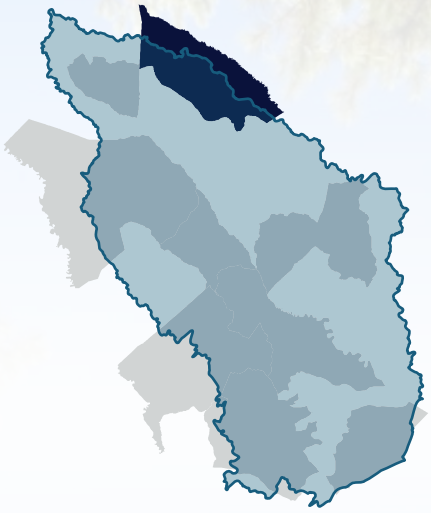
South Carolina
Resilient Coastal Communities Collaborative Program

Salkehatchie Watershed Plan



Resilience Portfolio for the Communities of

Bamberg County

SCOR South Carolina Office of Resilience

Sea Grant S.C. SEA GRANT CONSORTIUM

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

National Fish and Wildlife Foundation NFWF

McCORMICK TAYLOR

Weston & Sampson

Biohabitats

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1. Executive Summary

Planning at the watershed level has been recommended by both the South Carolina Floodwater Commission and the ***Strategic Statewide Resilience and Risk Reduction Plan*** to reduce impacts from flooding and enable communities, economies, and ecosystems to recover more quickly from disasters. Watershed planning was piloted in the Salkehatchie Watershed between January 2024-March 2026 through the ***South Carolina Resilient Coastal Communities Collaborative Program*** (SCRCCCP). The South Carolina Office of Resilience (SCOR) received funding from the National Fish and Wildlife Foundation (NFWF) National Coastal Resilience Fund (NCRF) in December 2022 to provide technical assistance to ten communities in the Salkehatchie Watershed to assess risk and vulnerability, mitigate flooding, and increase resilience. SCOR partnered with S.C. Sea Grant Consortium and S.C. Beach Advocates to engage with communities throughout the watershed to identify locations of and impacts from flooding. Three engineering consultant firms, Weston & Sampson, McCormick Taylor, and Biohabitats, worked with SCOR and S.C. Sea Grant to synthesize community input and develop risk and vulnerability assessments and portfolios of flood reduction strategies that are included in the Community Reports section of this Salkehatchie Watershed Plan.

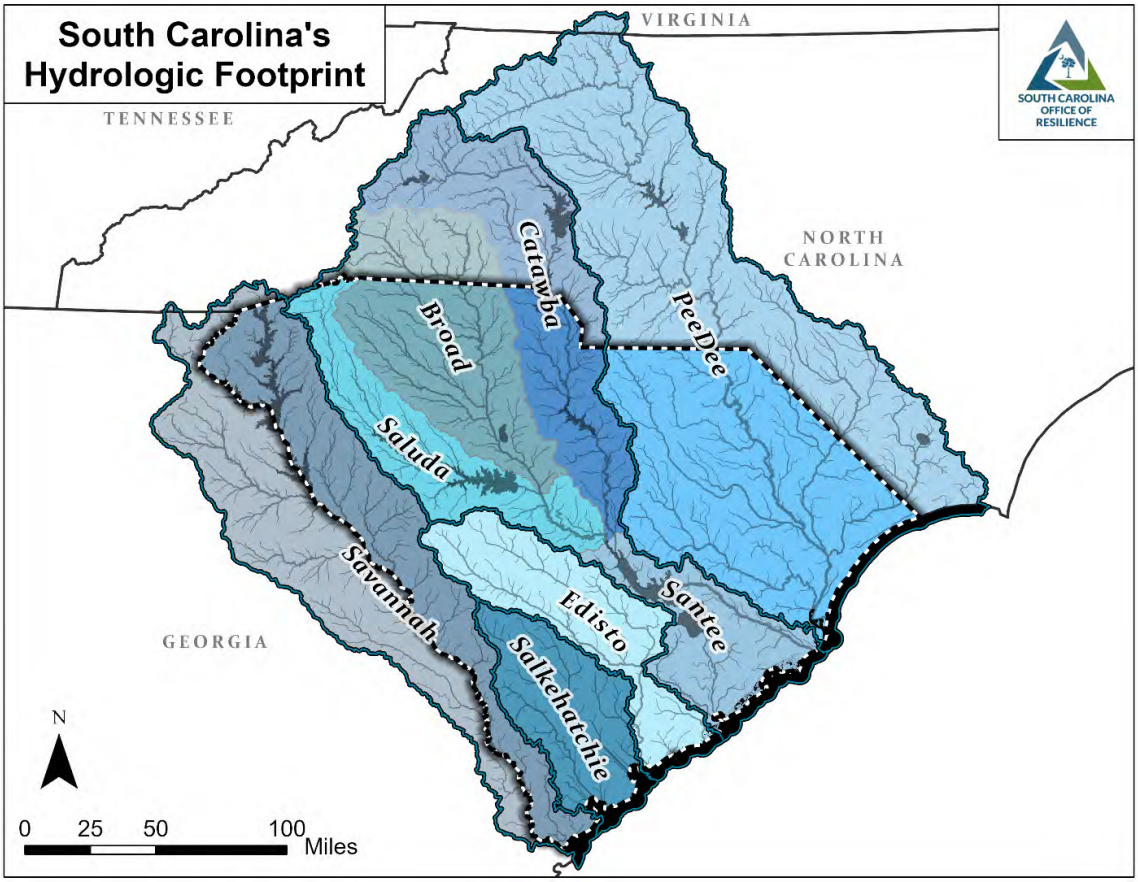


Figure 1: Salkehatchie River Basin

1a. The Salkehatchie River Basin

The Salkehatchie River Basin is located between the Lower Savannah and Edisto River Basins in the Southwestern Coastal Plain region of South Carolina. "The basin is the 7th largest in the State, encompassing approximately 653,606 acres and approximately 1,012 stream miles and 2,928 acres of lake waters" (SCDNR). The tributaries of the Salkehatchie Basin are predominantly shallow, blackwater bottomland swamps, and the rivers in the south of the basin are tidally influenced and brackish. The basin extends 95 miles inland from the Atlantic Ocean and contains eighteen HUC 10 watersheds spanning all or parts of seven counties (Allendale, Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper), thirty-four municipalities, and three military installations.

This Basin originates in the Upper Coastal Plain with the headwaters of the Salkehatchie and Little Salkehatchie in Barnwell and Bamberg, South Carolina and continues through the Lower Coastal Plain and Coastal Zone regions, merging to form the Combahee River just south of Horse Bay and just north of Yemassee in between Hampton and Colleton counties. The basin also contains the Coosawhatchie River which originates in Allendale and Fairfax, SC and flows through Allendale,

3

The Salkehatchie River Basin includes **three military installations**

7

The basin covers all or parts of **seven counties** (Allendale, Bamberg, Barnwell, Beaufort, Colleton, Hampton, Jasper)

7th

It is the **seventh largest basin** in the state

18

The basin spans across **eighteen HUC 10 watersheds**

34

It includes **thirty-four municipalities**

95

It extends **95 miles inland** from the Atlantic Ocean

1,012

The Salkehatchie River Basin includes **1,012 stream miles** (***SCDNR***)

315,000

Approximately **315,000 people** reside across the seven counties of the Salkehatchie River Basin

653,606

The basin encompasses approximately **653,606 acres**



Hampton, Jasper, and Beaufort Counties before merging with the Pocotaligo River to form the Broad River which then flows into Port Royal Sound and the Atlantic Ocean. The renowned ACE Basin is in the southeastern part of the Salkehatchie Basin and is comprised of the Ashepoo, Combahee, and Edisto Rivers. "The coastal area of this basin contains the most extensive estuarine water bodies in the State. These coastal water bodies are dominated by St. Helena Sound and Port Royal Sound and include numerous, often interconnecting, tidal creeks and rivers" (SCDNR). This basin also contains hundreds of thousands of acres of saltmarsh and is bounded by numerous barrier sea islands.

POPULATION: Aproximately 315,000 people reside in the seven counties located in the Salkehatchie River Basin. Beaufort County has the largest population center in the watershed (187,117), followed by Colleton, (38,604), Jasper (28,791), Barnwell (20,589), Hampton (18,561), Bamberg (13,311), and Allendale (8,039) Counties (2020 US Census). Rapid growth is occurring in Jasper and Colleton Counties, and development pressure is high in coastal areas. Populations in the communities in the middle and upper parts of the watershed have been decreasing in recent years, as people relocate to more urban areas and young adults move away after graduating from school. The coastal region of the Salkehatchie Watershed is home to Gullah Geechee communities represented by several organizations, including the Gullah Geechee Cultural Heritage Corridor Commission, the Gullah/Geechee Nation, and the Gullah Geechee Chamber of Commerce. The majority of the Gullah Geechee population resides on the sea islands in the basin.

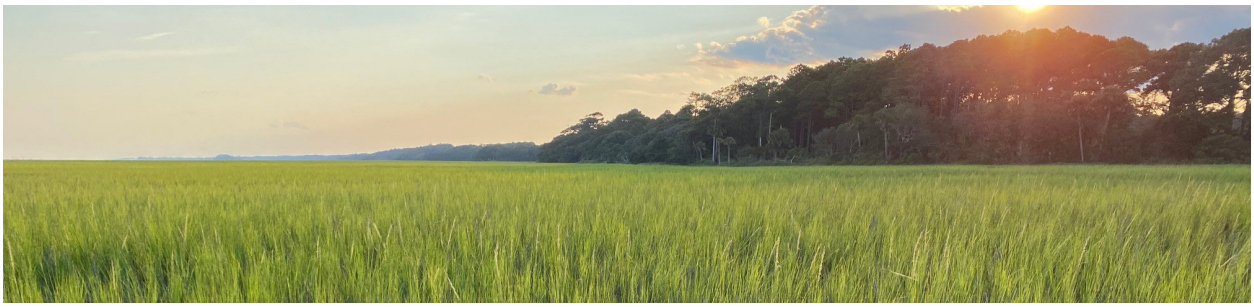
DEVELOPMENT PRESSURE: While the upper part of the Salkehatchie Watershed is primarily rural and agricultural, there is a high level of developmental pressure in the coastal region, specifically in Beaufort, Jasper, Colleton, and Hampton Counties. Forested and Agricultural land cover in the basin has decreased over the past two decades and impervious surfaces have increased, especially in coastal communities. Community members in the coastal counties expressed concerns about clearcutting, deforestation, and development in floodplains. Many

voiced support for conservation and more stringent zoning and environmental policies. They also expressed the need for education for developers, homebuyers, and foresters related to flood risk and the benefits of nature-based solutions for flood control and heat reduction.

HAZARDS & IMPACTS: The Salkehatchie Watershed is impacted by a variety of natural hazards and environmental changes, including flooding, hurricanes, tropical storms, lightning, tornados, extreme heat, drought, wildfire, and winter weather. Over the course of the SC Resilient Coastal Communities Collaborative Program (2024-2026), the most frequent hazards of concern mentioned in surveys, interviews, and at community meetings were flooding, extreme heat, high winds, and drought. Community members from sea islands and coastal areas also reported significant impacts from erosion, saltwater intrusion, and flooding due to sea level rise in addition to flooding from rain events and tropical storms/hurricanes. Community members throughout the basin reported impacts from these hazards to roads, buildings, cultural sites, and agriculture. There is concern throughout the watershed that ditches are not being cleaned and are often contributing to flooding and mosquito proliferation. As impacts from flooding were the primary focus of the SCRCCCP, the team focused on identifying locations in the Watershed that are prone to flooding, with a focus on roadway and parking lot flooding that is impacting access to services and ability to evacuate. Locations were reported and documented through interviews, surveys, and paper and electronic mapping exercises at 4 community meetings.

PLANNING CONDITIONS: There are a variety of planning efforts and projects being implemented in the Salkehatchie Watershed in addition to the SC Resilient Coastal Communities Collaborative Program. Two Council of Governments, the Lowcountry COG and the Lower Savannah COG, serve the region and assist communities with planning efforts, including Hazard Mitigation Plans, Transportation Plans, and Comprehensive Plans. Together, the two COGs support the seven counties and thirty-five municipalities located within the Salkehatchie River Basin. Major plans that are currently being updated or created include the Lowcountry Hazard Mitigation Plan , the Lower Savannah Hazard Mitigation Plan, the Lowcountry Transportation Resilience Improvement Plan, the Beaufort-Jasper Water and Sewer Authority Master Plan, and the Town of Hilton Head Island's Resilience Planning Initiative. Additionally, Hampton County, Jasper County, the City of Hardeeville, and the Towns of Yemassee, Allendale, Varnville, and Ridgeland are in the process of updating their comprehensive plans. Several regional planning collaborations, the South Carolina Lowcountry Sentinel Landscape Partnership, the Southern Lowcountry Resilience Collaborative, and the Southern Lowcountry Regional Board (SoLoCo), are also actively working to increase coordination of resilience initiatives in the region.

ECONOMIC DRIVERS & COMMUNITY RESOURCES: The primary economic drivers in the region are agriculture, education, research, industry, and tourism. Clemson Extension and SCDNR



Soil and Water Conservation Districts offer community education and assistance and both have offices in all seven counties. The Watershed hosts a variety of academic institutions, including USC Salkehatchie West (Allendale), USC Salkehatchie East (Walterboro), USC Beaufort, Technical College of the Lowcountry, Denmark Technical College, Voorhees University, and Barnwell County Career Center. Additionally, there are a number of non-profit and community-based organizations that operate in the region, offering resources and strengthening local communities. Some of the organizations that are most active in the river basin include Habitat for Humanity of the Lowcountry, Port Royal Sound Foundation, Open Land Trust, Southern Palmetto Regional Chamber, Keep Bamberg County Beautiful, Keep Allendale County Beautiful County, Coastal Conservation League, Audubon SC, and The Nature Conservancy-South Carolina.

1b. Project Approach

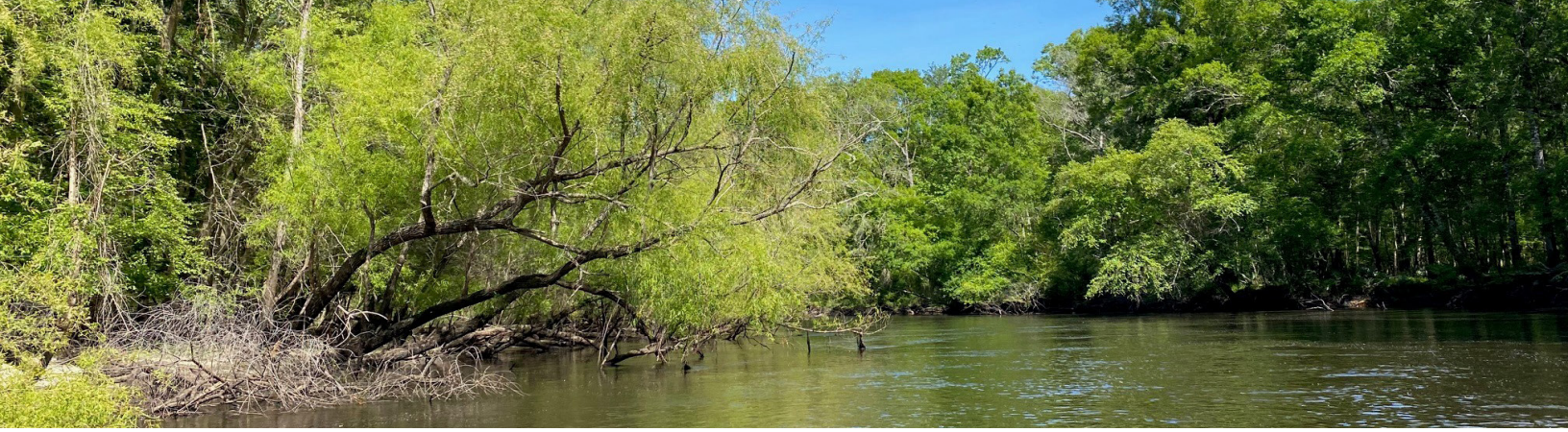
As a foundational step, **SCOR and SCSG reviewed local planning efforts** to better understand existing conditions and identify opportunities to leverage planned efforts.

The Project Team then conducted **multi-scale vulnerability assessments** at the watershed, community, and parcel levels to assess the natural hazards. This technical analysis was paired with **robust community engagement** through Community Action Team meetings, public surveys, field site visits, and consultant assessments to ensure that the vulnerability assessment results and proposed strategies were **grounded in local knowledge and priorities.**



Community Engagement

SCOR and SCSG worked together to identify local community members to form 9 Community Action Teams, which represent the 10 communities of focus. These Community Action Teams were involved with community outreach, input, and decision-making throughout the project. During the first Community Action Team meetings (Fall 2024-Winter 2025), team members shared concerns related to impacts from flooding and environmental changes. At the second Community Action Team meetings (Spring 2025), community members identified and mapped flood-prone areas directly on maps at public events, capturing localized issues often missing in broader state models. The third Community Action Team meetings (August 2025) included Community Action Team members and was also advertised for the public to attend, to gain broader perspectives. The purpose of the third Community Action Team meetings was to provide an overview of the results of the vulnerability assessments, review potential strategies, and obtain community feedback regarding strategies and priorities to guide strategy siting.



The fourth and final Community Action Team meetings took the form of two larger regional meetings in December 2025. A 6-hour regional gathering was held in the Town of Yemassee for the 5 Community Action Teams in the lower half of the watershed on December 4th and a second 6-hour regional gathering was held in the Town of Fairfax for the 4 Community Action Teams in the upper half of the watershed on December 5th. These meetings were designed to foster networking, collaboration, and coordination of regional efforts and to enhance collaborative opportunities for future implementation. The participants in these fourth Community Action team meetings were still divided into their smaller community-specific teams during part of the meeting to review proposed project ideas which contained information and photos from field visits. Participants were encouraged to evaluate each project idea using a visual grid, scoring them on two vital factors:

1. **Impact** (How much will this help the community?)
2. **Feasibility** (How realistic is it to build and maintain?)

Vulnerability Assessment

In July 2025, the Project Team completed a multi-scale vulnerability assessment. The assessment was conducted at three scales: 1) watershed-scale, 2) community-scale, and 3) parcel-level. The assessment was aimed at identifying the most vulnerable areas to flooding, extreme heat, wind, and wildfires.

The project team used First Street Foundation datasets to identify the most vulnerable areas across the Salkehatchie River Basin. For the community-scale assessment, modeling efforts focused on the 34 census tracts that encompass the ten communities of focus. The parcel level assessment focused on both near term (present day) and future (2055) conditions within the five most vulnerable areas identified in the community-scale analysis.

Strategy Siting

Strategy siting was conducted at the community level using community-specific data, feedback from the third Community Action Team meetings, and the results of the multi-scale vulnerability assessment. Following the desktop analysis, the Project Team conducted targeted site visits across the ten communities of focus in the Salkehatchie Watershed. At each location, the Project Team used a standardized field data sheet to evaluate the feasibility of the identified projects, **documenting conditions relevant to design and permitting, including:**

- land ownership
- structures on site
- paved surfaces
- drainage information
- vegetation cover
- site photos

Prioritization

Prioritization criteria were developed with SCOR and SCSG to identify projects that were both feasible to implement and capable of delivering the greatest benefits to each community. **Criteria were divided into three categories:**

1

Flood reduction benefit

Informed by project drainage areas and runoff reduction rates.

2

Feasibility

Considered factors such as land ownership, anticipated permitting effort, and maintenance costs.

3

Co-benefits

Accounted for water quality improvements, heat reduction, and wildlife habitat creation.

The prioritization matrix was used to **identify the top two projects in each community**, which then received a rough order of magnitude opinion (high-level cost estimate) which included project planning, design, and construction.

Results

Building resilience in the Salkehatchie River Basin is a continuous and adaptive process. This document is one of **nine (9)** Community Portfolios that are combined into the comprehensive, basin-wide Salkehatchie Watershed Resilience Plan. **Over fifty (50)** adaptative strategies and proposed projects were identified through this SCRCCCP process. Each portfolio provides specific information on community vulnerabilities and unique concerns as well as opportunities to reduce impacts from flooding and enhance community resilience.

The communities of the Salkehatchie River Basin have demonstrated commitment and capacity to continue to lead this work. By maintaining momentum, strengthening collaboration across the watershed, and staying engaged through regional partnerships such as the Salkehatchie Watershed Advisory Group and the Southern Lowcountry Resilience Collaborative, these communities can continue to identify sustained pathways to implementation, ensuring a **vibrant, safe, and resilient future for generations to come**.

The Communities of Bamberg County rely heavily on agriculture and forestry, making the region particularly sensitive to environmental fluctuations and extreme weather. Because flood reduction was identified as the community's highest priority, areas with known flooding were given particular attention during the desktop analysis, and preferred practices were prioritized such as conservation areas and bioretention features. **For cost estimation, the prioritization matrix highlighted the Stormwater Park at Rhoad Park Street and Birch Street which received the highest overall score, while a Bioretention practice at Bamberg Police Department was elevated as it addressed an urgent, community-identified problem area that frequently experiences flooding and is an important thoroughfare for the City of Bamberg.**

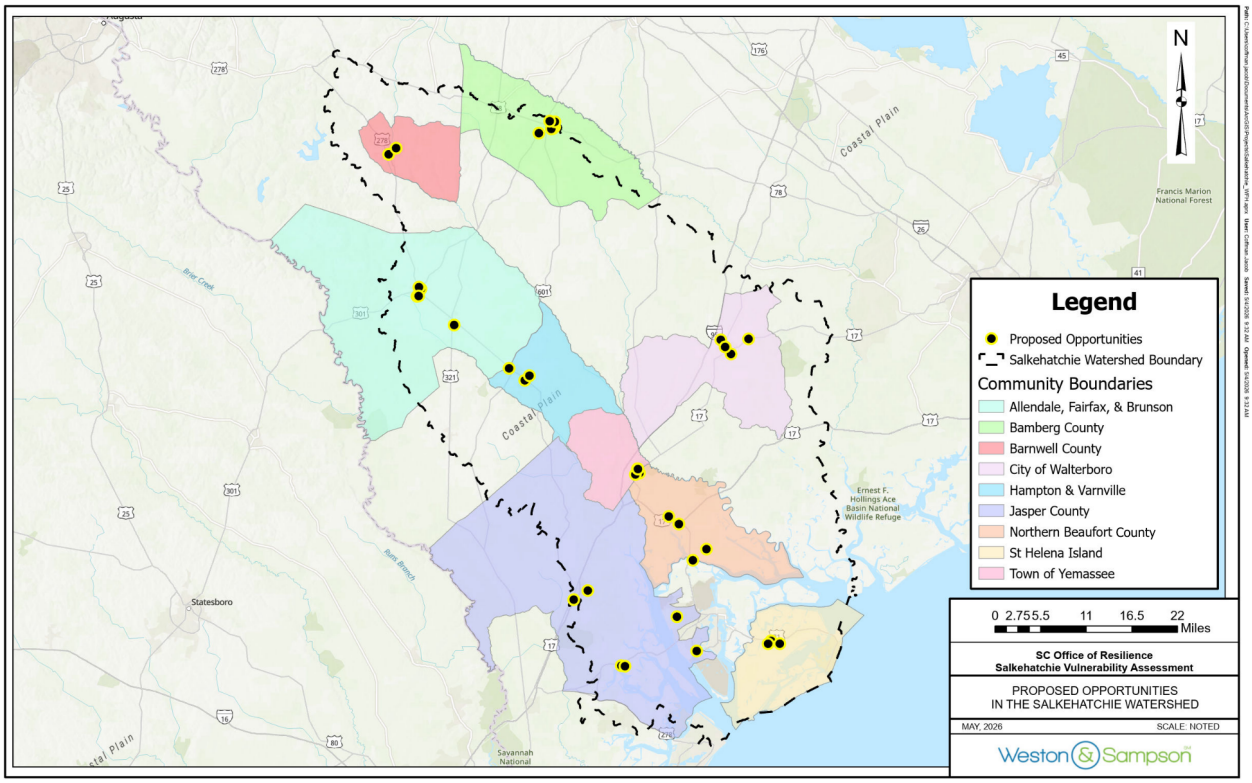


Figure 2: SCRCCCP Study Communities and Proposed Opportunities

2. Introduction

2a. Project Objectives

The goal of the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP) is to **support communities in the Salkehatchie River Basin** by developing locally informed and locally prioritized strategies and plans that **reduce impacts from flooding and improve resilience** to natural hazards and environmental changes. This process included working with community partners to co-produce **nine (9) Community Portfolios** for ten(10) areas of focus which are combined into a basin-wide Salkehatchie Watershed Resilience Plan. Each community portfolio is intended to accomplish the following objectives.

1

Explain the community's **vulnerability and risk** through a comprehensive assessment

2

Document **community concerns** about infrastructure and vulnerabilities to natural hazards and environmental changes

3

Document input on **flooding impacts** and locations of flood-prone **vulnerable areas** within the community

4

Provide a suite of flood reduction and resilience **strategies,** that are ready for funding and implementation

5

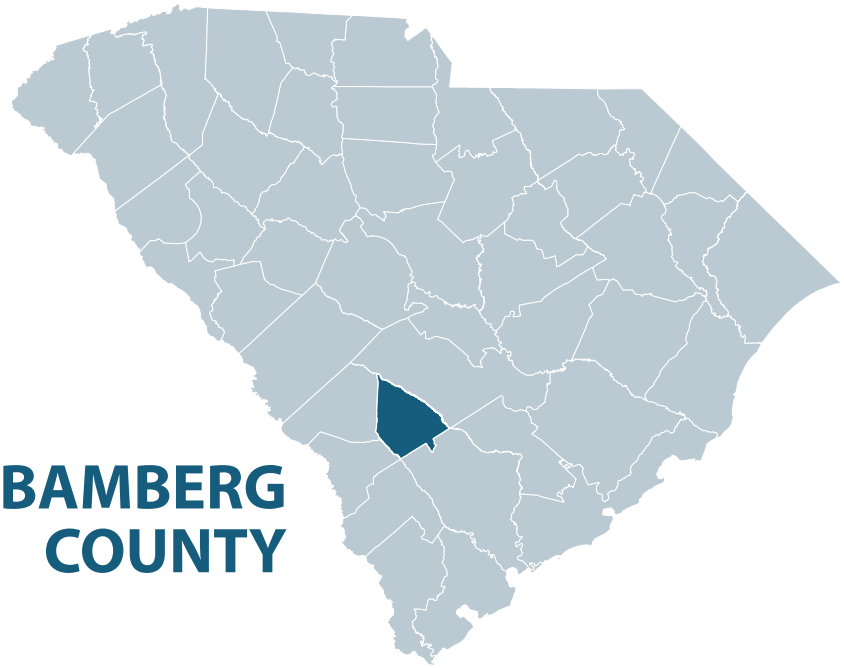
Highlight **community preferred** resilience strategies

6

Strengthen **collaboration and partnerships** within the watershed

2b. Community Background

Bamberg County is located in the southwestern coastal plain of South Carolina and is bordered by Barnwell, Allendale, Hampton, Colleton, Dorchester, and Orangeburg Counties. Located in the state's rural inland coastal plain, the County is defined by its deep agricultural roots and



vital riverine ecosystems, including Half Moon Creek and the Edisto, Salkehatchie, and Little Salkehatchie Rivers. The Edisto River is Bamberg County's boundary on the northeast, the Salkehatchie River on the southwest, and the Little Salkehatchie River runs through the middle of the County. The region's economy relies heavily on agriculture and forestry, making it particularly sensitive to environmental fluctuations and extreme weather. The County contains five municipalities: Bamberg, Denmark, Ehrhardt, Govan, and Olar. The City of Bamberg is the County Seat and the hub of government and public services, located at the intersection of U.S. Highways 301, 601, and 78. A major railroad crosses the County parallel to Hwy 321 and there is an Amtrak Station in the City of Denmark.

Made up of rural communities, Bamberg County faces structural challenges, including the reliance on aging infrastructure and private septic systems. This geographic and economic reality underscores the critical need for targeted resilience investments to protect public health, the local economy, and way of life.

Based on review of historic flooding and climate hazards, the hazards experienced by the Communities of Bamberg County includes hurricanes, tropical storms, thunderstorms, tornados, hail, and drought. The County recorded 10 FEMA disaster declarations between 2020 and 2026, mostly due to tropical storms and hurricanes. Other flooding that has impacted the region includes major flooding from the Edisto River in 2024 and 2025 and a flash flood event in 2016 on Hickory Hill Road. Frequent flooding has been reported to have severely impacted many roads throughout the County, sometimes making them impassable.

Current vulnerabilities that were discovered included poor water quality (in which the SC Department of Environmental Services became involved), the need for emergency broadcast sirens for tornado warnings, aging water lines that need to be replaced, and widespread septic tank issues, with many homes not connected to the municipal sewer system. The Project Team conducted a review of existing vulnerabilities and future threats for the Communities of Bamberg County through robust community engagement, plan review, and a vulnerability assessment.

2c. Plan Review

SCOR and S.C. Sea Grant reviewed local planning efforts to better understand existing conditions and to identify opportunities to leverage planned efforts. The plans reviewed for the Communities of Bamberg County are listed in Table 1.

Table 1: Plans Reviewed for the Communities of Bamberg County

Plan Name	Year
Bamberg County Natural Hazard Mitigation Plan	2010
Bamberg County Comprehensive Plan 2020	2021
City of Bamberg Comprehensive Plan	2019
District 6 Housing Needs Assessment	2019
Bamberg County Housing Needs Assessment	2019
Planning for Economic and Fiscal Health Report and Suggested Next Steps	2018
Comprehensive Economic Development Strategy 2022-2027 Lower Savannah Region	2017

The Project Team conducted a review of existing vulnerabilities and future threats for the Communities of Bamberg County. **The vulnerabilities that were identified by the Project Team include:**



Vulnerable **evacuation routes**



Aging **stormwater infrastructure**



Impacts to roads and buildings from high intensity storms



Impacts to agriculture and forestry from **extreme weather conditions**



Risk of tropical storms, hurricanes, thunderstorms, hail, tornadoes, high winds, high heat, and drought



Flooding from the **Edisto River, Salkehatchie River, Half Moon Creek, Lemon Creek, and Colston Branch**

2d. Community Engagement

The SC Office of Resilience (SCOR) and SC Sea Grant Consortium (SCSG) worked together to identify local community members to form a **Community Action Team**. The Community Action Team was involved with community outreach, input, and decision-making throughout the project, specifically during the four Community Action Team meetings which took place in December 2024, April 2025, August 2025, and December 2025. The members identified for the Communities of Bamberg County Community Action Team are listed in the table below.

Table 2: Team Members of Communities of Bamberg County Community Action Team

Team Members Name	Team Members Title
Nancy Foster	Former City of Bamberg Mayor
Alisha Moore	Bamberg County Public Information Officer
Councilwomen Bobbi Bunch	City of Bamberg Councilwomen
Camden Kittrell	Bamberg Public Works Compliance Director
Ronald Bunch (Buzzy)	Bamberg Public Works Chairman
Randy Maxwell	Citizen
Mary Jane Maxwell	Citizen
Mayor Corey Ramsey	City of Bamberg Mayor
Sophia Truempi	Coastal Community Engagement Specialist, S.C. Sea Grant Consortium
Karen Hardison	Watershed Coordinator-Salkehatchie & Lower Savannah, SC Office of Resilience

During the **first Community Action Team meeting** (December 2024), team members were invited to share concerns related to impacts from flooding and environmental changes they have experienced within their community. Two of the primary issues raised were flooding of roads and the inability of water to properly flow through roadside ditches, which contributes to areas of localized flooding and mosquito problems. Many community members asserted the ditch maintenance is one of the community's biggest needs related to flood reduction and cleaning and education needs to be prioritized. Fooding has been observed throughout Bamberg County, with significant problem areas identified near Highway 301, Pine Street, Half Moon Creek, and Little Rascal Daycare. Flooding was reported to have been frequent outside of Bamberg City Hall and the Bamberg Police Department, both located on Main Highway. Flooding was also reported around the Bamberg County Court House and Civic Center. Additionally, residents noted that heavy flooding and prolonged soil saturation have led to the uprooting of trees in some areas. Flooding has further impacted residential properties, with standing water contributing to mold growth in homes.

At the **second Community Action Team meeting** (April 2025), community members identified flood-prone areas directly on maps at a public event held at the Bamberg County Office on Aging. The areas identified include the Highway 301/Main Highway corridor, as well as Railroad Avenue, W. Railroad Ave, and Race Street at the corner of Zeigler Street and at the other end near New Bridge Street. Participants also expressed concern about frequent flooding affecting an entire neighborhood near Lemon Creek along Cedar Avenue near Highway 78 during heavy rainfall events. Community members noted that "Hwy 601 goes underwater" at Hwy 601 and HWY 301 near Halfmoon Branch and that N. Main Street also goes "under water" between Dixie Ave and State Rd J-S-173 during heavy rains.



Figure 3: Images from the third Community Action Team meetings

Participants said that North Street between Felder Street and North Avenue floods every time it rains and that all of Pine Street and whole yards adjacent to it flood. Other areas reported as flood prone include Highway 70 near Franklin Methodist Church, Pickney Street by the light company and Dickinson Street behind Bamberg County Memorial Hospital. Team members were also told that water rescues have been necessary after big storms at Heritage Highway & Briar Creek Road.

The **third Community Action Team meeting** took place in August 2025. Community Action Team members attended, and the meeting was advertised to the public to gain broader perspectives. The purpose of the third Community Action Team meeting was to provide an overview of the vulnerability assessments, review potential strategies, and obtain community feedback regarding strategies and priorities to guide strategy siting and typology criteria. A total of eight meetings were held including a combined meeting for the Town of Yemassee and the Communities of Northern Beaufort County and one for each of the seven other communities in the Program. Participants were encouraged to talk with members from the Team and physically add feedback to displays with focus on adaptation strategies, benefits prioritization, existing conditions, and a map showing the most vulnerable areas in each community. Participants provided feedback on the adaptation strategies and benefits prioritization boards by placing color-coded dots to indicate preference for specific adaptation strategies (i.e. bioswale, tree planting, permeable pavement) or rank the importance of certain strategy benefits (i.e. aesthetics, cost, flood reduction, ecological value, and recreation value). The existing conditions and vulnerable area boards contributed important place-based information through conversational notes and location-specific pins. Community members were asked to provide locations of chronic flooding, known community assets, and identifiable landmarks. After the meetings, SCOR and SCSG provided an online survey to community members to provide feedback if they were unable to attend the third Community Action Team meeting in person. The community-specific data gained from the third Community Action Team meeting and the survey informed the type of strategies selected, the strategy siting, and prioritization matrix.

The **fourth Community Action Team meeting** took place in December 2025. A six-hour regional gathering was held in the Town of Yemassee for the five Community Action Teams in the Lower half of the Salkehatchie Watershed on December 4th, 2025 and a second six-hour regional gathering was held in the Town of Fairfax for the four Community Action Teams in the Upper half of the Salkehatchie Watershed on December 5th, 2025. These meetings were designed to foster networking, collaboration, and coordination of regional efforts. The fourth Community Action Team meetings began by reviewing the vulnerability assessments and possible strategies for implementation. Representatives from partnering agencies and organizations provided information on their respective efforts, which provided an opportunity to connect community members with potential project funding and resources.

In small, community-specific groups, participants reviewed and discussed project-level details for proposed projects with project team members. Members of the project team provided community members with project sheets that contained information gained from field site visits, including photos and conceptual renderings of the proposed projects. Participants were asked to evaluate each proposed project on two vital factors: Impact (How much will this help the community?) and Feasibility (How realistic is it to build and maintain this?). Participants scored each project using a visual grid, helping identify projects that deliver high community benefits without facing construction or permitting hurdles. Participants also provided additional valuable information to help inform the final project recommendations.





Figure 4: Participants at the fourth Community Action Team meeting reviewed project sheets (See Appendices) to discuss which projects are the most feasible and provide the greatest benefit to the community.

Following the fourth Community Action Team meetings, all community feedback, including the impact and feasibility scores, was compiled for further analysis. To translate the visual grids into quantitative data, the impact and feasibility axis were scaled from 1 to 10, and each project was assigned a standardized score for both metrics. These two scores were summed to generate a composite community preference score. Additionally, project sheets were updated to incorporate a "Community Action Team 4 Feedback / Notes" section to capture qualitative community input, such as proposed land uses, local observations, and potential funding sources.

After the fourth Community Action Team meetings, the project team met to discuss the proposed projects. The project team evaluated each project and assigned consultant opinion scores based on professional judgement informed by the break-out sessions during the fourth Community Action Team meeting, field observations, drainage patterns, and potential funding opportunities. Community preference and consultant opinion scores were considered during project prioritization.

3. Vulnerability Assessment

In July 2025, the Project Team completed a multi-scale vulnerability assessment for the Salkehatchie Watershed. **The vulnerability assessment was conducted at three scales:**

1

WATERSHED-SCALE

Utilizing the Salkehatchie Watershed Boundary

2

COMMUNITY-SCALE

Based on Census Tracts

3

PARCEL-LEVEL

Incoporating Building Point Data from First Street Foundation

Following discussions with SCOR and S.C. Sea Grant, as well as stakeholder input from the first two Community Action Team meetings, which indicated that **flooding, extreme heat, wind damage, and wildfire were top concerns**, the following raster datasets from First Street Foundation were selected for inclusion in the watershed scale and community scale vulnerability assessments:

- **Flood 2055** – 500 Year Storm Event
- **Heat Max Temperature** – 2055
- **Wind Speed 2055** – Shared Socioeconomic Pathway 2-4.5 r3000
- **Burn Probability 2055** – Shared Socioeconomic Pathway 5-8.5

i

Note: Shared Socioeconomic Pathway is a set of narratives that help describe future developments in society based on the use of fossil fuels and the social and economic factors that drive fuel consumption.

3a. Watershed Scale

The Project Team used the four datasets; Flood 2055, Heat Max Temperature 2055, Wind Speed 2055, and Burn Probability 2055, to **identify the most vulnerable areas across the Salkehatchie Watershed.**

Figure 5 shows the results of the vulnerability modeling used to identify vulnerable areas across the Salkehatchie Watershed. The vulnerability scores range from 4.75 (lowest vulnerability) to 41.15 (highest vulnerability) and the final dataset provides complete coverage for the Salkehatchie Watershed. Conducting the assessment at the watershed scale allows the project team to **identify areas most at risk** based on the First Street Foundation data.

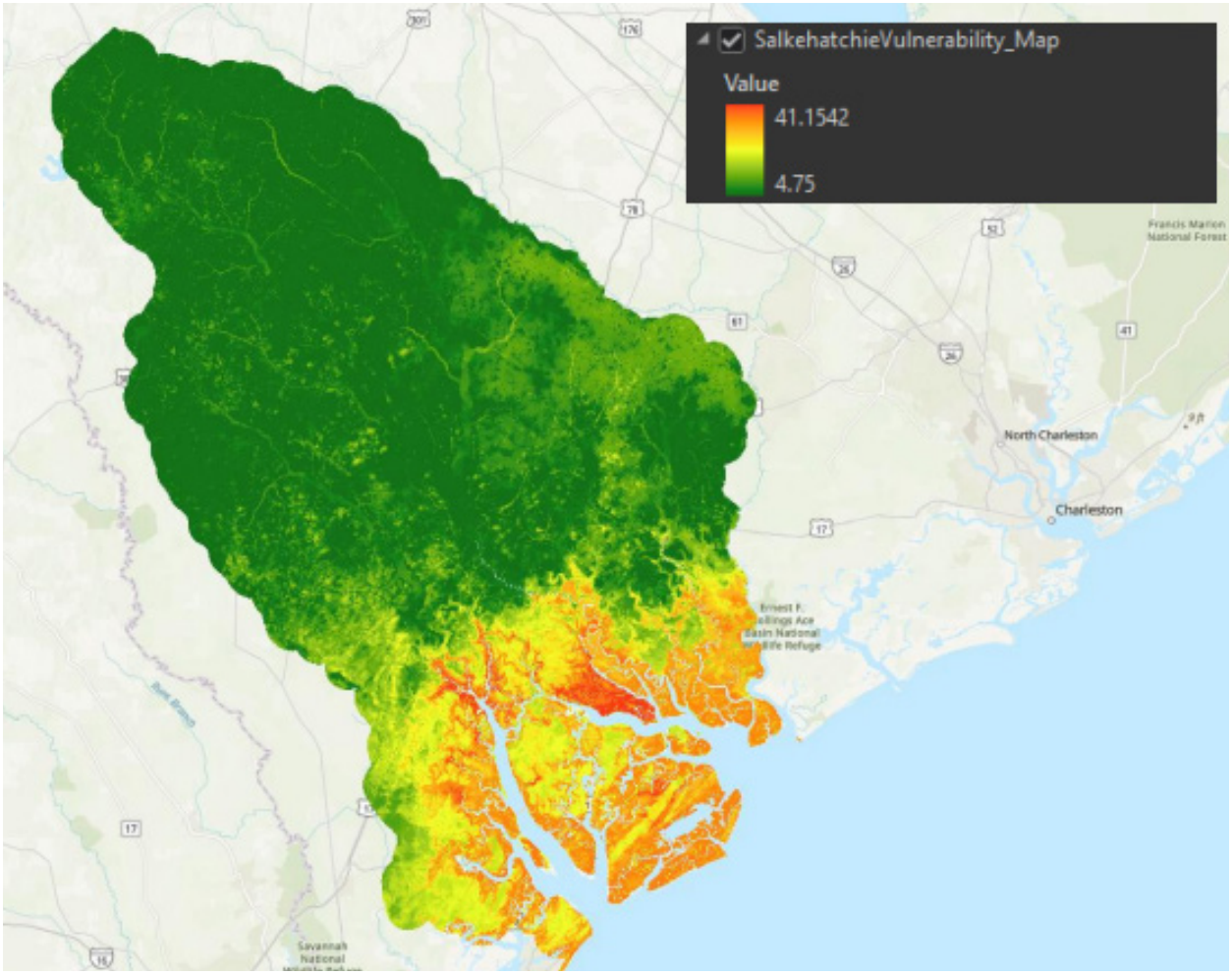


Figure 5: Salkehatchie Vulnerability Model Results

3b. Community Scale

For the community-scale component of the vulnerability assessment, modeling efforts focused on census tracts that encompass the previously identified communities of focus for the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP). A total of **34 census tracts were selected** using maps provided by SCOR to ensure accurate representation of the Community Action Teams. Census tracts were grouped according to the communities of focus including Communities of Barnwell County, Communities of Bamberg County, Communities of Allendale, Fairfax & Brunson, Communities of Hampton & Varnville, Communities of Northern Beaufort County, Communities of Jasper County, Town of Yemassee, City of Walterboro, and St. Helena Island (Figure 6).

A spatial vulnerability assessment was conducted for each of the community-scale census tract areas shown in Figure 6. The methodology for the community-scale vulnerability assessment closely follows the approach used in the watershed-scale assessment, including the selection of data layers, scoring procedures, and weighting criteria, ensuring consistency across scales while providing a more granular understanding of vulnerability within each community.

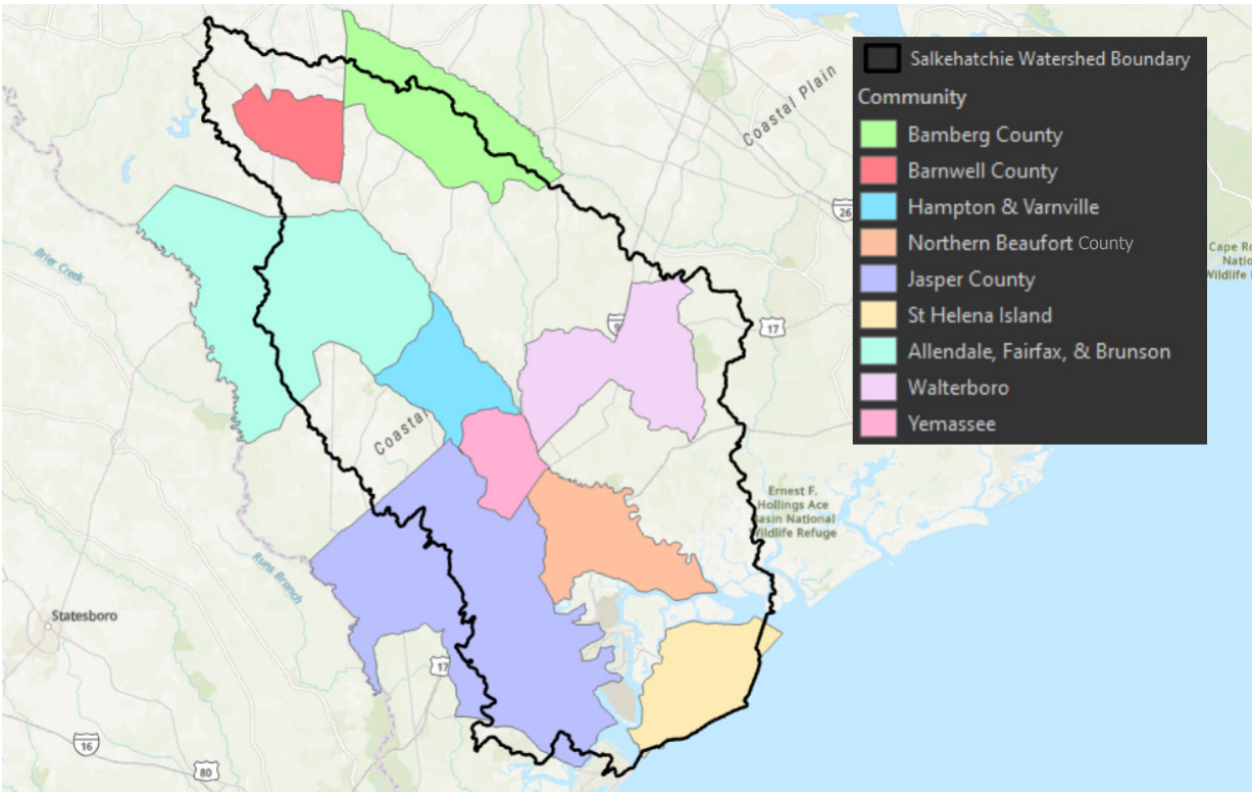


Figure 6: Salkehatchie Watershed and SCRCCCP Study Communities Census Tracts

The community-scale analysis helped:

1. Identify specific **vulnerable areas**
2. Validate **flood concerns** raised during Community Action Team meetings
3. Inform the siting of potential **adaptation recommendations**
4. Determine the **top five most vulnerable areas** in each community where parcel-level analysis was performed.

Figure 7 represents the results of the Vulnerability Assessment for the Communities of Bamberg County along with the locations of the highest average vulnerability scores within the Bamberg census tracts. The most vulnerable areas include Highway 61 between Highways 78 and 21 near the Edisto River, the southern side of the study area which includes the Little Salkehatchie River and Lemon Creek, and a large area south of the City of Bamberg that surrounds Lemon Creek. The results were consistent with information collected from stakeholders during the second community action team meeting.

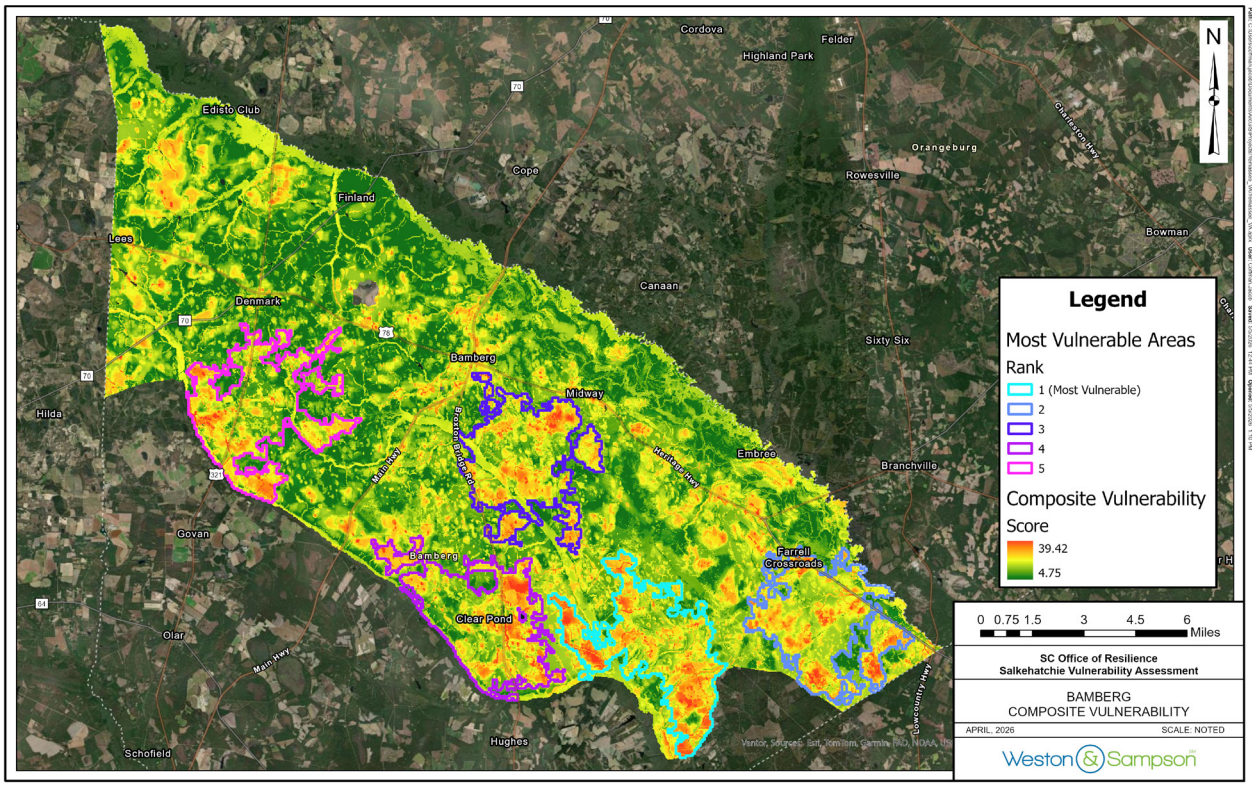


Figure 7: Bamberg Vulnerability Model – Most Vulnerable Areas

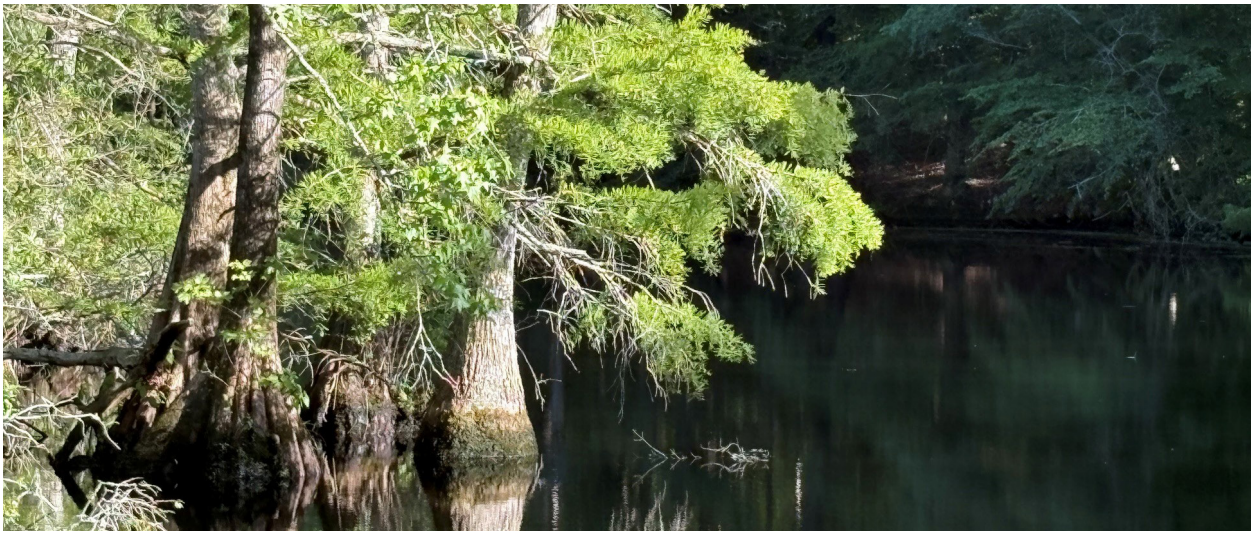
3c. Parcel Scale

The parcel-level vulnerability assessment was conducted for the five most vulnerable areas identified in each community. Parcel-level vulnerability results are not provided in this report to protect the privacy of property owners.

The assessment focused on both near-term (present-day) and future (2055) conditions. By evaluating both present and future conditions, existing vulnerabilities are identified and an understanding is gained of how risks may evolve. To understand parcel level vulnerability, the project team applied a standardized methodology that examined both exposure and sensitivity. When exposure and sensitivity are combined, these two components provide a comprehensive understanding of vulnerability for each parcel within the study communities' most vulnerable areas. Figure 8 defines exposure and sensitivity as it relates to the applied vulnerability scoring formula.

Exposure	X	**Sensitivity**
whether an asset is in an area that will **experience** a given hazard		whether an asset or its functionality will be **damaged** or **disrupted** from exposure to a hazard

Figure 8: Vulnerability Scoring Formula



4. Strategy Siting

4a. Desktop Analysis

Strategy siting was conducted through a desktop analysis at the community level, utilizing community-specific data, feedback from the third Community Action Team meeting, and the community-scale and parcel-scale vulnerability assessments. All data layers referenced were compiled and clipped to each community's study boundary to create a standardized spatial dataset for the analysis. Figure 10 describes the data layers used in the strategy siting analysis.

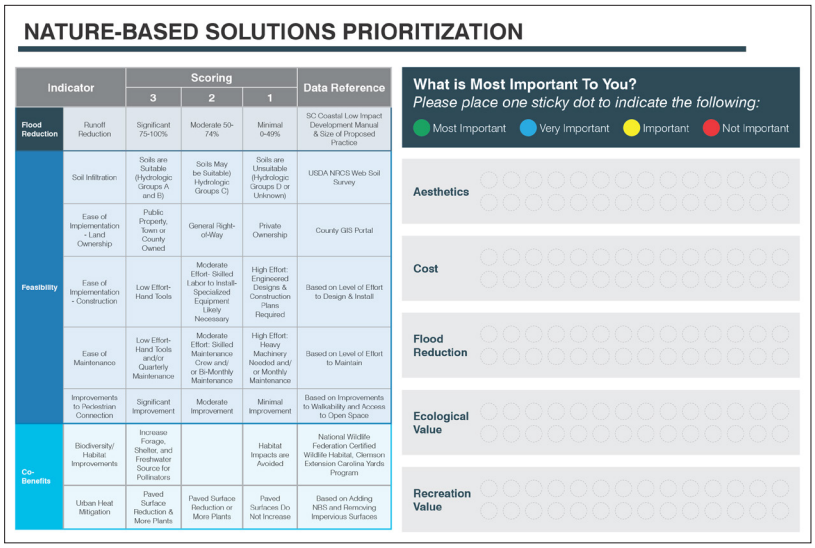


Figure 9: Strategy Prioritization Board Utilized in Community Action Team Meeting Three to Better Understand Community Preference.

The siting process was guided by community-specific strategy preferences and benefit priorities derived from the third Community Action Team meeting feedback and survey results. For the Communities of Bamberg County, community-preferred practices were prioritized including conservation areas and bioretention features. **Because flood reduction was identified as one of the community's highest priorities, areas with known flooding were of focus during the desktop analysis.**

Data Layer	Description	Data Source
Soil Drainage Class	Soil Hydrologic Group (A, B, C, D, A/D, B/D, C/D)	USDA NRCS Web Soil Survey, SSURGO Data
Digital Elevation Model (DEM)	Community specific elevation data	NOAA: Digital Coast LiDAR
Surface Streams (1 acre and 10 acre)	Surface streams derived from community DEM	Community DEM
Parcels	Community specific land ownership data	Beaufort County, Hampton County, Colleton County, Jasper County, Allendale County, Bamberg County, Barnwell County
SCOR Conservation Priorities	Displays SCOR's priority lands for conservation, developed land, water, and already conserved land	South Carolina Office of Resilience (SCOR)
Historic Structures	National Register of Historic Places	SC SHPO
LMI % Block Groups	Displays low-to-moderate income % by block group	HUD
20-year Flood 2025	Present-day flood depth and extent	First Street Foundation
20-year Flood 2055	Future conditions flood depth and extent	First Street Foundation
Locations of Known Flooding	Community point locations derived from Community Action Team meetings	Community Action Team Meetings Two and Three
Top 5 Vulnerable Areas	~5000 acre polygons of the most vulnerable areas in each community	Community-Scale Vulnerability Assessments

Figure 10: Data Layers Used in Strategy Siting During the Desktop Analysis

4b. Site Visits

Following the completion of the strategy siting, the project team conducted **forty-one targeted site visits across the nine study communities** to evaluate the feasibility and implementation of projects identified through the desktop analysis. At each site location, the consultants filled out a standardized field data sheet to document conditions relevant to design, permitting, and implementation of the proposed strategy. The field data sheet captured information pertaining to land ownership, structures on site, paved surfaces, drainage information, vegetation cover, feasibility comments, and site photos.

A completed field data sheet for each project visited in the Communities of Bamberg County is included in the appendices.



Figure 12: Site visits to potential project locations provided an opportunity to identify barriers to implementation, property conditions, opportunities, and co-benefits.

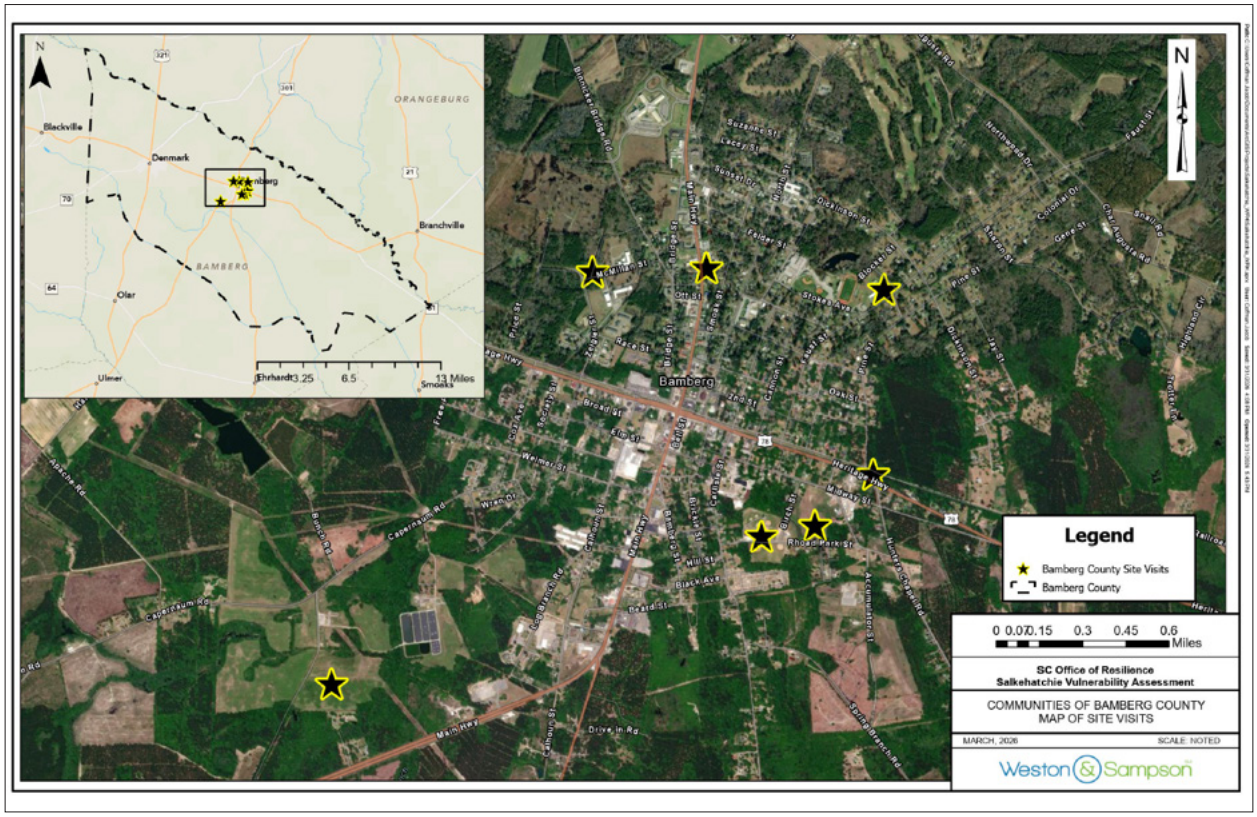


Figure 11: Site Visits Conducted by the Project Team in the Communities of Bamberg County

5. Prioritization Matrix

5a. Prioritization Criteria

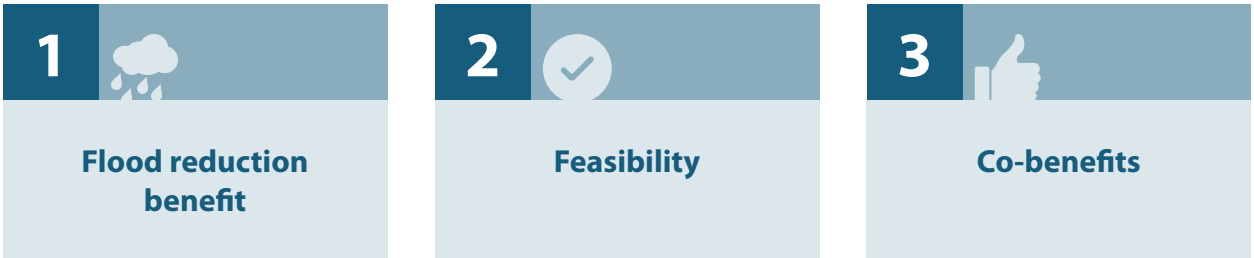
Prioritization criteria were developed to identify projects that were both feasible to implement and capable of delivering the greatest benefits to each community. A table of the prioritization criteria can be found in the appendices. Criteria were divided into three categories:

Flood Reduction Benefit: This was evaluated using the project's drainage area combined with the runoff reduction rate for each specific strategy, as outlined in the "Low Impact Development in Coastal South Carolina: A Planning and Design Guide."

Feasibility: This category evaluated practical implementation factors, such as land ownership and anticipated maintenance costs.

Co-Benefits: This accounted for the additional advantages a strategy might provide, such as water quality improvements and enhanced wildlife habitat.

Each criterion was scored on a scale from 1 to 3, where 1 represents lower benefit or greater implementation challenges and 3 represents higher benefit or greater ease of implementation. To emphasize the importance of reducing flood risk, the criteria representing flood-reduction benefit and flood exposure (present-day and future) were each weighted by 15. To ensure that both community feedback and consultant field observations were appropriately considered, Community Action Team 4 feedback and consultant opinion scores were each weighted at 10. All remaining criteria were assigned a weight of 5. This weighting structure ensures that **projects advancing flood resilience and reflecting community priorities received the highest consideration.**



5b. Prioritization Results

The prioritization matrix results helped identify the **top two projects in each community.** The top two projects for each community received an order of magnitude cost (high-level cost estimate) that considers all phases of implementation from design to construction. This information is intended to help with grant writing and future capital improvement planning. This order of magnitude cost informaiton is included in the appendices section.

For the Communities of Bamberg County, the prioritization matrix highlighted two projects that consistently performed well across all criteria. **The Stormwater Park at Rhoad Park Street and Birch Street** received the highest overall score. This project has the potential for high flood-reduction benefits, and for multiple co-benefits including urban heat island reduction and water quality improvements. **The Tree Planting at Midway Street and Birch Street** had the second highest score in the community. This project has moderate flood reduction potential but overall is more feasible than the Stormwater Park. Additional prioritization results can be found in the appendices.

While the prioritization matrix served as a critical tool in comparing projects across flood-reduction, feasibility, and co-benefits, the final selection of projects for cost estimation also incorporated several contextual considerations that the matrix could not fully capture. For the Communities of Bamberg County, the Tree Planting was replaced for cost estimating by the 4th-ranked project, a **Bioretention practice at Bamberg Police Department.** This project was elevated as it addressed an urgent, community-identified problem area at Main Highway, which frequently experiences flooding and is an important thoroughfare for the City of Bamberg. The fourth Community Action Team meeting also provided information that the identified Stormwater Park and Tree Planting parcels are a part of proposed park improvement project giving further reason to provide a cost estimate for a different project.





Figure 13: Participants in Community Action Team meeting four reviewed project sheets to help prioritize projects. The top two projects for each community received an order of magnitude cost estimate.

6. Recommendations Per Community

Opportunity Sheets

Navigating the Project Pages

To guide the development and implementation of resilience actions within the Salkehatchie watershed, a portfolio of potential projects, referred to as strategies, have been summarized in the following pages. Each strategy has been evaluated and presented with a standard set of criteria. These categories provide transparency, enable comparison among strategies, and offer a starting point for conversation with stakeholders who may be involved in advancing the strategy toward implementation. The sections below explain each element and its role in providing key information to support informed decision making.

Type of Strategy The Type of Strategy section simply identifies what project or practice is being described in detail on the sheet.

Strategy Description

The Strategy Description section provides a standard definition of what kind of solution is being proposed. This allows for a shared understanding in case some of the terms are unfamiliar.

Location Description

The Location Description section provides additional information to help identify the site when a specific address is not available. This may include descriptions such as the site being located between two streets or references to names commonly used by the community, such as "the old high school football field." This description helps readers clearly understand the location being referenced.

Narrative

The Narrative section provides a more detailed summary of the proposed project or study including background, scope, and key features. This overview offers a concise snapshot of what the project entails and includes additional context or information that may not fit in with other sections.

Photos

The Photos section includes on-the-ground photos of existing site conditions. Additionally, some sites have renderings or visualizations that illustrate what the site could look like after proposed improvements are implemented. The photos help provide context for those who have not visited the site, while the proposed conditions visuals help those unfamiliar with the strategy better envision how it would appear once installed.

Strategy Location and Map

Location identifies the specific area where the project will be carried out. This could be a site address, neighborhood, corridor, watershed, or broadly county-wide project. Understanding where a project takes place is essential for evaluating its vulnerability context, affected populations, and potential to address locally specific hazards.

Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

The Type of Solution section allows the reader to quickly understand the nature of the proposed approach. This may include a physical project, such as a nature-based solution; a modification to existing infrastructure through a facility or infrastructure retrofit; or a plan or policy intended to guide and support future solutions. Each type of solution plays an important role in supporting overall community resilience.

Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☐ Biodiversity Enhancement
- ☐ Floodplain Management
- ☐ Water Quality Improvement
- ☐ Urban Heat Reduction

The Supporting Function section identifies the primary purpose of the strategy by selecting from a defined list of intended outcomes. These selections indicate the benefits the strategy is expected to provide. Categories include flood mitigation, stormwater management, conservation, general resilience, biodiversity, floodplain management, water quality, and urban benefits.

Flood Vulnerability of Location



The Flood Vulnerability of Location section uses flooding data from First Street Foundation (Foundation) to determine how susceptible a site is to flooding. The Foundation's modeling incorporates terrain data, climate projections, historical flood events, and hydraulic simulations to estimate flood elevations for a range of storm events and future time periods. For this analysis, both current (2025) and future (2055) flooding conditions were evaluated using the 20-year storm event (5% annual chance of occurrence). Locations not projected to flood under either scenario were classified as "Low". Sites projected to flood under the future scenario only were classified as "Medium". Locations that were projected to flood under both current and future conditions were classified as "High". An understanding of the flooding conditions at the site can indicate both the need for the strategy and the anticipated success of the strategy.

Anticipated Flood Reduction Benefit



The Anticipated Flood Reduction section estimates the potential reduction in stormwater runoff volume expected from implementing the strategy. The ranges used for these estimates are based off guidance from the "Low Impact Development in Coastal South Carolina: A Planning and Design Guide," which provides typical runoff reduction values for common nature-based solutions. Flood reduction is a key focus of increasing community resilience in the Salkehatchie watershed.

Ease of Implementation



The Ease of Implementation section reflects key factors that may influence how easily a strategy can be carried out, including land ownership and permitting requirements. Strategies rated with a "Low Ease" of implementation generally require multiple permits and are located on private property. In contrast, strategies rated with a "High Ease" of implementation typically require no permits and are located on publicly owned property. Understanding the feasibility of implementation helps set expectations up front and identify potential challenges to address early in the implementation process.

Priority Rating



The Priority Rating section is categorized in "Low," "Medium," and "High" priority rating tiers based on a combination of variety of factors already discussed (flood reduction, cost, permitting) as well as additional factors such as the community's preference, consultant opinion, and co-benefits anticipated (water quality, cultural, habitat). The priority rating category helps decision-makers allocate limited resources efficiently.

Estimated Cost



The Estimated Cost section provides a preliminary projection of the financial investment required to implement. Strategies anticipated to be installed with basic or volunteer labor or consisted of modifications to an existing practice were classified as "Low" while strategies that require engineered designs were classified as "High". Understanding cost early in the process helps assess feasibility, plan budgets, and prioritize investments with fiscal constraints.

Bamberg Bioswale
Railroad Ave. by Pine Street

Type of Strategy
Bioswale

Strategy Description
A bioswale is a vegetated channel that slows and treats stormwater runoff, often along parking lots or property edges. A bioswale is similar to a bioretention cell in that the design includes engineered soils and vegetation, but different as bioswales focus on conveyance of stormwater runoff typically as part of a centralized drainage system.

Narrative
Grass swales exist along the roadway, some of which are now flat and do not have proper outflow drainage points. The f orested areas around this location have been logged, but the trees were replanted. Swales could be improved and retrofitted as bioswales by incorporating vegetation and benching the side slopes to create areas for water to stage during high water storm events. These improvements would enhance the ability of the swale to provide stormwater management benefits to the area under varying conditions. One potential project constraint is that any work around these powerlines will require an easement from the utility provider as well as SC-DOT as this project is adjacent to a state-owned road.

Location Description
This area is located on Railroad Ave, near Pine Street. Most ditches appear relatively flat. This area is grassy with an abundance of shrubs.

Photos
Existing Conditions



Grass swale, near Faust St.
Photo facing upstream



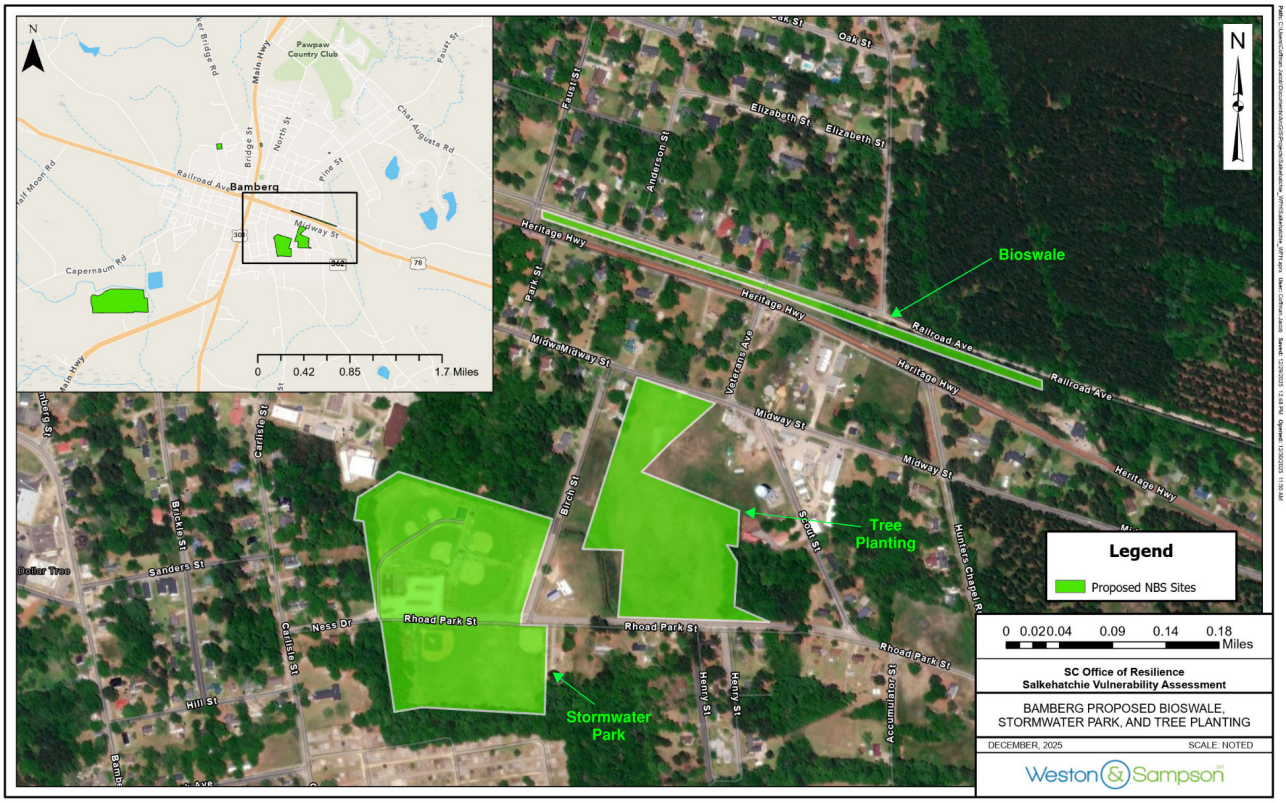
Grass swale, near Faust St.
Photo facing downstream



Ditch starting at the intersection of Pine St. and Railroad Ave.

Strategy Location and Map

2660 Railroad Ave, Bamberg, SC (by Pine Street)



Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Bamberg Tree Planting
Midway Street/Birch Street

Type of Strategy
Tree Planting

Strategy Description
Tree planting is a solution that adds more native trees to appropriate areas to increase shade, improve habitat for wildlife, and improve overall biodiversity.

Narrative
Plans exist for the property to be turned into a park to serve as a large sports complex. The timeline has yet to be determined. Flooding is of low concern in this area; however tree planting can provide benefits especially as additional impervious surfaces are added with park development. Currently, the community uses the area for soccer fields and as a gathering space. Tree plantings can add beautification to the site as well as reduce heat and add overall resiliency. The flood reduction benefit is marked as "medium" if trees are added and maintained and minimal conversion to impervious surfaces takes place. The location of planted trees should be carefully selected in coordination with authorities involved with future plans for the space.

Location Description
Birch Street, Midway Street, and Rhoad Park Street (721 Midway St, Bamberg, SC)

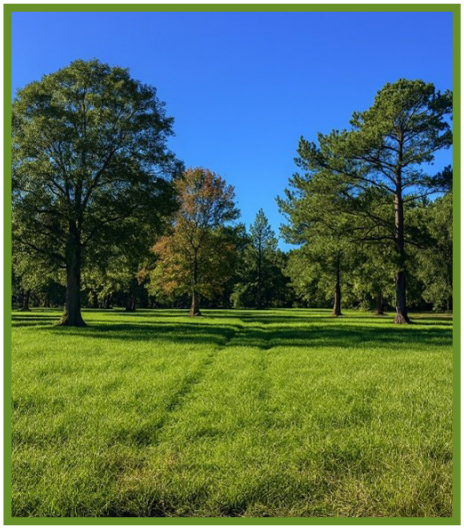
Photos

Existing Conditions

Photo of parcel taken from Midway St.

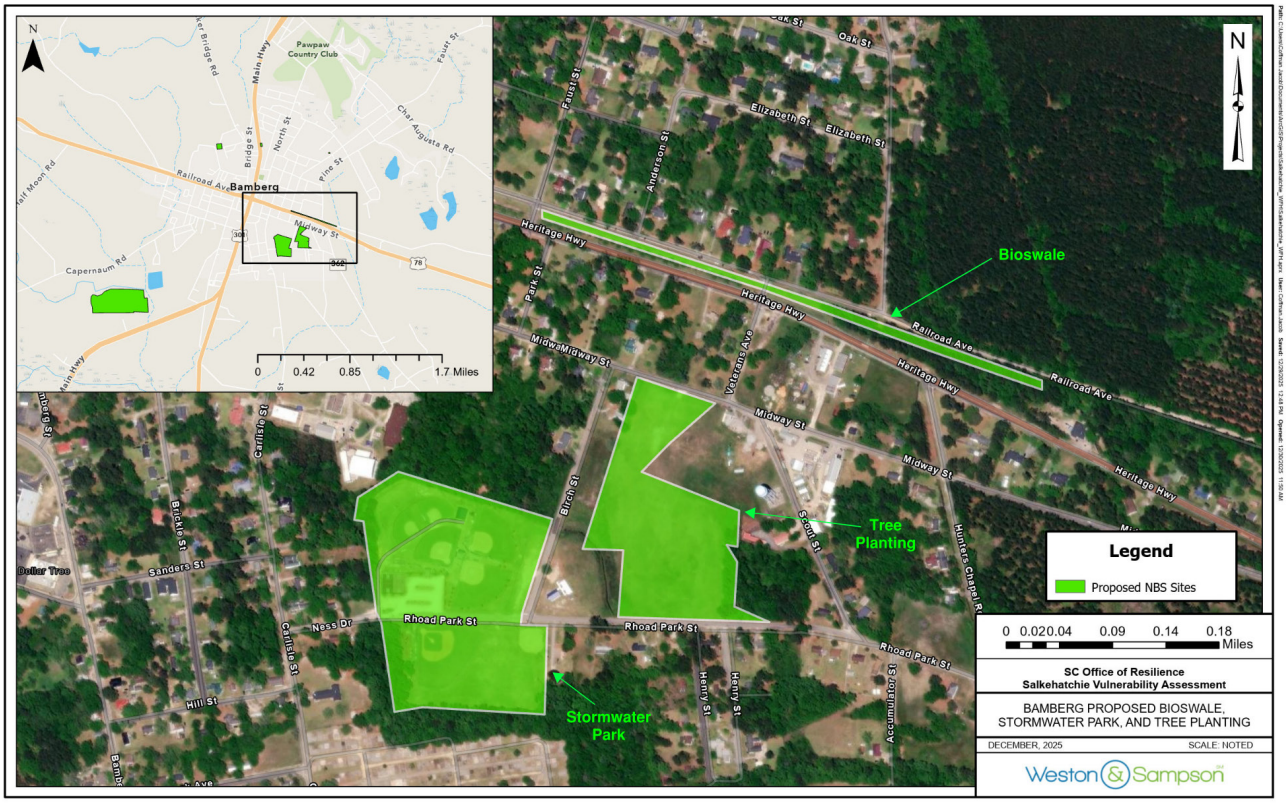
Existing Conditions

Photo of parcel taken from Midway St.

Proposed Improvements

Rendering of planted trees.

Strategy Location and Map

721 Midway St, Bamberg, SC



Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

Supporting Function

- ☐ Flood Mitigation
- ☐ Stormwater Management
- ☐ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☑ Urban Head Reduction
- ☐ Floodplain Management
- ☐ Water Quality Improvement

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Bamberg Stormwater Park
Rhode Park Street/Birch Street

Type of Strategy
Stormwater Park

Strategy Description
A stormwater park is a public park intentionally designed to collect, capture, store, treat, and manage stormwater runoff, then slowly release it, while also serving as recreational open space.

Narrative
Plans exists to retrofit this site into a sports complex; however timing is uncertain and initial designs do not incorporate stormwater. The planned sports complex could offer additional benefits to the community by incorporating nature-based solutions as the complex is developed. The parcel is relatively flat with minimal flooding concerns except for in the northwest corner where there is evidence of erosion and ponding water. Currently, water enters the site through a culvert that crosses under Birch Street, flows though a vegetated ditch in the southwest corner of the property and flows offsite through a culvert under Rhoad Park Street. Stormwater could be directed towards the parcel; a bioretention cell could be added to store and treat stormwater. Additionally, the parking lot offers opportunities to incorporate nature based solutions and underground detention.

Location Description
The site is located at Birch Street and Rhoad Park Street (530 Rhoad Park St, Bamberg, SC). It has a baseball dug out, shed, storage buildings, and batting cages at this location. There are existing woods, shrubs, and grass with a 10% tree canopy along all the edges. There is a presence of standing water.

Photos
Existing Conditions



Ditch facing downstream, towards Birch St.



Park building



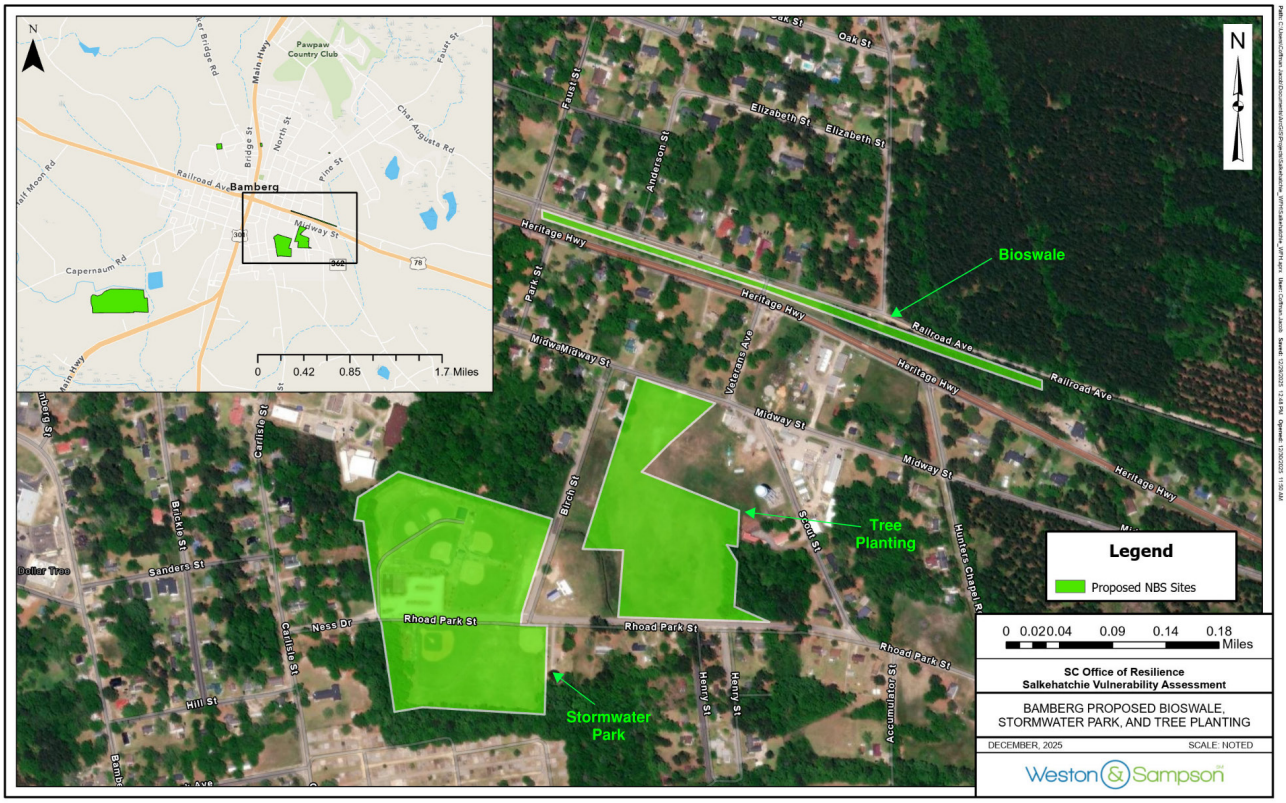
Basketball courts and gravel driveway



Soccer fields

Strategy Location and Map

530 Rhoad Park St, Bamberg, SC



Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☑ Infrastructure/Facility Retrofit

Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Bamberg Rain Garden
Bamberg Adult Learning Center

Type of Strategy
Rain Gardens

Strategy Description
A Rain Garden is a landscaped depression that is designed and located to intercept stormwater runoff from a roof or paved surface. Rain gardens use plants and amended soil media to collect, filter, and infiltrate runoff while also adding native vegetation and habitat enhancements.

Narrative
This section of the property is well drained with no current structures located on it. There is a ditch that runs parallel to Hightower St. and along Faust St. The ditch has minimal erosion and is in fairly good condition. There is an abundance of vegetation on the parcel. The proposed rain garden would benefit this location by assisting with the drainage of stormwater runoff from the adult learning center and pool building. The area around the parcel of land is used by the Town, including the High School and Clemson Extension office.Installing a rain garden at this location is a good opportunity for community engagement and education.

Location Description
Adjacent to Bamberg Adult Learning Center (3748 Faust St, Bamberg, SC). Next to the project boundary is a pool on the same parcel and an adult learning center on a separate parcel. Additional investigation will determine the best location for the rain garden where stormwater runoff can be captured and existing native vegetation is not disturbed.

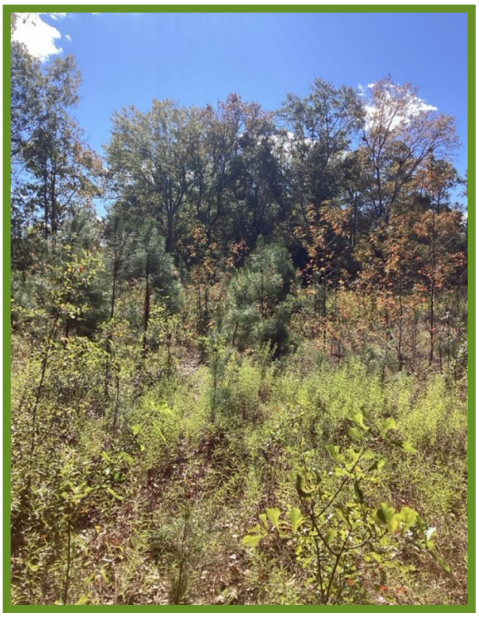
Photos
Existing Conditions



Downstream end of culvert under grassed driveway next to Faust St. Standing water present.



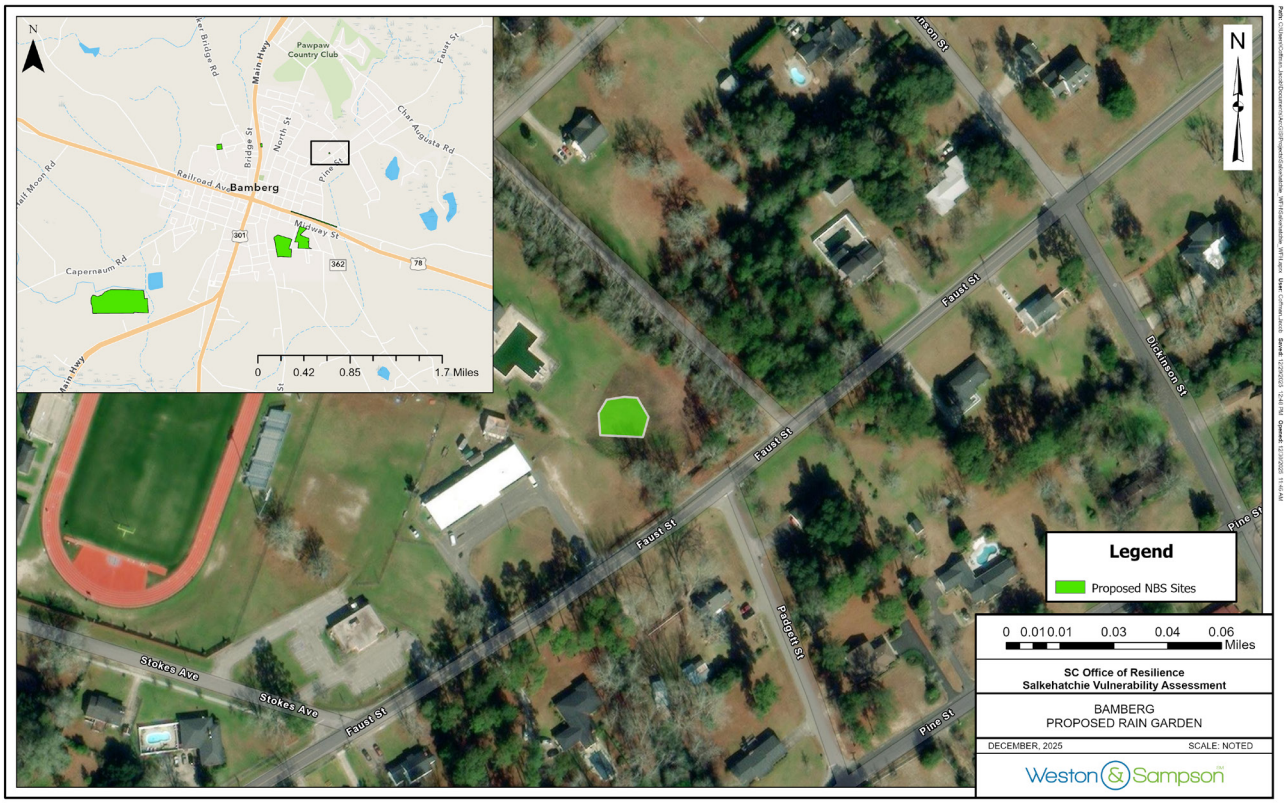
Ditch along Faust St., facing downstream.



Example of existing vegetation within the project boundary.

Strategy Location and Map

3748 Faust St, Bamberg, SC



Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Bamberg Constructed Wetland

Near Water Treatment Plant, North of Main Hwy

Type of Strategy

Constructed Wetland

Strategy Description

A constructed wetland mimics the hydrology and ecological functions of natural wetlands. Constructed wetlands are engineered systems that use natural systems including vegetation, soils, and permanent pools to store and capture stormwater runoff and improve water quality. Stormwater runoff may leave the system slowly and reduce downstream flooding.

Narrative

Flooding is reported in this area. A constructed wetland is a stormwater management practice that can manage water from acres of uplands and would benefit the area by reducing stormwater runoff. This site is currently used by a wastewater treatment plant to apply effluent using sprinklers spaced throughout the property. When the property floods, water flows downstream and can flood the wastewater treatment plant. A constructed wetland sited in this location would help to manage flooding and provide water quality benefits.

Location Description

Wastewater Treatment Plant (891 Capernaum Rd, Bamberg, SC). There are no structures located on this parcel. There is existing vegetation that includes woods and grass and is 20% forested.

Photos

Existing Conditions



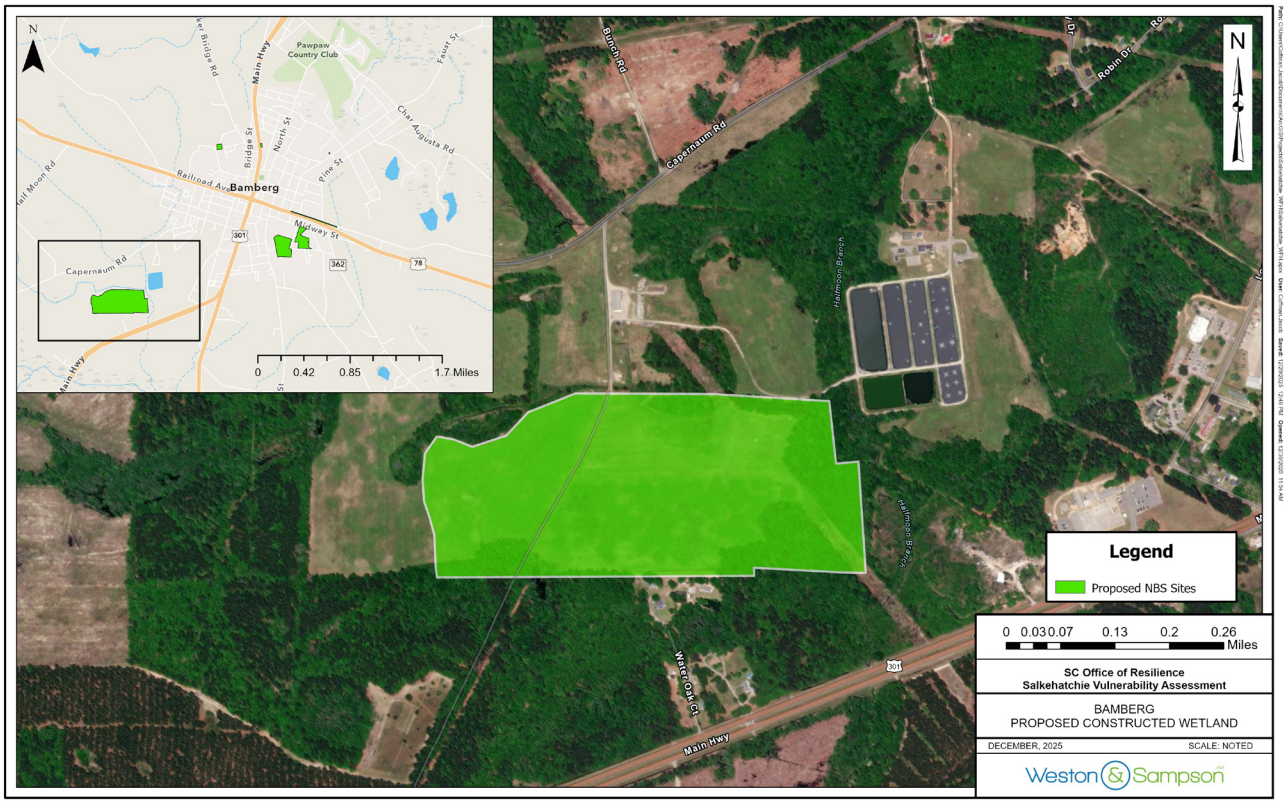
Parcel covered with sprinkler heads



Close up of sprinkler head

Strategy Location and Map

891 Capernaum Rd, Bamberg, SC



Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☑ Infrastructure/Facility Retrofit

Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

Flood Vulnerability of Location

High



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Bamberg Bioretention

Bamberg Police Department

Type of Strategy

Bioretention

Strategy Description

A bioretention cell is a landscaped depression that is designed with engineered soils and vegetation to capture, store, and treat stormwater runoff. Bioretention cells are designed to infiltrate within 72 hours after a storm event to prevent standing water and mosquito breeding.

Narrative

With reported flooding at this location, a bioretention cell would benefit this area and assist with stormwater management especially for the smaller, more frequent storms of less than one inch of rainfall in twenty-four hours. The area is flat and the surrounding parking lot is used by the Bamberg Police Department. There are no drainage structures within the parcel; however, a box top inlet drains to the main highway and is adjacent to the parcel. A bioretention cell or bioswale could be implemented in the parking lot between the sidewalk and the existing parking lot where currently there is a turf grass strip. The bioretention area would capture water flowing off of the parking lot. Permeable pavement and/or a rainwater harvesting system are additional practices for consideration at the Bamberg Police Department.

Location Description

The parking lot is next to the Bamberg Police Department. The location consists of an asphalt parking lot and concrete sidewalks next to the main highway. There is 0% tree canopy.

Photos

Existing Conditions



Grass strip, dividing parking lot

Proposed Improvements



Rendering to show bioswale/bioretention in grass strip

Existing Conditions



Parking lot. Low area in the middle of this section

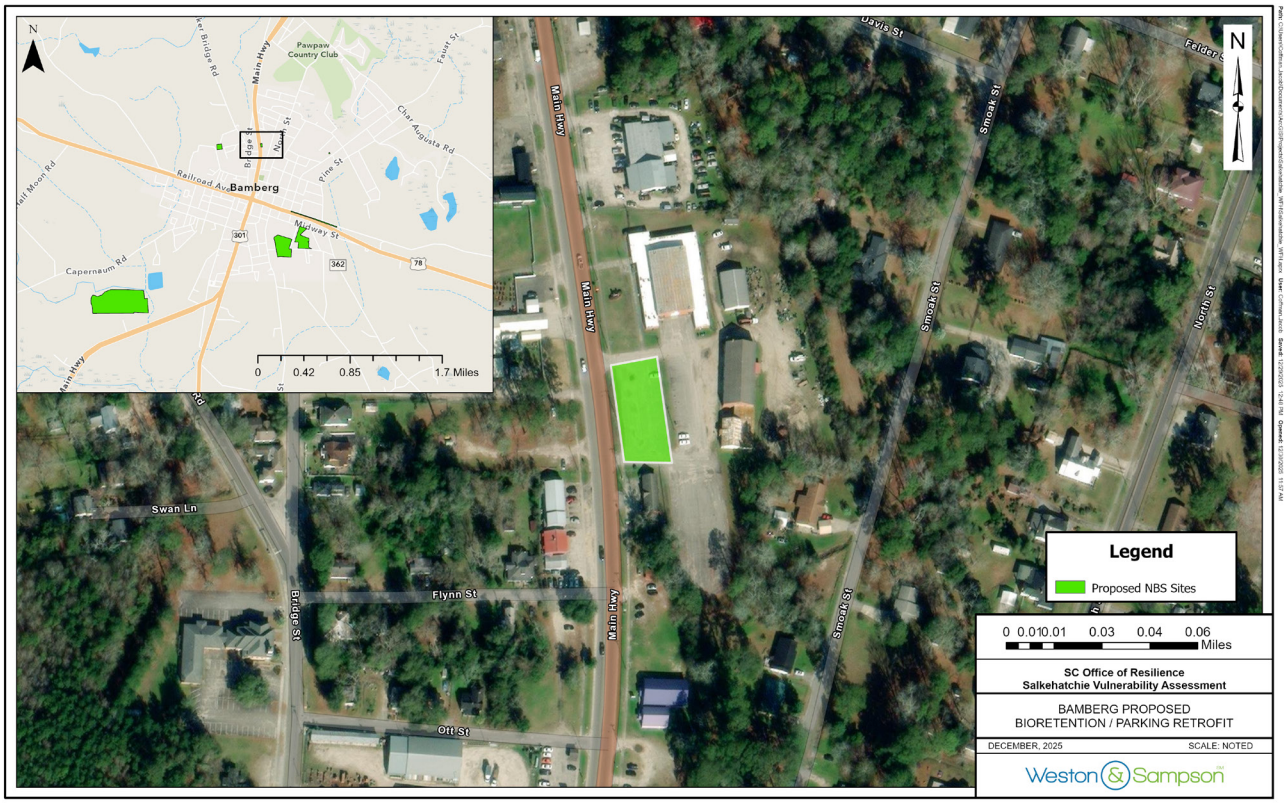
Proposed Improvements



Rendering to show same parking area with permeable pavement

Strategy Location and Map

Bamberg Police Department (2549 Main Hwy, Bamberg, SC)



Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☑ Infrastructure/Facility Retrofit

Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Conservation and Riparian Buffer Mapping
Salkehatchie Watershed-Scale

Type of Strategy
Conservation Mapping

Strategy Description
A Conservation and Riparian Buffer Mapping Plan is a planning level effort that uses spatial analysis and stakeholder input to identify, evaluate, and prioritize undeveloped lands and riparian corridors that are suitable for conservation. The plan relies on existing data sources and mapping tools to understand current land use, ecological value, floodplain function, and connectivity across the watershed. The resulting maps and datasets seek to provide a watershed-wide framework to guide future conservation priorities, support funding decisions, and inform local planning.

Narrative
This strategy proposes the development of a Conservation and Riparian Buffer Mapping Plan to identify and prioritize land conservation opportunities throughout the Salkehatchie Watershed. The project could establish a Salkehatchie Conservation Committee (SCC) and engage local governments, conservation professionals, non-profit organizations, and community members to guide the development of a watershed-wide conservation and riparian buffer mapping plan, ensuring that criteria and resulting maps reflect local knowledge and community-defined values. Using available state and regional data, a series of spatial analyses can be completed to inventory existing open space, evaluate undeveloped and available parcels, and identify priority riparian buffer areas that support flood resilience and watershed health. A complementary funding analysis can evaluate conservation funding programs and realistic funding strategies to support conservation goals identified through the mapping effort. The final Land Protection Vision Plan will synthesize these findings into a 25 year blueprint, providing communities and state partners with clear, data driven guidance to support future conservation planning and investment.

Location Description
Watershed-scale.

Photos

Existing Conditions



A few habitat types of the Salkehatchie Watershed: Bottomland Hardwoods



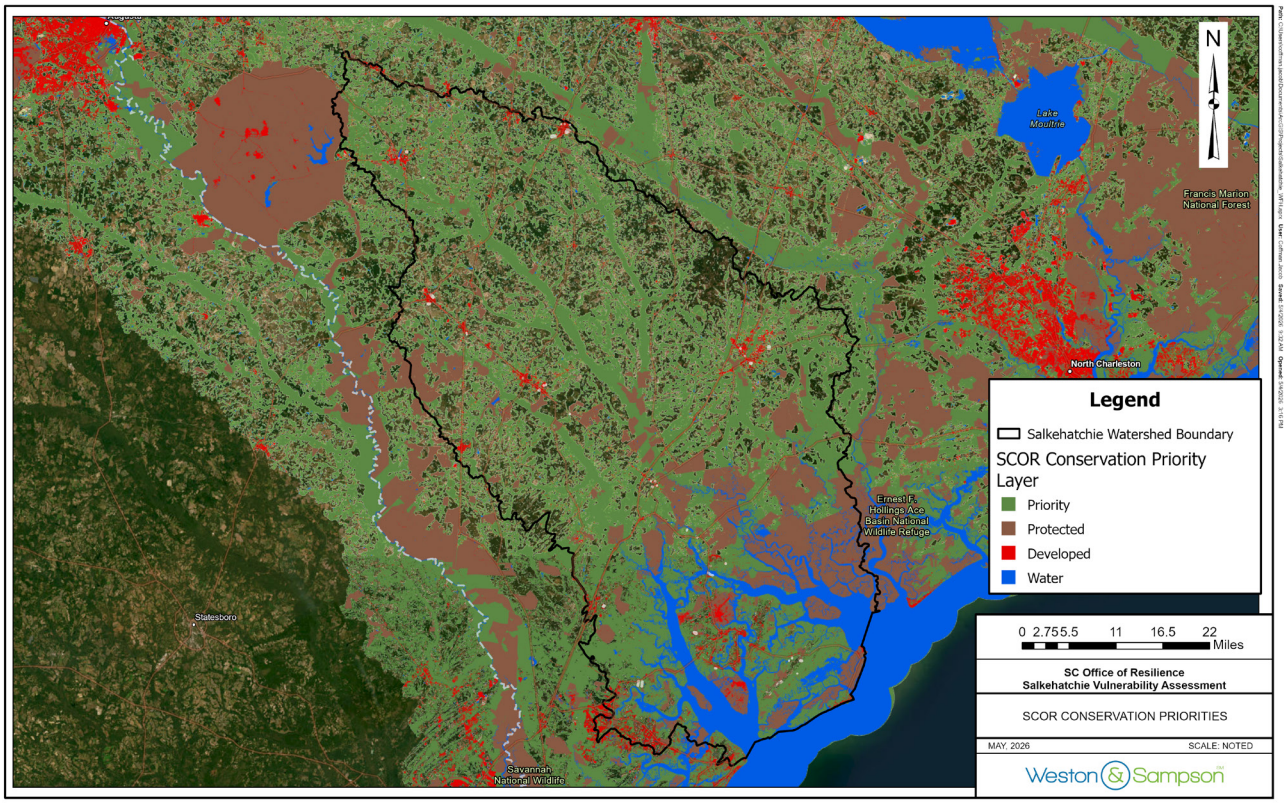
Longleaf Pine Savannas



Tidal Wetlands

Strategy Location and Map

Salkehatchie Watershed



Type of Solution

- ☐ Nature-based Solutions
- ☑ Plans, Policies, and Ordinances
- ☐ Infrastructure/Facility Retrofit

Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☑ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☑ Floodplain Management
- ☑ Water Quality Improvement
- ☑ Urban Heat Reduction

Flood Vulnerability of Location

High



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Hydrologic & Hydraulic (H&H) Study
Salkehatchie Watershed-Scale

Type of Strategy
H&H Study

Strategy Description
A watershed-wide stormwater model, also referred to as a hydrologic and hydraulic (H&H) study, is a comprehensive analysis of how rainfall, runoff, and floodwaters move through an entire watershed system. This type of study evaluates surface and sub-surface drainage, streams, rivers, bridges, culverts, and other infrastructure to understand how the watershed currently functions and how it may respond to future conditions such as increased development or more intense rainfall. The resulting model serves as a planning and decision-making tool to identify flood risks, prioritize infrastructure improvements, support future detailed H&H analyses, and coordinate stormwater management across multiple jurisdictions.

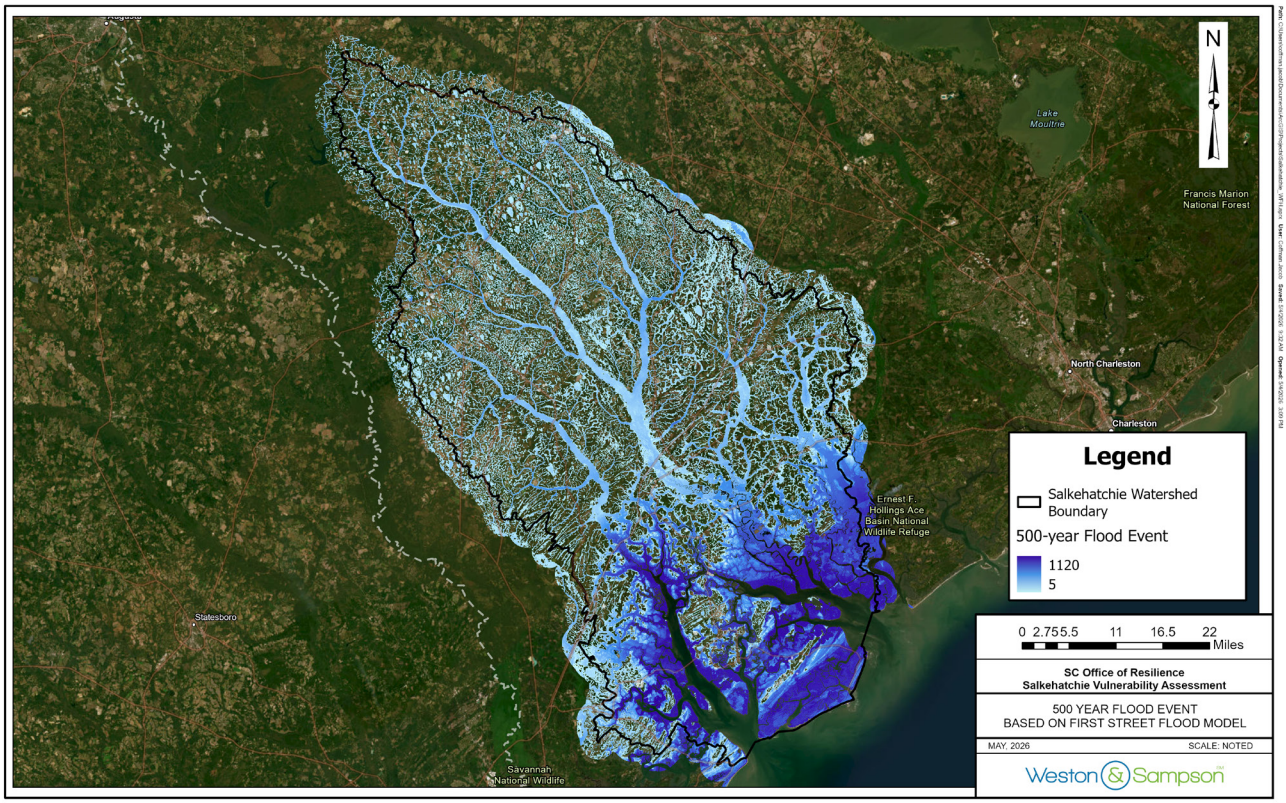
Narrative
This strategy proposes a 1D watershed-wide stormwater model for the Salkehatchie Watershed to improve understanding of hydrologic and hydraulic conditions at a watershed scale. The study will develop a comprehensive watershed model that evaluates current and future flood risks and identifies vulnerable infrastructure such as roadways, bridges, culverts, and evacuation routes. The initial model can be calibrated using existing FEMA H&H models and refined through stakeholder engagement and information gathered during the Salkehatchie Watershed Vulnerability Assessment.

The model is intended to serve as a flexible, long-term planning tool that can be updated over time as communities inventory drainage systems or complete their own stormwater or H&H studies. As local investments are made, higher-resolution 2D modeling can be incorporated in areas where additional detail is needed, allowing communities to evaluate localized flooding while understanding watershed-scale impacts. Ultimately, this effort will support coordinated decision-making and help prioritize flood mitigation and infrastructure improvements at the state, county, and local levels throughout the watershed.

Location Description
Watershed-scale.

Strategy Location and Map

Salkehatchie Watershed



Type of Solution

- ☐ Nature-based Solutions
- ☑ Plans, Policies, and Ordinances
- ☑ Infrastructure/Facility Retrofit

Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☐ Biodiversity Enhancement
- ☑ Floodplain Management
- ☐ Water Quality Improvement
- ☐ Urban Heat Reduction

Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Flood Vulnerability of Location

High



Priority Rating

Low | Medium | High

7. Next Steps

7a. Grant Opportunities & Funding

The vulnerability analysis and community engagement process for the Communities of Bamberg County identified several critical resilience challenges. To transition these identified strategies into projects, the following grant funding opportunities could be considered.

Water Quality and Wastewater Infrastructure Funding

SCDES Section 319(h) Nonpoint Source Grants:

This is the primary funding source for addressing the poor water quality and widespread septic tank issues identified in the county. Section 319 funds can be utilized to implement septic tank repair and replacement programs or to install nature-based solutions that filter runoff before it enters Half Moon Creek or the Salkehatchie River. (Note: Accessing these construction funds requires an EPA-approved 9-Element Watershed Based Plan).

SC Rural Infrastructure Authority (RIA) Grants:

RIA provides critical funding for aging infrastructure. The county and municipalities should target RIA's Basic Infrastructure grants to replace deteriorating water lines and stormwater infrastructure, and explore Regional Planning Grants to study the feasibility of expanding the municipal sewer system to neighborhoods currently reliant on failing septic tanks.

USDA SEARCH Grant (Special Evaluation Assistance for Rural Communities and Households):

Because Bamberg County includes rural, economically vulnerable areas, this USDA grant can fully fund (100% grant, no match) the preliminary engineering and environmental reports needed to plan decentralized wastewater or sewer expansion projects.

Flood Mitigation and Nature-Based Solutions (NBS)

National Fish and Wildlife Foundation (NFWF) – National Coastal Resilience Fund & Southeast Aquatics Fund:

NFWF provides substantial funding for nature-based solutions (NBS) that reduce flood risk while enhancing local habitats. These funds are ideal for implementing green infrastructure to alleviate chronic stormwater backups in roadside ditch networks, or for creating riparian buffers along Lemon Creek and Colston Branch to absorb river overflow.

USDA NRCS Watershed and Flood Prevention Operations (PL-566):

Given the reported impacts to agriculture and forestry from extreme weather, the county is a highly competitive candidate for this USDA program. It covers 100% of the planning costs for large-scale watershed flood mitigation projects, making it an optimal mechanism for addressing systemic drainage issues across the Salkehatchie basin.

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Resilience Hubs are facilities designed to support residents of a community before, during, and after natural disasters and emergencies.

Hazard Mitigation and Emergency Preparedness

SC Office of Resilience (SCOR) / FEMA Safeguarding Tomorrow Revolving Loan Fund:

As the County looks to establish Resilience Hubs, these state-administered resilience funds can be leveraged to outfit community centers with backup power, emergency supplies, and hardened infrastructure to serve residents during tornadoes or extreme heat.

7b. Resilience Hubs

Resilience Hubs are facilities designed to support residents of a community before, during, and after natural disasters and emergenciies. These facilities provide back-up power, air conditioning, and shelter, but also give the opportunity for community networks to **collaborate and bolster local resilience.** Resilience Hubs can be established community gathering areas such as schools, libraries, or community centers. These facilities can also be scalable, starting as a community center that evolves to include elements such as back-up solar power, dry-floodproofing, overnight shelter, and staff trained in emergency response. Ideally, the locations of Resilience Hubs provide easy access for residents in the facility's service area during an event and are resilient to natural disasters (i.e. elevated, outside of the 100-Year flood plain, flood-proofed, etc.).

Core Functions

Resilience hubs have several core functions before, during, and after a natural disaster. **These functions include:**

- Information & Communications
- Community Services
- Emergency Support
- Recovery, and Coordination

Prior to a natural disaster, the Resilience Hub can function as a **reliable source of information** on the event, help residents find resources for emergency alert systems and recovery resources, provide internet access to residents to communicate with family members and, provide refuge

prior to evacuation before the natural disaster occurs. Additionally, the Resilience Hub provides **community services** throughout the year including workforce training, workshops, and space for gathering and organizing community groups. This provides a deeper connection within the community and can help residents find information on disaster preparedness and climate awareness.

During an event, the Resilience Hub will provide **emergency support for residents.** This

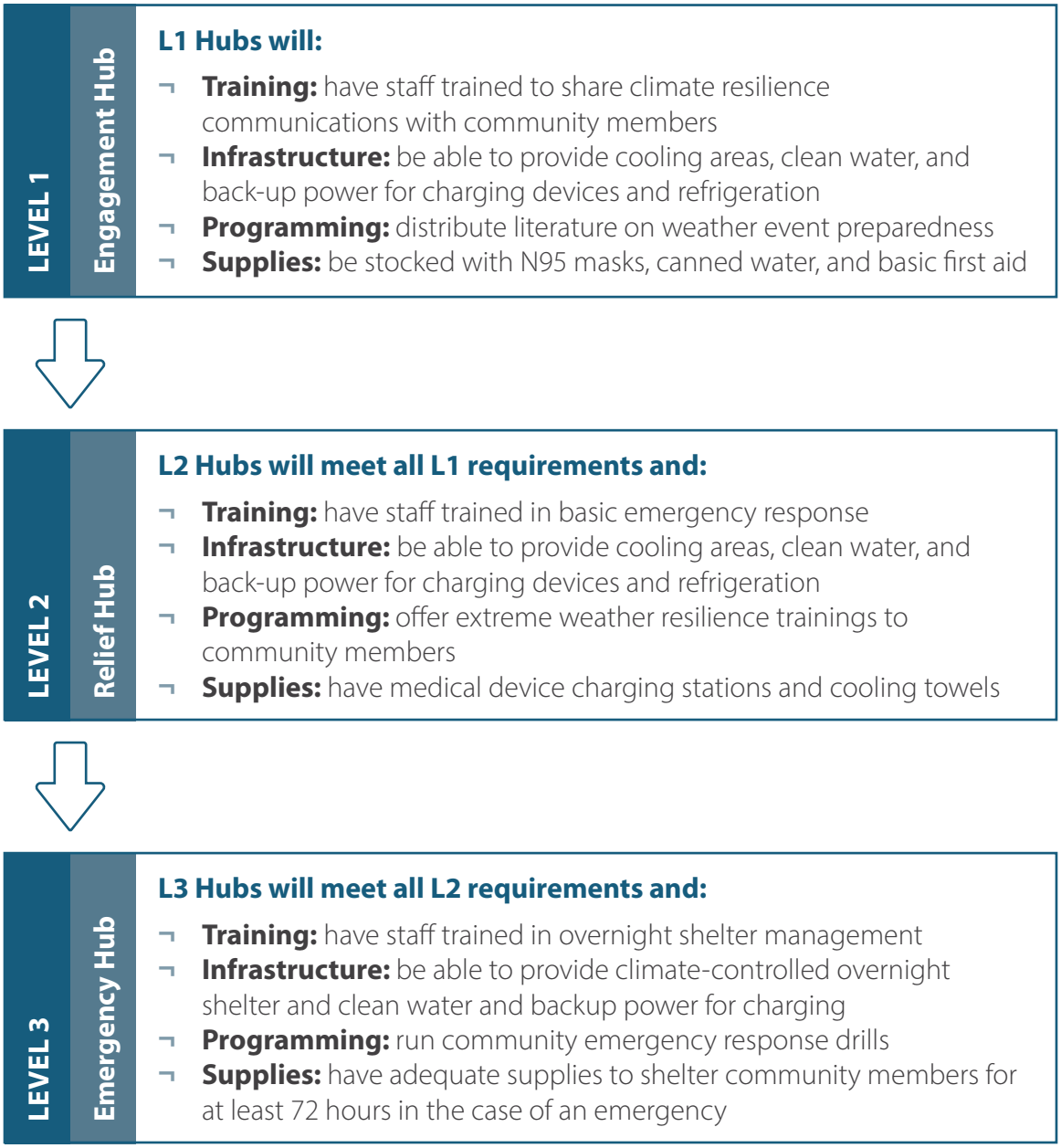


Figure 14: Diagram depicting the three levels of the resilience hub model (Gonzaga University Institute of Climate, Water, and the Environment, 2025). Graphic inspired by the Spokane Community Resilience Hub Network and the Institute for Climate, Water, and the Environment



includes safe shelter during extreme weather conditions like hurricanes, heat waves, or flooding. The facility should have back-up power to support charging devices or powering medical equipment. Finally, the facility provides food, water, first-aid, and other critical supplies during natural disasters for those affected.

In support of recovery efforts, the Resilience Hub can function as a **central point of distribution for supplies post-disaster.** These facilities can also help connect residents to resources for insurance, housing, and financial assistance in partnership with local, state, and federal agencies.

The Urban Sustainability Directors Network (USDN, 2019) provides further guidance on developing Resilience Hubs, which informs the development of these facilities. This is referred to as a living document that will be updated as new information becomes available. Additional resources such as the Spokane Community Resilience Hub Network and Gonzaga University Institute for Climate, Water, and Environment provide further information on Resilience Hubs and the different levels of Resilience Hubs based on the services they provide (Figure 14).

Implementation

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Resilience Hubs are practical solutions that turn existing community gathering locations into trusted sources of information, programs and training before natural disasters, lifelines during natural disasters, and support networks post-disaster. By identifying existing community centers, libraries, places of worship, or community gathering locations, communities in the Salkehatchie watershed can begin to identify locations to establish their own Resilience Hubs.

Starting with basic services, the **hubs can be retrofitted to increase their resilience to natural disasters and provide additional services over time** as new sources of funding become available and the community identifies key services for their respective Resilience Hub. Over time, these various Community Resilience Hubs may form a network to share resources, develop partnerships, and collaborate with neighboring communities with a shared goal of increasing resilience to natural disasters.

As one of the recommendations for the communities within the Salkehatchie Watershed, establishing Resilience Hubs comes from a few important considerations for implementation. One key aspect of identifying appropriate locations for Resilience Hubs is a **Vulnerability Assessment within the community** to identify areas with the most extreme exposure to climate hazards such as extreme heat, flooding, and high wind. At the same time, social vulnerability and adaptive capacity of neighborhoods should also be considered in siting these facilities to provide support where it is needed. With the information generated by the Salkehatchie SCRCCCP Watershed Plan, the parcel-level and community-level vulnerability assessment already conducted provides ample information to begin working with communities to identify locations for Resilience Hubs

After identifying potential locations within the communities, it will be critical to **establish a project team** to engage community members in the design and implementation of these facilities. This will help to integrate the Resilience Hub in local emergency management plans and to establish partnerships with local government, non-profit organizations, and utility providers.

7c. Participation in Salkehatchie Working Group

Community Action Team members and stakeholders from state, regional and local entities with knowledge and expertise related to flooding, natural hazard mitigation, planning, and resilience were invited to be part of a **Watershed Advisory Group** to give input on watershed scale strategies and review the Salkehatchie Watershed Plan. A virtual meeting was held on February 12, 2026 and a survey was sent out to gather input.

Group members will determine goals and future meeting frequency. This group may decide to form subcommittees for the upper half of the Watershed and the lower half of the Watershed. **There are several working groups** currently working on resilience, stormwater policy, and flood reduction strategies in Beaufort County and the Lowcountry Council of Governments (COG) region including the Southern Lowcountry Regional Board (SoLoCo) and the Southern Lowcountry Resilience Collaborative (SLRC).









7d. Conclusion

The creation of this Community Portfolio represents a comprehensive, community-driven effort developed under the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP). The SCRCCCP was designed to support communities across the Salkehatchie River Basin in developing locally informed and prioritized strategies and projects that are anticipated to reduce flooding impacts and improve resilience to natural hazards and environmental change. To accomplish this, the Project Team conducted multi-scale vulnerability assessments at the watershed, community, and parcel levels to clearly identify specific vulnerabilities and risks from natural hazards facing the community. The vulnerability analysis was also informed by robust community engagement through Community Action Team meetings, public surveys, field site visits and consultant assessments ensuring that each proposed project was supported by the community it is meant to serve. By actively listening to residents and thoroughly documenting their concerns about infrastructure, natural hazards, and flood-prone areas, the Project Team has produced **results that are both technically sound and relevant locally.**

The result of this effort is a practical roadmap for action. Detailed individual opportunity sheets outline a suite of targeted, flood-reduction and resilience projects that reflect community-preferred strategies and are ready for funding and implementation. Rough order of-magnitude cost estimates for the highest-ranked projects provide the specific information needed to pursue competitive grant opportunities and inform municipal capital improvement planning.

This document is one of nine Community Portfolios that have been combined into a comprehensive, basin-wide Salkehatchie Watershed Resilience Plan. By maintaining the momentum established from this planning effort and by continuing to strengthen collaboration and partnerships within the watershed, the community can continue to identify pathways towards implementation, ensuring a vibrant, safe, and resilient future for generations to come.

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This community-driven process would not have been possible without the **dedication, time, and deep local expertise of the Community Action Team members** as their insights and consistent participation were integral at every step of this project. While this portfolio outlines immediate next steps, building resilience is a continuous and adaptive process.



Appendix A

Survey Results

This Salkehatchie Community Survey was distributed in paper form and virtually through flyers and email to communities throughout the Salkehatchie Watershed with the help of Community Action Team members and local libraries. 166 responses were returned to SCOR.

Salkehatchie Community Survey

Thank you for taking time to answer the 10 questions below. The South Carolina Office of Resilience and S.C. Sea Grant Consortium are seeking input from government officials and community members in the Salkehatchie Watershed about their experiences with flooding and other hazards to learn more about the risks, vulnerabilities, and needs of the communities in the region to be able to assist with connection to resources to build more resilient communities. The Salkehatchie River Basin includes all or portions of 7 counties: Allendale, Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper. We appreciate your input.

Please email **Salkehatchie@scor.sc.gov** with any questions.

Disclaimer: This survey will be used for general analytical purposes to identify and assess potential risks from future disasters in your area and to implement flood mitigation and resilience measures across South Carolina's watershed basins. Your responses are voluntary and will be identified by area only and shall not be identified by individual; the responses will be compiled together and analyzed as a whole.

When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself.

Community Questions

1. Which Community do you live/work in?

2. What are your roles in the community? (Citizen, Farmer, Government Official, Community Organization Leader, Business Owner, Retiree, Volunteer)?

3. Which natural hazards are of greatest concern to your community & how often? (frequently, occasionally, rarely, never)? Examples: flood, wind, drought, heat, severe thunderstorm, tropical storm/hurricane impacts (other than flooding or flooding as a result of), tornados, wildfire, winter weather, earthquake, other:

	Frequently	Occasionally	Rarely	Never
Flooding	◯	◯	◯	◯
Wind	◯	◯	◯	◯
Drought	◯	◯	◯	◯
Heat	◯	◯	◯	◯
Thunderstorm	◯	◯	◯	◯
Hurricane/Tropical Storm	◯	◯	◯	◯
Tornado	◯	◯	◯	◯
Wildfire	◯	◯	◯	◯
Winter Weather	◯	◯	◯	◯
Earthquake	◯	◯	◯	◯
Other	◯	◯	◯	◯

4. Which types of flooding do you experience in your community? Check all that occur:

	Frequently	Occasionally	Rarely	Never
Flash: intense/long rain events	◯	◯	◯	◯
Stormwater: lack of drainage	◯	◯	◯	◯
Coastal: Storm Surge	◯	◯	◯	◯
Coastal: High Tide	◯	◯	◯	◯
Riverine: river/pond overflow	◯	◯	◯	◯
Hurricane/ Tropical Storm	◯	◯	◯	◯
Dam Breach: failure	◯	◯	◯	◯
Compound: multiple factors	◯	◯	◯	◯
Other	◯	◯	◯	◯

5. Where does flooding occur in your community?

6. What is impacted and/or damaged by flooding in your community?

- [ ] Homes
- [ ] Agriculture
- [ ] Businesses
- [ ] Roads
- [ ] Emergency/Evacuation Routes
- [ ] Hospitals
- [ ] Vehicles
- [ ] Equipment
- [ ] Solid Waste Sites
- [ ] Industrial Sites
- [ ] Cultural Sites
- [ ] Habitat
- [ ] Septic Systems
- [ ] Other

7. Are there other concerns or long-term environmental changes/issues that your community has or is experiencing? Examples: Water quality, higher temperatures, land use change, population change, habitat loss, tree health, invasive species, mosquitos, etc.

8. What are your community's top priorities and biggest needs related to natural hazards and building resilience?

9. What kind of assistance would be most helpful to your community?

10. Is there anything else that you would like to share related to resilience, flooding, and other hazards in your community?

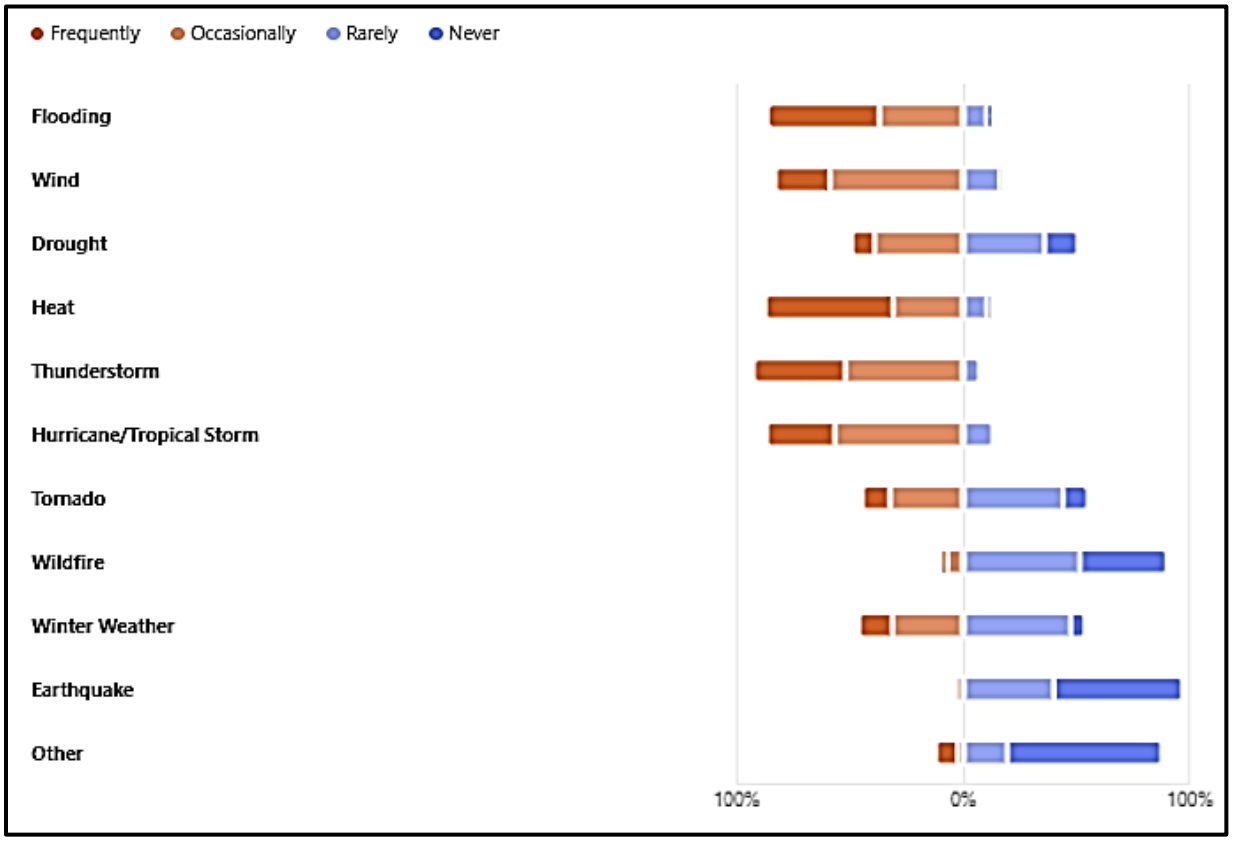
11. If you would like someone with the South Carolina Office of Resilience's Watershed-Based Planning Program to reach out to you to discuss assistance with resilience planning, community needs, identifying funding opportunities, and more, please provide your email here:

You may also complete this optional Statewide flooding survey to share details about specific locations of flooding your community. View the dashboard to see a live report of survey responses collected so far.

SCOR Flooding Experience Survey
https://survey123.arcgis.com/share/58d1be8df8004aaaae917395d2a9a2a3

SCOR Public Flooding Survey Response Dashboard
https://www.arcgis.com/apps/dashboards/6972b4799d7542fbb755adf9a9330cd4#

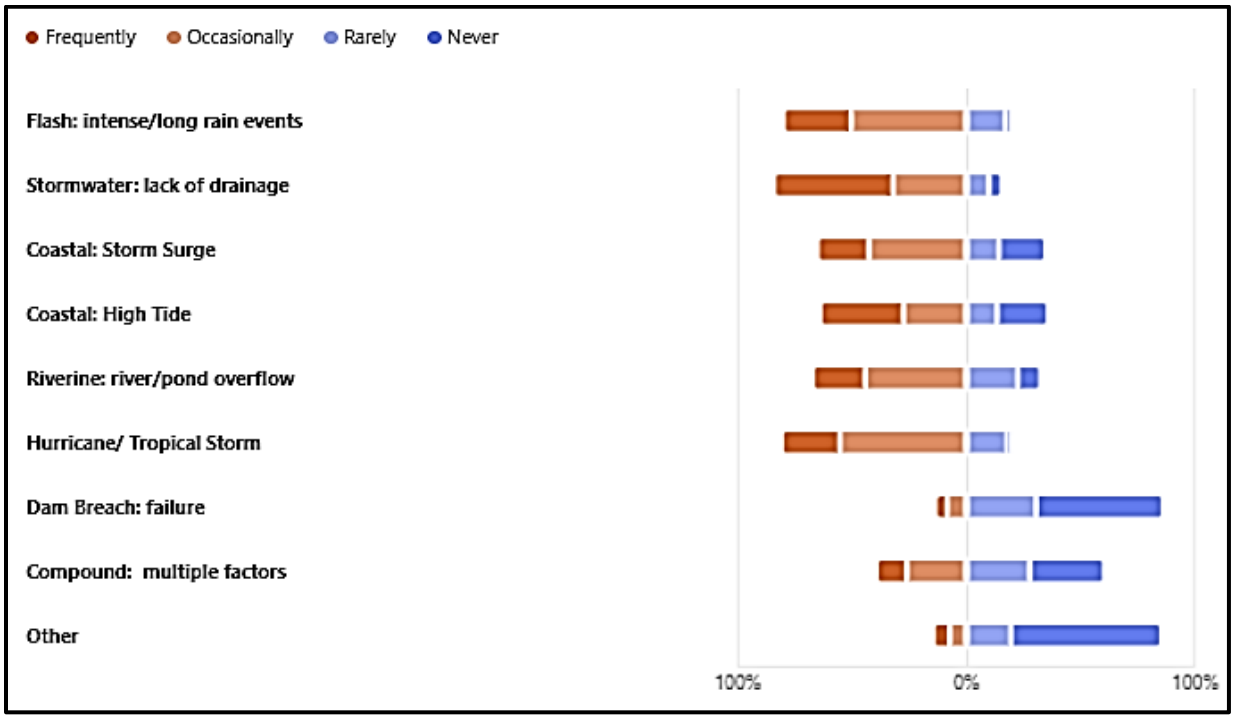
The natural hazards reported by respondents to be of greatest concern were: Heat, Flooding, Thunderstorm, Hurricane, and Wind



Heat		Flooding		Wind	
Frequently	56.6%	Frequently	49.7%	Frequently	24.3%
Occasionally	30.9%	Occasionally	36.9%	Occasionally	58.8%
Rarely	10.3%	Rarely	10.2%	Rarely	16.2%
Never	2.2%	Never	3.2%	Never	0.7%

Thunderstorm		Hurricane/Tropical Storm	
Frequently	40.7%	Frequently	30.3%
Occasionally	52%	Occasionally	56.6%
Rarely	7.3%	Rarely	13.2%

Flooding from "Stormwater: lack of drainage" was reported to be the most frequent type of flooding followed by "Coastal: High Tide", "Flash: intense/long rain events", Hurricane/Tropical Storm", and "Coastal: Storm Surge".



Stormwater: lack of drainage	
Frequently	52.3%
Occasionally	32%
Rarely	9.8%
Never	5.9%

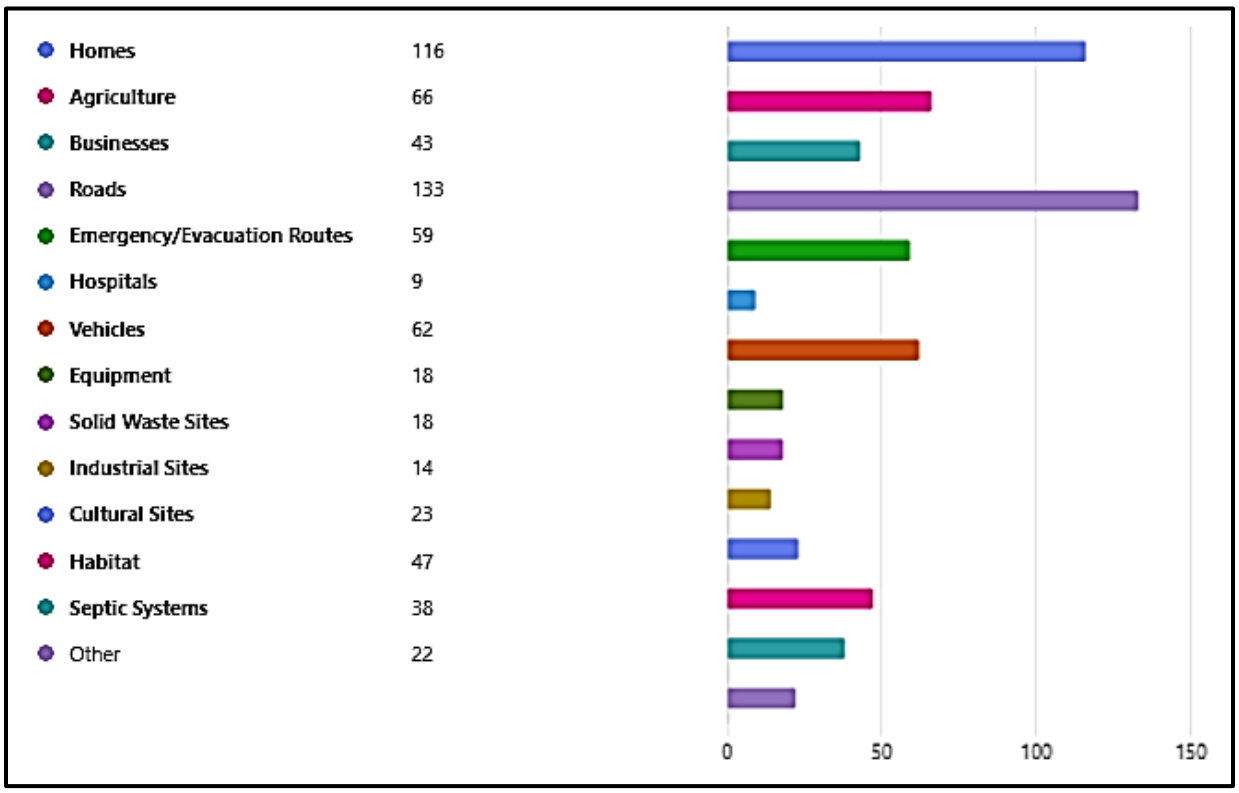
Coastal: High Tide	
Frequently	36.6%
Occasionally	27.5%
Rarely	13.4%
Never	22.5%

Flash: intense rain events	
Frequently	29.8%
Occasionally	50.4%
Rarely	17%
Never	2.8%

Hurricane/Tropical Storm	
Frequently	25.7%
Occasionally	55.3%
Rarely	17.8%
Never	1.3%

Coastal: Storm Surge	
Frequently	22.7%
Occasionally	42.6%
Rarely	14.2%
Never	20.6%

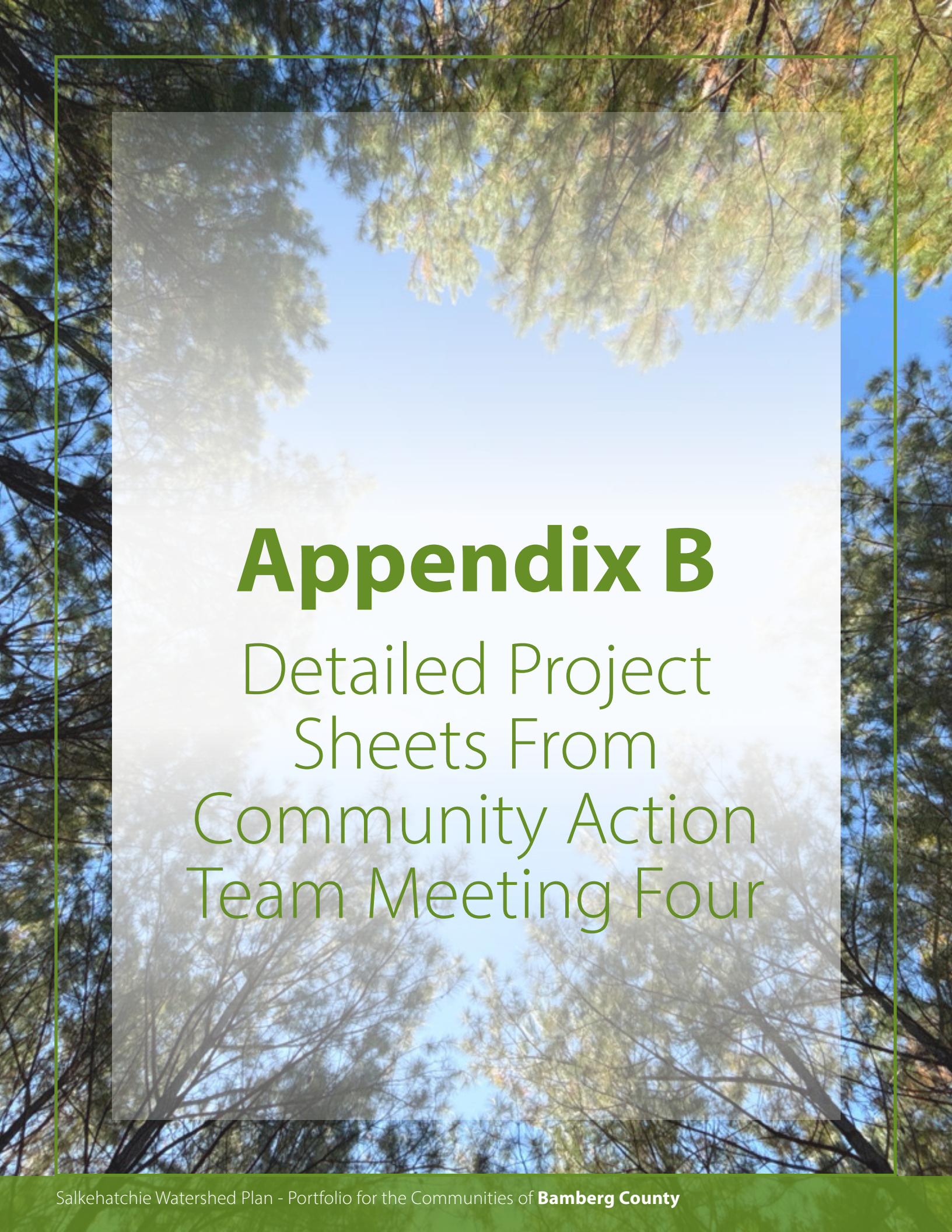
Survey respondents reported many impacts from flooding. Roads, Homes, Agriculture, Vehicles, and Evacuation routes topped the list.



Other concerns and long-term environmental changes that were shared include:

- **Land use change**
- **Rapid development**
- **Habitat loss**
- **Tree health**
- **Higher temperatures**
- **Water quality**
- **High intensity rain events**
- **Sea level rise**
- **Pollution**
- **Mosquitos**

Assistance community members responded would be helpful includes funding, infrastructure repair, better stormwater management, flood mitigation, ditch cleaning/maintenance, drainage, septic repair and replacement, road and bridge repair, and replacement of old pipes.



Appendix B

Detailed Project Sheets From Community Action Team Meeting Four

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Bioretention / Parking Retrofit

Address: Bamberg Police Department

Parcel ownership: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): No structures within the project boundary but the parking lot is next to the Bamberg police department/civic center.

Description of paved surfaces on site: Asphalt parking lot; concrete sidewalk next to Main Hwy.

Existing vegetation (all that apply): ☐Woods ☐Shrubs ☐Dirt ☒Grass

Estimated tree canopy cover: 0%

Presence of standing water: ☐ Yes ☒No

Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): There are no drainage structures within the immediate project boundary. Next to the project boundary is an inaccessible box top inlet which drains to a combo inlet on Main Hwy. The inlet connects to a combo inlet on the other side of Main Hwy and discharges to a ditch that runs parallel to the road.

Comments/Observations: The project area is mostly flat, with a small low spot in the back section of the parking lot where water tends to collect. There is a good opportunity to add a bioswale in the existing grass strip within the parking lot. To address the low area behind it, a trench drain could be added, or the parking lot could be regraded so water flows properly. The bioswale could drain to the existing box-top inlet located near the project boundary. Another option is to rebuild the parking lot using permeable pavement, which would let rain soak through instead of running off. There is also room to add another

bioretention area or swale in the grass strip between the sidewalk and the parking lot. The final placement of these features will depend on how water currently flows across the site.

Photos (structures, paved surfaces, standing water, vegetation, drainage):





1. Grass strip, dividing parking lot existing (left), proposed bioswale/rain garden (right).





3. Parking lot. Low area in the middle of this section existing (left), proposed permeable pavers (right).

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Bioswale

Address: Railroad Ave by Pine St.

Parcel ownership: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): No structures within the project boundary, however utility poles are located close to the ditch

Description of paved surfaces on site: Asphalt road for Railroad Ave and Veterans Ave. Railroad Ave turns into a dirt road after the intersection of Railroad Ave/Pine St.

Existing vegetation (all that apply): ☐Woods ☒Shrubs ☐Dirt ☒Grass

Estimated tree canopy cover: 0%

Presence of standing water: ☐ Yes ☒No

Drainage on site (all that apply): ☒Grassed Ditches ☒ Stormwater Pipes/Culverts

☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): There is an existing grass swale along Railroad Ave. In some areas the ditch appears relatively flat, likely causing drainage problems. The ditch enters a 15" RCP culvert under Veterans Ave. The culvert is in decent condition upstream, while the downstream end is half buried. The downstream end of culvert does not drain to a well-defined channel and likely causes flooding issues/ponding downstream. A defined ditch re-starts after the intersection of Pine St. and Railroad Ave on either side of the road, and flows southeast until outfalls to a larger channel that runs perpendicular between Railroad Ave and Heritage Hwy.

Comments/Observations: The culvert under Veterans Avenue does not drain into a well-defined channel, so the water has nowhere reliable to go during storms. A large berm between Heritage Highway and Railroad Avenue also blocks water from flowing back toward Heritage Highway, where it could otherwise move downhill. The roadside ditch along Railroad Avenue starts up again after the Railroad Avenue/Pine Street intersection.

This spot would be a good place to install a bioswale. The channel downstream of the culvert could also be regraded to improve flow and increase how much water it can safely carry.

Photos (structures, paved surfaces, standing water, vegetation, drainage):



1. Grass swale, near Faust St. Photo facing upstream. 2. Grass swale, near Faust St. Photo facing downstream.



3. Ditch starting at the intersection of Pine St. and Railroad Ave. 4. Ditch, perpendicular to Railroad Ave.

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Carolina Bay Restoration Analysis

Address: Community-wide

Parcel ownership: ☒Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): NA

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): Variable

Description of paved surfaces on site: Variable.

Existing vegetation (all that apply): ☒Woods ☐Streams ☒Wetlands ☒Grass

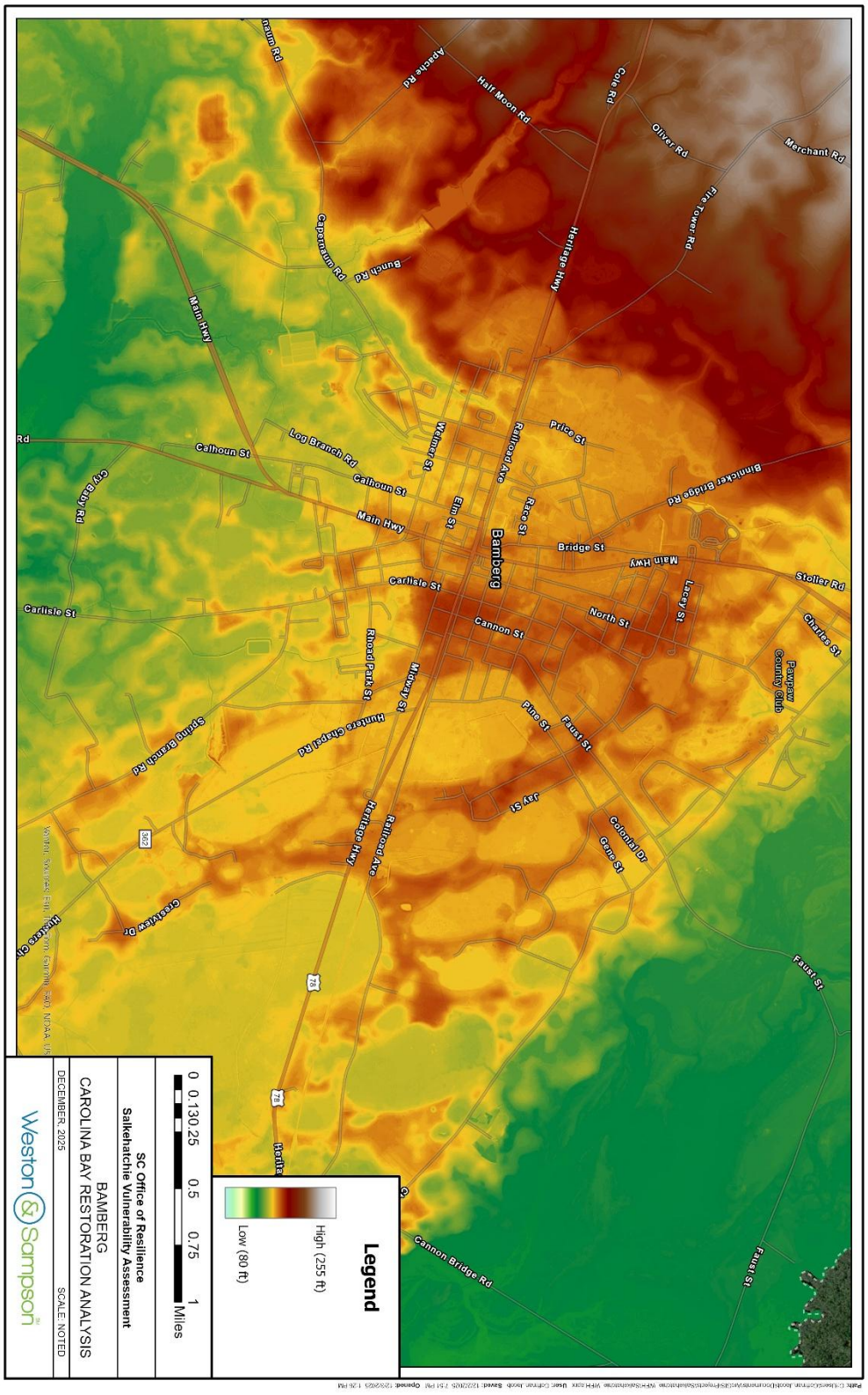
Estimated tree canopy cover: Variable

Presence of standing water: ☒ Yes ☐No

Drainage on site (all that apply): ☒Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): Variable

Comments/Observations: Carolina Bays are elliptical depressions that can collect rainwater and support plant communities associated with wetlands. Many Carolina bays have been modified by human activity such as the conversion to agricultural uses, commercial and residential development, as well as ponds. Carolina Bays were approved as a protection priority of the South Carolina Heritage Trust Program in 1983. (dnr.sc.gov/geology/Carolina-bays). A Carolina Bay management plan could help identify Carolina Bays for protection and/or restoration so that the Carolina Bay can benefit the community from a flood protection standpoint and support biodiversity.



Source: NOAA Digital Coast LIDAR Data

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Culvert Assessment

Address: Harper St/McMillan St

Parcel ownership: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): None

Description of paved surfaces on site: McMillan St is an asphalt road and Harper St is a dirt road.

Existing vegetation (all that apply): ☒Woods ☐Shrubs ☒Dirt ☒Grass

Estimated tree canopy cover: 70%

Presence of standing water: ☐ Yes ☒No

Drainage on site (all that apply): ☒Grassed Ditches ☒ Stormwater Pipes/Culverts ☐Stormwater Ponds ☒Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition):): Water enters an 18" CPP under Harper Street, flows southeast through the forested area and into an 18" RCP pipe. The pipe enters a grate inlet along McMillan St, crosses under McMillan St, and outfalls to a channel. Two roadside ditches along Harper St convey water to the culvert underneath Harper St. This 18" CPP is crushed on downstream end, which may impact flow. The downstream end of the pipe under McMillan St is clogged with sediment/debris. The channel within the project area appears to be in good condition with minor undercutting of the banks but no major erosion.

Comments/Observations: The land within the project area is mostly flat with very little slope, which likely contributes to water pooling after storms. The channel doesn't show much change in elevation, so water doesn't move through it well. The roadside ditches along Harper Street are not well defined and have little vegetation, so they could be reshaped and replanted to improve drainage. The pipe under McMillan Street should be

cleaned out, and the pipe under Harper Street should be replaced to help water flow properly through the system.

Photos (structures, paved surfaces, standing water, vegetation, drainage):



1. Upstream end of culvert crossing under Harper St. 2. Downstream end of culvert crossing under Harper St. Pipe is crushed.



3. Ditch between Harper St. and McMillan St. Photo facing downstream.

4. Downstream end of pipe crossing under McMillan St. Pipe full of sediment/debris.

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Rain Garden

Address: Faust Street and Hightower Street (Adjacent to Bamberg Adult Learning Center)

Parcel ownership: ☐Private ☐Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): No structures within the project boundary. Next to the project boundary is pool on the same parcel and an adult learning center on a separate parcel.

Description of paved surfaces on site: No paved surfaces within the project boundary. Project is next to the Bamberg Adult Learning Center parking lot and Faust St. which are asphalt.

Existing vegetation (all that apply): ☒Woods ☒Shrubs ☒Dirt ☒Grass

Estimated tree canopy cover: 5% within project boundary

Presence of standing water: ☐ Yes ☒No

Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): No drainage structures within the immediate project boundary. There is a ditch that runs parallel to Hightower St. and along Faust St., crossing under Faust St. and entering into a junction box. The ditch is in relatively good condition with minor erosion. There is standing water in sections of the ditch along Faust St. (see figure/photos).

Comments/Observations: The area inside the project boundary is well vegetated, and the soil seems to drain well. It also appears to function as a wetland. If a rain garden were added here, it could capture runoff from the adult learning center and the pool building. Another option would be to divert some of the flow from the nearby channel into the rain garden and then direct it back into the channel farther downstream.

Photos (structures, paved surfaces, standing water, vegetation, drainage):




1. Vegetation within project boundary. 2. Downstream end of culvert under grassed driveway next to Faust St. Standing water present.




3. Ditch next to project boundary. Photo facing upstream. 4. Ditch along Faust St., facing downstream

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Stormwater Park

Address: Birch Street and Rhoad Park Street

Parcel ownership: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): Baseball dug out, shed, storage building/bathrooms, batting cages.

Description of paved surfaces on site: Rhoad Park St. and Birch St. are asphalt; asphalt basketball courts; parking area is made of compacted gravel.

Existing vegetation (all that apply): ☒Woods ☒Shrubs ☒Dirt ☒Grass

Estimated tree canopy cover: ~10% (more along property edges)

Presence of standing water: ☒ Yes ☐No

Drainage on site (all that apply): ☒Grassed Ditches ☒ Stormwater Pipes/Culverts

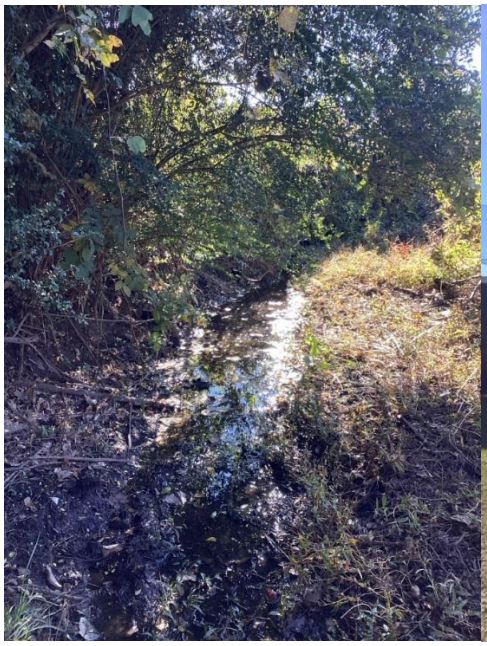
☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): The ditch along the northern edge of the property flows to the 48" RCP culvert under Birch St. There is evidence of erosion along the ditch in multiple locations and standing water is present. The left bank of the ditch (facing downstream) is steep and higher than the right bank, which may cause water to pond behind the baseball fields during high flow conditions. Besides for the ditch system, the only other drainage infrastructure is a pipe/inlet along Rhoad Park St. near the basketball courts. The pipe outfalls to a forested area with no well-defined channel and the downstream end of the pipe is filled with gravel/dirt/debris. The channel becomes more defined along the southern edge of the project boundary and flows east, eventually flowing offsite.

Comments/Observations: The land within the project area is flat. There are signs of erosion along the ditch on the north side of the property, which could make this a good location for a small dry detention basin or a bioretention area, though space is limited. On the east side along Birch Street, there is room for underground stormwater storage, which

would allow the site to keep its overflow parking. The channel along the southern edge of the property looks to be in good condition.

Photos (structures, paved surfaces, standing water, vegetation, drainage):





1. Ditch facing downstream, towards Birch St. 2. Park building.





3. Basketball courts and gravel driveway. 4. Soccer fields.

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Tree Planting

Address: Birch Street, Midway Street, and Rhoad Park Street

Parcel ownership: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): None.

Description of paved surfaces on site: None but surrounded by asphalt roads.

Existing vegetation (all that apply): ☐Woods ☒Shrubs ☐Dirt ☒Grass

Estimated tree canopy cover: 0%

Presence of standing water: ☐ Yes ☒No

Drainage on site (all that apply): ☒Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): A vegetated ditch runs through the southwestern corner of the property. Water enters the parcel through a culvert that crosses under Birch St. and flows offsite through a culvert under Rhoad Park St. Next to the ditch is a vegetated depressional area.

Comments/Observations: The parcel is mostly flat, except for the shallow dip around the ditch. There was no standing water present during the site visit. This area would be a good place to plant trees.

Photos (structures, paved surfaces, standing water, vegetation, drainage):



1. Photo of parcel taken from Midway St.



2. Flat, cleared area with no standing water (existing).



3. Upstream end of culvert crossing under Birch St.



4. **Proposed** tree planting.

Salkehatchie Project Sheet

Community: Bamberg

Potential Adaptation Strategy: Constructed Wetland / Tree Planting

Address: Wastewater Treatment Plant

Parcel ownership: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): No structure located within the project boundary.

Description of paved surfaces on site: None. The road to the project area is a dirt road.

Existing vegetation (all that apply): ☒Woods ☐Shrubs ☒Dirt ☒Grass

Estimated tree canopy cover: Forested area ~20%

Presence of standing water: ☐ Yes ☒No

Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

Drainage infrastructure notes (diameter, dimension, material, condition): None visible.

Comments/Observations: This area appears to be a land application site. Sprinklers are evenly spaced throughout the entire project boundary, with some labeled with valve numbers. Sprinklers would need to be removed for any tree plantings/constructed wetlands. If this is an active land application site, it would not be a suitable area for tree planting or constructed wetlands.

Photos (structures, paved surfaces, standing water, vegetation, drainage):



1. Parcel covered with sprinkler heads.



2. Close up of sprinkler head.



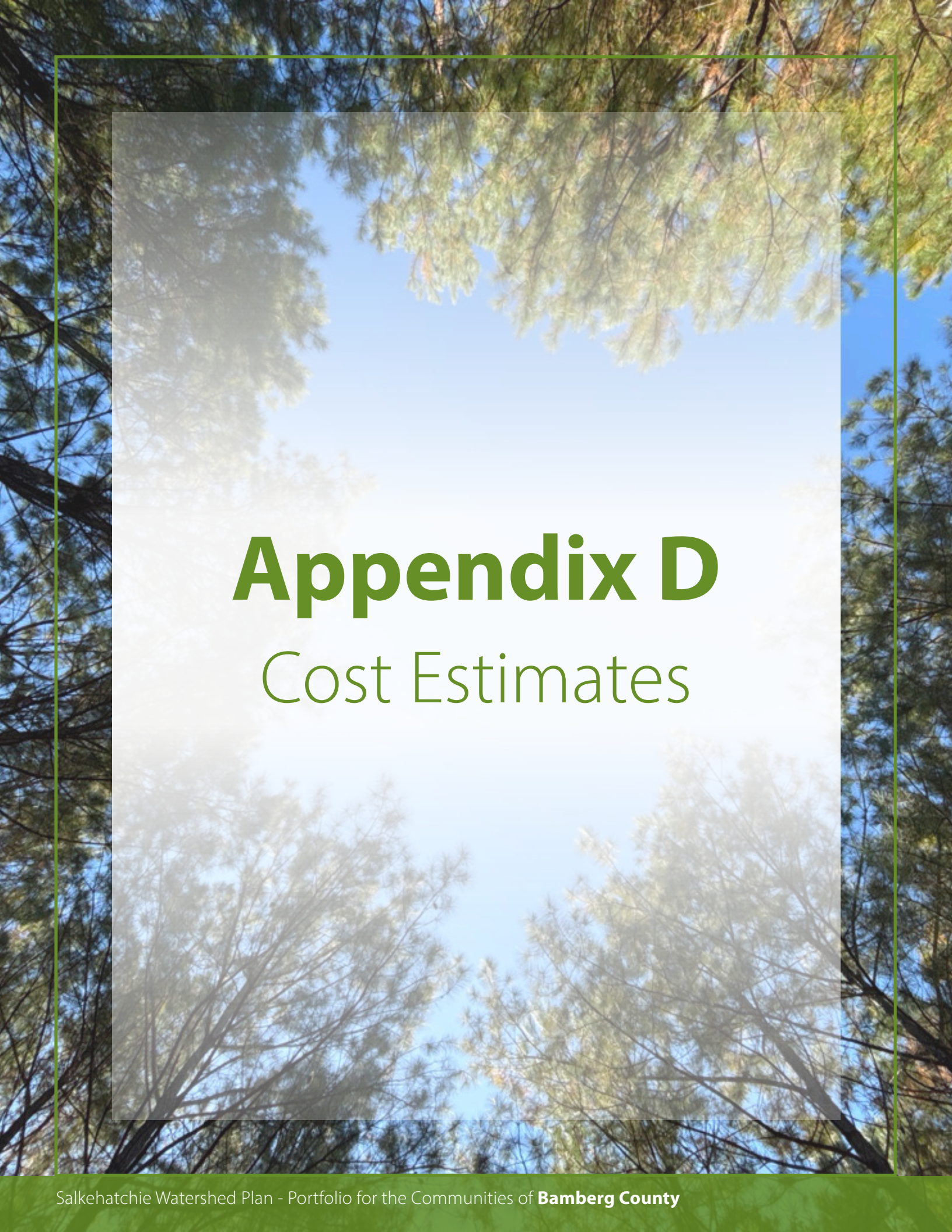
Appendix C

Prioritization Criteria

Prioritization Criteria for Ranking Adaptation Strategies

Indicator		Scoring			Weight	Data Reference
		3 (Best)	**2**	**1** (Least)		
Flood Reduction	Function of Area of Practice and Runoff Reduction Rates*	**Top 1/3** calculated flood reduction	**Middle 1/3** calculated flood reduction	**Bottom 1/3** calculated flood reduction	15	SC Coastal Low Impact Development Manual
Feasibility	Flooding – Current (2025) and Future (2055)	Located in **both** the 2025 and 2055 5% (20 yr) Flood	Located in **either** 2025 or 2055 5% (20 yr) Flood	Located in **neither** the 2025 or 2055 5% (20 yr) Flood	15	2025 and 2055 5% (20 yr) Flood (First Street Foundation)
	CAT 4 Project Preference	**Top 1/3** Composite Impact and Feasibility Scores	**Middle 1/3** Composite Impact and Feasibility Scores	**Bottom 1/3** Composite Impact and Feasibility Scores	10	CAT 4 Meetings
	Consultant Opinion	High Feasibility and Impact (**No foreseen hurdles**)		Low Feasibility or Impact (**Significant hurdles identified**)	10	Consultant Team Meeting
	Cost (see Table below)	**Low Effort:** Existing Practice or Unskilled/ Volunteer Labor	**Moderate Effort:** Skilled Labor to Install- Specialized Equipment Likely Necessary	**High Effort:** Engineered Designs and Construction Plans Required	5	Based on Level of Effort to Design and Install
	Permitting	**No Land Disturbance** Permitting or **Outside of SCDOT ROW**	**SCDOT ROW**	Section **401/404, CZC** Authorization, **Conservation** Areas	5	GIS Parcels
	Land Ownership	**Public Property:** Town or County Owned		**Private Property**	5	GIS Parcels

Indicator		Scoring			Weight	Data Reference
		3 (Best)	**2**	**1** (Least)		
Feasibility	Operations and Maintenance (see Table below)	**Low Effort:** Hand Tools and/or Quarterly Maintenance	**Moderate Effort:** Skilled Maintenance Crew and/or Bi-Monthly Maintenance	**High Effort:** Heavy Machinery Needed and/or Monthly Maintenance	5	Based on Level of Effort to Maintain
	Soil Infiltration Rate	Soils are **Suitable** (Hydrologic Group A)	Soils **may be Suitable** (Hydrologic Groups B and C)	Soils are **Unsuitable** (Hydrologic Groups A/D, B/D, C/D, D, or Unknown)	5	USDA NRCS, Web Soil Survey
Co-Benefits	Priority Populations Benefitted (LMI%)	LMI: > 51%		LMI: < 51%	5	HUD LMI Block Groups
	Urban Heat Mitigation/ Pedestrian	Paved Surface Reduction **and** Increased Plantings	Paved Surface Reduction **or** Increased Plantings	Paved Surfaces are not Reduced **Nor** are Plantings Increased	5	Based on Adding NBS and Removing Paved Surfaces
	Cultural	**Located** at Nationally Registered Historic Place		**Not Located** Nationally Registered Historic Place	5	SC SHPO
	Water Quality (see table below)	95 – 100 % of Total Suspended Solids Removed	80 – 94 % of Total Suspended Solids Removed	0 – 79 % of Total Suspended Solids Removed	5	SC Coastal Low Impact Development Manual
	Biodiversity/ Habitat (see table below)	**Increases** forage, shelter, **and** freshwater source for pollinators	**Either** increases forage, shelter, **or** freshwater source for pollinators	Habitat **not improved** during NBS project	5	NWF's Certified Wildlife Habitat
				TOTAL	**100**	



Appendix D

Cost Estimates

Order of Magnitude Cost (High-Level Cost Estimate) for:

Bamberg Bioretention

Type of Strategy: Parking Lot Retrofit (Bioswale, Permeable Pavement)

Community: Communities of Bamberg County

Strategy Address/Location: Bamberg Police Department, 2549 Main Highway, Bamberg, SC

Date of Estimate: 3/31/2026



1. Conceptual layout for Bamberg Police Department. green = bioswale, yellow = permeable pavement parking stalls

Planning and Design

- Project Management:
    - Description- Coordinate with the Owner on the proposed schedule, project progress, deliverables, and budget for the project duration. Meet on a bi-weekly basis to provide updates on budget, progress on deliverables, gain feedback, and discuss needs. Provide monthly invoices that include an estimate of percent complete and percent spent, and an estimate of hours spent during the prior month as well as hours spent to date.

    - Assumptions- Project is billed as lump sum. Regardless of billing arrangement, project management deliverables will remain consistent and include regular communication and opportunities for the Owner to provide feedback on design.
- Surveying:
    - One pre-construction survey is needed and should be provided as PDF and CAD files.
    - Pre-construction survey must include:
        - Property corners and property lines for subject parcel
        - Edge of pavement, centerline, curb and gutter, and edge of DOT right-of-way on Main Highway, driveways, and paths on site
        - Existing structures (buildings, power poles, light poles, parking lot bump outs, signs)
        - Contours and topographic features
        - Existing utilities
        - Utility easements or rights of ways
        - Drainage infrastructure (including inlets, outfalls, catch basins)
    - Assumptions – 811 shall be called prior to survey, as-built survey will not be needed.
- Permitting:
    - Description- submit site plans to Bamberg County Planning and Development to ensure no permits are required. Provide the City and County a narrative of the project and engage in correspondence to coordinate construction and planned improvements. Assume no permitting requirements will need to be met.
    - Assumptions- Improvements total approximately 0.2 acres of disturbance which is less than the NPDES Construction General Permit threshold of 1 acre, likely no permits required. Confirm requirements with the City/County.
- Engineering:
    - Conduct desktop analysis and one site visit to collect information necessary to produce 30% design.
    - Conduct one additional site visit to collect additional information necessary to produce 90% design. The Owner will have the opportunity to provide feedback and revisions at 30% and 90% design.
    - Produce 90% Designs for parking lot retrofit (bioretention cells and pervious pavement in parking stalls) for submittal to the Owner. The 90% design will need to include all information required for installation including but not limited to:

        - Site plan showing plan view and cross section view of proposed practices, property boundaries, existing structures, and proposed designs. Notes to include standards for materials used.
        - Details and specifications provided for Powerblock in parking stall areas including base, concrete strip, and maintenance instructions. Details and specifications for bioswale showing cross section view, grading plan, ponding depth, soil layers, and planting plan.
        - Specifications for staging materials and equipment. Specifications for ingress and egress to property, construction entrances, and sediment and erosion control.
        - Specifications for demolition and removal of existing asphalt, dirt, and debris.
    - Assumptions- The engineered drawings will provide sufficient detail, including dimensions of proposed practices, and necessary materials to develop specifications for project construction.

Table 1. Planning and Design Costs

Item	Unit	Quantity	Unit Cost ($)	Total ($)
Project Management	*LS*	*1*	4,500	4,500
Surveying	*LS*	*1*	3,500	3,500
Permitting	*LS*	*1*	2,000	2,000
Engineering	*LS*	*1*	25,000	25,000
Subtotal Planning and Design				**35,000**

Construction and Implementation

- Site Preparation:
    - Description-
        - Pervious Pavement (Powerblock) in parking stalls: Demolition of existing asphalt, excavating to depth required to install base and pavers, hauling off debris and dust control.
        - Bioswale: Excavate 24-36” in depth based on design and haul off materials, grading for positive drainage.
    - Assumptions- Installation of practices shall be done in a timely manner so that no materials are stored on site; 811 shall be called to locate existing utilities ahead of excavation.
- Soil Amendments:
    - Bioswale: Volume needed to allow for 4” depth of non-mushroom compost as amended soil layer, 4” of double or triple shredded hardwood mulch.

- Bioswale assumptions: No underdrains, minimum 6" ponding depth for bioswale. Costs include delivery.

- Planting:
  - Bioswale:
    - Plantings installed by hand per planting plan.
    - Plantings are native and provide wildlife benefits and can withstand dry and wet conditions.
  - Assumptions – plants are available and purchased from a local nursery. Costs include delivery.
- Structural Elements:
  - Powerblock- Installed Powerbock units, concrete edge restraint.
  - Assumptions- 6" concrete edge restraint between parking stalls and existing pavement. Costs include all materials needed for installation as well as installation costs. Following installation, existing asphalt should be milled and overlayed however this is not included in costs.

Note: All items include delivery and installation where applicable.

Table 2. Construction and Implementation Costs

Item	Unit	Quantity	Unit Cost ($)	Total ($)
Bioswale ~ 140 LF				
Site Preparation – excavation 24-36"	CY	*185*	50	9,250
Double or triple shredded hardwood mulch	2 CF	*250*	7	1,750
Non-Mushroom Compost (Cotton Burr Compost)	2 CF	*250*	12	3,000
Planting	SF	*2,000*	3	6,000
Educational Signage	*EA*	*1*	1,500	1,500
Subtotal Bioswale				**21,500**
Permeable Pavement ~ 8,500 SF				
Site Preparation – Asphalt Demo	*SY*	*950*	50	47,500
Powerblock units and edge restraint	*SF*	*8,500*	25	212,500
Striping of parking lanes	*SF*	*8,500*	0.20	1,700
Subtotal Permeable Pavement				**261,700**
Subtotal Construction and Implementation				**283,200**
Construction Oversight (20%)				**56,640**
Contingency (30%) *				**95,460**
GRAND TOTAL Planning, Design, Construction, and Implementation				**470,300**

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.

Maintenance

- Plant Maintenance:
    - Description- plants will need to watered 1 time per day after planting for two weeks. Irrigate 1 time per week during the heat of summer or drought conditions. Plants will need to be monitored and dead or dying vegetation removed in winter. Remove vegetation due to overcrowding in late summer. Weeding should occur 1 time per month or 4 times per year minimum.
    - Assumptions- Town or City staff/landscapers will oversee maintenance
- Erosion Repair:
    - Powerblock – cleaning of system minimum 4 times/year by pressure washer, street sweeper, or regenerative vacuum truck
    - Bioswale – bimonthly maintenance as needed to include: reshaping and regrading as needed, spot mulch application to maintain 3" layer of mulch, removal of trash, sediment, debris and replace with clean stone as needed.
    - Assumptions- Town or City staff/landscapers will oversee maintenance

Table 3. Maintenance Effort Per Year

Item	Unit	Quantity
Plant Maintenance	*Hrs*	48 (4 staff hours per month)
Erosion repair	*Hrs*	24 (4 staff hours every other month)

Order of Magnitude Cost (High-Level Cost Estimate) for:

Bamberg Stormwater Park

Type of Strategy: Stormwater park (detention pond, underground storage)

Community: Communities of Bamberg County

Strategy Address/Location: Rhode Park Street/Birch Street (530 Rhoad Park St, Bamberg, SC)

Design Stage: Final

Date of Estimate: 3/27/2026

Planning and Design

- Project Management:
  - Description- Coordinate with the Owner on project schedule, deliverables, and budget throughout the duration of the project. Recurring meetings will be held to provide progress updates, review budget status, and address Owner feedback and needs. Monthly invoices will include estimated percent complete and percent spent.
  - Assumptions- Project management is billed as lump sum.
- Surveying:
  - Two surveys are needed and include a pre-construction survey and as-built survey that are provided as PDF and CAD files.
  - Pre-construction survey must include:
    - Property corners and property lines for subject parcel
    - Edge of pavement, centerline, curb and gutter, and edge of DOT right-of-way on Birch Street and Road Park Street, paths and edge of pavement for intersecting streets for project extents
    - Existing structures (concession stands, fencing, signs, etc.)
    - Existing utilities
    - Utility easements or rights of ways
    - Drainage infrastructure (including inlets, outfalls, catch basins)
    - Existing ditch that runs on the north side of the park (grades, contours, thalweg, top of bank), water surface elevation at time of survey, locations and elevations of inflow and outflow structures
    - Topography of low-lying ditch areas

        - Wetland delineation
    - As-built survey will document the placement, grading, and dimensions of the stormwater detention pond, underground storage, and replaced RCP pipe. Locations, elevations, and dimensions of all new inlets, outlets, and pipes shall be included in as-built survey.
    - Assumptions – 811 shall be called prior to survey.
- Permitting:
    - Description- Estimate based on SCDES Notice of Intent. Includes permit package prep and agency coordination. Also includes any necessary permits from the Town/County.
    - Assumptions- One round of permitting and comments with resubmission to SCDES.
- Modeling:
    - Existing conditions PCSWMM model to identify flooded areas on site.
    - Proposed conditions PCSWMM model to analyze BMP effectiveness.
    - Assumptions – modeling cost estimate is incidental to engineering line item.
- Engineering:
    - Conduct desktop analysis and one site visit to collect information necessary to produce 30% design.
    - Conduct one additional site visit to collect additional information necessary to produce 90% design. The owner will have the opportunity to provide feedback and revisions at 30% and 90% design.
    - Produce 90% stamped designs for submittal to SCDES for proposed improvements. The 90% design will need to include all information required for permitting to include but is not limited to:
        - Site plans to include plan and profile of detention pond and additional pipe network, limits of disturbance, property boundaries, existing wetlands, structures on site, trees, connecting existing drainage infrastructure.
        - Details and notes for detention pond and underground storage, including a grading plan, soil layers, ponding depths, and planting plans.
        - Include considerations for construction staging and sequence.
        - Include specifications for sediment and erosion control measures during construction.
    - Assumptions- The engineered drawings will provide sufficient detail, including dimensions of proposed practices, and necessary materials to develop specifications for project construction.

Table 4. Planning and Design Costs

Item	Unit	Quantity	Unit Cost ($)	Total ($)
Project Management	*LS*	*1*	7,500	7,500
Surveying	*LS*	*1*	7,000	7,000
Geotechnical	*LS*	*1*	10,000	10,000
Permitting	*LS*	*1*	5,000	5,000
Modeling	*LS*	*1*	15,000	15,000
Engineering	*LS*	*1*	35,000	35,000
Subtotal Planning and Design				**79,500**

Construction and Implementation

- Site Preparation:
    - Description-
        - Detention pond: Excavation for 3,000 SF footprint with a 6' depth and 3:1 side slopes.
        - Stormwater pipe trench: Excavate 4' wide and 3' depth along total proposed pipe length for installation.
        - Underground storage: Excavation for 7,000 SF footprint with 3' depth. Assume there will be 2' of cover over the underground storage.
    - Assumptions- 811 shall be called to locate existing utilities ahead of digging.
- Planting:
    - Description- All disturbed areas to be seeded with turf grass and provided with temporary irrigation.
    - Assumptions- N/A
- Structural Elements:
    - Description:
        - Road paving: area above underground storage to be paved to protect underground storage. It's been indicated this area is used for parking.
        - RCP pipe: included to route flow to the detention pond and then back online. Existing 18" RCP pipe across Rhoad Park St to be replaced.
        - Riprap: for channel protection at inlet/outlet for detention pond.
        - Outfall structure: structure for detention pond.
        - R-Tank underground stormwater storage: Ferguson underground storage product, includes all materials and installation.
    - Assumptions- RCP pipe associated with the detention pond will be less than 24". Pipe that routes flow to underground storage and then back online is

considered incidental to underground storage line item. Costs include all materials as well as installation costs.

Table 5. Construction and Implementation Costs

Item	Unit	Quantity	Unit Cost ($)	Total ($)
Detention Pond (3,000 SF)				
Site Preparation (excavation and grading)	*CY*	*450*	50	22,500
RCP pipe	*LF*	*160*	90	14,400
Rip rap	*SY*	*6*	75	450
Outfall structure	*EA*	*1*	4,500	4,500
Subtotal Detention Pond				**41,850**
Underground Storage (7,000 SF)				
Site Preparation (excavation and grading)	*CY*	*1,300*	50	65,000
R-Tank Underground Stormwater Storage	*CF*	*21,000*	12.25	257,250
Road paving	*SF*	*7,000*	8	56,000
Turf grass seed	*SY*	*1,670*	1	1,670
Temporary irrigation	*SF*	*15,000*	0.75	11,250
18" RCP pipe (replace)	*LF*	*40*	100	4,000
Subtotal Underground Storage				**395,170**
Subtotal Construction and Implementation				**437,020**
Construction Oversight (20%)				**87,404**
Contingency (30%)*				**154,956**
GRAND TOTAL Planning, Design, Construction, and Implementation				**758,880**

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.

Additional general items not included in this estimate include mobilization, utility staking, traffic control, clearing and grubbing, utility relocation, erosion and sediment control, and materials testing.

Maintenance

- Replanting:
  - Description- Annual maintenance to ensure grassed areas don't go bare.
  - Assumptions- Town or city staff/landscapers will oversee maintenance
- Stormwater infrastructure maintenance
  - Description- RCP pipe to be cleaned every 10 years for sediment/debris accumulation. Detention pond to be mowed and sediment cleaned out

annually. Outfall structures to be cleaned for sediment/debris every 2 years. Sediment and debris to be cleaned from underground storage periodically.

Table 6. Maintenance Effort Per Year

Item	**Unit**	**Quantity (Annual)**
RCP pipe *Clearing debris*	*Hrs*	4
Underground Storage *Visual inspection of inlets/outlets and basic debris removal.* **Major debris flushing needed every couple years**	*Hrs*	18
Detention Pond *Embankment damage/erosion repair, mowing, debris clearing, seeding as needed*	Hrs	36
Outfall *Erosion inspection, debris/sediment clearing, photo documentation*	Hrs	4

Order of Magnitude Cost (High-Level Cost Estimate) for:

Salkehatchie Watershed Conservation/Riparian Buffer Mapping

Community: Salkehatchie Watershed-Scale

Date of Estimate: 3/31/2026

Planning and Design

- Project Coordination and Stakeholder Engagement:
    - Description- project coordination, creation of the Salkehatchie Conservation Committee (SCC), engagement with the SCC, stakeholder engagement
    - Assumptions-
        - 1 kickoff meeting with the client, 12 internal team coordination meetings, budget management, scope and schedule oversight
        - SCC will include relevant, qualified stakeholders such as representatives from local government staff and local land conservation professionals to guide and inform the process. Coordination, material development, and facilitation of up to four meetings with the SCC to collect input on key milestones. At least two SCC engagement sessions will be held in-person.
        - Coordination, material development, and facilitation of up to ten in-person public engagement sessions at each community within the Salkehatchie watershed. Creation of one digital survey to be distributed to the public. Synthesized analysis of public survey data
        - Staff involved: project manager and technical/design professionals
- Spatial Analysis
    - Description- Data collection from sources deemed necessary to assist in identification and prioritization of undeveloped and available parcels, Inventory of existing open space and analysis to identify open space suitable for protection, Development of prioritization criteria to evaluate open space opportunities, geospatial analysis of land conservation opportunities though incorporation of prioritization criteria and production of maps to demonstrate areas of focus for land conservation efforts and aid in parcel selection
    - Assumptions –

        - Data sources are available and accessible from sources such as the South Carolina conservation bank, South Carolina Office of Resilience, etc.
        - A series of maps will be produced at each step of the spatial analysis that will guide discussion among SCC, input from SCC will be incorporated in each step of the analysis
        - ESRI ArcGIS geodatabase will be created to produce the spatial analysis
        - Staff involved: project manager, senior technical/design professional, technical/design professional, junior technical/design professional, GIS professional
- Funding Analysis
    - Description – comprehensive review of similar land protection funding programs in the southeast and the associated administrative frameworks, Funding recommendations will be produced that estimate the cost of meeting the conservation goals as established by the SCC. The analysis will identify and assess the potential for a range of funding strategies that are realistic and that would substantially increase public funding to address parks, recreation, and conservation needs. Presentation to the client of key research findings
    - Assumptions-
        - Funding resource recommendations will include grants, loans, and options from federal, state, local, and private sources
        - Funding review will include examining the revenue-raising capacity, the fiscal impact to government budgets, and/or taxpayers of the local property tax needed to back general obligation bonds
        - Staff involved: project manager, senior technical/regulatory professional, technical/regulatory professional, junior technical/regulatory professional
- Land Protection Vision Plan –
    - Description - Draft plan development based on information gained from previous tasks to develop a comprehensive plan that will identify land protection opportunities, a forecast of land protection needs, and an analysis of the funding pathways necessary to meet the land conservation goals as defined by the SCC, final plan development with input from the SCC and client on the draft comprehensive plan, presentations to the SCC of final land protection vision plan
    - Assumptions –

- Land protection goals of the final land protection vision plan will be on a 25 year future timeline
- Staff involved: project manager and technical/design professionals

Table 1. Estimate of Cost

Item	Unit	Quantity	Total ($)
Project Coordination and Stakeholder Engagement	*LS*	*1*	45,000
Spatial Analysis	*LS*	*1*	30,000
Funding Analysis	*LS*	*1*	30,000
Land Conservation Vision Plan	*LS*	*1*	30,000
Contingency (30%) *			**40,500**
GRAND TOTAL			**175,500**

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.

Order of Magnitude Cost (High-Level Cost Estimate) for:

Salkehatchie Watershed Hydrologic & Hydraulic (H&H) Study

Community: Salkehatchie Watershed-scale

Date of Estimate: 3/31/2026

Overarching Assumptions

The goal of this study is to develop a better understanding of the hydrologic conditions within the Salkehatchie Watershed. The study's aim is to develop a model that can be used as a tool to evaluate present and future flood risks at the watershed-scale while also forming the basis of a master model, which can later be updated to include detailed 2D models of communities within the watershed. This initial model will be calibrated using existing available HEC-RAS models in the watershed and will be validated through stakeholder engagement and information collected through the Salkehatchie Watershed Vulnerability Assessment.

This watershed-wide model will identify critical infrastructure (roadways, evacuation routes, bridges, culverts, etc.) that are vulnerable to flooding in the present day and in the future, which will help the SC Office of Resilience and the communities within the Salkehatchie watershed to prioritize projects at the state and County level. Additionally, this model is intended to be updated as communities within the watershed begin inventorying their own drainage systems and developing their own H&H studies or stormwater master plans. As communities begin investing in stormwater infrastructure solutions, they can be added to this model as high-resolution 2D zones to provide additional detail around communities where it is needed. This model can serve as a resource to communities in their own H&H modeling efforts to help with model calibration and validation as well.

Ultimately, the development of this model will help provide a better understanding of Hydraulic & Hydrologic conditions in the watershed and will immediately inform potential projects at the State and County level within the watershed by identifying undersized culverts and bridge crossings. As funding becomes available and other communities begin inventorying and/or developing their own stormwater models, this model can be used as a master watershed model to house the model of each community and help determine upstream and downstream impacts for larger-scale projects.

Model Development

- Project Management:
    - Description- Project Management, Kick-off Meeting with Client and Project Team and Public Meetings & Engagement
    - Assumptions-
        - Quarterly Report Meetings (6 virtual meetings)
        - Kick-off Meeting with client (1 virtual meeting)
        - Stakeholder Engagement Meeting Materials and Planning
        - Staff involved- project manager, senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional
- Field Investigation and Survey:
    - Description- Spot elevations for critical infrastructure (bridges, culverts, roads, etc.)
    - Assumptions-
        - Only State and County stormwater infrastructure assets will be modeled as part of this project
        - Survey will be limited to spot elevations on critical assets, as needed
        - Staff involved- senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional
- Data Collection:
    - Description – Review of Existing Reports, FEMA Hydraulic Models, FEMA Flood Insurance Studies and Claims, SCDOT As-builts, Water Level Sensors, and Riverine Gauges. The team will also compile existing data for landcover, soils, drainage complaints, and topography.
    - Assumptions –
        - Hydraulic models (i.e. FEMA HEC-RAS) are available and accessible throughout the watershed
        - 1 virtual meeting with client to review data collection
        - *1 site visit which includes installation of a riverine gauge on the upstream side of the culvert crossing (optional)*
        - *$1,250 for riverine gauge equipment (assuming level logger and supplies to construct well) (optional)*
        - Staff involved- project manager, senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional

- Model Development:

    - Description- Gather stakeholder information (Survey123/ArcGIS StoryMap); Review of base mapping to use for hydrology & hydraulic design (soils, topography, drainage areas, etc.) and select appropriate design storms for model scenarios; Develop Existing and Future Conditions (2050) H&H Models
    - Assumptions –
        - 1 meeting with client to review stakeholder information, basemaps of model elements, and to select appropriate design storm events for existing and future conditions scenarios
        - Scenarios will include one existing conditions model and one future conditions model
        - Technical report will be produced
        - 1 virtual meeting with client to review model results
        - Staff involved- project manager, senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional
- Model Calibration/Validation:
    - Description- Stakeholder engagement to ground truth model results; Capture additional areas prone to flooding and inconsistencies in model results; Identify up to ten (10) recommended strategies for flood mitigation.
    - Assumptions-
        - Model validation will include comparison of results to at locations where existing H&H Models are present (i.e. HEC-RAS)
        - 1 engagement event in each community (10 total) to identify additional areas of concern and validate model results
        - Staff involved: project manager, senior technical/design professional, technical/design professional, and junior technical/design professional
- Proposed Conditions Model:
    - Description- Model ten (10) recommended strategies to determine potential for flood mitigation; Conduct Benefit-Cost Analysis (BCA) on 10 recommended strategies
    - Assumptions-
        - 10 recommended strategies will be assessed using the existing and future conditions models
        - A formal BCA will be conducted for each of the ten (10) projects

- Final Report:

- Description- Development of final report consisting of project goals and objectives, summarization of field investigations, and literature review; Assessment of results of BCA and ranking of ten (10) improvement projects.
- Assumptions-
  - Recommendations will be made for 10 improvement projects
  - Projects will be ranked by BCA score

Table 2. Cost Estimates

Item	Unit	Quantity	Total ($)
Project Management	*LS*	*1*	20,000
Field Investigation and Survey	*LS*	*1*	40,000
Data Collection	*LS*	*1*	55,000
Model Development	*LS*	*1*	110,000
Model Calibration/Validation	*LS*	*1*	40,000
Proposed Conditions Model	*LS*	*1*	65,000
Final Report	*LS*	*1*	45,000
Contingency (30%) *			**112,500**
GRAND TOTAL			**487,500**

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.