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## The Bucksport Community Progress Report: Updated Fall 2022

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# BUCKSPORT AND THE SUSTAINABLE DEVELOPMENT GOALS

REVIEW AND REPORT OF COMMUNITY PROGRESS: NOVEMBER 18, 2022

SUSTAINABILITY: METHODS + TOOLS

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## Introduction



This assessment is a product of fall semester 2022 Methods and Tools in Sustainability and Coastal Resilience. This group was assigned to analyze the resilience and sustainability of the town of Bucksport, South Carolina. The largest problem this community faces is the town flooding, which has been increasing in recent years. This causes damage to many homes and properties. At the county level, projects to mitigate flooding have been suggested by the Flood

Resilience Master Plan but those projects have not been implemented yet. Over the entire semester, the group was tasked with gathering sufficient data, organizing it to provide the town and its people with the proper information to move forward in dealing with the issues they are facing. The student group did much of its own research while also collaborating with multiple organizations and individuals, pooling resources to assist the community as best they could, given the limited time available to them during the semester. At the end of the semester, the group consolidated its findings and recommendations into a presentation for the people of Bucksport and those who are also working to assist the town.



## Location: Bucksport, Horry County, SC



Photo of the James R. Frazier Community Center taken by Noah Baran

Bucksport is a rural unincorporated town in South Carolina in the southwestern part of Horry County, west of Myrtle Beach at the coordinates  $33^{\circ}40'37''$  N,  $79^{\circ}6'54''$  W. It is nestled with the Waccamaw National Wildlife Refuge to the east and west. Bucksport sits on two bodies of water; the Waccamaw River and the Cowford Swamp and is also near the Great Pee Dee River. Bucksport is along US highway 701 and is made up of forests and farmland.

## Purpose of Report

The Coastal Carolina group gathered information relating to the sustainability of the Bucksport community. The goal is to examine the issues facing the town and use that information to find sustainable courses of action that the community may take. The students worked to gather information on several topics and issues including the culture, economy, politics, and natural attributes of the area. Through research, interviews, and collaboration, the students gathered information that was then examined through the lens

of sustainable development to find potential solutions and provide data to the community. This data can be used as a tool in applications for county, state, and federal funding in the future. A focus was placed on the United Nations Sustainable Development Goals (UN SDGs), a set of global and local interlinked goals and indicators adopted by all member countries of the UN, the idea being “a blueprint to achieve a better and more sustainable future for all” (United Nations, 2022). The students determined which of the 17 UN SDGs were applicable to the issues faced in the Bucksport community. These goals were then used as a guide and template to determine the best actions for the community moving forward. Rather than focusing on temporary solutions, the students worked toward long-term, sustainable methods that will support the community in the face of current and future problems. Students also dedicated efforts on gathering educational resources for residents to understand the Federal Emergency Management Agency (FEMA), what it covers, and how to apply for relief after damage is caused by presidentially declared national disasters.

**Unit Analysis/Scales:** There are various scales that impact Bucksport, South Carolina. This report focuses on the individual scale by gathering empirical data talking with the residents at community events. This was then used to narrow down the focus of the report to make it more useful for the community. On a much larger scale, the community is focused on things like climate change, poverty, and coastal flooding. These large-scale events affect communities across the world by causing catastrophic flooding from heavy rainfall and severe hurricanes (IPCC Report, 2022). The residents of Bucksport have been increasingly impacted by flooding events as the world’s climate continues to change. Bucksport residents participate in meetings to discuss flood mitigation plans. Another major concern the locals face is the high unemployment rate, which has a direct relationship with the poverty level. Each of these units are analyzed in the report.

## Who worked with us?

To complete this sustainability assessment for Bucksport, we worked with local community member and President of the Association for the Betterment of Bucksport Kevin Mishoe, South Carolina Office of Resilience GIS (Geographic Information Systems) analyst Andrew White, Katie Finegag of the SC Seagrass Consortium, and Waccamaw Riverkeeper Cara Schildtknecht. The 2021 team focused on cultural aspects of the Bucksport community working closely with Furman University students Sydney Spires, Jeanna Cline, and Meghan Salm.



## Methodology

This sustainability assessment serves to examine the Bucksport community (i.e., the state of the environment, people, and economics) and answer the following questions:

1. What is holding Bucksport back from prosperity?
2. Why does Bucksport feel so disenfranchised?
3. How do we help change their sustainability & resilience?
4. How do we get people outside of Bucksport to care?
5. How do we get the local government to feel inclined to protect this community? How do we help Bucksport capture more local government support and resources?

This assessment was developed in sections using a variety of qualitative, ethnographic, and case study methodologies. A variety of tools were used to measure data including observations, meetings, and pre-existing data. The pre-existing data used were published online and came from sources such as research articles, news articles, government websites and tools, and the Horry County Flood Resilience Master Plan Draft. The first section was the preliminary assessment where information regarding the geographic boundaries, natural attributes, social and cultural attributes, as well as economic and business attributes of Bucksport were collected. Challenges, disturbances, scales, and stakeholders that impact the community were also collected for this section. In the second section, the problems that Bucksport faces, the questions which would guide the assessment, and the unit of analyses were identified. The questions were then answered using empirical evidence and connected to the 17 United Nations Sustainable Development Goals (UN SDGs). The hazards, vulnerability, and risks of the community, Disaster Risk Reduction measurements (from the 2021 Sendai Agreement, a global agreement on disaster risk reduction), options regarding responses, suggestions for a plan, and actions based on previous findings were investigated within section three. A conceptual framework diagram, based on one established by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), was developed within section four and each aspect of the diagram was explained to describe the connection between nature and the people residing in the Bucksport community. Since flooding has become a prominent issue in Bucksport, understanding how to get help after natural disasters is important for the community. We conducted a survey to document where flooding has occurred in the community, along with other questions aimed at collecting information regarding insurance and the extent of damages. The survey will be continued into the spring semester to create a community flood map, identifying areas of

resident concern for this issue. By investigating the Federal Emergency Management Agency (FEMA), it was determined that expansions to proof of ownership documentation help people get relief, even if they find themselves living in an heirs' property. Findings based on the information collected within these sections were then developed into a sustainability assessment. Ways to help the Bucksport community along with recommendations for the future were also developed based on the findings.

## Timeline

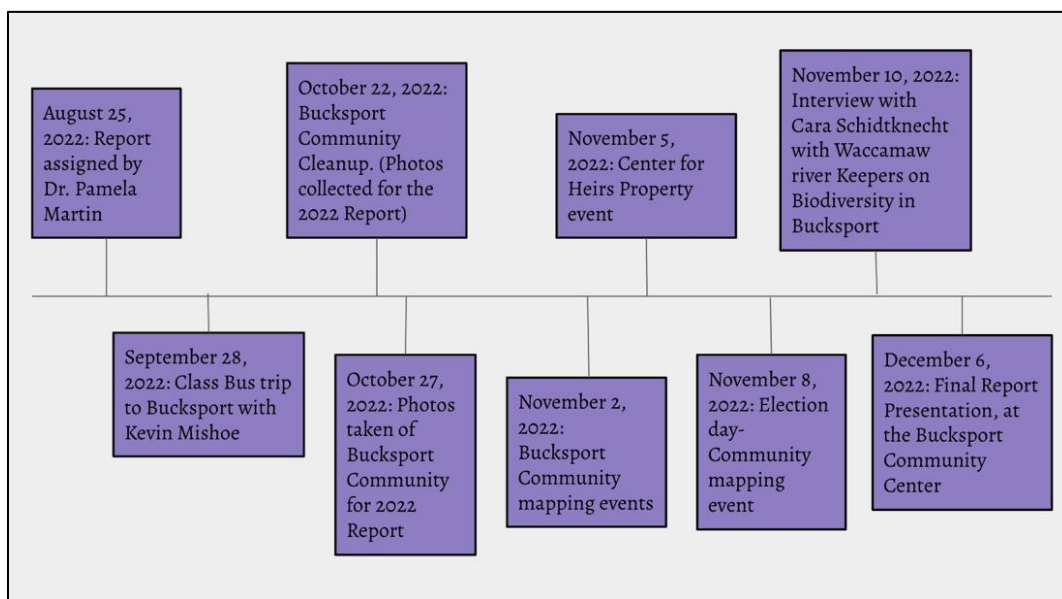
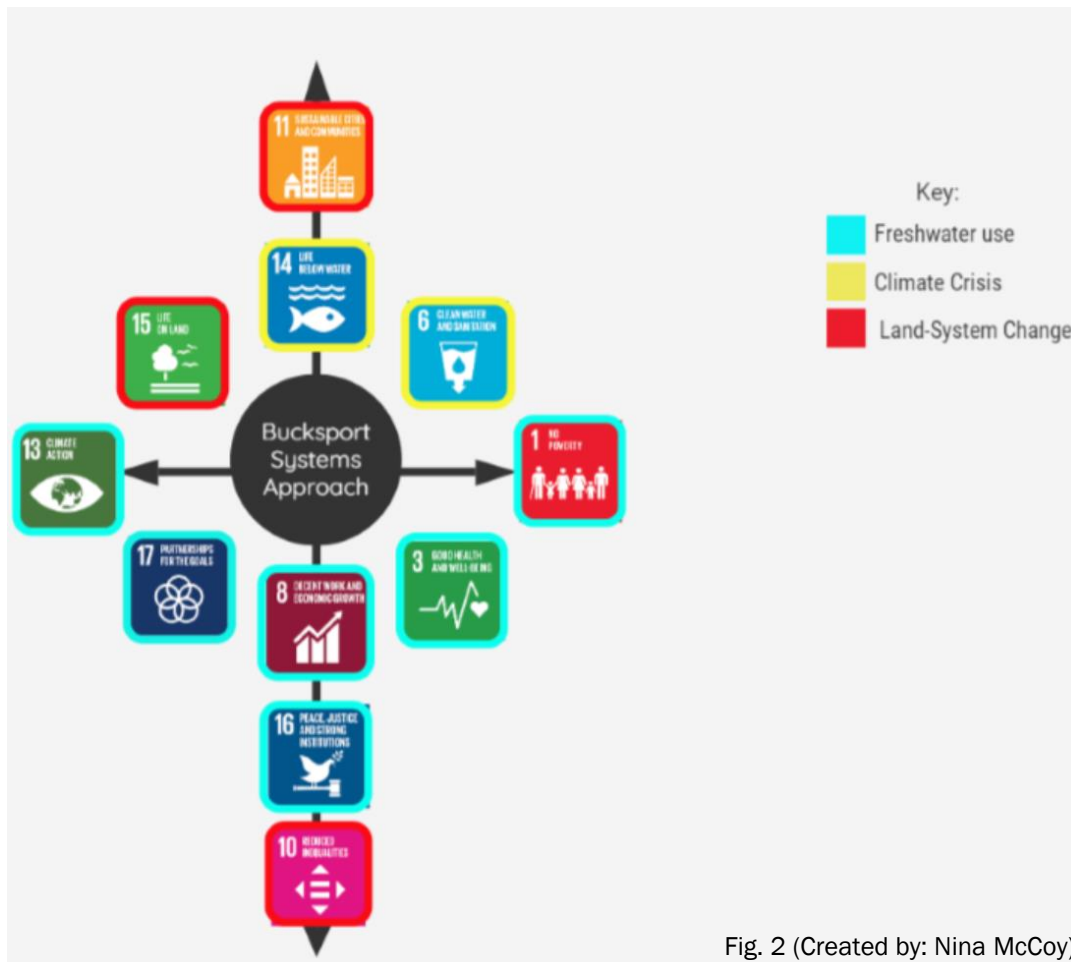


Fig. 1 (Diagram credit: Victoria Jeffreys)

## Framework and Sustainable Development Goals Bucksport Systems Approach



This model represents the sustainable development goals (SDGs) SDGs #11: sustainable cities and communities, #14: life below water, #15: life on land, #6: clean water and sanitation, #13: climate action, #1: no poverty, #17: partnerships for the goals, #8: decent work and economic growth, #3: good health and well-being, #10: reduce inequality, and #16: peace, justice, and strong institutions. The key describes the focus of each SDG using the colors teal, red and yellow. For example, SDG #11: Sustainable Cities and Communities connect alongside the land-system change. The original Bucksport System Approach Model

was modified into a new model to better reflect the community's interests, to be visually appealing, and easier to read.

### **What are the sustainable development goals?**

The Sustainable Development Goals (SDGs) are derived from the 2030 Agenda for Sustainable Development. It is a global, 15-year plan that involves all countries. It is centered around 17 Sustainable Development Goals and 169 targets. The goals are meant to link people and economic aspects of life on the planet and within its natural boundaries. The people element includes ending poverty and hunger and making sure that all humans can live in dignity within a healthy environment. The economic element, or prosperity, states that people have the right to prosperous lives while progressing in balance with nature. The planet element protects nature from further degradation. It also encompasses sustainable consumption, production, and use of natural resources. While simultaneously acting on the cause and effects of climate change, it also mentions preserving the needs of future generations. Peace and partnership were added along these three principles of sustainability. Peace promotes peaceful societies where justice is clearly present. Partnerships are based on collaborative solidarity toward the goals. It includes the idea that all stakeholders should be included, especially vulnerable communities (United Nations, 2022). The sustainable development goals that could be applied at a local scale were chosen to analyze the community. The goals chosen for this framework are **1: No Poverty, 3: Good Health and Well-being, 6: Clean Water and Sanitation, 8: Decent Work and Economic Growth, 10: Reduced Inequality Within and Among Countries, 11: Sustainable Cities and Communities, 13: Climate Action, 14: Life Below Water, 15: Life on Land, 16: Peace, Justice, and Strong Institutions, and Goal 17: Partnerships for the Goals.**

### **Why did we choose this framework?**

This framework was designed based on the sustainable goals listed. These goals were chosen out of the seventeen based on what is most applicable to Bucksport and can be represented with data. Starting at the base of the framework is **Goal 16: Peace, Justice, and Strong Institutions**. Goal 16 is based upon peace and inclusion. It also is based on providing equitable justice and keeping institutions accountable and inclusive. We chose this as the base upon which all other goals must be built upon and included in action. The arrow demonstrates how moving from one goal to the next is more easily achieved when the goals below it are. The next goals listed are **Goal 17: Partnerships for the Goals, 8: Decent Work and Economic Growth, and 3: Good Health and Well-being**. These three goals

are more easily achieved when Peace, Justice, and Strong Institutions are present within them and the community. Partnerships for the Goals are necessary to exchange valuable information and support communities that need it. When partners are working toward the same goal, it is achieved faster and includes more stakeholders in decisions. Decent Work and Economic Growth should also have Peace, Justice, and Strong Institutions present. Equitable access to aid, county funds, and economic expansion within the community is important for people to prosper. Prosperity is then linked to **Goal 3: Good Health and Well-being**. Good Health and Well-being includes factors of human life such as food, water, shelter, health, etc. Without the means to thrive financially, a community cannot sustain itself while maintaining its resources for future generations. **Goal 1: No Poverty** and **Goal 13: Climate Action** are next in the figure with a bold arrow between them. This arrow is meant to demonstrate how closely related the two goals are. No Poverty focuses on ending poverty, in every form. Poverty is exacerbated by climate change and its effects. **Goal 13: Climate action** is the goal dedicated to combat the drivers of climate change and the impacts it has on people, resources, and the environment. Climate change scientists predict more frequent and stronger weather events, such as hurricanes (IPCC Report, 2022). This would prove problematic for communities, such as Bucksport, that experience flooding due to development and geography and do not have means to build back after storms.

Communities cannot be sustainable and adapt to the changes brought about by climate change without the eradication of poverty and vulnerability. The next goals upward in the figure are **Goal 6: Clean Water and Sanitation**, **Goal 14: Life Below Water**, and **Goal 15: Life on Land**. Clean Water and Sanitation is meant to ensure that all people have access to clean water. This includes the ability to manage water sustainably. Life Below Water focuses on conserving marine resources and using them for sustainable development. Life on Land is similar. Life on Land encompasses restoration, protection, and promotion of ecosystems on land. Combating biodiversity loss is also included by sustainably managing forests, fighting desertification, and stopping or reversing land degradation. These three goals directly apply to Bucksport. Although within a terrestrial ecosystem, the unique landscape of rivers and wetlands means that water and water sanitation are both crucial factors to consider when looking toward the future. By implementing Climate Action in the community, as well as no poverty, protecting wildlife and maintaining resources are more easily attainable. All the goals lead to the top of the figure, **Goal 11: Sustainable Cities and Communities**. A sustainable community would be the overall goal from the analysis of Bucksport. This goal includes making cities and human

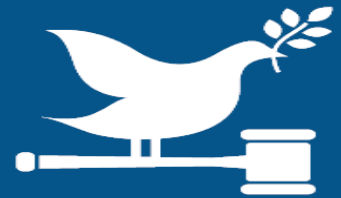


settlements safe, resilient, sustainable, and inclusive. All the goals previously listed, if accomplished, will lead to a sustainable community.

### **What are planetary boundaries?**

Planetary boundaries are the capacity of the planet to provide resources before accessing those resources and destabilizing ecosystems (Steffan, 2015). Imagine planetary boundaries as lines that are not meant to be crossed. For example, cutting down a large amount of forest is shown to disrupt other species and natural patterns that are necessary for healthy populations. Limiting oneself to a smaller number of resources within the forest allows it to continue providing services for the people. On a large scale, this applies to the planet and all countries. For this analysis, we chose planetary boundaries based on Bucksport's current resources and needs. The boundaries chosen are **Freshwater Use**, **Land-System Change**, and the **Climate Crisis**. Freshwater use refers to the water around Bucksport, such as the Waccamaw and Pee Dee rivers and the wetlands. The land-system change is in reference to the type of development that has taken place in Bucksport. The climate crisis relates to the effects that climate change could have on the Bucksport area. Sea-level rise, increased temperature and storm activity could impact the community as climate change progresses. The colors surrounding the goals are meant to link them to the related planetary boundary. Notice that Climate Crisis is most related to the goals chosen in reference to the community.

# 16 PEACE, JUSTICE AND STRONG INSTITUTIONS



**Goal Explanation:** UN Sustainable Development Goal 16 is focused on promoting a peaceful and inclusive society for sustainable development, providing access to justice for all and building effective, accountable, and inclusive institutions at all levels (United Nations, 2022)

**Introduction:** For a substantial portion of Bucksport’s history, the relationship between the town and the county and state government has been strained. Communication between leadership in the community has been deemed challenging due to lack of participation and involvement in community events. This has been reflected by the lack of data collected during the flood mapping events on November 2<sup>nd</sup> and 8<sup>th</sup>. This lack of communication is decreasing inclusivity and equity simply because of the disconnect between people and institutions has been reflected by the American Rescue Plan (ARP, adopted to assist with COVID-19) along with the county’s Flood Resilience Master Plan, which attempt to “solve” issues that involve Bucksport County. However, there has been a lack of communication between what the county has planned and what the town needs, as observed by the 2021 team in the following meeting– Bucksport community meeting October 25<sup>th</sup>. In addition, there are several property right issues related to Heirs property, property which has been inherited without a will in many cases lacking official documents. Along with being overlooked on a general scale, leaving this has left some of the town's inhabitants to have a distrust of the system they feel should be helping them.

## **Targets and Data:**

The two targets and indicators which could provide the most assistance to Bucksport would be targets 16.6 and 16.7.

**Target 16.6** which develops effective, accountable, and transparent institutions at all levels. This can be integrated through restructuring how the county notifies and broadcasts certain information out toward community members. Ensuring there is a platform for all people to commonly have access and identify the changes being made in their communities to ensure ample feedback is given. In addition, generating more educational opportunities within the schools and the Bucksport Community Center would urge younger generations toward employment opportunities within the community.

**Target 16.7** ensures responsive, inclusive, participatory, and representative decision-making at all levels. Public meetings need to be clearly and effectively communicated to the community in advance and in multiple formats – digital and paper in public locations to include the community center, churches, etc. An improved format for the meeting to feel more inclusive is another suggestion, based on our observations of the fall 2021 report. The meetings should create a comfortable environment so attendees feel confident in voicing their opinions for which they will be considered by the representatives. The Federal Emergency Management Agency (FEMA) has also created a policy change that enables those who live on Heirs' property to have equal access to receive disaster relief funding (Harris, 2022). This federal policy change is helping to ensure the equitable distribution of funds. It is a prime example of responsive and inclusive decision-making, which is key to improving community resilience.

Achieving peace and justice means, in part, creating an atmosphere in which residents feel safe and secure in their communities. A survey of forty-two Bucksport residents measured community public safety concerns related to speeding, break-ins, drug activity, and a general category for "other public safety concerns." Twelve survey respondents were concerned about speeding, five respondents had experienced a break in, and twenty-two respondents were concerned about suspected drug activity. In addition to completing an online survey, a series of community events were held where residents were encouraged to place color-coded dots on a printed map to indicate public safety "hot spots." A different color dot relates to each measure: red dots indicate speeding, blue represents suspected drug activity, yellow is for break-ins, and green represents other public safety concerns.



Based on these results regarding speeding, drug trafficking and break-ins, there is work to be done in the Bucksport community to bring peace, justice, and strong (or responsive) institutions. Open-ended responses from community respondents indicate support for more lighting in the community and installation of speed bumps. As for drug activity and break-ins, some community members did not feel reporting to law enforcement would lead to positive outcomes. These data are not representative of the community as whole but are a starting point from which to build additional research on public safety in the Bucksport community.

# 17 PARTNERSHIPS FOR THE GOALS



**Goal Explanation:** UN Sustainable Development Goal (SDG) 17 focuses on strengthening the implementation and revitalization of global partnerships for sustainable development. (United Nations, 2022)



Grand Strand Water and Sewer Bucksport Facility. Photo Credit: Noah Baran

**Introduction:** Strong partnerships with surrounding communities and the state are essential for the growth and development of Bucksport. Having a system of support and different partnerships from other public and private entities will enable Bucksport to have more resources to move toward becoming a more sustainable community. Bucksport has



begun establishing partnerships with different institutions on state and national levels such as The National Association for the Advancement of Colored People (NAACP), the Center for Heirs Property, the Gullah Preservation Society, the Gullah Geechee Chamber of Commerce, Coastal Carolina University, and Furman University. Bucksport is currently moving toward improving previously established partnerships with Grand Strand Water and Sewer and other Horry County communities. This will contribute to the future success of Bucksport becoming a sustainable and resilient community.

## **Targets and Data:**

**Target 17.7** encourages and promotes effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships, data, monitoring and accountability. Partnerships between Bucksport, Coastal Carolina University and Furman University have already established effective partnerships as resources. These partnerships have led to the creation of reports that bring awareness to the severity of the situation that Bucksport is experiencing. These reports are an educational opportunity to those in the community regarding issues they are facing. A commitment to establishing a better partnership between Horry County and Bucksport is pushed through institutional partnerships with Coastal Carolina University and Furman University and their sustainability assessments of Bucksport. Horry County is receiving \$68.8 million in ARPA (American Rescue Protection Act) funding, and \$8.2 million that is available to public service agencies to address public health issues. These funds have been made available and applied to help improve housing and infrastructure within the community (HCGovernment, 2021).

# 8

## DECENT WORK AND ECONOMIC GROWTH



**Goal Explanation:** UN Sustainable Development Goal (SDG) 8 is centered around Decent Work and Economic Growth promoting sustainable inclusive economic growth in addition to full and productive employment, and decent work for all. (United Nations, 2022)

**Introduction:** Currently in Bucksport there are two locations for recreation: Bucksport Landing and Port Harrelson Landing. There are several small convenience stores located throughout the community including one named Glenda's located toward the center of the community and a car wash. Bucksport is a community built upon faith, having 6+ churches located throughout the town. There are multiple major utility companies located throughout the Bucksport community including Grand Strand Water and Sewer Authority (GSWSA), Bull Creek Water Treatment Plant, and the Horry Telephone Cooperative Inc. (Flood Resilience Master Plan). Each of these makes up the anthropogenic assets of the community. The term 'anthropogenic asset' refers to established infrastructure, health facilities, or knowledge, as well as education work, technology, and financial assets. Other anthropogenic assets include the Bucksport Marina and a nursing home named, Horry County Council on Aging (Bucksport, SC). Although the Bucksport community has many anthropogenic assets, the community still lacks schools, hospitals, and doctor's offices, which takes away from the overall quality of life. The nearest hospital is Conway Hospital 18 miles away, and the nearest Horry County school is South Conway Elementary which is 11 miles away. Even though these resources are right outside the community they are still lacking in these resources in Bucksport.

Bucksport is a small community known for the Bucksport Marina, which is owned by the Grand Strand Water and Sewer Authority. At the marina, there are floating docks, an RV

campground, and kayak rentals (Ropp 2018). The Marina, however, experienced some damage from Hurricane Florence in 2018 from which they have been slowly recovering from. (“Conway Boat Marina” 2020).

In 2020, the median household income in Bucksport was \$44,181 whereas the median household income in South Carolina was \$54,864 (Bucksport, South Carolina 2021). This gap in household income points to the need for improvements in SDG 8: decent work and economic growth in the Bucksport community.

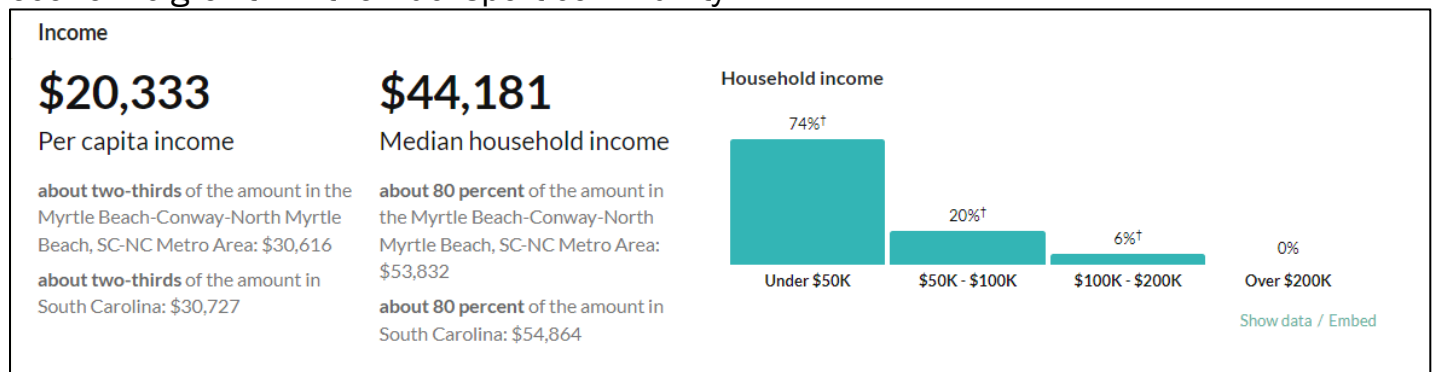


Fig. 3 (Source: Census Profile, 2021)

**Targets and Data:** Two targets within Goal number 8: Decent work and economic growth that Bucksport can improve on are targets 8.2 and 8.9.

**Target 8.2** focuses on diversifying, innovating, and upgrading economic productivity. Currently, Bucksport has a limited number of businesses and employment opportunities for their community members leading to stunted economic growth. One reason for this is that the businesses have employees that are commuters into Bucksport, instead of locals working in the community.

**Target 8.9** focuses on creating beneficial and sustainable tourism. Bringing back Gullah Geechee Day that the Bucksport community hosted in 2020 would support Bucksport’s tourism aspects. This would be achieved by people traveling to attend the festival and bringing in additional money for the community from the attendees. Another proposal from collaborators from Furman University is an artistic project (mural or sculpture) representing Gullah Geechee culture. According to the 2020 Market Report for Gullah Geechee Heritage Tourism, potential leisure spending in the Gullah Geechee Corridor States is 34 billion dollars (2020 Gullah Geechee Heritage Corridor). There are also potential ecotourism

prospects for the area that will bring in more visitors. Given its proximity to the Waccamaw Wildlife Refuge as well as the Waccamaw and Pee Dee rivers. The addition of campgrounds, river excursions from the marina, or wilderness tours into the wildlife refuge would cause an increase in Bucksport's tourism. This provides opportunities for anglers to travel to the community and for individuals to explore the Waccamaw River leisurely by kayaking, boating, etc.

# 3 GOOD HEALTH AND WELL-BEING



**Goal Explanation:** Aims to establish proper health and well-being for all people of all ages. This is outlined with several factors of goals and targets to achieve this. Including, but not limited to, access to quality forms of healthcare, reducing factors that negatively impact health both physically and mentally, as well as providing resources to promote a positive quality of life (United Nations, 2022).

**Introduction:** Focusing on Bucksport's values, the aspects of the community that achieve good health and well-being are cultural identity, nature, shelter, health, and good social relationships.

**Targets and Data:** Bucksport has a strong representation and history of Gullah Geechee culture. This is important to keep in mind when considering their positive quality of life. The spiritual values of the Gullah Geechee people include "the belief in a God, community above individuality, respect for elders, kinship bonds and ancestors; respect for nature, and honoring the continuity of life and the afterlife" (Gullah Geechee Corridor Organization, n.d). To achieve this goal, it is necessary to focus on cultural identity, respect for nature, and community above individuality. Conserving this historical land and culture is an important aspect in sustaining good health and well-being of the Bucksport community.

**Target 3.9: Environmental Health** focuses on reducing death and health impacts from hazardous chemicals and pollution contamination of air, water, and soil (United Nations, 2022). As a group, some of the students researching sustainability in the Bucksport community have helped in one of the community clean-up events on October 22, 2022,



held by the Beautification of Bucksport organization. At this event it was clear that the residents care about the health and well-being of their community and want to keep it clean. Litter removal in the community is an important action that can be taken toward attaining Sustainable Development Goal 3.



Photo Credit: Pierre D. Fignole III, a resident of Bucksport, SC

**Implementation 3b: Medicines and Vaccines**, is important to the Bucksport community as it aims to provide essential medicine and vaccine access at an affordable rate (Goal 3, 2022). Bucksport was heavily impacted by the COVID-19 pandemic. At the time of the 2021 Bucksport sustainability report, there were over 60,000 cases of COVID-19 reported in Horry County. It is clear based on the figures below that Horry County has experienced hardships in attaining the goal of good health and well-being caused by the COVID-19 pandemic. To combat these hardships, vaccines have been made available to the public for the prevention of contracting COVID-19. Figure 4 below shows the multiple spikes of confirmed COVID-19 cases as an example of the challenges posed to the community during the pandemic. Whereas figure 5 shows the number of confirmed COVID-19 cases as of November 5, 2022, with the number of spikes decreasing due to an increase in vaccinations administered and the total number of cases reported as 115,002.

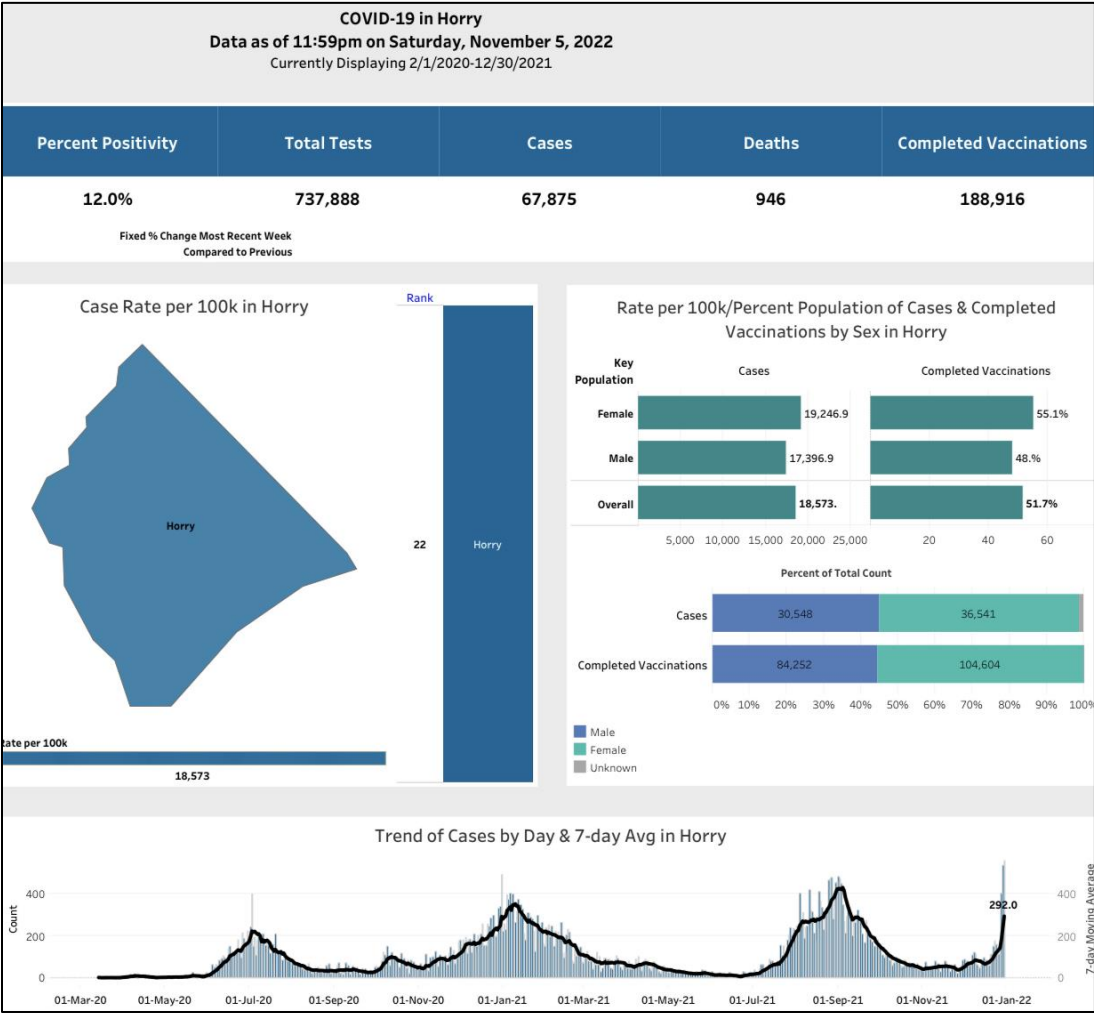


Fig. 4 (Source: SCDHEC)

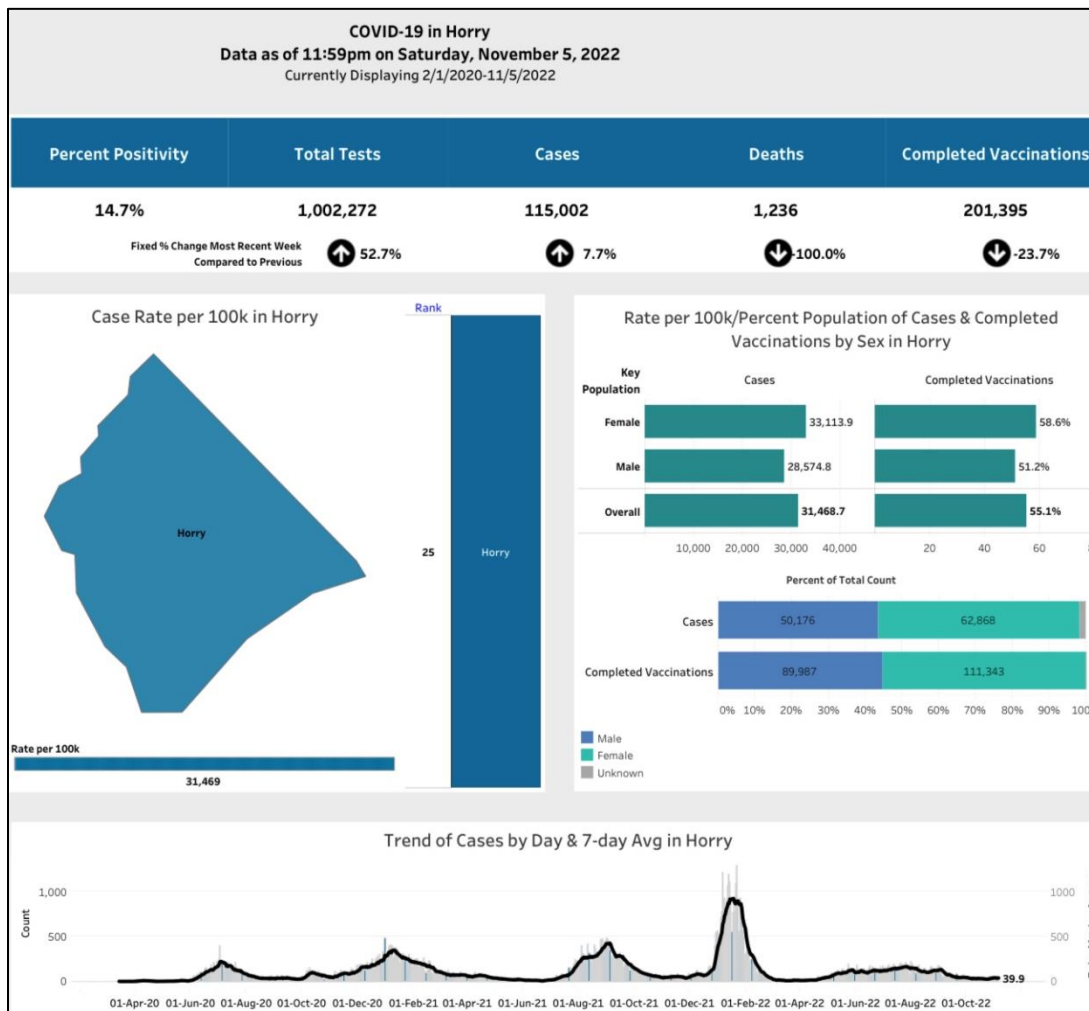


Fig. 5 (Source: SCDHEC)

Rural communities were the most harshly affected communities by the COVID-19 pandemic in The United States. At the beginning of the COVID-19 pandemic in this country urban cities were affected the most due to the higher population of people, but as the pandemic progressed rural areas began to experience a greater rate of cases and deaths as shown in figures below (Dobis and McGranahan, 2021). One reason for this is that some rural communities depend on meat packaging plants, farming, and manufacturing to fuel their county's economy (Pender, 2022) which causes employees to be working close together in some circumstances. This is present in Bucksport as much of the community consists of farmland. Another reason that rural communities were more adversely affected by COVID-19 is due to the higher percentage of older residents, underlying medical conditions, and

increased difficulty in reaching medical care facilities, and a lower percentage of residents with health insurance (Dobis and McGranahan, 2021). While these studies do not directly analyze the impact of COVID-19 in Bucksport, they give insight into how the virus adversely affected the residents of Bucksport, SC.

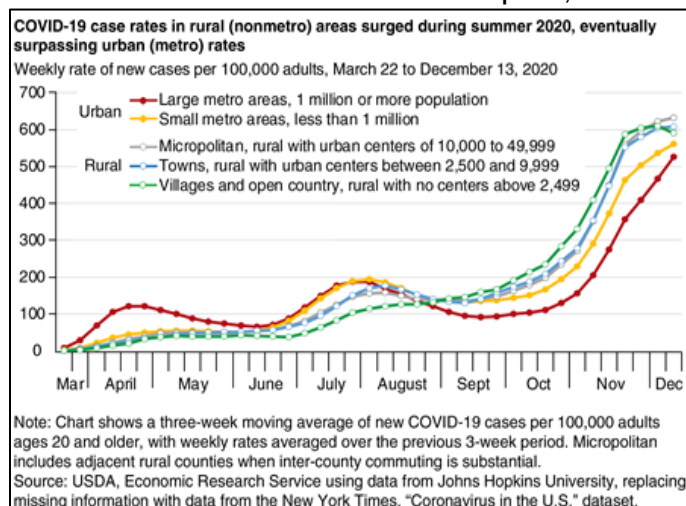


Fig. 6 (Source: USDA ERS)

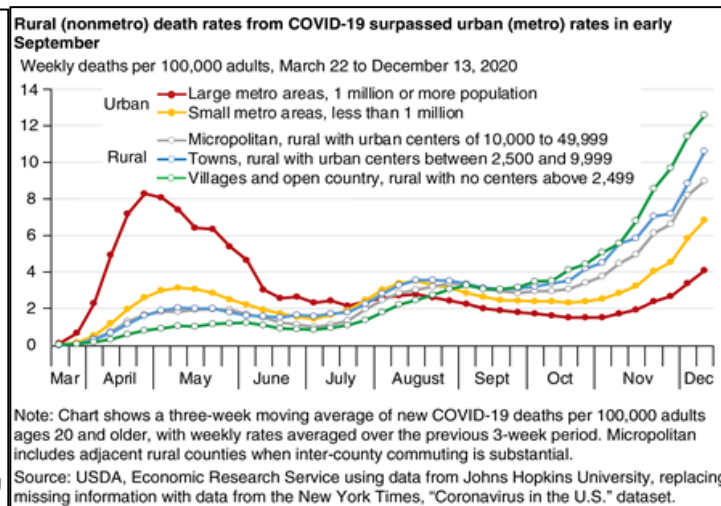


Fig. 7 (Source: USDA ERS)

When considering how Bucksport was affected by COVID-19 according to these factors there are many types of data to look at. Figure 8 below shows that COVID-19 caused the most deaths in the older population of residents in Horry County. Bucksport is a small town with a sizable percentage of its population being residents over the age of 50 years old. According to the 2020 census, figure 9 below, twenty-one percent of residents are between the ages of 50-59, fourteen percent are 60-69 years old, seven percent are 70-79 years old, and zero residents are 80 years of age or older (Census Reporter, 2020). When comparing these demographics to COVID-19 statistics it is apparent that residents 65 years or older are the most at risk for death caused by COVID-19. Currently the closest hospital to Bucksport is Conway Medical Center, which is 18.2 miles away, or about 25 minutes depending on traffic (Google Maps, 2022). This is hazardous for the residents of Bucksport because in a health emergency it is quite a distance to travel to just get to the hospital, not including that there may be a long wait to be seen and treated by a medical professional. In a small community like Bucksport these factors pose difficulties in preserving their rich history and culture that drives the residents' desires for an environmentally sustainable community.

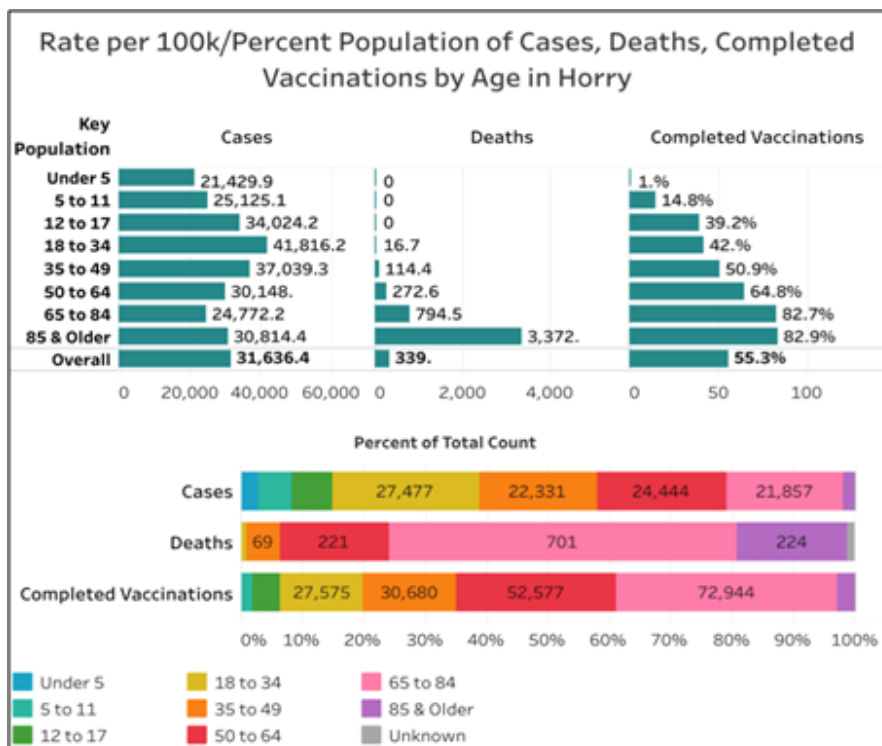


Fig. 8 (Source: SCDHEC)

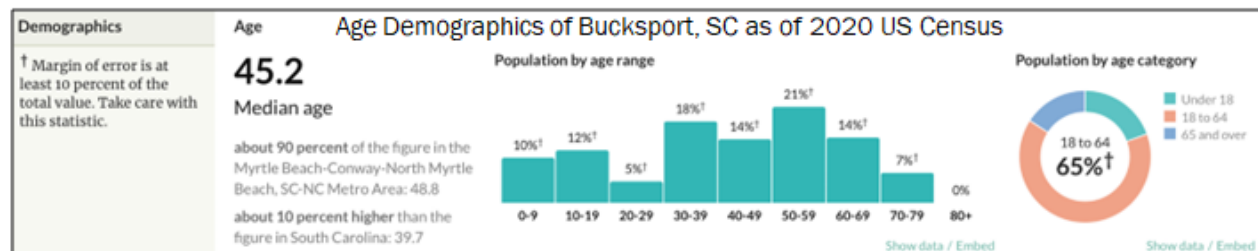


Fig. 9 (Source: SCDHEC)

# 13 CLIMATE ACTION



**Goal Explanation:** Aims to take urgent action to combat climate change and its impacts (United Nations, 2022). This goal is important because there is only so much time left to combat climate change before its effects are irreversible.

**Introduction:** Bucksport is currently experiencing various effects of climate change. Some negative impacts include more frequent and extreme flooding, hurricanes, and weather temperatures. When the community works together, Bucksport has a strong potential to become a sustainable and green community in the future.

## Targets and Data:

**Target 13.1: Strengthen Resilience and Adaptive Capacity to Climate-Related Hazards and Natural Disasters,** at a community level focuses on the ability to combat climate change effects on a small scale, which is a goal that is attainable in the Bucksport community. Bucksport is a prime community, a blank canvas, which could introduce the concept of being a green community. A green community is one that enacts environmentally conscious actions to meet the needs of its residents (“The Importance of Creating Green Communities,” n.d). This can be attained by implementing climate-action policies at a local government level.

**Target 13.2: Integrate Climate Change Measures into Policy and Planning,** demonstrates the need for climate change action plans to be present in government policies, planning, and strategies. Accounting for climate change and how it will affect Bucksport in the future is important when planning new infrastructure. The American Rescue Plan and the Flood



Resilience Plans are examples of plans that can be used to build more sustainable infrastructure in Bucksport. However, climate action-based plans are longer lasting and include sustainable solutions to anthropogenic climate change. A project conducted in Georgetown County by Georgetown RISE was designed to raise awareness of climate change and actions that can be taken at a local level (Georgetown RISE, 2019). We recommend that Horry County conduct more local studies to assess and evaluate Bucksport to find better solutions with positive long-term effects.

**SDG target 13.3 which aims to raise awareness and capacity to meet climate change goals**, is also prevalent in the Bucksport community. This promotes educating and spreading awareness to the community in ways they can contribute to Bucksport becoming a green oasis here on the Grand Strand. Our work has been rolling out several studies and presenting them to the community along with community and county leaders. This will be the first step in creating a significant impact in this area that could prove invaluable not only to the town of Bucksport, but to the county as well as the state.

Horry County conducted a resilience assessment of local communities including Bucksport. This assessment recognizes Horry County's susceptibility to major storms and flooding and aims to create a resilience plan to combat these hardships (Flood Resilience Master Plan 2022). The plan assesses risks and vulnerabilities in the community as well as their current infrastructures and assets and if each is considered a FEMA flood zone. The Horry County Resilience Plan determines various approaches to planning for a more resilient future. The main points of interest determined by this report are policy development, resilient neighborhood design, infrastructure improvements, post-storm recovery plans, education and community awareness, and buyouts for areas that are more susceptible to flooding (Flood Resilience Master Plan 2022). This assessment is one step forward being made by Horry County to be more resilient to climate changes effects in the future.

Using the South Carolina Department of Natural Resources (DNR) Flood Impact tool is a great resource to help residents visualize flood impact areas in the community. This tool shows that the majority of Bucksport is in the “AE” flood zone. This zone is considered a high-risk flood area in which there is a 1 in 4 chance of flooding occurring during a 30-year mortgage. The other areas of Bucksport that are not in this high-risk area are in the “X” flood zone. This zone has a 0.2% annual chance of experiencing flooding in a 30-year mortgage. This zone is not one in which flooding will not occur but there is a much smaller chance than that of “AE” flood zone. Especially when considering the small size and low-lying lands of the Bucksport community, there would still be some flooding in these areas. This tool can help residents better understand the risks for flooding in their areas so that they may be better prepared to deal with harsh flood events when they arise. Flooding is an extreme hardship for Bucksport since it is such a small community that also consists of residents living in poverty.

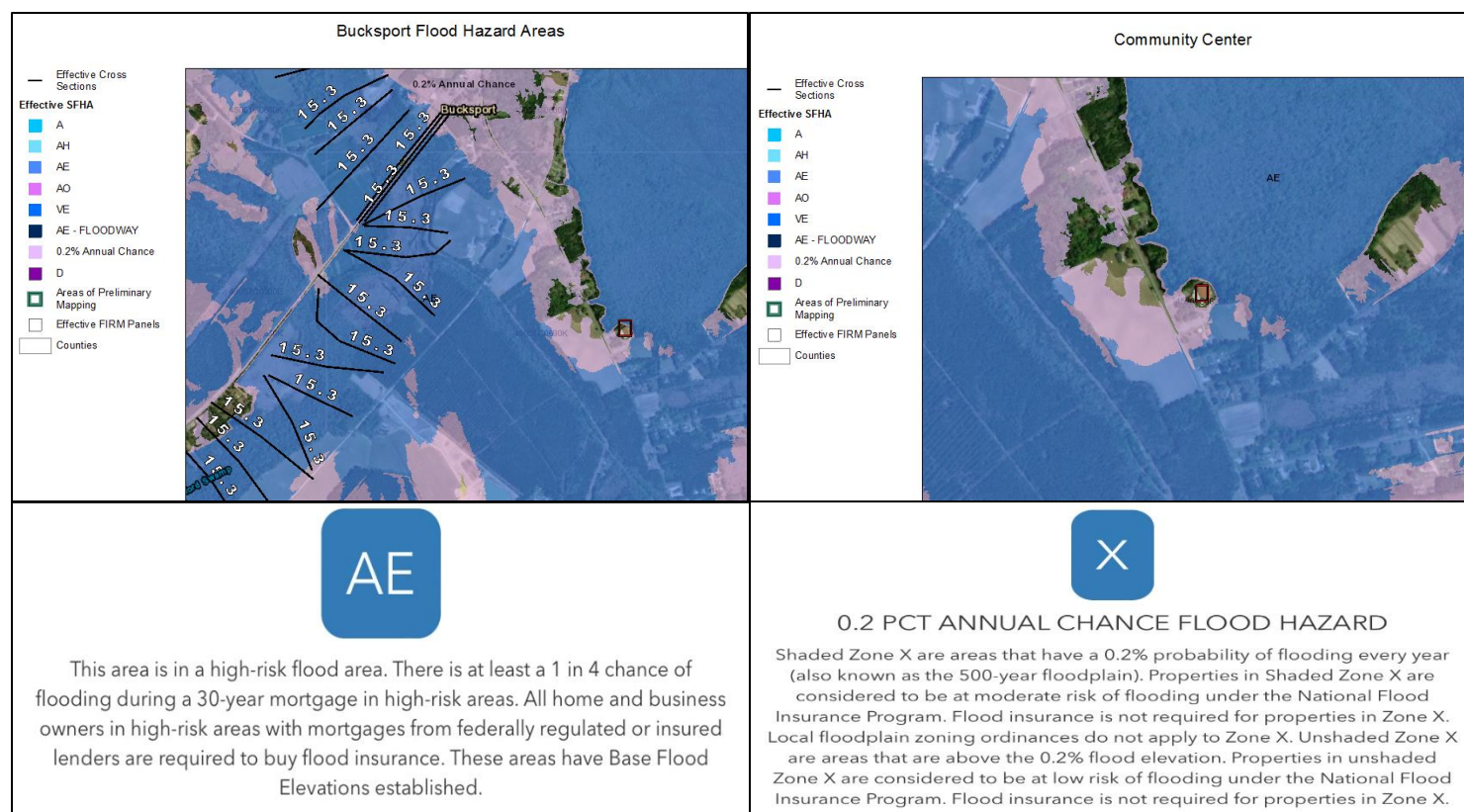


Fig. 10 (Source: SCDNR Flood Impact Tool)

Fig. 11 (Source: SCDNR Flood Impact Tool)

# 1 NO POVERTY

**Goal Explanation:** SDG Goal 1 focuses on ending poverty in all forms (United Nations, 2022).

**Introduction:** Using the Census Reporter data (2022), we were able to analyze Bucksport's poverty rate at 22.6%. This is more than double the rate in Myrtle Beach, Conway, North Myrtle Beach metro area being only 13.4%.

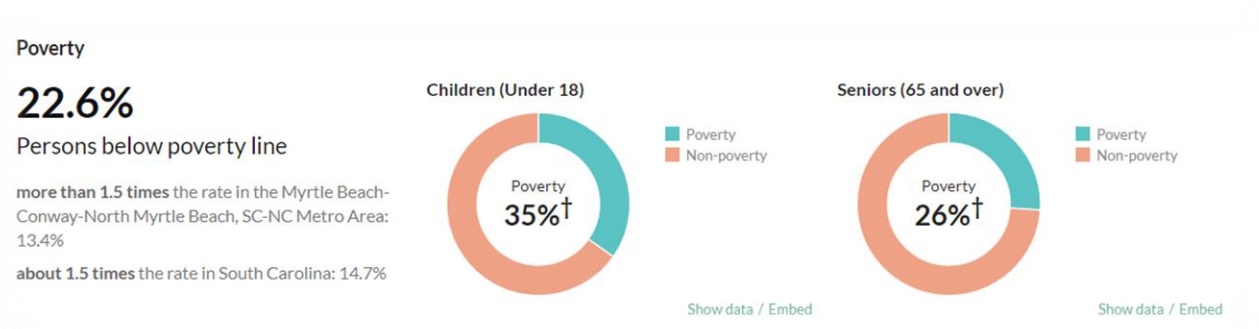


Fig. 12 (Source: Census Profile, 2022)

**Targets and Data:** The targets that we are focusing on for improving no poverty in the Bucksport Community are 1.1 and 1.2.

**Target 1.1 focuses on eradicating extreme poverty everywhere.** One major issue Bucksport faces is many of the residents are Heir's property owners, which leads to complications when asked for proof of ownership along with getting funding from FEMA. Heirs' property is land passed down through generations without a will or deed. Historically, African

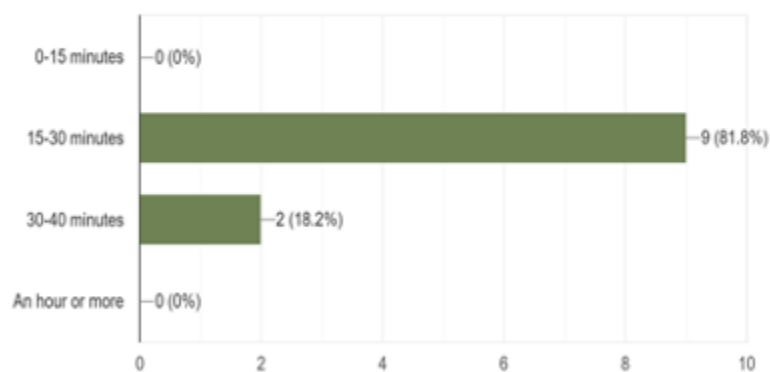
Americans were unable to use legal systems to obtain titles because of economic disparities and discrimination (Heirs Property Retention Coalition, 2021). This has led to a large population of African American landowners with heir's property. More than half the population of Bucksport's properties are heirs' property. Recently it was stated that FEMA is changing some document rules to help families who live on heirs' property (MSN News, 2021). These changes include allowing residents to self-certify, and FEMA will be accepting letters from local officials and bills for home repair as proof of ownership. Further information regarding these changes is explained later in the report in the FEMA section.

**Target 1.2 aims to reduce by half all people living in poverty according to national definitions.** This is important to consider in the community of Bucksport since there are 22.6% of persons in this community living below the poverty line. This makes it much harder for these residents to be able to financially recover from disastrous flood events. Flood events can cause serious damage that may cost a lot of money that poses a serious hardship for persons living in poverty. Connecting this back to SDG Goal 16 Peace, Justice, and Strong Institutions, strengthening the economy of Bucksport will make the area more viable for government assistance and protection as it becomes more valuable for the county and viable for further development. This target is applicable to Bucksport as it will help the community be more financially self-sufficient and resilient toward the area's frequent flooding in the future.

As a low-income, rural community Bucksport is at risk of being labeled a "food desert." The USDA defines a food desert as, "A tract in which at least 100 households are located more than one-half mile from the nearest supermarket and have no vehicle access; or at least 500 people, or 33 percent of the population, live more than 20 miles from the nearest supermarket, regardless of vehicle availability." Bucksport is not labeled a food desert by the South Carolina Department of Health and Environmental Control. However, the nearest grocery store is over 11 miles away and the only option for groceries within the community is the Dollar General. This means produce and other fresh foods are less accessible to Bucksport residents than the frozen, canned, or pre-prepared foods at the Dollar General. The Dollar General generally charges higher prices and/or features smaller portions than what is typically found at a regular grocery store, as well. A survey of a small sample of Bucksport residents (n=11) gives a snapshot of food access concerns in the community.

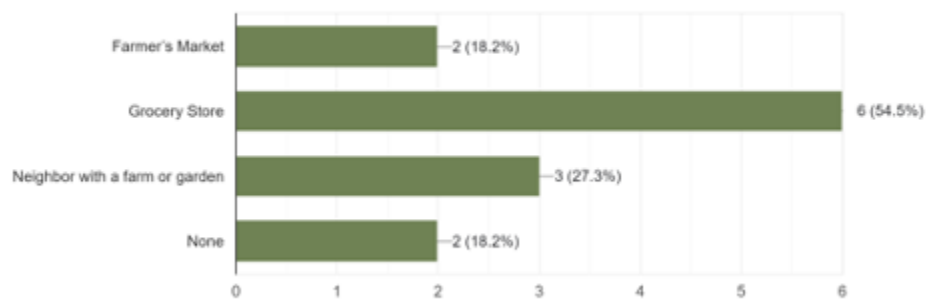
1. How many minutes do you have to travel by car to get fresh /healthy food ? (Select 1 or more)

11 responses



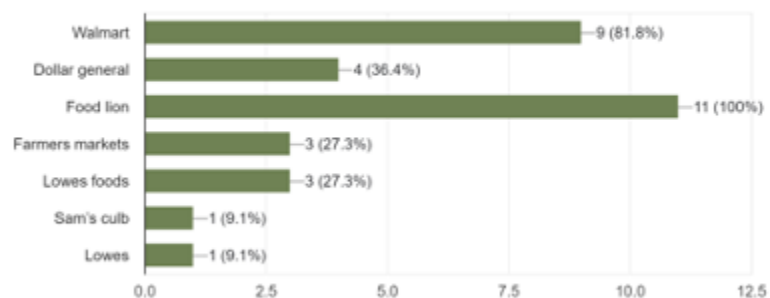
2. Do you have access to fresh produce from any of the following sources(select 1 or more)

11 responses



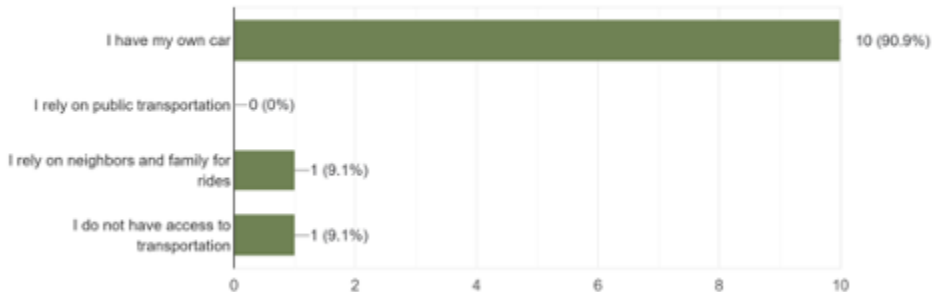
3. Where do you typically grocery shop (select 1 or more)

11 responses



4. Do you have regular access to transportation to get fresh/healthy food?

11 responses



These results are not representative of the community as a whole, and more research is needed on food accessibility in Bucksport. Especially as the surveys were completed online or at community events, the most vulnerable residents may not be reflected in the results.



**Reduce  
inequality  
within and  
among countries**

**Goal Explanation:** SDG Goal 10 aims to reduce inequalities between countries and within them (United Nations, 2022)

**Introduction:** The Bucksport community has a population of 607 people as of the year 2020 (Census Reporter, 2022). Out of those 607 people, between 90% and 100% are black. The average transportation time to get to work is 34 minutes (Census Reporter, 2022). Around 74% of the population makes less than \$50,000 a year, and only 20% of the population is between \$50,000 and \$100,000. These estimates are about two-thirds of the amount in South Carolina. While this is close to the average of South Carolina, the poverty rate in Bucksport is more than 1.5

times that in the state of South Carolina. All these statistics show the disparity between Bucksport and the rest of the state.

Structurally speaking, Bucksport is lacking in many areas. The town also lacks efficient rain-water diversion, causing ponding and flooding of households. The department of public works is responsible for maintaining the roads and has noted on the Horry County Government website that unpaved roads are in the process of getting updated. Despite this, there are roads in Bucksport that are made of dirt and people in Bucksport have reported that town members have gotten trapped in their homes during flood events as it was impossible to safely drive on these roads. This community should be placed on higher priority in the construction of unpaved roads. It is also important to make the roads in Bucksport as safe as possible, this includes adding streetlamps. The community should have streetlights to increase visibility at night and therefore enhance community safety. It has been proven that there are more urban clusters in areas where roads have been modernized (Lakshmanan, 2011).

## Targets:

**Target 10.1** aims to achieve an income growth of the bottom 40% of the population at a rate that is higher than the national average (United Nations, 2022). This would mean putting a focus on acquiring businesses in the Bucksport area so that there are more job opportunities to better support the economy. Adding a school district to Bucksport might help draw more people to the area by providing teaching jobs.

**Target 10.2** of the Sustainable Development Framework aims to “empower and promote the social, economic and political inclusion of all” (United Nations, 2022). This is already in progress in Bucksport as there are members that have started to advocate for their right to equal access to infrastructure updates and new designs.



# 15 LIFE ON LAND



**Goal Explanation:** SDG Goal 15 aims to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. (United Nations, 2022)

**Introduction:** The principal natural attributes of the community of Bucksport are the Great Pee Dee River and the Waccamaw River. The Waccamaw is a “deep blackwater swamp stream characterized by numerous buttressed tree species, predominately cypress draped with Spanish moss” (South Carolina, 2016). The Pee Dee River “flows through lowland swamps, scenic bluffs” and has “numerous oxbow lakes and sandbars” (South Carolina, 2016). A great amount of wildlife and biodiversity can be found in both the Pee Dee and Waccamaw rivers. Other notable waterways in the area include Bull Creek, which is located at the intersection of the two major rivers, and Cowford Swamp: a tributary of Pee Dee. The Waccamaw National Wildlife Refuge surrounds the Bucksport community. The 55,000-acre Refuge contains a wide variety of ecosystems like forested wetlands, freshwater tidal marshes, and longleaf pine forests. Forested wetlands have soils that are rich in minerals and organic material that are “dominated by deciduous trees such as cypress, tupelo, red maple, elm, oaks, and gums” (US Fish and Wildlife Service, n.d.). This type of ecosystem plays a critical role in filtering contaminants and sediments which contributes to water quality and storing floodwater to prevent downstream flooding. Freshwater tidal marshes

make up six and a half thousand acres of the Refuge. The freshwater tidal marshes contribute to filtering out contamination and prevent flooding by absorbing heavy rainfall. The marshes are influenced by the tide and have extraordinarily little salt intrusion. During the eighteenth and nineteenth centuries, the marshes were used for rice cultivation as the conditions were ideal for growth. According to the US Fish and Wildlife Service, longleaf pine forests are “one of the most species-rich ecosystems in North America.” Unfortunately, over 75% of the original forest cover has been destroyed due to logging and development. The Waccamaw National Wildlife Refuge is home to many unique species like swallow-tailed kites, red-cockaded woodpeckers, along with several other birds and migratory fish. The refuge is the northernmost nesting location for the swallow-tailed kites along with red-cockaded woodpeckers, an endangered species that nest in the longleaf pines (US Fish and Wildlife Service, n.d.). To protect wildlife and prevent flooding, it is best to keep the area preserved and undeveloped.

Forest cover is crucial for maintaining soil fertility, the water cycle, climate, and air quality. The changes in forest cover and wetland area of Horry County are presented by NOAA’s CCAP Landcover Atlas. The county lost 15.53% of its total forested area between 1996 and 2016. The loss of over 38 square miles of this forest was due to development. The Waccamaw watershed had similar data compared to the overall county data with a decrease of 16.42% in forest cover. The decreased forest cover in the Waccamaw watershed was also caused by development. Google Earth Plus was used to research information on the immediate area of Bucksport. The total land area is about 4 square miles with eight major deforested areas that make up approximately 30% of the total land area of the community (1.21 square miles). The biggest cut area is utilized surrounding Grand Strand Water Authority’s facilities. These measurements do not account for the roads or individual residences. Below is a map of Bucksport in 2020.

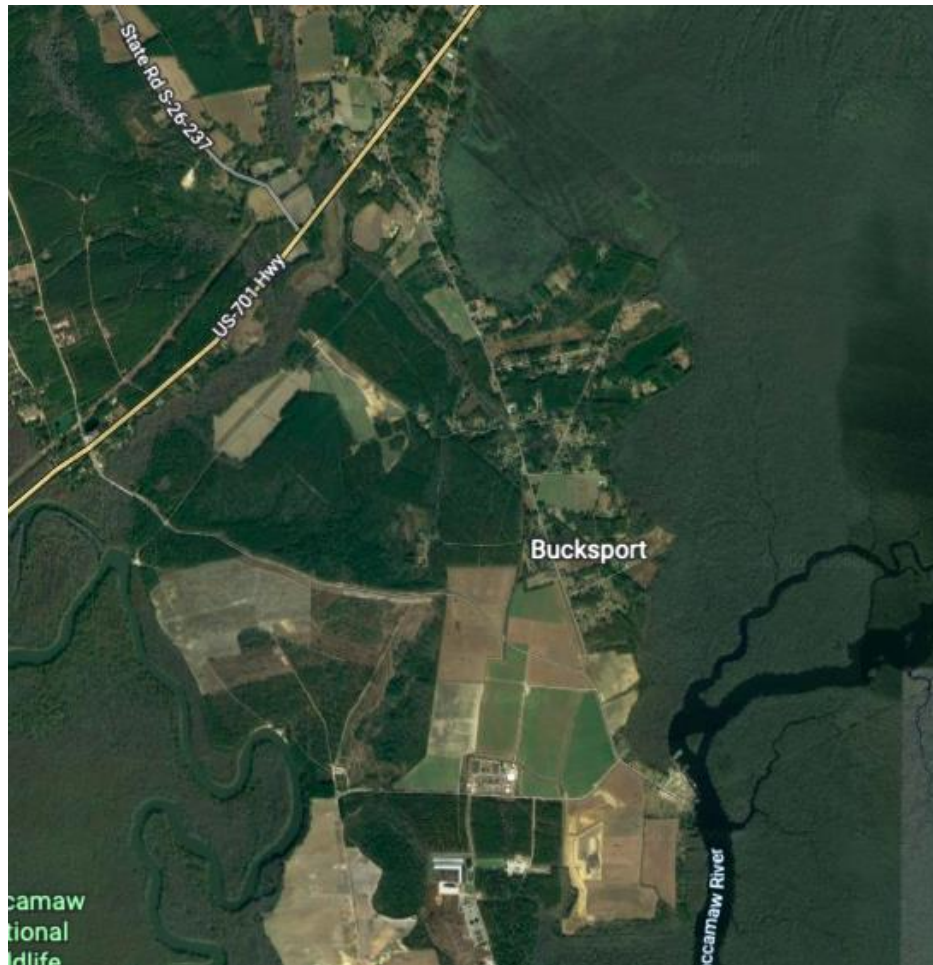


Fig. 13 (Screenshot taken from Google Earth)

Information about soil types in the interest area is given by USDA's Web Soil Survey. Most of the soil types consist of Lakeland sand, Hobonny muck, and Eulonia loamy fine sand. Lakeland sand is part of the Lakeland Series with characteristics of having very deep soil, excessively drained soil with rapid permeability and slow runoff (Lakeland Series, 2018). Lakeland sand makes up around 25% of the land area in Bucksport. Hobonny muck is part of the Maurepas series and has deep soil and poor drainage. This type of soil is formed in woody plant remains and can be found in about 16.5% of the land area in Bucksport.

(Maurepas Series, 2018). Eulonia loamy fine sand is part of the Eulonia soil series and described as “very deep, moderately well-drained soil” (Eulonia Series, 2004).

Bucksport soil composition is mostly described as a sandy loam or loamy sand within the top layer of strata with a higher ‘clayey’ content below. According to the soil survey from NOAA, most soil types would be categorized for absolutely no flooding. However, areas of Bd and Wa soil types are described as percolating at slower rates and where the Bd soil type warns for severe ponding when the land is developed. Most of Grand Strand water and sewer sits on this area including where the industrial park is planned for construction. Large areas of impervious surfaces are not ideal for this area and perpetuate flooding of the main road (NOAA, 2021).

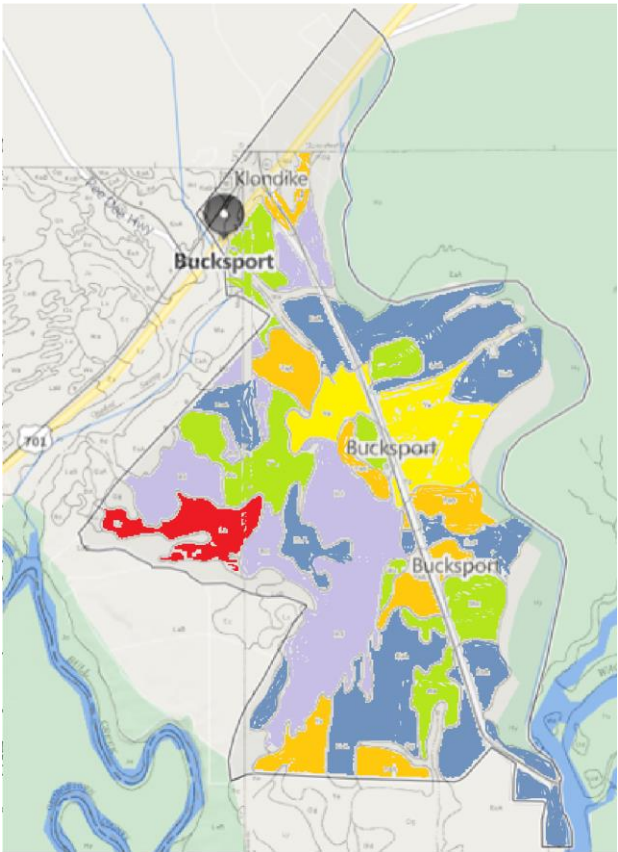


Fig. 14 by Noah Baran. The map is a combination of soil survey maps and street data with color to aid in reading.

Color Key	Soil Abrev.	Drainage	Texture / comp. (top layer)	Flooding	Development
	Ye	Cutbanks cave	Fine sand loamy	None	Severe wetness
	YaA	Favorable	Fine sand loamy	None	Moderate-severe wetness
	EuA	Favorable	Loamy fine sand	None	Severe-moderate wetness
	Bd	Percs. slowly	Fine sand loamy	None	Severe ponding
	Ly	Cutbanks cave	Sand	None	Severe wetness
	Wa	Percs. slowly	Fine sand loamy	None	Severe wetness

Many websites recognize Bucksport as the only location where a unique species of hibiscus plants can be found in South Carolina. Hibiscus flowers bring beauty to the land and resources for the community. Gutman (2021) first introduces this species by calling it Rosella or Sorrel. Kevin Mishoe from Bucksport is using old buildings to create an area for production of Rosella which will supply more jobs for the community. James (2022) explains that the Mishoe Legacy Farms, owned by the Mishoe family, “grow and take to market the only commercial-level hibiscus crop in the Palmetto State” to produce juice and hygiene products.

**Targets:** The target indicators that Bucksport should be focused on are 15.2 and 15.9.

**15.2** seeks to End Deforestation and Restore Degraded Forests. This target is crucial to help mitigate flooding. Bucksport is more susceptible to flooding as the area has lost a lot of its natural protective barriers, forest cover. It is best if Bucksport dedicates some of the open land specifically for replanting trees. Creating and maintaining this area could potentially help the community over time.

**15.9** encourages Integrating Ecosystem and Biodiversity in Government Planning. Bucksport’s location within the Waccamaw Wildlife Refuge is beneficial in relation to this goal. The refuge has regulations and policies in place to protect biodiversity and ecosystems. Unfortunately, Bucksport is not protected to the same extent as the refuge. The lack of protection has caused deforestation and overdevelopment to occur in the area. Horry county created an Imagine 2040 plan that includes a land use map. The inclusion on the map indicates they are considering the county's natural assets. The most recent map amendments show sizable areas dedicated to conservation. This Scenic & Conservation land includes underdeveloped beachfront, estuarine and forested wetlands, and agricultural lands (Horry County Planning Commission). The consideration of natural attributes is beneficial in achieving this target.

# 14 LIFE BELOW WATER



**Goal Explanation:** SDG Goal 14 focuses on how to conserve and sustainably use the oceans, seas, and marine resources for sustainable development (United Nations, 2022). Localizing this goal to Bucksport would mean conserving and protecting the resources in the Pee Dee and Waccamaw rivers.

**Introduction:** The National Oceanic Atmospheric Administration (NOAA) Coastal Change Analysis Program (C-CAP) Land Atlas supplied data of the wetland gains and losses between the years of 1996 and 2016. Horry county has lost 5.32% of its total wetland area and 74.75 square miles of Palustrine forested wetlands were lost. The U.S. Environmental Protection Agency defines Palustrine as “nontidal wetlands dominated by trees, shrubs, persistent emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%” (U.S. Environmental Protection Agency, 2002). Essentially, The Palustrine forested wetlands are marshes and swamps. Palustrine wetlands can absorb water therefore less water would be above the ground. It is crucial to keep these forests intact as they are especially important for biodiversity and mitigating flooding in the area. Below is a map provided by NOAA showing areas of wetland loss in Bucksport.



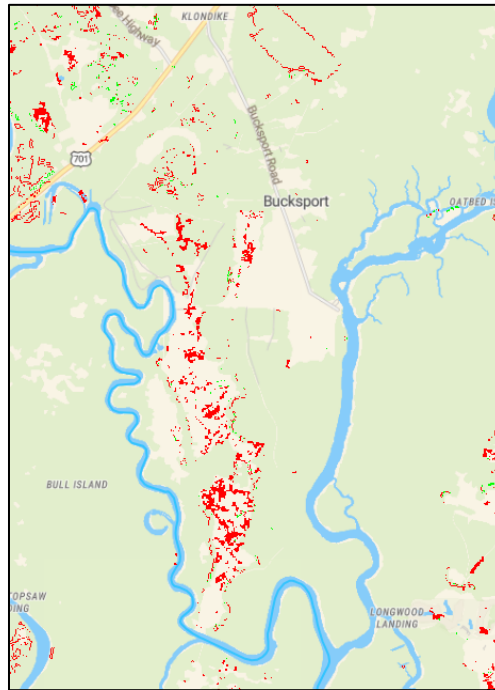


Fig. 15 (Red spots indicate wetland loss)

The Waccamaw Wildlife Refuge contains several animals like striped bass, American shad, blueback herring, and two federally endangered sturgeon species. There are many migratory fish species that live part of their lives in saltwater and swim up rivers to spawn (American Rivers). It is important to preserve the Waccamaw and Pee Dee Rivers to protect endangered species and the animals that depend on them (American Rivers).

## Targets and Data:

**Indicator 14.2** advocates to Protect and Restore Ecosystems. This target is applicable to Bucksport in relation to protecting the existing wetlands and restoring the wetlands that have been degraded or lost due to development. One of the biggest factors in preventing further flood risk to Bucksport is the condition of the wetlands surrounding the community. Research into the addition and maintenance of wetlands and vegetation in the area could be quite beneficial as they provide a buffer against flooding (Hitchcock, 2021). In deep pool wetland areas, floating and submerged aquatics are recommended. For shallow pools, herbaceous plants are recommended. The recommended plants for areas of upland soil are herbaceous plants and shrubs. It is important to note that only native species should



be planted. The planting strategies are as follows: a minimum of 50 herbaceous plants per 200 feet squared in shallow land area, centipede grass as a buffer, water plants frequently until established, add 4 inches of topsoil (Hitchcock, 2021).

**Indicator 14.7** focuses on how to Increase the economic benefits from sustainable use of marine resources. The ocean and its tributary rivers provide many benefits in terms of ecosystem services which are crucial to species' health, including humans. The rivers in Bucksport can bring additional benefits in terms of their economy as well as implementing eco-tourism in Bucksport. Eco-tourism uses the natural environment and/or culture of the area to attract visitors. An example of eco-tourism is Blackfoot River Valley in Montana. There are many benefits of this type of tourism like local economic improvements and growth in appreciation for the nature and culture of the area. Over the last decade, the Blackfoot River Valley has discovered the benefits that come along with protecting and restoring their local river. A few benefits are encouraging recreation, strengthening the connection between the community and the river, and creating an economic engine for the region. A closer example is Murrells Inlet in South Carolina. Bucksport has unique ecosystems and natural attributes surrounding the Waccamaw River. These features could bring great economic benefit to Bucksport along with a stronger appreciation of the community.

## 6 CLEAN WATER AND SANITATION



**Goal Explanation:** The focus of UN Sustainable Development Goal 6 is to ensure availability and sustainable management of water and sanitation for all people (United Nations, 2022).

**Introduction:** The community of Bucksport, along with the rest of Horry County, sources its drinking water from the Bull Creek Regional Water Plant. This plant pulls around 45 million gallons of untreated surface water from Bull Creek, an arm off the Pee Dee River, into their facility for treatment. The water is then treated with chlorine to kill bacteria and make it suitable for consumption (Water treatment plants, 2022). Bucksport disposes its waste from the Grand Strand Water and Sewer Authority (GSWSA), the major water supplier wastewater processing plant for the county. GSWSA treats around 5 million gallons of wastewater per day. The excess solid waste is used on site to fertilize crops and on other surrounding farms. These water treatment plants ensure public access to high-quality water sources throughout the region. To confirm that the processes that these plants are sustainable, there must be constant monitoring of the water quality of the ecosystems being utilized. To best test water quality in these ecosystems, indicators of pH, turbidity, conductivity (dissolved solids), and dissolved oxygen must be studied yearly to reduce potential ecosystem damage.

PH is a measure of how acidic or basic the water is, with a measure of 7 being neutral. Low or acidic pH's can indicate pollution. The recommended range given by the EPA for municipal water suppliers is between 6.5 and 8.5. Dissolved salts and inorganic chemicals

conduct an electrical current in water, so conductivity is also a useful measure of water quality. A significant increase in conductivity could indicate pollution, as well.

Turbidity is a measure of the number of suspended particles in the water that can come from soil erosion, runoff, discharges, stirred bottom sediments or algal blooms. A turbidity reading below 5 NTU appears clear, while a reading of 55 NTU will start to look cloudy, and a reading over 500 NTU will appear completely opaque.

Dissolved oxygen is another important indicator of water quality. It is essential for the survival of fish and other aquatic organisms. Oxygen dissolves in surface water due to the aerating action of winds. Oxygen is also introduced into the water as a byproduct of aquatic plant photosynthesis. When dissolved oxygen becomes too low, fish and other aquatic organisms cannot survive. Oxygen levels also may be reduced when there are too many bacteria or algae in water. DO levels below 3 milligrams per liter (mg/L) are of concern and waters with levels below 1 mg/L are considered hypoxic and usually devoid of life (EPA, 2021).

The Bucksport Water System releases a water quality report, also referred to as a consumer confidence report, each year. The report was produced to provide details and data about where the water is harvested from, what kind of contaminants if any are present, and how it compares to national standards for water treatment quality. There is also a section of the report that highlights water conservation and how to protect the source water.

The Waccamaw Watershed Academy supplies information about these water quality indicators. From the time span of 6 June 2020 to 25 August 2021 the median measurements of these indicators are as follows: 6.30 pH, 4.89 NTU (turbidity), 70  $\mu$ S/cm (conductivity), and 5.13 mg/L (dissolved oxygen). These values signify adequate water quality, but water quality is subject to impacts from flooding and storms. Stormwater can introduce pollutants and toxins into the water in the form of runoff from agriculture or residential developments.

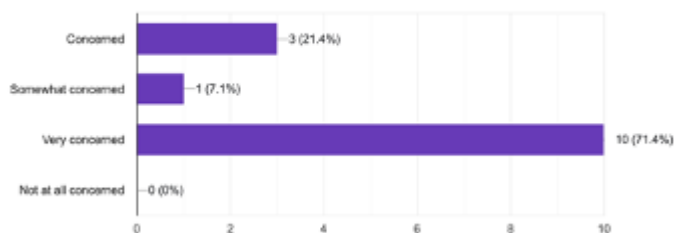
The average measurements of these indicators from 25 August 2021 to 2 November 2022 are as follows: 6.68 pH, 7.90 NTU (turbidity), 104  $\mu$ S/cm (conductivity), and 5.78 mg/L (dissolved oxygen). It is important to point out the increase in turbidity as that signifies large

amounts of erosion occurring around the area of Bucksport. These large erosion events are a result of the growing number of heavy rains that the community continues to experience.

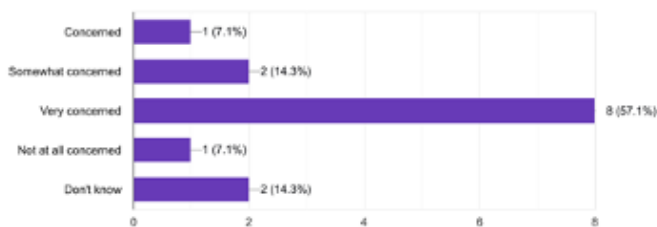
**Targets and Data:** We are examining how to achieve targets 6.3, 6.6, and 6.a to maintain water quality in Bucksport.

A survey administered to a small sample of Bucksport residents (n=15) indicates several concerns about water quality in the community.

To what degree are you concerned with the water quality after a heavy rain or flooding?  
14 responses



How concerned are you that Bullcreek Water Treatment Plant is providing good water quality to the Bucksport community and surrounding areas?  
14 responses



To what degree are you concerned about the quality of your drinking water.  
14 responses



Do you have other concerns or feedback about water quality or safety in the Bucksport community?  
12 responses

No
Not at this time
Tastes like chlorine
Yes the water in the community caused a lot of fluorosis stains on a lot of people in the community teeth.
Always flooding
Very concerned that it is not as good as it should be, especially raising young kids
Desire best of quality

The survey also included a question asking respondents “Have you ever contacted the water treatment plant about water quality concerns? How did they respond?” Most people said no or that they did not know how to contact them. Two people said they contacted the water treatment plant but did not get answers to their questions. Results of this survey are not representative but indicate further action is needed to 1) confirm whether concerns about water quality are widespread in the community, 2) determine if water quality issues are present in the water supply, 3) build communication and trust with the water authority in the region.

**6.3** strives to Improve Water Quality, Wastewater Treatment, and Safe Reuse. Keeping track of water quality in the Waccamaw River is a great first step in reaching this target, which is being done by the Waccamaw Watershed Academy. The next and most crucial step in ensuring future water quality is to focus on the goals that prevent further flood risk.

**6.6: Protect and Restore Water Related Ecosystems** is another target for Bucksport to work toward. Water related ecosystems include “mountains, forests, wetlands, rivers, aquifers, and lakes” which are “vital to providing social and economic benefits for people. The declining condition of the ecosystems directly impacts water availability as well as other essential services such as biodiversity, food production and flood control” (Coope, 2021, 1). This goes along with Life Below Water’s 14.2 indicator that would urge Bucksport to protect and restore degraded wetlands and forests to prevent flooding in the community while also improving the economy.

**6.a: Support and Strengthen the participation of local communities in improving water and sanitation management.** The Beautification of Bucksport hosts community cleanups monthly to clean the drainage ditch system on the sides of roads. Measuring the amount of waste picked up through each event, counting or weighing bags, to track the success of the community's efforts. These steps will establish a community of individuals that care about their natural environment and how the choices made have a direct impact on the surroundings.



Photo Credit: Pierre D. Fignole III, a resident of Bucksport, SC



**Goal Explanation:** Sustainable development goal 11 focuses on converting cities and human settlements to sustainable, resilient, safe, and inclusive areas (United Nations, 2022).

**Introduction:** Flooding events such as tropical storms and hurricanes have repeatedly affected Bucksport over the years. Without having access to the proper aid, rebuilding sustainably poses a challenge for residents with financial limitations. One reason rebuilding is difficult is due to half of the properties in Bucksport are defined as heirs' property. Heirs' property is passed down through generations without written documentation, such as wills and deeds. When applying for aid from natural disasters, it is difficult to show ownership without documentation. Another reason rebuilding is a challenge is due to the frequency of

flooding occurring in the area. There is not enough time in between storm events to rebuild properties, this does not allow the community to recover in time. This also demonstrates that the systems in place to deal with flooding are not equipped to handle the current levels and frequency of the floods.

## Targets and Data:

**Target 11.1: Safe and Affordable Housing** ensures access to safe, affordable, and adequate housing, along with basic services.

**Target 11.5: Reduce the Adverse Effects of Natural Disasters** to lessen the number of deaths and people affected by disasters. It is also dedicated to decreasing the direct economic losses related to disasters. Water-related disasters are included in this target and focus on protecting poor and vulnerable people. An updated resilience plan would be essential in reducing the effects of natural disasters. Flood mitigation and viable roadways during disasters would be beneficial to the community. An in-depth study of the people and environment would give Horry County insight on problems unique to Bucksport. It may also reveal solutions that have not been explored previously. A current Flood Resilience draft proposed by the county is one way both targets can be reached. Bucksport is explicitly mentioned in the plan and is one of the areas considered a vulnerable community (Horry County, 2021).

The current draft focuses on impervious infrastructure as the solutions to the flooding, such as concrete roads. The plan includes flood maps, but further hydrologic studies will be needed to know how to help the Bucksport community. On August 19, 2022 Bucksport agreed to a three-by-three study with the Army Corps of Engineers. This will be a three yearlong study, costing 3 million dollars that will be split evenly between local and federal governments. This will consist of a diverse team from across the country of 20-25 experts of engineers, hydrologists, biologists, and archeologists (Gilreath, 2022). By having a diverse panel of experts, a full spectrum of analysis will help identify mitigation opportunities and implement resilience to flooding. Communication between leadership in the community has been deemed challenging due to lack of participation in community meetings and events (United Nations, 2022).



One thing that must be addressed is heirs' property. Once applied to an insurance plan, community sustainability would improve. The plan does not include green infrastructure (Infrastructure that is resilient while managing environmental impacts that would benefit the community). Green infrastructure is also cost-effective. An example of green infrastructure is a rain garden. Rain gardens are small, shallow areas with plants that collect stormwater runoff. They are meant to allow water to flow naturally and/or be absorbed into the ground (Environmental Protection Agency). The current draft includes green infrastructure as solutions instead of focusing on concrete-based solutions. Current solutions for Bucksport in the Flood Resilience Plan do not have empirical data from Bucksport to support that the solutions would be applicable and lasting. We would advise that the draft be updated to include specific needs of vulnerable communities impacted. Part of the Flood Resilience Plan includes buy-out programs that Horry County would offer (Horry County, 2021). This may be seen to get people back into safe homes outside of the flood zones. Further survey data needs to be conducted, and more community engagement needs to be implemented to better reflect the needs and desires of the residents, combined with accurate and current scientific data. To assess community vulnerability, tools are used to identify risks and factors that impact community welfare.

The vulnerability index is a tool used by the CDC to map and identify areas that may need government support due to some sort of hazardous event. Bucksport is a part of Horry County which has a Social Vulnerability Index rating of 0.594 (0 being low vulnerability, 1 being high vulnerability) (South Carolina Office of Resilience, 2022). This classifies the area as having a moderate to prominent level of vulnerability. Considering the size of Bucksport, its proximity to the waterways causing flooding, the presence of unstable dirt roads, and the lack of aid so far, it is fair to assume that the community would have an even higher vulnerability rating than the rest of the county. This information signals that the county should be allocating funds to help provide the citizens of Bucksport with equal access to updated roads and infrastructure that is present in other parts of Horry County to mitigate the effects of flooding on the community.

The CDC/ATSDR has also issued a social vulnerability index that uses sixteen U.S. census variables to help identify local communities that may need support before, during, or after disasters. The importance of social vulnerability relates to the negative effects on communities caused by external stresses on human health such as natural stresses and human-caused disasters, or even disease outbreaks. By reducing social vulnerability, a

reduction in both human suffering and economic loss can be expected (South Carolina Office of Resilience, 2022).

## IPBES

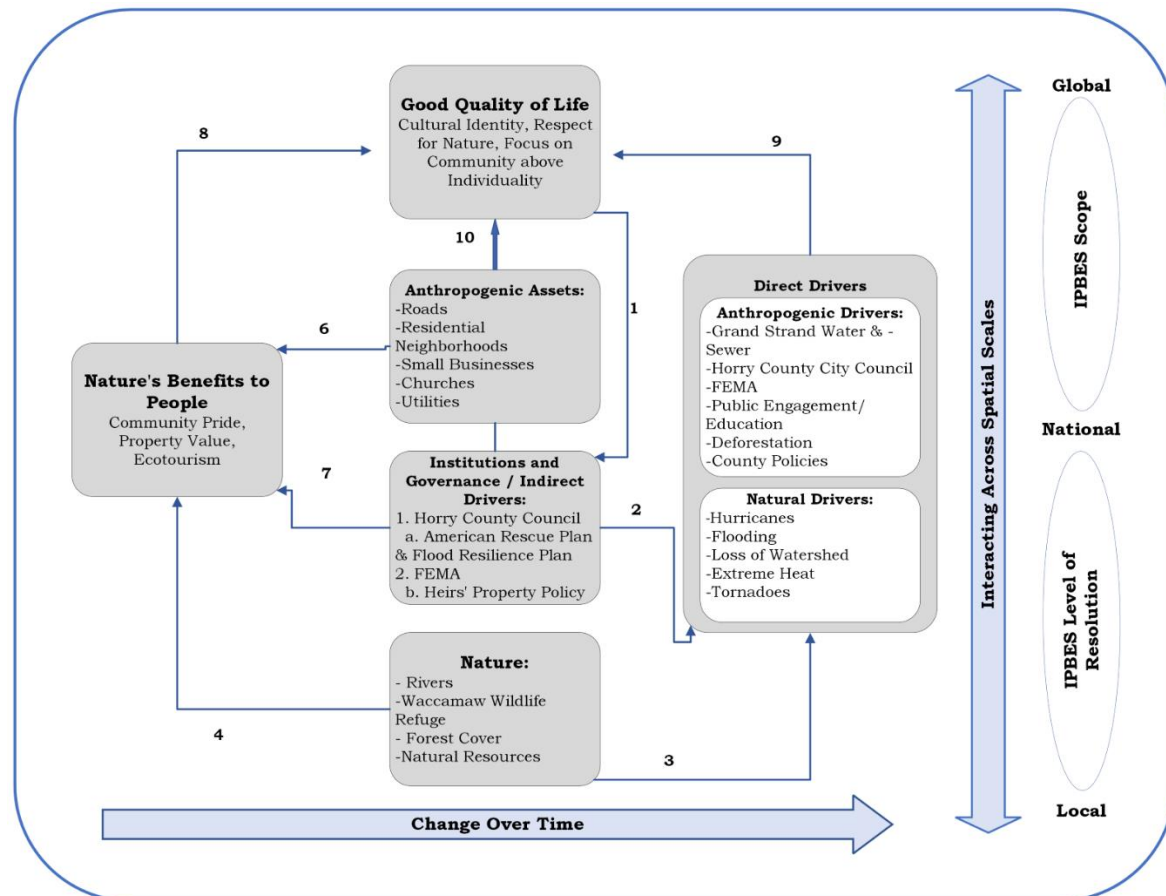


Fig. 16  
Modeled after the  
IPBES Conceptual  
Framework (Diaz et. al  
2015)

This conceptual framework diagram, first created by IPBES (Intergovernmental Panel on Biodiversity and Ecosystem Services), was edited to outline the connection between nature and residents of the Bucksport community. Bucksport is surrounded by the Great Pee Dee and Waccamaw rivers. The integrity of wetlands prevents flooding from happening inland. The native vegetation uses the water, and the soil, when healthy enough, absorbs the water, allowing it to become ground water. The anthropogenic assets consist of built infrastructure, health facilities, knowledge, technology, and financial assets. Access to the river is a primary financial benefit for Bucksport. Establishments can use the riverside view

to promote business. The main institutions and governance of the community include the Horry County Council and FEMA. Indirect community drivers are policies and plans created by the County Council and FEMA. Direct drivers are identified as forces of human and naturally induced stresses to ecosystems (usgs.gov). Each of these aspects combined can be used to determine an excellent quality of life. According to the 2021 IPBES Conceptual Framework article, good quality of life consists of multiple factors “access to food, water, shelter, health, education, good social relationships, physical, energy and livelihood security, equity, cultural identity, material prosperity, spiritual satisfaction, freedom of choice, action and participation in society”. To initiate a superior quality of life in Bucksport, direct drivers such as Grand Strand Water and Sewer and the Horry County Council need to join forces and create a stable infrastructure for Bucksport.

## Disaster Risk Reduction

The Sendai Framework on Disaster Risk Reduction is an agreement between 187 countries with the goal of reducing hardships that arise from several types of disasters. Some disaster risks include loss of lives, livelihoods, health, economic activity, environmental assets, and cultural importance. This goal will be executed by implementing “integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience” (Sendai Framework, 2021). Political involvement must be present for this goal to be achieved. State level governments, local governments, the private sector, and non-state entities must collaborate for the plan to be enacted effectively.

Along with the Sendai Framework, the Sustainable Development Goals were created to target problems and provide solutions that will be beneficial to life on Earth in the long run. These solutions are designed to create a balanced approach to solving a problem by integrating the various aspects of the environment, economy, and society. There are 17 Sustainable Development Goals; 4 of those relate to the Sendai Framework. Goal 1 is to end poverty, in all its forms, everywhere. Goal 11 seeks to make cities and human settlements inclusive, safe, sustainable, and resilient. Goal 13 is to combat climate change

and its effects. Finally, Goal 17 is the Partnership for the Goals. The Sendai Framework has indicators to measure and monitor the progression of the Sustainable Development Goals. There are 5 indicators. The first of which is the number of deaths, missing persons, and people affected by the disaster per 100,000 people. This indicates poor management in the areas of all four Sustainable Development Goals 1, 11, 13, and 17. The next indicator is the direct loss from disasters in relation to the global gross domestic product. This indicator relates to Goal 1, to end all poverty. Losing global GDP to disasters shows that the country may have issues with poverty. Another indicator is direct economic loss from disasters, damage to critical infrastructure and disruption of simple services. This indicator is related to Goal 11 and reflects that the city affected was not in fact safe or resilient. The fourth indicator is the number of countries with national and local risk reduction strategies. The last indicator is the proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction. This indicator relates to Goal 17; having strong partnerships with public and private entities will strengthen the community's capacity to develop resiliency to natural and manufactured disasters. The fourth and fifth indicators relate to all four Goals, 1, 11, 13, and 17. Government policies in relation to sustainability reflect what societies have and lack in resilience (Sendai Framework, 2021).

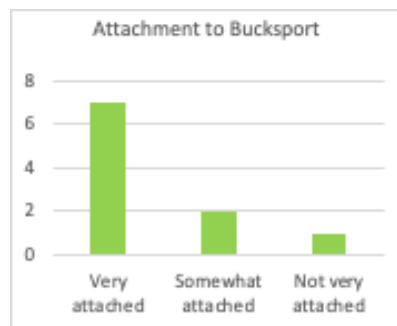
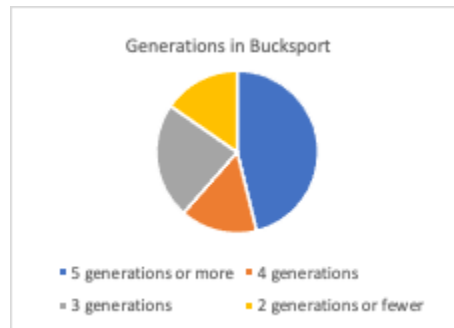
In relation to Bucksport, Hurricane Florence was looked at specifically to collect measurements since community members expressed that this hurricane had worse flooding than those in the recent past. The flooding from Hurricane Florence lasted days after the storm had already passed. Flood waters from North Carolina were deposited in the Intercoastal Waterway and traveled down into South Carolina. The Waccamaw river beat previous flood records by 4 feet, cresting at 22.1 feet. In Horry County, there was \$607 million dollars' worth of damage. There were 11,836 homes that experienced moderate to severe flood damage, forcing 455,000 people to be evacuated from their homes after the storm. While there were few deaths, the sheer number of people affected by the flooding demonstrates that the county was not resilient enough to deal with severe flooding. This is related to Goal 11 and 13, sustainable infrastructure and climate change. About one thousand homes and businesses along the Waccamaw river were affected (National Weather Service, 2019). Close to half of the properties in Bucksport have a 26% chance of being severely flooded. Severe damage to infrastructure demonstrates that the community needs new infrastructure that will be resilient to future flooding. There is a wide variety of organizations involved in the Bucksport community, including the Gullah Geechee Chamber

of Commerce, the Center for Heirs Property, and others. New partnerships with infrastructure related organizations such as Grand Strand Water and Sewer could be made to facilitate resilience to flooding events. This reflects where the community is in relation to Goals 11, 13, and 17, sustainable infrastructure, climate change, and strong partnerships with public and private entities. The risk of properties flooding in Bucksport continues to increase (NOAA, 2022). There is no clear amount of how many businesses in Bucksport were affected. However, roads flooding around the town cut off access from aid and any outside chance of economic activity.

Bucksport itself does not have its own resiliency plan. Horry County has recently made its Flood Resilience Master plan draft public in September of 2021. The Horry County Flood Resiliency Plan will affect areas along the Waccamaw and Pee Dee Rivers and the Intracoastal Water Way. The resiliency plan is meant to produce strategies for reducing flood risks in the previously mentioned areas. The amount of federal and local funds designated for this plan is \$400,950. A buyout program has also been created, which has been approved for \$13 million in funding (NOAA, 2022).

Within the section of the Horry County Flood Resilience Master Plan Draft titled “Policy and Project Considerations,” policy development, resilient neighborhood design strategies, resilient infrastructure considerations, and community engagement/planning are examined. Although the Master Plan draft heavily includes the Bucksport community, the policy and project considerations may not be entirely beneficial to the community. Raising freeboard levels is a main objective of policy development, but this would only impact future infrastructure rather than preexisting infrastructure. To have a better understanding of specific areas of flooding throughout Bucksport, a survey was conducted for residents to map out where they personally have experienced flooding. This map will be beneficial toward better executing the Flood Resilience Master Plan.

The buyout program is also included within the policy development. This program focuses on purchasing homes that have been severely impacted by flooding. Many members of the Bucksport community have a rich family and social history surrounding the area, so they reported their desire to not sell their homes (Sherwood Design Engineers, 2021). Therefore, this would not be a feasible option. A small, exploratory survey (n=10) conducted among Bucksport residents speaks to the community’s desire to protect and preserve their heritage, rather than “abandoning” their community in a buyout.



This survey hints at the extent to which Bucksport residents have deep ancestral roots in this historical community, which, in turn, cultivates strong bonds and identification with the area. These community bonds and the strong place identification must be considered in any flood mitigation plans. While a buyout may be a straightforward solution for some communities, these factors will make such an option not feasible in Bucksport. Options must be developed that respect and protect the culture and history of this community.

For example, other policies and projects included in the master plan draft, such as the preservation of the floodplain, creation of riparian and wetland buffers, and expanded tree preservation standards, could prove beneficial to the Bucksport community. Respectively, the plans for each policy/project entail adopting stricter floodplain boundaries, establishing a buffer composed of trees and shrubs to surround rivers, and the required preservation of 10% of predevelopment tree canopy. Each plan would help in reducing the impact of flooding. Overall, there are many proposed benefits contained within the master plan draft that could potentially help build resiliency in the Bucksport community that does not include the buyout program (Sherwood Design Engineers, 2021).

## Flood Survey Results

Students created a survey designed to map out frequent flooding areas. ArcGIS Survey 123 was the program used to create the survey. There were three separate survey events that occurred on November 2<sup>nd</sup>, 5<sup>th</sup>, and 8<sup>th</sup> of 2022. The event on November 2<sup>nd</sup> was a Community Mapping Event, however there was very little attendance. The lack of participation was attributed to the event occurring on a Wednesday evening in a religious community. The Heir's Property Presentation occurred on November 5<sup>th</sup> and students attended the event in order to get more survey participation from community members, however no data was collected on that day as only one member appeared at the lecture. Election Day, November 8<sup>th</sup>, was the final day of data collection and there were 17 people who participated in the survey. There were a few errors with the ArcGIS Survey 123 system so the map could not be made. A functioning survey with a mapping system will continue to be distributed in the spring semester of 2023 so that the community can have a visual aid to present to Horry County Council when addressing infrastructure problems in Bucksport. The purpose of the survey would be to show trends in the data and why the community is experiencing increased flooding over time. Many community members that participated in the survey claimed the ditches were causing flooding on their property, suggesting that the design of the ditches must be evaluated. The roads also pose a problem for the residents of Bucksport. Residents that completed the survey commented that they were unable to leave Bucksport due to the intense flooding on the only road to get out of town. The infrastructure of roads and drainage in Bucksport seems to be a widespread problem described by the residents and should be addressed by the county to create equal access to stable infrastructure.

One topic introduced in the survey was focused on the financial impact flooding has had on the community. Most Bucksport residents said they did not have flood insurance; therefore,

Fig. 17 (Made using ArcGIS Survey 123)



many people pay out of pocket for any damage that occurs to their homes. More than half of the results showed that people had to pay over \$5,000 in damages due to flooding.

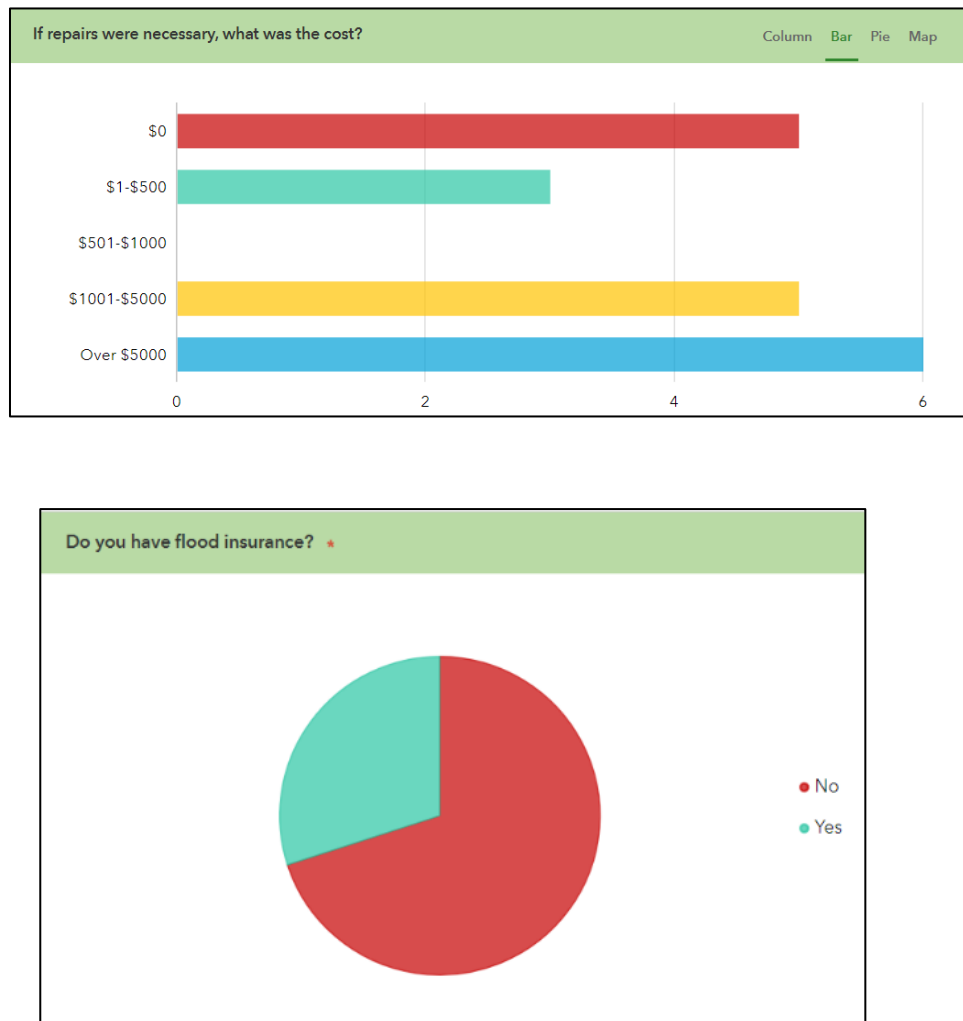


Fig. 18 (Made using ArcGIS Survey 123)

A trend that creates concern is the lack of government assistance after damage from flooding occurred. Most people said they did not receive government funding and had to pursue alternative methods of payment.

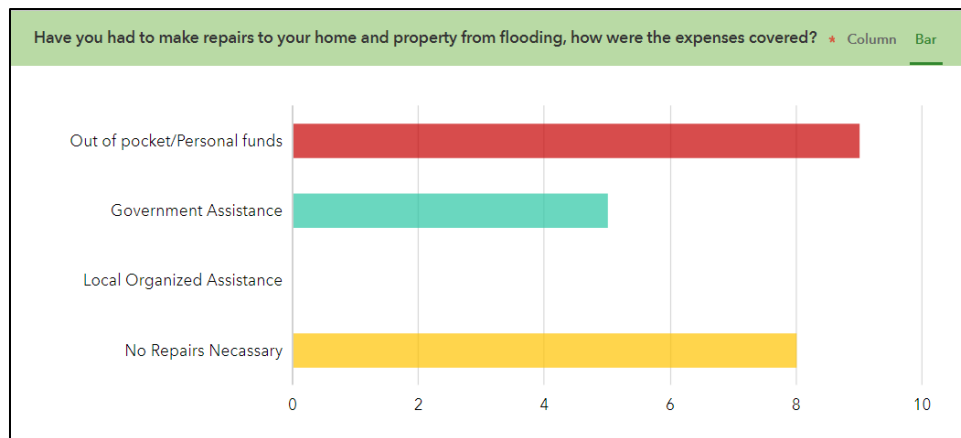


Fig. 19 (Made using ArcGIS Survey 123)

Another important trend in the results to analyze is the timeline for flooding experienced by residents. Twelve out of twenty people said that they were impacted by flooding after 2015. It would be beneficial to figure out what major changes to the landscape and infrastructure occurred during that turning point.

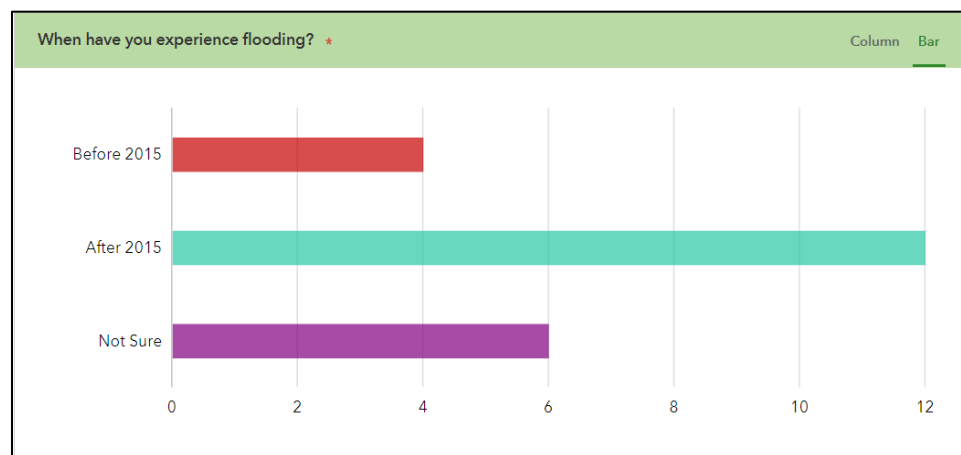


Fig. 20 (Made using ArcGIS Survey 123)

Residents are experiencing increased flooding as time progresses; and those who have insurance are impacted negatively. Many residents that have insurance reported an increase in their insurance rates as their property started to experience more flooding. If the structure of their surrounding environment is causing the flooding, then it would be important for the county to address these problems and focus on the impact developments have on the community members.

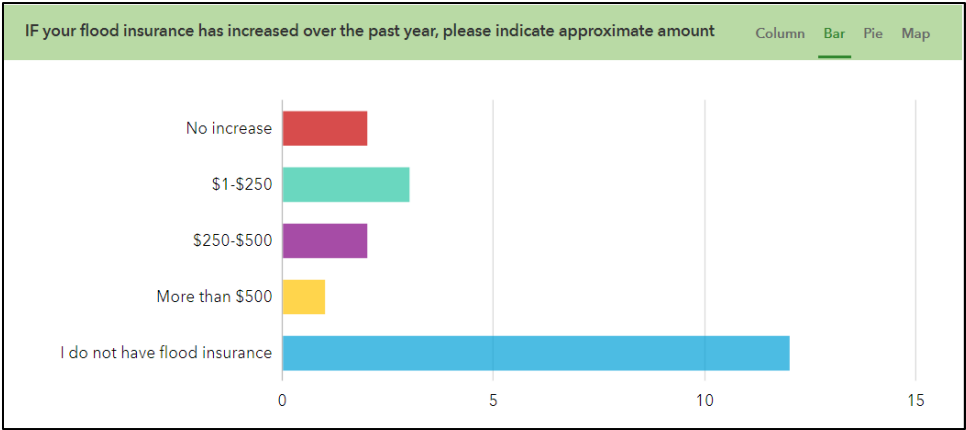


Fig. 21 (Made using ArcGIS Survey 123)

In addition to completing electronic surveys via iPad, Bucksport residents were invited to place dots on a printed map to indicate the location and severity of flooding they have experienced. Mapping data reveals clusters of residents who have experienced repetitive flooding over the last five years. Properties with the greatest impact from repetitive flooding are located along Bucksport Road between Mishoe Road and Martin Luther Drive, with prominent clusters of flooding at the intersection of Bucksport Road and Mishoe Road, along Martin Luther Drive, near the intersection of Railroad Drive and Beth Drive, and on Frazier Road. The colors of the dots indicate frequency of flooding: green dots indicate one occurrence of flooding the last five years, yellow indicates two occurrences of flooding in the last five years, blue indicates three occurrences, and red dots mean a property has flooded four or more times in the last five years. This is not a representative sample of Bucksport residents' experience with flooding, but it does provide a snapshot of problem areas and a basis for future research.



## Receiving Relief from FEMA

The Federal Emergency Management Agency (FEMA) works toward helping the citizens of the United States after a natural disaster. The agency provides many services including flood mapping, grants, and emergency management services. For people looking for financial assistance after a natural disaster, they must go through a series of steps to be eligible for reimbursement from FEMA. To be considered for relief, the natural disaster must be declared by the President of the United States. The most recent declaration affecting the Bucksport Community was Hurricane Ian in late September of 2022 (FEMA 2022). A problem presented in Bucksport revolves around Heirs' properties. An Heirs' property is a type of property that was handed down generations without a will or deed to prove ownership to the most current owner. This has been proven to cause social injustices across the nation (FEMA, 2022). FEMA has released a new method for citizens with Heirs' properties to still receive federal financial assistance after a natural disaster (FEMA, 2021).

## Proving Ownership According to FEMA

Starting in September of 2021, FEMA started to accept additional methods to prove ownership and occupancy of a residence when applying for financial relief (FEMA, 2021). There is now a broader range of documentation to prove residency or ownership of a property. To prove occupancy of a property you only need one of the following: lease or housing agreement, rent receipts, utility bill, pay stub, bank/credit card statement, driver's license or state issued identification card, public official's statement, medical provider's

bill, social service organization (e.g., Meals on Wheels), motor vehicle registration, affidavits of residency or other court documentation, letter or mail delivered to your address by an employer, public official social service organization, local school, or mobile home park owner/manager (FEMA, 2021). To prove ownership of a residence a person must provide only one of the following: deed/title, mortgage documentation, homeowners insurance, property tax receipt/bill, manufactured home certificate/title, home purchase contracts, last will and testament naming you heir to the property (with death certificate), receipts for major repairs/maintenance within 5 years before the disaster, or a letter prepared after the disaster from a mobile home park owner/manager/ public official. Whichever form is chosen must be dated within 1 year before the disaster. These other methods of documentation should help the property owners in Bucksport get the financial assistance necessary for any nationally declared natural disaster that has affected their property.

For any self-declarative statement provided, four characteristics are required by FEMA as of 2021:

- 1) The address of the damaged residence.
- 2) Length of residency prior to the disaster.
- 3) Your name and signature (or your co-applicant's name and signature).
- 4) The major elements of the following statement to prove Occupancy:

“I have made a good faith effort, in coordination with FEMA, to obtain and provide a copy of acceptable occupancy documentation. I was unable to obtain this documentation because [provide an explanation of the circumstances that prevent standard occupancy verification to include why the other document types were not available to the applicant or how the available documents do not meet FEMA's requirements]. I hereby declare under penalty of perjury that the foregoing is true and correct.”

**OR** the major elements of the following statement to prove Ownership:

“I have made a good faith effort, in coordination with FEMA, to obtain and provide a copy of acceptable ownership documentation. I do meet FEMA's definition of an owner-occupant because I am (A) the legal owner of the home. (B) pay no rent but am responsible for the payment of taxes or maintenance for the residence, or (C) hold lifetime occupancy rights. I was unable to obtain this documentation because [provide an explanation of the circumstances that prevent standard ownership

verification of the appropriate owner-occupant category]. I hereby declare under penalty of perjury that the foregoing is true and correct.”

A self-declarative statement to prove ownership via heirship must include:

- 1) The address of the damaged residence.
- 2) Length of time you lived in the disaster-damaged home before the Presidential disaster declaration.
- 3) Your name and signature (or your co-applicant's name and signature).
- 4) A copy of the decedent's death certification.
- 5) The major elements of the following statement:

“I have made a good faith effort, in coordination with FEMA, to obtain and provide a copy of acceptable ownership documentation. I was unable to obtain this documentation because [provide an explanation of the circumstances that prevent standard ownership verification].”

**AND**

“As the nearest relative of the deceased in the line of succession, my ownership includes all the rights and obligations of the deceased. The decedent's name is \_\_\_\_\_, and they died on \_\_\_\_\_. I understand I must submit the death certificate along with this declaration. I hereby declare under penalty of perjury that the foregoing is true and correct.”

### Understanding What FEMA Covers

FEMA is not a form of insurance; therefore, it only covers the damages to property that provide “the basic needs for a home to be safe, sanitary, and secure” (FEMA, 2021). Inspectors are required to verify the damages that have been filed and to determine what FEMA will cover. Below is a list of damages that would be covered as provided by FEMA in May of 2020:

*Property:* FEMA may assist in the replacement or repairs to disaster-damaged furnaces, hot waters heaters, refrigerators, and stoves. Non-essential items like dishwashers and home theatre equipment are not covered.

*Ceiling and roof damage:* FEMA may assist to repair disaster-related leaks in a roof that damage ceilings and threaten electrical components, like overhead lights, but not stains from roof leaks.

*Floors:* FEMA may assist in repairing a disaster-damaged subfloor in occupied parts of the home but not floor covering like tile or carpet.

*Windows:* FEMA may assist with disaster-related broken windows but not blinds and drapes.

*Other FEMA help* may include temporary expenses to pay for somewhere to stay if a survivor's home is uninhabitable or assistance replacing essential household items."

### Resources for FEMA and Filing a Claim

- 1) Download the app. This app provides real time updates regarding local weather changes. It also provides a list of frequently asked questions to help people understand what FEMA can do and the steps that are necessary to receive aid. It also has a list of all Presidentially declared disasters that is specific to the area so that the user knows whether they would be eligible for aid or not.

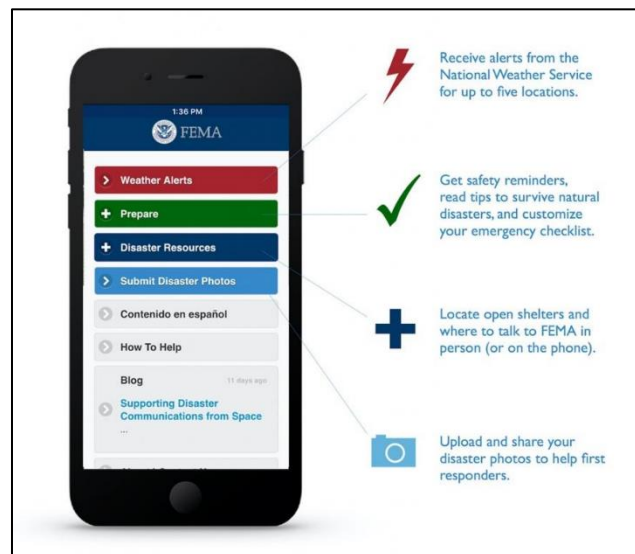


Fig. 22 (Source: FEMA)

- 2) "How to Start Your Flood Insurance Claim" is a webpage designed by FEMA to help those affected by a natural disaster to access the necessary resources when filing a claim. They provide information about each step of the process and with the resources to understand what is covered and what isn't covered. It is a useful tool that is highly recommended.



a. <https://www.floodsmart.gov/how-do-i-start-my-flood-claim>

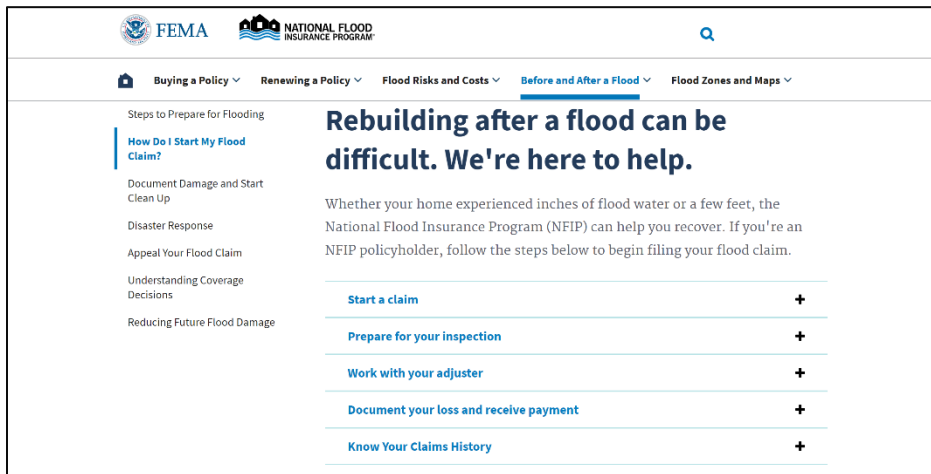


Fig. 23 (Source: FEMA)

## Recommendations for the Future

1. Lifting the roads that flood in these communities - use NOAA (National Oceanic and Atmospheric) flood viewer to justify
2. Affordable housing that is flood safe - use Social Vulnerability data to justify
3. Broadband facility for computers and Internet with ability to have high def zoom capability for education and pandemic-related needs - look for broadband capability and educational levels for community to justify, providing a space for telehealth, transportation.
4. Reforestation, vegetative filters, and riparian buffers - use floodwater commission report to justify
5. Develop eco-tourism opportunities (rain gardens), Gullah tourism events (yearly festivals), and introduce new community engagement/education opportunities.
6. Implementing a city-wide flood water retention system, such as deeper ditches to hold floodwater.
7. Utilize the FEMA app to help stay updated and efficiently receive aid in wake of a Presidentially Declared Emergency

Bucksport has one main road that goes from Highway 701 to the marina called Bucksport Road. This road connects all the other back roads in town to the highway. A major issue the town faces is that the road is vulnerable to flooding; the hazard levels of which can be seen in the Flood Exposure Mapper from NOAA below. This presents a big

problem as it can cut the town off from getting basic resources or it prevents them from evacuating. As the mapping also shows, many of the other roads in the community are at risk of flooding as well. Horry County Council recently approved the raising of this road; however, a new concern is that water will pool on the sides of the road. The U.S. Army Corp of Engineers will be conducting a study regarding the functionality of the road to guarantee the safety of the residents and their homes.

As suggested by the South Carolina Flood Commission, reforestation should be considered to help provide a buffer against flooding (South Carolina Floodwater Commission, 2019). Forests and trees can prevent flooding in several ways. Trees provide a natural buffer against flooding as the presence of the roots physically obstructs the water's path and prevents soil erosion. One tree can absorb up to 150 gallons in a single day (Purcell, 2021). This statistic depends on the availability of water in the trees' habitat,

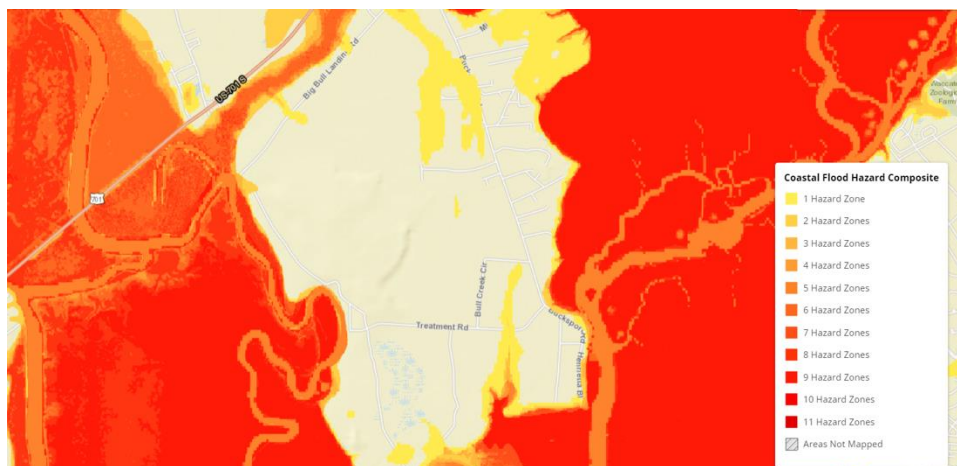


Fig. 24 (Source: NOAA)

and as we have seen, Bucksport has a lot of water to keep an entire forest healthy. To put it simply; the more forest that is present, the more water will be absorbed and not contribute to the flooding. Land without trees, particularly land that has been covered by impermeable surfaces like parking lots or buildings, absorbs far less water and makes areas more prone to flooding.

Restoring the land is a lengthy process, and meanwhile hurricanes continue to affect Bucksport with flooding problems. Hurricane Ian brought 6-8 inches of rain in the abbreviated time it was passing through Horry County (Strong, 2022). In that period, storm drains were overflowing, and coastal areas were flooded. Since Hurricane Ian was Presidentially declared as a disaster in South Carolina, residents who experienced damage

from flooding can seek reimbursement from the Federal Emergency Management Agency (FEMA). It is important that all damage be documented efficiently, and an inspector should be contacted to evaluate the damage. The FEMA app should be downloaded to facilitate contact with your application for disaster relief. It is also critical to know and understand what FEMA covers, because not all types of damages are covered. Educating the community of these concepts could help the community live in better conditions. Setting up community meetings or even handing out flyers describing these crucial pieces of information could make all the difference.

To create a more sustainable community, it is important to focus on the infrastructure. As seen by the immense flooding in the community, the drainage ditches are not functioning properly, and it is recommended that they work with the county to get better drainage equal to or better than what is seen in other towns within Horry County. It is also recommended that the Bucksport community request streetlights from the county. Horry County does require that there be sufficient access to power for the construction of the streetlights so if that is not possible, then it is recommended that solar powered streetlights be implemented. It is possible to get grant funding from the Environmental Protection Agency (EPA) to help build a more sustainable community. If the community does not meet the criteria for a grant, they could propose that the Horry County Government utilize the resources provided by the EPA's Green Infrastructure page. This resource provides preliminary plans to build in a more sustainable fashion.

Considering Bucksport has an extensive and valuable history of Gullah Geechee culture, it is important to preserve that to move Bucksport forward as a sustainable community. Working with Furman University students Sydney Spires, Jeanna Cline, and Meghan Salm the 2021 report developed the idea of promoting Gullah Geechee Tourism along with preservation of history and culture. Projects to work on in the future are a Gullah Geechee Community Day, an artistic project, and a video outlining the importance of preserving this culture. The town is also near the Waccamaw National Wildlife Refuge, allowing easy access to over 26,000 acres of pristine wilderness. This makes the area a perfect spot for eco-tourism, as the closeness of the river and refuge could make Bucksport a good place to stay for people who wish to explore the area and enjoy the nature around them.

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