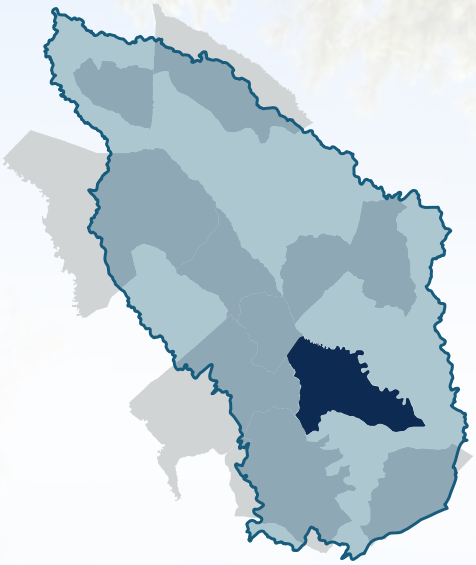
South Carolina
Resilient Coastal Communities Collaborative Program

Salkehatchie Watershed Plan



Resilience Portfolio for the Communities of

Northern Beaufort County

SCOR South Carolina Office of Resilience

Sea Grant S.C. SEA GRANT CONSORTIUM

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

National Fish and Wildlife Foundation NFWF

McCORMICK TAYLOR

Weston & Sampson

Biohabitats

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1. Executive Summary

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

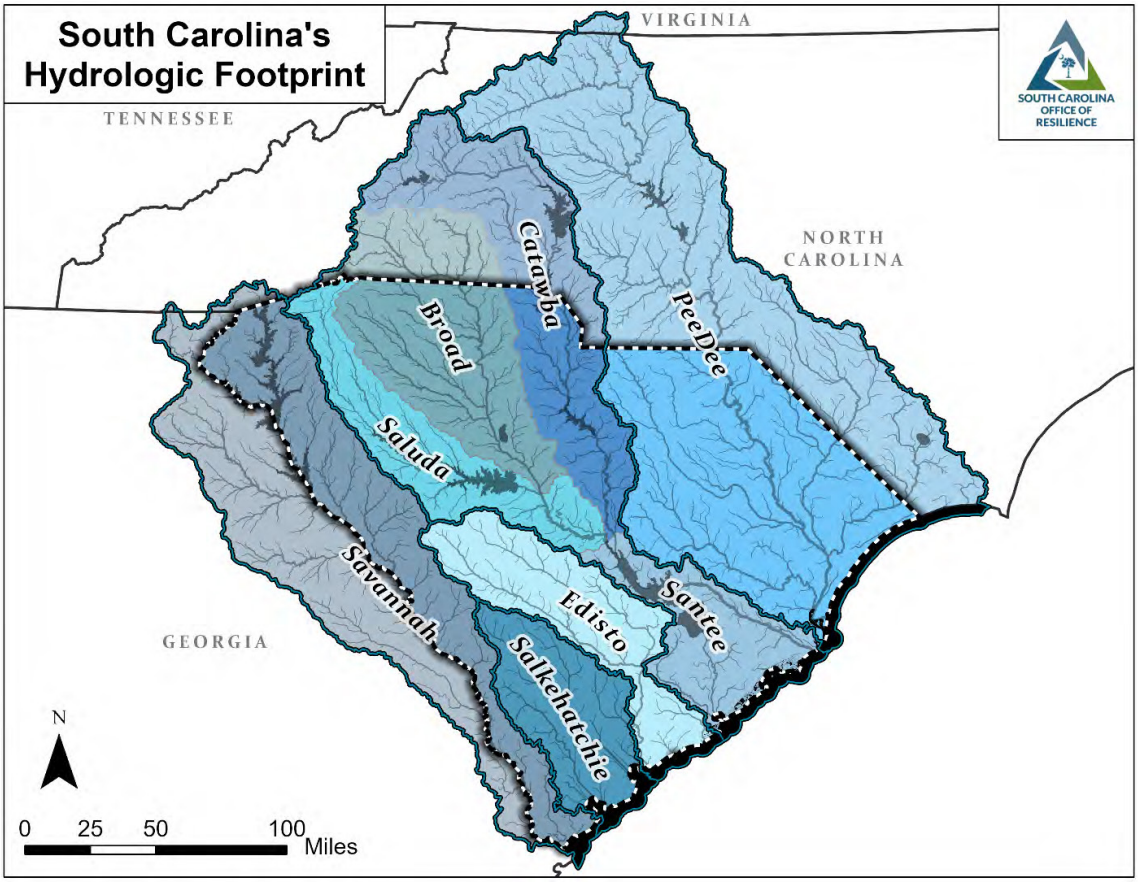


Figure 1: Salkehatchie River Basin

1a. The Salkehatchie River Basin

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

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

3

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

7

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

7th

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

18

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

34

It includes **thirty-four municipalities**

95

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

1,012

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

315,000

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

653,606

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



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

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

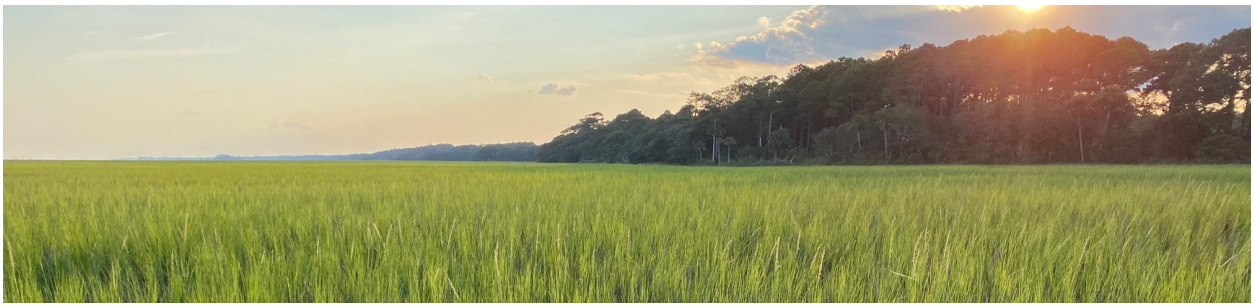
DEVELOPMENT PRESSURE: While the upper part of the Salkehatchie Watershed is primarily rural and agricultural, there is a high level of developmental pressure in the coastal region, specifically in Beaufort, Jasper, Colleton, and Hampton Counties. Forested and Agricultural land cover in the basin has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

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

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

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

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



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

1b. Project Approach

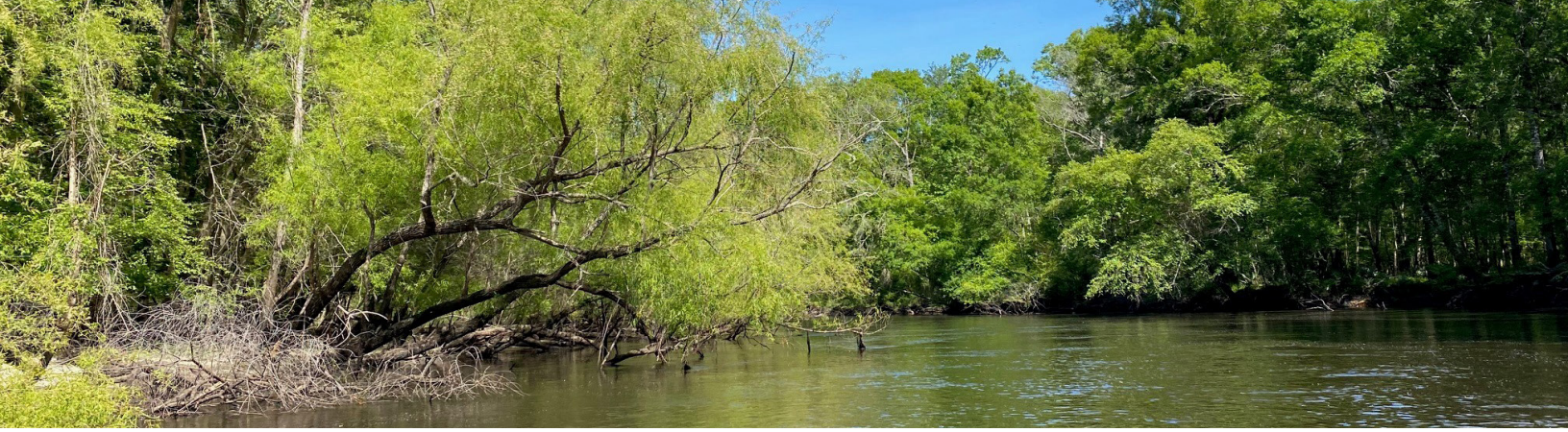
As a foundational step, **SCOR and SCSG reviewed local planning efforts** to better understand existing conditions and identify opportunities to leverage planned efforts.

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



Community Engagement

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



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

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

Vulnerability Assessment

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

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

Strategy Siting

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

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

Prioritization

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

1

Flood reduction benefit

Informed by project drainage areas and runoff reduction rates.

2

Feasibility

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

3

Co-benefits

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

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

Results

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

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

The Communities of Northern Beaufort County are defined by complex coastal geography and experience historic flooding that includes impacts from tropical storms, hurricanes, high intensity rain events, king tides, and storm surge. Because ecological value was identified as the community's highest priority, the desktop analysis placed emphasis on practices that provide wildlife habitat co-benefits, prioritizing community-preferred practices such as conservation areas and living shorelines. **For cost estimation, the prioritization matrix highlighted two projects that consistently performed well across all criteria: the Drainage Study at Bailey Road, which had the highest overall score, and a series of Rain Gardens at James J David Elementary School, which had the second highest score in the community.**

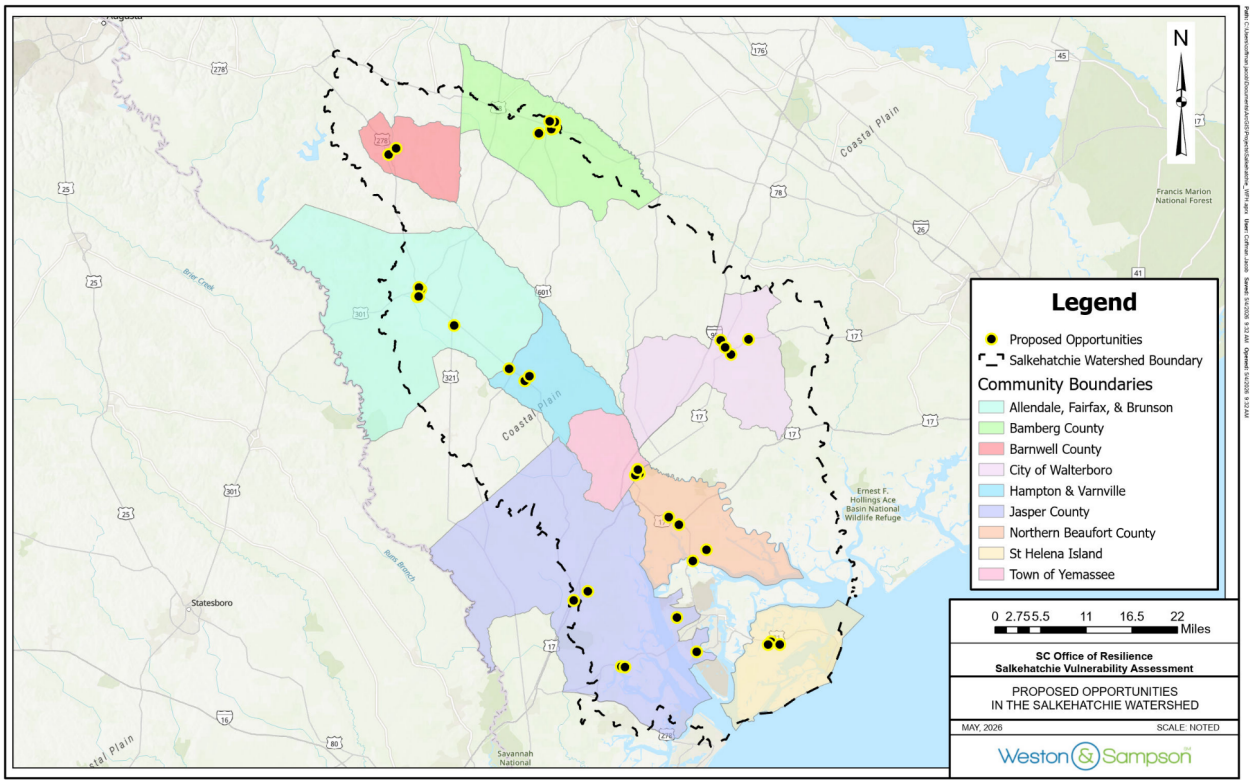


Figure 2: SCRCCCP Study Communities and Proposed Opportunities

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

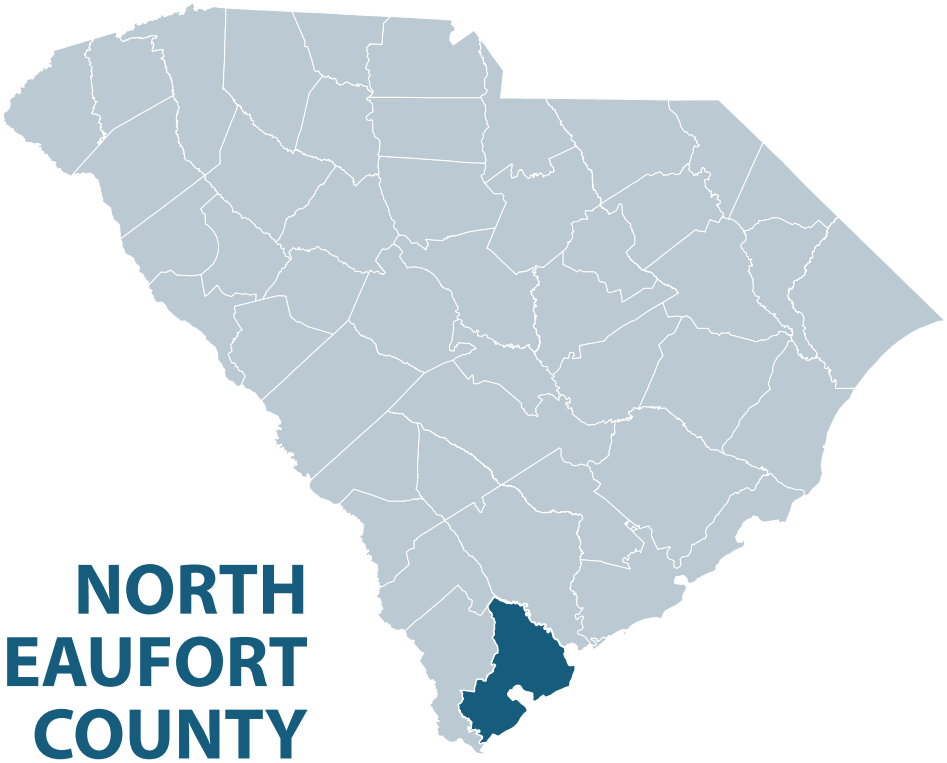
Highlight **community preferred** resilience strategies

6

Strengthen **collaboration and partnerships** within the watershed

2b. Community Background

The unincorporated communities of Sheldon, Lobeco, and Dale in Northern Beaufort County are defined by complex coastal geography, featuring a highly interconnected network of tidal creeks and rivers, expansive salt marshes, and estuarine environments. Located just south of the Town of



NORTH BEAUFORT COUNTY

Yemassee, this region is an economic driver for the Lowcountry, home to local farms and a vital commercial seafood industry, particularly oyster and shrimp harvesting. Highway 21 runs through these communities and is an important evacuation route and corridor to the City of Beaufort, the Town of Port Royal, and to major national defense installations, including Marine Corps Air Station Beaufort and Marine Corps Recruit Depot Parris Island.

Historic flooding experienced by the Communities of Northern Beaufort County includes impacts from tropical storms, hurricanes, high intensity rain events, king tides, and storm surge. These events have repeatedly flooded roads, residential neighborhoods, and agricultural areas. Recurring inundation has occurred along Witsell Road, Highway 21 near, Highway 17, Bailey Road, and Whale Branch Road. These conditions not only restrict mobility and isolate neighborhoods but also strain emergency access and can cause widespread damage to property and infrastructure. High intensity rain events in this area have also resulted in increased stormwater runoff that has decreased the salinity in some of the surrounding wetlands, resulting in negative impacts on oyster farming.

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

Table 1: Plans Reviewed for the Communities of Northern Beaufort County

Plan Name	Year
A Blueprint for Clean Water: Strategies to Protect and Restore Beaufort County's Waterways	1997
Beaufort County Special Area Management Plan	2002
Beaufort County Stormwater Management Plan	2006
Water Quality Restoration Five Year Action Plan	2006
Northern Beaufort County Plan	2007
Refuges Road Safety Audit, Beaufort and Jasper Counties, South Carolina	2008
Beaufort County Regional Stormwater Quality BMP Retrofit Project	2011
Lowcountry Regional Water Quality Management Plan	2012
2015 Beaufort County Hazard Mitigation Plan	2015
2015 Lowcountry Hazard Mitigation Plan	2015
Marine Corps Air Station Beaufort Joint Land Use Study	2015
Marine Corps Recruit Depot Parris Island Joint Land Use Study	2015
Sea Level Rise Adaptation Report: Beaufort, SC	2015

Plan Name	Year
Beaufort Joint Land Use Study: SLR and Infrastructure	2017
Beaufort County 2018 Stormwater Management Implementation Guide	2018
Beaufort County Comprehensive Water Quality Monitoring Plan	2018
District 1 Housing Needs Assessment	2019
District 6 Housing Needs Assessment	2019
Southern Lowcountry Stormwater Design Manual	2020
The Lowcountry Lowdown on Sea Level Rise (Beaufort County)	2020
City of Beaufort Comprehensive Plan	2021
Envision Beaufort County 2040 Comprehensive Plan	2021
Beaufort County Long Term Resilience Strategy	2022
Comprehensive Economic Development Strategy 2022 Lowcountry	2022
Military Installation Resilience Review Study	2022
Lowcountry Green Infrastructure Plan	2023
Lowcountry Transportation Resilience Improvement Plan (TRIP)	2026

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



Vulnerable evacuation routes.



Aging **stormwater infrastructure.**



Increasing saltwater intrusion that affects both natural systems and septic tanks.



Need for improved **septic system management.**



Stronger resilience networks to overcome policy or council resistance.



Technical assistance needed for permitting **living shorelines, which provide critical natural protection but require specialized regulatory guidance.**

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 Northern Beaufort County Community Action Team are depicted in Table 2.

Table 2: Team Members of Communities of Northern Beaufort County Community Action Team

Team Members Name	Team Members Title
Juliana Smith	Beaufort County Long Range Environmental Planner
Taylor Brewer	Beaufort County Stormwater Manager
Jane Hearn	Citizen
Roy Green	Citizen and Farmer (Farmer of Simply Green Garden)
Courtney Kimmel	Conservation Director, Port Royal Sound Foundation
Sally Murphy	Citizen
Julie Davis	Farm Manager (Lady's Island Oyster)
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. Top concerns include impacts from sea walls that limit marsh migration, forest die-off, ghost forests caused by saltwater intrusion, clearcutting, king tides causing flooding, shoreline erosion, septic system failures, tornado events, extreme heat and cold affecting local agriculture, stormwater flooding along major highways, and salinity fluctuations that threaten oyster habitats. These challenges highlight important community needs such as the need for improved public education, redesigned roadways, increased coordination with the South Carolina Department of Transportation, sewer and septic upgrades, and targeted road studies to support resilience planning. The community also indicated interest in stronger wildlife corridors.

In addition to input gathered through the Community Action Team community engagement process, it is clear that multiple sectors across Northern Beaufort County are already contending with and planning for future climate-related risks. Increasing flood frequency, stronger storm events, and rising temperatures are expected to exacerbate challenges such as standing water, infrastructure strain, and public health concerns. Critical assets, including major military installations and low-lying residential communities, face ongoing exposure to tidal flooding, though in some cases substantial investments in resilience planning and implementation are already underway. At the same time, natural resource-based industries, particularly those tied to oysters and shrimp, remain highly sensitive to shifting coastal conditions, underscoring the broader economic and ecological stakes of watershed-scale adaptation. Together, these considerations highlight the importance of integrating cross-sector perspectives into long-term planning.

The **second Community Action Team meeting** (April 2025) was held at the Lobeco Library and community members had the opportunity to identify flood-prone areas directly on maps. Additional locations that were identified as flood prone include the Huspa Creek area along Old Sheldon Church Road, as well as nearby Bailey Circle near the Old Sheldon Church Ruins, where recurrent flooding poses access and drainage challenges. Community members provided additional concerns in the Dale community, particularly around Kline Circle, which experiences frequent standing water during heavy rainfall as well as the Bull Point area as experiencing both erosion and flooding.

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.



Figure 3: Images from the third Community Action Team meetings

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.

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.





Figure 4: Participants at the fourth Community Action Team meeting reviewed project sheets (See Appendices) to discuss project feasibility and benefit.

3. Vulnerability Assessment

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

1

WATERSHED-SCALE

Utilizing the Salkehatchie Watershed Boundary

2

COMMUNITY-SCALE

Based on Census Tracts

3

PARCEL-LEVEL

Incoporating Building Point Data from First Street Foundation

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

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

i

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

3a. Watershed Scale

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

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

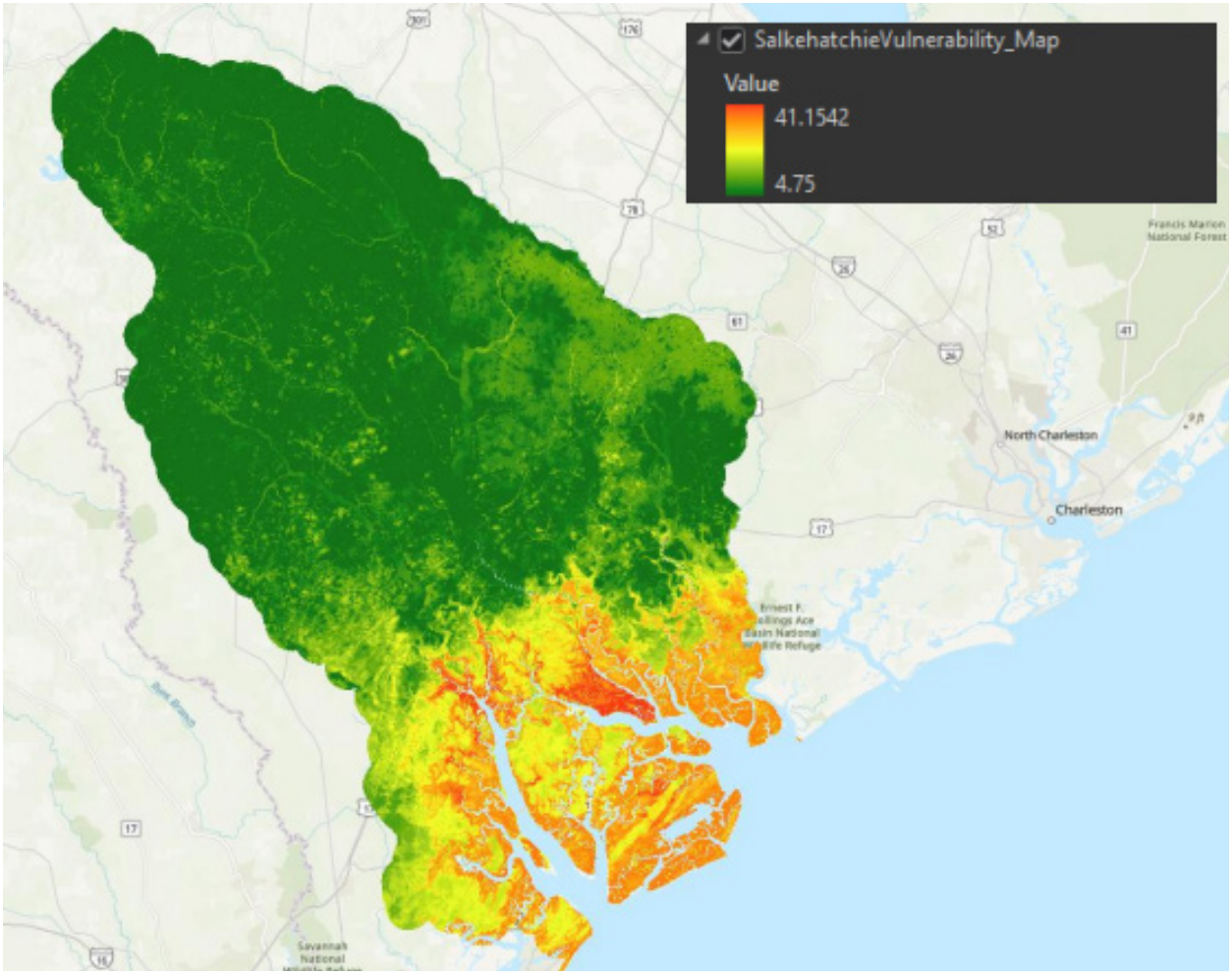


Figure 5: Salkehatchie Vulnerability Model Results

3b. Community Scale

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

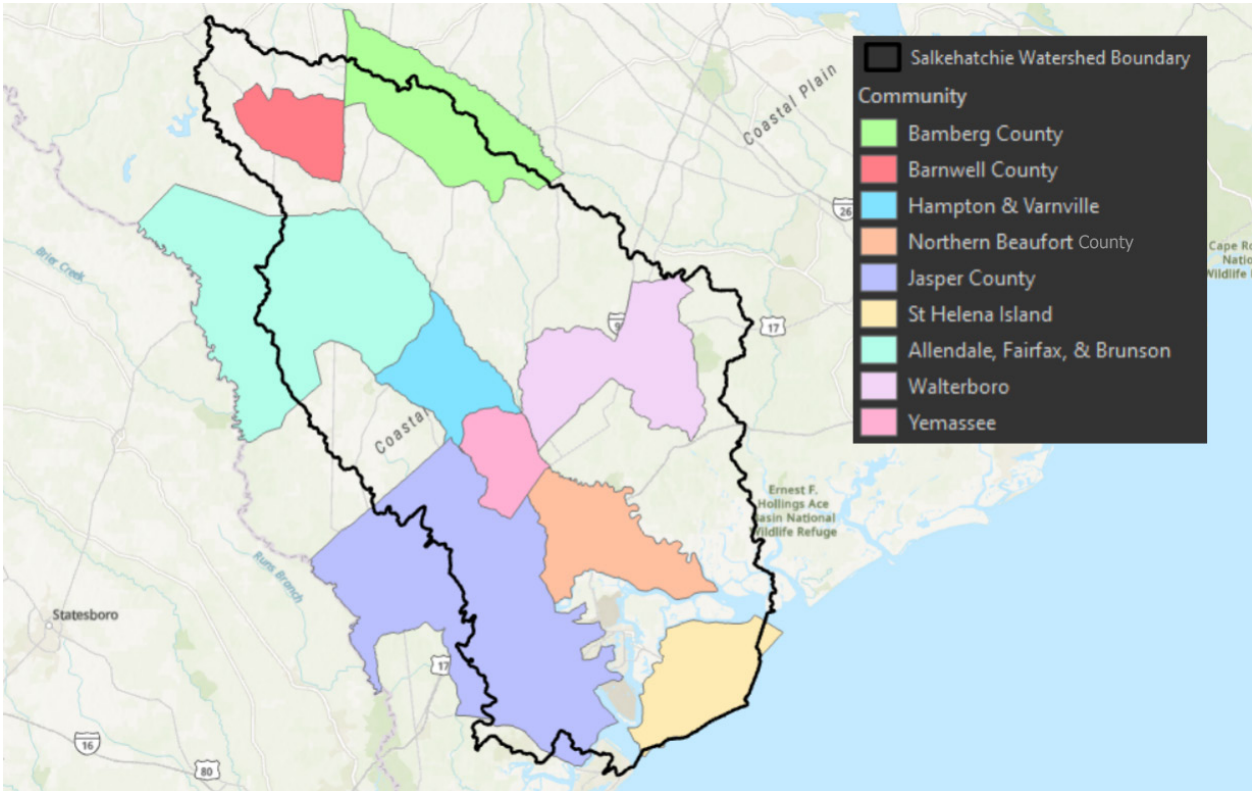


Figure 6: Salkehatchie Watershed and SCRCCCP Study Communities Census Tracts

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 Northern Beaufort County along with the locations of the highest average vulnerability scores within the Northern Beaufort County census tracts. The most vulnerable areas included the areas of Gardens Corner, Lobeco, and Coosaw, along with the areas bordering the Coosaw River and Wimbee Creek on the southeast corner of the study area. These results were consistent with information collected during Community Action Team meetings.

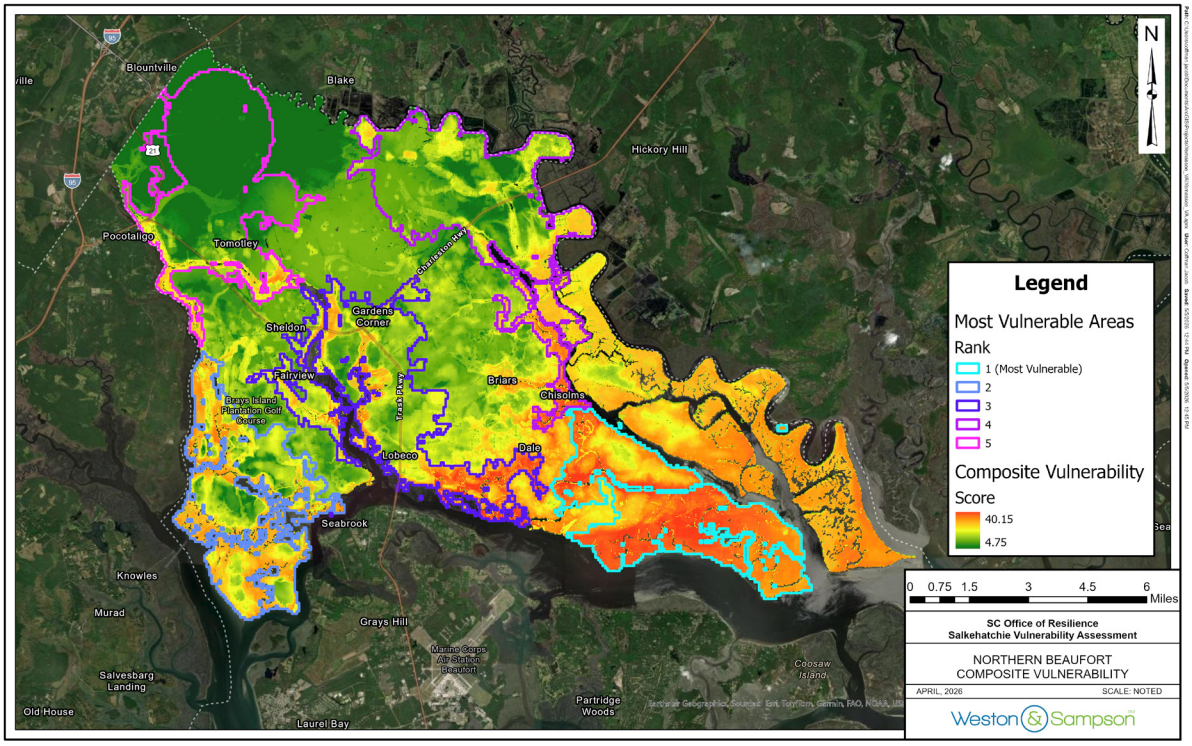


Figure 7: Northern Beaufort County Vulnerability Model – Most Vulnerable Areas

3c. Parcel Scale

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

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

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

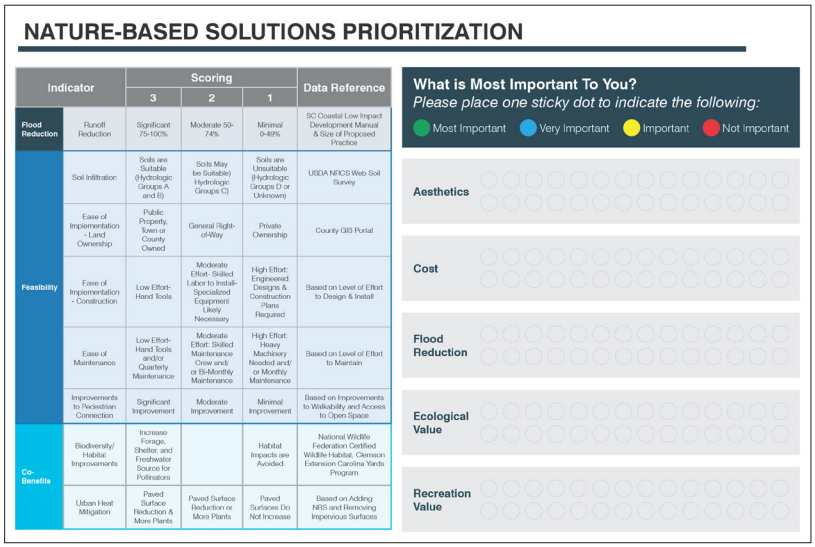
Figure 8: Vulnerability Scoring Formula



4. Strategy Siting

4a. Desktop Analysis

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



Indicator		Scoring 3	Scoring 2	Scoring 1	Data Reference
Flood Reduction	Runoff Reduction	Significant 75-100%	Moderate 50-74%	Minimal 0-49%	SC Coastal Low Impact Development Manual & Size of Proposed Practice
Feasibility	Soil Infiltration	Soils are Suitable (Hydrologic Groups A and B)	Soils May be Suitable) Hydrologic Groups C)	Soils are Unsuitable (Hydrologic Groups D or Unknown)	USDA NRCS Web Soil Survey
	Ease of Implementation - Land Ownership	Public Property, Town or County Owned	General Right-of-Way	Private Ownership	County GIS Portal
	Ease of Implementation - Construction	Low Effort- Hand Tools	Moderate Effort- Skilled Labor to Install- Specialized Equipment Likely Necessary	High Effort: Engineered Designs & Construction Plans Required	Based on Level of Effort to Design & Install
	Ease of Maintenance	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	Based on Level of Effort to Maintain
	Improvements to Pedestrian Connection	Significant Improvement	Moderate Improvement	Minimal Improvement	Based on Improvements to Walkability and Access to Open Space
Co-Benefits	Biodiversity/ Habitat Improvements	Increase Forage, Shelter, and Freshwater Source for Pollinators		Habitat Impacts are Avoided	National Wildlife Federation Certified Wildlife Habitat, Clemson Extension Carolina Yards Program
	Urban Heat Mitigation	Paved Surface Reduction & More Plants	Paved Surface Reduction or More Plants	Paved Surfaces Do Not Increase	Based on Adding NHS and Removing Impervious Surfaces

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 Northern Beaufort County, this meant prioritizing community-preferred practices such as conservation areas and living shorelines. **Because ecological value was identified as the community's highest priority, emphasis was placed on practices that also provide wildlife habitat co-benefits.**

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 Northern Beaufort 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.

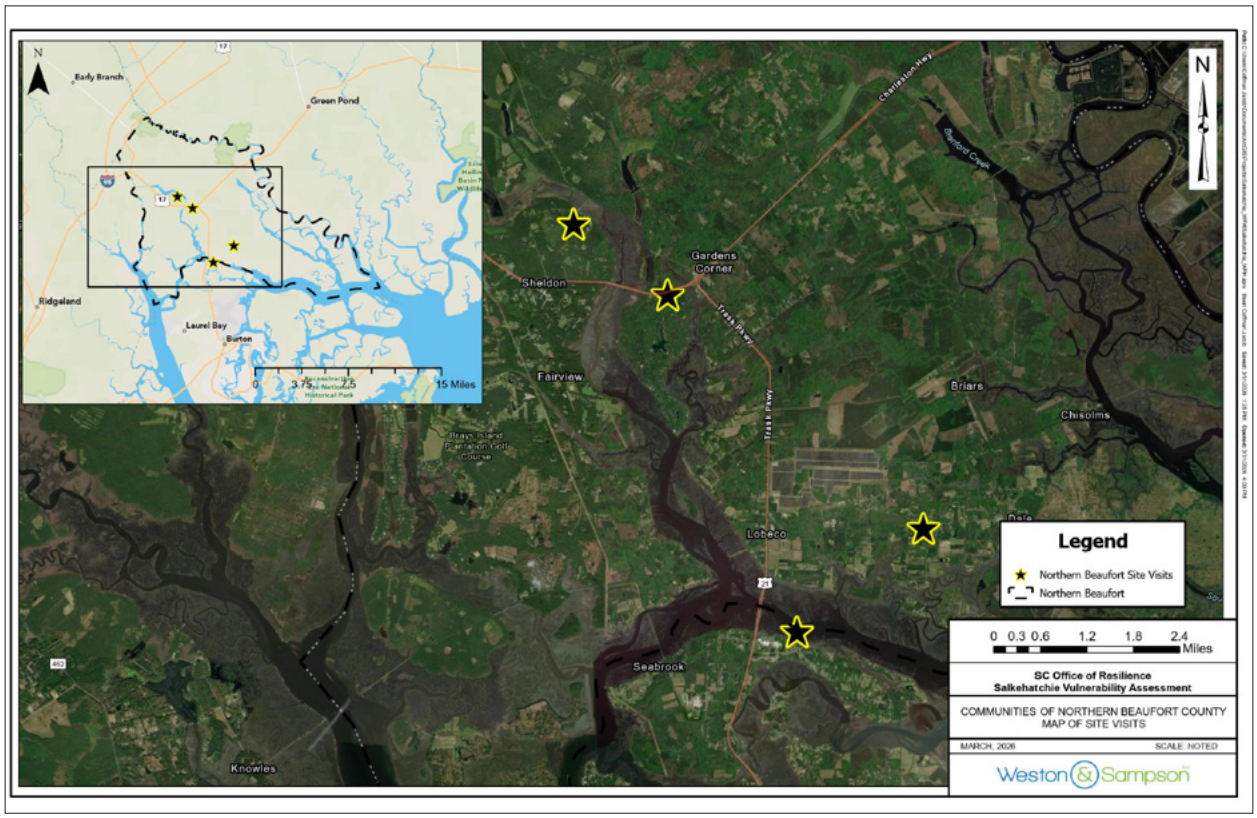


Figure 11: Site Visits Conducted by the Project Team in Northern Beaufort County

5. Prioritization Matrix

5a. Prioritization Criteria

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

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

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

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

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



5b. Prioritization Results

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

For the Communities of Northern Beaufort County, the prioritization matrix highlighted two projects that consistently performed well across all criteria. **The Rain Gardens at James J David Elementary School** had the highest overall score. This project has the potential for moderate flood-reduction benefits, is located within current and future flood extents and has potential for multiple co-benefits including water quality improvements and habitat improvements. **A Drainage Study at Bailey Road** had the second highest score in the community. This project has high flood reduction potential along with the potential for multiple co-benefits including urban heat island reduction and water quality improvements.





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.

Northern Beaufort County Rain Gardens
James J. David Elementary School

Type of Strategy
Rain Gardens

Strategy Description
Rain Gardens are landscaped depressions that are designed and located to intercept stormwater runoff from a roof or paved surface. Rain gardens use plants and amended soil media to collect, filter, and infiltrate runoff while also adding native vegetation and habitat enhancements. For this site, multiple smaller-scale rain gardens could be incorporated with minimal impact to existing use of the space.

Narrative
James J. David Elementary School is a well-utilized community facility with significant roof area and open space that presents an opportunity to incorporate visible, nature-based stormwater features into the campus landscape. The school's extensive roof area represents an opportunity to manage stormwater at its source through small-scale rain gardens designed to capture and infiltrate runoff from impervious surfaces. A series of rain gardens located near the building could intercept roof drainage, reduce runoff volumes and improve water quality while enhancing site aesthetics. These features would offer clear educational value as a visible demonstration of nature-based stormwater practices for students, staff, and the surrounding community. The proposed approach emphasizes native planting, shallow ponding, and simple conveyance from downspouts, allowing the project to function as both a learning tool and a resiliency improvement.

Location Description
James J Davis Elementary School (51 Gum Tree Lane, Seabrook, SC)

Photos
Existing Conditions



Field with gravel walking path and ball field fence



Field with gravel walking path

Strategy Location and Map

51 Gum Tree Lane, Seabrook, SC



Type of Solution

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

Supporting Function

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

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Northern Beaufort County Drainage Study
Bailey Road

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
Bailey Road is a critical access route for a residential area near the community of Sheldon, making recurring drainage issues a public safety concern. Although a large roadside ditch along the western right-of-way appears to be maintained, field observations indicate that runoff does not consistently reach the ditch due to localized high points between the road and ditch, damaged or undersized cross culverts, and uncertain downstream conditions. Flooding at this location may be influenced by a combination of stormwater runoff, sediment from the adjacent dirt roadway, and elevated water levels associated with the nearby tidally influenced Huspah Creek. A focused drainage study is recommended to evaluate existing conditions, characterize hydrologic and tidal influences, and identify feasible solutions such as ditch regrading, floodplain benching, culvert repair or replacement, and improved conveyance across the roadway. The study would provide a data driven foundation for future investment while ensuring that any proposed improvements improve safety, maintain access during storm events, and function within the constraints of this low lying coastal setting.

Location Description
19-45 Bailey Rd, Seabrook, SC

Photos
Existing Conditions



Flowing water in existing ditch



Damaged drainage pipe under road



Ditch as seen from Bailey Road

Strategy Location and Map

19-45 Bailey Rd, Seabrook, 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

Northern Beaufort County Bioswale
Bull Point Drive

Type of Strategy
Bioswale

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

Narrative
A proposed bioswale or other form of enhanced swale was sited along Bull Point Drive off Highway 17. Flooding was reported here and described as stormwater draining from Highway 17 during rainfall events near the entrance to this community. A bioswale is designed with an engineered filtration media that can provide water quality benefits. Upon further site investigations, the Beaufort County's SoLoCo Manual should be referenced for options for the different uses and benefits of enhanced swales. Regardless of exact application, a swale in this location could help manage nuisance flooding in this community.

Location Description
Bull Point Drive (10 Bull Point Dr, Seabrook, SC)

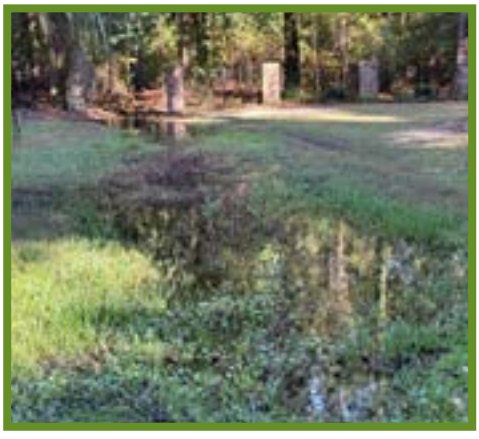
Photos
Existing Conditions



Standing water east side of Bull Point Drive



18" culvert under entrance road with tapered wide mouth starting at 24" wide on either end



Standing water near 18" culvert on entrance road



Privacy berm on the east side of Bull Point Drive

Strategy Location and Map

10 Bull Point Dr, Seabrook, SC



Type of Solution

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

Supporting Function

- ☑ Flood mitigation
- ☑ Stormwater Management
- ☐ Conservation
- ☐ General Resiliency
- ☑ Biodiversity
- ☐ Floodplain Management
- ☑ Water Quality
- ☐ Urban Heat

Flood Vulnerability of Location

Medium



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

Northern Beaufort County Living Shoreline
Trask Parkway/Whale Branch Elementary

Type of Strategy
Living shoreline

Strategy Description
A living shoreline is a nature-based method for stabilizing coastal edges, salt marshes, and estuaries using natural materials. In South Carolina, living shorelines are often an oyster-based approach using materials such as bagged shell, manufactured wire reefs, and oyster castles. Living shorelines can be effective at preventing marsh edge erosion while also enhancing habitat and providing wildlife quality benefits.

Narrative
The benefits of installing a living shoreline in this location are water quality protection and education. An expansive marsh upwards and even greater than 1,000 feet in width exists between the Coosaw River and Whale Branch Elementary School. The close proximity of the Elementary School offers a good opportunity for student education and community engagement. An oyster-based approach will make for a successful living shoreline based on the abundant growth and presence of oysters in close proximity of the site. Access may be challenging and should be a consideration for implementation. Due to the expansive marsh, a path for shoreline access will need to be determined and materials will likely need to be brought in by boat.

Location Description
Trask Parkway in front of Whale Branch Elementary School

Photos
Existing Conditions



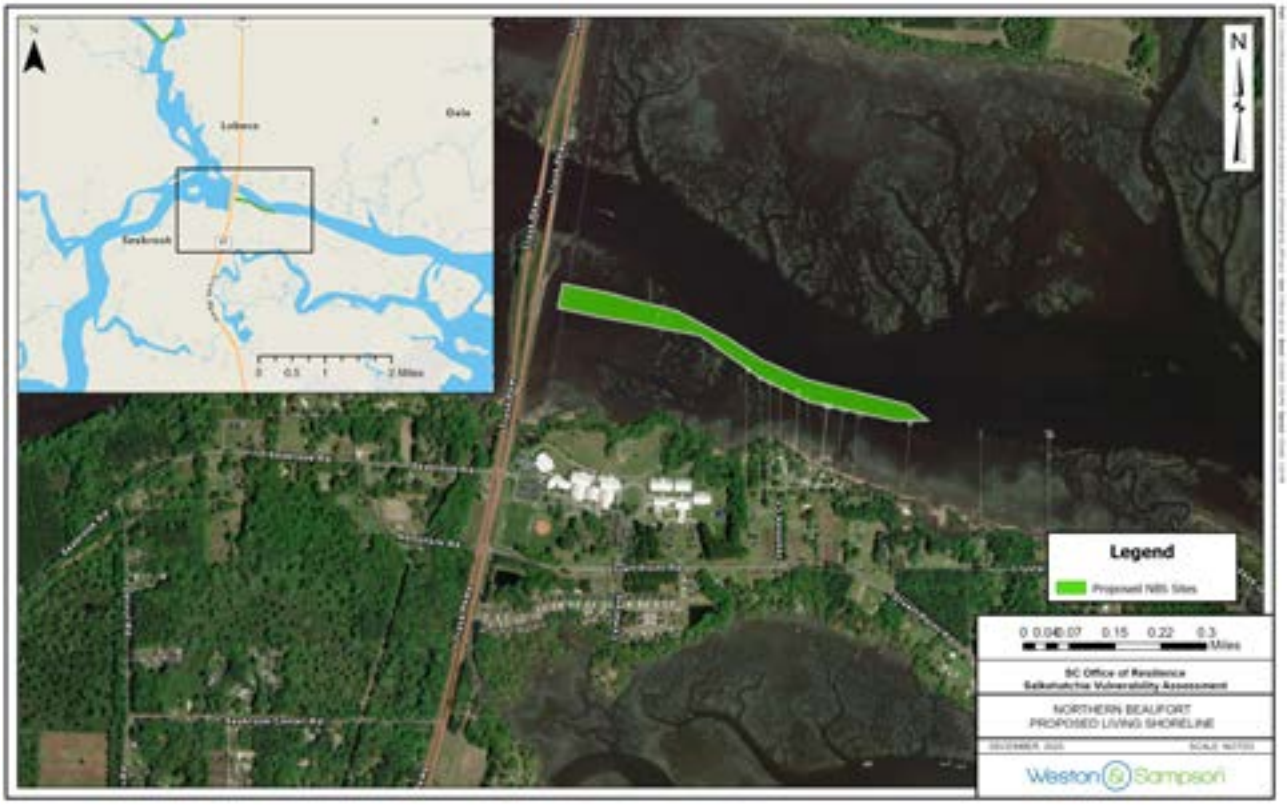
Site of possible living shoreline off Trask Highway



Site of possible living shoreline off Trask Highway

Strategy Location and Map

Trask Parkway in front of Whale Branch Elementary School



Type of Solution

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

Supporting Function

- ☐ Flood mitigation
- ☐ Stormwater Management
- ☐ Conservation
- ☑ General Resiliency
- ☑ Biodiversity
- ☐ Floodplain Management
- ☑ Water Quality
- ☐ Urban Heat

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

Northern Beaufort County Stormwater Park
Shell Point

Type of Strategy
Stormwater Park

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

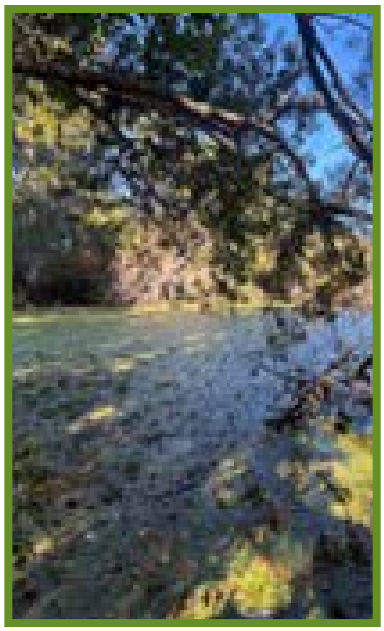
Narrative
The site consists of an open field with playground and an existing stormwater pond that receives runoff from a drainage ditch originating near Midtown Drive and a nearby medical facility via a 30-inch culvert. The open field is bordered by mature loblolly pine (40–50+ years old). During the site visit, three dead turtles identified as pond sliders (Trachemys scripta) were found at the culvert outfall, suggesting potential water-quality concerns.

The established pond has a well-vegetated buffer and public trail with potential opportunities to enhance ecological value through strategic plantings of native aquatic or emergent vegetation along pond margins. If additional flood storage is needed through additional analyses, there is opportunity to incorporate nature-based solutions into the area. Practices may include a rain garden or bioretention cell that captures the roof runoff from the bathroom facilities. Space for a constructed wetland may be possible to provide added storage capacity and improved ecological conditions. Retrofitting drainage ditches to more enhanced swales or bioswales is also a possibility. Furthermore, this stormwater park concept would serve as a demonstration site for the community since this is a well-used park providing opportunities for education and engagement. Additional water quality monitoring is likely needed.

Location Description
Shell Point Park (34 Shell Point Rec Park, Beaufort, SC)

Photos
Existing Conditions


Stormwater pond at outfall


Stormwater pond


Trail around pond


Walking trail and open field park area

Strategy Location and Map

34 Shell Point Rec Park, Beaufort, SC



Type of Solution

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

Supporting Function

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

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Northern Beaufort County Stormwater Park
Middleton Recreation Drive

Type of Strategy
Stormwater Park

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

Narrative
The park currently has drainage features that could be retrofitted to enhance flood reduction benefits, while also providing opportunities for educational signage about nature-based solutions. Existing features include drainage ditches, a vegetated swale, and adjacent wooded areas that are likely functioning as wetlands. To maximize benefits for nearby neighborhoods, it will be important to evaluate drainage connectivity and potentially install infrastructure that directs additional stormwater into the park. Expanding bioretention and bioswale areas, implementing pervious pavement in parking medians, and diverting more flow to the site, would improve both stormwater quantity and quality management for the area.

Location Description
67 Middleton Recreation Drive, Beaufort, SC

Photos
Existing Conditions


Wooded ditch in North-East corner of the property

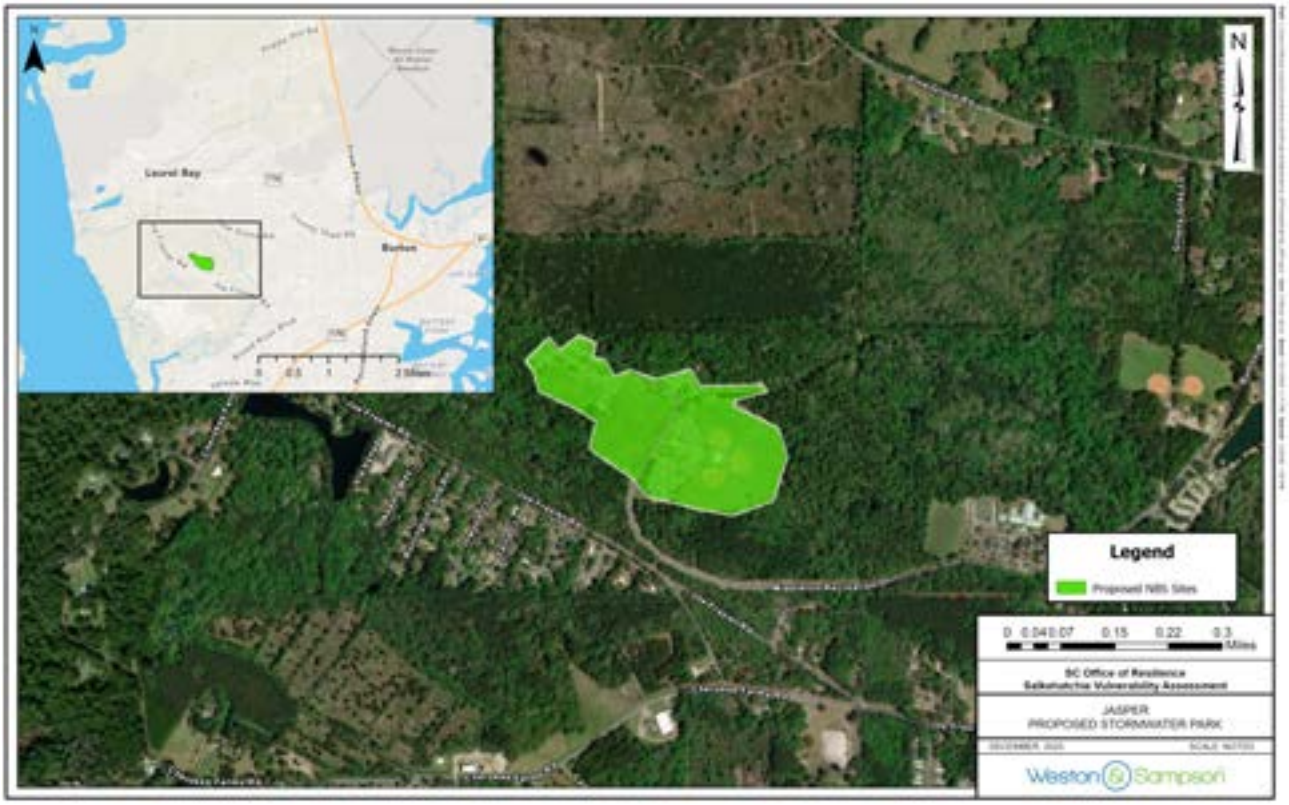

Swale behind baseball field


Stormwater pond with un-mowed edges


Parking lot medians which could be retrofit with rain gardens and pervious pavement

Strategy Location and Map

67 Middleton Recreation Drive, Beaufort, SC



Type of Solution

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

Supporting Function

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

Flood Vulnerability of Location

Low



Anticipated Flood Reduction Benefit

Low | Medium | High

Ease of Implementation

Low Ease | Moderate Ease | High Ease

Estimated Cost

Low | Medium | High

Priority Rating

Low | Medium | High

Conservation and Riparian Buffer Mapping
Salkehatchie Watershed-Scale

Type of Strategy
Conservation Mapping

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

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



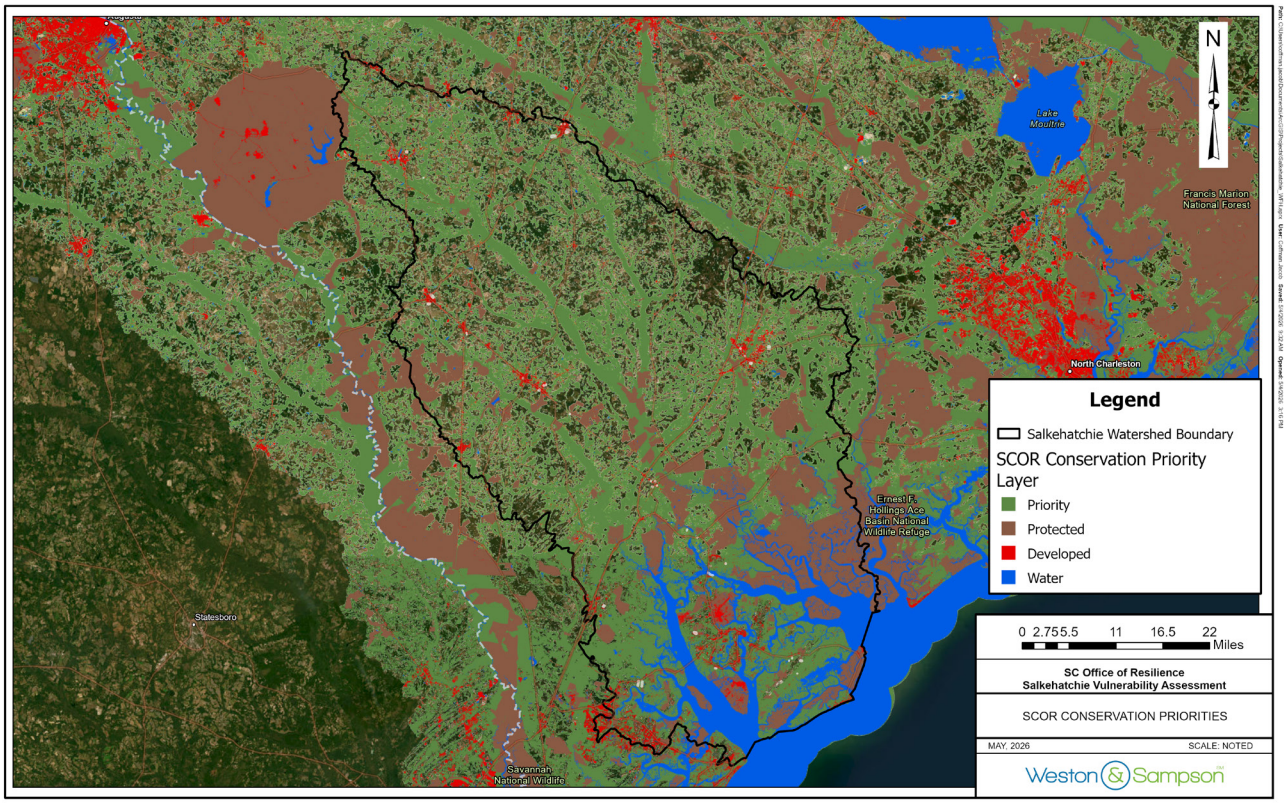
Longleaf Pine Savannas



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.

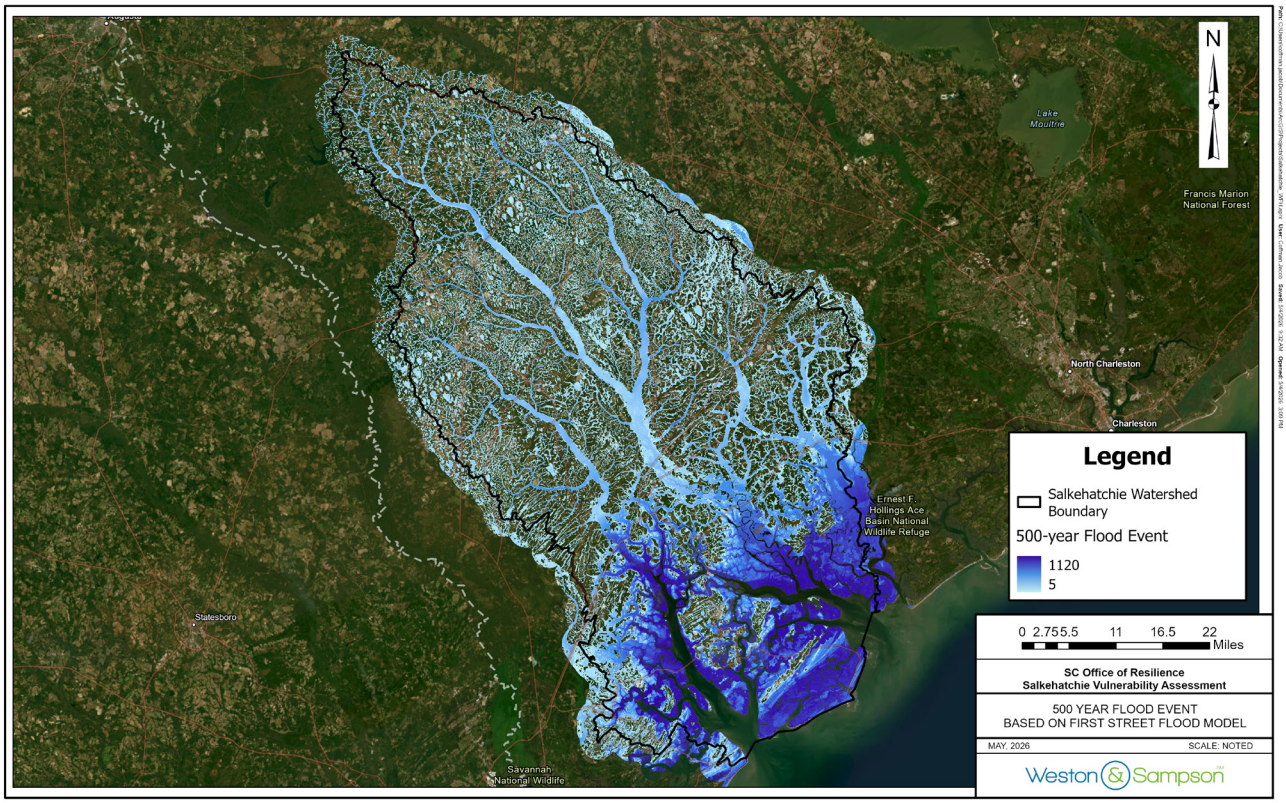
Narrative
This strategy proposes a 1D watershed-wide stormwater model for the Salkehatchie Watershed to improve understanding of hydrologic and hydraulic conditions at a watershed scale. The study can develop a comprehensive watershed model that evaluates current and future flood risks and identifies 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 Northern Beaufort 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 Lowcountry Hazard Mitigation Plan, will be beneficial in support of future funding initiatives.

Coastal Resilience & Ecological Restoration

National Fish and Wildlife Foundation (NFWF) – National Coastal Resilience Fund (NCRF): NFWF NCRF is a funding mechanism for large-scale coastal habitat restoration. These funds could be targeted to implement living shorelines that buffer tidal flooding while restoring vital oyster habitats and protecting the local seafood economy. They could also be used to implement large scale engineered rain gardens and constructed wetlands or large-scale studies. This grant is highly competitive and applications benefit from large-scale projects or grouping multiple interrelated projects into one larger application.

The Nature Conservancy (TNC) Living Shorelines Community Assistance Program (CAP): Funded through a NOAA grant in partnership with the SC Office of Resilience, this program is designed specifically to overcome the financial and technical hurdles of shoreline protection. TNC's CAP provides fully funded design, permitting, and construction of living shorelines at zero cost to eligible property owners. This is the ideal mechanism for private landowners, culturally significant sites, and under-resourced neighborhoods in Northern Beaufort experiencing active erosion who need targeted, site-specific natural coastal protection.

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.

SC Native Plants Society Lowcountry chapter's grants: Could be used for the rain gardens at the elementary school or other small-scale projects on public property (cannot be used on private property). Maximum grant award is $1,000. Can be used for native plant projects related to resilience, such as pond buffers, rain gardens, reforestation, invasive plant removal, shorelines.

Applications are typically advertised in January and August; applications are due in February and September.

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 could be used to upsize aging stormwater infrastructure, elevate flood-prone road segments along Highway 21 and Highway 17, and harden critical evacuation routes.

Department of Defense Community Infrastructure Pilot (DCIP) Program: Given the identified vulnerabilities at critical military facilities such as Parris Island and MCAS Beaufort, the County could partner with the Department of Defense. DCIP funds can be leveraged to implement off-base infrastructure improvements that directly benefit military readiness and protect shared access routes.

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

Water Quality & Wastewater Infrastructure

SC Rural Infrastructure Authority (RIA) Grants: RIA provides critical funding for public wastewater utilities and stormwater infrastructure. The County could target RIA Basic Infrastructure grants to upgrade struggling pump stations and explore Regional Planning Grants to study the feasibility of expanding municipal sanitary sewer services to neighborhoods experiencing saltwater-induced septic and stormwater system failures.

SCDES Section 319(h) Nonpoint Source Grants: A primary funding mechanism for the implementation of nature-based solutions and conventional infrastructure repairs—such as septic tank replacements—to reduce nonpoint source pollution and improve water quality. Must meet MS4 permit requirements. (Note: Accessing these construction funds requires an EPA-approved 9-Element Watershed Based Plan in areas with either groundwater or surface water protection zones).

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

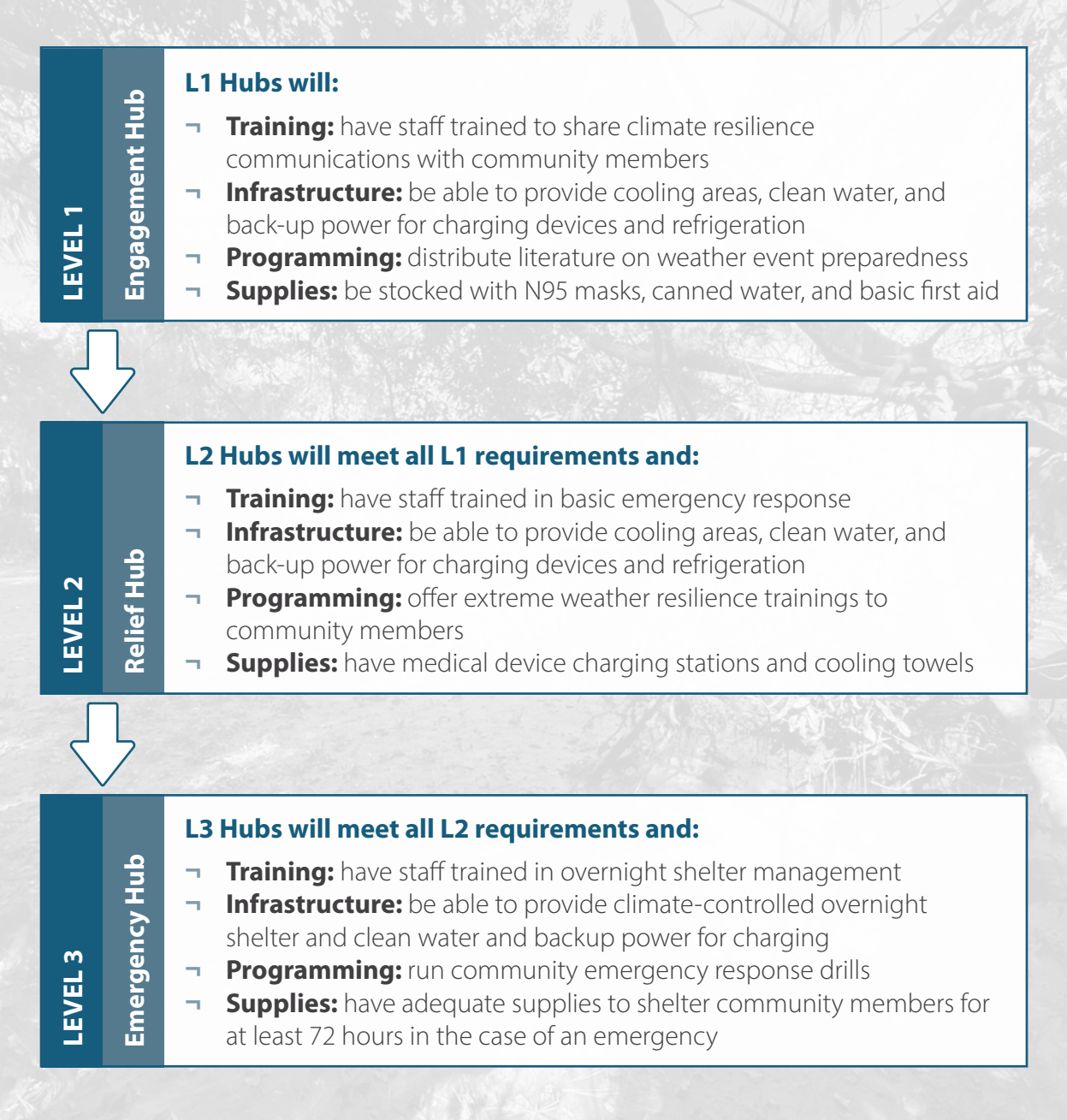


Figure 14: Diagram depicting the three levels of the resilience hub model (Gonzaga University Institute of Climate, Water, and the Environment, 2025). Graphic inspired by the Spokane Community Resilience Hub Network and the Institute for Climate, Water, and the Environment



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

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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.

insurance, housing, and financial assistance in partnership with local, state, and federal agencies.

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

Implementation

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

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

7c. Participation in Salkehatchie Working Group

Community Action Team members and stakeholders from state, regional and local entities with









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

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

7d. Conclusion

The creation of this Community Portfolio represents a comprehensive, community-driven effort developed under the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP). The SCRCCCP was designed to support communities across the Salkehatchie River Basin in developing locally informed and prioritized strategies and projects that are anticipated to reduce flooding impacts and improve resilience to natural hazards and environmental change.

To accomplish this, the Project Team conducted multi-scale vulnerability assessments at the watershed, community, and parcel levels to clearly identify specific vulnerabilities and risks from natural hazards facing the community. The vulnerability analysis was also informed by robust community engagement through Community Action Team meetings, public surveys, field site visits and consultant assessments ensuring that each proposed project was supported by the community it is meant to serve. By actively listening to residents and thoroughly documenting

their concerns about infrastructure, natural hazards, and flood-prone areas, the Project Team has produced **results that are both technically sound and relevant locally.**

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

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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.

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.



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?

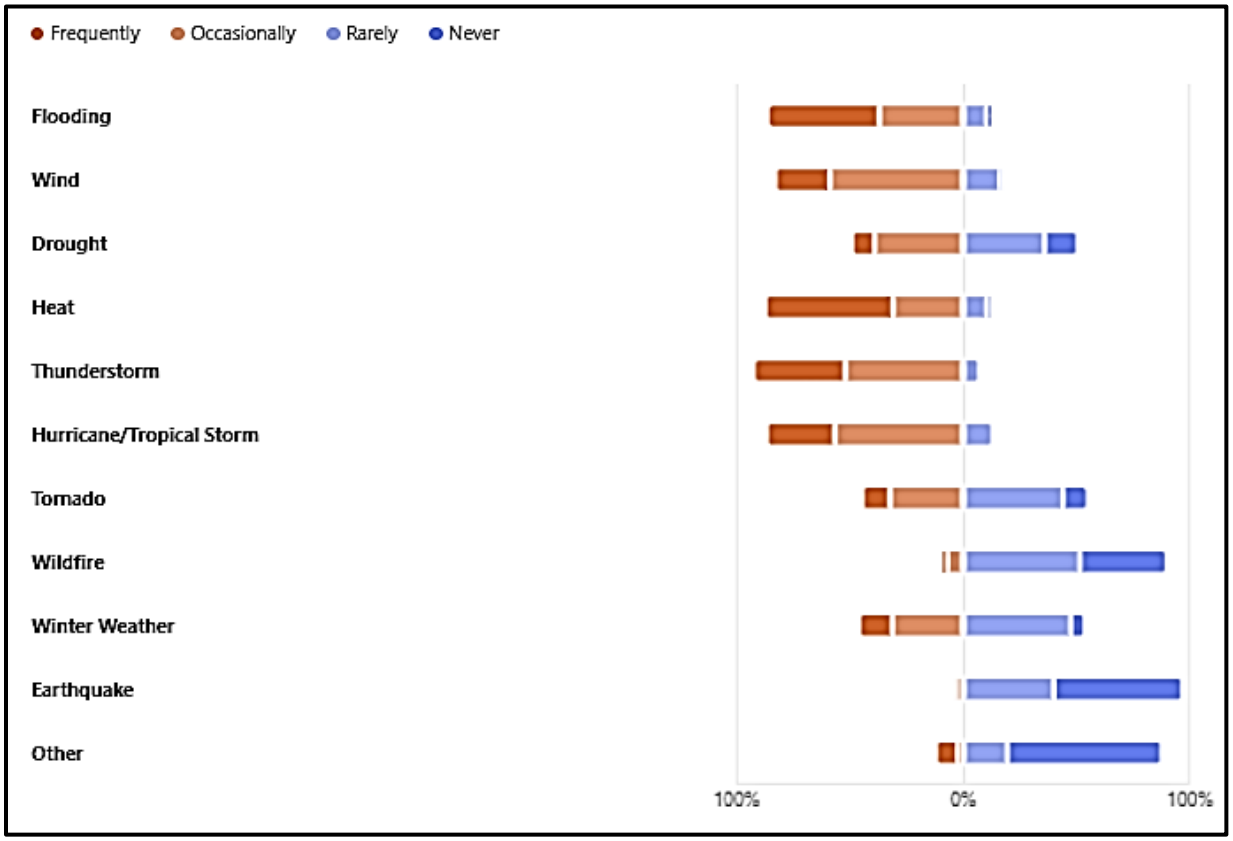
11. If you would like someone with the South Carolina Office of Resilience's Watershed-Based Planning Program to reach out to you to discuss assistance with resilience planning, community needs, identifying funding opportunities, and more, please provide your email here:

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#

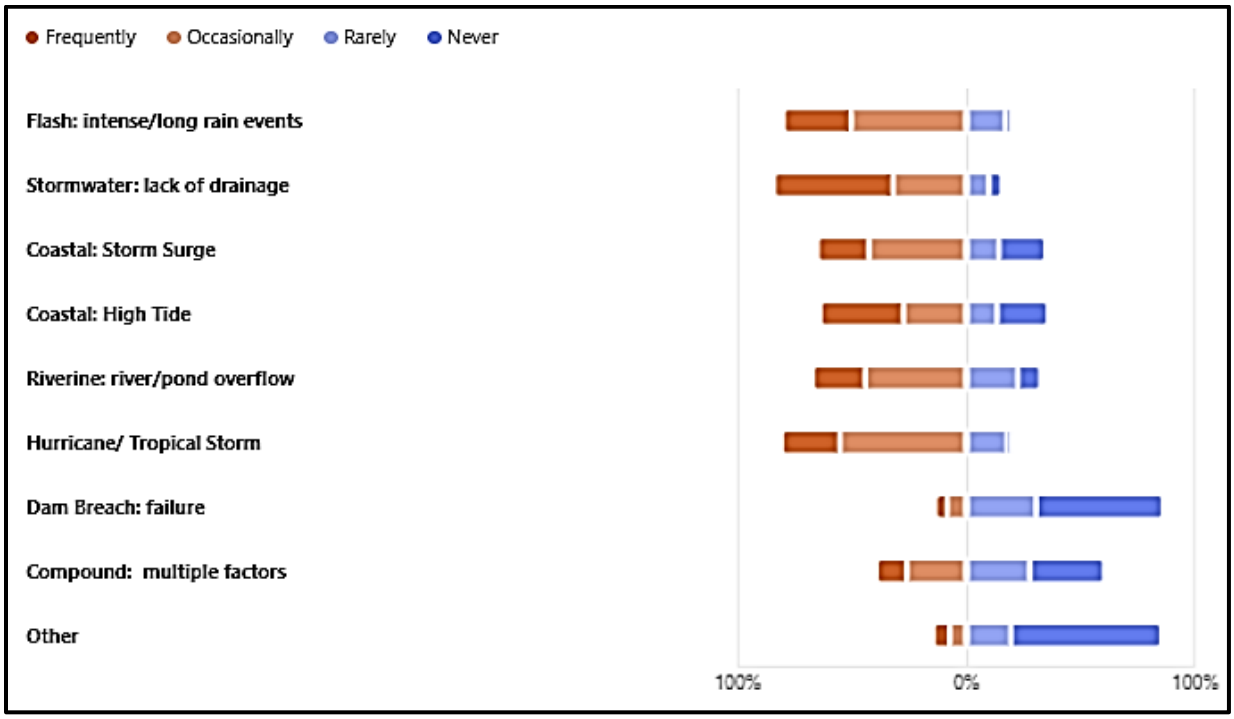
The natural hazards reported by respondents to be of greatest concern were: Heat, Flooding, Thunderstorm, Hurricane, and Wind



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%

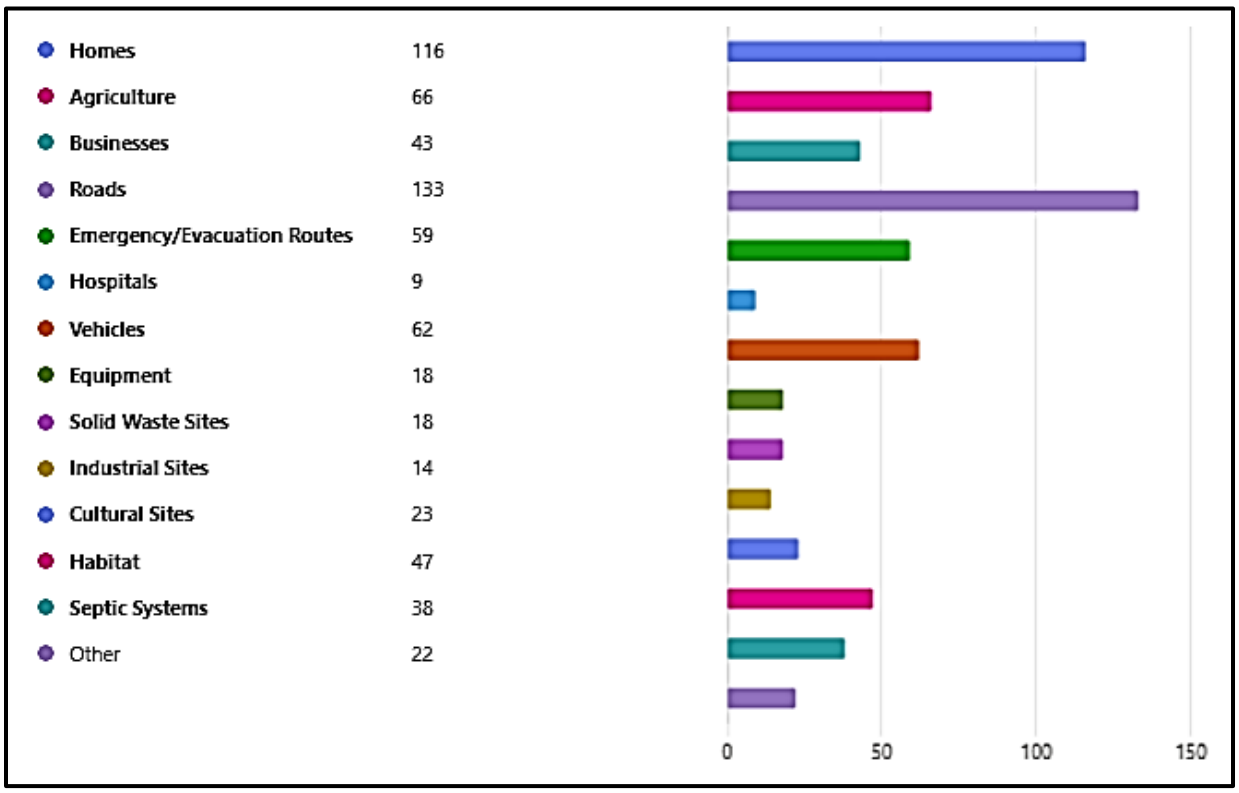
Coastal: High Tide	
Frequently	36.6%
Occasionally	27.5%
Rarely	13.4%
Never	22.5%

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%

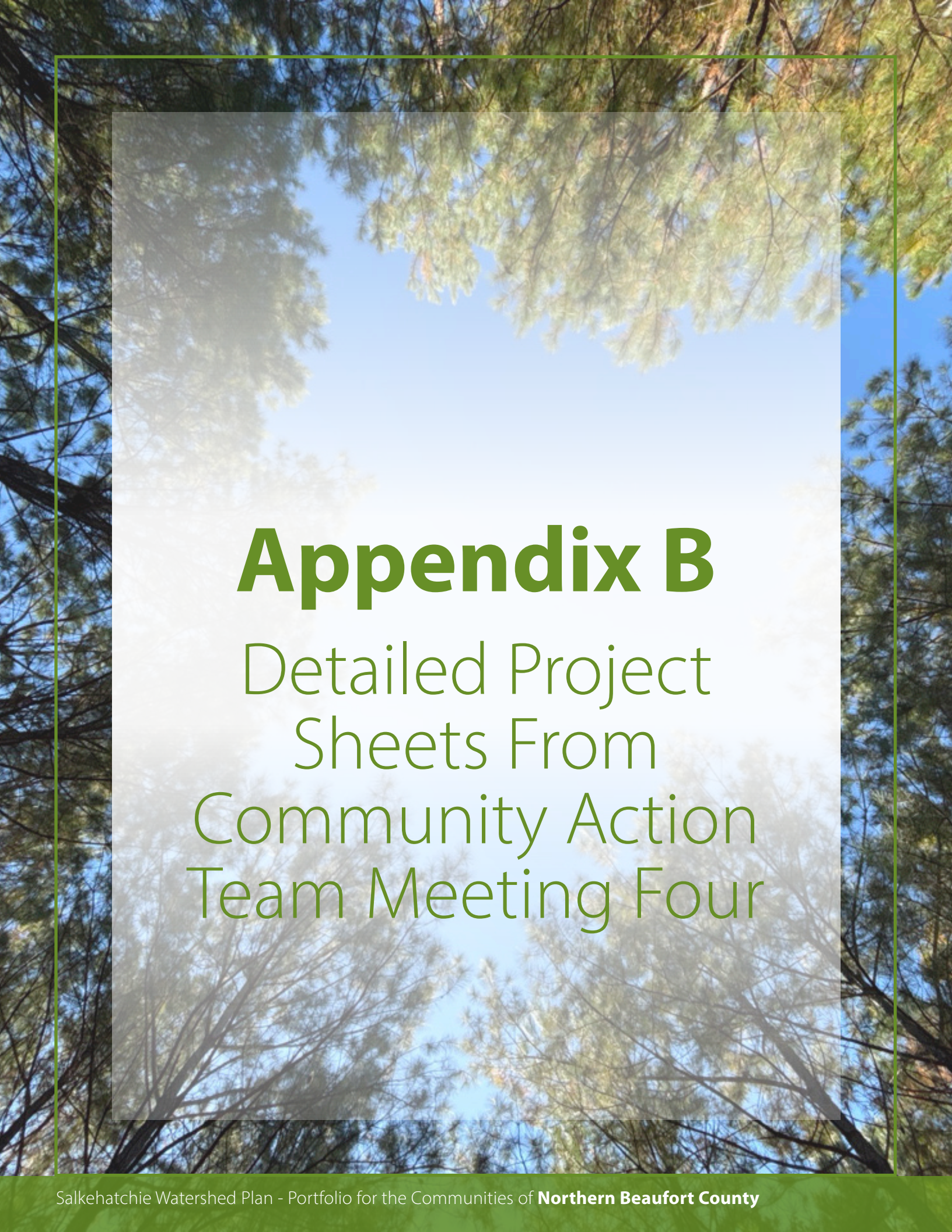
Survey respondents reported many impacts from flooding. Roads, Homes, Agriculture, Vehicles, and Evacuation routes topped the list.



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: Northern Beaufort

Potential Adaptation Strategy: Bioswale

Address: Bailey Road

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

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): None

Description of paved surfaces on site: Adjacent dirt road

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

Estimated tree canopy cover: 60%

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): 12" corrugated plastic pipe (CPP), 24" corrugated metal pipe (CMP), 24" CMP culvert for property access in ditch; also muddy leaves on side of the road. 12" CPP under road.

Comments/Observations: It looks like water can't drain off the road into the ditch the way it should. The ditch likely needs to be re-graded, and adding plants along the edges would help slow erosion and keep it working properly. Even though the ditch seems to have been cleared and mowed recently, the water level was still very high—even at low tide—so the downstream conditions should be checked. A bioswale probably isn't a good fit here because the dirt road would cause it to clog quickly. Since this road is the only way in and out of the neighborhood, the drainage problem is a safety concern. Creating a small floodplain area by lowering and reshaping the berm would help give the water more space and improve drainage.

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



1. Standing water in existing ditch.



2. Under road culvert 3. Ditch as seen from Bailey Road.

Salkehatchie Project Sheet

Community: Northern Beaufort

Potential Adaptation Strategy: Bioswale or Constructed Wetland

Address: Bull Point Dr

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

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☒ Yes ☐ No

Describe structure(s): Entrance road, gate house

Description of paved surfaces on site: Entrance paved road

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

Estimated tree canopy cover: 0%

Presence of standing water: ☐ Yes ☒No

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

Drainage infrastructure notes (diameter, dimension, material, condition): 18" culvert under entrance road w flared end section

Comments/Observations: An engineer is designing a bulkhead at point of Bull Point Dr (John Gary Taylor and Associates). Reported flooding at entrance to Bullpoint off of Hwy 17.

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



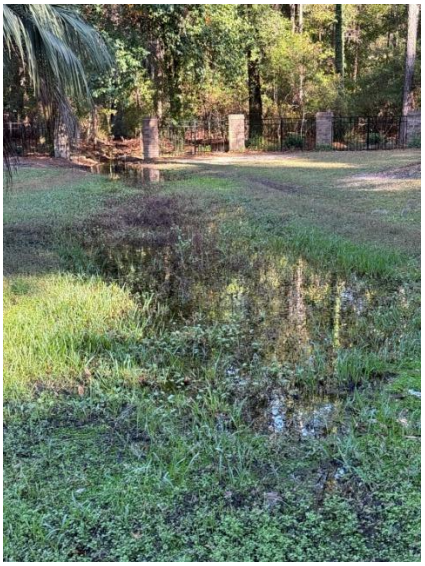


1. 18” culvert under entrance road, with tapered wide mouth starting at 24” wide on either end.

2. Privacy berm on the east side of Bull Point Dr.



3. Standing water east of privacy berm.





4. Standing water near 18” culvert on entrance road (right) with proposed bioswale (far right).

Salkehatchie Project Sheet

Community: Northern Beaufort

Potential Adaptation Strategy: Living Shoreline

Address: Trask Pkwy / Whale Branch Elementary

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

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): None

Description of paved surfaces on site: Near Main Hwy Bridge

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

Estimated tree canopy cover: 0%

Presence of standing water: ☒ Yes ☐No

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

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

Comments/Observations: There's a large marsh between the main waterway and the developed area, including the school. Because there is already so much marsh separating the shoreline from the mainland, adding a living shoreline is unlikely to make a noticeable difference in reducing saltwater intrusion

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



1. Site of possible living shoreline off Trask Hwy.



2. Site of possible living shoreline off Trask Hwy.

Salkehatchie Project Sheet

Community: Northern Beaufort

Potential Adaptation Strategy: Stormwater Park

Address: James J David Elementary School

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

Rainfall in past 24 hrs (CoCoRaHS): No Rain

Structure(s) on site: ☐ Yes ☒ No

Describe structure(s): None

Description of paved surfaces on site: Paved track, ball field fence

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

Estimated tree canopy cover: 0%

Presence of standing water: ☐ Yes ☒No

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

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

Comments/Observations: This field sits on higher ground and isn't connected to any stormwater flow or nearby streams. A small demonstration rain garden near the school could still be helpful for education and showing how runoff can be managed.

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





1. Ditch on south side of property. 2. Field with gravel road.





3. Field with gravel road and ball field fence. 4. Ditch on southeast corner of property.

Salkehatchie Project Sheet

Community: Northern Beaufort

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

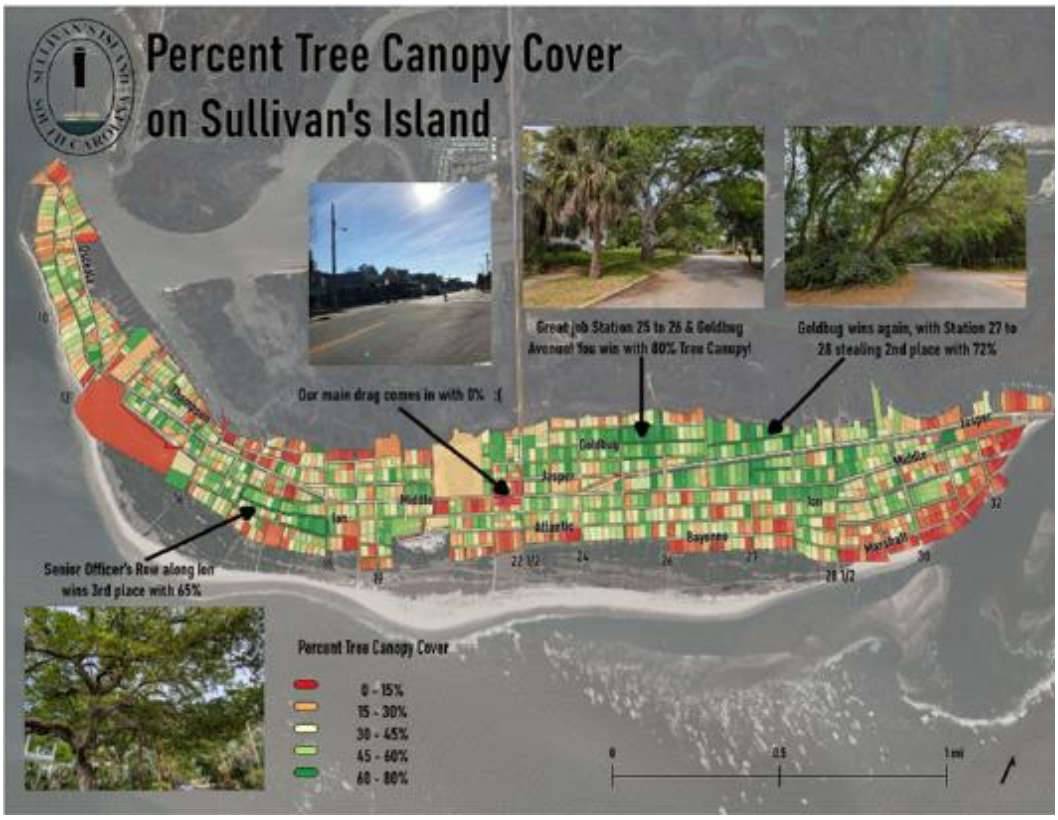
Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☒Other: Forested areas can assist with drainage.

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

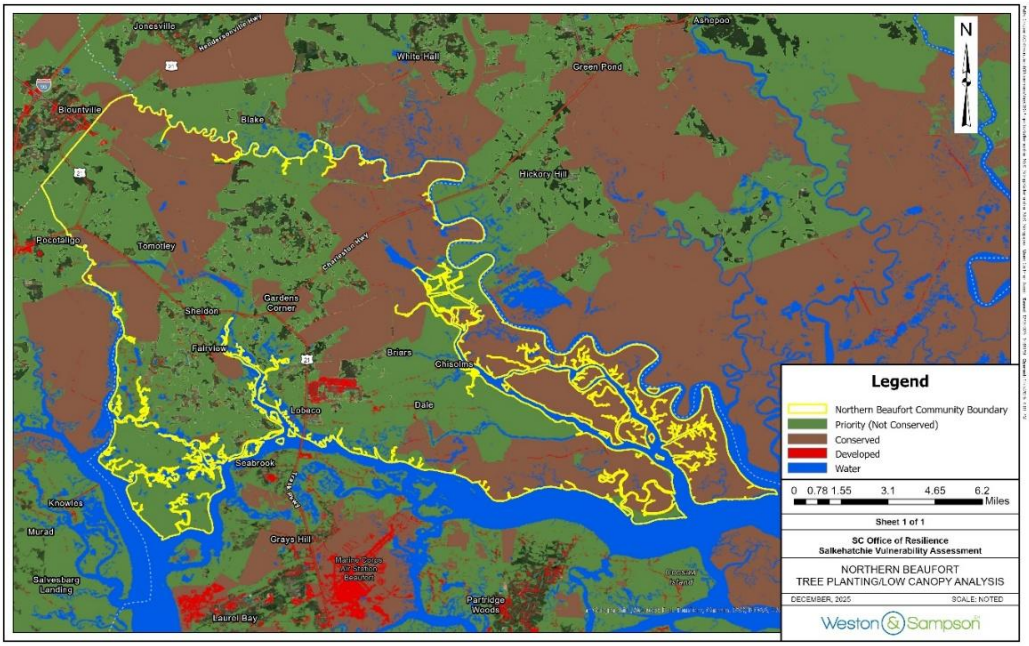
Comments/Observations:

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:



Source: Town of Sullivan's Island Tree Canopy Mapping



Source: SC Office of Resilience Conservation Priority Data

Salkehatchie Project Sheet

Community: Northern Beaufort

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

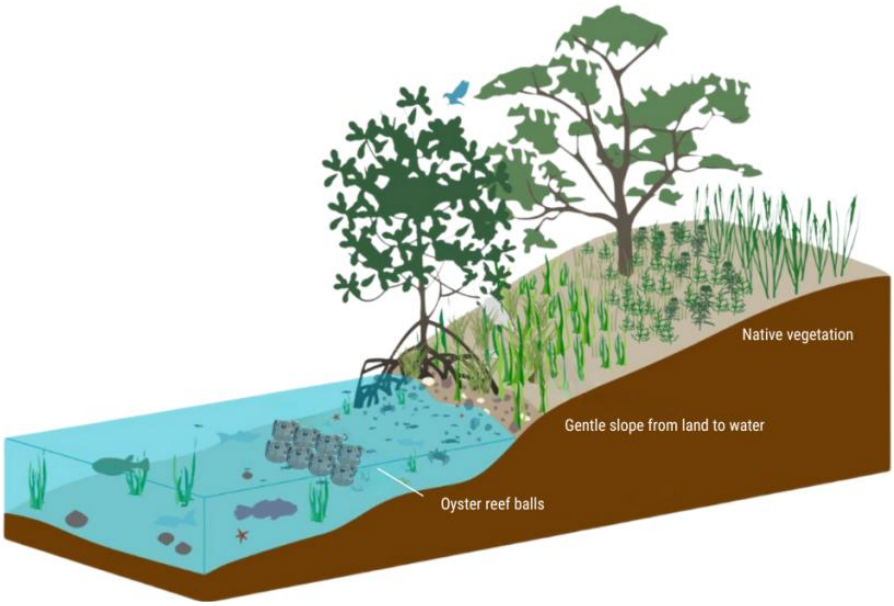
Drainage on site (all that apply): ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☒Other: Stormwater system outfalls may exist in project areas.

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



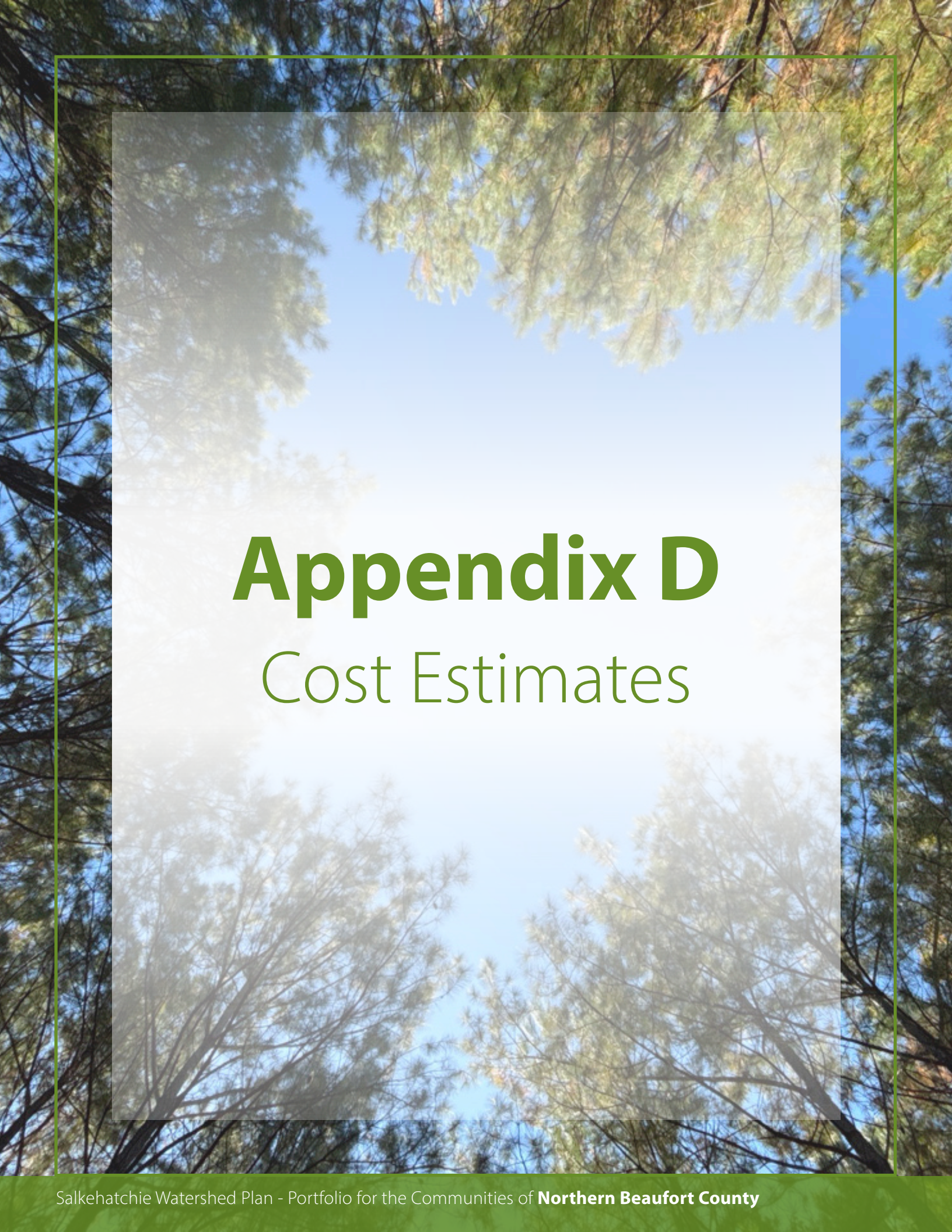
Appendix C

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:

Northern Beaufort Rain Gardens

Type of Strategy: Rain Garden

Community: Communities of Northern Beaufort County

Strategy Address/Location: James J. David Elementary School located at 364 Keans Neck Rd, Seabrook, SC 29940 (32.555277, -80.710886)

Design Stage: Final

Date of Estimate: 03/31/2026

Overarching Assumptions

- No drainage study was completed prior to this cost estimate, but a drainage study would likely benefit this project.
- The placement of multiple demonstration rain gardens would be beneficial next to the space with the most impervious area, James J Davis Elementary School, to serve as a place to capture roof runoff.
- This rain garden was priced as a project to be constructed by a professional contractor, but through NGO and volunteer support, the final price could be lower. The cost associated with each line item pertains to professional services and includes engineered drawings, plant survivability assurances, and other services.
- Depending on location, multiple, smaller rain gardens located near downspouts may reduce the need for extensive piping.
- The following cost estimate is based on a rain garden system that would capture the entire impervious roof area of the school, the cost associated with this estimate is variable and can be reduced by capturing a portion or percentage of the impervious roof surface.
- There is an initial Project Management category as well as time built into each design task for project management associated with each individual design task.

Planning and Design

- Project Management:
    - Description- Coordinate with the Owner on the proposed schedule, project progress, deliverables, and budget for the project duration. Meet on a bi-weekly basis to provide updates on budget, progress on deliverables, gain feedback, and discuss needs. Provide monthly invoices that include an

estimate of percent complete and percent spent, and an estimate of hours spent during the prior month as well as hours spent to date.
    - Assumptions- Project is billed as lump sum. Regardless of billing arrangement, project management deliverables will remain consistent and include regular communication and opportunities for the Owner to provide feedback on design.
- Site Visit:
    - Description- Travel to and from site, examine drainage patterns off of rooftop, conduct percolation test in soils where rain gardens could go and conduct interviews with school staff to learn best placement for rain garden and learn about any areas where pooling occurs. Call 811-dig ahead of visit.
    - Assumptions- Two staff members will conduct the site visit. Time for preparation and travel are included. The team will be able to meet a few staff from the school out on site during the 1-day site visit.
- Desktop Mapping and Drainage Calculation:
    - Description- Soil maps, onsite utilities, drainage areas, percolation test review, soil sample review
    - Assumptions- The roof of the elementary school is approximately 72,000 square feet so a rain garden will be approximately 14,400 square feet (20% of drainage area). The team will only explore within the footprint of the school and surrounding fields. In the design, the rain garden system is capturing the first 1" of rainfall for the entire 72,000 square foot roof system.
- Garden Design
    - Description- A landscape architect and biologist will create a site layout plan for all plant selections, placements, site prep, soil amendments, etc.
    - Assumptions- none
- Plant Selection & Schedule
    - Description- All plants chosen will be native plants to the area and be suitable for this application in a rain garden with associated moisture frequency, shade tolerance, soil preference, etc. Plant selections are placed in a "schedule" to be given a cost-estimate and eventually purchased and planted. These also come with site plans, specifications, and plan details that are needed for professional installation.
    - Assumptions- This includes time for a landscape architect and a biologist to achieve the work, as well as internal QAQC review.

Table 1. Planning and Design Costs

Item	Unit	Quantity	Total ($)
Project Management	*LS*	*1*	4,500
Engineering	*LS*	*1*	24,500
Subtotal Project Management and Planning			**29,000**

Construction and Implementation

- Plant Material:
    - Description- Plant palette consists of native shrubs, herbaceous perennials and grasses, and a small number of 2" caliper trees as focal points.
    - Assumptions- ~1,700 plants total at one plant per 8–10 sq ft; blended wholesale rate of ~$25–$35/plant for shrubs and herbs, ~$600/tree for 7 balled & burlapped (B&B) trees.
- Site Preparation
    - Description- Mechanical removal of existing turfgrass via sod cutter or skid steer, rough grading to establish the rain garden bowl (6–12" deep at center), and spoil haul-off.
    - Assumptions- Site is existing maintained turfgrass with no major subsurface obstructions; grading assumes modest cut-and-fill on a relatively flat schoolyard.
- Soil Amendments
    - Description- A 12–18" blended filter media layer (coarse sand, compost, native soil) topped with 3" of shredded hardwood mulch; compost sourced locally from Charleston County's McGill facility.
    - Assumptions- ~533 cubic yards of blended media (covering the base of the entire area of rain garden) and ~134 cubic yards of mulch (covering the top of the entire area of rain garden); all material costs include delivery and installation.
- Planting
    - Description- Installation of all plant material, tree staking and caging, and a temporary drip irrigation setup maintained for a 6–8 week establishment period. Some contractors lump the cost of labor in with plant pricing in their estimates, but it is separated out for this cost estimate and assumed to be $20/plant average in case an NGO or the school or County wants to take on the planting labor as a volunteer / community engagement event.
    - Assumptions- Bulk installation labor rate of ~$20/plant; temporary above-ground drip line removed after establishment.

- Structural Elements
    - Description- Underground PVC conveyance, rerouting ~20 rooftop downspouts into the garden's inlet zones, 3 educational benches, and temporary perimeter fencing during establishment.
    - Assumptions- Average 30 ft of underground PVC per downspout run including trenching; benches are commercial-grade recycled composite; fencing assumed at ~480 linear feet.

Table 2. Construction and Implementation Costs

Item	Unit	Quantity	Unit Cost ($)	Total ($)
Plant Material				
Shrubs (3 gallon)	*EA*	*800*	30	24,000
Herbaceous (1 gallon)	*EA*	*900*	12	10,800
Trees (2” caliper)	*EA*	*7*	600	4,200
Site Prep				
Turf Removal + haul off	*SF*	*14,400*	*1*	14,400
Grading and bowl shaping	*SF*	*14,400*	*0.75*	10,800
Soil Amendments				
Blended filter media	*CY*	*533*	140	74,620
Shredded hardwood mulch (3”)	*CY*	*134*	65	8,710
Planting				
Labor	*EA*	*1,700*	20	34,000
Tree installation and caging	*EA*	*7*	180	1,260
Temporary irrigation	*LS*	*1*	3,500	3,500
Structural Elements				
Downspout Rerouting	*EA*	*20*	400	8,000
Educational bench materials and installation	*EA*	*3*	1,000	3,000
Perimeter Fencing (split-rail)	*LF*	*480*	80	38,400
Subtotal Construction and Implementation Costs				**235,690**
Construction Oversight (20%)				**47,138**
Contingency (30%) *				**79,407**
GRAND TOTAL Planning, Design, Construction, and Implementation				**391,235**

*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

Northern Beaufort Drainage Study

Type of Strategy: Drainage Study

Community: Communities of Northern Beaufort County

Strategy Address/Location: Along Bailey Circle beginning at the intersection of Bailey Road and Bailey Circle (227-203 Bailey Circle) and traveling south (32.613206, -80.786329)

Design Stage: Modeling of existing conditions and recommendations for alleviating flooding associated with dirt roadway.

Date of Estimate: 03/31/2026

Overarching Assumptions

- Bailey Road is an unpaved road owned by Beaufort County. It is situated such that the egress from the neighborhood passes over a culvert that is connected to a tidal system (Huspa Creek). Additionally, although there is a large and apparently recently maintained ditch on the western side of the road, it is unclear if stormwater runoff can flow efficiently across the dirt road and vegetated shoulder into the ditch. This study will clarify the nature and causes of the flooding and evaluate potential 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
- Survey:
    - Description- surveyor will capture the roadside ditch, crest of road, culvert crossing, and tide gage location.
    - Assumption- fee includes markup for project management from design firm
- 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
    - 1 site visit which includes installation of a tide gauge on the upstream side of the culvert crossing
    - $1,250 for tide gauge equipment (assuming level logger and supplies to construct well)
    - 1 site visit to download/process tide gauge info
    - 1 stakeholder meeting (assume in person) to gather additional information
    - Staff involved: project manager, senior technical/design professional, technical/design professional, junior technical/design professional, GIS/CADD professional

- Engineering & Conceptual Design:
  - Description- *modeling and Schematic Design (30%)*
  - Assumptions-
    - 1 existing conditions model
    - 1 proposed conditions model with up to 5 proposed solutions
    - CAD schematic plans
    - Technical report with associated 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 3. Planning and Design Costs

Item	Unit	Quantity	Total ($)
Project Management	*LS*	*1*	15,000
Survey	*LS*	*1*	7,500
Pre-Design	*LS*	*1*	20,000
Engineering and Conceptual Design	*LS*	*1*	75,000
Contingency (30%) *			**35,250**
GRAND TOTAL Planning and Design			**152,750**

*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.