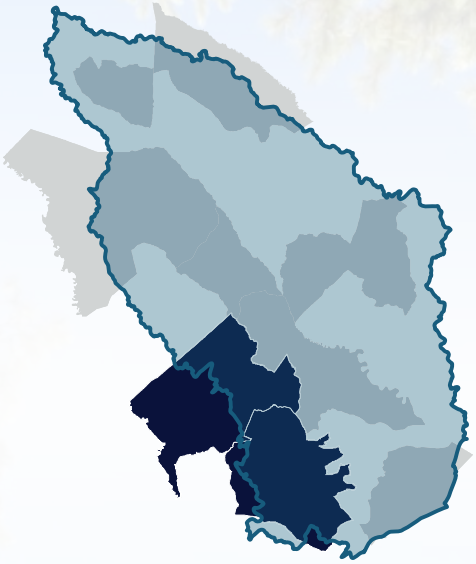
South Carolina
Resilient Coastal Communities Collaborative Program:

Salkehatchie Watershed Plan



Resilience Portfolio for the Communities of Jasper 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

Contents

1. Executive Summary **1-1**

1a. The Salkehatchie River Basin **1-2**

1b. Project Approach **1-5**

Community Engagement 1-5

Vulnerability Assessment 1-6

Strategy Siting 1-7

Prioritization 1-7

Results 1-8

2. Introduction **2-1**

2a. Project Objectives **2-1**

2b. Community Background **2-1**

2c. Plan Review **2-3**

2d. Community Action Team Engagement **2-5**

3. Vulnerability Assessment **3-1**

3a. Watershed Scale **3-1**

3b. Parcel Scale **3-5**

4. Strategy Siting **4-1**

4a. Desktop Analysis **4-1**

4b. Site Visits **4-3**

5. Prioritization Matrix **5-1**

5b. Prioritization Results **5-2**

6. Recommendations Per Community **6-1**

7. Next Steps **7-1**

7a. Grant Opportunities & Funding **7-1**

Critical Infrastructure 7-1

Water Quality & Wastewater Infrastructure 7-1

7b. Resilience Hubs 7-2

Core Functions 7-2

7c. Participation in Salkehatchie Working Group 7-5

7d. Conclusion 7-5

Appendix A: Survey Results

Appendix B: Detailed Project Sheets From Community Action Team Meeting Four

Appendix C: Prioritization Criteria

Appendix D: Cost Estimates

Figure List

Figure 1: Salkehatchie River Basin 1-1

Figure 2: SCRCCCP Study Communities and Proposed Opportunities 1-8

Figure 3: Images from the third Community Action Team meetings 2-6

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. 2-8

Figure 5: Salkehatchie Vulnerability Model Results 3-2

Figure 6: Salkehatchie Watershed and SCRCCCP Study Communities Census Tracts 3-3

Figure 7: Jasper County Vulnerability Model – Most Vulnerable Areas 3-4

Figure 8: Vulnerability Scoring Formula 3-5

Figure 9: Strategy Prioritization Board Utilized in Community Action Team Meeting Three to Better Understand Community Preference. 4-1

Figure 10: Data Layers Used in Strategy Siting During the Desktop Analysis 4-2

Figure 11: Site Visits Conducted by the Project Team in Communities of Jasper County 4-3

Figure 12: Site visits to potential project locations provided an opportunity to identify barriers to implementation, property conditions, opportunities, and co-benefits. 4-3

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. 5-2

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 7-3

Table List

Table 1: Plans Reviewed for the Communities of Jasper County 2-3

Table 2: Team Members of Communities of Jasper County Community Action Team 2-5

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.

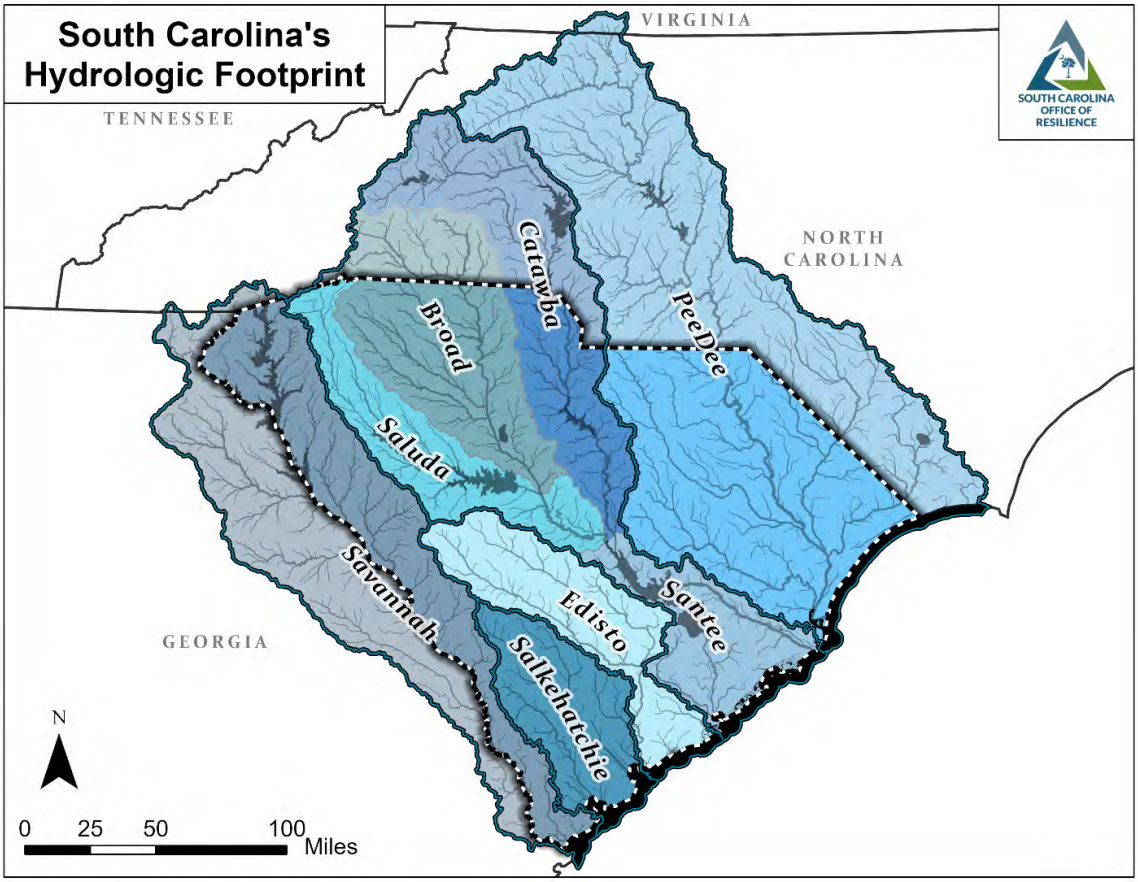


Figure 1: Salkehatchie River Basin

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.

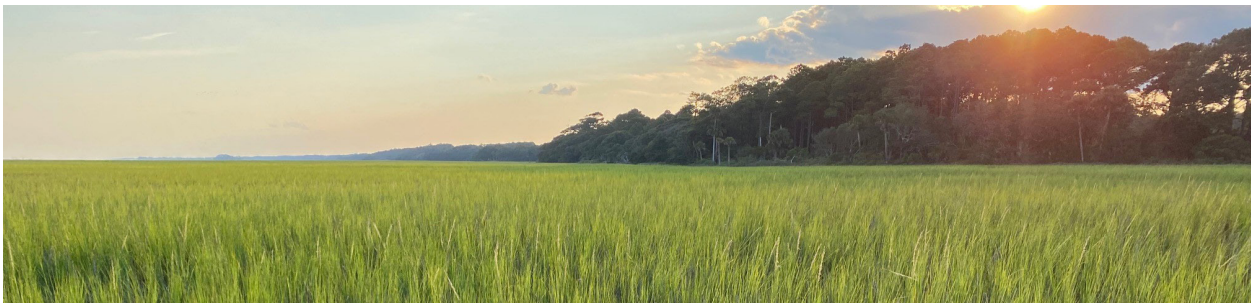
DEVELOPMENT PRESSURE: While the upper part of the Salkehatchie Watershed is primarily rural and agricultural, there is a high level of developmental pressure in the coastal region, specifically in Beaufort, Jasper, Colleton, and Hampton Counties. Forested and Agricultural land cover in the basin has 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 Savanah 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

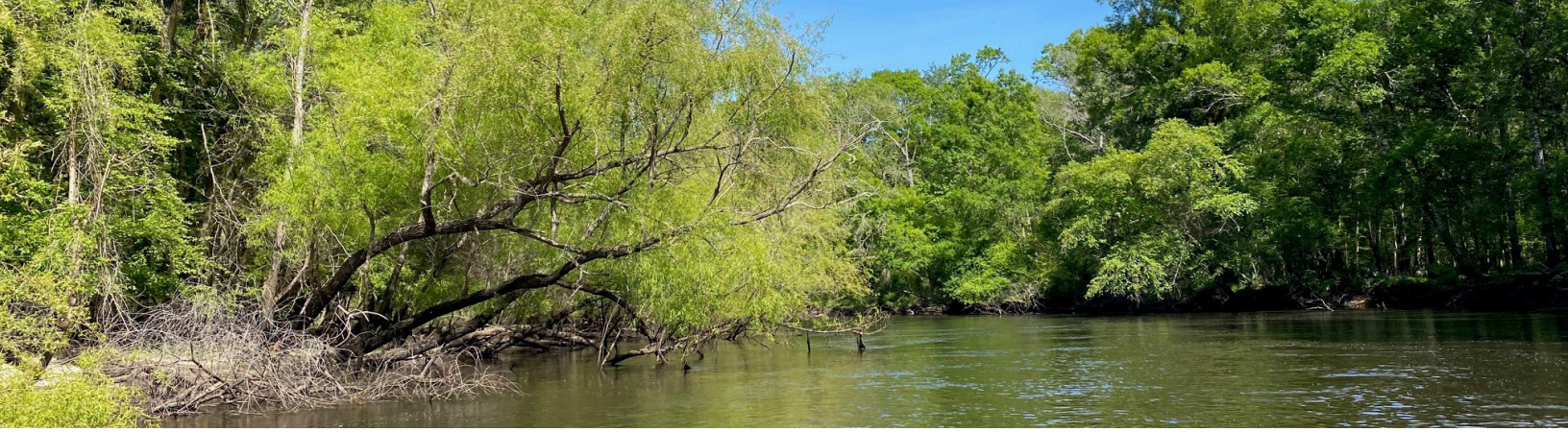
As a foundational step, **SCOR and SCSG reviewed local planning efforts** to better understand existing conditions and identify opportunities to leverage planned efforts.

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 (Winter 2025), team members shared concerns related to impacts from flooding and environmental changes. At the second Community Action Team meeting (Spring 2025), community members identified and mapped flood-prone areas directly on mapss 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, flooding, 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**.

Bridging vital coastal ecosystems with major inland transportation corridors, the communities of Jasper County are experiencing intense development pressure and frequent flash and riverine flooding events. Because flood reduction was identified as the community's highest priority, areas with known flooding were given particular attention during the desktop analysis, and community-preferred practices were prioritized such as land conservation and infiltration-based practices. **For cost estimation, the prioritization matrix highlighted two projects that consistently performed well across all criteria: the Constructed Wetland at Bees Creek Road and Ridgeland Lakes Drive, which had the highest overall score, and the Drainage Study in the Okatie Park and Old Bailey's Communities, which had the second highest score in the community.**

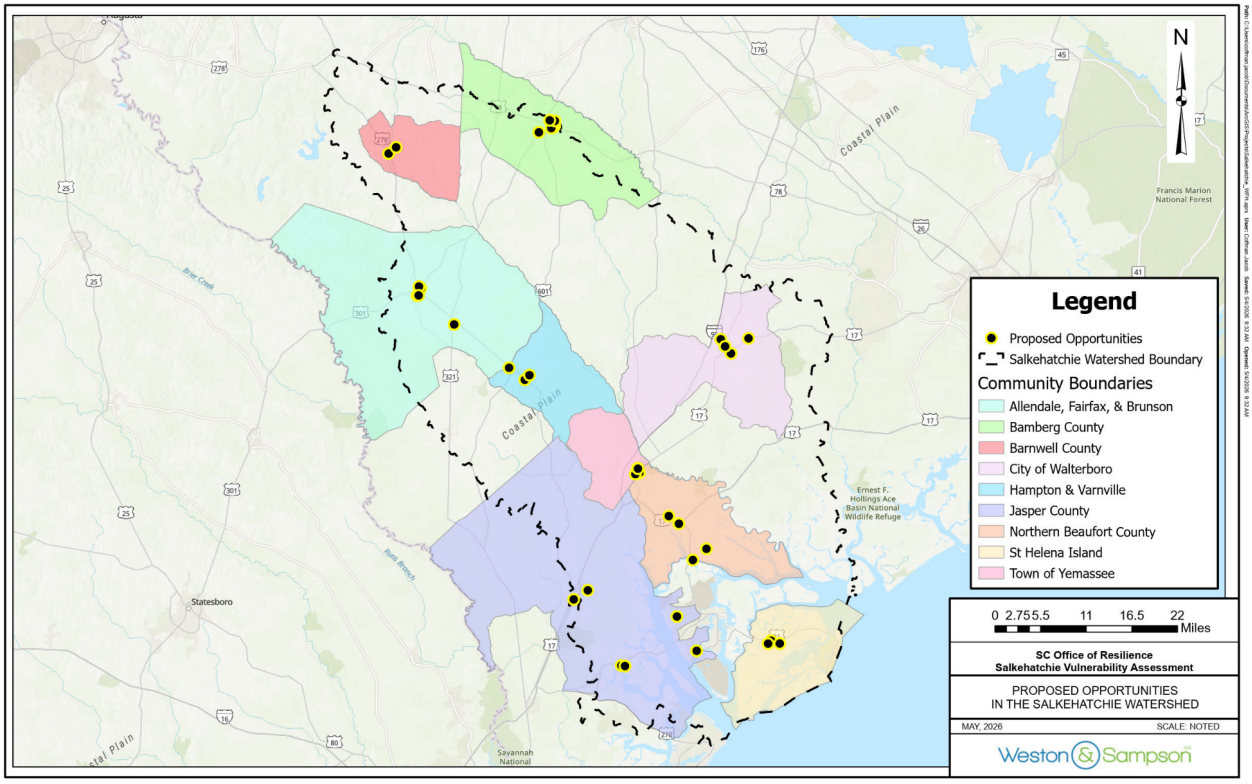


Figure 2: SCRCCCP Study Communities and Proposed Opportunities

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

Jasper County lies in the southwestern corner of South Carolina, adjacent to the Savannah River and the Georgia state line. The County serves as a critical transition zone in the South Carolina Lowcountry, bridging vital coastal ecosystems with major inland transportation corridors such



as Interstate 95 and US Highway 17. Jasper County's geography consists of salt marshes, tidal creeks and rivers, and coastal plain lowlands. The County sits in between Savannah, Georgia and Beaufort, SC and is home to the South Carolina portion of the Savannah National Wildlife Refuge, established in 1927 to protect and aid migratory birds.

Historically, most of the County has been rural and forested and the lumber industry has been the main economic driver. This area of the State was home of the Yamassee and Coosaw Indians. Currently, the Town of Ridgeland is the County seat, and the City of Hardeeville is the largest municipality. Jasper County is experiencing a period of immense population growth due to its location and climate. The 2026 estimates released by the US Census Bureau cite Jasper as being the fastest growing county in the United States. Growth has been reported to be nearly 33% in a six-year time period. This intense development pressure is creating tension between the region's natural environment and its expanding built upon footprint. Many are advocating for concurrency development, to ensure that roads, utilities, water systems, drainage systems and schools are properly prepared before developments are approved. There is also a call for conservation of critical and vulnerable habitat.

The Communities of Jasper County are prone to flooding from thunderstorms, tropical storms and hurricanes due to their location on the South Carolina coast. The County's roads and bridges have been inundated and significantly damaged by many of these storms, most recently by Tropical Storm Debby. Historic flooding experienced by the communities of Jasper County includes major evacuation routes such as I-95 and Highway 17 due to frequent flash and riverine flooding events. Infrastructure deficits, combined with poorly drained soils in areas like Cyprus Branch and Coleman Run, worsen contamination risks and contribute to significant pollution and high nutrient loads in agricultural areas like Black Swamp.

The Project Team gained an understanding of existing vulnerabilities and future threats for the Communities of Jasper 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 Jasper County are listed in Table 1.

Table 1: Plans Reviewed for the Communities of Jasper County

Plan Name	Year
Jasper County Housing Needs Assessment	2021
2020 Lowcountry Natural Hazard Mitigation Plan- Updated 2026	2021
Hardeeville Comprehensive Plan	2019
District 6 Housing Needs Assessment	2019
Lower Savannah River Watershed Protection Plan	2019
Jasper County Comprehensive Plan	2018
Ridgeland Comprehensive Plan	2017
2015 Lowcountry Hazard Mitigation Plan	2015
Lowcountry Regional Water Quality Management Plan	2012
Savannah (SC 170, US 17) and Pinckney Island (US 278) National Wildlife Refuges Road Safety Audit, Beaufort and Jasper Counties, South Carolina, March 5-6, 2008	2008
Jasper County Natural Resources Conservation Plan	2007

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



Limited awareness of **flood risks**



Repeated flooding of **critical evacuation routes**



Lack of **water quality monitoring** which can worsen the negative impacts during flood events



Limited **drainage capacity**



Widespread reliance on **aging septic systems** due to a lack of sanitary sewer access

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 November 2024, April 2025, August 2025, and December 2025. The members identified for the Communities of Jasper County Community Action Team are depicted in Table 2.

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

Team Members Name	Team Members Title
Tara Hayes	Jasper County Planning & Zoning Coordinator
David Peterson	Jasper County Fire-Rescue: Firefighter/EMT
Cathleen DeCourcy	Citizen
Rev. Patricia Hicks Dupont	Citizen
Anthony Cannick	Citizen
Tyler Stanley	Citizen
Hunter Smiley	Jasper County Planner
Lisa Wagner	Jasper County Director of Planning & Building Services
Sophia Truempi	Coastal Community Engagement Specialist, S.C. Sea Grant Consortium
Karen Hardison	Watershed Coordinator-Salkehatchie & Lower Savannah, SC Office of Resilience

At the **first Community Action Team meeting** (November 2024), team members were invited to share concerns related to impacts from flooding and environmental changes they have experienced within their community. The team members identified several impacts and concerns affecting their communities, including tree cutting impacts to wetlands, clear-cutting leading to flooding, agricultural losses tied to drought conditions and intense "rain bomb" events, as well as erosion and flooding that continue to damage land, cultural sites, and infrastructure. Additional concerns included high winds, wetland infill impacts, and concerns regarding clearcutting and development. Members emphasized the need for improved flood education for new homebuyers, flood disclosure real estate policy, and tree farming education to support sustainable land management. Future threats identified by community members and stakeholders included expanding development, declining water quality driven by rapid population growth, and rising environmental pressures. Additionally, community members expressed concern that increasing exposure to extreme weather, such as stronger storms, hurricanes, and intense heat, will intensify risks to health, local infrastructure, agriculture, and natural systems. Frequent flash and riverine flooding, combined with ongoing habitat loss and land-use changes, are expected to further strain waterways and worsen flooding impacts for communities.

The **second Community Action Team meeting** (April 2025) was held at a local community center and community members identified flood-prone areas directly on maps. Reported areas of repeat flooding include the Jasper County Detention Center near Exit 22 on I95, which consistently floods during heavy rains, and the Sonoco Gas Station at Exit 33, which floods during storms, especially hurricanes. The intersection of SC 46 and US 17 was noted for flooding during major rain events, along with portions of Highway 462 south of Highway 336. Additional problem areas included Pine Arbor Road, McTeer Street area, and the Old Baileys and Old Chelsea neighborhoods. Participants also highlighted that several roads in the northern part of Jasper County were flooded and washed out during Tropical Storm Debby in 2024 due to creek overflow, with some roadways still not fully restored.



Figure 3: Images from the third Community Action Team meetings

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** `_qcb m l r f c Dgpqr Qrpccr Dms l b_rgm l b_r_,

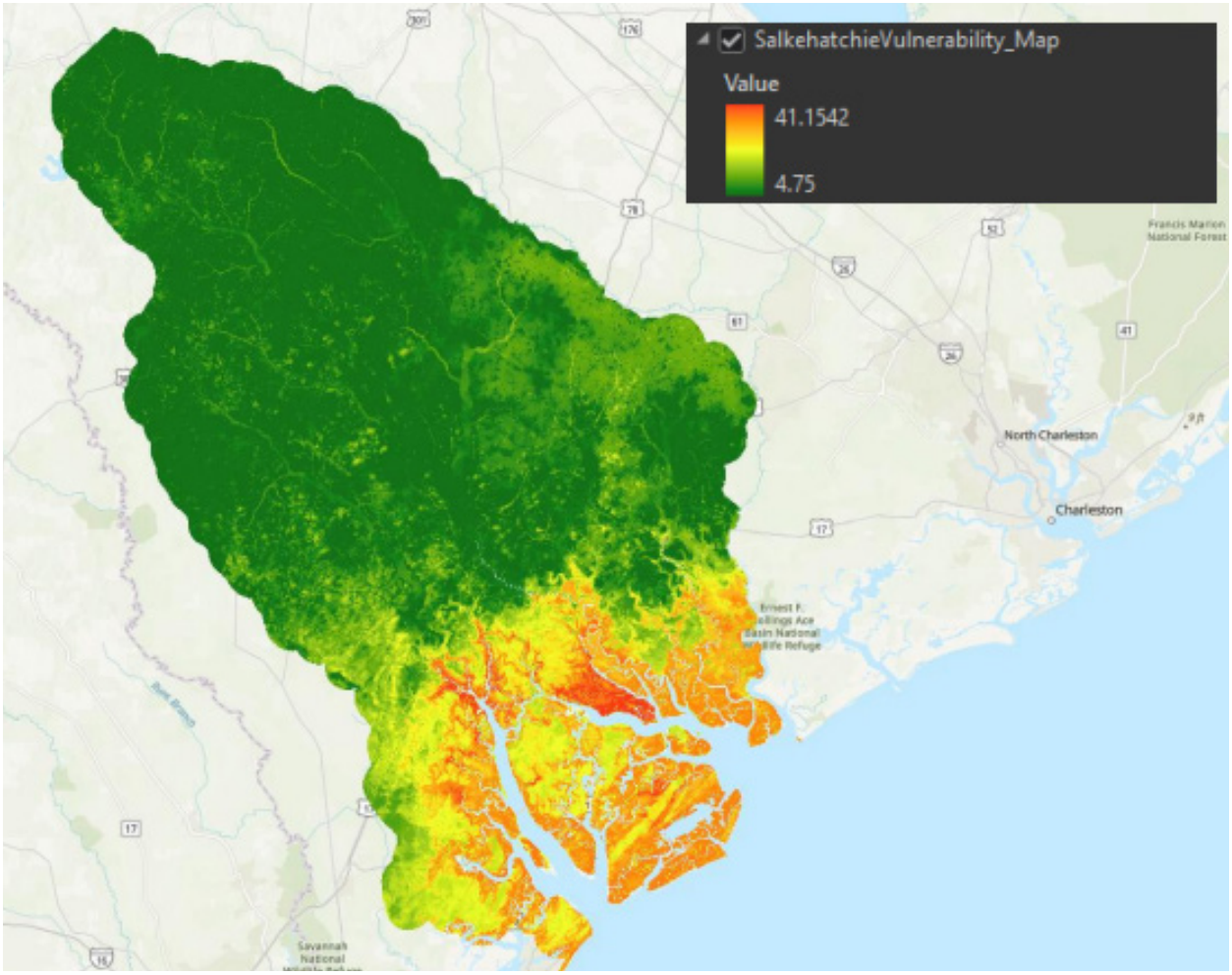


Figure 5: Salkehatchie Vulnerability Model Results

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.

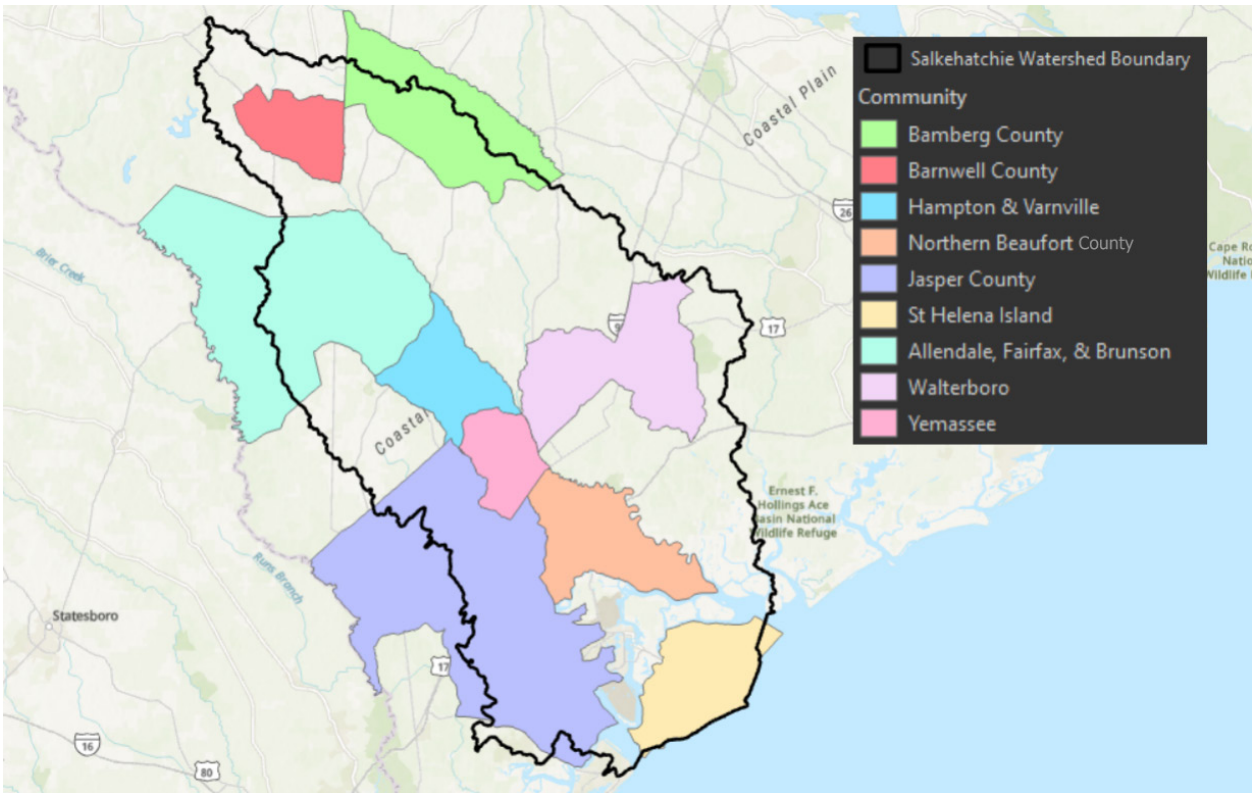


Figure 6: Salkehatchie Watershed and SCRCCCP Study Communities Census Tracts

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 Jasper County along with the locations of the highest average vulnerability scores within the Jasper County census tracts. The most vulnerable areas included the community of Coosawhatchie, and areas near Okatie Highway surrounding the Port Royal Sound including Old Bailey's and Old Chelsea neighborhoods. These results were consistent with information collected during the second Community Action Team meeting.

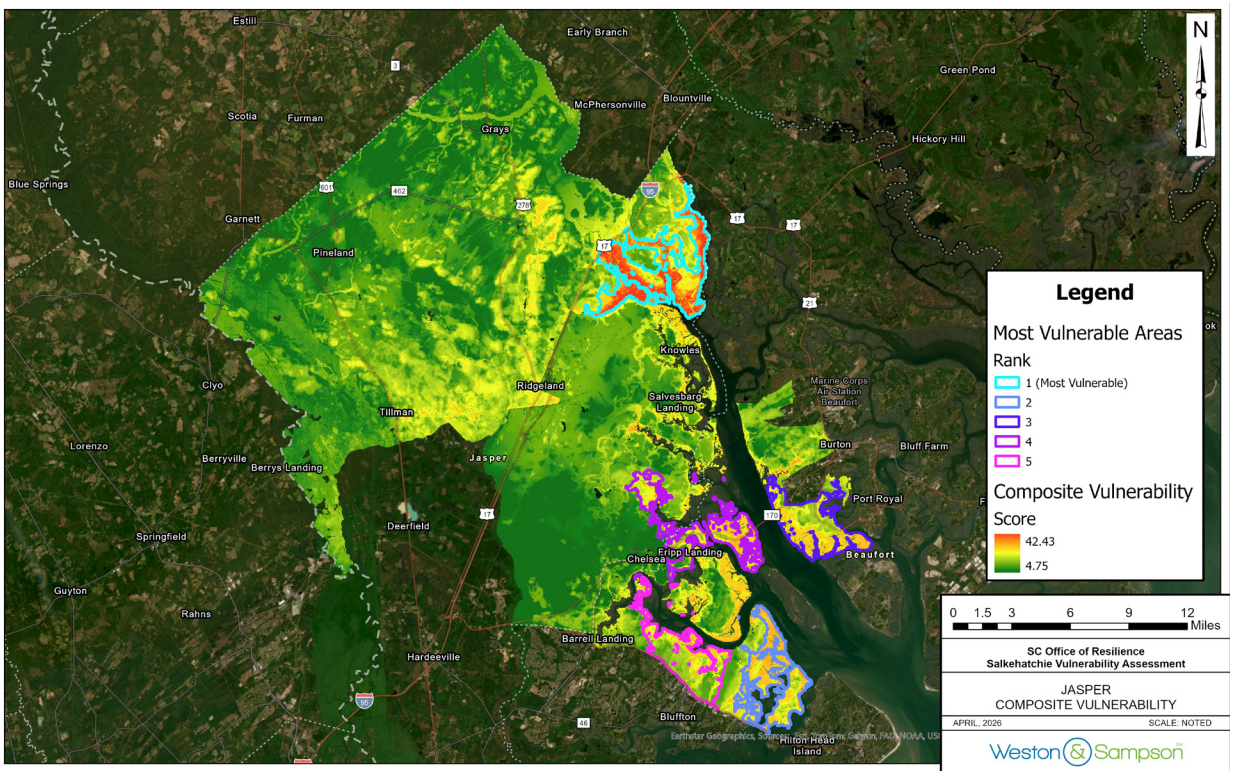


Figure 7: Jasper County Vulnerability Model – Most Vulnerable Areas

3b. 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.

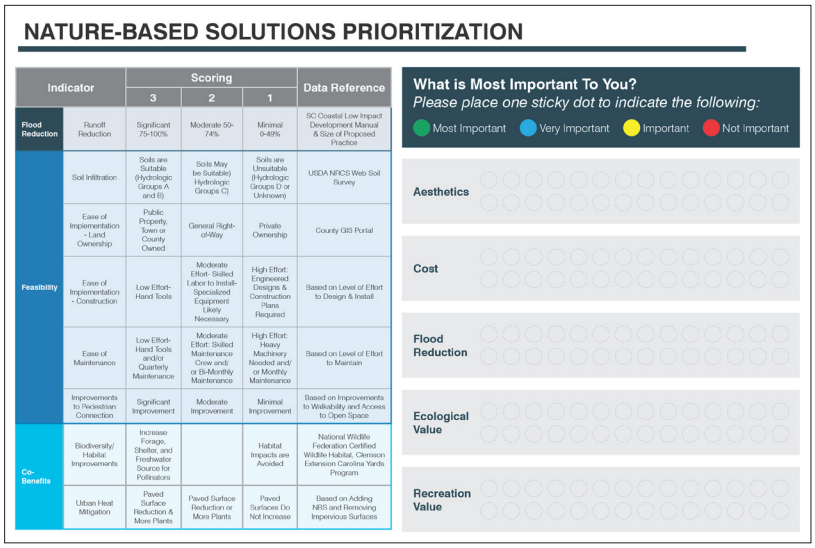


Figure 9: Strategy Prioritization Board Utilized in Community Action Team Meeting Three to Better Understand Community Preference.

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 Jasper County, this meant prioritizing community-preferred practices such as land conservation and rain gardens. **Because flood reduction was identified as the community's highest priority, areas with known flooding were given particular attention.**

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 Jasper 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.

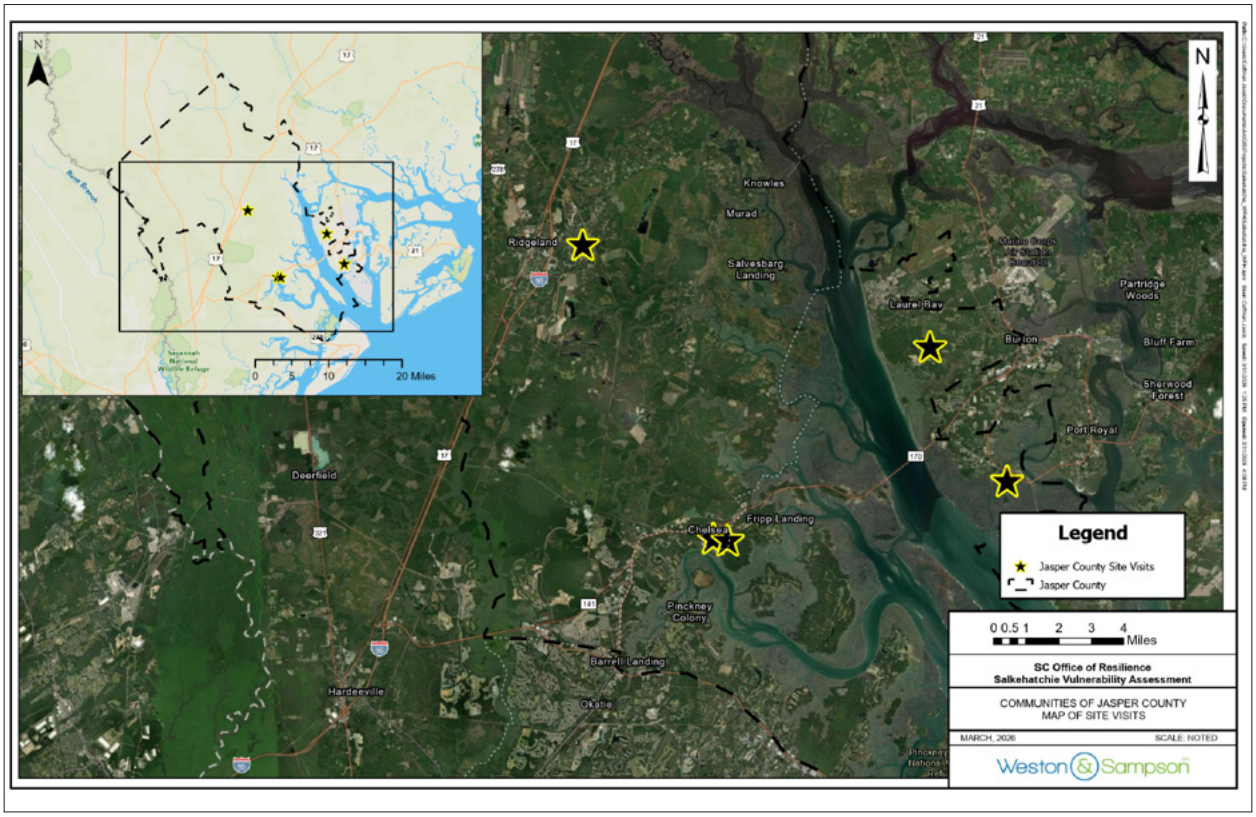


Figure 11: Site Visits Conducted by the Project Team in Communities of Jasper County

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 information is included in the appendices section.

For the Communities of Jasper County, the prioritization matrix highlighted two projects that consistently performed well across all criteria. **The Constructed Wetland at Bees Creek Road and Ridgeland Lakes Drive** had the highest overall score. This project has the potential for high flood-reduction benefits and for multiple co-benefits including water quality improvements, and is located within current and future flood extents. **The Drainage Study in the Okatie Park and Old Bailey's Communities** had the second highest score in the community. This project addresses areas within the current and future flood extents and has potential for co-benefits including historic value.





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.

Jasper Constructed Wetland

Bees Creek Rd, Ridgeland Lakes Drive

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

Implementation of a constructed wetland at this site will address flooding issues which have been exacerbated by development in the area. The project site, spanning up to 5 acres, contains young trees on the southeast portion, ditches running through the property, and existing forested wetlands that will need to be protected. A constructed wetland would address flooding issues and provide relief to the nearby neighborhoods which appear to be lacking drainage infrastructure and experience flooding from overland sheet flow. This property is state-owned and likely the future site of a new school. Any plans for the constructed wetland will need to occur in close coordination with school design and constraints. The constructed wetland could be designed to manage stormwater runoff from both the new school and the adjacent neighborhood with the incorporation of proper conveyance features.

Location Description

Bees Creek Road and Ridgeland Lakes Drive (3716 Bees Creek Road, Ridgeland, SC)

Photos

Existing Conditions



Gate all the way around property, cement foundation present



Young Pine trees in open field



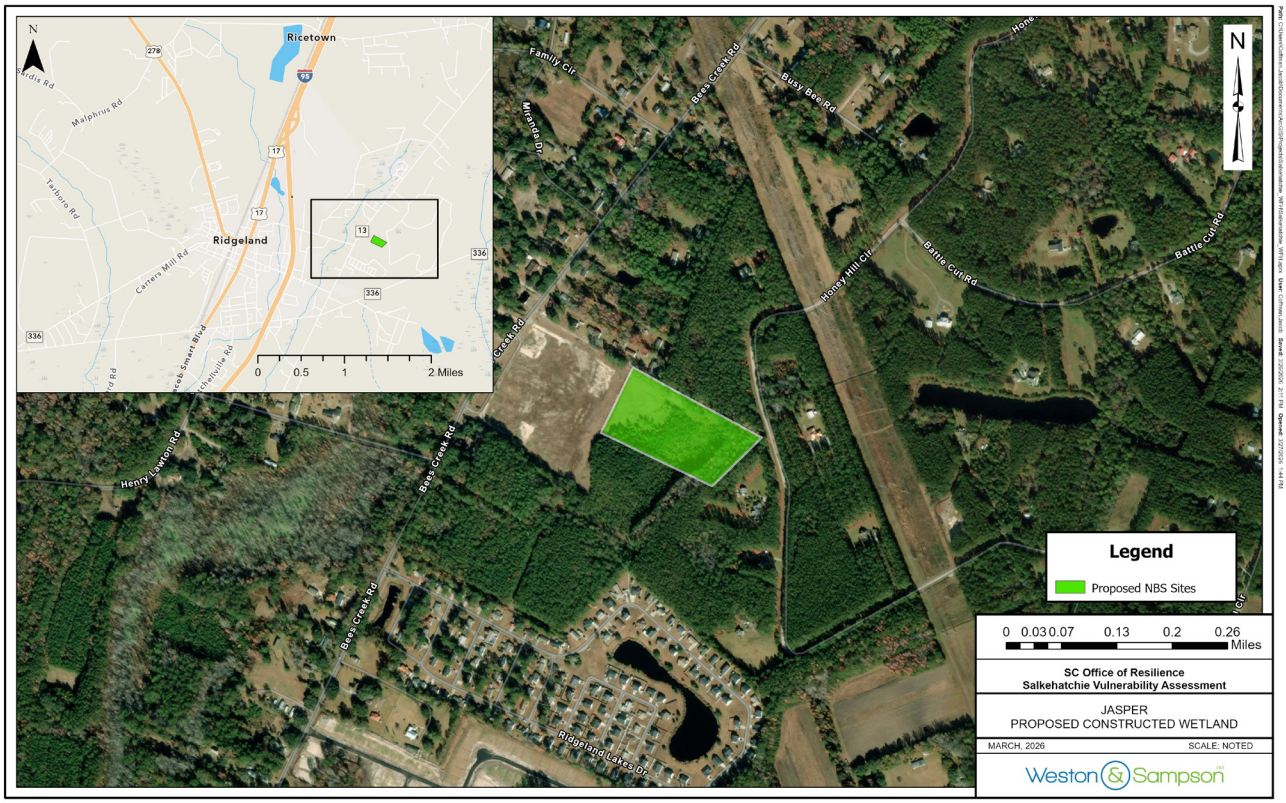
Ditch running away from property



Edge between pine and grassland. Rebar stakes present possibly for prior construction

Strategy Location and Map

3716 Bees Creek Road, Ridgeland, 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

Jasper Drainage Study

Okatie Park and Old Baileys Road Communities

Type of Strategy

Drainage Study

Strategy Description

A drainage study is a detailed evaluation of how stormwater flows through an area, both on the surface, through ditches, swales, and ponds, and underground, through pipes and underground detention structures. A drainage study evaluates how well drainage infrastructure can handle stormwater and identify where flooding and ponding occurs. The purpose of a drainage study is to identify if existing drainage infrastructure is properly sized and functioning as intended.

Narrative

The proposed drainage study would evaluate the existing infrastructure in the Okatie Park and Old Baileys Road communities. The Okatie Park neighborhood is located on higher elevation and has expanded over recent years. Multiple reasons for flooding issues and the existing infrastructure need to be evaluated in the drainage study. Stormwater runoff flows directly downstream into the Old Bailey Road area before heading towards the Colleton River. The extent and frequency needs to be confirmed, but apparently the Okatie Park pond overflows periodically contributing to the neighborhood drainage challenges. There appears to be existing wetlands located between the neighborhoods and water may not be able to drain efficiently due to added development. It may be possible that the culvert on Old Baileys Road is undersized and that new development is not able to infiltrate water as designed due to the increased amount of impervious areas. Overall, the drainage study would be useful to understand how new development effects existing development and if the drainage infrastructure in place is sufficient.

Location Description

Okatie Park Neighborhood (191 Okatie Park Drive, Ridgeland, SC) and Old Baileys Road area

Photos

Existing Conditions



Private pond off Old Baileys Road



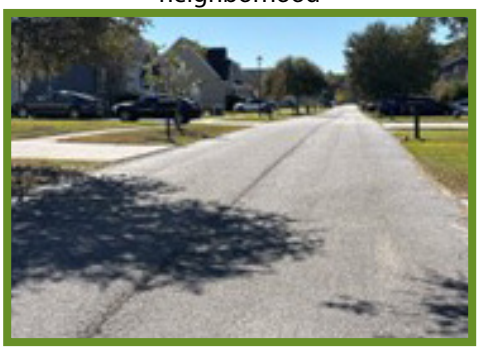
Low spot of Old Baileys Road neighborhood



Roadside ditch on Old Baileys Road



Stormwater pond in Okatie Park neighborhood



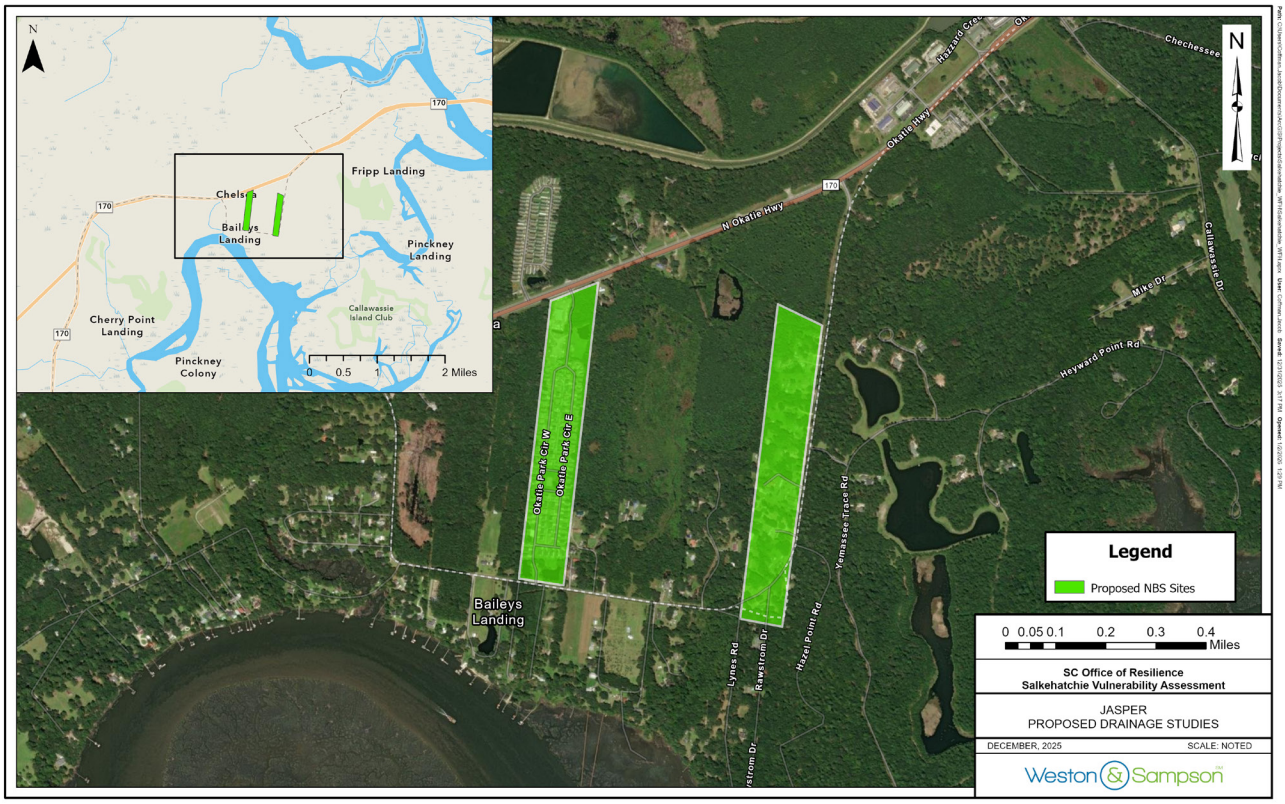
Okatie Park neighborhood - Roads with inverted crowns with inlet in the middle



Soccer field and stormwater pond at entrance to Okatie Park neighborhood

Strategy Location and Map

191 Okatie Park Drive, Ridgeland, 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

Jasper Stream Restoration
Captain Bill Creek Stream Restoration

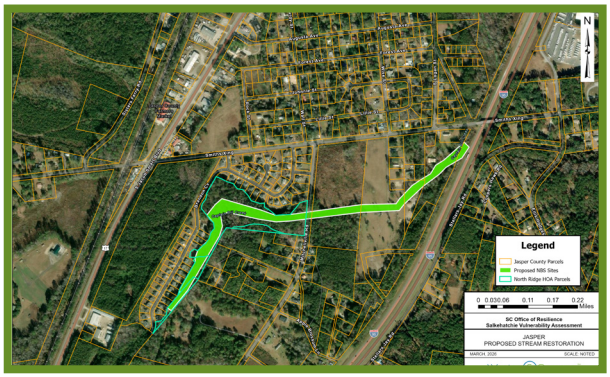
Type of Strategy
Stream Restoration

Strategy Description
Stream restoration is the practice of repairing damaged streams so they function more like natural systems, improving water quality, habitat, and channel stability.

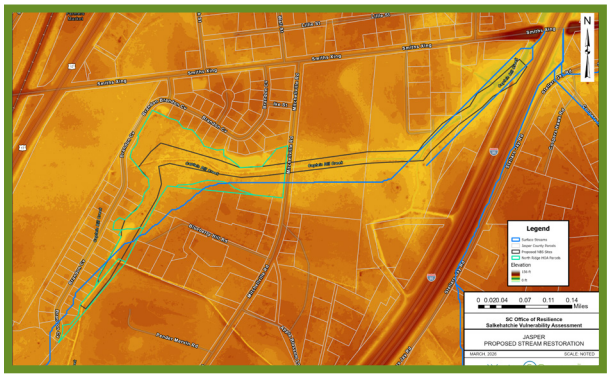
Narrative
This project proposes the restoration of a section of Captain Bill Creek that flows through North Ridge Subdivision that has experienced recurring flooding issues. Observed flooding is believed to be linked to altered stream alignment, restricted conveyance, and degraded channel conditions. This project seeks to restore the stream's natural flow and floodplain connectivity to improve hydraulic performance and reduce flooding risk to nearby homes and infrastructure. Proposed restoration measures may include channel regrading, bank stabilization, in-stream habitat improvements, culvert upsizing along Mitchellville Rd, and reconnection of the stream to its adjacent floodplain where feasible.

Location Description
The project area is within the North Ridge Subdivision and follows Captain Bill Creek from Brandon Cove to Smiths Crossing/I-95. A majority of the parcels in the proposed project boundary are owned by the North Ridge Homeowners Association, allowing for coordinated planning and implementation. Portions of the corridor between Mitchellville Road and Smiths Crossing traverse privately owned properties which may require landowner coordination or easement agreements.

Photos
Existing Conditions



Proposed stream restoration site with Jasper County Parcels and North Ridge HOA owned parcels.



Proposed stream restoration site with Jasper County Parcels, North Ridge HOA owned parcels, digital elevation model (DEM), and surface streams.



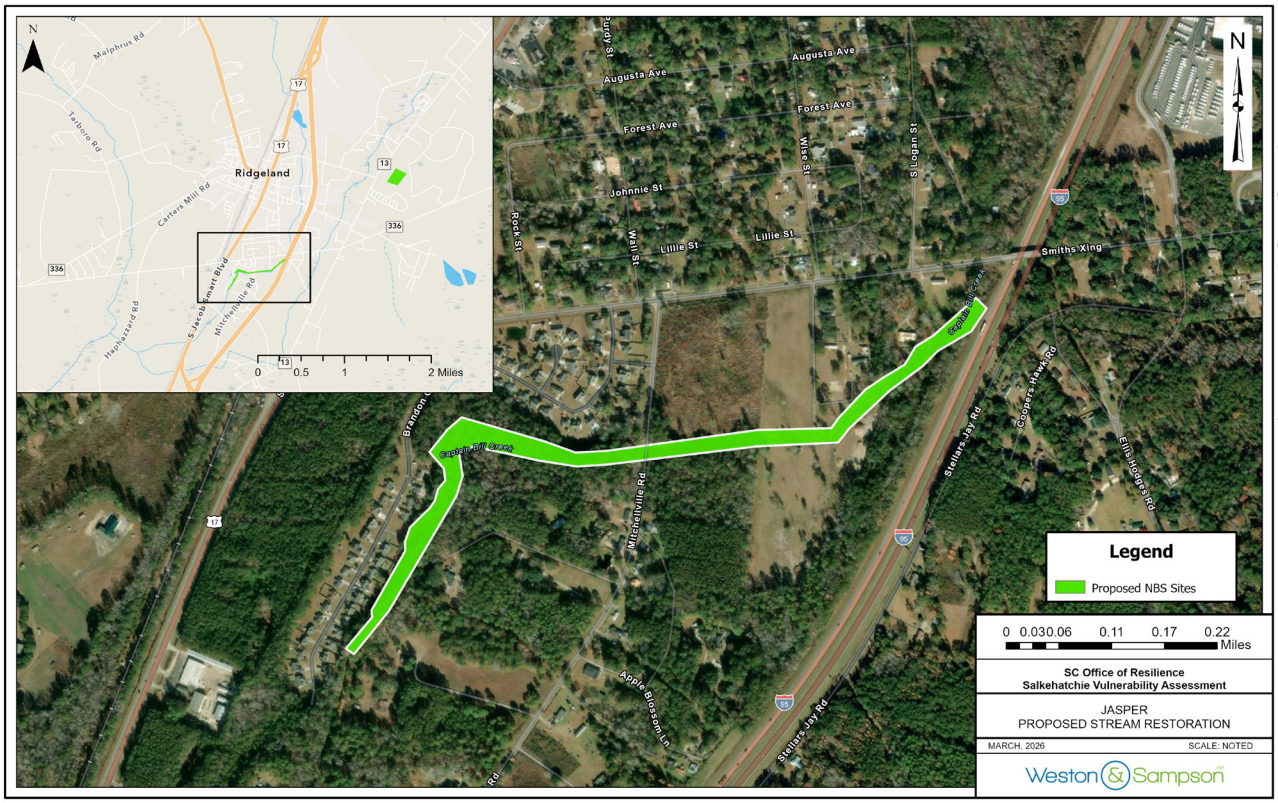
Street view within boundaries of proposed stream restoration facing east on Mitchellville Rd.



Street view within boundaries of proposed stream restoration facing west on Mitchellville Rd.

Strategy Location and Map

North Ridge Subdivision



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

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



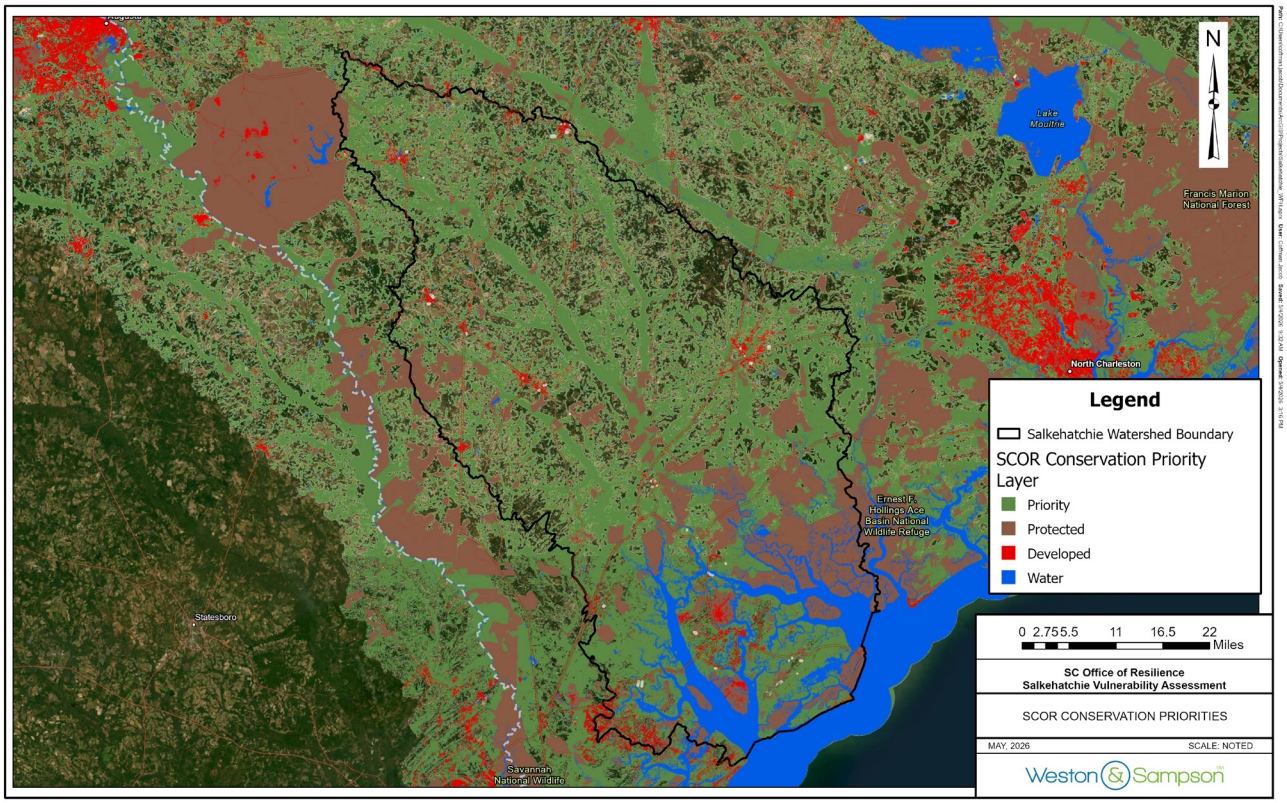
Longleaf Pine Savannas



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.

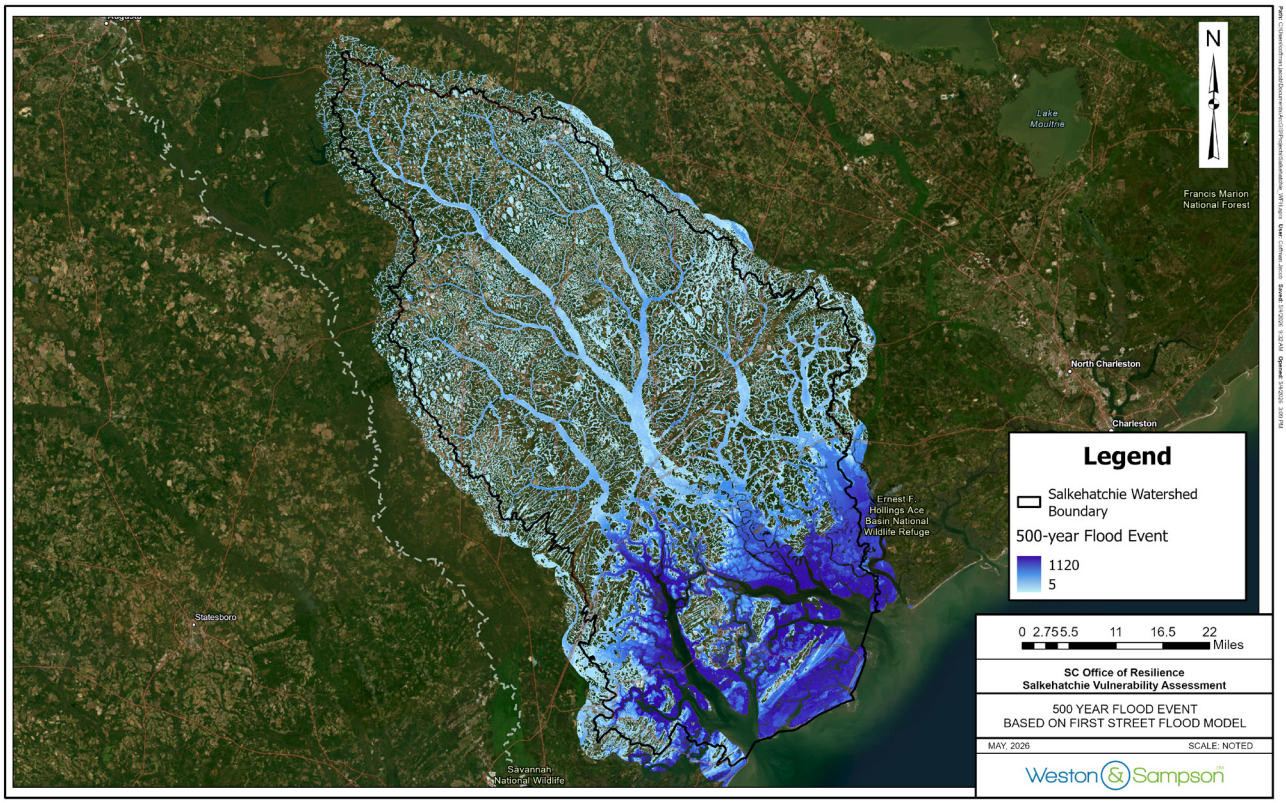
Narrative
This strategy proposes a 1D watershed-wide stormwater model for the Salkehatchie Watershed to improve understanding of hydrologic and hydraulic conditions at a watershed scale. The study can develop a comprehensive watershed model that evaluates current and future flood risks and identifies 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 Jasper County identified **several critical resilience challenges.** To transition these identified strategies into projects, the following grant funding opportunities could be considered. Furthermore, consideration of incorporating SCRCCCP prioritized projects into future planning efforts, such as the Jasper County Hazard Mitigation Plan, will be beneficial in support of future funding initiatives.

Critical Infrastructure

FEMA Hazard Mitigation Grant Program (HMGP):
Administered through the SC Emergency Management Division (SCEMD), these funds are specifically designated for hazard mitigation infrastructure. HMGP is a funding mechanism that can be used to upsize failing culverts, elevate flood-prone road segments along the US 17 and SC 46 intersection, and harden critical evacuation routes against future washouts.

National Fish and Wildlife Foundation (NFWF) – National Coastal Resilience Fund (NCRF):
NFWF provides substantial funding for nature-based solutions (NBS) that reduce flood risk while enhancing habitats. These funds should be targeted to stabilize the creek banks that washed out during Tropical Storm Debby in the northern part of the County.

NOAA Transformation Habitat Restoration and Coastal Resilience Grants:
The National Oceanic and Atmospheric Administration (NOAA) administers this annual program to fund projects that deliver transformative benefits to coastal communities and Tribes nationwide. Competitive applications clearly demonstrate measurable gains for fisheries, contribute to the recovery of threatened and endangered species, and enhance the resilience of coastal ecosystems and communities to climate change. Funded efforts may include reconnecting rivers to historic floodplains, coral outplanting to rebuild reefs, constructing living shorelines to reduce erosion and sea level rise impacts, and similar nature-based solutions.

Water Quality & Wastewater Infrastructure

SCDES Section 319(h) Nonpoint Source Grants:
This is the primary funding source for addressing agricultural nutrient runoff in the Black Swamp and widespread septic failures. Section 319 funds can be utilized to implement septic tank repair programs, implement agricultural BMPs, or install nature-based solutions to filter runoff. (Note: Accessing these construction funds requires an EPA-approved 9-Element Watershed Based Plan in areas with either groundwater or surface water protection zones).

SC Rural Infrastructure Authority (RIA) Grants:
RIA provides funding for public wastewater utilities and stormwater infrastructure. The County and local municipalities could target RIA Regional Planning Grants to study the feasibility of expanding municipal sanitary sewer services to neighborhoods currently reliant on aging, unmaintained septic and drainage systems.

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

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 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

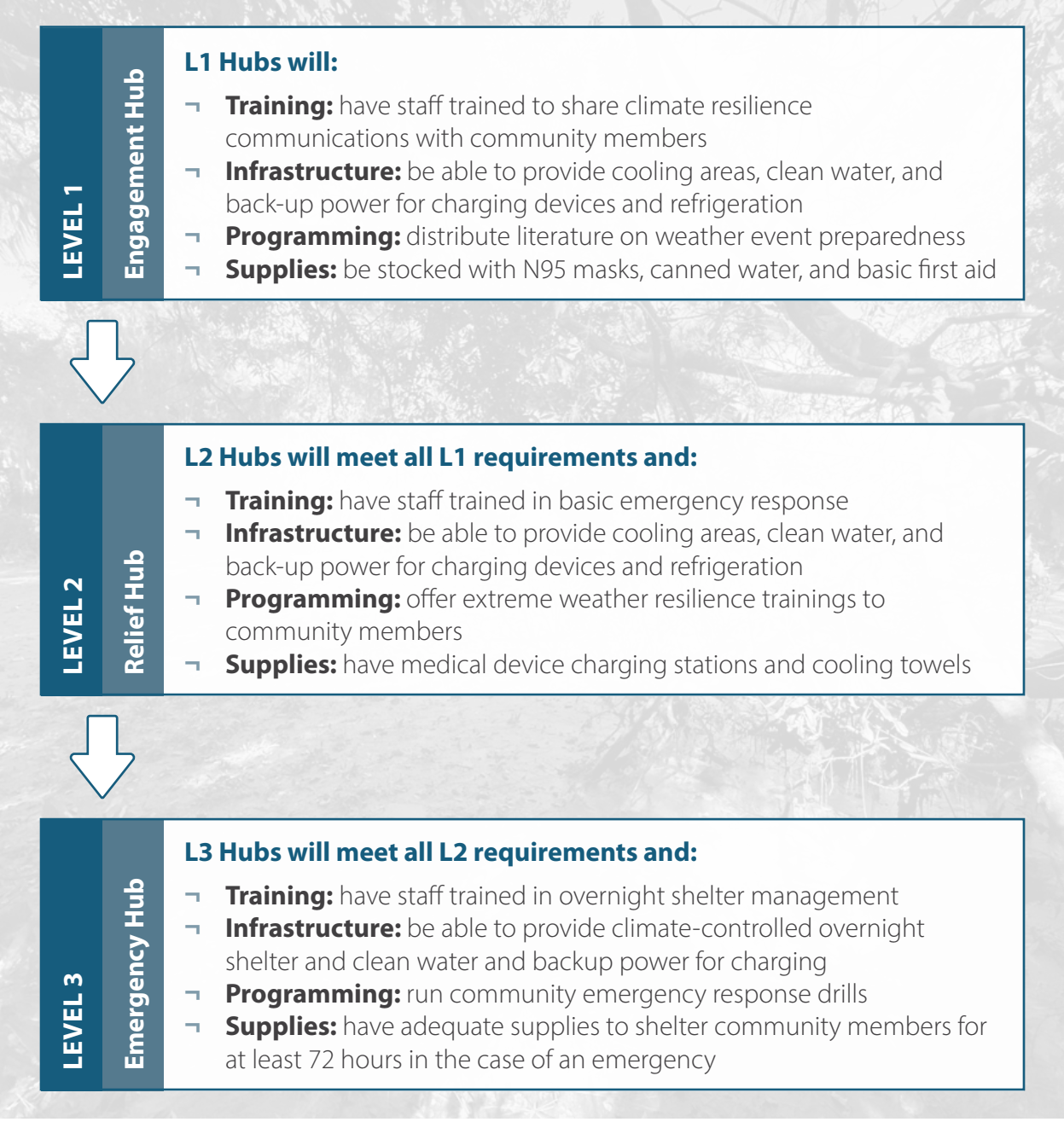


Figure 14: Diagram depicting the three levels of the resilience hub model (Gonzaga University Institute of Climate, Water, and the Environment, 2025). Graphic inspired by the Spokane Community Resilience Hub Network and the Institute for Climate, Water, and the Environment



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

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

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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.

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.









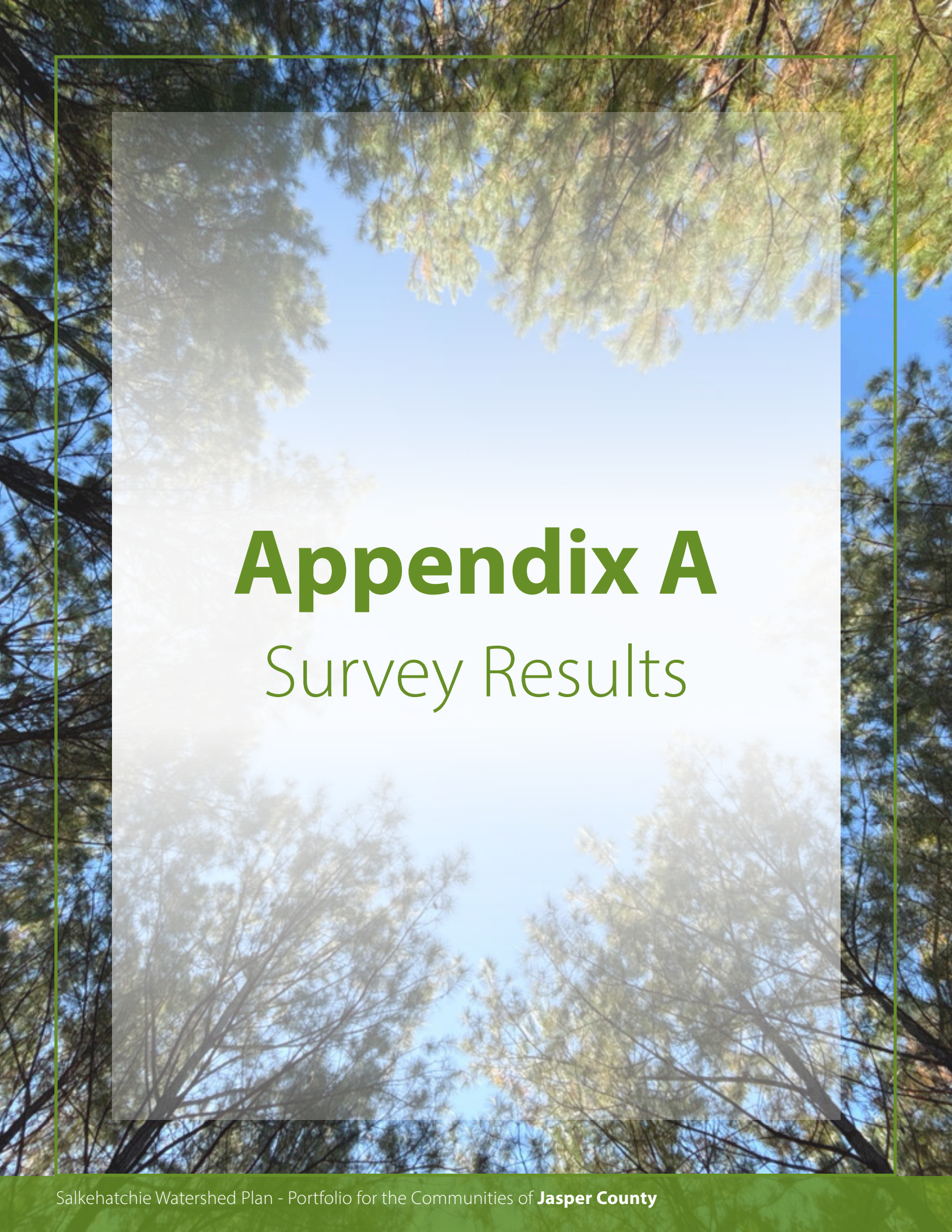
To accomplish this, the Project Team conducted multi-scale vulnerability assessments at the watershed, community, and parcel levels to clearly identify specific vulnerabilities and risks from natural hazards facing the community. The vulnerability analysis was also informed by robust community engagement 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?

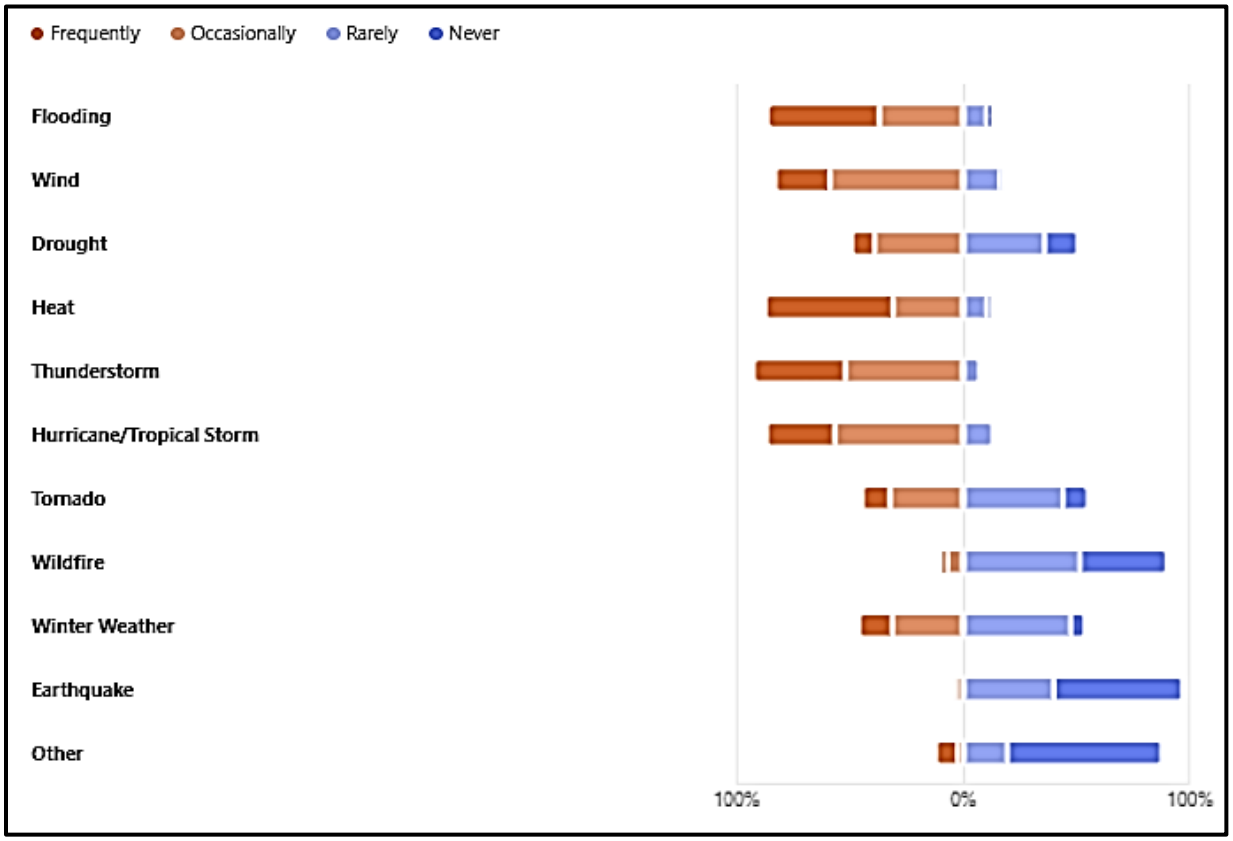
11. If you would like someone with the South Carolina Office of Resilience's Watershed-Based Planning Program to reach out to you to discuss assistance with resilience planning, community needs, identifying funding opportunities, and more, please provide your email here:

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#

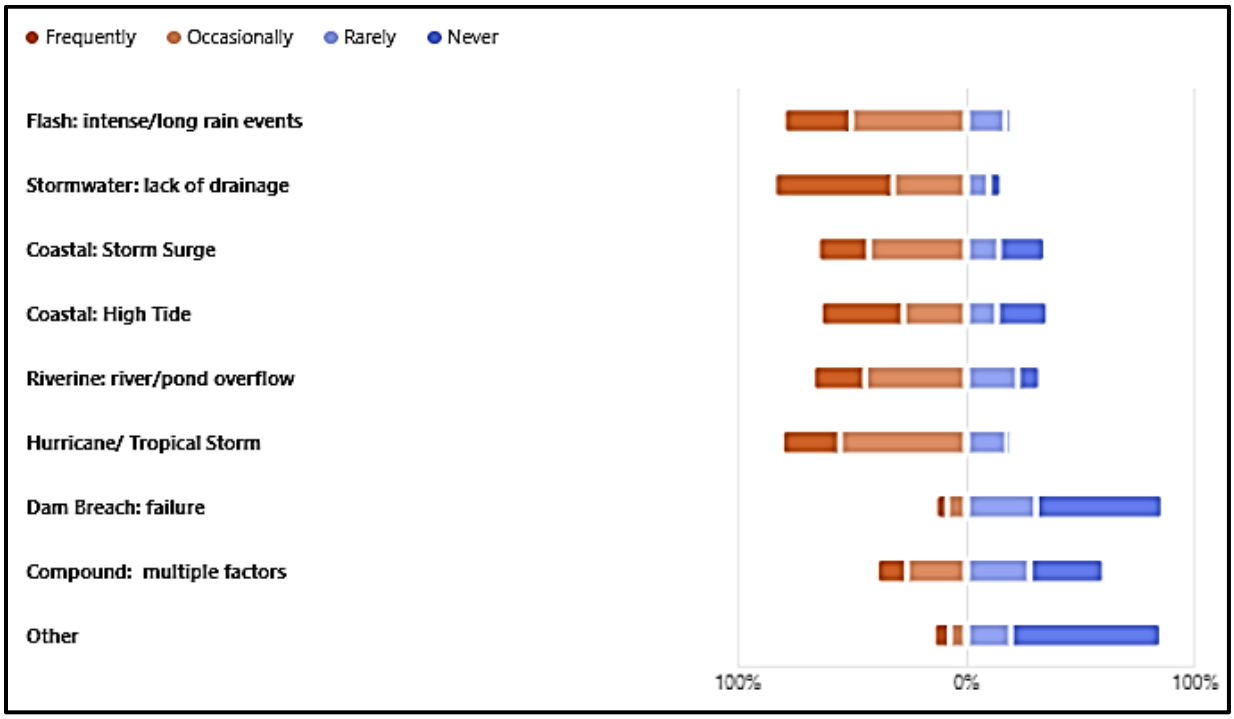
The natural hazards reported by respondents to be of greatest concern were: Heat, Flooding, Thunderstorm, Hurricane, and Wind



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%

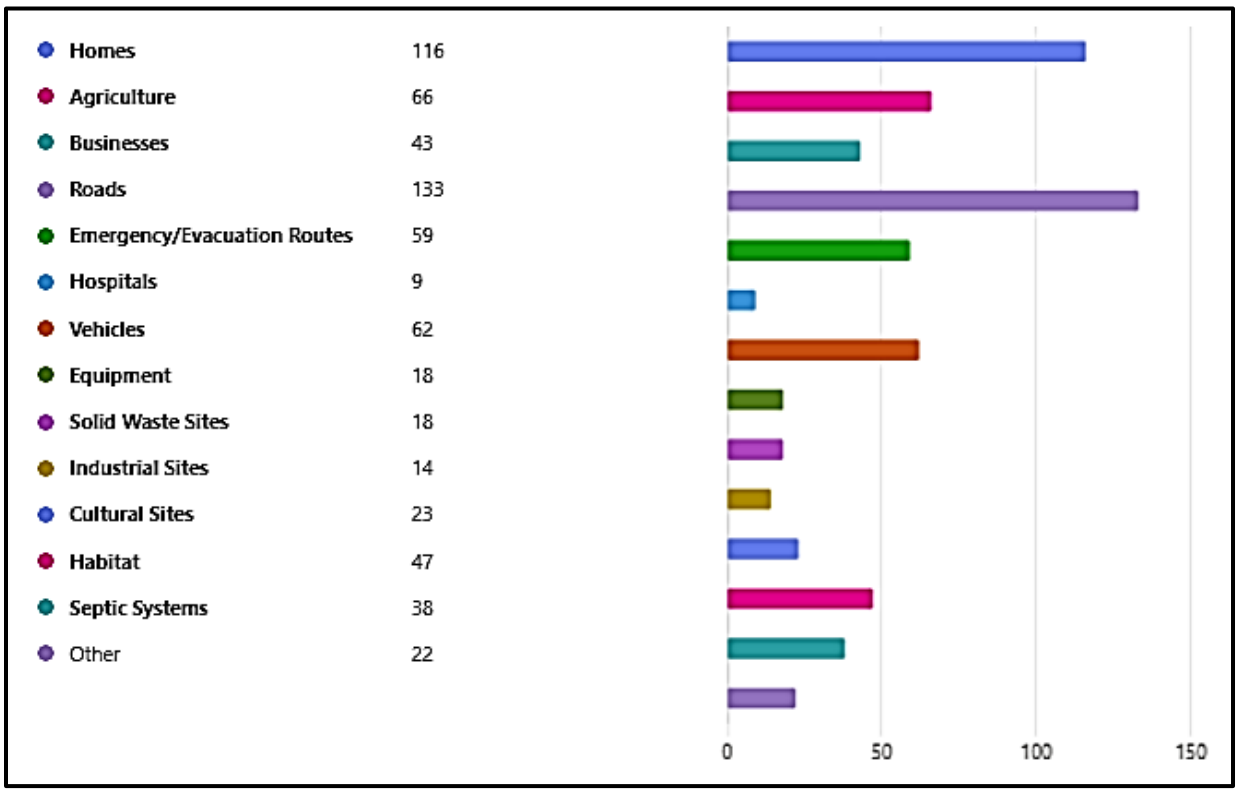
Coastal: High Tide	
Frequently	36.6%
Occasionally	27.5%
Rarely	13.4%
Never	22.5%

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%

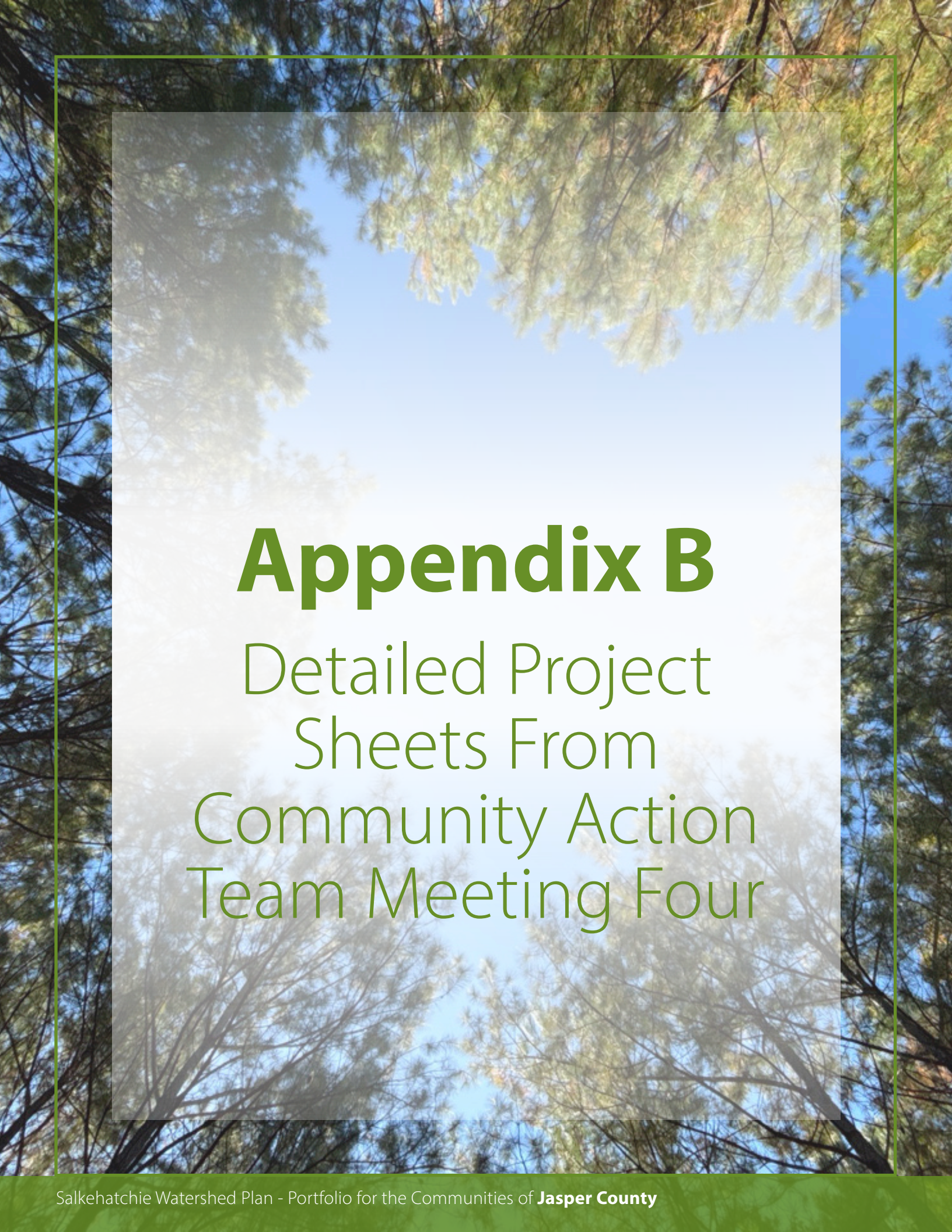
Survey respondents reported many impacts from flooding. Roads, Homes, Agriculture, Vehicles, and Evacuation routes topped the list.



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: Jasper

Potential Adaptation Strategy: Tree Canopy 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): Open fields and other areas that lack canopy cover.

Description of paved surfaces on site: Places for recommended tree plantings may be adjacent to paved surfaces such as roadways or parking lots.

Existing vegetation (all that apply): ☐Woods ☐Shrubs ☐Dirt ☐Open Fields

Estimated tree canopy cover: 0 to 15%

Presence of standing water: ☒ Possible ☐No

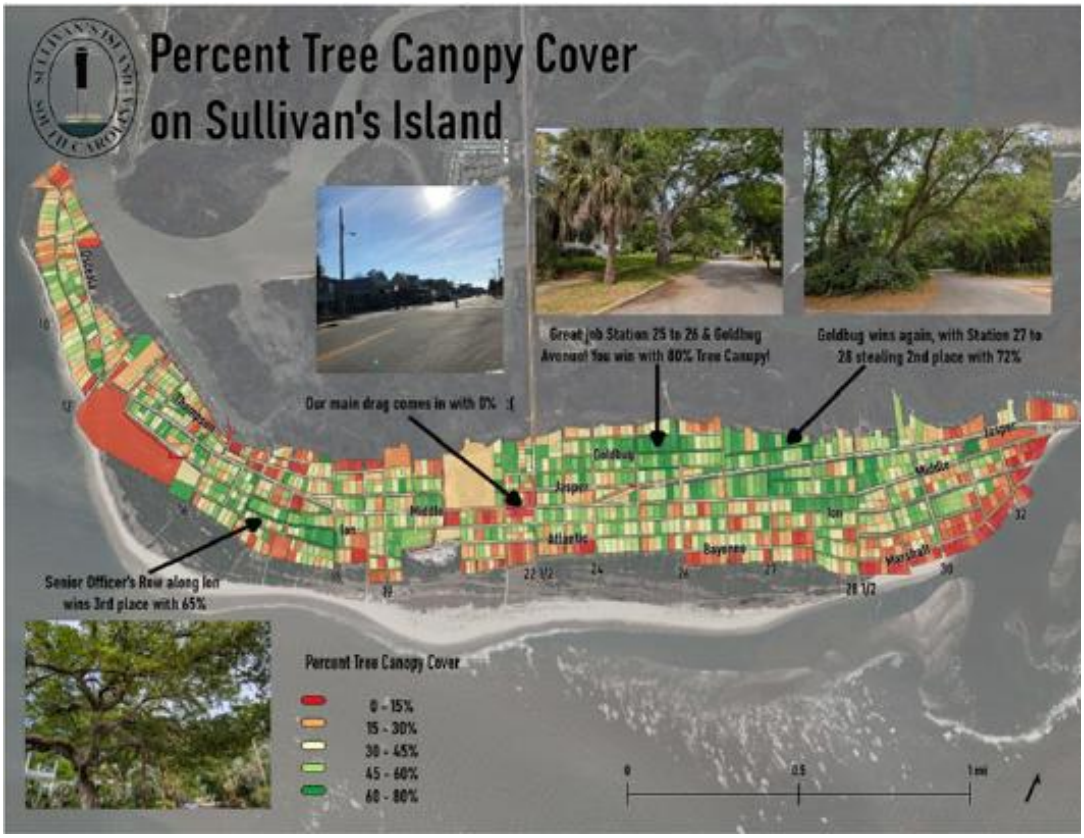
Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☒Other: Forested areas can assist with drainage.

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

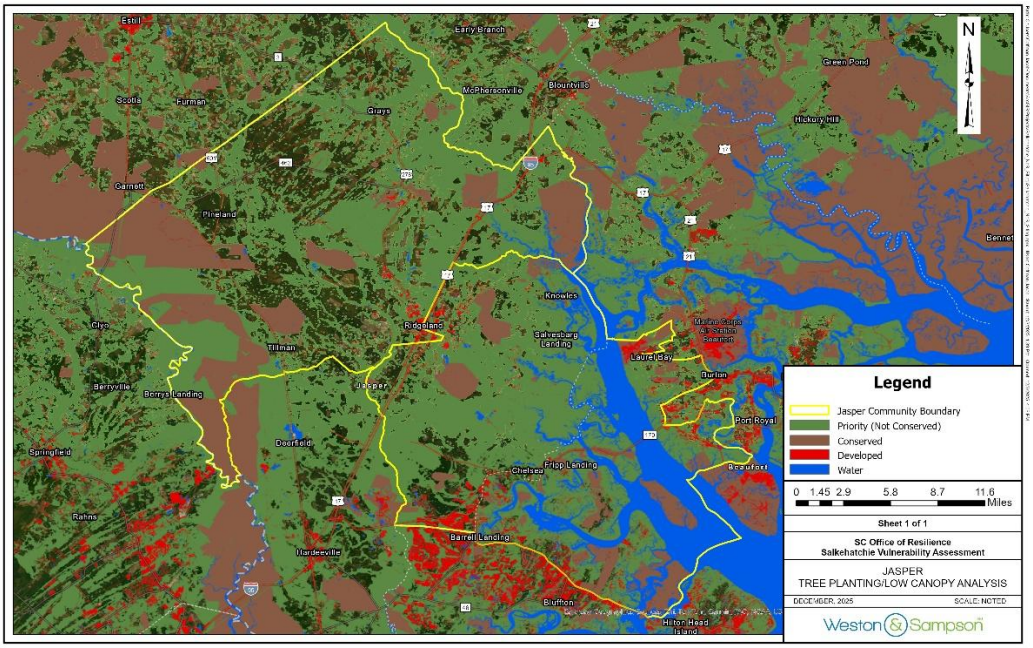
Comments/Observations:

A healthy tree canopy offers abundant benefits including cooling effects, beautification, water management, pollution remediation, and wildlife habitat. A tree canopy analysis, in coordination with the South Carolina Forestry Commission and other organizations, can offer guidance to increase tree plantings on public and private property and recommend strategies for long-term forest success. Open fields that may lay fallow from former agricultural use can be converted to forested areas to assist with water management and more. A tree canopy analysis will help to identify areas with low to no tree canopy cover and prioritize areas for tree planting.

Supportive Graphics:



EXAMPLE. **Source: Town of Sullivan's Island Tree Canopy Mapping**



Source: SC Office of Resilience Conservation Priority Data

Salkehatchie Project Sheet

Community: Jasper

Potential Adaptation Strategy: Constructed Wetland

Address: Bees Creek Rd and Ridgeland Lakes Dr

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

Rainfall in past 24 hrs (CoCoRaHS): 0.50 inches

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): Cement pad on east corner of site, power poles on property.

Description of paved surfaces on site: Click or tap here to enter text.

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

Estimated tree canopy cover: 95% on east half, 0% on west half.

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): Possible ditches on adjacent west property.

Comments/Observations: There are young trees on the site, mostly loblolly pines, and some rebar that might be for silt fencing. It's not clear whether the property should be turned into a wetland or restored as a hardwood area with some wetland pockets. A wetland delineation is needed before any work begins. It's also unclear how water flows to and from the site. More information is needed about the new school's design, since it likely already has stormwater management planned. The main land use of the area is unknown. Nearby neighborhoods have standing water and rely on sheet flow to move water from roads to stormwater ponds, but some ditches and inlets are blocked or missing.

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




1. Gate all the way around property. Some sort of cement foundation here.

2. Young pine stands in open field.




3. Edge between pine and grassland. Rebar stakes (from sediment fencing?) present in property (left). Proposed conditions hardwood area with some constructed wetland pockets.

.

Salkehatchie Project Sheet

Community: Jasper

Potential Adaptation Strategy: Evacuation Roads Analysis/Culvert Elevations

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): Culverts & other drainage infrastructure along roadways

Description of paved surfaces on site: State and local highways.

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: Using research conducted by Clemson University and other available data, a deeper understanding of roadway vulnerability is possible. By identifying evacuation routes that flood and the conditions of the associated drainage infrastructure, a capital improvements plan can prioritize future roadway project needs. In some communities, flooded roadways is a primary concern for residents as it relates to climate adaptation.

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Salkehatchie Project Sheet

Community: Jasper

Potential Adaptation Strategy: Living Shoreline Suitability 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): Docks, revetments, bulkheads are common features in the focus area.

Description of paved surfaces on site: Bridges or boat ramps may be adjacent to project areas.

Existing vegetation (all that apply): ☐Woods ☐Shrubs ☐Dirt ☒Salt Marsh & Tidal Creeks

Estimated tree canopy cover: Variable

Presence of standing water: ☒ Yes ☐No

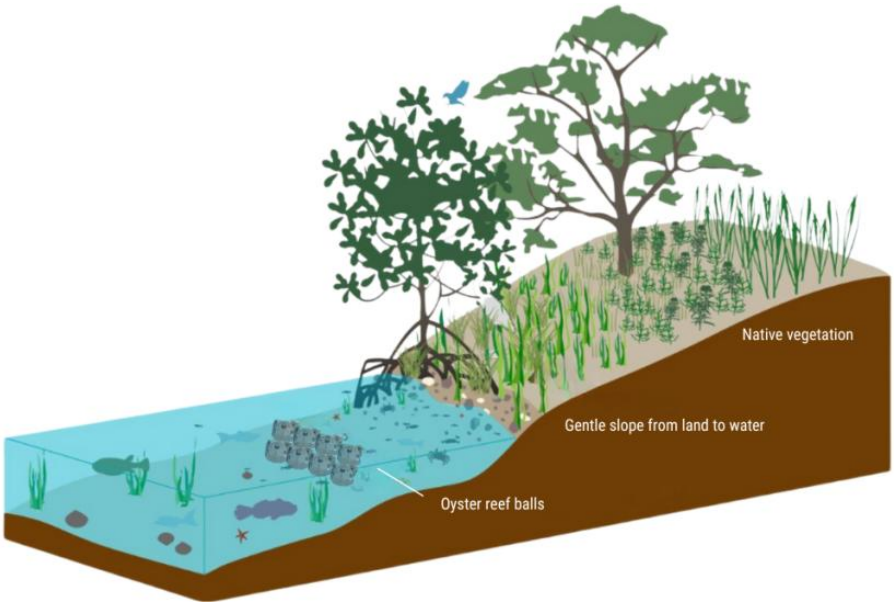
Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☒Other: Stormwater system outfalls may exist in project areas.

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

Comments/Observations: Living shorelines are a method of stabilizing the shoreline including the marsh edge and uplands. Living shorelines are encouraged in the estuary as an alternative to or in support of traditional hardened erosion control structures such as bulkheads or rip rap. Living shorelines may be placed adjacent to traditional stabilization techniques. Living shoreline methods involve planting of native vegetation and/or the installation of green infrastructure such as oyster shell, that promote the health and growth of the native ecosystems (www.clemson.edu/extension/living-shorelines). Living shorelines can provide benefits that improve water quality, stabilize shorelines, provide habitat for fish and other aquatic species, and more.

A living shoreline suitability analysis would use the The Nature Conservancy Living Shorelines application as well as other data to perform a desktop analysis that would help to inform site identification and prioritization for living shoreline implementation. This analysis would provide community specific best practices for living shorelines including design considerations to increase long-term success.

Supportive Graphics:



Source: Ocean Research and Conservation Association Inc. (ORCA)



Source: The Nature Conservancy Living Shorelines Application App



Source: The Nature Conservancy Living Shorelines Application App

Salkehatchie Project Sheet

Community: Jasper

Potential Adaptation Strategy: Drainage Study

Address: Okatie Park Area

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

Rainfall in past 24 hrs (CoCoRaHS): 0.02 inches

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): Developed neighborhood.

Description of paved surfaces on site: Click or tap here to enter text.

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

Estimated tree canopy cover: Click or tap here to enter text.

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): Click or tap here to enter text.

Comments/Observations: The roads have inlets in the middle and are designed with an inverted crown, so water flows across the pavement. There's a park in the middle of the neighborhood, and a wetland to the east has standing water. We need to check the stormwater management plans for this development. It's possible that less water is soaking into the ground than expected, because driveways are paved and rain gardens may not be properly maintained.

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





1. Stormwater pond at the back of the neighborhood.

2. Park in the middle of the neighborhood.





3. Inverted roads with inlet in the middle.

4. Soccer field and stormwater pond at entrance of neighborhood.

Salkehatchie Project Sheet

Community: Jasper

Potential Adaptation Strategy: Drainage Study

Address: Old Baileys Road Area

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

Rainfall in past 24 hrs (CoCoRaHS): 0.02 inches

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): Developed neighborhood.

Description of paved surfaces on site: Main paved road (Old Baileys Rd), dirt road, houses.

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

Estimated tree canopy cover: 40%

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): Click or tap here to enter text.

Comments/Observations: A resident said the neighborhood doesn't flood, but the ditches need cleaning. The nearby Okatie River has a watershed plan, which could make the area eligible for 314 funding to implement a project. It's not yet clear what the best solution would be.

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





1. Stormwater pond off Old Baileys Rd.

2. Low spot of the neighborhood.





3. Roadside ditch on Old Baileys Rd.

4. Roadside ditch on Old Baileys Rd.

Salkehatchie Project Sheet

THIS PROJECT WAS SITED THROUGH DESKTOP ANALYSIS INFORMED BY COMMUNITY FEEDBACK, AN IN-PERSON SITE VISIT WAS NOT PERFORMED

Community: Jasper

Potential Adaptation Strategy: Stream Restoration

Address: North Ridge Subdivision (Proposed boundary follows Captain Bill Creek from Brandon Cove to Smiths Crossing)

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

Rainfall in past 24 hrs (CoCoRaHS): N/A

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): N/A

Description of paved surfaces on site: Stream crosses under Mitchellville Rd.

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

Estimated tree canopy cover: Unsure

Presence of standing water: ☒ Yes ☐No

Drainage on site (all that apply): ☒Grassed Ditches ☒ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other:

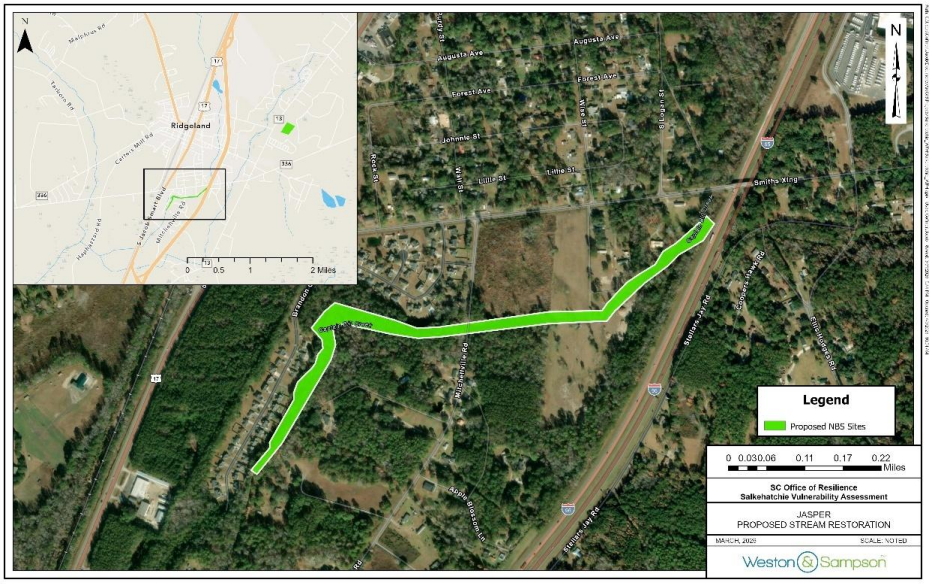
Drainage infrastructure notes (diameter, dimension, material, condition): Unsure

Comments/Observations:

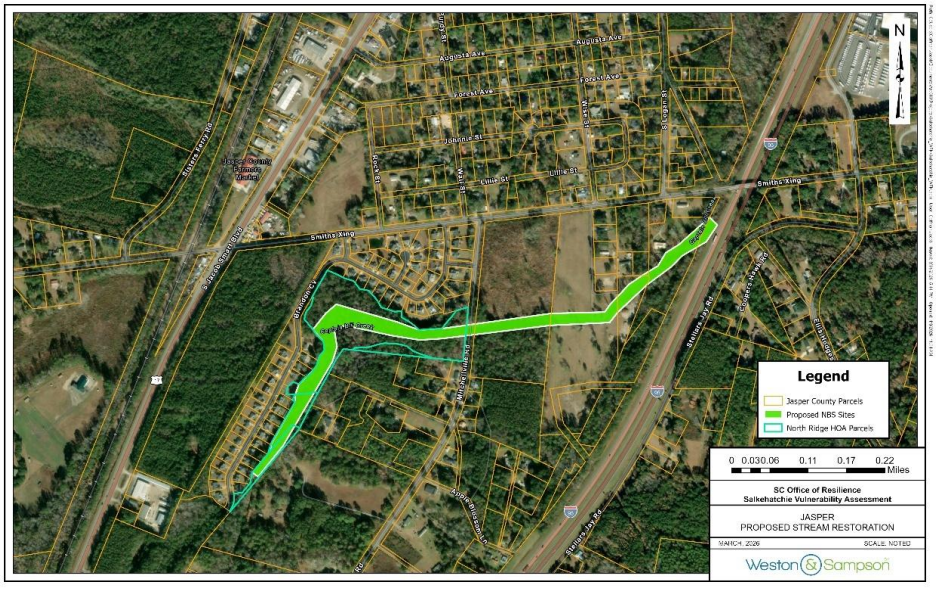
This project proposes the restoration of a section of Captain Bill Creek that flows through North Ridge Subdivision that has experienced recurring flooding issues. Observed flooding is believed to be linked to altered stream alignment, restricted conveyance, and degraded channel conditions. This project seeks to restore the stream's natural flow and floodplain connectivity to improve hydraulic performance and reduce flooding risk to nearby homes and infrastructure. Proposed restoration measures may include channel regrading, bank stabilization, in-stream habitat improvements, culvert upsizing, and reconnection of the stream to its adjacent floodplain where feasible.

The southern half of the project area is located on parcels owned by the North Ridge Homeowners Association, allowing for coordinated planning and implementation. Portions of the stream corridor between Mitchellville Road and Smiths Crossing traverse privately owned properties, which may require landowner coordination or easement agreements. Restoration in these areas would be designed to minimize impacts to adjacent properties while maximizing flood mitigation benefits. There is potential to extend restoration efforts further south; however, this area contains a larger number of privately owned parcels that would require additional stakeholder engagement.

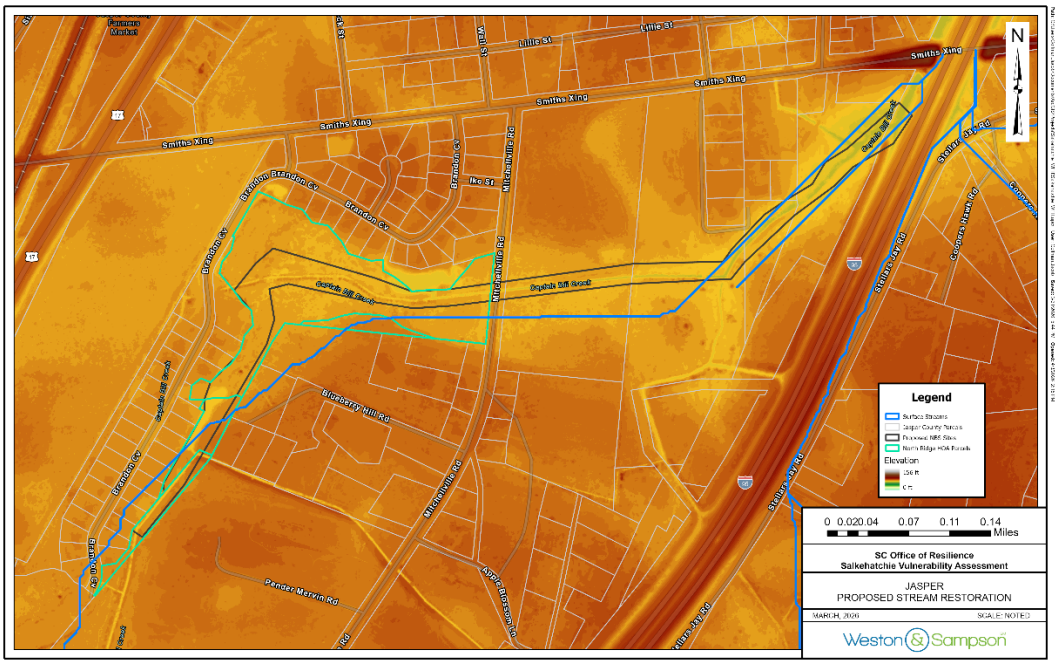
Supportive Graphics:



1. Proposed stream restoration site with inset map.



2. Proposed stream restoration site with Jasper County Parcels and North Ridge HOA owned parcels.



3. **Proposed stream restoration site with Jasper County Parcels, North Ridge HOA owned parcels, digital elevation model (DEM), and surface streams.**





4. **Street view within boundaries of proposed stream restoration facing east on Mitchellville Rd. (left)**

5. **Street view within boundaries of proposed stream restoration facing west on Mitchellville Rd. (right)**



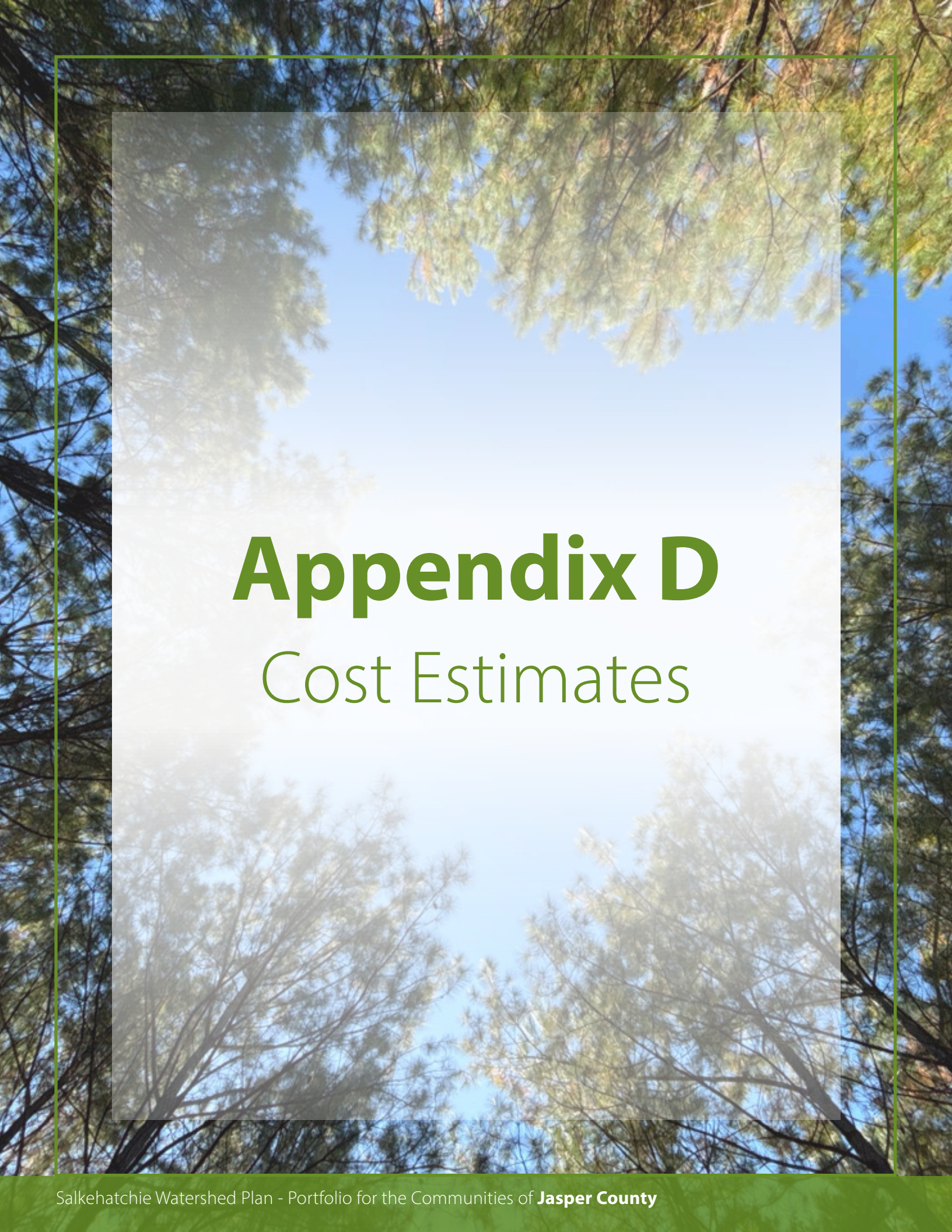
Appendix C

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:

Jasper Constructed Wetland

Type of Strategy: Constructed Wetland

Community: Communities of Jasper County

Strategy Address/Location: 3716 Bees Creek Road/ Ridgeland Lakes Drive, Ridgeland, SC (32.482708, -80.954483)

Date of Estimate: 03/31/2026

Overarching Assumptions

- The following cost estimate is for a large constructed wetland of approximately 3 acres in size which is intended to manage runoff from adjacent neighborhood that currently experiences flooding and future school buildings and paved surfaces. Constructed wetlands if designed and sized correctly can manage a large drainage area, upwards of 35 acres depending on site specifics.
- The following cost includes design and conveyance materials to connect this wetland to adjacent properties to both receive stormwater runoff, and discharge into nearby water bodies during high water events.
- This cost estimate should not be used to assume that this work is sure to happen but was produced as an example of what could be done after appropriate coordination. Coordination with the property owner is ongoing.
- The area of this constructed wetland was assumed to be toward the back of the property where the current tree line is located.
- The location of the school building has not been determined, and that may alter the footprint of the constructed wetland and other associated aspects like pipe length.
- Planning and Design task costs involve a multidisciplinary set of professional contractors including restoration ecologists, landscape architects, and water resource engineers.

Planning and Design

- Project Management and Coordination:
    - 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.
- Project Area Assessment
    - Description- Site visit, biological existing conditions assessment, gathering utility records, survey and survey review, geotechnical analysis.
    - Assumptions- Two staff members will conduct the site visit. Time for preparation and travel are included. Time is included for a tree survey and jurisdictional wetland delineation for a roughly 20-acre area which is inclusive of the full project area and a pathway for water to travel between the flooded neighborhood to the constructed wetland, and from the constructed wetland to the nearby stream channel.
- 30% Design
    - Description- Base Maps, Existing Conditions Hydrologic Analysis, Community Engagement, Plan Drafting, Review and Final 30% Design documentation.
    - Assumptions- none
- Survey & Geotechnical
    - Description- A licensed surveyor and a geotechnical contractor will gather necessary information for the design and permitting of this constructed wetland in the design phase. A construction survey is needed to define horizontal and vertical control for grading, pipe alignment, and any structure placements. A geotechnical investigation is recommended prior to final design to characterize subsurface soil conditions across the basin footprint and pipe corridors.
    - Assumptions- Priced as a lump sum, this cost contributes to paying two separate firms to work as subs on this project to a prime firm.
- 60-90% Design
    - Description- Design Plans, Stormwater H&H Calculations, Develop Specifications, Planting Plan, Erosion and Sediment Control Plan, Operations Plan, Permitting/City Coordination
    - Assumptions- none
- Final Design
    - Description- Finalize Plans, finalize specifications, finalize cost estimate, finalize report

Table 1. Planning and Design Costs

Item	Unit	Quantity	Total ($)
Project Management & Coordination	*LS*	*1*	15,000
Survey	*LS*	*1*	65,000
Geotechnical	*LS*	*1*	15,000
Engineering	*LS*	*1*	115,000
Subtotal Planning and Design			**210,000**

Construction and Implementation

- Site Setup and Access
    - Description- An engineer, landscape architect, and biologist will create a site layout plan for all plant selections, placements, site prep, soil amendments, etc. Prior to construction, the site will be prepared with standard erosion and sediment control measures required under the SCDES Construction General Permit. A single stabilized construction entrance with washing station will be established at the primary access point off Bees Creek Road, using aggregate base per SCDES best management practice specifications. The perimeter of the approximately 6-acre work zone will be delineated with blaze orange construction fencing, and super silt fence will be installed along all wetland and waterway buffers. Disturbed upland areas outside the wetland basin will receive 3-inch wood chip mulch for stabilization.
    - Assumptions- One construction entrance is sufficient based on site access from Bees Creek Road. Soils mapping indicates the access route avoids wet soils, so a mulch access road is not included. Fencing and silt fence quantities are based on the estimated project footprint and will be refined once construction limits are established on the grading plan.
- Site Preparation and Documentation
    - Description- This section covers general construction tasks including survey stakeout, as-built documentation, tree clearing, and traffic management. Construction stakeout and as-built survey are included as lump sum items, with the as-built survey required for permit compliance under USACE Section 404 and SCDES. Approximately 1.39 acres of trees were assumed to be cleared within the proposed constructed wetland footprint and adjacent buffer, with individual tree removal priced by the unit following a tree survey. Traffic control is included as a lump sum to cover any road crossings or construction access flagging required along the pipe corridors.

    - Assumptions- Tree removal quantity is based on 60,714 ft^2 of identified canopy area and will need to be converted to an individual tree count following a formal tree survey. Maintenance of stream flow and dewatering are carried at $0 pending confirmation of whether active surface flow exists at the site during the anticipated construction window.
- Excavation and Earthwork
    - Description- Constructing the wetland basin requires excavating approximately 22,600 cubic yards of material to a depth of 4 feet across the 3.5-acre basin footprint. Excavated material suitable for reuse will be placed as compacted structural fill in perimeter berms, interior cell dividers, and weir foundations. Prior to bulk excavation, approximately 6 inches of organic topsoil will be stripped, stockpiled, and respread over upland disturbed areas and planted buffer zones following grading.
    - Assumptions- Excavation volume is based on 3.5 AC at 4 ft depth (22,587 CY gross cut); swell factor not applied and should be adjusted per soils report. Jasper County Coastal Plain soils (Lakeland-Blanton-Rutlege association) are predominantly sandy with a shallow seasonal water table, so wet excavation conditions and potential dewatering costs should be anticipated. Native soils may not be suitable for structural fill in berms and weirs, potentially requiring imported borrow material. Unit price for excavation includes haul.
- Storm Drain / Inlet Conveyance
    - Description- Water will be conveyed from the flooded neighborhood areas to the constructed wetland basin via approximately 1,109 linear feet (0.21 miles) of new storm drainpipe. Pipe was used for cost estimate purposes. The pipe size and material will be determined by hydraulic design, but HDPE corrugated pipe is anticipated as typical for stormwater and wetland applications in South Carolina. The network includes manholes or junction structures spaced approximately every 300 to 400 linear feet, a catch basin for surface runoff interception, a concrete headwall with trash rack at the inlet end, and a lump sum allowance for connection to the existing drainage infrastructure at the donor wetland.
    - Assumptions- Pipe unit price includes trench excavation and backfill. Pipe diameter is estimated at 18 to 36 inches pending hydraulic design. Four manholes are assumed based on alignment length. The tie-in allowance accounts for potential SCDOT coordination if the alignment crosses a road.
- Outlet Works and Discharge Conveyance

    - Description- Water will exit the constructed wetland through a primary control structure and be conveyed approximately 1,848 linear feet (0.35 miles) to the receiving stream. The control structure will be a corrugated metal or precast concrete riser with stop-log slots, an anti-seep collar, and a weir to regulate water levels within the basin. At the downstream end, a concrete headwall with trash rack will be installed at the stream outfall, along with a riprap apron to dissipate flow energy and prevent scour. Flashboard risers are included as an optional item to allow seasonal drawdown for vegetation establishment and invasive species management.
    - Assumptions- Outlet pipe unit price includes trench excavation and backfill. Anti-seep collar is required per NRCS standards given the pipe passes through an embankment. Riprap apron sizing will be determined by hydraulic design per SCDOT or NRCS standards. Outlet control structure elevation must be coordinated with the hydraulic grade line of the receiving stream. Energy dissipation at the stream outfall is a standard requirement under USACE Section 404 and SCDES permit conditions and is therefore treated as a required item, not optional.
- Site amenities
    - Description- Interpretive educational signage is included to communicate the ecological function and community value of the constructed wetland. This is typical for grant-funded wetland restoration projects and supports public outreach goals.
    - Assumptions- Four signs assumed at this stage. Quantity, content, and placement to be determined in coordination with the project owner and any grant program requirements.
- Site Planting
    - Description- The planting plan covers the full 5.5-acre project area including the basin interior and upland buffer. Trees will be planted across the wetland edges and open water areas, shrubs will be clustered on intermittent high spots and along the perimeter, and a native seed mix will be applied to drier disturbed areas. Recommended species reflect the freshwater Coastal Plain context of Jasper County.
    - Assumptions- Trees are priced at 3/4 to 1-inch caliper; if the site is intended for immediate public use as a park feature, upgrade to 2-inch caliper at an increased average price of $450 per tree. Approximately 500 trees at 15 to 20-foot spacing, 300 shrubs clustered on high spots, and 6,700 square yards of native seed are assumed based on the estimated planting area distribution. Final quantities will be determined by a planting plan. Seed mix should be

certified SC-source native; confirm species list and seeding rates with NRCS EQIP standards or project specifications.

- Administrative
    - Description- A 20% contingency is applied to the base construction cost, consistent with an AACE Class 5 conceptual-level estimate. This contingency rate reflects the significant uncertainties remaining at this stage, including pipe sizing, soils conditions, tree counts, and final grading design. The contingency rate should be reduced to 15% at the feasibility level and 10% at the design development level as the project advances.
    - Assumptions- none

Table 2. Construction and Implementation Costs

Item	Unit	Quantity	Unit Cost ($)	Total ($)
Site Setup and Access				
Stabilized Construction Entrance	*EA*	*1*	6,000	6,000
Mulch - 3" depth on disturbed areas outside of channel	*CY*	*90*	50	4,500
Blaze orange fence (construction fence)	*LF*	*3,000*	7	21,000
Super Silt Fence	*LF*	*3,500*	9	31,500
Site Preparation and Documentation				
Construction Stakeout	*LS*	*1*	10,000	10,000
As-Built Survey	*LS*	*1*	10,000	10,000
Clearing and Grubbing	*AC*	*2*	4,500	9,000
Traffic Control	*LS*	*1*	8,000	8,000
Individual Tree Removal	*EA*	*75*	750	56,250
Excavation and Earthwork				
Wetland Basin Excavation	*CY*	*22,587*	45	1,016,415
Structural Fill	*CY*	*1,000*	85	85,000
Topsoil Stockpile and Respread	*CY*	*4,000*	17	68,000
Storm Drain / Inlet Conveyance Network				
Storm Drain Pipe – Inlet Conveyance	*LF*	*1,108*	135	149,688
Storm Drain Manhole / Junction Structure	*EA*	*4*	6,500	26,000
Catch Basin / Inlet Box	*EA*	*2*	3,000	6,000
Headwall / Endwall – Inlet End	*EA*	*1*	3,000	3,000
Connection to Existing Storm Drain System / Modification	*LS*	*1*	10,000	10,000
Outlet Works and Discharge Conveyance				
Control Structure / Riser with Weir and Anti-Seep Collar	*EA*	*1*	25,000	25,000
Outlet Pipe – Discharge Conveyance	*LF*	*1,848*	140	258,720

Headwall / Endwall – Outlet End (to stream)	*EA*	*1*	3,000	3,000
Riprap Apron / Energy Dissipator at Stream Outfall	*SY*	*25*	80	2,000
Flashboard Riser / Stop Logs	*EA*	*1*	5,000	5,000
Site Amenities				
Educational Signage	*EA*	*4*	750	3,000
Site Planting				
Trees	*EA*	*500*	350	175,000
Shrubs	*EA*	*300*	60	18,000
Herbaceous Seed	*SY*	*6,700*	8	53,600
Subtotal Construction and Implementation				**2,063,565**
Construction Oversight (20%)				**412,713**
Contingency (30%) *				**682,070**
GRAND TOTAL Planning, Design, Construction, and Implementation				**3,368,348**

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

Maintenance

- Establishment (1st year)
  - Replanting, erosion repair, mulching sediment/debris clearing inlet/outlet
- Annual Maintenance
  - Replanting, erosion repair, mulching, sediment/debris clearing inlet/outlet
- Long-term (every 10-20 years)
  - Regrading, pipe replacement, inlet/outlet structural repair, sediment/debris clearing from basin
- Assumptions
  - Costs do not include replacement of materials (plants, mulch) and infrastructure (pipes, riser)

Note: Maintenance costs in hours, assume County staff will provide maintenance

Table 3. Maintenance Effort

Item	Unit	Quantity
Establishment	*Hrs*	64
Annual	*Hrs*	60
Long Term (every 10-20 years)	hrs	20

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

Jasper Drainage Study

Type of Strategy: Drainage Study

Community: Communities of Jasper County

Strategy Address/Location: Okatie Park – 191 Okatie Park Dr, Ridgeland SC (start) and south along Okatie Park Circle

Old Baileys Road – from intersection of Okatie Hwy and Old Baileys Rd (start) and south along Old Baileys Rd

(32.350258, -80.881925)

Design Stage: Modeling of existing conditions and recommendations for alleviating flooding

Date of Estimate: 03/31/2026

Overarching Assumptions

- Otis Cannick Drive is situated between two different drainage basins: Okatie Park, which is a relatively newer development to the west, and Old Baileys Road which is an older neighborhood to the east. Neither of these neighborhoods appear to have flooding issues (as documented in site visits); however, an in-depth drainage study may help identify problem areas and potential effective solutions.

Planning and Design

- Project Management:
    - Description- progress meetings, budget management, scope and schedule oversight details.
    - Assumptions-
        - 1 kickoff meeting with client, 12 team coordination meetings; 4 progress meetings with client
        - Staff involved: project manager and technical/design professionals
        - Reimbursables: mileage for kickoff meeting
- Pre-Design:
    - Description: data collection (as-builts, GIS, drainage reports, drainage complaints); site visit; virtual meeting with client to review data; gather stakeholder information (survey/webmap); base mapping to use for hydrology & hydraulic design (soils, topography, drainage areas, etc.)

    - Assumptions
        - 1 virtual meeting with client
        - 2 site visits
        - Staff involved: project manager, senior technical/design professional, technical/design professional, junior technical/design professional, GIS/CADD professional
        - Survey not required (use available GIS contours/DEM and make measurements for key crossings/infrastructure in field)
        - Reimbursables:
            - Mileage for 2 site visits
- Engineering & Conceptual Design:
    - Description- *hydrologic and hydraulic modeling*
    - Assumptions-
        - 1 existing conditions model
        - 1 proposed conditions model with up to 5 proposed solutions
        - Technical report with associated GIS maps and model output
        - 1 virtual meeting with client to review recommendations
        - 1 round of edits to technical memo to address any comments
        - Engineer's proposed cost estimate for recommendations

Table 4. Planning and Design Costs

Item	**Unit**	**Quantity**	**Total ($)**
Project Management	*LS*	*1*	15,000
Pre-Design	*LS*	*1*	20,000
Engineering & Conceptual Design	*LS*	*1*	75,000
		Contingency (30%) *	**33,000**
		GRAND TOTAL	**143,000**

*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 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.