

PASSENGER FERRY FEASIBILITY STUDY

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16. Abstract North Carolina's ferry system serves a diverse population along the coast and is an important transportation link, supporting thousands of jobs and millions of dollars of employee earnings and tax dollars (ITRE, 2020). The research team employed geospatial analysis, a series of stakeholder engagements, and site visits to explore and assess the feasibility of passenger ferry opportunities as existing and new locations. Additionally, the research team assessed the impacts and benefits of the Ocracoke Express and found that it supports dozens of jobs, generates millions of dollars in business output, and supports over one million dollars in earned wages. To assess the feasibility of various passenger ferry routes, the research team analyzed total travel time, travel time in comparison to driving with and without estimated traffic, met with stakeholders and citizens to gain further insight into feasibility, and conducted several site visits. Furthermore, the research team created ArcGIS dashboards as well as a matrix of potential feasibility indicators such as travel time savings and current and future demand. The combination of these sets forth a clear framework for future assessment of ferry sites and routes by NCDOT and communities.			
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Executive Summary

North Carolina's ferry system serves a diverse population of people along the coast and is an important transportation link, supporting thousands of jobs and millions of dollars of employee earnings and tax dollars (ITRE, 2020). The research team employed geospatial analysis, a series of stakeholder engagements, and site visits to explore and assess the feasibility of passenger ferry opportunities at existing and new locations. Additionally, the research team assessed the impacts and benefits of the Ocracoke Express and found that it supports dozens of jobs, generates millions of dollars in business output, and supports over one million dollars in earned wages.

To assess the feasibility of various passenger ferry routes, the research team analyzed total travel time, travel time in comparison to driving with and without expected traffic, met with stakeholders and citizens to gain further insight into the feasibility of potential locations, and conducted several site visits. Furthermore, the research team created ArcGIS dashboards as well as a matrix of potential feasibility indicators such as travel time savings and current and future demand. The combination of these sets forth a clear framework for future assessment of ferry sites and routes by NCDOT and communities.



Introduction

Background

The North Carolina Ferry Division operates vessels on seven routes along the eastern coast of North Carolina – including a new passenger ferry on the Hatteras-Ocracoke route. The routes serve diverse populations, ranging from routes with substantial tourist/visitor customers to routes with primarily daily commuters. Passenger ferries offer the potential to reduce congestion on popular routes at high demand times and provide customers with other travel alternatives – particularly if these passenger ferry routes have adequate multi-modal connectivity potential. The recently opened Hatteras-Ocracoke passenger ferry, known as the “Ocracoke Express,” has proved to be a popular alternative for travelers and shows the potential for expanding this type of service in other locations. The additional routes (from Cedar Island and Swan Quarter) are of particular interest to NCDOT, but multiple other locations may prove to be feasible options for passenger ferry service.

Scope and Objective

The primary objectives of this project are to 1) quantify the benefits and impacts of the new passenger ferry from Hatteras to Ocracoke and 2) explore the feasibility of passenger ferry opportunities at other locations (existing or new routes). The study can be used as a resource for both NCDOT and the State’s coastal communities as they consider passenger ferry feasibility which could be funded from a variety of sources, including local, federal, and private opportunities.

Report Organization

This technical report is organized into four sections, which contain the relevant findings from this research. The four sections that make up the report are organized as follows:

- [Section 1: Introduction](#) – This section provides an overall background of the research conducted, reviews the scope and objectives of this research, and summarizes the expected results.
- [Section 2: Literature Review](#) – This section provides an overall summary of the literature findings, including a review of previous transportation funding and finance polls conducted by other research organizations.
- [Section 3: Summary of Findings](#) – This section provides a summary and discussion of the results.
- [Section 4: Conclusion](#) – This section provides a summary of relevant findings for NCDOT and opportunities for future research.
- [Section 5: Appendix](#) – This section provides an in-depth summary of site visits conducted by the research team.



Literature Review

Several studies have been completed, often at the city, county, or regional level to assess the feasibility of various passenger ferry routes. Potential passenger ferry routes have been frequently assessed in Washington state, specifically in the Puget Sound area. Most recently, the Puget Sound Regional Council (PSRC) conducted a passenger-only ferry study which evaluates potential new routes and landing sites, potential demand, and estimated costs associated (Puget Sound Research Council, 2021). Additionally, the report acknowledges the importance of community support in the consideration of any passenger ferry service and therefore the PSRC implemented community and stakeholder outreach to further assess feasibility regarding likely ridership within communities, tax and funding considerations, compatibility with long term planning, and land use regulations among other considerations. The Council conducted in person and virtual stakeholder sessions as well as site-specific outreach to gain further insight into feasibility, support, and other considerations. As part of the study, the Council evaluated specific sites and routes and evaluated travel times, potential ridership, multimodal connections and infrastructure, and hurdles and opportunities. A 2019 study conducted by the New York City Economic Development Council (NYCEDC) assessed 11 different passenger ferry landing sites for feasibility within three geographic clusters and employed a community engagement strategy to observe community priorities, recreational potential, and allowed community advocates and representatives to request specific sites and routes (New York City Economic Development Council, 2019). Additionally, the study assessed the travel time and cost of a direct ferry versus both a car and public transit travel route and calculated the associated potential savings. Another study conducted by the Prince William County Department of Transportation was designed to determine commuter ferry feasibility along the Potomac River, and identified estimated travel times along several potential routes as well as a series of recommendations if the establishment of a new route were to proceed (Prince William County Department of Transportation, 2009). The report recommended coordination with proper authorities and local governments, rigorous market analysis to project demand, and investigations into what authority would oversee ferry operations in cities where routes might operate.

These various reports exploring the feasibility of passenger ferry routes make it clear that there are several important components in assessing any route: analysis of time savings, stakeholder engagement, and consideration of factors such as actual and potential tourism, commuting, and modal connections and alternatives.

Existing and Planned Passenger Ferry Services

Existing Services

OCRACOKE EXPRESS

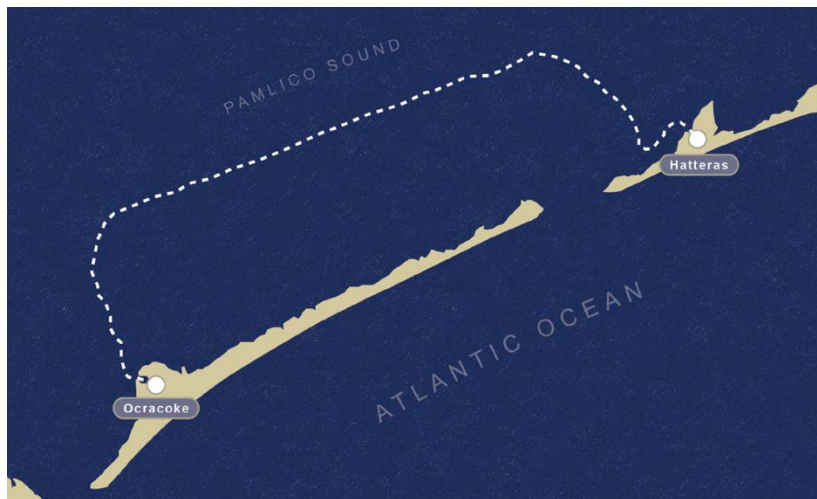
Travelers between Hatteras and Ocracoke Village have a choice to reach their destination (in addition to the vehicle ferries that already serve the popular route). The passenger ferry service aboard the Ocracoke Express runs seven days a week during the summer season. The ferry transports as many as 149 passengers per trip across the Pamlico Sound directly into Ocracoke Village and transported 28,604 passengers in 2019.

For the inaugural 2019 season, service began on May 20th, 2019, and ended on September 2nd, 2019.

The Ocracoke Express was NCDOT's first-ever passenger-only ferry (the vessel was leased by

NCDOT and not owned or operated by NCDOT). In 2021, the ridership included 17,610 passengers and 1,020 bicycles. According to a study conducted by ITRE, the Ocracoke Express supported 55 jobs, \$4.2 million in business output, \$1.6 million in earned wages, and \$24,000 in local and state taxes (ITRE, 2020).

Figure 1: Ocracoke Express Route

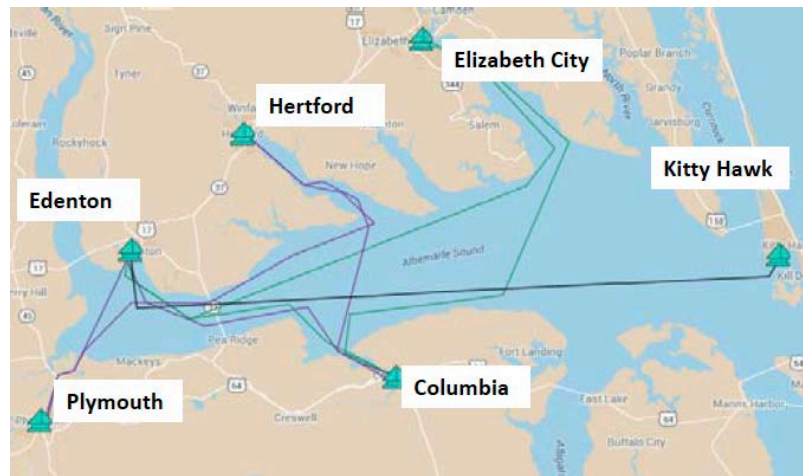


Planned Services

HARBOR TOWN PROJECT

The Harbor Town Project has secured funding of \$5 million through the North Carolina legislature to develop a pilot program to provide a tourism-based ferry system to connect communities on the Albemarle Sound. The legislation that provided the funding (S.L. 2021-180) specifically notes that the economic development project is planned to connect Plymouth, Columbia, Edenton, Manteo, Hertford, and Elizabeth City. According to a study by the UNC Kenan-Flagler Business School, the Harbor Town ferry system in the first year of operation would expect 107,000 visitors, \$14 million in direct tourism spending, and 94 jobs (Didow, 2015).

Figure 2: Harbor Town Project planned route



Smoky Mountain Jetboats in Bryson City, North Carolina is currently building the first ferry in the area.

Findings

Data Analysis

Geospatial Analysis

The research team conducted geospatial analysis to determine feasible routes, their estimated travel time, the estimated drive time with and without traffic to get between those same destinations, and the number and type of businesses in the communities where new or existing terminals could be located. This allowed the research team to evaluate time savings and identify pedestrian generators, local attractions, and other transit options nearby. An [ArcGIS dashboard¹](http://go.ncsu.edu/ferries) of potential routes was created, which will allow NCDOT and any stakeholders involved in planning processes to use this data.

Figure 3: ArcGIS dashboard displaying potential routes with shorter ferry travel time than driving time

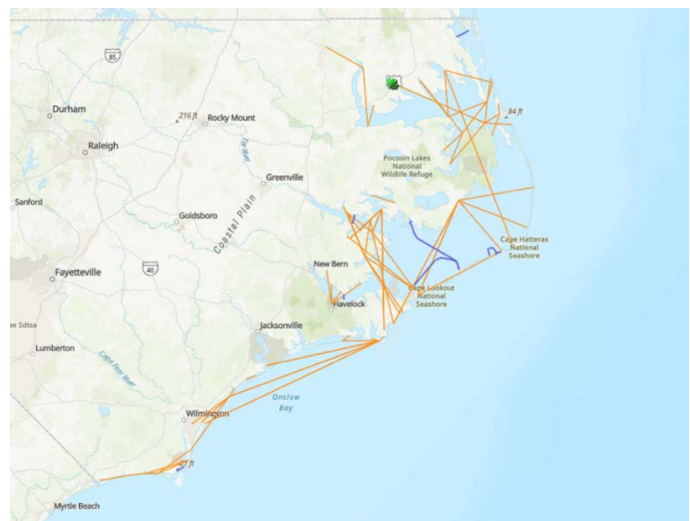
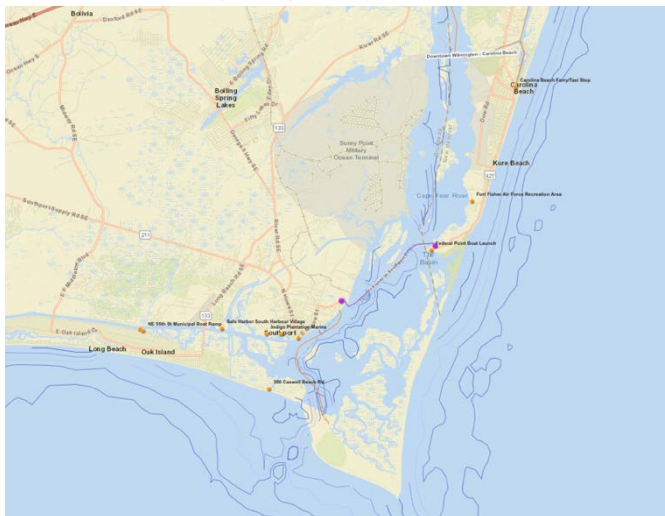


Figure 4: ArcGIS dashboard displaying potential and current sites, bathymetry, and multimodal connections



An [additional ArcGIS dashboard²](https://go.ncsu.edu/ferryroutes) was created to display existing ferry terminals, multimodal connections, bathymetry and other supporting infrastructure. This can be used in conjunction with the dashboard of potential routes to further assess routes and sites.

¹ <http://go.ncsu.edu/ferries>

² <https://go.ncsu.edu/ferryroutes>

Public Meetings

The research team conducted public meetings with community members and representatives. Meetings were held both in person and virtually through an online meeting platform. These public meetings allowed the research team to gain a local perspective and collect information on desired ferry routes, potential sites for ferry terminals, and potential environmental impacts and limitations. The following meetings were held:

- Cape Fear River and Southeast Coast | June 1, 2022 (virtual)
- Albemarle Sound and Currituck Sound | June 14, 2022 (virtual)
- Pamlico Sound and Pamlico River | June 14, 2022 (virtual and in person)
- Neuse River and Crystal Coast | June 15, 2022 (virtual)

Figure 5: Pamlico Sound and Pamlico River in-person session

Participants were able to suggest specific sites for terminals, their desired routes, and any concerns they had. For example, some participants voiced concerns about environmental impacts. The feedback from community members and stakeholders was considered in assessing regional feasibility. Additionally, the research team observed that several sites and routes were frequently mentioned that would have a shorter drive time but were still seen as desirable by community members including routes from Ocracoke connecting to Vandemere, Washington, Belhaven, Bayview, and Bath.



Because Ocracoke was frequently mentioned as a desired destination by community members, the research team met with local representatives to discuss the feasibility of a passenger ferry route. Local representatives expressed that Ocracoke is a “most endangered” ferry route, with severe environmental challenges such as shoaling, and the community is trying to formulate new ideas to maintain access to the island. A passenger ferry route would be beneficial for tourism and business, and would be more feasible with a pre-existing ferry basin. Additionally, another connection to the mainland would help workers to commute and would improve access to healthcare for island residents as it can be difficult to get care for people who live on the island and medical emergencies can present a strain on emergency medical services.

Site Visits

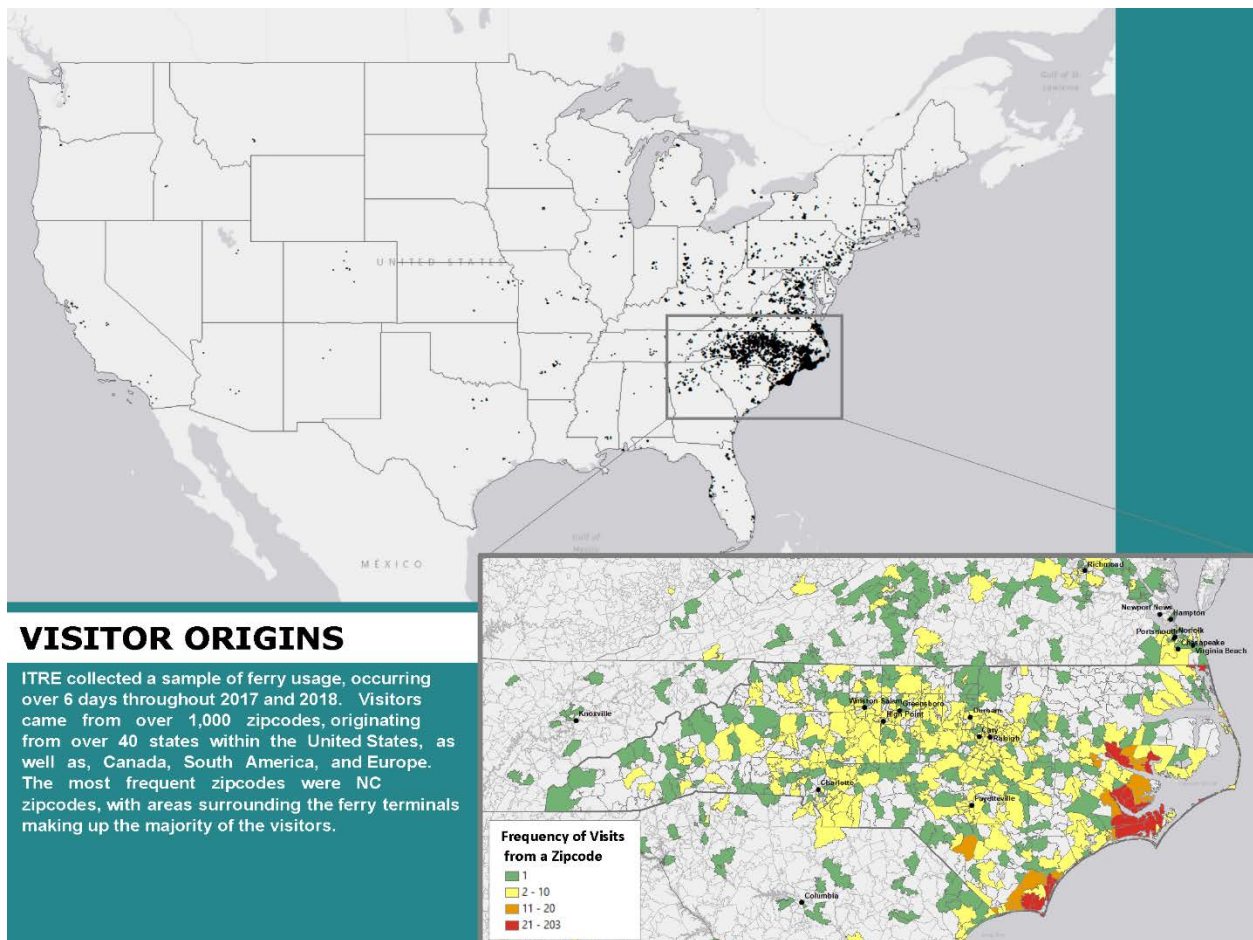
As part of this research, ITRE conducted site visits at a sample of coastal locations that could potentially benefit from the addition of passenger ferry service. This research is a continuation of the efforts that have been conducted over the last three decades, which have focused on the economic development potential of implementing passenger ferry service in North Carolina's Coastal Communities. Site visits at a sample of locations that could potentially support ferry service were conducted in the Fall of 2022. These locations and the dates of their site visits are included below:

- Vandemere | October 17, 2022
- Washington | October 17, 2022
- Outfall Canal | October 17, 2022
- Manteo | October 18, 2022
- Belhaven | October 18, 2022
- Brunswick County | November 7, 2022
- Pender County | November 7, 2022

A summary of each of these prospective locations with information on conditions that support passenger ferry route development, anticipated population served, site specifications, other considerations, and site visit contacts can be found in the appendix of this report.

Due to a demonstrated need for additional ferry service to Ocracoke Island, as well other coastal communities in North Carolina, multiple locations are viable for passenger ferry service. Survey data shows that North Carolina's ferry system draws visitors from more than 40 states, over a six-day survey period, and is a major facilitator of economic activity (see Figure 6). Based on this data, new passenger ferry service would facilitate additional economic activity and could provide economic development opportunities for economically distressed communities in North Carolina.

Figure 6: Six-Day Sample of Visitors Who Used the NC Ferry System by Zip Code (2017-2018)



Feasibility Assessment

The research team created a matrix to assess the various locations assessed in this study, shown in Figure 7. This allows for an easily replicable and standardized framework in future considerations for route planning and assessment. Travel time savings, existing tourism demand, potential tourism demand, existing commuting demand, potential commuting demand, and existing modal connects were all sourced from publicly available data at the county level. This same analysis could also be employed at a smaller geographical level, such as a specific region or town.

Figure 7: Matrix to Assess Feasibility

	Travel time savings	Existing tourism demand		Potential tourism demand	Existing commuting demand	Potential commuting demand	Existing modal connections
	Based on travel time model	Recreation (visitor spending, 2021, in millions)	Total (visitor spending, 2021, in millions)	Spending growth rate, 2020 to 2021	Workers in commuting flow, 2011 to 2015	Percent growth in commuting flow between 2009-13 and 2011-2015	Based on county and NCDOT existing and planned infrastructure
Pamlico Sound and Pamlico River	Potential for travel time savings	17.67	127.8	70.8%	18,050	-4.3%	Local demand response transportation, fixed route transit, intercity bus
County evaluated: Beaufort							
Neuse River and Crystal Coast	Varies, potential for travel time savings	5.56	34.05	45.9%	3,512	-2.4%	Local demand response transportation, fixed route transit, intercity bus
County evaluated: Pamlico							
Albemarle Sound and Currituck Sound	Potential for travel time savings	69.88	473.2	26.0%	6,496	4.8%	Local demand response transportation, intercity bus
County evaluated: Currituck							
Cape Fear and Southeast Coast	Minimal, but important to consider additional congestion potential in peak months	119	930.4	33.4%	119,274	3.9%	Bicycle, pedestrian, and multiuse paths; fixed bus route service, local demand response transportation, intercity bus
County evaluated: New Hanover							

Across all regions, there is community interest in establishing or expanding ferry service. While some of the areas evaluated, such as the Cape Fear and Southeast Coast region already have considerable existing tourism demand, the spending growth rate in other regions such as the Pamlico Sound and Pamlico River and Neuse River and Crystal Coast indicate the potential for growth. Furthermore, it is important to consider site-specific features such as attractions, pedestrian generators, and mobility in making any decisions to implement a specific route.



Conclusions

Findings Relevant to NCDOT

The research team established that there are various regions and towns along North Carolina's coast that could feasibly serve as a site for a ferry terminal. There is considerable interest in such a terminal within communities across all the regions examined in this report. These communities include Pamlico Sound and Pamlico River, Neuse River and Crystal Coast, Albemarle Sound and Currituck Sound, and Cape Fear and Southeast Coast, each of which are discussed further in the appendix of this report.

As indicated by similar studies, community engagement and interest are important in ensuring economic support of a ferry route. As such, the research team created a toolkit that can be used by NCDOT and communities to assess the feasibility of passenger ferry service using geospatial analysis with online, easily accessible and updatable dashboards and objective identification of key markers of potential impact of a ferry route. Examples include travel time savings, existing and potential tourism demand, existing and potential commuting demand, and existing modal connections.

In addition to studying feasibility of new passenger ferry locations, the research team found that the Ocracoke Express supports economic activity by helping passengers reach work, retail, recreational, and educational expectations. The introduction of the Ocracoke Express has supported Hyde and Dare counties by bolstering employment, earned income, economic output, and tax revenue. Additionally, passengers can experience safety benefits, travel time savings, and transportation cost savings.

Financial feasibility is a critical consideration for any potential future passenger ferry route. Financial support could come from a variety of public and/or private sources of funding, and different components of the route system may come from different types of funding. For example, the ferry terminal might be funded differently than the access road, vessel, transit connectivity, etc. Connections to public lands may also be eligible for funding support.

Some communities in North Carolina include water transportation in local and regional transportation organization planning processes and reports. Communities that wish to establish a passenger ferry may opt to include potential ferry routes and related transportation components in relevant planning documents. This practice can help an area consider and document route characteristics and requirements such as infrastructure.



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Appendix

The Economic Importance of Ferry Operations

Ferries play a pivotal role as an economic and social enabler providing access to a host of essential locations. In 2019, more than 4.27 billion passengers traveled by ferry worldwide, with the global ferry industry supporting \$60 billion in GDP and 1.1 million jobs globally.¹

Within the United States, coastal communities in Alaska, Maine, New Jersey, North Carolina, Texas, and Washington rely on ferry operations to reach school, work, medical, shopping, dining, social, and other locations.² Among these states, North Carolina has the second largest ferry system, transporting 800,000 vehicles and 1.8 million passengers annually.³ In 2019, the ferry system supported \$735.2 million in economic output,⁴ the equivalent of \$873.8 million in 2023 US dollars and approximately 1 percent of the ferry industry's global share of economic output.⁵ Currently operating 21 ferries with everyday service on seven regular routes across the Currituck and Pamlico sounds as well as the Cape Fear, Neuse, and Pamlico rivers.⁶

Prospective Economic Development Opportunities in North Carolina

In 2019, the NC Ferry Division added passenger ferry service to alleviate summertime congestion on the popular Hatteras-Ocracoke vehicle ferry route. Now operating in its fourth season, the Ocracoke-Hatteras passenger ferry serves as a viable demonstration of what many elected leaders, city planners, and economic developers would like to emulate in their coastal communities.

Within Eastern North Carolina, there has been a lot of activity focused on advancing passenger ferry operations. This has included a number of planning efforts, research studies, and reports that promote passenger ferries in North Carolina's coastal communities. A sample of these activities are included below:

¹ Oxford Economics. 2021. "Economic impact of the global ferry industry." Online: <https://www.oxfordeconomics.com/resource/economic-impact-of-the-global-ferry-industry/>

² Sullivan, J. and DeSimone, A. 2014. "Where The Water Meets the Road." FHWA. Online: <https://highways.dot.gov/public-roads/marchapril-2014/where-water-meets-road>

³ WOBX. 2022. "Newest member of N.C. Ferry System fleet, M/V Salvo, arrives in Manns Harbor."

⁴ NCDOT. 2020. "Economic Contribution of North Carolina's Ferry System." ITRE. Online: <https://trid.trb.org/view/1689723>

⁵ Derived from: (1) Oxford Economics. 2021. "Economic impact of the global ferry industry." Online: <https://www.oxfordeconomics.com/resource/economic-impact-of-the-global-ferry-industry/>; (2) NCDOT. 2020. "Economic Contribution of North Carolina's Ferry System." ITRE. Online: <https://trid.trb.org/view/1689723>

⁶ NCDOT. 2023. "Ferry Schedule." Online: <https://www.ncdot.gov/travel-maps/ferry-tickets-services/routes/Pages/default.aspx>

Passenger Ferries in North Carolina. In May of 1994 a report entitled, “A Preliminary Analysis of the Feasibility of Operating High Speed Passenger Ferries on the Rivers and Sounds of Northeastern North Carolina” was commissioned by the Office of Tourism Development of the Northeastern North Carolina Economic Development Commission. The report provided an overview of passenger ferry technology, examples of existing operations, the Regional Harbor Strategy to promote passenger ferry growth in 16 counties of Northeastern North Carolina, and feasibility considerations for vessel purchase and route implementation. During the time of the study there were 718 high speed ferries operating internationally.⁷ Currently, an estimated 3,272 ferry vessels are operating internationally with 333 conducting operations in the United States.⁸

Harbor Town Concept. In 2015 UNC conducted a study on the Harbor Town concept, which would connect the historic communities of Columbia, Edenton, Hertford, Plymouth, Roper, Elizabeth City, and Kitty Hawk by passenger ferry. These harbor towns on the Albemarle Sound have a high tourism market appeal because of their unique identities, historic sites, and ecological offerings. Study findings demonstrated that ferry service in the Albemarle Sound region could draw 170,000 annual visitors and generate approximately \$6.4 million dollars over a ten-year period.⁹ At the time of the study, approximately 729,000 North Carolinians lived within 60 miles, 2.4 million North Carolinians live 60-120 miles away, and 4 million North Carolinians live 120-180 miles away from the region.

Since the Regional Harbor strategy and the Harbor town concepts came into fruition, Northeastern North Carolina has witnessed some passenger ferry-related advancements. In addition to the aforementioned Ocracoke-Hatteras passenger ferry route, as part of Session Law 2022-74, House Bill 103, the General Assembly earmarked \$5 million to be provided as a grant to Harbor Towns, Inc., a nonprofit corporation, to be used for tourism-based development in the Plymouth, Columbia, Edenton, Manteo, Hertford, and Elizabeth City.¹⁰

The Ocracoke-Hatteras passenger ferry service and the \$5 million seed grant for North Carolina’s Harbor Towns helped meet demand at some of North Carolina’s most

⁷ Fast Ferry International. 2023. “Fast Ferry Intelligence Data.” Online: <http://www.fastferryinfo.com/>

⁸ Ibid

⁹ Sourced from: Didow, N. 2015. “Water Transportation in the Albemarle Sound.” \$6.4 million represents a 10-year net present value of \$5 million 2015 USD adjusted for inflation to 2023 USD using the BLS CPI calculator.

¹⁰ Sourced from: H.B. 103 – 2022 Appropriations Act (2021-2022). These funds were diverted from the Town of Edenton as part of the State Capital and Infrastructure Fund Corrections. Online: <https://www.ncleg.gov/Sessions/2021/Bills/House/PDF/H103v5.pdf>

suitable passenger ferry locations. However, in addition to these investments, there are many other prospective passenger ferry sites in North Carolina that could flourish. If developed, these passenger ferry routes could generate substantial economic activity for their communities.

As part of Research Project 2021-19: “Passenger Ferry Feasibility Study - Other Routes,” the Institute for Transportation Research and Education conducted site visits at a sample of coastal locations that could potentially benefit from the addition of passenger ferry service. This research is a continuation of the efforts that have been conducted over the last three decades, which have focused on the economic development potential of implementing passenger ferry service in North Carolina’s Coastal Communities. Site visits at a sample of locations that could potentially support ferry service were conducted in the Fall of 2022. These locations and the dates of their site visits are included below:

- Vandemere | October 17, 2022
- Washington | October 17, 2022
- Outfall Canal | October 17, 2022
- Manteo | October 18, 2022
- Belhaven | October 18, 2022
- Brunswick County | November 7, 2022
- Pender County | November 7, 2022

A summary of each of these prospective locations containing information on conditions that support passenger ferry route development, anticipated population served, site specifications, other considerations, and site visit contacts are discussed.

Vandemere

Conditions That Support Ferry Route Development

Vandemere, meaning “village by the sea,” was established in 1895 on the Bay River. Centrally located between the Pamlico and Neuse Rivers, Vandemere offers a family friendly environment with access to parks, fishing, historical sites, museums, aquariums, beaches, and many other recreation sites. In 2017, Vandemere’s Waterfront Park won national recognition by receiving the Outstanding Project Award from the States Organization for Boating Access (SOBA; see Figure 8 on page 23). The park features eight acres complete with dual boat ramps, a kayak launch, concrete docks, boat slips, gazebos, grills, and public restrooms. The Waterfront Park has become an important recreational anchor, bringing tourists from across the state to take part in boating and world class fishing. Coastal North Carolina is known for its Red Drum, Flounder, Sea Trout, and Croaker, which are just a few of the many fish that are popular in the area. Additionally, blue crab, shrimp, and oysters are also very popular catches in Vandemere.

Primary Ferry Route Functions

Enable Weekend Getaways to Ocracoke Island

- Reduce commute times from 5.5-7 hours to 3.5-5 hours for residents in Raleigh, Durham, Chapel Hill.

Mainland Access for Ocracoke Residents

- Provide access to important medical, education, daycare, elder care, retail, and work locations.

Much of Vandemere's water depths are conducive to a wide range of watercraft. In Vandemere’s vicinity all size boats and vessels; from kayaks to industrial trawlers can be spotted. Vandemere is situated about 3 miles from the Atlantic Intracoastal Waterway and is one of the shorter distances to Ocracoke if traveling by boat.

Anticipated Population Served

With Ocracoke being such an important draw for tourism, Vandemere sees itself as a vital gateway to the Outer Banks, especially for the 1.85 million residents living in Raleigh, Durham, Chapel Hill, or other locations near the Research Triangle. Currently, visitors traveling from the Triangle region spend 5.5 to 7 hours commuting to Ocracoke, which is often prohibitive for weekend getaways. However, if Vandemere were to become the location of a passenger ferry terminal, weekend travel could become possible (see Figure 1 and Figure 9).

Beyond visitor travel, a Vandemere passenger ferry would also enable access to essential medical, education, daycare, elder care, and retail locations for Ocracoke residents who visit the mainland to obtain these services. A list of essential services that Ocracoke residents take advantage of in Pamlico County are shown in Figure 10. A passenger ferry would also enable residents living in or near Vandemere to commute to Ocracoke to work, especially during peak season when the island has its greatest need for additional employees.

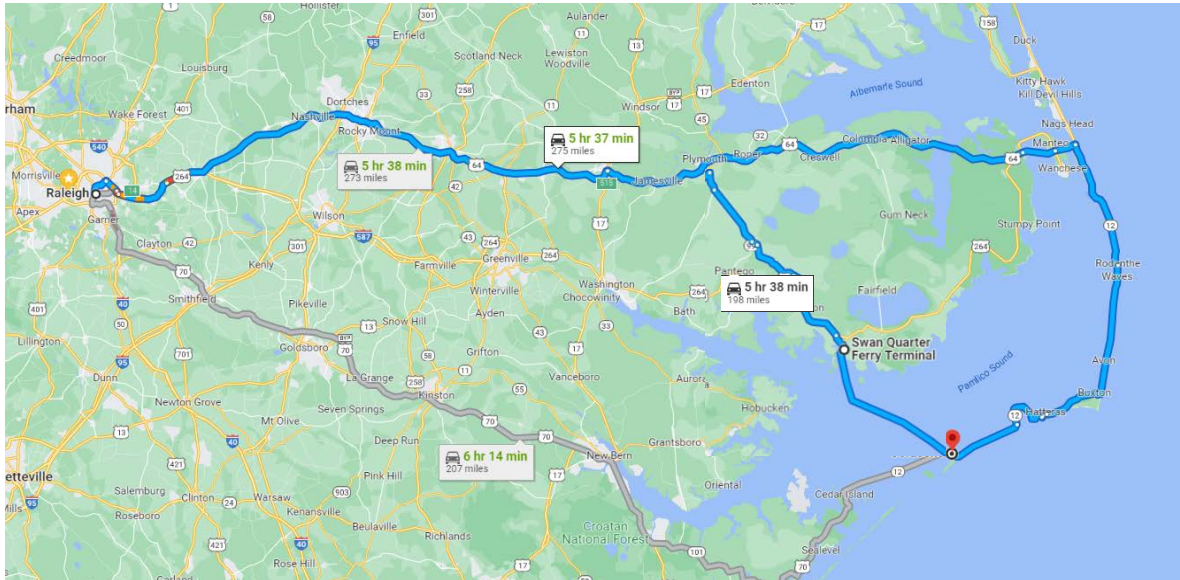
*Table 1: Vandemere Passenger Ferry Target Market**

County	Population
Alamance	171,415
Chatham	76,285
Durham	324,833
Orange	148,696
Wake	1,129,410
Total	1,850,639

Source: US Census, 2020

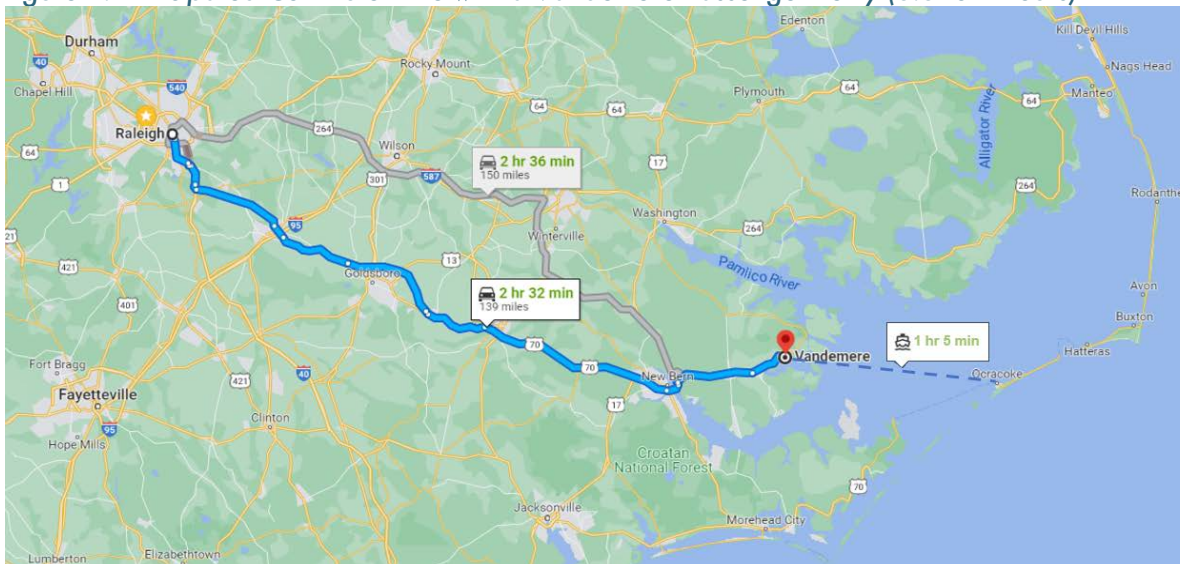
* This target market estimate does not include Carteret, Craven, Cumberland, Harnett, Johnston, Jones, Lenoir, Sampson, or Wayne Counties which are anticipated to be important ancillary markets as well.

Figure 1: Current Commute Time from Raleigh to Ocracoke (5.5 to 6.5 hours)



A trip from Raleigh to Ocracoke would require a commute time of 5.5 to 6.5 hours. A traveler can head east through Manteo and then south to the Hatteras Ferry Terminal for the quickest commute time (an estimated 5 hours 37 minutes), assuming that they will be able to get on the first ferry boarding from Hatteras to Ocracoke. For a similar commute time (5:38), a traveler can go east to Plymouth and then head south until boarding the Swan Quarter Ferry. A traveler can also head southeast through Morehead City and then board the Cedar Island Ferry (an estimated commute time of 6 hours and 14 minutes). With most workdays ending from 3-5pm on Friday, a commute time of 5-6 hours is often prohibitive for those desiring a weekend getaway to Ocracoke.

Figure 2: Anticipated Commute Time with a Vandemere Passenger Ferry (3.5 to 4 hours)



If a passenger ferry route were available in Vandemere, a weekend getaway would become possible. It is anticipated that the trip to Ocracoke for these commuters could be reduced to 3.5 to 4.5 hours (2.5 hours by car and a little over one hour by ferry).

Figure 3: Key Resources in Pamlico County for Outer Banks Resident Needs

Medical Resources

- CCHC Pamlico Medical Center- full primary care, x-rays, labs
- Pamlico Community Health Center- income based primary care medical and dental
- Rose and Rose, DDS – Dental services
- Brian Carawan DDS- Dental services
- Oriental Dental- Dental services
- Brian Smith, D DDS- Smith and Smith Orthodontists
- Pamlico Family Eyecare
- HOPE Clinic -free medical and medications for working poor.
- New Beginnings - Opioid and alcohol recovery program
- Axelson Chiropractic
- Inner Banks Chiropractic
- Pamlico County Health Department- WIC, checkups, vaccinations, women's health, health care
- Pamlico Partnership for Children's - Strengthening Families Program
- Still Waters -Family, individual, and children mental counseling
- Heartworks- childcare and mental health counseling
- Promised Place- trauma and mental health counseling
- Oriental Counseling Center
- Florence E. Perry, RPH
- CVS Pharmacy
- Bayboro Pharmacy
- Walmart Pharmacy
- Realo Pharmacy
- Hospice
- Carolina East Health Systems in New Bern - closest hospital. Fastest access for a large portion of the Outer Banks for medical procedures is through Pamlico County.

Education / Daycare / Youth Engagement

- Pamlico Community College
- Pamlico County Schools
- Arapahoe Charter School
- Pamlico Christian Academy
- Pamlico County Schools – Pre-K
- Pamlico Christian Academy – Pre-K
- Motion Church Preschool – Pre-K
- Smiling Faces Daycare
- First Friends Daycare
- Pamlico Child Development Center
- HeartWorks- after school program
- Youth Navigating Towards Opportunity - Ages 4-19 youth engagement

Elder Care

- The Gardens of Pamlico- assisted living
- Grantsbrook- nursing home
- Trinity Home Health Care, LLC
- Kingdom 1st Home Care, LLC

Military

- US Coast Guard Station Hobucken

Site Specifications

The Town of Vandemere has identified four potential passenger ferry site locations, which are shown in Figure 5, Figure 11, Figure 14, and Figure 13 on page 22. The first prospective site is a 10-acre lot that is ideally situated with access to 8-10 feet deep water on the Bay River. Additionally, the lot is adjacent to Vandemere's iconic Waterfront Park, which enables passengers waiting to board the ferry access to the park and all of its amenities, including public restrooms. The first site's parcel has enough space available for 50-100 lawn parking spaces with overflow spots available at Waterfront Park. The Town of Vandemere would be willing to discuss additional parking options and investments associated with this site, as well as the three other prospective ferry sites.

The second option for a ferry site is at the location of Vandemere's old town boat ramp. This location includes approximately 1.8 acres of land and would have enough space for 25-50 vehicles. The second passenger ferry site option is approximately 1/10 of a mile away from Waterfront Park. Golf carts or a shuttle service were discussed as options for to get people to and from overflow parking at Waterfront Park.

The third option for a passenger ferry location is at the Pamlico Packing site. This site is 1.86 acres and is adjacent to the second option. Locating at this site would require off-site parking with shuttle or golf cart service.

The fourth option for passenger ferry service is on Vandemere Creek. The property is 50 acres and could accommodate 100+ lawn parking spaces.



Source: ITRE. 2022.

Vandemere's first passenger ferry site option is adjacent to Waterfront Park.



Source: ITRE. 2022.

Public waterfront access that awaiting ferry passengers could visit prior to departure.

Figure 4: First Option for a Passenger Ferry Site in Vandemere, NC



Source: Pamlico County GIS, 2023.

Figure 5: Second Option for a Passenger Ferry Site in Vandemere, NC



Source: Pamlico County GIS, 2023.

Figure 6: Third Option for a Passenger Ferry Site in Vandemere, NC



Source: Pamlico County GIS, 2023.

Figure 7: Fourth Option for a Passenger Ferry Site in Vandemere, NC



Source: Pamlico County GIS, 2023.

Figure 8: States Organization for Boating Access (SOBA) Award for Waterfront Park



231 South LaSalle Street ■ Suite 2050 ■ Chicago, IL 60604
Tel: 312.946.628 ■ Fax: 312.946.0388 ■ sobaus.org ■ info@sobaus.org

Sara Sherman, PE
North Carolina Wildlife Resources Commission
Division of Engineering Services
1720 Mail Service Center
Raleigh, NC 27669-1701

Dear Sara:

Each year the States Organization for Boating Access (SOBA) solicits nominations for outstanding boating access projects from our member states across America and its territories. The Vandemere Boating Access project received such a nomination from the North Carolina Wildlife Resources Commission. This nomination was evaluated by the SOBA Executive Board using several criteria, including the use of sound engineering principles, innovative solutions to problems, cost effectiveness, and measures taken to reduce long-term maintenance. This particular project was infused with vision and a strong desire by the Town of Vandemere to make this into a reality.

It is my pleasure to inform you this project has been selected to be nationally recognized by SOBA with the Outstanding Project Award at our annual conference this August 28th – 31st in Anchorage, Alaska. As a function of our mission to support state boating access programs and the projects they undertake, SOBA's annual conference is an important collaboration of the best and brightest in our profession.

Thank you for your support of boating access, and for truly making a positive difference for the boating public.

Sincerely,

Ron Christofferson
President
States Organization for Boating Access

Cc: Dean Barbee, Project Manager

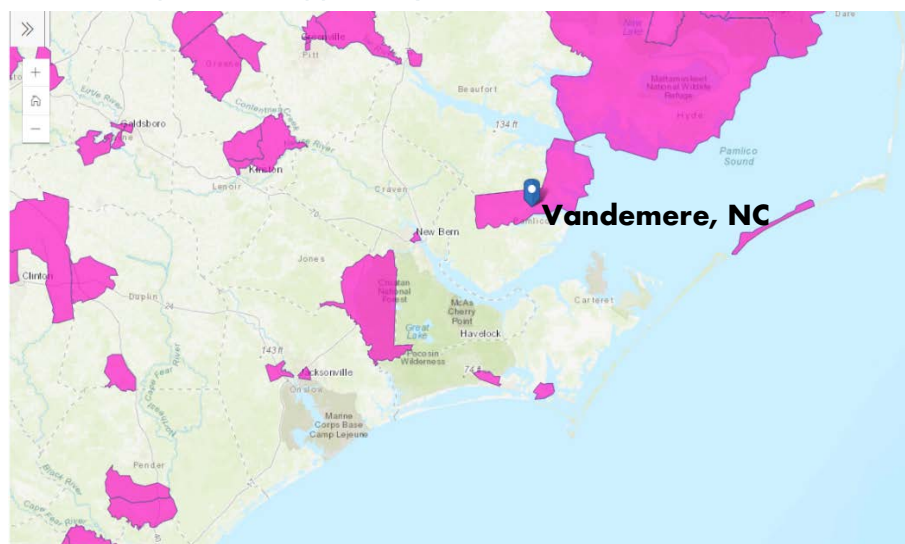
2016/17 Executive Board:	<i>Ron Christofferson (AZ)</i> President	<i>Scott Meister (SC)</i> Vice President	<i>Janine Belleque (OR)</i> Immediate Past President
Members-At-Large:	<i>Lorene Reid (GA)</i>	<i>Alan Wolslegel (WA)</i>	<i>Trey Cooksey (TX)</i> <i>Preston Smith (VA)</i>

Other Considerations

In 2021, there were approximately 768,400 ferry passengers who took trips originating from or terminating at Ocracoke Island.¹¹ With the establishment of a Vandemere Ferry Route, it is anticipated that number would increase substantially. There are currently more than 1.85 million North Carolinians residing in Vandemere's target market (see Table 1). If new ferry access at Vandemere resulted in just 1 percent of those residents making one additional trip to Ocracoke, that would equate to an additional 18,500 passenger ferry trips, a total which is 11.5 percent more than all the North Carolina passenger ferry trips made in 2021.¹² Using VisitNC visitor profile data to assume a group size of 2.8 individuals, staying for 2.8 nights, and spending \$480,¹³ a Vandemere passenger ferry would facilitate \$3.2 million in direct expenditures. These direct expenditures would give rise to a larger economic impact when accounting for indirect (business-to-business transactions) and induced (transactions generated from household income spent within the economy). A Vandemere passenger ferry would likely support more than 50 jobs, \$1.9 million in employee earnings, \$5.5 million in annual economic output, and \$129,000 in local and state tax revenue.¹⁴

In addition to helping tourism on Ocracoke, a passenger ferry would have spillover benefits for the Town of Vandemere and Pamlico County. There are a number of medical providers and Vandemere residents that would be willing to provide last-mile transportation services (through ride share companies) for clients arriving in Vandemere from a passenger ferry. These last-

Figure 9: Map of HUD Opportunity Zones



Source: Housing and Urban Development, 2018.

¹¹ Derived from: NCDOT Ferry Division. 2022. "Monthly Traffic Report."

¹² Derived from: NCDOT Ferry Division. 2022. "Monthly Traffic Report." In 2021, there were 16,588 Passenger ferry trips. Passenger ferry service was available between Hatteras and Ocracoke from May through September.

¹³ Assumptions extracted from: Economic Development Partnership of North Carolina. 2022. "Visitor Profile Studies." Online: <https://partners.visitnc.com/visitor-profile-studies>

¹⁴ IMPLAN analysis conducted using EDPNC Visitor Profile data for group size, overnight stay, and expenditures. These assumptions were applied to an estimated 18,500 additional ferry passengers, which came from the assumption that a Vandemere passenger ferry would capture 1 percent of its target market population.

mile transportation services could also be valuable to transport interested travelers to Raleigh-Durham International (RDU) or Coastal Carolina Regional (EWN) (located in New Bern) airports. There have also been a number of economic development discussions involving ways to capitalize on the increase in visitor traffic passing through Vandemere on the way to and from Ocracoke. Bed and breakfasts, hotels, restaurants, and wedding venues were discussed as the feasible developments to coincide with passenger ferry operations and prospective developers have already been communicating these interests with the Town of Vandemere. Additionally, existing offerings in Vandemere and Pamlico County, in conjunction with new developments spurred by a passenger ferry, could attract a share of travelers to stay in Vandemere and day-trip to Ocracoke. A passenger ferry investment would help support the existing marinas, camp sites, lodging, museums, aquariums, historic sites, and businesses in Vandemere and the county. Since Vandemere resides within an Opportunity Zone and a Tier II county, feasible economic development opportunities should be highly considered and could leverage existing state programs for support.

Vandemere has several well-known sailing camps and outdoor resources that attract thousands of campers, employees taking corporate retreats, and collegiate athletes. Having access to Ocracoke via passenger ferry could strengthen the desirability of these camp offerings. The Town of Vandemere is already an attractor for the 30,000+ marines stationed at the Marine Corps Air Station (MCAS). With a passenger ferry servicing Ocracoke, MCAS may become a target market for Ocracoke day-trips.

In addition to providing economic benefits to Ocracoke, Vandemere, and the region, a passenger ferry service would also provide a valuable evacuation route for Ocracoke residents and visitors during storm events. Off-season, it could also be used for emergency evacuation training.

Site Visit Contacts

During the Vandemere site visit conducted on behalf of NCDOT Research Project 2021-19: "Passenger Ferry Feasibility Study - Other Routes," the Institute for Transportation Research and Education met with five primary contacts to discuss the feasibility of a passenger ferry in Vandemere. For more information about how a passenger ferry would benefit the Town of Vandemere and Pamlico County, please contact the individuals listed below.

- Beth Bucksot, Economic Development Director | beth.bucksot@pamlicocounty.org
- Becca Eversole, Senior Transportation Planner | beversole@eccog.org
- Judy Thaanum, Mayor | judythaanum@gmail.com

- Tom Woodruff, Town Manager | townofvandemere@gmail.com
- Sue Britt, Town Clerk | vandemereclerk@live.com

Washington

Conditions That Support Ferry Route Development

Washington was historically home to three linguistic tribes, the Iroquoian, Siouan, and Algonkian. The first English explorers visited the area in 1585 and it eventually became the Washington settlement in the 1770s. Situated on the Banks of the Pamlico River, Washington played a strategic role during the War for Independence and became an established commercial and cultural center thereafter due to its prized location on navigable waterways.¹⁵ In 1969, Washington undertook a major renovation project and witnessed the construction of Stewart Parkway, a road and park paralleling the waterfront area. This project included the construction of a 1,500-foot-long walkway and bulkhead along the Pamlico River designed for both pedestrian and boat traffic.¹⁶ In 1978, the Washington Historic District was established and placed on the National Register of Historic Places, encompassing more than 600 properties in the central business district and residential areas.¹⁷ In the early 1990s and continuing today, a period of downtown revitalization took hold, of which new shops, restaurants, and businesses have opened and operate in the historic downtown area overlooking the Pamlico River.¹⁸ In 2002, the City of

Primary Ferry Route Functions

Weekend and Day Trips to Ocracoke Island

- Greenville, Washington, Kinston, and New Bern operating as the primary markets.

Establish Inner Banks Market During Off-Season

- When not running peak season trips to Ocracoke, the passenger ferry could be used to dock at different locations along the Inner Banks including Bath, Belhaven, or Bayview.



Source: ITRE, 2022.

Washington's NC Estuarium on the waterfront.



Source: ITRE, 2022.

ferry.

¹⁵ City of Washington North Carolina. "History." Online: https://www.washingtonnc.gov/residents/community_information/history.php

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

Washington completed the Renaissance and Stormwater Management projects, that expanded boater and pedestrian access to Washington's waterfront, enhanced parking and traffic flow, and created a stronger tie between the waterfront, the Historic District, and downtown.¹⁹

Figure 10: Prospective Local Markets

County	Population
Beaufort	44,652
Craven	100,720
Hyde	4,589
Lenoir	55,112
Martin	22,031
Pamlico	12,276
Pitt	170,243
Tyrell	3,245
Washington	11,003
Total	423,871

Source: US Census, 2020

As a key destination on the waterfront, the NC Estuarium serves as both a geographical and educational entry point for the Pamlico River showcasing the ecology, history, and maritime culture that defines the Inner Banks community.²⁰ Part aquarium, museum, and part classroom for students of all ages, its purpose is to bring attention to the Inner Banks' innumerable estuary systems, which are vital components of the Eastern North Carolina ecosystem.²¹ Additionally, the City of Washington, Beaufort County, and the Partnership for the Sounds would like to see the NC Estuarium become the staging area for a passenger ferry route from Washington to Ocracoke. With over 200 exhibits and 12,500 square feet of space, the NC Estuarium could accommodate an entire ferry boarding party. This would help provide passengers with entertainment as they wait to board the ferry and could bring additional revenue to the Estuarium.

Anticipated Population Served

As a city of approximately 10,000 people and a greater community of approximately 26,000 residents, Washington remains the economic, cultural, recreational, and medical center of Beaufort County and of several other counties as well.²² It is anticipated that Washington would be a primary market for using passenger ferry service to Ocracoke and would attract a number of other nearby residents as well.

Situated just 30 minutes away by car, with a population density of 10,000+ people per square mile²³ and a total population of 88,700,²⁴ Greenville is a key market for a

¹⁹ Ibid.

²⁰ Pamlico.com. 2023. "North Carolina Estuarium." Online: <https://www.pamlico.com/north-carolina-estuarium.html>

²¹ Pamlico.com. 2023. "North Carolina Estuarium." Online: <https://www.pamlico.com/north-carolina-estuarium.html>

²² City of Washington North Carolina. "History." Online:

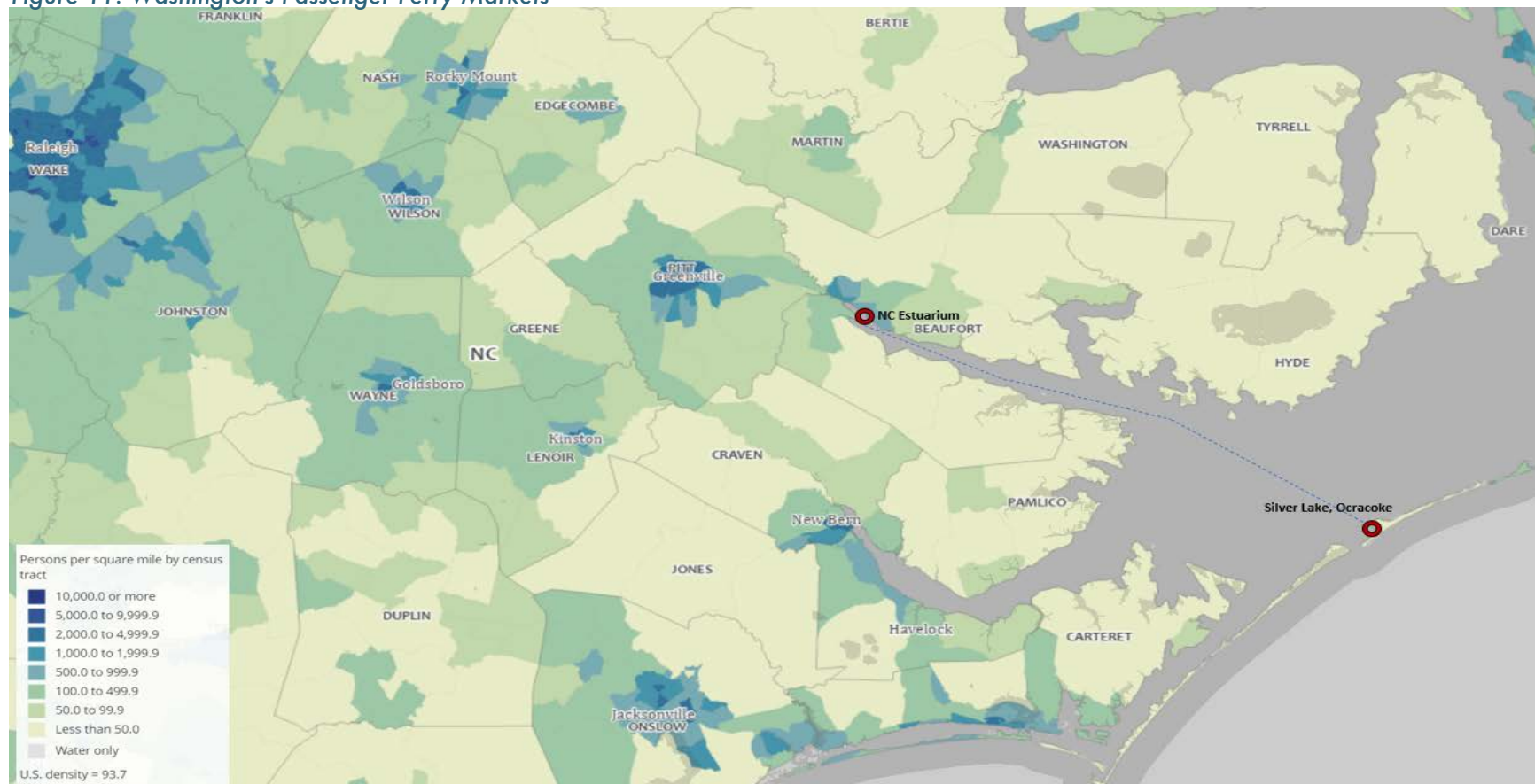
https://www.washingtonnc.gov/residents/community_information/history.php

²³ North Carolina Office of State Budget and Management. "2020 Census Demographic Data Map Viewer." Online: <https://www.osbm.nc.gov/facts-figures/population-demographics/nc-census-data>

²⁴ US Census. 2020. Quick Facts: Greenville city, North Carolina. Online: <https://www.census.gov/quickfacts/greenvillecitynorthcarolina>

passenger ferry route from Washington to Ocracoke. Outside of Greenville, other markets in the region include Bath, Belhaven, Kinston, New Bern, and residents in the surrounding counties (see Figure 17 and Figure 18). Altogether, there are approximately 423,800 residents who fall within the prospective market of a Washington to Ocracoke passenger ferry.

Figure 11: Washington's Passenger Ferry Markets



Site Specifications

The NC Estuarium is 12,500 square feet and is situated on a 0.89 acre lot that abuts the Pamlico River. It is anticipated that the Estuarium would serve as the staging area for a Washington to Ocracoke Ferry, which would enable ferry passengers to visit its 200+ exhibits prior to boarding their ferry vessel. Washington's Waterfront surface parking lots are expected to manage vehicle parking, though additional options for parking are possible and welcome. Passenger ferry vessels are anticipated to dock at the Washington waterfront adjacent to the Estuarium. Docking infrastructure is available on the Washington waterfront adjacent to the NC Estuarium. This infrastructure includes dockage, tie ups and a boarding ramp that could be used for passenger ferry operations. Docking infrastructure has been used previously by Eastern Carolina University to dock its 65-foot research vessel the R/V Perkins and by a commercial operation called the "Belle of Washington."

Other Considerations

A Washington passenger ferry would generate substantial tourism opportunities, both from Washington to Ocracoke and Ocracoke to Washington. It could also service a

Figure 12: NC Estuarium (Staging Area for NC Passenger Ferry)



Source: Beaufort County Parcel Viewer.



Source: ECU News Services, 2019.



Source: Tommy Mobley, 2015.

vision shared among many of the coastal communities in the region of unlocking the Inner Banks to ferry navigation. One idea that has been discussed is to implement a passenger ferry route from Washington to Ocracoke during peak season, but during off-season test out a passenger ferry service that goes between coastal communities such as Bath, Belhaven, Bayview, and others to develop coastal tourism among the historic towns along the Pamlico River. In 1994, Washington was the most western of the “Regional Harbors” evaluated by consultants in “A Preliminary Analysis of The Feasibility of Operating High-Speed Passenger Ferries On the Rivers and Sounds of Northeastern North Carolina.” Its navigable waters and waterfront area have made Washington a viable ferry location for decades.

Site Visit Contacts

During the Washington site visit conducted on behalf of NCDOT Research Project 2021-19: “Passenger Ferry Feasibility Study - Other Routes,” the Institute for Transportation Research and Education met with five primary contacts to discuss the feasibility of a passenger ferry in Washington. For more information about how a passenger ferry would benefit the City of Washington, Beaufort County, and the region, please contact the individuals listed below.

- Brian Alligood, County Manager | brian.alligood@beaufortcountync.gov
- David Clegg, County Manager | dclegg@tyrrellcounty.net
- Jonathan Russell, City Manager | jrussell@washingtonnc.gov
- Jackie Woolard, Executive Director | jpwpfs@embarqmail.com
- Tom Stroud, Deputy Director | tmstroud@embarqmail.com

Outfall Canal

Conditions That Support Ferry Route Development

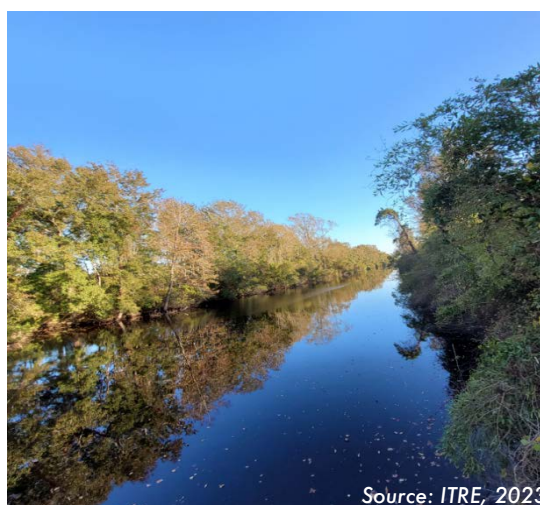
After a map of North Carolina was prepared by Surveyor General Edward Moseley in 1773, plans emerged to drain Lake Mattamuskeet and farm its nutrient rich bed.²⁵ In 1837, North Carolina financed the digging of a seven-mile-long canal to drain the lake into the Pamlico Sound with the ultimate goal to use the resulting farmland to pay for needed public education programs.²⁶ After the canal was constructed, 55,000 acres of water remained in the lake, largely due to much of the lake's water basin being below sea level.²⁷ In 1909, the area became designated as a drainage district and approximately 130 miles of canals were created.²⁸ The Outfall Canal was one of these projects, constructed by mechanical dredge at 7 miles long, 60 feet wide at the base and 70 feet wide at the top.²⁹ The Outfall Canal enabled 20,000 acres of the Mattamuskeet lake bed to be claimed, which led to the development of the Town of New Holland.³⁰ North Carolina Secondary Route 1164, runs adjacent to the outfall canal starting at US-264 and terminating at the Pamlico Sound.

Anticipated Population Served

Due to its proximity to the Swan Quarter Ferry terminal, it is anticipated that an Outfall Canal passenger ferry service would help support



Source: ITRE, 2023.
US-264 intersects SR-1164, which parallels the Outfall Canal.



Source: ITRE, 2023.
The Outfall Canal runs from New Holland to the Pamlico Sound.



Source: ITRE, 2023.
The terminus of SR-1164 at the Pamlico Sound.

²⁵ Bland, S. 2013. "The Serengeti of North Carolina." Online: <https://coastalreview.org/2013/03/the-serengeti-of-north-carolina/#:~:text=Slaves%20dug%20the%20seven%2Dmile,National%20Register%20of%20Historic%20Places>.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid.

²⁹ NC Coast. 2018. "A History of Development Within Lake Mattamuskeet and Surrounding Watershed. Online: <https://www.nccoast.org/wp-content/uploads/2018/02/2-1-18-2-Page-Timeline-of-Changes.pdf>

³⁰ Ibid.

the existing Swan Quarter Ferry market. This could include servicing excess demand during the peak season to and from Ocracoke.

Site Specifications

The unpaved SR-1164 terminates at the Pamlico Sound, where docking infrastructure could be constructed to support passenger ferry service (see Figure 20). Docking infrastructure could also be located along the Outfall Canal. SR-1164 would likely require paving, if Outfall Canal were to become a viable support market for the Swan Quarter ferry. More information about the Outfall Canal passenger ferry concept can be found in the [Ocracoke Observer](#).

Figure 13: Outfall Canal Passenger Ferry Concept



Source: Ocracoke Observer, 2022.

Manteo

Conditions That Support Ferry Route Development

Manteo's location at the confluence of the Albemarle and Pamlico Sounds, and its rich history and culture, make it well-suited as a hub for an intercoastal ferry system. Downtown Manteo offers dozens of dining and drinking establishments, the largest collection of bed and breakfasts and inns on the Outer Banks, and a number of boating, performing arts, and natural attractions. People are drawn to Manteo to catch a show at the nation's longest running outdoor drama, *The Lost Colony*, enjoy its abundant outdoor activities, and take part in water recreation via sailboat, catamaran, or sunset cruise. Once visitors have landed in Manteo they are within close proximity to a number of other attractions on the Outer Banks. Manteo is situated within minutes of Nags Head, Kill Devil Hills, Kitty Hawk, Duck, and the Cape Hatteras National Seashore.

Anticipated Population Served

As a thriving tourist destination, Manteo envisions itself as a hub for an intercoastal ferry network. As such, tourists could base out of Manteo and make day trips to the numerous coastal communities and tourist attractions on the Albemarle Sound (see Figure 15). This concept was spotlighted in the 1990s when it was documented in "A Preliminary Analysis of the Feasibility of Operating High-Speed Passenger Ferries on the Rivers and Sounds of Northeastern North Carolina."³¹ Since that time, the intercoastal ferry network idea has become widely known as the *Harbor Town Concept* through numerous economic development discussions and the "Water Transportation in the Albemarle Sound" study conducted by the UNC Kenan-Flagler Business School. Study findings demonstrated that ferry service in the Albemarle Sound region could draw 170,000 annual visitors and generate approximately \$6.4 million dollars over a

Primary Ferry Route Functions

Serve as a hub for an intercoastal ferry system

- Manteo could connect Nags Head, Kitty Hawk, Duck, Corolla, Elizabeth City, Hertford, Edenton, Plymouth, and Columbia.

Serve as an Express Route to Ocracoke

- Alleviate ferry congestion between Hatteras & Ocracoke during peak season.

Figure 14: Prospective Local Markets

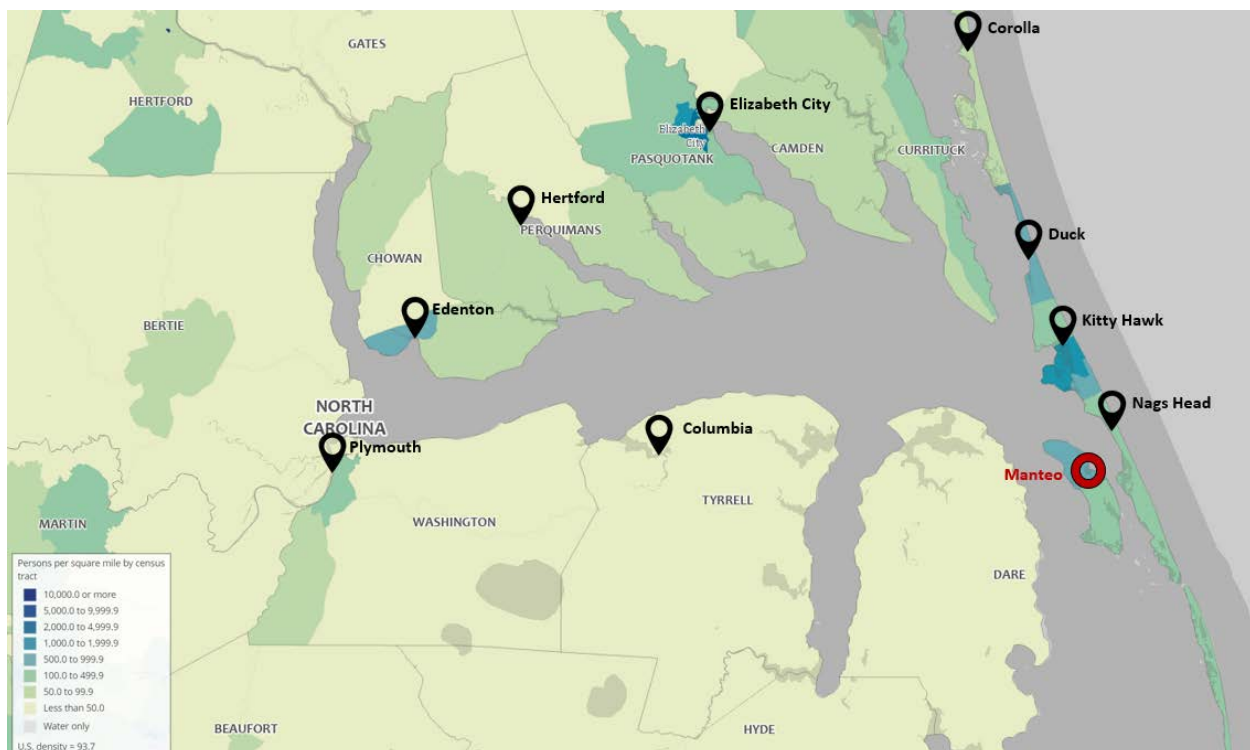
County	Population
Bertie	17,934
Camden	10,355
Chowan	13,708
Currituck	28,100
Dare	36,915
Hyde	4,589
Martin	22,031
Pasquotank	40,568
Perquimans	13,005
Tyrell	3,245
Washington	11,003
Total	201,453

Source: US Census, 2020

³¹ Northeastern North Carolina Economic Development Commission. 1994. "A Preliminary Analysis of the Feasibility of Operating High-Speed Passenger Ferries on the Rivers and Sounds of Northeastern North Carolina."

ten-year period.³² Additionally, during the 2021-2022 fiscal year, General Assembly allocated \$5 million to be provided as a grant to Harbor Towns, Inc., a nonprofit corporation, to be used for tourism-based development in Manteo, Plymouth, Columbia, Edenton, Hertford, and Elizabeth City.³³ With the advancement of the Harbor Town Concept, it is anticipated that 11 counties with a population of more than 200,000 people would become the immediate market (see Figure 21). Additionally, as more coastal ferry locations in the region are available, it would draw visitors from other parts of the state and country.

Figure 15: Intercoastal Passenger Ferry Service Concept Throughout the Albemarle Sound



Source: ITRE, 2023; US Census, 2020

³² Sourced from: Didow, N. 2015. "Water Transportation in the Albemarle Sound." \$6.4 million represents a 10-year net present value of \$5 million 2015 USD adjusted for inflation to 2023 USD using the BLS CPI calculator.

³³ Sourced from: H.B. 103 – 2022 Appropriations Act (2021-2022). These funds were diverted from the Town of Edenton as part of the State Capital and Infrastructure Fund Corrections.

Site Specifications

The Roanoke Marshes Lighthouse, which is situated on an 0.85-acre parcel of land owned by the Town of Manteo, would serve as the point of embarkation for a Manteo passenger ferry. Extending 40 yards and tucked into Shallowbag Bay, the lighthouse is filled with educational and historical exhibits, including a Fresnel lens dating back to the 1800s.³⁴ In addition to being a free, family-friendly location to wait prior to ferry boarding, the lighthouse also offers navigable water depths for the passenger ferry vessel. It is anticipated that waterfront parking lots could be used to fulfill some of the parking needs with nearby overflow parking equipped with shuttle or golf cart services.

Figure 16: Manteo Passenger Ferry Site Location



Source: Dare County Parcel Data Map.



Source: Town of Manteo, 2021.

Other Considerations

Depending on Hatteras to Ocracoke ferry congestion during peak season, Manteo could also serve as an express route to Ocracoke as a demand management strategy. This would relieve queuing between Hatteras and Ocracoke and could potentially attract visitors to the Outer Banks who would prefer to travel entirely by water rather than traveling by car and the potential of congested conditions. A Manteo to Ocracoke express route would also help improve travel reliability to the island, ensuring a navigable route in case storms made NC Highway 12 or the Hatteras Inlet impassable.

Site Visit Contacts

During the Manteo site visit conducted on behalf of NCDOT Research Project 2021-19: "Passenger Ferry Feasibility Study - Other Routes," the Institute for Transportation

³⁴ Town of Manteo. "Roanoke Marshes Lighthouse." Online: <https://www.manteonc.gov/visitors/roanoke-marshes-lighthouse>

Research and Education met with Ruth Stetson to discuss the feasibility of a passenger ferry in Manteo. For more information about how a passenger ferry would benefit the Town of Manteo, Dare County, and the region, please contact Ruth Stetson, Manteo Commissioner, rstetson@manteonc.gov.

Belhaven

Conditions That Support Route Development

The Town of Belhaven is home to merchants and shops, boutiques, antiques, and stunning architecture within its historic district. Belhaven's cultural heritage spans over two centuries and throughout the year the town hosts compelling events to tell its unique story. From music and art to nature and watersports, Belhaven offers numerous attractions for visitors coming for a long weekends or day trips.³⁵

Known to locals as the "Beautiful Harbor" it is considered one of the prettiest riverfront locations on North Carolina's inner banks. In 1928, Belhaven received national attention when it became the final link to complete the inland route of the Atlantic Intracoastal Waterway, connecting Beaufort to Boston.³⁶

Throughout its history, waterways have defined Belhaven. Located at the convergence of Pantego Creek and the Pungo River and with convenient access to the Pamlico Sound, Belhaven has been well situated to draw visitors and commerce alike. Belhaven was once a thriving center for the seafood and logging industries and has become a peaceful haven for recreational boating and fishing. Its abundance and diversity of wildlife make it a popular destination for birders and hunters, and its fertile soil supports residential gardens, as well as seed, flower, and other commercial farming operations.³⁷

Anticipated Population Served

Located within proximity to a number of population centers within Northeastern North Carolina, it is anticipated that nine counties with a combined population of more than 411,000 residents would be the primary market for a Belhaven passenger ferry (see Figure 24 and Figure 18). Within this market, Belhaven, Washington, and Greenville would be the most proximate population centers.

Primary Ferry Route Functions

Serve as a hub for an intercoastal ferry system

- Manteo could connect Nags Head, Kitty Hawk, Duck, Corolla, Elizabeth City, Hertford, Edenton, Plymouth, and Columbia.

Serve as an Express Route to Ocracoke

- Alleviate ferry congestion between Hatteras & Ocracoke during peak season.

Figure 17: Prospective Local Markets

County	Population
Bertie	17,934
Beaufort	44,652
Craven	100,720
Dare	36,915
Hyde	4,589
Martin	22,031
Pitt	170,243
Tyrell	3,245
Washington	11,003
Total	411,332

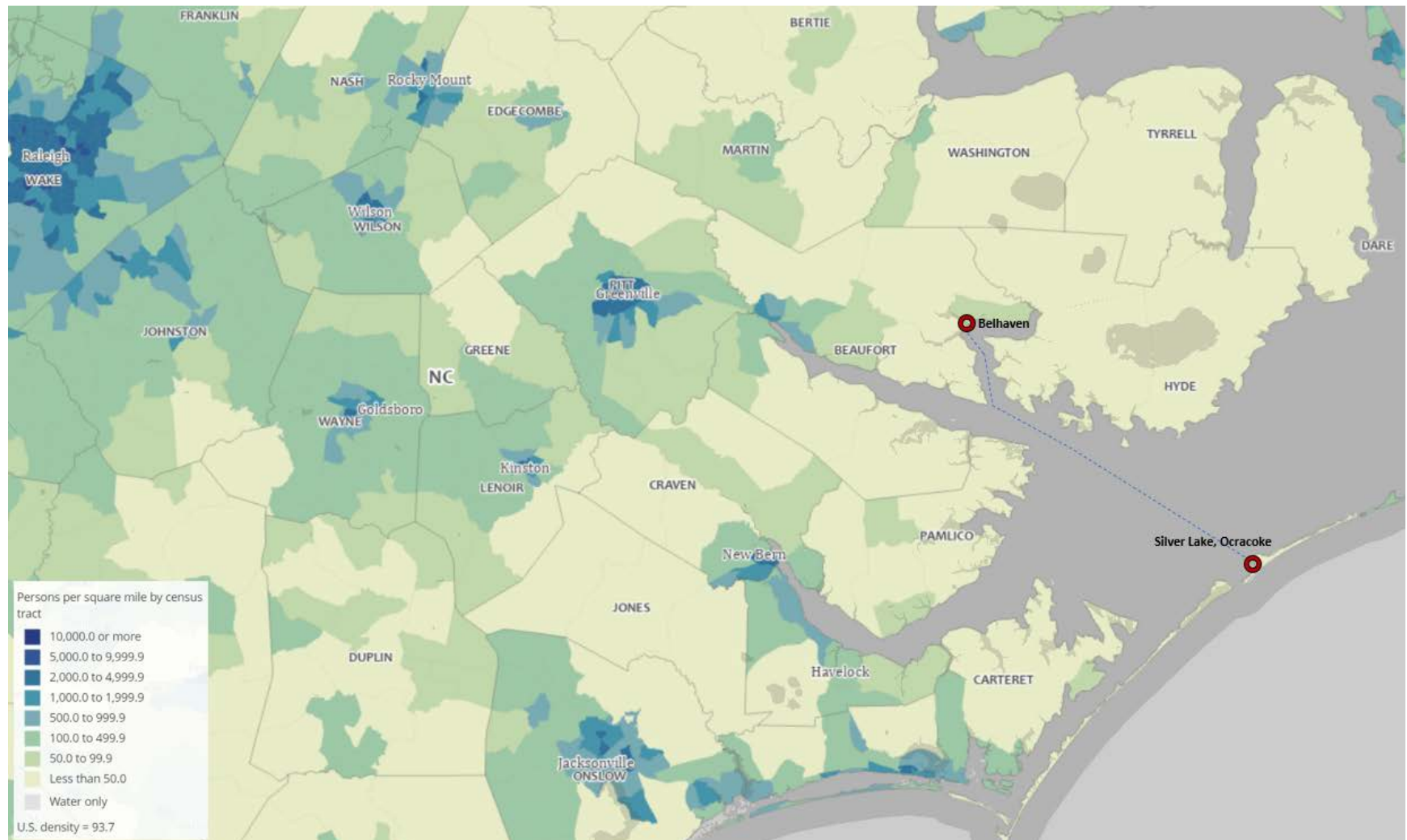
Source: US Census, 2020

³⁵ Belhaven Community Chamber of Commerce. "Places to See." Online: <https://www.visitbelhavennc.com/>

³⁶ Belhaven Community Chamber of Commerce. "Our Town." Online: <https://www.visitbelhavennc.com/our-town>

³⁷ Ibid.

Figure 18: Belhaven's Passenger Ferry Markets



Source: US Census Bureau, 2020.

Site Specifications

Three prospective site locations have been identified for a Belhaven passenger ferry. The first is a 30.9-acre site owned by the Town of Belhaven. It is located at 409 North Carolina Highway 99 South. This property is adjacent to county and town lots that are sufficient in size to accommodate overflow parking for ferry service. There is ample space to park 100+ vehicles and the entrance and exit for vehicles can be easily managed.

Figure 19: Belhaven Prospective Passenger Ferry Site Locations



Source: Beaufort County GIS, 2023.

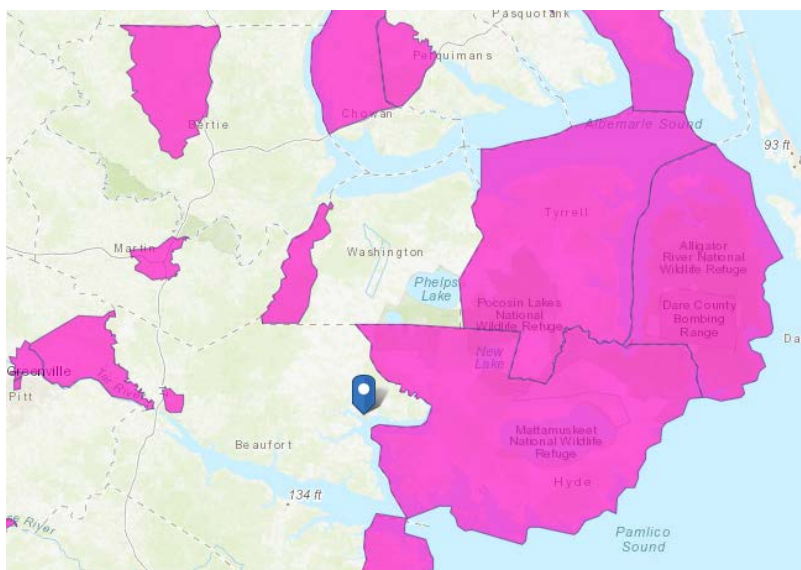
The second site, known as the Cooperage Tract, is a 7.5-acre site located at 121 West 3rd Street. Similarly, there would be plenty of space for vehicle parking. The third location is owned by the Town of Belhaven and is 1.5 acres. It is anticipated that this site may require off-site parking with a shuttle service. Prospective site locations can be viewed in Figure 19. The prospective sites have connections to the existing utility grids and would therefore not require building infrastructure (power, water, and sewer). Connection to the existing utility grids would not require building infrastructure (power,

water, and sewer) are located at the prospective sites. Additionally, fire department and police stations are in close proximity.

Other Considerations

Located in Beaufort County, a Belhaven passenger ferry would operate within a Tier 2 County. Six of the nine counties (Hyde, Tyrell, Washington, Bertie, Martin, and Pitt) within the Belhaven passenger ferry primary market are in Tier 1 Counties. Additionally, Belhaven is located just outside a federally designated opportunity zone (see Figure 27). It is anticipated that a passenger ferry route would

Figure 20: Opportunity Zones Near Belhaven



Source: Housing and Urban Development, 2018.

generate economic benefits to the Town of Belhaven and spillover economic benefits to the region, which hosts a high concentration of opportunity zones. The Belhaven Chamber of Commerce prepared a White Paper outlining a number of reasons why Belhaven is an appropriate location for Passenger Service between Belhaven and Ocracoke.³⁸ These reasons include Belhaven's deep navigable waters, the ferry's proximity to downtown attractions, the opportunity of Ocracoke residents to access Belhaven's affordable shopping and retail locations, and the economic potential a passenger ferry service brings to the Town of Belhaven (see Figure 28).

Site Visit Contacts

During the Belhaven site visit conducted on behalf of NCDOT Research Project 2021-19: "Passenger Ferry Feasibility Study - Other Routes," the Institute for Transportation Research and Education met with Lynn Davis to discuss the feasibility of a passenger ferry in Belhaven. For more information about how a passenger ferry would benefit the Town of Belhaven, Beaufort County, and the region, please contact Lynn Davis, Town Manager, ldavis@townofbelhaven.com.

³⁸ Belhaven Chamber of Commerce. "Justification for Locating a Passenger-only Ferry Service Between Belhaven NC and Ocracoke Island."

Figure 21: The Belhaven Chamber of Commerce White Paper for Passenger Ferry Service Between Belhaven and Ocracoke Island

White Page for Passenger Ferry Service between Belhaven NC and Ocracoke Island

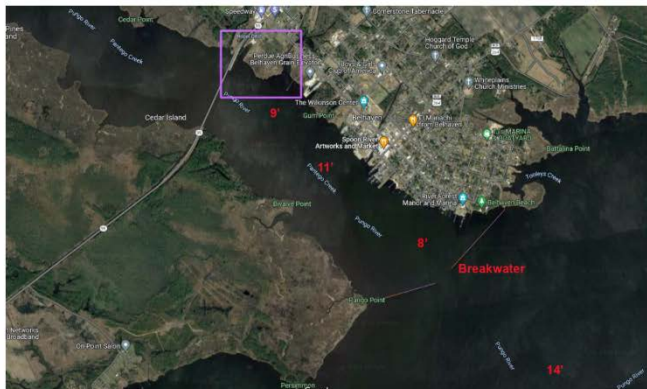
Justification for Locating a Passenger-only Ferry Service between Belhaven NC and Ocracoke Island

This white paper was prepared by the Belhaven Chamber of Commerce for the town to justify the Department of Transportation for locating a ferry service in downtown Belhaven. Besides describing the better suitability of this location over other locations being considered, it will describe how the Belhaven location will greatly economically develop both the towns of Belhaven and Ocracoke.

Open, easily-accessible, deep-water, protected harbor having little recreational-boat traffic to impede ferry passage.

Belhaven has a naturally-deep harbor that is protected by inland barriers and further protected by an Army Corps of Engineer breakwater (see Figure 1). Dredging to keep a ferry service open for passengers (see expected ship draft info amended) would never be needed. The harbor bottom does not shoal and the shoreline has not moved in decades. Passageway through the harbor is already delineated by Coast Guard channel markers. At the north side of the Hwy 99 bridge, located ~3000 feet from the proposed ferry landing is a recreational boat launch (see Figure 2). Boat traffic from the launch will not have an effect on ferry passage. While the channel is naturally deep, it is already permitted to be dredged.

Figure 1. Open, easily-accessible, deep-water, protected harbor having little recreational-boat traffic to impede ferry passage. Breakwater indicated. Depth in feet is marked in red. Purple box is region shown in Figure 2.



1

White Page for Passenger Ferry Service between Belhaven NC and Ocracoke Island

Figure 2. Proposed site for ferry landing indicated (from box in Figure 1)



Landing area near the town center is available and easily accessible with sufficient parking area.

The town owns property suitable for a ferry landing close to the town center and is willing to make this available for this purpose. This property is adjacent to county and town lots that are sufficient in size to accommodate overflow parking for ferry service. Entrance access for cars is very easy. Connection to the existing utility grids would not require building infrastructure (power, water and sewer are located at the property. There is only a need to connect to them. Almost adjacent to the property are the fire department and police stations.

The town provides services for passengers travelling in both directions.

Passengers arriving from outside of the Belhaven area will have available supplies that they will need that are not necessarily available in Ocracoke at a low cost. These include a large grocery store and several pharmacies.

Much of the attention for this project has been on passengers traveling from the inner banks to Ocracoke however travel by permanent residents of the outer banks to Belhaven would also greatly benefit. Even tourists who stay for a week or longer would be interested in travel to Belhaven for a day trip or to get supplies they would, otherwise, not get in Ocracoke. The distance between the proposed ferry landing and Belhaven town center is easy walking distance. In addition, the town would also strongly consider running trolleys between the town center, a large grocery store, several pharmacies, and the ferry landing. Moreover, Belhaven is a golf cart-friendly town and golf cart and bicycle rental services would be provided. Emergency

2

White Page for Passenger Ferry Service between Belhaven NC and Ocracoke Island

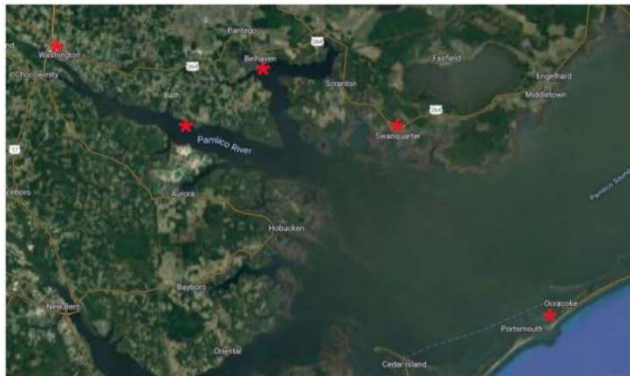
medical service is within one half mile of the property. There are at least 116 short-term beds currently in Belhaven and this cottage industry is growing rapidly.

While Belhaven is a small town, it boasts several excellent restaurants within walking distance to the proposed landing. The town center has shops whose clientele are mostly tourists. This too is growing and surely would be positively impacted by a passenger ferry service. There is a growing art gallery scene in the town center and beyond. Services and goods such as hardware, hair care (salon and barber), phone repair, coffee/bakery, and banks with 24/7 ATMs are also available. There are several churches within walking distance.

Belhaven is Perfectly Located for Maximum Usage of the Passenger Ferry.

Greenville with a population of 93,000 the largest urban center in eastern North Carolina, is only 50 minutes from Belhaven. The other city of size is Washington (pop. 10,000) which is only 25 minutes from Belhaven. The only existing ferry landing closer to Ocracoke on which the passenger ferry could be launched is Swan Quarter. However, Swan Quarter is located another hour away the two urban centers than is Belhaven (see Figure 3). Also, it should be added that existing ferry landings at Swan Quarter and Bayview would likely still require building a landing for the passenger ferry because the existing car ferry landings would not work for the passenger ferry.

Figure 3. Belhaven is Perfectly Located for Maximum Usage of the Passenger Ferry. The 4 different possible landing sites on the inner bank plus Ocracoke are indicated with red asterisk.



White Page for Passenger Ferry Service between Belhaven NC and Ocracoke Island

Economic Potential for Belhaven.

Without question, the placement of the Ferry landing in Belhaven would have a major economic boost on the town. Belhaven is rebranding itself as a gateway for adventure, thus the ferry is an appropriate metaphor. We are slowly building the short-term bed inventory through Bed and Breakfast establishments and Air B&Bs. Store spaces in the downtown area are being renovated. Town management is on-board for this opportunity.

Brunswick County

Conditions That Support Route Development

Home to two universities and three community colleges, dozens of miles of renowned beaches, and employing more than 200,000 skilled workers,³⁹ Brunswick County is a popular location to live, work, and play. Brunswick is one of the fastest growing counties in North Carolina and the U.S., and a major attraction for visitors who like explore coastal communities like Varnamtown, Boiling Spring Lakes, Carolina Shores, Bald Head Island, or historic Southport. Many popular movies and TV shows have been filmed in Southport including Crimes of the Heart, Nicholas Sparks' Safe Haven and Steven King's Under the Dome.⁴⁰

Primary Ferry Route Functions

Serve as a multi-stop passenger ferry network

- Connect populations centers to renown beaches.
- Southport could be a primary embarkation point that connects Bald Head Island, Caswell Beach, Oak Island, Sunset Harbor, Holden Beach, Ocean Isle, among others.

Anticipated Population Served

A Brunswick County passenger ferry's prospective local market would include five counties that are home to over 500,000 residents (see Figure 29). Due to its vast shoreline, estuaries, and inland rivers, there are numerous prospective passenger ferry routes that could serve the needs of resident and visitor beach goers. Instead of a direct route with one origin and one destination, it is anticipated that a passenger ferry route in Brunswick County would stop at multiple locations along the route, similar to a bus service. An example of this type of service can be found in Washington State with ferry service operating between Anacortes and Sidney, servicing six locations along the route (see Figure 23).

Figure 22: Prospective Local Market

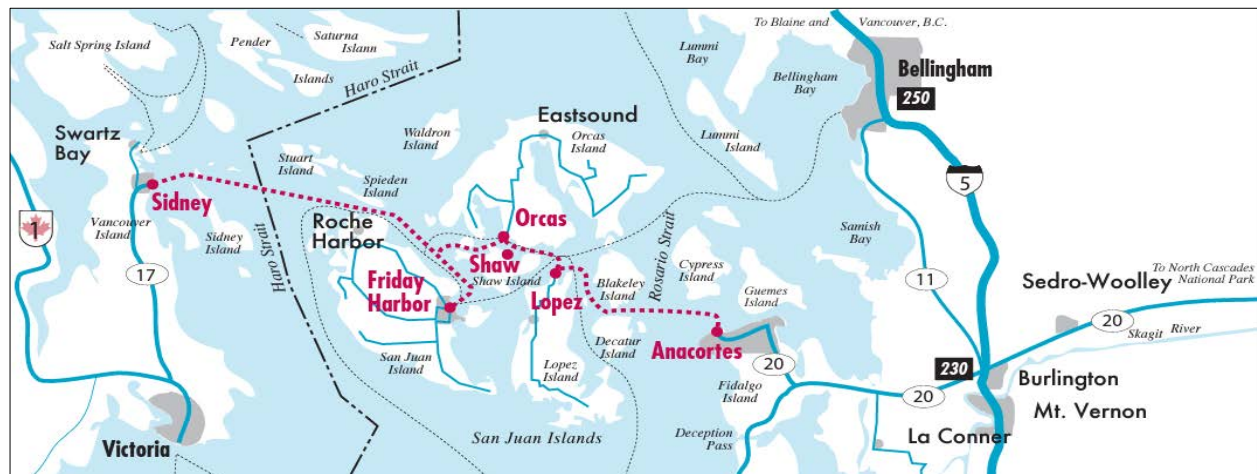
County	Population
Bladen	29,606
Brunswick	136,693
Columbus	50,623
New Hanover	225,702
Pender	60,203
Total	502,827

Source: US Census, 2020

³⁹ Brunswick Business & Industry Development. 2023. "Bid on Brunswick." Online: <https://brunswickbid.com/>

⁴⁰ City of Southport. 2023. "Southport Exploration Guide." Online: <https://cityofsouthport.com/community-relations-department/southport-exploration-guide/>

Figure 23: Example of an Operating Ferry Route in Washington State that Services Multiple Stops



Site Specifications

There were 12 locations that were identified as potential passenger ferry sites in Brunswick County. An initial analysis of these locations was conducted by the Cape Fear Council of Governments, which evaluated the water depth, tidal flow, wake zone, ADA, parking, beach access, pier, and land use characteristics of each site. This information can be shown in Table 2. Those locations are visualized within the maps found in Figure 24, Figure 25, Figure 26, and Figure 27. Of these prospective locations, the Old Bald Head Island ferry facility is an example of a highly feasible location with its water depth and ample space for parking.

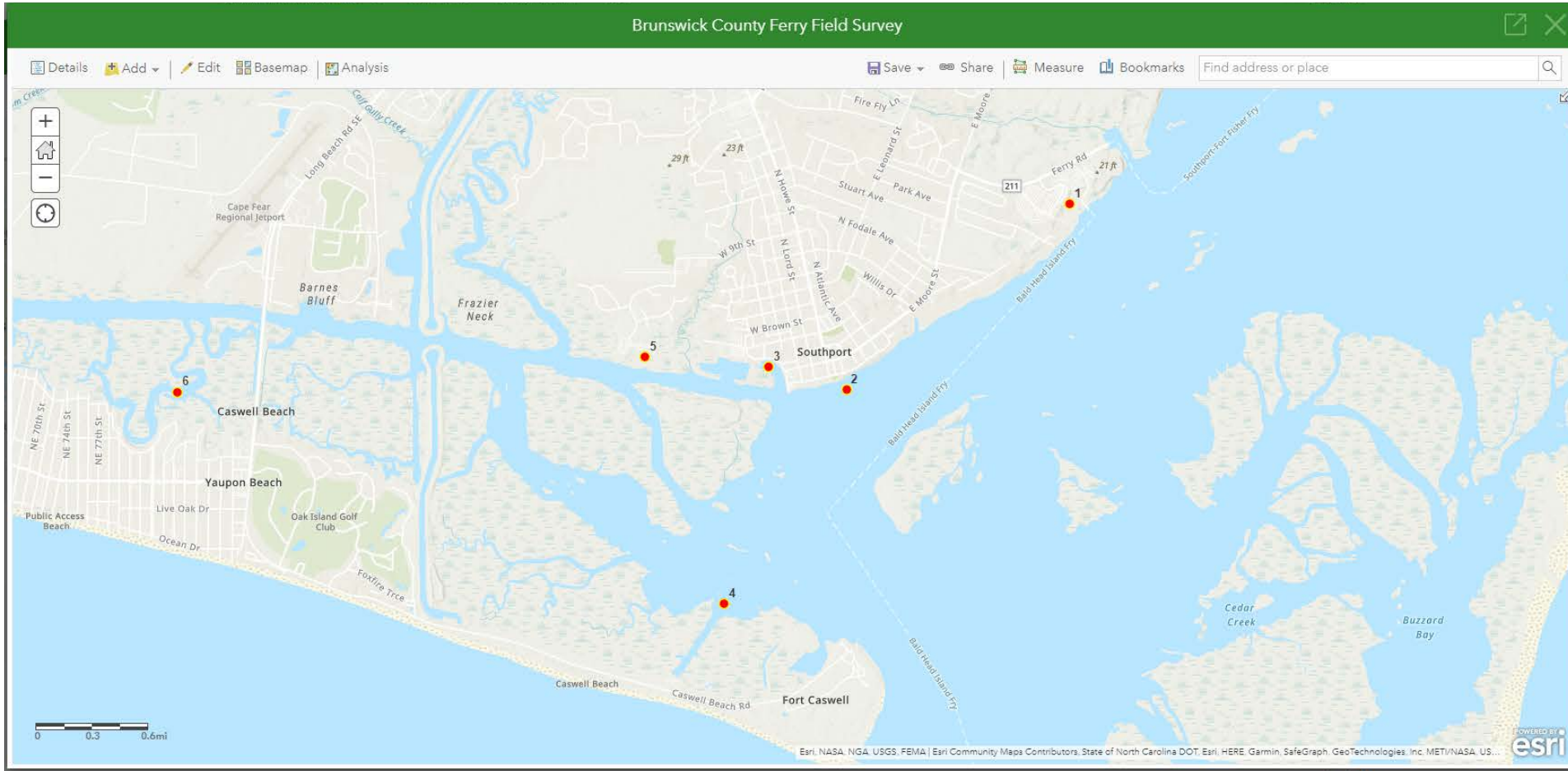
Table 2: Characteristics of 12 Prospective Passenger Ferry Locations in Brunswick County

Location	Water Depth (feet)	No Wake Zone	ADA	Parking	Beach Access	Pier	Land Use	Additional Notes / Information
1	8	Yes	Yes	Yes	No	Yes	Vacant	Deep Point Marina Entry has plenty of water
2	5.5	No	Yes	Yes	No	Yes	Commercial / Retail	Dock is 10 ft off waterline Heavy current/wind Southport fishing pier
3	5	Yes	Yes	Yes	No	Yes	Commercial / Retail	Minimal parking Protected area Southport town dock
4	-	-	-	-	-	-	-	Restricted area coast guard station
5	6.7	Yes	Yes	Yes	No	Yes	Vacant	Well protected Old Bald Head Island ferry facility Ton of parking Indigo
6	-	-	-	-	-	-	-	Maymore park - channel too shallow
7	-	-	-	-	-	-	-	Oak Island nature center too shallow
8	2.5	No	Yes	Yes	Yes	Yes	Residential SF	Oak Island Malcolm register nature center Little parking Fishing pier

Location	Water Depth (feet)	No Wake Zone	ADA	Parking	Beach Access	Pier	Land Use	Additional Notes / Information
9	10	Yes	No	Yes	Yes	Yes	Commercial / Retail	Dock 15' above water
								Currents and boat traffic a potential concern
								HB pavilion
								Generally protected
10	12	No	Yes	Yes	Yes	Yes	Commercial / Retail	HB park
								Boat traffic a concern
								Generally protected
11	3	No	No	Yes	Yes	Yes	Residential SF	Dock 10 ft off
								Heavy winds, current, narrow channel
								Old OIB ferry landing
12	4.5	Yes	No	Yes	Yes	No	Commercial / Retail	Current + heavy boat traffic
								Tight space
								Utilities & bridge
								OIB wildlife boat ramp

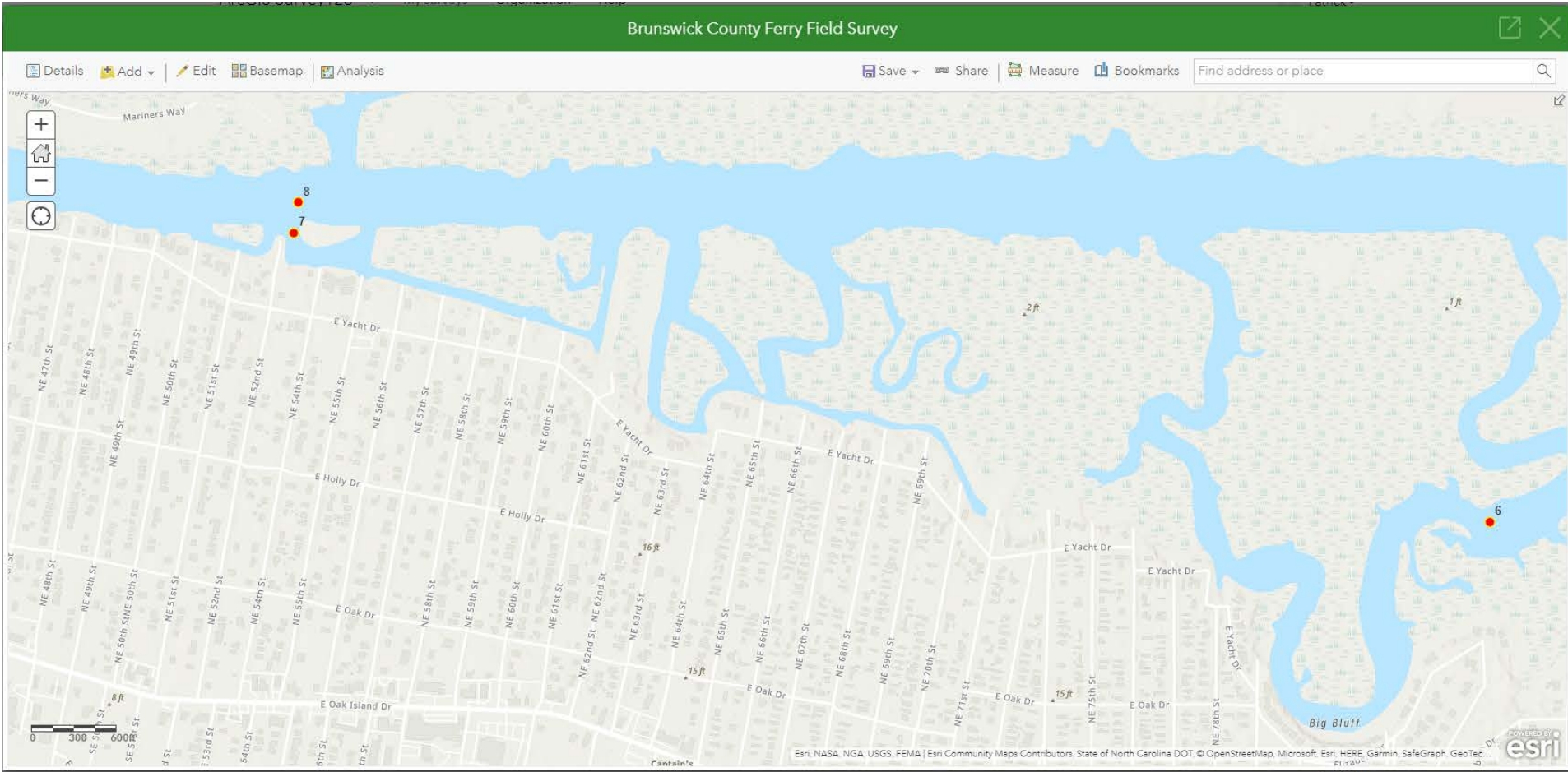
Source: Cape Fear Council of Governments, 2023.

Figure 24: Potential Passenger Ferry Stop Locations within Brunswick County (1 of 4)



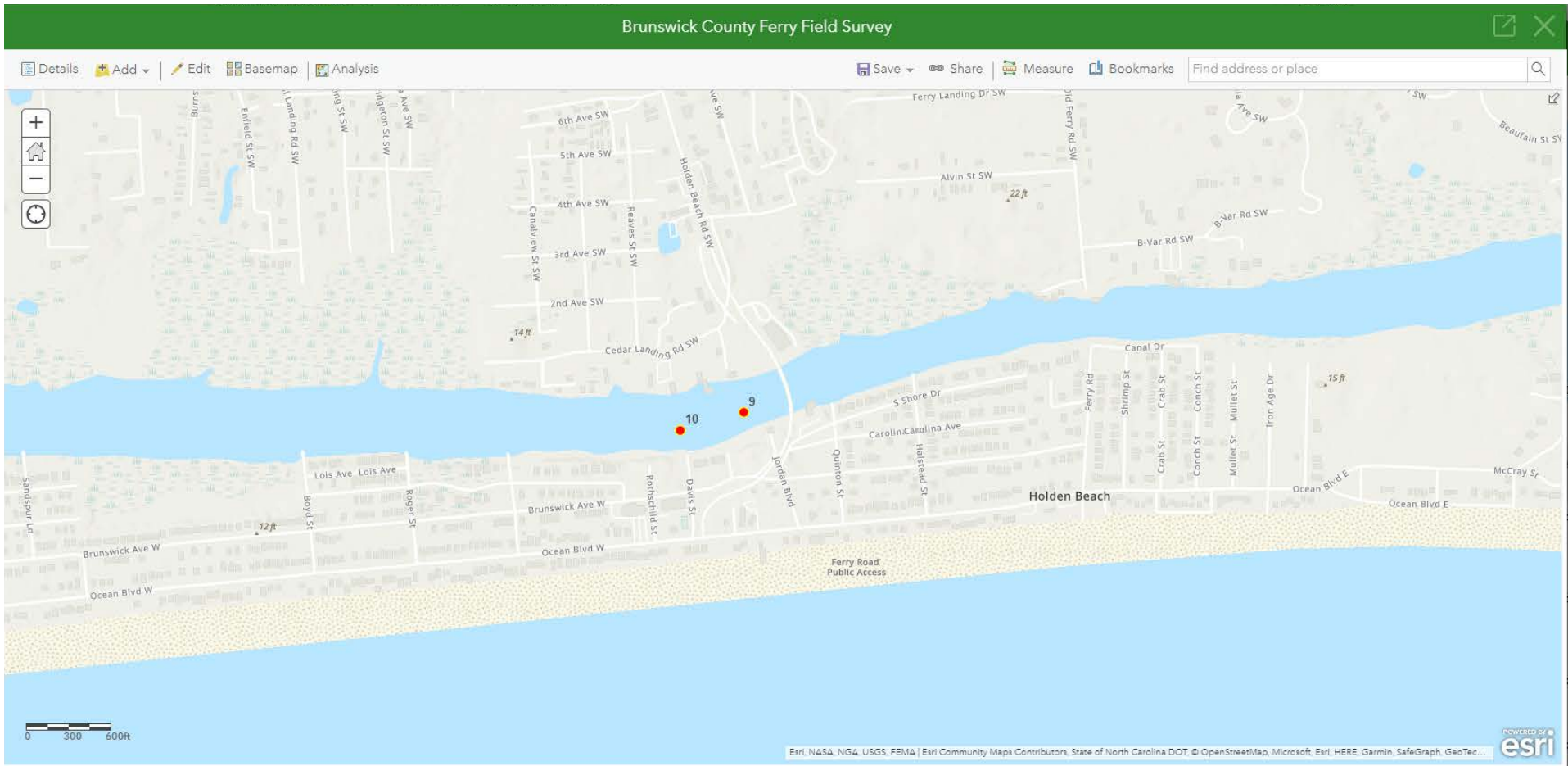
Source: Cape Fear Council of Governments, 2023.

Figure 25: Potential Passenger Ferry Stop Locations within Brunswick County (2 of 4)



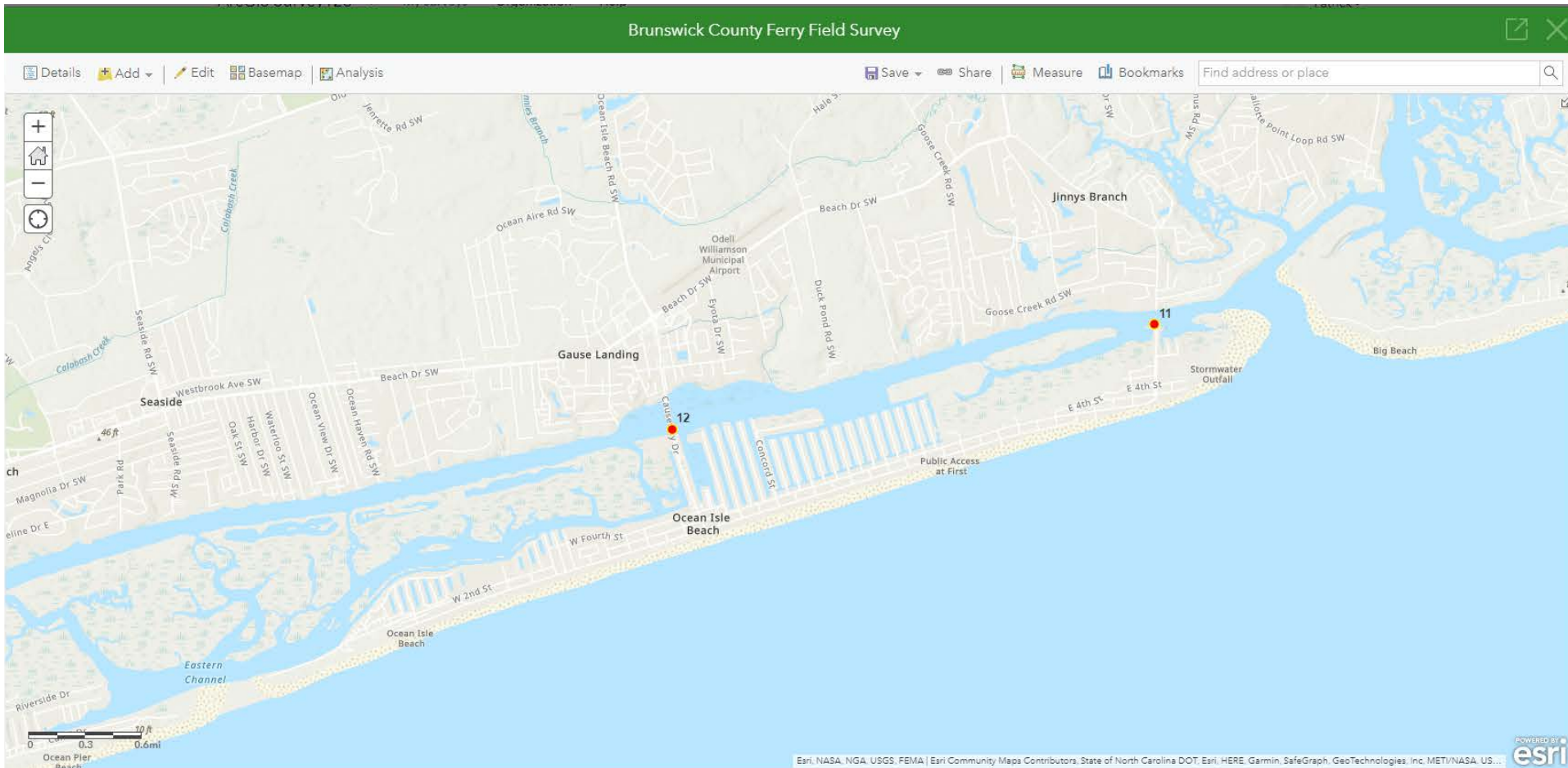
Source: Cape Fear Council of Governments, 2023.

Figure 26: Potential Passenger Ferry Stop Locations within Brunswick County (3 of 4)



Source: Cape Fear Council of Governments, 2023.

Figure 27: Potential Passenger Ferry Stop Locations within Brunswick County (4 of 4)



Source: Cape Fear Council of Governments, 2023.

Other Considerations

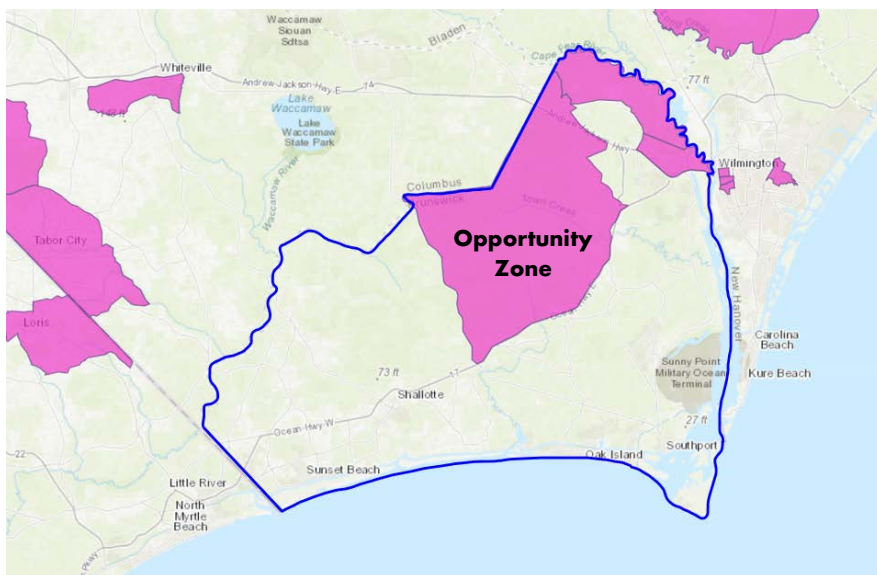
The North Carolina Department of Commerce classifies Brunswick County as Tier 3. The average annual private sector wage is \$46,464, which is approximately \$16,000 less than the North Carolina average. There is a large federally designated opportunity Zone within the northeastern quadrant of the county, as shown in Figure 35. It is anticipated that a passenger ferry route would provide notable economic benefits to the county.

Site Visit Contacts

During the Brunswick County site visit conducted on behalf of NCDOT Research Project 2021-19: "Passenger Ferry Feasibility Study - Other Routes," the Institute for Transportation Research and Education met with Patrick Flanigan to discuss the feasibility of a passenger ferry in Brunswick County. For more information about how a passenger ferry would benefit the Town of

Belhaven, Beaufort County, and the region, please contact Patrick Flanigan, Regional Planner, pflanagan@capefearcog.org.

Figure 28: Opportunity Zones Within Brunswick County



Source: Housing and Urban Development, 2018.

Pender County

Conditions That Support Route Development

Pender County is It is a popular destination for tourists due to its beautiful beaches, scenic nature trails, historic sites, and family-friendly attractions. It offers a range of attractions and activities for visitors to enjoy, including Topsail Island, Surf City, Moores Creek National Battlefield, Burgaw, the Holly Shelter Game Land, Poplar Grove Plantation, and Penderlea Homestead Museum. While not technically in Pender County, Wilmington and its nearby beaches are just a short drive away. With over 60,200 residents, Pender County is well positioned for growth and development. The County works closely with the Wilmington Business Development, Inc. to develop, expand, market, and recruit business and industry to the county.

Primary Ferry Route Functions

Serve as a multi-stop passenger ferry network

- Connect populations centers to renown beaches.
- Ferry route would connect Surf City to Wrightsville Beach via Topsail Beach and Serenity Point

Anticipated Population Served

A Pender County passenger ferry's prospective local market would include eight counties that are home to over 800,000 residents (see Figure 36). Due to its expansive shoreline, estuaries, and inland rivers, there are a number of prospective passenger ferry routes that could serve the needs of resident and visitor beach goers. Instead of a direct route with one origin and one destination, it is anticipated that a passenger ferry route in Pender County would originate at Surf City then pass through Topsail Beach and Serenity Point en route to Wrightsville Beach.

Figure 29: Prospective Local Market

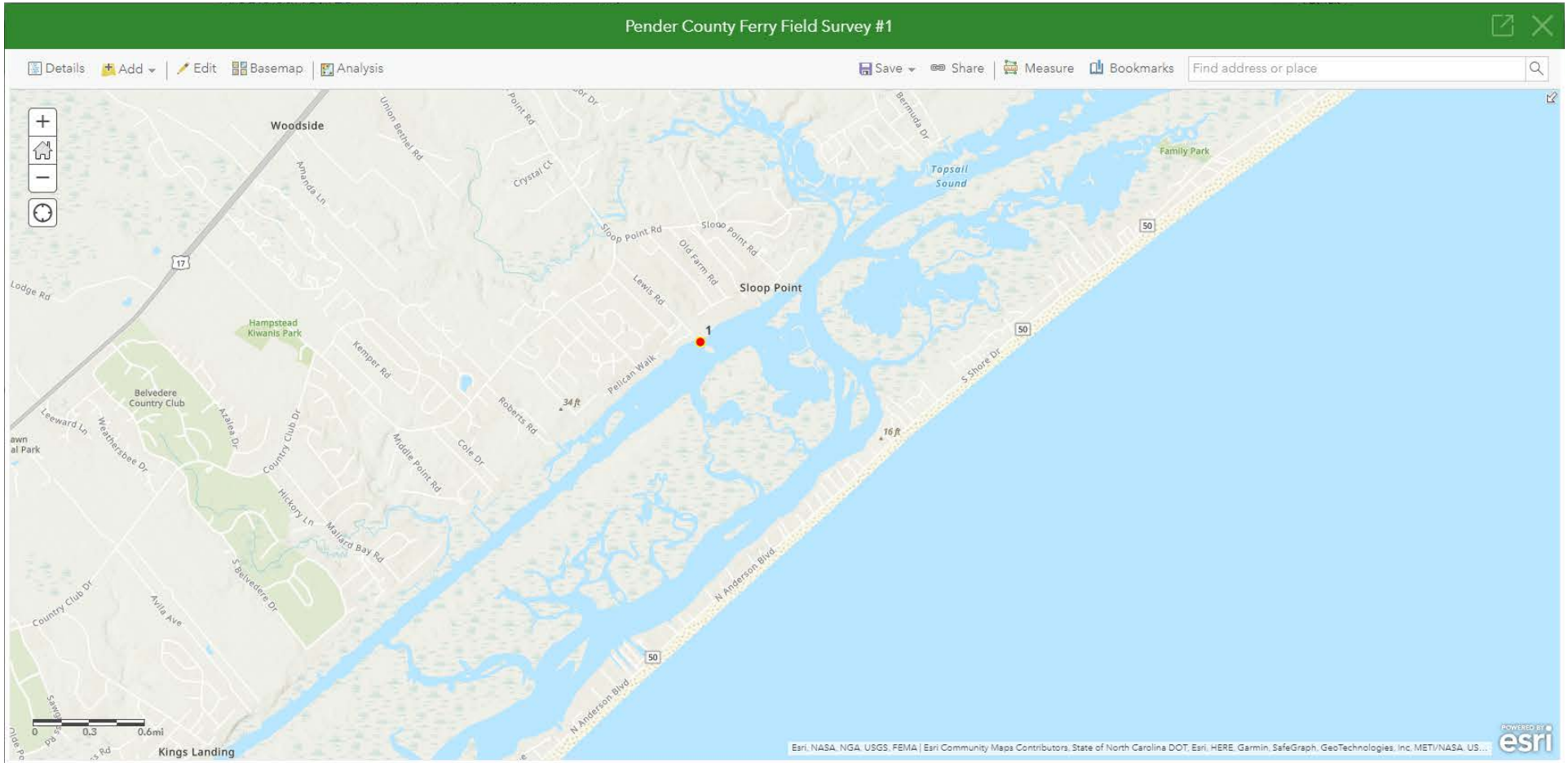
County	Population
Bladen	29,606
Brunswick	136,693
Columbus	50,623
Duplin	48,715
New Hanover	225,702
Onslow	204,576
Pender	60,203
Sampson	50,036
Total	806,154

Source: US Census, 2020

Site Specifications

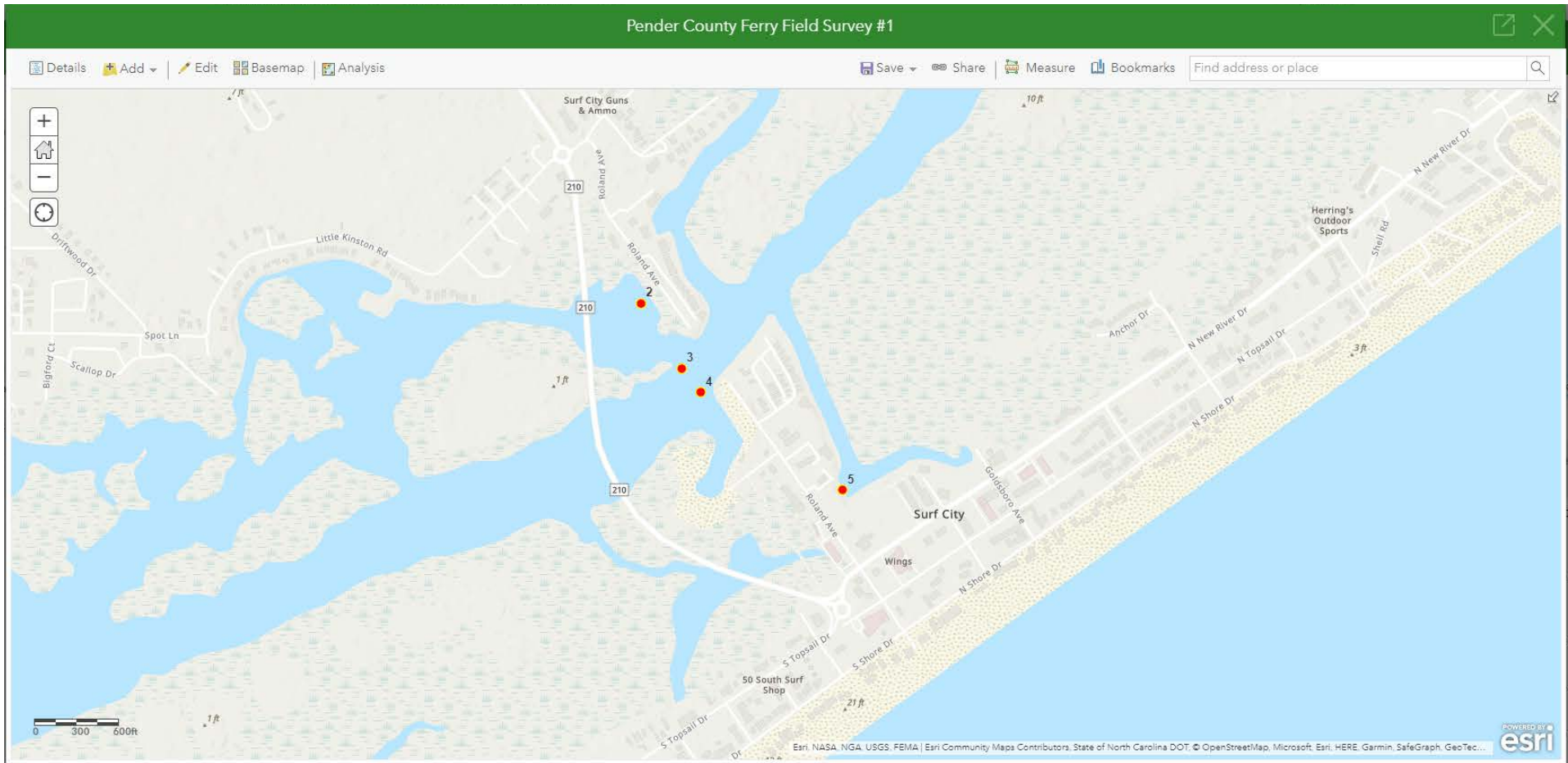
There were 10 locations that were identified as potential passenger ferry sites, which could connect Surf City to Wrightsville Beach. An initial analysis of these locations was conducted by the Cape Fear Council of Governments, which evaluated the water depth, tidal flow, wake zone, ADA, parking, beach access, peer, and land use characteristics of each site. This information can be shown in Table 3. Those locations are visualized within the maps found in Figure 30, Figure 31, Figure 32, and Figure 33.

Figure 30: Potential Passenger Ferry Stop Locations within Pender County (1 of 4)



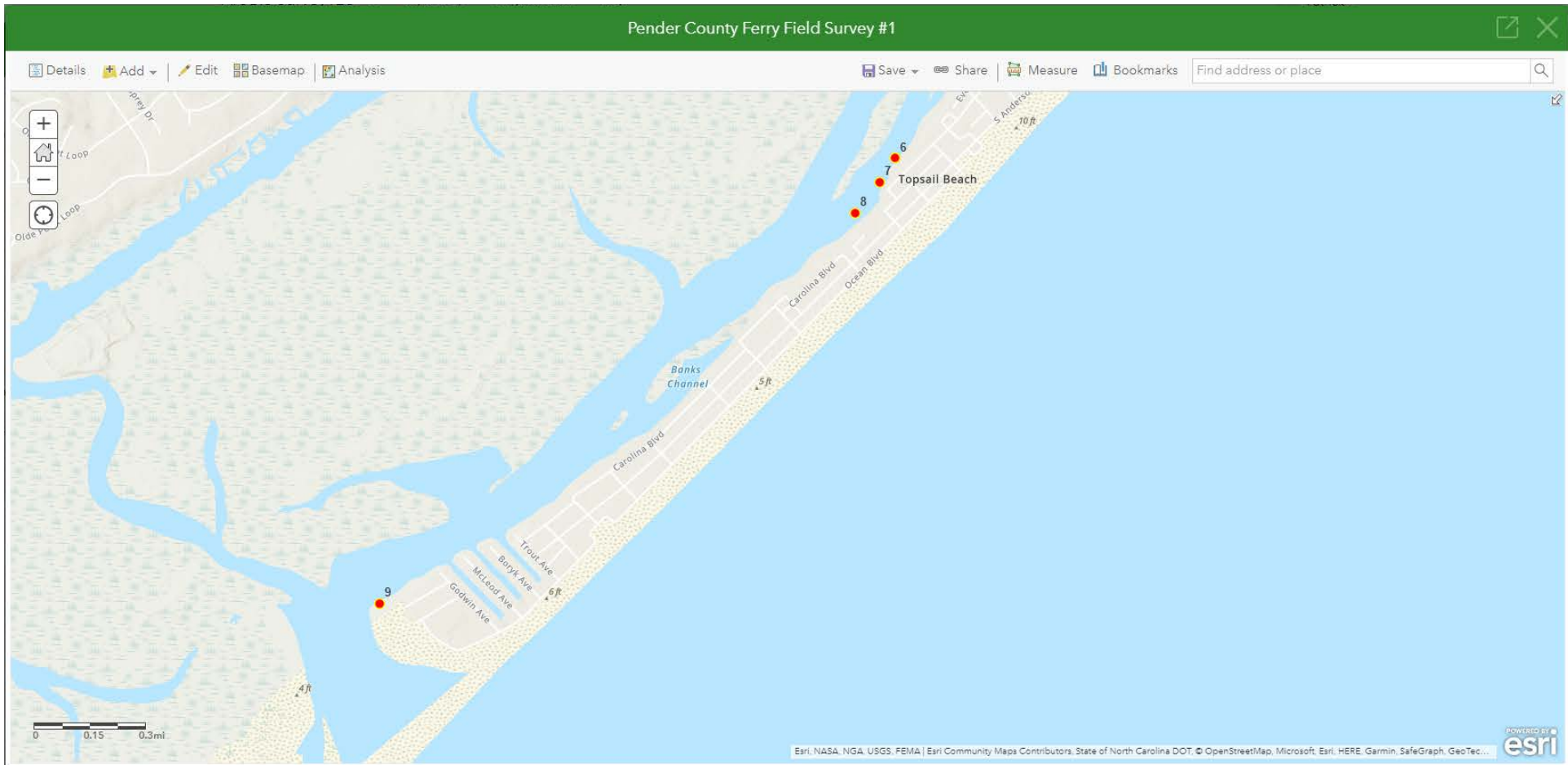
Source: Cape Fear Council of Governments, 2023.

Figure 31: Potential Passenger Ferry Stop Locations within Brunswick County (2 of 4)



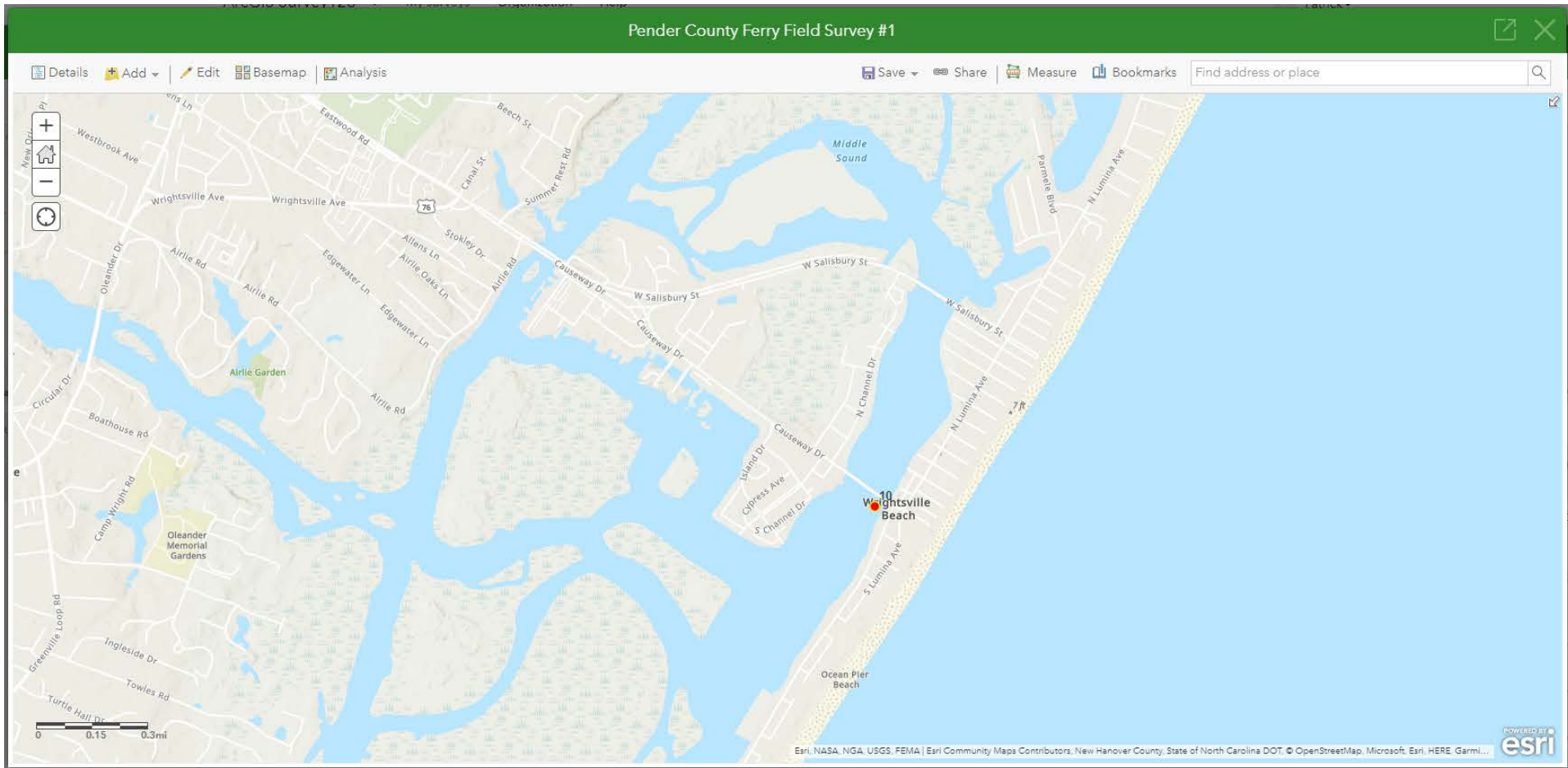
Source: Cape Fear Council of Governments, 2023.

Figure 32: Potential Passenger Ferry Stop Locations within Brunswick County (3 of 4)



Source: Cape Fear Council of Governments, 2023.

Figure 33: Potential Passenger Ferry Stop Locations within Brunswick County (4 of 4)



Source: Cape Fear Council of Governments, 2023.

Table 3: Characteristics of 10 Prospective Passenger Ferry Locations in Pender County

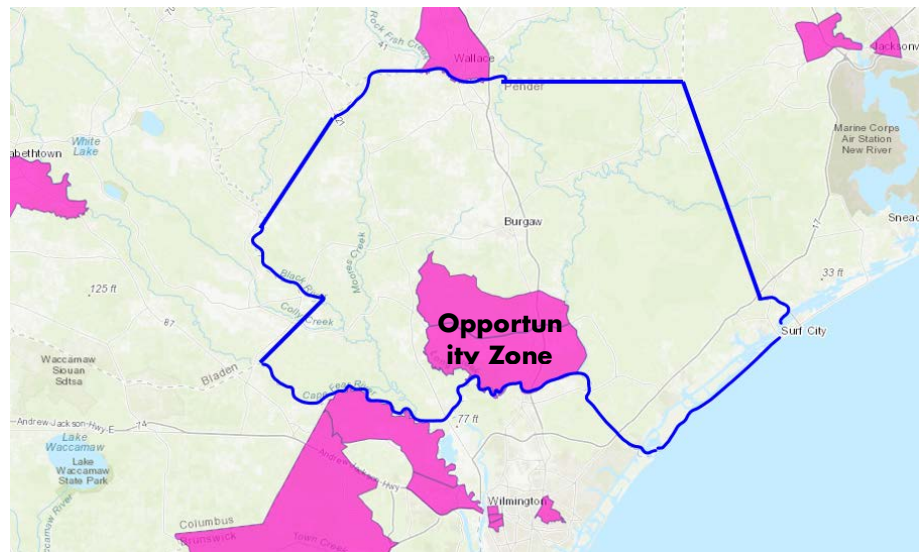
Location	Water Depth	No Wake Zone	ADA	Parking	Beach Access	Pier	Land Use	Additional Notes / Information
1	3.5	Yes	Yes	Yes	No	Yes	Residential SF	Lewis road boat ramp
								Inlet was 1.7 ft deep
								Tidally constrained, would need maintenance
2	2	No	Yes	Yes	No	Yes	Commercial / Retail	SW corner surf city bridge
								Chanel came to 1.7 ft
3	-	-	-	-	-	-	-	NW side of Surf City bridge residential
4	7.3	No	Yes	Yes	Yes	Yes	Commercial / Retail	SE side Surf City bridge / sound side park
5	-	-	-	-	-	-	-	NE side, topsail island marina - no access
6	6.5	Yes	Yes	Yes	Yes	Yes	Commercial / Retail	Missiles and more
								Gravel parking lot - ADA concern
7	10	Yes	No	Yes	Yes	Yes	Commercial / Retail / Government	Topsail dock
								Ada access unclear
8	6	Yes	Yes	Yes	Yes	Yes	Residential SF	Bush marina
								Tidal movement close to inlet
9	20	No	No	Yes	Yes	No	Recreational / Residential SF	Old coast guard
								Cobra
								Would need more parking
10	25	No	Yes	Yes	Yes	Yes	Commercial / Retail	Wrightsville docks
								Substantial no wake zone to access

Source: Cape Fear Council of Governments, 2023.

Other Considerations

The North Carolina Department of Commerce classifies Pender County as Tier 3. The average annual private sector wage is \$40,288, which is approximately \$22,000 less than the North Carolina average. There is a federally designated opportunity Zone within the southern

Figure 34: Opportunity Zones within Pender County



Source: Housing and Urban Development, 2018.

part of the county, as shown in Figure 41. It is anticipated that a passenger ferry route would provide notable economic benefits to the county.

Site Visit Contacts

During the Pender County site visit conducted on behalf of NCDOT Research Project 2021-19: "Passenger Ferry Feasibility Study - Other Routes," the Institute for Transportation Research and Education met with Patrick Flanigan to discuss the feasibility of a passenger ferry in Pender County. For more information about how a passenger ferry would benefit the Town of Belhaven, Beaufort County, and the region, please contact Patrick Flanigan, Regional Planner, pflanigan@capefearcog.org

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