
- Control of insects, rodents and other pests

Any of the above parts of the CEMP's recommendation could be turned into a valuable grant for the community. Providing the best services possible will help expand the list of mitigation projects submitted.

Nursing Homes

The second area of concern is the nursing homes. Some nursing homes may be able to double as medical facilities in storm times, but the quantity of equipment in a nursing home will be much lower than a hospital. Many of the same protocols as the above medical facilities should be included in a nursing home plan. The major difference is the lack of responsibility to the general public. The nursing homes will be most concerned with their current residents and any additional medical supplies they can provide to the hospitals.

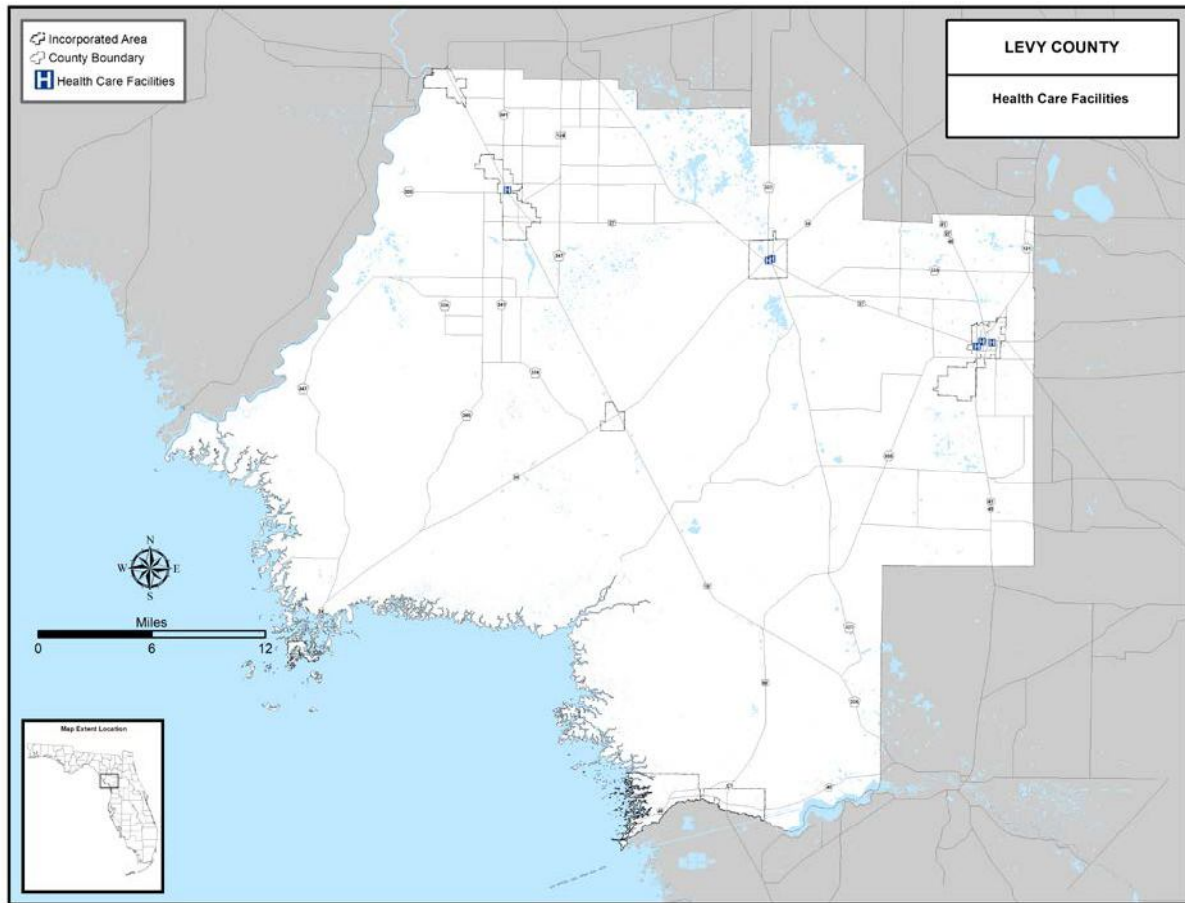
Other Institutions With Populations Requiring Special Care

The other institutions that require special care may include prisons or detention centers. In this report, the list includes the Levy County Jail.

Table V-3. Levy County Medical Facilities

Type	Name	Address	City	Zip
Assisted Living Fac	Good Samaritan Retirement Hm	507 SE 1st Ave	Williston	32696
Hospital	Nature Coast Regional Hospital	125 SW 7th Street	Williston	32696
Skilled Nursing Fac	Oakview Rehabilitation & Care	300 NW 1st Ave	Williston	32696
Hospice	North Central Fla Hospice Inc	311 NE 9 ST	Chiefland	32626
Lab/Public Health Office	Levy Health Dept	66 W Main St	Bronson	32621
Lab	Chiefland Medical Center	1113 NW 23rd Avenue	Chiefland	32626

Figure V-1. Health Care Facilities



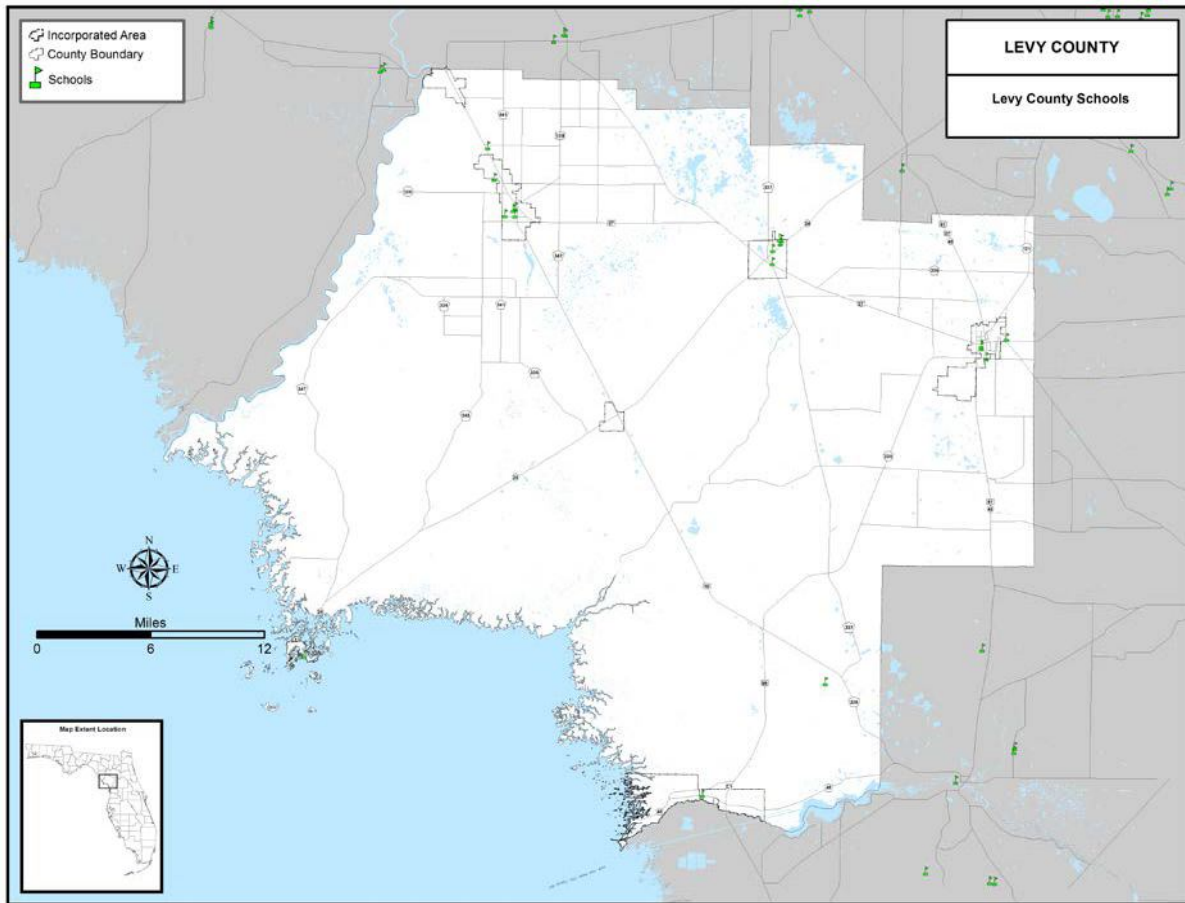
Schools

Most of the time there will be sufficient notice of an oncoming storm, and schools will be closed. Therefore, the location of the schools becomes important primarily for sheltering persons who choose to not go to hotels or family and friends. Schools are used because of their size and functions, including kitchens. The schools that are set up as shelters will have sufficient supplies for a person, or persons, to endure a short stay. Those schools that are not opened as shelters may be required to open if the storm or disaster number of individuals seeking shelter is greater than first expected. In those cases they are strictly emergency shelters. Due to the strength and timing of the disaster there may not be enough time to supply these additional schools with more than basic necessities. These additional facilities can include private schools and churches. Figure V-2 and Table V-4 give a listing of schools including their specific location. This information was obtained from the Levy County School Board.

Table V-4. Levy County Public and Private Schools

Name	Address	City
Bronson Elementary School	400 Ishie Ave	Bronson
Bronson Middle/High School	8691 NE 90th St	Bronson
Levy Learning Academy	320 Mongo Street	Bronson
Nature Coast Middle School	6830 NW 140 St	Chiefland
Adult High School, College of Central FL	114 Rodgers Blvd.	Chiefland
Landmark Baptist School	11150 Ne 113th Place	Archer
Cedar Key School	951 Whiddon Avenue	Cedar Key
Chiefland High School	808 N Main Street	Chiefland
Chiefland Middle School	811 NW 4th Drive	Chiefland
Whispering Winds Charter School	2480 NW Old Fannin Road	Chiefland
Williston High School	427 W Noble Avenue	Williston
Joyce M. Bullock Elementary School	130 SW 3rd Street	Williston
Williston Middle School	20550 NE 42 Place	Williston
Yankeetown School	4500 Highway 40 West	Yankeetown
Williston Elementary School	801 S Main Street	Williston
Chiefland Elementary School	1205 NW 4th Avenue	Chiefland
County Superintendent's Office	Po Drawer 129, 480 Marshburn Drive	Bronson

Figure V-2. Levy County Schools



Water and Wastewater Treatment Plants

Water and wastewater treatment plants are important due to the nature of their role in providing critical infrastructure for sheltering and recovery. If these facilities are damaged, extra warnings and precautions need to be provided to the population serviced by the damaged plant. Contamination of the water supply can occur from one unplanned release of waste product due to storm damage. Cleanup of the water supply can take a significant amount of time during which all water would need to be sterilized before use.

Providing information to the public is an important protocol in case of contamination. If wastewater facilities do not have access to the public through television or radio, there must be coordination between the EOC and the wastewater facilities to provide initial reports and updates. These facilities are shown on Figure V-3 and listed in Table V-5.

The Comprehensive Emergency Management Plan provides a listing of protocols that will provide the appropriate level of preparedness for critical facilities. Each water/wastewater facility should have a list of protocols in case of an emergency including but not limited to:

- Adequate potable water
- Restoration of water supply
- Provision of water for firefighting
- Demolition or stabilization of damaged structures

Electrical Generating Facilities

Electrical generating facilities are critical due to the many functions that rely on an electrical power supply and the widespread use of electrical appliances by the populous. These facilities, if damaged, can cause power outages. Loss of power is more detrimental than a simple lack of electricity to a home. If a hospital, police, emergency management or any other public service loses electricity, the ability to provide emergency services is extremely limited. Any medical or emergency service should have a listing of backup sources of power.

The Comprehensive Emergency Management Plan includes a listing of protocols that provide the appropriate level of preparedness for critical facilities. Each energy facility should have a list of protocols in case of an emergency including but not limited to:

- Support agencies providing information, equipment, labor, fuel and repair
- Transportation of fuel or other emergency supplies
- Assess energy supply and demands in restoring systems – on a prioritized allocation method
- Setting up a system to process requests for fuel or power assistance

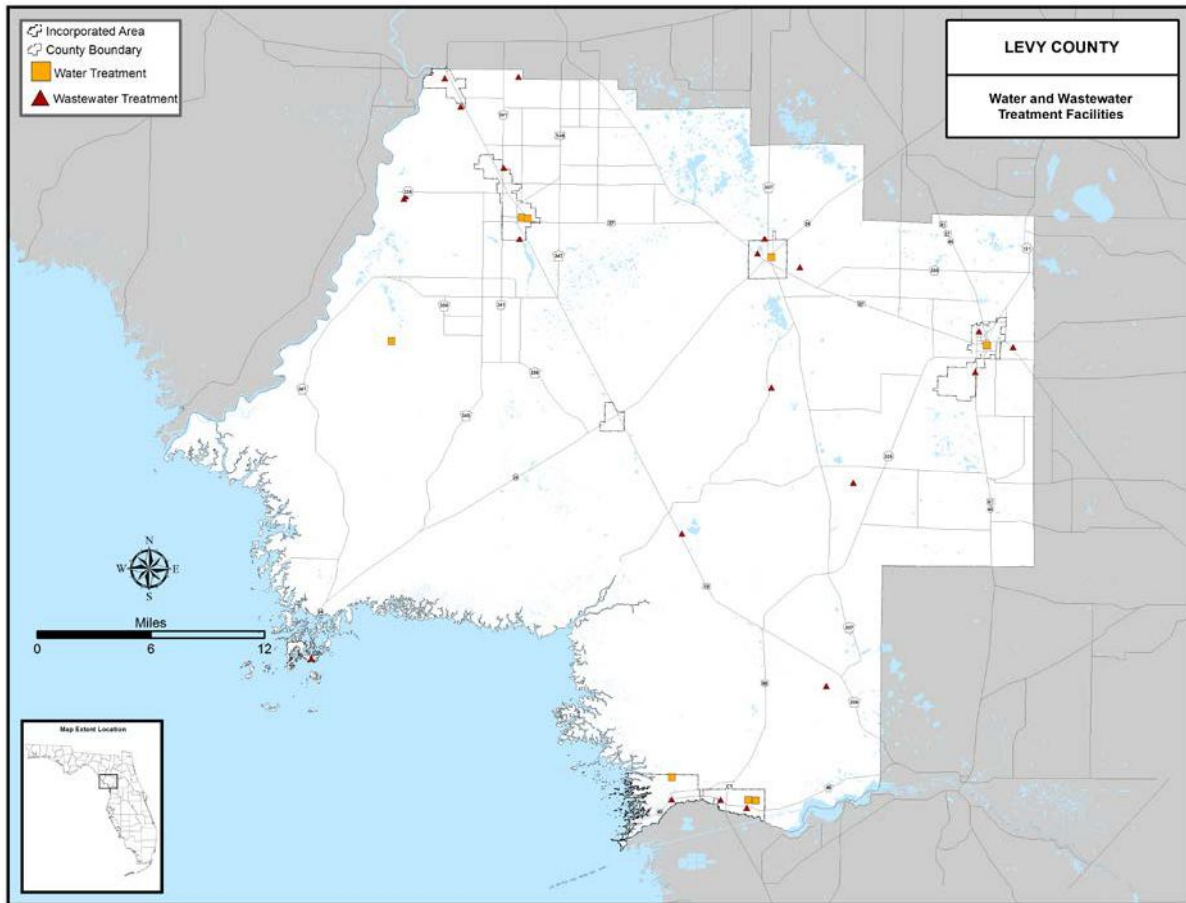
There are no electrical generation plants in Levy County. However, sub-stations and transmission lines share the same high vulnerability as the plants in general.

Table V-5. Levy County Water and Wastewater Treatment Plants

Name	Address	City	Zip
City of Chiefland Wastewater treatment	2216 SW 4th Place	Chiefland	32626
City of Chiefland Well 1	14 NE 1st St	Chiefland	32626
City of Chiefland Well 2	100 NE 8th street	Chiefland	32626
City of Chiefland Well 3	926 NW 4th Drive	Chiefland	32626
City of Chiefland Well 4	920 NW 4 Drive	Chiefland	32626
City of Williston - water tank 1	15 SW 1st Ave	Williston	32696
City of Williston - water tank 2	SW Noble Ave	Williston	32696
City of Fanning Springs - Well 1	17651 NW 90th Ct	Trenton	32693
City of Fanning Springs - Well 2	16351 NW 80th Ct	Trenton	32693
Williston Sewer	behind Dixie Lilly	Williston	32696
Town of Yankeetown water plant	Main Street	Yankeetown	34498
Town of Otter Creek City Sewer	Main Street	Otter Creek	32683
Town of Bronson well C-32	360 Ishe Ave	Bronson	32621
Town of Inglis water treatment	171 Elm St	Inglis	34449
Cedar Key Sewer Plant	510 3rd St	Cedar Key	32625
Cedar Key Water Plant	County Rd 347	Cedar Key	32625
Cedar Key Well 3&4	State Road 24	Cedar Key	32625
Industrial Water Treatment Plants			
Name	Address	City	Ownership Type
Alliance Dairies	4951 NW 170th Street	Trenton	Privately Owned
Anderson Materials, Inc - Chiefland	NW 160th Street Of Us 19	Chiefland	Privately Owned
Bell Concrete	341 NW 127th Place	Chiefland	Privately Owned
Cedar Key Plantation "Ro" Treatment Plant	S.R. 24, 1 Mi. North Of City Of Cedar Key	Cedar Key	Privately Owned
FDOT Chiefland Maintenance Unit	1820 South Young Blvd	Chiefland	State Owned
Florida Rock Industries-Gulf Hammock	Approximately 5 Miles South Of Us-19 And	Gulf Hammock	Privately Owned
Florida Rock-Williston Ready Mix Batch Plant	1603 SW 7th Street	Williston	Privately Owned
Levy County Road Department Equipment Wash Facility	Northwest Of Hwy. 27 & SR 24	Bronson	County Owned
Mid State Concrete Inc	20931 Ne Highway 27	Williston	Privately Owned
Town Of Inglis - Ro Concentrate	135 Highway 40, P.O. Box 429	Inglis	Privately Owned
Domestic Water Treatment Plants			
Name	Address	City	Ownership Type
Bronson WWTF	P.O. Box 266	Bronson	Privately Owned
Caber Corp RAF	West Of Cr 347 & North Of Cr 326	Cedar Key	Privately Owned
Cedar Key District WWTF	510 Third Street	Cedar Key	Public Ownership

(WSD)			
Cedar Key Plantation WWTF	Cedar Key Plantation	Cedar Key	Privately Owned
Chiefland WWTF	2214 Southwest 4th Street	Chiefland	City Owned
Fisher RAF	P.O. Box 424	Chiefland	Privately Owned
Forestry Youth Academy WWTF - Inglis (FDACS)	14251 Southeast Glass Road	Inglis	State Owned
Gillispie And Ryals RAF	Section 17, Township 11 S, Range 15 E	Chiefland	Privately Owned
Hideaway Subdivision WWTF	State Road 320 And Manatee Avenue	Chiefland	Privately Owned
Inglis Villas Apartments WWTF (Flynn)	33 Tronu Drive	Inglis	Privately Owned
Levy County Jail WWTF	9130 Northeast 80th Avenue	Bronson	County Owned
Levy Forestry Work Camp WWTF - Bronson (FDOC)	County Road 343	Bronson	State Owned
Seabreeze Manor Apartments WWTF	County Road 40	Inglis	Privately Owned
Springside Mobile Home Park WWTF	State Road 320 And Springside Avenue	Chiefland	Privately Owned
Suwannee River Villas Apartments WWTF (Flynn)	County Road 231, Suwannee River Drive	Fanning Springs	Privately Owned
Williston RAF, City Of	Cr 521 Or SW 21st Place	Williston	City Owned
Williston WWTF	North End Northwest 4th Street	Williston	City Owned
Yankeetown School WWTF (LCSB)	4500 Highway 40 West	Yankeetown	County Owned

Figure V-3. Water and Wastewater Treatment Facilities



Storage Tanks

Information on the location of the facilities that have storage tanks either above ground or below is required by several government agencies. From this standpoint, finding the most up to date and accurate source of this data is important. The Florida Department of Environmental Protection maintains a database that allows the user to download spreadsheets listing the storage tanks by county.

The Levy County storage tanks are listed on Table V-6. These storage tanks are important to emergency management in regards to the substances contained. If any of these tanks with hazardous wastes are damaged in a hurricane, the effects to the population can last longer than general cleanup of debris. These contaminants must be contained as soon as possible for emergency managers to re-enter an area. If the contaminants are allowed to leak for long periods of time the groundwater can be affected which can further damage the water supply, environment and wildlife.

Table V-6. Levy County Tank Locations and Type 2015

Facility Location	City	Tank Type
6551 NW 100th St-Hwy 345	Chiefland	Fuel user/Non-retail
1025 N Young Blvd	Chiefland	Retail Station
607 S Main St	Chiefland	Retail Station
12810 Hwy 24	Cedar Key	Retail Station
Hwy 19	Chiefland	Retail Station
951 Whiddon Ave	Cedar Key	County Government
480 Marshburn Dr	Bronson	County Government
461 N Main St	Williston	Retail Station
1800 SW 19th Ave	Williston	Local Government
230 SE Hwy 19	Otter Creek	Retail Station
5450 CR 347	Cedar Key	Agricultural
102 E Noble Ave	Williston	Retail Station
135 N Hathaway Ave	Bronson	Retail Station
524 W Noble Ave	Williston	Retail Station
6611 Riverside Dr	Yankeetown	Waterfront Fuel Storage
215 E Rodgers Blvd	Chiefland	Fuel user/Non-retail
12151 Anchor Cove Dr	Cedar Key	Fuel user/Non-retail
9850 NW 42nd Ct	Chiefland	State Government
415 E Noble Ave	Williston	Retail Station
112 N Main St	Chiefland	Retail Station
6551 NW 100th St-Hwy 345	Chiefland	Fuel user/Non-retail
340 W Noble Ave	Williston	Retail Station
607 S Main St	Chiefland	Retail Station
8051 N W 115 St	Chiefland	Retail Station
712 E Noble Ave	Williston	Retail Station
230 SE Hwy 19	Otter Creek	Retail Station
102 E Noble Ave	Williston	Retail Station
2750 SE 26th Terr	Gulf Hammock	Fuel user/Non-retail
6621 W Riverside Dr	Yankeetown	Marine/Coastal Fuel Storage
12780 Hwy 24	Cedar Key	Marine/Coastal Fuel Storage
12780 Hwy 24	Cedar Key	Marine/Coastal Fuel Storage
8191 NW 160th St	Chiefland	Fuel user/Non-retail

Facility Location	City	Tank Type
3250 SE Hwy 41	Morrison	Retail Station
9531 NE 110th Ave	Bronson	Fuel user/Non-retail
12550 NW 50th Ave	Chiefland	Agricultural
4951 NW 170th St	Trenton	Fuel user/Non-retail
2201 N Young Blvd	Chiefland	Fuel user/Non-retail
Us 27	Williston	Fuel user/Non-retail
1820 S Young Blvd	Chiefland	State Government
Us Hwy 27a	Bronson	Fuel user/Non-retail
808 N Main St	Chiefland	County Government
9931 NE Hwy 24	Archer	Retail Station
7951 SE 5th Ave	Gulf Hammock	Retail Station
13574 NW Hwy 19	Chiefland	Retail Station
11050 SE 30th St	Morrison	Retail Station
11050 SE 30th St	Morrison	Retail Station
30 Hwy 19 N	Inglis	Retail Station
6611 Hwy 40 W	Yankeetown	Retail Station
3250 SE Hwy 41	Morrison	Retail Station
415 E Noble Ave	Williston	Retail Station
920 SE 4th St	Chiefland	Local Government
5250 N E 140 Ct	Williston	Retail Station
121 W Fox Run	Williston	Retail Station
6950 NW 60th St	Chiefland	Retail Station
8051 N W 115 St	Chiefland	Retail Station
8051 N W 115 St	Chiefland	Retail Station
4500 Hwy 40 W	Yankeetown	County Government
951 Whiddon Ave	Cedar Key	County Government
12751 NW Hwy 19	Chiefland	Fuel user/Non-retail
105 S Main St	Chiefland	Retail Station
Us Hwy Alt 27	Chiefland	Agricultural
125 SW 7th St	Williston	Fuel user/Non-retail
102 E Noble Ave	Williston	Retail Station
1199 SE 7th St	Williston	Retail Station
7517 NE Hwy 41	Williston	Retail Station
5290 SE Us 19	Gulf Hammock	Retail Station
20931 NW Hwy 27	Williston	Fuel user/Non-retail
4828 Hwy 40 W	Yankeetown	Local Government
8731 N W 174th St	Fanning Springs	Retail Station
415 E Noble Ave	Williston	Retail Station
12351 NW Hwy 19	Chiefland	Retail Station
6351 SE Hwy 19	Gulf Hammock	Fuel user/Non-retail
Hwy 19	Chiefland	Retail Station
7690 SW Hwy 24	Cedar Key	Retail Station
240 E Noble Ave	Williston	Retail Station
2201 N Young Blvd	Chiefland	Collection Station
1605 N Young Blvd	Chiefland	Retail Station
9150 NE 80th Ave	Bronson	County Government
20551 NE Hwy 27	Williston	Retail Station
8191 NW 160th St	Chiefland	Fuel user/Non-retail

Facility Location	City	Tank Type
8991 NW 160th St	Fanning Springs	Fuel user/Non-retail
Intersection of Beckwell & SR 24	Rosewood	Fuel user/Non-retail
553 N Main St	Williston	Retail Station
1025 N Young Blvd	Chiefland	Retail Station
Hwy 19	Chiefland	Retail Station
501 Hathaway Blvd	Bronson	Retail Station
112 E Noble Ave	Williston	Retail Station
112 Se 1st Ave	Chiefland	Fuel user/Non-retail
Us Hwy Alt 27	Chiefland	Agricultural
135 N Hathaway Ave	Bronson	Retail Station
6621 W Riverside Dr	Yankeetown	Marine/Coastal Fuel Storage
6831 NW 115th St	Chiefland	Fuel user/Non-retail
20931 NW Hwy 27	Williston	Fuel user/Non-retail
19 US Hwy 19 S	Inglis	Retail Station
432 S Main St	Chiefland	Retail Station
7 N US Hwy (6 Us 19)	Inglis	Retail Station
7 N US Hwy (6 Us 19)	Inglis	Retail Station
415 E Noble Ave	Williston	Retail Station
349 E Noble Ave	Williston	Retail Station
4 Hwy 19 S	Inglis	Retail Station
427 W Noble	Williston	County Government
461 N Main St	Williston	Retail Station
20551 NE 75th St	Williston	Fuel user/Non-retail
9931 NE Hwy 24	Archer	Retail Station
125 SW 7th St	Williston	Fuel user/Non-retail
6621 W Riverside Dr	Yankeetown	Marine/Coastal Fuel Storage
6621 W Riverside Dr	Yankeetown	Marine/Coastal Fuel Storage
400 Ishie Ave	Bronson	County Government
15249 NW 46th Ln	Chiefland	Retail Station
1251 NE Cr 343	Bronson	State Government
607 S Main St	Chiefland	Retail Station
12810 Hwy 24	Cedar Key	Retail Station
12810 Hwy 24	Cedar Key	Retail Station
1904 N Young Blvd	Chiefland	Retail Station
6250 NW 82nd Ct	Chiefland	Agricultural
1824 N Young Blvd	Chiefland	Retail Station
529 Hwy 40 W	Inglis	Retail Station
6607 Riverside Dr	Yankeetown	Marine/Coastal Fuel Storage
15 Hickory Ave	Yankeetown	Marine/Coastal Fuel Storage
2550 NE 200th Ave	Williston	Fuel user/Non-retail
12 Se 1st St	Williston	Fuel user/Non-retail
15249 NW 46th Ln	Chiefland	Retail Station
19 Us Hwy 19 S	Inglis	Retail Station
432 S Main St	Chiefland	Retail Station
8191 NW 160th St	Chiefland	Fuel user/Non-retail

VI. HAZARDS IDENTIFICATION AND PROFILES

Hazard identification and profiling are conducted as parts of the risk assessment. Risk assessment, which also includes a vulnerability assessment, combines the likelihood of a hazard event (probability) with the potential extent or degree of damage that would result (vulnerability).

Hazard identification and profiling refers to the process of defining hazard-prone areas, estimating the probability and severity of the hazard risk, and evaluating existing mitigation efforts. The process allows us to analyze all types of hazards threatening the County and its communities. It may be preferable to divide some hazards into their component parts. For example, Tropical Cyclones, which include tropical storms and hurricanes, may be divided into wind and surge hazards.

A. HAZARD IDENTIFICATION

In the hazard identification process, the hazards can be categorized as natural, technological/manmade, and societal. The table below consists of the identified hazards by type, the method of which they were identified, and why they were identified. This information was compiled in order to identify various hazards that affect or will have an impact on Levy County in the future.

Following Table VI-1 are descriptions of each hazard.

Table VI-1. Identified Hazards

HAZARD	HAZARD TYPE	HOW IDENTIFIED	WHY IDENTIFIED
Tropical Cyclones	Natural	<ul style="list-style-type: none"> -Review of past disaster declarations. -Review of National Climatic Data Center (NCDC) Severe Storms Database. -National Oceanographic and Atmospheric Association (NOAA) climatology data. -Research including new media and the Internet. -Research including National Hurricane Center (NHC). 	<ul style="list-style-type: none"> -Hurricanes and coastal storms affect Florida every year. -Hurricanes have caused extensive damage and loss of life across the State for the last 50 years. -10 out of the last 14 federally declared disaster events in Florida were hurricanes.
Floods	Natural	<ul style="list-style-type: none"> -Review of past disaster declarations. -Review of Federal Flood Insurance Rate Maps (FIRMs). -Input from State floodplain manager. -Identification of National Flood Insurance Plan repetitive loss properties in the State. 	<ul style="list-style-type: none"> -Florida is affected by flooding nearly every year. -Floods have caused extensive damage and loss of life in the State in the past. -The most recent federally declared disaster event (May 27, 2009) in Florida included flooding from severe storms.
Wildfires	Natural	<ul style="list-style-type: none"> -Florida Division of Forestry statistics and input. -U.S. Department of Agriculture, Forest Service Fire, fuel, and Wildland-Urban Interface mapping. -Input from Florida Division of Emergency Management about wildfires and the Emergency Operations Center activations. -Public input including newspapers and media. 	<ul style="list-style-type: none"> -Florida experiences wildfires every year. -Development in much of the State is occurring at the Wildland-Urban Interface (WUI). -Cyclical drought patterns result in increases of brush and other dry materials. This increases the overall risk for significant fires.
Sinkholes	Natural	<ul style="list-style-type: none"> -Coordination with the Florida Geographical Survey. -The Florida Sinkhole Database. -Coordination with the Florida Department of Transportation. -Input from the Central United States Earthquake Consortium. -U.S. Geological Survey Landslide Hazard maps. 	<ul style="list-style-type: none"> -Sinkholes are a common feature of Florida's landscape. -Growing issues as development continues in high risk areas. -Impact on the roads and physical infrastructure of the State.
Coastal Erosion	Natural	<ul style="list-style-type: none"> -Coordination with the Florida Department of Environmental Protection – Bureau of Beaches and Coastal Systems. -SHMPAT interview and input. -Evaluation of Erosion Hazards, the report from the Heinz Center that was presented to FEMA in April 2000. -Public input including newspapers and media. 	<ul style="list-style-type: none"> -Due to the gradual, long-term erosion, as many as one in four houses along the coast could fall into the ocean in the next 60 years. -80 to 90 percent of the nation's sandy beaches are facing erosion problems. -Significant economic impact due to property damages, loss of actual beach front real estate, and effects on tourism.
Drought/Extreme Heat	Natural	<ul style="list-style-type: none"> -National Weather Service data. -National Oceanographic and Atmospheric Association (NOAA) paleoclimatology data. -The U.S. Drought Monitor. -Keith Byram Drought Index (KBDD). -Agricultural community throughout the State. 	<ul style="list-style-type: none"> -Drought has a severe economic impact due to the large amounts of agriculture and livestock. -Significant drought trends during the last 10 years, including the driest back-to-back calendar years in 2006-2007.
Tornadoes	Natural	<ul style="list-style-type: none"> -Review of past disaster declarations. 	<ul style="list-style-type: none"> -Florida experiences a tornado nearly every year.

Local Mitigation Strategy

Levy County

HAZARD	HAZARD TYPE	HOW IDENTIFIED	WHY IDENTIFIED
Severe Winter Storms / Freeze	Natural	<ul style="list-style-type: none"> -Review of National Climatic Data Center (NCDC) Severe Storms Database. -National Weather Service input and data. -Research including media and Internet resources. -Review of past disaster declarations. -Review of National Climatic Data Center Severe Storms Database. -National Weather Service input and data. -Public input including newspapers and media. -Review of past disaster declarations. 	<ul style="list-style-type: none"> -Tornadoes have caused extensive damage and loss of life to county residents. -Levy County is affected by winter storms cyclically -There have been significant freezes, particularly during the 1980s, that affected the citrus industry -The population is unprepared for cold weather, with many having inadequate heating capabilities -There are dams that could impact the nearby population.
Dam Failure	Natural	<ul style="list-style-type: none"> -Review of Federal Flood Insurance Rate Maps (FIRMs). 	<ul style="list-style-type: none"> -Tsunamis commonly occur in large bodies of water. -Recent tsunamis from around the world have caused widespread destruction.
Tsunamis	Natural	<ul style="list-style-type: none"> -Input from the National Oceanic and Atmospheric Association Center for Tsunami Research. -Coordination with the Florida Division of Emergency Management. -Input from the United States Geological Survey. 	<ul style="list-style-type: none"> -Residential and commercial development along coastlines are at risk to the effects of tsunamis. -Numerous accidental hazardous material releases occur every year. -Potential for human and environmental impacts.
Hazardous Materials Releases	Technological/ Manmade	<ul style="list-style-type: none"> -Coordination with the State Emergency Response Commission. -Interaction with the Local Emergency Planning Committees (LEPC). -Communications with the FL Department of Environmental Protection. 	<ul style="list-style-type: none"> -Threat of radiation from a nuclear related incident. -Potential for human and environmental impacts.
Nuclear Power Plant Incidents	Technological/ Manmade	<ul style="list-style-type: none"> -Coordination with the State Emergency Response Commission. -Interaction with the Local Emergency Planning Committees (LEPC). -Coordination with the Nuclear Regulatory Commission (NRC). -Communications with the FL Department of Environmental Protection. 	<ul style="list-style-type: none"> -Potential for human, economic, and environmental impacts.
Coastal Oil Spill	Technological/ Manmade	<ul style="list-style-type: none"> -Coordination with the State Emergency Response Commission. -Communications with the FL Department of Environmental Protection. 	<ul style="list-style-type: none"> -National priority with federal government requirements. -Potential for devastating impacts to life and infrastructure. -Protection for the citizens of Florida and the USA.
Civil Disturbance	Societal	<ul style="list-style-type: none"> -Coordination with FEMA and Department of Homeland Security -Coordination with the Florida Department of Law Enforcement (FDLE). -Interaction with local law enforcement agencies. 	<ul style="list-style-type: none"> -Historic precedence for migration to Florida by boat. -Large amounts of unpatrolled coastlines.
Mass Immigration	Societal	<ul style="list-style-type: none"> -Coordination with the US Citizens and Immigration Service (USCIS). -Data from local law enforcement. 	

The following are descriptions of the various hazards that may occur in Levy County and were compiled with reference to the Levy County Comprehensive Emergency Management Plan (CEMP), 2008.

1. Tropical Cyclones

Tropical cyclones include tropical storms and hurricanes, and are typically characterized by high winds and heavy rains. A tropical cyclone is any closed circulation developing over tropical waters and around a low pressure center in which the wind rotates counterclockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. As a developing center moves over warm water, pressure drops (measured in millibars or inches) in the center of the storm. As the pressure drops, the system becomes better organized and the winds begin to rotate around the low pressure, pulling the warm and moist ocean air. It is this cycle that causes the wind and rain associated with a tropical cyclone.

A tropical storm is a warm core tropical cyclone in which the maximum sustained surface wind (1-minute mean) ranges from 39 to less than 74 mph.

A hurricane is a warm core tropical cyclone in which the maximum sustained surface wind (1-minute mean) reaches at least 74 mph.

Tropical cyclones Season in North America lasts from June 1st to November 30th each year. Four natural hazards are associated with tropical cyclones: high winds, storm surge, flooding, and tornadoes (flooding and tornadoes will be further discussed in separate hazard categories “Floods” and “Tornadoes”).

Tropical storm force winds are strong enough to be dangerous to those caught in them; however greater concern is focused on hurricane force winds. Hurricane force winds are by definition sustained winds with a one minute average speed of 74 mph or greater. Sustained wind speed as high as 190 mph have been recorded during hurricanes along with peak wind gusts that are even greater than sustained winds. These tremendous winds are capable of causing roof failure, outward collapse of walls and glass openings, destruction of crops, and the transformation of unsecured objects into speeding projectiles. The strongest winds usually occur in the right side of the eye-wall of the hurricane. Wind speed usually decreases significantly within 12 hours after landfall. Nonetheless, winds can stay above hurricane strength well inland.

As the eye of the tropical cyclone strikes the coast or makes its closest point of approach from the sea, the stress of high winds and pressure forces produces a rising wall of water which moves onto the coast. This abnormal rise in water level is known as the storm surge. Since the winds of a tropical cyclone spin counterclockwise about its center, the storm surge affecting Levy County will be largely limited to the area south of where the eye approaches the coast. The peak storm surge of a tropical cyclone occurs approximately at the radius of maximum winds from the storm center.

The effect of surge has proven to be deadly, causing 9 out of 10 tropical cyclone related fatalities. The surge is the hazard of greatest damage potential, capable of rendering complete destruction in areas of lower elevation where surge and wind unobstructed by trees and buildings has a synergistic effect. Obviously the higher the storm surge the greater the potential for damage.

The variation in both storm surge and the length of coastline subject to surge inundation is due to: Tidal effects, storm intensity, the tropical cyclone’s forward speed, the radius of maximum winds, the angle of the storm path, the shape of the coastline, and the bathymetry of the ocean off the coast. Spring tides

which occur around the full and new moons can add an additional 12 inches to the normal high tide, and hence add an additional 12 inches to the storm surge. The surge will generally be higher for more intense tropical cyclone. The surge will also be higher if the path of the tropical cyclone to the coast is more perpendicular than at other angles. Generally, shallow water off the coast where the tropical cyclone comes ashore increases the surge height. Bays and other coastal inlets produce a funneling effect that results in a higher surge than along relatively smooth sections of coastline. The radius of maximum winds has minimal effect on surge height, but does increase the length of coastline subject to surge as the radius increases. The speed of the storm essentially governs how long a particular area will be subject to surge, although faster moving storms produce a slightly higher surge. The maximum height of the surge will occur approximately when the eye of the storm strikes or makes its closest point of approach to the coast.

2. Floods

Flooding refers to the general or temporary conditions of partial or complete inundation of normally dry land areas by surface water runoff from any source (Statewide Hazard Mitigation Plan, 2009). Flooding can be divided into two major categories: coastal and riverine. Interrelated hazards can result in both types of flooding, sometimes in different locations.

Coastal flooding is usually the result of a severe weather system such as a tropical cyclone. The damaging effects of coastal floods are caused by a combination of higher water levels of the storm surge, the winds, rains, erosion and battering by debris. Loss of life and property damage are often more severe since it involves velocity wave action and accompanying winds.

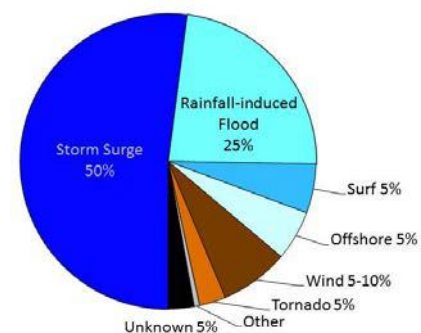
Riverine flooding is associated with a river's watershed, which is the natural drainage basin that conveys water runoff from rain. Riverine flooding occurs when the flow of runoff is greater than the carrying capacities of the natural drainage systems. Rainwater that is not absorbed by soil or vegetation seeks surface drainage lines following natural topography lines. These lines merge to form a hierarchical system of rills, creeks, streams and rivers. Generally, floods can be slow or fast rising depending on the size of the river or stream.

Florida is affected by a large number of tropical weather systems. Although inland flooding has great potential for loss of life, recent research indicates that storm surge was responsible for the greatest number of fatalities over the last 50 years. Studies show that 50 percent of the tropical cyclone deaths in the United States resulted from storm surge (see Figure VI-1, National Weather Service).

Rainfall from tropical cyclones can be as devastating as the wind. This flooding is entirely separate from the coastal surge. Even if the storm is relatively minor, Levy County will experience freshwater flooding in vulnerable areas. The soils in the 100-year floodplain and its wetland systems create a pre-saturated landscape, made worse with extensive rain.

A tropical cyclone or heavy rainfall event can be expected to bring 6 to 12 inches of rainfall as it takes about 24 hours to pass an area on average, but the amount does not vary according to storm Category. According to the National Hurricane Center, the amount of rainfall associated with a tropical cyclone is not a function of the size or intensity of the storm. Tropical cyclone rains generally vary with the speed of

Figure VI-1. US Atlantic Tropical Cyclone Deaths, 1963-2012



the storm, with slower moving storms generating more rainfall than faster moving storms. One reasonably accurate way to forecast the amount of rain expected from a tropical cyclone is:

Maximum inches of
rainfall per 24 hours = 100/ forward speed of storm (mph);

For example, a storm moving at 25 miles per hour would bring approximately 4 inches of rain per 24 hours. Accordingly a tropical cyclone moving at 10 miles per hour can be expected to generate 10 inches of rain.

Many parts of Florida are poorly drained and, in fact, drainage improvements are often discouraged under the current regulations. Florida's Water Management Districts have adopted policies to encourage percolation of rainfall into the ground wherever possible. Placing fill into low-lying areas is also discouraged through regulatory means. These policies make flooding conditions and situations difficult to mitigate through drainage improvements or engineering solutions. Therefore, avoidance of low-lying areas is the most effective mitigation against flood damage.

3. Wildfires

A wildfire is any fire occurring in the wildlands (i.e., grasslands, forest, brushland, etc). Wildfires can be a natural hazard or a manmade hazard. Wildfires have burned across the woodlands of Florida for centuries and are part of the natural management of much of Florida's ecosystems. Florida's typical fire season is from January to May. Wildfires caused by lightning are common in central Florida, especially in association with weather patterns that create intense thunderstorms. The largest numbers of fires caused by lightning occur in July coinciding with the peak of the thunderstorm season.

Forest fires from natural causes (such as lightning) only account for a small percentage of Florida's wildfires. People are still by far the leading cause of wildfires in Florida. A variety of human activities cause wildfires including: controlled burns escaping containment; campfires getting out of control; land clearing activity; vehicle crashes and disposing of lit cigarette butts. Potentially, any human activity that employs combustion can start a wildfire.

4. Sinkholes

Sinkholes are of interest to Florida because they are one of the predominant landform features of the state. Their development may be sudden and may result in property damage or loss of life. Florida has more sinkholes than any other state in the nation. However, most sinkholes which are of a size or location to be considered very threatening, progress to their maximum size over 2 to 3 days, giving ample time for evacuation of structures and appropriate levels of emergency response. The County's average sinkhole size is 5 feet long, 4 feet wide, and 9 feet deep.

Sinkholes occur in three general types in Florida; collapse, solution and subsidence. The collapse sinkhole is the most common type and the most dangerous. The beginning of sinkhole formation typically occurs slowly as measured in geologic time.

A collapse sinkhole happens when the overburden is thick with soils and heavy clay. Collapse sinkholes are rapidly occurring, steeply-sided holes in the ground triggered by fluctuations in the water-table. As water levels fluctuate, the roof of an underground cave or cavity is repeatedly stressed and weakened.

When the water-table drops too far, the cavity is unsupported and the ceiling becomes too weak to hold the overburden above. Eventually, the ceiling collapses causing the ground surface and development supported on the ground surface to rapidly subside, sometimes with disastrous but localized effects.

In contrast, a solution sinkhole is characterized by thin or absent overburden. This leaves exposed limestone which is broken down by the forces of wind, rain and surface water combined with acidic soils. The eroded area gradually forms a bowl shaped depression as chemical and physical erosion continues to break down the rock.

Subsidence sinkholes occur in areas with a thin layer of overburden. This type of sinkhole differs in that rather than limestone being carried away by wind and rain, the erosion happens internally. Dissolving limestone is replaced by overburden soils that recede into the depression and fill the holes. Subsidence sinkholes appear as a concave depression in the ground. Subsidence sinkholes are often only a few feet in depth because the chemical erosion of limestone is stunted when cavities are filled with clay and sand. As the sediments fill the depression, they restrict the percolation of water through the bottom. Where water accumulates, a lake or pond is formed.

5. Coastal Erosion

Coastal erosion is the wearing away of land or the removal of beach or dune sediments by wave action, tidal currents, wave currents, or drainage; the wearing away of land by the action of natural forces; on a beach, the carrying away of beach material by wave action, tidal currents, littoral currents or by deflation. Waves generated by storms cause coastal erosion, which may take the form of long-term losses of sediment and rocks, or merely in the temporary redistribution of coastal sediments. Erosion changes are usually gradual, however, can happen instantly during a storm. Even without storms, sediment may be lost to longshore drift (the currents that parallel coastlines), or sediment may be pulled to deeper water and lost to the coastal system.

6. Drought/Extreme Heat

Extreme heat occurs when temperatures hover 10 degrees or more above the average high temperature for a region and lasts for several weeks. Generally extreme heat will occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation. Drought and extreme heat are weather events and, like other weather-related hazards, are unpredictable. However, it is expected that droughts and extreme heat are a normal part of the long-term weather pattern that is typical of Central Florida's climate. These climatic conditions can be deadly to people and animals that are unable to escape the heat or hydrate their bodies properly. When temperatures reach 100+ degrees, special needs populations and households without air conditioning are vulnerable.

7. Tornadoes

Tornadoes are often spawned by tropical cyclone conditions. They are intense storms of short duration formed by winds rotating at a very high speed in a counter-clockwise rotation. Tornado paths are usually no more than a quarter mile wide and seldom more than 16 miles long. The wind threats from tornadoes are similar to that of tropical cyclones, but tornadoes form quickly and sporadically, so fast in fact, there is virtually no time to evacuate in advance of a tornado. Tornadoes can also come as independent threats separate from a tropical cyclone. Severe thunder storms often spawn tornadoes.

A tornado is characterized by the isolated nature of extremely high winds of up to 500 mph. When compared with other states, Florida ranks #3 in the average annual number of tornado events and #9 in average annual tornado deaths. These rankings are based upon data collected for all states and territories for tornado events between 1985-2014 ([National Weather Service Storm Prediction Center](#)).

Florida has two tornado seasons: summer and spring seasons. The summer tornado season, from June until September, has the highest frequencies of storm generation, with usual intensities of EF0 or EF1 on the Fujita Scale (see the Enhanced Fujita-Pearson Intensity Scale in Tornado Profile, Extent section). This includes those tornadoes associated with land-falling tropical cyclones. In general, tornadoes associated with tropical cyclones are less intense than those that occur in the Great Plains. Nonetheless, the effects of tornadoes can produce substantial damage.

The spring season, February through April, is characterized by more powerful tornadoes. This is because of the presence of the jet stream, which digs south into Florida and is accompanied by a strong cold front and a strong squall line of thunderstorms. The jet stream's high level winds of 100 to 200 mph often strengthen a thunderstorm into what meteorologists call a supercell, or mesocyclone. These powerful storms can move at speeds of 30 to 50 mph, produce dangerous downburst winds, large hail, and are usually the most deadly tornadoes.

Sixty-nine percent of all tornadoes are weak tornadoes, EF0-EF2 sizes. Twenty-nine percent of all tornadoes are strong and can last 20 minutes or longer. Two percent of all tornadoes fall into the EF-4 and EF-5 categories. The most powerful tornadoes are spawned by what are called super-cell thunderstorms. These are storms that, under the right conditions, are affected by horizontal wind shears (winds moving in different directions at different altitudes.) These wind shears cause horizontal columns of air to begin to rotate the storm. This horizontal rotation can be tilted vertically by violent updrafts, and the rotation radius can shrink, forming a vertical column of very quickly swirling air. This rotating air can eventually reach the ground, forming a tornado. We have no way at present to predict exactly which storms will spawn tornadoes or where they will touch down. The Doppler radar systems have greatly improved the forecaster's warning capability, but the technology usually provides lead times from only a few minutes up to about 30 minutes. Consequently, early warning systems and preparedness actions are critical.

8. Severe Winter Storms/Freeze

Severe winter storms include freeze, snowfall, ice storms, and/or strong winds. Areas where such phenomena are uncommon are typically affected more by severe winter storms than regions that experience them more frequently. Below-freezing temperatures, moisture, and lift are factors in the formation of severe winter storm. Lift is commonly provided by warm and cold air colliding along a weather front. These storms move easterly or northeasterly and use both the southward plunge of cold air from Canada and the northward flow of moisture from the Gulf of Mexico to produce ice, snow, and sometimes blizzard conditions. These fronts may push deep into the interior regions, sometimes as far south as Florida (Statewide Hazard Mitigation Plan, 2010).

Snowfall is defined by the National Weather Service as a steady fall of snow for several hours or more. The National Weather Service defines an ice storm as a storm which results in the accumulation of at least 0.25 inches of ice on exposed surfaces. However, amounts as little as 1 inch in Florida have significant impact on transportation, special needs populations, and agriculture and livestock throughout the State.

Snowfall and ice storms are very uncommon in Levy County, but freeze occurs much more frequently. A freeze is marked by low temperatures, especially those remaining below the freezing point (32°F) over a widespread area for an extended time period. Florida's agricultural production is seriously affected when temperatures remain below the freezing point. Each winter, Levy County faces the threat of a freeze. This presents a problem for Florida as a whole because of the large amount of agricultural activity conducted throughout the state. For Levy County this activity is centered on the vegetable and livestock industries. Personal injury or death due to severe winter storms is considered a hazard indirectly through fire caused by incorrect or careless use of heating apparatus.

9. Dam Failure

A flood event may trigger a dam failure. The dam impounds water in the reservoir or upstream area. The amount of water impounded is measured in acre-feet. Dam failures are not routine but the results can be significant. Two factors influence the potential severity of a dam failure: (1) the amount of water impounded and (2) the density, type and value of the development downstream (Statewide Hazard Mitigation Plan, 2010).

Failure can occur as a result of natural events, human-induced events, or both. A number of outside forces can cause dam failure, including prolonged periods of rain or flooding, landslides into reservoirs, failure of dams upstream, high winds, and earthquakes. Other factors that may cause failure include improper design and maintenance, inadequate spillway capacity, and internal erosion, or piping, within a dam. According to some national statistics, overtopping of dams due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest account for 34%; foundation defects, including settlement and slope instability, account for 30%; piping and seepage cause 20% (including internal erosion caused by seepage, seepage and erosion along hydraulic structures, leakage through animal burrows, and cracks in the dam); and other means, including conduits and valves, cause the remaining 16% of all dam failures (Statewide Hazard Mitigation Plan, 2010).

10. Tsunamis

A tsunami is a series of waves created when a body of water, such as in an ocean, is rapidly displaced. A tsunami has a much smaller amplitude (wave height) offshore, and a very long wavelength (often hundreds of kilometers long), which is why they generally pass unnoticed at sea, forming only a passing "hump" in the ocean. A tsunami can be caused by several incidents, but they are most commonly from earthquakes. There are no historical occurrences of tsunamis in Levy County, therefore this is a Natural Hazard that will not be discussed further.

11. Hazardous Materials Releases

A hazardous material is any substance that, if released into the environment, would have a harmful and sometimes fatal effect on persons and animals coming into contact with it. Hazardous materials include highly flammable fuels, herbicides and pesticides, petroleum and related products, natural gas and chemicals. Radioactive substances, although they are frequently included within the category of hazardous materials, were not considered a hazard within this analysis. However, there are relatively few facilities within Levy County that use these substances. In any case, there are over 3,000 hazardous chemicals licensed for transport by the US Department of Transportation, many of which have a disastrous effect if released in an accident. These substances are most often released as a result of transportation accidents or because of chemical accidents in plants.

In fact, one of the most difficult problems encountered in the management of a hazardous material accident scene is the identification of the product or products involved.

Levy County and its communities are vulnerable to the effects of hazardous materials accidents resulting from both transportation and industry. Light industries present in Levy County store and utilize materials such as natural gas, anhydrous ammonia, petroleum distillates, chlorine and pesticides on a daily basis, and hazardous materials are transported to and through the County by rail, highway and air.

As stated previously the best mitigation for man-made disasters is preparation and an overall expansion of the capacity of all responding agencies to deal appropriately with the unlimited variety of emergency situations.

Each county completes the Hazards Analysis program, consistent with federal laws including the Community-Right-to-Know Act. This analysis creates a database of facilities that are responsible for hazardous materials. These facilities are classified as small quantity and large quantity generators. The number of generating facilities varies from county to county based on the land uses allowed by the counties. Counties with higher levels of industrial, agricultural and commercial land uses will normally have a greater number of hazardous generating facilities.

Hazardous materials could be released at any time and the vulnerability in Levy County ranges from low to moderate. Although Levy County is not a major end user of hazardous materials, several types of chemicals are used for agricultural purposes. The most commonly used chemicals used in Levy County are Chlorine, Sulfuric Acid and Sulfur Dioxide. Many other chemicals are transported through the County, most commonly via US 19 and US 27 (Alternate) both of which traverse through the most densely populated areas of the County near schools and other public buildings. This is a Technological/Manmade Hazard that will not be discussed further.

12. Nuclear Power Plant Incidents

Nuclear power plants use the heat generated from nuclear fission in a contained environment to convert water to steam, which powers generators to produce electricity. Although the construction and operation of these facilities are closely monitored and regulated by the Nuclear Regulatory Commission (NRC), accidents are possible. An accident could result in dangerous levels of radiation that could affect the health and safety of the public living near the nuclear power plant. The potential danger from an accident at a nuclear power plant is exposure to radiation. This exposure could come from the release of radioactive material from the plant into the environment, usually characterized by a plume (cloud-like formation) of radioactive gases and particles. The major hazards to people in the vicinity of the plume are radiation exposure to the body from the cloud and particles deposited on the ground, inhalation of radioactive materials, and ingestion of radioactive materials.

Levy County is within the 10 Mile Emergency Planning Zone of the Crystal River Unit 3 (CR3), a nuclear generating facility located in Citrus County and owned by Duke Energy. In 2013, Duke Energy retired CR3 after discovering delamination, or separation of concrete, within the containment building that surrounds the reactor vessel.

Crystal River Unit 3 is located approximately five miles south of the Levy-Citrus County line. Much of southwest Levy County is within the 50 mile Ingestion Pathway Zone. The remainder of the County lies within the 50-mile Ingestion Pathway Zone from this Unit.

In case of a radiological accident, residents, livestock and crops will be exposed to radiological impacts. Additionally, if an accident at the nuclear power plant occurs and evacuation in Citrus County is required, the road system in Levy County will be impacted. This situation, combined with the evacuation of Levy County residents within the Plume Exposure Zone, would cause traffic congestion within the County. This is a Technological/Manmade Hazard that will not be discussed further.

13. Coastal Oil Spill

Although the probability is low, an oil release could occur in the Gulf of Mexico and discharge pollutants on Levy County's coastal area and possibly into the river systems. Tourism in the Cedar Key area, fishing, boating and local coastal residents could be adversely impacted. Both the State of Florida and the US Coast Guard have contingency plans to respond to such a situation. This is a Technological/Manmade Hazard that will not be discussed further.

14. Civil Disturbance & Terrorism

Civil disturbances are public crises that occur with or without warning and that may adversely impact significant portions of the population. These disturbances may be the actions of any number of persons causing disruption of the populace. Terrorism is defined in the Code of Federal Regulations as "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." It is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom.

Although the federal government recognizes that the United States has entered the post-Cold War era, federal planning guidelines on military threats are in transition. For hazard analysis purposes, it is prudent to scale back on the magnitude of nuclear events for other more likely scenarios.

For instance, emergency management attention to other threats of armed violence, such as terrorism, is growing. Terrorism is a serious issue in Florida; the state is particularly vulnerable due to its proximity to Latin America and Cuba. Although potential targets are unpredictable, high-density population centers and military installations are the most likely. Terrorism increases the likelihood of mass casualty and mass evacuation from a target area.

For threats of armed violence, it is very likely that joint jurisdictional management of the operation will take effect, coordinated at the County level between the Sheriff and FDLE. For any of these scenarios, some degree of state and federal involvement may occur. The lead federal agency may be FEMA or the Department of Justice.

There is no history of civil disturbance or terrorism in Levy County, and the probability of occurrence of a civil disturbance or terrorism is low. The County has a moderately diverse population with the accompanying variety of perceptions on polarizing issues. Other than the corrections facility operated by the Levy County Sheriff's Office, there are no large inmate populations. This is a Societal Hazard that will not be discussed further.

15. Mass Immigration

Mass immigration in South Florida has been continuing since 1980, as Florida's proximity to the Caribbean basin makes it a vulnerable point of entry for a massive influx of refugees entering the United States illegally. However, it has had limited impact on the north-central Florida area including Levy County. The likelihood of immigrants arriving along the Levy County shoreline and the County being used as a relocation center is minimal. Despite recent downward trends, Levy County has experienced an overall increase in permanent population. Currently, the population estimates indicate that the county population is approximately 40,000. This estimate is about 6,000 more people than the 2000 census which showed the population at 34,450.

Due to the climate and natural features, Levy County is the destination for a small but noticeable seasonal snowbird population. Levy County is also hosts a "hidden" population. This term refers to undocumented workers. These workers typically take up work in the agriculture and construction industries. This number will vary based on crop quality and economic conditions however it is believed to range from 250 to 1,500 depending on seasons during the year.

This is a Societal Hazard that will not be discussed further.

16. Conclusion of Hazard Identification

In the hazard identification process, natural, technological/manmade, and societal hazards were identified and described. For the purposes of this Plan, only the aforementioned Natural Hazards of which there is a reasonable expectation of occurrence and substantial damage will be profiled in more detail in the next section (Hazard Profiles) and addressed later in the Vulnerability Assessment.

B. HAZARD PROFILES

Hazard profiling includes the following: the location and boundaries of hazard-prone areas; the extent, or potential magnitude of an event of each type; historical occurrences; and the probability, or likelihood of each event to occur in the future. Probability is a function of frequency of occurrence, or return period (period of time in years/number of occurrences), and for the purposes of this Plan, is defined as follows:

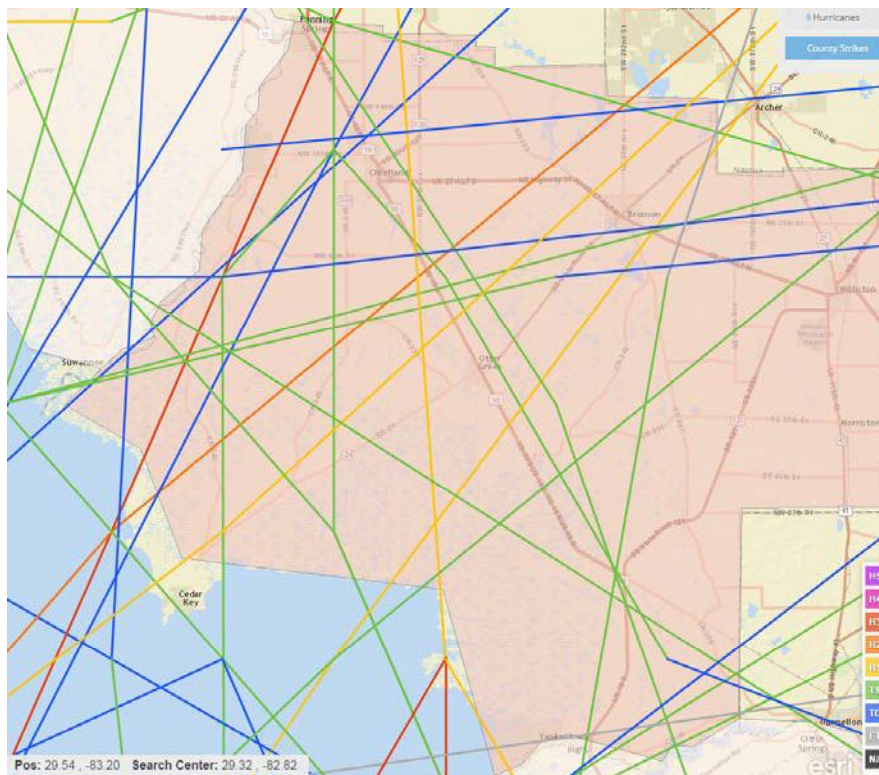
Very High Probability	=	0 to 3 year return rate
High Probability	=	4 to 7 year return rate
Moderate Probability	=	8 to 10 year return rate
Low Probability	=	11 to 14 year return rate
Very Low Probability	=	15+ year return rate.

1. Tropical Cyclones

a. Location

Because of its subtropical location and long coastline, Florida is particularly susceptible to tropical cyclones. Florida’s flat topography also makes it susceptible to the full force of high winds and powerful storm surge. All of Levy County (including all municipalities) is vulnerable to tropical cyclones (see Figure VI-2). However, different areas of the County vary in degree of vulnerability, especially to high winds and storm surge from tropical cyclones.

Figure VI-2. Historical Paths of Tropical Cyclones



The American Society of Civil Engineer’s Standard 7 (ASCE 7) provides wind risk assessments (see Figure VI-3) for areas throughout Florida along with associated building standards based on wind hazard associated with tropical cyclones. According to this wind risk assessment, Levy County lies within 120 mph to 130 mph wind zones. In 2010, a Statewide Building Code was fully updated in Florida. The County developed and adopted the Levy County Wind-borne Debris Region and Basic Wind Speed Map, attached to Ordinance No. 01-08 in order to comply with changes in the statewide building code and to further protect residents’ life, property, and general welfare.

Levy County’s coastal communities have a higher risk of surge events. Figure VI-4 depicts the categories of inland surge of water that can be expected from different categories of tropical cyclones. This information was originally developed by the NOAA as the SLOSH model. In 2010, the Withlacoochee Regional Planning Council, along with all other regional planning councils in Florida, completed the 2010 Statewide Regional Evacuation Study. The study includes a revision of surge zones using new SLOSH data provided by NOAA and a new digital elevation model created with new LiDAR data.

Figure VI-3. ASCE 7 Wind-borne Debris Region for Residential Structures

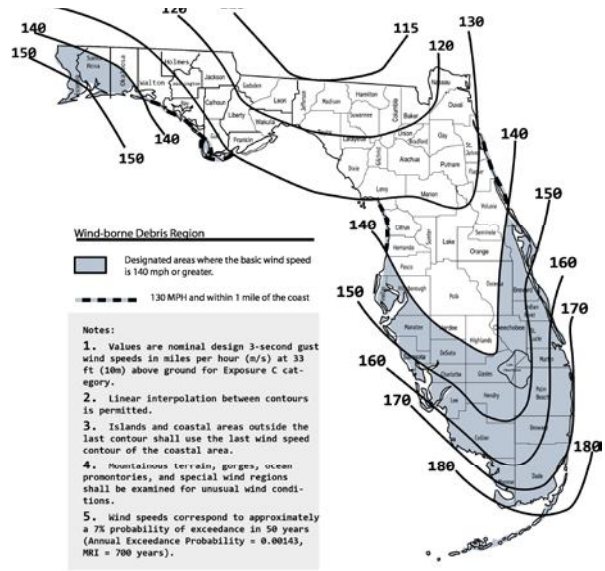
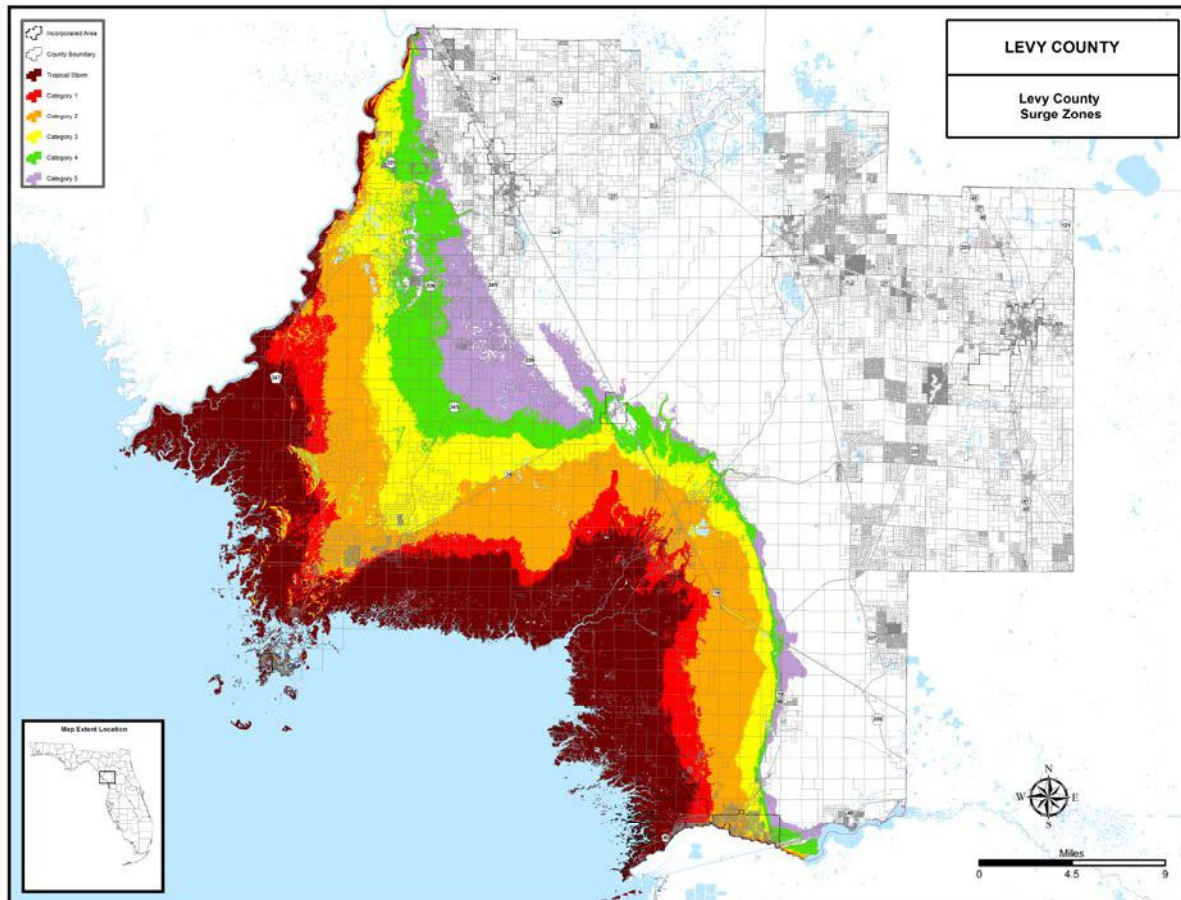


Figure 1609A Wind-Borne Debris Region, Category II and III Buildings and Structures except health care facilities

Figure VI-4. Levy County Surge Zones



b. Extent

Levy County has not experienced a tropical cyclone greater than a Category 3 hurricane, therefore the extent of tropical cyclones in Levy County is Category 3.

The Saffir-Simpson Scale was developed in the early 1970s by Herbert Saffir, a consulting engineer in Coral Gables, Florida, and Dr. Robert Simpson, then Director of the National Hurricane Center. The scale was based primarily on wind speeds and included estimates of barometric pressure and storm surge associated with each of the five hurricane categories. However, the scale was revised in 2009 to only include Sustained Winds per Hurricane Category (see Table and descriptions from NOAA of damage below for the extent of a potential hurricane event). The extent of tropical storm winds is 39-73 miles per hour. Some effects include scattered trees, scattered power outages, and some roads blocked due to downed trees and power lines.

Table VI-2. Saffir Simpson Hurricane Classification

Hurricane Category	Sustained Winds (mph)	Potential Damage
1	74 - 95	Very dangerous winds will produce some damage
2	96 - 110	Extremely dangerous winds will cause extensive damage
3	111 - 130	Devastating damage will occur
4	131 - 135	Catastrophic damage will occur
5	156 +	Catastrophic damage will occur

- Category 1 damage

People, livestock, and pets struck by flying or falling debris could be injured or killed. Older (mainly pre-1994 construction) mobile homes could be destroyed, especially if they are not anchored properly as they tend to shift or roll off their foundations. Newer mobile homes that are anchored properly can sustain damage involving the removal of shingle or metal roof coverings, and loss of vinyl siding, as well as damage to carports, sunrooms, or lanais. Some poorly constructed frame homes can experience major damage, involving loss of the roof covering and damage to gable ends as well as the removal of porch coverings and awnings. Unprotected windows may break if struck by flying debris. Masonry chimneys can be toppled. Well-constructed frame homes could have damage to roof shingles, vinyl siding, soffit panels, and gutters. Failure of aluminum, screened-in, swimming pool enclosures can occur. Some apartment building and shopping center roof coverings could be partially removed. Industrial buildings can lose roofing and siding especially from windward corners, rakes, and eaves. Failures to overhead doors and unprotected windows will be common. Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. There will be occasional damage to commercial signage, fences, and canopies. Large branches of trees will snap and shallow rooted trees can be toppled. Extensive damage to power lines and poles will likely result in power outages that could last a few to several days. Hurricane Dolly (2008) is an example of a hurricane that brought Category 1 winds and impacts to South Padre Island, Texas.

- Category 2 damage

There is a substantial risk of injury or death to people, livestock, and pets due to flying and falling debris. Older (mainly pre-1994 construction) mobile homes have a very high chance of being destroyed and the flying debris generated can shred nearby mobile homes. Newer mobile homes can also be destroyed. Poorly constructed frame homes have a high chance of having their roof structures removed especially if they are not anchored properly. Unprotected windows will have a high probability of being broken by flying debris. Well-constructed frame homes could sustain major roof and siding damage. Failure of aluminum, screened-in, swimming pool enclosures will be common. There will be a substantial percentage of roof and siding damage to apartment buildings and industrial buildings. Unreinforced masonry walls can collapse. Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. Commercial signage, fences, and canopies will be damaged and often destroyed. 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. Potable water could become scarce as filtration systems begin to fail. Hurricane Frances (2004) is an example of a hurricane that brought Category 2 winds and impacts to coastal portions of Port St. Lucie, Florida with Category 1 conditions experienced elsewhere in the city.

- Category 3 damage

There is a high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older (pre-1994) mobile homes will be destroyed. Most newer mobile homes will sustain

severe damage with potential for complete roof failure and wall collapse. Poorly constructed frame homes can be destroyed by the removal of the roof and exterior walls. Unprotected windows will be broken by flying debris. Well-built frame homes can experience major damage involving the removal of roof decking and gable ends. There will be a high percentage of roof covering and siding damage to apartment buildings and industrial buildings. Isolated structural damage to wood or steel framing can occur. Complete failure of older metal buildings is possible, and older unreinforced masonry buildings can collapse. Numerous windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Most commercial signage, fences, and canopies will be destroyed. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to a few weeks after the storm passes. Hurricane Ivan (2004) is an example of a hurricane that brought Category 3 winds and impacts to coastal portions of Gulf Shores, Alabama with Category 2 conditions experienced elsewhere in this city.

- Category 4 damage

There is a very high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older (pre-1994) mobile homes will be destroyed. A high percentage of newer mobile homes also will be destroyed. Poorly constructed homes can sustain complete collapse of all walls as well as the loss of the roof structure. Well-built homes also can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Extensive damage to roof coverings, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will break most unprotected windows and penetrate some protected windows. There will be a high percentage of structural damage to the top floors of apartment buildings. Steel frames in older industrial buildings can collapse. There will be a high percentage of collapse to older unreinforced masonry buildings. Most windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months. Hurricane Charley (2004) is an example of a hurricane that brought Category 4 winds and impacts to coastal portions of Punta Gorda, Florida with Category 3 conditions experienced elsewhere in the city.

- Category 5 damage

People, livestock, and pets are at very high risk of injury or death from flying or falling debris, even if indoors in mobile homes or framed homes. Almost complete destruction of all mobile homes will occur, regardless of age or construction. A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. Extensive damage to roof covers, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will occur to nearly all unprotected windows and many protected windows. Significant damage to wood roof commercial buildings will occur due to loss of roof sheathing. Complete collapse of many older metal buildings can occur. Most unreinforced masonry walls will fail which can lead to the collapse of the buildings. A high percentage of industrial buildings and low-rise apartment buildings will be destroyed. Nearly all windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed. Nearly all trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months. Hurricane Andrew

(1992) is an example of a hurricane that brought Category 5 winds and impacts to coastal portions of Cutler Ridge, Florida with Category 4 conditions experienced elsewhere in south Miami-Dade County.

Using NOAA’s updated SLOSH model for the Cedar Key Basin (which extends from Sarasota County north to Jackson County), potential surge height is estimated for the County. Potential storm tide heights are associated with each category of tropical cyclone (see Table VI-3 below). If a category 5 hurricane hit the County, surge height could potentially be as high as 41.3 feet.

Table VI-3. Potential Storm Tide Height for Levy County (In Feet above NAVD88)

Storm Strength	Storm Tide Height
Tropical Storm	3.0 – 6.4
Category 1 Hurricane	4.5 – 10.8
Category 2 Hurricane	10.2 – 20.1
Category 3 Hurricane	16.8 – 25.4
Category 4 Hurricane	21.4 – 31.4
Category 5 Hurricane	18.1 – 41.3

c. Historical Occurrences

Shown on Figure VI-2 are the tracks of tropical cyclones in Levy County from 1842 to 2015. Below is a table listing storms that directly impacted the County, as well as descriptions of historically significant tropical cyclones and surge. No tropical cyclones have affected Levy County since 2013.

Table VI-4. Tropical Storms and Hurricanes Directly Affecting Levy County

Location or County	Date	Time	Type	Deaths	Injuries	Property Damage	Crop Damage
FLZ039 - 042>043 - 048>052 - 055>057 - 060>062 - 065	10/7/1996	8:00 AM	Tropical Storm Josephine	0	0	\$ 0.91 M	0
FLZ039 - 042>043 - 048>052 - 055>057 - 060>062 - 065	9/2/1998	12:00 PM	Hurricane Earl	0	2	\$1.13 M	0
FLZ039 - 042>043 - 048>052 - 055>057 - 060>062 - 065	9/25/1998	12:00 AM	Hurricane Georges	0	0	0	0
FLZ039 - 042 - 049>051 - 055 - 060>062 - 065	9/20/1999	9:00 PM	Tropical Storm Harvey	0	0	0	0
FLZ039 - 042 - 048>050 - 050>052 - 055>057 - 060>062 - 065	9/17/2000	3:30 AM	Hurricane Gordon	0	0	\$ 100K	0
FLZ039 - 042>043 - 048>052 - 055>057 - 060>062 - 065	9/14/2001	3:00 AM	Tropical Storm Gabrielle	0	0	\$ 50K	0
FLZ039 - 042 - 048>051 - 055 - 061>062 - 065	9/5/2004	8:00 AM	Tropical Storm Frances	0	0	\$ 4.8 M	0
FLZ039 - 042 - 048>051 - 055 - 060>062 - 065	9/25/2004	10:00 PM	Tropical Storm Jeanne	0	0	\$1.1 M	0
FLZ039 - 042 - 050>051 - 062 - 065	7/9/2005	5:44 AM	Tropical Storm Dennis	0	0	0	0

Location or County	Date	Time	Type	Deaths	Injuries	Property Damage	Crop Damage
FLZ039 - 042>043 - 048>051 - 055 - 060	6/13/2006	12:30 AM	Tropical Storm Alberto	0	0	\$40K	0
FLZ039 - 043	8/21/2008	14:00 PM	Tropical Storm Fay	0	0	\$ 15K	0
FLZ039 - 042 - 048>050 - 050>052 - 055>057 - 060>062 - 065	6/25/2012	10:00 AM	Tropical Storm Debby	0	0	\$175K	0
FLZ039 - 042 - 048>050 - 050>052 - 055>057 - 060>062 - 065	6/6/2013	0:00	Tropical Storm Andrea	0	0	0	0
TOTALS:				0	2	\$ 8.32M	0

Source: NOAA National Climatic Data Center

In Levy County, those with first-hand knowledge refer to Hurricane Easy in 1950 as the most severe storm to affect the County. A spiraling path took Easy along the Gulf Coast from the Everglades to just west of Tampa where it made a loop, then made landfall in Citrus County, returned to the Gulf in Waccasassa Bay and greatly impacting Cedar Key, then made landfall again in Hernando County before dissipating in Georgia. A statewide history of other tropical cyclones is also included as examples of the type of damage that is possible from Florida's greatest hazard threat.

June 6, 2013 Tropical Storm Andrea: Tropical Storm Andrea developed in the Gulf of Mexico on the morning of the 5th and moved northeast, making landfall 10 miles south of Steinhatchee early on the evening of the 6th. At its peak, Tropical Storm Andrea had a minimum surface pressure of 992 MB. Tropical storm force winds were felt along the coast of Levy county and just inland. The highest gust recorded was 44 knots at both the CKYF1 and CDRF1 weather stations in Cedar Key, with both sites also recording periods of sustained winds of 35 knots. Storm total precipitation ranged from 2 inches to just over 6 inches across the county, with the CoCoRaHS site FL-LV-9 located 8.5 miles east northeast of Chiefland measuring the highest total of 6.17 inches. Peak storm tide at the Cedar Key tide gauge reached 6.26 feet MLLW. Subtracting the predicted astronomical tide, the calculated highest storm surge was 4.08 feet MLLW.

June 24, 2012 Tropical Storm Debby: Tropical Storm Debby lingered for several days over the northeastern Gulf of Mexico and caused high winds and heavy rain before making landfall near Steinhatchee, FL on the 26th. A tropical storm warning was in effect for Levy, Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, and Sarasota counties from 10 AM EDT on June 25th through 8 PM EDT on June 26th.

In Levy County, tropical storm force winds were felt along the coast as Tropical Storm Debby moved onshore on the afternoon of the 26th. Heavy rainfall of over 8 inches fell across the county from the 24th through the 26th, with the highest storm total rainfall reported at the CoCoRaHS site near Chiefland of 13.42 inches. The tide gauge at Cedar Key measured a peak tide of 6.78 feet MLLW on the evening of the 25th. Subtracting the predicted astronomical tide, the calculated highest storm surge was 4.49 feet MLLW late in the evening of the 25th. The surge flooded a few buildings at Cedar Key and Yankeetown. In total, around \$175K in damage to public property was recorded.

September 11 2008: Swells from Hurricane Ike caused above normal tides along the west coast of Florida. In Levy County, the C-MAN station at Cedar Key reported a maximum storm surge of 2.00 feet with a maximum storm tide of 5.80 feet.

August 18, 2008 Tropical Storm Fay: Fay was the sixth named storm of the 2008 Atlantic tropical cyclone season. Formed from a vigorous tropical wave on August 15, and made landfall on the Florida Keys late in the afternoon of August 18 before veering into the Gulf of Mexico. It again made landfall near Naples, Florida, in the early hours of August 19 and progressed northeast through the Florida peninsula, emerging into the Atlantic Ocean near Melbourne on August 20. Extensive flooding took place in parts of Florida as a result of its slow movement. On August 21, it made landfall again near Smyrna Beach, Florida, moving due west across the Panhandle, crossing Gainesville and Panama City, Florida. As it zigzagged from water to land, it became the first storm in recorded history to make landfall in Florida four times. Thirty-six deaths were blamed on Fay. Eleven tornadoes were spawned within the United States due to Fay. Damage from Fay was heavy, estimated at \$560 million.

In Levy County, tides were 2 to 2.5 feet above normal. The total storm tide reached 5 feet. A peak wind gust of 49 MPH was recorded at the Cedar Key C-MAN station. Numerous trees were downed in the west part of Morriston due to the combination of the wind and wet ground, and caused damage to a home and a van. Widespread heavy rain fall of 6-12 inches soaked the ground.

June 13, 2006 Tropical Storm Alberto: This was the first tropical storm of the 2006 Atlantic tropical cyclone season. Forming on June 10 in the northwestern Caribbean Sea, the storm moved generally to the north, reaching a maximum intensity of 70 mph (110 km/h) before weakening and moving ashore in the Big Bend area of Florida on June 13. In Levy County, a peak wind gust from the south of 48 knots (55 MPH) was recorded at the C-MAN station on Cedar Key. The storm tide at Cedar Key was 6.74 feet which included a surge of 4.09 feet. Two feet of water covered the roads in downtown Yankeetown and near shore areas of Highways 40 and 24. About 20 homes received minor damage in the Yankeetown area, however, these homes are in a low area and are susceptible to unusually high tides as well. Cedar Key did not experience flooded roads as the tide was going down as the surge was coming in.

August 25, 2005 Hurricane Katrina: While better known for the devastating destruction of the new Orleans area, Katrina became a hurricane just before making landfall near the Miami-Dade/Broward county line. Tide levels along Florida's west coast and in Tampa Bay remained about 1 foot above normal the 28th and 29th as Hurricane Katrina moved away. A storm surge of 2.07 feet was recorded at Cedar Key at 5:12 PM EDT on the 29th but the highest storm tide was 5.09 feet and was recorded at 10:06 AM EDT on the 29th. Damage to Florida was relatively minor. Seasonally warm waters led to rapid strengthening of Katrina giving it sustained 175 mile hour winds and its category 5 designation. On August 28 made landfall near Buras, Louisiana.

July 9, 2005 Hurricane Dennis: Hurricane Dennis developed in the eastern Caribbean on the 5th and moved northwest and exited the northwest coast of Cuba early on the 9th. The center of Hurricane Dennis passed 220 miles east of Fort Myers Beach around 9 PM EDT on the 9th and passed 200 miles east of Cedar Key around 10 AM EDT on the 10th. Tropical storm force sustained winds of 39 MPH or greater were intermittent within rain bands around Dennis. These bands did produce 7 tornadoes and 1 waterspout in southwest and west central Florida. No significant wind damage was reported. The maximum storm surge of 3 feet did not affect the area until Sunday the 10th around 4 AM EDT. Cedar Key - Storm Surge 4.81 feet at 11:12 AM EDT, Storm Tide 7.79 feet at 1:54 PM EDT. About 3 feet of water covered State Road 23 west of the #4 Bridge and the airport and numerous roads were closed in

Cedar Key due to the above normal tides. Yankeetown streets were covered with 10 inches of water and County Road 40A west of the city was closed due to water on the road. Moderate beach erosion was reported on Cedar Key. Water damage at Cedar Key was limited to 20 business and \$500 thousand. Seas were 5 to 7 feet with some waves up to 10 feet. In Levy County, Cedar Key recorded sustained winds of 40 MPH with gusts to 46 MPH. A spotter in Chiefland recorded wind gusts to 56 MPH using his handheld anemometer.

September 26, 2004 Hurricane Jeanne: Hurricane Jeanne followed much the same route as Frances of three weeks prior. The center of Jeanne curved north of Tampa Bay during the afternoon and traveled north along the coastal counties before exiting north through Levy County. With its rapid deterioration from 120 mile wide speeds to tropical depression over a two day period, Jeanne produced heavy rainfall over previously saturated and battered land in central Florida. In Levy County the observation from Cedar Key recorded a gust to 40 knots (46 MPH) from the northeast.

September 5-6, 2004 Hurricane Frances: Hurricane Frances formed into a tropical depression in the Atlantic on August 25 prior to its eventual landfall in Stuart as a Category 2 hurricane. Following a general west to north track, Frances traveled through the peninsula of Florida on its way through Georgia and north. Frances produced memorable storm surge, rainfall and tornado activity. In Levy County the observation at Cedar Key recorded a gust to 51 knots (59 MPH) from the south.

August 13, 2004 Hurricane Charley: Hurricane Charley developed from a tropical wave, developing into a tropical depression in the waters south-southeast of Barbados. Charley eventually would qualify as a category 4 Hurricane after crossing over the western third of Cuba. From there, Charley charted a northerly track crossing over central Florida in approximately the Orlando Area departing Florida through the Daytona beach area towards South Carolina as a weak category 1 storm.

September 13-14, 2001 Tropical Storm Gabrielle: Tropical Storm Gabrielle formed in the eastern Gulf of Mexico, moved east-northeast, with the center crossing Florida's west coast near Venice. Gabrielle caused over \$20 million in property damage due to wind damage, storm surge, minor beach erosion and flooding.

September 16-17, 2000 Tropical Storm Gordon: Tropical Storm Gordon formed in the Gulf of Mexico and moved northeast, briefly intensified to hurricane strength, then moved ashore in the Big Bend area of Florida as a tropical storm. The outer fringes of Gordon moved across South Florida, producing flooding as well as numerous funnel clouds and waterspouts. Official, maximum sustained winds of 53 mph, with gusts as high as 68 mph, were observed at the C-MAN automated weather sensor at Cedar Key in Levy county prior to landfall near the mouth of the Suwannee River. Levy County's storm tide value was estimated to be 2 to 4 feet MSL. Damage in Levy County was confined to roofs and toppled trees, mainly in the Cedar Key area, where a total of \$100,000 dollars was estimated.

September 20, 1999 Tropical Storm Harvey: Remnants of Tropical Storm Harvey moved parallel along the West Central coast of Florida and produced near tropical storm force wind gusts. Tropical Storm Harvey produced storm surges of one to two feet from Levy south to Sarasota County and two to three feet along the coast of Charlotte and Lee counties.

September 15-29, 1998 Hurricane Georges: Hurricane Georges hit the Florida Keys with 105 mph winds, destroying mobile homes in the area before moving into the Panhandle, creating storm surge and

flood damage. This storm caused nearly \$255 million in damage in South Florida. Levy County's storm tide value was estimated to be 2 to 4 feet MSL.

September 2-3, 1998 Hurricane Earl: A Category 1 hurricane, Earl made landfall near Panama City causing minor flooding, moderate beach erosion, numerous tornadoes and power outages. Hurricane Earl moved northeast across the Gulf of Mexico and brought low end tropical storm force wind gusts from Cedar Key south to Sarasota. Levy County's storm tide value was estimated to be 5 to 7 feet MSL. Damage from "Earl" was considered minor. However, cumulative damage estimates, primarily tornadic, from fifteen counties of West Central and Southwest Florida, yielded a value of 1.13 million dollars. Property damage statewide was estimated at over \$7 million.

October 7-8, 1996 Tropical Storm Josephine: Tropical Storm Josephine impacted Florida's West Coast with 70 mph winds before exiting through the northeast portion of the state. Sixteen counties experienced extensive damage, with losses estimated near \$45 million. Tropical Storm Josephine moved onshore in the Big Bend area of Florida and caused storm surges of 8 to 9 feet at Cedar Key in Levy County.

August 23, 1995 Tropical Storm Jerry: Tropical Storm Jerry moved onshore north of West Palm Beach around noon on the 23rd. Tropical Storm Jerry moved northwest across the state and began to affect Highlands and Polk counties with gusts of 25 to 30 knots by the evening of the 23rd. Although minimal rainfall occurred with the center of Jerry as it moved northwest across the Florida peninsula, significant rainfall from extreme outer rain bands of Jerry occurred over coastal areas of West Central and Southwest Florida on the 24th and 25th. Storm tides averaged one to one and one-half feet above normal mean sea level in Pinellas, Hillsborough, Pasco, Hernando, Citrus and Levy Counties after Jerry moved offshore during the 24th and 25th. Beach erosion from Jerry was minor and occurred from Englewood Beach in Pinellas County to Cedar Key in Levy County.

August 2, 1995 Hurricane Erin: Erin, a minimum category 1 hurricane, moved onshore near Vero Beach, Florida then slowly weakened to tropical storm strength as it moved west-northwest over Central Florida. Erin slowly re-intensified to minimal hurricane strength well after moving offshore of West Central Florida into the northeast Gulf of Mexico. Twenty-four hour rainfall totals averaged between 2.5 and 3.5 inches from the Tampa metro area north to Levy County. Extensive wind damage was experienced in Santa Rosa and Escambia Counties and extensive stormwater flooding occurred in Brevard County.

August 24, 1992 Hurricane Andrew: Hurricane Andrew made a memorable landfall in south Dade County, causing an estimated \$26.5 billion in damages. Andrew produced approximately seven inches of rain, 165 mph sustained winds, a maximum storm tide of 16 feet and a total of 96 deaths (including Louisiana). In all, Andrew destroyed 25,000 homes and significantly damaged more than 100,000 others in South Florida. Two weeks after the hurricane, the U.S. military deployed nearly 22,000 troops to aid in the recovery efforts, the largest military rescue operation in U.S. history. When Hurricane Andrew hit southeast Miami-Dade County, flying debris in the storm's winds knocked out most ground-based wind measuring instruments, and widespread power outages caused electric-based measuring equipment to fail. The winds were so strong many wind-measuring tools were incapable of registering the maximum winds. Surviving wind observations and measurements from aircraft reconnaissance, surface pressure, satellite analysis, radar, and distribution of debris and structural failures were used to estimate the surface winds.

Though originally classified as a Category 4 storm, extensive post-impact research led to the reclassification of Andrew as a Category 5 storm in 2002.

September 9-12, 1964 Hurricane Dora: Hurricane Dora crossed Florida from east to west during September 9-12 before turning to southern Georgia. On September 13-16, Dora produced over 20 inches of rainfall and caused flooding throughout one-third of the state of Florida, extensively affecting the St. Mary's, Santa Fe and Steinhatchee River basins. An estimated \$150 million in losses were reported, affecting residential, commercial and agricultural operations.

August 31-September 8, 1935 Labor Day Hurricane: This hurricane is considered to be one of the most severe hurricanes ever recorded in Florida. With winds in excess of 200 miles per hour, the storm passed over the Florida Keys on September 2 with a minimum barometric pressure of 26.35 inches. Three relief-work camps, inhabited by veterans of World War I, were destroyed. The Red Cross estimated that 408 lives were lost.

September 6-20, 1928 Hurricane: The hurricane's eye passed directly over West Palm Beach with a minimum barometric pressure of 27.43 inches. As the storm passed over Lake Okeechobee, a 1.7 mile section of levee gave way, sending a 5 to 10 foot high wall of water into the towns of Pahokee, South Bay, and Belle Glade, killing an estimated 1,836 persons.

September 6-22, 1926 Hurricane: The eye of the hurricane moved directly over Miami on the morning of September 18, leaving approximately 100 dead. The storm continued northwestward across south Florida and entered the Gulf of Mexico at Fort Myers. Northeast winds from the storm raised Lake Okeechobee water levels above the low dike on the south end of the lake near Moore Haven. Approximately three miles of dike failed, sending 10 to 12 foot floodwaters into Moore Haven and at least five foot deep floodwaters into Clewiston, 16 miles to the southeast.

d. Probability

Using a historical analysis, return intervals were developed for all the tropical storms and hurricanes that have passed through Levy County. From 1842 to 2015 (174 years), 33 tropical depressions, storms, and hurricanes had passed within 25 nautical miles of the center of Levy County. Based on this data from NOAA, the overall return period for all tropical cyclones is 5.3 years. Therefore, the probability of a tropical cyclone occurrence is High. The overriding assumption for hazard mitigation is that tropical cyclones do strike Florida each year and will affect Levy County at some point in the future. Return periods for each category of tropical cyclone are shown below (Table VI-5).

Table VI-5. Tropical Cyclone Return Periods for Levy County

Overall	TD	TS	CAT 1	CAT 2	CAT 3	CAT 4	CAT 5
5.3	14.5	10.24	58	174	87	NDE	NDE

Note: This data represents the mean recurrence interval, not the amount of years since the last storm of any specific category. Some of the higher intensity storms have not hit Levy County in the 174 years of recorded tropical cyclone. These incidents are described as No Direct Effect or NDE.

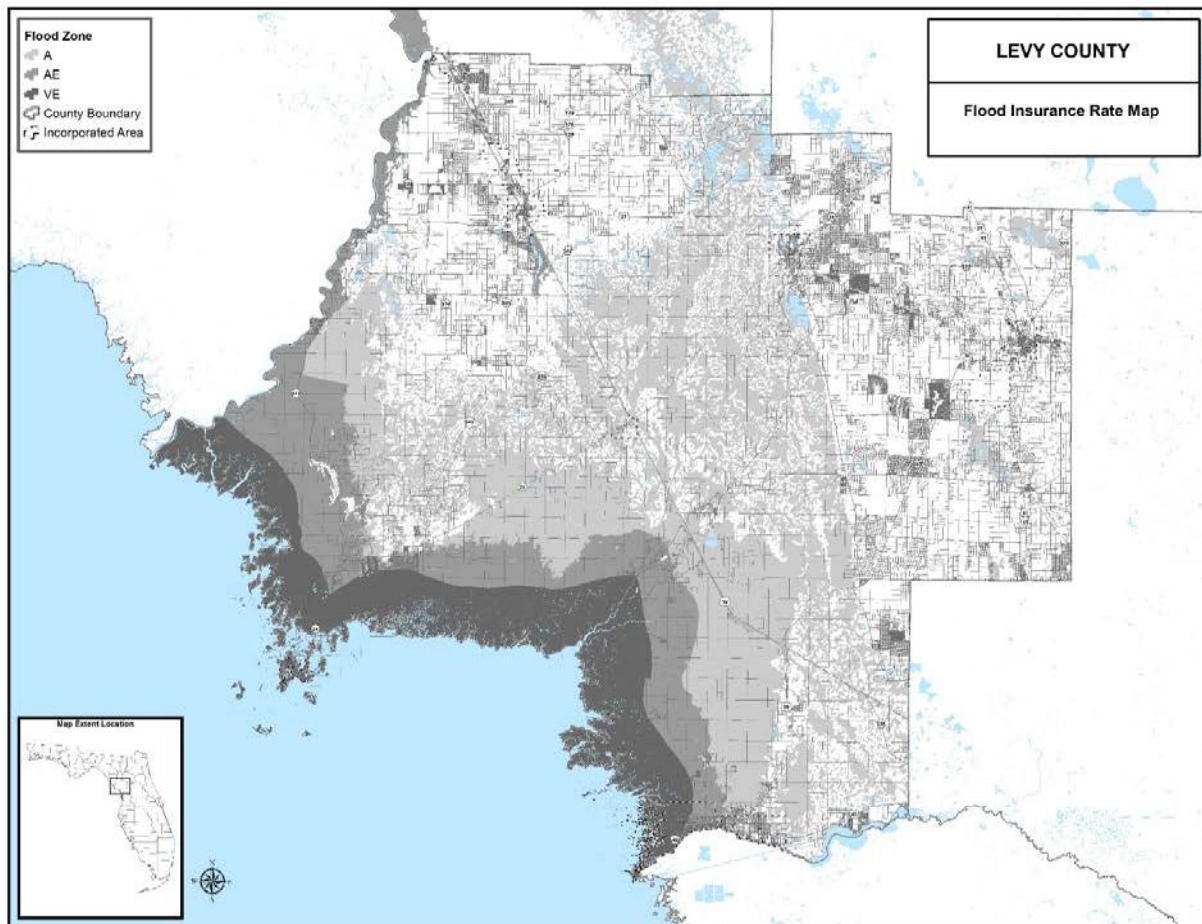
2. Floods

a. Location

As a weather event, cumulative rainfall amounts could develop anywhere within the County. All of the County and its municipalities are vulnerable to flooding. However, the degree of vulnerability may vary throughout the County. Tropical cyclone induced flooding and heavy rainfall present problems for low-lying areas of Levy County filling up too fast, especially along the Suwannee River in northern Levy County and the Withlacoochee River in southwest Levy County. Also, overflowing water retention areas creates flooding problems. Many of the lakes would be impacted as well, although drainage wells or improved drainage systems have mitigated problems in these areas somewhat.

The Levy County Building and Zoning Department maintains federally provided flood maps, which show the 100 and 500 year flood-prone areas of Levy County (see Figure VI-5). The floodplain map is derived from the Flood Insurance Rate Maps (FIRM) as developed by the National Flood Insurance Program, and recently updated and adopted in 2012. This information generally describes the low-lying areas of the County that are vulnerable to seasonal flooding on a yearly basis. This map clearly shows that a large portion of the County is within the 100-year floodplain and it is valid to assume that flooding is a significant vulnerability. The soils in the 100-year floodplain and its wetland systems create a pre-saturated landscape, made worse with extensive rain. The 500-year floodplain is also included to show secondary flood vulnerability. Much of the floodplain in Levy County is associated with coastal marsh, isolated wetlands, lakes, ponds and river basins. In some cases man-made drainage structures are inadequate and flooding will occur and remain longer in areas subject to drainage obstructions.

Figure VI-5. Levy County Flood Insurance Rate Map



Historical flood data and information are important to determine where vulnerable populations and areas of impact are located. Local knowledge regarding past events can be more valuable than other more general sources of information such as the Flood Insurance Rate Maps (FIRM) from the National Flood Insurance Program (NFIP). The FIRM maps are mainly used as part of the building permit process in that special standards for construction are required for structures built in the flood plain. Structures and roads are normally built above the 100-year flood plain elevation. However, due to changes in drainage patterns, new and more specific information is always beneficial. In the LMS, areas and roads that are known to historically flood have been identified. This is an important issue because some of those roads are evacuation routes and access to homes for residents and responders becomes an issue. The following information and the corresponding map data were gathered from the participants of the Levy County LMS.

Levy County, as with all coastal counties, has the potential for coastal flooding due to storm surge. However, Levy County is different in that a majority of its coastline is in state ownership. Additionally, many acres of the land within the category 1-5 surge zones has a future land use designation of either "Natural Reservation" or "Recreation and Open Space." This land use designation will help to insure that future development will be limited and this relatively undeveloped coastal area will not be subject to

increased storm surge damages. There are currently many residents and businesses in the coastal areas of Levy County and the coastal towns of Inglis, Yankeetown and Cedar Key that are vulnerable to storm surge.

Freshwater flooding in Levy County is of concern within the floodplains of the Suwannee River, the Withlacoochee River and the Waccasassa River. Residents who live in river floodplains are generally prepared for flood events and are aware of the level of vulnerability but make a conscious choice to live on the river.

The historic Suwannee River forms the northwestern border of Levy County spanning approximately 30 miles from the City of Fanning Springs to its mouth at the Gulf of Mexico. The Suwannee floods every few years under normal rainfall cycles in north Florida and south Georgia. People who live on or near the river have come to expect this eventuality and are educated to listen to the media for cresting reports and monitoring of the river gauge at Branford by Suwannee River Water Management District.

The Withlacoochee River forms the southern border of Levy County and runs through the Town of Inglis and the Town of Yankeetown. Water levels on the Withlacoochee can have a great impact in both towns due to the substantial amount of land within the 100-year floodplain. Water control structures at Lake Rousseau and the Inglis spillway reduce the flood impacts of typical river cresting caused by upstream events. Conversely, the water level of the Withlacoochee at Inglis and Yankeetown is influenced by tides and weather events coursing upstream from the Gulf of Mexico.

The Waccasassa River is a small river in central Levy County with a large floodplain. Currently, there are no population centers in this large flooding area. However, the Town of Otter Creek is within the floodprone area. The large floodprone area within central Levy County is also filled with many areas of closed basin flooding.

Closed basin flooding is common throughout Levy County due to the many small drainage basins and sub-basins. The FIRM Figure VI-5 for Levy County displays a complex pattern of thousands of small pockets within the 100-year floodplain. Typically, in a storm event a small drainage sub-basin will fill and spill over through a "saddle" that connects to another sub-basin. The spill-over chain reaction can continue through several sub-basins. During the El Nino disaster of '97-'98 (DR 1195) sub-basins flooded that had not flooded for years and new flood-prone areas were discovered or rediscovered. Based on the relatively flat topography of most of Levy County these sub-basins can cover large areas of land and the saddles can be hard to locate or predict without an accurate topographical survey. Understandably, once a closed basin is flooded the only reduction of the water level is through percolation and evaporation. Percolation is usually impeded by soil saturation. Therefore, closed basin flooding in Levy County can be difficult to predict and flood waters can remain for a significant period of time.

Some of the most valuable information regarding flooded roadways was gained from the staff of the Levy County Road Department. The Road Department staff along with the Building Official had a meeting with the Working Group to provide information on flooded roadways throughout the County. This information is included on the Historic Flooding Map. County and municipal staff should be consulted again prior to future updates of the LMS.

Below are descriptions of additional areas that historically flood. The below listed information was either submitted by working Group representatives or gained from meetings with staff.

Town of Bronson

The Town of Bronson has two small developed areas that flood, causing access problems for the few residents in the specific areas. The Public Works Director thinks flooding in these areas could be reduced but probably not alleviated by drainage improvements. The NFIP map designates larger areas on the south and west side of Bronson as being within the 100-year floodplain. These areas have minimal local population and are currently unimproved. Policy and /or planning initiatives could be adopted to mitigate future growth in the 100-year floodplain.

City of Cedar Key

In December 1998, the City of Cedar Key had 434 flood policies of which 208 policies were claimed amounting to \$2,406,232. Of the total number of flood policies, 414 were in the velocity zone. The total coverage of policies amounts to \$27,945,100 and the total premiums amount to \$250,078. These figures represent a single point in time where flood insurance policies were paid out. With the continued growth and increase in property values, potential insurance losses would most likely exceed the 1998 numbers should a similar event take place again.

Cedar Key is group of islands that are subject to flooding influenced by conditions in the Gulf of Mexico. The map of historic flood problems centers on flooded roadway segments. The LMS Working Group agreed that road access is a problem that needs addressing. Most of the roads shown on the map are inundated at a five or six foot tide. Most importantly, access to and from Cedar Key is blocked at five foot (5') tide at Bridge #4. Rebuilding several bridges and raising several miles of SR 24 could alleviate the access issues, but that is not seen as realistic. Additionally, there are only a few areas in Cedar Key that are outside the 100-year floodplain. Therefore, preparedness for evacuation and early warning are fundamental to life safety issues with regard to all hurricane and tropical storm events.

City of Chiefland

The City of Chiefland reports two main problem areas that have had repeated flooding as listed below. Flooding typically occurs with rainfall events when more than an inch of rain falls within several hours time. Traffic must be directed around these areas and the waters do enter some nearby structures. These two areas could be addressed by a stormwater management study and drainage projects.

Block 19, parcel 2 on North Main Street

Intersecting area of Northeast 1st Avenue and Northeast 1st Street by the City Hall

City of Fanning Springs

The City of Fanning Springs is located on the banks of the Suwannee River and is subject to flooding events associated with the river. U.S. Hwy 19 is a major regional evacuation route that crosses the Suwannee River at Fanning Springs. Fanning Springs has identified areas along the Suwannee River as prone to seasonal flooding. The Suwannee River floodplain can be affected by weather events locally and as far away as southern Georgia.

Town of Inglis

The Inglis Stormwater Runoff Investigation conducted in 1992, identified flooding in yards, driveways and/or in the roads near residences. Several of the respondents who participated in the study reported that flooding resulted any time after heavy rainfall occurred. The duration of the flooding varied depending on the storm event, but residents indicated that when flooding occurred it lasted for several days or more than a week. This is indicative of low-lying and depressional areas filling with water and

not having an outlet to drain them. A perception indicated by the respondents is that alteration to land use patterns have resulted in some flooding. As new houses and buildings are constructed each one displaces the water that once was absorbed on the property.

The roadway segments on the attached map correspond with the 100-year floodplain map. These roadway segments flood with normal, heavy rainfall events.

Town of Otter Creek

The Town reports flooding problems at the intersection of SW 3rd Ave and SW 3rd Lane which impede safe travel. Additional problems are reported at an RV park on the banks of Otter Creek (the creek). Fortunately, people here can easily leave flooded areas. Approximately half of this very small Town (Population around 120) is considered flood-prone. However, the flood-prone areas have little to no population.

City of Williston

Generally, Williston is not located near any major areas of flooding. However, several small closed basins in the City are shown as being within the 100-year floodplain. These areas are sub-basins near the developed portion of the City and drainage projects may not be feasible. Williston may consider acquisition of these properties for use as drainage retention areas. The worst of the localized flooding is located on NW 4th St. next to the Oak View Care Center (180 bed skilled nursing facility). The area of most frequent flooding within this sub-basin was acquired by the City in 2007 and converted into parkland.

Town of Yankeetown

Tidal surge and localized flooding caused by rainfall are the two types of flooding that occur in Yankeetown. Flooding from abnormal tides is the most dangerous of the two and typically accompanies tropical cyclones, tropical depressions or strong and sustained southwesterly winds. The entire Town, with a few minor exceptions, lies within the 100-year floodplain. Flood levels vary from 11 feet NGVD near the eastern corporate limit to about 2 feet NGVD near the County Park at the western end of County Road 40. Low-lying areas less than about 5 feet NGVD are subject to frequent tidal flooding.

Although flooding from coastal surges is unavoidable in low-lying areas, problems are exacerbated by the lack of adequate outfall and drainage infrastructures. Low-lying areas become filled with water as a result of abnormal tides or because of heavy rainfalls. Once filled, they are unable to drain and they must rely on evaporation and slow percolation for relief. In such situations, septic tanks become inoperable and the mosquito population increases dramatically.

Fowlers Bluff

Exceptional heavy seasonal rain in southern Georgia and the panhandle of Florida contributed to flooding along the Suwannee River. The Suwannee River Water management District through decades of research, monitoring and observation was able to predict and warn homeowners on river of impending flooding conditions. On April 20 and 21, 2009 water levels along the Suwannee River at the Fowlers Bluff station peaked at 7.17 and 7.16 feet above National Geodetic Vertical Datum 1929 levels.

Losses due to high water levels occurred between March 26 and May 5. Under Presidential Disaster Declaration, individual assistance was provided to approximately 20 households in this low lying area on the Northern boundary of county. Emergency management terminated the Local State of Emergency

Declaration No. 1831 regarding flooding on the Suwannee River on April 21, 2009. Total Public assistance paid to all counties included in this disaster is 36,071,338, however Levy County accounts for a very small amount of this figure.

b. Extent

Areas designated as 100-year flood zones have a 1% chance of being inundated in any given year (see Table VI-6 for descriptions of FIRM zones). A tropical cyclone is likely to bring rainfall amounts that are above the 100-year flood level. As described earlier, floodplain maps are derived from the Flood Insurance Rate Maps (FIRM) as developed by the National Flood Insurance Program. These floodplain maps include flood zones and base flood elevations (for Zones AE and VE only). Base flood elevations are computed elevations to which floodwater is anticipated to rise during the base flood. Estimated base flood elevations in Levy County range from 8 to 28 feet. This means that 28 feet is the very highest that floodwater is anticipated to rise.

Table VI-6. Definitions of NFIP Flood Zones

AE	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. In most instances base flood elevations (BFEs) derived from detailed analyses are shown at selected intervals within these zones.
X500	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from the 100-year flooding.
X	Areas outside the 1-% annual chance floodplain, areas of 1% annual chance sheet flow flooding where average depths are less than 1 foot, areas of 1% annual chance stream flooding where the contributing drainage area is less than 1 square mile, or areas protected from the 1% annual chance flood by levees. No Base Flood Elevations or depths are shown within this zone. Insurance purchase is not required in these zones.
A	Flood zone area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths of base flood elevations are shown within these zones.
ANI	An area that is located within a community or county that is not mapped on any published FIRM.
VE	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
UNDES	A body of open water, such as a pond, lake, ocean, etc., located within a community's jurisdictional limits that has no defined flood hazard.
AO	River or stream flood hazard areas and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
100IC	An area where the 100-year flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile.

c. Historical Occurrences

In addition to the areas that historically flood described in the above "Location" section, historical flood occurrences and their respective damages have been recorded by NOAA's National Climatic Data Center. Below are a table and descriptions of historical flooding occurrences that have affected Levy County. The last recorded flooding according to NOAA's NCDC data was in August 2015.

Table VI-7. Historical Occurrences of Flood in Levy County

Location or County	Date	Time	Type	Deaths	Injuries	Property Damage	Crop Damage
Peninsular	9/15/1994	0	Flooding	0	0	500K	0
West-central Fl	10/2/1994	1600	Flood	0	0	5.0M	0
Chiefland	6/10/1996	8:00 AM	Urban/sml Stream Fld	0	0	0	0
Chiefland	6/15/1996	11:00 AM	Urban/sml Stream Fld	0	0	0	0
Chiefland	10/27/1997	12:00 PM	Urban/sml Stream Fld	0	0	1K	0
Bronson	2/22/1998	5:30 PM	Urban/sml Stream Fld	0	0	10K	0
FLZ039	7/23/2001	6:00 PM	Coastal Flooding	0	0	100K	0
FLZ039 - 042	2/2/2007	12:35 AM	Coastal Flood	0	0	0K	0
Janney	4/20/2009	12:00 PM	Flood	0	0	13K	0
Inglis	8/3/2015	11:20 AM	Flood	0	0	100K	0
TOTALS:				0	0	6.06 M	0

Source: NOAA National Climatic Data Center

August 2015, Flooding was reported on the southwest side of Butler Road near Inglis. One foot of water was in a home while other homes were inaccessible.

April 2009, A series of April cold fronts passed through and stalled across the area with the heaviest rainfall north of the Suwannee River and in the Florida Pan Handle. Sixteen homes reported flood damage but monetary amounts were low due as the homes were on stilts. Flooding is not uncommon in this low lying area. The Levy County side of the Suwannee River is higher than the Dixie County side and Fowlers Bluff was the only area to report flood damage.

February 22 1998, Heavy rainfall over three to four inches in less than five hours caused localized flooding on roadways between Bronson and Cedar Key. A few vehicles incurred water damage from the floodwaters.

October 27 1997, Four to seven inches of rain caused localized flooding along the U.S. Highway 19 corridor from New Port Richey north across Spring Hill to Crystal River and into Levy county.

June 15 1996, Heavy rainfall of up to five inches in less than two hours caused localized street flooding from Lebanon to Otter Creek along the U.S. Highway 19 corridor.

June 10 1996, Up to five inches of rain in less than two hours produced localized flooding of low lying areas along the U.S. Highway 19 corridor.

October 1994, The remnants of tropical depression number 10 moved from the northeast Gulf of Mexico on October 1 across the Florida Panhandle and into Georgia on October 2. High winds produced rough seas along the west central and northwest Florida coasts causing minor tidal flooding and beach erosion. A total of 18 persons had to be rescued from sinking boats in the northeast Gulf of Mexico. Heavy rains in the Florida Big Bend and Panhandle accompanied the system causing extensive flooding to roadways, creeks and low lying areas and minor flooding of rivers.

September 1994, Two synoptic-scale systems, one tropical and one non-tropical brought heavy rain to most of peninsular Florida the last half of September. Rivers and streams, particularly in the west central counties of Citrus, Polk, Hillsborough, Sarasota, Hardee, Desoto and Manatee Counties, overflowed, flooding roadways and inundating or isolating residential areas.

d. Probability

Like other weather events discussed in this section, the rainfall amounts that cause flood conditions are considered a normal part of the County's climate. Often heavy rainfall is isolated in a small area of a few square miles with severe consequences to the point where shelter activation is needed. Based on the historical data from NOAA's NCDC, the return period for a flood event is approximately 5 years. However, because most of Levy County lies within a flood zone, and because heavy rainfall events occur at least once per year, the probability of a flood event occurring is Very High.

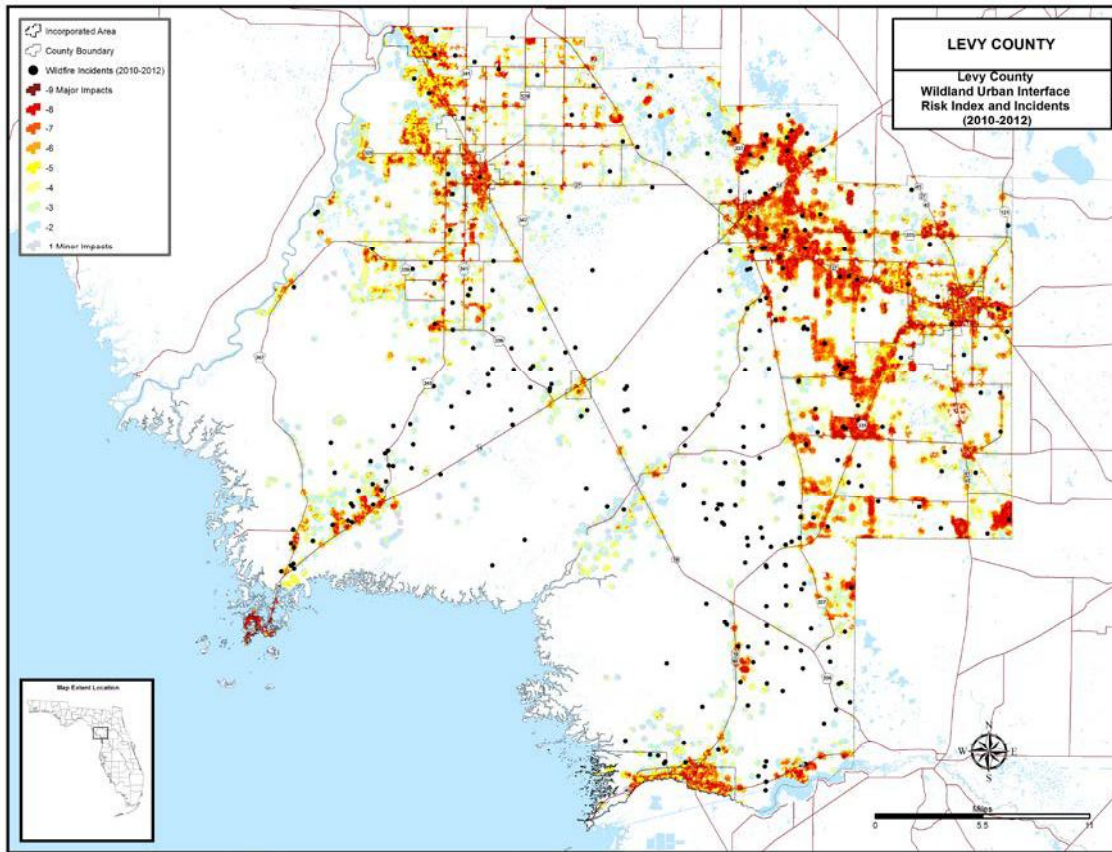
3. Wildfires

a. Location

Approximately 2/3 of Levy County is forest land. Additionally, vast portions of the County consist of woods, timber land and agriculture areas. These areas are intermingled with sparsely populated areas as well as eight small municipalities. The rural population of Levy County is very vulnerable to wildfire. Only areas with few trees such as urban areas, pastures and prairies have a low vulnerability to wildfire.

Figure VI-6 combines the WUI Risk Index and reported wildfire incidents (2010, 2011, and 2012). The Wildland Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes. The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9 while areas with low housing density and low flame lengths are rated -1.

Figure VI-6. Levy County Wildland Urban Interface Risk Index and Incidents from 2010-2012



The United States Forest Service in coordination with the Florida Forest Service conducted a community at risk assessment in 2004 that identified a region or a community’s exposure to wildland fire threats in the categories of low, medium and high. This assessment was updated in 2008 and 2012. All of the County’s communities at risk and their vulnerability ratings as updated in 2012 are listed in Table VI-8 below and shown in Figure VI-7. Based on the 2012 update, Levy County had eight communities/regions rated at medium risk and five rated as high risk.

Table VI-8. Communities at Risk, 2012 Rank

LEVY COMMUNITY	2012 Rank
Andrews	Low
Bronson	High
Cedar Key	Low
Chiefland	Low
East Bronson	High
East Williston	Medium
Fanning Springs	Medium

LEVY COMMUNITY	2012 Rank
Inglis	Medium
Manatee Road	Low
Otter Creek	Low
Williston	Medium
Williston Highlands	High
Yankeetown	Low
Montbrook	Medium
Morriston	High
Gulf Hammock	Low
Merediths	High
Raleigh	Medium
Rosewood	Medium
Sumner	Medium

b. Extent

The worst wildfire recorded in recent history (June 28, 2011) consumed 3,175 acres in Goethe State Forest. Therefore the extent of wildfire is 3,175 acres.

Wildfires will negatively affect Levy County with a variety of impacts:

- Forested lands and any surrounding urban areas (WUI - wildland-urban interface) are most at risk to wildfires. Potential risks include destruction of land, property, and structures, as well as injuries and loss of life.
- Although rare, deaths and injuries usually occur at the beginning stages of wildfires when sudden flare-ups occur from high wind conditions. In most situations, however, people have the opportunity to evacuate the area and avoid bodily harm.
- Responders are most at risk during the process of fire suppression. Responders put themselves in the way of harm to contain the fire and save lives and property. Firefighters are often trapped by fires that either grow or suddenly change directions.
- Major fires have the ability to disrupt transportation in large areas.

Fire experts often disagree about the short- and long-term effects of large-scale fires on the overall environment. The case of the Yellowstone Park wildfire is the most notable event where experts initially thought long-term damage would result from the massive fires. After some years, however, the environment regenerated itself and experts now believe that the fire was actually beneficial to the long-term health of the area.

Financial losses related to wildfires include destroyed or damaged houses, barns, private facilities and equipment, loss of commercial timber supplies, and local and State costs for response and recovery.

c. Historical Occurrences

Below is a Table of occurrences of wildfire in Levy County in 2011 and 2012, by cause of fire and acreage burned. These 2 years are the only ones described, as they have the most complete and recent data. During both of these years, the majority of fires were caused by lightning and non-authorized

burning of trash. Lightning was also the greatest contributor to the amount of acres burned during both years. NOAA’s Storm Events Database lists two major wildfire events that impacted Levy County:

May 23-26, 2001, Dense smoke, from a major wildfire over rural Dixie and Lafayette counties in North Florida, spread south along the West Central Florida coastline and reduced visibilities from one to three miles with occasional isolated pockets below one quarter mile. No deaths, injuries, crop damage, or property damage were reported.

June 6-12, 2011, A wildfire raged for about a week across southeast Levy County and consumed over 3,100 acres. Voluntary evacuations were in place on June 6th for areas near Lebanon to shelters in Bronson. The wildfire had 14 brush trucks, 6 tankers, and nearly 50 people working it. The fire remained in the Goethe National Forest and did not damage any structures or cause any injuries.

Figure VI-7. Communities at Risk, 2012

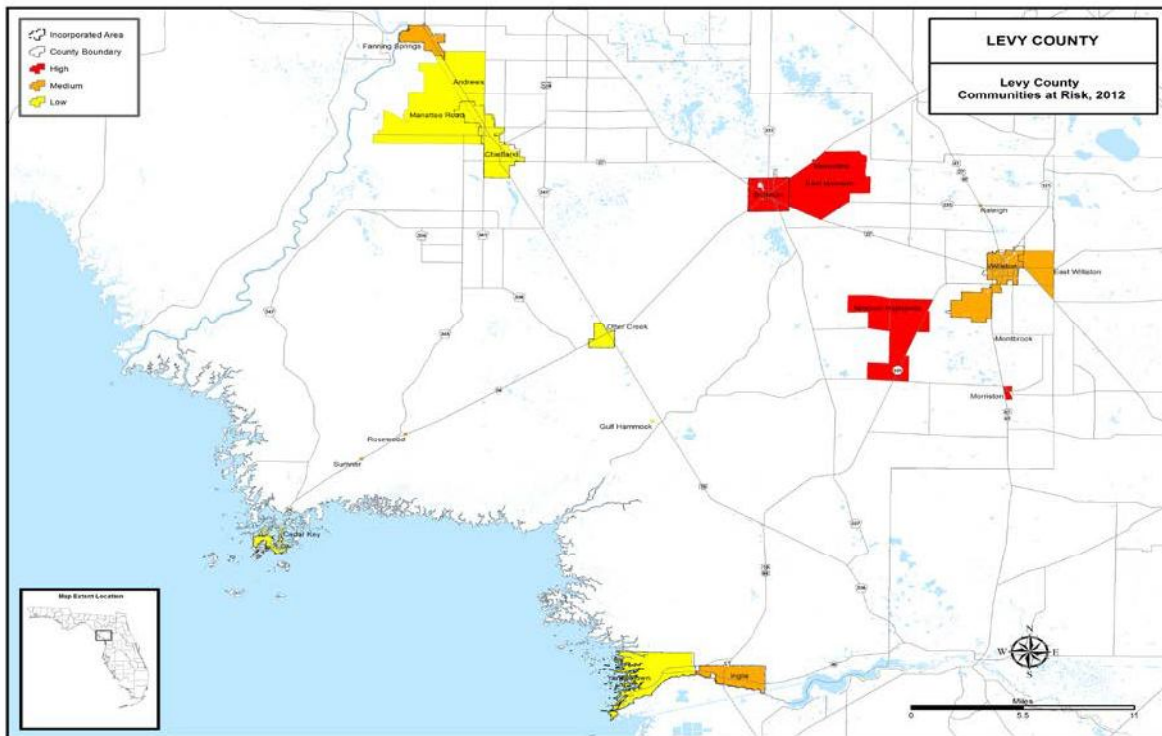


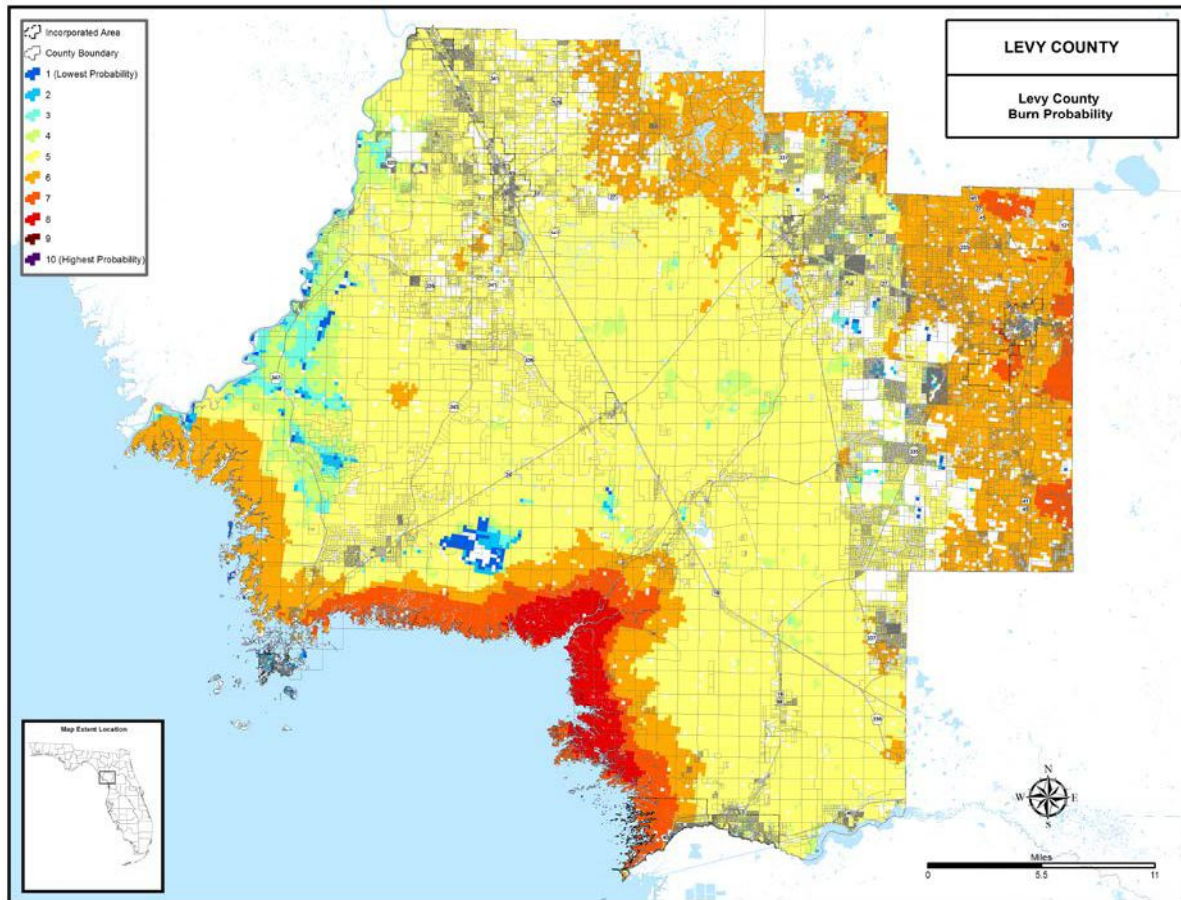
Table VI-9. Historical Occurrences of Wildfire in Levy County, 2011-2012

Cause	2011		2012	
	# incidents	Total Acres Burned	# incidents	Total Acres Burned
Campfire	3	21.0	3	11.4
Children	1	11.0	2	3.0
Debris Burn--Auth-- Broadcast/ Acreage	3	215.0	2	3.0
Debris Burn--Auth-- Piles	4	122.2	4	8.6
Debris Burn--Auth-- Yard Trash	0	NA	7	16.2
Debris Burn--Nonauth--Broadcast/ Acreage	0	NA	0	NA
Debris Burn--Nonauth--Piles	5	45.4	3	44.5
Debris Burn--Nonauth--Yard Trash	20	149.7	6	24.5
Equipment-- Agriculture	0	NA	1	4.0
Equipment-- Logging	2	10.1	3	47.0
Equipment-- Recreation	0	NA	2	4.5
Equipment-- Transportation	3	2.6	3	44.5
Incendiary	1	0.3	3	26.0
Lightning	74	5,941.7	28	378.7
Miscellaneous --Power Lines	3	2.2	4	16.1
Miscellaneous --Breakout	3	52.0	0	NA
Miscellaneous--Other	6	122.1	1	0.2
Miscellaneous--Structure	0	NA	6	13.8
Unknown	11	68.9	8	188.1
TOTAL	139	6,764.2	83	789.6

d. Probability

Using the data from the Division of Forestry, it is estimated that Levy County experiences approximately 111 wildfires a year, and the return period is about 0.01 years, or 3.3 days. Therefore, the probability of a wildfire occurrence in Levy County is Very High.

Figure VI-8. Burn Probability



The Burn Probability layer (see Figure VI-8) depicts the probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts. Burn Probability replaces the Wildland Fire Susceptibility Index. Described in more detail, it is the tendency of any given pixel to burn, given the static landscape conditions depicted by the LANDFIRE Refresh 2008 dataset (as resampled by FPA), contemporary weather and ignition patterns, as well as contemporary fire management policies (entailing considerable fire prevention and suppression efforts).

4. Sinkholes

a. Location

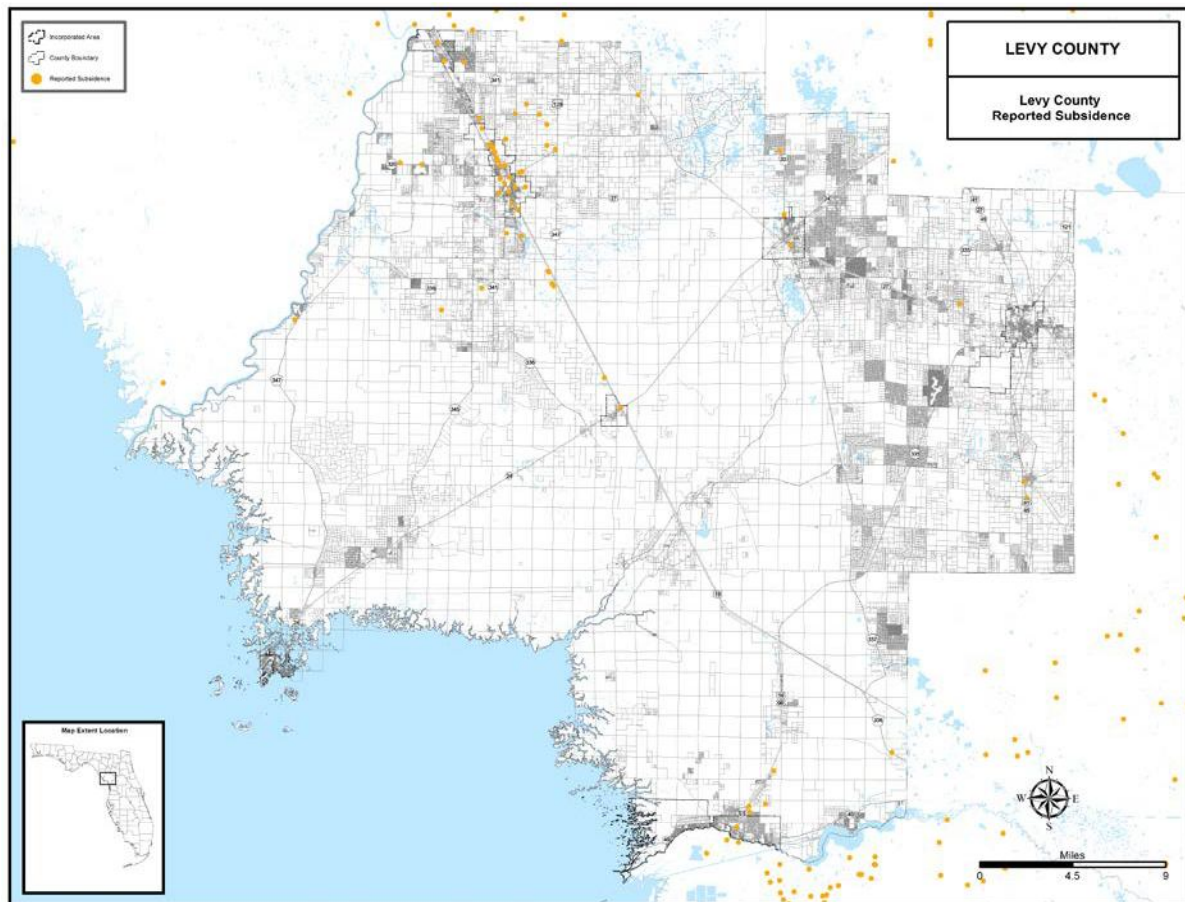
All of Levy County (including all municipalities) is vulnerable to sinkholes. However, different areas of the County vary in degree of vulnerability. The areas of higher elevation of Levy County are classified as high recharge areas with an unconfined aquifer. The limestone layer holding aquifer in these areas can give way to sinkholes more frequently than in areas where the aquifer is covered by a clay confining layer. High recharge areas of permeable sands and an “unconfined aquifer” bring about an increased vulnerability to groundwater pollution via HAZMAT or chemical spills. In the high recharge areas of Levy County the material covering the aquifer is 30 to 200 feet thick, consisting mainly of incohesive and

permeable sand. Typically, sinkholes develop gradually and are small, shallow and few. Cover collapse sinkholes are most prevalent in high recharge areas. The Chiefland area seems to have the most incidents of sinkhole activity. Figure VI-9 shows historical occurrences of sinkholes as well as areas that may be susceptible to sinkholes. Table VI-10 describes sinkholes in Levy County.

b. Extent

The average sinkhole size in Levy County is approximately 5 feet long, 4 feet wide, and 9 feet deep. The largest sinkhole in Levy County is approximately 20 feet in length and width, and 12 feet deep. It is assumed that this is the greatest extent of a sinkhole in Levy County.

Figure VI-9. Levy County Reported Sinkholes, 1948-2015



c. Historical Occurrences

Every year, sinkholes commonly form in roadways. Below is a table with recorded sinkholes in Levy County. The last recorded sinkhole was in 2012 in Chiefland. Following the table are descriptions of historically significant sinkholes in Florida. It is important to note that the data presented in the table reflect reported sinkholes. This is probably not a complete list of sinkholes in the county, as there are probably unreported sinkholes in unpopulated, undeveloped areas. Also, despite no new sinkholes since 2012, there has been shifting and land subsidence recently in Williston. In 2014, the Williston Police

Department was relocated due to land subsidence. A contractor was hired to drill piles and pump grout into the foundation to correct the problem. While investigating the Police Department, it was also discovered that Williston City Hall had some gaps that need filling under the foundation. Work on City Hall subsidence began in December 2015.

Table VI-10. Recorded Sinkholes in Levy County, 1948-2015

MONTH	DAY	YEAR	QUAD	NAME	LENGTH	WIDTH	DEPTH
9	18	2012	Chiefland	Residence	6	6	5
7	2	2012	Chiefland	Near Road	2	2	
5	25	2007	Ocala		2	0	0
3	9	2005	Fanning Springs	Unknown	0	0	0
11	8	2005	Manatee Springs	Unknown	38		
1	19	2004	Yankeetown	Unknown	4	4	0
9	7	2004	Chiefland	Unknown	4	4	
3	12	2003	Chiefland	Unknown	8	8	40
7	24	2003	Trenton	Mr. Liles	7	7	4
6	11	2003	Chiefland	Fire Chief - Grandma's Pantry	2	2	8
6	14	2003	Chiefland	Chiefland Elementary School	0	0	0
3	14	2002	Newberry	Unknown	6	6	6
10	21	2002	Chiefland	Unknown	0	0	0
12	13	2002	Bronson	Unknown	0	0	0
10	8	2002	Morrison	Terry Posey	5	7	2
5	10	1988	Manatee Spr N-28	Department Of Transportation	8	8	5
9	9	1988	Suwannee River M-28	Department Of Transportation	15	10	6
2	17	1987	Trenton	Department Of Transportation	2	2	15
4	6	1987	Chiefland	Department Of Transportation	20	20	12
2	28	1987	Trenton	Department Of Transportation	15	6	10
4	2	1987	Chiefland N-29	Royal American Mgt.	10	8	7
5	14	1987	Chiefland N-29	Department Of Transportation	2	2	2
5	14	1987	Chiefland N-29	Department Of Transportation	5	5	5
5	14	1987	Chiefland N-29	Department Of Transportation	5	5	20
2	2	1987	Trenton M-29	Department Of Transportation	1	1	14
2	2	1987	Trenton M-29	Department Of Transportation	3	3	14
6	18	1986	Trenton M-29	Department Of Transportation	2	2	8
7	1	1986	Trenton M-29	Department Of Transportation	2	2	11
7	1	1986	Trenton M-29	Department Of Transportation	6	6	11
6	11	1986	Trenton M-29	Department Of Transportation	3	3	4
6	11	1986	Trenton M-29	Department Of Transportation	4	4	6
4	19	1985	Suwannee River	Department Of Transportation	4	4	6
7	27	1985	Chiefland	Unknown	2	3	9
9	15	1985	Trenton M-29	Department Of Transportation	7	14	11
10	18	1985	Trenton M-29	Department Of Transportation	2	2	20
10	18	1985	Trenton M-29	Department Of Transportation	2	2	20
10	18	1985	Trenton M-29	Department Of Transportation	4	4	5
7	12	1984	Suwannee R.	Unknown	2	2	20
1	16	1984	Morrison	Unknown	12	20	2
1	5	1984	Suwannee River	Unknown	5	5	4
9	20	1983	Chiefland	City Of Chiefland	20	4	2
11	23	1983	Suwannee River	Unknown	2	4	17
12	5	1983	Suwannee River	Unknown	2	2	17
5	4	1981	Vista	County (Levy)	25	0	7
9	0	1974	Williston	Department Of Transportation	8	8	6
9	1	1974	Williston	Department Of Transportation	6	6	3
1	2	1973	Yankeetown	Department Of Transportation	6	6	6
6	14	1973	Yankeetown	Department Of Transportation	2	2	5
10	30	1972	Trenton	Department Of Transportation	4	4	90
10	2	1972	Trenton	Department Of Transportation	3	3	9
10	2	1972	Trenton	Department Of Transportation	0	0	59
10	13	1972	Suwannee River	Department Of Transportation	6	6	18

MONTH	DAY	YEAR	QUAD	NAME	LENGTH	WIDTH	DEPTH
11	2	1972	Otter Creek	Department Of Transportation	4	4	2
3	3	1970	Trenton	Department Of Transportation	0	0	0
1	0	1970	Trenton	Department Of Transportation	0	0	0
1	0	1970	Trenton	Department Of Transportation	0	0	0
3	0	1970	Suwannee River	Department Of Transportation	0	0	0
5	0	1970	Chiefland	Unknown	0	0	0
6	4	1970	Manatee	Department Of Transportation	24	24	5
9	0	1970	Suwannee River	Department Of Transportation	0	0	0
3	0	1970	Suwannee River	Department Of Transportation	0	0	0
10	20	1970	Chiefland	Department Of Transportation	0	0	0
3	0	1969	Chiefland	Department Of Transportation	4	4	3
1	0	1969	Chiefland	Department Of Transportation	5	5	6
10	0	1969	Yankeetown Se	Department Of Transportation	15	15	5
10	99	1969	Yankeetown	Department Of Transportation	2	2	3
10	0	1969	Yankeetown	Department Of Transportation	2	2	3
0	0	0	Manatee	Department Of Transportation	0	0	0
0	0	0	Chiefland	Department Of Transportation	0	0	0

Source: Florida Department of Environmental Protection

In 2004, numerous small and medium sized sinkholes opened up primarily in the area of The City of Chiefland in the aftermath of Hurricanes Charlie, Frances and Jeanne. The sinkhole activity was caused by sustained rains were caused by saturated grounds form a unusually active storm season.

Perhaps the most famous sinkhole in recent US history is the one formed in May 1981 at Winter Park, Florida near Orlando. The sinkhole is roughly circular but elongated, (approximately 300 feet by 300 feet in size) and swallowed one house and shed, half of the municipal swimming pool, a Porsche sports car, several large oak trees, a section of the crossing street and adjoining street, and an estimated 4 million cubic feet of soil. The sinkhole also damaged three other Porsche sports cars and a pick-up camper that slid into the crater, caused the rear of an auto shop to crack open, and exposed or damaged various utility lines in the vicinity.

Lake Jackson in Tallahassee, a nationally known bass fishing lake, experienced a sinkhole on September 16, 1999 that suddenly drained more than half the lake of every last gallon of water, not to mention every last fish and alligator.

On July 12, 2001, emergency officials for Hernando County investigated 18 confirmed sinkholes that hit in one day across the area, affecting a 15 to 16 block residential area and causing extensive damage to one house. One of the largest holes measured between 50 and 100 feet deep.

In June 2002, a 150-foot-wide sinkhole forced the evacuation of part of a 450-unit apartment building in Orlando, and a Spring Hill woman saw a 40-foot wide hole open in a retention area behind her uninsured home.

d. Probability

The probability of future sinkhole events within the County is considered to be Very High due to review of past historical events and the continuation of ongoing reports of sinkhole activity. Approximately 1.04 sinkholes occur per year, and the estimated return period is 0.94 years. Levy County is ranked 14th in Florida in number of sinkholes.

5. Coastal Erosion

a. Location

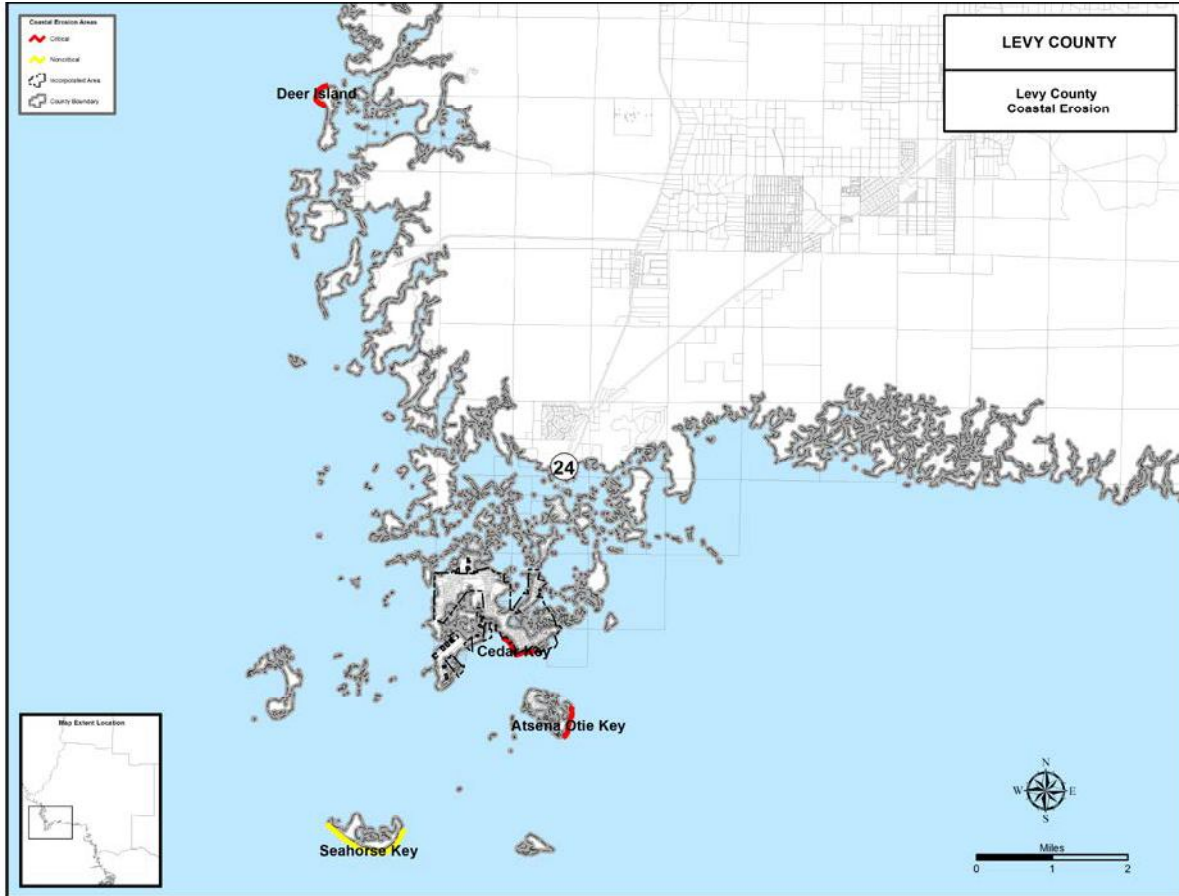
The bathymetry of the Gulf Coast is not very conducive to coastal erosion. The water off the shore of Levy County is shallow for several miles out. This shallow water bathymetry does not allow wave energy to build up, thus creating a “low intensity coastline.” The lack of wave action is evidenced by the lack of any natural beaches. However, despite its low intensity coastline, Levy County does have some recorded coastal erosion. Due to the lack of waves in the Gulf of Mexico in the coastal areas of Levy County, erosion is minimal and only occurs during tropical cyclones.

The Florida Department of Environmental Protection develops and publishes the *Critically Eroded Beaches Report*, last updated in 2014. The data from this report is gathered from a set of monitoring locations along the coast throughout the State. The continual reporting and analysis is combined with the historical data for detailed records about the status of the State’s beaches.

The Report found that Atsena Otie Key, Deer Island, and Cedar Key are Critical Erosion Areas, while Seahorse Key is Non-critical Erosion Area (see Figure VI-10). “Critical Erosion Areas” are defined as segments of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critical erosion areas may also include peripheral segments or gaps between identified critical erosion areas which, although they may be stable or slightly erosional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects.

b. Extent

Figure VI-10. Levy County Coastal Erosion



According to the *Critically Eroded Beaches Report*, Levy County had approximately 2.4 miles of eroded coastline in 2010. By 2014, the County’s eroded coastline increased by 0.5 miles to 2.9 miles, to include critical erosion at Deer Island. The extent of coastal erosion is 0.1 miles per year.

Table VI-11. Levy County Erosion Data

	Recorded length, 2010	Recorded length, 2014	Change from 2010-2014	Rate of change
Deer Island	0	0.5	0.5	0.1 mi/year
Cedar Key	0.6 miles	0.6 miles	0 miles	0 mi/year
Atsena Otie Key	0.5 miles	0.5 miles	0 miles	0 mi/year
Seahorse Key	1.3 miles	1.3 miles	0 miles	0 mi/year
TOTAL	2.4 miles	2.9	0.5 miles	0.1 mi/year

c. Historical Occurrences

The following is a list of notable tropical cyclones that caused recorded erosion in Levy County. This information is from the National Climatic Data Center and does not include more detailed data, i.e. amount of erosion. The last recorded event that caused coastal erosion was in July 2005.

July 9, 2005 Hurricane Dennis: Moderate beach erosion was reported on Cedar Key.

September 13-14, 2001 Tropical Storm Gabrielle: Gabrielle caused over \$20 million statewide in property damage due to wind damage, storm surge, minor beach erosion and flooding.

August 23, 1995 Tropical Storm Jerry: Beach erosion from Jerry was minor and occurred from Englewood Beach in Pinellas County to Cedar Key in Levy County.

d. Probability

Because coastal erosion in Levy County is related to the occurrence of tropical cyclones, the probability of coastal erosion occurring in the future is High. However, because of Levy's low intensity coastline, it is assumed that the rate of erosion per year will remain very low.

6. Drought/Extreme Heat**a. Location**

All of Levy County (including all municipalities) is vulnerable to drought/extreme heat.

b. Extent

Because no single definition of drought works for all circumstances, we rely on drought indices to detect and measure droughts. The Drought Monitor is a synthesis of multiple indices and impacts that represents a consensus of federal and academic scientists.

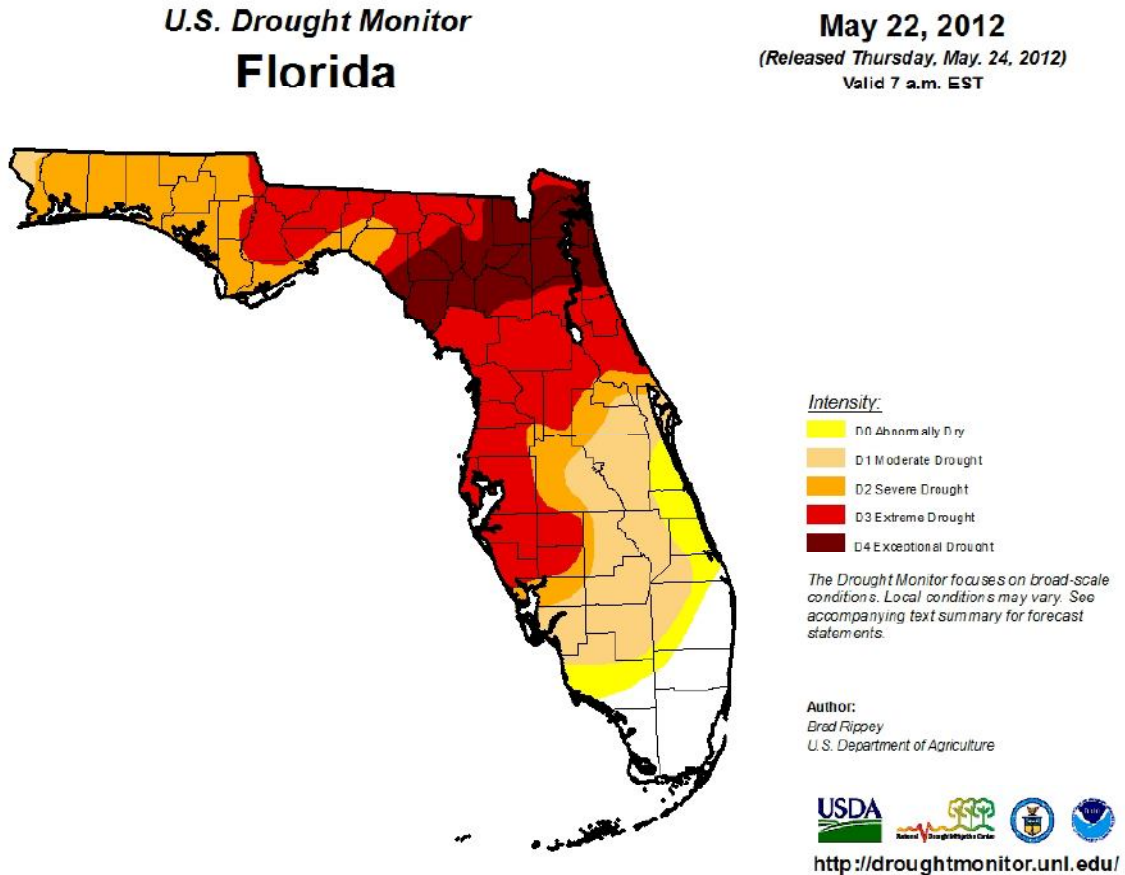
The Drought Monitor's drought intensity categories are based on five key indicators and numerous supplementary indicators (see Table VI-12). Because the ranges of the various indicators often don't coincide, the final drought category tends to be based on what the majority of the indicators show. Drought maps also reflect weighted indices according to how well they perform in various parts of the country and at different times of the year.

Table VI-12. Drought Severity Classification

		RANGES					
Category	Description	Possible Impacts	Palmer Drought Index	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Source: Drought Monitor

Figure VI-11. US Drought Monitor, Florida, Week of May 22, 2012



Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDA/NASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index (SWSI). Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

The highest recorded temperature in Levy County was 105°F in June 1989. According to data from the Drought Monitor, the worst level drought Levy County has experienced was a D4 (Exceptional Drought) in December 2000. Therefore, it is anticipated that the extent of extreme heat is 105°F and the extent of drought is the Drought Monitor's D4 Classification.

c. Historical Occurrences

According to the Southeast Regional Climate Center (SERCC), there are 2 stations in Levy County that keep historical climate data (from 1956 to 2015): Cedar Key 1 WSW and Usher Tower in Chiefland. Data

from these 2 stations indicate that the highest temperature recorded was 105°F on June 3rd, 1989. From January to November 2015, Levy County experienced the greatest number of days (113 days) than any year since 1956 in which the recorded daily maximum temperature was above 90°F. Also, July 2015 had the greatest number of days (30 in which the daily maximum temperature was above 90°F.

Below is a Table listing historical occurrences of the greatest severity of drought in each month from 2011 to 2015 in Levy County based on monthly data from the Drought Monitor. Refer to Table VI-12 for Classification definitions.

Levy County experienced some of the worst drought conditions from 2010 to 2015 weekly, in February 2012 to June 2012. During this period, most or all of the county experienced Extreme Drought conditions every week.

Table VI-13. Historical Occurrences of Drought

	Januar y	Februar y	Marc h	April	May	June	July	Augu st	Septemb er	Octob er	Novemb er	Decemb er
2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	D0	D0-D1	D2-D3
2011	D2-D3	D2	D2	D1	D1	D1	D0-D1	D0	D0	D0	D0	D0
2012	D1-D3	D2-D3	D2-D3	D2-D3	D2-D3	D2-D3	N/A	N/A	N/A	N/A	N/A	N/A
2013	D0	D0-D1	D1	D1-D2	D1-D2	D0-D1	N/A	N/A	N/A	N/A	N/A	N/A
2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	D0

Source: Drought Monitor Monthly Animations by Year

d. Probability

Every year, Levy County experiences multiple days of extreme heat, in which temperatures exceed 90°F, therefore the probability of extreme heat affecting Levy County is Very High.

The data from Table VI-13 shows that from 2010 to 2015 there were only 2 years in which Levy County did not experience drought conditions (Drought Monitor Classification D1 through D4) during any month. The return period for drought conditions (using the Drought Monitor Index and data) in Levy County is 1.5 years, therefore the probability of drought conditions occurring in the County is Very High.

7. Tornadoes

a. Location

All of Levy County (including all municipalities) is vulnerable to tornadoes. Because of the unpredictable pattern of tornadoes, and because the entire state, including Levy County, has a relatively high reoccurrence frequency, the entire County is vulnerable to tornados (see Figure VI-11). The northern portion of the state's Gulf Coast (between Tampa and Tallahassee) along with the Panhandle region have generally experienced more tornadoes than other areas of the state, primarily due to the high frequency of thunderstorms making their way east through the Gulf of Mexico.

b. Extent

The Enhanced F-scale is a set of wind estimates (not measurements) based on damage. It uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage (listed at www.spc.noaa.gov/faq/tornado/efscale.html.) These estimates vary with height and exposure. Important: The 3 second gust is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, "one minute mile" speed.

Enhanced Fujita-Pearson Tornado Intensity Scale**EF0 Gale Tornado**

65-85 mph

Some damage to chimneys. Tree branches broken off. Shallow rooted trees uprooted.

EF1 Moderate Tornado

86-110 mph

Peels surface off roofs. Mobile homes overturned. Moving autos pushed off roads.

EF2 Significant Tornado

111-135 mph

Considerable damage. Roofs torn off frame houses. Large trees snapped or uprooted. Light-object missiles generated.

EF3 Severe Tornado

136-165 mph

Severe damage. Roofs and some walls torn off well constructed homes. Trains overturned. Most trees in forests uprooted. Heavy cars lifted off ground.

EF4 Devastating Tornado

166-200 mph

Well-constructed houses leveled. Structures with weak foundations blown off some distance. Cars thrown and large missiles generated.

EF5 Incredible Tornado

Over 200 mph

Strong frame houses lifted off foundations and disintegrated. Automobile-sized missiles fly through the air in excess of 100 mph. Trees debarked.

In general, tornadoes associated with tropical cyclones are less intense than those that occur in the Great Plains. Although the highest intensity tornado to hit the County was an F2 in 1982, an F4 tornado has been recorded within 100 miles of Levy County. For this reason, it is reasonable to expect a similar strength storm could strike any part of the county.

c. Historical Occurrences

According to the National Climatic Data Center, the County experienced 23 tornado events from 1968 through 2012. There has not been a recorded tornado in Levy County since 2012. These events caused 3 deaths, 11 injured, and a total of approximately \$56.3 million in property damage (NCDC, 2015). Table VI-14 shows the number of tornadoes documented between 1968 and 2015 for Levy County. The estimated dollar amount of damages is also included. Damage amounts can be a function of storm intensity or the density of the development pattern.

Figure VI-12. Historical Occurrences of Tornadoes in Levy County

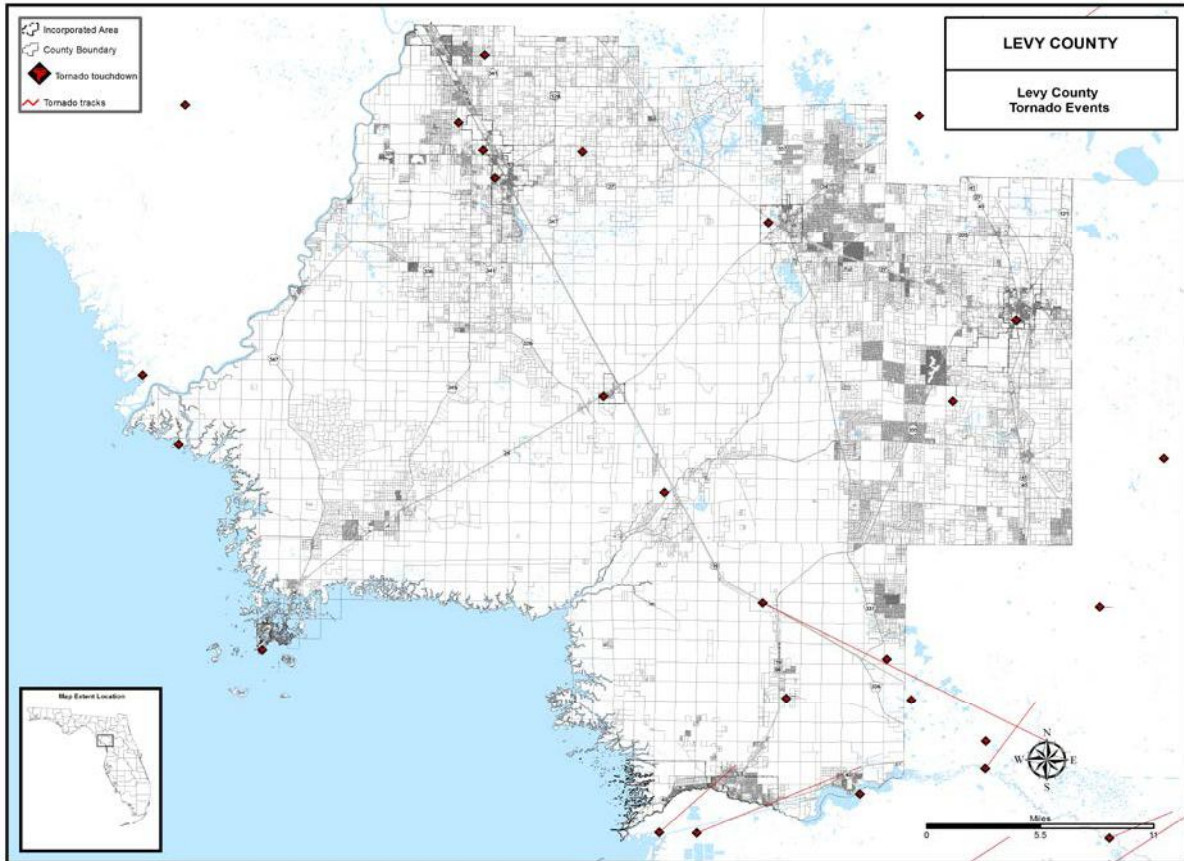


Table VI-14. Historical Occurrences of Tornadoes in Levy County

Date	Event #	Time	Dead	Injured	EF scale	Property Damage	Path Width feet	Path Length miles
March 12, 1968	006	1130	0	0	EF1	0K	10	0
May 12, 1974	018	0630	0	0	EF1	25K	50	8
May 14, 1976	023	1415	0	0	EF0	25K	10	0
April 08, 1982	012	1800	0	0	EF1	25K	20	1
June 11, 1982	026	1530	0	0	EF2	250K	60	13
August 25, 1986	040	1347	0	0	EF0	0K	30	1
June 16, 1989	046	0920	0	0	EF1	25K	50	1
October 03, 1992	053	1640	0	0	EF0	25K	10	0
March 12, 1993	010	2238	3	10	EF2	50.0M	80	1
October 30, 1993	072	0251	0	1	EF1	500K	60	1
October 30, 1993	074	0920	0	0	EF0	1K	10	0
October 30, 1993	077	0955	0	0	EF1	5.0M	60	1
October 30, 1993	078	1016	0	0	EF0	0	10	0
October 30, 1994	069	1135	0	0	EF0	5K	10	0

Date	Event #	Time	Dead	Injured	EF scale	Property Damage	Path Width feet	Path Length miles
April 23, 1997	16	07:10 AM	0	0	EF0	20K	10	1
July 18, 2000	38	12:30 PM	0	0	EF0	0	0	0
October 15, 2002	35	01:03 PM	0	0	EF1	450K	100	5
July 11, 2004	14	04:44 PM	0	0	EF1	25K	50	1
August 14, 2004	40	04:41 PM	0	0	EF0	0	30	1
September 15, 2004	81	09:17 PM	0	0	EF0	0	30	0
September 15, 2004	82	09:22 PM	0	0	EF0	0	30	0
July 24, 2007	36	05:33 AM	0	0	EF0	0K	30	0.2
May 29, 2012		13:13 PM	0	0	EF0	0K	600	2.84

Source: Tornado History Project

d. Probability

Levy County typically has experienced tornadoes as an offshoot of large frontal systems or tropical cyclones. Florida has averaged approximately 75 tornadoes per year since 1950, with an average of 3 deaths and 60 injured per year. The County has experienced approximately 23 tornadoes from 1968 to 2015, and a return rate of approximately 2.04 years. Also, because tornadoes in Florida are usually associated with tropical cyclones and severe thunderstorms (which have high probabilities of impacting the County), the probability of tornadoes affecting the County in the future is Very High.

8. Severe Winter Storms/Freeze

a. Location

All of Levy County (including all municipalities) is vulnerable to severe winter storms/freeze. As a weather event, the location of winter storm conditions could develop anywhere within the central Florida climate including all jurisdictions within Levy County.

b. Extent

The lowest temperature recorded in the County was 9 degrees Fahrenheit in January 1985. The worst freeze in Levy County was on January 10, 2010, when temperatures dropped into the lower 20s with durations of below freezing for up to 14 hours. **The extent of a severe winter storms/freeze event is 21 degrees Fahrenheit for up to 14 hours.**

c. Historical Occurrences

Historical climate data (from 1956 to 2015) from Cedar Key 1 WSW and Usher Tower in Chiefland stations indicate that the lowest temperature recorded was 9 degrees Fahrenheit on January 22nd, 1985.

The Table below lists all historic occurrences of freeze in Levy County from 2001 to 2015. Despite the extensive crop damage, there were no reported deaths or injuries. According to NOAA's NCDC, the last record of freezing temperatures in Levy County was in November 2013.

Table VI-15. Historical Occurrences of Freeze in Levy County

Date	Time	Type	Property Damage	Crop Damage
1/1/2001	12:00 AM	Freeze	0	5.1M
1/2/2001	4:00 AM	Freeze	0	0
1/3/2001	12:00 AM	Freeze	0	0
1/4/2001	1:00 AM	Freeze	0	0
1/5/2001	12:00 AM	Freeze	0	6.9M
1/7/2001	12:00 AM	Freeze	0	0
1/10/2001	12:00 AM	Freeze	0	4.0M
1/11/2001	1:00 AM	Freeze	0	0
1/21/2001	1:00 AM	Freeze	0	0
1/24/2001	5:30 AM	Freeze	0	0
1/26/2001	12:00 AM	Freeze	0	0
12/27/2001	4:00 AM	Freeze	0	0
3/1/2002	1:00 AM	Freeze	0	0
3/5/2002	3:00 AM	Freeze	0	0
11/24/2002	1:00 AM	Extreme Cold	0	0
11/29/2002	1:00 AM	Extreme Cold	0	0
11/30/2002	2:00 AM	Extreme Cold	0	0
12/1/2002	10:00 PM	Extreme Cold	0	0
12/16/2002	3:00 AM	Extreme Cold	0	0
12/29/2002	3:00 AM	Extreme Cold	0	0
1/19/2003	2:00 AM	Extreme Cold	0	0
1/23/2003	10:00 PM	Extreme Windchill	0	8.5M
1/24/2003	9:00 PM	Extreme Cold	0	0
1/6/2006	3:00 AM	Extreme Cold/wind Chill	0	0
12/9/2006	1:00 AM	Extreme Cold/wind Chill	0K	0K
1/29/2007	3:00 AM	Cold/wind Chill	0K	0K
2/17/2007	1:00 AM	Extreme Cold/wind Chill	0K	0K
2/19/2007	4:00 AM	Extreme Cold/wind Chill	0K	0K
10/29/2008	4:00 AM	Cold/wind Chill	0K	0K
11/19/2008	3:00	Freeze	0K	0K
30.4211/20/2008	1:00	Freeze	0K	0K
12/3/2008	3:00	Freeze	0K	0K
1/20/2009	21:00	Freeze	0K	0K
1/21/2009	20:45	Freeze	0K	0K
1/23/2009	0:00	Freeze	0K	0K
2/4/2009	21:30	Freeze	0K	0K
2/5/2009	21:00	Freeze	0K	0K
2/21/2009	1:00	Freeze	0K	0K
1/10/2010	20:00	Freeze	0K	5.30M
2/26/2010	0:00	Freeze	0K	710.0K
12/14/2010	22:00	Freeze	0K	3.29M
1/3/2012	21:00	Freeze	0K	0K
1/4/2012	23:00	Freeze	0K	0K
1/14/2012	7:00	Freeze	0K	0K
1/14/2012	22:00	Freeze	0K	0K

Date	Time	Type	Property Damage	Crop Damage
1/16/2012	2:00	Freeze	0K	0K
1/30/2012	6:00	Freeze	0K	0K
2/12/2012	3:00	Freeze	0K	0K
2/12/2012	21:00	Freeze	0K	0K
12/22/2012	5:00	Freeze	0K	0K
12/23/2012	2:00	Freeze	0K	0K
2/18/2013	0:00	Freeze	0K	0K
3/4/2013	3:00	Freeze	0K	0K
3/27/2013	3:00	Freeze	0K	0K
3/28/2013	3:00	Freeze	0K	0K
11/28/2013	3:00	Freeze	0K	0K
			0K	33.75M

Source: NOAA National Climatic Data Center

The most notable severe winter storm hit the entire state of Florida on March 13, 1993 and has become known as the “Storm of the Century” or the “No-Name Storm.” The storm came across the Gulf of Mexico as a normal late winter cold front, but gathered strength just before landfall. Hitting Levy County in the early morning hours with gale force winds, rain, hail, snow, flooding, power outages and widespread freezing conditions, the storm marched across the State and had strong effects as far south as Cuba. These hazards are dealt with individually each winter, but their combined effects proved too much for recovery resources across the state. Each individual emergency situation was made worse by the lack of warning from the weather forecasters. The storm was a fluke and responders were not prepared. The best mitigation for severe winter storms and freezing conditions is accurate weather forecasting.

The following are descriptions of significant freeze events in Levy County that caused property or crop damage. Because freezes may be widespread, these descriptions may include details about other counties, as well as Levy.

January 1, 2001: The second and coldest night of a two-night freeze in south Florida saw minimum air temperatures ranging from 25 to 30 degrees over interior sections of the peninsula. In the metropolitan areas of Miami-Dade, Broward and Palm Beach counties temperatures were in the middle 30s over the western suburbs. An estimated \$6 million in crop damage included losses to corn and newly planted sugar cane in Palm Beach County, and to certain vegetables in Hendry and eastern Collier counties. An additional \$5.1 million in crop damage was caused by widespread freezing temperatures across most of In west central and southwest Florida. Low temperatures in Levy County ranged from the low to middle 20s with total durations below freezing for up thirteen hours. In Citrus, Sumter, Hernando and Pasco counties, low temperatures ranged from the middle to upper 20s and remained below freezing for durations of nine to thirteen hours. In Polk, Hillsborough, Highlands, Hardee and DeSoto counties, low temperatures ranged from the middle to upper 20s and remained below freezing for durations of six to nine hours. Isolated pockets of low temperatures in the upper teens were observed in extreme rural southern Highlands County. In Hillsborough County, the freeze caused nearly four million dollars in damage to the tropical fish crop. In Sarasota, Manatee, Charlotte and Lee counties, low temperatures dropped into the upper 20s and lower 30s and remained below freezing for durations of five to seven hours. In Lee County, the freeze caused nearly three million dollars in damage to the squash and cucumber crop. In Charlotte County, the freeze caused at least 100 thousand dollars damage to the pepper crop.

January 5, 2001: A freeze occurred throughout the interior sections of south Florida, causing an estimated \$78 million in damage to certain crops. Hardest hit were certain vegetable crops with 75% losses in Hendry and east Collier counties and 30% losses in the farming areas of south Miami-Dade County. Other crops that were damaged included newly planted sugar cane, ornamentals, and tropical fruits. A heavy frost occurred in the western suburbs of Miami-Dade, Broward and Palm Beach metropolitan areas. Several daily minimum temperature records were broken. Selected minimum temperatures included 27 degrees at Belle Glade, 29 degrees in the Homestead agricultural area, 31 degrees in Naples, 39 degrees at Miami International Airport and 43 degrees in Miami Beach. Widespread freezing temperatures were also observed across most of west central and southwest Florida during the pre-dawn and mid-morning hours, causing \$6.9 million in crop damage.

In Levy, Sumter, Citrus, Hernando and Pasco counties, low temperatures dropped into the upper teens and lower 20s with durations below freezing for up to nine hours. In Hillsborough, Polk, Hardee, DeSoto, and Highlands counties, low temperatures ranged from the low to middle 20s with durations below freezing for up to eight hours. The freeze caused nearly four million dollars' worth of damage to the tropical fish crop in Hillsborough County. In Pinellas, Manatee, Sarasota, Charlotte and Lee counties, low temperatures ranged from the middle 20s inland to the lower 30s along the immediate coast with durations below freezing for up to six hours. In Lee County, the freeze caused nearly 2.6 million dollars' worth of damage to the squash and cucumber crops. In Charlotte County, the freeze caused nearly 250 thousand dollars in damage to the pepper crop.

January 10, 2001: Freezing temperatures were observed over most of west central and parts of southwest Florida during the pre-dawn through mid-morning hours. In Levy, Sumter and Citrus counties, low temperatures dropped into the middle teens to the lower 20s with durations below freezing for up to nine hours. In mainly inland Hernando, Pasco, Hillsborough, Manatee and western Polk counties, low temperatures dropped into lower to middle 20s with durations below freezing for up to seven hours. In Hillsborough County, the freeze caused nearly four million dollars' worth of damage to the tropical fish crop. In western Hardee, western DeSoto, eastern Sarasota, and northern Charlotte counties, low temperatures dropped into the upper 20s to lower 30s for durations below freezing of up to three hours.

January 23-25, 2003: A strong cold front ushered in cold temperatures and gusty northwest winds into the Florida peninsula, which created some of the coldest weather in several years. Wind chill temperatures ranged from 10 to 15 in Bronson, around 20 in Tampa and Lakeland, to 20 to 25 degrees in Fort Myers. Overnight low temperatures ranged from near 20 in the inland counties north to the upper 20s in the inland counties south, to the lower 30s along the coast near Fort Myers. A hard freeze (temperatures of 27 degrees or less for three or more hours) reached south into northeast Hillsborough and northern Polk counties. Citrus crops fared well because the freeze did not last long enough but strawberries took a \$4.5 million loss and tropical fish a \$4 million loss. Early morning low temperatures on January 24th dropped well below freezing across east central Florida. Temperatures ranged from 24 degrees in Leesburg and 25 in Daytona Beach to 29 in Melbourne and 27 in Orlando. To the south, Ft. Pierce and Vero Beach reported lows near 30. Later that morning, winds shifted off the ocean producing a few snowflakes in the coastal communities from Daytona Beach to Ft. Pierce. On January 25, arctic high pressure settled over the southeastern United States which maintained the clear and cold weather across the Florida peninsula. Overnight lows of 19 to 24 occurred from Bronson to Brooksville with temperatures in the 30s farther south. Northeast winds of 10 to 15 mph produced wind chills down to 25

degrees from Tampa to Lakeland to Fort Myers. Citrus crops fared well during the freeze but strawberries took an estimated \$4.5 million dollar loss and tropical fish an estimated \$4 million dollar loss.

January 10-11, 2010: Levy county felt freezing temperatures for 12 to 14 hours across the county, with temperatures falling below 28 degrees for 8 to 10 hours. The Usher Tower cooperative station near Chiefland recorded the coldest minimum temperature across the county of 15 degrees, which broke the previous record low of 21 degrees set in 1982 and 1959. The county has 44,870 acres of harvested farmland, which translates into approximately \$5.30 million in damages to crops.

February 26, 2010: Levy County felt sub-freezing temperatures for around 8 hours across much of the county. The Usher Tower cooperative station near Chiefland experienced the coldest temperature across the county of 23 degrees. Levy County has 44,870 acres of harvested farmland, which translates into approximately \$0.71 million in damages to crops.

December 14-15, 2010: Levy County recorded sub-freezing temperatures for around 11 hours across much of the county. The Usher Tower cooperative station near Chiefland and the FAWN station in Bronson both experienced the coldest temperature across the county of 21 degrees. This was a new record low for Usher Tower. The county has 44,870 acres of harvested farmland, which translates into approximately \$3.29 million in damages to crops.

d. Probability

Levy County has a history of freezes. Since 1950, there have been at least 99 recorded freezes. The return period for freezes in Levy County is approximately 0.66 years, therefore the probability of a freeze occurrence in the County is Very High.

9. Dam Failure

a. Location

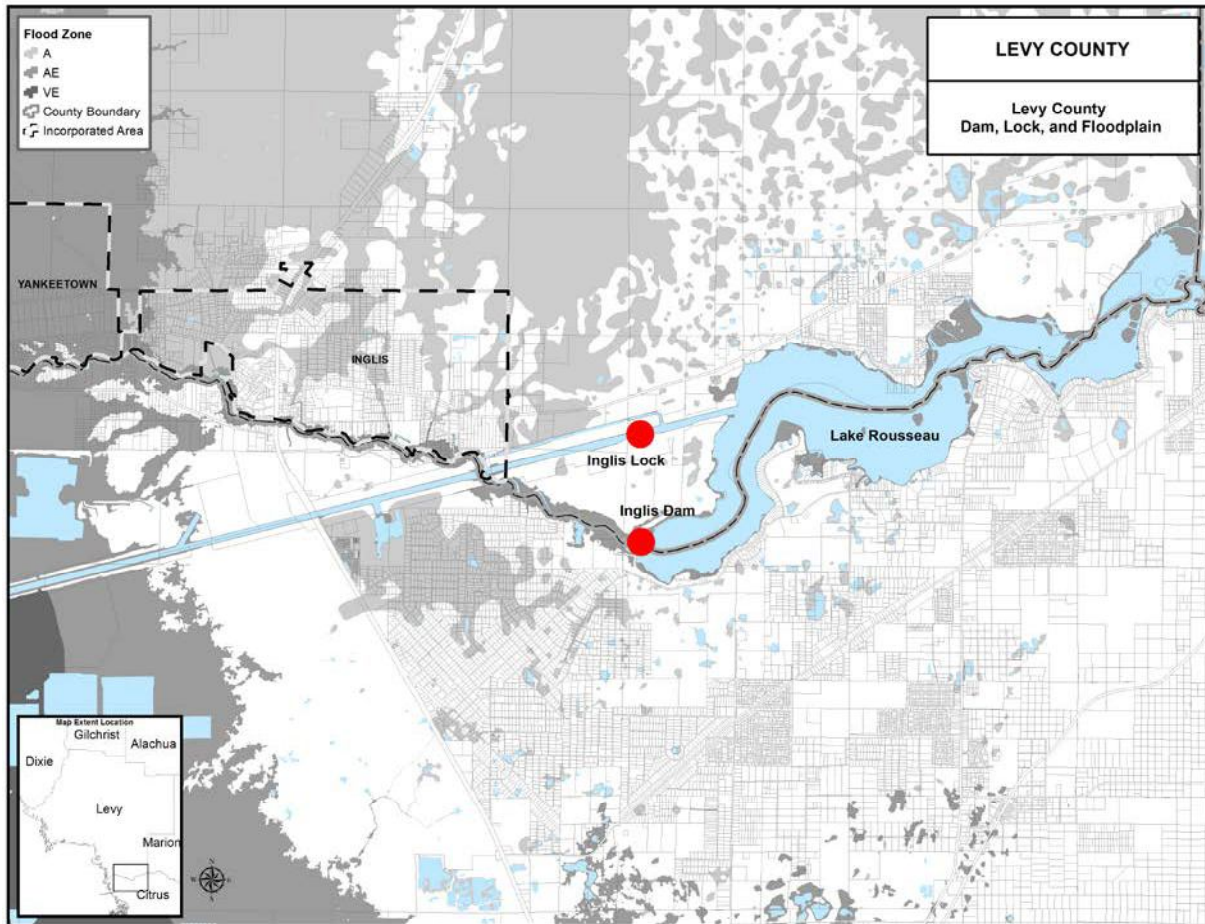
Dam failure can also be the cause of flood damages. There are only 2 dams/spillways located within or in close proximity to the County (see Table VI-16 below and Figure VI-12). The only dam posing a potential threat to Levy County is the Inglis Bypass Spillway Dam which confines the Withlacoochee River at Lake Rousseau. Dam failure at the Spillway Dam is expected to cause extensive property damage to riverfront and low-lying properties in Inglis and Yankeetown. The USGS Inventory of Dams considers both of the dams to be low hazards.

Table VI-16. Dams and Locks in the Levy County Area

Dam Name	NDID	County	River	Hazard
Inglis Spillway & Dam	FL00142	Citrus	Withlacoochee	L
Inglis Spillway & Dam	FL00141	Levy/Citrus	Withlacoochee	L

Source: USGS Dam Inventory

Figure VI-13. Levy County Dam, Lock, and Floodplain



The dam hazard is a term indicating the potential hazard to the downstream area resulting from failure or mis-operation of the dam or facilities. According to the USGS National Inventory of Dams, there are 149 major dams in the state of Florida which have been identified by a hazard risk of low, significant and high.

Low hazard: A dam where failure or mis-operation results in no probable loss of human life and low economic and/or environmental loss. Losses are principally limited to the owner's property.

Significant hazard: A dam where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities or impact other concerns. These dams are often located in predominantly rural or agricultural area but could be located in areas with population and significant infrastructure.

High: A dam where failure or mis-operation will probably cause loss of human life. (Statewide Hazard Mitigation Plan, 2009)

b. Extent

The Inglis Main Dam and Bypass Channel Dam Action Plan, prepared by SWFWMD (Dam Operator) and FDEP (Dam Owner) includes an examination of conditions resulting from dam failure. The reservoir capacity is 33,600 acre feet. In the event of Main Dam failure, it is estimated that approximately 100 properties (all in Inglis) would be inundated at 1 foot above finished floor elevation in about 4.25 to 6 hours.

c. Historical Occurrences

There are no historical occurrences of dam failure.

d. Probability

Because there are no historical occurrences of dam failure, the probability of occurrence in Levy County is Very Low.

VII. VULNERABILITY ASSESSMENT

A. DEFINING VULNERABILITY ASSESSMENT

A vulnerability assessment is the process of estimating disaster potential in terms of what is susceptible to damage. Typical measures include, the number of people living or working in a hazard-prone area; the amount and value of property; and the amount, value and emergency necessity of public buildings and facilities.

The objectives of the vulnerability assessment are to show how a population, facility, system or environmental feature is actually vulnerable to a hazard or even a combination of hazards. The assessment also allows one to gain an understanding of the types of impacts caused by specific hazards which actually result in physical damage or operational failure.

This Section evaluates the following: the number of people at risk; the value of property at risk; the number and function of exposed critical facilities; the danger of secondary hazards (hazards caused by the onset of the first event), including the danger from hazardous facilities located in the risk area; the danger of exposure to hazardous materials in the wake of the disaster; the potential demand for shelter; evacuation needs and capabilities; and potential environmental impacts. Vulnerability assessments need to consider growth trends and any existing development management policies that will affect growth. As density in an area increases, so does vulnerability.

This vulnerability assessment is divided into the following sub-sections:

B. Vulnerable Population Assessment

Total Population and Projections

Population Densities

Population by Age Group

Institutional Population

Transient Population

Special Needs Population

C. Vulnerability Assessment by Hazard

Overview

Identifying Structures

Loss (in the "Flood" Sub-section only)

Estimating Potential Loss

Analyzing Development Trends

Multijurisdictional Risk Assessment

B. VULNERABLE POPULATION ASSESSMENT

The major objective of the Local Mitigation Strategy is to protect people from the health and safety impacts of various disasters and to make communities safer. This objective is emphasized in the Strategy's community guiding principal, protection of health, welfare and safety of the people. This part of the Vulnerability Assessment attempts to identify the vulnerable population in vulnerable areas. Analysis will include consideration of the special populations such as those living in nursing homes, other assisted living facilities and in correctional institutions.

The identification of these characteristics of the population will be influential in future decision making. The objective of the vulnerability assessment is to show how a population, facilities and systems or environmental features are actually vulnerable to hazards. Levy County continues to maintain an

inventory of facilities that cater to this group as well as those registered for planning purposes regarding special population. This inventory is constantly updated and maintained.

1. Total Population and Projections

The most up-to-date population estimates from the Bureau of Economic and Business Research are shown in the table below. Levy County total permanent resident population as of April 1, 2015 is 40,448.

Table VII-1. Population Estimates, April 1, 2015

City/Town	Population Estimates
Bronson	1,187
Cedar Key	696
Chiefland	2,153
Fanning Springs (Inside Levy County)	455
Inglis	1,301
Otter Creek	120
Williston	2,848
Yankeetown	489
Unincorporated	31,199
TOTAL	40,448

Source: Bureau of Economic and Business Research, University of Florida, Florida Estimates of Population, April 1 2015.

Table VII -2 shows the population of the Levy County cities and towns and is projected to the year 2040. The population growth trend indicates that all cities and towns will experience limited growth due to the rural traits of Levy County, including environmental characteristics and limited transportation access.

Currently, of all the Levy County cities and towns, the Town of Otter Creek is the smallest, and the Town will remain the smallest through the year 2040 with a population of 144 residents. Cedar Key, Inglis and Yankeetown are the coastal communities in Levy County that are located in the surge zone areas, although Otter Creek and Fanning Springs also have limited surge areas. Due to their coastal locations, this report has identified Cedar Key, Inglis and Yankeetown as the most vulnerable areas.

Table VII-2. Population Projections, 2020-2040

City/ Town	2020	2025	2030	2035	2040
Bronson	1,226	1,290	1,349	1,403	1,452
Cedar Key	665	642	619	599	578
Chiefland	2,241	2,314	2,371	2,415	2,454
Fanning Spring	456	453	447	441	431
Inglis	1,240	1,189	1,138	1,094	1,048
Otter Creek	132	137	140	144	144
Williston	3,031	3,215	3,382	3,523	3,656
Yankeetown	455	424	389	359	332
Levy Un-incorporated	33,565	35,538	37,264	38,726	40,102
County Total	43,011	45,202	47,099	48,704	50,197

Source: Shimberg Affordable Housing Center University of Florida (<http://www.flhousingdata.shimberg.ufl.edu/>)

The Shimberg Affordable Housing Center, located at the University of Florida appears to have been extremely conservative in their analysis. The benefit of mitigating hazards becomes blatantly apparent with an increase of population.

2. Population Density

Levy County, whose land area is 1,118 square miles, is predominantly a rural county with a climate of moderate winter temperatures. The mild temperature of the County contributes to in-migration of retirement age people. The County experiences moderate rates of growth. With a population density of 36 persons/square mile, the County retains a rural nature. According to population density, Levy County is ranked 55 among the 67 counties in the state of Florida. The socio-economic characteristics of a region influence its residents significantly in the accessibility to health care needs.

3. Population by Age Group

Providing data on the health and age characteristics of Levy County will allow a clear picture of the emergency management issues related to the sick or elderly population. Counties with high populations of elderly person need to put specific protocols in place in the event of a disaster. These people will many times not have the income or the ability to safely evacuate before a disaster. Having a system for notification and evacuation is important to health dependent individuals.

Table VII-4 indicates that of the total Levy County 2014 population of 40,474, approximately 22.4 percent belong to the 0-19 years age Category. The 50-64 years age group consists of 23.7 percent of the total population; the 35-49 group consists of 17.0 percent; the 20-34 group consists of 15.9 percent; and the 65-74 group consists of 12.5 percent of the total population. Finally the 75 and older age group consists of 8.6 percent. We can assume that people over the age of 80 years, due to physical limitations, will need special care and arrangements during disasters.

Table VII-5 depicts the elderly population, those who are 65 years or older, of the cities and towns of Levy County. An analysis of the table indicates that the elderly population of the Levy County cities and towns will grow steadily, and Town of Otter Creek will have the smallest number of elderly which is indicative of its small resident population.

4. Institutional Population

Table VII-3 indicates the number of persons living in various group quarters, 2010. It is also safe to assume that the population in group quarters will not increase significantly as the facilities such as nursing homes, hospitals and prisons have fixed number of beds and cell space. Table VII-3 indicates that of the total Levy County population, 1.6 percent lived in various institutions or group quarters.

Table VII-3. Institutionalized Population - Levy County

Type of Institution	Number of Persons
Correctional Institutions	424
Nursing Homes	116
Other Institutions	16
Total - Institutional Population	635
Total - Levy County Population	40,801
Percentage in Group Quarters (of the total County population)	1.6%

Source: US Census, 2010

If a disaster were to impact a prison population, a considerable amount of manpower and resources would be needed to respond. This would also reduce the County's ability to respond in other areas. Levy County needs to make sure that contingency plans and mutual aid agreements are in place to provide the manpower and facilities

needed for mass transportation of prisoners if warranted.

Table VII-4. Population by Age Group, 2014

Area	Total Population	Age 0-19	Age 0-19 Percent	Age 20-34	Age 20-34 Percent	Age 35-49	Age 35-49 Percent	Age 50-64	Age 50-64 Percent	Age 65-74	Age 65-74 Percent	Age 75+	Age 75+ Percent
Bronson	1,143	336	29.4%	193	16.9%	210	18.4%	232	20.3%	103	9.0%	69	6.0%
Cedar Key	691	83	12.0%	51	7.4%	93	13.5%	208	30.1%	138	20.0%	118	17.1%
Chiefland	2,154	672	31.2%	422	19.6%	382	17.7%	345	16.0%	176	8.2%	157	7.3%
Fanning Springs	456	89	19.5%	76	16.7%	55	12.1%	107	23.5%	79	17.3%	50	11.0%
Inglis	1,291	201	15.6%	151	11.7%	190	14.7%	388	30.1%	237	18.4%	124	9.6%
Otter Creek	129	27	20.9%	23	17.8%	23	17.8%	31	24.0%	14	10.9%	11	8.5%
Williston	2,815	739	26.3%	585	20.8%	446	15.8%	495	17.6%	269	9.6%	281	10.0%
Yankeetown	494	72	14.6%	55	11.1%	52	10.5%	135	27.3%	111	22.5%	69	14.0%
Levy Un-Incorporated	31,301	6,829	21.8%	4,875	15.6%	5,421	17.3%	7,635	24.4%	3,935	12.6%	2,606	8.3%
TOTAL	40,474	9,048	22.4%	6,431	15.9%	6,872	17.0%	9,576	23.7%	5,062	12.5%	3,485	8.6%

Source: Shimberg Affordable Housing Center University of Florida (<http://www.flhousingdata.shimberg.ufl>)

Table VII-5. Elderly Population Projections, 2014-2040

City/ Town	2014	2015	2020	2025	2030	2035	2040
Bronson	172	182	238	273	319	339	363
Cedar Key	256	263	293	307	312	294	271
Chiefland	333	341	387	407	435	433	445
Fanning Springs	129	133	165	185	207	200	196
Inglis	361	367	397	438	489	489	484
Otter Creek	25	27	26	24	21	18	14
Williston	550	565	662	730	815	814	825
Yankeetown	180	181	190	170	151	122	95
Levy Un-Incorporated	6,541	6,733	8,012	9,242	10,775	11,184	11,725
TOTAL	8,547	8,792	10,370	11,776	13,524	13,893	14,418

Source: Shimberg Affordable Housing Center University of Florida (<http://www.flhousingdata.shimberg.ufl>)

5. Transient Population

The migrant and seasonal workers in Levy County tend to work during the months of June and July, which are the first two months of the hurricane season. It is safe to assume that these migrant and seasonal workers live in temporary or short term housing and/or group quarters. The short term housing generally tends to be manufactured housing or RVs which are very susceptible to high winds and thus are not very safe to be occupied during severe storms and hurricanes. Communities should take action now to prevent possible threats to lives and damage to property during natural disasters. The 2009 Comprehensive Emergency Management Plan lists this population at 750 persons.

6. Special Needs Population

The Levy County Comprehensive Emergency Management Plan 2008 lists 170 special needs people in the County. The County is directed to provide special needs shelter space for the special needs population. The official Florida Division of Emergency Management definition of special needs people are those who are "electrically dependent". This would refer to those who need an electric air pump or condenser to assist breathing or other electric device. People who are on kidney dialysis are considered to have acute medical needs and should evacuate to a medical facility. In the event of a real evacuation the special needs shelters will be announced on the radio and most people under any type of medical care will consider themselves to have "special needs." Based on the trends toward an older population, increased medical capability is needed.

This section of Chapter VII analyzes the populations that are at risk and are vulnerable to natural-hazards. In this study, the term *special population* is defined as those persons who are disabled, those living in long term care facilities, and those living in group quarters. The special population is assumed to be special needs persons who live in long-term care facilities such as health care facilities - hospitals, clinics, nursing homes, Assisted Living Facilities (ALFs), shelters, and other group quarters that generate additional concern in an emergency situation. An analysis of these segments of the community's population enables local governments to better understand how they can develop programs to save lives of those special needs persons, protect property, and ensure their safety.

Nursing Homes

Some nursing homes may be able to double as medical facilities in storm times, but the quantity of equipment in a nursing home will be much lower than a hospital. Many of the same protocols as the above medical facilities should be included in a nursing home plan. The major difference is the lack of responsibility to the general public. The nursing homes will be most concerned with their current residents and any additional medical supplies they can provide to the hospitals. Included below is a table describing the elder and nursing home population in Levy County. In 2014, there were 120 community nursing home beds (Table VII-6).

Table VII-6. Elder and Nursing Home Population, 2014

Adult Day Care Facilities	0
Adult Family Care Homes	2
Adult Family Care Homes Beds	7
Nursing Homes with Beds	1
Nursing Home Beds	120
Home Health Agencies	1
Homemaker & Companion Service Companies	2
Ambulatory Surgical Centers	0

Source: 2014 Florida County Profiles, Florida Department of Elder Affairs

Health Care Agencies

The following health care agencies will provide medical care in an emergency situation:

As the primary agency, the Levy County Health Department will give coordination and direction to ESF 8 activities from the EOC. The Levy County Environmental Health Unit will coordinate and direct environmental health activities.

Levy County EMS will continue to provide services to the general public and disaster relief workers. Meridian Behavioral Health Care, Inc. will perform crisis counseling activities, to include Critical Incident Stress Debriefing (CISD) of emergency response workers.

The American Red Cross - Coast to Coast Chapter will assist in the coordination of the nursing and mental health staff providing assistance to disaster victims as a support agency for mass care (ESF 6).

The Nature Coast Regional Hospital, located in Williston, will receive and treat victims of disaster within its abilities. This is the only full-scale hospital in Levy County.

Medical facilities will be one of the most difficult of all the facilities to evacuate. Presumably persons who reside in hospitals are not capable of evacuating without assistance. The assistance may range anywhere from wheelchairs to oxygen and IVs. Therefore, all medical facilities need to have their own protocols in case they are called upon to evacuate. There is only one hospital facility in Levy County - Nature Coast Regional Hospital. The medical facility is located in Williston and would experience a situation related to other inland county hospitals. The facility would be under duress from the overload of patients coming from the areas closer to the coast and from patients needing immediate care from traveling accidents. All of the medical facilities in the County may be used in a host capacity if a hurricane threatens the Tampa Bay Region, so having a plan is imperative.

C. VULNERABILITY ASSESSMENT BY HAZARD

In the overviews of each hazard below, the types of structures and infrastructure affected by each respective hazard and their potential impacts are generally described. In the Identifying Structures sections, Critical Facilities and major roads located in vulnerable areas are listed. In order to identify all other vulnerable structures and populations, and estimate potential losses, data from the Levy County Property Appraiser for 2015 was obtained and analyzed. In estimating potential losses, factors that should be considered include replacement values of structures and contents, percent damage, and structure use and function loss.

In this Plan, current (2015) data from the Levy County Property Appraiser's Office was used to estimate potential losses. Also, current population data from the US Census Bureau American Community Survey was analyzed (5-year estimates for 2013 by Block Group).

From the 2015 Levy County Property Appraiser dataset, features, such as the year structures were built, number of buildings or residential units, use category (corresponding with the Department of Revenue categories and more broadly aggregated), building values, and just values were studied. The Table below lists the number of buildings, parcels, and just values per use category. The "Vacant" category includes Vacant Residential, Vacant Commercial, and Vacant Industrial. Using this current parcel data and the location of vulnerable areas presented in the Hazards Profiles from the previous section, vulnerable structures are identified and potential losses are calculated.

Table VII-7. Structures and Values by Use Category in Unincorporated Levy County

Use Category	Parcels	Bldgs or Units	Value \$1000s
Agriculture	6,615	2,467	1,142,515
Residential- Single-Family	4,720	4,871	468,885
Residential- Multi-Family	101	137	5,167
Residential- Mobile Homes	7,813	7,934	290,992
Commercial	146	243	26,417
Industrial	54	78	8,896
Institutional	135	119	29,175
Government	786	29	342,973
Misc. Infrastructure	109	6	7,963
Non-Ag Acreage	92	1	7,127
Vacant	19,318	77	168,637
TOTAL	39,889	15,878	2,498,748

Table VII-8. Structures and Values by Use Category in Incorporated Areas

Use Category	Bronson		Cedar Key		Chiefland		Fanning Springs		Inglis		Otter Creek		Williston		Yankeetown	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	14	3,672	14	2,796	13	9,860	2	2,671	1	1,320	8	2,091	15	3,085	0	1,494
Residential-Single-Family	238	14,278	423	73,119	500	27,153	61	4,841	382	37,304	39	1,392	774	48,602	427	51,747
Residential-Multi-Family	28	936	232	26,883	273	6,188	27	555	79	1,741	0	0	155	4,106	0	0
Residential-Mobile Homes	173	4,517	40	3,138	156	3,299	194	6,993	350	8,649	28	591	127	2,355	47	998
Commercial	64	8,728	95	15,048	240	79,666	54	4,359	81	10,747	8	589	151	27,351	26	4,860
Industrial	5	507	0	95	18	1,747	13	1,093	16	1,314	1	36	41	4,881	0	37
Institutional	21	2,482	13	3,666	50	12,197	4	1,011	13	2,195	16	2,817	47	16,675	6	1,243
Government	33	9,231	49	19,901	98	11,846	7	7,541	5	1,077	1	137	16	29,882	3	4,455
Misc. Infrastructure	1	235	2	532	9	1,522	0	7	2	253	0	25	1	577	0	0
Non-Ag Acreage	0	0	0	0	0	288	0	0	0	0	0	0	0	1,616	0	1,222
Vacant	7	3,908	0	16,202	3	9,283	0	7,013	1	9,695	0	539	9	5,705	0	7,561
TOTAL	565	48,494	862	161,380	1,173	163,049	341	36,084	874	74,295	101	8,217	1,222	144,835	509	73,617

A matrix was created that labels the potential vulnerability of each of the hazards as High (H), Medium (M), Low (L), or None (N) on the communities and county at large. The following table was developed based on local knowledge and historical occurrence of the jurisdiction's vulnerability of the identified natural and manmade hazards. Jurisdictional Vulnerability is further discussed within each hazard section.

Table VII-9. Jurisdictional Vulnerability

	Levy-Un incorporated	Bronson	Cedar Key	Chiefland	Fanning Springs	Inglis	Otter Creek	Yankeetown	Williston
Tropical Cyclones	H	M	H	M	H	H	M	H	M
Floods	M	M	H	M	H	H	H	H	L
Wildfire	M	M	L	M	M	M	M	L	L
Sinkholes	M	M	L	M	L	M	L	M	M
Coastal Erosion	L	N	H	N	N	N	N	L	N
Drought/Extreme Heat	M	M	M	M	M	M	M	M	M
Tornadoes	M	M	M	M	M	M	M	M	M
Severe Winter Storms/ Freeze	L/M	L/M	L/M	L/M	L/M	L/M	L/M	L/M	L/M
Dam Failure	L	N	N	N	N	L	N	L	N

H = High- Likely to experience threat, effect, or reoccurrence of event.

M = Moderate- Average to better than average likelihood of experiencing threat, effect or reoccurrence of event.

L = Low- Below average likelihood of experiencing threat, effect or reoccurrence of event.

N = Very little or no likelihood threat will occur.

1. Tropical Cyclones

a. Overview

Types of structures and infrastructure affected by tropical cyclones include: all structures, mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, sewage systems, potable water, roadways, waterways, airports, agriculture, livestock, fisheries, economic disruptions, environmental damage.

Tropical cyclones will negatively affect Levy County with a variety of impacts (Tropical cyclone impacts listed from NOAA's NHC are also discussed in the previous section, Hazards Profiles.):

Severe coastal flooding

Significant building damage from flooding and from high winds. Roofing is particularly susceptible to damage

Human and animal deaths and injuries from flooding and from windblown debris

Extreme disruptions to the transportation networks and to communications

Requirements for sheltering, as well as humanitarian supplies such as food, water, blankets, first aid, etc.
Termination of utility services, especially loss of electricity and contamination of the drinking water supplies

Extraordinary financial impact for the immediate response as well as for long-term recovery

Damage to critical infrastructure that requires long-term recovery.

The greatest damages from hurricanes come in the form of flooding and high winds, with flooding being responsible for far more damages to life and property. Roads in low-lying coastal areas have the potential to be submerged at various points (such as SR 24 and CR 347 in west Levy County). Flooding of US Hwy 19 from the surge of a major hurricane would seriously hinder evacuation efforts from counties to the south. Inundation of roadways not only reduces evacuation capabilities but also erodes emergency response capabilities.

Critical facilities in the County should be inspected and hardened to withstand high winds even if located in the center of the state. Other facilities such as mobile homes are of great concern and should also be mitigated where possible. High winds could occur throughout the County making mobile homes a general county-wide vulnerability. The design and materials used to construct mobile homes and other manufactured housing structures make these housing types particularly vulnerable to destruction by high winds. These buildings generally have flat sides and ends and anchoring systems that cannot withstand the strength of high winds. Mobile homes are also more susceptible from damage to flying debris. Due to these facts of vulnerability, the National Weather Service recommends that all mobile home residents evacuate in the event of a hurricane.

b. Identifying Structures

An analysis of the critical facilities located in the Coastal High Hazard Area (CHHA) as delineated by the Category 1 Hurricane Surge Zone reveals several critical facilities located in the CHHA, including:

Cedar Key

City Hall / Fire Department

Police Department

Cedar Key School

Wastewater Treatment Plant and Lift Stations

Water Treatment Plant

Water Supply Well

Yankeetown

Town Hall / Fire Department

Water Plant and Wells

Yankeetown School

These facilities should be considered, when possible, for hazard mitigation improvements based on their level of importance to the community. Generally, any facility in identified vulnerability areas should be considered for mitigation improvements.

Small portions of Highways 19 and 121 are located in the Category 1 Surge Zone. There are also several hazardous materials facilities:

Cedar Key

Tri-County Oil Distributors

Cedar Key Special Water and Sewerage Dis. 14266

Cedar Key Special Water and Sewerage Dis. 14297

Yankeetown

BellSouth Communications

As stated earlier, the entire County is vulnerable to high winds. However, mobile/manufactured structures, and structures built before the Florida Building Code was updated in 2010 may be more vulnerable to high winds (see Tornado section).

In addition to the facilities identified above, there are many structures and property within the tropical cyclone surge zones. There are also many structures that may be more vulnerable to high winds. Below are tables with the number of buildings and total values within the vulnerable surge zones, and which may be more vulnerable to high winds. The data is from the Levy County Property Appraiser's Office (2015).

c. Estimating Potential Loss

According to FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage for surge or high winds from tropical cyclones. Therefore, population by residential structure type and the total Values of vulnerable areas categorized by land use were calculated to estimate potential loss. It is important to note that population and structures in higher surge zones should be added to all lower surge zones to estimate total vulnerability. For example, if Levy County experienced a Category 3 hurricane, people and structures in the Category 3 surge zones may be affected, as well as those in the Category 2 surge zone, Category 1 surge zone, and the Tropical Storm surge zone.

Table VII-10. Population Vulnerable to Surge in Unincorporated Levy County

Housing Type	Tropical Storm	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Mobile Home Residential	117	158	689	659	644	641
Multifamily Residential	95	15	19	3	0	5
Single Family Residential	323	167	379	201	334	379

Table VIII-11. Tropical Cyclone Surge Vulnerability in Unincorporated Levy County

Use Category	Tropical Storm Surge		Category 1 Surge		Category 2 Surge		Category 3 Surge		Category 4 Surge		Category 5 Surge	
	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	64	86,076	36	39,112	82	96,952	78	68,509	99	61,890	130	50,014
Residential-Single-Family	266	49,467	112	8,458	202	17,236	98	7,808	186	19,402	189	16,685
Residential-Multi-Family	57	3,066	9	310	10	242	3	81	0	20	2	109
Residential-Mobile Homes	68	3,664	103	3,753	356	11,995	310	10,241	290	9,710	288	10,481
Commercial	9	1,823	6	1,046	6	1,369	8	589	21	2,285	19	1,614
Industrial	0	0	2	166	9	1,269	0	20	0		0	445
Institutional	0	0	1	165	3	1,029	5	785	1	218	6	1,540
Government	4	88,024	0	1,644	1	5,342	0	2,604	1	3,147	2	4,266
Misc. Infrastructure	3	5,145	0	0	0	96	0	57	0	163	0	442
Non-Ag Acreage	0	834	1	232	0	1,617	0	188	0	471	0	475
Vacant	0	11,775	0	3,092	0	10,325	1	5,134	1	6,231	3	4,853
TOTAL	471	249,874	270	57,978	669	147,472	503	96,016	599	103,537	639	90,924

d. Analyzing Development Trends

Areas vulnerable to surge, including Fanning Springs, Yankeetown, Inglis, and Cedar Key, have had the largest proportionate population growth since the 2000 census. These municipalities, as well as the County's other municipalities will continue to grow in population and density. Generalized future land uses located within surge areas include Agriculture, Conservation, Recreation, Public, Commercial, Industrial, and Residential. However, the greatest amount of land area vulnerable to surge has Conservation (County), Agriculture/Low Density Residential (County) and Forestry/Rural Residential (County) future land use designations (see Map VII-1 through VII-9).

As stated earlier, the entire County is vulnerable to high winds from tropical cyclone. The Tornado section describes the structures by type of existing land uses that may be more vulnerable to high winds (those built before the revised 2010 Florida Building Code). The greatest portion of structures built before the 2010 FBC are residential structures.

e. Multi-Jurisdictional Risk Assessment

The tables below describe the structures and values, by municipality, that are vulnerable to surge and high winds from tropical cyclone. Jurisdictions most vulnerable to surge include Fanning Springs, Yankeetown, Inglis, and Cedar Key.

Table VII-12. Population Vulnerable to Surge in Incorporated Areas

	Housing Type	Tropical Storm	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Cedar Key	Mobile Home Residential	29	5	1	1	0	0
	Multifamily Residential	106	80	17	5	0	0
	Single Family Residential	249	36	58	28	4	0
Fanning Springs	Mobile Home Residential	0	0	0	0	0	43
	Multifamily Residential	0	0	0	0	0	0
	Single Family Residential	0	0	2	5	2	9
Inglis	Mobile Home Residential	9	5	314	247	31	0
	Multifamily Residential	0	0	146	0	0	0
	Single Family Residential	233	31	345	62	18	0
Otter Creek	Mobile Home Residential	0	0	0	0	14	0
	Multifamily Residential	0	0	0	0	0	0
	Single Family Residential	0	0	0	0	8	2
Yankeetown	Mobile Home Residential	64	0	0	0	0	0
	Multifamily Residential	0	0	0	0	0	0
	Single Family Residential	382	182	15	0	0	0

Table VII-13. Tropical Cyclone Surge Vulnerability in Cedar Key

Use Category	Tropical Storm Surge		Category 1 Surge		Category 2 Surge		Category 3 Surge		Category 4 Surge		Category 5 Surge	
	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	14	2,796	0	0	0	0	0	0	0	0	0	0
Residential-Single-Family	283	53,128	39	5,029	65	8,574	32	5,535	4	852	0	0
Residential-Multi-Family	118	13,611	89	10,775	13	1,419	6	1,078	0	0	0	0
Residential-Mobile Homes	32	2,560	6	296	1	174	1	108	0	0	0	0
Commercial	94	14,701	1	347	0	0	0	0	0	0	0	0
Industrial	0	95	0	0	0	0	0	0	0	0	0	0
Institutional	3	1,580	1	288	4	827	4	767	1	204	0	0
Government	41	17,051	0	812	0	0	7	1,389	1	649	0	0
Misc. Infrastructure	1	405	0	0	0	0	1	127	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	12,795	0	1,087	0	1,133	0	1,007	0	140	0	40

Table VII-14. Tropical Cyclone Surge Vulnerability in Fanning Springs

Use Category	Tropical Storm Surge		Category 1 Surge		Category 2 Surge		Category 3 Surge		Category 4 Surge		Category 5 Surge	
	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	365	0	0	0	604	1	354
Residential-Single-Family	0	0	0	0	1	172	2	399	1	75	3	161
Residential-Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0	0	0	0	0	15	202
Commercial	0	0	0	0	0	0	0	0	0	0	1	67
Industrial	0	0	0	0	0	0	0	0	0	0	0	12
Institutional	0	0	0	0	0	0	0	0	0	0	0	0
Government	2	1,179	0	0	1	973	0	120	0	115	0	920
Misc. Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	150	0	119	0	151	0	20	0	35	0	25

Table VII-15. Tropical Cyclone Surge Vulnerability in Inglis

Use Category	Tropical Storm Surge		Category 1 Surge		Category 2 Surge		Category 3 Surge		Category 4 Surge		Category 5 Surge	
	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	107	1	1,121	0	93	0	0
Residential-Single-Family	132	18,691	18	2,619	184	13,013	37	2,366	11	616	0	0
Residential-Multi-Family	0	0	0	0	79	1,741	0	0	0	0	0	0
Residential-Mobile Homes	5	248	3	84	171	3,957	152	3,931	19	429	0	0
Commercial	2	382			68	9,815	10	522	1	28	0	0
Industrial	0	0	0	0	10	995	6	319	0	0	0	0
Institutional	0	0	0	0	11	1,594	2	601	0	0	0	0
Government	0	2	0	0	5	805	0	13	0	257	0	0
Misc. Infrastructure	0	0	0	0	2	253	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	2,950	0	137	1	5,273	0	1,121	0	214	0	0

Table VII-16. Tropical Cyclone Surge Vulnerability in Otter Creek

Use Category	Tropical Storm Surge		Category 1 Surge		Category 2 Surge		Category 3 Surge		Category 4 Surge		Category 5 Surge	
	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	0	1	271	3	1,344	0	0
Residential-Single-Family	0	0	0	0	0	0	0	0	5	191	1	58
Residential-Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0	0	0	7	146	0	0
Commercial	0	0	0	0	0	0	0	0	2	146	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	1	72	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Misc. Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	16	0	55	0	0

Table VII-17. Tropical Cyclone Surge Vulnerability in Yankeetown

Use Category	Tropical Storm Surge		Category 1 Surge		Category 2 Surge		Category 3 Surge		Category 4 Surge		Category 5 Surge	
	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	1,119	0	375	0	0	0	0	0	0	0	0
Residential-Single-Family	288	39,789	128	11,348	11	609	0	0	0	0	0	0
Residential-Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0
Residential-Mobile Homes	47	998	0	0	0	0	0	0	0	0	0	0
Commercial	23	4,515	2	269	1	76	0	0	0	0	0	0
Industrial	0	37	0	0	0	0	0	0	0	0	0	0
Institutional	3	754	3	489	0	0	0	0	0	0	0	0
Government	3	4,269	0	186	0	0	0	0	0	0	0	0
Misc. Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	1,222	0	0	0	0	0	0	0	0	0	0
Vacant	0	5,941	0	1,530	0	90	0	0	0	0	0	0

2. Floods

a. Overview

Types of structures and infrastructure affected by floods include: All structures, mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, sewage systems, potable water, roadways, waterways, airports, agriculture, livestock, fisheries, economic disruptions, environmental damage.

Floods will negatively affect Levy County with a variety of impacts:

People, facilities, and infrastructure located within the floodplains are susceptible to flood impacts.

The County is in the high-risk area for hurricanes and could expect to face a flooding event resulting in long-term, significant flooding. The impacts included severe property damage, severe damage to cars and other equipment, water system contamination, wastewater treatment disruptions, civil unrest, and evacuation issues.

Flooding has caused traffic accidents and congestion that has resulted in short-term impacts on the transportation infrastructure.

High dollar impact to uninsured property from floods. Most homeowner insurance policies do not cover floods and citizens don't always opt to purchase National Flood Insurance policies.

Property damaged by a flooding event often results in a mold infestation that can require lengthy remediation. The mold can also create health issues for people in contact with it.

Responders are often put at risk during flood events as they respond to calls for assistance. Their risks can range from performing dangerous rescue missions for stranded citizens to sickness due to exposure to

inclement weather. Most responders, however, are not at a great health and safety risk from flooding events.

Flooding is often the result of fast moving, severe storm systems and can include tornadoes, lightning, straight-line winds, and hail. The impact from these related hazards will compound the response and recovery issues related directly to flooding, as well as damages and injuries.

Some of the dangers of flooding are inherent with the location of residents in rural areas or at waterfront locations. Emergency vehicles cannot navigate through flooded roadways to the elderly and sick, living on sub-standard roads. Persons without trucks and other heavy-duty vehicles cannot get out to the shelters if they wait too long. This combination can increase the potential for casualties from the storm. Persons in areas with difficult vehicle access or vulnerable locations should be urged to evacuate early.

Another aspect of flooding is that it tends to remain after the storm has passed. Once a storm has passed, a community cannot return to normal if there are a large number of damaged homes and other structures. Evacuation shelters are not designed for extended stays, as many of them serve two functions, such as school and shelter. Therefore, a long-term sheltering strategy is needed in addition to a long-term recovery strategy. By pre-identifying funding to repair homes and businesses, a community can begin to recover more quickly. Plans for long term housing exist in the Disaster Housing Plan for Levy County.

With the onset of a storm there is danger, as mentioned previously, from both surge and freshwater flooding. Because roadways are the main concern for residential evacuation, the elevation of the roads along with the depth of water that can possibly occur is important. This information can provide the emergency manager with a tool to order evacuations in a timely manner. Evacuation routes that will easily deteriorate due to surge or freshwater flooding may be subject to early closures and rerouting. Many of these risks can be mitigated through simple pre planning and preparation.

b. Repetitive Loss **Defining Repetitive Losses**

The National Flood Insurance Program (NFIP) defines repetitive loss properties as structures within the flood insurance program that have experienced two or more insurance claims of at least \$1,000 in any given 10 year period since 1978. In addition to the NFIP defined repetitive losses, adjacent and nearby properties are also considered to be in repetitive loss areas. Historical information and experience can help to define the extent of repetitive loss areas and indicate areas outside the floodplain which are prone to repetitive damage from severe weather events.

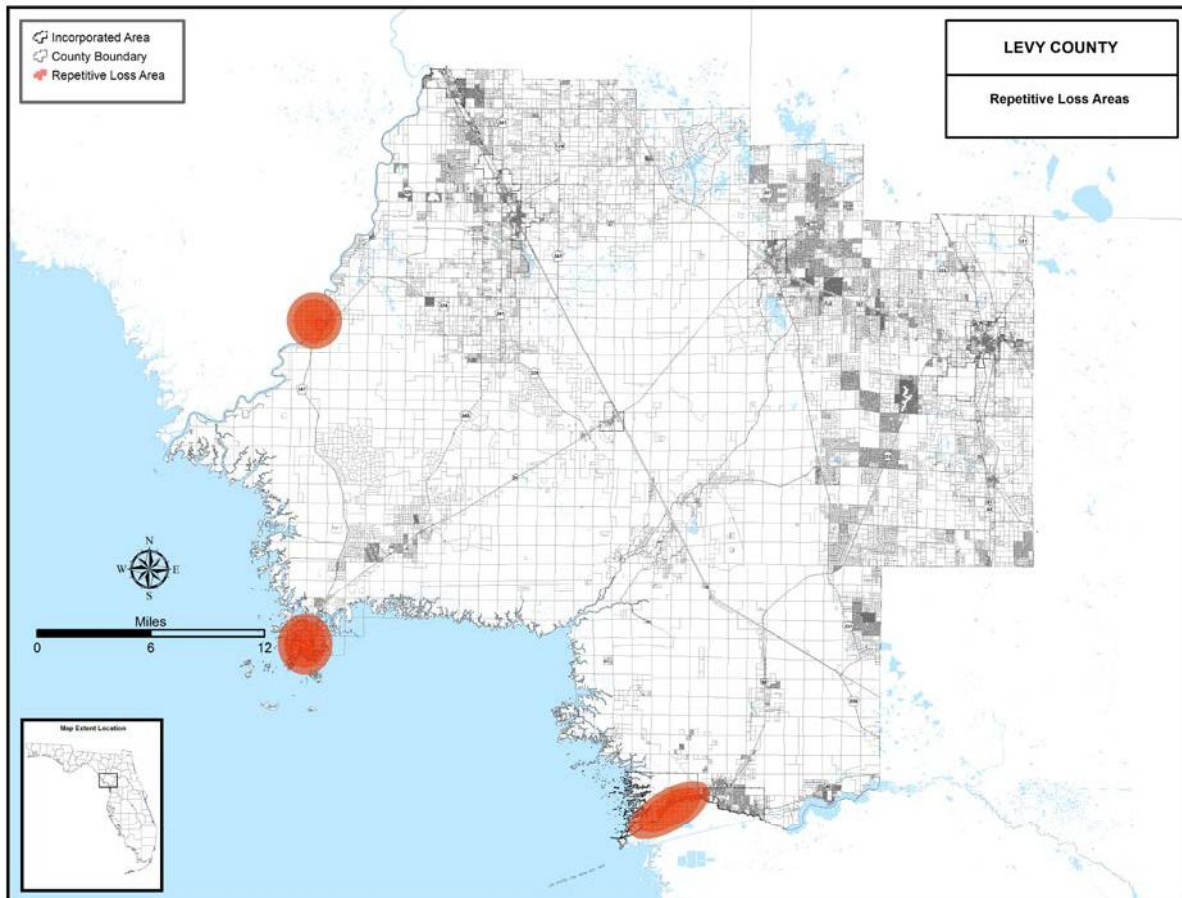
Funding sources at the Federal and State level have identified acquisition of repetitive loss structures and substantially damaged structures as the top funding priority. By virtue of the repeated and severe damage to these structures they are proven to be one of the most vulnerable places to live. As far as mitigating hazards, protecting lives is always the first consideration. Because of the life safety issues involved, the Hazard Mitigation Grant Program (HMGP) has declared that grant applications for acquisition of repetitive loss properties and substantially damaged structures do not have to undergo benefit-cost analysis and are expedited directly to the Federal Emergency Management Agency (FEMA) for funding consideration. Additionally, FEMA has paid the repair bills for reconstructing the repetitive loss properties only to have them damaged again after the next big storm. Acquisition of repetitive loss properties is far more cost-effective and safer than rebuilding after every disaster. This is the basis of FEMA's campaign for "Breaking the Cycle."

The Community Development Block Grant (CDBG) has also made acquisition of substantially damaged structures and flooded homes in general a top funding priority. This is a significant breakthrough for small local governments such as those in Levy County because CDBG grant applications do not require matching funds when associated with recovery from a Federally Declared Disaster. And, after a Federally Declared Disaster those CDBG funds can be used for matching funds for other grant sources. The end result is that small local governments with limited financial resources can leverage larger funding amounts to recover from disasters and mitigate future disasters.

Both the Hazard Mitigation Grant Program (HMGP) and the Community Development Block Grant (CDBG) have recognized the importance of the LMS process and are awarding additional points to those grant applications for projects that are included in the LMS document. Despite this fact there are no acquisition projects currently listed on the Levy County LMS.

Grants to acquire repeatedly flooded or damaged properties are mitigation projects that need the support of the local government leaders. They take a long time, even up to two years to complete the final closing. They take up staff resources, often with low grant administration funds. They reduce the tax base and increase land maintenance costs. And finally can be a highly emotional process for property owners who are displaced while waiting for grant approval.

Figure VII-1. Repetitive Loss Areas



It is recommended that the local jurisdictions in Levy County undertake a study of repetitive loss properties and properties that are expected to be damaged by a large storm. First, identify the properties that would fit in with plans for parks or open space or water retention areas. Second, survey the property owners and determine if they would consider selling the property or if they would rebuild following severe storm damage to the structure. Finally, from this information, a repetitive loss zone map has been created. This is a process evolving from the 1999 LMS Working Group's recommendation. This map could be used for future mitigation planning and land use planning. The best solutions to losses are preventative measures taken by the land owners and local planning mechanisms.

Because of the sensitivity of the properties on the list, it is important to not list these here in this public document. Those jurisdictions wishing to apply for funding to alleviate the problem can contact the FDEM for a list or by contacting FEMA through the Flood Smart Program <http://www.floodsmart.gov/floodsmart/pages/index.jsp>. Map number VII-10 has identified areas prone to repetitive losses. These areas are identified due to their proximity to water and their exposure to wind and tides and also the natural draining of land during and after major rain events.

Table VII-18. Repetitive Loss Properties

Jurisdiction	Number of Structure	Structure Type
Bronson	0	
Cedar Key	28	6 Commercial, 22 Residential
Chiefland	0	
Fanning Springs	0	
Inglis	2	2 Residential
Otter Creek	0	
Williston	0	
Yankeetown	35	2 Commercial, 33 Residential
Unincorporated	13	13 Residential
Total		8 Commercial, 70 Residential, 0 Industrial

Source: Levy County Zoning Administration, Development Department, Floodplain Manager and CRS coordinator

c. Identifying Structures

Vulnerable critical facilities located within the FEMA 100-year floodplain are listed in the table below by type and jurisdiction.

Table VII-19. Critical Facilities Vulnerable to Flood

Jurisdiction	Type	Zone
Inglis	Volunteer Fire	A
Inglis	Shelter	A
Unincorporated Levy County	Fire	A
Unincorporated Levy County	Law Enforcement	A
Unincorporated Levy County	Correctional Facility	A
Unincorporated Levy County	EOC	A
Unincorporated Levy County	Shelter	A
Unincorporated Levy County	Volunteer Fire	A
Unincorporated Levy County	Fire Station	AE
Unincorporated Levy County	School/Shelter	AE
Yankeetown	Volunteer Fire	AE
Cedar Key	Law Enforcement	VE
Cedar Key	Fire Station	VE
Cedar Key	Schools/Shelter	VE

Levy County's coastal lowlands provide for a large number of roads that could be affected by surge flooding. The County's outcropping of coastal keys creates a large area for surge inundation. The central portion of the County will experience the greatest amount of freshwater flooding within the floodplain of the Waccasassa River. Each of the roads in Table VII-20 will be inundated from freshwater flooding. (Based on FEMA Flood Insurance Rate Maps).

Table VII-20. Frequently Flooded Roads

Route	Route Segment Susceptible to Freshwater Flooding
CR 326	From intersection with CR 347, west to the Gulf
CR 326	From intersection with CR 320 to CR 337
SR 24	From Cedar Key to Bronson
CR 345	From intersection with SR 24 to 1 mile south of intersection with CR 336
US 19	From 1 mile south of intersection with CR 347 to Citrus County
US 19	A 2 mile section 1 mile south of Chiefland and 1 mile north of the CR 347 intersection
CR 339	From Bronson to the intersection with CR 320
US Alt 27	From the intersection with CR 339 and 1 mile to the west
CR 343	From the intersection with CR 326 to the intersection with CR 337
CR 40	From the gulf to 1 mile east of Inglis
CR 335	East of the intersection of 335 and 121 for approximately 1 half mile

Major roads and evacuation routes subject to flooding should be included in a listing of mitigation projects addressed by the Local Mitigation Strategy.

d. Estimating Potential Loss

In addition to the facilities identified above, there are many structures and property within the 100-year floodplain. Below is a table with the number of buildings and total values within the flood zones. The data is from the Levy County Property Appraiser's Office (2015).

Table VII-21. Flood Vulnerability in Unincorporated Levy County

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	793	601,651	101	90,113	20	37,777
Residential-Single-Family	556	58,872	352	37,436	160	37,404
Residential-Multi-Family	18	532	31	947	31	2,326
Residential-Mobile Homes	657	28,232	325	13,169	21	1,048
Commercial	21	4,325	38	2,973	10	2,737
Industrial	14	2,246	6	484		
Institutional	10	2,414	1	205		
Government	5	152,066	1	28,517	3	65,969
Misc. Infrastructure	0	827	3	4,142	0	1,003
Non-Ag Acreage	1	4,483	0	630	0	515
Vacant	4	20,125	0	13,326	0	9,429
TOTAL	2,079	875,773	858	191,942	245	158,208

Table VII-22. Population Vulnerable to Flood in Unincorporated Levy County

Housing Type	Zone A	Zone AE	Zone VE
Mobile Home Residential	1,541	573	35
Multifamily Residential	30	60	43
Single Family Residential	1,248	560	153

e. Analyzing Development Trends

Areas vulnerable to flood, including Fanning Springs, Yankeetown, Inglis, and Cedar Key, have had the largest proportionate population growth since the 2000 census. These municipalities, as well as the County's other municipalities will continue to grow in population and density. Generalized future land uses located within surge areas include Agriculture, Conservation, Recreation, Public, Commercial, Industrial, and Residential. However, the greatest amount of land area vulnerable to flood has Conservation (County), Agriculture/Low Density Residential (County) and Forestry/Rural Residential (County) future land use designations (see Map VII-1 through VII-9).

f. Multi-Jurisdictional Risk Assessment

The tables below describe the structures and values, by municipality, that are vulnerable to flood. Jurisdictions most vulnerable to flood include Yankeetown, Inglis, and Cedar Key.

Table VII-23. Flood Vulnerability in Bronson

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	3	662	5	1,806	0	0
Residential-Single-Family	8	380	27	2,109	0	0
Residential-Multi-Family	0	0	0	0	0	0
Residential-Mobile Homes	4	149	3	117	0	0
Commercial	4	1,070	5	643	0	0
Industrial	0	0	0	0	0	0
Institutional	0	0	0	0	0	0
Government	8	403	0	479	0	0
Misc. Infrastructure	0	109	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0
Vacant	0	221	0	409	0	0
TOTAL	27	2,994	40	5,563	0	0

Table VII-24. Flood Vulnerability in Cedar Key

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	14	2,796
Residential-Single-Family	0	0	0	0	392	68,019
Residential-Multi-Family	0	0	0	0	233	26,883
Residential-Mobile Homes	0	0	0	0	40	3,138
Commercial	0	0	0	0	95	15,048
Industrial	0	0	0	0	0	95
Institutional	0	0	0	0	7	2,569
Government	0	0	0	0	44	18,405
Misc. Infrastructure	0	0	0	0	1	405
Non-Ag Acreage	0	0	0	0	0	0
Vacant	0	0	0	0	0	14,962
TOTAL	0	0	0	0	826	152,320

Table VII-25. Flood Vulnerability in Chiefland

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	1	863	0	147	0	0
Residential-Single-Family	0	0	2	132	0	0
Residential-Multi-Family	0	0	0	0	0	0
Residential-Mobile Homes	0	0	1	18	0	0
Commercial	0	0	0	0	0	0
Industrial	0	0	0	0	0	0
Institutional	0	0	0	0	0	0
Government	0	0	0	0	0	0
Misc. Infrastructure	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0
Vacant	0	50	0	74	0	0
TOTAL	1	913	3	371	0	0

Table VII-26. Flood Vulnerability in Fanning Springs

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	365	0	0
Residential-Single-Family	0	0	3	571	0	0
Residential-Multi-Family	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0
Commercial	0	0	0	0	0	0
Industrial	0	0	0	0	0	0
Institutional	0	0	0	0	0	0
Government	0	0	3	2,253	0	0
Misc. Infrastructure	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0
Vacant	0	0	0	439	0	0
TOTAL	0	0	6	3,628	0	0

Table VII-27. Flood Vulnerability in Inglis

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	1	632	0	0	0	0
Residential-Single-Family	81	5,455	179	23,426	0	0
Residential-Multi-Family	38	874	5	177	0	0
Residential-Mobile Homes	182	4,462	18	526	0	0
Commercial	26	3,237	2	382	0	0
Industrial	8	490	0	0	0	0
Institutional	9	1,486	1	68	0	0
Government	3	938	1	51	0	0
Misc. Infrastructure	2	253	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0
Vacant	1	3,413	0	3,273	0	0
TOTAL	351	21,240	206	27,903	0	0

Table VII-28. Flood Vulnerability in Otter Creek

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	5	1,852	0	0	0	0
Residential-Single-Family	6	221	0	0	0	0
Residential-Multi-Family	0	0	0	0	0	0
Residential-Mobile Homes	5	123	0	0	0	0
Commercial	2	146	0	0	0	0
Industrial	0	0	0	0	0	0
Institutional	1	72	0	0	0	0
Government	0	12	0	0	0	0
Misc. Infrastructure	0	25	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0
Vacant	0	231	0	0	0	0
TOTAL	19	2,682	0	0	0	0

Table VII-29. Flood Vulnerability in Williston

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	1	317	0	0	0	0
Residential-Single-Family	7	689	0	0	0	0
Residential-Multi-Family	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0
Commercial	10	3,141	0	0	0	0
Industrial	0	0	0	0	0	0
Institutional	0	0	0	0	0	0
Government	0	14,515	0	0	0	0
Misc. Infrastructure	0	83	0	0	0	0
Non-Ag Acreage	0	323	0	0	0	0
Vacant	0	443	0	0	0	0
TOTAL	18	19,511	0	0	0	0

Table VII-30. Flood Vulnerability in Yankeetown

Use Category	A		AE		VE	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	801	0	694
Residential-Single-Family	0	0	347	35,768	80	15,979
Residential-Multi-Family	0	0	0	0	0	0
Residential-Mobile Homes	0	0	45	961	2	37
Commercial	0	0	26	4,860	0	0
Industrial	0	0	0	37	0	0
Institutional	0	0	6	1,223	0	20
Government	0	0	1	1,194	2	3,261
Misc. Infrastructure	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	1,222
Vacant	0	0	0	5,059	0	2,490
TOTAL	0	0	425	49,903	84	23,703

Table VII-31. Population Vulnerable to Flood in Incorporated Areas

Municipality	Housing Type	Zone A	Zone AE	Zone VE
Bronson	Mobile Home Residential	13	10	0
	Multifamily Residential	0	0	0
	Single Family Residential	25	100	0
Cedar Key	Mobile Home Residential	0	0	36
	Multifamily Residential	0	0	209
	Single Family Residential	0	0	347
Chiefland	Mobile Home Residential	0	2	0
	Multifamily Residential	0	0	0
	Single Family Residential	0	3	0
Fanning Springs	Mobile Home Residential	0	0	0
	Multifamily Residential	0	0	0
	Single Family Residential	0	7	0
Inglis	Mobile Home Residential	323	33	0
	Multifamily Residential	77	10	0
	Single Family Residential	154	320	0
Otter Creek	Mobile Home Residential	10	0	0
	Multifamily Residential	0	0	0
	Single Family Residential	12	0	0

Williston	Mobile Home Residential	0	0	0
	Multifamily Residential	0	0	0
	Single Family Residential	18	0	0
Yankeetown	Mobile Home Residential	0	61	3
	Multifamily Residential	0	0	0
	Single Family Residential	0	485	94

3. Wildfires

a. Overview

Types of structures and infrastructure affected by wildfires include: mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, sewage systems, potable water, roadways, agriculture, livestock, economic disruptions, environmental damage. All critical facilities near fire fuel areas are at risk from fire damage. Clearing debris near structures is an important step in mitigating the risks of wildfires.

Dry weather and drought conditions are major contributing factors in the size and severity of a wildfire. Fuel load is also a factor in fire intensity and speaks to the need for well-managed forest lands. As stated previously Levy County has a high percentage of rural population. Those people and facilities located in rural, wooded areas are particularly vulnerable to wildfire. Subdivisions should be designed using FireWise principles and homeowners should create at least 30 feet of cleared area around the house for defensible space. This house-by-house Mitigation Strategy will be the most effective means to reduce the level of wildfire vulnerability in Levy County due to the large size of the County and the wide distribution of the unincorporated population. Map VII-12 describes Burn Probability to show wildfire vulnerability.

b. Identifying Structures

The Burn Probability (BP) layer depicts the probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts. Burn Probability replaces the Wildland Fire Susceptibility Index (WFSI) layer developed in the original SWRA project completed in 2005. Values range from 1, Lowest Burn Probability, to 10, Highest Burn Probability. There are no areas anywhere in Levy County that have a 9 or a 10, the highest Burn Probability values.

Values in the Burn Probability (BP) data layer indicate, for each pixel, the number of times that cell was burned by an FSim-modeled fire, divided by the total number of annual weather scenarios simulated. The fire growth simulations, when run repeatedly with different ignition locations and weather streams, generate burn probabilities and fire behavior distributions at each landscape location (i.e., cell or pixel). Results are objectively evaluated through comparison with historical fire patterns and statistics, including the mean annual burn probability and fire size distribution, for each FPU.

These populations and the critical facilities located in or near them are vulnerable to wildfires. Appropriate mitigation can come in the form of enhanced warning systems and the establishment of

defensible spaces around all structures. Fire responders should continually seek to improve their response capabilities.

Critical facilities located within high risk and very high risk areas include:

Bronson

Clinical Lab, Fire Station, Library, Public Schools, Public Water Supply, and Wastewater Facility

Chiefland

Public Schools, Public Water Supply, Radio Communication Tower, Wastewater Facility

Fanning Springs

Fire Station, Public Water Supply

Inglis

Fire Station, Public Water Supply, Law Enforcement

Otter Creek

Fire Station, Public Water Supply

Williston

Wastewater Facility

Yankeetown

Fire Station, Library, Public Water Supply, Radio Communication Tower

Electrical Substation

c. Estimating Potential Loss

In addition to the facilities identified above, there are many structures and property within areas vulnerable to wildfire. Below is a table with the number of buildings and total values. The data is from the Levy County Property Appraiser’s Office (2015).

According to FEMA’s *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage for wildfire. Therefore, the total values of vulnerable areas categorized by land use were calculated to estimate potential loss.

Table VII-32. Population Vulnerable to Wildfire (Burn Probability) in Unincorporated Levy County

Housing Type	1	2	3	4	5	6	7	8
Mobile Home Residential	16	113	336	684	10,622	4,664	130	0
Multifamily Residential	0	2	0	0	91	133	29	4
Single Family Residential	19	79	141	327	5,695	3,585	263	0

Table VII-33. Fire Vulnerability, Burn Probability in Unincorporated Levy County

Use Category	1-Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bids or Unit	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s
Agriculture	5	3,131	4	2,314	6	19,316	28	1,185	1,043	398,099	170	106,420	0	1,853	0	0
Residential- Single-Family	11	1,158	62	8,756	74	18,005	168	2,548	1,393	132,844	88	8,386	0	0	0	0
Residential- Multi-Family	0	0	2	431	0	46	0	41	1,164	64	1,551	296	91	2	91	0
Residential- Mobile Homes	8	462	42	1,138	143	10,410	301	4,619	1,733	68,194	42	1,266	0	0	0	0
Commercial	0	0	0	110	2	441	8	137	14,508	69	8,213	797	0	0	0	0
Industrial	0	0	0	0	0	84	1	33	4,564	36	3,756	0	0	0	0	0
Institutional	0	0	0	0	0	1,241	3	56	12,328	52	14,466	44	0	0	0	0
Government	0	5,867	1	2,862	0	11,374	2	20	234,561	5	55,288	4,593	0	0	0	4,580
Misc. Infrastructure	0	7	0	34	0	48	0	6	5,778	0	1,134	241	0	0	0	0
Non-Ag Acreage	0	45	0	0	0	503	0	1	4,480	0	1,403	402	0	0	0	194
Vacant	0	409	2	2,912	0	8,614	3	43	96,667	16	33,072	2,435	0	0	0	243
TOTAL	24	11,080	113	22,214	225	70,082	514	8,689	1,385,185	4,411	718,021	124,880	2	6,960	2	6,960

d. Analyzing Development Trends

Areas most vulnerable to wildfire, include Bronson, Chiefland, Yankeetown, and Inglis. These municipalities, as well as the County's other municipalities will continue to grow in population and density. Generalized future land uses located within areas vulnerable to wildfire include Agriculture, Conservation, Recreation, Public, Commercial, Industrial, and Residential (see Map VII-1 through VII-9). However, the greatest amount of land area vulnerable to wildfire has Agriculture/Low Density Residential (County).

e. Multi-Jurisdictional Risk Assessment

The tables below describe the structures and values, by municipality, that are vulnerable to wildfire. Jurisdictions most vulnerable to wildfire include Bronson, Chiefland, Yankeetown, and Inglis.

Table VII-34. Population Vulnerable to Wildfire (Burn Probability) in Incorporated Areas

Municipality	Housing Type	1	2	3	4	5	6	7
Bronson	Mobile Home Residential	0	0	0	0	416	0	0
	Multifamily Residential	0	0	0	0	67	0	0
	Single Family Residential	0	0	0	0	620	0	0
Cedar Key	Mobile Home Residential	16	2	0	0	0	0	0
	Multifamily Residential	0	56	0	0	0	0	0
	Single Family Residential	55	94	0	0	0	0	0
Chiefland	Mobile Home Residential	0	0	0	0	177	0	0
	Multifamily Residential	0	0	0	0	469	0	0
	Single Family Residential	0	0	0	0	763	0	0
Fanning Springs	Mobile Home Residential	0	0	0	0	523	0	0
	Multifamily Residential	0	0	0	0	77	0	0
	Single Family Residential	0	0	0	0	165	0	0
Inglis	Mobile Home Residential	0	0	0	92	441	0	0
	Multifamily Residential	0	0	0	0	130	0	0
	Single Family Residential	0	0	15	148	461	0	0
Otter Creek	Mobile Home Residential	0	0	0	0	54	0	0
	Multifamily Residential	0	0	0	0	0	0	0
	Single Family Residential	0	0	0	0	64	0	0
Williston	Mobile Home Residential	0	0	0	0	32	73	0
	Multifamily Residential	0	0	0	0	0	210	0
	Single Family Residential	0	26	0	0	229	747	21
Yankeetown	Mobile Home Residential	9	0	0	0	0	42	0
	Multifamily Residential	0	0	0	0	0	0	0
	Single Family Residential	15	7	0	0	262	151	30

Table VII-35. Fire Vulnerability, Burn Probability in Bronson

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bids or Unit	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	13	3,509	1	163	0	0	0	0
Residential- Single-Family	0	0	0	0	0	0	0	0	207	12,380	0	0	0	0	0	0
Residential- Multi-Family	0	0	0	0	0	0	0	0	20	615	0	0	0	0	0	0
Residential- Mobile Homes	0	0	0	0	0	0	0	0	152	3,981	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	45	5,701	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	5	507	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	17	1,928	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	32	8,570	0	0	0	0	0	0
Misc. Infrastructure	0	0	0	0	0	0	0	0	0	109	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	0	3	3,498	0	64	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	494	40,798	1	227	0	0	0	0

Table VII-36. Fire Vulnerability, Burn Probability in Cedar Key

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bids or Unit	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s
Agriculture	3	601	1	212	0	0	0	0	0	0	0	0	0	0	0	0
Residential- Single-Family	65	9,191	105	22,070	0	0	0	0	0	0	0	0	0	0	0	0
Residential- Multi-Family	0	0	63	9,730	0	0	0	0	0	0	0	0	0	0	0	0

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bldgs or Unit	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Residential-Mobile Homes	18	1,292	2	91	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	24	1,968	3	349	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Institutional	0	0	1	288	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	12	0	616	0	0	0	0	0	0	0	0	0	0	0	0
Misc.	0	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	2,306	0	4,945	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	110	15,369	175	38,350	0	0	0	0	0	0	0	0	0	0	0	0

Table VII-37. Fire Vulnerability, Burn Probability in Chiefland

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bldgs or Unit	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	12	8,664	0	0	0	0	0	0
Residential-Single-Family	0	0	0	0	0	0	0	0	333	19,138	0	0	0	0	0	0
Residential-Multi-Family	0	0	0	0	0	0	0	0	243	4,857	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0	0	0	87	1,948	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	113	46,351	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	14	1,517	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	38	11,064	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	80	9,279	0	0	0	0	0	0
Misc.	0	0	0	0	0	0	0	0	7	1,336	0	0	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	288	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	3	6,429	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	0	930	110,872	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table VII-38. Fire Vulnerability, Burn Probability in Fanning Springs

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bldgs or Unit	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	2	2,671	0	0	0	0	0	0
Residential- Single-Family	0	0	0	0	0	0	0	0	60	4,797	0	0	0	0	0	0
Residential- Multi-Family	0	0	0	0	0	0	0	0	27	555	0	0	0	0	0	0
Residential- Mobile Homes	0	0	0	0	0	0	0	0	185	6,545	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	44	3,317	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	13	1,093	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	2	801	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	5	5,697	0	0	0	0	0	0
Misc.	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	0	0	6,523	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	338	32,006	0	0	0	0	0	0

Table VII-39. Fire Vulnerability, Burn Probability in Inglis

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bldgs or Unit	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	1	1,309	0	0	0	0	0	0
Residential- Single-Family	0	0	9	902	82	7,233	256	25,796	0	0	0	0	0	0	0	0
Residential- Multi-Family	0	0	0	0	0	0	70	1,434	0	0	0	0	0	0	0	0
Residential- Mobile Homes	0	0	0	0	57	1,565	250	6,162	0	0	0	0	0	0	0	0

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bldgs or Unit	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Commercial	0	0	0	0	2	250	24	3,701	37	4,387	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	14	1,039	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	3	317	7	1,368	0	0	0	0	0	0
Government	0	0	0	0	0	0	1	156	4	920	0	0	0	0	0	0
Misc.	0	0	0	0	0	0	1	174	0	35	0	0	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	303	0	1,643	1	5,753	0	0	0	0	0	0
TOTAL	0	0	0	0	11	1,455	168	14,799	640	48,203	0	0	0	0	0	0

Table VII-40. Fire Vulnerability, Burn Probability in Otter Creek

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bldgs or Unit	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s	Bldgs	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	8	2,091	0	0	0	0	0	0
Residential- Single-Family	0	0	0	0	0	0	0	0	37	1,369	0	0	0	0	0	0
Residential- Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential- Mobile Homes	0	0	0	0	0	0	0	0	27	579	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	5	380	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	1	36	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	16	2,815	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	1	137	0	0	0	0	0	0
Misc.	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	64	0	358	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	89	95	7,765	0	0	0	0	0	0

Table VII-41. Fire Vulnerability, Burn Probability in Williston

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bids or Unit	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	0	33	8	2,585	7	467	0	0
Residential- Single-Family	0	0	11	549	0	0	0	0	76	2,803	302	26,376	9	1,141	0	0
Residential- Multi-Family	0	0	0	0	0	0	0	0	0	0	88	1,750	0	0	0	0
Residential- Mobile Homes	0	0	0	0	0	0	0	0	10	107	29	646	0	0	0	0
Commercial	0	0	2	231	0	0	0	0	0	0	45	9,533	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	8	1,858	0	0	0	0
Institutional	0	0	5	695	0	0	0	0	2	162	17	6,005	1	3,903	0	0
Government	0	0	1	7,035	0	0	0	0	0	23	2	9,113	0	8,900	0	0
Misc.	0	0	0	0	0	0	0	0	0	83	0	53	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	0	0	323	0	1,293	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	245	0	0	0	0	1	132	2	3,152	0	301	0	0
TOTAL	0	0	19	8,755	0	0	0	0	89	3,342	501	61,393	17	16,003	0	0

Table VII-42. Fire Vulnerability, Burn Probability in Yankeetown

Use Category	1- Lowest Probability		2		3		4		5- Medium Probability		6		7		8- High Probability	
	Bids or Unit	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s	Bids	Value \$1000s
Agriculture	0	0	6	812	0	0	0	0	0	260	0	625	0	609	0	0
Residential- Single-Family	11	731	0	0	0	0	0	0	182	23,102	111	10,719	29	6,990	0	0
Residential- Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential- Mobile Homes	7	192	0	0	0	0	0	0	0	0	31	607	0	0	0	0

Local Mitigation Strategy

Levy County

Commercial	1	850	0	0	0	0	0	0	0	0	232	12	2,519	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	37	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	0	6	1,223	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	1,041	1	116	2	3,260	0	0
Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infrastructure																	
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	298	0	925	0	0
Vacant	0	283	0	42	0	429	0	0	0	0	2,362	0	2,310	0	1,029	0	0
TOTAL	19	2,057	6	854	0	429	0	0	0	190	28,221	155	17,231	31	12,813	0	0

4. Sinkholes

a. Overview

Types of structures and infrastructure affected by sinkholes include: mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, sewage systems, roadways, airports, agriculture, livestock, economic disruptions, environmental damage.

Sinkholes will negatively affect Levy County with a variety of impacts:

Sinkholes can be very sudden and relatively large.

Depending on the location of the sinkhole, severe damage can be done to individual properties or to roads and other infrastructure.

Prior to sinkhole collapse a gradual settlement may occur in the affected area.

Doors and windows in affected homes may fail to close properly and cracks may appear in the foundation.

A circular pattern of ground cracks may form outlining the subsiding area and water may pond in the new low area where it has not previously.

Fence posts and other similar small objects may become tilted.

Differential distortion of a structure, where one portion of the building moves relative to another, causes cracks to form.

b. Identifying Structures

Vulnerable critical facilities are critical facilities that are near or adjacent to existing sinkhole activity.

According to the most current sinkhole inventory from the Florida Geographic Data Library (FGDL), Levy County has one solid waste facility and one hazardous waste facility (in Chiefland) with identified sinkholes. Also, the Fire Station, Correctional Facility, EOC, Law Enforcement, Public School, Library, and Wastewater Treatment facilities in Bronson, as well as the Public Water Supply and Public Schools in Chiefland are within approximately 500 feet of an identified sinkhole.

The typical methodology for sinkhole potential relies heavily on the presence of existing sinkholes.

Extreme increases in groundwater withdrawals can also make an area more vulnerable to sinkholes as the groundwater level fluctuates. In the 2004 TAOS update for the State, a methodology for further exploration of sinkhole vulnerability was created.

Sinkhole vulnerability was determined according to points assigned to each 90m grid cell in the state.

Three classes of points were assigned, for distance to historic sinkholes, geology, and soils:

2 points if cell was within 2000m of an existing sinkhole;

1 point if cell between 2000m and 5000m of an existing sinkhole;

1 point if the cell was in the same USGS surface geologic unit as an existing sinkhole;

1 point if the cell was in the same NRCS soil unit as an existing sinkhole.

Thus, each cell as assigned a value from 0 to 4:

0: no significant risk

1: low risk

2: moderate risk

3: high risk

4 very high risk.

This methodology was applied to Levy County using the newer County Property Appraiser data and more current sinkhole inventory from the FGDL. The Table below describes the number of buildings and total values within areas vulnerable to sinkholes by vulnerability category.

c. Estimating Potential Loss

In addition to the facilities identified above, there are many structures and property within areas vulnerable to sinkholes. Below is a table with the number of buildings and total values within areas vulnerable to sinkholes. The data is from the Levy County Property Appraiser's Office (2015).

According to FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage from sinkholes. Therefore, the total values of vulnerable areas categorized by land use were calculated to estimate potential loss.

Table VII-43. Population Vulnerable to Sinkhole Potential in Unincorporated Levy County

Housing Type	0	1	2	3	4
Mobile Home Residential	34	679	6,093	7,139	5,116
Multifamily Residential	9	99	94	48	43
Single Family Residential	11	467	3,748	4,036	2,938

Figure VII-2. Sinkhole Vulnerability

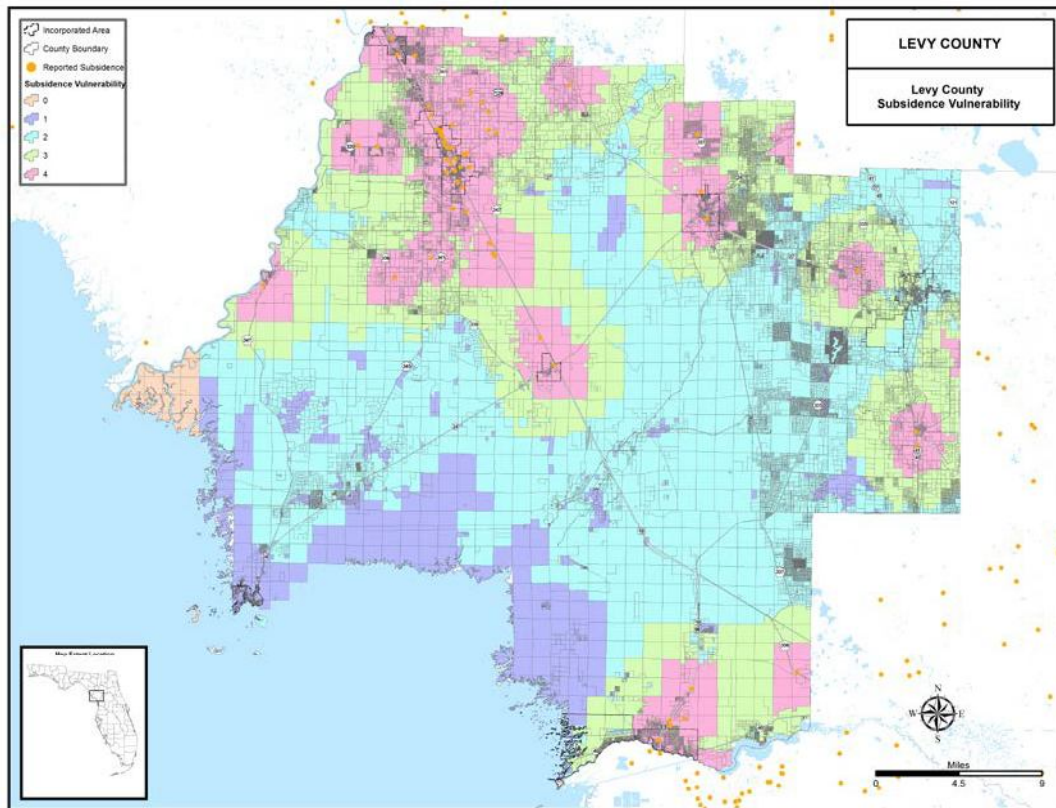


Table VII-44. Sinkhole Vulnerability in Unincorporated Levy County

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	1,183	104	58,776	868	465,604	932	383,665	563	233,288
Residential-Single-Family	4	262	330	51,741	1,541	136,149	1,737	160,153	1,259	120,579
Residential-Multi-Family	3	132	59	3,149	40	1,074	20	512	18	300
Residential-Mobile Homes	12	499	351	11,164	2,489	97,207	3,026	107,928	2,056	74,195
Commercial	0	0	7	1,475	43	6,803	74	6,195	119	11,945
Industrial	0	0	4	230	34	4,572	3	614	37	3,480
Institutional	0	0	2	341	35	9,234	42	8,423	40	11,177
Government	0	10,992	3	50,712	9	219,791	3	30,487	14	30,991
Misc. Infrastructure	0	5	0	862	1	1,416	2	490	3	5,190
Non-Ag Acreage	0	0	1	1,245	0	3,210	0	1,447	0	1,225
Vacant	0	54	2	19,221	32	71,774	30	47,762	13	29,826
TOTAL	19	13,127	863	198,916	5,092	1,016,834	5,869	747,676	4,122	522,196

d. Analyzing Development Trends

Areas most vulnerable to sinkholes, including Bronson, Chiefland, and Williston, are mostly located in areas with significant limestone deposits. These municipalities, as well as the County's other municipalities will continue to grow in population and density. Generalized future land uses located within vulnerable sinkhole areas include Agriculture, Conservation, Recreation, Public, Commercial, Industrial, and Residential (see Map VII-1 through VII-9). However, the greatest amount of land area vulnerable to sinkholes has Agriculture/Low Density Residential (County) and Forestry/Rural Residential (County) future land use designations.

e. Multi-Jurisdictional Risk Assessment

The tables below describe the structures and values, by municipality, that are vulnerable to sinkholes. Jurisdictions most vulnerable to sinkholes include Bronson, Chiefland, Inglis, and Williston.

Table VII-45. Population Vulnerable to Sinkhole Potential in Incorporated Areas

Municipality	Housing Type	0	1	2	3	4
Bronson	Mobile Home Residential	0	0	0	21	450
	Multifamily Residential	0	0	0	7	81
	Single Family Residential	0	0	0	61	642
Cedar Key	Mobile Home Residential	0	36	0	0	0
	Multifamily Residential	0	209	0	0	0
	Single Family Residential	0	374	0	0	0
Chiefland	Mobile Home Residential	0	0	0	0	380
	Multifamily Residential	0	0	0	0	622
	Single Family Residential	0	0	0	0	1,132
Fanning Springs	Mobile Home Residential	0	0	0	0	549
	Multifamily Residential	0	0	0	0	77
	Single Family Residential	0	0	0	0	167
Inglis	Mobile Home Residential	0	0	7	129	471
	Multifamily Residential	0	0	0	0	146
	Single Family Residential	0	0	3	51	636
Otter Creek	Mobile Home Residential	0	0	0	0	56
	Multifamily Residential	0	0	0	0	0
	Single Family Residential	0	0	0	0	68
Williston	Mobile Home Residential	0	4	331	0	0
	Multifamily Residential	0	0	233	143	0
	Single Family Residential	0	3	1,524	480	0
Yankeetown	Mobile Home Residential	0	0	0	64	0
	Multifamily Residential	0	0	0	0	0
	Single Family Residential		8	68	407	96

Table VII-46. Sinkhole Vulnerability in Bronson

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	0	0
Residential-Single-Family	0	0	0	0	0	0	20	1,378	14	3,672
Residential-Multi-Family	0	0	0	0	0	0	2	59	218	12,900
Residential-Mobile Homes	0	0	0	0	0	0	8	199	26	877
Commercial	0	0	0	0	0	0	2	140	165	4,318
Industrial	0	0	0	0	0	0	0	0	62	8,588
Institutional	0	0	0	0	0	0	2	220	5	507
Government	0	0	0	0	0	0	8	3,579	19	2,261
Misc. Infrastructure	0	0	0	0	0	0	1	126	25	5,651
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	1	300	0	109
TOTAL	0	0	0	0	0	0	44	6,001	534	38,883

Table VII-47. Sinkhole Vulnerability in Cedar Key

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	14	2,796	0	0	0	0	0	0
Residential-Single-Family	0	0	423	73,119	0	0	0	0	0	0
Residential-Multi-Family	0	0	233	26,883	0	0	0	0	0	0

Residential-Mobile Homes	0	0	40	3,138	0	0	0	0	0
Commercial	0	0	95	15,048	0	0	0	0	0
Industrial	0	0	0	95	0	0	0	0	0
Institutional	0	0	13	3,666	0	0	0	0	0
Government	0	0	49	19,901	0	0	0	0	0
Misc.	0	0	2	532	0	0	0	0	0
Infrastructure	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	16,202	0	0	0	0	0
TOTAL	0	0	877	161,379	0	0	0	0	0

Table VII-48. Sinkhole Vulnerability in Chiefland

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	13	9,860
Residential-Single-Family	0	0	0	0	0	0	0	0	500	27,153
Residential-Multi-Family	0	0	0	0	0	0	0	0	291	6,188
Residential-Mobile Homes	0	0	0	0	0	0	0	0	156	3,299
Commercial	0	0	0	0	0	0	0	0	240	79,666
Industrial	0	0	0	0	0	0	0	0	18	1,747
Institutional	0	0	0	0	0	0	0	0	50	12,197
Government	0	0	0	0	0	0	0	0	98	11,846
Misc.	0	0	0	0	0	0	0	0	9	1,522
Infrastructure	0	0	0	0	0	0	0	0	0	288
Non-Ag Acreage	0	0	0	0	0	0	0	0	3	9,283
Vacant	0	0	0	0	0	0	0	0	1,378	163,050
TOTAL	0	0	0	0	0	0	0	0	0	0

Table VII-49. Sinkhole Vulnerability in Fanning Springs

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	0	0	0	0	2	2,671
Residential-Single-Family	0	0	0	0	0	0	0	0	61	4,841
Residential-Multi-Family	0	0	0	0	0	0	0	0	27	555
Residential-Mobile Homes	0	0	0	0	0	0	0	0	194	6,993
Commercial	6	453	0	0	0	0	0	0	48	3,906
Industrial	0	0	0	0	0	0	0	0	13	1,093
Institutional	0	0	0	0	0	0	0	0	4	1,011
Government	0	146	0	0	0	0	0	0	7	7,395
Misc. Infrastructure	0	0	0	0	0	0	0	0	0	7
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0
Vacant	0	235	0	0	0	0	0	0	0	6,778
TOTAL	6	835	0	0	0	0	0	0	356	35,249

Table VII-50. Sinkhole Vulnerability in Inglis

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	0	0	0	12	1	1,309
Residential-Single-Family	0	0	0	0	2	67	29	1,661	351	35,577
Residential-Multi-Family	0	0	0	0	0	0	0	0	79	1,741

Residential-Mobile Homes	0	0	0	4	81	75	1,592	271	6,976
Commercial	0	0	0	0	0	3	593	78	10,154
Industrial	0	0	0	0	0	3	309	13	1,005
Institutional	0	0	0	0	0	1	285	12	1,910
Government	0	0	0	0	0	0	0	5	1,077
Misc.	0	0	0	0	0	1	174	1	79
Infrastructure	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	11	1	1,107	0	8,577
TOTAL	0	0	0	6	159	113	5,732	811	68,404

Table VII-51. Sinkhole Vulnerability in Otter Creek

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	0	0	0	29	8	2,063
Residential-Single-Family	0	0	0	0	0	0	0	0	39	1,392
Residential-Multi-Family	0	0	0	0	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0	0	0	28	591
Commercial	0	0	0	0	0	0	0	0	8	589
Industrial	0	0	0	0	0	0	0	0	1	36
Institutional	0	0	0	0	0	0	0	0	16	2,817
Government	0	0	0	0	0	0	0	0	1	137
Misc.	0	0	0	0	0	0	0	0	0	25
Infrastructure	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	0	0	0	0	539
TOTAL	0	0	0	0	0	0	0	29	101	8,187

Table VII-52. Sinkhole Vulnerability in Williston

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	12	2,473	3	612	0	0
Residential-Single-Family	0	0	1	121	580	34,851	193	13,630	0	0
Residential-Multi-Family	0	0	0	0	98	2,102	105	2,004	0	0
Residential-Mobile Homes	0	0	1	47	126	2,307	0	0	0	0
Commercial	0	0	2	234	87	19,055	62	8,062	0	0
Industrial	0	0	0	0	22	2,037	19	2,845	0	0
Institutional	0	0	0	0	30	6,032	17	10,642	0	0
Government	0	0	0	0	13	11,259	3	18,623	0	0
Misc.	0	0	0	0	1	519	0	58	0	0
Infrastructure										
Non-Ag Acreage	0	0	0	0	0	1,616	0	0	0	0
Vacant	0	0	0	129	9	3,205	0	2,371	0	0
TOTAL	0	0	4	531	978	85,456	402	58,848	0	0

Table VII-53. Sinkhole Vulnerability in Yankeetown

Use Category	0- No Significant Risk		1- Low Risk		2- Moderate Risk		3- High Risk		4- Very High Risk	
	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s	Bldgs or Units	Value \$1000s
Agriculture	0	0	0	0	0	0	0	1,494	0	0
Residential-Single-Family	0	0	13	5,353	54	7,958	303	28,031	57	10,404
Residential-Multi-Family	0	0	0	0	0	0	0	0	0	0
Residential-Mobile Homes	0	0	0	0	0	0	47	998	0	0

Local Mitigation Strategy

Levy County

Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Institutional	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	415
Government	0	0	0	0	0	962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc. Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	235	0	0	0	299	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	0	0	0	0	1,266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	702
TOTAL	0	235	13	0	7,900	7,900	54	383	9,552	44,409	59	11,521	0	0	0	0	0	0	0	0	0	0	0	0

5. Coastal Erosion

a. Overview

Types of structures and infrastructure affected by coastal erosion include: mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, roadways, waterways, airports, agriculture, fisheries, environmental damage.

Erosion will negatively affect Levy County with a variety of impacts:

Areas of the County's coast are eroded away at varying levels at all times and especially by strong storms and hurricanes.

Erosion can lead to property damage to houses and structures on or near the beach.

Beach erosion can impact transportation waterways such as inlets and can interfere with boat traffic.

Eroded beaches impact the level of tourism, and this lowers the overall economy of the coastal areas and the County.

b. Identifying Structures

Without the velocity to cause damage quickly, the potential erosion damage is by slow erosion over time. Vulnerable facilities are limited to structures that are in, or close to, the water at normal levels and flow rates, including bridges, dams, docks, and boat ramps. Certain residential structures that are built on pilings are also subject to erosion potential. Appropriate mitigation for erosion is periodic inspections of water-related structures. No significant erosion has been recorded outside of the tropical cyclones and periodic flooding events.

There are no critical facilities in the County that demonstrate an increased vulnerability to coastal erosion.

c. Estimating Potential Loss

There are some structures and property within areas vulnerable to coastal erosion. Below is a table with the number of buildings and total values within the areas vulnerable to coastal erosion. The only areas vulnerable to coastal erosion are in Cedar Key. The structures and values in the table below consist of areas within approximately 500 feet or about two city-blocks away from identified erosion. The data is from the Levy County Property Appraiser's Office (2015).

According to FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage erosion. Therefore, the total values of vulnerable areas categorized by land use were calculated to estimate potential loss.

Table VII-54. Coastal Erosion Vulnerability

Use Category	Bldgs or Units	Value \$1000s
Agriculture	NA	NA
Residential- Single-Family	72	15,153
Residential- Multi-Family	59	8,016
Residential- Mobile Homes	1	108
Commercial	19	3,576
Industrial	NA	NA
Institutional	4	790
Government	5	2,696
Misc. Infrastructure	NA	NA

Vacant	0	1,011
TOTAL	160	31,349

d. Analyzing Development Trends

Cedar Key, which has one of the largest proportionate population growths since the 2000 census, is vulnerable to coastal erosion. Cedar Key will continue to grow in population and density. Generalized future land uses located within coastal erosion areas include Conservation, Water-dependent Commercial, Public, and Residential (see Map VII-1 through VII-9).

e. Multi-Jurisdictional Risk Assessment

Cedar Key is the only municipality that is vulnerable to coastal erosion. The Table above describes structures and values in Cedar Key only.

6. Drought/Extreme Heat

a. Overview

Types of structures and infrastructure affected by drought/ extreme heat include: telecommunications, electrical utilities, potable water, roadways, waterways, agriculture, livestock, fisheries, economic disruptions, environmental damage.

Drought/extreme heat will negatively affect Levy County with a variety of impacts:

Drought is often associated with periods of long and intense heat. Drought usually does not affect humans directly, but extreme heat can cause injury and even death, particularly with children, elderly citizens, and other special needs populations. Injuries and potential deaths are most likely to impact rural, poor areas that lack air conditioning and immediate medical care.

The largest impact of prolonged drought is the financial impact to farmers with crops and livestock. A serious drought would damage or possibly destroy annual crops and limit the number of livestock that could be properly cared for.

Drought and extreme heat have no real effect on houses, facilities, or infrastructure. Rationing water supplies would most likely be the worst-case scenario impact for drought.

Prolonged drought over a number of years could have long-term environmental impacts on the area, including species endangerment and necessary changes to the local agricultural makeup.

Crop loss is the greatest economic concern especially from those crops that are major exports. The vulnerability is greater in the various types of crops that are more susceptible to drought than others. Newly planted crops are extremely vulnerable to drought. Livestock must also be monitored and managed properly in cases of severe drought. Farmers in general are particularly affected by drought conditions as the water table falls and deeper wells need to be drilled for irrigation purposes.

Of course, water supply is the greatest concern during a drought and utility managers must be prepared to protect the water supply by instituting water restrictions when needed. During extended periods of extreme heat power supplies also may be depleted due to the widespread use of air conditioning systems. Appropriate mitigation for the potential loss of power is to maintain backup generators for critical facilities.

b. Identifying Structures

Generally, structures are not vulnerable to drought/extreme heat. However, the agricultural sector and

respective land areas can be significantly harmed by drought/extreme heat.

c. Estimating Potential Loss

According to FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage for drought or extreme heat. Therefore, the total values of vulnerable areas (all areas designated as Agriculture) were calculated to estimate potential loss. The data is from the Levy County Property Appraiser's Office (2015), and can be found in Tables VII-7 and VII-8.

d. Analyzing Development Trends

As the population grows in Levy County, land in Agriculture uses maybe lost to other uses (see Map VII-1 through VII-9). However, as Levy County is one of the least densely-populated counties in Florida, and rate of growth is steady, Agriculture will mostly likely remain one of the County's primary land uses and economic drivers.

e. Multi-Jurisdictional Risk Assessment

In Levy County the major crop is timber which is actively cultivated throughout the County. Traditional crops are grown in the Chiefland (watermelons) and Williston (peanuts) areas of the county. Drought or extreme heat conditions especially during planting time could cause hardship to these local economies. Cedar Key and Yankeetown are tied to the fisheries economy. Fisheries are vulnerable to a period of extended heat which could cause elevated gulf water temperatures contributing to a "red tide" fish kill. Red tide is less common this far north on the gulf coast, but occurs every 2 to 3 years from the Tampa Bay region south to the keys.

The jurisdictional economies of Bronson, Fanning Springs and Inglis are not as dependent on traditional agriculture or fisheries. The general vulnerabilities of human or animal impact are potentially felt by all who cannot escape the heat, especially the elderly and those who work outdoors.

7. Tornadoes

a. Overview

Types of structures and infrastructure affected by tornadoes include: all structures, mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, sewage systems, potable water, roadways, waterways, airports, agriculture, livestock, fisheries, economic disruptions, environmental damage.

Tornadoes can negatively affect Levy County with a variety of impacts:

Tornadoes cause localized damage in the specific area of impact and are part of a larger storm system that affects communities with flooding, lightning, hail, and straight-line winds.

Humans and animals are often injured or killed by severe tornadic activity. Most cases involve a direct impact combined with minimal shelter or protection.

Properties and facilities are often damaged by tornadic activity. The severity of the damage depends on the type of construction, the age of the facility, and the strength of the storm, and results can vary from minor roof damage to the complete demolition of the structure.

Buildings, facilities, and infrastructure are often impacted by the debris caused by a tornado. Common consequences of tornadoes are power outages and power line damage caused by fallen limbs and trees. This often occurs with large trees that have not been trimmed and are located near structures or power

lines.

It is not possible to identify the locations of at-risk facilities as tornadoes strike randomly throughout the County. All locations and critical facilities were deemed vulnerable to this hazard.

Losses due to tornadoes tend to be localized and do not tend to have many long-term effects on the economy of the affected area. After a tornadic event, there is often an increase in economic activity as people rebuild their homes and repair additional damages. The monetary losses can be high in terms of actual damage to specific locations combined with injuries and the potential loss of life for humans and animals.

Tornadoes usually do not have a long-term impact on the environment. Extreme damage may occur in a localized area, but long-term effects on the flora and fauna in the surrounding areas are not typical. Electricity and other essential services to local areas can be disrupted during storm events. In severe cases, power can be lost for several days or weeks. In most cases, however, disruptions in power are usually short-term and service is quickly restored by repair crews and responders.

The damage potential for a tornado increases as a function of population density. As the number of structures and people increase, the potential damage/injury rate increases. Mobile homes, poorly constructed or substandard housing apartment complexes are especially susceptible to damage from a tornado. Mobile homes and substandard housing are exceptionally susceptible because of their lack of resistance to high winds, and apartment complexes and low rent projects because of their size and densities. All of the incorporated municipalities, as well as the unincorporated urbanized area of Levy County is vulnerable.

b. Identifying Structures

Specific vulnerable facilities cannot be identified based on the unpredictable nature of tornadoes and also based on the awesome destructive power. Mobile homes are of the greatest concern but wood frame structures are also unable to withstand the intense winds of a tornado. Concrete block structures with wooden roof truss systems are also vulnerable. Appropriate mitigation for tornadoes is to construct a safe-room specifically engineered for such use.

c. Estimating Potential Loss

According to FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage from tornadoes. Also, vulnerable areas and specific structures cannot be identified. Therefore, the entire County's structures and total values may be considered as potential losses (see Table VII-17 and VII-8).

Mobile homes or modular homes are spread throughout the County and are generally considered unsafe when winds reach 75 mph. According to the 2015 Property Appraiser data, there are approximately 9,003 mobile homes in Levy County, with an estimated 21,559 people residing in them. Most of these people will leave the area before a hurricane hits Levy County. Evacuation rates depend mainly on the severity of the storm.

Mobile home structures have a high risk for destruction in a hurricane if erected on or near the coast. Mobile home residents, due to a lack of structural support, are normally encouraged to evacuate before residents of site-built homes and businesses. Because of their early evacuation, the transportation analysis will need to take into account the effect these residents have on the general process. The mobile home parks definition used for this document is the areas that have permanent residents, not including RV

seasonal residents. The assumption is made that those residents who have mobility will, in fact, leave the area before the storm approaches. A listing of the mobile home parks for Levy County is shown on Table VII-56.

Vulnerable structures should also include older, sub-standard buildings. As stated earlier in the Hazard Identification and Profile section, the Florida Building Code changed significantly in 2002 and again in 2010. These changes included higher wind loads. It may be assumed that structures built before 2010 were based on the older building code, and therefore more vulnerable to high winds from tropical cyclones than newer structures. Table VII-55 and Table VII-57 summarize the occupied residential structures that were built before and after the revised 2010 Florida Building Code. This dataset does not include Vacant Residential, parcels with no structures, or recorded years built. Population living in these older structures may be considered more vulnerable.

Table VII-55. Structures in Unincorporated Levy County Built Before and After 2010 Florida Building Code

Use Category	2011 or After	2010 or Earlier
Agriculture	96	2,371
Residential- Single-Family	136	4,735
Residential- Multi-Family	2	138
Residential- Mobile Homes	134	7,800
Commercial	4	239
Industrial	2	76
Institutional	13	106
Government	0	29
Misc. Infrastructure	0	6
Non-Ag Acreage	1	0
Vacant	11	66
TOTAL	399	15,566

An excellent project that could be undertaken by the Levy County municipalities or other jurisdiction is the establishment of location shelters. Providing a shelter to the populations in these mobile homes that may not have predicted their danger and needs could save lives. A private-public partnership could use funds from mitigation projects and in-kind services from local contractors and community groups. The mitigation funding would provide the supplies while the community groups provide the labor. This type of project could be modeled after the Habitat for Humanity protocol. By including local groups such as the American Red Cross, the Boy Scouts of America and local churches that participate in disaster recovery, the in-kind services would surely outweigh the federal funds.

We can make the assumption that when a residential structure is damaged more than 50% of its value it will not be habitable. Making this assumption leads to other concerns regarding evacuation, sheltering and long-term temporary housing. Evacuation issues for residents of mobile homes consist mainly of communicating the message to evacuate early. The most important sheltering issues are shelter capacity and structural integrity. One of Levy County's listed projects is for a study of emergency shelters. Long-term temporary housing issues should be addressed in future issues of the LMS.

Figure VII-3. Mobile Home Parks

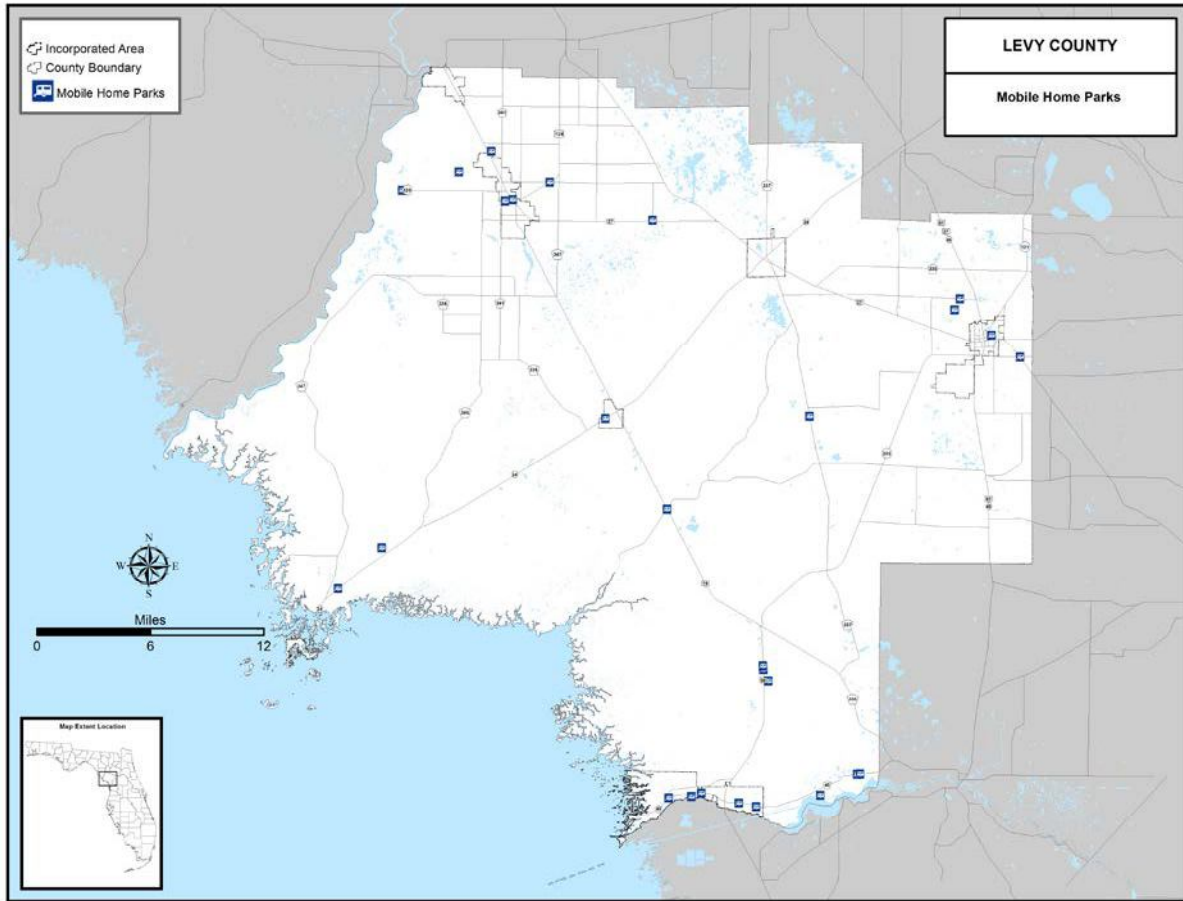


Table VII-56. Levy County Mobile Home Parks

NAME	ADDRESS	CITY	ZIP CODE	MH SPACE S
Dan's Mobile Home Park Inc	1000 HWY 40 E	Inglis	34449	13
Buddy's Lakeside Park I	10050 HWY 40 E	Inglis	34449	10
Breezy Acres Campground	10050 NE 20th Ave	Chiefland	32626	1
Cannon Oaks Mobile Home Park	10251 HWY 40 E	Inglis	34449	12
Fin and Feather Campground	10930 SE 201 St	Inglis	34449	1
Sunset Isle Trailer Park	11850 SW Hwy 24	Cedar Key	32625	14
Rainbow Country RV campground	11951 SW Shiloh Rd	Cedar Key	32625	8
Manatee Springs Mobile Home Park	12570 NW 82th Ct	Chiefland	32626	13
Snowbird Nest	14750 NE Hwy Alt. 27	Williston	32696	8
Parc Place	17250 NE 60th St	Williston	32696	13
Park Blevins MHP	3550 NW 120th St	Chiefland	32626	14
Dumal Park	394 Dumal Place	Inglis	34449	15

NAME	ADDRESS	CITY	ZIP CODE	MH SPACES
Shady Oaks at Otter Creek	442 SW 3rd St	Otter Creek	32683	1
Odyssey Campground	6510 SW 101 Terrace	Cedar Key	32625	13
Cedar Villas	6551 NW 135th Lane	Chiefland	32626	8
B's Cypress Marina & RV	6621 Riverside Drive	Yankeetown	34498	2
Twisted Oaks Estates	7050 NW 140th St	Chiefland	32626	13
Waccassassa Fishing Club Store LC	7951 SE 5th Ave	Gulf Hammock	32639	50
Village Pines Mobile Park	8150 SE 140th Lane	Inglis	34449	25
Bronson Heights Mobile Home	9770 NE Alt 27	Bronson	32621	8
Promise Acres Inc	United States Highway 27	Williston	32696	25
Driftwood Mobile Home Park	HWY 40 E	Inglis	34449	24
M.E. McDougal Inc. MHP	NW 90th Court	Fanning Springs	32693	19

d. Analyzing Development Trends

Because vulnerability to tornadoes cannot be determined geographically, development trends within a vulnerable area cannot be analyzed.

e. Multi-Jurisdictional Risk Assessment

All jurisdictions within Levy County are equally vulnerable to tornadoes.

Table VII-57. Structures in Incorporated Areas Built Before and After 2010 Florida Building Code

Use Category	Bronson		Cedar Key		Chiefland		Fanning Springs		Inglis		Otter Creek		Williston		Yankeetown	
	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier	2011 or After	2010 or Earlier
Agriculture	4	10	0	14	2	11	0	2	0	1	0	8	0	15	0	0
Residential-Single-Family	10	228	5	418	1	499	4	57	7	375	0	39	5	769	4	423
Residential-Multi-Family	0	28	0	233	3	288	0	27	0	79	0	0	0	203	0	0
Residential-Mobile Homes	1	172	0	40	0	156	3	191	1	349	1	27	0	127	0	47
Commercial	1	63	0	95	7	233	1	53	3	78	0	8	2	149	0	26
Industrial	0	5	0	0	0	18	0	13	0	16	0	1	0	41	0	0
Institutional	0	21	0	13	3	47	0	4	3	10	0	16	2	45	0	6
Government	0	33	0	49	0	98	0	7	1	4	0	1	0	16	0	3
Misc.	0	1	0	2	0	9	0	0	0	2	0	0	0	1	0	0
Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-Ag Acreage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vacant	0	7	0	0	0	3	0	0	0	1	0	0	0	9	0	0
TOTAL	16	568	5	864	16	1,362	8	354	15	915	1	100	9	1,375	4	505

8. Severe Winter Storms/Freeze

a. Overview

Types of structures and infrastructure affected by severe winter storms/freeze include: telecommunications, electrical utilities, potable water, roadways, waterways, agriculture, livestock, fisheries, economic disruptions, environmental damage.

Winter storms will negatively affect Levy County with a variety of impacts:

Severe winter events including snow and ice are considered hazards; however, the impacts resulting from these events are historically more severe in regards to human and economic losses as opposed to damages to buildings and infrastructure.

Roads and highways are most vulnerable to the effects of winter storms. Roads frequently become iced over, resulting in accidents, injuries, deaths, and traffic congestion. Roads can be heavily damaged due to winter weather events. Potholes and cracks can be found on roadways after a winter weather event, resulting in the need for repairs and causing further economic losses to the local area.

Electrical transmission lines are highly vulnerable to severe winter weather. Trees frequently fall due to the extra weight of ice accumulating on branches. Trees falling on nearby power lines causes disruption of power service, which results in additional costs for repairs and maintenance.

Other impacts resulting from winter storms include damage to plumbing, sewers, and waterlines, as well as minor roof damage and house fires resulting from portable heaters.

First responders are increasingly at risk as they respond to traffic incidents and calls for medical attention. They are vulnerable to the same transportation dangers as other citizens, but often have to go out in hazardous conditions when ordinary citizens would not.

Other than agricultural loss, hazards include icy roads and bridges, power outages, structural damage from fallen trees and limbs and exposure to extreme cold. The protection of economically important crops and livestock hinges on the availability and accuracy of weather information. Low income households can also become vulnerable to winter storm conditions if heating systems don't exist or are not operable. Unfortunately, public works departments in Florida generally do not have adequate resources to de-ice roads and bridges or remove snow from roadways, so even small amounts of snow and ice can be a concern.

b. Identifying Structures

Generally, structures are not vulnerable to severe winter storm/freeze in Levy County. However, the agricultural sector and respective land areas can be significantly harmed by severe winter storm/freeze. Table VII-7 and Table VII-8 describe structures and values by jurisdiction, categorized as Agriculture, as Agricultural land will be the most affected.

Also, Power supply facilities have proven to be the most vulnerable critical facilities because winter storms with an extended time frame cause peak use periods to also be extended. The result is that power suppliers cannot meet demand and must generate a pattern of "rolling brown-outs" that create temporary power outages in a geographic pattern.

c. Estimating Potential Loss

According to FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001), there are no loss estimation tables to calculate extent of damage for severe winter storm/freeze.

Therefore, the total values of vulnerable areas (all areas designated as Agriculture) were calculated to estimate potential loss. The data is from the Levy County Property Appraiser’s Office (2015).

d. Analyzing Development Trends

As the population grows in Levy County, land in Agriculture uses maybe lost to other uses (see Map VII-1 through VII-9). However, as Levy County is one of the least densely-populated counties in Florida, and rate of growth is steady, Agriculture will mostly likely remain one of the County’s primary land uses and economic drivers.

e. Multi-Jurisdictional Risk Assessment

Tables VII-7 and VII-8 describe the Agricultural structures and values, by municipality, that are vulnerable to severe winter storms/freeze. Jurisdictions most vulnerable to severe winter storms/freeze include Chiefland and Williston.

9. Dam Failure

a. Overview

Types of structures and infrastructure affected by dam failure include: mobile homes, poorly constructed homes, non-elevated homes, telecommunications, electrical utilities, potable water, roadways, waterways, agriculture, livestock, fisheries, economic disruptions, environmental damage. Impacts are the same as those in the Flood section.

b. Identifying Structures

According to the Inglis Main Dam and Bypass Channel Dam Emergency Action Plan (2003), structures in Inglis and Yankeetown that are adjacent to the Withlacoochee River are most vulnerable to flood from dam failure. Yankeetown Town Hall / Fire Department is located a block from the Withlacoochee River and is vulnerable in the case of dam failure.

c. Estimating Potential Loss

Following boundaries from the Inglis Main Dam and Bypass Channel Dam Emergency Action Plan (2003), parcels adjacent to the Withlacoochee River are most vulnerable to flooding from dam failure. The following table describes the number of structures and total values by land use category within this vulnerable area. Extent of damage is not considered, as no data was available to estimate percent damage.

Table VII-58. Dam Failure Vulnerability

Use Category	# Bldgs	Value
Agriculture	0	466,667
Residential- Single-Family	258	69,650,340
Residential- Multi-Family	NA	NA
Residential- Mobile Homes	16	949,793
Commercial	3	1,813,341
Industrial	1	83,490
Institutional	NA	NA
Government	0	901,206

Misc. Infrastructure	5	9,451,405
TOTAL	283	83,316,241

d. Analyzing Development Trends

Areas vulnerable to flood from dam failure, including Yankeetown and Inglis, have had the largest proportionate population growth since the 2000 census. Generalized future land uses located within these vulnerable areas include Conservation, Recreation, Commercial, Industrial, with the majority of the area in Residential (see Map VII-1 through VII-9).

e. Multi-Jurisdictional Risk Assessment

The tables below describe the structures and values, by municipality, that are vulnerable to flooding from dam failure.

Table VII-59. Dam Failure Vulnerability by Jurisdiction

Jurisdiction	# Bldgs	TOTAL Value
Inglis	178	41,258,720
Yankeetown	104	36,798,406
Levy Un-Incorporated	1	5,259,116

D. Economic Vulnerability

Agriculture is the largest economic generator in Levy County. Forestry products are a major export of the County. The forestry industry is more disaster resistant than other agricultural crops such as watermelons or peanuts which also make significant contributions to the local economy. Mitigation measures to reduce crop loss from hurricanes are not considered practical. However, mitigation of wildfire damages to the forestry industry could be implemented through policies, planning and best management practices. Chapter XI includes recommendations for initiatives to mitigate wildfires.

Another industry that brings money into the County is the tourism industry. Tourism is not fully reflected in the tables above because restaurants are included as commercial. The largest single generator of tourism income in Levy County is the Cedar Key business district. Not only is the downtown area near the Gulf and susceptible to wind and wave, but the largest and newest restaurants are built on a wharf. The foundations for these structures are actually pilings in the Gulf of Mexico. Obviously, this is a very vulnerable coastal location. The proposed hardening and storm resistance outfitting of the community center in Cedar Key will have a definite economic benefit if implemented all of Cedar Key’s businesses. The initiative to harden, provide back-up power generation and secure a water filtration system for the community center will allow for a return to normalcy within the community. This will allow for businesses and citizens to resume their practice and recover in a quick and timely fashion. The actual cost savings generated by this initiative will depend on participation rates. However, the economic value the mitigation initiative brings to this small, remote island community is unarguably a very important step toward a more disaster-proof local economy. Economic losses resulting from a tropical storm or even a Category 1 hurricane can be effectively mitigated by these projects if implemented. Economic losses to the contents of Cedar Key structures will be significantly higher without their requested projects.

Another project for the city is to utilize a portable generator for lift station operation during power outages. Without this, the city will have an inoperable sewer system creating a health and environmental

hazard. Cedar Key displays what may be the most profound case of lifeline dependency in the state. To reach the commercial area of Cedar Key one must cross four bridges. Roadway access to the island is cut off at bridge number 4 (the closest to the mainland) any time the Gulf waters reach 5 feet above the mean high tide. The water supply pipe that brings water to the City from the treatment facilities on the mainland is attached to the bridge and is vulnerable to wave action and floating debris. The pipe broke in Hurricane Josephine (1996) and the water supply was cut off for several days. This past mitigation project has been addressed and corrected, however without power to the lift stations, this vulnerability will remain. Most importantly, this initiative will have significant public health benefits, but it will also ensure that the tourism industry, especially motels and restaurants, will be less vulnerable.

Though not a current project, Levy County conducted a project designed to mitigate water quality issues with regards to the aquaculture industry. The clam farming industry in Levy County has grown in the past few years with support and funding from the state's economic development resources in response to the loss of fishing industry jobs resulting from the state referendum to limit net fishing. The 1998 El Nino rainfall event sent a flush of fresh water out into the Gulf that proved to be fatal to the newly seeded crop of clams of numerous state clam leases just offshore of Levy County. Furthermore, not only were the small clams out in the Gulf killed, but the tiny clams growing in the nursery were killed. With the seed stock now dead, the industry had to wait 18 months for a new hatching of clams to grow large enough to be set out into the Gulf waters. The mitigation project/solution that proposes to reduce the industry's vulnerability to sudden water quality changes is a clam nursery with a closed water circulation system that does not rely on the Gulf waters. The 18 month and up to 3 year down-time is significant in that most of the clam farming business cannot survive without additional income sources. The Institute of Food and Agricultural Sciences at the University of Florida (IFAS) continues to research and work on techniques to mitigate this particular vulnerability to the economic conditions of the coastal communities of Levy County.

VIII. HAZARD MITIGATION PROJECTS AND INITIATIVES

The mitigation initiatives that have been developed have their basis in the community guiding principles on hazard mitigation. The initiatives are intended to actively reduce a community's vulnerability to hazards. This has been justified through the vulnerability assessment section of the strategy. Finally, mitigation initiatives accurately reflect the community's needs. The Working Group assigned to develop the Strategy should continue to assure that local needs are incorporated in the mitigation initiatives. These steps help develop projects that have their basis in the community's overall vision of hazard mitigation, or directly address vulnerability to hazards.

Most governments conduct mitigation activities on an ongoing basis by implementing projects that simply make good sense. However, documenting and itemizing the amount of money a community spends each year on these activities will identify where mitigation funds are being spent. Some federal grant programs require local governments to secure matching funds. In the future, program funds spent on mitigation in the community may count as a local match. Therefore, it is recommended that local governments keep a record of ongoing mitigation activities. In addition, procedures developed to monitor and coordinate these expenditures will help towards expediting recovery from future natural disasters.

The Capital Improvements Element from the local government Comprehensive Plan includes a list of prioritized work projects. This list can serve as a model for prioritizing mitigation projects and programs for funding. Mitigation projects that are listed in the Capital Improvements Element of the local Comprehensive Plan will receive additional points toward approval in the competitive grant process.

Numerous funding programs are available to facilitate the process of identifying and implementing mitigation initiatives such as the Community Development Block Grants (CDBG), the Emergency Management Preparedness and Assistance Program (EMPA), the Hazard Mitigation Grant Program (HMGP), and the Flood Mitigation Assistance Program (FMAP). Additional information regarding grant funding sources for mitigation activities is included in Chapter IX (Funding Sources).

Listed below is the ranked and prioritized list of mitigation initiatives. The project list also appears a second time in unranked order. The initiatives have been nominated by the County and municipal representatives on the Working Group and prioritized by the Group using the adopted criteria. An average score was developed from the group scoring. Vulnerability analysis has been performed by the staff to the Working Group using the approved criteria.

During this scoring process, evaluators were asked to assign up to 6 points for the category of "documentation of project costs". This number combined with the population served and the 16 total categories helped to evaluate the benefits of each project in relation to its cost. This consideration of the "documentation of project costs" as well as the up to 6 points assigned for population figures establishes a simplified cost to benefit value as scored by members of the Working Group. The scores for all sections (as seen in Appendix C) from the evaluation process were averaged to come up with a final score. Scored projects were then grouped into priority order for implementation.

Levy County understands the value of cost to benefit analysis. The Working Group understands that FEMA employs a formal cost-benefit computer module to determine project funding. As Levy County LMS projects move forward to the application phase, a more detailed cost-benefit analysis will be

performed if required by the funding agency. For the purposes of ranking mitigation projects, the FEMA cost benefit analysis is not necessary at the local level.

The list should be used to guide local government mitigation activity on an ongoing basis and can function as a road map after a disaster. Upon notice of funds awarded in a post disaster situation, the Working Group will meet to vote on the projects and evaluate them based on needs as well as costs to benefits in order to maximize available allocated monies. The projects included on this list are justified based on a community’s vulnerability assessment, and are supported by guiding principles and existing policies and ordinances.

From the beginning of the 2015 rewrite process, the Working Group determined the previous Project List was deemed outdated. The Working Group decided to reintroduce a new Project List for the five year planning cycle. Many projects were completed or deemed no longer a priority for the County or the municipality who nominated them in 2009 and after. Below is an explanation for each project and why it was rejected. The group decided that all previously existing projects, that were still relevant but not addressed or mitigated were allowed to be resubmitted to be included on the current project list LMS rewrite.

Table VIII-1. Projects Eliminated from Project List from 2011-2015

Project Number	Jurisdiction	Year Submitted	Project Name	Reason For elimination
FS01	City of Fanning Springs	2009	City of Fanning Springs Phase I and II Generator Installation	Project Complete
FS03	City of Fanning Springs	2009	City of Fanning Springs Expansion of Fire Department Facility	No longer a priority, as County provides service
FS04	City of Fanning Springs	2009	City of Fanning Springs US 19 Storm Water Project	No longer a priority
FS06	City of Fanning Springs	2012	Historic Park Construction	Project Complete
FS09	City of Fanning Springs	2014	Community Center Retrofit for Storm Shelter/Recovery	No longer a priority
YT01	Town of Yankeetown	2009	Inglis-Yankeetown Potable Water Interconnect	Project Complete
YT02	Town of Yankeetown	2009	Yankeetown Volunteer Fire Rescue VHF Communication	Project Complete
YT06	Town of Yankeetown	2009	Yankeetown- Waste Water Feasibility Study	Will be included in expanded study area for Project IG04.
LC03	Levy County	2009	Levy County- CR 335 Road Way Improvement	Project Complete
CK01	Cedar Key	2010	Portable Generator for Lift Stations	Project Complete
FS07	City of Fanning Springs	2012	Fire Rescue Ambulance Purchase	Project Complete

Below is the current Project List as designated by the 2015 Working Group. Table VIII-2 is all projects submitted. Table VIII-3 is the project list by rank with scores. All projects on both the ranked and unranked lists are intended to mitigate existing and known hazards to the jurisdiction who nominated the project. In many cases, each initiative (project) mitigates hazards beyond the jurisdictional boundary of the nominating party and in all cases, mitigated multiple hazards in one way or another.

Table VIII-3 ranks submitted mitigation strategy projects into mitigation actions to be taken in the order of greatest importance to the county and its municipalities. These are the specific mitigation action to be taken should funding become available unless re-prioritized during the course of an event.

Table VIII-2. Project List Submitted for 2016

Proj ect Num ber	Jurisdiction	Year Submi tted	Project Description	Respo nsible Parties	Comp letion Timef rame	Potential Funding Sources
FS02	City of Fanning Springs	2009	City of Fanning Springs Sewer Project	municipal Building Dept	24-48 mo	PDM, EMPA, CDBG
FS05	City of Fanning Springs	2012	Waste Water Project	municipal Building Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
FS08	City of Fanning Springs	2012	Water Well Improvements- replace arsenic wells	municipal Building Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
FS10	City of Fanning Springs	2014	Island Causeway Improvement Project	municipal Public Works	12-24 mo	HMGP, CDBG, FDOT, SRWMD
YT03	Town of Yankeetown	2009	Establish Back-Up Emergency Operations and Preparedness Center	municipal Building Dept	6-12 mo	PDM, EMPA, CDBG
YT04	Town of Yankeetown	2009	Yankeetown- Implement Stormwater Management Plan	municipal Building Dept	24-36 mo	HMGP, CDBG, SWFWMD
YT05	Town of Yankeetown	2009	Yankeetown- Develop Stormwater Management Plan	municipal Building Dept	12-24 mo	HMGP, CDBG, SWFWMD
WL01	City of Williston	2009	Generator for Hospital Lift Station	municipal Building Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford

Proj ect Num ber	Jurisdiction	Year Submi tted	Project Description	Respo nsible Parties	Comp letion Timef rame	Potential Funding Sources
WL0 2	City of Williston	2009	Generator for Williston Elementary School	muni cipal Buildin g Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
WL0 3	City of Williston	2009	Generator for Fire and Police Station with 24 Hour dispatch	muni cipal Buildin g Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
WL0 4	City of Williston	2009	Drainage Improvements to NW 4 th Street	muni cipal Public Works	12-24 mo	HMGP, CDBG
WL0 5	City of Williston	2012	Drainage Improvements on South Main Street at US2 7	muni cipal Public Works	12-24 mo	HMGP, CDBG
WL0 6	City of Williston	2012	Pressure Reducing Valve for Potable Water System	muni cipal Public Works	12-24 mo	HMGP, CDBG
WL0 7	City of Williston	2015	New Emergency Warning Sirens plus materials to hook up sirens to poles.	muni cipal Buildin g Dept	6-12 mo	HMGP, EMPA
BR0 2	Town of Bronson	2009	Emergency Generator for Sewer Lift Stations	muni cipal Public Works	6-12 mo	PDM, EMPA
BR0 3	Town of Bronson	2009	Storm Drainage on Oak Street	muni cipal Public Works	12-18 mo	PDM, EMPA, CDBG
CH0 6	City of Chiefland	2012	City Emergency Operations Center Equipment	muni cipal Police Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
CH0 7	City of Chiefland	2013	Storm Shutters for Building Department	muni cipal Buildin g Dept	12-24 mo	HMGP, EMPA, CDBG, Stafford
CH0 8	City of Chiefland	2013	Storm Shutters for Police Department	muni cipal Buildin g Dept	12-24 mo	HMGP, EMPA, CDBG, Stafford
CH0 9	City of Chiefland	2013	Pavement and Storm Water Improvements for SW 4t1i Street	muni cipal Public Works	12-18 mo	PDM, EMPA, CDBG

Project Number	Jurisdiction	Year Submitted	Project Description	Responsible Parties	Completion Timeframe	Potential Funding Sources
CH10	City of Chiefland	2013	City Well Improvements	municipal Building Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
CH11	City of Chiefland	2014	SW 4 Street Paving	municipal Public Works	12-18 mo	PDM, EMPA, CDBG
IG02	Town of Inglis	2009	Palm Street Road Improvements- Enlarge Culverts, Widen Bridge and Provide Safety Bumpers at Palm Street	municipal Public Works	12-24 mo	HMGP, CDBG, Stafford
IG03	Town of Inglis	2009	Pave Critical Evacuation Route of Gladys Street from hammock Road to	municipal Building Dept	12-24 mo	HMGP, CDBG, Stafford
IG04	Town of Inglis	2009	Town of Inglis Sewer System Feasibility Study	municipal Public Works	12-24 mo	HMGP, CDBG, Stafford
IG05	Town of Inglis	2009	Construct Addition to Fire Station for Central Command Headquarters Levy	municipal Public Works	12-24 mo	HMGP, EMPA, CDBG, Stafford
LC01	Levy County	2009	County- 800 MHZ Cedar Key	County EM	6-12 mo	PDM, EMPA, CDBG
LC02	Levy County	2009	Levy County- 800 MHZ Williston	County EM	6-12 mo	PDM, EMPA, CDBG
LC04	Levy County	2009	Mitigation Public Outreach	County EM	6-12 mo	PDM, EMPA
LC05	Levy County	2012	Firewise Education and Outreach	County EM	6-12 mo	PDM, EMPA
LC06	Levy County	2016	Improving stormwater drainage in Inglis-Yankeetown area	County Public Works	12-18 mo	PDM, EMPA, CDBG
LC07	Levy County	2016	Hardening of facilities structures at the Levy County Public Safety Complex	County Public Safety	12-24 mo	HMGP, EMPA, CDBG, Stafford
LC08	Levy County	2016	Replace all the windows at the Levy County Public Safety Complex with high impact windows	County Public Safety	12-24 mo	HMGP, EMPA, CDBG, Stafford
LC09	Levy County	2016	Redundant radio communication dispatch capability at the Levy County Public Safety Complex	County Public Safety	6-12 mo	PDM, EMPA, CDBG

Project Number	Jurisdiction	Year Submitted	Project Description	Responsible Parties	Completion Timeframe	Potential Funding Sources
LC10	Levy County	2016	Replace six (6) Radio communication tower sites in the Levy county	County Public Safety	6-12 mo	PDM, EMPA, CDBG
LC11	Levy County	2016	Station generators at Levy County Fire Rescue Station 4, 6, 9, 10, and 11	County Public Safety	6-12 mo	HMGP, EMPA
CK02	Cedar Key	2009	Portable Generator for Community Center	municipal Building Dept	6-12 mo	HMGP, EMPA
CK03	Cedar Key	2009	Hardening for Roof, Doors and Windows at Community Center	municipal Building Dept	12-24 mo	HMGP, EMPA, CDBG, Stafford
CK04	Cedar Key	2009	Water Well Filtration System for Community Center	municipal Building Dept	6-12 mo	HMGP, EMPA, CDBG, Stafford
CK05	Cedar Key	2016	Raise a section of G Street between 1st Street and 4th Street that continually floods	municipal Public Works	12-18 mo	PDM, EMPA, CDBG

Note: PDM= Pre-Disaster Mitigation Grant Program; EMPA= Emergency Management Preparedness and Assistance Program; CDBG= Community Development Block Grants; HMGP= Hazard Mitigation Grant Program; FDOT= Florida Department of Transportation; SWFWMD= Southwest Florida Water Management District; SRWMD= Suwannee River Water Management District; Stafford= Stafford Public Assistance Program Section 406.

Table VIII-3. Project List By Rank Submitted for 2016

Project Number	Jurisdiction	Year Submitted	Score	Rank	Description
LC09	Levy County	2016	73.43	1	Redundant radio communication dispatch capability at the Levy County Public Safety Complex
LC11	Levy County	2016	72.86	2	Station generators at Levy County Fire Rescue Station 4, 6, 9, 10, and 11
LC07	Levy County	2016	72.57	3	Hardening of facilities structures at the Levy County Public Safety Complex
LC01	Levy County	2009	68.5	4	County- 800 MHZ Cedar Key
LC08	Levy County	2016	68	5	Replace all the windows at the Levy County Public Safety Complex with high impact windows
LC10	Levy County	2016	67.86	6	Replace six (6) Radio communication tower sites in the Levy county
IG02	Town of Inglis	2009	67.25	7	Enlarge Culverts, Widen Bridge and Provide Safety Bumpers at Palm Street
IG04	Town of Inglis	2009	65.75	8	Town of Inglis Sewer System Feasibility Study

Project Number	Jurisdiction		Score	Rank	Description
WL01	City of Williston	2009	65.43	9	Generator for Hospital Lift Station
WL03	City of Williston	2009	65.25	10	Generator for Fire and Police Station with 24 Hour dispatch
CH09	City of Chiefland	2013	64.8	11	Pavement and Storm Water Improvements for SW 4th Street
LC06	Levy County	2016	64.29	12	Improving stormwater drainage in Inglis-Yankeetown area
WL02	City of Williston	2009	64.28	13	Generator for Williston Elementary School
YT04	Town of Yankeetown	2009	64	14	Yankeetown- Implement Stormwater Management Plan
LC02	Levy County	2009	63.25	15	Levy County- 800 MHZ Williston
YT05	Town of Yankeetown	2009	62.25	16	Yankeetown- Develop Stormwater Management Plan
IG05	Town of Inglis	2009	61.75	17	Construct Addition to Fire Station for Central Command Headquarters Levy
CH11	City of Chiefland	2014	61.6	18	SW 4 Street Paving
LC04	Levy County	2009	61.5	19	Mitigation Public Outreach
BR02	Town of Bronson	2009	60.57	20	Emergency Generator for Sewer Lift Stations
YT03	Town of Yankeetown	2009	59.71	21	Establish Back-Up Emergency Operations and Preparedness Center
CH08	City of Chiefland	2013	57.6	22	Storm Shutters for Police Department
WL05	City of Williston	2012	57	23	Drainage Improvements on South Main Street at US2 7
IG03	Town of Inglis	2009	54.25	24	Pave Critical Evacuation Route of Gladys Street from hammock Road to US 19
CH07	City of Chiefland	2013	54.2	25	Storm Shutters for Building Department
FS05	City of Fanning Springs	2012	52.9	26	Waste Water Project
CH10	City of Chiefland	2013	51.6	27	City Well Improvements
WL06	City of Williston	2012	50.2	28	Pressure Reducing Valve for Potable Water System
CK03	Cedar Key	2009	50	29	Hardening for Roof, Doors and Windows at Community Center
CH06	City of Chiefland	2012	48.125	30	City Emergency Operations Center Equipment
CK02	Cedar Key	2009	47.25	31	Portable Generator for Community Center
FS10	City of Fanning Springs	2014	47	32	Island Causeway Improvement Project
CK04	Cedar Key	2009	42.75	33	Water Well Filtration System for Community Center
FS02	City of Fanning Springs	2009	41.43	34	City of Fanning Springs Sewer Project
WL04	City of Williston	2009	38.25	35	Drainage Improvements to NW 4th Street
BR03	Town of Bronson	2009	37.43	36	Storm Drainage on Oak Street
CK05	Cedar Key	2016	36.57	37	Raise a section of G Street between 1st Street and 4th Street that continually floods
WL07	City of Williston	2016	34.57	38	New Emergency Warning Sirens plus materials to hook up sirens to poles.

Project Number	Jurisdiction		Score	Rank	Description
FS08	City of Fanning Springs	2012		Unranked	Water Well Improvements- replace arsenic wells
LC05	Levy County	2012		Unranked	Firewise Education and Outreach

Table VIII-4. Hazards Related to Each Project

Project Number	Jurisdiction	Project Description	Tropical Cyclone	Floods	Wild fire	Sink holes	Coastal Erosion	Drought/Extreme Heat	Tornadoes	Severe Winter Storm/ Freeze	Dam Failure
FS02	City of Fanning Springs	Sewer Project	X	X		X					X
FS05	City of Fanning Springs	Waste Water Project	X	X		X					X
FS08	City of Fanning Springs	Water Well Improvements- replace arsenic wells	X	X		X					
FS10	City of Fanning Springs	Island Causeway Improvement Project	X	X	X				X		
YT03	Town of Yankeetown	Establish Back-Up Emergency Operations and Preparedness Center	X	X	X			X	X	X	X
YT04	Town of Yankeetown	Implement Stormwater Management Plan	X	X		X					X
YT05	Town of Yankeetown	Develop Stormwater Management Plan	X	X		X					X
WL01	City of Williston	Generator for Hospital Lift Station	X	X	X				X	X	X
WL02	City of Williston	Generator for Williston Elementary School	X	X	X				X	X	X
WL03	City of Williston	Generator for Fire and Police Station with 24 Hour dispatch	X	X	X				X	X	X
WL04	City of Williston	Drainage Improvements to NW 4 th Street	X	X		X					
WL05	City of Williston	Drainage Improvements on South Main Street at US2 7	X	X		X					
WL06	City of Williston	Pressure Reducing Valve for Potable Water System	X	X		X					
WL07	City of Williston	New Emergency Warning Sirens plus materials to hook up sirens to poles.	X						X		
BR02	Town of Bronson	Emergency Generator for Sewer Lift Stations	X	X	X				X	X	X
BR03	Town of Bronson	Storm Drainage on Oak Street	X	X		X					X

Local Mitigation Strategy Levy County

Project Number	Jurisdiction	Project Description	Tropical Cyclone	Floods	wind fire	Sink holes	Coastal Erosion	Drought/Extreme Heat	Tornadoes	Severe Winter Storm/ Freeze	Dam Failure
CH06	City of Chiefland	City Emergency Operations Center Equipment	X	X	X	X		X	X	X	
CH07	City of Chiefland	Storm Shutters for Building Department	X						X		
CH08	City of Chiefland	Storm Shutters for Police Department	X						X		
CH09	City of Chiefland	Pavement and Storm Water Improvements for SW 4th Street	X	X	X				X		
CH10	City of Chiefland	City Well Improvements	X	X		X					
CH11	City of Chiefland	SW 4 Street Paving	X	X	X				X		
IG02	Town of Inglis	Enlarge Culverts, Widen Bridge and Provide Safety Bumpers at Palm Street	X	X		X					X
IG03	Town of Inglis	Pave Critical Evacuation Route of Gladys Street from hammock Road to	X	X	X				X		X
IG04	Town of Inglis	Sewer System Feasibility Study	X	X		X					X
IG05	Town of Inglis	Construct Addition to Fire Station for Central Command Headquarters	X	X	X			X	X	X	X
LC01	Levy County	Levy County- 800 MHZ Cedar Key	X	X	X			X	X	X	X
LC02	Levy County	Levy County- 800 MHZ Williston	X	X	X			X	X	X	X
LC04	Levy County	Mitigation Public Outreach	X	X	X	X	X	X	X	X	X
LC05	Levy County	Firewise Education and Outreach						X			
LC06	Levy County	Improving stormwater drainage in Inglis-Yankeetown area	X	X		X					X
LC07	Levy County	Hardening of facilities structures at the Levy County Public Safety Complex	X						X		
LC08	Levy County	Replace all the windows at the Levy County Public Safety Complex with high impact windows	X						X		
LC09	Levy County	Redundant radio communication dispatch capability at the Levy County Public Safety Complex	X	X	X			X	X	X	X
LC10	Levy County	Replace six (6) Radio communication tower sites in the Levy county	X	X	X			X	X	X	X

Local Mitigation Strategy Levy County

Project Number	Jurisdiction	Project Description	Tropical Cyclone	Floods	wind fire	Sink holes	Coastal Erosion	Drought/Extreme Heat	Tornadoes	Severe Winter Storm/Freeze	Dam Failure
LC11	Levy County	Station generators at Levy County Fire Rescue Station 4, 6, 9, 10, and 11	X	X	X				X	X	X
CK02	Cedar Key	Portable Generator for Community Center	X	X	X				X	X	X
CK03	Cedar Key	Hardening for Roof, Doors and Windows at Community Center	X						X		
CK04	Cedar Key	Water Well Filtration System for Community Center	X	X		X					X
CK05	Cedar Key	Raise a section of G Street between 1st Street and 4th Street that continually floods	X	X							

IX. FUNDING SOURCES

The following list of federal and state funding sources is the major resource that will be considered in the Local Mitigation Strategy. These sources are administered through the state of Florida which consider hazard mitigation as a main priority in their funding criteria. It is recommended that further information on any of these grant funding sources be investigated by accessing the Florida Division of Emergency Management website, which contains information on historical and potential funding sources for disaster mitigation, recovery and long-term redevelopment projects funded by federal, state and other organizations. FDEM provides representative examples of grant projects that have been approved by each grant funding resource. Program descriptions, eligibility requirements, application procedures and contact information are provided for various funding sources.

Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) operates under the authority of Public Law 100-707, the Robert T. Stafford Disaster Relief and Emergency Assistance Act. There are two hazard mitigation programs authorized under the Stafford Act. The site specific mitigation under Section 406 is part of each Damage Survey Report that is written if authorized by the federal/state/local officials and is in accordance with any applicable rules and regulations. This type of mitigation receives 75 percent federal money and requires a state/local match of 25 percent.

The HMGP under Section 404 provides 75/25 matching funds to eligible applicants to implement immediate and long-term hazard mitigation measures. A total of up to 15 percent of the combined public assistance and individual assistance programs are available to fund hazard mitigation projects.

These measures will be consistent with the state's Hazard Mitigation Administrative Plan and the Hazard Mitigation Plan developed in response to the planning requirements of the Stafford Act.

The HMGP is used to fund projects to protect either public or private property. Examples are:

- Structural hazard control or protection, such as debris basins or stormwater facilities
- Retrofitting of critical facilities, such as flood proofing or installation of hurricane shutters
- Property acquisition, relocation, and elevation to protect structures from future damage
- Development of state and local mitigation standards, and comprehensive mitigation plans or programs with implementation as an essential component.

Pre-Disaster Mitigation Grant Program

The Pre-Disaster Mitigation Grant Program (PDM) exists to assist communities in reducing overall risk to the population and structures from natural disasters. Eligible applicants are state agencies, federally recognized Indian tribal governments, and local governments. Private non-profit organizations are not eligible to apply; however, they may request a local government submit an application for proposed activities on their behalf.

Potential project types include:

- Acquisition
- Elevation
- Engineering studies
- Hydrologic/hydraulic studies/analyses

- Localized flood control project
- Protective measures for utilities
- Relocation
- Retrofitting
- Safe rooms
- Storm water management projects
- Vegetation management

Through PDM, Florida has provided protection to local government structures and critical facilities, as well as reduced flooding in neighborhoods. Although the PDM program is federally funded, the program is administered through a partnership arrangement with DEM. In this capacity, the key responsibilities of the state are to:

- Solicit and review proposals from applicants
- Prepare and submit proposals in accordance with PDM funding guidance
- Manage the PDM program and funds available under the program

Public Assistance Funding

Section 406 of the Stafford Act authorizes funding to local governments for cost-effective repairs, restoration, reconstruction, or replacement of a public facility damaged or destroyed by a major disaster. This funding is site specific and must be tied to a specific damaged facility.

The Federal Coordinating Officer may authorize hazard mitigation measures that are necessary for compliance with codes and standards if the measures are in the public interest and the following conditions are met:

- The mitigation measures will substantially reduce or eliminate the risk of recurring damage to the facility.
- The measures reflect sound engineering and construction practices.
- The measures are cost-effective.
- Applicable environmental and floodplain management requirements have been met.

It is important that the State Hazard Mitigation Officer work with the Hazard Mitigation Engineer when inspecting the damage to make site specific recommendations for incorporating hazard mitigation measures into necessary repairs and to include them in the Damage Survey Reports.

Emergency Management Performance Grant

FEMA is responsible for leading and supporting the nation in a comprehensive, risk-based, all hazards emergency management program. The primary means of ensuring the development and maintenance of such a program is FEMA funding to states through the Emergency Management Performance Grant (EMPG). The purpose of the EMPG is to support comprehensive emergency management at the state and local levels, and to encourage the improvement of mitigation, preparedness, response, and recovery capabilities for all hazards.

DEM uses EMPG funding for programs in all four phases of emergency management: preparedness, response, recovery and mitigation. Examples of the effective use of EMPG funding for mitigation

purposes includes the hiring of a consultant to conduct the statewide risk and vulnerability assessment, and partial funding of the Florida Prepares initiative.

Emergency Management Preparedness and Assistance Trust Fund

The Emergency Management Preparedness and Assistance Trust Fund (EMPA) consists of two competitive grant programs: The Emergency Management Competitive Grant Program and the Municipal Competitive Grant Program. Both programs are designed to implement projects that will further State and local emergency management objectives. The Notice of Funding Availability (NOFA) to open grant cycles for the EMPA grant programs are published in the Florida Administrative Weekly. Examples of eligible activities include:

- Storm shelter and critical facility retrofitting and equipping.
- Informational studies relating to evacuation scenarios, hurricane insurance risk assessment, transportation methodologies.
- Operational readiness and response equipment (such as radios, potable water delivery system, search and rescue equipment, warning/alert devices).
- Public disaster education projects, including individual training, radio and television public service announcements, brochures/ publications.
- Local mitigation strategy development activities.

Flood Mitigation Assistance Program (FMAP)

The Florida Division of Emergency Management in coordination with the Federal Emergency Management Agency administers the FMAP which is a pre-disaster grant program. Planning is the foundation of flood mitigation. Therefore, the state of Florida and FEMA encourage local governments to identify ways to reduce their risk of flood damage by preparing Flood Mitigation Plans. Planning grants may be provided to local governments to develop or update the flood portion of Local Mitigation Strategies. Project grants are available to owners of repetitively flooded structures to reduce flood losses. Examples of projects include:

- Elevation of structures insured by the National Flood Insurance Program (NFIP).
- Acquisition of NFIP insured structures and real property.
- Relocation or demolition of NFIP insured structures.
- Dry flood proofing of NFIP insured structures.
- Minor localized drainage projects.
- Beach renourishment activities

Residential Construction Mitigation Program

The Residential Construction Mitigation Program (RCMP) is a state funded mitigation grant program established within the Bureau of Mitigation, DEM by Section 215.559 (1) F. S. DEM receives an annual appropriation of \$10 million from the investment income of the Florida Hurricane Catastrophe Fund (FHCF) authorized under the Florida General Appropriation Act and Section 215.555 (7) (c) F. S. The purpose of the \$10 million annual appropriation is to provide funding to local governments, state agencies, public and private educational institutions, and nonprofit organizations to support programs that improve hurricane preparedness, reduce potential losses, and to provide research and education on how to reduce hurricane losses.

The funds are also used for programs that will assist the public in determining the appropriateness of particular upgrades to structures, financing such upgrades, or for protecting local infrastructure from potential damage from a hurricane. Section 215.559 F.S., establishes minimum funding levels for specific program areas and creates an Advisory Council to make recommendations on developing programs within the RCMP.

The specific areas funded by the \$10 million appropriation include retrofits for existing public facilities, the Mobile Home Tie Down program administered by Tallahassee Community College, a hurricane research program conducted by Florida International University, wind mitigation retrofit projects, and public outreach programs.

The shelter retrofit program receives \$3 million of the annual \$10 million appropriation. Of the remaining \$7 million, forty percent of the funds are designated for the Mobile Home Tie Down program and 10 percent is designated for the hurricane research program. The remaining funds are used to competitively award contracts for wind mitigation retrofits projects and conduct public outreach programs to Florida homeowners and local governments.

Florida Communities Trust

The Florida Communities Trust Program (FCT) provides approximately \$300 million annually to local governments. Small local governments with a population of less than 10,000 are eligible for a 100% grant award. The amount of any award or combination of awards to an applicant cannot exceed ten percent of the advertised amount of available funding. Application cycles are announced in the Florida Administrative Weekly at least 75 days prior to each application deadline.

The FCT offers incentives to assist local governments in protecting resources identified in the comprehensive plan. FCT helps to implement conservation, recreation, open space, and coastal management elements. FCT provides financial and technical assistance to acquire lands that conserve natural resources, correct undesirable development patterns, restore degraded natural areas, enhance resource values, restore deteriorated urban waterfronts, reserve lands for later purchase, use innovative land acquisition methods, and provide public access to surface waters.

When Florida Forever funding is available, FCT's Parks and Open Space program receives 21 percent of the funds and FCT's Stan Mayfield Working Waterfronts program receives 2.5 percent of the funds. In 2008, the Florida legislature created the Stan Mayfield Working Waterfronts Florida Forever grant program. This program sets aside 7.5 million of the annual 300 million dollar budget for seafood harvesting and aquaculture industries in Florida.

Florida Small Cities Community Development Block Grant (CDBG)

In addition to the long-established CDBG entitlement programs the state allocates funding for a Neighborhood Revitalization program and an Economic Development program. Typical activities that are eligible for the Revitalization program are:

- Construction of water and sewer lines
- Construction of streets and neighborhood facilities.
- Sewer and water system hookups.
- Upgrades to systems in low to moderate income neighborhoods.
- Housing.

Typical activities eligible for funding under the Economic Development program are:

- Assistance to local businesses in retaining or creating jobs.
- Public infrastructure necessary for business to locate at a desired site.

The CDBG program will also allocate funding to affected areas following Presidentially-declared disasters. Current priorities are: acquisition of repetitive loss properties, elevation of structures, and drainage projects. As always, CDBG grant funding focuses on low to moderate income households.

Other Emergency Related Funding Sources

These funding sources are not specifically targeted by the Local Mitigation Strategy; however, are included to give a more complete overview of disaster-related funding sources.

Small Business Administration (SBA)

Once implemented, the SBA program can offer low interest rates to individuals and businesses for refinancing, repair, rehabilitation or replacement of damaged property (real and personal). Loans may be available to businesses which have suffered an economic impact as the result of the disaster. An SBA declaration can be made independently or in concert with a Presidential disaster declaration. There must be a minimum of 25 homes or businesses with 40 percent or more uninsured losses and/or five businesses with substantial economic or physical losses.

Temporary Housing

In the event of a Presidentially-declared disaster, the FEMA managed Temporary Housing Program may be authorized in order to meet the housing needs of victims. The program has several components including:

a. **Mortgage and Rental Assistance Program**

Applicable for individuals or families who have received written notice of eviction or foreclosure due to financial hardship caused by the disaster.

b. **Rental Assistance**

Provided to homeowners or renters whose dwelling is determined unlivable as a direct result of the disaster.

c. **Minimal Repair Program**

This program provides money for owner occupied, primary residences which have sustained minor damage, and are unlivable as a direct result of the disaster.

d. **Mobile Homes or Other Readily Fabricated Dwellings**

When all other avenues are exhausted, FEMA may initiate the mobile home program. Such homes are moved to, or near, the disaster site and set up.

Individual and Family Grant Program

The Individual and Family Grant Program (IFG) provides grants up to \$14,800 though the average grant award ranges from 2,000 to 4,000 dollars to help families meet serious needs and necessary expenses

that are not covered by other governmental assistance programs, insurance, or other conventional forms of assistance. Financial aid can be provided under the following categories:

- a. Medical expenses
- b. Transportation costs
- c. Home repairs
- d. Replacement of essential property
- e. Protective measures
- f. Funeral expenses

Seventy-five percent of the costs are funded by FEMA and 25 percent funded by the state and/or local government.

Disaster Unemployment Assistance

Individuals unemployed as a result of a major disaster, and not covered by regular state or private unemployment insurance programs, will be eligible for unemployment benefits. The weekly compensation received will not exceed the maximum amount of payment under Florida's Unemployment Compensation Program, and may be provided until an individual is re-employed or up to 26 weeks after the major disaster is declared, whichever is the shorter period.

Farmers Home Administration (FmHA)

Low interest disaster loans are made available to farmers, ranchers and agricultural operators for physical or production losses. Loans of up to 50 percent are made available to farmers, ranchers and agricultural operators for physical or production losses. Loans of up to 50 percent of the loss or \$500,000 (whichever is less) may be made to either the tenant or owner of the agricultural business.

Income Tax Service

The Internal Revenue Service helps victims identify ways in which the disaster affects their federal income tax. Casualty loss credits, early tax refunds and information on lost documentation are some services available to disaster victims.

Food Coupons

Emergency food coupons may be made available to disaster victims. This program is administered by the U.S. Department of Agriculture at the federal level and Department of Human Resources DHRS at the state level. Length and eligibility for receiving food coupons will be determined by the President.

Community Outreach

FEMA and state officials will conduct "outreach" activities in an effort to inform disaster victims concerning what programs are available. This outreach will be accomplished by utilizing all media resources and by assembling and deploying outreach teams to remote areas to inform residents of assistance efforts.

Disaster Related Stress Management

Professional services are provided to help relieve disaster-related stress and prevent the development of more serious physical and mental health problems.

Florida Department of Insurance

Assistance and information about resolving insurance claims are provided.

National Fire Programs

Project Grants; Use of Property, Facilities, and Equipment; Provision of Specialized Services;
Direct Financial Assistance.

X. RECOMMENDATIONS

The following list of recommended policy and program actions for hazard mitigation is based on the Community Guiding Principles as adopted by the Local Mitigation Strategy Working Group. These principles are a set of common goals and objectives derived from an analysis of the goals and objectives adopted within policies of all local governments within Levy County. Most of these policy areas are addressed in some way by each local government. It is suggested that local elected officials review the adopted goals, objectives and policies in the below listed policy areas to ensure that their adopted policies fit the needs of their respective jurisdictions. Additional policy areas listed have been suggested in the *Local Mitigation Strategy Guidebook*.

Develop policies and programs for mitigation of wildfire.

Policies should include an agreement with the County Forestry Agent to notify the Board of County Commissioners when fire restrictions are put into effect so the County can immediately adopt an Emergency Ordinance supporting the restrictions. This will greatly increase enforcement capabilities and also help to publicize the fire ban through the local media.

Homeowner education programs would be useful to instruct citizens on ways to mitigate the risk of wildfire around their homes.

Develop policies and plans for long-term temporary housing.

Initial programmatic steps to coordinate long-term temporary housing will be to assign responsibilities to identify appropriate housing resources, explore the process to coordinate State and federal assistance, and develop a plan.

The policy initiative for long-term temporary housing will include adopting the Long-term Temporary Housing Plan (probably as an annex in the Long-term Recovery Plan) and assigning the responsibility to implement the plan when needed.

Local governments should integrate the findings of the adopted County Disaster Housing Plan into their local plans. Cities should ensure proper zoning and policies are in place to facilitate the use of emergency disaster housing.

Develop Public/Private agreements for post-disaster recovery of the local business community.

Issues for possible agreement could include public use of privately owned heavy equipment or approved early re-entry for business owners to their place of business after a mandatory evacuation.

Develop policies and programs to retrofit existing manufactured homes in flood prone areas and regulate the location of new manufactured homes in flood prone areas.

Homeowner education programs need to stress the importance of anchoring the mobile home.

Develop a study of the benefits and costs of mobile home anchoring and educate homeowners. Also urge mobile home dealers and finance companies to develop incentive programs for structural stabilization.

Mitigating policies would include adopting more stringent anchoring requirements and inspecting existing mobile homes periodically for code compliance.

Require mobile home parks of over 100 units to build a community center.

Ensure that procedures within the Building Permit process clearly define requirements and responsibilities to notify property owners that subject properties are within the 100-year floodplain.

An effective policy to mitigate the purchase of property with flooding problems by unknowing buyers is to adopt a requirement to include a photocopy of the FIRM map for the area surrounding the property with the deed during the transfer of title.

Print brochures regarding floodplain development and post flood maps in public places.

Adopt policies and programs that address repetitively damaged and vulnerable residential and commercial structures. [Include policies on structural retrofitting, property acquisition, and relocation.]

Develop a program to identify vulnerable structures. Notify the owners and assist them in developing individual structural mitigation plans by identifying funding sources and educating them regarding cost beneficial retrofit projects.

Adopt post-disaster emergency permitting procedures for reconstruction and repair projects that have approved structural mitigation plans or show significant reduction of vulnerability.

Adopt policies that designate and prioritize areas for acquisition.

Initiate a study of repetitive loss and flood-prone areas that are, or could become likely candidates for acquisition grants. The purpose of the study would be to create a file on these areas that could be quickly converted into a grant application package after receiving consent from the owner and the local government.

Ensure that policies to regulate land use, floodplains, non-point source stormwater runoff, and the design and location of sanitary sewer and septic tanks in hazard-prone areas are monitored for effectiveness.

Seek funding for a study through the Florida Coastal Management Program to monitor coastal impacts or to update a coastal management element of the local Comprehensive Plan.

Maintain data and maps that reflect current Flood Insurance Study including any Letters of Map Revision

The National Flood Insurance Program (NFIP) has created an updated Flood Insurance Study (FIS), effective November 2, 2012, and Flood Insurance Rate Map (FIRM) series for Levy County showing the 100 and 500 year floodplain. These maps are based on LIDAR data gathered in 2009. The current FIRM presents flooding information for the entire geographic area of Levy County excluding Fanning Springs, which is part of the Gilchrist County FIS (effective September 29, 2006). Prior to countywide mapping, separate Flood Hazard Boundary Maps (FHBMs) and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. The updated Study and Maps provide detailed analysis to individual homeowners, communities and counties. This will enable the

emergency management personnel to make timely and accurate decisions about evacuation procedures. The county planning departments will be able to make more accurate decisions about building permits and comprehensive plan updates. Levy County has a number of areas that flood. Based on the previous FEMA maps the flooding was so severe over 50% of the County lies within a floodplain. With the LIDAR data and potential manipulation of GIS data a clear picture of the problem areas will be created.

Disaster Resistant Planning Techniques and Strategies

This chapter also deals with future actions that could be taken to continue building a disaster resistant community. Needs assessments and future vulnerability assessments will reveal mitigation opportunities within the various fields of Emergency Management, Planning and Public Administration. As in most cases it is much easier to identify problems than it is to identify solutions. This chapter presents strategies for addressing the problems by providing a direction where solutions can be found.

The action items that are needed to ensure operability during a storm are primarily the same for all jurisdictions. To better understand which communities should focus on which action items a spreadsheet was created. In this spreadsheet the values of High (H), Medium (M) and Low (L) have been assigned to each municipality's need to focus their primary mitigation strategies on a particular action item. A definition of the values and their relationship to the action item is described below.

Actions that promote control of hazards

- Storm water controls – Stormwater management plans through grants and fees.
 - H – Extreme documented flooding in jurisdiction
 - M – Some flooding in specific areas
 - L – Little to no flooding
- Structures to lessen hazard impacts – Hurricane shutters are one of the most cost-effective mitigation measures. All critical public facilities should be “hurricane hardened.” New facilities should be built to current structural standards for withstanding hurricane winds.
 - H – Many critical facilities without hurricane hardening
 - M – Few critical facilities without hurricane hardening
 - L – All critical facilities have hurricane hardening

Actions that protect public facilities and infrastructure

- Adjust infrastructure location, design – Avoid building new public infrastructure that will encourage growth in high hazard areas. Design new public infrastructure to withstand disasters.
 - H – High development rate
 - M – Some new development – very few public buildings
 - L – New development – primarily private
- Retrofit community facilities – Shutters, hurricane clips, roof retrofits, door braces
 - H – Many facilities without hurricane hardening
 - M – Few facilities without hurricane hardening
 - L – All facilities with hurricane hardening
- Hazard-proof new community facilities – Assure proper elevation, back-up generators, safe guard computers and communications systems.
 - H – All public facilities should comply due to potential hazards
 - M – Some potential for future hazards
 - L – Very little potential for hazards

- Site community facilities to maintain services – Site community facilities near trunk lines for utilities and ensure that access roads don't flood.
 - H – Very little development outside city limits
 - M – Expanded city limits
 - L – Continual development

Actions that promote emergency preparedness and response

- Preparedness plan/program – increase communications system and warning procedures for all disasters. Increase weather-monitoring capabilities.
 - H – Level of potential hazards
 - M – Level of potential hazards
 - L – Level of potential hazards
- Emergency response plans – Continue ongoing efforts for planning, preparedness and training. Focus on issues identified in needs assessments.
 - H – No specific response plan
 - M – A limited response plan
 - L – Response plan
- Evacuation plan/program – Begin with population/ housing analysis possibly following the 2000 census. Perform transportation analysis using updated traffic counts and roadway capacities.
 - H – Based on Population
 - M – Based on Population
 - L – Based on Population
- Sheltering plans – Perform structural analysis of shelters and incorporate population analysis.
 - H – No hurricane shelters
 - M – Small number of shelters
 - L – Adequate shelters

Table X-1. Action Items by Jurisdiction

	Bronson	Cedar	Chiefland	Fanning	Inglis	Otter	Williston	Yankeetown	Levy
	Key	Key	Springs	Springs	Creek	Creek	Yankee	Yankee	Unincorp.
Actions that promote control of hazards									
Storm water controls – Stormwater management plans through grants and fees.	M	H	M	H	H	M	L	H	M
Structures to lessen hazard impacts – Hurricane shutters are one of the most cost-effective mitigation measures. All critical public facilities should be “hurricane hardened.” New facilities should be built to current structural standards from withstanding hurricane winds.	L	H	M	M	H	M	L	H	M
Actions that protect public facilities and infrastructure									
Adjust infrastructure location, design – Avoid building new public infrastructure that will encourage growth in high hazard areas. Design new public infrastructure to withstand disasters.	M	M	M	M	M	L	L	M	L
Retrofit community facilities – Shutters, hurricane clips, roof retrofits, door braces	M	H	M	M	H	M	M	H	M
Hazard-proof new community facilities – Assure proper elevation, back-up generators, safeguard computers and communications systems.	M	H	M	M	H	L	M	H	M
Site community facilities to maintain services – Site community facilities near trunk lines for utilities and ensure that access roads don’t flood.	L	L	L	L	L	L	L	L	M
Actions that promote emergency preparedness and response									
Preparedness plan/program – increase communications system and warning procedures for all disasters. Increase weather monitoring capabilities.	M	M	M	M	M	M	M	M	M
Emergency response plans – Continue ongoing efforts for planning, preparedness and training. Focus on issues identified in needs assessments.	M	M	M	M	M	M	M	M	L
Evacuation plan/program – Begin with population/ housing analysis possibly following the 2010 census. Perform transportation analysis using updated traffic counts and roadway capacities.	L	M	L	L	M	L	L	M	L
Sheltering plans – Perform structural analysis of shelters and incorporate population analysis.	L	M	L	M	M	L	L	M	M

XI. ADMINISTRATION

Updating and Revising the Local Mitigation Strategy

The Local Mitigation Strategy will be reviewed annually, or as circumstances dictate, by the Local Mitigation Strategy Working Group.

In the 1999 Levy County LMS, each of the municipalities looked at which community programs would be directly affected by the LMS and mitigation projects. Below are the listing of those programs, plans and policies. Again, the 2016 Working Group reviewed the strategies and protocols and determined they remain relatively the same. Upon closer examination if there is a specific new program or ordinance that is implemented during the 2016 LMS sessions or in the upcoming quarterly review meetings, this list will be changed.

Existing Municipal Policies, Ordinances, Programs That Affect Mitigation

Program / Ordinance

- Comprehensive Plan
- Land Development Regulations
- Floodplain Ordinance
- Building Code
- Utilities Code
- Water and Sewer Services Ordinance
- Florida Building Code

The above plans exist within the current framework of Levy County Government. These plans all include elements of emergency management and further the goal of protection and mitigation.

Future Planned Updates and Plans to Include the LMS

- Project Ready (Health Department)
- CEMP (Will Adopt The LMS Risk Assessment)
- Flood Mitigation Plan (NFIP)
- Post Disaster Redevelopment Plan

These above listed plans will incorporate the Local Mitigation Plan into their text. In cases, they will adopt the risk assessment for foundation of plan writing or as annex. The county departments will continue to coordinate and integrate plan writing to further the protection through mitigation.

Participating Community Rating System communities, such as Fanning Springs and Yankeetown, will use the adopted Local Mitigation Strategy for qualifying Community Rating System credit. Other communities, such as Inglis, have expressed interest in participation and will use the County's adopted Local Mitigation Strategy once they become Community Rating System communities.

Because none of the communities have a hazard mitigation plan, all municipalities within Levy County utilize Levy County's Local Mitigation Strategy as their own hazard mitigation plan. As revisions to the Local Mitigation Strategy are made, especially in the floodplain and surge maps, communities adopt these changes in their own comprehensive plans, as seen in the future land use map series. Data from the Local

Mitigation Strategy, including location and estimated value of vulnerable structures and critical facilities, is used by the communities in developing the project list.

The main focus of the LMS is for grant writing. By nominating projects, grants can be applied for, that reflect the needs of the community. Because emergency management affects the well-being of the all of the residents of the community, incorporating the projects identified in the LMS into other program areas is very important. Each of the programs or ordinances, as they come up for review will incorporate information from the LMS. The comprehensive plan goes through the Evaluation and Appraisal Report (EAR) process in a five year cycle. The updates should include, in the capital improvements element, references to the projects nominated in the LMS. By incorporating the LMS into these plans, not only will they have fulfilled their requirements to include mitigation into their plans such as the comprehensive plan, they will also reinforce the support of the LMS. This and all other above mentioned plans are written with the goal of threat and vulnerability reduction. Those who draft these other plans and documents must consider the LMS as the Working Group has considered their documents in the current efforts. This creates cohesion between projects and not redundancy. Building, utility and water codes should be written with emergency management policies as their basis. Storms have a lasting effect on infrastructure. Each jurisdiction can glean from the LMS where the areas of greatest concerns are. In so doing, this document creates an interdisciplinary approach to plans and grant writing.

The appropriate membership of the Working Group (to include County, agency, municipal and private business representatives) will review the Strategy; amend their responsibilities under the Strategy; and update the Hazard Identification / Vulnerability Assessment and Mitigation Initiatives by modifying procedures, maintaining current data and/or adding new projects and deleting completed projects.

Proposed amendments to the Local Mitigation Strategy that are approved by the Working Group shall be submitted to the Levy County Emergency Management Director for presentation to the Levy County Board of County Commissioners for public comment and final adoption.

Nominating and Ranking Projects and Initiatives

The first step toward developing the required single, prioritized list of mitigation initiatives is to establish and educate the Working Group. The initial core Working Group members were the County and municipal representatives as appointed by their respective jurisdictions. At their first formal meeting the Working Group initiated more participation from the private sector, as directed in the "Guidebook," by inviting the local Chambers of Commerce to participate in the LMS process. Various local religious institutions and aid services have participated. Though they have not provided projects, their input was received and has helped craft the final work product. Once formed, the Working Group adopted a representative membership for voting on issues brought before the group. The current Working Group roster is included at the end of Chapter II.

Education of the group is and will remain an ongoing process. The Working Group found that the most useful information for the LMS process pertained to mitigation grants and the competitive grant process. Also of great interest were the maps generated for structural damage and storm surge. The most valuable information given by the Working Group were examples of the effects of previous flooding or storm events. These were used as a measure of vulnerability.

Before projects were submitted, a system for evaluating and ranking the projects had to be set into place. The adoption of criteria to rank mitigation projects featured lengthy discussion through the course of

several Working Group meetings. The adopted “Project Nomination and Score Worksheet” is included as Appendix “C.” Once a matrix for scoring projects was agreed upon by the Working Group, projects could be nominated for scoring in the prioritization process.

It was agreed that each jurisdiction would first list and prioritize its own projects using its own criteria. However, it was recommended that the adopted LMS Working Group criteria be used. Second, each jurisdiction would nominate its top three projects for formal ranking. To nominate a project the “Project Nomination and Score Worksheet” is used to provide information about the proposed project in regards to each of the ranking criteria.

The ranking process is begun by distributing the Project Nomination and Score Worksheet for one project to each voting member. Each voting member fills in the appropriate score for each of the ranking criteria. This process takes place for each project that is nominated. After all the projects are ranked the total score from each voting member is then averaged to form the projects score.

After the projects were scored and ranked, the Working Group created priority groups for implementation. The final list of prioritized mitigation projects is included in Chapter VIII (Hazard Mitigation Projects and Initiatives.)

One of the important aspects to the LMS is the end product, which is a listing of projects a jurisdiction wishes to get funded. The projects get funded through a variety of grants and opportunities. To receive many of the federal and state mitigation grants, a jurisdiction is required to have the project on the LMS list and also a “benefit” and “cost” analysis of the project that the jurisdiction wishes to complete. Both costs and benefits are considered in the nomination and prioritization of projects. For example, the Levy County LMS Project Nomination and Score Worksheet (Appendix C) requires documentation of project costs. Costs are also considered in the project score criteria “Life Expectancy of the Project,” in which lower scores are assessed to projects that meet the needs of the community for shorter periods of time, and therefore may need to be updated more frequently, costing more resources over a period of time. Benefits of a project are considered in the Criteria “Reduction of Vulnerability.” In the prioritization of projects, higher scores were assigned to projects that eliminate or reduce risk of repetitive loss than projects that had no impact on repetitive loss. Other criteria for ranking projects have inferred costs (such as, time needed to implement, or if unfair to a social group) and benefits (such as, if politically /socially acceptable, or if other community goals are achieved) as outlined in FEMA 386-5, Using Benefit Cost Review in Mitigation Planning.

The Benefit-Cost Analysis can be completed with software provided by FEMA. The program considers what future damages and losses are possible and the benefits are the reduction in expected damages. The cost is the amount needed to implement an action that will support a greater benefit. Normally it is not too hard to figure out the cost – particularly if a new structure is being designed. The benefits are harder because the severity of a storm and the probability may be opposite. For example a hurricane’s probability is low – but the severity is high. Some benefits to include in the analysis are damage to buildings, damage to business operations, and displacement of inhabitants, rental loss, and nonprofit function loss.

There is a lot of confusion about the benefits of mitigation. Obviously there are higher benefits for mitigation to a building that is in the 10-year floodplain versus one that is in the 500-year floodplain. Yet a low-occupancy building, receiving funding in a 10-year floodplain is also not as beneficial.

Therefore the majority of the projects gain the most benefit points by suggesting mitigation for critical facilities such as hospitals, fire stations, assisted living facilities, and schools. Cost effectiveness is a big key to having a project funded. Each project then is scored against itself - there can be no comparison because each project has a myriad of possibilities.

Adoption and Implementation of the Local Mitigation Strategy

This is an all-county document as is the Comprehensive Emergency Management Plan (CEMP). It is expected that the administration and update of future editions of this LMS will fall under the responsibility of the Levy County Emergency Management Department. In light of this expectation, the Working Group has directed that the local process to adopt the LMS be the same as the local process to adopt the CEMP.

Implementation of the LMS will be done by each of the local governments in Levy County or by other entities that may identify funding for projects listed in this LMS or future updates of the LMS. As with all plans, studies and strategy documents the final goal is implementation. The timing of implementation a factor that is dependent on funding mechanisms and a timeline for implementation cannot be established. However, it is clear that those initiatives with life-safety implications or initiatives that will eliminate losses should be implemented first. The methods for implementation are important, but stand as a secondary goal. It is the intent of this Strategy to keep all windows of funding opportunity open and open them further if possible. With this goal, the Local Mitigation Strategy plan will incorporate county planning department along with all participating agencies adopted ordinances, regulations, procedures or existing programs in order to promote hazard mitigation efforts. These would include Comprehensive Plans, Land Development Regulations, Floodplain Ordinances, Building Codes, Utilities Codes, Water and Sewer Service Ordinances and the Florida Building Code.

Public Participation

With the availability of the internet, newspapers, public announcements and members of the Working Group that are involved in many different groups, there is a plethora of public interactions to promote the LMS. The public involvement that has the highest participation includes citizen groups such as the American Red Cross and a variety of church organizations. These persons are allowed to participate in all aspects of the Working Group meetings. Obviously the voting members of the Working Group are the decision makers for furthering the project lists and amendments to the LMS, based on the recommendations of the Working Group. During the 2015 LMS process, public participation was represented by the interested citizen members of the Working Group. No feedback was provided or logged directly by any citizen on part of public participation to the Working Group during the review process and the plans availability in emergency management and regional planning council offices. Working Group members representing the communities within the County spoke for their jurisdictions and their citizens through the process during meetings of the LMS Working Group. Otherwise, no direct input was offered by the general public.

The availability of the plan for public comment will be located on-line at the Levy County website before final adoption. The contact for public participation will be the planners revising the LMS based out of the NCFRPC as well as the director of Emergency Management for Levy County. The contact information will include both telephone as well as the email address for both of the agencies. This will allow the public to reach an agency they feel most comfortable with in discussing the LMS.

As with this, in future updates, meetings will be publically noticed. Meetings for both the five year plan update and the annual plan review will be noticed at the county court house and on the county Emergency management website, www.levydisaster.com and are open to public. The adoption of the plan will include each of the municipalities and the county. At each of these meetings there is again a request and opportunity for public participation. Levy County and the participating municipalities are responsible for the advertisement of these meetings.

Monitoring, Evaluation and Revision

The following are tasks and monitoring activities that should be accomplished prior to or in the early part of the LMS update and revision process. The Working Group chairman is responsible for the monitoring, evaluating and updating of this plan. These tasks represent examples of recommended actions and should be reviewed for their applicability by the Levy County Emergency Management Director (prior to the update process) or the Working Group (as a part of the update process).

The plan will be monitored on a yearly basis in the following ways. The Working Group at the direction of the Chairman will decide the extent of updates needed for the yearly update based on the findings. If the Working Group finds sufficient changes during the monitoring process, they may choose to update the plan to a greater degree than what is required under the yearly update requirements. At minimum, the Working Group shall perform the yearly update to the Working Group roster, the projects list and submit to the state notice of current activities. This evaluation and update of this plan shall take place on an annual basis and within the five year cycle shall meet all current FEMA crosswalk requirements. The five year update process will begin approximately at the end of the third year or first quarter of the fourth year in the cycle. This fifth year will require a more comprehensive plan review, meeting schedule and Working Group participation. These updates will be performed by the host agency, Levy County Emergency Management or by their designee.

- Ongoing information systems - GIS databases that have been created for the LMS should be reviewed and updated with each formal revision of the Strategy.
- Monitoring implementation process - Projects that have been implemented need to be taken off the List of Mitigation Initiatives. Members of the Working Group should also attend workshops and stay abreast of current grant funding opportunities.
- Obstacles/problems in implementation - Some listed projects may be considered as poor candidates for grant funding and may need to be revised to be fundable. Criteria should be developed in the future to assess which projects need to be revised.
- Ability to update baseline data - The GIS update to the LMS could be made the responsibility of one or several County departments with GIS capability.
- Monitoring of hazards - The development of local information regarding the effects of hazards (such as the flooded roads database) should be an ongoing process. The Emergency Management Department should monitor the effects of hazards and actions taken and keep a record of such. This information should be added to the next update of the LMS.

- Evaluation of success/failure - A method to formally evaluate the LMS should be identified by the Division of Emergency Management. The LMS will be a success to the citizens of Levy County if it can be used by local governments as a grant writing tool and can identify ways to reduce the impact of disasters.
- Updatable, objective achievement measures - Indicators for the evaluation of the performance of the LMS have not been developed at this time and their value remains questionable.
- Citizen participation in the LMS process - Questionnaires that have been distributed can be sent out again or recreated to provide additional information. It is recommended that future updates of the LMS receive media exposure through press releases to encourage public participation.

Each year the plan will be evaluated by the Chairman and the Working Group by the first meeting of the calendar year. The main question that should be raised, is whether or not the plan still reflects the character of the jurisdictions? The second question, have there been any rules or regulations that have been adopted in the year that would alter the effectiveness of the LMS document? Finally the third question, are there any changes in the administrative process or participation?

A check list approach is the best methodology for making sure all of the topics have been covered:

<i>YEARLY REVIEW OF THE LMS DOCUMENT</i>		
	Reviewed	Completed Change
CHARACTERIZATION CHANGES		
Population change of each jurisdiction		
Economic change / added businesses		
Annexations of properties		
Update the critical facilities list		
Update the sensitive facilities list		
Identify developments of regional impacts (DRI)		
Land Use map changes		
Updated Repetitive Loss Structure list		
RULES / REGULATION CHANGES		
EAR based amendments		
Land Development Regulations		
State Legislation		
ADMINISTRATIVE CHANGES		
Roster analysis		

Chair Person		
Grant Cycle dates		
Update Project Lists		
Update Minutes		

Due to the nature of the comprehensive plan, the LMS plan will be updated and implemented on a faster basis than the local comprehensive plan. The projects listed in the LMS are projects that the communities need in a timely manner. Many projects will be completed on a time scale not related to the comprehensive plan’s updates.

When the time arrives for an update to the comprehensive plan the LMS plan will be observed for trends in capital improvement initiatives. The projects nominated that have not been completed can be included in a general fashion in order to guide the capital improvements element of the comprehensive plan.

The schedule for each community in Levy County to complete their evaluation and appraisal of the comprehensive plan is established in statute. During the review, each government should review the LMS document to ensure support for it is written into its comprehensive plan.

Also, the comprehensive plan reviews issues such as impact fees and future land use. Reviewing the LMS plan will provide the planners of Levy County with a tool that considers the public, private sector, government and specifically emergency management, and examines emergency management concerns.

When making Changes in the Land Development Code (LDC), staff should refer and review the LMS. At times, changes in the development codes could alleviate persistent problems, creating less vulnerability to future structures.

Another plan that should look to the LMS to learn about problem areas and needed projects includes The Water Resource Studies to evaluate the current condition of the water supply and evaluates key flooding issues.

The underlying goal of the LMS in regards to local jurisdictions will be to educate and inform the departments on the types of projects considered for implementation through mitigation funding.

In review, the LMS Chair (Levy County Emergency Management) is responsible for carrying out the following method and schedule for monitoring, evaluating, and updating the plan.

Monitoring

The LMS Chair (Levy County Emergency Management) is responsible for monitoring any changes throughout the county and making sure that the information gets properly entered into the plan on an annual basis. This process includes the following schedule and method:

- The LMS Chair will schedule four Working Group Meetings each year (recommended to take place) in the months of March, June, September, and December. Each of these meetings will be scheduled usually six months in advance in the Levy County Emergency Management Emergency Operations Center unless otherwise noticed. These meetings will allow the LMS

Chair to monitor advancements or changes in mitigation projects being implemented by Working Group members. At every meeting the LMS Chair is going to ask for updates on current projects being implemented and suggestions for new projects. Any meeting announcement by agencies and organizations about project changes, problems, and advancements will be itemized by the LMS Chair in the project priority list and included in the summary of the meeting. This allows the project advancements and changes to be noted on paper on a quarterly basis every year.

- All LMS Working Group members will usually be given the meeting date and time around 6 months in advance, a reminder at the previous LMS Working Group meeting 3 months in advance, and an email reminder as well as a U.S. Postal mail packet sent three weeks in advance for those without email access.
- Two weeks prior to the meeting, the LMS Chair will ask for a public notice announcement to be posted in the local courthouse and on the Levy County Emergency management website; www.LevyDisaster.com, at least 10 days in advance of the LMS meeting.
- The LMS Chair will call each agency that is working on a LMS project usually two to five weeks before LMS Working Group meetings to monitor progress, hear concerns, give assistance, and answer questions regarding the mitigation projects.
- If any agency or organization that is implementing a project can't attend the LMS Working Group meeting, the LMS Chair will request an overview of their project update so that the Chair can present the information at the meeting.
- All mitigation project changes and advancements will be provided by the LMS Chair to all LMS Working Group members approximately three weeks before each of the four Working Group meetings. The notice may be provided by mailing, email or during the Working Group meeting should they not be available in advance. This information may include supplemental information about grant programs, etc. as has been done in the past.
- If need be, the LMS Chair will schedule meetings and site visits with the agencies and organizations requesting certain assistance with a mitigation project.
- Yearly, the LMS Chair will look for new ways of incorporating the community into the LMS process.
- Yearly, the LMS Chair will ask the LMS Working Group to review parts of the LMS document that may need to be updated.
- Also, the LMS Chair will prepare an annual report that captures the highlights of the previously mentioned quarterly meetings and the LMS developments.

Evaluating

The LMS Chair (Levy County Emergency Management) is responsible for evaluating any changes or situations that need to be taken into account for the LMS Working Group goals and for the LMS document to prosper. This process includes the following schedule and method:

- Every year during the summer months and after all natural disasters, the Chair will conduct an evaluation on the nature, magnitude, and/or type of risks that may have possibly changed within that timeframe for the county. This will be done by seeking new hazard and hazard vulnerability

data, through speaking with experts, and by inquiring input from LMS Working Group members or any other relevant experts.

- At the end of every year, the LMS Chair will evaluate the attendance and participation of LMS members. If certain agencies or organizations attend one or less meetings in the past year, the Chair will attempt to find the reasons why and try to accommodate them so their participation can increase. If needed, the Chair will seek an alternate representative to the Working Group from agencies or organizations who have attended one or less meeting in the current yearly cycle. In an effort to reach out to the local business community, the LMS Chair will review Chamber of Commerce information as a source to obtain up-to-date details on new businesses and organizations that could potentially become part of the LMS Working Group.
- Every three years the LMS Chair will conduct a Working Group meeting to determine if the LMS goals and guiding principles are being met and if any of them should be changed or new ones added. This process will be determined entirely by the Working Group members.
- The LMS Chair will call each agency/organization that is working on a LMS project around two to five weeks before the LMS Working Group meetings to monitor progress, hear concerns, give assistance, and answer questions regarding the mitigation projects. Based on the comments, re-evaluation of project implementation will commence.

Updating

The LMS Chair (Levy County Emergency Management) is responsible for updating the plan within five years from the date of the last FEMA or DEM approval. This process includes the following chronological schedule and method:

- Every year within the 5-year update timeframe, the LMS Chair will make notes in the LMS of items that require changes based on the evaluation process.
- During both the second and third year of the 5-year timeframe, the LMS Chair will begin updating the actual document sections with the most recent data available. This will be done with the help and acknowledgement of the LMS Working Group members. After each of these document updates, the Chair will bring forth the changes to the LMS Working Group members for review.
- Based on the review input from the LMS Working Group, the Chair will make changes where required.
- During the end of the third year and the beginning of the fourth year, the LMS Chair will gather the new FEMA update element requirements so that the updated plan will act in accordance with federal regulations.
- The LMS Chair will then give a presentation about the 5-year update to the LMS Working Group members and describe how they can help and why they should participate.
- The LMS Chair will update all sections of the LMS with the most recent data and processes available.
- This updated document will then be presented to the LMS Working Group members for review.

- After making the revisions from the review, the LMS Chair will send the document to the State Hazard Mitigation Officer for initial review. This will be done approximately 7 months before the plan's expiration date.
- After this review, any changes will be completed with acknowledgment from the Working Group before it is sent to FEMA. This will be accomplished at least 5 months before the plan's expiration date.
- Upon FEMA or DEM approval, the county and all jurisdictions will adopt the LMS document within the following year.

Future Meetings

The meeting dates will be established at the end of each 5-year update cycle. For the 2016 and beyond updates the future meetings will be held on the last Friday of each month quarterly (January, April, July and October) or as availability of Working Group members permits. In the upcoming years the Working Group will be called together by the Chairman. If for some reason the Working Group establishes a new chair, the responsibility will be transferred accordingly. The steps below indicated the protocol for these biannual meetings.

The meetings are to take place quarterly or biannually, whichever is more obtainable by Working Group members. This is to allow jurisdictions to initially look for changes in their projects and community profiles. The second meeting is for the nomination of new projects. Because it is important for projects to be included in the LMS document in order to receive funding, each year the ranked listing of projects should be updated.

The jurisdictions to include in the invitation – County departments, Planning, DOT, Natural Resources, Forestry, Economic Development, Chamber of Commerce, Emergency Management, and an Academic Representative.

At the meetings, a copy of the LMS on CD should be available upon request. To get a better feel for the changes that have occurred, a yearly survey could be conducted at each of the first yearly meetings asking for changes in each of the areas and projects previously added to the document. Keeping up with yearly changes is very important in the struggle to get projects funded and create a safer County to live in.

XII. Appendix A: Meeting Minutes

**LEVY COUNTY
LOCAL MITIGATION STRATEGY**
Levy County Emergency Operation Center, Bronson
November 6, 2015

Meeting Summary

Attendees:

John MacDonald, Levy County Emergency Management Director
Leatha Keene, Levy County Emergency Management
Liz Florence, City of Williston
Danny Wallace, City of Williston
Michael Hancock, Cedar Key
Robert Robinson, Cedar Key
Bill Hammond, Levy County Building Department
Lauren Yeatter, NCFRPC

Welcome and Introductions

John MacDonald, Director of Levy County Emergency Management and chairman welcomed all in attendance to the Local Mitigation Strategy (LMS) and called the meeting to order at 10:10 a.m. Attendees introduced themselves.

Levy LMS 5-year update

Lauren Yeatter, staff to the Working Group gave a presentation about the LMS 5-year update process. The presentation covered the topic of Mitigation generally and the requirements of the LMS, including the 5-year update. Data, sources, and methodologies were also presented to the Working Group.

The Working Group discussed the benefits of participating in the LMS process. The Working Group also discussed which hazards were identified in the LMS and the need to update the project list.

Future Schedule

The group was thanked for all their work and participation in the rewrite process. Staff informed the Working Group that the results of the hazard and vulnerability analysis would be presented for the next meeting. Working Group members were encouraged to be prepared to add and/or delete projects from the list during the next meeting.

Next Meeting

December 10, 2015

Adjourn-11:30 a.m.

**LEVY COUNTY
LOCAL MITIGATION STRATEGY**
Levy County Emergency Operation Center, Bronson

December 10, 2015

Meeting Summary

Attendees:

John MacDonald, Levy County Emergency Management Director
Leatha Keene, Levy County Emergency Management
Honorable Dan Severino, Mayor of Otter Creek
Honorable Drinda Merritt, Mayor of Inglis
Honorable Debra Weiss, Mayor of Yankeetown
Dave Pieklik, NCBD Council
Liz Florence, City of Williston
Levy County Public Works
Ludie Bond, Florida Forest Service
Lauren Yeatter, NCFRPC

Welcome and Introductions

John MacDonald, Director of Levy County Emergency Management and committee chairman welcomed all in attendance to the Local Mitigation Strategy (LMS) and called the meeting to order at 10:15 a.m. Attendees introduced themselves.

Levy LMS 5-year update

Lauren Yeatter, staff to the Working Group gave a presentation about the LMS 5-year update process. Staff presented results of the hazard and vulnerability analysis. The Working Group discussed hazard events that have occurred since the last 5-year update in 2010-2011. The Group also revised the Critical Facilities inventory, as some municipalities experienced a decrease in the number of Critical Facilities, and the County expanded Critical Facilities.

The Working Group revised the project list, but it was determined that a new, simplified project nomination/evaluation worksheet should be created and distributed before finalizing the project list.

Future Schedule

Staff agreed to create a new, simplified project nomination/evaluation worksheet and distribute to the Group in the following week. The Working Group was asked to review the new worksheet, submit any new projects to be nominated for the list, notify staff of any projects that needed to be eliminated from the list, and provide reason for any project elimination. Staff informed the Working Group that the revised LMS, including analysis presented at the meeting, would be submitted to FDEM after the project list is finalized.

Next Meeting

Called as Determined

Adjourn- 12:00 p.m.

XIII. Appendix B: Agenda and Sign-In Sheet

**LEVY COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
WORKING GROUP MEETING**

Levy County Emergency Operations Center, Bronson – May 20, 2011

A G E N D A

1. **Welcome and Introductions** 10:20
2. **Review of Final Draft**
3. **Document Distribution**
4. **Next Meeting- with Local Mitigation Strategy**
5. **Adjourn** 11:30

All changes by June 1

LMS → July 29, on agenda, project sheet to Lodie

Leetha copy tab 1-7

LEVY COUNTY COMMUNITY WILDFIRE PROTECTION PLAN WORKING GROUP

Friday
May 20, 2011

Name	Agency/ Contact Information
Benjamin W. Beauchamp	DOF
Ludie Bond	DOF
Dawnyle Wallace	WFR
Mark J. Sun	LCDEM 352-486-5713
Michael Arnold	WRPC
Leatha Keener	LCDEM

LEVY COUNTY LOCAL HAZARD MITIGATION STRATEGY

WORKING GROUP MEETING

2012-2013

Levy County Emergency Operations Center, Bronson – May 3, 2012

A G E N D A

1. **Welcome and Introductions**
2. **Project Submission**
3. **Project Scoring**
4. **Other Plans Updates**
5. **Next Meeting- Quarterly Schedule** July 19 10:00
6. **Closing comments**
7. **Adjourn**

Add Adam Hall to LMS email list, David Knowles

Wants Evac Routes identified on evacuation zone 24x36

Send LMS executive order to Leethe

LEVY COUNTY LOCAL MITIGATION STRATEGY 2012- 2013

Friday
May 3, 2012

Name	Agency/ Contact Information
TOM SHOLES	YANKEETOWN COUNCIL 954-650-0212 TSHOLES@BELLSOUTH.NET
Laurie Opeland	City of Chiefland 493-6711 laurie@chieflandfla.com
Bill HAMMOND	City of Chiefland 493-6827
Adam Hall	City of Williston 352.528.3060
Cyndie McQuaig	City of Williston 352-528-3060
Danny Wallace	Williston Fire 352-528-5203
MARK S. Johnson	Levy County Emergency Management
David Knowles	Levy County Public Safety 352-486-5209
Sara Doxglass	BOT WOP Yankeetown
Cheryl Mihal	City of FALWING Springs

Board of Directors
 W. H. Lacerche Golf Preserve

**LEVY COUNTY LOCAL HAZARD MITIGATION STRATEGY
WORKING GROUP MEETING**

2013-2014

Levy County Emergency Operations Center, Bronson – April 11, 2013

A G E N D A

- 1. Welcome and Introductions**
- 2. Project Submission/ Scoring**
- 3. LMS/ CWPP Plan Updates**
- 4. Hurricane Season Preparations**
- 5. Next Meeting- Quarterly Schedule**
- 6. Closing comments**
- 7. Adjourn**

LEVY COUNTY LOCAL MITIGATION STRATEGY 2012- 2013

Thursday
April 11, 2013

Name	Agency/ Contact Information
Sally Price	INGLIS Commissioner
MAYOR Glenda Kirkland	MAYOR OF INGLIS
Laurie Copeland	City of Chiefland laurie@chieflandfla.com
David Pieklik	NBCDL - director@nortrecast.org
Bill Hammond	Levy Co. levyb2@bellsouth.net
Danny Wallace	City of Williston/WFR
Adam P McNiece	Yorketown
Jimmy Dunford	TOWN OF BRONSON
Serry Hoston	Forest Service
JOE RINAUO	LCDPS
Connie Caldwell	Otter Creek - Town Clerk
Cheryl McKelA	Fanning Springs
Alesha Arnold	Levy Abbe Safety
W. Casey Duquette	Levy Co. Rd Dept.
Arlene Bond	Florida Forest Service
MARK S. JOHNSON	LEVY CO. E.M.
McArnold	WRPC UMS staff

LEVY COUNTY LOCAL HAZARD MITIGATION STRATEGY

WORKING GROUP MEETING

Levy County Emergency Operations Center, Bronson – May 8, 2014

A G E N D A

- 1. Welcome and Introductions**
- 2. Project Submission/ Scoring**
- 3. LMS/ CWPP Plan Updates**
- 4. Hurricane Season Preparations**
- 5. Next Meeting- Quarterly Schedule**
- 6. Closing comments**
- 7. Adjourn**

LEVY COUNTY LOCAL MITIGATION STRATEGY

Community Wildfire Working Group

Thursday
May 8, 2014

Name	Agency/ Contact Information
JOHN McPHERSON	CEDAR KEY WATER & SEWER DISTRICT 352 543 5285 JOHN@CKWATER.DRG
RON GRANT	PLANNING COMMISSION YANKEETOWN
TOM SHOLES	TOMMYSHOLES@GMAIL.COM
<i>Cheryl Miller</i>	FANNING SPRINGS
Dave Flekile	N(BI)C director@naturecast.org
<i>Mark S. J.</i>	UCEM
Robert Robinson	Cedar Key Fire/City cedarkey fire bill@ck.net
Glenda Kirkland	MAYOR INGLIS
Michael Arnold	WRPC
David Knowles	KV Levy County DPS
Michael Arnold	WRPC MA

**LEVY COUNTY LOCAL HAZARD MITIGATION STRATEGY
and
COMMUNITY WILDFIRE PROTECTION PLAN**

WORKING GROUP MEETING

Levy County Emergency Operations Center, Bronson – May 7, 2015

A G E N D A

- 1. Welcome and Introductions**
- 2. Plan Status and Program Turn Over**
- 3. Next Meeting- Quarterly Schedule**
- 4. Closing Comments**
- 5. Adjourn**

LEVY COUNTY LOCAL MITIGATION STRATEGY

Community Wildfire Working Group

Thursday
May 7, 2015

Name	Agency/ Contact Information
RON GRANT	CERT
DRUIDA B MERRITT	INGLIS YANKEETOWN
TOMMY SHOLES	TOMMYSHOLES@GMAIL.COM
DEBRA L WEISS	yankeetown dlweiss@bellsouth.net
LAUREN YEATER	WRPC / YEATER@WRPC.CC
Leatha Keene	LCEM leathakeene@levydisaster.com
Michael Arnold	WRPC / staff
Mark J. Johnson	Levy EM

Date: 11/6/15
 Purpose: LEVY LMS MTG

Name	Agency	Email
LAWREN YEATTER Liz Florence	NCFRRC Williston	YEATTER@NCFRRC.ORG City Planner@CityofWillistonFL.org
Therese Wallace	City of Williston	wallace@CityofWillistonFL.org
Bill Cransley	GENE KEY	BERANLEY@GENEKEYFL.US
Bill Harrison	Levy County	Harrison.Bill@LevyCounty-FL.org
Michael Hancock	City of Cedar Key	mhancou@cedarkeyfl.us
John MacDonald	Levy County Emergency Management	john.macdonald@levycountyfl.us
PLEASE COPY		
ROBERT ROBINSON	Gene Key Fire Chief	R.ROBINSON@GenekeyFL.US
Leatha Keene	Levy Co. Emerg. Mngt.	leathakeene@levydisaster.com

XIV. Appendix C: Project Nomination and Scoring Worksheet

LEVY COUNTY LMS- PROJECT NOMINATION AND SCORE WORKSHEET

Directions: Project information section to be completed only by individual nominating the project. Response and score lists to be completed with spreadsheet project number in the title.

PROJECT INFORMATION					
Project Number	Time frame for Completion	Project Goals	Priority / Addressed:		
Responsible Party for Implementation			Potential Funding Sources:		
Project Name/Description					

Directions: Check the box that best describes each criteria for the project (0, 1, 2, 3, or 4 points). Points will automatically be totaled.

Criteria	PROJECT SCORE				TOTAL
	0	1	2	3	
Public Health and Safety (Consider safety of the LMS program, its safety, health, safety, and other benefits)	No safety impact associated with project <input type="checkbox"/>	Project would promote or maintain safety <input type="checkbox"/>	Project needed to alleviate potential safety hazard <input type="checkbox"/>	Project needed to alleviate existing safety hazard <input type="checkbox"/>	
Local Institutional Impact (How does the project affect the community?)	No effect on any jurisdiction <input type="checkbox"/>	Project affects one jurisdiction <input type="checkbox"/>	Project affects two or more jurisdictions <input type="checkbox"/>	Project affects the entire county <input type="checkbox"/>	
Structural Integrity of the System (Consider structural integrity of existing facilities)	Project does not provide protection <input type="checkbox"/>	Project will protect a non-critical facility or state-future expansion <input type="checkbox"/>	Project will protect, repair or improve systems important to a non-critical facility's operation <input type="checkbox"/>	Project is critical to save or protect structural integrity of existing facility repair significant structural deterioration, or expansion of a critical facility <input type="checkbox"/>	
Project Location (ranked by a local public health, public health, safety, highly populated area)	Category 4 (Large Area) <input type="checkbox"/>	Category 3 (Large Area) <input type="checkbox"/>	Category 2 (Large Area) <input type="checkbox"/>	Category 1 (Large Area) <input type="checkbox"/>	
Reduction of Redundancy (Consider redundancy of existing systems, such as power, water, gas, etc.)	No reduction of repetitive loss <input type="checkbox"/>	Project reduces a repetitive loss problem <input type="checkbox"/>	Project reduces risk of a repetitive loss problem by 50% <input type="checkbox"/>	Project eliminates a repetitive loss problem <input type="checkbox"/>	
Urgency of the Project (How soon should the project be completed in order to reduce redundancy, critical facilities and health)	Optional: Project does not address an identified threat or issue <input type="checkbox"/>	Necessary: Project should be carried out to meet anticipated needs <input type="checkbox"/>	Essential: Project absolutely has to be carried out to meet anticipated needs <input type="checkbox"/>	Urgent: Project can not be postponed, eliminates an existing threat to a critical facility or public health, safety or safety maintains a critical program needs an emergency situation <input type="checkbox"/>	
Level of Emergency Preparedness (EMM) needs	None <input type="checkbox"/>	Low <input type="checkbox"/>	Moderate <input type="checkbox"/>	High <input type="checkbox"/>	
Level of Vulnerability to Economic Disasters (EMM) needs	None <input type="checkbox"/>	Low <input type="checkbox"/>	Moderate <input type="checkbox"/>	High <input type="checkbox"/>	
Economic Recovery (How soon can the business sector, community, economy, etc. be returned to full economy)	Project will have little or no economic impact <input type="checkbox"/>	Improve quality of life for the citizens <input type="checkbox"/>	Project will encourage capital investment, improve the City's tax base, improve job opportunities, etc. and encourage for the City, or produce public or private revenues <input type="checkbox"/>	Facilitates capital investment, encourages job opportunities <input type="checkbox"/>	
Life Expectancy of Project (Estimated operational period 20-30 years)	Meets needs of community for less than 10 years <input type="checkbox"/>	Meets needs of community for next 10 to 14 years <input type="checkbox"/>	Meets needs of community for next 15 to 20 years <input type="checkbox"/>	Meets the needs of community for next 20 years or more <input type="checkbox"/>	
Population Served by Project	Less than 1,000 <input type="checkbox"/>	1,000 to 1,999 <input type="checkbox"/>	2,000 to 2,999 <input type="checkbox"/>	Over 3,000 <input type="checkbox"/>	
Percentage of Institutional Population Served by Project	Less than 10% <input type="checkbox"/>	10% to 24% <input type="checkbox"/>	25% to 49% <input type="checkbox"/>	50% or more <input type="checkbox"/>	
Initiated by outside organization for the City (Consider organizations and entities that are not government, but others for this purpose)	Project is not included in any written plan or identified by the governing body as being needed <input type="checkbox"/>	Project has been identified by a jurisdiction as a needed project through an action of the governing body <input type="checkbox"/>	Project is included in FEMA Post-Disaster Mitigation Report <input type="checkbox"/>	Project is included in an approved Comprehensive Plan or Capital Improvement Program <input type="checkbox"/>	
Local government support or endorsement of public interest (How the project is supported by the elected body? Newspaper articles, reports, etc.)	No support from the public or local governing body <input type="checkbox"/>	Some support from the public (letters to the editor, public comment at public meeting, etc.) <input type="checkbox"/>	Some support from the public and local governing body (attendance at public meeting, resolution by jurisdiction, etc.) <input type="checkbox"/>	Support from most of the public and local government (funds budgeted for the project) <input type="checkbox"/>	
Uniqueness of Investment (How is project unique compared to other or some other public proposal?)	Project will not address any identified hazard or concern <input type="checkbox"/>	Project will address one identified hazard or concern <input type="checkbox"/>	Project will address two identified hazards or concerns <input type="checkbox"/>	Project will address three or more identified hazards or concerns <input type="checkbox"/>	
Special Needs (Does the project serve special needs community?)	The project does not meet particular needs of a special population <input type="checkbox"/>	Serves internal City needs <input type="checkbox"/>	Serves residential neighborhoods across individual areas <input type="checkbox"/>	The project meets a community obligation to serve a special need of a segment of the population, such as low/moderate income, age, minorities, handicapped, etc. <input type="checkbox"/>	

TOTAL 0