

HARDEE COUNTY

ADAPTATION ACTION AREA PLAN #3 WAUCHULA



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HARDEE COUNTY CVA – AAA PROJECT

Adaptation Action Area Plan #3 Wauchula

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APPENDIX 2 - Hardee County Long-Term Recovery Plan	<i>Under Separate Cover</i>

Abbreviations

AAA	Adaptation Action Area	HVAC	Heating, Ventilation, and Air Conditioning
BFE	Base Flood Elevation	I&I	Inflow and Infiltration
BMAP	Basin Management Action Plan	LDC	Land Development Code
BOCC	Board of County Commissioners	LF	Linear Feet
CFRPC	Central Florida Regional Planning Council	LID	Low Impact Development
CHNEP	Coastal & Heartland National Estuary Partnership	LMI	Low- and Moderate-Income
CIP	Capital Improvement Program	LMS	Local Mitigation Strategy
CVA	Comprehensive Vulnerability Assessment	LTRP	Long-Term Recovery Plan
DOT	Department of Transportation	NBI	National Bridge Inventory
EPA	U.S. Environmental Protection Agency	NFIP	National Flood Insurance Program
FCMP	Florida Coastal Management Program	NOAA	National Oceanic and Atmospheric Administration
FDEP	Florida Department of Environmental Protection	PROTECT	Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation
FDEM	Florida Department of Emergency Management	RAP	Reasonable Assurance Plan
FEDR	Florida Office of Economic and Demographic Research	RPC	Regional Planning Council
FEMA	Federal Emergency Management Agency	SFHA	Special Flood Hazard Areas
FFE	Finished Floor Elevation	SWFWMD	Southwest Florida Water Management District
FHWA	Federal Highway Administration	TMDL	Total Maximum Daily Load
FMA	Flood Mitigation Assistance	USDA	U.S. Department of Agriculture
GIS	Geographic Information System	WWTF	Wastewater Treatment Facility

Photographic Image Source Credits

Unless otherwise noted, images included in this report were sourced from the Hardee County website or from Google Earth Street View. “Existing” images in the Conceptual Planning section are from Google Earth Street View imagery.

Introduction

Hardee County (the County) received funding through the Coastal & Heartland National Estuary Partnership (CHNEP) to write three Adaptation Plans for the highest ranking Adaptation Action Areas (AAAs) within the County. This Adaptation Plan is a continuation of the work performed under the County Comprehensive Vulnerability Assessment (CVA) and the Identification and Ranking of AAAs. This Adaptation Plan has been developed for the Wauchula AAA, the third highest ranked AAA in Hardee County, to bridge the gap between identified vulnerable critical assets and the implementation of flood reduction solutions.

The County, Central Florida Regional Planning Council (CFRPC), and CHNEP staff assisted Kimley-Horn in each Adaptation Plan's development. This report outlines specific adaptive strategies, measures, and policies that were developed based on the [Florida Adaptation Planning Guidebook](#) and tailored to the unique needs and challenges of the Wauchula AAA. A location map of the Wauchula AAA is shown in **Figure 1**.

The objectives of this Adaptation Plan are:

- ▶ To highlight Hardee County's current capacity to address flood resiliency in the Wauchula AAA.
- ▶ To propose implementable adaptation strategies that would reduce flood risk of identified critical assets.
- ▶ To rank proposed adaptation strategies based on their anticipated flood resilience improvements, costs, and feasibility.
- ▶ To develop preliminary (planning level) costs, descriptions, and conceptual representations for proposed projects.
- ▶ To highlight funding opportunities for the proposed adaptation strategies.

This study utilized the latest Florida Adaptation Planning Guidebook published in collaboration between Florida Department of Environmental Protection (FDEP), the Florida Coastal Management Program (FCMP), and National Oceanic and Atmospheric Administration (NOAA), to guide the development of methodologies, criteria and strategies for this Adaptation Plan.

Background

Critical assets include infrastructure, community and emergency facilities, transportation and evacuation routes, and natural, cultural, and historical resources that are essential for community function, safety, and resiliency. During the Hardee County CVA, critical assets were identified and evaluated for physical exposure to rainfall-driven flooding as well as for their social, environmental, and hazard sensitivity.

Based on the results of the CVA, the evaluated list of critical assets was refined to only include County-owned assets that experienced flooding in the 500-Year, 24-Hour 2040 Rainfall event, and did not currently have planned projects to improve flood resiliency. This refined asset list was used in the Identification and Ranking of AAAs project to define AAA boundaries that group critical assets most vulnerable to flooding. AAAs were geographically defined using ArcGIS based on flood extents, critical asset distribution, and municipal and parcel boundaries.

Once the AAA boundaries were identified, they were ranked using a multi-criterion weighted matrix. The criteria used in the matrix to rank the AAAs included:

- ▶ Exposure Analysis (100-Year, 24-Hour 2040 Rainfall)
- ▶ Exposure Analysis (500-Year, 24-Hour 2040 Rainfall)
- ▶ Sensitivity Analysis
- ▶ Asset Ownership
- ▶ Asset Relevancy
- ▶ Asset Group
- ▶ Length of Inundated Roadway
- ▶ Length of Inundated Bridges/Culverts
- ▶ Quantity of Public Comments

An explanation of the criteria, the scoring process, and the weighting factors applied to each criteria can be found in the Hardee County Identification and Ranking of AAA Technical Memorandum attached in **APPENDIX 1**. A location map of the identified Hardee County AAAs and their rank are shown in **Figure 2**.

Figure 1: Wauchula AAA Boundary with Vulnerable Critical Assets

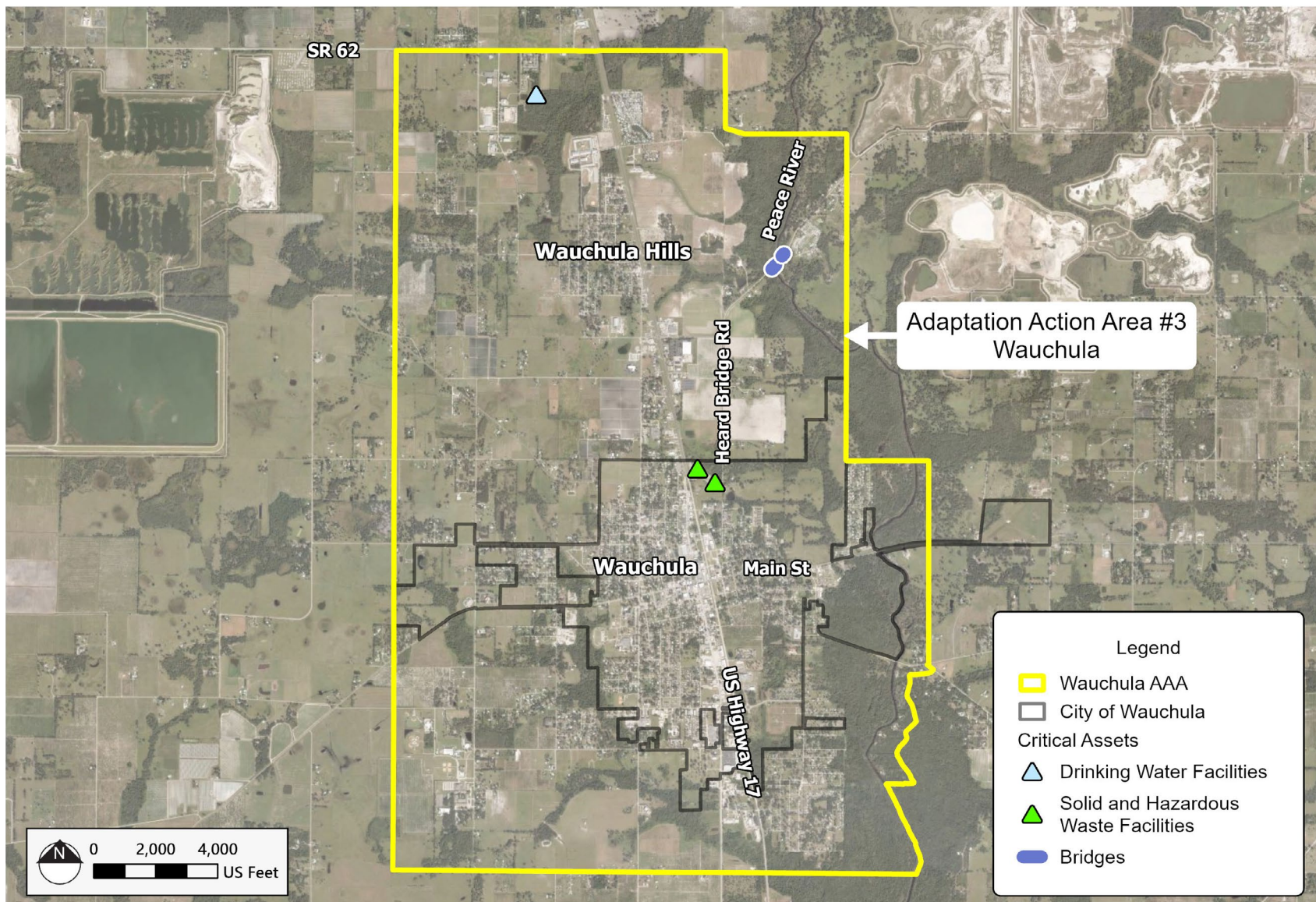
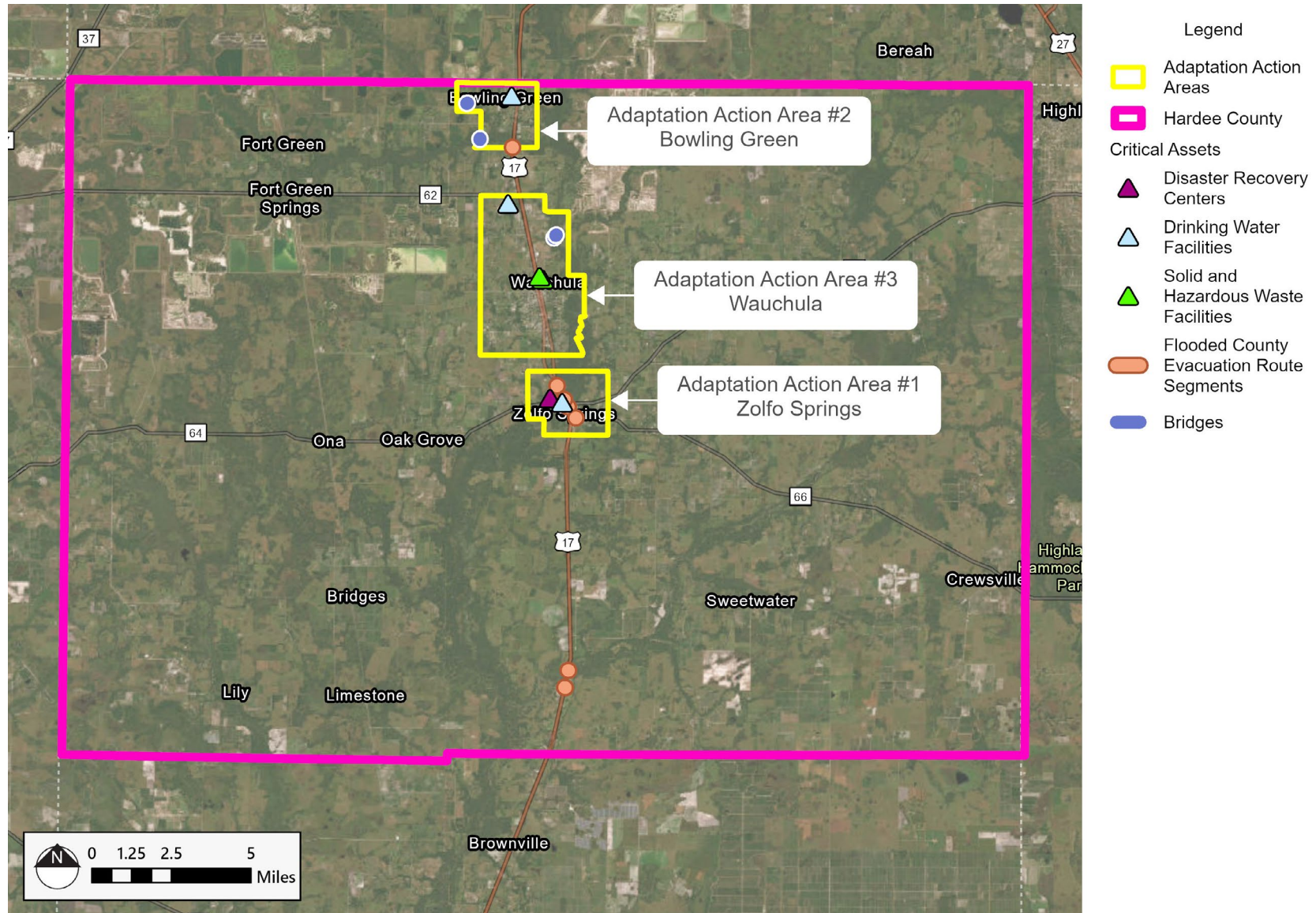


Figure 2: Location Map of Hardee County AAAs and their Rank



Resiliency in Hardee County

Hardee County is a rural, non-coastal, agricultural hub that encompasses approximately 638 square miles. In recent years, Florida has seen more frequent and increasingly intense weather events, including heavy rainfall. Inland regions like the County are becoming more vulnerable to the effects of severe and prolonged rainfall. Such events lead to soil saturation, reduced infiltration, increased runoff, and general flooding. Severe flood events pose risks to property and public safety, while also causing disruptions to municipal infrastructure and affecting economic stability. Hardee County is vulnerable to a range of flooding hazards, including rainfall-induced flooding, riverine flooding, storm surge, and the long-term effects of sea level rise. While the county is inland, storm surge and sea level rise can influence water levels within the lower reaches of the Peace River watershed and its tributaries.

Recognizing these vulnerabilities, the County has taken proactive steps to identify threats, propose strategic actions, and outline a roadmap for building a more resilient future. The County is actively collaborating to implement adaptation strategies that not only strengthen level of service and mitigate flood risks but also enhance the overall wellbeing and sustained growth of the community.

This Adaptation Plan outlines specific adaptive strategies, measures, and policies that are tailored to the unique needs and challenges of the Wauchula AAA and build upon existing initiatives such as the Hardee County CVA, [Hardee County Local Mitigation Strategy \(LMS\)](#), and the [Hardee County Long Term Recovery Plan \(LTRP\)](#).

Wauchula

The Wauchula AAA is located between the Zolfo Springs and Bowling Green AAAs. The AAA is bisected by U.S. Highway 17 and contains the City of Wauchula and the unincorporated area of Wauchula Hills. The City of Wauchula has a population of approximately 5,000 people and is known for its agricultural roots in citrus, cucumbers, and ranching.

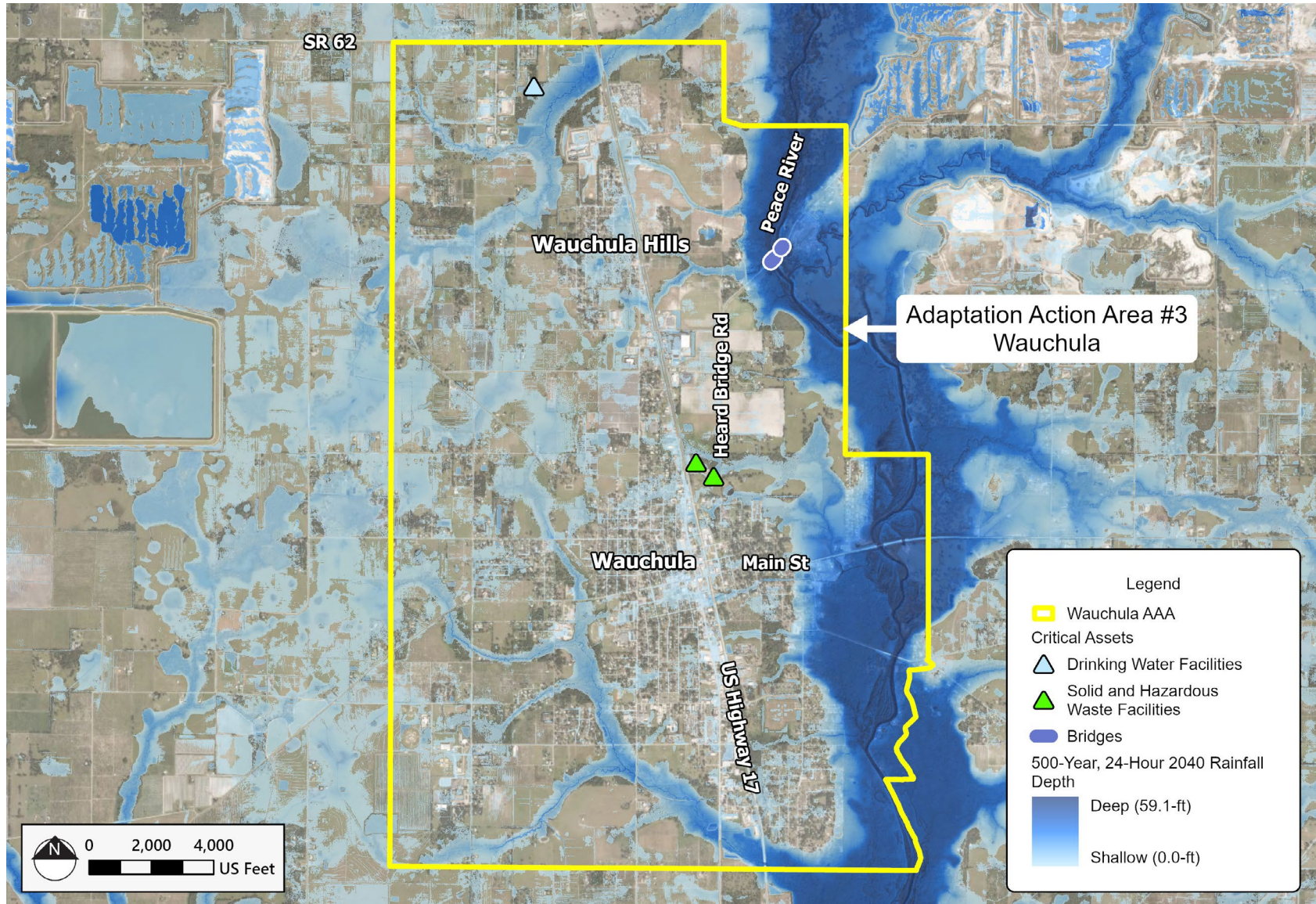
The AAA includes five critical assets, the Wauchula Hills Water and Wastewater Treatment Facility, two solid and hazardous waste facilities including the Hardee County Fire Rescue Administration and the Hardee County Health Department, a bridge on Heard Bridge Rd, and a culvert under a second bridge on Heard Bridge

Rd shown to flood in the 500-Year, 24-Hour 2040 Rainfall event modeled during the County CVA. A total of 17 flood risk comments were received from public outreach meetings for locations within the AAA. A map of the Wauchula AAA and the 500-Year, 24-Hour 2040 Rainfall flood depths are shown in **Figure 4**.

Figure 3: River Lane Flooding During Hurricane Ian



Figure 4: Wauchula AAA 500-Year, 24-Hour 2040 Rainfall Flood Depths



Assessment of Current Adaptive Capacity

Adaptive capacities are broadly defined by the Florida Adaptation Plan Guidebook to refer to how well a system can adjust and respond to changing conditions and challenges. Adaptive capacity for the County has been assessed in terms of:

- ▶ Regulatory and planning capacity,
- ▶ Administrative and technical capacity,
- ▶ Fiscal capacity, and
- ▶ Infrastructure status.

These four criteria capture the ability of the County and the City of Wauchula to implement, fund, and maintain adaptive strategies and interventions as described in further detail below.

Regulatory and Planning Capabilities

Current regulatory and planning capabilities within the Bowling Green AAA are governed by Hardee County, the City of Bowling Green, and statewide regulations. Primary regulatory and planning documents applicable to the AAA include:

- ▶ [Hardee County Comprehensive Plan](#) (2030, as amended through November 2014)
- ▶ [Hardee County Unified Land Development Code](#) (adopted October 12, 2023)
- ▶ [Hardee County Local Mitigation Strategy](#) (effective March 27, 2025)
- ▶ [Hardee County Capital Improvements Program](#) (as adopted through the annual budgeting process)
- ▶ [City of Wauchula Comprehensive Plan](#) and [Unified Land Development Code](#), as amended.
- ▶ [City of Wauchula Community Redevelopment Agency \(CRA\) Plan](#)
- ▶ [Florida Building Code](#)
- ▶ [Federal Emergency Management Agency floodplain management requirements](#)
- ▶ [Hardee County Long Term Recovery Plan](#)
- ▶ Hardee County Stormwater Master Plan

The County's adopted budget and capital programming framework further support implementation of infrastructure improvements through a structured, multi-year capital planning process.

Comprehensive Plans

Long-range planning within the AAA is guided by both the Hardee County Comprehensive Plan (2030) and the City of Wauchula Comprehensive Plan, each adopted in accordance with section 163.3177, Florida Statutes. Together, these plans establish policy direction for land use, infrastructure, and growth management across jurisdictional boundaries.

Across both jurisdictions, the Comprehensive Plans support:

- ▶ Coordination between land use and infrastructure planning
- ▶ Intergovernmental coordination, and
- ▶ Consideration of environmental constraints in development decisions
- ▶ Planning for public facilities and capital improvements to support adopted level of service standards

The Hardee County Comprehensive Plan includes policies supporting intergovernmental coordination with municipalities, including the City of Wauchula, particularly in the provision of infrastructure and maintenance of adopted level of service standards.

Across both Hardee County and the City of Wauchula, the Comprehensive Plans include policies related to stormwater management and conservation of natural resources, which contribute to managing environmental constraints in development decisions.

Land Development Regulations

Across both Hardee County and the City of Wauchula, Land Development Codes (LDC) establish requirements for floodplain management, site design, and development intensity. These regulations collectively require:

- ▶ The elevation of structures within Special Flood Hazard Areas (SFHA) to be at least the Base Flood Elevation (BFE) as defined by the Federal Emergency Management Agency (FEMA)
- ▶ Limitations on development within designated floodways
- ▶ Use of flood-resistant construction practices and materials

These provisions support compliance with the National Flood Insurance Program (NFIP) and provide a consistent baseline for reducing flood risk across the AAA.

In addition, both LDCs include development and subdivision standards that influence site layout, impervious surface conditions, and drainage patterns. These standards collectively affect how stormwater is generated, conveyed, and managed within development areas and are implemented in coordination with applicable state and regional permitting programs.

The Hardee County Land Development Code (Section 05.01.01) establishes flood-resistant construction standards consistent with the Florida Building Code (FBC) and FEMA floodplain management requirements, supporting compliance with the NFIP.

Capital Improvement Program

Hardee County maintains a multi-year Capital Improvement Program (CIP) that identifies, prioritizes, and schedules capital investments for public infrastructure and facilities. The program includes projects related to water systems, stormwater management, transportation, and public facilities, and is used to guide funding decisions based on system needs, available resources, and long-term planning objectives. The County's adopted budget reflects the use of this program as a rolling multi-year planning tool to prioritize and fund infrastructure projects, including those related to stormwater management, transportation, and public facilities.

The Capital Improvements Element of the Comprehensive Plan provides the policy basis for the CIP, requiring that infrastructure improvements be planned to support existing and future development and maintain the adopted level of service standards.

The CIP functions as an implementation tool by translating planning policies into funded projects, including infrastructure upgrades, system maintenance, and capacity improvements that support continued service delivery and reduce vulnerability to system disruptions. The program also provides a mechanism for integrating external funding sources, including state and federal grants, into capital project delivery.

Community Redevelopment Agency

A substantial portion of the incorporated area within the AAA is located within the Wauchula Community Redevelopment Agency (CRA) district. The CRA supports redevelopment activities within designated redevelopment areas through capital improvements, infrastructure investment, streetscape improvements, public facility

enhancements, and economic revitalization initiatives funded in part through tax increment financing mechanisms.

Local Mitigation Strategy

The Hardee County LMS (effective March 27, 2025) is a multi-jurisdictional hazard mitigation plan developed and maintained at the local level in coordination with the Florida Division of Emergency Management (FDEM) and consistent with FEMA. Both Hardee County and the City of Wauchula participate in the LMS Working Group, which meets quarterly to:

- ▶ Assess hazards and vulnerabilities
- ▶ Identify and prioritize mitigation projects
- ▶ Coordinate implementation across jurisdictions

The LMS integrates planning mechanisms across both jurisdictions, including their respective Comprehensive Plans and Land Development Regulations, and coordinates with related efforts such as the Comprehensive Emergency Management Plan and post-disaster redevelopment planning.

Participation in the LMS is required to maintain eligibility for state and federal mitigation funding and supports implementation of capital-focused adaptation strategies, including flood protection measures, drainage improvements, and facility retrofits.

Long-Term Recovery Plan

Following Hurricane Ian, Hardee County and its municipalities, including the City of Bowling Green, the City of Wauchula, and the Town of Zolfo Springs, prepared the Hardee County LTRP with support from FEMA Recovery Support Functions (RSFs) and other local, state, and federal partners. The LTRP was developed to support coordinated long-term recovery, prioritize recovery projects, and guide resilient redevelopment efforts across the County and its municipalities.

The LTRP identifies recovery and resilience projects related to infrastructure systems, stormwater and drainage improvements, public facilities, housing, transportation, economic redevelopment, and utility systems. The plan identified ten high-priority projects within the City of Wauchula related to utility rehabilitation, flood protection, workforce housing, redevelopment, transportation, and public

facility improvements. In addition, three Hardee County high-priority projects located within portions of the AAA outside the Wauchula city limits are also identified in the LTRP. The plan also identifies implementation mechanisms, partnerships, and potential funding opportunities to support long-term recovery and future resilience efforts. The Hardee County Long-Term Recovery Plan is included in **APPENDIX 2**.

Hardee County Stormwater Master Plan

The recently awarded Hardee County Stormwater Master Plan will be a comprehensive, county-wide plan to mitigate flooding and manage water quality. Stormwater master plans aim to map and evaluate existing stormwater infrastructure including pipes, drop structures, channels, and other stormwater utilities. The collected data will be used by the County to target aging infrastructure for rehabilitation projects that will improve urban rainwater runoff and protect water quality. Stormwater master plans are vital to maintain an accurate inventory of County stormwater assets and plan for infrastructure projects.

Administrative and Technical Capabilities

Administrative and technical capabilities of the County are demonstrated by their respective local government departments, divisions, and committees and are defined as the staff available to maintain County operations and perform work. At the time of this assessment, the County employs approximately 189 people across 45 total departments.

In addition to public partnerships, the County maintains continuing service agreements with engineering and consulting firms for larger efforts including numerical modeling, design, permitting, and support services; grant writing and administration services; and Geographic Information System (GIS) support for data and asset management.

Fiscal Capacity

Current fiscal capacity was reviewed to identify the current measures that can be taken to pay for adaptation strategies and resiliency efforts. The largest sources of revenue for the County are from taxes and state grants which make up 15.5% and 58.2% respectively of the total revenue in the Fiscal Year 2025-2026 Budget Summary, based on the Hardee County Board of County Commissioners (BOCC). Additionally, most funds are allocated to public safety and the physical environment which make up 46.6% and 18.9% of the total annual expenditure respectively.

A potential funding matrix has been included in this adaptation plan to provide the

County with recommendations for optimal funding opportunities tailored to each strategy. The funding matrix can be found in the Potential Funding Opportunities section of this report.

Infrastructure

Current infrastructure capacity of the Wauchula AAA was reviewed to identify potential assets that could benefit from adaptation strategies or interventions. The County identified five critical assets within the Wauchula AAA for inclusion in this study, the Wauchula Hills Water and Wastewater Treatment Facility, two solid and hazardous waste facilities including the Hardee County Fire Rescue Administration and the Hardee County Health Department, and a bridge and culvert on Heard Bridge Rd.

Drinking Water Facility

The Wauchula Hills Water and Wastewater Treatment Facility is located on State Rd 62 (**Figure 5**). The facility is comprised of large outdoor treatment facility equipment and the Hardee County Utilities and Operations Headquarters that are enclosed with chain link fences. The drinking water facility was identified as having 0.11-ft of flood depth during the 500-Year, 24-Hour 2040 Rainfall event.

Figure 5: Wauchula Hills Water and Wastewater Treatment Facility



Solid and Hazardous Waste Facilities

The Hardee County Fire Rescue Administration and the Hardee County Health Department are adjacent facilities located on K D Revell Rd (**Figure 6**). These facilities store solid and hazardous waste but are not hazardous waste generators themselves. The facilities were identified as having low vulnerability with 0.01-ft of flood depth in the 500-Year, 24-Hour 2040 Rainfall event. However, the facility parking lots and K D Revell Rd flood during the 100-Year storm event which could limit access to the facilities and disrupt emergency operations. The Hardee County Health Department building also includes the Supervisor of Elections. The Hardee County Fire Rescue Administration is proposed to be relocated to the Supervisor of Elections parking lot, strategies proposed in this plan target the surrounding area as the building will be replaced and moved.

Figure 6: Hardee County Fire Rescue Administration (Top) and Hardee County Health Department (Bottom)



Bridges and Culverts

One bridge and one culvert critical asset were identified in the Wauchula AAA on Heard Bridge Rd crossing the Peace River (**Figure 7**). The bridge was identified as having 30.34-ft of flood depth, and the culvert as having 20.52-ft of flood depth in the 500-Year, 24-Hour 2040 Rainfall event. It should be noted that these flood depths represent the depth of water within the Peace River, and not the depth of water above the bridge.

Figure 7: Heard Bridge Rd Bridge (Top) and the Heard Bridge Rd Culvert (Bottom)



During the development of this Adaptation Plan the County received a bid proposal to rehabilitate the Heard Bridge Rd culvert using a geopolymer mortar for \$168,796. This rehabilitation project would repair cracks or holes inside the culvert and protect it from future corrosion.

Based on bridge condition data provided by the Federal Highway Administration (FHWA), the Heard Bridge Rd bridge (ID: 060017), and the Heard Bridge Rd culvert (ID: 060480) were last inspected in February 2025. The National Bridge Inventory (NBI) operates on a scale of 0 to 9 with a value of 9 being “Excellent” and 0-3 being “Critical to Failed Condition”. The bridge received an overall condition rating of “7-Good”, a structural evaluation condition of “6-Equal to Present Minimum Criteria”, and a channel condition of “6-Channel Remediation is Satisfactory”. The culvert received an overall condition rating of “7-Good”, a structural evaluation condition of “6-Equal to Present Minimum Criteria”, a channel condition of “7-Channel Remediation is Satisfactory”, and a culvert condition of “6-Minor Deterioration”.

Identification of Adaptive Strategies

Adaptive strategies are proposed or planned solutions that aim to increase resiliency and strengthen the AAA against future high-intensity flooding events. Strategies were proposed based on the current adaptive capacity of the AAA and known threats and stressors. Per the Florida Adaptation Planning Guidebook, proposed adaptive strategies were classified as either protection, accommodation, retreat, or avoidance solutions. (Figure 8).

Figure 8: Types of Adaptation Strategies

TYPES OF ADAPTATION STRATEGIES



Once major needs and priorities are defined, specific adaptation strategies can be developed, vetted, and defined.



01 Protection

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered.



02 Accommodation

Accommodation strategies alter physical design of vulnerable structures to allow the structure or land use to stay in place with modification.



03 Retreat

Retreat from areas or infrastructure where protection or accommodation will not be efficient or effective can be voluntary, incentivized, or done gradually.



04 Avoidance

Avoidance involves guiding new development away from areas that are subject to coastal hazards and can be done by implementing policy and/or offering of incentives.

Protection

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered. By prioritizing the protection of vulnerable areas and assets, these strategies help mitigate potential damage, preserve vital resources, and ensure the stability of communities in the face of evolving threats. Ultimately, protection strategies form the first line of defense, enabling a buffer against immediate risks while working towards long-term adaptation and sustainability goals.

Table 1 lists the protection strategies identified for the Wauchula AAA. Short-term projects are those that could be implemented in five years or less, and long-term projects are those that require longer than five years to complete.

Table 1: Protection Strategies

Strategy	Term	Description
Reinforce Heard Bridge Rd Bridge to Withstand Unavoidable Flooding	Long	Reinforce bridges by armoring embankments and using more durable materials to withstand unavoidable flooding.
Implement New Roadside Swales and Detention Ponds	Short	Implement engineered swales or detention areas that store runoff during peak storm events to protect major roadways.
Reinforce Heard Bridge Rd Culvert	Short	Reinforce the culvert crossing on Heard Bridge Rd to armor against erosion during major storm events.
Construct Detention Pond at the Wauchula Hills Water and Wastewater Treatment Facility	Short	Construct a detention pond that stores runoff during peak storm events to protect the Wauchula Hills Water and Wastewater Treatment Facility

Accommodation

Accommodation strategies modify systems and structures to better cope with the impacts of environmental changes. These strategies focus on adjusting current infrastructure via retrofitting or re-design to reduce vulnerability and enhance resilience. Accommodation strategies alter the physical design of vulnerable structures to allow the element to stay in place with modification. This may involve enhancing infiltration and drainage, increasing storage capacity, or providing maintenance to improve flow or conveyance.

Table 2 lists the accommodation strategies identified for the Wauchula AAA. Short-term projects are those that could be implemented in five years or less, and long-term projects are those that require longer than five years to complete.

Table 2: Accommodation Strategies

Strategy	Term	Description
Rehabilitate the Hardee County Health Department	Short	Repair the Hardee County Health Department roof, walls, and HVAC system to reinforce the building against major storm damage.
Upsize Existing Roadside Drainage Infrastructure	Long	Regrade and expand existing roadside ditches/swales along major roadways to reduce roadway inundation during major storm events and increase storage.
Implement Low Impact Development (LID) Improvements at the Hardee County Fire Rescue and Health Department	Short	Utilize available space adjacent to the Hardee County Fire Rescue and Health Department buildings to implement rain gardens, bioswales, and vegetated filter strips.
Expand Backup Power Capacity at the Wauchula Hills Water and Wastewater Treatment Facility	Short	Review the capacity of the existing emergency power system and expand backup power capacity to increase functionality after major storm events.

Retreat

Retreat strategies focus on relocating people, infrastructure and activities away from areas increasingly at risk due to environmental changes. Retreat strategies are often implemented where protection or accommodation will not be efficient or effective. These strategies involve phased retreat from vulnerable regions. By strategically withdrawing from high-risk areas, future damage can be mitigated, exposure hazards can be reduced, and lives and investments can be protected.

Table 3 lists retreat strategies identified for the Wauchula AAA. Short-term projects are those that could be implemented in five years or less, and long-term projects are those that require longer than five years to complete.

Table 3: Retreat Strategies

Strategy	Term	Description
Elevate Heard Bridge Rd Bridge Vulnerable to Flooding	Long	Elevate bridges and roads vulnerable to flooding above the 500-Year 2040 BFE to reduce flood service disruptions during major storm events.

Avoidance and Planning

Avoidance strategies focus on limiting development or expansion of infrastructure in areas prone to environmental risks. These strategies are typically implemented as policies and often incorporate an incentivization element to encourage participation and compliance. Common avoidance measures include revisions to land-use planning regulations and zoning laws, and enforcement of more restrictive building codes that direct new development away from vulnerable areas or hold them to a higher level of service. These proactive strategies not only help in minimizing future damage but also promote safer, more resilient community growth. By integrating avoidance strategies, Adaptation Plans can effectively manage risk and ensure that development aligns with long-term sustainability objectives.

Table 4 lists the avoidance and planning strategies identified for the Wauchula AAA. Short-term projects are those that could be implemented in five years or less, and long-term projects are those that require longer than five years to complete. It should be noted that certain updates to comprehensive plans, land development codes, and other land review projects may be subject to restrictions under F.S. 252.422 and 553.902 as amended by SB 180 (2025).

Table 4: Avoidance and Planning Strategies

Strategy	Term	Description
LID Ordinance	Short	Develop an ordinance supportive of LID and green infrastructure practices that will result in increased water storage, decreased runoff, and water quality improvements.
Develop a Stormwater Engineering Standards Manual	Short	Develop a stormwater engineering standards manual to provide consistent infrastructure planning with clear guidelines to minimize the risk of poorly designed systems that could lead to excessive flooding.
Finished Floor Elevation (FFE) Ordinance	Short	Increase the minimum FFE to 1-ft above the BFE such that any building foundation must be constructed to a minimum standard elevation.
Encourage Development in Areas of Low Flood Risk	Long	Promote adaptive reuse and new development in areas with low flood risk by offering density bonuses for affordable housing projects.
County Land Acquisition Program	Long	Develop a program for the County to gradually acquire flood prone properties to limit development in locations vulnerable to flooding.

Adaptive Capacity Scoring Criteria

Adaptive capacity scoring criteria were developed with guidance from the Florida Adaptation Planning Guidebook. Adaptive strategies with high scores are those that offer the maximum positive flooding resilience impact for the least cost. Definitions for the scoring criteria used are shown in **Table 5**, **Table 6**, **Table 7**, **Table 8**, and **Table 9**.

Figure 9: East Main Street Flooding During Hurricane Ian



Table 5: Scoring Criteria – Resilience

Resilience Criteria	
3	Strategy is anticipated to greatly increase resilience to flooding
2	Strategy is anticipated to moderately increase resilience to flooding
1	Strategy is anticipated to minimally increase resilience to flooding

Table 6: Scoring Criteria – Implementation Costs

Implementation Costs Criteria	
3	Implementation costs are anticipated to be minimal
2	Implementation costs are anticipated to be moderate
1	Implementation costs are anticipated to be high

Table 7: Scoring Criteria – Life Cycle Costs

Life Cycle Costs Criteria	
3	Life cycle costs are balanced; provides significant resilience dividends
2	Life cycle costs are increased; provides significant resilience dividends
1	Life cycle costs are increased; provides minimal resilience dividends

Table 8: Scoring Criteria – Project Scale

Project Scale Criteria	
3	Strategy is anticipated to have a regional impact
2	Strategy is anticipated to have a local impact
1	Strategy is anticipated to only impact the target critical asset

Table 9: Scoring Criteria – Technically Feasible

Technically Feasible Criteria	
3	Strategy is anticipated to have minimal design constraints
2	Strategy is anticipated to have moderate design constraints
1	Strategy is anticipated to have high design constraints

Ranking of Proposed Adaptive Strategies

A ranking matrix for proposed adaptive strategies is shown in **Table 10**.

Table 10: Ranking of Proposed Adaptive Strategies

Strategy Type	Strategy Name	Strategy Description	Resilience	Implementation Costs	Life Cycle Costs	Project Scale	Technically Feasible	Overall Score	Final Ranking
Avoidance and Planning	FFE Ordinance*	Increase the minimum FFE to 1-ft above the BFE such that any building foundation must be constructed to a minimum standard elevation.	2	3	3	3	3	14	1
Avoidance and Planning	County Land Acquisition Program	Develop a program for the County to gradually acquire flood prone properties to limit development in locations vulnerable to flooding.	2	3	3	3	3	14	1
Avoidance and Planning	Evacuation Route Drainage Infrastructure Inspections	Develop a stormwater engineering standards manual to provide consistent infrastructure planning with clear guidelines to minimize the risk of poorly designed systems that could lead to excessive flooding.	3	3	3	3	2	14	1
Protection	Construct Detention Pond at the Hardee County Fire Rescue and Health Department	Construct a detention pond that stores runoff during peak storm events to protect the Hardee County Fire Rescue and Health Department.	3	2	2	2	3	12	2
Protection	Construct Detention Pond at the Wauchula Hills Water and Wastewater Treatment Facility	Construct a detention pond that stores runoff during peak storm events to protect the Wauchula Hills Water and Wastewater Treatment Facility	3	2	2	2	3	12	2
Avoidance and Planning	Encourage Development in Areas of Low Flood Risk	Promote adaptive reuse and new development in areas with low flood risk by offering density bonuses for affordable housing projects.	1	3	3	2	3	12	2
Avoidance and Planning	LID Ordinance*	Develop an ordinance supportive of LID and green infrastructure practices that will result in increased water storage, decreased runoff, and water quality improvements.	2	3	3	2	2	12	2
Accommodation	Expand Backup Power Capacity at the Wauchula Hills Water and Wastewater Treatment Facility	Review the capacity of the existing emergency power system and expand backup power capacity to increase functionality after major storm events.	2	3	2	2	3	12	2
Protection	Reinforce Heard Bridge Rd Bridge to Withstand Unavoidable Flooding	Reinforce bridges by armoring embankments and using more durable materials to withstand unavoidable flooding.	3	1	2	2	3	11	3
Accommodation	Rehabilitate the Hardee County Health Department	Repair the Hardee County Health Department roof, walls, and HVAC system to reinforce the building against major storm damage.	2	2	3	1	3	11	3
Accommodation	Implement LID Improvements at the Hardee County Fire Rescue and Health Department	Utilize available space adjacent to the Hardee County Fire Rescue and Health Department buildings to implement rain gardens, bioswales, and vegetated filter strips.	2	2	2	2	3	11	3
Accommodation	Upsize Existing Roadside Drainage Infrastructure	Regrade and expand existing roadside ditches/swales along major roadways to reduce roadway inundation during major storm events and increase storage.	2	1	3	3	2	11	3
Protection	Reinforce Heard Bridge Rd Culvert	Reinforce the culvert crossing on Heard Bridge Rd to armor against erosion during major storm events.	3	1	2	2	3	10	4
Protection	Implement New Roadside Swales and Detention Ponds	Implement engineered swales or detention areas that store runoff during peak storm events to protect major roadways.	2	1	2	3	2	10	4
Retreat	Elevate Heard Bridge Rd Bridge Vulnerable to Flooding	Elevate bridges and roads vulnerable to flooding above the 500-Year 2040 BFE to reduce flood service disruptions during major storm events.	3	1	3	1	2	10	4

* It should be noted that certain updates to comprehensive plans, land development codes, and other land review projects may be subject to restrictions under F.S. 252.422 and 553.902 as amended by SB 180 (2025).

Conceptual Planning

This section refines the proposed adaptive strategies with associated construction projects to bridge the gap between critical assets and flood reduction solutions. Proposed projects descriptions have been supplemented with preliminary costs, planning considerations, and conceptual representations. The adaptive strategies have been organized by the type of critical asset infrastructure they target.

These concepts are not intended to represent engineering designs, however, they provide a planning-level framework to support decision-making, prioritization, and future funding pursuits by translating high-level strategies into specific concepts that could be considered for design and implementation. Preliminary planning-level cost estimates for each strategy were derived from comparable completed projects and are presented as a conservative range encompassing construction costs. It should be noted that costs related to project design, required hydraulic modeling, and future assumptions of inflation, are not included in the cost estimates. A summary of the proposed adaptive strategy projects elaborated in this section is shown in **Table 11**. Short-term projects are those that could be implemented in five years or less, and long-term projects are those that require longer than five years to complete.

Table 11: Summary of Proposed Adaptive Strategy Projects

Strategy Name	Term	Planning Construction Cost
Construct Detention Pond at the Wauchula Hills Water and Wastewater Treatment Facility	Short	\$45,000-\$150,000
Expand Backup Power Capacity at the Wauchula Hills Water and Wastewater Treatment Facility	Short	\$75,000-\$300,000
Construct Detention Pond at the Hardee County Fire Rescue and Health Department	Short	\$45,000-\$150,000

Strategy Name	Term	Planning Construction Cost
Implement LID Improvements at the Hardee County Fire Rescue and Health Department	Short	\$50,000-\$150,000
Rehabilitate the Hardee County Health Department	Short	\$2,500,000-\$4,000,000
Reinforce Heard Bridge Rd Bridge to Withstand Unavoidable Flooding	Long	\$500,000-\$1,200,000
Elevate Heard Bridge Rd Bridge Vulnerable to Flooding	Long	\$2,000,000-\$5,000,000
Reinforce Heard Bridge Rd Culvert	Short	\$75,000-\$250,000
Implement New Roadside Swales and Detention Ponds	Short	\$200,000-\$500,000
Upsize Existing Roadside Drainage Infrastructure	Long	\$500,000-\$1,500,000

Adaptive Strategies: Drinking Water Facility

Construct Detention Pond at the Wauchula Hills Water and Wastewater Treatment Facility

This strategy would include the construction of a stormwater detention pond adjacent to the Wauchula Hills Water and Wastewater Treatment Facility to increase stormwater storage capacity. The detention pond would be designed to capture runoff generated on site and from adjacent contributing areas, reducing localized ponding and overland flow impacts to the drinking water facility during major storm events. By providing additional on site storage, the detention pond would lower peak discharge rates and reduce the potential for shallow flooding around critical buildings and utilities.

Considerations would include evaluation of available storage volume based on site constraints and contributing drainage area, confirmation of soil suitability and groundwater conditions, and integration with existing on site drainage features. A visual representation of a detention pond adjacent to the Hardee County Utilities & Operations Headquarters at the Wauchula Hills Water and Wastewater Treatment Facility is shown in **Figure 10**.

It should be noted that the ongoing Hardee County Utilities and Facilities Master Plan includes an expansion of the Wauchula Hills Water and Wastewater Treatment Facility in the proposed pond location, an alternate pond location may be required if construction proceeds.

Preliminary planning-level costs for construction of a detention pond are primarily driven by required storage volume, excavation depth, grading complexity, soil conditions, and associated inlet and outlet structures. Based on similar FDOT stormwater infrastructure projects, small to mid sized detention ponds are estimated to cost \$45,000 to \$150,000. Ongoing maintenance costs are anticipated to range from approximately \$3,000 to \$8,000 annually and would include routine inspections, vegetation management, sediment removal as needed, and minor repairs to inlet or outlet structures.

Figure 10: Visualization of Detention Pond at Wauchula Hills Water and Wastewater Treatment Facility



Adaptive Strategies: Drinking Water Facility

Expand Backup Power Capacity At the Wauchula Hills Water and Wastewater Treatment Facility

This strategy would include the expansion/upgrade of the existing backup power system at the Wauchula Hills Water and Wastewater Treatment Facility to ensure continued operation during and after power outages associated with major storm events. Improvements could consist of installation of additional generators, increase of fuel storage capacity, or implementation of redundant power supply components that support critical treatment processes. Enhancement of backup power capacity would reduce the risk of service disruptions, maintain regulatory compliance, and support continuous operation of essential water and wastewater functions during and after major rainfall events.

Considerations would include an evaluation of the current backup power system capacity and critical load requirements to determine an appropriate generator size or target fuel storage capacity. A review of the existing power system should be conducted to evaluate the remaining life of the generators to identify dated components in need of replacement. Additional considerations include the location and elevation of new generators to minimize flood exposure, integration with existing electrical infrastructure, and compliance with applicable FDEP and building code requirements. Opportunities to incorporate automatic transfer switches and remote monitoring systems should also be evaluated to improve system reliability and response time. It should be noted that the ongoing Hardee County Utilities and Facilities Master Plan includes an expansion of the Wauchula Hills Water and Wastewater Treatment Facility which will increase the facility's electrical demand, therefore, additional backup power capacity will be required.

Preliminary planning-level costs for expanding backup power capacity are influenced by generator size, number of units, fuel type, electrical integration complexity, and site-specific constraints. Based on similar municipal utility generator installation projects, costs are estimated to range from \$75,000 to \$300,000. Ongoing maintenance costs are anticipated to include routine inspections, periodic load resting, fuel management, and equipment servicing, generally ranging from \$2,000 to \$10,000 annually depending on system size and configuration.

Adaptive Strategies: Solid and Hazardous Waste Facilities

Rehabilitate the Hardee County Health Department

This strategy would include the rehabilitation of the Hardee County Health Department roof, walls, and HVAC system to improve building resiliency during major storm events. The existing roof would be replaced to address impact damage, corrosion and rusting, and splitting sealant voids identified in the Inspection Report from October 2024. The rehabilitation of damaged walls will include repairs to large cracks and voids to prevent flood intrusion and leakage. Additionally, the existing HVAC system is approaching its end of life and will be replaced to maintain functionality during and after major storm events to not impede emergency services.

Considerations would include an evaluation of the building interior to diagnose the extent damage caused by leaks and holes in the roof and walls. Additional considerations include a review of the existing HVAC system to identify failing components and elements that do not need rehabilitation. The selected roof material for the rehabilitation should be resistant to corrosion and capable of withstanding impacts from debris during major storm events. Waterproof sealants should be used during the rehabilitation and future maintenance to limit water penetration and fully fill joints, cracks, or gaps.

Preliminary planning-level costs for the rehabilitation of the roof and walls include the removal and replacement of the existing roof system, the restoration of damaged walls, and the replacement of the HVAC system. Based on the cost estimate from the inspection report and HVAC replacement costs for similarly sized facilities, the rehabilitation is estimated to cost between \$3,000,000 to \$4,250,000. Ongoing maintenance costs are anticipated to decrease as emergency repairs will be limited after these systems are replaced.

Adaptive Strategies: Solid and Hazardous Waste Facilities

Construct Detention Pond at the Hardee County Fire Rescue and Health Department

This strategy would include the construction of a stormwater detention pond adjacent to the Hardee County Fire Rescue and Health Department to increase stormwater storage capacity. The detention pond would be designed to capture runoff generated on site and from adjacent contributing areas, reducing localized ponding and overland flow impacts to the drinking water facility during major storm events. By providing additional on site storage, the detention pond would lower peak discharge rates and reduce the potential for shallow flooding around critical buildings and utilities.

Considerations would include evaluation of available storage volume based on site constraints and contributing drainage area, confirmation of soil suitability and groundwater conditions, and integration with existing on site drainage features. A visual representation of a detention pond adjacent to the Hardee County Fire Rescue and Health Department is shown in **Figure 11**. The top figure displays existing conditions; the bottom figure illustrates the adaptive strategy.

Preliminary planning-level costs for construction of a detention pond are primarily driven by required storage volume, excavation depth, grading complexity, soil conditions, and associated inlet and outlet structures. Based on similar FDOT stormwater infrastructure projects, small to mid sized detention ponds are estimated to cost \$45,000 to \$150,000. Ongoing maintenance costs are anticipated to range from approximately \$3,000 to \$8,000 annually and would include routine inspections, vegetation management, sediment removal as needed, and minor repairs to inlet or outlet structures.

Figure 11: Visualization of Expansion of Detention Pond Adjacent to Hardee County Buildings



Adaptive Strategies: Solid and Hazardous Waste Facilities

Implement LID Improvements at the Hardee County Fire Rescue and Health Department

This strategy would include the implementation of LID improvements at the Hardee County Health Fire Rescue and Health Department to reduce stormwater runoff and localized flooding during major storm events. The strategy would focus on converting impervious surfaces and better utilizing open space to improve stormwater quality and create additional storage. LID improvements are recommended at this location over conventional stormwater collection systems due to the limited available open space.

Considerations would include installation of grass or landscaped bioswales, rain gardens, pervious pavement, or other LID features designed to capture, infiltrate, and treat stormwater closer to its source. These features would be integrated into existing landscaped areas or retrofit portions of paved surfaces to slow runoff, reduce peak flows, and improve overall site drainage performance. A visual representation of LID improvements located at the Hardee County Health Department is shown in **Figure 12**. The top figure displays existing conditions; the bottom figure illustrates the adaptive strategy.

Planning considerations include evaluation of existing site grading and drainage patterns, identification of appropriate locations for LID features without impacting facility access, and selection of vegetation and materials suitable for periodic inundation and low maintenance. Design should ensure LID features are sized to provide meaningful runoff reduction while remaining compatible with existing utilities and building infrastructure.

Preliminary planning level costs for LID retrofits are driven by the type and extent of improvements, excavation requirements, and surface restoration needs. Based on similar LID retrofit projects in case studies published by the Environmental Protection Agency (EPA), costs are estimated to range from \$50,000 to \$150,000. Ongoing maintenance costs would involve routine inspections, vegetation management, and sediment removal.

Figure 12: Visualization of LID Improvements at the Hardee County Health Department



Adaptive Strategies: Bridges and Culverts

Reinforce Heard Bridge Rd Bridge to Withstand Unavoidable Flooding

This strategy would include reinforcing existing bridges to withstand unavoidable flooding through embankment armoring and the use of flood-resilient structural materials. Improvements may include installation of articulated concrete blocks, riprap, or sheet piling along bridge approaches and abutments to reduce erosion and scour during high water events that could cause a structural failure of the bridge. Where feasible, bridge components could also be retrofitted with higher-durability materials designed to tolerate repeated inundation without compromising structural integrity. These enhancements would improve bridge reliability during major storm events and reduce the risk of structural failure.

Engineering evaluations would assess existing foundation conditions, hydraulic performance, anticipated flood depths, and flow velocities to determine appropriate armoring extents and material selection. Reinforcement measures would be designed to maintain conveyance capacity beneath the bridge while protecting embankments from erosion, and upgrade the strength or durability of the bridge without compromising structural integrity. Where possible, improvements could be phased or coordinated with scheduled bridge maintenance or rehabilitation projects to reduce overall costs. A visual representation of the reinforced bridge crossing Peace River on Heard Bridge Rd is shown in **Figure 13**. The top figure displays existing conditions; the bottom figure illustrates the adaptive strategy.

Preliminary planning level costs for reinforcing bridge embankments are influenced by bridge size, armoring length, material selection, and construction access constraints. Based on similar FDOT bridge retrofit projects, embankment armoring using riprap typically costs between \$150,000 to \$400,000 per bridge. More extensive retrofits involving sheet piling, foundation improvements, or structural material upgrades may range from \$400,000 to \$1,000,000 per bridge, depending on site conditions and hydraulic complexity. It should be noted that riprap or sheet piling improvements may be excessive for peak velocities in the creek during major storm events, other stabilization methods such as geotextiles or vegetated stabilization could be more suitable based on a hydraulic analysis.

For planning purposes, reinforcing one flood-prone bridge is estimated to cost between \$500,000 and \$1.2 million. Ongoing maintenance costs are expected to be low, consisting primarily of periodic inspections following major storm events and localized repair of displaced armoring as needed.

Figure 13: Visualization of Reinforced Peace River Bridge on Heard Bridge Rd



Adaptive Strategies: Bridges and Culverts

Elevate Heard Bridge Rd Bridge Vulnerable to Flooding

This strategy would include elevating bridges and adjacent roadway approaches that are vulnerable to flooding to heights above the 500-Year, 24-Hour 2040 BFE. Elevation improvements would allow bridges to remain accessible during and after major rainfall events, improving emergency access and evacuation reliability. Where feasible, roadway approaches would be raised gradually to maintain proper transitions and minimize impacts to surrounding infrastructure.

Considerations would include the review of historical flood events to identify the extent of bridge overtopping during storm events, or limited clearance above predicted flood elevations. Engineering evaluations would assess existing bridge profiles, hydraulic capacity, design flood elevations, and right-of-way constraints to determine feasible elevation targets. Elevation designs would need to account for drainage continuity, maintaining or improving conveyance beneath bridges, and minimizing upstream flooding impacts. Coordination with FDOT standards and floodplain management requirements would be necessary. A visual representation of an elevated bridge on Heard Bridge Rd is shown in **Figure 14**. The top figure displays existing conditions; the bottom figure illustrates the adaptive strategy.

Preliminary planning level costs for bridge and roadway elevation projects are influenced by bridge length, required elevation increase, approach roadway reconstruction, and utility relocation needs. Based on similar FDOT bridge replacement projects, elevating a small to mid-sized bridge and its approaches generally range from \$2 million to \$6 million per structure. Larger bridges or projects requiring substantial roadway realignment, extended approach fills, or drainage modifications may exceed \$8 million.

For planning purposes, elevating the Heard Bridge Rd bridge and associated roadway approaches is estimated at \$2 million to \$5 million. Ongoing maintenance costs are expected to be low, consisting primarily of periodic inspections following major storm events.

Figure 14: Visualization of Upsized Swale in the Median of US Highway 17 Located at the Evacuation Route Segment



Adaptive Strategies: Bridges and Culverts

Reinforce Heard Bridge Rd Culvert

This strategy includes reinforcing the existing culvert crossing at Heard Bridge Rd to improve its structural stability and resilience during major storm events. Improvements could involve the installation of reinforced concrete headwalls, wingwalls, and cutoff walls, along with armoring of the culvert inlets using riprap or other stabilization methods. These modifications would reduce the risk of erosion, maintain culvert functionality under high flow conditions, and prevent the roadway from washing out during major storm events. These improvements could be implemented in tandem with the received culvert rehabilitation proposal that will use geopolymer mortar to repair cracks and increase the corrosion resistance of the pipe for a total bid price of \$168,796.

Considerations would include evaluation of the existing culvert condition, hydraulic capacity, and susceptibility to scour and erosion under project flood conditions. Hydraulic modeling may be required to confirm flow velocities and tailwater conditions to appropriately size armoring materials and determine the extent of reinforcement needed. Additional considerations include maintaining or improving hydraulic conveyance, minimizing impacts to upstream and downstream conditions, and ensuring compatibility with existing roadway geometry and drainage infrastructure. A visual representation of the culvert crossing at Heard Bridge Rd reinforced with concrete wingwalls is shown in **Figure 15**. The top figure displays the existing conditions; the bottom figure illustrates the adaptive strategy.

Preliminary planning-level costs for culvert reinforcement are influenced by culvert size, extent of armoring, site accessibility, and construction sequencing constraints. Based on similar FDOT culvert rehabilitation and stabilization projects, costs are estimated to range from \$75,000 to \$250,000 not including the existing proposal. Ongoing maintenance costs are expected to be low and would primarily include periodic inspections following major storm events and localized repair of displaced riprap or minor erosion features.

Figure 15: Visualization of Culvert reinforced with Concrete Wingwalls on Heard Bridge Rd



Adaptive Strategies: AAA Resiliency

Implement New Roadside Swales and Detention Ponds

This strategy would include the design and implementation of roadside swales/detention ponds to store and attenuate stormwater runoff during peak rainfall events. Open spaces near evacuation routes could be utilized for such infrastructure which would allow flows to be directly routed away from roads. These features can be designed to slow flow velocities, reduce peak discharge rates, and provide storage, thereby reducing the depth and duration of flooding on roadway surfaces.

Considerations include identification of locations along major roadways with sufficient right of way or County owned parcels to accommodate swales and detention facilities, as well as evaluation of existing drainage patterns and contributing drainage areas. Swales are graded to maintain drainage toward downstream conveyance systems, while detention ponds are designed to detain and release runoff at controlled rates that do not overwhelm downstream infrastructure. Where possible, these features could also be integrated with existing drainage systems to improve overall network performance. A visual representation of a detention pond at the intersection of US Highway 17 and E Townsend St is shown in **Figure 16**. The top figure displays existing conditions; the bottom figure illustrates the adaptive strategy.

Preliminary planning level costs for implementing roadside swales and detention ponds are primarily driven by the size of the proposed system, storage volume, land acquisition, design, permitting, and earthwork quantities. Based on similar FDOT stormwater infrastructure projects, small to mid sized detention ponds constructed adjacent to roadway corridors generally range from \$45,000 to \$150,000 per pond. Vegetated roadside swale construction costs typically range from \$10,000 to \$40,000 per installation, depending on length, grading complexity, land accessibility, right-of-way acquisition, and vegetation establishment.

For planning purposes, a combined program of strategically placed swales and one detention pond along US Highway 17 is estimated at \$200,000 to \$500,000, depending on site specific conditions. Ongoing maintenance costs are expected to be moderate and consist primarily of lawn maintenance and mowing.

Figure 16: Visualization of a Detention Pond at the Intersection of US Highway 17 and E Townsend St



Adaptive Strategies: AAA Resiliency

Upsize Existing Roadside Drainage Infrastructure

This strategy would include the design and targeted upgrades of existing roadside drainage infrastructure along major roadways to improve stormwater storage capacity and reduce roadway inundation during major storm events. Based on the vulnerability assessment and flood depth maps, flooding along the evacuation corridors appear to be driven by limited roadside storage. The strategy includes expanding existing roadside ditches/swales along major roadways. By enhancing storage capacity at critical locations, this strategy would reduce the duration and depth of flooding within travel lanes and shoulders.

Considerations would include an evaluation of existing drainage corridors, identification of hydraulic bottlenecks, and review of system compatibility with current roadway right of way constraints. Improvements should be designed to increase drainage capacity and long term system performance with more resilient drainage infrastructure. A visual representation of an upsized swale on US Highway 17 is shown in **Figure 17**. The top figure displays existing conditions; the bottom figure illustrates the adaptive strategy.

Preliminary planning-level costs for upsizing existing roadside drainage infrastructure are primarily driven by length of improvements, and the number of inlets or culvert crossings requiring replacement. Based on similar FDOT stormwater infrastructure projects, upsizing stormwater pipes and culverts along roadway corridors generally range from \$150 to \$400 per LF, with higher costs associated with larger diameter pipes, deeper excavations, and work within constrained rights-of-way. Regrading and stabilizing roadside ditches will add additional costs related to earthwork, erosion control, and restoration but remains comparatively lower than closed-system pipe replacement.

Depending on the number of stormwater improvements and the extent of associated roadway restoration, project costs could range from approximately \$500,000 to \$1,500,000 to upsize swales for a 0.5-mile stretch of US Highway 17. Ongoing maintenance costs are expected to be comparable to existing roadway maintenance activities and are anticipated to include periodic inspection, sediment removal, and debris clearing to maintain system capacity.

Figure 17: Visualization of Upsized Swales on US Highway 17



Next Steps

This AAA Plan was developed to highlight existing flood vulnerabilities within the Wauchula AAA, evaluate local adaptive capacity, identify feasible adaptive strategies, and bridge the gap between identified vulnerable critical assets and the implementation of flood reduction solutions. This plan provides Hardee County and the City of Wauchula with conceptual adaptive strategies to guide near and long term flood resilience improvements.

To advance the implementation of this plan, it is recommended that the County and City of Wauchula review the high scoring, near term adaptive strategies that score favorably across the flood resilience, implementation cost, and feasibility criteria.

Next steps include refining identified projects to be included in the County CIP, advancing planning level strategies, and coordinating with regional and state partners to position projects for upcoming grant cycles.

A potential funding opportunities matrix has been developed to support implementation of the recommended adaptive strategies by identifying federal, state, regional, and local funding programs. The matrix is intended to serve as a planning and decision making tool that includes funding pathways, highlights application cycles, competitiveness, match requirements, and eligibility considerations. Funding opportunities are organized by primary, supporting, planning level, and conditional sources to help the County pursue grants.

Figure 18: West Main Street Flooding During Hurricane Elsa



Potential Funding Opportunities

A funding matrix that highlights funding opportunities for the proposed adaptation strategies is shown in **Table 12, Table 13, Table 14, Table 15, Table 16, and Table 17.**

Table 12: Potential Funding Opportunities (Most Aligned with AAA Strategies)

Funding Opportunity	Funding Type	Funding Available	Competitiveness	Application Cycle	Match Requirements	Project Recommendations	Additional Considerations
FEMA - Building Resilient Infrastructure and Communities (BRIC)	Federal Grant	Up to tens of millions per project; varies based on national allocation and project type	High - Application requires cost-benefit analysis, and application process is exhaustive	Open: September Due to FDEM: November FDEM submits: January	30% Waived if under \$200,000	Flood barriers; drainage and conveyance improvements; storm-water detention and swales; roadway and bridge elevation; critical facility protection and elevation; backup power improvements	Purpose: To increase resilience and public safety; reduce injuries, loss of life, and damage to infrastructure from natural hazards. Funding Types: Mitigation Plans, Project Scoping, Infrastructure Projects, Flood Risk Reduction. Eligibility: Local governments via FDEM; must be in LMS and meet FEMA Benefit-Cost Analysis (BCA) requirements.
FDEP - Resilient Florida Grants Program	State Grant	Varies annually based on appropriations and project type	Medium - Requires readiness to proceed	Varies every year Open: July Due: September (approx.)	50% - Cost-share may be reduced for rural communities	Targeted vulnerability assessments; stormwater and drainage planning; infrastructure adaptation strategies; flood mitigation and resilience projects	Purpose: Supports projects addressing flooding, rainfall, and climate impacts. Funding Types: Planning and Implementation tied to vulnerability assessments. Eligibility: Local governments; projects aligned with resilience priorities.
SWFWMD - Cooperative Funding Initiative	Regional Cost Share	Varies by project and funding cycle	Medium - Requires that project is ready for construction	Open: August Due: October	Typically ~50%	Stormwater system upgrades; roadside drainage improvements; detention and conveyance projects; regional flood mitigation solutions	Purpose: To provide funds for projects that assist in creating sustainable water resources and provide flood protection. Funding Types: Stormwater and watershed projects. Eligibility: Local sponsor required; must provide regional water resource benefit.
FDEP - Water Quality Improvement Grant Program	State Grant	Not reported	Medium - Requires that the project is ready to proceed and nutrient removal calculations	Varies every year Open: July Due: August (approx.)	Up to 50% (may be waived for rural communities)	Sanitary sewer re-routing (I&I reduction); WWTF upgrades; stormwater improvements improving water quality	Purpose: To address wastewater, stormwater, or nutrient sources in waterbodies. Funding Types: Implementation grants. Eligibility: Projects must improve waters not meeting standards, TMDLs, or within BMAP/RAP areas.
Florida Commerce - Small Cities CDBG	Federal (State-administered)	Varies based on state allocation and project type	Medium	Annual	Typically none or low	Drainage infrastructure; roadside drainage improvements; utilities; neighborhood-scale stormwater improvements; public facility (fire/health) improvements	Purpose: Community development and infrastructure improvements. Funding Types: Public infrastructure and utilities. Eligibility: Non-entitlement communities; must meet Low- and Moderate-income (LMI) benefit criteria.

Table 13: Supporting Funding Opportunities (Can fund portions of AAA projects depending on eligibility and project type)

Funding Opportunity	Funding Type	Funding Available	Competitiveness	Application Cycle	Match Requirements	Project Recommendations	Additional Considerations
Federal Emergency Management Agency - Flood Mitigation Assistance (FMA)	Federal Grant	Varies annually based on NFIP prioritization	High - Application requires cost-benefit analysis	Open: September Due to FDEM: November FDEM submits: January	Typically 30%	Property acquisition; elevation and floodproofing of critical infrastructure; targeted facility protection	Purpose: Reduce repetitive flood damage to buildings and infrastructure. Funding Types: Planning, Infrastructure, Mitigation Projects. Eligibility: Must benefit NFIP-insured properties; must be in LMS.
FDEP - Non-Point Source Funds (319 Grants)	Federal and State Grants	Awards vary	Medium - Requires that project is ready to proceed and nutrient removal calculations	Rolling / periodic cycles	40% non-federal match (i.e., 60% federal share maximum)	Stormwater retrofits; LID/green infrastructure; runoff reduction projects; watershed improvements	Purpose: Reduce nonpoint source pollution from land use activities. Funding Types: Implementation grants. Eligibility: Local governments and water management entities; must demonstrate pollutant reduction.
US DOT - PROTECT Program	Federal Grant	Not reported	High - Application process is lengthy and detailed	Open: April Due: August (approx.)	Implementation: 20% Planning: 0%	Evacuation route drainage improvements; roadway and bridge flood mitigation; transportation resilience upgrades	Purpose: Strengthen transportation systems against flooding and extreme weather. Funding Types: Planning and infrastructure. Eligibility: All levels of government; must tie to transportation resilience.
US DOT - Rebuilding American Infrastructure with Sustainable and Equity (RAISE)	Federal Grant	Awards vary from \$5,000,000 to \$25,000,000	High - Application requires cost-benefit analysis	Open: November Due: February (approx.)	Typically 20%	Roadway drainage improvements; multimodal infrastructure supporting flood resilience	Purpose: Support transportation projects with regional impact. Funding Types: Planning and capital. Eligibility: Must demonstrate significant local or regional benefit.
Florida Commerce - Rural Infrastructure Fund (RIF)	State Grant	Funding awarded up to \$300,000 - varies based on project scope and state funding availability	Medium	Opens: July Closes: September	Typically none	Water, wastewater, stormwater, transportation, and public infrastructure improvements	Purpose: Support infrastructure tied to economic development. Funding Types: Planning, design, engineering, construction. Eligibility: Rural communities; must demonstrate economic benefit.

Table 14: Planning & Policy Funding Opportunities (Funds planning, policy, and regulatory updates supporting AAA strategies)

Funding Opportunity	Funding Type	Funding Available	Competitiveness	Application Cycle	Match Requirements	Project Recommendations	Additional Considerations
Florida Commerce - Community Planning Technical Assistance (CPTA)	State Grant	Up to \$75,000	Medium	Varies every year Due: May	Typically none	Engineering standards manual; LID ordinance; FFE ordinance updates; development policies for low flood risk areas	Purpose: Planning and policy development for resilience and growth management. Funding Types: Planning grants. Eligibility: Counties, municipalities, and RPCs.

Table 15: Local Implementation Funding Source (Used to implement projects and meet match requirements)

Funding Opportunity	Funding Type	Funding Available	Competitiveness	Application Cycle	Match Requirements	Project Recommendations	Additional Considerations
Hardee County Capital Improvement Program (CIP); City of Wauchula CRA Budget	Local Funding / Implementation	Varies annually based on City/ County budget	Low	Annual budgeting	N/A	Local match funding; phased implementation of drainage, stormwater, and infrastructure projects	Purpose: Implement local infrastructure priorities. Funding Types: Capital projects. Eligibility: Determined by County priorities and budget.

Table 16: Loans/Financing Programs (Used for large capital projects where grant funding is insufficient; requires repayment)

Funding Opportunity	Funding Type	Funding Available	Competitiveness	Application Cycle	Match Requirements	Project Recommendations	Additional Considerations
EPA - Water Infrastructure Finance and Innovation Act (WIFIA)	Federal Loan	Not reported	High - Requires credit worthiness analysis, pro-formas and extensive review	Rolling (Letters of Interest accepted year-round)	Finances up to 49% of total project cost; requires application fee (which is used as a down payment for the loan)	Large-scale stormwater and drainage infrastructure; flood mitigation systems; regional drainage infrastructure	Purpose: Large-scale water infrastructure. Funding Types: Low-interest federal financing for large-scale water infrastructure (design, construction, rehabilitation) Eligibility: Typically, >\$20M projects; requires strong financial capacity. Application fee: \$100,000 for most applicants and \$25,000 for small communities (with population less than 25,000.)
Florida Commerce - Rural Community Development Revolving Loan Fund	State Loan	Varies based on project type	Medium	Rolling; Requests accepted quarterly	0% match; interest rates ~1-2.5%; up to 30-year terms	Water, wastewater, stormwater, generators	Purpose: Infrastructure projects. Funding Types: Low-interest state financing for infrastructure projects (planning, design, engineering, construction) Eligibility: Rural communities; repayment required.
USDA Rural Development	Federal Grant/ Loan	Varies by program and eligibility	Medium	Rolling / Annual	Varies	Water systems; public facilities; rural infrastructure	Purpose: Support infrastructure in rural communities. Funding Types: Loan and grant combinations for rural infrastructure (water, wastewater, public facilities) Eligibility: Rural areas; income thresholds apply.

Table 17: Additional Conditional Funding Opportunities (Not consistently available; dependent on disasters, special allocations, or timing)

Funding Opportunity	Funding Type	Funding Available	Competitiveness	Application Cycle	Match Requirements	Project Recommendations	Additional Considerations
FEMA - Hazard Mitigation Grant Program (HMGP)	Federal Grant	Available only after federally declared disaster	Medium-High	Post-disaster only	Typically 25%	Property acquisition; relocation; elevation; drainage improvements	Purpose: Post-disaster mitigation funding. Funding Types: Post-disaster mitigation grants (property acquisition, elevation, infrastructure mitigation). Eligibility: Only available after disaster; must be in LMS.
Florida Commerce - CDBG-MIT	Federal (State-administered)	Varies based on federal disaster allocation	High	Periodic / Program-specific	Varies	Regional drainage; large-scale mitigation infrastructure	Purpose: Long-term mitigation after disasters. Funding Types: Large-scale mitigation and infrastructure projects (state-administered federal disaster recovery funds). Eligibility: Only during active funding cycles.
FDOT Work Program	State Program	Not reported at project level; programmed by FDOT priorities	Medium	Annual	None	Roadway drainage and bridge improvements along state corridors	Purpose: Maintain and improve state transportation infrastructure. Funding Types: State-programmed transportation and drainage improvements (not a competitive grant program) Eligibility: Limited to FDOT facilities.

APPENDIX 1

HARDEE COUNTY IDENTIFICATION AND RANKING OF AAA - TECHNICAL MEMORANDUM

Under Separate Cover

APPENDIX 2

HARDEE COUNTY LONG-TERM RECOVERY PLAN

Under Separate Cover