The North Brunswick Blueway



Balancing Growth with Sustainability





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Table of Contents

Executive Summary	3
Chapter 1: Project Purpose and Scope	9
1.1 Vision	10
1.2 Goals	10
Chapter 2: Introduction to Blueways and Ecotourism	10
2.1 Blueways	10
2.2 Eco-Tourism	11
Chapter 3: Study Area Description	12
3.1 Trail Boundaries	12
3.2 Study Area Characteristics/Demographics	13
3.3 Leland	14
3.4 Belville	15
3.5 Navassa	15
Chapter 4: Public Benefits of Blueways	16
4.1 Active Lifestyles	16
4.2 Economic Development Enhancement	18
4.3 Healthy Rivers, Clean Air and Water, Protection of Property and Lives	19
4.4 Enhanced Property Values	21
4.5 Promote Cultural Heritage and Sense of Community	21
Chapter 5: Assessment of Existing Conditions	22
5.1 Existing Access Sites	22
5.2 Potential Access Sites	25
Chapter 6: Municipal Planning Efforts	25
6.1 Leland Parks, Recreation and Open Space Plan	25
6.2 Town of Leland Master Plan	26
6.3 Town of Leland CAMA Land Use Plan	27
6.4 Town of Belville Vision 2020	28
6.5 Town of Navassa CAMA Land Use Plan Update	29
6.6 Brunswick County CAMA Core Land Use Plan	29
Chapter 7: Other Planning Efforts	30
7.1 Cape Fear Paddle Trail	30
7.2 East Coast Greenway	31
7.3 Brunswick County Greenway Plan	32
7.4 Brunswick Nature Park	33
7.5 Brunswick County Historical Review	34
7.6 Cape Fear Arch Conservation Plan	35
7.7 Eagle Island Conservation and Eco-Tourism Effort	37
7.8 Gullah/Geechee Cultural Heritage Corridor	38
Chapter 8: Recommendations	39
Chapter 9: Grant Funding Sources	46
Appendices	47
Maps	77
References	83

Executive Summary

This study is a collaborative effort involving various stakeholders that desire to balance economic growth with environmental sustainability through the coordination of a regional blueway trail. Blueways (also known as Blue Trails) are the water equivalent to land based trails and greenways and are associated with numerous public benefits. Some of these benefits include economic development, healthy lifestyles, air and water quality improvements, increased property values and promotion of a sense of community and regional identity associated with the river.

Ultimately, the stakeholders envision a comprehensive plan that also incorporates an educational component and clarifies marketing of facilities with uniform signage and mapped paddle trails. The outcome of this feasibility study is a guiding document for the coordination of a blueway system in Northern Brunswick County and is the initial step towards implementation. The document is a compilation of information gathered through literature research, email and phone interviews of paddle trail associations and various stakeholders. It also includes an examination of the current situation including existing access points, identifies and evaluates future access points, potential stakeholders, partners and funding sources. A summary of relevant municipal land use plans and other planning efforts pertinent to the blueway project are incorporated as they provide vital links and support to this new trail segment. Careful consideration of each plan and collaboration among all stakeholders is essential for achieving a successful blueway plan.

The proposed water trail spans from Indian Creek at the northern boundary to the new 900 acre Brunswick Nature Park to the south. It extends to the US Government Rail Transfer Facility on the west and incorporates Eagles Island on the east. The trail encompasses the towns of

Belville, Leland and Navassa and the northern portion of Eagles Island. All three municipalities are located in Brunswick County along the banks of the river and each within 5 miles of downtown Wilmington. Brunswick county is one of the fastest growing counties in the country and was ranked the third fastest growing county in North Carolina in 2008. Continued growth is expected in this region due to the close proximity of the area to the city of Wilmington, which is the largest municipality in southeastern North Carolina.

This intense growth will continue to stress the existing recreational facilities and threaten the natural resources in the area. The North Brunswick Blueway intends to increase recreational, educational and economic opportunities and preserve the quality of life within the region. The blueway will provide an essential tool for building the local economy by drawing new investment and enhancing tourism in the area. Ultimately, an established blueway complete with educational signage will transform the area into an "outdoor classroom" that encourages an appreciation of the region's people and past while promoting informed decisions regarding its future.

The following action steps are recommended for implementation of a successful comprehensive blueway system:

1.) Adopt a Blueway Plan

Municipalities should adopt a blueway plan into their comprehensive parks and recreation, and growth management plans. This will provide the legal and financial basis for local governments to pursue trail development. It may also be necessary for local governments to amend or revise zoning ordinances, land development codes and other policies and procedures that allow for blueway development to occur. Local governments should evaluate required changes that are necessary for blueway implementation as soon as feasibly possible.

2.) Engage Stakeholders and Build Public Support

It is important to include all stakeholders from the very beginning of the process in order to provide them with a sense of ownership and involvement in the planning process. Conducting an initial meeting that brings stakeholders together provides a forum for the exchange of ideas as well as garners support. A list of suggested stakeholders is attached in Appendix F.

Community involvement is also essential in protecting the resource as well as promoting the area as an established paddling destination. Forming a citizen's advisory group or "Friends of the River" is recommended to serve as a voice for the public as well as to offer advice and assistance.

Hosting a trail opening event such as a "Mayors Cup" or "Commissioners Cup" can draw attention to the water trail and spark public interest and participation. Continued annual events such as a "Big Sweep" designed to collect trash and debris in the river and its corridors as well as hosting race events provide an ongoing method of engaging the public and drawing economic revenue to the area.

3.) Define Organizational Structure

A formal agreement should be established among the participating jurisdictions. It is recommended that the municipalities sign a written Memorandum of Understanding which formalizes each local government's commitment to the development of the blueway and for the protection and maintenance of the river as a valuable resource.

Establishing central coordination by either holding regularly scheduled meetings, establishing an advisory committee or hiring a river coordinator is essential. A formal maintenance plan detailing specific duties should also be implemented. In general, each municipality is responsible for the trails and access sites that fall within their jurisdiction.

Volunteers and non-profits can provide supplemental management although it is recommended that ultimate maintenance responsibility rest with the local governments.

4.) Identify and Commit Funding

Stakeholders should seek local, state, federal and private funds to help with land acquisition, development and maintenance of the trail system. Numerous grant funding sources are available to assist with aspects of the blueway project. A list of possible grant sources and a brief description of each is included in Appendix M. It is also recommended that stakeholders seek a technical grant from the National Park Service's Rivers, Trails, and Conservation Assistance (RTCA) program. Most importantly, regional collaboration is essential to securing grant funding. It shows grant funders that widespread cooperation and commitment to the project exists which ultimately, fosters a greater chance of project success.

5.) Acquire Land for Future Development

In order to assure the ongoing development of the blueway project it is necessary to identify and purchase land for potential public access sites early in the process. Prioritizing land early in the process allows stakeholders to target undeveloped land which is generally better suited for placement of public access facilities. It also assists with the location of potential conservation easements and riparian buffers to ensure water quality protection. A list of potential access sites is attached in Appendix E.

Some common types of land acquisition strategies include donations, bargain sale, fee simple purchase, easement, zoning/development regulations, developer contributions, abandoned rail corridors and eminent domain. Determining the level of landowner support for location of an access site on their property prior to seeking grant funding is recommended. The most common forms of landowner support include a verbal commitment, a written commitment such

as a letter of support, or a right of first refusal. This allows communities a greater chance for meeting funding eligibility.

6.) Trail Design and Development

Determining a target audience is important when determining the economic impact of the blueway. The type and number of visitors is important to consider when designing the trial as it will dictate the number of access sites and necessary facilities. A trail with numerous access points will generally attract day users and novice paddlers while few access points provide a longer expedition-like paddling experience and the desire for overnight camping. Destination trips which consist of an overnight excursion of two or more days to an area that offers other attractions, amenities and visitor services have a greater economic impact than do day trips.

Trail design also requires considering the types of amenities located at each site. The North Carolina Department of Environment and Natural Resources (NCDENR) has State Trails Standards for Paddle Trails Access Sites for NCDENR designation. The standards consist of five levels of trail development and are included in Appendices G through L. Although these standards have not yet been formalized, it is important for communities seeking NCDENR funding to follow these guidelines. It is recommended that law and emergency management officials also be consulted regarding trail development and design in order to provide ample security measures at the sites and along the trail.

7.) Consider Liability Insurance/Recreational Use Statutes

It is important for communities to consider liability coverage and seek legal counseling prior to providing access to the public. Local governments that own access sites in fee simple and retain management responsibility can be covered by the government's general liability policy. Sites that only obtain an access easement across a landowner's property, recreational

statutes provide some liability coverage to the landowner. The recreational statute can act as an umbrella, however the county or local governing body may need to offer additional insurance coverage for the landowner in case of legal litigation.

Chapter 1: Project Purpose and Scope

This project is a regional collaboration among the towns of Belville, Leland, Navassa, Brunswick County, the Cape Fear River Watch and other stakeholders to determine the feasibility for a blueway along the Brunswick River. The study compiles information gathered through literature research and email and phone interviews with paddle trail associations and various stakeholders to create a guideline for the coordination of a blueway trail system. The proposed water trail incorporates existing access sites and greenway trails and spans from Indian Creek at the northern boundary to the new 900 acre Brunswick Nature Park to the south. The blueway route proposes to include the area's creeks and tributaries and extend as far west to the US Government Rail Transfer Facility. The trail also extends east across the Brunswick River to include Eagles Island.

The blueway intends to increase outdoor recreational opportunities and preserve the quality of life within the region. It is an essential tool for building the local economy by drawing new investment and enhancing tourism in the area. The blueway project is also a means for increasing environmental awareness and an understanding of the region's natural and cultural resources by transforming the water trail into an "outdoor classroom" complete with educational signage for citizens and visitors to explore. The Northeast Brunswick Blueway will serve to create a regional identity associated with the river which will in turn, produce economic benefits and a higher quality of life.

Ultimately, the stakeholders envision a comprehensive plan that will identify existing public access sites and facilities, prioritize sites for future access, identify potential funding sources, incorporate an educational component and clarify marketing of facilities with uniform signage and mapped paddle trails. This feasibility study is the initial step towards

implementation and examines existing access points, identifies and evaluates future access points, potential stakeholders, partners and funding sources. The study also incorporates a summary of relevant land use plans and other blueway/greenway planning efforts that may provide a vital link to this new trail segment. The final component of the feasibility study offers recommendations for implementation.

1.1 Vision

To enhance recreational, economic and educational opportunities (within the area) that will also serve to cultivate a regional identity and sense of community associated with the river.

1.2 Goals

- **Identify opportunities and barriers.**
- **Begin development of a "Blue Trail" that spans the northeast segment of the Brunswick watershed including Eagles Island**
- **Design a trail that can be linked to the Cape Fear Paddle Trail as well as offer a nice diversion from the East Coast Greenway.**
- **Identify and engage stakeholders and partners.**
- **Collaborate with local communities.**
- **Garner community support.**
- **Secure funding.**

Chapter 2: Introduction to Blueways and Eco-Tourism

2.1 Blueways

Blueways are the water equivalent to land based hiking trails or greenways. These water trails or routes designate access sites for paddle boats (non-motorized craft) at various locations along the river to provide safe and environmentally conscious access to the river. They offer increased recreational opportunities as well as environmental and educational benefits by providing an alternative way for citizens and visitors to explore the river. The routes are usually

mapped to create an educational and scenic experience for recreational paddlers. A successful blueway requires a healthy water body and are often associated with conservation easements and greenways which provide protection from stormwater pollution attributable to neighboring land uses. Ultimately, blueways serve to promote a healthy economy and a high quality of life while preserving our natural and cultural resources (American Rivers, http://www.bluetrailsguide.org/).

2.2 Eco-Tourism

Eco-Tourism is a sector of tourism that incorporates the principles of sustainability to protect the environment for future generations. It is defined by the International Ecotourism Society (ITES) as responsible travel to natural areas that conserves the environment and improves the welfare of the local people. It is one of the fastest growing sectors of the tourism industry. Typical characteristics of eco-tourism include: having a minimal impact on the environment, enhancing environmental and cultural awareness, providing direct financial benefits for conservation, providing financial benefits and empowerment for local people, and fostering increased respect for local culture. (http://www.ecotourism.org/site/c.orLQKXPCLmF/b.4835303/k.BEB9/What_is_Ecotourism__The_International_Ecotourism_Society.htm)

Generally, eco-tourism involves travel to places where the primary attractions are the local flora, fauna and cultural heritage which can be experienced on one's own or through guided tours. Eco-tours provide the tools to connect local citizens to their heritage and inform them of the significance of the area's natural resources through educational signage provided along the routes and trails. Eco-tourism and heritage travel continue to gain popularity. According to *Case Studies of Water Trail Impacts on Rural Communities*, the interest in this type of vacation travel continues to grow. The number of people who visit historical places is expected to

increase at a steady pace and "according to Cordell (1999), by 2050, the total number of participants will be more than 75% above the 1995 levels" (Johnson, 2002, p.15). Additionally, the demand for destination canoeing and kayaking is expected to increase to 169 million per year by 2040. (Johnson, 2002)

The proposed blueway study area is rich in cultural heritage and undeveloped natural areas. The Brunswick River is teeming with wildlife, wetlands, waterways and historical significance and is an excellent source of eco-tourism opportunities. Ultimately, an established blueway complete with educational signage will transform the area into an "outdoor classroom" that encourages an appreciation of the region's people and past while promoting informed decisions regarding its future.

Chapter 3: Study Area Description

3.1 Trail Boundaries and Study Area

The trail boundaries extend from Indian Creek in the town of Navassa as the northernmost boundary, the Brunswick Nature Park at Town Creek/Southern Drive as the southernmost limit, the Cape Fear River including Eagles Island marks the eastern boundary, and the US Government Transfer Facility is the western boundary line of the proposed trail.

Northernmost Limit	Indian Creek in Navassa
Southernmost Limit	Brunswick Nature Park at Town Creek/Southern Drive
Easternmost Limit	Cape Fear River including Eagles Island
Westernmost Limit	US Government Transfer Facility

3.2 Study Area Characteristics/Demographics and Trends

The study area encompasses the towns of Belville, Leland and Navassa, each of which is located within close proximity to historic downtown Wilmington and to area beaches. These towns have witnessed intense growth over the past decade as indicated by Table 1. Northern Brunswick County as a whole is expected to experience continued development in part due to its close proximity to the city of Wilmington, which is one of the largest municipalities and employment centers in southeastern North Carolina.

Table 1: Demographic Outlook of the Study Area

	Brunswick County	Belville	Leland	Navassa
Population Totals July 2008	103,160	1,432	12,623	1,918
% Change from April 2000 to July 2008	40.6%	294.49%	551.34%	300.42%
Median Age	41.08			

Source: NC Office of Budget and Management, Population estimates and projections

Each of the municipalities within the blueway study area has strong economic and social ties to one another and the Wilmington metropolitan area. These ties have been increasing as measured by average vehicle miles traveled between Brunswick and New Hanover counties and the distribution of employment opportunities across the region. In 2008, Brunswick County ranked 37th among the fastest growing counties in the nation and third in the state. These trends illustrate the viability of the blueway as a regional eco-tourism attraction and the importance of proactively seeking to provide public access to local waterways before increased development pressure makes it more difficult to do so. The blueway will provide new public recreational opportunities and access to local waterways; acting to alleviate the stress increased population growth will place on existing facilities.

The current public canoe/kayak launch sites consist of: the Davis Creek Estuarine Water Access located in Navassa, the Brunswick River Creek Park located across from the Belville Elementary School, the Mill Creek Access Site in Leland, and Town Creek Pottery off US 17 and Rices Creek Wildlife Resource Commission. A new access site is currently under construction at the new 900 acre Brunswick Nature Park.

3.3 Leland

The town of Leland is considered the gateway to Brunswick County with its strategic location along major regional transportation routes that provide easy access to the many local beach communities. Leland is one of the fastest growing towns in southeastern North Carolina. The town was originally a railroad crossroads, and was settled with the growth of plantations along the Cape Fear and Brunswick Rivers. Leland was incorporated in 1989 and experienced little growth prior to 2000. Local amenities include a small town charm with extraordinary natural beauty including the Cape Fear River and Sturgeon Creek, several public parks, as well as a championship golf course in Magnolia Greens, which is one of the many emerging residential developments within the town.

Leland is considered the largest municipality in Brunswick County and the fastest growing town in the 37th fastest growing county in the nation with the current population at approximately 12,623. In addition, Leland also doubled its geographic size with the annexation of Brunswick Forest which consists of 4,900 acres. The annexation is expected to add 10,000 residential units and push the population over 20,000 (WilburSmith Associates, 2008).

The continued addition of new residents will stress the existing parks facilities, open space and other natural resources. It is important for the town and the surrounding municipalities to address this growth in a regional context and plan for this population increase in order to

preserve the area's abundant natural resources now while the opportunity still exists. (WilburSmith Associates, 2008)

3.4 Belville

The town of Belville is situated on the Brunswick River in northeast Brunswick County. The town was incorporated in 1977 and encompasses approximately 3,000 acres. Belville's current population is approximately 1,432 residents with growth expected to continue due to its location within Brunswick County and bordering the town of Leland. The major corridors serving the town include Highway 17 and NC 133 which offer easy access to downtown Wilmington and the Oak Island/Southport beaches. Belville's development originated with the formation of the plantations that located along the river and served as a crossroads for shipping and commerce. The town's current land uses are primarily low-density residential housing with limited commercial facilities and civic/public uses. The area is comprised of a high number of wetlands due to its soil conditions and high water table typical of a coastal area. Belville currently has an underutilized waterfront but is poised for growth with a Vision 2020 plan designed for an attractive working waterfront community. The plan calls for redevelopment of the historic downtown area as a riverfront village that will preserve the waterfront for the public. (The Lawrence Group, 2007)

3.5 Navassa

Navassa is also located on the river's banks in northeast Brunswick County, situated at the confluence of the northwest Cape Fear and the Brunswick Rivers. Navassa, like its counterparts Leland and Belville, is strategically located only 5 miles from historic downtown Wilmington. The location affords the town and its citizens easy access to UNC-Wilmington, area beaches, Cape Fear Community College and local shopping. The town was incorporated in

1977 and currently has a population of approximately 1,918 residents. Navassa is also poised for growth due to the planned construction of the I-140 highway bypass that will provide another river crossing between Brunswick and New Hanover counties and is anticipated to bring in a sharp rise in new residential and commercial developments. Currently, Navassa has an abundance of undeveloped land and natural areas offering spectacular recreational opportunities.

Navassa also sits in the northernmost reach of the Gullah/Geechee Cultural Heritage Corridor which is part of the National Park Service's National Heritage Area Program. The program is designed to promote and preserve the Gullah/Geechee history and culture that once thrived within the rice plantations of earlier times and still exists along the coastal regions of the corridor. The area possesses numerous untapped educational and recreational opportunities. A regional planning effort that capitalizes on these resources would provide for economic growth while preserving the precious natural and cultural resources that make the region unique.

Chapter 4: Public Benefits of Blueways

There are many public benefits associated with blueways and numerous studies have attempted to quantify and monetize these benefits in an effort to increase public support for blueway development. The following chapter discusses the key public advantages to implementing a community blueway system.

4.1 Active Lifestyles

Trails and greenways provide an easy way for people to get outside and maintain an active lifestyle while connecting with their communities and environment. Trails offer safe, attractive and easily accessible places for citizens to engage in the recommended thirty minutes of physical activity for adults and sixty minutes for children most days of the week. The benefits associated with active lifestyles are abundant. Engaging in regular physical activity can reduce the risk of

coronary heart disease and of developing high blood pressure, colon cancer, and diabetes. A regular active regime can also help reduce blood pressure in some people with hypertension, help maintain healthy bones, muscles and joints, reduce symptoms of anxiety and depression, and help control weight (Galson, 2008).

"Characteristics of our communities such as proximity of facilities, street design, and availability of pedestrian and bicycle facilities such as trails play a significant role in promoting or discouraging physical activity." –

(NC Health& Wellness Trust Fund, Fit Together, http://www.fitcommunitync.com/)

Unfortunately, the Center for Disease Control (CDC) found that more than 60% of American adults do not engage in the recommended amount of physical activity. Obesity has reached epidemic proportions in the U.S and nearly 300,000 deaths in this country are attributable to the illness each year. The national economic costs associated with obesity-related illnesses reach within the tens of billions of dollars. The CDC estimates that in North Carolina alone, the obesity-related expenses add up to more than $2.1 billion dollars. Sedentary lifestyles are a major contributor to the epidemic. According to CDC reports, "approximately 43% of adolescents watch more than two hours of television each day and 40% of adults in the United States do not participate in any leisure time physical activity" (http://www.surgeongeneral.gov/topics/obesity/, para. 4).

Communities and governments can be a part of the solution by helping people choose an active lifestyle and providing recreational opportunities. Designing communities around a system of safe, accessible and attractive trails for walking, kayaking, and bicycling help to promote physical activity and make it an "easy choice" for citizens, while also promoting a culture of outdoor recreation. As the Fit Initiative states, "individuals and families often want to make better choices for healthier lifestyles, but find there are too many existing barriers. The

answer is not just an individual solution, but a community solution" (http://www.healthwellnc.com/hwtfc/htmfiles/ fundprty_obesity-FitCommunities.html, para. 3)

4.2 Economic Development Enhancement

Blueways offer a means of stimulating economic development within communities by increasing tourism to the area as well as local citizen participation in recreational activity and spending. The recreational opportunities of blueways provide economic benefits well beyond the recreational services industry itself. The trickle-down effect ripples through the local economy. Some of the local businesses that benefit from paddlers include restaurants, hotels, bed and breakfast homes, transportation, retail stores, historical and cultural sites as well as outfitters within the recreational services industry. Specific paddle trail studies further indicate the industry creates long-term economic growth and community development.



Figure 1: Rivers Edge Café, Confluence, Pennsylvania

According to the Outdoor Industry Foundation's Fall 2006 report, the active outdoor recreation industry:

- Contributes $730 billion annually to the U.S. economy.
- Supports 6.5 million jobs.
- Generates $88 billion in annual state and national tax revenue.
- Contributes $289 billion annually in retail sales and services across the U.S.

The study also revealed that Americans spend:

- $46 billion each year on outdoor gear, equipment, apparel, footwear, accessories, and services for outdoor experiences.

- $243 billion on trips that range from summer camping to afternoon family bike rides.

The economic impact of outdoor recreation in North Carolina alone is also substantial. The actual dollar amounts are illustrated in the table below. (Outdoor Industry Foundation, 2006)

Table 2: Economic Contribution of Outdoor Recreation

Active Outdoor Recreation Economic Contribution in North Carolina			
Total Annual Contribution	**Jobs Generated**	**Annual State Tax Revenue**	**Annual Retail Sales & Services**
$7.5 billion	95,000	$430 million	$6.1 billion

Source: Outdoor Industry Foundation,(2006).The active outdoor recreation economy

"A 2006 economic impact study of the Northern Forest Canoe Trail in the Adirondack Mountains estimated that trail users spent an estimated $4.4 million in the local economies." (WMTH Corporation)

"An economic impact study of the 1,200 miles of paddle trails in eastern NC conducted in 2000 by the North Carolina Paddle Trail Association revealed that use of the trails contribute $105 million annually to the communities of eastern North Carolina with $55.14 attributable to trail related tourism" (NCPTA)

4.3 Healthy Rivers, Clean Air and Water, Protection of Property and Lives

Stormwater runoff (rain or snowmelt that runs off of impervious surfaces) has been identified as a leading source of water pollution in the United States. It is associated with shellfish closures, fish kills and a decrease in aesthetics which negatively affects property values, fishing, and the recreational industry. Runoff also causes flooding, stream bank erosion, threatens public health, and increases water and wastewater treatment costs. Stormwater runoff is largely attributable to the increase in impervious surfaces (parking lots, rooftops, decks, etc.) associated

with urbanization which alters the natural landscape so that it can no longer carry out the natural functions of infiltration and pollutant removal.

Blueways offer natural resource protection through their association with clean water bodies. Water trails promote the protection of wetlands and encourage the implementation of riparian buffers and conservation easements. These conservation efforts, in turn, provide environmental benefits such as pollution filtration, habitat protection, cleaner air, drinking water quality improvements, reduced treatment costs, groundwater recharge and flood prevention. Buffers act as a filter for pollutants such as motor oil, pesticides, sediment and fertilizers present in runoff and help to prevent stream bank erosion. Protecting floodplain areas and wetlands also helps prevent property loss associated with flooding by decreasing the quantity and rate of stormwater runoff entering a given waterway.

These conservation measures can also help the towns of Leland and Navassa meet the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Plan requirements set forth by the Environmental Protection Agency (EPA). The Phase II program applies to smaller municipalities and is designed to improve water quality through stormwater management. Some of the benefits associated with natural resource protection are quantified in the following case study examples:

"The lowest cost estimate for a water treatment alternative to natural filtration created by wetlands in the Congaree Bottomland Swamp in South Carolina is $ 5 million." (EPA, 2005)

"The overall economic impact of recreational fishing in the United States is estimated at $116 million and wetlands play a critical role in the life cycle of up to 90% of the fish caught recreationally." (American Sport Fishing Association)

4.4 Enhanced Property Values

Property located adjacent to or in close proximity to water trails generally see an increase in value. The trails offer aesthetic value as well as easy access to recreational opportunities that many property owners seek. The following case studies reveal some of the increase in property values associated with trials and greenways:

> *"A 1998 study of the Mountain Bay Trail in Brown County, Wisconsin, revealed that lots adjacent to the trail sold faster and for an average of 9% more than similar property not located next to the trail." (Rails to Trails Conservancy)*

> *"In a 2002 survey of recent home buyers sponsored by the National Association of Realtors and National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices." (Rails to Trails Conservancy)*

4.5 Promote Cultural Heritage and Sense of Community

Blueways, greenways, and bike trails reconnect us to our cultural heritage by promoting the protection of historical places and providing access to them. This, in turn, can enhance community identity and pride through an increased awareness of historic, cultural and natural places. Trails enable people to easily explore local communities and to connect with family and friends by providing a common ground for social interaction as well as providing safe and healthy recreation options (http://www.bluetrailsguide.org/).



Figure 2*: NOAA Smart Buoy, Chesapeake Bay Gateways Network, *Capt. John Smith Trail

The blueway study region consists of numerous opportunities for the development of a comprehensive trail that could easily support an educational, cultural and historical component.

The area is rich in history from its ties to our nation's early wars, the rice culture of the lower Cape Fear region, its status as a growing trade center associated with the naval stores of the mid 1700s to late 1800s, the US Maritime Commission Reserve Fleet, and numerous shipwrecks. Additionally, the blueway could provide an enhanced opportunity to build on the current efforts to formalize the Gullah/Geechee Cultural Heritage Corridor which is part of the National Park Service's National Heritage Area Program. The proposed North Brunswick Blueway plans to incorporate educational signage along the trail routes that would offer brief descriptions of the abundant cultural resources of the Cape Fear region. Allowing people to explore the area in this way can foster an appreciation of local customs and traditions and promote awareness of past and present contributions of the local people to the region.

Chapter 5: Assessment of Existing Conditions

5.1 Existing Access Sites

The following section provides a brief description of the existing public access sites within the study area and the individual site amenities. These sites provide a foundation for a blueway that can evolve into a regional system through careful planning.

1.) **Davis Creek Estuarine Water Access** along Cartwheel Branch. This site is located in Navassa and consists of a walkway, piers, concrete boat ramp, kayak launching area, a picnic area and a shaded gazebo. Navassa has been awarded a grant from the North Carolina



Figure 3: **Davis Creek Park**



Figure 4: **Davis Creek Park**

Coastal Waterfront Access Fund to make additional improvements to the Davis Creek park including new signage, improved parking, and repairs to the small watercraft launching ramp.

2.) **Brunswick River Park (formerly known as John D. Long Park):**

Twenty-two acres located across from the Belville Elementary School. Facilities include fishing areas, a small boat dock, viewing dock overlooking the Brunswick River, three picnic shelters, two playgrounds and restrooms.



Figure 5: **Brunswick River Park**

3.) **Mill Creek Access Site, 844 Appleton Way, (Town of Leland):** Twenty-seven acres of wetlands donated in 2005 by Kirby Sullivan and 1.2 acres of uplands acquired with a 2007-2008 Coastal Waterfront Access Grant from the State Division of Coastal Management. Town's first water access site designed for launching canoes, kayaks, rowing shells and small motorized "Jon" boats. The Parks, Recreation and Open Space plan determines this site is adjacent to "the northern tributary of Sturgeon Creek and extends westward from a connection at the end of Appleton Way and includes the undeveloped floodplain south of the creek." (Wilbur Smith Associates, 2008, chap.2, p.8) The plan also recommends that the town develop the area at the end of Appleton Way as a trail head.



Figure 6: **Mill Creek Water Access Park**

4.) **Town Creek Trail:** This trail has two access sites located at Town Creek Pottery at US highway 17 and Rices Creek Wildlife Recources Commission. The distance between Town Creek Pottery and Rices Creek access sites is approximately four miles.

5.) **Brunswick Nature Park** – 900 acre park off NC 133 currently under construction. The kayak & canoe access sites are currently being constructed. This site provides a handicapped canoe/kayak launch access and a covered picnic shelter is already in place.



Figure 7: **Brunswick Nature Park, Canoe/kayak Launch Site 1**



Figure 8**: Brunswick Nature Park, Covered Picnic Area**



Figure 9: **Brunswick Nature Park, Launch Site 1**

5.2 Potential Access Sites

The potential access sites include the recommendations presented in the Leland Parks, Recreation and Open Space Plan completed by Wilbur Smith Associates dated August 2008. Additional sites have been identified through a review of local land use plans and county land records. The NC Coastal Land Trust's conservation lands are also included in this section and a map of the trust's *Town Creek and Lower Cape Fear Initiative* is included as map 4 of this document. All of the site locations and their descriptions are listed in Appendix E.

Chapter 6: Municipal Planning Efforts

The following section describes the municipal planning efforts within the study area that are relevant to the blueway project. A summary of supporting language within the plans that is consistent with a blueway trail system is also included in the corresponding Appendices A-C.

6.1 Leland Parks, Recreation and Open Space Plan

The Leland Parks, Recreation and Open Space Plan serves as a guide for the development of a system of recreation facilities and open space and includes recommendations for future expansion, site acquisition, and improvements to existing facilities. Results of a Parks, Recreation and Open Space steering committee meeting identified the following goals for guiding the plan: acquire and develop, diversify, maintain and manage, and preserve and protect. It is recognized that a diverse system of parks, recreation and open space facilities will offer the greatest benefit to the broadest number of residents. The plan supports acquiring, developing and improving parks and recreation facilities and open space areas as well as providing the proper management and maintenance for an overall efficient system. The plan also encourages preservation and protection of existing and future open space areas and corridors throughout Leland and Eagles Island and for the establishment of natural areas and open space that protects

the environment and maintains buffers from surrounding land uses (WilburSmith Associates, 2008).

The plan provides a list of town owned parks and related properties and offers recommendations regarding future parks, natural areas, a trail system and access points for non-motorized watercraft. Current paddle trail programs are discussed as are potential access points that can link into an entire system of walking and biking trails throughout Leland. Results of a public survey are also included in the plan. The survey was conducted for the purpose of gauging public interest in the types of facilities and parks and recreation opportunities. Respondents indicated biking and nature trails were the most highly desired components for new parks and recreation facilities. A blueway offers a water based nature trail that citizens and families can enjoy within easy access of their community (WilburSmith Associates, 2008).

6.2 Town of Leland Master Plan **(revised and adopted by council 5/21/09)**

The *Town of Leland Master Plan* is the culmination of a planning process that took place from mid 2006 through summer 2007 to develop a vision for the town's 61 square mile planning area. It is intended to provide guidance to Leland's decision makers when considering how and where the town should grow. The plan incorporates public input, a market analysis of supply and demand for various types of development, a transportation system analysis, and a "framework plan." The "framework plan" is designed as a land use policy map with the primary purpose of establishing a foundation for future land use and development over the next 20 years. It accomplishes this by establishing the overall structure for the appropriate patterns of growth and environmental conservation throughout the community. "This plan, in conjunction with three other planning efforts (the bicycle master plan, the open space and recreation plan, and the CAMA land use plan update) is intended to become Leland's Comprehensive Land Use and

Transportation strategy" (Lawrence Group, 2008, p. 3). The main concept of the "Framework Plan" divides the study area into six separate classifications or "sectors" (Lawrence Group, 2008). The sectors relevant to the North Brunswick Blueway project are listed in Appendix A and a map of the Framework Plan is included as Map 5 of this document.

6.3 Town of Leland CAMA Land Use Plan **(Draft Planning Stage)**

The Town of Leland is currently in the process of updating their CAMA Land Use Plans. The *1999 CAMA Land Use Plan* update recognizes that the quality of the town's natural resources is linked to the overall quality of life and economic development potential. The primary elements relevant to the Blueway project addressed in the 1999 update include resource protection, resources production management, and economic and community development.

Leland's key productive resources are the commercial and recreational fisheries and the recreational use of land and water (including public access to the waters). The Town supports the reduction of stormwater runoff into the Brunswick River and Sturgeon Creek through the regulation of land use development adjacent to water bodies. In addition, Leland is in favor of protecting the unique coastal marshes that the fisheries depend upon as well as providing adequate public access to the Brunswick River and Sturgeon Creek for recreational uses. The 1999 Update recognizes that tourism is an important factor in the town's and the region's economic development and Leland supports the promotion, development and expansion of travel and tourism facilities, which adds support to the creation of a blueway in the area (Cape Fear Council of Governments, 1999a).

6.4 Town of Belville Vision 2020 (2007)

The *Vision 2020 Plan* for the Town of Belville and its companion document *Proposed Code Changes Technical Memo* (April, 2007) serve to guide future development and redevelopment within the town. Most notable in the plan for the purposes of this study is the Riverfront Village conceptual plan. The plan designates reconstruction of the old downtown area located on the east side of highway 133 as an urban, riverfront village. The concept envisions re-creating a town center that is linked to its waterfront to provide for community interaction and commerce as well as a destination for tourists. The plan calls for a boardwalk, a new town hall and public green space accompanied by mixed-use buildings. Other possible amenities mentioned include extending piers from the boardwalk and a public marina. The plan also includes results of a charrette conducted to gain insight into the desires of the citizens.

Environmental sustainability and protection of the town's natural resources including wetlands and watercourses were designated as a priority in the charrette. Smart Growth, Low Impact Develoment and LEED green building principles provide a foundation for the recommendations within the *2020 Vision Plan*. Of particular relevance to the blueway project, is the designation of a 120 acre zone in the Blackwell Road area as a wetland mitigation site and nature preserve consisting of boardwalks and light trails contingent upon CAMA and Army Corps of Engineers permitting. Most importantly, the *Vision 2020 Plan* recognizes that the future of Belville is intertwined with Leland's which necessitates collaboration among the two municipalities. Belville's future plans for a waterfront community and nature preserve can provide a crucial link to the North Brunswick Blueway and in turn, the blueway can offer an additional attraction to the historic riverfront village (Lawrence Group, 2007).

6.5 Town of Navassa CAMA Land Use Plan (1999)

The purpose of the *Navassa CAMA Land Use Plan* is to guide growth and development within the Town. The plan sets out the Town's desired objectives and goals designed to steer growth toward making Navassa a better place to live, work and visit. These goals and objectives incorporate the protection of the town's vital natural resources while providing for economic growth and services to all of Navassa's citizens. The plan recognizes natural resource protection as a crucial element for the enhancement and preservation of the local community and quality of life. Navassa further recognizes the significance of tourism as an economic benefit to the entire region and that the area's natural resources and recreational facilities play a major role in making the region a tourist destination. A blueway project creates an opportunity for Navassa to balance economic growth with environmental sustainability. The goals and objectives relevant to the North Brunswick Blueway are listed below and relevant excerpts of the plan's policy statements are listed in Appendix B. (Cape Fear Council of Governments, 1999b).

- **Clean up and beautification of Navassa's waterfront.**
- **Provision of better recreation opportunities for residents.**
- **Town residents would prefer new industry to be "clean".**

6.6 Brunswick County CAMA Core Land Use Plan **(Certified 11/20/07)**

Brunswick County's CAMA Land Use Plan addresses the county's policies regarding the Coastal Resource Commission's management topics for land use plans. The document sets guidelines to assure that development and land use proposals are consistent with the management goals, planning objectives, and land use requirements of the plan. It emphasizes the conservation-related policies of public access, conservation, stormwater control, natural hazard

areas, water quality and cultural, historical and scenic areas. The plan supports the principles of Smart Growth in determining the direction of growth for Brunswick County. Most notable to the blueway project is Brunswick County's support for a tourism strategy that capitalizes upon the area's unique natural and scenic resources. Specifically, the county desires to avoid the congestion and garish visual blight often associated with more urban or entertainment-oriented tourist destinations, and to promote eco-tourism as a way of enhancing traditional tourism which is consistent with the North Brunswick Blueway vision. The management policies and implementation actions relevant to the North Brunswick Blueway are quoted from the plan in Appendix C (Holland Consulting Planners, 2007).

Chapter 7: Other Planning Efforts

This chapter illustrates the regional planning efforts that provide supporting links for the North Brunswick Blueway. These supporting links include existing and future paddle trails, future greenways, potential educational material and sites, and ongoing conservation efforts that parallel the blueway's vision and goals. Ultimately, these links can be combined to form a collaborative effort for the entire region.

7.1 Cape Fear Paddle Trail

The Cape Fear Paddle Trail runs from Fayetteville beginning at the J Bayard Clark Park and travels through the coastal plain ending at Southport. The beginning of the trail is broad and lined with forests and ends in the coastal estuaries. Three locks and dams exist along the trail which require portage and are managed by the US Army Corps of Engineers. The portions of the river from Wilmington to Southport are strongly influenced by the tides. This section is also commercialized being heavily utilized by large, ocean-going vessels that enter and exit the state port. However, the area is very wide with room for both commercial and recreational boaters

provided that caution is used. A paddle trail along the Brunswick River would be a nice extension to the Cape Fear Trail offering a quieter and more serene experience. A copy of the paddle trail map is attached in Map 1.

(http://www.ncsu.edu/paddletrails/southerncoast/sc10.html)

7.2 East Coast Greenway

The East Coast Greenway is a 3,000 mile urban, shared-use trail system along the eastern seaboard stretching from Calais, Maine to Key West, Florida. The complete trail system will link 25 major cities by connecting to existing and planned trails and will incorporate 2,000 miles of alternate routes that link key cities, towns and natural areas. The trail ties in park paths waterfront esplanades, canal townpaths, abandoned railroad corridors, and highway corridors. The trail will be accessible to non-motorized users of all abilities and ages. The trail known as the Green Travel Corridor will provide users such as walkers, cyclists, and other non-motorized transportation modes a low-impact way to explore the eastern seaboard.

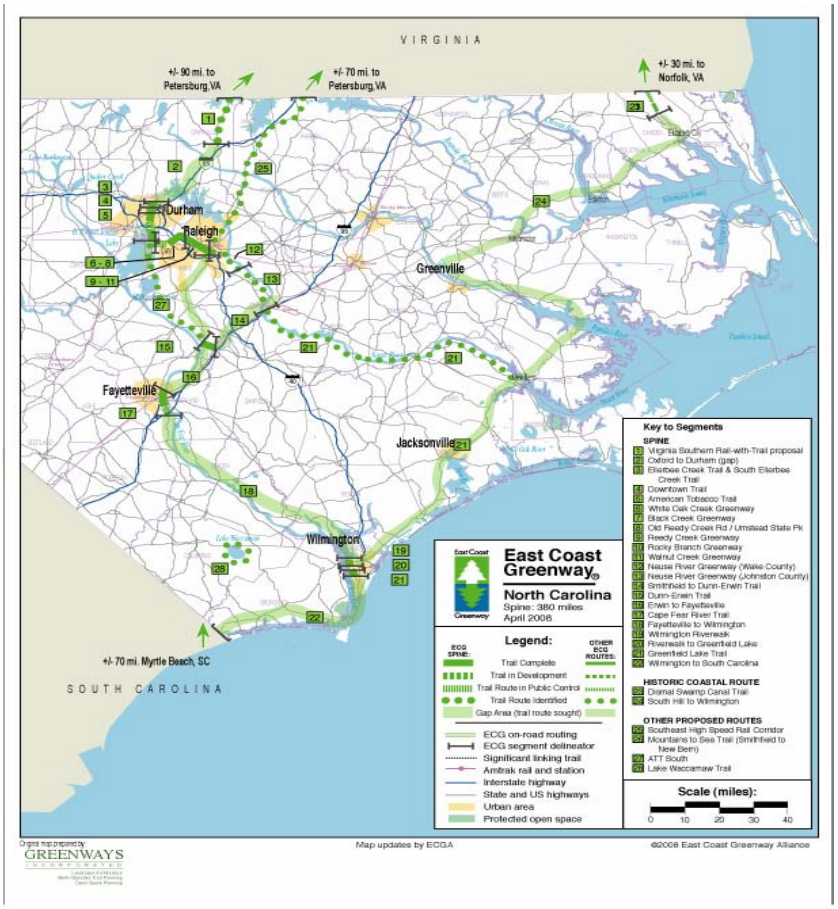


Figure 10 : **Map of East Coast Greenway**

(http://www.greenway.org)

In Wilmington, the primary trail corridor runs along the east side of the Cape Fear River and proceeds through the city. Some of trail segments around Wilmington are already completed or are underway. Trails on the Brunswick River along the west side of Eagles Island that pass along the shorefronts of Navassa, Leland and Belville would provide a nice respite from the more commercialized Wilmington side of the Cape Fear river. This area is off the beaten track and provides a quieter recreational experience with the opportunity to explore the towns of Navassa, Leland and Belville that sit along the river's banks. (http://www.greenway.org)

7.3 Brunswick County Greenway Plan

Since 2002, Brunswick County has been developing a Greenway/Blueway Master Plan. The plan is currently in the review process. The major goal of the Plan is to connect Brunswick County to the East Coast Greenway. The plan provides for additional parks, recreational areas, and water access points and will be a multi-modal (boat, bike and pedestrian) trail.

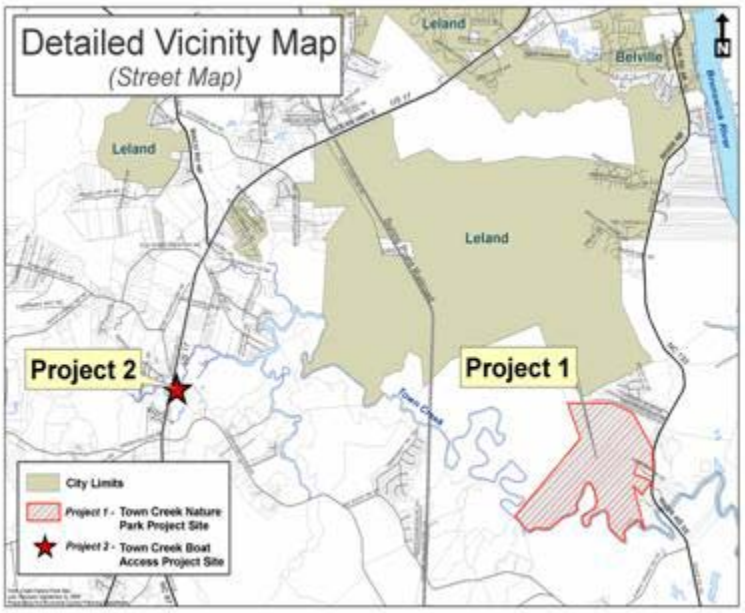


Figure 11: Brunswick County Greenway Plan

The proposed location is between the Brunswick Nature Park off highway 133 to the area of Leland just south of highway 133. The Greenway Plan originally entailed two blueway projects. However, Project 2 was removed due to lack of funding. The county was awarded two grants from the North Carolina Public Beach and Waterfront Access Program (NCDENR) which initiated the program.

The awards totaled $517,280 (grant and local match) to construct two canoe/kayak launch ramps for the Town Creek Nature Park (Project 1). Project 2 was planned for the Town Creek Access site. Both project sites are located off US 17 and NC 133 which are major growth corridors. Town Creek is also designated as a vital location that will provide connectivity to Brunswick County's proposed Greenway/Blueway Plan (K. Dixon, personal communication, October 2, 2009).

Brunswick County's development of a county greenway plan further demonstrates support from local elected officials for the creation of blue trails. The North Brunswick trail segment will create a nice extension to the already existing plan, allowing paddlers to explore further reaches of the river.

7.4 Brunswick Nature Park

The park consists of 911 acres of undeveloped wilderness located along Town Creek and just off River Road (NC 133), a major growth corridor. The area is abundant in natural beauty consisting of a dynamic mix of wildlife, vegetation, vistas, ecosystems, wetlands and waterways. The site location is the result of a 2003 shoreline access plan that designated the creek as a high priority site for the development of a regional nature park with water access. The park provides a crucial link to other sites. In addition, The Brunswick County Greenway/Blueway Plan identifies Town Creek as a prominent location that will provide connectivity to the Brunswick County Greenway/Blueway network along Town Creek. Design of the Park is governed by a strict conservation easement and memorandum of understanding between the North Carolina Clean Water Management Trust Fund and Brunswick County and is held by the



Figure 12: Brunswick Nature Park

North Carolina Coastal Land Trust. The key components included in the Master Plan for the Nature Park include:

- Horse Trails - 6.5 miles
- Hiking Trails – 5.0 miles
- Biking Trails – 5.0 miles
- Boat Access (canoe/kayak)
- Boardwalks through environmentally sensitive areas
- Viewing platforms/overlooks
- Bird Watching Blinds
- Picnic Shelter
- Restrooms
- Parking Areas
- Horse Trailer Parking Area
- Access Roads



Figure 13: **Brunswick Nature Park**

This use of this 900 acre site as a nature park shows a commitment by the county to eco-tourism and nature based recreation. The park will serve as the southernmost extension of the North Brunswick Blueway offering paddlers a variety of nature based activities and attractions. A map of the master plan is attached as Map 2 (BSC Rice, 2007).

7.5 Brunswick County Historical Review

Brunswick County is currently conducting a comprehensive historical survey that will create an inventory of the major historical sites and places throughout the county. This project started in September 2009 and is expected to be completed in June 2010. The Town Creek area

is included in the survey as it is rich in historical significance. History links the area to rice fields and as a popular drop for boats. Remnants of these boats can still be seen among the creeks and rice canals and one of the kayak/canoe trail routes runs along one of these rice canals. The Brunswick Nature Park is not a part of this survey. However, a site visit was conducted by the NC State Office of Archeology prior to starting the development of Phase I of the Nature Park. The visit indicated that Tarheel mounds are located on the site and any future development will be required to go through the State Office of Archeology. The State's office only looks at areas that are proposed for development (K. Dixon, personal communication, October 2, 2009).

Brunswick County plans to use the survey results as a resource to help guide the development and routing of future Greenway and Blueway trails especially those sites that are open to the public. Other resources that will help guide Brunswick County's Greenway/Blueway trail development include tourism sites (museums, parks, water accesses, ferry system), natural resources (beaches, rivers, creeks, etc.) major destinations (towns, shopping), transportation system, and population distribution/density. The historical review can provide valuable information to accompany the blueway's educational component by assisting in determining where historical signage will be placed and the composition of the educational material to be included (K. Dixon, personal communication, October 2, 2009).

7.6 Cape Fear Arch Conservation Area & Plan

The Cape Fear Arch Collaboration is a partnership of organizations and individuals with the purpose of protecting the region while balancing the needs of man and nature. The partnership stems out of concern over the rampant growth in the Cape Fear Arch region that poses a threat to the natural resources of the area.

The Arch region is located between Cape Lookout in North Carolina and Cape Romain in South Carolina and extends as far inland as the Sandhills Region. With the exception of Florida, it is considered the most biologically diverse region north of Florida and has an unusual geology that distinguishes it from other areas of the coastal plain. The Arch region boasts a wide assortment of plants and animals many of which are not found anywhere else in the world.



***Figure 14*: Venus Fly Trap**

The most notable elements mentioned in the conservation plan that are relevant to the blueway project (aside from the protection of valuable resources) pertain to the abundant educational, tourism, and recreational opportunities within the Arch region. According to the plan,

- "22 plants and 19 animals are considered endemic (specific to a site or region if it occurs nowhere else but at that site or region) to the Cape Fear Arch region.
- According to Hall and Schafale (1999), "the Southeast Coastal Plain of North Carolina is an area of particularly high biodiversity of the 17,601 occurrence records of the National Heritage Program element species communities, more than 3,757(21%) are from this area. These element occurrence records represent 298 different species including
    - 19 species listed as endangered or threatened by the federal government and
    - 63 that are included on the corresponding state lists of protected animals and plants." (Cape Fear Arch Conservation Collaboration, 2009, p.11)

Also of significant importance to tourism and recreational opportunities is that the coastal plain eco-region is ranked among the top 10 in the continent for reptile, bird and tree species by the NC Wildlife Action Plan (www.ncwildlife.org). The plan notes that the region is particularly

diverse in bird species due to the fact that North Carolina lies at the northern end of the range for southeastern breeding species and the southern end of the range for numerous northern breeding species. These unique characteristics create an array of activities for nature enthusiast and offer a unique character to the North Brunswick Blueway project. A map of the Arch region is attached as Map 4. (Cape Fear Arch Conservation Collaboration, 2009)

7.7 Eagle Island Conservation and Eco-Tourism Effort

Eagles Island is located at the confluence of the Cape Fear and Brunswick Rivers between the bridges that connect the Wilmington riverfront and the Town of Leland in Brunswick County. The Cape Fear River runs along the eastern and northern sections of the island while the Brunswick River flows along the western side beginning at the railroad bridge within the Town of Navassa and then joins the Cape Fear River at the southern end. The island is comprised of uplands, marsh and aquatic habitat which total approximately 3,110 acres. The New Hanover Soil and Water Conservation District in partnership with the Cape Fear Resource Conservation and Development Council (RC&D) leads the conservation effort to preserve the island for education, ecotourism and resource management while permitting the traditional uses of hunting, paddling, and fishing. Approximately 500 acres have already been placed in conservation and the RC&D is pursuing grant funding to add an additional 258 acres (Land Management Group).

A Chronological Inventory of Eagles Island was prepared by Land Management Group for the District. The inventory is a compilation of historical and cultural significance, environmental resources of the island, discussion of two Significant Natural Heritage Areas (SNHAs) and considerations for future management. The most notable management considerations relevant to the Blueway project include support for educational and ecotourism

components located on the island. The particular site locations and component descriptions are listed in Appendix D.

7.8 Gullah/Geechee Cultural Heritage Corridor

The Gullah/Geechee Cultural Heritage Corridor is a part of the National Park Services' National Heritage Area Program created to recognize the contributions of the culture and history of the Gullah/Geechee communities. In 2004, The National Trust for historic preservation included the Gullah/Geechee culture on its annual list of most endangered resources. The corridor includes over 12,000 square miles of coastal regions from Jacksonville, Florida to Wilmington, North Carolina and was established in 2006 by Congress as a result of a special resource study conducted by the National Park Service to determine ways to preserve the culture from encroaching development. The legislation established a commission which is charged with developing and submitting a management plan to the Secretary of the Interior. The plan is currently in the development stage which involves planning for and implementing interpretation and preservation opportunities, identifying important resources, and seeking partners and funding. Educational signage along the corridor will offer citizens and visitors another great resource to learn about American Culture and will tie in well with the vision of the North Brunswick Blueway (http://www.nps.gov/guge/index.htm).



Figure 15: **Map of the Gullah/Geechee Cooridor**

Chapter 8: Recommendations

Adopt a Blueway Plan
Define Organizational Structure
Identify and Commit Funding
Acquire Land for Future Development
Determine Trail Design and Development
Determine Liability Insurance Coverage

8.1 Adopt a Blueway Plan

The first step towards implementation is for the local governments to incorporate routing for the paddle trail/blueway into their comprehensive, parks and recreation and growth management plans. Incorporating a blueway system into comprehensive plans provides the necessary elements for local governments to move forward with implementation. First, it assures that necessary land and water resources will be reserved for a healthy blueway system. Second, it requires that future land use activities consider the blueway related facilities development. Third, incorporation into community land use plans provides the legal and financial basis for local governments to pursue trail development. Finally, it furthers a community's goal of increasing recreational facilities by strengthening a local government's chances of receiving grant funding for projects (Greenways, Inc., 2004).

In addition, it may be necessary for local governments to amend or revise zoning ordinances, land development codes and other policies and procedures that allow for blueway development to occur. Each local government must be fully engaged in properly evaluating the changes that are required for implementation and to act on making these changes, amendments and policy decisions as soon as practically possible (Greenways, Inc., 2009a). Greenways, Inc.,

a consulting firm based in North Carolina, has identified in various comprehensive project plans, suggestions of potential areas for revisions which include:

- "Review and amend zoning and land development codes
- Review and amend floodplain ordinances to limit construction in flood prone landscapes
- Review and amend zoning and land development codes to protect riparian zones
- Review and amend current open space and park land dedication requirements along with fee-in-lieu programs." (Greenways, Inc., 2009a, p46)

8.2 Engage Stakeholders and Build Public Support

It is important to include all stakeholders from the very beginning of the process in order to provide them with a sense of ownership and involvement in the planning process. Conducting an initial meeting that brings stakeholders together can provide a forum for the exchange of ideas and lead to increased public suppport. A list of suggested stakeholders and partners is attached in Appendix F.

Building public support for the blueway is imperative for a successful project. Community involvement is essential in protecting the resource as well as promoting the area as an established paddling destination. Forming a "Friends of the River" association or a citizens advisory committee creates an advocacy group that can promote the plan and serve as a voice for the public. In addition, hosting a trail opening event such as a "Mayor's Cup" or "Commissioner's Cup" on the completed trail segment can draw attention to the water trail and spark public interest and participation. Continued annual events such as a "Big Sweep" designed to collect trash and debris in the river and its corridors provides an ongoing method of engaging the public and providing revenue for the local communities.

8.3 Define Organizational Structure

Establish a Formal Agreement

In order for efficient management and development of the blueway, a formal agreement should be established among the participating jurisdictions. A written Memorandum of Understanding (MOU) formalizes local governments' commitment to the development of the blueway and for the protection and maintenance of the river as a valuable resource for the entire region.

Establish Central Coordination

The next step is to establish some form of central coordination. This can be accomplished by either holding regularly scheduled meetings, establishing an advisory committee or hiring a river coordinator. Grant funding may be available for a permanent coordinator position. The Haw River Trail received an award from the Z. Smith Reynolds Foundation that initially paid for a coordinator position for the first three years. The position is now jointly funded by all local governments involved in the river trail. (B. Baker, personal communication, October 2009).

Non-profit management of the river provides an alternative management form. The Roanoke River Partners is the first private system of its kind in the nation and their website (http://www.roanokeriverpartners.org/AboutRRP.htm) provides valuable resources regarding this type of management structure.

Establish maintenance duties

Maintenance of the trail is dependent upon the type of management system that is chosen for the particular trail. Local government management of the trail system provides that each municipality is responsible for the trails and the access sites that fall within their jurisdiction. The county is responsible for those sites falling under county jurisdiction. Maintenance does not

necessarily require the hiring of new employees. The tasks can be worked into the regular duties of the parks and recreation employees' schedules. Volunteers and non-profits can provide supplemental management to report issues and concerns as well as help with trail maintenance. However, it is highly recommended that a formal maintenance plan detailing specific duties be implemented and that the ultimate responsibility for managing the blueway rest with local governments. (B. Baker, personal communication, October 2009)

8.4 Identify and Commit Funding

The project should seek local, state, federal and private money to help with land acquisition, development and management of the trail system. In general, it is necessary to establish a source of local funding as grants often require a substantial local match. Typically, grants require that these pledges or commitments be in writing. Solicitation of municipal governments, corporations, and individuals may be required to raise these funds. It may also be necessary for local governments to appropriate funds in their annual operating budget although the funds may also be generated from private sources. Many opportunities exist to establish funding over an extended period of time to assist in capital improvements. A compilation of grant funding opportunities for the blueway project are listed Appendix M. It is also recommended that stakeholders seek a technical grant from the National Park Service Rails, Trails and Conservation Assistance program (RTCA).

8.5 Acquire Land for Future Development

In order to assure the ongoing development of the Blueway project it is necessary to identify and purchase land for potential access sites. Determining possible sites involves prioritizing land into categories that include municipally owned property, conservation lands (i.e. Nature Conservancy property), wildlife lands and major land holders (i.e. Timber Companies,

Developers). Prior to seeking grant funding, it is recommended to determine the level of landowner support for an access site location on their property. The most common forms of landowner support for the project include a verbal commitment, a written commitment such as a letter of support, or a right of first refusal. This allows communities a greater chance for meeting funding eligibility. Partnering with local land trusts and the State of North Carolina can help procure the acquisition process. Land trusts can offer assistance in negotiations with property owners and conduct the closing process. Some common types of land acquisition strategies include donation, bargain sale, fee simple purchase, easement, zoning/development regulations, developer contributions, abandoned rail corridors and eminent domain.

In addition to acquiring sites for public access to the river, it is also important to consider conservation easements and riparian buffers for the protection of the river's water quality as well as for scenic and aesthetic appeal. Generally, it is not desirable to have numerous docks, piers, houses or built structures within view of the river. This allows a community to achieve a nature based experience that many paddlers and tourists seek.

8.6 Trail Design and Development

Determine Target Audience

Identifying the type of trail experience the Blueway will offer is important in determining the number of necessary access sites and facilities. The type and number of visitors is important to consider when designing the trail. A trail with numerous access points will generally attract day users and novice paddlers while few access points provide a longer paddling experience. Long distance paddling generally attracts paddlers seeking an expedition type experience and the desire for overnight camping. A "loop" water trail is more conducive to recreational paddlers

and families and those who prefer not to deal with transportation and shuttling services. (Johnson, 2002).

These are important considerations when determining the economic impact of the Blueway. Destination trips which consist of an overnight excursion of two or more days to an area that offers other attractions, amenities and visitor services have a greater economic impact than do day trips in which a visitor stays less than six hours in a community (Johnson, 2002). Expedition type excursions often include overnight camping along the trail. The Roanoke River offers this type of experience with 20 ft by 20 ft camping platforms situated on the river that are available for rent. This type of camping experience is a possible consideration for the North Brunswick Blueway, contingent upon CAMA and Corps permitting, and should be pursued further.

Trail and Facility Construction/NCDENR Trail Development Standards

Different levels of trail development exist. NCDENR has State Trails Standards for Paddle Trails Access Sites for projects seeking NCDENR designation. The standards consist of five levels of trail development. They are Level I (Minimal/Undeveloped), Level II (Simple/Minor Site Development), Level III (Developed/Improved Site), Level IV (Highly Developed Site), and Level V (Fully Developed). Although the NCDENR trail development standards have not yet been formalized, it is recommended that communities seeking NCDENR funding follow these guidelines. Currently, NCDENR is utilizing the Haw River Trail as a "road test" for these standards. The NCDENR trail standards and trail level development requirements are attached in Appendices G-L for further consideration in the North Brunswick trail development. (http://www.ncsu.edu/ncblueways/ncblueways_standards.html)

Another important consideration in trail design is security. According to Greenways, Inc., trail design can incorporate Crime Prevention through Environmental Design (CPTED) which entails well-placed lighting, wide-open spaces along the trail, clearing of underbrush, and easily accessible trail heads. Regular patrols by uniformed officers warn people that the trail is being watched. Volunteers can also provide supplemental patrols by reporting any issues or alarming activity. In addition, law and emergency enforcement officials should be consulted regarding trail security design as well as to notify them that they need to prepare for enforcement of the trail segment (Greenways, Inc., 2009).

Liability Insurance/Recreational Statutes

Liability insurance is an important consideration for access sites located along the Blue Trail. Liability issues can be handled in several ways and depends on the type of management and access permission acquired. Management can be handled by a non-profit that has its own liability insurance. Local governments that own access sites in fee simple and retain management responsibility can be covered by the government's general liability policy. For sites that only obtain an access easement across a landowner's property, recreational statutes provide some liability coverage for the landowner. The North Carolina statute is similar to the duty of care a landowner owes to a trespasser. The recreational statute can act as an umbrella, however the county or local governing body may need to offer additional insurance coverage for the landowner in case of legal litigation. The Haw River Paddle Trail has this dual protection coverage. In addition, it may also be necessary for organizations that are hosting a paddling event to obtain additional liability insurance. Ultimately, it is important to consider liability coverage and seek legal counseling prior to providing access to the public.

8.7 Grant Funding Sources

Collaboration is crucial to obtaining grant funding. The coordination of efforts results in effective management decisions and ultimately demonstrates a greater potential for overall project success. A common vision and strategy can more effectively target the efforts and goals of partners and funders. Potential grant funding sources are listed in Appendix M.

APPENDICES

Appendix A: Town of Leland Master Plan Relevant Excerpts
Appendix B: Town of Navassa 1999 Land Use Plan Relevant Excerpts
Appendix C: Brunswick County CAMA Core Land Use Plan
Appendix D: Eagles Island Future Management Considerations Relevant Excerpts from the Chronological Inventory prepared by Land Management Group
Appendix E: Potential Access Sites
Appendix F: Suggested Stakeholders and Partners
Appendix G: NC DENR State Trail Standards for Paddle Trails
Appendix H: NCDENR Trail Standards Level I: Minimal/Undeveloped
Appendix I: NCDENR Trail Standards Level II
Appendix J: NCDENR Trail Standards Level III
Appendix K: NCDENR Trail Standards Level IV
Appendix L: NCDENR Trail Standards Level V
Appendix M: Grant Funding Sources

APPENDIX A

Town of Leland Master Plan Relevant Excerpts

S-1 Preserved Open Space

This sector represents the community's "green infrastructure" intended to provide critical habitat for wildlife, protection of water quality and protection from flooding and erosion and recreation areas for citizens. It is comprised of non-developable land, including agricultural lands and woodlands, wildlife habitats, critical wetlands, exceptional wetlands with riparian buffers, floodways with riparian buffers, existing parks and conservation easements.

The designated appropriate land uses for this sector include:

- conservation areas,
- parks and greenways,
- agricultural and forestry uses,
- water access areas, and
- limited civic uses such as schools.

S-2 Reserved Open Space

The framework plan designates this sector for "land areas that are prime candidates for moving into the S-1 Preserved Open Space sector through conservation easements or other open space acquisition protection methods." These areas are designated for light development to undeveloped (which is defined by the plan as remaining in a rural or natural state.) Examples include important agricultural land, floodplains and certain kinds of wetlands. Appropriate Designated Land uses for this sector include:

- conservation areas,
- parks and greenways,
- agricultural and forestry uses,
- limited civic uses such as schools,
- very low-density residential development and clustered development (no greater than 1 dwelling unit per 5 gross acres.)

Supporting language for conservation measures associated with blueways is found in the "framework plan's" recommendations for environmental considerations. These recommendations include:

- Increasing minimum riparian buffer widths
- Enhancing minimum open space requirements
- Prohibiting development in the 100 year floodplain
- Encouraging infill in developed areas

APPENDIX B

Town of Navassa 1999 Land Use Plan Relevant Excerpts

Section 2: Resource Protection Policy Statements

a.) Resources Protection (page 50)

"2(a)(1): Navassa's policy is to preserve, protect and enhance the area's natural resources because the quality of our environment is an important ingredient in our overall quality of life, including our potential for expanding economic growth." (page 50)

"2(a)(2): Protection of our natural resources shall be pursued in a regional context, with area-wide planning through a political process that favors long term goals over short term interests and provides accountability for the implementation of the goals and policies stated herein." (page 50)

"2(a)(3): To support all resource protection efforts and to encourage the acquisition of land parcels with a high resource value by the state of NC or area land trusts." (page 50)

b.) Constraints to development

"2(b)(3): … to minimize development and to encourage low intensity land uses (i.e. open space and/or recreational type uses) in areas subject to natural or man-made hazardous conditions." (page 50)

c.) Appropriate uses in Areas of Environmental Concern

"2(c)(4): Public trust areas "also support recreational fisheries, waterfowl hunting, tourism, and are also a sign of significant aesthetic value. Public trust waters give the community an essentially untapped resource which with careful management, may well be a valuable asset in helping to provide additional recreation resources for the Town in the future." (page 50)

o.) Marina and floating home development

"2(o)(4): the Town encourages the safe use of canoes and kayaks on the Brunswick River and Sturgeon Creek." (page 59)

Section 4: Economic and Community Development Policy Statements

i.) Tourism

"4(i)(1): In the future, travel and tourism could become more significant to Navassa and could contribute significantly to the Town's economic base. Navassa policy is to support the promotion, development and expansion of area travel and tourism facilities." (page 70)

"4(i)(3): The Town of Navassa strongly supports tourism. The Town recognizes tourists as vital and important part of the economy of the region and the state." (page 70)

j.) Public beach and waterfront access

"4(j)(1): It is the policy of Navassa to continue to provide access to public trust waters, through the development and redevelopment of parks and boat launching areas. Development and redevelopment shall be consistent with the need to protect the area's natural resources. Navassa will, in the future, seek financial assistance from state and federal sources to support the development, and/or expansion, of parks and recreational facilities in appropriately sited locations." (page 71)

"(4)(j)(4): …to support beach and water access projects within Brunswick County and throughout coastal North Carolina." (page 71)

k.) Recreational services

"(4)(k)(1): The Town supports the exploration, assessment and development of estuarine access opportunities for the public to enjoy." (page 71)

"(4)(k)(2): The Town will seek County, State and Federal funds to expand both passive and active park and recreational lands and public water access (including Davis Creek Access)." (page 71)

Section 10: Intergovernmental Coordination and Implementation

1.) "Navassa will continue to cooperate and strive to become even more involved with Brunswick County and other Municipalities within the Cape Fear Region. Many of the issues Navassa must confront will often effect populations similar to its own. " (page 84)

2.) "The integration of strategies employed by other local governments will not only provide experience and guidance, but also a more cost effective means of accomplishing many of the tasks that will befall the Town." (page 84)

3.) "It is realized a need for continuity in the decisions of area local governments, a similarity of purpose for the betterment of the region of north Brunswick County, which will be in the best interest of all parties." (page 84)

APPENDIX C

Brunswick County CAMA Core Land Use Plan

B.) Public Access:

"a.) Management Goal: Brunswick County and its participating municipalities will maximize public access to their shorelines and public trust waters….Goals includes developing facilities for additional public beach and coastal waterfront access, particularly access to creeks, rivers and sounds of the county for both pedestrian and boating traffic." (Sec 6, Page 23)

Policies - Public Access

"P.4 Additional public beach and coastal waterfront access facilities are desirable, especially those accommodating small, motorized boats, canoes, kayaks, and other recreational vehicle uses….Should include boat ramps, fishing piers and observation decks, and provide limited parking and restroom facilities." (Sec 6, page 24)

Implementing Actions – Public Access

"I.3 Brunswick County and its participating municipalities will pursue private sources of funding for the development of shoreline access facilities, including donation of land." (Sec. 6, page 24)

Policies – Conservation

"P.25 Brunswick County will preserve/protect wetlands and swamps from development pressures." (Sec 6, page 32)

"P.26 Brunswick County will protect water quality of its streams and rivers." (Sec 6, page 32)

"P.27 Brunswick County will support beach municipalities in maintenance/protection of beaches as a valuable natural resource as well as protecting shorelines under County jurisdiction." (Sec. 6, page 32)

"P.28 Brunswick County will support educational programs on the importance of preserving wetland areas." (Sec 6, page 32)

"P.29 Brunswick County supports increasing usable open space in major subdivisions." (Sec 6, page 32)

"P.30 Brunswick County supports forestation to maintain key wildlife areas." (Sec. 6, page 32)

"P.32 Brunswick County is one of most biologically diverse areas of NC County shall take no action nor approve of any action which would seriously or irreparably harm the long-term biodiversity and productivity of the area."(Sec. 6, page 32)

Implementing Actions – Conservation

"I.33 In order to protect wetlands, Brunswick County will implement the following programs:

1.) Develop a "Nature's Classroom Program" in our public school system for wetlands education.
2.) Coordinate the wetlands education program with Brunswick County Community College, UNCW, and other universities.
4.) Create trails and access into natural areas and wetlands
5.) Expand the program that cooperates with schools from the mountains and piedmont to plan for weekend "Eco-Camps" for students to visit Brunswick County."
6.) Work with NC Cooperative Extension 4-H to create state-wide high school program for "eco-education projects."

"I.34 Brunswick County and its participating municipalities will preserve open space through implementation of its UDO."

"I.35 In order to assist in protecting wetlands, Brunswick County will accomplish the following:

Educational- (4) Host international meetings with environmental groups to better coordinate ecotourism and other conservation efforts." (Sec 6, page 35)

"I.38 Establish a regional ecotourism board and link with Brunswick County resources to unify interests of different groups across the Cape Fear region." (Sec 6, page 35)

"I.43 Through the development process review, the diversity of wildlife in Brunswick County shall be preserved and enhanced through protection of the unique coastal ecosystems including marshes, woodlands, open fields, and other areas upon which they depend."(Sec.6, page 36)

Policies – Economic Development

"P.113 Brunswick County will support a tourism development strategy that capitalizes upon the area's unique natural and scenic resources, specifically avoiding the congestion and garish visual blight often associated with more urban or entertainment-oriented tourist destinations." (Sec. 6, page 56)

Implementing Actions – Economic Development

"I.107 Promote ecotourism to enhance traditional tourism." (Sec. 6, page 56)

"I.114 Brunswick County supports: Incorporating the recommended Town of Belville Master Plan prepared by the Lawrence Group, to be approved in 2007 by Belville Board of Commissioners." (Sec. 6, page 58)

APPENDIX D

Eagles Island Future Management Considerations
Relevant Excerpts from the Chronological Inventory prepared by Land Management Group

6.) **Rice Culture Demonstration Project**:

- Project location is recommended for the Creech tracts because the rice fields and ditches are still intact. (page 58)

- The Inventory suggests a demonstration project with a wooden gate replica and narrative explaining how rice workers used it in conjunction with the ebb and flow of the tides. (page 58)

- Recommendation for a lecture stand about rice culture to be placed on the western portion of McIntyre spoil island. It is recommended that the stand be raised 20 feet in height which would overlook most of the Creech rice fields. (page 58)

7.) **Historic – Ecology Walking Tour**

- "It is recommended that a walking tour from the battleship across US highway 421 to the Prevatte parcel, up a hiking trail to the tidal lake, and back to the battleship would provide an educational experience for the public." (page 58)

- "Historic markers and habitat signs along the way could highlight information from this Inventory." (page 58)

- "New Historic Markers along the Leland to Wilmington Causeway where traffic slows can educate the public about the history of the island." (page 58)

10.) **Ecotourism Map and Paddle Routes**

- The inventory recommends a map of the creeks and rice ditches on Eagles Island prepared with approximate water depths based on mean low water conditions to ensure safe navigation. (page 59)

- Kayak/canoe races are recommended to attract attention to the unique resource. (page 59)

APPENDIX E

Potential Access Sites

The following access sites are those recommended in the Town of Leland Parks, Recreation and Open Space Plan prepared by Wilbur Smith Associates dated August 2008. They include:

1.) **159 S. Navassa Road (1 acre)**: The site is located just south of Sturgeon Creek on the west side of Navassa Road. It is adjacent to the road but not to the water. Purchasing the adjacent parcel in the floodway to allow for the construction of a dock to the creek edge is recommended per the Recreation and Open Space Plan.

2.) **Jackey's Creek Place (117 acres)/Westgate Nature Park**: This site is adjacent to the creek and extends westward from the Brunswick River beginning at River Road and extending westward to near Coral Stone Street, incorporating the undeveloped floodplain north of the creek. The town is currently accepting public comments and input on the master plan. The conceptual master plan dated 8/26/09 and revised 9/30/09 includes:

- Bathroom facilities
- Picnic shelter
- Bicycle/Trail connections
- Trail connections outside of the project links
- Paved trails
- Sidewalks
- Boardwalk trail and
- Outdoor classrooms

3.) **North Brunswick High School Area:** Development of a trail head near the high school is recommended by the Parks, Recreation, and Open Space Plan as it could easily tie into other trail connections located nearby.

4.) **Village Road Enhancement:** The plan recommends the elevation of Village Road bridge over Sturgeon Creek to allow for a greenway and paddle trail undercrossing of the roadway in conjunction with the road enhancement project.

5.) **Sturgeon Creek:** The PR&O plan recognizes the creek as "one of the most outstanding features in the northern section of Leland which lends itself to the development of a blueway and paddle trail to its junction with the Brunswick Creek and existing paddle trails." This area may be suitable for overnight camping for regional paddle trail visitors.

6.) The Plan recognizes Sturgeon Creek as a valuable area in terms of natural resources and recommends additional acquisition of parcels along the tributary to Sturgeon's Creek to allow for development of a path connecting the Town Hall Park to a creek trail system.

The following are potential access sites determined from a review of local land use plans and the Brunswick county land records:

7.) **Blackwell Road Area (Belville):** 120 acre tract with a high percentage of wetlands located on the site. Vision 2020 plan recommends this site as a good location for a nature preserve. The site is suitable for boardwalks and trails to traverse through the terrain. The plan recommends using wetlands mitigation bank credits to purchase the site. Information for this program can be obtained through the NC Ecosystem Enhancement Program at http://www.nceep.net. It is not clear if this site is located adjacent to any stream corridors.

8.) **Riverfront Village (Belville):** Conceptual plan for the old downtown area located east of highway 133 (River Road) in the Vision 2020 Plan developed by the Lawrence Group, dated September 2007 recommends establishing piers extending from a boardwalk along the river within the village to maintain public access. The plan suggests that these piers be combined with a public marina contingent on CAMA and the Army Corps of Engineers permitting. A kayak/canoe access site in this general area would allow paddlers with easy access to explore the downtown area.

9.) **Parcel # 0240000102, (#59 per GIS map), Navassa, Wilmington River Club, owner:** The parcel consists of 899.05 acres located adjacent to the Indian Creek, Mill Branch and the Cape Fear River north of Eagles Island. Road corridors adjacent to the site include Cedar Hill Road to the west and Royster Road which traverses the southern portion of the property. The landowner has tentative plans for marina and residential development and has communicated a verbal interest in a kayak/canoe launch site to be located on the property. The Brunswick County GIS map indicates a portion of the property is Riverine Swamp Forest.

10.) **Parcel # 01700053, (#68 per GIS Map), Navassa, Daniels Road Mulberry Land Company, Owner:** This site consists of 1,057 acres. It is located on both sides of Daniels Road and situated north of and adjacent to Indian Creek. The landowner has indicated plans for residential homes and a verbal interest for kayak/canoe access sites to be located on the property.

11.) **Parcel # 01700091, (#71 per GIS map), Navassa, Dupont, E I De Nemour, Owner:** The site consists of 22.56 acres and is situated on the northeast side of Mt. Misery Road. It is also adjacent to Cherry Tree Prong which runs off of Indian Creek to the west of Daniels Road. The Town of Navassa currently has a 30 year lease for a park.

12.) **Parcel # 0110000101 (#72 per GIS map), Navassa, Dupont, E I De Nemour, Owner:** The site consists of 1,406 acres.

13.) **Parcel #0290013101, (#84 per GIS Map), Navassa, Navassa Land & Development, LLC, Owner:** A 32.7 acre site located to the south of parcel #02900131 also owned by Navassa Land & Development, LLC. It sits adjacent to Mill Creek on the north. The parcel appears to be landlocked except for access across parcel #02900131. The owner has indicated a verbal interest in kayak/canoe access sites.

14.) **Parcel #02900131, (#84A per GIS Map), Navassa, Navassa Land & Development, LLC, Owner:** Parcel consists of 31.42 acres and is located directly north of and is contiguous to parcel # 0290013101. The parcel is located adjacent to Church Street which runs off of Main Street. This site is not adjacent to Mill Creek. The owner has indicated a verbal interest in kayak/canoe access areas.

15.) **Parcel #03800025, ("A" per GIS map), Leland, New Hanover Soil & Water Conservation District (C/O Town of Leland), Owner:** The parcel consists of 158 acres and is located on Eagles Island adjacent to the Brunswick River. Redmond Creek runs along the eastern portion of the property. The property has already been placed in conservation by the owner.

16.) **Parcel #03000011, ("B" per GIS map), Leland, Blue Sky Timber Properties, LLC, Owner:** This site consists of 239 acres located across a canal from parcel #0380025("A"). It is located adjacent to the Brunswick River and to the west of Redmond Creek. The New Hanover County Soil & Water Conservation District currently has a contract to purchase on this site and is presently seeking grant funding to complete the transaction.

17.) **Parcel #03800025, ("D" per GIS map), Leland, New Hanover County Soil & Water Conservation District (C/O Town of Leland):** A 158 acre parcel situated to the east across a canal from parcel #03800025 ("A"). Redmond Creek runs along the eastern boundary of the property.

18.) **Parcel #03900002, ("H" per GIS map), Leland, New Hanover County Soil & Water Conservation District, Owner:** This is a 53 acre site located next to a wetland mitigation site owned by the NC Department of Transportation. Brunswick County GIS indicates that a Depressional Swamp Forest is located on the site. The site may provide the end of the eastern trail route on Eagles Island for paddlers to explore.

The following parcels contain sizeable acreage and/or are owned by a major landholder or are part of the *NCCLT Town Creek and Lower Cape Fear Initiative.* All of the parcels do have water access.

19.) **Parcel # 05900006 (#13), Scarlet Lipscombe, Trustee, Owner:** Contains 1,211 acres.

20.) **Parcel #0720000501(#14), Rachel Pickett Pace et als, Owner:** Contains 167.59 acres. This parcel is in conservation per the NCCLT Town Creek and Lower Cape Fear Initiative map. It is also part of the Clarendon Rice Plantation.

21.) **Parcel #07200005 (#15), Rachel Pickett Pace et als, Owner:** Contains 568.67 acres. Parcel is also part of the Clarendon Plantation per the NCCLT Town Creek and Lower Cape Fear Initiative

22.) **Parcel # 08600025 (#16), Howard Coupland, Jr., Owner:** Contains 248.89 acres.

23.) **Parcel #0860002501 (#17), Howard Coupland, Sr, Owner:** Contains 156.87 acres.

24.) **Parcel #08600027 (#18), Oleander Co., Inc., Owner:** Contains 793.37 acres. Parcel is in conservation per the NCCLT Town Creek and Lower Cape Fear Initiative map and is a part of the Old Towne Plantation.

25.) **Parcel #10100001 (#19), Town Creek Timber Co., Owner:** Contains 2,822.41 acres. This parcel is in conservation per the NCCLT Town Creek and Lower Cape Fear Initiative map and is a part of the Pleasant Oaks Plantation.

26.) **Parcel #08600031 (#23), Town Creek Timber Co., Owner:** Contains 132 acres.

27.) **Parcel #08500001 (#27), Elizabeth Taylor Trustee & Revocable Trust, Owner:** Contains 70.3 acres.

28.) **Parcel # 05800007 (#28), Funston Land & Timber, LLC, Owner:** Contains 4,140.11 acres.

29.) **Parcel # 0470002402 (#30), Jackeys Creek Land Co., Owner:** Contains 1,415.8 acres.

30.) **Parcel # 030OB04202 (#51), David Oscar Bullard, Owner:** Contains 30 acres.

31.) **Parcel #03000010 (#52), Kerr-Mcgee Corp., Owner:** Contains 243.41 acres.

32.) **Parcel #03000007 (#53), Brunswick Corp., Owner:** Contains 59.82 acres.

33.) **Parcel #03000006 (#54), V.A. Creech & Albert Edwards, Owner:** Contains 57.16 acres.

34.) **Parcel #02400003 (#55), Lincoln Development, Co., Inc., Owner:** Contains 166.23 acres.

35.) **Parcel #02400005 (#56), J Harold Matthews, Owner:** Contains 104 acres.

36.) **Parcel #0240000204 (#57), Cape Fear Boat Works, Owner:** Contains 53.5 acres.

37.) **Parcel #01700088 (#61), Barbara Olson Dean Corbett, et als, Owner:** Contains 1,000 acres.

38.) **Parcel # 01700086 (#63), TC&I Timber Co., LLC, Owner:** Contains 67.5 acres.

39.) **Parcel # 01700063(#65), Riverfront Co., LLC, Owner:** Contains 271 acres.

40.) **Parcel #02300017(#77), Lincoln Development Co, Inc:** Contains 167.3 acres.

41.) **Parcel # 02300084 (#78), Raiford G. Trask, Jr. Trustee, et als, Owner:** Contains 453.38 acres.

42.) **Parcel #030GA001(#80), Cumulus Broadcasting, Inc., Owner:** Contains 16.5 acres.

43.) **Parcel # 0290012901 (#85), James P. Cynthia Ward, Owner:** Contains 59.9 acres.

44.) **Parcel # 029LA019(#87), Town of Leland, Owner:** Contains 20.11 acres (Trail Head at end of Appleton Way)

45.) **Parcel #037DA005 (#88), Brunswick Co. Board of Education, North Brunswick High School:** Contains 60 acres.

46.) **Parcel # 030PA001 (#92), Kenneth Lee Blake, Owner:** Contains 10.55 acres.

47.) **Parcel #030PB013 (#97), Boyd Williamson, Owner:** Contains 11.29 acres.

48.) **Parcel #0370005502 (#98), Landmark Land & Timber, Inc., Owner:** Contains 129.9 acres. The parcel is located north of and adjacent to Jackey's and adjacent to Lanvale Road.

49.) **Parcel # 0470001205, (#99), E.G. Goodman, Owner:** Contains 448.79 acres. GIS lists the parcel description as the Lanvale Farm and it appears from the tax information (deferred taxes) to be in agricultural use. The parcel is located on Jackey's Creek to the south and adjacent to Highway 17.

APPENDIX F

Suggested Stakeholders & Partners

1. Local Governments (Brunswick Co., Leland, Navassa, Belville – Parks & Rec., Planning)
2. NC Coastal Land Trust
3. Cape Fear River Watch
4. NC Coastal Federation
5. DENR's Division Parks & Recreation
6. NC Department of Commerce – Div. of Tourism, Film & Sports Development
7. NC Fisheries & Wildlife
8. Private Business/Outdoor Suppliers
9. Cape Fear Council of Governments
10. Chambers of Commerce
11. UNCW
12. New Hanover Soil & Water Conservation
13. North Carolina Coastal Reserve
14. Brunswick Soil & Water Conservation
15. Land for Tomorrow
16. River Network http://www.rivernetwork.org/
17. NC Paddle Trails Association http://www.ncpaddletrails.info/
18. Tourism Development Authorities
19. Nature Conservancy
20. Cape Fear Arch
21. NC Department of Cultural/Historical Resources
22. Local Law and Emergency Enforcement
23. American Rivers
24. Ducks Unlimited
25. Cape Fear Resource Conservation and Development Council
26. NPS Rivers, Trails, Conservation Assistance Program
27. Brunswick Community College

APPENDIX G

NC DENR State Trail Standards for Paddle Trails

1. Each trail must be sponsored by a partnership consisting of all three of the following: a Non-Profit Organization (NPO), a governmental body, and a local volunteer organization.

2. A written partnership agreement between all sponsors, valid for a minimum of three years, must be legally recorded and available to the public for view. The partnership must be reviewed and renewed every five years.

3. If the proposed paddle trail traverses multiple jurisdictions, each municipality involved must sign a joint Memoranda of Understanding.

4. A written emergency plan for the entire trail must be on file with all enforcement and emergency services departments who have jurisdiction on the trail.

5. A publicly accessible website containing pertinent educational and resource information, emergency contact information, water conditions, trail difficulty rating, local hazards, and Leave No Trace principles, must be maintained for each trail. Each trail website must have a means of collecting data, feedback, and site conditions for the trail.

6. Current digital pictures of all Level I and Level II access sites on the trail, which clearly detail the parking area, pathway to water access, and the site itself, must be posted to the trail website. Pictures of Level III, Level IV, and Level V sites suitable for identification and promotional purposes are requested, but not mandatory.

7. Links to each trail website will be on NC DENR State Trails Program website and all the websites of the governmental bodies in which the paddle trails are located.

8. An access site (see below for description of site characteristics) will be ideally located every 2.5 miles of the paddle trail. No more than 15 miles may exist between each site.

9. A Level III site or higher must be located every 15 miles of the paddle trail. Platform camping sites accessible only by water can qualify as Level III sites provided they meet the criteria described under the **Note** section of Standards for Access Sites Level III.

10. A functioning livery (public or private) with a current business license and proof of insurance must be affiliated with the paddle trail.

11. Designation by NC DENR State Trails Program is a privilege, which can be revoked if standards are not maintained, or if repeated infractions are brought to the attention of the NC DENR State Trails staff or governmental officials.

12. The NC DENR State Trails Program has the final right of approval for all designation plans, revisions, and improvements.

APPENDIX H

NCDENR Trail Standards Level I: Minimal/Undeveloped

Site Use: Low; Infrastructure: Minimal, consisting mainly of signage

- Natural but well maintained pathway from parking to water access
- Pathway at least 6 feet wide
- Grass not higher that 5 inches on pathway
- Tree overhang not lower than 14 feet
- Grade must not exceed 20%
- Pathway must be marked every 250 feet.
- Markers should be visible in all seasons. Suitable markers are, but are not limited to: wood posts, rock cairns, reflective paint, or reflective medallions.
- Pathway cannot cross an Interstate Highway, primary thoroughfare, secondary road, or require the crossing of any bridge
- If a pathway from parking area to water access exceeds 1500 feet, a permanently affixed canoe or kayak stand must be positioned every 1000 feet.
- Two designated, well-maintained parking sites must be designated by signs meeting NCDOT visibility requirements.
- Digital pictures of the parking, pathway, and access areas must be displayed for reference on a publicly accessible website.
- Website must display conditions of access site including: 12-month log with bimonthly updates of currents, local hazards, water gage, paddler skill level, and other relevant information must be displayed at all times; 60-month data must be available upon request.
- Informational signs containing emergency contact numbers, contact numbers for the managing partner, distance to closest access site, and Leave No Trace criteria must be displayed on the website, at the parking space area, and within 150 feet of the access site.
- Access site must be marked with reflective signage visible from water.

APPENDIX I

NCDENR Trail Standards Level II: Simple/Minor Site Development

Site Use: Low to moderate; Infrastructure: Minimal to Moderate

- Natural but well maintained pathway from parking to water access
- Pathway at least 6 feet wide
- Grass not higher than 5 inches on pathway
- Tree overhang not lower than 14 feet
- Grade must not exceed 20%
- Pathway must be marked every 250 feet.
- Markers should be visible in all seasons. Suitable markers are, but are not limited to: wood posts, rock cairns, reflective paint, or reflective medallions
- Pathway cannot cross an Interstate Highway, primary thoroughfare, secondary road, or require the crossing of any bridge.
- If a pathway from parking area to water access exceeds 1500 feet, a permanently affixed canoe or kayak stand must be positioned every 1000 feet.
- Two designated, well-maintained parking sites must be designated by signs meeting NCDOT visibility requirements.
- Digital Pictures of the parking, pathway, and access areas must be displayed for reference on a publicly accessible website.
- Website must display conditions of access site including: 12-month log with bimonthly updates of current, local hazards, water gage, paddler skill level and other relevant information must be displayed at all times; 60-month data must be available upon request
- Informational signs containing emergency contact numbers, contact numbers for the managing partner, paddler skill level, distance to closest access site, and Leave No Trace criteria must be displayed on the website, at the parking space area, and within 150 feet of the access site.
- Access to the waterway must be clear of obstructions, firm, durable, and clearly delineated.
- Access site must be marked with reflective signage visible from water.
- Seating appropriate for the site located at access, grill or fire pit is recommended, and interpretive and educational signs are strongly encouraged

APPENDIX J

NCDENR Trail Standards Level III: Developed/Improved Site

Site Use: Moderate; Infrastructure: Moderate

- Natural but well maintained pathway from parking to water access
- Pathway at least 6 feet wide
- Grass not higher that 5 inches on pathway or accessible areas
- Tree overhang not lower than 14 feet
- Grade must not exceed 20%
- Pathway must be marked every 250 feet.
- Markers should be visible in all seasons. Suitable markers are, but are not limited to: wood posts, rock cairns, reflective paint, or reflective medallions.
- Pathway cannot cross an Interstate Highway, primary thoroughfare, secondary road, or require the crossing of any bridge.
- If a pathway from parking area to water access exceeds 1500 feet, a permanently affixed canoe or kayak stand must be positioned every 1000 feet.
- Digital Pictures of the parking, pathway, and access areas must be displayed for reference on a publicly accessible website.
- Website must display conditions of access site including: 12-month log with bimonthly updates of current, local hazards, water gage, paddler skill level and other relevant information must be displayed at all times; 60-month data must be available upon request.
- Informational signs containing emergency contact numbers, contact numbers for the managing partner, paddler skill level, distance to closest access site, and Leave No Trace criteria must be displayed on the website, at the parking space area, and within 150 feet of the access site.
- A minimum of four well-maintained and clearly delineated parking spaces must be available.
- The parking surface may consist of compacted earth, well-maintained grass, or gravel, clearly delineated by railroad ties, or other suitably durable marking material.
- Access site must be marked with reflective signage visible from water.
- Access to the waterway must be clear of obstructions, firm, stable, and have a durable construction meeting or exceeding local building codes.
- An appropriately constructed ramp, meeting all building codes relevant to the jurisdiction in which it is located, must be in place.
- Guardrails around water area must be available when appropriate.

- Permanent covered shelter with seating must be on site.
- Canoe and kayak stands or rests placed should be within 150 feet of the ramp.
- Grill or area for small cooking fires must be permanently constructed.
- Bathroom facilities must be in place. Portable toilets and washing stations are acceptable.
- Garbage cans must be permanently in place and trash must be removed on a weekly basis.
- To ensure that future plans for development and construction will be able to minimize risks in a proactive manner; an architect or landscape architect holding current designation in North Carolina must approve changes proposed to the site.
- **Note:** Camping platforms accessible only by water will be designated as Level III sites providing there is an organized permitting/reservation procedure for the camping platform, portable toilets are a requirement of the permitting procedure, and a website meeting criteria above is publicly accessible

APPENDIX K

NCDENR Trail Standards Level IV: Highly Developed Site

Site Use: Heavy; Infrastructure: Moderate to Heavy

- Well maintained pathway from parking to water access
- Pathway at least 6 feet wide
- Grass not higher than 5 inches on pathways or accessible pedestrian areas.
- Tree overhang not lower than 14 feet
- Grade must not exceed 20%.
- Pathway must be marked every 250 feet.
- Markers should be visible in all seasons. Suitable markers are, but are not limited to: wood posts, rock cairns, reflective paint, or reflective medallions.
- Pathway cannot cross an Interstate Highway, primary thoroughfare, secondary road, or cross any bridge.
- If a pathway from parking area to water access exceeds 1500 feet, a permanently affixed canoe or kayak stand must be positioned every 1000 feet.
- Parking spaces must be well maintained and permanently delineated by signs meeting NCDOT visibility requirements.
- Parking surfaces must be paved or have an equivalent durable surface that is approved for use in that jurisdiction.
- The parking spaces will be determined by the amount of paved surface area and zoning codes appropriate to the area. Spaces, which can accommodate single axle trailers, must be available.
- Website must display conditions of access site including: 12-month log with bimonthly updates of current, local hazards, water gage, paddler skill level and other relevant information must be displayed at all times; 60-month data must be available upon request.
- Informational signs containing emergency contact numbers, contact numbers for the managing partner, paddler skill level, distance to closest access site, and Leave No Trace criteria must be displayed on the website, at the parking space area, and within 150 feet of the access site
- Access to the waterway must be clear of obstructions, firm, durable, and clearly delineated.
- Access site must be marked with reflective signage visible from water.
- Access areas suitable for launching canoes and kayaks must be clearly marked and distinguished from the ramps used to launch other types of boats.
- Permanent bathroom facilities must be in place.

- Lights in parking and picnic areas must be available.
- Electricity must be available.
- Potable water must be available.
- Designated play area, approved by Recreation Resources Services, must be available.
- To ensure that future plans for development and construction will be able to minimize risks in a proactive manner; an architect or landscape architect holding current designation in North Carolina must approve changes proposed to the site

APPENDIX L

NCDENR Trail Standards Level V: Fully Developed

Site Use: Intensive; Infrastructure: Extensive

- Well maintained pathway with a permanent surface from parking to water access
- Pathway at least 6 feet wide
- Walking and driving surfaces must be of suitable and sustainable material
- Tree overhang not lower than 14 feet
- Grade must not exceed 15%.
- Pathway must be marked every 250 feet.
- Markers should be visible in all seasons. Suitable markers are, but are not limited to: lights, wood posts, rock cairns, reflective paint, or reflective medallions.
- Pathway cannot cross an Interstate Highway, primary thoroughfare, secondary road, or require the crossing of any bridge.
- If a pathway from parking area to water access exceeds 1500 feet, a permanently affixed canoe or kayak stand must be positioned every 1000 feet.
- Website must display conditions of access site including: 12-month log with bimonthly updates of current, local hazards, water gage, paddler skill level and other relevant information must be displayed at all times; 60-month data must be available upon request.
- Informational signs containing emergency contact numbers, contact numbers for the managing partner, paddler skill level, distance to closest access site, and Leave No Trace criteria must be displayed on the website, at the parking space area, and within 150 feet of the access site.
- Parking surfaces must be paved or have an equivalent durable surface that is approved for use in that jurisdiction.
- The parking spaces will be determined by the amount of paved surface area and zoning codes appropriate to the area. Spaces must be provided to accommodate single axle trailers.
- Livery with rental canoes, kayaks, equipment and lessons must be available.
- Access to the waterway must be clear of obstructions, firm, durable, and clearly delineated.
- Access site must be marked with reflective signage visible from water.
- Access areas suitable for launching canoes and kayaks must be clearly marked and distinguished from the ramps used to launch other types of boats.
- Designated primitive camping sites
- Permanent bath facilities with shower

- Lights in parking and picnic areas must be available. (Care should be taken that the lights are of a quality that minimizes light pollution.)
- Electricity must be available.
- Potable water must be available.
- Designated swimming area.
- Designated picnic area with permanent grills.
- Designated play area, approved by Recreation Resources Services, must be available.
- Maintenance staff should be in place for facility.
- To ensure that future plans for development and construction will be able to minimize risks in a proactive manner; an architect or landscape architect holding current designation in North Carolina must approve changes proposed to the site.
- The ramps and waterway access must be able to accommodate boat trailers up to 30 feet

Appendix M

Grant Funding Sources

1.) ***North Carolina Clean Water Management Trust Fund (CWMTF)***

Created in 1996, The Clean Water Management Trust Fund receives a direct appropriation from the General Assembly. Local governments, state agencies and conservation non-profits are eligible to apply for funding. The fund finances projects that address water pollution. The specific projects that will be considered are those that 1.) Enhance or restore degraded waters, 2.) Protect unpolluted waters, 3.) And/or contribute to a network of riparian buffers and greenways for environmental, educational and recreational benefits. More information is available at http://www.cwmtf.net/.

2.) ***Natural Heritage Trust Fund***

The NC Natural Heritage Trust Fund is committed to the acquisition and protection of important natural areas, the preservation of the state's ecological diversity and cultural heritage and to construction an inventory of the natural heritage resources of the state. The supplemental funding the trust fund provides is awarded to select state agencies. Specifically, grants are awarded for:

- The purchase of lands that represent the state's ecological diversity to ensure their preservation and conservation for recreational, scientific, educational, cultural and aesthetic purposes.
- The purchase of additions to state trails, state parks, aesthetic forests, wild and scenic rivers, fish and wildlife management areas;
- The development of a balanced state program of historic properties; and
- The inventory and conservation planning of natural areas by the Natural Heritage Program.

The board generally meets twice a year to review grant applications. The meetings typically occur in the fall and spring (March/April). More information can be retrieved at their website http://www.ncnhtf.org/.

3.) ***North Carolina Parks and Recreation Trust Fund***

The North Carolina Parks and Recreation Trust Fund was established in 1994 by the General Assembly and provides dollar-for-dollar matching grants to local governments. The grants are made for improvements in the state's park system and to increase the public's access to the state's beaches. The money can be used for the acquisition of land and/or for the development of parks and recreational projects that serve the general public. Their website offers more information at http://www.ncparks.gov/About/grants/partf_main.php.

4.) ***North Carolina Farmland Development and Preservation Trust Fund (NC Department of Agriculture)***

The purpose of this fund is to support farming, forestry, and horticulture communities within the agriculture industry. The fund accomplishes this by providing funding for projects that:

- Support the purchase of agricultural conservation easements (on farm, forest and horticulture lands), including transaction costs.
- Funding public and private enterprise programs that will promote profitable and sustainable family farms through assistance to farmers in developing and implementing plans for the production of food , fiber, and value-added products, agritourism activities, marketing and sales of agricultural products produced on the farm, and other agriculturally related business activities.
- Funding conservation agreements (on farm, forest and horticulture lands) targeted at the active production of food, fiber and other agricultural products.

The NC Agricultural Development and Farmland Preservation Trust Fund website offers more information at http://www.ncadfp.org/.

5.) ***USDA Forest Legacy Program***

The Forest Legacy Program was created by Congress in 1990 through the Farm Bill. The purpose of the fund is to help landowners, state and local governments, and private land trust identify and protect environmentally important forested lands that are threatened by present and future conversion to non-forest uses. Projects are first reviewed and then prioritized by a state committee which submits a list to the US Forest Service. The US Forest Service's national review team finalizes the priorities. The website is located at http://www.fs.fed.us/spf/coop/programs/loa/flp.shtml.

6.) ***Recreational Trails Program Grants (RTP), US DOT, Federal Highway Administration***

The Federal Highway Trust Fund administers the funds for the Recreational Trails Program. The funds are distributed by legislative formula whereby half of the funds are distributed equally among all states, and half are distributed in proportion to the estimated amount of non highway recreational fuel use in each state. Projects that are eligible to receive funding are those that:

- Maintain and restore existing trails
- Develop and rehabilitate trailside and trailhead facilities and trail linkages.
- Purchase and lease trail construction and maintenance equipment
- Construct new trails (with restrictions for new trails on federal lands)
- Acquire easements or property for trails.
- Assess trail conditions for accessibility and maintenance
- Develop and disseminate publications and operation of educational programs to promote safety and environmental protection related to trails (including supporting

non-law enforcement trail safety and trail use monitoring patrol programs and providing trail-related training)(limited to 5% of state's funds)

- State administrative costs related to this program (limited to 7% of a state's fund).

For information on grant fund and projects visit http://www.fhwa.dot.gov/environment/rectrails/.

7.) ***Land & Water Conservation Fund (LWCF)***

The Land and Water Conservation Fund was enacted in 1965 to help preserve, develop and assure access to outdoor recreation facilities to strengthen the health of U.S. citizens. The principal source of funding for land acquisition for outdoor recreation is by 4 federal agencies – NPS, BLM, Fish and Wildlife Service, and the Forest Service. The fund also provides a matching grant program to assist states (and localities) in recreational planning, acquiring recreational lands and waters, and developing outdoor recreational facilities. Grant money is awarded through a competitive selection process by the states. Each state establishes their own policies, priorities and criteria based on statewide recreation plans. More information is available at http://www.tpl.org/tier3_cd.cfm?content_item_id=10566&folder_id=191.

8.) ***State Adopt-A-Trails Grant/NC Trails Program***

The North Carolina Adopt-A-Trail program awards monies to projects that involve trail building, trail signage and facilities, trail maintenance, trail brochures and maps and other related uses. Eligible applicants include government agencies, nonprofit organizations and private trail groups. The program requires no local match or in-kind services. More information can be found at http://cnr.ncsu.edu/rrs/pdfs/Adopt_a_trail_grant_2010.pdf.

9.)***Fit Community Designations/NC Health and Wellness Trust Fund***

The Fit Community Initiative is a partnership between the North Carolina Health and wellness Trust Fund (www.HealthwellNC.com) and Blue Cross Blue Shield. The initiative's purpose is to address the increasing obesity rates in North Carolina adults and children. The program promotes a community-based approach to address obesity in the state due to the important role that communities have in implementing the types of policies and environments that make healthy choices easier and more accessible for all citizens. Eligible recipients include state agencies, 501(c)(3) non-profit organizations (that have a significant purpose promoting the public's health, limiting youth access to tobacco products, or reducing the health consequences of tobacco use), county agencies, 501(c)(3) non-profit organization representing a county partnership, municipal agencies and 501(c)(3) non-profit organization representing a municipal partnership.

HWTF supports programs that represent a broad geographic region range, diversity of needs, and a range of strategies used to address those needs. Grants will provide up to $60,000 over two years. It is important for proposals to focus on implementing policy and physical strategies to bring about future behavior change. More information on the initiative and projects they fund is available at http://www.fitcommunitync.com/.

10.)*Tourism Matching Funds Program (NC Dept. of Commerce)*

The fund is aimed at stimulating economic growth and allows communities and nonprofits to participate in marketing North Carolina as a travel destination. The projects that receive priority are those that demonstrate the potential for positive economic impact. In addition, projects that promote travel from out-of-state or from areas more than 100 miles distance particularly through paid advertising and during shoulder and off seasons are also given priority.

The preferred marketing activities for projects are paid advertising outside North Carolina, paid advertising in prime markets in other regions of the state, cooperative regional advertising and marketing programs, cooperative local advertising and marketing programs and other aggressive outreach marketing activities designed to attract new visitors from outside the local region or enhance the long-term growth of the travel industry. Projects receiving priority are generally those that include web advertising, direct mail campaigns with targeted audience, media kits, out of state/region media campaigns or regional cooperative marketing efforts. In addition, the project should target visitors from outside at least a 100-mile radius or from out-of-state. Projects that tend to receive a low ranking in the selection process are those that include brochure redesign/reprint, brochures/rack cards without a specific and innovative distribution plan, website redesign marketing proposals for events that have only limited local appeal. For more information on the program visit http://www.nccommerce.com/en/CommunityServices/CommunityDevelopmentGrants/TourismMatchingGrants/.

11.) Five-Star Restoration Matching Grants Program (Nat'l Association of Wildlife Habitat Council & USEPA)

The Five-Star Restoration program is a partnership between the National Association of counties, the National Fish and Wildlife Foundation (NFWF), the Wildlife Habitat Council (WHC), in cooperation with the US Environmental Protection Agency (USEPA), Southern Co., and Pacific Gas and Electric Company (PG&E). The program strives to develop community capacity to sustain local natural resources for future generations. It does so by offering financial assistance to diverse local partnerships for wetland, riparian and coastal habitat restoration. Available funding is distributed throughout the United States by EPA, in several southeast states from the corporate sponsors and in most of northern and Central California. Their website offers information on anticipated 2010 funding opportunities.

The four elements required in a Five-Star Project include on-the-ground restoration, environmental education, partnerships, and measurable results.

Any public or private entity is eligible to apply. However, grants funded by PG&E's Nature Restoration Trust are restricted to nonprofit community-based organizations, conservation organizations, local governments, and school districts. Grant requests are limited to $10,000 to $40,000 and projects are expected to be completed within one to two years. Partnerships are required to contain at least five organizations ("five-stars") that contribute to the project. For more detailed information regarding the required elements and past recipients visit http://www.epa.gov/wetlands/restore/5star/.

12.) ***Golden Leaf Foundation Open Grants Program***

The Golden Leaf is dedicated to funding projects that demonstrate the most potential for strengthening North Carolina's long-term economy, especially in tobacco-dependent, economically distressed, and/or rural communities. Focus areas of the foundation are agriculture, job creation and retention and workforce preparedness. Specific areas of the foundation's focus relevant to the North Brunswick Blueway are job creation and retention projects that include efforts to create opportunities for employment with new and existing businesses in tobacco-dependent, economically distressed, and/or rural communities, particularly in the health care sector; as well as projects that focus on other opportunities to support and develop economic strength in tobacco-dependent, economically distressed and/or rural communities. Of particular note, purchase of land requests receive low priority from the foundation. More information can be found by visiting ***http://www.goldenleaf.org/***.

13.) ***National Park Service, Rivers, Trials and Conservation Assistance (RTCA)***

Provides technical assistance to groups working to protect natural areas and water resources and enhance close to home outdoor recreation opportunities. http://www.nps.gov/ncrc/programs/rtca/. Initial contact has been made with Dawn Godwin dawn_godwin@nps.gov.

14.) ***USEPA Section 319 Nonpoint Source Pollution Grant Program***

The program initially intended to fund innovative nonpoint source pollution (NPS) management strategies that were to be used as demonstrations to others. Eligible applicants include state and local governments, interstate and intrastate agencies, public and private nonprofit organizations and institutions. Typically, the USEPA designates $5million for Section 319 grants in North Carolina of which three quarters is designated for projects by the state. The North Carolina Division of Water Quality is the lead agency for the program in North Carolina.

The projects that are deemed appropriate to receive funding include those that involve demonstration of innovative BMPs, TMDL development and implementation, environmental education and technology transfer, monitoring indices of biologic integrity as a method to measure biologic impairment, restoration on 303(d) listed water bodies impaired due to NPS pollutions. Projects deemed Inappropriate are activities required by NPDES permit, water quantity projects such as dredging, purchase of equipment and vehicles, cost share unless part of a demonstration project. Projects are selected by a workgroup that meets twice a year. Highest priority is given to projects that address one of more of the following:

- "Demonstrate innovative management practices (structural or nonstructural) and/or new technologies for addressing NPS pollution (preferably initiated in impaired and/or sensitive watersheds like those listed on the 303(d) list.
- Educate the general public, students, and local elected officials on causes and impacts of NPS pollution and appropriate management practices (structural or nonstructural)
- Address watershed-scale issues in hydrologic unit selected for the unified watershed assessment."

For information and past projects visit their website at http://h2o.enr.state.nc.us/nps/319.htm.

15.) ***The North Carolina Conservation Tax Credit, Managed by NCDENR***

This program offers an incentive to private landowners to conserve land. The program is voluntary and provides a tax credit to landowners that donate a conservation easement or fee simple deed to a qualified recipient. The credit can be applied to the landowner's state income taxes. The North Carolina Department of Natural Resources is responsible for certifying that the donation results in one or more of the following public benefits: public beach access, public access to public waters or trails, fish and wildlife conservation, forestland or farmland conservation, watershed protection, conservation of natural areas as that term is defined in G.S. 113A-164.3(3), conservation of natural or scenic river areas as those terms are defined in G.S. 113-34, conservation of predominately natural parkland, or historic landscape conservation. NCDENR considers two questions when considering requests which are:

- Does the donation provide one or more of the public benefits listed above?
- Does the instrument of transfer adequately protect/conserve public benefit(s)?

State and local governments, qualified nonprofits incorporated to receive and administer land for conservation purposes and receive charitable contributions under G.S. 105-130.9 are eligible to apply. The review process generally takes four to six weeks. Information on the tax credit may be found at http://www.onencnaturally.org/pages/CTC_Overview.html.

16.) ***Agriculture Cost Share Program***

The Agriculture Cost-Share Program was established for the purpose of protecting water quality through the implementation of BMPs on agricultural lands. The program is administered through the Division of Water Quality section of the North Carolina Department of Environment and Natural Resources. Eligible applicants are landowners or renters of an existing agricultural concern in operation for more than three years. Cost-sharing funds and technical assistance is provided to landowners for the installation of BMPs. Applicants may receive up t o 75% of the costs of installation. Applications are available through the landowners local Soil and Water Conservation District. More information is provided at http://www.enr.state.nc.us/dswc/pages/agcostshareprogram.html

17.)***Water Resources Development Grant Program (NCDENR, DWQ)***

The Water Resources Development Grant Program is administered by the North Carolina Department of Environment and Natural Resources Division of Water Quality. The program provides cost-share grants and technical assistance to local governments in North Carolina and reviews grant applications twice a year. Application deadlines are July 1 and January 1. Consideration is given for seven purposes which include general navigation, recreational navigation, water management, stream restoration, beach protection, land acquisition, facility development for water based recreation, and aquatic weed control. More information can be found at http://www.ncwater.org/Financial_Assistance/.

18.)Wetlands Reserve Program, USDA, National Resource Conservation Service (NRCS)

The Wetlands Reserve Program is administered by the National Resource Conservation Service (NRCS). The program is a voluntary program offered to landowners for the purpose of protecting, restoring, and enhancing wetlands on their property. The USDA (NRCS) provides technical and financial assistance to landowners for their wetland restoration efforts. The goal of the NRCS through this program is "to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program." This offers landowners the opportunity to institute long-term conservation and wildlife practices and protection on their property. More information on the program can be found at http://www.nrcs.usda.gov/programs/.

19.)*The Community Development Block Grant (HUD-CDBG)*

This program provides funding to municipal and county governments to enhance the viability of communities by providing decent housing and suitable living conditions and by expanding economic opportunities. The fund focuses on persons of low- and - moderate income levels. For more information and to see past recipients visit their website at http://www.nccommerce.com/en/CommunityServices/CommunityDevelopmentGrants/CommunityDevelopmentBlockGrants/

20.) *USDA Rural Business Enterprise Grants*

The program provides grants to public agencies, private non-profit corporations or Indian groups for the purpose of providing needed infrastructure to fund technical assistance needs and to establish or fund revolving funds. Communities that are eligible to apply are those with an area of less than 50,000 in population. To apply, contact the Rural Development State Office at (208) 378-5623 or for further information on the types of eligible projects visit http://www.rurdev.usda.gov/rbs/busp/rbeg.htm.

21.) *NC Attorney General Environmental Enhancement Grant*

The NC Attorney General Environmental Enhancement Grant originated as an agreement between the NC Attorney General and Smithfield Foods, Inc. The program seeks to improve air, water and land quality of North Carolina. Grants are awarded to projects that improve or preserve the natural resources of North Carolina and those that develop environmentally sensitive swine waste management. The program's design is flexible in order to meet the changing environmental enhancement needs of North Carolina. For more information and descriptions of past recipient awards visit http://www.ncdoj.com/Top-Issues/Improving-the-Environment/Environmental-Grants.aspx.

22.) *Z. Smith Reynolds Foundation*

The areas of focus most relevant to the Blueway project are community economic development and the environment. Through community economic development, the foundation seeks to protect and increase the incomes and assets of low-income individuals and families and to increase community control of economic assets and economic independence for the benefit of low-economic and/or rural populations.

The foundation's environment program seeks environmental justice, clean air and water for all, conservation of green space, and healthy coastal ecosystems. Of particular note, priority is given to regional/multi-county, and statewide efforts, within the healthy coastal ecosystems focus area. For more information visit http://www.zsr.org/.

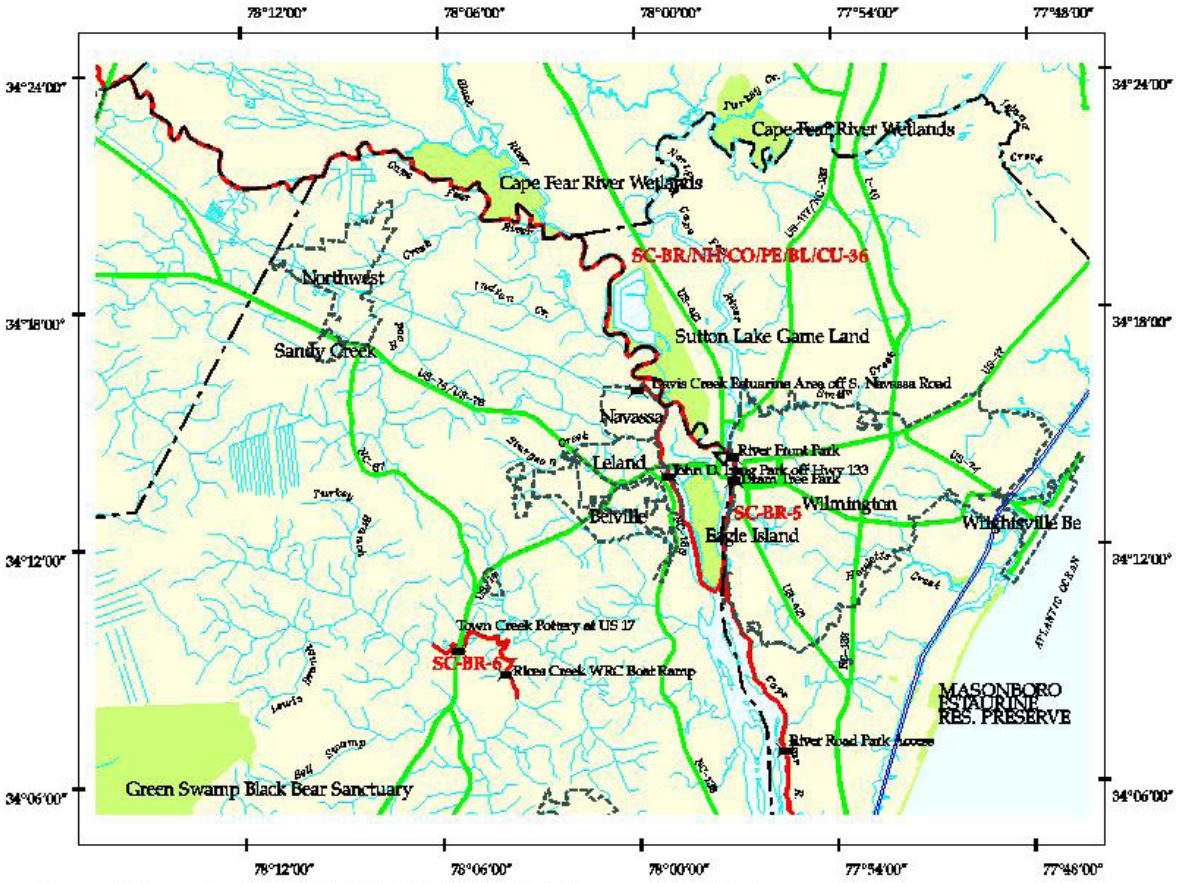
23.) NC Plan, Eat Smart, Move More,

This grant program supports local health departments in North Carolina to develop community based interventions that encourage, promote and facilitate physical activity. The program provides funding to local communities to implement strategies that advance the goals and objectives of the Eat Smart, Move More Plan. More information can be found at **http://www.eatsmartmovemorenc.com/ESMMPlan/ESMMPlan.html**.

MAP 1: CAPE FEAR PADDLE TRAIL

CAPE FEAR AND SOUTHERN COAST REGIONS

Trail Numbers SC-BR/NH/CO/PE/BL/CU-36 - Southern Portion, SC-BR-5, SC-BR-6



Contact Information for SC-BR/NH/CO/PE/BL/CU-36 (Cape Fear River Trail):
Cape Fear Council of Governments * 1480 Harbour Drive * Wilmington NC 28401 * (910)395-4553
Contact Information for SC-BR-5 (Brunswick River Trail) and SC-BR-6 (Town Creek/Rices Creek Trail):
Brunswick County Parks & Recreation Department * P.O. Box 249 * Bolivia NC 28422 * (910)253-2670

Public Lands
Trail Access
Rest Area / Welcome Center
Campsite
Lighthouse

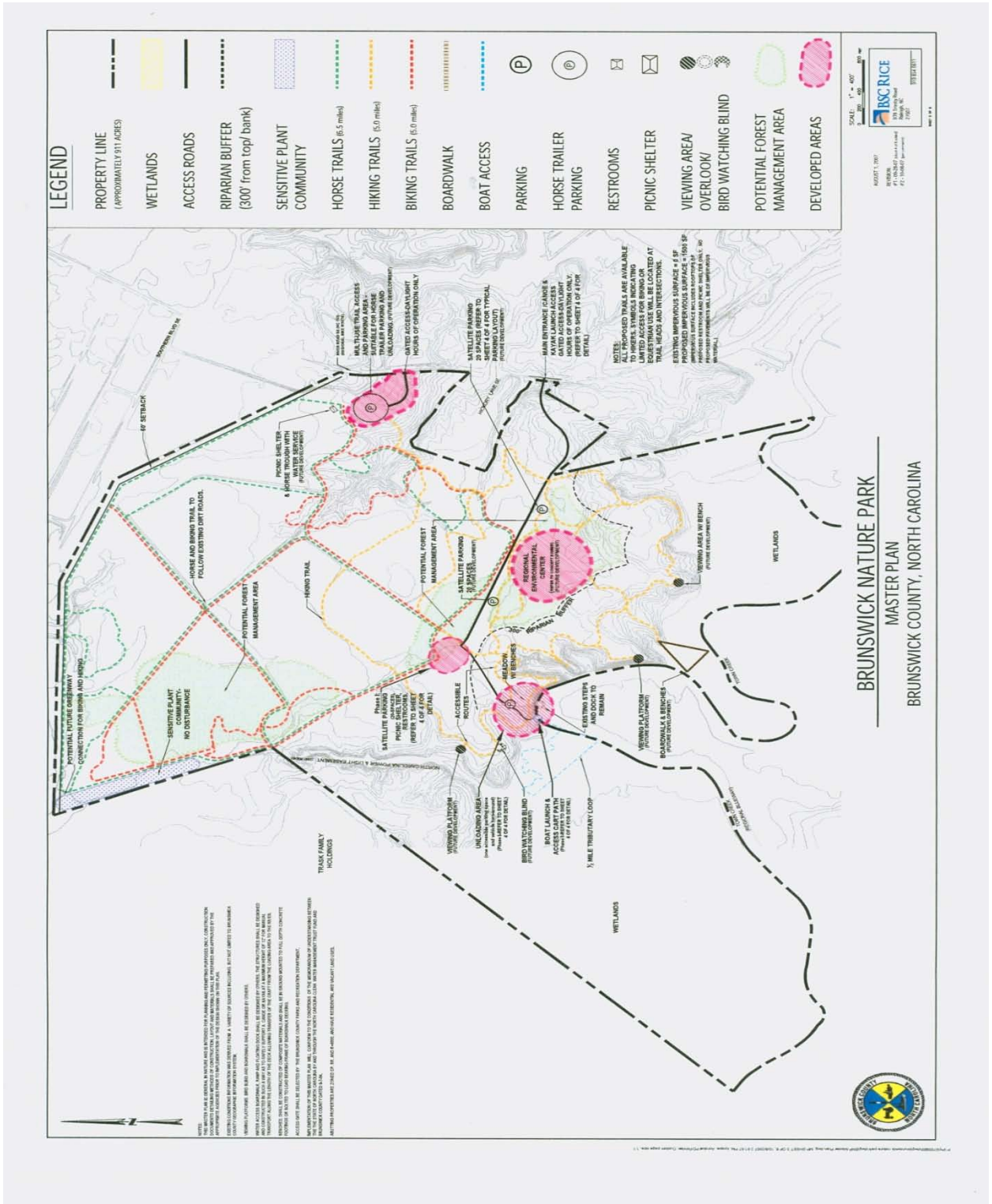
County Boundary
State Boundary
Municipal Boundary
Highway
Hydrography
Intracoastal Waterway
Ferry Route
Paddling Trail



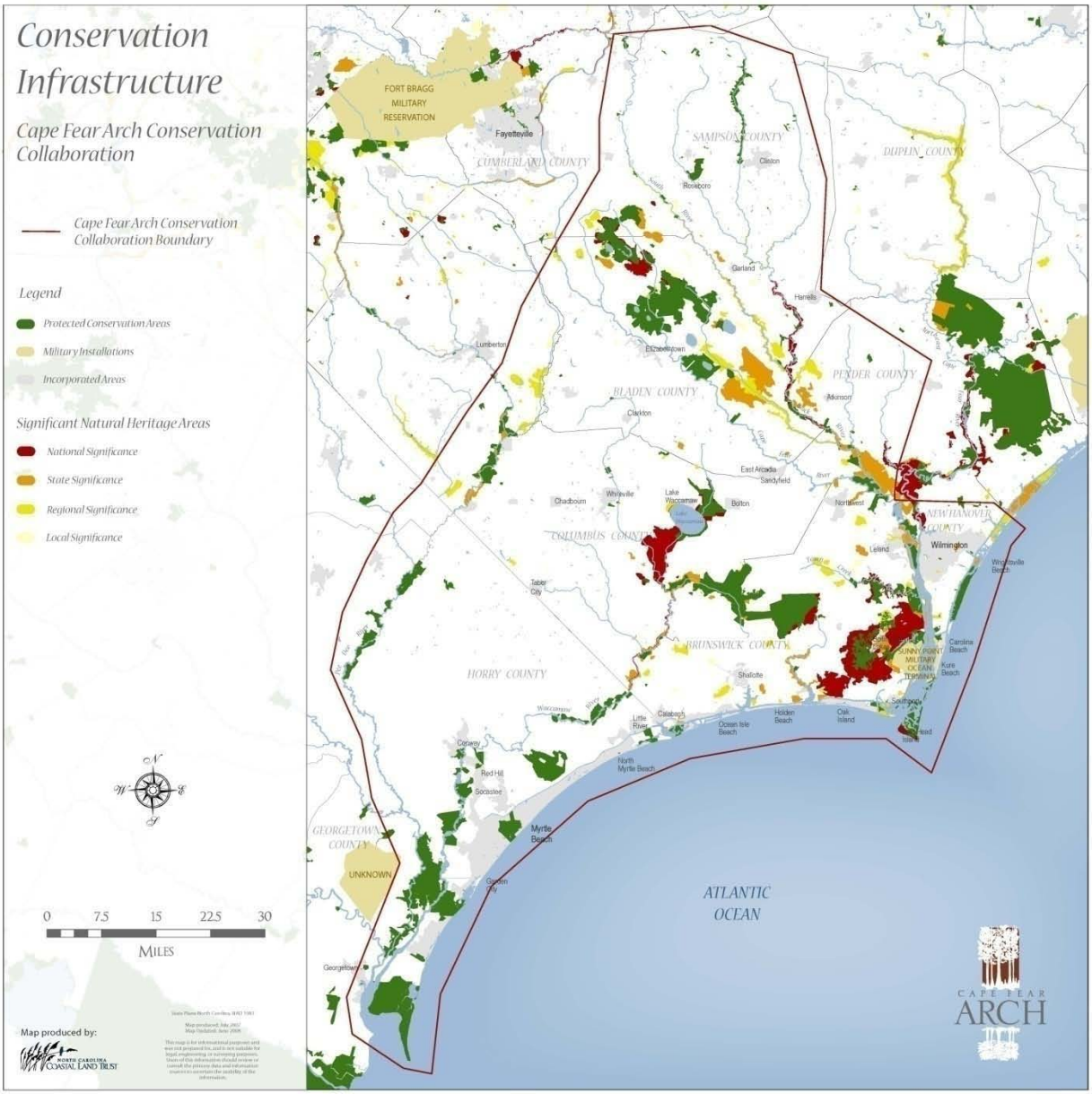


For more information, visit our WebSite: http://ils.unc.edu/parkproject/nctrails.html

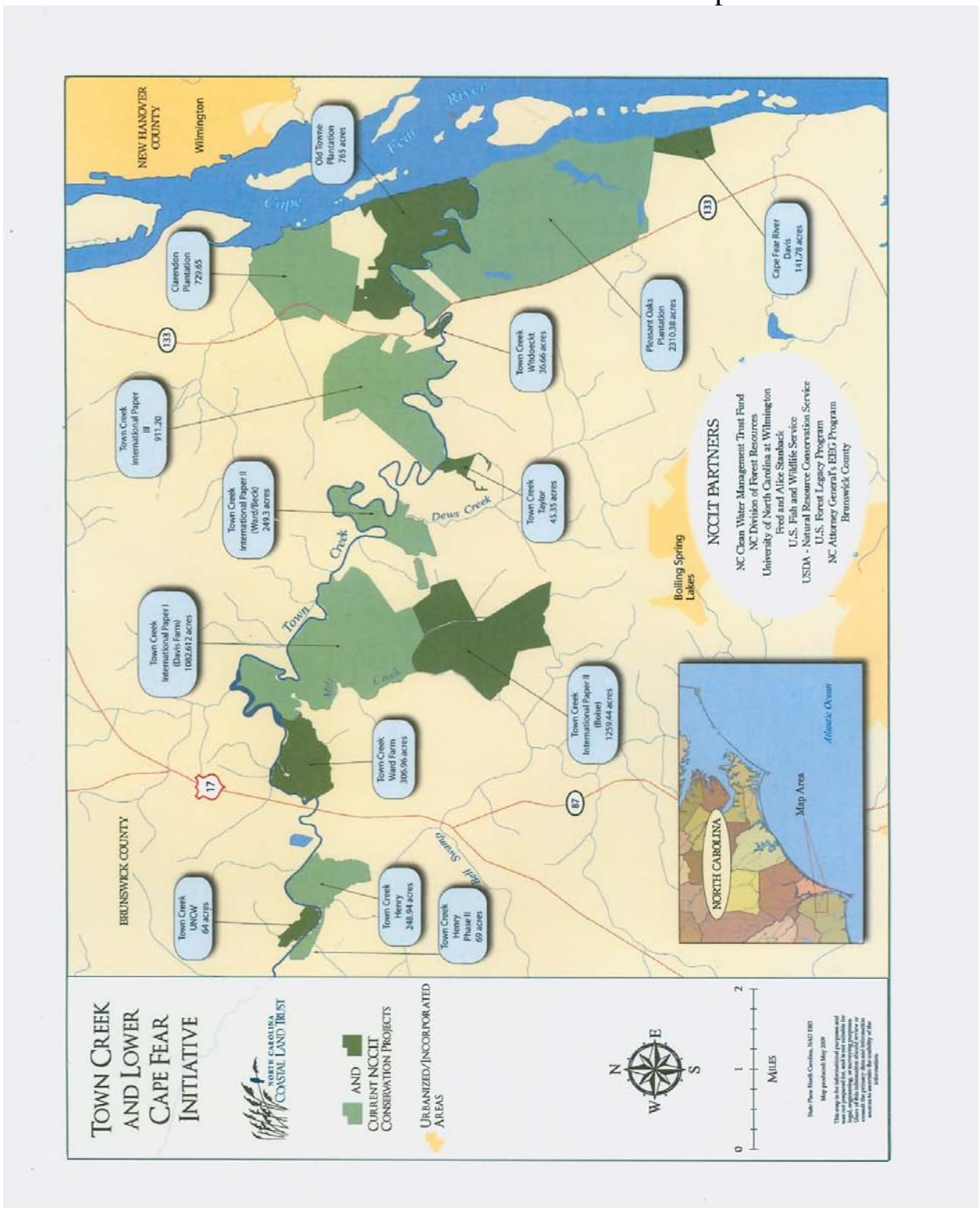
MAP 2
BRUNSWICK NATURE PARK MASTER PLAN



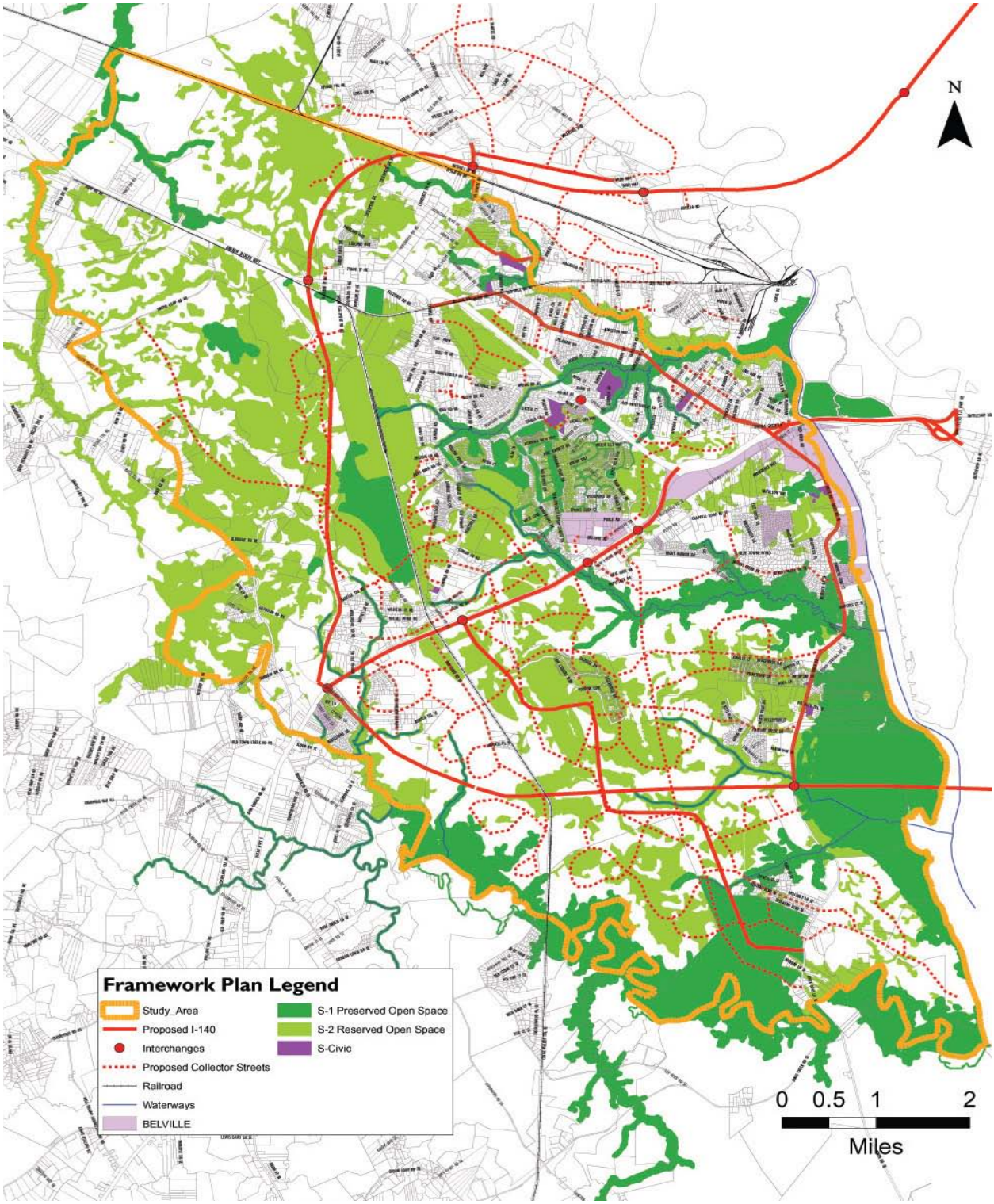
MAP 3
Cape Fear Arch Conservation Infrastructure



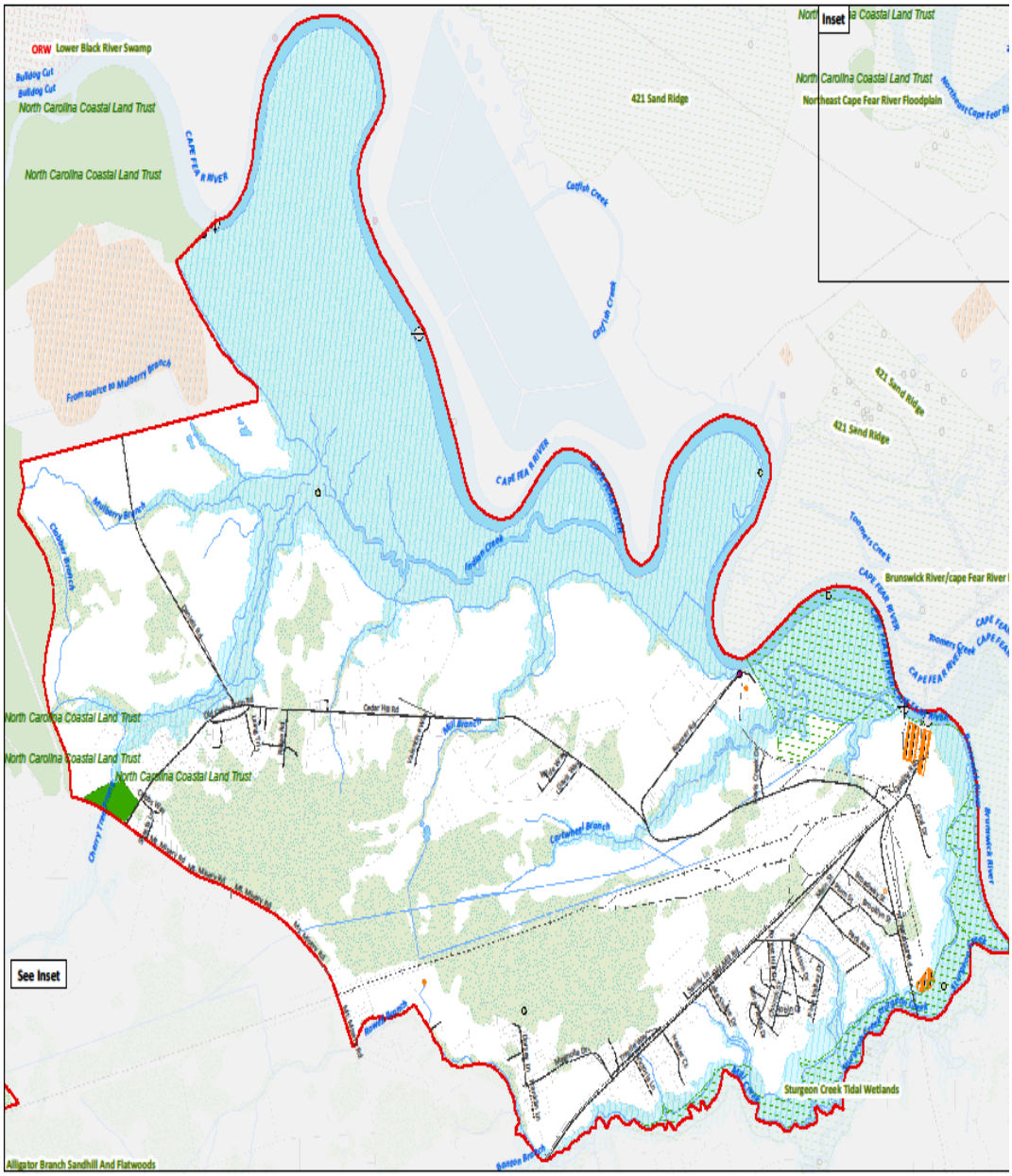
MAP 4
NC Coastal Land Trust Town Creek and Lower Cape Fear Initiative



Map 5
Town of Leland Framework Plan Map



Map 6
Town of Navassa Environmental Conditions


Inset
ORW Lower Black River Swamp
Bulldog Cut
Bulldog Cut
North Carolina Coastal Land Trust
North Carolina Coastal Land Trust
North Carolina Coastal Land Trust
Northeast Cape Fear River Floodplain
421 Sand Ridge
CAPE FEAR RIVER
Catfish Creek
Catfish Creek
From source to Mulberry Branch
421 Sand Ridge
421 Sand Ridge
CAPE FEAR RIVER
Mulberry Branch
Cedar Hill Branch
Indian Creek
Tomahawk Creek
Brunswick River/cape Fear River
CAPE FEAR RIVER
Women Creek
CAPE FEAR RIVER
North Carolina Coastal Land Trust
North Carolina Coastal Land Trust
North Carolina Coastal Land Trust
Cedar Hill Rd
Old Mill Rd
Mill Branch
Mill Rd
Mill Rd
Mill Rd
Mill Rd
Cedarhurst Branch
Cherry Tree Rd
Mill Rd
Mill Rd
Mill

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