Highlands County

ADAPTATION ACTION AREA PLAN

Sebring Parkway

June 2026

Table of Contents

List of Tables

List of Figures

Executive Summary

Highlands County is experiencing an increase in flooding driven by intense rainfall events, limited drainage capacity, and shallow groundwater conditions. One of the first steps the County has taken to address this challenge is conducting a Comprehensive Vulnerability Assessment and Adaptation Action Area planning exercise. Together the assessment and planning exercise help identify areas where focused resilience strategies are needed to reduce risk to critical assets, infrastructure, and community services. This Adaptation Action Area Plan focuses on the Sebring Parkway Adaptation Action Area, one of the highest priority areas identified through the County's data-driven ranking process.

The Sebring Parkway area includes critical community and emergency assets and essential transportation segments that are vulnerable to current and future rainfall-induced flooding. The area received the highest cumulative score due to its concentration of County-maintained critical assets and vulnerability to flooding. Flooding in this area may disrupt emergency services and limit access affecting residents and day-to-day business.

This plan takes the countywide comprehensive vulnerability assessment findings and zooms into the infrastructure and hydrologic conditions of the Sebring Parkway area. It recommends a range of targeted actions, including:

- Policy and regulatory considerations
- Resilience hub planning
- Infrastructure improvements
- Conceptual adaptation strategies

These approaches aim to reduce flood depth and duration, improve infrastructure performance, maintain roadway access, and build community resilience.

1. Introduction

1.1 About Highlands County

Highlands County is an inland County located in south-central Florida that covers about 1,020 square miles. The County includes the cities of Sebring and Avon Park, the Town of Lake Placid, and many unincorporated communities[1]. The landscape is generally flat and characterized by numerous freshwater lakes and wetlands that contribute to the County's natural and environmental functions.

The County's flat geography and dense development patterns are key factors that impact its vulnerability to flooding, particularly during heavy rainfall events. Development in low-lying areas may experience more extreme flooding during major storms because of limited drainage capacity.

As of 2025, Highlands County is home to an estimated 111,122 residents[2]. About 35% of the population is aged 65 or older, almost double the statewide average. Older populations may face more challenges during flood events and recovery periods. They often need assistance to prepare for a flood or to evacuate.

Median household income in the County is lower than the Florida average[2]. Housing is mostly owner-occupied, with a high number of older structures and manufactured housing units. This means that housing may be more susceptible to flooding, but homeowners may not be able to afford repairs[2].

1.2 Countywide Existing Conditions

The existing conditions documented in Highlands County Comprehensive Vulnerability Assessment (CVA)[3] indicate that flood risk is driven by intense rainfall and long duration flooding events. These flood impacts occur under varying drainage conditions across the County, reflecting differences in how stormwater is stored, conveyed, or infiltrated.

In many areas, stormwater is managed through localized or closed-basin systems that rely on the ground to absorb and store water rather than moving it through pipes or channels to an outlet. These conditions are common in areas where regional drainage outlets are limited, and stormwater management relies primarily on on-site storage and infiltration. These systems generally function well during typical rain events but can become overwhelmed when rainfall is intense, prolonged, or occur over multiple consecutive days, causing soils to become saturated and limiting how much additional water can be absorbed.

In other parts of the County, flooding is influenced by limited surface drainage infrastructure, such as a lack of connected storm sewer systems, swales, or defined drainage pathways. In these areas, flooding is driven less by infiltration capacity and more by the limited ability to convey runoff away from roadways and developed areas. The County's relatively flat terrain further reduces the ability for water to naturally flow away, which can result in water ponding on roadways and low-lying areas after major storms.

As rainfall intensity and the frequency of back-to-back storms increase, both conditions can lead to flooding. Although these drainage mechanisms differ, they can produce similar flood outcomes during extreme or prolonged rainfall events. Saturated soils reduce infiltration in closed-basin areas, while limited drainage capacity slows water movement in areas with minimal conveyance. Together, these factors contribute to longer-lasting floods that can repeatedly affect the same locations and place added stress on infrastructure throughout both incorporated and unincorporated areas of the County.

The CVA also identified a concentration of regionally and locally important assets in areas vulnerable to rainfall-driven flooding. Flood impacts to these assets can disrupt transportation access, emergency response, and essential services, creating challenges that extend beyond the immediately flooded locations.

1.3 Countywide Resilience Planning and Vulnerability Assessment

Highlands County has taken a number of steps to address flooding. As an inland County, the primary flood risks are associated with intense rainfall events, stormwater system limitations, and rising groundwater levels. These risks can affect homes, transportation networks, utilities, emergency services, and natural resources.

To better understand current and future risks, the County received funding from the Florida Department of Environmental Protection (FDEP) through the Resilient Florida Program to complete a Comprehensive Vulnerability Assessment (CVA). Additional funding from the Coastal & Heartland National Estuary Partnership (CHNEP), part of the U.S. Environmental Protection Agency (EPA) National Estuary Program, supported the development of these Adaptation Action Area (AAA) Plans.

These initiatives build on existing County efforts, including the Multi-Hazard Local Mitigation Strategy[4], Emergency Management planning, and ongoing updates to the Highlands County Comprehensive Plan[5]. Together, these coordinated efforts help ensure that future policies, projects, and investments reduce risk, improve safety, and enhance long-term resilience.

The Highlands County CVA is currently underway and is being conducted in accordance with Section 380.093, Florida Statutes[6]. The CVA covers unincorporated areas of the County as well as the Cities of Avon Park and Sebring and the Town of Lake Placid. The assessment inventories and evaluates the statutorily required critical assets, including:

- Community and Emergency Facilities
- Critical Infrastructure
- Transportation and Evacuation Routes
- Natural, Cultural, and Historical Resources

Using high-resolution light detection and ranging (LiDAR) elevation data and two-dimensional hydraulic modeling, the CVA evaluated flood exposure under current and future conditions across multiple planning horizons. Flood modeling incorporates rainfall-driven flooding scenarios representing varying storm intensities and durations to assess how flood risk may change over time. Flood extents and depths are analyzed with critical asset locations to identify areas and facilities that are most vulnerable.

The results of the CVA provide the technical foundation for identifying AAAs and prioritizing actions that reduce flood risk and strengthen community resilience.

1.4 Adaptation Action Area Planning

AAAs are locally designated geographic areas that experience heightened vulnerability and where focused resilience and adaptation strategies are needed to reduce flood impacts. This data-driven approach focuses on local conditions and priorities while supporting state planning requirements. The AAA designation approach also incorporated public input, bringing local leaders into the process while aligning with the goals of the Resilient Florida Program.

The AAA planning process is intended to:

- Identify areas of the County where critical assets are most exposed to future flooding conditions.
- Prioritize areas for adaptation and mitigation investments, informed by technical analysis and public and stakeholder input.
- Support informed decision-making related to capital improvement planning, land use policy, and infrastructure resilience.
- Strengthen eligibility for further resilience and infrastructure funding.

In Highlands County, AAAs were identified through GIS-based, data-driven methodology that integrates flood exposure, asset sensitivity, land use, asset ownership, and critical assets.

1.5 Common Risks and Recurring Challenges across AAAs

AAA planning builds on Highlands County's ongoing resilience initiatives and the AAA framework translates countywide vulnerability findings into targeted planning areas where coordinated adaptation actions can be implemented. The AAA process also supports goals set in the Highlands County Comprehensive Plan by informing future land use considerations, infrastructure priorities, and long-range resilience strategies. The three highest priority AAAs are primarily located in the City of Sebring and adjacent unincorporated areas of Highlands County. While each AAA has distinct characteristics and assets, they share several recurring risks related to development patterns and drainage conditions.

- **Rainfall Patterns**: Rainfall-driven flooding is the dominant hazard across the Sebring AAAs, particularly during high-intensity or multi-day flooding events. Flooding is influenced by soil saturation, limited infiltration capacity, and stormwater system performance. As identified in the CVA, flood risk is dynamic and can occur both within and outside the mapped Special Flood Hazard Areas (SFHAs).
- **Outdated Infrastructure Design**: Aging drainage systems and public facilities were designed for historically lower rainfall amounts, deeper groundwater levels, and higher infiltration capacity. Such systems may experience strain during today's and future major storms with increased rainfall amounts, increasing the likelihood of localized roadway flooding, operational disruptions, and maintenance demands.
- **Assets and Daily Activity**: The concentration of critical facilities, government services, and daily public activity in flood-prone areas increases the consequences of flooding events. These locations are typically highly developed and intensively used, leaving limited physical space for flood mitigation retrofits or stormwater system expansion. Flooding in downtown and civic areas can disrupt emergency response, government operations, transportation access, and community events, resulting in impacts that extend beyond the immediate flood footprint and affect day-to-day life for a large number of residents and visitors.

These shared challenges are a key factor for why multiple AAAs in Sebring scored highly as priorities for detailed planning. The individual adaptation strategies in each AAA plan are tailored to the specific conditions in each area.

2. Sebring Parkway AAA Overview

2.1 AAA Overview

The Sebring Parkway AAA is centered on the Sebring Parkway corridor and adjacent roadways, and includes public facilities, residential areas, and critical infrastructure. Among all identified AAAs, the Sebring Parkway AAA received the highest cumulative score due to the concentration of County-maintained critical assets and its documented and projected vulnerability to flooding driven by intense rainfall events and stormwater system limitation.

The area includes multiple publicly owned assets and critical transportation routes that support routine mobility and transportation response operations. Assets located within the Sebring Parkway AAA are summarized in Table 1, and Figure 1 illustrates the AAA boundary and the locations of these assets. Asset numbers shown in Table 1 correspond to those displayed in Figure 1.

Table 1: Assets Within the Sebring Parkway AAA

Asset No.	Asset Name	Asset Type
1	Railroad Crossing at Fortune Boulevard	Transportation and Evacuation Routes
2	Highlands County Fire Rescue EMS #18	Critical Community and Emergency Facilities
3	Hope Villas	Critical Community and Emergency Facilities
5	Segment of Sebring Drive	Transportation and Evacuation Routes
4; 6-12	Segments of SE Lakeview Drive	Transportation and Evacuation Routes

The Transportation and Evacuation Route assets used in this assessment represent a refined subset of the broader transportation and evacuation route assets originally developed in the Highlands County CVA. This refinement ensured that only features relevant to the County were included.

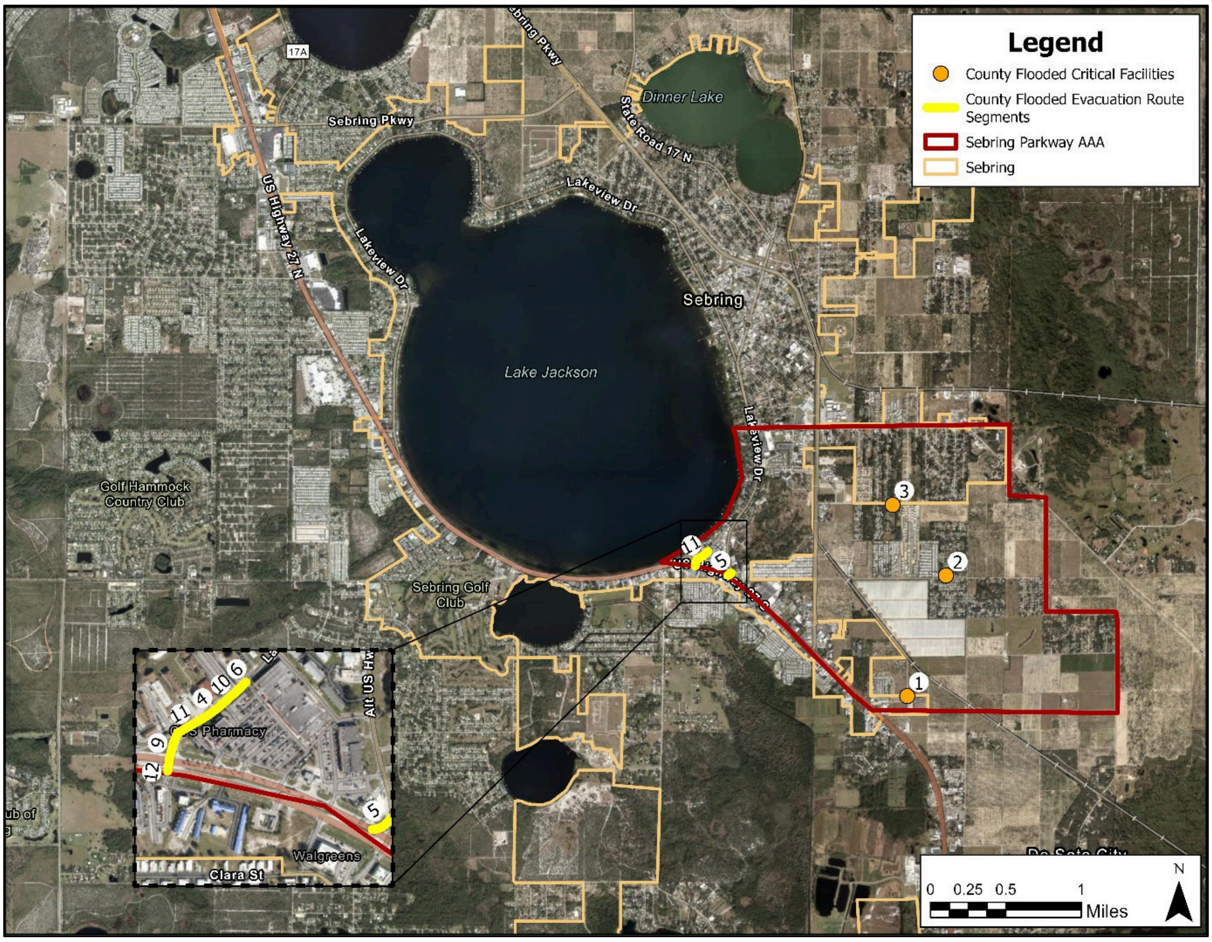

Figure 1: Sebring Parkway Adaptation Action Area and Critical Assets

2.2 Existing Conditions and Recurring Challenges

The Sebring Parkway area is characterized by moderate topographic changes, aging infrastructure, and a stormwater system that includes conveyance components (catch basins and underground pipes) as well as stormwater management features (retention areas, exfiltration trenches, and natural infiltration)[7].

Conveyance limitations occur where existing catch basins and inlet structures have limited capacity to capture and convey runoff during high-intensity or long-duration rainfall events. In these locations, runoff can exceed inlet capacity, causing water to accumulate on roadways and in low-lying areas before it can enter the drainage network.

Stormwater management limitations are also present, particularly during periods of prolonged rainfall when soils become saturated. Under these conditions, infiltration rates decline, and retention or exfiltration features experience reduced recovery time between rainfall events. When available storage capacity is diminished, excess runoff cannot be adequately attenuated, increasing the likelihood of localized flooding.

In combination, constrained conveyance capacity and limited storage or infiltration performance contribute to periodic ponding and localized flooding within the Sebring Parkway area, especially during high-intensity rainfall events.

Recent and ongoing floodplain modeling efforts by the Southwest Florida Water Management District (SWFWMD)[8] evaluate flood risk in Sebring based on watershed-scale hydrology and multi-day rainfall events, including 100-year storm scenarios that reflect regional rainfall patterns and system response. These modeling efforts provide a more dynamic understanding of flood extents, including areas that may experience flooding due to prolonged rainfall, system capacity limits, or soil saturation.

Federal Emergency Management Agency (FEMA) flood mapping, by contrast, is primarily intended for regulatory and insurance purposes and focuses on identifying Special Flood Hazard Areas (SFHAs)[9] associated with the 1-percent annual chance (100-year) flood. While FEMA maps remain an important regulatory tool, they do not capture all flood mechanisms or localized conditions identified through SWFWMD's watershed-based modeling or local flood hazard data. Together, SWFWMD modeling, FEMA flood maps, and local flood history indicate that flood risk in Sebring extends beyond mapped SFHAs, highlighting the importance of risk-based planning approaches.

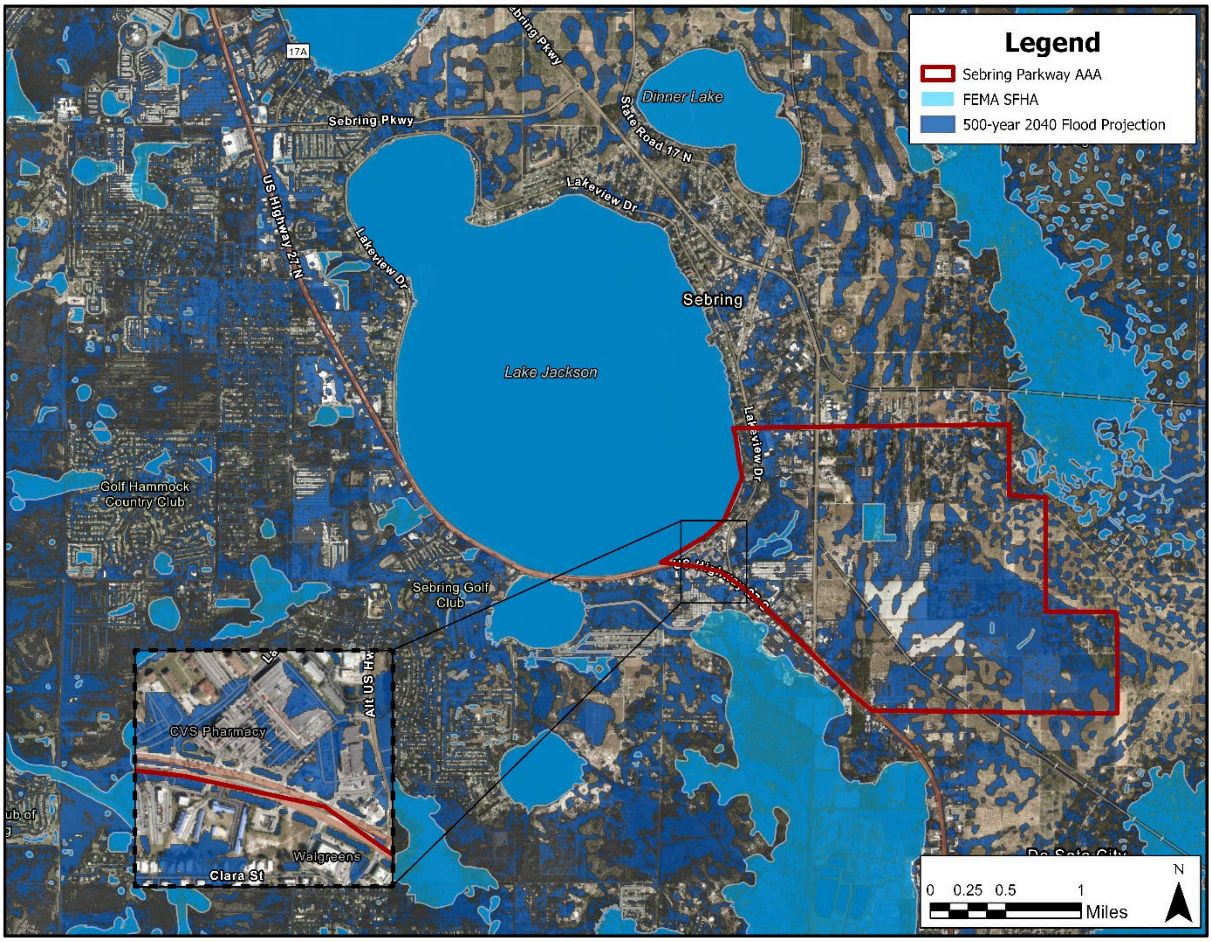

Figure 2: Sebring Parkway AAA and FEMA Special Flood Hazard Areas

2.3 Community Input

Community input was incorporated into the AAA identification and prioritization process through multiple Countywide public meetings and stakeholder coordination efforts. Feedback focused on locations that have experienced recurring flooding and was considered as a qualitative factor in the AAA prioritization. While the Sebring Parkway AAA received limited location-specific public comments, its prioritization is strongly supported by the results of the Highlands County CVA, which identify a high concentration of critical assets with exposure to modeled future rainfall-driven flooding under both the 100- and 500-year 2040 scenarios.

3. Adaptation Strategies

3.1 Policy Recommendations

Policy and regulatory strategies can play a critical role in supporting long-term flood risk reduction and resilience, particularly when applied within designated AAAs. The following recommendations focus on aligning land use policies, capital investments, and development standards with identified vulnerabilities to guide future growth and reinvestment in a manner that reduces risk to people, property, and critical infrastructure. As the Sebring Parkway AAA is located within the City of Sebring, these strategies may apply to both Highlands County and the City of Sebring.

Explore Transfer of Development Rights (TDR)

Evaluate the use of Transfer of Development Rights programs to shift development away from flood-prone areas while preserving property value and directing growth toward safer locations.

Integrate Resilience into Comprehensive Plan Updates

Update comprehensive plan policies to incorporate flood risk reduction, climate adaptation, and resilience considerations, ensuring that future land use, infrastructure, and development decisions support long-term community resilience.

Incorporating AAAs into Capital Improvement Program

Integrating AAAs into Capital Improvement Programs helps prioritize infrastructure investments in locations facing the greatest current and future flood risk, supporting more resilient and cost-effective planning.

Adopting Stormwater and Drainage Design Standards

Updating stormwater and drainage design standards ensures new and improved infrastructure accounts for rainfall-driven flooding, groundwater conditions, and future climate stressors, reducing flood impacts and improving long-term system performance.

3.1.1 Adoption of Adaptation Action Areas into Existing Plans and Ordinances

The designation of AAAs within existing Highlands County and the City of Sebring plans and ordinances would establish a clear policy framework for reducing flood risk in the most vulnerable areas. Incorporating AAAs into the Comprehensive Plan, Capital Improvement Program (CIP), hazard mitigation plan, and related policies would support the prioritization of infrastructure investments, help guide redevelopment decisions, and align public funding with established resilience objectives. Formal incorporation of AAAs may also strengthen eligibility and competitiveness for state and federal resilience and hazard mitigation funding, while promoting consistency across land use, infrastructure planning, and emergency management decisions. In addition, integrating AAAs into the CIP would enable the prioritization of roadway drainage and stormwater improvement projects in flood-prone areas, including targeted investments that address recurring infrastructure and access challenges.

3.1.2 Stormwater/Drainage Design Standards

Highlands County and the City of Sebring currently rely on stormwater design criteria established by the Florida Department of Environmental Protection (FDEP) and the applicable Water Management Districts (WMDs) which have established the standards required for new and retrofit developments with the intent of managing flooding and protecting water resources and infrastructure. The City of Sebring and portions of Highlands County fall within the Southwest Florida Water Management District (SWFWMD), while other areas of the County are served by the South Florida Water Management District (SFWMD).

In general, local governments should avoid adopting enforceable stormwater design standards that conflict with state permitting requirements; however, they may establish more stringent or supplemental criteria where appropriate to address local conditions, provided these remain consistent with applicable state frameworks. Therefore, it is not recommended broadly to apply enhanced stormwater design requirements beyond current state standards without coordination and technical justification.

Instead, the City and County can work collectively with the local Water Management Districts (WMDs) to identify flood hazard areas and inform where additional floodplain storage may be warranted. Additionally, the City and County can develop more rigorous storm sewer conveyance design requirements for both open channel and closed systems, including considerations for storm frequency, freeboard, erosion control, and maintenance, as these criteria are typically not fully defined by FDEP or the WMDs.

Stormwater Basin Definitions

- **Open Basin System**: A drainage area where rainfall and runoff can flow to a natural outlet, such as a creek, canal, lake, or other downstream drainage feature. In these areas, water has a clear path to move away from roads and developed properties. Under current WMD criteria, open basin stormwater systems are typically designed to manage a 25-year, 24-hour rainfall event.
- **Closed Basin System**: A drainage area or watershed with no surface outfall for rainfall events up to and including the 100-year, 24-hour flood stage. Runoff is retained within the basin and dissipates through infiltration, evaporation, or engineered controls such as pumping or storage. Because water cannot discharge off-site, sufficient storage must be provided to manage stormwater until levels recede. Accordingly, WMD criteria require these systems to be designed for the 100-year, 24-hour rainfall event.

3.1.3 Zoning and Land Use Regulations

Zoning and land development regulations offer an opportunity to reflect localized flood risk within designated AAAs and to guide development toward more resilient outcomes. The use of AAA overlay districts or similar planning tools could allow local governments to apply tailored standards within the most vulnerable areas. These standards may include measures such as limiting increases in density or intensity in flood-prone locations unless appropriate mitigation is provided.

Specific zoning and land use to consider for AAAs may include:

- Preservation of natural drainage features
- Reducing the allowable impervious surface area amount
- Incorporation of green infrastructure strategies

For critical facilities located within or serving AAAs, zoning and development regulations could encourage development in lower-risk areas where feasible and promote enhanced flood protection measures when relocation is not practicable. Together, these approaches would support resilience objectives while maintaining flexibility in local land use decision-making.

3.1.4 Building Codes, Development Guidelines, and the Relationship Between AAAs and SFHAs

Highlands County and the City of Sebring have adopted strong flood-resistant construction standards through the Florida Building Code (FBC), which establishes a statewide minimum, as well as locally adopted Floodplain Management Ordinances that exceed these requirements, including freeboard standards greater than the National Flood Insurance Program (NFIP) minimums. These regulations provide important protection for development located within mapped SFHAs. However, the effectiveness of SFHA-based regulations is influenced by the inherent limitations of Federal Emergency Management Agency (FEMA) flood mapping, which is primarily designed to support insurance and regulatory programs and may not fully capture localized drainage constraints, rainfall-driven flooding, infrastructure conditions, or evolving future conditions.

There are areas of localized flooding within Highlands County, and the City of Sebring that are driven by factors beyond the riverine or lake flooding which is the primary flooding source shown on the current FEMA maps (effective date 11/18/2015). Localized conditions, including elevated groundwater, intense or prolonged rainfall, lack of runoff storage, constrained or aging drainage infrastructure, limited system maintenance, removal or modification of drainage features, and land cover changes, can contribute to flooding both within and outside mapped SFHAs. These locally observed conditions, combined with projected changes in rainfall intensity, highlight the importance of incorporating localized knowledge and multiple flood mechanisms into planning and decision-making.

AAAs help address these gaps by identifying areas vulnerable to flooding from multiple mechanisms that may not be fully reflected in FEMA flood maps, including rainfall-driven flooding, drainage limitations, infrastructure performance, groundwater conditions, and other climate-related stressors identified through local and regional analyses. As a result, AAAs provide a planning framework that emphasizes observed and anticipated flood risk in addition to FEMA floodplain designation.

Within this context, the County and City may consider whether certain development standards traditionally applied only within SFHAs, such as minimum finished floor elevations, freeboard, floodproofing techniques, use of flood-resistant materials, and site design considerations, could be encouraged, incentivized, or selectively applied within designated AAAs. Applying enhanced standards within AAAs, without formally designating these areas as SFHAs, allows local governments to proactively reduce flood risk while maintaining regulatory flexibility. This approach enables the use of risk-informed standards without triggering federal regulatory requirements tied to SFHA designation, such as mandatory flood insurance or specific development restrictions under the NFIP. It also allows the County and City to tailor requirements to locally observed flood conditions that may not be reflected in FEMA mapping, supporting more adaptive resilience strategies.

3.1.5 Stormwater Asset Inventory and Data Integration

Stormwater asset inventory and data integration focus on developing a comprehensive understanding of existing drainage infrastructure to support effective stormwater management and resilience planning. These efforts compile and standardize information on system components such as inlets, pipes, conveyance systems, outfalls, and treatment facilities within a centralized database, typically supported through GIS mapping and data management tools.

Common approaches include field verification of infrastructure, consolidation of existing data sources, and integration of asset information with flood modeling and risk assessment results. By organizing stormwater infrastructure data in a consistent and accessible format, communities can better identify system constraints, prioritize retrofit and maintenance needs, and coordinate improvements across facilities and service areas.

Within AAAs, a comprehensive stormwater asset inventory provides a critical foundation for implementing adaptation strategies. By linking infrastructure data with observed and projected flood conditions, communities can more effectively target investments, improve system performance, and support long-term operations and maintenance. This integrated approach enables coordination across site-level and regional strategies, helping to reduce flood risk, improve water quality, and support more efficient use of public resources.

3.2 Resilience Hub

The Urban Sustainability Directors Network[10] (USDN) describes resilience hubs as physical spaces that address both physical and social goals, offering opportunities to strengthen emergency management, reduce climate-related risks, and enhance community resilience. These hubs are designed to support communities before, during and after flooding events while also providing ongoing benefits during normal conditions.

3.2.1 Resilience Hub Considerations

Ideally, resilience hubs are located outside areas subject to current and future flood risk, including areas projected to experience flooding under 100-year and 500-year rainfall scenarios. Locating hubs in lower-risk areas can help ensure that facilities remain operational during flooding events and reduce the need for extensive floodproofing measures.

However, in some cases, locating a resilience hub within or near a flood-prone area may be both necessary and appropriate to ensure access for vulnerable populations. If a resource is located too far from the community it is intended to serve, particularly populations with mobility constraints or limited transportation options vulnerability, it may not function as an effective resilience hub. In these situations, fortifying an existing asset within a flood-vulnerable area to improve its resilience and functionality can be a more practical and justifiable approach.

Within flood-prone areas, resilience hubs function as multi-purpose community assets that integrate emergency response capabilities, essential services, and flood-resilient design. In the Sebring Parkway AAA, resilience hub planning should prioritize facilities that can continue serving residents during disruptive events while reinforcing long-term resilience.

Resilience hub facilities within the Sebring Parkway AAA should:

- Remain accessible and functional during localized flooding and heavy rainfall events.
- Be capable of operating independently during power outages or extreme rainfall.

- Provide safe, well-identified locations for emergency staging, public information delivery, distribution of resources, or post-event recovery support.

Potential resilience hub strategies include:

- Enhancing existing public or community-serving facilities (e.g., community centers, public works yards, or emergency service facilities) with flood-resilient site design, building retrofits, and elevation or floodproofing where appropriate.
- Co-locating flood mitigation features, including stormwater storage, green infrastructure, permeable surfaces, or groundwater recharge systems, with hub facilities to reduce localized flooding impacts while providing functional community amenities.
- Ensuring resilience hub locations are supported by reliable and resilient transportation access, clear signage and visibility during flood events to facilitate safe access for residents and emergency responders.
- Incorporating flexible interior and exterior spaces that can support day-to-day community use and transition quickly to emergency or recovery functions during flood and extreme rainfall events (Figure 3).

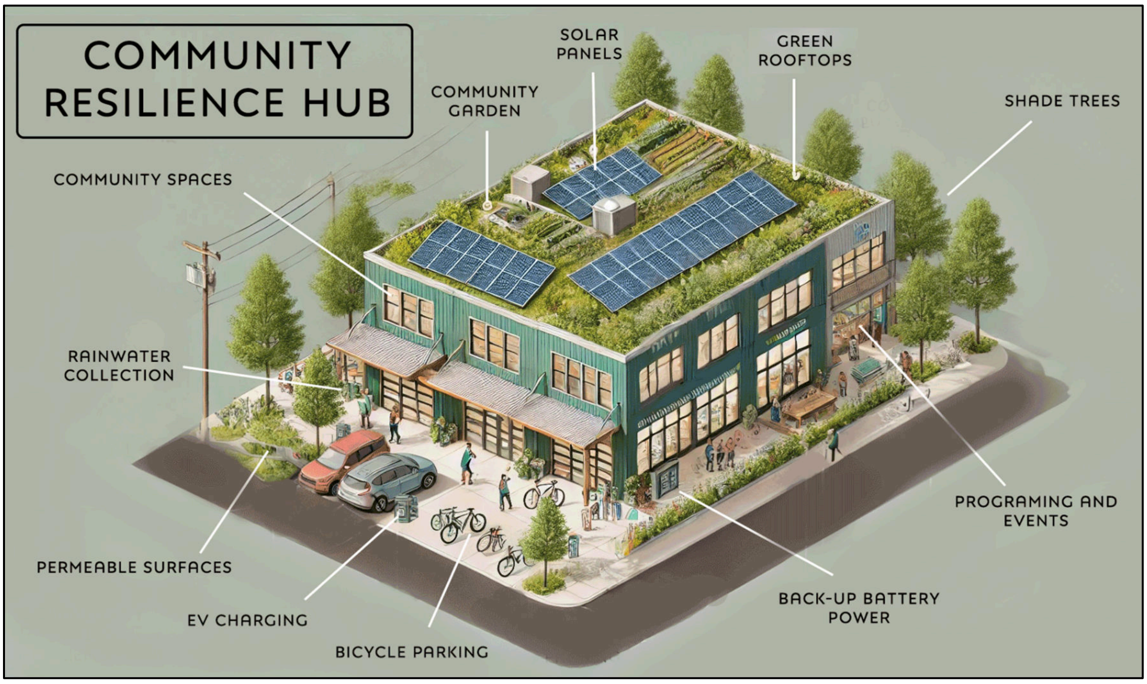

Figure 3: Conceptual resilience hub illustrating flexible space designed for both everyday community use and emergency operations[11].

3.2.2 Sebring Parkway Resilience Hub

Hope Villas, an affordable housing community located within the Sebring Parkway AAA, represents a strong candidate for resilience hub planning due to its location within a flood-vulnerable area and its potential to support residents before, during, and after flooding and extreme rainfall events.

As part of the Sebring Parkway AAA, resilience hub enhancements at or near Hope Villas could support residents by providing:

- A safe location for shelter-in-place during localized flooding or severe rainfall events.
- Access to backup power, communications, and potable water during power outages or service disruptions.
- Space for distribution of information, emergency supplies, flood preparedness, or post-event recovery assistance.
- Year-round services that support resilience in “blue-sky conditions,” such as:
    - Community space for preparedness education, flood awareness, and seasonal readiness activities.
    - Cooling space during periods of extreme heat or poor air quality.
    - Access to information on flood insurance, home retrofits, and available assistance programs.
    - Partnerships for periodic food distribution or other essential resource access.

Potential strategies for advancing Hope Villas resilience hub include:

- Retrofitting existing common spaces or identifying nearby public facilities to incorporate resilience hub functions.
- Integrating flood mitigation and green infrastructure improvements to reduce localized flooding impacts around the housing site.
- Coordinating with affordable housing providers, emergency management, and social service partners to ensure the hub meets both emergency response and everyday community needs.

3.3 Infrastructure Improvements

The proposed infrastructure improvements within the Sebring Parkway AAA focus on addressing localized flooding driven by high-intensity rainfall rates and total rainfall volumes, shallow groundwater conditions, and the limitations of closed or semi-closed drainage basins. Semi-closed drainage basins are areas where stormwater discharge is constrained by a limited number of outlet points and reduced downstream conveyance capacity, resulting in a system that relies heavily on internal storage, infiltration, and controlled release. While not completely closed, these basins function with restricted hydraulic connectivity, which can be exceeded during moderate to heavy rainfall events. In contrast, open basin drainage systems are characterized by well-defined and hydraulically efficient conveyance pathways with adequate outfall capacity, allowing stormwater to be readily conveyed downstream with minimal reliance on localized storage. Unlike coastal systems that are governed by tidal control and outfall capacity, flooding in this area is driven by the inability of the local system to adequately store, convey, and recover from stormwater during and between rainfall events.

Existing drainage infrastructure in the area was largely designed based on historical rainfall patterns and groundwater conditions. As rainfall events occur in closer succession, available storage and system recovery are increasingly constrained. Stormwater systems rely on time between storms for pond levels to draw down and soils to drain. When events occur in rapid succession, storage features may already be partially full and soils saturated. This reduces overall system capacity and increases the likelihood of localized flooding.

In response, infrastructure adaptation strategies within the Sebring Parkway AAA should prioritize enhanced stormwater storage, improved conveyance efficiency, and groundwater-aware design practices to maintain roadway functionality, reduce repetitive flooding, and support long-term resilience. The infrastructure approaches outlined in this section emphasize incremental and scalable improvements that can be implemented individually or coordinated with planned roadway projects, drainage retrofits, and routine maintenance activities.

Individually, these improvements can provide localized reductions in flood risk; when implemented in combination, they can further reduce peak flood elevations, shorten flood duration, and improve the reliability of critical transportation corridors and drainage infrastructure serving the Sebring Parkway AAA.

The following recommendations introduce key resilience concepts applicable to the area, with select strategies discussed in greater detail in subsequent sections of this report.

Localized Stormwater Management Enhancements

Implement site-scale and neighborhood-scale stormwater improvements to reduce localized flooding, manage runoff, and minimize impacts from heavy rainfall events.

Groundwater Awareness Design

Incorporate design approaches that account for high groundwater levels to reduce flood risk and improve long-term performance of public and private developments.

Expand Green Spaces

Increase and enhance parks, open spaces, and landscaped areas, including the acquisition of flood-prone properties, to preserve open land so that it would not be developed while providing stormwater storage, reducing runoff, and improving infiltration where feasible. Expanded green spaces also support improved water quality and provide co-benefits such as heat mitigation, habitat enhancement, and expanded community amenities.

Promote Low-Impact Development

Encourage development practices that minimize impervious surfaces and preserve natural hydrology, including permeable pavements, rain gardens, and on-site infiltration, to reduce flooding and support sustainable growth within AAAs.

Elevate Critical Equipment

Raise essential mechanical, electrical, and communications equipment above anticipated flood levels to reduce damage, maintain functionality during flood events, and support rapid post-event recovery.

Update Building and Roadway Standards

Revise building and roadway design standards to account for current and future flood conditions to reduce damage and maintain access during flood events.

3.3.1 Local Stormwater Management Enhancements

Where closed-basin conditions occur within the Sebring Parkway AAA, infrastructure strategies focus on maximizing on-site stormwater, managing flow pathways, and allowing sufficient time for water levels to recede. Key approaches include:

- Implement stormwater retrofits, which may include expanding existing pond capacity and modifying or updating existing drainage systems to improve storage efficiency, conveyance, and overall system performance.
- Incorporate passive stormwater features, such as conveyance-oriented swales (including bioswales designed to maintain or enhance flow capacity), enhanced roadside drainage, and shallow storage where feasible.
- Improve inlet spacing, conveyance continuity, and maintenance access to reduce localized bottlenecks.

3.3.2 Groundwater-Awareness Design

Rising groundwater levels reduce the effectiveness of infiltration-based systems which are prevalent in the closed-basin areas of the AAA. Future infrastructure improvements within these areas should:

- Account for seasonal high and long-term groundwater elevations in drainage and roadway design.
- Use lined or partially lined stormwater systems designed to remain dry under normal conditions, such as systems that rely on subsurface filtration layers beneath the pond bottom. Liners prevent groundwater intrusion while allowing these systems to function effectively for stormwater filtration, controlled drawdown, and storage recovery.
- Incorporate controlled discharge strategies, including pumping strategies with defined operating controls consistent with County or State regulations, where gravity outfall is not feasible.

3.3.3 Roadway and Transportation Resilience

Roadways within the AAA experience flooding that can disrupt access and emergency response, even when structural damage is minimal. Adaptation measures include:

- Targeted roadway elevation increases in areas with repetitive flooding.
- Designing road profiles that safely convey shallow flooding without damaging pavements or adjacent properties.
- Coordinating roadway improvements with underground drainage and utility upgrades to maximize long-term benefit.

4. Proposed Adaptation Strategies

4.1 Concept Designs

4.1.1 Roadway Stormwater Retrofits

Roadway stormwater retrofits enhance the resilience of existing transportation corridors by improving drainage capacity and managing runoff more effectively during heavy rainfall events. These improvements are typically implemented within existing rights-of-way and can be coordinated with routine roadway maintenance or safety projects.

Common retrofit strategies include raising low-lying roadway segments, adding or upgrading stormwater inlets, and incorporating nature-based features such as rain gardens or bioretention areas along medians, shoulders, or adjacent corridors. Together, these measures reduce roadway flooding, improve water quality, and limit downstream impacts by increasing stormwater capture, storage, and infiltration.

Within AAAs, roadway stormwater retrofits help maintain critical access, support evacuation routes, and reduce flood risk while providing flexible, cost-effective resilience upgrades to existing infrastructure. Figure 4 includes examples of different types of roadway stormwater retrofits.

Figure 4: Examples of Roadway Stormwater Retrofits

4.1.2 Site-Level Stormwater Retrofits

Site-level stormwater retrofits improve flood resilience at County-owned facilities, including County offices, schools, and public community centers, by reducing on-site flooding and protecting critical assets. These retrofits focus on managing stormwater close to where it is generated and are particularly effective for mitigating localized flooding impacts within developed areas.

Common retrofit measures include raising or hardening critical infrastructure, installing or upgrading stormwater inlets and conveyance, and incorporating green infrastructure such as rain gardens, bioretention areas, permeable pavement, and enhanced drainage controls. These improvements help capture, store, and treat runoff while reducing peak flows to downstream systems.

Within AAAs, site-level stormwater retrofits help ensure the continued operation of essential public services during and after rainfall events. By protecting buildings that serve emergency, educational, and community functions, these strategies enhance public safety, reduce repair and maintenance costs, and support long-term resilience of public assets. Figure 5 illustrates examples of different types of site-level flood protection and stormwater retrofits.

Figure 5: Examples of Site-Level Flood Protection Stormwater Retrofits

4.1.3 Open Space and Nature-Based Solutions

Open space and nature-based solutions leverage parks, school grounds, community centers, and other publicly accessible lands to manage stormwater while delivering environmental and community co-benefits. These strategies use natural systems and landscape features to slow, store, and treat runoff, reducing flood risk and improving water quality within developed areas.

Common approaches include rain gardens, bioretention areas, vegetated swales, expanded green space, and permeable walkways or plazas that intercept stormwater from roofs, sidewalks, and parking areas. When integrated into schools and community centers, these features can also support passive recreation, urban cooling, and outdoor learning opportunities.

Within AAAs, open space and nature-based solutions provide flexible, scalable flood mitigation that complements traditional infrastructure. By restoring or enhancing natural hydrologic functions, these strategies help reduce localized flooding, increase neighborhood resilience, and improve quality of life while supporting long-term adaptation goals. Figure 6 includes examples of different types of open space and natural-based solutions for public spaces.

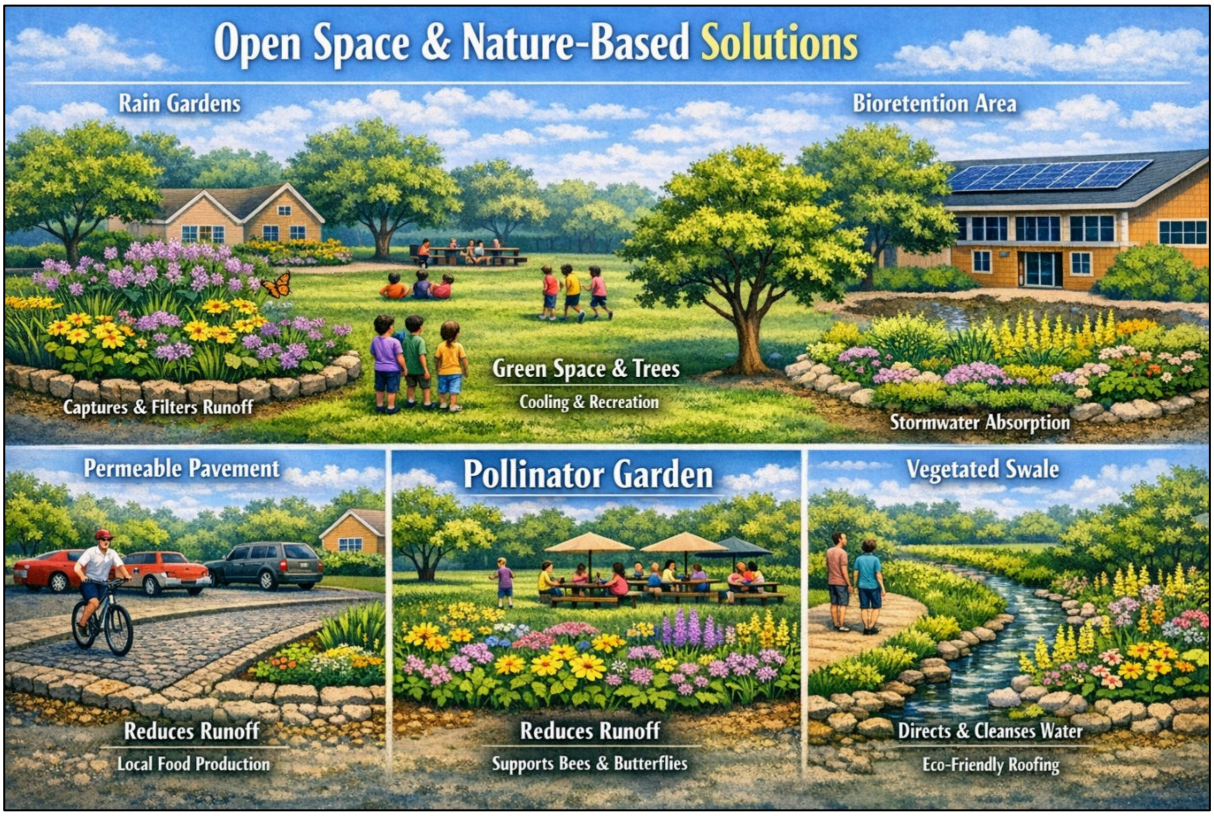

Figure 6: Examples of Open Space and Nature-Based Solutions

4.1.4 Regional and Interconnected Solutions

Regional and interconnected stormwater solutions focus on managing runoff at a broader watershed or multi-facility scale, rather than solely within individual parcels or corridors. These systems typically serve multiple contributing areas and public facilities, such as county offices, libraries, schools, and community centers, through shared stormwater infrastructure designed to reduce flood risk and improve systemwide performance.

Common regional strategies include regional stormwater ponds, centralized treatment and detention facilities, and coordinated drainage networks that accept runoff from nearby roadways, parking areas, and developed sites. By consolidating stormwater storage and control into fewer, strategically located facilities, regional systems can more effectively attenuate peak flows, improve water quality, and reduce downstream flooding impacts.

Within AAAs, regional and interconnected stormwater solutions provide a scalable and efficient approach to resilience planning. These systems are particularly well-suited for redevelopment areas and publicly owned lands, where coordinated planning can maximize benefits while minimizing maintenance complexity. Regional facilities also offer opportunities for integration with open space and passive recreation, supporting both flood mitigation and community goals. By shifting from isolated, site-by-site solutions to coordinated regional infrastructure, communities can improve long-term flood resilience, reduce cumulative impacts, and make more effective use of limited public resources. Figure 7 illustrates an example of a regional and interconnected stormwater management system for public facilities.

Figure 7: Example of a Regional Stormwater Management System

4.2 Conceptual Capital Improvement Projects

This section presents a series of conceptual capital improvement projects intended to illustrate potential adaptation strategies within the Sebring Parkway AAA. These concepts are provided to demonstrate how resilience-focused design approaches may be applied to address localized flooding, drainage limitations, and long-term infrastructure performance. The associated visuals are conceptual and were generated using artificial intelligence (AI) tools to support high-level planning discussion. Images may not fully reflect existing site conditions and may depict elements or modifications that are beyond the scope of the proposed improvements. These visuals are intended for illustrative purposes only and should not be interpreted as final design recommendations.

4.2.1 Railroad Crossing at Fortune Boulevard

Estimated Project Cost: $0.8M – $1.2M

Lead Agency: Highlands County Public Works / Engineering

Supporting Agencies: Railroad Operator; Florida Department of Transportation; Emergency Management

Anticipated Implementation Timeframe: Preliminary engineering and coordination followed by approximately 6-9 months of construction, subject to railroad approvals

---

Project Overview

Existing Conditions

The railroad crossing at Fortune Boulevard is a critical transportation asset that supports local circulation, freight access, and emergency connectivity. The crossing is located in a low-lying area and is susceptible to flooding during intense rainfall events due to limited roadway elevation, minimal stormwater storage, and constrained drainage conveyance. Stormwater runoff from Fortune Boulevard and adjacent areas can accumulate at the crossing, creating temporary roadway inundation and disrupting vehicular access.

Existing conditions are further constrained by the presence of active railroad infrastructure. Track geometry, operating requirements, and safety standards significantly limit the ability to raise the railroad profile, necessitating a cautious and highly coordinated approach to any resilience improvements.

Figure 8: Existing Conditions at Railroad Crossing at Fortune Boulevard

Adapted Conditions

Under adapted conditions, the Fortune Boulevard railroad crossing would remain largely at its existing elevation, with incremental and targeted improvements focused on reducing flood frequency and duration rather than eliminating inundation entirely. The roadway approaches and the railroad spur would be selectively raised where feasible, combined with enhanced drainage and localized stormwater management to improve passability during rainfall events. These improvements would reduce disruption to transportation and emergency access while respecting railroad operational constraints.

Figure 9: Adapted Conditions at Railroad Crossing at Fortune Boulevard

Proposed Improvements

Given the operational and regulatory limitations associated with railroad infrastructure, proposed improvements emphasize minimal yet meaningful adaptations, including:

Surface Water Management

Managing runoff through improved drainage, storage, and infiltration to reduce surface flooding and enhance system performance.

Critical Infrastructure Protection

Protecting and elevating critical infrastructure components to maintain functionality during flood events and reduce service disruptions.

Stormwater and Rainfall Impacts

Addressing rainfall-driven flooding through design strategies that account for storm intensity, duration, and system capacity.

Final design would be contingent on detailed engineering, hydraulic analysis, and coordination agreements with the railroad operator.

Project Benefits

- Decrease frequency and duration of roadway inundation at the railroad interface during heavy rainfall events.
- Enhance accessibility and reliability of a key roadway connection without major disruption to rail operations.
- Improve passability for emergency vehicles during rainfall events.
- Apply resilience measures that respect physical and regulatory constraints of railroad infrastructure.
- Provide a pragmatic approach to resilience where full avoidance or elevation is not feasible.

Preliminary Cost Estimate (Planning-Level)

Improvement Category	Estimated Cost Range
Roadway approach raising and profile adjustment	\$300,000 - \$450,000
Railroad spur elevation adjustments (limited)	\$150,000 - \$250,000
Drainage and stormwater conveyance improvements	\$150,000 - \$250,000
Pavement rehabilitation and surface restoration	\$100,000 - \$150,000
Engineering, permitting, and railroad coordination	\$100,000 - \$150,000
Estimates Total Project Cost	**\$0.8 - \$1.2 M**

Costs are planning-level estimates and will be refined through coordination with the railroad operator and completion of preliminary engineering.

4.2.2 Highlands County Fire Rescue EMS #18

Estimated Project Cost (Order of Magnitude): $0.9M – $1.4M

Lead Department/Agency: Highlands County Fire Rescue

Supporting: Highlands County Facilities and Maintenance; County Stormwater / Public Works

Anticipated Implementation Timeframe: Design and permitting followed by approximately 9-12 months of construction

---

Project Overview

Existing Conditions

Highlands County Fire Rescue EMS #18 is a critical emergency response facility that provides life-safety services to the surrounding community. The site includes a single-story building with paved access and limited on-site stormwater management. Existing drainage relies primarily on surface flow across impervious areas and surrounding turf, offering little detention or attenuation during heavy rainfall events.

While the structure itself is operationally functional, key mechanical, electrical, and operational equipment, including emergency power systems and heavy response equipment, are located at or near grade. During intense rainfall or localized flooding, these conditions create vulnerability to service disruption, delayed emergency response, and potential equipment damage.

Figure 10: Existing Conditions of Highlands County Fire Rescue EMS #18

Adapted Conditions

Under adapted conditions, EMS #18 would function as a more resilient emergency services facility with enhanced protection of critical assets and improved on-site stormwater performance. The site would incorporate modest low-impact development (LID) features and dry retention areas to manage runoff, while prioritizing elevation and hardening of critical equipment to ensure continued operations during and after flood events. These improvements strengthen facility reliability without altering core operations or emergency access.

Figure 11: Adapted Conditions of Highlands County Fire Rescue EMS #18

Proposed Improvements

Proposed improvements focus on asset protection first, supplemented by site-level stormwater retrofits:

Site Resilience and Groundwater-Aware Design

Incorporating site-level adaptations to reduce flood exposure and improve drainage performance, including minor grading adjustments, use of vegetated areas, and limited low impact development (LID) features to promote infiltration and direct runoff away from critical structures.

Critical Infrastructure Protection and Elevation

Elevating and hardening critical equipment, including generators, electrical panels, and communications systems, to maintain functionality during flood events. This may include installation of raised platforms, reinforced pads, and modifications to utility connections to support continued operations.

Stormwater Storage and Drainage Improvements

Enhancing stormwater management through construction of dry retention areas, improved drainage features, and optional runoff capture strategies. Thes measures are intended to reduce standing water, improve drawdown, and minimize localized flooding during rainfall events.

Final design would be informed by site-specific flood assessments and coordination with Fire Rescue operational requirements.

Project Benefits

- Elevation of critical equipment significantly reduces the likelihood of service interruption during flood events.
- Reduce risk of damage to generators, electrical systems, and response equipment.
- On-site storage and drainage upgrades reduce nuisance flooding and improve stormwater management.
- Focus on targeted, high-impact adaptations rather than full facility reconstruction.
- Emphasize asset protection and emergency function continuity, which are highly competitive criteria for resilience funding.

Preliminary Cost Estimate (Planning-Level)

Improvement Category	Estimated Cost Range
Elevation of generators, electrical, and communications equipment	$350,00 - $550,000
Elevated equipment pads and structural supports	$200,000 - $300,000
Dry retention area and site-level stormwater improvements	$150,000 - $250,000
Minor grading and drainage adjustments	$100,000 - $150,000
Engineering, permitting, and construction administration	$100,000 - $150,000
Estimates Total Project Cost	**$1.8 - $2.7 M**

Costs are planning-level estimates and will be refined during project design.

4.2.3 Hope Villas

Estimated Project Cost: $1.5 – $2.4M
Lead Department/Agency: Highlands County Housing / Community Services
Supporting Agencies/Departments: Highlands County Public Works; Emergency Management; Stormwater Division
Anticipated Implementation Timeframe: Design and permitting followed by approximately 12-18 months of phased construction

Project Overview

Existing Conditions

Hope Villas is a residential development serving elderly and mobility-limited residents, making it a critical community asset during extreme rainfall events. The facility includes single-story residential buildings, internal roadways, sidewalks, and open landscaped areas.

Existing site drainage relies primarily on shallow surface conveyance, limited roadside swales, and a small outlet structure that provides minimal storage and attenuation.

The current configuration offers limited flood resilience. During heavy rainfall events, runoff accumulates along internal roadways and landscaped margins, potentially restricting access and creating safety concerns for residents with limited mobility. While green space is present, it is not currently optimized for stormwater storage, nor is it explicitly designed to support resilience hub functionality such as emergency access, passive cooling, or temporary refuge during rainfall events.

Figure 12: Existing Conditions of Hope Villas

Adapted Conditions

Under adapted conditions, Hope Villas would function as both a more flood-resilient residential community and a neighborhood-scale resilience hub. Stormwater management features would be integrated into the site in a manner that prioritizes safety, accessibility, and ease of maintenance, while avoiding features that could pose fall hazards or impede mobility. Green infrastructure would provide distributed storage, improve drainage performance, and enhance the site’s ability to remain functional during and after rainfall events.

Figure 13: Adapted Conditions of Hope Villas

Proposed Improvements

Proposed improvements emphasize gentle, accessible, and multi-benefit adaptations appropriate for an elderly population:

Green Infrastructure and Bioretention Enhancements

Expanding the use of linear bioretention areas and vegetated swales to improve runoff management and water quality. This includes replacing narrow ornamental rain gardens with broader, shallow, grass-forward systems designed with low side slopes, minimal ponding depths, and clear edge definition to support safety, visibility, and ease of maintenance.

Site Functionality and Resilience Hub Support

Maintaining safe and reliable site operations through flood-resilient access, improved internal circulation, and enhanced open space. These improvements support emergency response and resident movement while incorporating shaded, landscaped areas that contribute to passive cooling and usability during power outages or extreme heat events.

Stormwater Storage and Drainage Improvements

Enhancing stormwater performance through distributed dry retention areas and improved outlet and conveyance systems. Landscaped areas are modified to temporarily store runoff during rainfall events and drain between storms, increasing storage without introducing standing water hazards. Improvements to outlet structures and conveyance pathways support controlled discharge, faster drawdown, and reduced erosion. Flat curbs may be incorporated to allow stormwater runoff to enter adjacent systems, reducing ponding in low-lying roadway areas and improving overall drainage efficiency.

Final design would coordinate stormwater function with accessibility standards, emergency planning, and long-term maintenance considerations.

Project Benefits

- Reduce flood risk and access disruptions for elderly and mobility-limited residents.
- Support Hope Villas' potential role as a neighborhood-scale resilience hub during extreme rainfall events.
- Provide additional on-site storage and improved drainage performance during intense rainfall.
- Avoid steep slopes, deep ponding, or hard infrastructure that could pose safety concerns.
- Enhance aesthetics, thermal comfort, and quality of life while delivering stormwater function.

Preliminary Cost Estimate (Planning-Level)

Improvement Category	Estimated Cost Range
Expanded bioretention and vegetated swales	\$450,000 - \$700,000
Distributed dry retention enhancements	\$400,000 - \$600,000
Roadside curb retrofits and drainage collection improvements	\$200,000 – \$400,000
Outlet structure and conveyance improvements	\$250,000 - \$400,000
Site grading and accessibility adjustments	\$200,000 - \$350,000
Engineering, permitting, and construction administration	\$200,000 - \$350,000
Estimates Total Project Cost	**\$1.1 - \$1.9 M**

Costs represent planning-level estimates and will be refined during project design.

4.2.4 Segment of Sebring Drive

Estimated Project Cost: $1.1 – $1.5M
Lead Department/Agency: City of Sebring Public Works / Engineering
Supporting Agencies/Departments: Stormwater Division; Emergency Management
Anticipated Implementation Timeframe: Design and permitting followed by approximately 9-12 months of construction

Project Overview

Existing Conditions

This segment of Sebring Drive functions as a key arterial roadway and signalized intersection serving commercial properties, neighborhood traffic, and regional travel. The corridor is highly impervious and characterized by curb-and-gutter drainage with minimal on-site stormwater storage or infiltration. Run off from travel lanes, turn lanes, and adjacent commercial driveways are rapidly conveyed to downstream systems with limited attenuation or treatment.

The intersection geometry and surrounding development create localized low points that are susceptible to surface ponding during high-intensity rainfall events. Under these conditions, roadway flooding can impede traffic movement, reduce safety, and disrupt access to nearby commercial and residential areas. As rainfall events become more frequent and occur in closer succession, existing drainage infrastructure provides limited resilience.

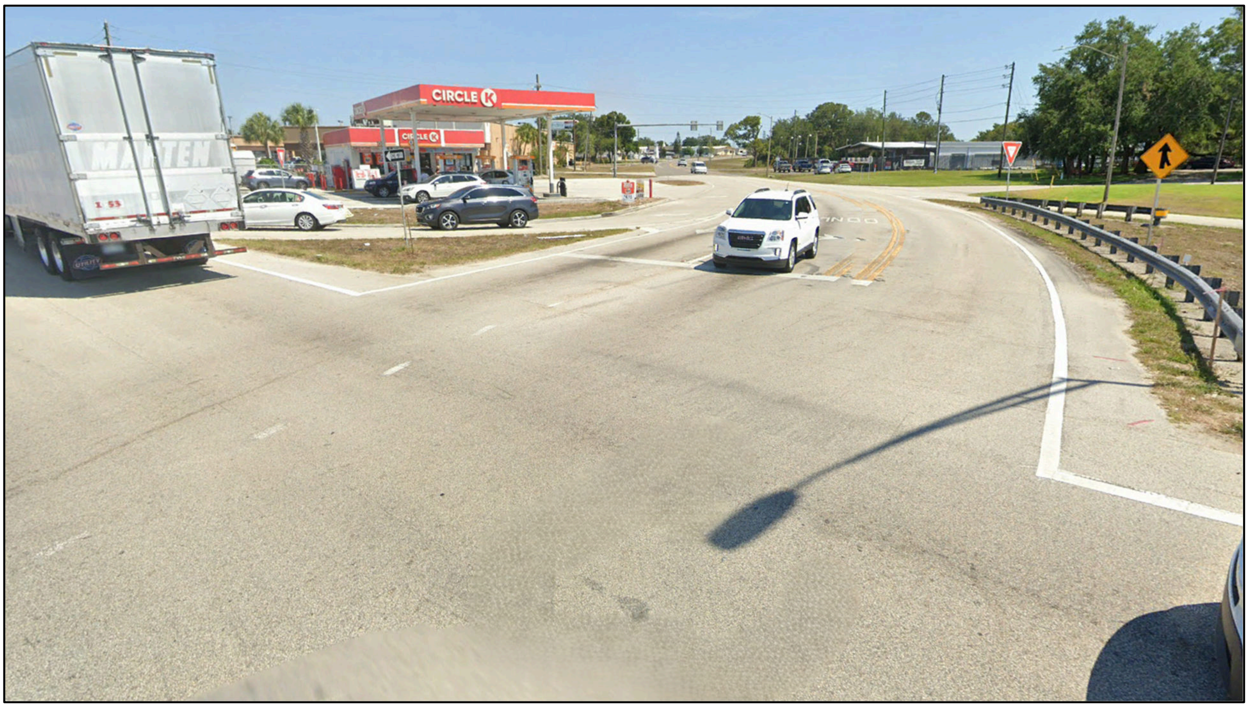

Figure 14: Existing Conditions of the segment of Sebring Drive

Adapted Conditions

Under adapted conditions, Sebring Drive would function as a more resilient transportation corridor and intersection capable of managing stormwater closer to its source. Adaptations would focus on improving stormwater capture, localized storage, and conveyance efficiency within the existing right-of-way, reducing roadway flooding risk while maintaining traffic operations and access. Improvements would also reduce the volume and rate of untreated runoff conveyed downstream.

Figure 15: Adapted Conditions of the segment of Sebring Drive

Proposed Improvements

Proposed improvements mirror those applied to SE Lakeview Drive and emphasize localized, implementable retrofits, including:

Stormwater Storage and Conveyance Improvements

Enhancing localized stormwater management through improved runoff capture and conveyance. This includes installation of additional or retrofitted curb inlets at low points to reduce surface ponding within travel lanes, along with targeted upgrades to stormwater conveyance systems to improve flow efficiency and reduce backwater effects during heavy rainfall. Minor roadway grading and profile adjustments may also be incorporated to promote positive drainage and reduce nuisance flooding.

Green Infrastructure and Water Quality Improvements

Incorporating median and roadside green infrastructure features to provide localized storage, pretreatment, and water quality benefits. Shallow, linear bioretention areas and grassed stormwater features are designed to function under normally dry conditions, with gentle side slopes and compatibility with roadway safety requirements. These vegetated systems help reduce pollutant loading and improve the quality of runoff prior to discharge to downstream systems.

Final design would be refined through detailed engineering analysis and coordination with applicable roadway and stormwater design standards.

Project Benefits

- Reduce frequency and duration of localized roadway flooding during heavy rainfall events.
- Improve functionality and safety at a busy commercial intersection by maintaining passable lanes during rainfall events.
- Improvements can be implemented in phases or coordinated with future roadway or signalization projects.
- Reduce volume and pollutant load of untreated roadway runoff entering downstream receiving waters.
- Focus on targeted retrofits rather than full roadway reconstruction.

Preliminary Cost Estimate (Planning-Level)

Improvement Category	Estimated Cost Range
Additional and retrofitted stormwater inlets	\$300,000 - \$400,000
Conveyance upgrades and drainage improvements	\$200,000 - \$300,000
Median and roadside bioretention features	\$250,000 - \$350,000
Roadway grading and profile adjustments	\$150,000 - \$250,000
Engineering, permitting, and construction administration	\$200,000 - \$300,000
Estimates Total Project Cost	**\$1.1 - \$1.5 M**

Costs represent planning-level estimates and will be refined during project design.

4.2.5 Segments of SE Lakeview Drive

Estimated Project Cost: $1.2 – $1.6M
Lead Department/Agency: Highlands County Public Works / Engineering
Supporting Agencies/Departments: Stormwater Division; Emergency Management
Anticipated Implementation Timeframe: Design and permitting followed by approximately 9-12 months of construction

Project Overview

Existing Conditions

SE Lakeview Drive is a critical transportation corridor that functions as a primary evacuation and emergency access route. The roadway and adjacent areas are highly impervious and provide little to no on-site stormwater storage or infiltration. Stormwater runoff is rapidly conveyed via curb-and-gutter systems and inlets, discharging directly to Lake Jackson with minimal attenuation or treatment.

These conditions increase vulnerability to roadway flooding during high-intensity rainfall events, limiting access during emergencies and accelerating the delivery of pollutants to the receiving waterbody. The lack of distributed storage and treatment reduces overall corridor resilience as rainfall events become more frequent and occur in closer succession.

Figure 16: Existing Conditions of SE Lakeview Drive

Adapted Conditions

Under adapted conditions, SE Lakeview Drive would operate as a more resilient transportation and evacuation corridor capable of managing stormwater closer to its source. The corridor would incorporate enhanced stormwater capture, localized storage, and vegetated treatment features to reduce surface flooding, improve conveyance performance, and decrease direct runoff impacts to Lake Jackson. These improvements would enhance roadway reliability during rainfall events while maintaining critical access for emergency response and evacuation.

Figure 17: Adapted Conditions of SE Lakeview Drive

Proposed Improvements

Proposed improvements along SE Lakeview Drive focus on targeted roadway and stormwater retrofits within the existing corridor and right-of-way, including:

Stormwater Storage and Conveyance Improvements

Enhancing localized stormwater management through improved runoff capture and conveyance. This includes installation of additional or retrofitted curb inlets at low points to reduce surface ponding within travel lanes, along with targeted upgrades to stormwater conveyance systems to improve flow efficiency and reduce backwater effects during heavy rainfall. Minor roadway grading and profile adjustments may also be incorporated to promote positive drainage and reduce nuisance flooding.

Green Infrastructure and Water Quality Improvements

Incorporation of curbside stormwater collection and subsurface storage systems to provide localized detention, pretreatment, and water quality benefits. Runoff is captured through curb inlets and conveyed to underground chamber systems, where it is temporarily stored, filtered, and slowly released through controlled outlet structures. These systems function below grade and under normally dry surface conditions, maintaining compatibility with roadway operations while improving runoff quality and reducing downstream pollutant loading.

Final design would be refined through detailed engineering analysis and coordination with applicable roadway and stormwater design standards.

Project Benefits

- Reduce frequency, depth, and duration of roadway flooding during heavy rainfall events.
- Improve functionality of a critical evacuation and emergency access route during storm conditions.
- Decrease untreated runoff and pollutant loading to Lake Jackson.
- Improvements may be phased or coordinated with future roadway or utility projects.
- Vegetated features provide aesthetic enhancements and potential heat-mitigation benefits.

Preliminary Cost Estimate (Planning-Level)

Improvement Category	Estimated Cost Range (Per LF)
Drainage and inlet retrofits (curb inlets, collection system)	$497.65 – $710.93 / LF
Subsurface stormwater storage system (modular chamber system)	$710.93 – $1,279.67 / LF
Outlet structure and controlled discharge improvements	$355.46 – $568.74 / LF
Roadway grading and profile adjustments	$284.37 – $426.56 / LF
Curb modifications and roadside drainage treatments	$213.28 – $355.46 / LF
Water quality and roadside drainage treatments	$284.37 – $497.65 / LF
Estimates Total Project Cost (Per LF)	**$2,417.15 - $3,839.01 LF**

Total Length of the SE Lakeview Drive segment = 703.1 LF. *Costs reflect planning-level assumptions for design, permitting, and construction and will be refined during project development.*

4.3 Potential Funding Sources

Implementation of adaptation strategies within the Sebring Parkway AAA may be supported through a combination of state, federal, and local funding sources, as well as partnerships with public and private entities. When a project addresses multiple benefits including flood mitigation, stormwater management, water quality, emergency access, or infrastructure resilience, they are more competitive for a variety of funding opportunities.

4.3.1 Grant and Public Funding Opportunities

Florida Department of Environmental Protection (FDEP) – Resilient Florida Program

The Resilient Florida Program provides planning and implementation grants to local governments for projects that reduce flood risk and improve community resilience to sea level rise, storm surge, and rainfall-driven flooding. Eligible projects include stormwater improvements, drainage upgrades, floodproofing, and nature-based solutions. Access to funding typically requires an adopted vulnerability assessment or adaptation plan and submittal of a competitive grant application during FDEP’s annual Resilient Florida funding cycle.

FEMA Hazard Mitigation Assistance (HMA) Programs

FEMA-administered Hazard Mitigation Assistance programs—including the Building Resilient Infrastructure and Communities (BRIC), Hazard Mitigation Grant Program (HMGP), and Flood Mitigation Assistance (FMA)—support projects that reduce long-term risk from flooding. Eligible activities include stormwater infrastructure improvements, roadway elevation, protection of critical facilities, and drainage enhancements. Applications are submitted through the State of Florida as the funding applicant, and projects must demonstrate cost-effectiveness and consistency with local hazard mitigation plans.

Florida Department of Transportation (FDOT) Resilience and Drainage Programs

FDOT offers funding opportunities for resilience, drainage, and flood mitigation improvements when projects are located along or adjacent to State roadway corridors. These programs may support drainage retrofits, stormwater capacity enhancements, or roadway resilience measures that protect transportation infrastructure. Access typically occurs through coordination with FDOT District staff during project planning, inclusion in FDOT work programs, or partnership agreements when local adaptations align with state transportation priorities.

South Florida Water Management District (SFWMD)

The South Florida Water Management District provides cost-share and cooperative funding for projects that improve regional water management, drainage efficiency, flood protection, and water resource sustainability. Eligible projects may include stormwater conveyance improvements, regional drainage enhancements, or projects with benefits beyond local jurisdictional boundaries. Funding is generally pursued through SFWMD’s cooperative funding programs and coordination during annual budget and work plan cycles.

EPA or FDEP Water Quality Grant Programs

Projects that provide water quality benefits—such as nutrient reduction, stormwater treatment, or green infrastructure—may be eligible for funding through U.S. Environmental Protection Agency (EPA) or Florida DEP water quality grant programs. These programs often prioritize projects that reduce pollutant loads to impaired waters or improve stormwater treatment performance. Local governments typically access these funds through competitive grant applications coordinated with DEP or regional watershed initiatives.

4.3.2 Local and Partnership-Based Funding

County and Municipal Capital Improvement Programs (CIPs)

Local Capital Improvement Programs provide a primary mechanism for funding priority adaptation projects over a multi-year planning horizon. Incorporating AAA projects into adopted CIPs can help leverage matching funds for state or federal grants and ensure long-term implementation.

Interlocal Agreements

Interlocal agreements between Highlands County, municipalities, and special districts can facilitate shared funding responsibilities and coordinated implementation for projects with cross-jurisdictional benefits, such as drainage systems or roadway corridors.

Public–Private Partnerships

Public–private partnerships may support site-specific or redevelopment-related mitigation improvements, particularly where adaptation strategies align with private investment, redevelopment plans, or infrastructure upgrades.

Developer Contributions and Mitigation

Developer contributions, impact fees, or mitigation measures associated with redevelopment projects may provide opportunities to implement stormwater, drainage, or resilience enhancements consistent with AAA objectives. Strategically packaging projects that address flood mitigation, water quality, emergency access, and community benefit can improve competitiveness across multiple funding programs and increase the likelihood of successful implementation.

4.4 Implementation Timeline

Implementation of adaptation strategies is anticipated to occur over a phased, multi-year timeline, allowing flexibility as data, funding, and partnerships evolve. Policy and regulatory recommendations supporting these actions are outlined in Section 3.1; this section focuses on the sequencing and implementation of capital, programmatic, and coordination-based strategies.

4.4.1 Near-Term (0–3 Years)

- Complete stormwater asset inventory and data integration
- Advance conceptual designs to feasibility or preliminary engineering
- Implement low-cost, high-impact site-level retrofits
- Integrate AAA priorities into local CIP planning and grant applications

4.4.2 Mid-Term (3–7 Years)

- Design and construct priority roadway and storage improvements
- Implement nature-based solutions within parks and public lands
- Coordinate drainage improvements with scheduled roadway or utility projects
- Secure implementation funding through state and federal programs

4.4.3 Long-Term (7+ Years)

- Implement regional or interconnected drainage solutions
- Continue phased upgrades tied to redevelopment and infrastructure renewal
- Reassess priorities using updated data and performance monitoring
- Adapt strategies to reflect changing rainfall patterns and groundwater conditions

5. Next Steps and Conclusion

The Sebring Parkway AAA represents a critical opportunity for Highlands County and the City of Sebring to translate vulnerability assessment findings into actionable resilience. Flooding in this area is driven by intense rainfall events, groundwater, and limited drainage capacity, requiring targeted and context-specific solutions. The strategies outlined in this plan emphasize practical, scalable actions that can be implemented incrementally while improving long-term flood resilience.

Successful implementation may be dependent on continued coordination across departments, integration of AAA priorities into existing planning and capital programs and leveraging external funding sources. While many recommendations can be applied independently, benefits will be achieved when projects are planned and implemented as a coordinated, long-term resilience strategy.

5.1 Recommended Next Steps

To advance the Sebring Parkway AAA from planning to implementation, the following actions are recommended:

- **Formalize AAA planning into County frameworks** – Incorporate the Sebring Parkway AAA into applicable Comprehensive Plan policies, Capital Improvement Programs, stormwater planning documents, and hazard mitigation efforts to establish consistency and guide future investment decisions.
- **Advance priority projects to feasibility and design** – Evaluate near-term, high-impact roadway and site-level stormwater improvements for feasibility or preliminary engineering to support grant readiness and capital budgeting.
- **Coordinate with the City of Sebring and key partners** – Continue coordination between the County, City, emergency management, public works, housing providers, and utility partners to align responsibilities and implementation pathways, particularly for shared assets and facilities.
- **Secure funding and phase implementation** – Package projects to align with state and federal funding programs, including the Resilient Florida Program, FEMA Hazard Mitigation Assistance, and water management district cost-share opportunities, while advancing lower-cost improvements through local funding sources.

Through continued investment, coordination, and adaptive management, the Sebring Parkway AAA provides a clear example of how Highlands County can apply the Adaptation Action Area framework to reduce flood risk, protect critical assets, and strengthen long-term community resilience.

References

[1] Highlands County. (August 2025). *Highlands County Strategic Plan*. Retrieved from: https://cms2.revize.com/revize/highlandscountyfl/departments/HighlandsCounty.StrategicPlan-08.04.25.pdf?t=202509171544080&t=202509171544080.

[2] United States Census Bureau. (July 2025). *QuickFacts: Highlands County, Florida*. Retrieved from: https://www.census.gov/quickfacts/fact/table/highlandscountyflorida.

[3] Highlands County, Florida. (2026). *Highlands County Comprehensive Vulnerability Assessment*.

[4] Highlands County, Florida. (2020). *Highlands County Multi-Hazard Local Mitigation Strategy*. Retrieved from: https://cms2.revize.com/revize/highlandscountyfl/departments/public_safety/emergency_managemet/LMS%20Plan%202020%20(1).pdf?t=202304031043360&t=202304031043360.

[5] Highlands County (2025). *Highlands County Comprehensive Plan*. Retrieved from: https://www.cfrpc.org/highlands-county-comp-plan.

[6] Florida Legislature. (2024). *Section 380.093, Florida Statutes*. Retrieved from: https://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0300-0399/0380/Sections/0380.093.html.

[7] City of Sebring, Florida. *Stormwater*. Retrieved from: https://www.mysebring.com/191/Storm-Water

[8] Southwest Florida Water Management District. *Sebring Floodplain Maps*. Retrieved from: https://www.swfwmd.state.fl.us/sites/default/files/floodplain_maps/Sebring_ReadMe.pdf

[9] Federal Emergency Management Agency. *National Flood Hazard Layer*. Retrieved from: https://www.fema.gov/flood-maps/national-flood-hazard-layer

[10] The Urban Sustainability Directors Network (USDN). (2019). Retrieved from: https://resilience-hub.org/wp-content/uploads/2019/10/USDN_ResilienceHubsGuidance-1.pdf.

[11] Future of Small Cities Institute. What is a community resilience hub? Retrieved from: https://www.futureofsmallcities.org/news/what-is-a-community-resilience-hub.