

CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

COMPREHENSIVE REPORT

September 2020





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Acknowledgements

Thank you to the Steering Committee and residents of the City of Boiling Spring Lakes for their involvement and support in this planning process and commitment to pedestrian planning. This plan was funded through the North Carolina Department of Transportation (NCDOT) Integrated Mobility Division (IMD) Bicycle and Pedestrian Planning Grant Initiative.

Key Partners

The City of Boiling Spring Lakes
Cape Fear Rural Planning Organization
The North Carolina Department of Transportation (NCDOT) Division 3
NCDOT Integrated Mobility Division (IMD)

The City of Boiling Spring Lakes Steering Committee

Sharon Amrol-Davis, Resident	Greg Jordan, Chief of Police
Bichson Bush, Resident	Michael Mack, Public Works Director
Glen Davis, Resident	Michael Michaux, Local Business Owner
Mary Green, Parks & Recreation Director	Nicole Morgan, Planning & Zoning Administrator
Tom Guzulaitis, Commissioner	Patrick Flanagan, Cape Fear RPO Director

Comprehensive Pedestrian Plan
City of Boiling Spring Lakes



AECOM



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

TABLE OF CONTENTS

Executive Summary	6
Key Findings and Recommendations	8
Key Action Steps.....	10
1.0 Introduction and Project Overview	14
1.1 Background.....	14
1.2 Community Vision.....	14
1.3 Goals and Objectives.....	15
1.4 Purpose and Scope of the Plan	16
1.5 Benefits of a Walkable Community.....	17
2.0 Existing Conditions.....	20
2.1 Demographics.....	20
2.2 Land Use and Development.....	24
2.3 Existing Plans and Programmed Projects	25
2.4 Community Features	29
2.5 Infrastructure.....	31
2.6 Existing Pedestrian Facilities.....	35
2.7 Pedestrian and Vehicular Traffic Counts and Crash Data	38
2.8 Existing Pedestrian Programs	38
2.9 Opportunities and Constraints.....	41
3.0 Public Involvement	43
3.1 Steering Committee.....	43
3.2 Public Meetings	44
3.3 Community Survey	45
4.0 Recommendations.....	49
4.1 Facility Types.....	49
4.2 Prioritization	52
4.3 Cost Estimates.....	54
4.4 Recommended Infrastructure Improvements.....	55
4.5 Recommended Pedestrian Policies and Programs.....	85
5.0 Implementation.....	94
5.1 Key Action Steps.....	94
5.2 Project Development Strategy.....	96
5.3 Funding Sources	98
5.4 Performance and Evaluation Measures	102



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

APPENDICES

Appendix A: Committee and Public Involvement

Appendix B: Community Survey

Appendix C: Roadway Inventory

Appendix D: Prioritization

Appendix E: Funding Sources



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

LIST OF FIGURES

Figure 1: Age Group Percentages.....	21
Figure 2: Racial Composition of Boiling Spring Lakes	22
Figure 3: Poverty Rate Percentages	22
Figure 4: Vehicles per Household	23
Figure 5: Means of Transportation to Work.....	24
Figure 6: 2018 City of Boiling Spring Lakes Zoning	25
Figure 7: Land Use at City Center.....	26
Figure 8: Boiling Spring Lakes Existing Trails Map.....	27
Figure 9: Walking Frequency in the City of Boiling Spring Lakes.....	45
Figure 10: Mapping Survey Tool.....	46
Figure 11: Local Preference Survey Tool.....	47
Figure 12: Local Preference	47
Figure 13: NC 87 from City Hall to Cougar Road Improvements Rendering	59
Figure 14: NC 87 from City Hall to Cougar Road Improvements Map.....	59
Figure 15: Fifty Lakes Drive Improvements Rendering	62
Figure 16: Fifty Lakes Drive Improvements Map	62
Figure 17: NC 87 to City Limits (South) Improvements Rendering	65
Figure 18: NC 87 to City Limits (South) Improvements Map.....	65
Figure 19: Alton Lennon Drive/Eden Drive Improvements Rendering	68
Figure 20: Alton Lennon Drive/Eden Drive Improvements Rendering	68
Figure 21: Cougar Road Improvements Rendering.....	71
Figure 22: Cougar Road Improvements Rendering.....	71
Figure 23: Wayfinding Signage	84
Figure 24: Federal Funding Matrix.....	166

LIST OF MAPS

Map E-1: Proposed Projects.....	12
Map 3: Key Community Features	30
Map 4: Existing Facilities	36
Map 5: Annual Flood Impact.....	37
Map 6: Proposed Projects	57

LIST OF TABLES

Table 1: Proposed Project Corridors.....	8
Table 2: Key Steps to Implementation.....	10
Table 3: Key Community Features.....	29
Table 4: Boiling Spring Lakes Pedestrian Facilities Inventory by Street.....	33
Table 5: Utilities.....	35
Table 6: Steering Committee	44
Table 7: Project/Program Prioritization.....	46
Table 8: Quantitative Criteria and Measures Methodology	52
Table 9: Qualitative Criteria and Measures Methodology.....	53
Table 10: Proposed Project Corridors.....	55
Table 11: NC 87 from City Hall to Cougar Road Improvements	60
Table 12: Fifty Lakes Drive Improvements.....	63
Table 13: NC 87 to City Limits (South) Improvements	66



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 14: Alton Lennon Drive Improvements.....	69
Table 15: Cougar Road Improvements	72
Table 16: East Boiling Spring Road Improvements.....	74
Table 17: NC 87 to City Limits (North) Improvements.....	75
Table 18: Spring Lake Loop Improvements	76
Table 19: City Connector Improvements.....	77
Table 20: South Shore Drive Improvements.....	78
Table 21: Tate Lake Park Loop Improvement	79
Table 22: West Boiling Spring Road Improvement.....	80
Table 23: Rails to Trails Improvement.....	81
Table 24: East Boiling Spring Road Improvement.....	82
Table 25: Recommended Policy Updates.....	86
Table 26: Key Steps to Implementation.....	95
Table 27: Implementation Evaluation Criteria.....	103
Table 28: Funding Sources	163



EXECUTIVE SUMMARY



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Executive Summary

The City of Boiling Spring Lakes Pedestrian Plan (Plan) is the culmination of a planning process to improve pedestrian safety, connectivity, and health and wellbeing through recommended infrastructure projects and community policies and programs. This effort was led by the North Carolina Department of Transportation's (NCDOT) Integrated Mobility Division (IMD), AECOM as the project consultant, and the locally appointed Steering Committee.

Brief History and Overview of the Community

Past Planning Efforts

The City of Boiling Spring Lakes has had multiple planning efforts that have contributed to preserving natural resources, recreational activities, and infrastructure development. The following documents were reviewed to understand the land use and regulatory environment in the City and the region:

- City of Boiling Spring Lakes Comprehensive Land Use Plan
- Boiling Spring Lakes Planning Board Long Range Plan
- 2018-2023 Parks, Recreation, and Open Space Master Plan for the City of Boiling Spring Lakes
- Brunswick County Trail Plan
- Brunswick County Comprehensive Transportation Plan
- Brunswick County CAMA Land Use Plan
- Military Ocean Terminal Sunny Point (MOTSU) Joint Land Use Study (JLUS)

The preservation of recreational resources and dedication to quality of life are common themes in past planning efforts. This contributes significantly to the dedication the City of Boiling Spring Lakes has to its natural assets and promoting active transportation.

Purpose and Process of this Plan

The purpose of this Plan is to evaluate the existing pedestrian conditions within Boiling Spring Lakes and recommend programmatic and infrastructure projects to improve safety, connectivity, and wellbeing. This effort was led by the NCDOT Integrated Mobility Division (IMD), a project consultant, and a Steering Committee. The Steering Committee was formed by the City and included the Parks and Recreation director, Planning and Zoning Administrator, Commissioner, Chief of Police, local business owners, residents, and representatives from the IMD and Cape Fear Rural Planning Organization (RPO). Through the planning and development of this Plan, the Committee approved goals and objectives that guided the set of recommendations for infrastructure projects, policies, and programs. Public meetings were held for city residents and stakeholders to provide input on planning efforts, and close coordination with NCDOT Division 3 and Cape Fear RPO was conducted.

A vision statement was formed in collaboration with the Steering Committee for this Plan with the desired outcome of implementing pedestrian projects, policies, and programs in Boiling Spring Lakes. The importance and connection between walkability and Boiling Spring Lakes' legacy as a destination for recreation activities is underscored by the following vision statement:



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Boiling Spring Lakes Pedestrian Plan Vision Statement

"Boiling Spring Lakes will be a place that fosters community connectivity through multimodal transportation options, development of complete streets, and programs and policies that link City assets and resources to create a more walkable, attractive, and identifiable community."

Plan Goals

- Improve on-road pedestrian safety, with an emphasis on heavily used routes.
- Create a network of multimodal transportation options for active and passive recreation that will enhance connections between community origins and destinations such as schools, stores, churches, parks, and recreation areas.
- Develop pedestrian projects that make land use, development, and transportation infrastructure more resilient to potential future risks including storm events or other threats.
- Educate the community as to the benefits of pedestrian activity and applicable rules and regulations.
- Provide a hierarchy of recommended pedestrian policies and programmatic support services for a strategic action plan. Policies and development guidelines in coordination with the 2018-2023 Parks, Recreation and Open Space Master Plan, the 2017 Land Use Plan, and regulations consistent with the pedestrian master plan.
- Outline funding opportunities that provide a clear pathway to building active transportation in Boiling Spring Lakes.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Key Findings and Recommendations

The planning process identified pedestrian safety and access to recreational activities as important issues facing the City of Boiling Spring Lakes. Speeding along NC 87, East Boiling Road, South Shore Drive, and Fifty Lakes Drive were noted as a concern for residents. Crossing NC 87 was identified as one of the most dangerous for pedestrian due to a lack of crosswalks, pedestrian signals, or wide curb radii. The lack of pedestrian infrastructure throughout the community result in a challenge for the pedestrian mobility of residents and visitors alike. Infrastructure projects, policies, ordinances, and programs have been recommended to address these issues and achieve the vision of this Plan.

Recommended Infrastructure Projects

The existing pedestrian conditions of Boiling Spring Lakes were analyzed and prioritized according to project corridors. Prioritization was based on stakeholder input, constraints, opportunities, safety, and connectivity. Project corridors consisting of sidewalks, crosswalks, multiuse paths, wayfinding signage, and placemaking benefits (such as green infrastructure and lighting) were then recommended for each of the corridors. The corridors are listed below in priority order:

Table 1: Proposed Project Corridors

Project Corridor	Project Description	Map ID
Tier 1 Projects		
NC 87 from City Hall to Cougar Road	Pedestrian linear and spot improvements including multiuse path, boardwalk, high visibility crosswalks, midblock crossing, turning and roundabout studies, wayfinding and lighting, and green infrastructure.	1
Fifty Lakes Drive	Pedestrian linear and spot improvements including multiuse path, advance yield signage, traffic calming study, wayfinding and lighting, and green infrastructure.	2
NC 87 to City Limits (South)	Pedestrian linear and spot improvements including multiuse path and wayfinding.	3
Alton Lennon Drive	Pedestrian linear and spot improvements including multiuse path, midblock crossings, advance yield signage, wayfinding and lighting, and green infrastructure.	4
Cougar Road	Pedestrian linear and spot improvements including sidewalk, high visibility crosswalk, turning radii reduction, traffic calming study.	5



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Project Corridor	Project Description	Map ID
Tier 2 Projects		
East Boiling Spring Road	Pedestrian linear and spot improvements including multiuse path, advance yield signage, traffic calming study, wayfinding and lighting, and green infrastructure.	6
NC 87 to City Limits (North)	Pedestrian linear including multiuse path.	7
Spring Lake Loop	Pedestrian linear including multiuse path and wayfinding signage.	8
Tier 3 Projects		
City Connector	Pedestrian linear including multiuse path and wayfinding signage.	9
South Shore Drive	Pedestrian linear and spot improvements including advance yield signage, traffic calming study, and traffic calming measures.	10
Tate Lake Park Loop	Pedestrian linear including wayfinding signage.	11
West Boiling Spring Road to East Coast Greenway and Oak Island	Pedestrian linear including multiuse path and wayfinding signage.	12
Rails to Trails	Pedestrian linear including conversion of unused rail line to multiuse trail and wayfinding signage.	13
East Boiling Spring Road to Brunswick Nature Park	Pedestrian linear and spot improvements including multiuse path, pedestrian crossing and safety study, and wayfinding signage.	14

Nature-based and/or green infrastructure is also recommended for all large multiuse paths to address flooding and promote resiliency in the community. Wayfinding signage and lighting are recommended throughout Boiling Spring Lakes as a strategy for encouraging walking by making the city easier to navigate. It would also enhance the City's brand and identity and perceptions of safety.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Policies and Programs

Policies, ordinances, and programs that complement infrastructure projects are critical to a successful pedestrian plan. Safety is dependent on physical elements, such as linear and spot improvements, as well as program and policy changes, such as pedestrian-friendly ordinances, educational programs, reduction of speed limits, and enforcement of laws.

A comprehensive set of recommendations for code and ordinance updates can be found in Section 4.5: Recommended Policies. This includes a table of existing code/ordinances and recommended amendments or updates. High-level recommendations were made to the following: Article 5.4 Overlay Districts; Article 5.7 Table of Area, Setback, Living Area, and Height Requirements; Article 7.9.2 (c) Cross Access; Article 7.16 Pedestrian Facilities; Article 7.16 Pedestrian Facilities; Article 11.4.2 Flood Damage Prevention Ordinance; New Section – Dedication of Open Space; New Section – Signage Policy; New Section – Lighting Policy.

This Plan also makes several programmatic recommendations to improve safety, encourage physical activity, and enhance the local aesthetics of Boiling Spring Lakes. Whereas infrastructure projects can be expensive to construct, programs are comparatively inexpensive to implement and can provide a tremendous benefit to the community. The City should consider expanding upon the work of the existing Boiling Spring Lakes Bicycle & Pedestrian Task Force to lead these efforts and formalize into the Boiling Spring Lakes Active Transportation Advisory Committee (ATAC). Other programmatic recommendations include safety campaigns to educate pedestrians, active transportation users and drivers, enhance safe access to schools, open street and walking events, public art and environmental education, and enforcing existing drive laws and speed limits.

Key Action Steps

The success of this Plan depends on its implementation. The existing Task Force or a newly converted ATAC is entrusted with overseeing the implementation of the Plan with assistance from City staff and participation by the stakeholders. The Task Force or ATAC would be responsible for meeting regularly to receive updates and guide progress on the action steps. It would also author the annual progress update submitted to the Board of Commissioners on multimodal conditions in Boiling Spring Lakes. The key action steps for accomplishing the goals and objectives of this Plan are summarized on the following page.

Table 2: Key Steps to Implementation

Action	Description	Stakeholder	Timeline
Adopt the Boiling Spring Lakes Comprehensive Pedestrian Plan	Present the Plan to the Boiling Spring Lakes Board of Commissioners for adoption.	Board of Commissioners and city staff	Fall 2020
Amend Brunswick County CTP	Amend Brunswick County Comprehensive Transportation Plan (CTP) to incorporate recommended projects from this plan into the CTP.	Board of Commissioners, City Staff, Brunswick County	Fall 2020
Adopt a sidewalk overlay district	Adopt a sidewalk overlay district that to require sidewalk infrastructure be built throughout the City.	Board of Commissioners and city staff	Fall 2020



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Action	Description	Stakeholder	Timeline
Convert the Task Force to an Active Transportation Advisory Committee (ATAC)	Transition the Boiling Spring Lakes Bicycle & Pedestrian Task Force into a formal advisory committee that will be responsible for overseeing the implementation of the Plan.	Board of Commissioners and city staff	Winter 2020
Strengthen partnerships with Cape Fear RPO and NCDOT Division 3	Hold an initial meeting with the stakeholders to provide an overview of the Plan's recommendations and identify opportunities for collaboration.	Cape Fear RPO, NCDOT Division 3, and city staff	Winter 2020/ ongoing
Apply for Watch for Me NC	Apply to participate in NCDOT's Watch for Me NC campaign to raise awareness and provide educational resources to promote bicycle and pedestrian safety to residents, drivers, and law enforcement.	Task Force/ATAC and city staff	Winter/Spring 2021/ Ongoing
Identify potential funding sources during city budget planning	Identify potential funding sources for pedestrian programs, projects, and maintenance in the city's budget such as Powell Bill funds. Begin to accumulate funds that can be used for the local match required for most projects.	Task Force/ATAC, Board of Commissioners, and city staff	Winter/ Spring 2021
Apply for alternative funding sources for the Plan's projects and programs	Refer to the funding sources identified in this Plan in Appendix D; apply for funds in addition to the STIP process to implement programs and projects. Establish a fund to use for local match requirements.	Task Force/ATAC and city staff	Ongoing
Include requirements for pedestrian facilities in city ordinances and policies	Draft amendments to city ordinances and policies following the recommendations of this Plan and NCDOT's Complete Street Policy for pedestrian infrastructure in existing and new development.	Board of Commissioners, and city staff	Spring/ Summer/ Fall 2021
Coordinate with Active Routes to School Coordinator	Begin meeting with the Active Routes to School Coordinator to establish and develop policy for implementation and/or training or programs for South Brunswick Middle and High Schools.	Task Force/ATAC, city staff, NCDOT, NC Division of Public Health	Summer/ Fall 2021
Partner with local artists, businesses, and the parks department	Partner with local artists, businesses, and the parks department to work on placemaking projects.	Local artists, art organizations, and city staff	Winter 2022
Prepare the Boiling Spring Lakes Comprehensive Pedestrian Plan Annual Report/Memo	Prepare the first Boiling Spring Lakes Pedestrian Plan Annual Report or memo assessing progress made annually using the performance and evaluation measures included in this Plan.	Task Force/ATAC and city staff	Spring 2022

Proposed Projects

1. NC 87 from City Hall to Cougar Rd
2. Fifty Lakes Drive
3. NC 87 to City Limits (South)
4. Alton Lennon Drive
5. Cougar Road
6. East Boiling Spring Road
7. NC 87 to City Limits (North)
8. Spring Lake Loop
9. City Connector
10. South Shore Drive
11. Tate Lake Park Loop
12. West Boiling Spring Road to East Coast Greenway and Oak Island
13. Rail to Trails
14. East Boiling Spring Road to Brunswick Nature Park

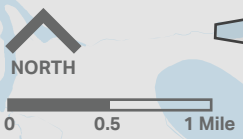
City of Boiling Spring Lakes Pedestrian Plan

2020

Proposed Projects (with Existing Network)

- High-Visibility Crosswalk with Pedestrian Rapid Flash Beacon
- Mid-Block Crossing
- Advance Yield Here Sign/Line
- Traffic Calming Study
- Turning Improvement (Radii, Roundabout)
- Wayfinding/Green Infra./Lighting
- Multiuse Path (Linear)
- Sidewalk (Linear)
- Boardwalk (Linear)
- Paddle Trail Access*
- NC Birding Trail*
- Existing Trail Route*
- Streets
- Streams
- Water Feature
- City Limits

*As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan. Trail conditions and types of facilities are rural unpaved roads or on-road trails.



Southport



INTRODUCTION + PROJECT OVERVIEW





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

1.0 Introduction and Project Overview

1.1 Background

The City of Boiling Spring Lakes is dedicated to improving its pedestrian infrastructure through a comprehensive planning effort. With an existing active transportation task force and strong City and Cape Fear Rural Transportation Planning Organization (Cape Fear RPO) support, the area is primed for multimodal improvements. The focus of the Comprehensive Pedestrian Plan (the Plan) is to define the vision and goals, outline recommendations, and identify programs and policies for implementing pedestrian infrastructure and amenities that increase multimodal connectivity, safety and quality of life. The Plan has been funded through a matching grant from the NCDOT Integration Mobility Division (IMD) with the City of Boiling Spring Lakes providing the matching funds. The grant provides funding for local governments to develop comprehensive active transportation plans focused on active transportation infrastructure.

The City of Boiling Spring Lakes is located on North Carolina's eastern coast in Brunswick County, near Wilmington (22 miles) to the northeast and Caswell Beach, Oak Island, and Southport to the south (approximately 11 miles to the Atlantic Ocean). With a population of 5,372 (2010 US Census), the City boasts many recreational activities as well as shops and amenities. Incorporated in 1961, developers transformed a historic spring (formerly known as Bouncing Log Spring) via a dam to create a "paradise in the pines." The City gets its namesake from this natural boiling spring and is known for its eight parks and more than 50 natural and man-made lakes totaling 10 miles of shoreline, making it a picturesque place to live and play. In recent years, major weather events including Hurricane Florence caused devastation to the community from flooding and breaching of the City's Sanford Dam.



City of Boiling Spring Lakes

1.2 Community Vision

Boiling Spring Lakes Pedestrian Plan Vision Statement

"Boiling Spring Lakes will be a place that fosters community connectivity through multimodal transportation options, development of complete streets, and programs and policies that link City assets and resources to create a more walkable, attractive, and identifiable community."



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

The following word cloud represents key terms residents used to identify their community.



1.3 Goals and Objectives

A series of goals were developed by the Plan's Steering Committee throughout the planning process. These goals form the foundation of objectives and strategies that guide the creation and implementation of the Plan while also forming a strategic framework for developing and improving pedestrian mobility in the City of Boiling Spring Lakes. In alignment with the North Carolina Statewide Bicycle and Pedestrian Plan, *WalkBikeNC*, these goals, objectives, and strategies were developed to further encourage consistency with key state and local active transportation initiatives and facilities.

Goals of the Plan

- Improve on-road pedestrian safety, with an emphasis on heavily used routes.
- Create pedestrian opportunities that make land use, development, and transportation infrastructure more resilient to potential future risks including storm events or other threats.
- Create a network of multimodal transportation options for active and passive recreation that will enhance connections between community origins and destinations such as schools, stores, churches, parks, and recreation areas.
- Organize and support programs to become a walkable and multimodal community.
- Provide a hierarchy of recommended pedestrian infrastructure projects and programmatic support services.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

- Have clear policies and development guidelines in coordination with the 2018-2023 Parks, Recreation and Open Space Master Plan, the 2017 Land Use Plan, and regulations consistent with the pedestrian master plan.
- Educate the community as to the benefits of pedestrian activity and applicable rules and regulations.

Objectives of the Plan

- Identify and develop pedestrian accommodations along Boiling Spring Lakes' roadways.
- Survey the Boiling Spring Lakes' community in order to craft a pedestrian plan representative of the community.
- Partner with diverse stakeholders, including vulnerable populations, such as schools, community groups, the county health department, environmental groups, other stakeholders, and city government to plan and hold events that recognize and promote the health and environmental benefits of walking and biking and promote active living.
- Identify policies that promote resiliency to mitigate impact of potential, future weather events.
- Implement policies and programs to improve pedestrian safety and educate the community.
- Improve links between existing pedestrian infrastructure, organize and support programs and events on the benefits of pedestrian activity, and create incentives to encourage walking.

1.4 Purpose and Scope of the Plan

The purpose of this plan is to evaluate the existing pedestrian conditions within the City of Boiling Spring Lakes and recommend programmatic and infrastructure projects to improve safety, connectivity, and well-being. This effort was led by NCDOT's Integrated Mobility Division, AECOM as the project consultant, and the locally appointed Steering Committee. Public meetings were also conducted for City residents to provide input on planning efforts. Engineering studies and construction were not included in the scope.

The scope of the plan included the following tasks:

- Analysis of existing conditions and demographics
- Review of existing plans and policies
- Policy and program recommendations
- Infrastructure improvements and cost estimates
- Identification of funding sources
- Public input through a Steering Committee and Public meetings
- Implementation strategies



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

1.5 Benefits of a Walkable Community

There are many benefits of pedestrian planning and the resulting programs and infrastructure projects. By working to develop walkable communities, municipalities are investing in an increased sense of community through the promotion of improved health, economic resources and activity, sustainable transportation systems, and environmental consciousness. Planning and developing pedestrian facilities also create a valuable resource for future generations to use and expand upon. *WalkBikeNC*, the statewide bicycle and pedestrian plan, established a vision for North Carolina centered around five key benefits: safety, health, economic, mobility, and stewardship. The statistics and benefits discussed in this section were compiled from several sources: the *WalkBikeNC* plan, the Pedestrian and Bicycle Information Center based at the University of North Carolina Highway Safety Research Center, the National Survey of Children's Health, and the *North Carolina Pedestrian Crash Facts Summary Report* by the NCDOT Integrated Mobility Division.



Health

Active transportation infrastructure such as sidewalks, multiuse paths, and trails promote active living and improve health by providing residents with opportunities to exercise and integrate physical activity into their daily lives. Programs such as Active Routes to School provide education and encouragement for more physical activity. Improving health is of critical importance in North Carolina where 35.9 percent of adults are overweight, and 29.7 percent of adults are obese¹(2016). The National Survey of Children's Health found that the percentage of children classified as obese in North Carolina continually declined between 2003 and 2016. However, in 2016, 30.9 percent of the population under the age of 18 were classified as overweight and 12.6 percent were classified as obese. This indicates that the need to decrease these numbers and promote active and healthy lifestyles remains imperative in North Carolina (US Census Bureau, 2016).



Economic Competitiveness

Investing in pedestrian infrastructure returns economic benefits to communities through increased property values, patronage of local businesses, and tourism. Improving transportation choices in a community encourages better connectivity between people and places and is closely tied to public health, access to jobs and resources, and business opportunities. Providing access to and connectivity between local businesses are important incentives for economic development, as convenient and appealing pedestrian facilities can encourage the movement of people and increase their access to economic resources.



Safety

The need to improve safety for pedestrians is urgent. Between 2011 and 2015, an average of 2,509 pedestrian crashes occurred across the state, annually. In the same timeframe, an average of 176 of these crashes caused fatal injury per year and an average of 188 of these crashes caused one or more disabling injuries per year (NCDOT Integrated Mobility Division, 2018). With high traffic volumes and five (5) known crashes in the City of Boiling Spring Lakes, pedestrian safety is a major concern that needs addressing through greater protections for active transportation users.

¹ Centers for Disease Control and Prevention (2016), North Carolina State Nutrition, Physical Activity, and Obesity Profile: <https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/pdfs/north-carolina-state-profile.pdf>



Mobility

Mobility/transportation efficiency describes the effectiveness of the transportation system, which includes roads, rail, public transit, and bicycle or bicycle facilities, to move people and goods safely and quickly. As roads become increasingly congested, one way that communities can improve transportation efficiency is by offering active transportation options to automobiles and designing 'Complete Streets' that accommodate all modes of transportation. Providing the most appropriate types of transportation facilities can also improve transportation efficiency. In areas with multiple resources within proximity of one another, providing pedestrian facilities can reduce the number of short motor vehicle trips.



Sustainability and Resiliency

Nationally, transportation is responsible for nearly 80 percent of carbon monoxide and 55 percent of nitrogen oxide emissions (US Pedestrian and Bicycle Information Center, 2015). Active transportation infrastructure encourages stewardship of our natural resources by providing residents with a fossil fuel-free mode of transportation. Impacts of facilitating and encouraging walking or bicycling as a standard mode of transportation include the following: fostering an appreciation for nature and protecting natural resources, reducing fossil fuel consumption and vehicle emissions, and encouraging overall energy conservation and land use planning that promotes diverse modes of transport and mix of land uses. While reducing vehicle miles travelled in general yields environmental benefits, shorter trips are more polluting than long trips on a per-mile basis. This is due to the high levels of emissions caused by "cold starts" and the first few minutes of travel before pollution control devices work effectively. Therefore, consolidating the number of vehicle trips is an important environmental goal (US Pedestrian and Bicycle Information Center, 2015).

As a part of sustainability, developing multimodal infrastructure also has the keen possibility to be built with resiliency embedded in the infrastructure and policy frameworks. This allows the incorporation of nature-based and green infrastructure to help absorb stormwater and potential flooding, allowing for great adaptation to severe weather events. This also provides quality of life benefits to a community while expanding natural habitat to wildlife.



Quality of Life

Quality of life is influenced by factors that include, but are not limited to commute options, access to recreation including parks and trails, safety, and economic competitiveness. Pedestrian amenities positively contribute to the overall quality of life of a community as such amenities encourage residents and visitors to be active, social, and enjoy more travel choices.



EXISTING CONDITIONS



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

2.0 Existing Conditions

2.1 Demographics

Title VI of the Civil Rights Act of 1964 requires that each federal agency ensure that no person is excluded, denied, or discriminated based on race, color, national origin, age, sex, disability. Executive Order 12898, signed by President Bill Clinton in 1994, requires that each federal agency shall make achieving environmental justice part of its mission. This is relevant to Boiling Spring Lakes in that the city would coordinate with federal agencies and apply for federal funds in order to implement the programs and projects recommended by this plan.

Datasets studied include the following: population, age, race characteristics, Hispanic/Latino and minority populations, poverty rates, limited English proficiency (LEP) populations, and zero car households. The demographic analysis was based on 2000 and 2010 U.S. Decennial Census data and 2013-2017 American Community Survey (ACS) 5-Year estimate data analyzed at the place, county, and state levels. All data is based on the U.S. Census Bureau unless noted otherwise.

Population and Age

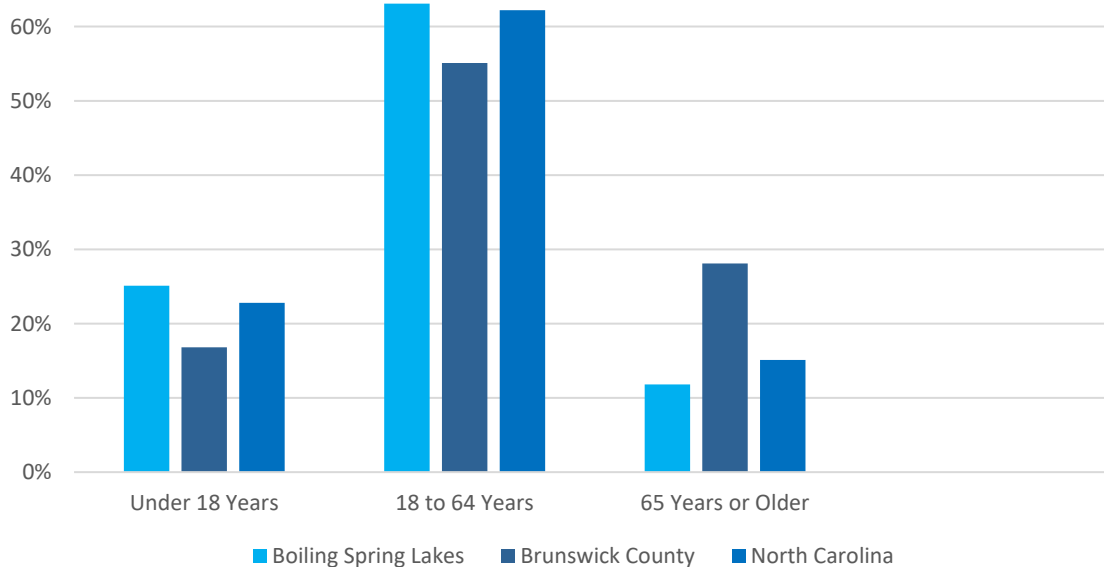
The population of the City was 5,703 people in 2016 and grew to 5,777 people in 2017, a 1.3 percent increase. Brunswick County's population was 119,167 in 2016 and 122,586 people in 2017, a 2.87 percent increase. This increase in both the City and County are consistent with statewide population growth and may suggest a need for continued dedication to quality of life benefits, such as active transportation infrastructure, to attract both people and business to the area. In recent years, the City has dedicated many efforts toward these types of improvements, including the formation of a Bicycle and Pedestrian Transportation Task Force.

Based on 2013-2017 ACS data, the median age is 36.8 in Boiling Spring Lakes, while Brunswick County is older with a median age of 51.9. Boiling Spring Lakes is comparable to the state median age of 38.4 (see Figure 1). This data suggests that Boiling Spring Lakes has a larger proportion of working-age individuals. Improved multimodal infrastructure can help to retain or attract a more diverse population while also serving the current population in Boiling Spring Lakes who may be interested in different modes of transportation. Those populations living in the community currently can gain health benefits from pedestrian facilities, while also benefitting from a greater quality of life.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 1: Age Group Percentages



Race and Ethnicity

The minority population² in Boiling Spring Lakes is approximately 17.3 percent of the total population (1,679 people). The minority population for Brunswick County is slightly higher at 18.4 percent (22,551 people).

In 2017, there were 9.56 times more White (Non-Hispanic) residents in Boiling Spring Lakes than any other race or ethnicity. The City is therefore predominantly white (82.8 percent), with a small percentage of Black/African-American (1.5 percent), Asian (0.6 percent), some other race (8.9 percent), and two or more races (6.3 percent), and a Hispanic/Latino population of approximately 8.7 percent (see Figure 2). In Brunswick County, there were 7.77 times more White (Non-Hispanic) residents than any other race or ethnicity. The demographic composition is predominantly white (83.5 percent) with a higher Black/African-American (10.6 percent) population than the City. The remainder of its population defined as American Indian/Alaska Native (0.5 percent), Asian (0.6 percent), Native Hawaiian/Pacific Islander (0.1 percent), some other race (2.5 percent), and two or more races (2.1 percent), and a Hispanic/Latino population of approximately 4.6 percent. In the state of North Carolina, the white (69.0 percent) and Black/African-American (21.5 percent) populations define the majority with the remainder of the population defined as American Indian (1.2 percent), Asian (2.7 percent), Hawaiian/Pacific Islander (0.1 percent), some other race (3.1 percent), or two or more races (2.5 percent).

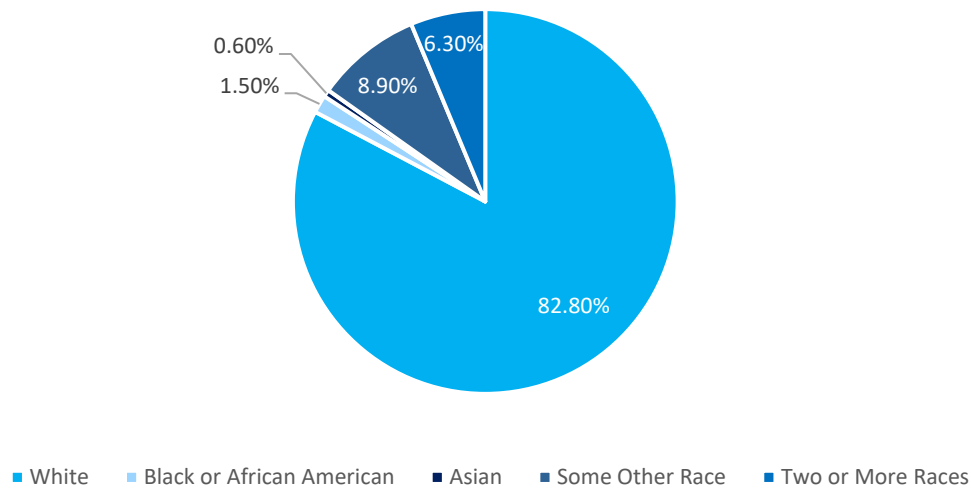
The Hispanic/Latino population represents 9.1 percent of the population in the state of North Carolina, just above the City's Hispanic/Latino population. Such minority and racial compositions indicate a minimally diverse composition of people living in both Boiling Spring Lakes and Brunswick County, outside of its Hispanic/Latino population which is statistically aligned with the State rate.

² Calculated by subtracting White, Non-Hispanic population totals from the Total Population based on 2013-2017 ACS data.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

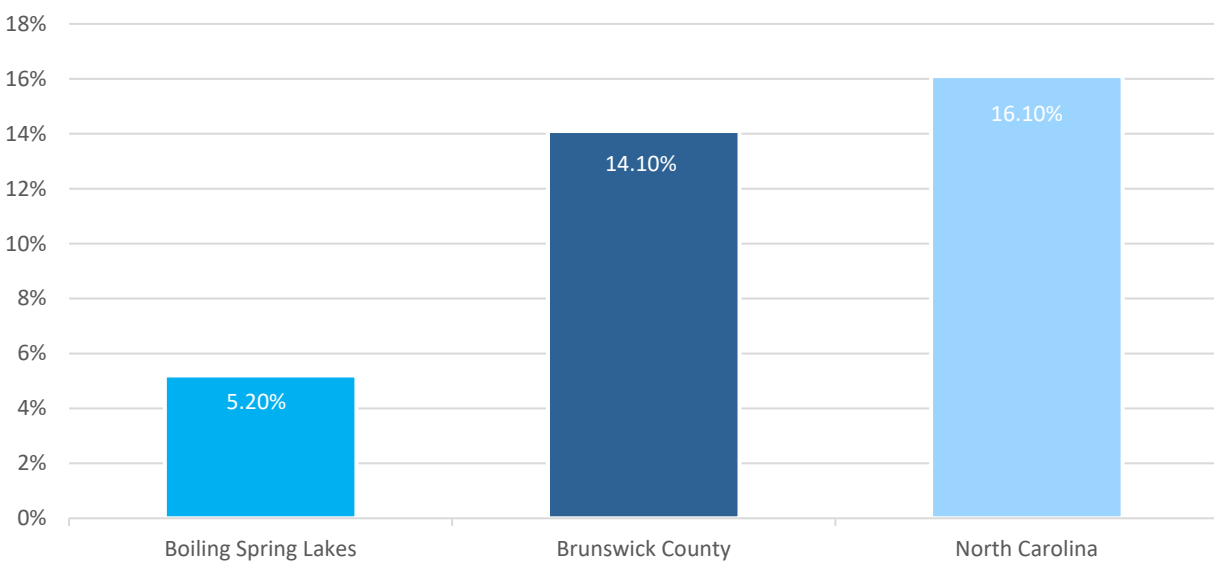
Figure 2: Racial Composition of Boiling Spring Lakes



Regional Poverty Rates

Individuals living below the poverty line in Boiling Spring Lakes comprise approximately 5.2 percent of the population. This is lower than the County rate at 14.1 percent, and lower than the North Carolina poverty rate of 16.1 percent living below the poverty line. The City of Boiling Spring Lakes has a poverty rate that is much lower than the county and state (see Figure 3).

Figure 3: Poverty Rate Percentages





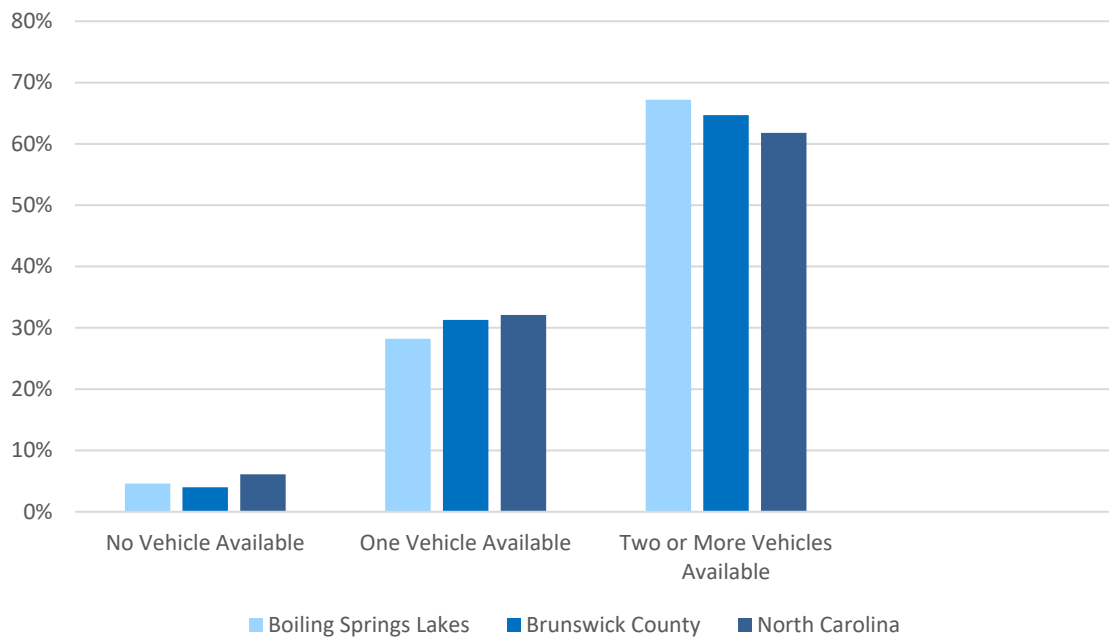
Limited English Proficiency (LEP)

The populations in Boiling Spring Lakes that speak English “less than very well” comprise approximately 3.4 percent of adult individuals age 18 and older. Of those in this category, the predominant language spoken other than English is Spanish (3.4 percent of the adult population over 18 years of age). In Brunswick County, LEP populations are approximately 2.3 percent. Of those that speak English “less than very well,” Spanish is the predominant language making up 1.6 percent of the adult population over 18 years of age.

Vehicles per Household

In Boiling Spring Lakes, 4.6 percent of households have no vehicle available, 28.2 percent of households have one vehicle available, and 67.2 percent of households have two or more vehicles available. In Brunswick County, 4.0 percent of households have no vehicle available, 28.2 percent of households have one vehicle available, and 64.7 percent of households have two more vehicles available. Statewide, 6.1 percent of households have no vehicle available, 32.1 percent of households have one vehicle available, and 61.8 percent of households have two more vehicles available (see Figure 4). Active transportation infrastructure projects would particularly benefit residents that do not have access to vehicles or share vehicles within a household.

Figure 4: Vehicles per Household



Means of Transportation to Work³

An overwhelming majority of Boiling Spring Lakes’ residents (83.7 percent) commute alone to work using a car. Fourteen (14.8) percent of residents’ commute by carpool, while zero percent of the population of Boiling Spring Lakes walk, bike, or uses a form of public transportation to travel to work. The City’s average travel time to work that is less than 15 minutes makes up 24.4 percent of the population.

³ NCDOT Demographic Snapshot Tool, March 2020

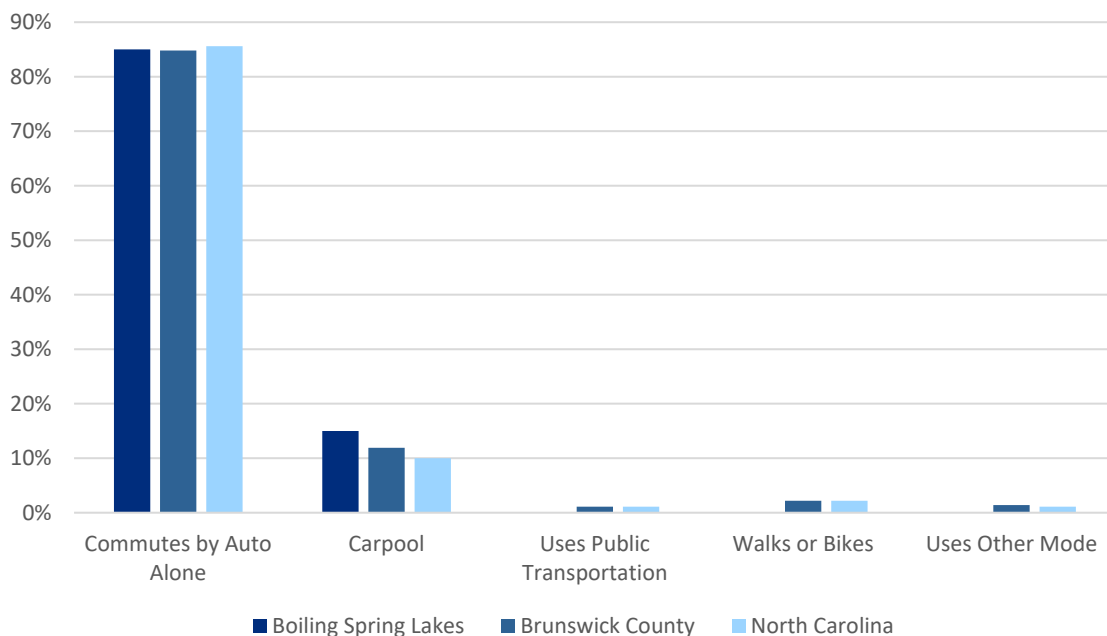


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

These figures are comparable to Brunswick County and the state of North Carolina, where 84.8 percent and 85.6 percent commute alone by auto, respectively. In Brunswick County, a total of 11.9 percent of workers carpool, while 10.0 percent of the state uses a similar mode of transportation. In the county, 1.1 percent of the population uses public transportation, 2.2 percent commutes by bike or walking, and 1.4 percent uses another mode to commute. Statewide, 1.1 percent use public transportation, 2.2 percent walks or bikes to work, and 1.1 percent uses another mode to commute. The County and State’s average travel time to work that is less than 15 minutes makes up 28.1 and 27.0 percent of the population, respectively.

These statistics show a higher dependency on vehicle usage in Boiling Spring Lakes as compared to both county and statewide figures (see Figure 5). Supporting the development and use of transportation networks for active modes may provide an opportunity for a variety of commuting options to work, as well as enabling workforce participation by people with limited access to vehicles.

Figure 5: Means of Transportation to Work



2.2 Land Use and Development

The City of Boiling Springs is highly committed to preserving its natural resources for conservation and recreation. This is reflected through the ten recreational facilities dispersed throughout the City’s boundaries. The City is largely residential and comprised of single-family homes. There are currently sections of unpaved roadways with no development. Additional single-family homes are anticipated to be constructed in these locations. The land use along NC 87 differs from the rest of the City and is commercial in character for a small portion of the roadway. The remainder of NC 87 is bordered by undeveloped land.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

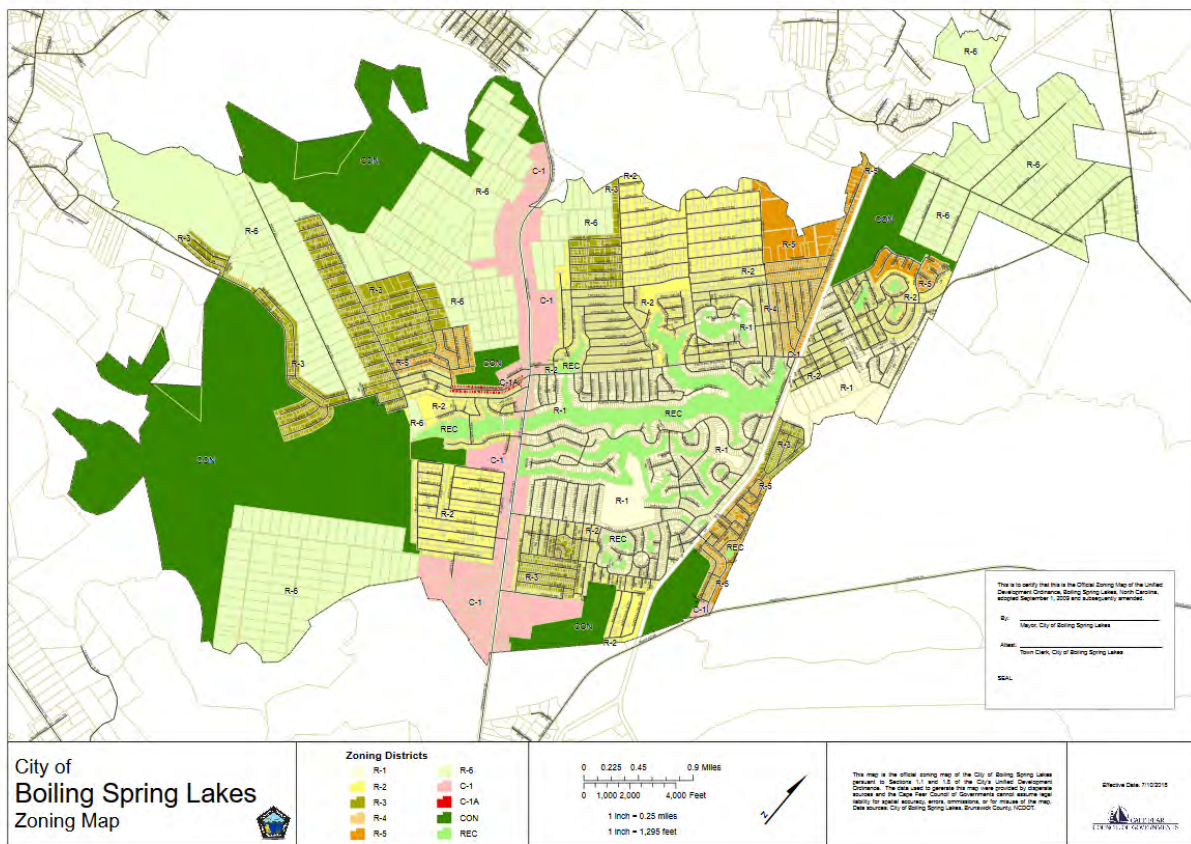
2.3 Existing Plans and Programmed Projects

The City of Boiling Spring Lakes has multiple plans that outline the importance the City places on the development of an active transportation network.

City of Boiling Spring Lakes, NC: Comprehensive Land Use Plan

According to the *Comprehensive Land Use Plan*, the City's primary concerns are protecting the environment, preserving a family friendly character, and maintaining its existing resources for enjoyment today and in the future. Among the City's top priorities are paving and repaving more city streets, maintaining the City's small-town character, providing sidewalks along all major roads, and providing more walking paths, multi-use trails (greenways), bike routes, and pedestrian scaled lighting. The City currently has eight leisure parks and a community garden. In addition to this recreational space, the City has approximately 6,400 acres of undeveloped land in conservation easements.⁴

Figure 6: 2018 City of Boiling Spring Lakes Zoning



⁴ Conservation areas include recreation areas such as the lakes, wetlands, and forests. See the City of Boiling Spring Lakes 2018 zoning map here: https://www.cityofbsl.org/Data/Sites/1/media/departments/planningandzoning/zoningmap/bsl_zoning_map_2018-07-10.pdf

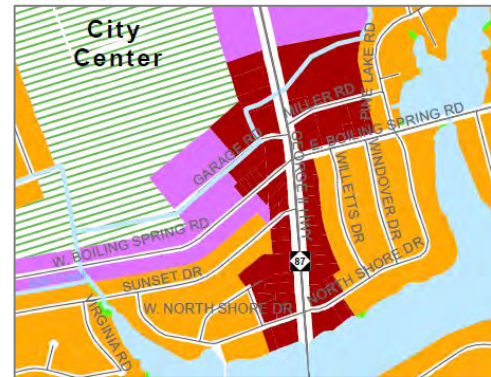


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

In 2009, the City partnered with the County to prepare an informal bicycle plan. The plan identified two routes for bicycle travel; however, the plan was never formally adopted by the City. Brunswick County is currently in the process of developing a Countywide Greenway and Blueway Plan. The Parks and Recreation Department has also identified the provision of bicycle and pedestrian facilities as a high priority for the City. Currently, there are limited opportunities for walking and bicycling in Boiling Spring Lakes. Most roadways do not have sidewalks or other pedestrian accommodations, where the local population walk in right-of-way areas or on residential streets that have lower speed limits.

While Boiling Spring Lakes is dedicated to maintaining its small-town atmosphere, the Plan identifies an area along NC 87 to be developed as the City center (see Figure 7). The City center zoning classification promotes development that is high density and pedestrian oriented to promote social activities and cultural value, including commercial, retail, and vertical mixtures of land uses coupled with shared and reduced parking.

Figure 7: Land Use at City Center



Boiling Spring Lakes Planning Board Long Range Plan, 2014

The *Boiling Spring Lakes Planning Board Long Range Plan* identifies the following key transportation goals for the City:

- Encouraging land use opportunities throughout the City that reduce the dependency on private vehicles for shopping and recreation,
- Developing, supporting, and maintaining a public pedestrian system (five-year goal), and
- Developing, supporting, and maintaining a public bicycle path system (ten-year goal).

The Plan also designates providing practical and high visual quality streetscapes throughout Boiling Spring Lakes as a city design goal.

2018-2023 Parks, Recreation, and Open Space Master Plan for the City of Boiling Spring Lakes

The primary goal identified in the Plan is to provide a non-motorized transportation system that includes marked, safe, improved, and expanded bicycle and pedestrian facilities. The Plan notes interest in bicycle and pedestrian facilities that connect existing residential neighborhoods, existing parks and recreation areas, facilities and open spaces, commercial and service areas, and other public areas and facilities. The City has a strong focus on natural open space and manages nine community and neighborhood parks. Despite that quantity of community space, Boiling Spring Lakes is currently lacking an active transportation network to connect the different city amenities. In a 2017 Needs Assessment Survey, 15 percent of respondents indicated that they felt the City was a safe place to bike while 20 percent of respondents agreed with the statement that "The City of Boiling Spring Lakes is pedestrian friendly/safe place to walk."



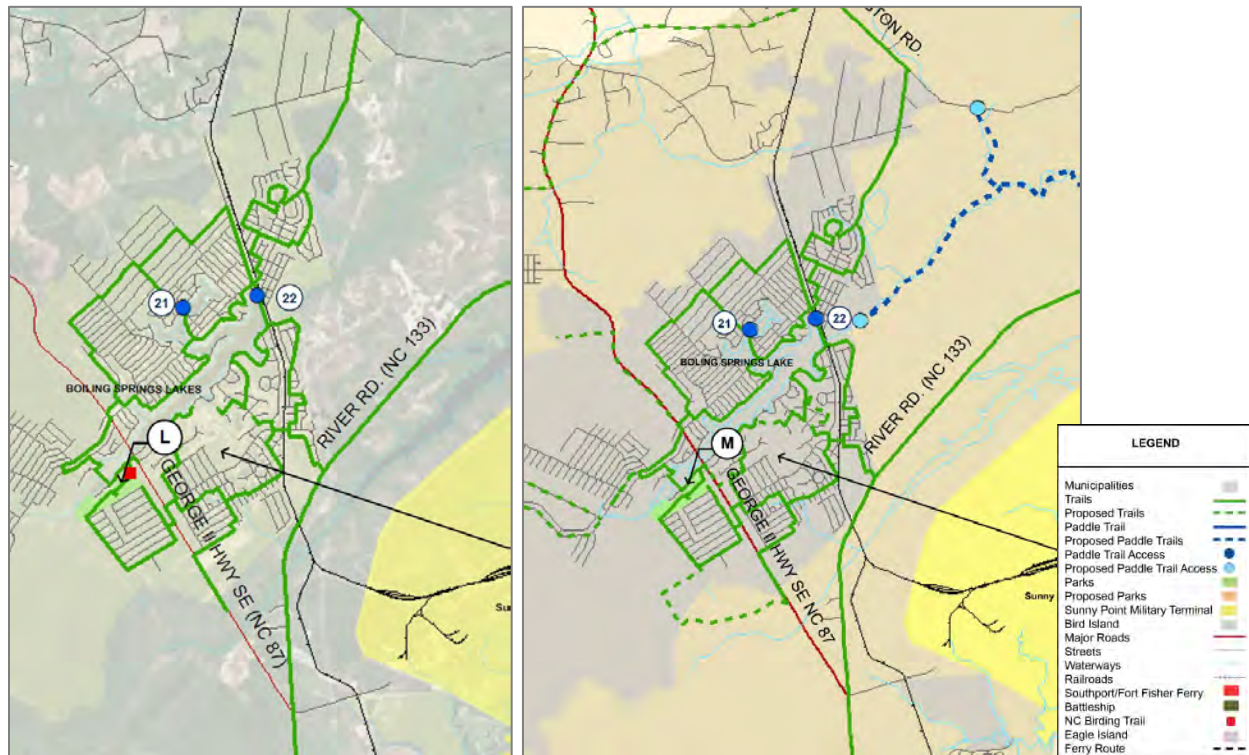
CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Brunswick County Trail Plan

Brunswick County coordinated a county-wide *Brunswick County Trail Plan* focused on biking, walking, kayaking, wildlife, or preserving natural resources. The goal of the Plan is to create a comprehensive network of walking trails, bike routes, and paddle trails, while preserving Brunswick County's many natural resources, and acting as a catalyst to promote healthy communities throughout Brunswick County. The Trail Plan was approved by the Brunswick County Board of Commissions in March 2017.

The Plan is comprised of two maps, existing and proposed facilities (see Figure 8) and proposes several expanded trails and paddle trails for the City of Boiling Spring Lakes. The trail map showing recommendations for the City identifies roadways that have been designated as trails. However, the City is currently lacking active transportation infrastructure along these designated routes. This is specifically important as these trails provide connections to regionally important and comprehensive walking trails, bike routes, and paddle trails.

Figure 8: Boiling Spring Lakes Existing Trails Map



Brunswick County Comprehensive Transportation Plan

The *Brunswick County Comprehensive Transportation Plan* does not currently show or propose any active transportation infrastructure in Boiling Spring Lakes. NC 87 through Boiling Spring Lakes is noted as a boulevard in need of improvement. Cougar Street and West Boiling Springs Road are also listed as roads in need of improvement.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Brunswick County CAMA Land Use Plan

Brunswick County prepared a plan in accordance with the requirements of the North Carolina Coastal Area Management Act (CAMA). The guidelines required that each of the identified coastal counties and municipalities prepare and adopt a Core CAMA Land Use Plan that includes an analysis of existing and emerging conditions. The Brunswick County CAMA Land Use Plan (completed 2007 and most recently recertified in 2012) outlines existing conditions and land uses, land suitability analysis, community facility demand information, future land use plan, specific land use, development goals, policies, and tools for managing development.

No specific future land use measures for the City of Boiling Spring Lakes were identified. Other specific recommendations as they pertain to the City included promoting continued action to respond to the Red Cockaded Woodpecker preservation needs. Recommendations include education and monitoring. According to a survey conducted as part of the plan, key issues in Boiling Spring Lakes with needed actions included (ranked highest to lowest): sewage problems/sewage solutions, responsible managed growth, Brunswick County should promote quality education for present/future generations, Brunswick County should protect its natural environment, unplanned commercial strip development, scattered and sprawling subdivision activity, concern with stormwater runoff and drainage, expand employment opportunities, preserve and protect wetlands from development pressure, improve the availability of affordable housing.

Military Ocean Terminal Sunny Point (MOTSU) Joint Land Use Study (JLUS)

In 2019, a Joint Land Use Study was completed for the Military Ocean Terminal Sunny Point to address communities surrounding military installations. The goal of the study is to allow the military's ability to maintain its training, and operational missions with surrounding communities as they experience population growth and urban development. The MOTSU JLUS identified multiple recommendations that directly apply to the City of Boiling Spring Lakes. These include the following recommendation along the MOTSU rail corridor and/or around the interchange yard:

- Zoning regulations to limit the density and intensity of residential development and restrict incompatible uses with the potential need for emergency evacuation
- Zoning standards to provide for enhanced safety and security (e.g., berms, fencing)
- Disclosure provisions in subdivision ordinances to require plat notations indicating proximity
- MOTSU, NCDOT, Cape Fear RPO, Wilmington MPO and the local governments should explore opportunities for the elimination of at-grade road crossings and work toward sealing the rail corridor
- MOTSU and the local governments should continue working with NCDOT to mitigate and eliminate flooding issues along the highway access routes to MOTSU



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

2.4 Community Features

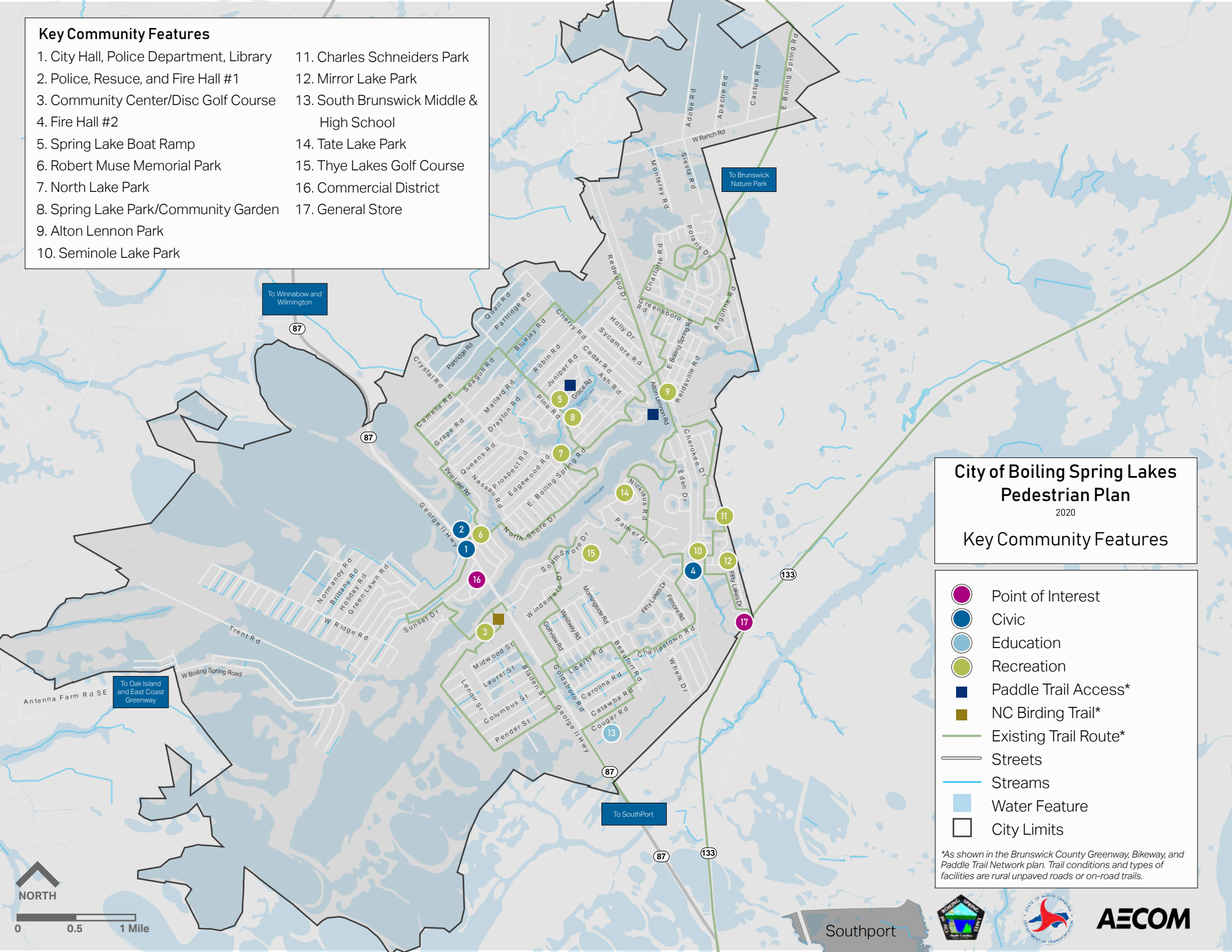
Boiling Spring Lakes has several community features that provide important services and enrich the quality of life for its residents. These features serve as potential pedestrian origins and destinations. The Steering Committee reported current pedestrian activity at the following locations: Lake Patricia, the commercial district on George II Highway, the community center, and South Brunswick Middle and High School. By improving connectivity between these locations and Boiling Spring Lakes' neighborhoods, residents would be more likely to walk. All community features are listed in Table 3: Key Community Features and mapped on Map 3: Key Community Features. An infrastructure project's ability to provide connectivity to these origins and destinations was one variable used to prioritize projects.

Table 3: Key Community Features

Map ID	Name	Type
1	City Hall, Police Department, and Library	Civic
2	Police, Rescue, and Fire Hall #1	Civic
3	Community Center & Disc Golf Course	Recreational
4	Fire Hall #2	Civic
5	Spring Lake Park	Recreational
6	Robert Muse Memorial Park	Recreational
7	North Lake Park	Recreational
8	Spring Lake Park and Community Garden	Recreational
9	Alton Lennon Park	Recreational
10	Seminole Lake Park	Recreational
11	Charles Schneider's Park	Recreational
12	Mirror Lake Park	Recreational
13	South Brunswick Middle and High School	Education
14	Tate Lake Park	Recreational
15	The Lakes Golf Course	Recreational
16	Commercial District	Point of Interest
17	General Store	Point of Interest

Key Community Features

- | | |
|--|--|
| 1. City Hall, Police Department, Library | 11. Charles Schneiders Park |
| 2. Police, Resuce, and Fire Hall #1 | 12. Mirror Lake Park |
| 3. Community Center/Disc Golf Course | 13. South Brunswick Middle & High School |
| 4. Fire Hall #2 | 14. Tate Lake Park |
| 5. Spring Lake Boat Ramp | 15. Thye Lakes Golf Course |
| 6. Robert Muse Memorial Park | 16. Commercial District |
| 7. North Lake Park | 17. General Store |
| 8. Spring Lake Park/Community Garden | |
| 9. Alton Lennon Park | |
| 10. Seminole Lake Park | |

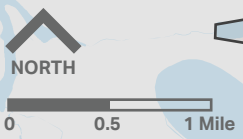


City of Boiling Spring Lakes Pedestrian Plan 2020

Key Community Features

- Point of Interest
- Civic
- Education
- Recreation
- Paddle Trail Access*
- NC Birding Trail*
- Existing Trail Route*
- Streets
- Streams
- Water Feature
- City Limits

*As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan. Trail conditions and types of facilities are rural unpaved roads or on-road trails.



Southport





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

2.5 Infrastructure

The City of Boiling Spring Lakes is located south of Leland and north of Oak Island. George II Highway (Highway 87), a two-lane highway, runs through the center of the city intersecting with East Boiling Spring Road, Patricia Lake, Fifty Lakes Drive, and Cougar Road. The major roads in Boiling Spring Lakes, such as East Boiling Spring Road, George II Highway (Highway 87), and Cougar Road, are maintained by NCDOT. There is one private road (Bet Lane) and the City maintains the remaining residential streets (paved and unpaved).

Vulnerability to Storm Events

The state of North Carolina has recently completed its *NC Climate Science Report (2020)*, a scientific assessment of climate trends and potential future climate change across the state in accordance with the Governors Executive Order 80 (EO80). This document along with other upcoming agency documentation, including NCDOT, outlines climate change trends and actions. According to these assessments, changes in temperature, sea level rise, storm events, and flooding are all expected to increase, causing potential significant compounding events that change the magnitude of weather and health-related risk events. Resiliency of infrastructure assets has never been more important, both for public health and safety as well as infrastructure continuity during emergencies.



Collapsed Sanford Dam on Alton Lennon Road

The City of Boiling Spring Lakes has already been impacted by extreme flooding and infrastructure failure after Hurricane Florence (2018), where five dams were breached. Most importantly, Sanford Dam was breached⁵ which caused subsequent breaches at North Lake, Pine Lake, Middle Dam, and Upper Dam (see Map 4 for dams breached and flood zone area). These breaches not only caused flooding and lengthy detours during the storm but resulted in these major recreational assets to be drained. See “Bridges and Dams” following this section for more detail on Sanford Dam and other dam breaches.

In North Carolina alone, 129,000 bridges are vulnerable to breach and/or flooding events due to being structurally deficient.⁶ The deterioration and ultimate collapse of critical infrastructure reemphasizes the importance of designing for resilient communities. As a community that has experienced severe storm events, The City of Boiling Spring Lakes may benefit from considering how active transportation infrastructure can help support alternatives to mobility when large-scale infrastructure, such as bridges or dams, fail.⁷ See Map 4: for existing pedestrian facilities and flooding.

⁵ Because Sandford Dam (Alton Lennon Drive) was built on a berm, structural dam safety rating is not available. According to North Carolina Department of Environmental Quality (NCDEQ), the dam was listed as a “high-hazard dam.” This refers to the damage potential downstream, not the condition of the dam itself.

⁶ Wright et al. (2012), Estimated effects of climate change on flood vulnerability of U.S. bridges: <https://link.springer.com/article/10.1007/s11027-011-9354-2>; This study found that more than 129,000 bridges were currently defined as deficient, with more than 100,000 bridges vulnerable to increased river flows.

⁷ Association of State Dam Safety Officials, Extreme Rainfall Events: https://damsafety.org/sites/default/files/ASDSO-LivingWithDams-ExtremeRainfallEvents-NO%202-WEB_0.pdf



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Roads

The road network in Boiling Spring Lakes forms a grid-like pattern typical of many North Carolina cities, however, its central core is Patricia Lake instead of a downtown. Patricia Lake, also known as “The Big Lake,” is typically filled with 12 feet of water but the Sanford Dam breach during Hurricane Florence (2018) has left the lake empty. Alton Lennon Drive crosses over the eastern portion of the lake and is currently unusable and in disrepair due to its position over the dam. The bridge over Alton Lennon Drive provides critical connections to East Boiling Spring Road and neighborhoods south of Patricia Lake in the City.

There are currently no NCDOT STIP projects in Boiling Spring Lakes. There are also no upcoming resurfacing projects in the 2020-2024 Highway Maintenance Improvement Program (HMIP), however, Funston Road SE which borders the City limits will be resurfaced in 2024. A future STIP project could help pay for future pedestrian accommodations.

The City owns and maintains approximately 112 miles of roads within the Corporate Limits of the City. Approximately 54 miles are paved, and 58 miles are unpaved or constructed with rock and dirt. The only NCDOT roadways within the Corporate Limits are George II Hwy (SR 87), Cougar Road, and E. Boiling Spring Road (SR 1539).

Characteristics of the road network in Boiling Spring Lakes including ownership, surface type, length, speed limits, traffic, right-of-way, resurfacing schedule, and barriers and limitations for pedestrian infrastructure are summarized in Table 4. Most of Boiling Spring Lakes’ main roads are two lanes with pavement widths of approximately 18 to 26 feet. Some residential streets are smaller at approximately 15 feet wide. All roads are currently lacking sidewalks, as well as curb and gutter sections. The pavement widths in Table 4 do not include gutter pans. The speed limits vary between 35 and 55 mph in the downtown area and 25 mph on the residential streets.

Rights-of-way were estimated using aerial photography and Brunswick County parcel data. George II Highway enters the downtown area and has the widest right-of-way at approximately 150 feet. In other areas of the city, the right-of-way averages around 60 feet. George II Highway, Fifty Lakes Drive, and River Road have larger rights-of-way in the City, which would more easily accommodate future pedestrian infrastructure. These estimates would need to be verified during the feasibility and engineering phases of future projects.

CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN



Table 4: Boiling Spring Lakes Pedestrian Facilities Inventory by Street

Street	Ownership	Length (miles)	Speed Limit (mph)*	Traffic (2017 AADT)	Right-of-Way (feet)**	Pavement Width (without gutter pan) (feet)**	Curb/Gutter	Existing Pedestrian Facilities	Constraints
Alton Lennon Rd	City	0.79	35	n/a	60	24	No	None	Collapsed dam, vegetation, right-of-way to lake
Antenna Farm Rd SE	City	0.04	n/a	n/a	60	n/a	No	None	Unpaved
Ash Rd	City	0.57	25	n/a	60	15	No	None	Sloped shoulders
Catawba Rd	City	0.48	n/a	n/a	60	n/a	No	None	Majority is unpaved
Cougar Rd	State	0.52	35	3,100	100	26	No	None	Drainage ditches
Dam Rd	City	0.25	n/a	n/a	n/a	n/a	No	None	Unpaved
Dix Ln	City	0.09	n/a	n/a	60	20	No	None	Sloped shoulders
Drayton Rd	City	1.06	n/a	n/a	60	n/a	No	None	Unpaved
E Boiling Spring Rd	State	4.47	35-45	3,100-6,300	60	25	No	None	Utility poles, signage, and drainage ditches
Eden Rd	City	0.93	35	n/a	60	22	No	None	Utility poles
Fifty Lakes Dr	City	2.41	35	n/a	100	22	No	None	Drainage ditches
George II Highway (Hwy 87)	State	3.72	35-55	8,900-11,000	150	20	No	None	Bridge w/o pedestrian accommodations, vegetation, ROW
George II Hwy SE	City	0.01	35-55	n/a	150	20	No	None	Drainage ditches
Grace Rd	City	0.68	n/a	n/a	60	n/a	No	None	Vegetation and utility poles
Lexington Rd	City	0.62	n/a	n/a	n/a	n/a	No	None	Unpaved
Nicklaus Rd	City	0.61	n/a	n/a	n/a	n/a	No	None	n/a
Palmer Dr	City	0.65	n/a	n/a	n/a	n/a	No	None	n/a
Pine Lake Rd	City	1.19	30	n/a	60	18	No	None	Narrow travel lanes, vegetation, and water
Pine Rd	City	1.39	n/a	n/a	n/a	n/a	No	None	Unpaved
S Shore Dr	City	2.79	30	n/a	65	20	No	None	Drainage ditches
Sunset Dr	City	1.06	n/a	n/a	n/a	n/a	No	None	Unpaved
Tate Lake Dr	City	0.34	n/a	n/a	n/a	n/a	No	None	Right-of-way
W Boiling Spring Rd	City	3.25	45	n/a	65	20	No	None	Drainage ditches
W South Shore Dr	City	0.66	30	n/a	65	20	No	None	Drainage ditches

Note(s): Please see Appendix C for the complete roadway inventory table.

*Unless otherwise posted, contact the City Clerk's office to find speed limits and other traffic regulations for specific streets.

**ROW and pavement width approximations were measured from parcel to parcel across the width of the road using the measuring tool in ArcMap.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Bridges and Dams

Within Boiling Spring Lakes' city limits, there is one bridge along Highway 87 over Allen Creek which leads into Patricia Lake (Bridge ID #090026). This bridge contains two lanes and does not include pedestrian accommodations such as a sidewalk or pedestrian-safe railings. According to federal bridge condition ratings, it is currently identified in "poor" condition and no longer meets the demands for traffic use. This bridge is still safe to use, but it will need to be improved or replaced due to narrow lanes, low height clearances, or have posted weight limits. Access to this bridge significantly impacts evacuation during major storm events and circulation in Boiling Spring Lakes. Should the bridges be replaced in the future, sidewalk railings must meet the recommended 42-inch height requirement.

The second bridge in Boiling Spring Lakes is along Alton Lennon Road as it crosses the Sanford Dam over Patricia Lake in the eastern half of the City. It is currently unusable and in disrepair due to the collapse during Hurricane Florence. The Sanford Dam provides critical connections to East Boiling Spring Road and neighborhoods south of Patricia Lake. The dam's state of disrepair is contributing to prolonged traffic congestion and is delaying travel for emergency services traveling east. Road, bridge, and dam washouts provide an opportunity to reconstruct infrastructure with pedestrian needs in mind. The cost of reconstruction (in 2020) is projected at a reimbursable cost to FEMA of nearly 32.5 million dollars toward repair of the dam to its pre-disaster design. Under FEMA's Public Assistance Grant Program (for which the rebuild funds are held), improved infrastructure upgrades require local monies or repair of the facility to a code or standard that exceeds FEMA-approved code and standards.

Other dams breached during Hurricane Florence include North Lake Dam, Pine Lake Dam, Middle Dam, and Upper Dam (see Map 4). North Lake and Pine Lake dams experienced road breaches, prompting NCDOT to install new 96" culverts to be installed at elevations that do not allow water impoundment. Future repairs include removing the culverts and replacing with concrete control structures that meet NCDOT standards along E. Boiling Spring Road. Middle dam currently does not have vehicle access and is privately owned. A 250-foot wide berm structure is proposed to allow for constant water flow. The Upper dam while receiving little traffic at W Ridge Road, is being repaired to handle storms according to NCDOT guidance.

Railroads

The Department of Defense MRSX is an active railroad that runs parallel with Alton Lennon Road through the City. This railroad is part of the Military Ocean Terminal Sunny Point, a key ammunition shipping point on the Atlantic coast United States forces. The Military Ocean Terminal Sunny Point is not open to the general public. See section 2.3 for details regarding the MOTSU Joint Land Use Study.

Public Transportation

Brunswick Transit Services is a non-profit community transportation system that provides transit services throughout Brunswick County. Brunswick County residents use the transit service for general purpose trips, medical trips, and non-emergency trip destinations. The transit system operates 17 vehicles and can accommodate persons with special needs with ADA equipped vehicles. Reservations must be made at least forty-eight hours in advance through the Dial-a-ride program. Services are offered between Monday and Friday 8:00 a.m. and 5:00 p.m. Fares typically cost \$3.00 to \$5.00 one-way depending on the destination.⁸ Although public transportation services are limited, as they expand, they will depend on a

⁸ Brunswick Transit Services: <http://www.brunswicktransit.org/Services>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

pedestrian network for transit riders to safely access transit stops. A connected pedestrian network would support future expansion in public transportation by providing safer access to transit stops on streets and sidewalks. Good pedestrian design should take all users into account. For example, if Brunswick Transit Services were to have a single stop located within the City, ADA accommodations for wheelchair users should be considered in the design of a new sidewalk.⁹

Utilities

Utilities are an important consideration for pedestrian planning. Moving or replacing existing utilities to make room for new pedestrian infrastructure can be costly and, in some cases, cost prohibitive. Table 5 lists where above-ground utilities become barriers to pedestrian improvements. Often, sidewalks and multiuse paths are located on the side of the road where utilities are not present. The exact location of utilities would need to be surveyed during the engineering phase of each project. Coordination would need to occur with utility providers before construction.

Table 5: Utilities

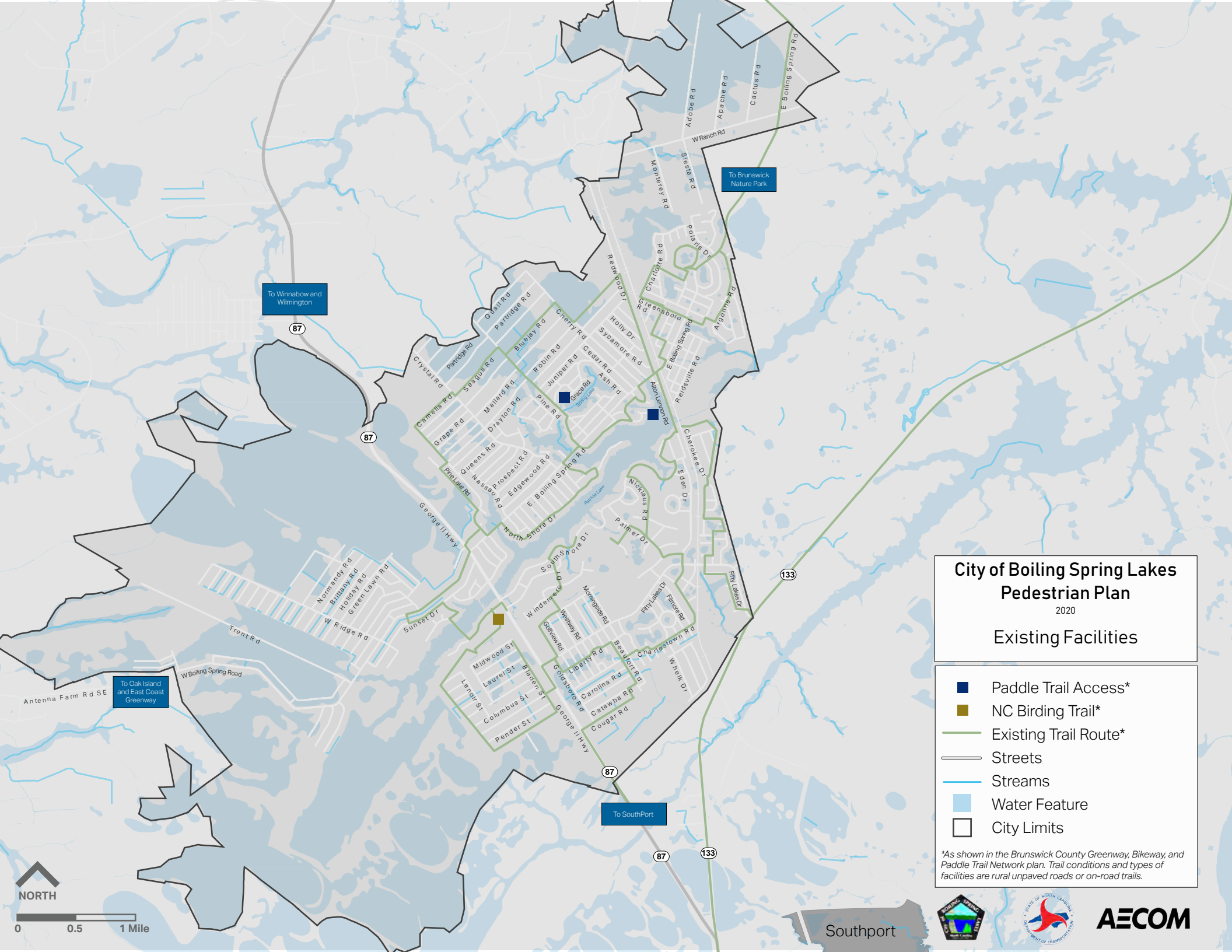
Utility	Provider	Location
Electricity	Duke Energy	Above and Below ground
Telephone/TV/Internet	Spectrum (Time Warner Cable-Charter) and ATMC (Atlantic Telephone Membership Cooperative)	Below ground
Water/Sewer	Brunswick County Public Utilities Department	Below ground

2.6 Existing Pedestrian Facilities

The City of Boiling Spring Lakes does not currently have pedestrian facilities along roadways, except for a partial sidewalk in front of City Hall along E Boiling Spring Road. Some unpaved nature trails are available for recreational use at the Boiling Spring Lakes Community Center.

Based on input from the Steering Committee, the absence of pedestrian facilities is notable and creates a dangerous environment for multimodal travel in various locations. The schools are lacking pedestrian crossings for students walking from nearby neighborhoods. Additionally, there are many recreational and natural areas in the town that generate pedestrian activity but have no pedestrian facilities connecting to neighborhood streets.

⁹ FHWA, Pedestrian Safety Guide for Transit Agencies:
https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/ch3.cfm

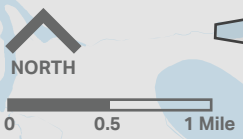


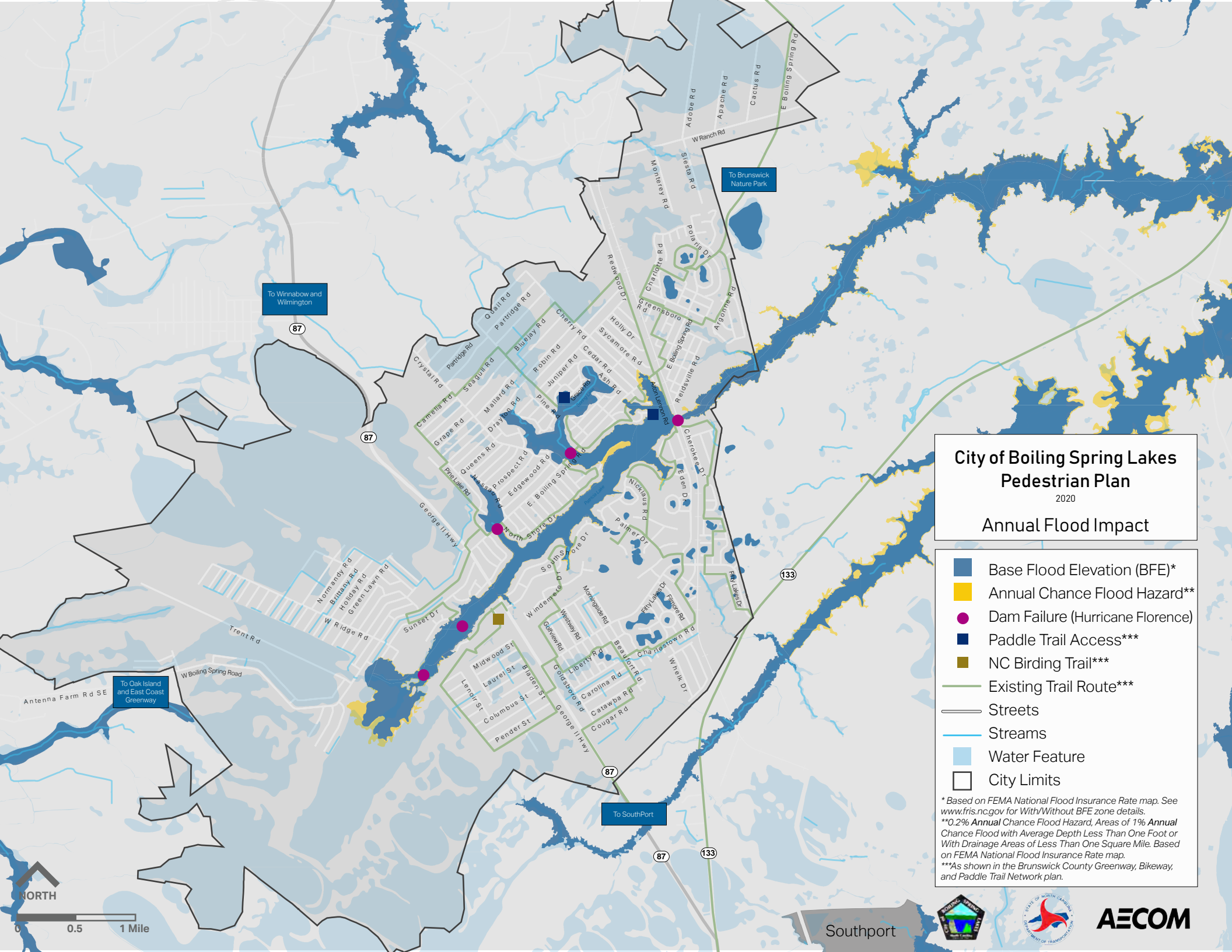
City of Boiling Spring Lakes Pedestrian Plan 2020

Existing Facilities

- Paddle Trail Access*
- NC Birding Trail*
- Existing Trail Route*
- Streets
- Streams
- Water Feature
- City Limits

*As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan. Trail conditions and types of facilities are rural unpaved roads or on-road trails.



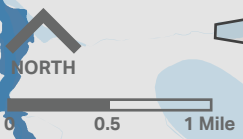


City of Boiling Spring Lakes Pedestrian Plan 2020

Annual Flood Impact

- Base Flood Elevation (BFE)*
- Annual Chance Flood Hazard**
- Dam Failure (Hurricane Florence)
- Paddle Trail Access***
- NC Birding Trail***
- Existing Trail Route***
- Streets
- Streams
- Water Feature
- City Limits

* Based on FEMA National Flood Insurance Rate map. See www.fris.nc.gov for With/Without BFE zone details.
 ** 0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with Average Depth Less Than One Foot or With Drainage Areas of Less Than One Square Mile. Based on FEMA National Flood Insurance Rate map.
 *** As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan.





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

2.7 Pedestrian and Vehicular Traffic Counts and Crash Data

Pedestrian and traffic counts were conducted using a qualitative and quantitative methodology. While specific traffic counts and crash data were available for some roadways, input from the public and Steering Committee were also considered throughout the development of the Plan. No quantitative data was available for pedestrian activity, so local input was used to understand current walking patterns as well as perceived safety concerns throughout Boiling Spring Lakes.

Pedestrian Activity

The Steering Committee noted that pedestrian activity primarily occurs on residential streets and next to the schools on Cougar Road. The Committee has observed people walking in the lakebed of Patricia Lake, which is currently drained, but find it dangerous. The Committee has observed children crossing East Boiling Spring Road to access Muse Park, raising concerns about dangerous crossing conditions.

NCDOT Annual Average Daily Traffic Counts

Most of the roadways in Boiling Spring Lakes are owned and maintained by the City; only NC 87, E. Boiling Spring Road, and Cougar Road are owned and maintained by NCDOT. The average annual daily traffic (AADT) along NC 87 from the City's southeast boundary to just north of Fifty Lakes Drive is 12,500. The remainder of NC 87 to the northwest City boundary is 9,700. The AADT along Cougar road, which has multiple schools along the roadway, is 3,400. AADT for the City roads is not available; however, traffic along these roadways is largely residential.

Crash Data

The NCDOT Division of Bicycle and Pedestrian Transportation in collaboration with local law enforcement departments developed a dataset for all reported crashes involving pedestrians and/or bicyclists within the state between the years of 2007 and 2018. According to this dataset, there have been five pedestrian crashes, all of which have been non-fatal. There have been four vehicular crashes (with bicycle), one of which was fatal at the intersection of NC 87 and East Boiling Spring Road.

The Steering Committee also noted safety concerns regarding pedestrian activity near the school and at railroad crossing, neither of which currently have pedestrian facilities to improve safety. There is also concern about children crossing roads unsafely to access community resources. For example, the Steering Committee noted seeing children cross East Boiling Spring Lakes Road to reach Muse Park.

2.8 Existing Pedestrian Programs

There are several existing programs within the City of Boiling Spring Lakes that promote and encourage walking. Several groups have implemented walking programs and/or facilities for meeting such as the City's Bicycle and Pedestrian Task Force, the Boiling Spring Lakes Community Center, the Boiling Spring Lakes Preserve Trail, South Brunswick Middle School after-school walking programs, the Brunswick Wellness Coalition's Walk with a Doc Program, Brunswick County's blueway and greenway trails, and Kindred At Home's Step On It! walking program.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Boiling Spring Lakes Bicycle and Pedestrian Task Force

Elected officials and other stakeholders have supported pedestrian programs in Boiling Spring Lakes by initiating the establishment of a task force designated to address the need for active transportation (including bicycle and pedestrian) infrastructure and related programs. Earlier this year, the Boiling Spring Lakes Board of Commissioners supported the Parks and Recreation Advisory Board in forming the Boiling Spring Lakes Bicycle & Pedestrian Task Force to work towards addressing this need within the City. The Task Force has supported the pursuit of the NCDOT Pedestrian Planning Grant Program funding to complete this Comprehensive Pedestrian Plan. Additional support has been received from the City of Boiling Spring Lakes Police Department, the local Veterans of Foreign Wars of the United States Post 10400, and the Cape Fear Rural Transportation Planning Organization. The Task Force serves as the steering committee for the Pedestrian Plan and provides input and support for the creation and implementation of the Pedestrian Plan. Additionally, the Cape Fear Council of Governments will continue to provide support and guidance throughout the planning process.

Boiling Spring Lakes Community Center

The Boiling Spring Lakes Community Center offers a couple walking activities to City residents. Adjacent to the Community Center is the Cougar Country Disc Golf Course which is located adjacent to the main building and offers outdoor enthusiasts the opportunity to walk the course and play a sport at the same time. The second activity that the Community Center hosts is a Walking to Fitness Program for Adults.

Boiling Spring Lakes Preserve

The Boiling Spring Lakes Preserve is approximately 6,000 acres in size and contains a variety of rare flora and fauna, including the endangered Red-Cockaded Woodpecker, carnivorous plants, rough-leaf loosestrife, and orchids. The preserve contains more than 400 vascular plant species, some of which are nearing endangerment due to over-collection and loss of suitable habitat. Visitors can walk through the preserve on trails at the Boiling Spring Lakes Community Center, just off Highway 87. This site is also featured on the North Carolina Birding Trail. Species that have been observed in the preserve include brown-headed nuthatch, summer tanager, blue grosbeak, indigo bunting, and winter sparrows. Partnerships with the N.C. Plant Conservation Program and the Nature Conservancy made this trail possible.¹⁰

South Brunswick Middle School

The South Brunswick Middle School offers an after-school fitness and wellness program called Impact fit Club. This club encourages students to engage in various aerobic exercises, different sports, relay races, games, endurance running/walking and healthy living options for life. The club's final event is a 5K race. The club currently takes place in the school's gymnasium or outside in the back-field area.

Both the South Brunswick Middle and High Schools have traffic crossing guards that assist with pedestrian and car movement during school hours.

¹⁰ Visit NC, Boiling Spring Lakes Reserve: <https://www.visitnc.com/listing/YUAz/boiling-spring-lakes-preserve>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Brunswick Wellness Coalition

The Brunswick Wellness Coalition’s mission is to improve the health of the community with the vision of becoming the healthiest county in North Carolina. The group promoted the Walk with a Doc Program throughout Brunswick County and was featured on Boiling Spring Lakes’ website.¹¹ The event took place at the Boiling Spring Lakes Community Center on May 11, 2019. Walks are ongoing and are held the second Saturday of every month. The walk was led by local physicians. More information on Walk with a Doc can be found at: <https://walkwithadoc.org/>



Walk with a Doc Event Flyer

Brunswick County Greenway and Blueway Trails

Community members and City visitors interested in active transportation and recreation are encouraged to view the *Brunswick County Trail Plan*. Several trails identified in the *Brunswick County Trail Plan* are designated routes for travel, typically along a roadway. Off-road greenway style and pedestrian friendly facilities are limited to the Brunswick Forest Multi-Use Trail, the Brunswick Riverwalk at Belville, and the Carroll Street Bike Trail. Parklands and Preserves that have off-road facilities for walking and biking are identified on the map and in the legend with corresponding Letters A through T. Pedestrian users should utilize these off-road facilities. More information on the *Brunswick County Trail Plan* can be found at: <https://www.brunswickcountync.gov/planning/trails/>

Step On It!

The Step On It! Program was created by the Cooperative Program with Kindred At Home and is designed to encourage older adults to exercise and promotes healthy living. Tools included in the program include: How to keep moving and sticking to plan, how to build confidence by minimizing risks and falls, how to make your home a safe haven, how to ask for help, and provides tips on what to do you happen to fall. More information on Step On It! Can be found at: https://www.kindredhealthcare.com/docs/default-source/default-document-library/kindred-homecare-step-on-it.pdf?sfvrsn=453e84ea_2

¹¹ City of Boiling Spring Lakes, Walk with a Doc: <https://www.cityofbsl.org/walk-with-a-doc-program-2019-06-08>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

2.9 Opportunities and Constraints

In partnership with the Steering Committee, opportunities for improving pedestrian mobility and safety were identified, as well as potential constraints to overcome in order to transform Boiling Spring Lakes into a more walkable community. The combination of Boiling Spring Lakes' small size and close proximity of community features and resources create opportunities for developing pedestrian infrastructure that will greatly improve connectivity within the City. Constructing new pedestrian facilities will enable residents and tourists to explore and experience the small town charm of Boiling Spring Lakes, while also providing economic benefits to local businesses.

Opportunities

The following existing conditions of the roadway network within Boiling Spring Lakes, present many opportunities for developing a well-connected network of pedestrian infrastructure.

1. The commercial corridor between City Hall and the Community Center along NC 87 is compact and suitable for sidewalks, enhancing the economic growth and investment in the City.
2. Many of the roadways have room for the addition of pedestrian facilities within the existing right-of-way.
3. Strategically selected pedestrian infrastructure projects could significantly enhance the connectivity and walkability of the town given that a few key roadways provide most of the connectivity for the City of Boiling Spring Lakes and connect to smaller, lower trafficked streets that reach residential areas.
4. The proximity of local resources and shops provides the opportunity for Boiling Spring Lakes to be a "park once" community.
5. Future development will provide opportunities for new active transportation infrastructure, just as infrastructure can induce growth.
6. Ample recreational areas, and connectivity between them, provide key destinations primed for improved active transportation assets both within the City and to regional assets.

Boiling Spring Lakes is primed for active transportation with its proximity of stores, close-knit community, and many natural resources

Constraints

1. A lack of existing active transportation infrastructure, particularly sidewalks, do not form a connected network and result in unsafe conditions for pedestrians.
2. Unsafe intersections for accessing key destinations and recreation facilities.
3. Existing City policies and land uses that require sidewalks as part of new development or re-development require updating to reflect community needs.
4. Existing infrastructure does not incorporate adaptation techniques that could mitigate impacts of potential, future flooding or weather events and should be incorporated in future policies and infrastructure designs.
5. Roadway ownership may prove complicated in obtaining funding for active transportation projects.
6. Right-of-way challenges increases engineering and construction costs of active transportation infrastructure.



PUBLIC INVOLVEMENT



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

3.0 Public Involvement

3.1 Steering Committee

The Steering Committee that guided this Plan was formed out of the Boiling Spring Lakes Bicycle & Pedestrian Task Force, a dedicated group of local officials, staff, stakeholders, and citizens focused on incorporating a diverse range of community perspectives (see Table 6). The committee met three times throughout the planning process to help shape the Plan by identifying goals and objectives, identifying pedestrian constraints and opportunities, and prioritizing proposed projects.

The first Steering Committee meeting took place on September 19, 2019 at the Commissioner’s Chamber at City Hall. During this meeting, the group chose a vision statement for the plan and discussed issues the community is facing with regards to pedestrian infrastructure. Members focused on developing a vision and set of goals for the plan. The committee broke into groups during a working session to define pedestrian origins, destinations, activity, and areas of concern. These areas of concern were used to start thinking about potential projects, policies, or programs. The committee discussed focusing on connectivity, safety, and implementable projects.



Boiling Spring Lakes Pedestrian Plan Steering Committee

The second Steering Committee meeting was held on January 28, 2020. Sample projects, policies, and programs were presented to the committee in preparation for a working session. The working session captured committee input on pedestrian infrastructure projects, as well as relevant policies or programs. Specifically, focus was placed on linear facilities and spot improvements, connections and gaps in pedestrian infrastructure, and amenities. The feedback gathered during this meeting was used to develop preliminary recommendations.



The third Steering Committee meeting took place on April 23, 2020. This was held as a conference call due to the 2020 pandemic and as required by stay-at-home orders. The meeting reviewed the status and timeline of the project and was used primarily as a working session. Draft projects, programs, and policies were presented to the committee via video conference and discussed, at-length, to capture any edits, updates, or refinements by the committee. This was an opportunity for the Steering Committee to provide their final input prior to release of the draft plan. Input was captured as notes and used to finalize proposed recommendations.

Table 6: Steering Committee

Steering Committee Members	
Sharon Amrol-Davis, Resident	Greg Jordan, Chief of Police
Bichson Bush, Resident	Michael Mark, Resident
Glen Davis, Resident	Michael Michaux, Local Business Owner
Mary Green, Parks & Recreation Director	Nicole Morgan, Planning & Zoning Administrator
Tom Guzulaitis, Commissioner	Patrick Flanagan, RPO Director

3.2 Public Meetings

The first public meeting was held on January 28, 2020 in the Commissioner’s Chamber at City Hall, immediately following the second Steering Committee Meeting. Before this initial meeting, the consultants took a driving tour around the City to identify concerns related to pedestrian safety and connectivity. Following the driving tour, the consultant team presented a brief PowerPoint presentation to the public explaining the goals of the project. Following the presentation, the public engaged in a mapping exercise where they placed dots on the maps to indicate areas with high pedestrian activity, areas of concern, and locations for potential projects.



Public Meeting #1 at the Commissioner’s Chamber at City Hall.

The second public meeting was held on August 26, 2020 via an online webinar according to public safety guidelines for group assembly. The meeting reviewed the proposed projects, programs, and policies and welcomed public comment using a Poll Everywhere to capture feedback.

The purpose of these meetings was to provide a brief presentation about the planning process and present highlights from the plan. Maps displaying the recommended projects were provided during these meetings. A copy of all meeting materials is provided in Appendix A: Public Involvement.



3.3 Community Survey

A survey was made available to Boiling Spring Lakes' residents from October through December 2019 to gather local information about current travel behaviors, priorities, and opportunities for pedestrian activity in the City. The survey was made available online through MetroQuest and on paper. The online survey was distributed by the City via *Nextdoor* and available in paper form at City Hall and the Community Center. No completed paper surveys were submitted. Information from the survey has been included in this Plan's recommendations. The following sections summarize the key findings from the more than 300 survey responses submitted. See Survey questions and additional materials in Appendix B: Community Survey.

"Trails and pathways for children to ride bikes would be awesome! The town is growing so fast there are too many cars on the streets for children to be safe."
-Survey Respondent

"We have a huge problem with people that simply won't obey the speed limit."
-Survey Respondent

"I don't feel comfortable walking on the streets. People drive too fast and don't pay attention. I feel people would get out and walk more if we had safe sidewalks."
- Survey Respondent

Survey Findings

Of the more than 300 survey responses, 90 percent of respondents stated that exercise and recreation was their primary motive for walking. The range of how frequently people walk had a more evenly distributed spread with 40 people stating they walk in the City daily (see Figure 9). When asked what makes walking difficult in the City, 62 percent of respondents stated a lack of sidewalks and crosswalks, while 18 percent indicated speeding traffic.

Whether due to high vehicle speeds, high traffic volume, lack of sidewalks, or a lack of street lighting, safety was a resounding theme throughout the survey. Almost 50 percent of survey respondents indicated that speed enforcement was their preferred pedestrian program. In the survey, "Safety Improvements" was the second most commonly ranked priority behind "Infrastructure Improvements." Many comments focused on the need for improved walking safety for all residents, especially children.

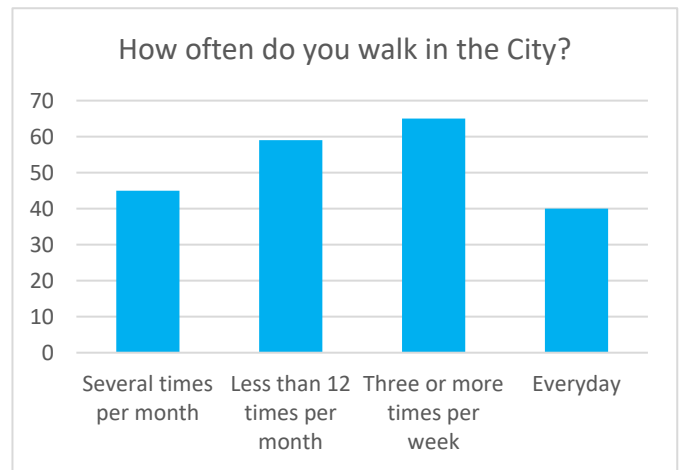


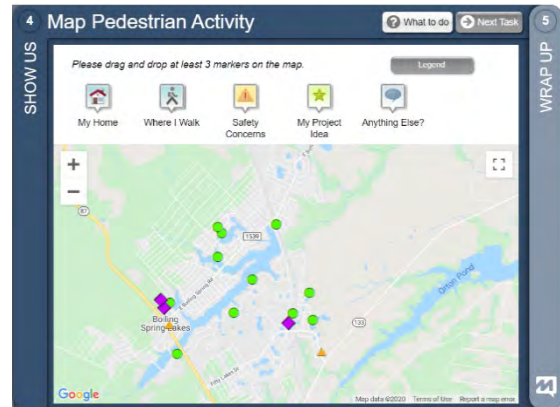
Figure 9: Walking Frequency in the City of Boiling Spring Lakes



Mapping Exercise

A mapping exercise in the survey asked respondents to drop icons on a map of Boiling Spring Lakes to indicate, among other topics, where there were safety concerns for pedestrians (Figure 10). Multiple safety concerns were noted along Cougar Road, which provides access to South Brunswick Middle School and South Brunswick High School. One comment noted that there is no safe connection for multimodal activity from school to residential areas. Additional areas highlighted included safety along NC 87, due to heavy traffic volume and high vehicle speeds, and Boiling Spring Road, due to a lack of pedestrian facilities and high vehicle speeds.

Figure 10: Mapping Survey Tool



Priority Ranking

Survey respondents were asked to participate in the survey to better understand the City's preferences and needs for pedestrian related projects and programs. First, the survey asked participants to rank their top three projects/programs by priority, with a score of "1" being the most important, "2" being the second most important, and "3" being the third most important. "Infrastructure Projects" was the project/program with the highest average prioritization (indicated by an average rank closest to "1") as well as the most commonly ranked (number of times survey participants provided a ranking).

This was followed by "Safety Improvements" in both the average priority ranking and the number of times ranked. Table 7 shows the average priority ranking for each item and the number of times each category was ranked. This provides additional insight into how the different project/program types were prioritized by the survey participants. For example, "Aesthetics/Local Feel" has a lower (closer to "3") average priority ranking than "Education and Enforcement" and "Policy/Zoning" but was ranked more times than these two items, indicating that more people feel aesthetics and local feel is a priority, but it is less likely to be a first or second priority.

Table 7: Project/Program Prioritization

Project/Program	Average Priority Ranking	Times Ranked
Infrastructure Projects	1.71	180
Safety Improvements	1.95	147
Education and Enforcement	2.06	70
Policy/Zoning	2.07	69
Aesthetics/Local Feel	2.17	113
Connectivity of Resources	2.22	91

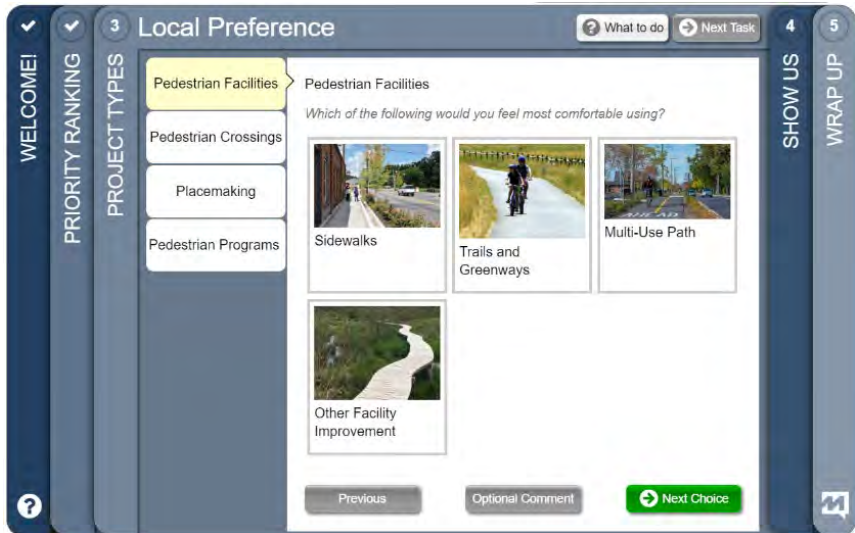


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Project Types

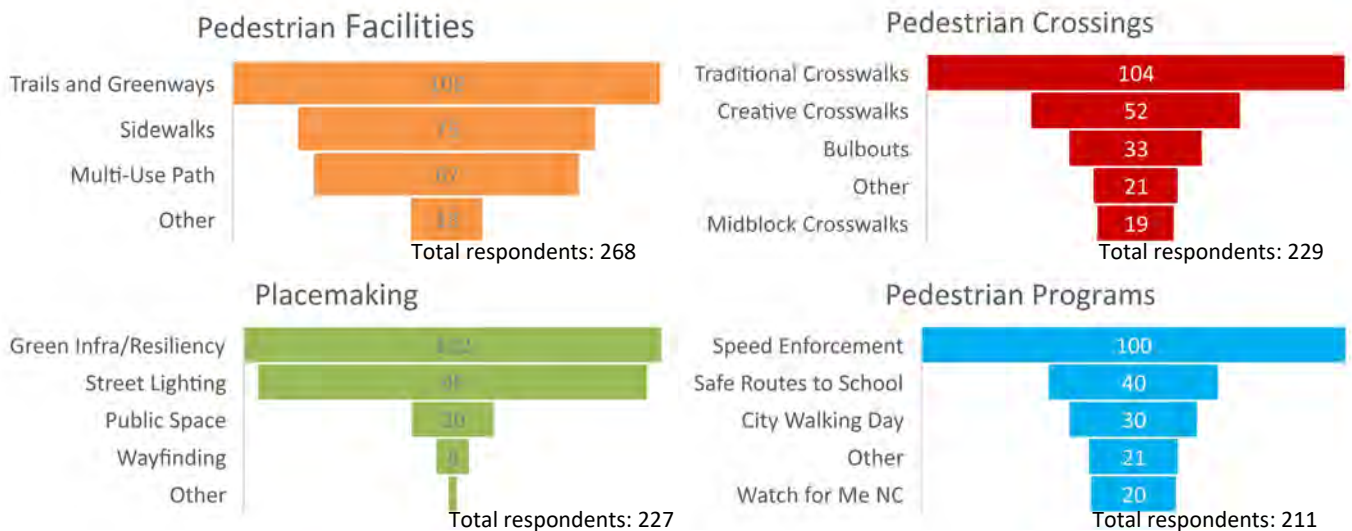
In the “Local Preference” section of the survey, participants were provided with a set of visual choices and asked which one they preferred, comparing the images representing different types of pedestrian projects and programs (as shown Figure 11). The total number of respondents was over 200 for each preference category. The results indicated an interest in multiple types of pedestrian facilities. While trails and greenways received the most votes for pedestrian facilities, the survey shows Boiling Spring Lakes residents are interested in trails and greenways, sidewalks, and multi-use paths. There was also a focus on both green infrastructure and resiliency to flooding and street lighting, as indicated by the closeness of votes for those two placemaking items. Figure 12: Local Preference shows the final vote counts from the online survey for each topic.

Figure 11: Local Preference Survey Tool



There was also a focus on both green infrastructure and resiliency to flooding and street lighting, as indicated by the closeness of votes for those two placemaking items. Figure 12: Local Preference shows the final vote counts from the online survey for each topic.

Figure 12: Local Preference





RECOMMENDATIONS



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

4.0 Recommendations

Active transportation offers many benefits including improved health, reduced environmental impacts, and fewer financial commitments from decreased dependency on the automobile. This section describes the infrastructure improvements that are recommended to provide the City of Boiling Spring Lakes with a safe, accessible, and connected pedestrian network. Chapter 4 proposes infrastructure and programmatic recommendations for achieving the goals and objectives of the Plan based on the review of existing conditions and public involvement.

4.1 Facility Types

Different types of pedestrian facilities that are considered for improving pedestrian connectivity, access, comfort, and safety are provided below. Facility types fall into two main categories: spot improvements and linear improvements.

Spot Improvements

Spot improvements address pedestrian challenges at specific locations, such as intersections, crossings, and short gaps in a pedestrian network. These types of improvements are generally low-cost and provide enhancements through surface improvements, signing, access enhancements, or functional upgrades.



High Visibility Crosswalk

A crosswalk is the portion of the roadway intended for pedestrians to use for crossing the street and is typically located at roadway intersections. It may be distinctly indicated for pedestrian crossing by lines or other markings on the surface. High visibility crosswalks are crosswalks marked with diagonal or longitudinal lines parallel to traffic flow, such as the ladder, continental or bar pair marking pattern.



Mid-Block Crossing

Midblock crossings are typically located on low-volume, low-speed roadways and provide a safe crossing option indicated by pavement markings and/or signs.



Pedestrian Rapid Flash Beacon

Pedestrian rapid flash beacons are pedestrian-activated devices used to warn and control traffic at an unsignalized location to assist pedestrians in crossing at a marked crosswalk or mid-block crossing.



Advance Yield Here Sign and Yield Line

Advance Yield Here To (Stop Here For) Pedestrians signs are placed between 30 and 50 feet in advance of the marked crosswalk along with the stop line or "shark's teeth" yield line.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN



Traffic Calming Study

Intended to increase visibility of pedestrians along a roadway, traffic calming studies investigate measures such as speed tables, share the road signage, stop signs, or neighborhood roundabouts that would help address vehicular speeds and provide safety for pedestrians.



Curb Ramp

A curb ramp provides a combined ramp and landing to accomplish a change in level at a curb between the sidewalk and the street. This element provides a transitional access between elevations for pedestrians using wheelchairs, strollers or other devices with wheels, and must comply with ADA standards.



Nature Based/Green Infrastructure

Infrastructure that supports water management through protection, restoration, or mimics the natural water cycle. This may include use of existing healthy ecosystems such as existing floodplains, wetlands, or forests or manmade protections such as increased landscaping, permeable pavement, vegetated buffers berms, bioswales, rainwater collection, or retention ponds.



Wayfinding

Wayfinding includes comprehensive signage and/or markings to guide travelers to their destinations along preferred routes. It is usually comprised of four types of signs that are informational (e.g., opening hours), directional (e.g., trail route information), identification (e.g., name of a park entrance), or regulatory (e.g., restricted areas).



Lighting Improvements

Lighting improvements for active transportation typically includes street lighting such as light poles, lampposts, or streetlamps, or other raised source of light along a multiuse path or sidewalk. High-quality and well-placed lighting, including supplementing pedestrian-scale lighting at night-time crossing areas, increases safety and security for non-motorized and vehicular users. Dark sky lighting options should also be considered in response to sensitive natural areas and wildlife.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Linear Improvements

Linear improvements address pedestrian challenges along portions of a roadway such as sidewalks, or in some cases, as separate facilities from the roadway such as multi-use paths. These types of improvements are generally larger infrastructure projects with higher costs and longer implementation timeframes. Together, they form a network of safe transportation choices for the community.



Sidewalks

Sidewalks are the portion of a roadway right-of-way, beyond the curb or edge of roadway pavement, which is intended for use by pedestrians. As the primary element of the pedestrian environment, sidewalks are generally constructed of concrete, pavers, or another hard surface. The Federal Highway Administration (FHWA) and Institute of Transportation Engineers (ITE) recommend a minimum width of five feet for a sidewalk (Pedestrian and Bicycle Information Center, n.d.).



Multiuse Path

A paved shared use path designed to meet ADA standards for use by active transportation users. The multiuse path is separated from the roadway by an open space or a physical barrier, or within an independent-right-of-way.



Boardwalk

A boardwalk is an elevated footpath, walkway, or a low type of bridge. It is typically built of wooden planks that allows active transportation users to cross wet or marshy land. Many boardwalks are typically used in natural areas to preserve the landscape while providing a minimally invasive walking path.

Complete Streets

NCDOT adopted a “Complete Streets” policy (CS) in 2009, that has been updated in 2019. Complete streets consider and incorporate all modes of transportation when building new projects or making improvements to existing infrastructure. Complete Streets are designed to be safe and comfortable for all users, including pedestrians, bicyclists, transit riders, motorists, and individuals of all ages and capabilities.¹² NCDOT has developed the P6.0 Complete Streets Project Sheet, which will require project submitters to note multimodal elements that are to be evaluated as a part of the proposed transportation project. If no multimodal facilities are to be evaluated with the proposed project, the sheet requires the project submitter to document why they are not to be evaluated.

Part of designing with CS principles in mind includes the impact of street patterns on trip length, connectivity between resources, intersection use, and the overall experience of the user. Both cyclists and pedestrians can benefit from a street that has been designed with the CS policy including improvements for children and individuals with accessibility needs, health advantages, improved public transportation services, economic revitalization, safety enhancements, roadway equity, and a more livable community.

¹²NCDOT Complete Street Planning and Design Guidelines at <http://completestreetsnc.org/>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

4.2 Prioritization

Project corridors were prioritized using a methodology developed specifically for Boiling Spring Lakes. The methodology was inspired by the NCDOT Prioritization 6.0 process, which is a data-driven process for prioritizing the funding of major transportation projects in the state. This Plan’s prioritization methodology was intentionally based on Prioritization 6.0 as the pedestrian infrastructure projects proposed for the City would most likely be funded through this process, which is discussed further in Section 5.3.

Quantitative Score

Like the Prioritization 6.0, the prioritization methodology for this Plan is based on two equally weighted components: a quantitative score and a qualitative score. The quantitative score includes the following criteria: safety, accessibility/connectivity, demand/density, and cost effectiveness. Measures for each criterion are described in Table 8. Criteria and measures are weighted following the Prioritization 6.0 methodology for weighting. Measures were normalized to a 100-point scale based on the NCDOT Prioritization 5.0 scales where available as Prioritization 6.0 scales are currently under development by NCDOT. In cases where Prioritization 5.0 scales were not available, measures were normalized to a 100-point scale relative to the other Boiling Spring Lakes project corridors. Please refer to Appendix D: Prioritization for more detailed methodology on normalization and prioritization results.

Table 8: Quantitative Criteria and Measures Methodology

Criteria	Measure	Description
Safety (20% of total score)	Crashes (40% of safety sub-score)	Number of crashes
	Crash Severity (20% of safety sub-score)	Crash type
	Safety Risk (20% of safety sub-score)	Based on whether corridor is within an incorporated area, surrounding land uses, roadway configuration, and posted speed limits
	Safety Benefit (20% of safety sub-score)	NCDOT-defined Specific Improvement Type
Accessibility/Connectivity (15% of total score)	Points of Interest	Pedestrian projects: within 0.5 miles Multiuse projects: within 1.5 miles
	Connections	Connections to existing or planned pedestrian and bicycle infrastructure
	Bike Routes	2 points if project is on/improves a designated route 1 point if project connects to a designated route
Demand/Density (10% of total score)	Households per square mile	Pedestrian projects: within 0.5 miles Multiuse projects: within 1.5 miles
	Jobs per square mile	
Cost Effectiveness (5% of total score)	Cost Effectiveness	$(\text{Safety} + \text{Accessibility/Connectivity} + \text{Demand/Density}) / \text{Cost to NCDOT}$



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Qualitative Score

The qualitative score is evenly divided between input from the Steering Committee and context sensitivity. At the second Steering Committee meeting, members were asked to rank the 14 project corridors. These rankings were then converted to a point system. The context sensitivity criteria provided an opportunity to tailor the prioritization methodology to address resiliency, active lifestyle opportunities, and economic growth for the City. Project corridors would receive 1 point for each measure they fulfilled or 0 points for measures they did not address as shown in Table 9. Points for the Steering Committee and context sensitivity measures were normalized to a 100-point scale. Please refer to Appendix D: Prioritization for more detailed methodology on normalization and prioritization results.

Table 9: Qualitative Criteria and Measures Methodology

Criteria	Measure	Description
Steering Committee (25% of total score)	Steering Committee Ranking Exercise	Points assigned by corridor
Context Sensitivity (25% of total score)	Improves access during and after hazard or flood events	No: 0 points Yes: 1 point
	Provides access to critical infrastructure during and after hazard or flood events	
	Considers green and/or blue infrastructure in its design as mitigative infrastructure	
	Provides active lifestyle and social benefits not previously available	
	May encourage economic growth	

Prioritization Results

The results from the prioritization process are provided in Table 8 and listed in order of ranking. The highest-ranking project corridor is NC 87 from City Hall to Cougar Road while East Boiling Spring Road to Brunswick Nature Park ranks as the lowest ranked corridor. Prioritization results are meant to serve as a general guide. The project corridors are organized according to Tiers, Tier 1 being the highest and Tier 3 being a lower priority.

There may likely be opportunities to implement project elements or entire projects in an order different from the order in which they were prioritized. For example, if NCDOT is repaving NC 87, then it would be advantageous to explore all potential pedestrian accommodations even though initial projects along this corridor may have ranked lower than other projects. The prioritization in this plan should generally be followed as it directly reflects Steering Committee input and community feedback captured during public meetings and an online survey. This should not, however, prevent the City from taking advantage of pedestrian improvements as opportunities present themselves. It is beneficial to implement pedestrian projects on the same road segment simultaneously in order to realize cost savings and minimize disruptions due to construction. Detailed prioritization results for each corridor are provided in Appendix D: Prioritization.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

4.3 Cost Estimates

Costs for recommended pedestrian infrastructure projects were primarily estimated using NCDOT's Bicycle and Pedestrian Cost Estimation (BPCE) Tool. The Pedestrian and Bicycle Information Center (PBIC)'s report titled *Costs for Pedestrian and Bicyclist Infrastructure Improvements* and the capital costs from similar projects were used to estimate costs for project types not included in the NCDOT cost estimator tool.¹³

Data Sources

The BPCE tool was adopted in July 2019 in order to assist NCDOT divisions, Metropolitan Planning Organizations, and Rural Planning Organizations in developing reasonable and comparable bicycle and pedestrian cost estimates for submittal through the Prioritization 6.0 process. The PBIC report was published in October 2013 with over 1,700 cost figures from construction and engineering bids compiled nationwide in order to provide cost estimates for over 70 types of bicycle and pedestrian facilities. The report provides the average, median, high, and low-cost estimates for each item. The median estimate was used for the purposes of this Plan as the average estimate may be skewed by outliers. Costs for similar green infrastructure and roundabout projects were adapted for the Boiling Spring Lakes infrastructure projects.

Methodology

The BPCE tool was used to estimate costs for signage, crosswalks, lighting, signals, sidewalks, and multiuse paths. The PBIC report was used to estimate costs for curb radii reductions, traffic calming measures, and wayfinding signs. The costs reported in this Plan include design, permitting, utility relocation, and construction. The projects are anticipated to be implemented within existing right-of-way. The costs associated with any additional right-of-way needed for these projects are not included in these estimates.

Estimated costs were adjusted to 2020 dollars by using an annual inflation factor of 3.5 percent. BPCE tool costs were provided in 2019 dollars and PBIC estimates provided in 2013 dollars. The costs are approximate and subject to change based on the current price of materials and labor. They are dependent on the actual conditions which will be determined during the planning and engineering phases. The estimates provided are intended to serve as a relative guide for a rough order of cost magnitude.

Results for the cost estimates can be found in Section 4.4, after each proposed project. A master table of projects costs can be found in Appendix D. Recommended Pedestrian Infrastructure Projects. Infrastructure projects are recommended for the City of Boiling Spring Lakes to improve pedestrian safety, connectivity, and mobility. These projects contain various land uses, community assets, and roadway characteristics, taken together, the projects proposed within these planning corridors will tie together to encourage pedestrian connectivity throughout the city. Project recommendations include improvements such as the installation of lighting, wayfinding, and pedestrian signage, as well as pavement markings, multiuse paths, and green infrastructure to treat and absorb stormwater. Curb ramps compliant with ADA are recommended at intersections and crossings, but due to scale, are not shown on the figures. The projects are organized by corridor and focus on addressing the needs and challenges of the City's top ranked projects. Proposed projects can be found in *Table 8* below, organized by prioritization as Tier 1, Tier 2, and Tier 3 projects. Pedestrian policies and programs are also recommended and are intended to work in tandem with these infrastructure projects, see Section 4.5.

¹³ PBIC receives funding from FHWA and is part of the University of North Carolina Highway Safety Research Center.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Assumptions and Disclaimers

These estimates are intended for use as an aid to estimating project costs for pedestrian and active transportation projects associated with P6.0. This methodology should not be used to estimate projects of other modes (roadways or other). The tool contains estimations for design services, utilities, ROW, and construction with contingencies based on limited project knowledge and inputs. Due to the conceptual nature of project descriptors, the accuracy of cost estimates will be limited. More accurate cost estimates would result from an engineered feasibility study project. Estimated cost outputs are designed to assume federal transportation funding is used in compliance with all federal transportation regulations and FHWA-approved NCDOT Local Programs Management Office oversight requirements in place as of the date of this tool's publication.

4.4 Recommended Infrastructure Improvements

Recommended improvements in this plan include multiuse paths along NC 87, major thoroughfares including Fifty Lakes Drive, Alton Lennon Drive, and East Boiling Spring Road, sidewalks along Cougar Road, and crossing improvements across the community.

All proposed projects are intended to provide safe connections between origins and destinations within the City while promoting exercise and mobility. The projects were developed through collaboration with the Steering Committee, field analysis, and public input. All pedestrian facility recommendations along NCDOT maintained roadways will require coordination with NCDOT Highway Division 3 as part of implementation. The following section outlines projects in detail, according to Tier 1, Tier 2, and Tier 3. Tiers are based on project prioritization.

Table 10: Proposed Project Corridors

Project Corridor	Project Description	Map ID
Tier 1 Projects		
NC 87 from City Hall to Cougar Road	Pedestrian linear and spot improvements including multiuse path, boardwalk, high visibility crosswalks, midblock crossing, turning and roundabout studies, wayfinding and lighting, and green infrastructure.	1
Fifty Lakes Drive	Pedestrian linear and spot improvements including multiuse path, advance yield signage, traffic calming study, wayfinding and lighting, and green infrastructure.	2
NC 87 to City Limits (South)	Pedestrian linear and spot improvements including multiuse path and wayfinding.	3



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Project Corridor	Project Description	Map ID
Alton Lennon Drive	Pedestrian linear and spot improvements including multiuse path, midblock crossings, advance yield signage, wayfinding and lighting, and green infrastructure.	4
Cougar Road	Pedestrian linear and spot improvements including sidewalk, high visibility crosswalk, turning radii reduction, traffic calming study.	5
Tier 2 Projects		
East Boiling Spring Road	Pedestrian linear and spot improvements including multiuse path, advance yield signage, traffic calming study, wayfinding and lighting, and green infrastructure.	6
NC 87 to City Limits (North)	Pedestrian linear including multiuse path.	7
Spring Lake Loop	Pedestrian linear including multiuse path and wayfinding signage.	8
Tier 3 Projects		
City Connector	Pedestrian linear including multiuse path and wayfinding signage.	9
South Shore Drive	Pedestrian linear and spot improvements including advance yield signage, traffic calming study, and traffic calming measures.	10
Tate Lake Park Loop	Pedestrian linear including wayfinding signage.	11
West Boiling Spring Road to East Coast Greenway and Oak Island	Pedestrian linear including multiuse path and wayfinding signage.	12
Rails to Trails	Pedestrian linear including conversion of unused rail line to multiuse trail and wayfinding signage.	13
East Boiling Spring Road to Brunswick Nature Park	Pedestrian linear and spot improvements including multiuse path, pedestrian crossing and safety study, and wayfinding signage.	14

Proposed Projects

1. NC 87 from City Hall to Cougar Rd
2. Fifty Lakes Drive
3. NC 87 to City Limits (South)
4. Alton Lennon Drive
5. Cougar Road
6. East Boiling Spring Road
7. NC 87 to City Limits (North)
8. Spring Lake Loop
9. City Connector
10. South Shore Drive
11. Tate Lake Park Loop
12. West Boiling Spring Road to East Coast Greenway and Oak Island
13. Rail to Trails
14. East Boiling Spring Road to Brunswick Nature Park

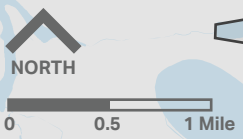
City of Boiling Spring Lakes Pedestrian Plan

2020

Proposed Projects (with Existing Network)

- High-Visibility Crosswalk with Pedestrian Rapid Flash Beacon
- Mid-Block Crossing
- Advance Yield Here Sign/Line
- Traffic Calming Study
- Turning Improvement (Radii, Roundabout)
- Wayfinding/Green Infra./Lighting
- Multiuse Path (Linear)
- Sidewalk (Linear)
- Boardwalk (Linear)
- Paddle Trail Access*
- NC Birding Trail*
- Existing Trail Route*
- Streets
- Streams
- Water Feature
- City Limits

*As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan. Trail conditions and types of facilities are rural unpaved roads or on-road trails.



Southport





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Tier 1 Projects

Tier 1 projects are those projects that are considered a high priority for the City of Boiling Spring Lakes based on the outcomes of the prioritization process. Proposed projects for each corridor include a series of short, medium, and long-term projects to accommodate a range of planning horizons.

PROJECT CORRIDOR 1: NC 87 from City Hall to Cougar Road

Existing Conditions

NC 87 is lined with several businesses and provides critical connections between City Hall, the community center and South Brunswick Middle and High School. The roadway is the major thoroughfare in the City, providing important access to Wilmington to the north and Southport to the south, among other regional amenities and recreational opportunities. Importantly, NC 87 is also a state designated evacuation route. NC 87 from City Hall to Cougar Road was discussed numerous times in Steering Committee and public meetings, frequently identified as needing pedestrian improvements as the current segment does not have accommodations. The corridor is heavily used by vehicles with speeds that make walking or other active transportation modes unsafe.

NC 87 is a NCDOT maintained roadway and the primary access route in the City, connecting City Hall, the Community Center, and access to South Brunswick Middle and High School via Cougar Road. NC 87 is a two-lane road with center turn lanes at intersections. There are currently no pedestrian facilities along NC 87 within the Boiling Spring Lakes city limits, including pedestrian crosswalks at intersections. There is also no street lighting or other active transportation accommodations. The current speed limit along NC 87 ranges from 35-55 mph and the existing right-of-way is 150 feet. The Average Annual Daily Traffic (AADT) is 8,900-11,000 AADT.

Challenges

Intersections along NC 87, especially at East Boiling Spring Road and Cougar Road, present challenges for pedestrians and other active transportation users who wish to cross the busy roadway. There was recently a fatality, further discouraging pedestrians that wish to cross NC 87. This is of concern as AADT has the highest rate in the City. Drainage ditches lining NC 87 also pose a challenge to the construction of pedestrian infrastructure. There are several driveways along the corridor which will need to be taken into consideration when designing pedestrian improvements including the proposed multiuse path. Existing utility infrastructure will also need to be addressed. Officer Mitchell Prince Bridge currently does not have sidewalks and has limited shoulders for installation of safe multimodal amenities. This segment of NC 87 also presents right-of-way challenges based on proximity to Patricia Lake.

Recommended Improvements

As NC 87 currently lacks pedestrian accommodations including sidewalks, crosswalks, and signals, the installation of improved active transportation enhancements such as pedestrian crosswalks and a multiuse path would promote activity amongst residents and connectivity within the City. This would also provide an alternative way for residents to travel to the businesses and recreational opportunities in this area. There are eleven projects proposed for this section of NC 87, organized according to short, medium, and long-term projects to accommodate a range of planning horizons.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 13: NC 87 from City Hall to Cougar Road Improvements Rendering



Figure 14: NC 87 from City Hall to Cougar Road Improvements Map





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 11: NC 87 from City Hall to Cougar Road Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
NC 87 from City Hall to Cougar Road	1A	Medium-term project to construct high visibility crosswalk at intersection of NC 87 and East Boiling Spring Road with pedestrian signal and pavement markings	Spot	\$135,000	BPCE
	1B	Medium-term project to construct high visibility crosswalk at intersection of NC 87 and East South Shore Drive with pedestrian signal and pavement markings	Spot	\$135,000	BPCE
	1C	Medium-term project to construct multiuse path on both sides of NC 87 from City Hall to Community Center	Linear	\$3,395,000	BPCE
	1D	Short-term project to study turning radii of the right turn lane from NC 87 onto Cougar Road and assess feasibility of roundabout. To be coordinated with truck/trailer radii and Cougar Road radii project	Spot	\$60,000	PBIC
	1E	Medium-term project to install a mid-block crossing at NC 87 and Fifty Lakes Drive	Spot	\$114,000	BPCE
	1F	Medium-term project to study possible installation of a pedestrian boardwalk along one side of the Officer Mitchell Prince Bridge to accommodate pedestrian activity along NC 87	Linear	\$60,000	PBIC
	1G	Long-term project to engineer (based on 1D study) and install roundabout at NC 87 and East Boiling Spring Road with pedestrian accommodations including accessible pedestrian crosswalks with refuges, pavement markings, pedestrian crossing, and removal of existing traffic signals	Spot	\$2,000,000	AECOM
	1H	Long-term project to install green infrastructure (permeable surfaces to absorb pluvial flooding) and signage/welcome signs to the City where feasible/at roundabout	Spot	\$150,000	AECOM
	1I	Long-term project to construct multiuse path on one side of NC 87 from Community Center to Cougar Road	Linear	\$2,588,000	BPCE
	1J	Long-term project to provide lighting and wayfinding signage measures along NC 87	Spot	\$299,000	BPCE/ PBIC
	1K	Long-term project to include green infrastructure along NC 87 multiuse path such as bioswales and use of pervious surfaces for increased stormwater drainage	Spot	\$2,600,000	AECOM
	Total			\$12,462,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 2: Fifty Lakes Drive

Existing Conditions

Fifty Lakes Drive connects NC 87 to River Road Southeast (outside of municipal boundaries) and serves as an important east-west connector for the City. As a two-lane road, Fifty Lakes Drive does not currently have pedestrian infrastructure despite its use as a walking route or connection to NC 87 for the surrounding residential area. The road was identified for improvements based on safety concerns, specifically regarding vehicle speeds and lack of existing pedestrian accommodations.

Fifty Lakes Drive is predominantly zoned as residential with many private driveways intersecting the roadway. There are also several mobile homes in the area. Currently, there is construction west of Golfview Road and north of Fifty Lakes Drive where a new development is expected in this location where sidewalks are not required as part of the new development. The speed limit is 35 mph and this corridor lacks pedestrian accommodations including crossings or linear amenities. The right-of-way is 100 feet with a 22-foot pavement width.

Challenges

Fifty Lakes Drive connects NC 87 to Alton Lennon Road and to Route 133, both of which have important equity considerations about connectivity. While this road primarily serves residential uses, there is one fire station to the west near Alton Lennon Road. It is important to install pedestrian activity systems such as flashing beacons to alert the fire station that there are pedestrians active in the area. As one of the dominant east-west connectors for the City, Fifty Lakes Drive vehicles often drive faster than the posted speed limit causing unsafe conditions for active transportation users. This is emphasized by the winding nature of the roadway, decreasing visibility for oncoming traffic and users who are walking or participating in other active transportation. The roadway currently does not have lighting or adequate stormwater drainage.

Recommended Improvements

All proposed projects aim to address residents who use the roadway for walking and other active transportation as well as for improved connectivity to regional amenities. With one of the largest rights-of-way areas at 100 feet, the roadway presents existing potential for multimodal infrastructure. There are five projects proposed, organized according to short, medium, and long-term projects to accommodate a range of planning horizons.

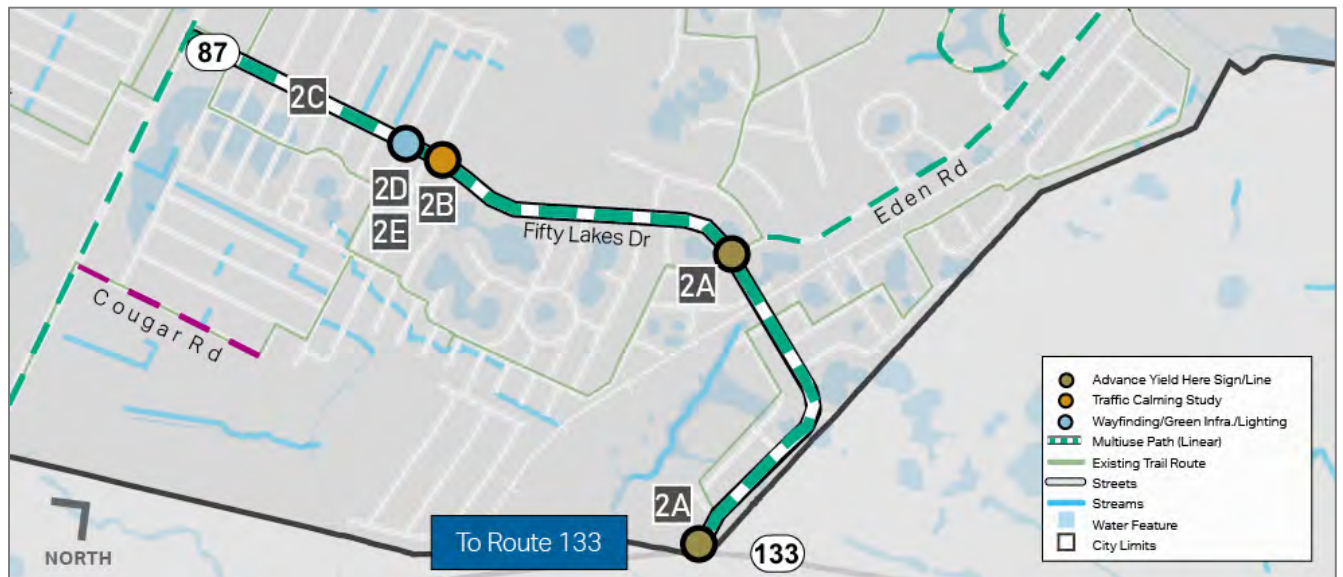


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 15: Fifty Lakes Drive Improvements Rendering



Figure 16: Fifty Lakes Drive Improvements Map





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 12: Fifty Lakes Drive Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
Fifty Lakes Drive	2A	Short-term project to install <i>advance yield here</i> sign and line on Fifty Lakes Drive, near fire station and at Route 133 (near the Olde Brunswick General Store) to notify vehicles of pedestrian activity	Spot	\$42,000	PBIC
	2B	Short-term project to conduct a traffic calming study along Fifty Lakes Drive from NC 87 to Route 133 that investigates the use of speed tables, <i>share the road</i> signage, stop signs, and neighborhood roundabouts to help control vehicular traffic speeds	Spot	\$80,000	AECOM
	2C	Long-term project to install multiuse path on north side of Fifty Lakes Drive from NC 87 to Route 133	Linear	\$4,950,000	BPCE
	2D	Long-term project to install placemaking measures, including lighting and wayfinding signage, along Fifty Lakes Drive to direct users to Route 133/Brunswick County multimodal routes (including the bicycle loop).	Spot	\$246,000	BPCE/ PBIC
	2E	Long-term project to install green infrastructure along Fifty Lakes Drive multiuse path such as bioswales and use of pervious surfaces for increased stormwater drainage, where feasible/applicable	Spot	\$1,600,000	AECOM
		Total			\$6,918,000



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 3: NC 87 to City Limits (South)

Existing Conditions

NC 87 (south) provides local and regional connection to the main corridor of the City, where several businesses and critical connections between City Hall, the community center and South Brunswick Middle and High School exist. The roadway is the major thoroughfare in the City, providing important access to Wilmington to the north and Southport to the south, among other regional amenities and recreational opportunities. NC 87 from City Hall to Cougar Road was discussed numerous times in Steering Committee and public meetings, frequently identified as needing pedestrian improvements as the current segment does not have accommodations. The corridor is heavily used by vehicles with speeds that make walking or other active transportation modes unsafe.

NC 87 is a NCDOT maintained roadway and the primary access route in the City, connecting City Hall, the Community Center, and access to South Brunswick Middle and High School via Cougar Road. NC 87 is a two-lane road with center turn lanes at intersections. There are currently no pedestrian facilities along NC 87 within the Boiling Spring Lakes city limits, including pedestrian crosswalks at intersections. There is also no street lighting or other active transportation accommodations. The current speed limit along NC 87 (south) is 55 mph, the highest speed within the City, and the existing right-of-way is 150 feet. The Average Annual Daily Traffic (AADT) is 8,900-11,000 AADT.

Challenges

Intersections along NC 87 present challenges for pedestrians and other active transportation users who wish to cross the busy roadway. This is of concern as AADT has the highest rate in the City. Drainage ditches lining NC 87 also pose a challenge to the construction of pedestrian infrastructure. There are several driveways along the corridor which will need to be taken into consideration when designing pedestrian improvements including the proposed multiuse path. Existing utility infrastructure will also need to be addressed.

Opportunities

Establishing safety measures and installing appropriate infrastructure will be crucial to creating a safer community for all users as well as provide better connectivity to regional attractions such as Southport and Oak Island. There are two projects proposed for this section of NC 87, organized according to short and long-term projects to accommodate a range of planning horizons.

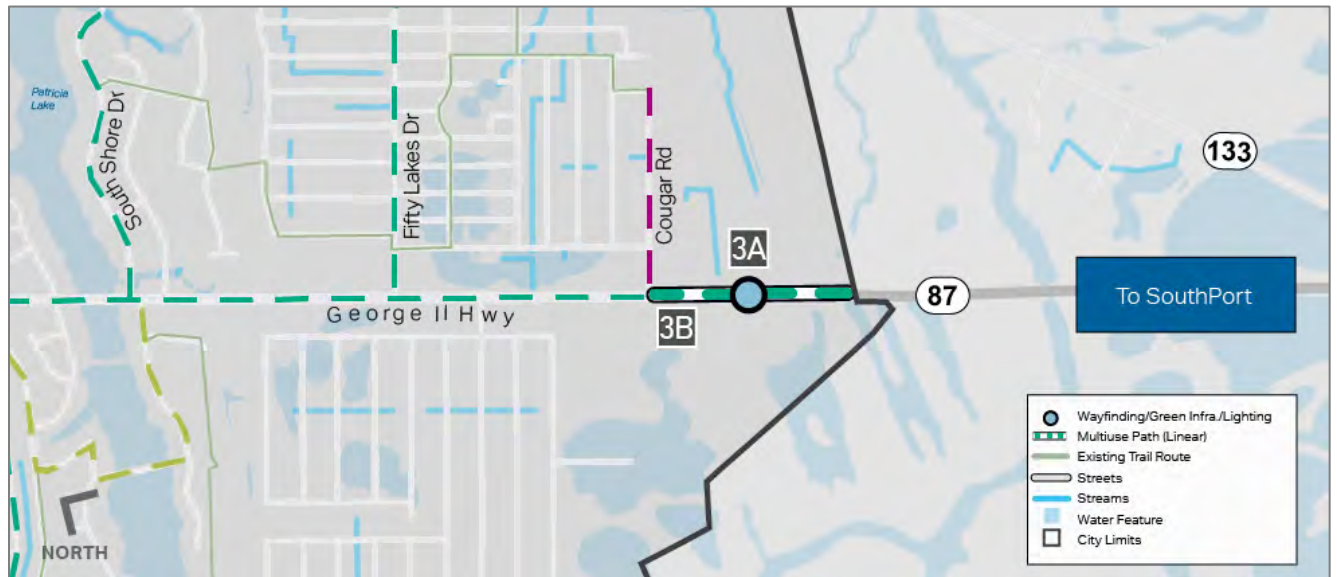


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 17: NC 87 to City Limits (South) Improvements Rendering



Figure 18: NC 87 to City Limits (South) Improvements Map





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 13: NC 87 to City Limits (South) Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
NC 87 to City Limits (South)	3A	Short-term project to install wayfinding signage with regional direction to Southport	Spot	\$2,000	PBIC
	3B	Long-term project to extend multiuse path along NC 87 at Cougar road to city limits (south)	Linear	\$1,496,000	BPCE
	Total			\$1,498,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 4: Alton Lennon Drive/Eden Drive

Existing Conditions

Alton Lennon Drive once connected the western portion of the City at East Boiling Spring Road to South Shore Drive and Eden Drive but is in the process of being rebuilt after the Sanford Dam was breached during Hurricane Florence (2018). The dam, originally built on a berm, is in the process of being replaced through FEMA's Public Assistance (PA) grant program, which repairs the dam to its pre-disaster design, which did not include sidewalk infrastructure. The roadway width is approximately 260 feet at the site of the dam and includes curb and gutter on both sides. The roadway currently has a posted speed limit of 35 mph, a right-of-way of 60 feet with a 24-foot pavement width.

Challenges

Alton Lennon Drive provides critical connections to East Boiling Spring Road and neighborhoods south of Patricia Lake, made more evident after the wash-out of the Sandford Dam. The dam's current state of disrepair is contributing to prolonged traffic congestion and is delaying travel for emergency services traveling east. The cost of reconstruction (in 2020) is projected at a reimbursable cost to FEMA of nearly 32.5 million dollars toward repair of the dam to its pre-disaster design. Under FEMA's Public Assistance grant program, improved infrastructure upgrades require local monies or repair of the facility to a code or standard that exceeds FEMA-approved code and standards. Additional FEMA grants, including the Building Resilient Infrastructure and Communities (BRIC) grant released in 2020, could be utilized to capture additional mitigation funds.

Recommended Improvements

Road, bridge, and dam washouts provide an opportunity to reconstruct infrastructure with pedestrian needs in mind. Although at the time of this comprehensive plan, plans for reconstruction under FEMA do not include upgrades such as sidewalks. Zoning updates such as a sidewalk code for new development or a sidewalk overlay district could mandate the inclusion of active transportation infrastructure as part of mitigation efforts to prevent potential, future dam breach. A multiuse path may be accommodated on the downstream face of the existing berm, which would require widening. The NCDOT minimum *berm* for a sidewalk would be 10 feet from the face of the curb and gutter. It is recommended that the roadway width along Alton Lennon drive is widened to accommodate future linear, active transportation infrastructure.

The strong motivation by the community and City to plan for medium and long-term opportunities for both dam-specific upgrades as well as improved active transportation amenities along the entirety of the roadway will also help encourage medium- and long-term improvements. There are seven projects proposed, organized according to short, medium, and long-term projects to accommodate a range of planning horizons.

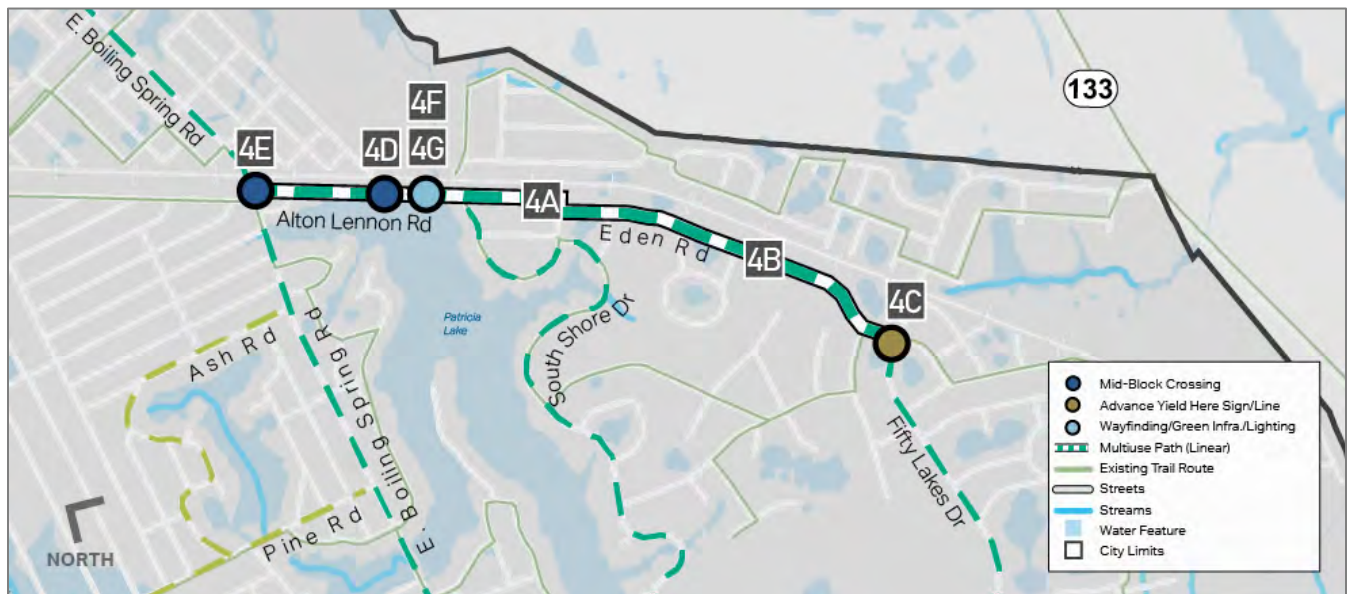


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 19: Alton Lennon Drive/Eden Drive Improvements Rendering



Figure 20: Alton Lennon Drive/Eden Drive Improvements Rendering





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 14: Alton Lennon Drive Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
Alton Lennon Drive	4A	Medium-term project to install multiuse path on east side of Alton Lennon Drive from Eden Drive to East Boiling Spring Road. If active transportation cannot be included in FEMA dam repairs, 10-foot widening from the face of the curb and gutter is recommended on the downstream face of the existing/repared berm. This should be done in coordination with FEMA rebuilding efforts and the East Boiling Spring Road project (see project 6C)	Linear	\$2,670,000	BPCE
	4B	Long-term project to install multiuse path on east side of Eden Drive from Alton Lennon Drive to Fifty Lakes Drive to extend the multiuse path along Alton Lennon Drive as part of the Sanford Dam reconstruction project (see project 4A)	Linear	\$2,650,000	BPCE
	4C	Long-term project to install <i>advance yield here</i> sign and line at Eden Drive, coordinated with the Fifty Lakes Drive multiuse path (see project 2C)	Spot	\$21,000	BPCE
	4D	Long-term project to install mid-block crossing at Alton Lennon Park	Spot	\$21,000	BPCE
	4E	Long-term project to install mid-block crossing on east side of Alton Lennon Drive at East Boiling Spring Road	Spot	\$21,000	BPCE
	4F	Long-term project to install lighting and wayfinding signage along Eden Drive and Alton Lennon Drive	Spot	\$282,000	BPCE/ PBIC
	4G	Long-term project to install green infrastructure along Eden Drive and Alton Lennon Drive multiuse path such as bioswales and use of pervious surfaces for increased stormwater drainage, where feasible/applicable	Spot	\$1,900,000	AECOM
		Total			\$7,565,000



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 5: Cougar Road

Existing Conditions

Cougar Road owned by NCDOT and is the predominate access route to South Brunswick High School and Middle School and is heavily used by school attendees as well as residents accessing NC 87. As a predominate resident area in the City of Boiling Spring Lakes, many school attendees live in the surrounding neighborhood and seek walking-access to the institutional facilities. Planned new development in this area will also increase the desire for improved walkability along Cougar Road. The roadway currently has a posted speed limit of 35 mph, a generous right-of-way of 100 feet with a 26-foot pavement width.

Challenges

This road currently lacks pedestrian accommodations that would encourage students, parents, and school staff to walk to and from the schools. During school drop off and pick up times, local police have been observed at the traffic light directing the flow of traffic to improve safety and help with the flow of traffic. It was noted by the Steering Committee and during public meetings the desire for the installation pedestrian-oriented infrastructure as many school attendees could be walked to school but are driven due to safety concerns. Improvements to the intersection of NC 87 and Cougar Road will need to take construction phasing and the school into consideration. The roadway also does not currently have adequate lighting and drainage ditches could be insufficient.

Recommended Improvements

Recommended projects for the Cougar Road corridor include several linear and spot pedestrian projects to improve walkability around the schools and surrounding residential areas. Pedestrian improvements are likely to help reduce automobile dependence in this area, thereby reducing traffic. There are four projects proposed, categorized as short-term projects based on the high-level of need for the corridor.

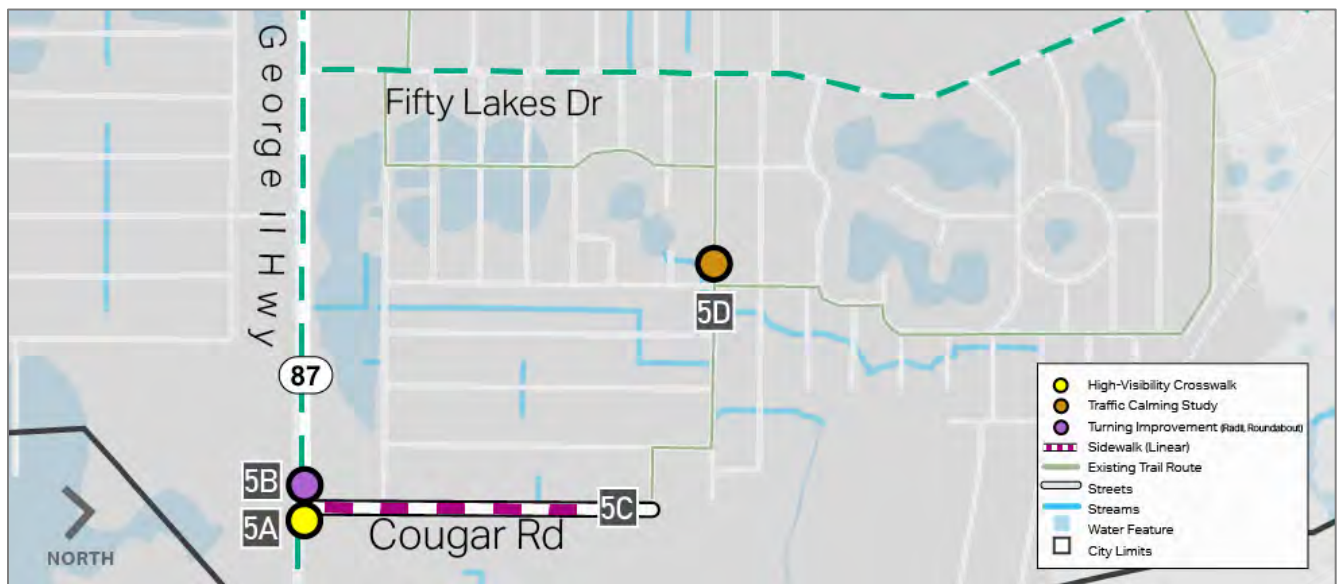


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 21: Cougar Road Improvements Rendering



Figure 22: Cougar Road Improvements Rendering





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 15: Cougar Road Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
Cougar Road	5A	Short-term project to install high visibility crosswalk on east side of Cougar Road and NC 87 intersection with pavement markings, right-turn-on-red restriction, pedestrian signal, and a leading pedestrian interval	Spot	\$135,000	BPCE
	5B	Short-term project to reduce turning radii of the right turn lane from Cougar Road onto NC 87. To be coordinated with NC 87 turning radii project	Spot	\$40,000	PBIC
	5C	Short-term project to install sidewalk on south side of Cougar Road from NC 87 to Dix Road	Linear	\$719,000	BPCE
	5D	Medium-term project to conduct a traffic calming study that investigates the use of speed tables and neighborhood roundabouts to help control vehicular traffic speeds along Dix Road, Catawba Road, Lexington Road from Cougar Road to Fifty Lakes Drive	Spot	\$60,000	AECOM
	Total			\$978,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Tier 2 Projects

Tier 2 projects are those projects that are considered a medium-high priority for the City of Boiling Spring Lakes based on the outcomes of the prioritization process.

PROJECT CORRIDOR 6: East Boiling Spring Road

Existing Conditions

East Boiling Spring Road is a two-lane road that connects NC 87 to Alton Lennon Road and contains entrances to City Hall, several residential roads, and a couple of parks. The roadway is a commonly used thoroughfare in the City, providing important eastern access to recreational activities such as Brunswick Nature Park. Improving access to and safety for active transportation users along East Boiling Spring Road was discussed numerous times during Steering Committee and public meetings. The current posted speed limit on this segment is 45 mph, has an AADT of 3,100-6,300, and a right-of-way of 60 feet.

North Lake and Pine Lake dams along East Boiling Spring Road experienced breaches during Hurricane Florence, prompting NCDOT to install new 96" culverts to be installed at elevations that do not allow water impoundment. Future repairs include removing the culverts and replacing with concrete control structures that meet NCDOT standards along E. Boiling Spring Road.

Challenges

The corridor is frequently used by vehicles traversing east-west across the City, often at speeds that make walking or other multimodal activities unsafe. With a speed limit of 35-45 mph and an AADT of 3,100-6,300, community members noted that cars typically travel at faster speeds than posted and seek measures that notify drivers of pedestrians and reinforce reduced speed limits. There are also many intersecting roadways along East Boiling Spring Road. Existing utility poles and limited stormwater drainage also make multimodal infrastructure a challenge for installation. There is currently no lighting or green infrastructure along East Boiling Spring Road.

Recommended Improvements

With a high frequency of use, East Boiling Spring Road has a high demand for improvement by both the Steering Committee and the public. There are five projects proposed, organized according to short, medium, and long-term projects to accommodate a range of planning horizons



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 16: East Boiling Spring Road Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
East Boiling Spring Road	6A	Short-term project to conduct a traffic calming study that investigates the use of speed tables and neighborhood roundabouts to help control vehicular traffic speeds from NC 87 to Alton Lennon Drive	Spot	\$7,000	PBIC
	6B	Medium-term project to install <i>advance yield here</i> sign and line in conjunction with a roadway resurfacing project or similar roadway upgrades based on 6A	Spot	\$21,000	BPCE
	6C	Long-term project to install a multiuse path on the north side of East Boiling Spring Road from NC 87 to Alton Lennon Drive (see Alton Lennon Drive multiuse project 4B and crossing project 4E)	Linear	\$6,743,000	BPCE
	6D	Long-term project to provide lighting and wayfinding signage along East Boiling Spring Road	Spot	\$356,000	BPCE/ PBIC
	6E	Long-term project to include green infrastructure along East Boiling Spring Road multiuse path such as bioswales and use of pervious surfaces for increased stormwater drainage	Spot	\$2,400,000	AECOM
	Total				\$9,527,000



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 7: NC 87 to City Limits (North)

Existing Conditions

NC 87 (north) provides local and regional connection to the main corridor of the City, where several businesses and critical connections between City Hall, the community center and South Brunswick Middle and High School exist. The roadway is the major thoroughfare in the City, providing important access to Wilmington to the north and Southport to the south, among other regional amenities and recreational opportunities. NC 87 from City Hall to Cougar Road was discussed numerous times in Steering Committee and public meetings, frequently identified as needing pedestrian improvements as the current segment does not have accommodations. The corridor is heavily used by vehicles with speeds that make walking or other active transportation modes unsafe.

NC 87 is a NCDOT maintained roadway and the primary access route in the City, connecting City Hall, the Community Center, and access to South Brunswick Middle and High School via Cougar Road. NC 87 is a two-lane road with center turn lanes at intersections. There are currently no pedestrian facilities along NC 87 within the Boiling Spring Lakes city limits, including pedestrian crosswalks at intersections. There is also no street lighting or other active transportation accommodations. The current speed limit along NC 87 (south) is 55 mph, the highest speed within the City, and the existing right-of-way is 150 feet. The Average Annual Daily Traffic (AADT) is 8,900-11,000 AADT.

Challenges

Intersections along NC 87 present challenges for pedestrians and other active transportation users who wish to cross the busy roadway. This is of concern as AADT has the highest rate in the City. Drainage ditches lining NC 87 also pose a challenge to the construction of pedestrian infrastructure. There are several driveways along the corridor which will need to be taken into consideration when designing pedestrian improvements including the proposed multiuse path. Existing utility infrastructure will also need to be addressed.

Recommended Improvements

NC 87 is lined with several businesses and provides connections to the community center and City Hall. The installation of multiuse path would promote active transportation amongst residents in the City and provide an alternative way for residents to travel to the businesses in this area. There is one project proposed for this segment of NC 87.

Table 17: NC 87 to City Limits (North) Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
NC 87 to City Limits (North)	7A	Long-term project to extend multiuse path from City Hall to city limits (north)	Linear	\$3,731,000	BPCE
	Total			\$3,731,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 8: Spring Lake Loop

Existing Conditions

The Spring Lake Loop Corridor connects Pine Road, Grace Road, Ash Road, and East Boiling Spring Road around Spring Lake located north of Lake Patricia. Spring Lake Park is a destination located off Pine Road and Boiling Spring Lakes Community Garden is located across the street. Awesome Memorial Park is another nearby attraction and is located off East Boiling Spring Road near Cottage Road. It was noted during Steering Committee and Public outreach the desire for improved recreational trails that provide an alternative to walking along the roadway.

Challenges

There is limited right-of-way along the western edge of Pine Road where the road crosses the connection between Spring Lake and North Lake. Drayton Road is currently unpaved. Vegetation, existing utility boxes, and mailbox intersection may contribute to higher costs if a multiuse path is constructed along this corridor. There is currently no lighting in this area which could present challenges for users who wish to use the loop outside of daylight hours.

Recommended Improvements

The City's current alternative emergency/evacuation route from East Boiling Spring Road to Pine Road to Drayton Road then to Pine Lake Road is proposed as a pedestrian linear project. There are three projects proposed, organized according to short and long-term projects to accommodate different planning horizons.

Table 18: Spring Lake Loop Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
Spring Lake Loop	8A	Short-term project to install wayfinding signage around Spring Lake from Pine Road, Grace Road, Ash Road, to East Boiling Spring Road	Spot	\$3,000	PBIC
	8B	Long-term project to install multiuse path from Pine Road, Grace Road, Ash Road, to East Boiling Spring Road	Linear	\$3,954,000	BPCE
	Total			\$3,957,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Tier 3 Projects

Tier 3 projects are those projects that are considered a lower priority for the City of Boiling Spring Lakes based on the outcomes of the prioritization process.

PROJECT CORRIDOR 9: City Connector

Existing Conditions

The City Connector provides recreational access between the Community Center and City. Popular business along the route, located on NC 87, include The Office Coffee and Wine Bar, Dollar General, Sunoco Gas Station, and Pepperoni Grill. The four roads that make up the Loop are all two-lane side roads or in the case of Dam Road, which is unpaved. It was noted during Steering Committee and Public outreach the desire for improved recreational trails that provide an alternative to NC 87 as a dominant access between City Hall, the Community Center, and residents.

Challenges

During Hurricane Florence, Middle dam, located along the City Connector proposed route, was breached. The existing berm currently does not have vehicle access and is privately owned. A 250-foot wide berm structure was proposed in 2020 to allow for constant water flow, which may need to be re-assessed to allow for the proposed pedestrian infrastructure. The existing walking path is a less frequented area within the City and will require additional signage to promote activity and use of a recreational route, if feasible. There is some concern regarding potential flooding or other challenges from stormwater drainage for future storm events. In addition to drainage, right-of-way may be a concern to provide adequate pedestrian buffer for walkers or other users.

Recommended Improvements

The City Connector not only provides refuge from the busy NC 87, but also offers scenic areas for walking and multimodal activity, particularly along Dam Rd. There are two projects proposed, organized according to short and long-term projects to accommodate different planning horizons.

Table 19: City Connector Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
City Connector	9A	Short-term project to designate a City Connector with distinctive wayfinding signage from the Community Center to City Hall along West South Shore Drive to Dam Road to W North Shore Drive to Sunset Road	Spot	\$3,000	PBIC
	9B	Long-term project to install a multiuse path along the City Connector from the Community Center to City Hall along West South Shore Drive to Dam Road to W North Shore Drive to Sunset Road	Linear	\$3,980,000	BPCE
	Total			\$3,983,000	



PROJECT CORRIDOR 10: South Shore Drive

Existing Conditions

South Shore Drive is a two-lane roadway located south of Lake Patricia, connecting NC 87 and Alton Lennon Drive. The roadway is embedded in the residential heart of the City with access to important recreational activities including Lakes Country Club, Patricia Lake, and Tate Lake Park. However, residents that enjoy walking along the roadway are forced to walk in the right-of-way area along South Shore Drive with no pedestrian buffer or signage to alert vehicles of potential multimodal use. Additionally, the curvature of the road, along with the many residential driveways that pull directly into oncoming traffic, decreases visibility for drivers and results in unsafe conditions for pedestrians. Despite these factors, Attendees at plan meetings noted that cars typically speed along South Shore Drive despite the posted speed limit 30 mph. The right-of-way is 65 feet along the roadway.

Challenges

Steering committee and public meetings confirmed strong preference for safety measure and/or a multiuse path along South Shore Drive. However, the length of the road, its curvature, and numerous driveways may contribute to increased costs associated with pedestrian infrastructure. Stakeholders also noted that many driveways have mailboxes located near or in the right-of-way, resulting in potential coordination challenges with resident populations if South Shore Drive were to be expanded for development of permanent multiuse infrastructure. Although there are some drainage ditches along the roadway that would require assessment with right-of-way compatibility.

Recommended Improvements

Based on conversations with the Steering Committee and the public, it was highlighted that reducing traffic speeds was a priority to enhance safety along the roadway. There are three projects proposed and organized according to short and long-term projects to accommodate different planning horizons.

Table 20: South Shore Drive Improvements

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
South Shore Drive	10A	Short-term project to install <i>advance yield here</i> sign and line to alert drivers of pedestrian activity at intersections	Spot	\$29,000	BPCE/ PBIC
	10B	Medium-term project to conduct a traffic calming study that investigates the use of speed tables, <i>share the road</i> signage, stop signs, and neighborhood roundabouts to help control vehicular traffic speeds	Spot	\$60,000	AECOM
	10C	Long-term project to install traffic calming measures (see 10B) from NC 87 to Alton Lennon Drive	Linear	\$7,000- \$500,000	PBIC
	Total			\$589,000 (*assumes \$500,000 for 10C)	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 11: Tate Lake Park Loop

Existing Conditions

Tate Lake Park is located between South Shore Drive and Tate Lake Drive with access to Patricia Lake and Tate Lake. The area is residential and currently used as a recreational walking loop, which residents frequently utilize. Tate Lake Drive is a two-lane road with numerous driveways intersecting. Mailboxes are currently built within some parts of the right-of-way, which is already limited and does not have adequate drainage.

Challenges

Tate Lake Park is surrounded by residential streets and may be less known to visitors, so the installation of wayfinding is critical around the park. However, existing mailbox and right-of-way overlap may cause potential coordination challenges for the installation of signage or other future pedestrian amenities or infrastructure.

Recommended Improvements

As an already utilized active transportation facility, permanent signage will promote multimodal use of the roadway, access to the park, and promote recreational activity in the area. There is one project proposed and is deemed as a short-term project based on the Steering Committee's planning horizon.

Table 21: Tate Lake Park Loop Improvement

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
Tate Lake Park Loop	11A	Short-term project to install wayfinding signage on South Shore Drive at Tate Lake Drive.	Spot	\$3,000	PBIC
	Total			\$5,633,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 12: West Boiling Spring Road to East Coast Greenway and Oak Island

Existing Conditions

West Boiling Spring Road is a two-lane road that runs southwest through the City from NC 87 towards Antioch. It turns into Antennae Road SE as it crosses the City’s municipal boundary. This road primarily serves residents and provides access to both the East Coast Greenway and Oak Island. The Steering Committee and residents noted this road provides access to these important regional amenities via active transportation including walking and biking. West Boiling Spring Road has a posted speed limit of 45 mph and right-of-way of 65 feet. The roadway currently has drainage ditches.

Challenges

Traffic speeds may need to be addressed if the volume of active transportation use increases. Existing mailbox and right-of-way overlap may cause potential coordination challenges for the installation of pedestrian amenities or infrastructure. Due to the length of the corridor segment being proposed, cost may also be a concern for installation of a multiuse path as well as any potential future amenities such as lighting or similar.

Recommended Improvements

Proposed recommendations focus on highlighting the regional connectivity West Boiling Spring Road provides. There are two projects proposed and are described as long-term projects based on the Steering Committee’s planning horizon.

Table 22: West Boiling Spring Road Improvement

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
West Boiling Spring Road to East Coast Greenway/ Oak Island	12A	Long-term project to install wayfinding signage with regional direction to the East Coast Greenway and Oak Island	Spot	\$2,000	PBIC
	12B	Long-term project to extend multiuse path along West Boiling Spring Road/Antenna Farm Road SE at NC 87 to City limits	Linear	\$8,327,000	BPCE
	Total			\$8,329,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 13: Rails to Trails

Existing Conditions

The WB&S Old Railroad Grade is an abandoned railroad track just west of the Community Center. Several members of the Steering Committee recommended this feature become a recommended project in the plan to provide additional recreational activities. There is potential for this railroad track to evolve into a rail to trails project and it is viewed as a regional connection. According to Walkscore.com, there are existing trails located around the railroad track. The trails begin at West Ridge Road behind the community center and meander south, crossing Orton Creek, and links to Reidmont Drive Southeast near Smithville Township District Park.

Challenges

Despite local interest in converting the railroad track into a recreational facility, there has been little championing of the effort on behalf of the public. Additional (non-monetary) investment by the City would be needed to encourage the effort to pursue this project. Part of this effort would also require further assessment of the length and extents of converting the existing track into a trail. Additionally, it is difficult to determine the current state of the railroad track. Property ownership may also be of concern if land were to be acquired for a multiuse path. If the parcel is owned by the railroad it would need to be purchased and converted into a conservation easement. Upper dam, while receiving little traffic at W Ridge Road, Upper dam was breached during Hurricane Florence and is being repaired to handle storms according to NCDOT guidance. Therefore, further evaluation and analysis of this area may be required.

Recommended Improvements

The City of Boiling Spring Lakes is currently recognized as a great place for recreational activity. A Rails to Trails program can further increase the area as a destination. There are two projects proposed and are described as long-term projects based on the Steering Committee's planning horizon.

Table 23: Rails to Trails Improvement

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
Rail to Trails	13A	Long-term project to convert the Wilmington, Brunswick and Southern Railroad west of the City from an unused rail line to a multiuse trail	Linear	\$8,235,000	BPCE
	13B	Long-term project to add wayfinding signage (or similar) along NC 87 (and other key corridors, as needed) to direct active transportation users to the Rail to Trails	Spot	\$4,000	PBIC
	Total			\$8,239,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

PROJECT CORRIDOR 14: East Boiling Spring Road to Brunswick Nature Park

Existing Conditions

East Boiling Spring Road is an important east-west connector that provides access to City Hall, Community Center, businesses, and residential areas. The two-lane roadway is a commonly used thoroughfare in the City, providing important eastern access to recreational activities such as Brunswick Nature Park. The current posted speed limit on this segment is 45 mph, has an AADT of 3,100-6,300, and a right-of-way of 60 feet. Improving access to and safety for active transportation users along East Boiling Spring Road was discussed numerous times during Steering Committee and public meetings.

Challenges

The corridor is frequently used by vehicles traversing east-west across the City, often at speeds that make walking or other multimodal activities unsafe. Community members noted that cars typically travel at faster speeds than posted and seek measures that notify drivers of pedestrians and reinforce reduced speed limits. There are also many intersecting roadways along East Boiling Spring Road. Existing utility poles and limited stormwater drainage also make multimodal infrastructure a challenge for installation. There is currently no lighting or green infrastructure along East Boiling Spring Road.

Recommended Improvements

Proposed recommendations focus on highlighting the regional connectivity East Boiling Spring Road provides. There are three projects proposed, organized according to short, medium, and long-term projects to accommodate a range of planning horizons.

Table 24: East Boiling Spring Road Improvement

Project Corridor	Project Element	Description	Project Type	Estimated Cost (2020 \$)	Source
East Boiling Spring Road to Brunswick Nature Park	14A	Short-term project to install wayfinding signage with regional direction to Brunswick Nature Park	Spot	\$2,000	PBIC
	14B	Medium-term project to conduct a pedestrian crossing and safety study with the existing and active railroad line between Alton Lennon Drive and Durham Road for potential, future multiuse path extension along East Boiling Spring Road from Alton Lennon Road to City limits. Extending crossing arms, installing crossing paths, increased signage, or similar should be assessed	Linear	\$60,000	
	14C	Long-term project to extend multiuse path along East Boiling Spring road at Alton Lennon Drive to City limits	Linear	\$4,399,000	BPCE
	Total			\$4,461,000	



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Additional Projects

Green Infrastructure and Resiliency

Developed areas with impermeable surfaces, such as pavement and building materials prevent groundwater infiltration, and instead exacerbate stormwater runoff. This direct flow of water into nearby water can carry pollutants and lead to erosion, flooding, and degradation of aquatic habitat, property, and infrastructure damage depending on the speed and flow of the runoff. Green infrastructure includes a range of approaches for managing stormwater, however, three approaches that will be applicable to the Plan are described briefly below.

Permeable Pavement

An environmentally friendly alternative to traditional asphalt or concrete. Permeable pavement helps reduce stormwater runoff, recharges groundwater, traps suspended solids and pollutants, reduces the heat island effect, and reduces the need for grey infrastructure including retention basins and water collection areas.¹⁴

Bioswales and Bioretention cells

Low maintenance, linear landscaped depressions or channels designed to capture and treat stormwater. Bioswales are a low impact development method that typically contain mulch, native plants, and may contain drought tolerant plants.¹⁵ These bioretention systems contain gently sloped sides that direct water, allowing for the slow absorption of water and pollutants, and are engineered and constructed to ensure adequate percolation and filtration of captured runoff.

Native Landscaping

Trees, shrubs, or other plantings that are native to the ecosystem help promote evapotranspiration which reduced the amount of stormwater runoff or flooding. Landscaping also help absorb pollutant while promoting increased habitat for flora and fauna. This helps enhance the pedestrian experience as well, providing a buffer between active transportation routes and the roadway.



Permeable Pavement



Bioswale



Native Landscaping



Riparian Buffer

¹⁴ Green Building Alliance: Permeable Pavement at <https://www.go-gba.org/resources/green-building-methods/permeable-pavements/>

¹⁵ EPA: Enhancing Sustainable Communities with Green Infrastructure at <https://www.epa.gov/sites/production/files/2016-08/documents/green-infrastructure.pdf>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Riparian Buffers

Riparian buffers (also called greenbelts) are undeveloped areas adjacent to bodies of water, typically consisting of native plantings and shrubs. They help capture runoff by increasing stormwater infiltration into soil, stabilize soils, reduce shoreline erosion, and provide increased wildlife habitat. These are measures that can be taken along active transportation routes that align with the City's many lakes or flood-prone areas.

Wayfinding and Lighting Improvements

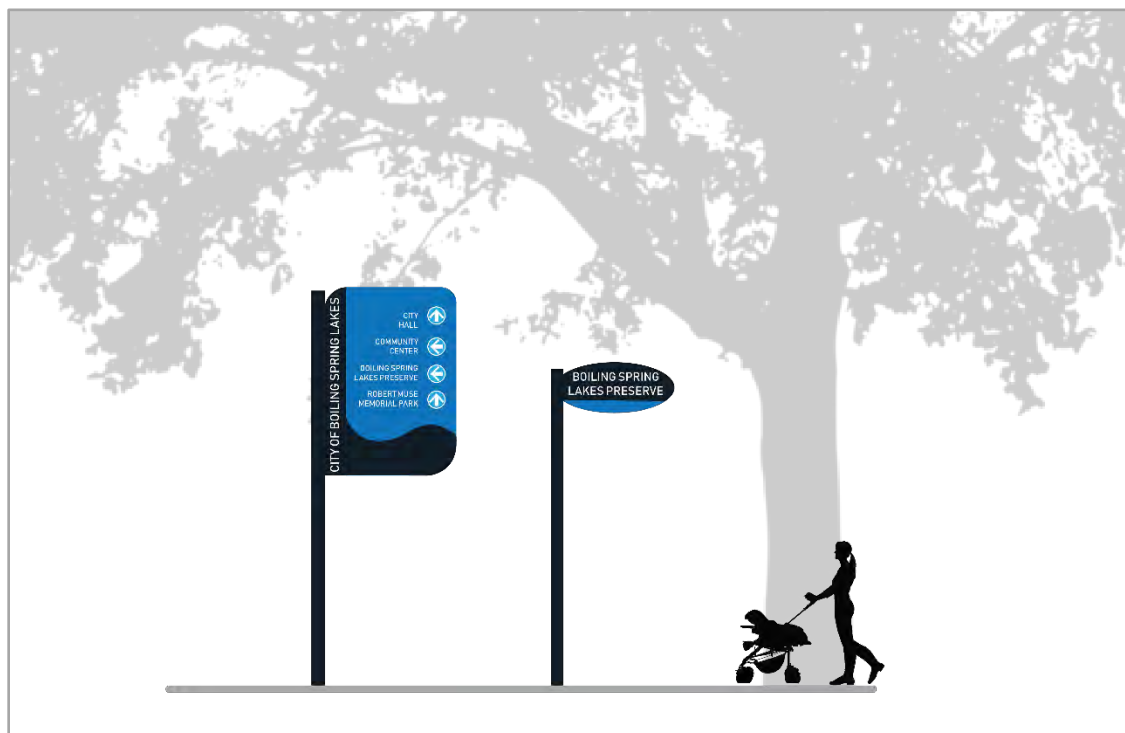
Wayfinding signage and lighting is recommended throughout the City as a strategy to achieve the following objectives:

- Promote Boiling Spring Lakes as a destination for walking and tourism
- Encourage walking by making the city easier to navigate
- Contribute to the City's development projects and effort to improve walkability
- Improve the safety and overall visibility of the community through installation of lighting

Wayfinding signage should complement Boiling Spring Lake's landscape (see Figure 23) and list nearby destinations with arrows for navigation. Walking distances may be included on the signs as space allows to further orient the pedestrian. Wayfinding signs would be particularly useful on NC 87 to help navigate visitors that arrive in the City and are searching for outdoor recreational activities or community features.

Pedestrian lighting should be a priority along NC 87 and other roadways with high pedestrian activity should include lighting to promote activity during dawn and dusk hours. Lighting should consider the lamp temperature and be mindful of long-term maintenance and operation costs. Dark sky lighting options may also be an important consideration to protect against light trespass for habitat-sensitive recreation areas.

Figure 23: Wayfinding Signage





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

4.5 Recommended Pedestrian Policies and Programs

In addition to recommended infrastructure and policy improvements, the planning team considered policies and programs that, if implemented, could encourage non-motorized transportation usage in the City and improve safety conditions for pedestrians.

Recommended Policies

The City of Boiling Spring Lakes' zoning ordinance was reviewed in order to understand how it influences the planning of pedestrian enhancements. One of the most cost-effective strategies for implementing this Plan would be to establish land development regulations and street design policies and standards that promote walkable new development and capital projects.

The consultant team reviewed regulatory and policy language from other communities in North Carolina and used best practices that provide successful land use and active transportation integration, alignment with sustainable nature-based planning in response to flooding and to encourage resiliency, and Complete Streets. The goal is to encourage safe, alternative options to vehicular use through policy-level planning efforts. These should work in tandem with the infrastructure projects recommended throughout Section 4.4 Recommended Infrastructure Improvements. Including safe alternative options to vehicular use can help encourage residents to walk for both transportation and leisure purposes. Redevelopment and new development permitted in the City of Boiling Spring Lakes should provide for active transportation facilities. The City Council can encourage pedestrian activity by adopting the policy updates as listed in Table 25: Recommended Policy Updates on the following page.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 25: Recommended Policy Updates

Code, Ordinance, Existing Condition	Current Policy or Condition	Recommended Changes and Comments
Code, Ordinance, Existing Condition Article 5.4 Overlay Districts (UDO)	Currently states that it is "reserved for future use."	<p>Create an Active Transportation Overlay Zoning District along all linear corridors defined and mapped in the City of Boiling Spring Lakes Pedestrian Plan (2020). See "proposed projects" 1-14.</p> <p>This regulation is intended to require sidewalk/multiuse infrastructure requirements for any new or proposed construction or reconstruction projects throughout the city.</p>
Article 5.7 Table of Area, Setback, Living Area, and Height Requirements (UDO)	<p>Zoning districts (including PRD, C-1, and C-1A) have minimum front setbacks of n/a and 50-feet, respectively. City-Center (C-C) has a minimum front setback of 15 feet. Side and rear setbacks are 50 feet (PRD has a n/a setback).</p>	<p>Amend zoning to require minimum front setbacks in commercial and planned residential districts (PRD) to align with city-center (C-C) setback of 15 feet. Require new commercial buildings to be placed close to the sidewalk and require either rear or side parking.</p> <p>The standard setback of 50 feet for commercial buildings does not create a pedestrian-friendly environment. In walkable urban environments, buildings placed at the edges of sidewalks and public spaces, rather than being set back, can greatly enhance the character of the pedestrian environment. To promote design that fosters a safe and inviting pedestrian environment, the adoption of a smart growth, performance-based, or other types of code, including form-based codes are recommended. These types of zoning codes can regulate the size, height, and proximity to the street and can help create vibrant walkable communities.</p> <p>More information regarding smart growth codes can be found at https://www.epa.gov/smartgrowth/codes-support-smart-growth-development and https://formbasedcodes.org/.</p>
	New Section	<p>Parking lots should be located behind future developments to provide a safer entrance for pedestrians accessing the business.</p>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Code, Ordinance, Existing Condition	Current Policy or Condition	Recommended Changes and Comments
Article 7.9.2 (c) Cross Access (UDO)	Where new development, except individual one-and two-family residences, is adjacent to vacant land or developed land with poor adjacent connections, all streets, driveways, sidewalks, paths, and other access ways shall be designed to allow future connections at property boundaries unless the UDO Administrator determines that topography, the presence of natural features, and/or vehicular safety factors make connection impractical	Amend this section to require sidewalks and sidewalk and roadway connections between developments (stub outs) to allow greater connectivity and traffic flow between developments.
Article 7.16 Pedestrian Facilities (UDO)	(A) Sidewalks shall be at least five (5) feet wide and constructed of concrete at least five (5) inches thick, or such other material as may be approved by the City of Boiling Spring Lakes City Engineer.	<p>Amend to include "active transportation including sidewalks and multiuse facilities."</p> <p>Amend to include that all facilities require compliance with ADA. This should include curb ramps on sidewalks at all crossings and a restriction of cross slopes of more than two (2) percent. National and statewide plans are used by NCDOT to guide the planning, design, and construction of bicycle and pedestrian infrastructure.</p> <p>Amend to include wider sidewalks, between 10'-15', in the C-C zoning district to allow for outdoor dining.</p>
	(B) Sidewalks should be installed along the frontage of all new development or redevelopment within the C-1, and C-C zoning districts. Sidewalks shall be installed within the right-of-way and connect to adjacent facilities in all zoning districts.	Amend to include active transportation (e.g., sidewalks or multiuse paths) shall be located on at least one side of each street or roadway of a new development, subdivision, redevelopment, or newly paved street within C-1, C1A, and C-C zoning districts.
	New Subsection	<p>Amend to include new sub section that vegetative buffering should be provided along newly constructed, developed, or re-developed sidewalks or multiuse paths to provide increased drainage during storm or flood events, shade, and natural resource protection. Permeable pavement should also be used, where feasible, to increase drainage.</p> <p>This should follow FHWA's Nature-based Resilience for Coastal Highways guidance.</p>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Code, Ordinance, Existing Condition	Current Policy or Condition	Recommended Changes and Comments
Article 7.16 Pedestrian Facilities (UDO)	New Subsection	Amend to include new sub section that when an existing sidewalk or multiuse path is closed for construction or maintenance reasons – on the walkway itself or on adjacent property – an adequate detour route should be established and signed, if feasible.
Article 11.4.2 Flood Damage Prevention Ordinance (UDO)	Section 11.4.2 (l) includes specifications for “other development” including fences, retaining walls, roads/watercourse crossings.	Add sub article that requires hybrid green/nature-based infrastructure and stormwater infiltration, conveyance, and storage improvements be included on all roadway upgrades, new construction, or reconstruction to help mitigate impacts from stormwater and nuisance flooding. This may include larger-diameter grey infrastructure and combinations of green and gray infrastructure such as vegetative buffers, storm sewers, and culverts. This should follow FHWA’s Nature-based Resilience for Coastal Highways guidance.
New Section – Dedication of Open Space	New Section	Align with Section 8.11 in UDO requiring open space for subdivisions of 50 acres or more to include open space defined as any portion of any lot proposed for open space, common open space, or recreation area means any space or area characterized by great natural scenic beauty or whose openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding development, or would maintain or enhance the conservation of natural or scenic resources; or any undeveloped or predominately undeveloped land that has value for one or more of the following purposes: (1) Park and recreational uses; (2) Conservation of land and other natural resources; or (3) Recreational or scenic purposes. Chapter 4 of NCDOT’s Complete Streets Planning and Design Guidelines provides specific design guidance and recommendations for greenways, shared use paths, bicycle facilities, and sidewalks.
New Section – Signage Policy	New Section	Signage that provide wayfinding for active transportation users should be required on construction of all active transportation facilities including greenways, shared use paths, bicycle facilities, and sidewalks.
New Section – Lighting Policy	New Section	Provision of lighting along active transportation routes, designed by the City, should be required for new construction.

- City of Boiling Spring Lakes UDO: <https://www.cityofbsl.org/unified-development-ordinance>
- NCDOT Complete Streets Planning and Design Guidelines: http://www.pedbikeinfo.org/pdf/PlanDesign_SamplePlans_CS_NCDOT2012.pdf
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities: [http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07\(263\)_FR.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07(263)_FR.pdf)
- WalkBikeNC North Carolina Statewide Pedestrian and Bicycle Plan: <https://altaplanning.com/wp-content/uploads/WalkBikeNCPlanChapterslowres.pdf>
- FHWA Nature-based Resiliency for Coastal Highways: https://www.fhwa.dot.gov/environment/sustainability/resilience/ongoing_and_current_research/green_infrastructure/implementation_guide/fhwa_hep19042.pdf



Recommended Programs

To encourage active transportation in Boiling Spring Lakes, a series of programs can be administered to socialize the public to multimodal activities and/or facilities. The focus is to educate both active transportation users and vehicular users while bringing awareness to proposed recommendations. Five programs that would be beneficial to the City of Boiling Spring Lakes are as follows:

- Safety campaigns to educate pedestrians and drivers
- Enhance safe access to schools
- Provide open street and walking events
- Improve local aesthetics with public art
- Enforce existing driving laws and speed limits

Active Transportation Advisory Committee

The City should consider expanding upon the work of the existing Boiling Spring Lakes Bicycle & Pedestrian Task Force. It is recommended to convert the name of the existing Task Force to the Boiling Spring Lakes Active Transportation Advisory Committee (ATAC) in order to encompass all multimodal activities and for alignment with NCDOT's Integrated Mobility Division nomenclature and multimodal directives. This group will be important to organize and maintain the proposed programs and identify and seek out funding sources that will help the city achieve its goal of becoming a more walkable community.

The ATAC will serve to research funding opportunities, assist with submission of grant applications, and play a role in selecting and monitoring the work of consultants and contractors designing and constructing pedestrian infrastructure. It would also serve to form partnerships between schools, businesses, and neighboring municipalities. The ATAC should continue to meet regularly and provide updates to the Boiling Spring Lakes City Commissioners. In addition to helping implement proposed projects, the City Commissioners and ATAC should promote education, safety, encouragement, enforcement and evaluation, events, and beautification programs.

Safety Campaigns to Educate Pedestrians, Active Transportation Users, and Drivers

Watch for Me NC is a comprehensive campaign aimed at reducing the number of active transportation users, including pedestrians, hit and injured in crashes with vehicles. The campaign consists of educational messages on traffic laws and safety, and an enforcement effort by area police. With more than 3,000 pedestrians and 850 bicyclists hit by vehicles each year in North Carolina, NCDOT in collaboration with municipalities and universities has launched the Watch for Me NC campaign to reduce crashes through education and enforcement. Education materials in the form of a website, public service announcements, pamphlets, bus wraps, billboards, and bumper stickers have been developed and distributed to increase awareness of pedestrians and bicyclists and applicable laws. Many of the materials can be distributed at local festivals and other events, at local businesses. The campaign also provides increased training to law enforcement. Many of these resources are downloadable from Watch for Me NC at: <http://www.watchformenc.org/>.





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Enhance Safe Access to Schools

Safe Routes to School (SRTS) is a program that enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.



Active Routes to School is the North Carolina SRTS project that is supported by a partnership between NCDOT and the Division of Public Health. The goal of the project is to increase the number of North Carolinians that meet the physical activity recommendations by increasing the number of elementary and middle school students who safely walk and bike to or from school. Brunswick County's Active Routes to School Program is led by Region 8, Robeson County Department of Public Health Services. More information on SRTS can be found at:

<https://www.ncdot.gov/bikeped/safetyeducation/safeRoutesToSchools/>

In addition to the SRTS, the City could facilitate South Brunswick Middle and High School's participation in the NCDOT program Let's Go NC! — Pedestrian and Bicycle Safety Curriculum. Aimed to instruct children between grades K-5, the program focuses on walking and biking skills to promote safety. To promote healthy and active lifestyles, a curriculum was developed that includes aspects of the SRTS program in addition to classroom, video, and exercise materials.



More information can be found at: www.connect.ncdot.gov/projects/BikePed/Pages/LetsGoNC.aspx

Open Street & Walking Events

The City of Boiling Spring Lakes has unique characteristics that can be showcased through outdoor events that could be supported by pedestrian facilities. An outdoor festival could be set up along East Boiling Spring Road as this would be near both Robert Muse Memorial Park and Boiling Spring Lakes City Hall. If the proposed pedestrian projects are implemented, this location could also be surrounded by walkable and inviting streets that would encourage festival attendees to explore the rest of Boiling Spring Lakes.

The City of Boiling Spring Lakes is known for its numerous bodies of water, as well as local and rare flora and fauna. The City could develop informal walking tours to encourage pedestrian activity among visitors and highlight the attractions and resources one can find in Boiling Spring Lakes. To achieve this, the City could designate a few different loops that are walkable and connect habitats, attractions, and local businesses. These loops could be mapped onto pamphlets that are made available at the City Hall, local business along Highway 87, the Boiling Spring Lakes Community Center, and Robert Muse Memorial Park. Callouts on the maps can show parking options, pedestrian routes, animal and plant habitats, food options, and key attractions that are within walking distance of one another.



*El Valle Golden Frog Festival
(Smithsonian National Zoo)*



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Following the installation of pedestrian infrastructure within Boiling Spring Lakes, the City could host a walking festival for the endangered and threatened species that live in the City. The photo above was taken at the Golden Frog Festival held in El Valle de Anton, Panama. El Valle is working to bring environmental awareness to the Golden Frog in response to massive chytridiomycosis-related amphibian declines in the area. Boiling Spring Lakes could host a similar event to provide awareness for the Red-Cockaded Woodpecker and Venus Flytrap.



Boiling Spring Lakes may consider hosting a walking event where the community shows support and awareness for the local Red-Cockaded Woodpecker and Venus Flytrap.

More information can be found at: www.openstreetsproject.org

The El Valle Golden Frog Festival can be found at: <https://playacommunity.com/panama-articles/coronado-community/7756-el-valle-golden-frog-festival-2019.html>

Public Art & Environmental Education

Creating a welcoming and enjoyable walking environment is an important component of developing a walkable community. Discussion with the Steering Committee indicated that the City has interest in using its most defining element to improve the aesthetics of the city; the City's rich diversity of flora and fauna species attracts many visitors. Local art showcasing these plants and animals can be located along paths and sidewalks throughout the City to not only beautify the community, but also showcase the environmental features that are so prevalent in Boiling Spring Lakes.

Local art could also be incorporated with sidewalk projects and alongside signage for local businesses and seen as an advertising opportunity to promote economic vitality for local businesses, as well as environmental awareness and a sense of stewardship for the local species. By including a small plaque with the name of the species or artist along with their business name and location, the city could



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

encourage local artists to donate their art or even pay a small fee to cover installation and maintenance fees in exchange for the advertising that would result from the public display of their art. The City may also partner with the Brunswick Arts Council on outdoor public art projects.

Educating Citizens on Existing Driving Laws & Speed Limits

Education is essential for teaching and reminding drivers of all ages the applicable laws and responsibilities of motorists as they pertain to safely sharing the road with bicyclists and pedestrians. This also includes educating police officers on pedestrian and active transportation user laws.

Although children aged 5 to 15 years are not yet old enough to drive, it can be expected that the majority will become automobile users. Educating elementary and middle school students (the future driving population) about bicycle and pedestrian safety provides excellent opportunities to make a difference in a two-fold manner.



Pedestrian safety, as well as how to safely maneuver an automobile while in the presence of pedestrians and bicycles can be an instrumental part of any driver's education program in Boiling Spring Lakes. This training will allow new generations to be more aware of the simple fact that motorized vehicles do not have sole right to the transportation network, and it is everyone's responsibility to be careful when in the roadways.

More information can be found at: www.ncdot.gov/dmv.

The NC Bicycle and Pedestrian laws can be found at: www.ncdot.gov/divisions/bike-ped/Pages/bike-ped-laws.aspx.



IMPLEMENTATION



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

5.0 Implementation

Achieving the vision, goals, and objectives of this Plan will require the commitment of City officials and staff, Task Force or ATAC, Cape Fear RPO, NCDOT, and the support and leadership from the community and other partner organizations. Guided by the goals, objectives, and strategies, Boiling Spring Lakes will continue working to improve pedestrian safety and connectivity.

The implementation strategy for this Plan includes several components to assist with translating this document into implemented programs and constructed pedestrian facilities:

- Key Action Steps: Describing actions to help the city implement the recommendations of this Plan and improve overall bicycling and pedestrian facilities
- Project Development Strategies: Utilizing key action steps to implement specific projects
- Funding Process and Sources: Identifying and mobilizing funding for projects
- Performance Evaluation Measures: Evaluating the effectiveness of projects

Adopting this Plan is a necessary first step for improving pedestrian safety and mobility in Boiling Spring Lakes. Coordination with NCDOT Division 3 and Cape Fear RPO will be critical to implementing the infrastructure projects proposed in this Plan.

5.1 Key Action Steps

The existing Task Force or a newly converted ATAC is entrusted with overseeing the implementation of the Plan with assistance from City staff and participation by the stakeholders. The Task Force or ATAC would be responsible for meeting regularly to receive updates and guide progress on the action steps. It would also author the annual progress update submitted to the Board of Commissioners on multimodal conditions in Boiling Spring Lakes.

In addition, all infrastructure recommendations along NCDOT-maintained roadways would require review and approval by NCDOT Division 3 prior to implementation. All roadway projects along NCDOT owned roads should be compliant with the NCDOT Complete Streets policy and consider pedestrian recommendations in this Plan. The key actions are listed in Table 26. The timeline for the action steps is meant as a general guide and can be modified as necessary.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 26: Key Steps to Implementation

Action	Description	Stakeholder	Timeline
Adopt the Boiling Spring Lakes Comprehensive Pedestrian Plan	Present the Plan to the Boiling Spring Lakes Board of Commissioners for adoption.	Board of Commissioners and city staff	Fall 2020
Adopt an active transportation overlay district	Adopt a sidewalk overlay district that to require sidewalk infrastructure be built throughout the City.	Board of Commissioners and city staff	Fall 2020
Amend Brunswick County CTP	Amend Brunswick County Comprehensive Transportation Plan (CTP) to incorporate recommended projects from this plan into the CTP.	Board of Commissioners, City Staff, Brunswick County	Fall 2020
Convert the Task Force to an Active Transportation Advisory Committee (ATAC)	Transition the Boiling Spring Lakes Bicycle & Pedestrian Task Force into a formal advisory committee that will be responsible for overseeing the implementation of the Plan.	Board of Commissioners and city staff	Winter 2020
Strengthen partnerships with Cape Fear RPO and NCDOT Division 3	Hold an initial meeting with the stakeholders to provide an overview of the Plan's recommendations and identify opportunities for collaboration.	Cape Fear RPO, NCDOT Division 3, and city staff	Winter 2020/ ongoing
Apply for Watch for Me NC	Apply to participate in NCDOT's Watch for Me NC campaign to raise awareness and provide educational resources to promote bicycle and pedestrian safety to residents, drivers, and law enforcement.	Task Force/ATAC and city staff	Winter/Spring 2021/ Ongoing
Identify potential funding sources during city budget planning	Identify potential funding sources for pedestrian programs, projects, and maintenance in the city's budget such as Powell Bill funds. Begin to accumulate funds that can be used for the local match required for most projects.	Task Force/ATAC, Board of Commissioners, and city staff	Winter/ Spring 2021
Apply for alternative funding sources for the Plan's projects and programs	Refer to the funding sources identified in this Plan in Appendix D; apply for funds in addition to the STIP process to implement programs and projects. Establish a fund to use for local match requirements.	Task Force/ATAC and city staff	Ongoing
Include requirements for pedestrian facilities in city ordinances and policies	Draft amendments to city ordinances and policies following the recommendations of this Plan and NCDOT's Complete Street Policy for pedestrian infrastructure in existing and new development.	Board of Commissioners, and city staff	Spring/ Summer/ Fall 2021
Coordinate with Active Routes to School Coordinator	Begin meeting with the Active Routes to School Coordinator to establish and develop policy for implementation and/or training or programs for South Brunswick Middle and High Schools.	Task Force/ATAC, city staff, NCDOT, NC Division of Public Health	Summer/ Fall 2021
Partner with local artists, businesses, and the parks department	Partner with local artists, businesses, and the parks department to work on placemaking projects.	Local artists, art organizations, and city staff	Winter 2022
Prepare the Boiling Spring Lakes Comprehensive Pedestrian Plan Annual Report/Memo	Prepare the first Boiling Spring Lakes Pedestrian Plan Annual Report or memo assessing progress made over the past year using the performance and evaluation measures included in this Plan.	Task Force/ATAC and city staff	Spring 2022



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

5.2 Project Development Strategy

The development process to prepare for a project's construction involves six key components described below. This strategy can be used to implement infrastructure projects proposed in this Plan. When applicable, each component of the strategy will incorporate action steps described in Table 26, demonstrating how City officials can implement the project through the following:

- Identification of funding source(s)
- Public involvement
- Feasibility Study (right-of-way availability and needs)
- Engineering and design
- Analysis of affected property owners
- Design-level cost estimates

The project development process will vary depending on whether the project is on-road or off-road on a new location. Roadway re-striping and traffic calming measures, such as speed tables, are on-road improvements typically constructed within the road right-of-way. However, adding sidewalks may involve obtaining additional right-of-way and/or easements from adjacent property owners.

Identification of Funding Sources

Funding for pedestrian infrastructure projects needs to be identified early in project development. Many funding options are presented in Section 5.3 of this Plan. Relevant action steps include the following:

- Coordinate with the Cape Fear RPO to include infrastructure projects in the regional planning process
- Align City budget planning
- Apply for alternative funding sources for the Plan's projects and programs
- Partner with North Carolina Department of Commerce for grants and technical assistance
- Form public-private partnerships

Scoping Report/Feasibility Study

Regardless of whether the proposed facility is on-road or off-road, the project will require a project scoping report (part of express designs) or a feasibility study (usually part of large corridor projects). A project scoping report or feasibility study would likely be done for each proposed project, a small group of inter-related projects, or an entire project corridor. The study will examine the utility and right-of-way issues associated with a proposed facility and provide concept plans, profiles, and high-level cost estimates. The study will determine utility constraints, and if right-of-way acquisition is necessary for the project. The study should be conducted in consultation with NCDOT where occurring within an NCDOT right-of-way.

Some of the pedestrian projects proposed in this Plan would be on-road facilities within NCDOT rights-of-way that require coordination with NCDOT. On NCDOT roads in the City, roadway re-striping to reallocate road space has the potential to be accomplished cost-effectively through the division's resurfacing projects. As identified in the key action steps table, coordination with NCDOT Division 3 should be initiated following the adoption of this Plan. There may be opportunities to include pedestrian facilities proposed



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

by this Plan in road repaving and widening projects. An important role for the Task Force or ATAC would be to monitor the NCDOT Division 3 resurfacing schedule. This could be accomplished through arranging quarterly check-ins with the Division Operations and Maintenance personnel to determine upcoming resurfacing plans or coordinating with the Cape Fear RPO. Although NCDOT communicates with local municipalities concerning upcoming resurfacing plans and the 2019 Complete Streets Policy ensures pedestrian plans be considered in resurfacing projects, coordination with NCDOT is recommended to ensure projects in this Plan can be implemented through resurfacing.

Project scoping reports or a feasibility study could require coordination at multiple levels from the City to NCDOT. The following actions would assist in coordinating and conducting feasibility studies:

- Adopt the Boiling Spring Lakes Comprehensive Pedestrian Plan
- Strengthen partnerships with Brunswick County and the Cape Fear RPO
- Coordinate with NCDOT Division 3
- Coordinate with the Cape Fear RPO to include infrastructure projects in the regional planning process and in the CTP
- Include in City budget planning
- Develop partnerships with local and regional businesses to help fund wayfinding, arts, and streetscape elements

Engineering and Design

In the engineering and design phase, concepts developed in the feasibility study will be developed and advanced using more in-depth engineering to develop a preliminary design. During this phase additional, more specific information on right-of-way and utility constraints will be developed. As with the feasibility study, the planning and design phase should be conducted in consultation with NCDOT where occurring within an NCDOT right-of-way. Because engineering and design follow feasibility studies closely, many applicable action steps are the same:

- Coordinate with NCDOT Division 3
- Coordinate with the Cape Fear RPO to include infrastructure projects in the regional planning process
- Align efforts with City budgeting and planning

Analysis of Affected Property Owners

It is best to develop projects within existing city or NCDOT right-of-way to minimize right-of-way acquisition and costs. Typically, pedestrian infrastructure projects, including those in this Plan, utilize existing roadways, sidewalks, and rights-of-way, as the acquisition of private property would reduce the feasibility of the project. Shared use paths are an example of a project that typically requires right-of-way acquisition. However, if a project requires the acquisition of additional rights-of-way, the feasibility study, engineering, and design identify property owners who could be impacted by a project's alignment and construction. Once those property owners are identified, city officials should coordinate with NCDOT (if on NCDOT road) on the process to initiate contact with impacted property owners and acquire right-of-way. As part of the project selection process, this Plan considered available right-of-way and, based on high-level analysis, only proposes projects that would fit within the existing right-of-way. Pedestrian projects



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

that could require the acquisition of rights-of-way typically include those that are not using existing roadways or sidewalks.

Design-level Cost Estimates

A critical component of a project's engineering and design is developing the design-level cost estimates for proposed project alternatives. Detailed cost estimates allow the Board of Commissioners to evaluate alternatives, present options to the public, receive public input, and ultimately decide on the alternative that best fits the City's goals and budget. Design-level cost estimates are generated by the project engineers tasked with designing the project alternatives. Cost estimates include the following details, at a minimum:

- Roadway/path/sidewalk construction
- Utility construction or relocation
- Right-of-way acquisition
- Contingencies that could arise during project construction

Public Involvement

This is a critical component for soliciting community input on the location, design, and function of the proposed facility. In addition, public involvement is critical in forming partnerships with local advocacy organizations and educating the community about the overall benefits of active transportation. Public involvement should be included in all phases of project development. Practical action steps include the following:

- Convert the existing Task Force to an Active Transportation Advisory Committee (ATAC)
- Carry out programs that educate residents on the health benefits of active transportation
- Conduct wayfinding and traffic calming studies
- Participate in Watch for Me NC

5.3 Funding Sources

This section discusses the state funding process and other potential funding sources. Funding for pedestrian projects will likely not come from a single source, and instead will need to be combined with several funding sources that can be used for a variety of activities, including the following: feasibility studies, planning, design, implementation, and maintenance. Although funding is available from outside sources, it is highly recommended that the City establish a source of local matching funds for potential grants. Even small amounts of local funding are essential for matching and leveraging outside sources. Local matching funds can be achieved through allocations to a reserve fund from the capital budget. In addition, many grants allow in-kind matching (e.g., local staff time).

State Funding Process for Transportation Improvements

In June 2013, the North Carolina General Assembly overhauled the process for funding state transportation projects with the Strategic Transportation Investments law (House Bill 817). This law establishes the Strategic Mobility Formula to allocate funds through a competitive process based on quantitative criteria and local input. The formula is intended: "to maximize North Carolina's existing



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

transportation funding to enhance the state's infrastructure and support economic growth, job creation and high quality of life." This formula is applied in creating the State Transportation Improvement Program (STIP), which is NCDOT's ten-year transportation improvement plan for the state. The STIP is updated every two years and includes projects across six transportation modes: highway, aviation, bicycle/pedestrian, public transportation, ferry, and rail.

Active transportation projects that are submitted through the NCDOT project prioritization process as part of a roadway project must meet the following requirements based on the latest round of prioritization (Prioritization 6.0):

- Minimum project cost of \$100,000 for stand along pedestrian (or bicycle) projects (this does not apply for active transportation elements that are part of a roadway project).
- According to the 2019 Complete Streets Policy, if the pedestrian facility is included in an adopted local plan, the City will not be responsible for the cost. If the pedestrian project component is not included in a plan, the City will have to provide a local match.
- Must be included in an adopted plan (pedestrian plans, bicycle plans, greenway plans, Safe Routes to School action plans, CTPs and long-range transportation plans)
- Right-of-way must be secured prior to receiving federal construction funding
- The formula funds projects according to the three following categories:
 - Division Needs (30 percent)
 - Regional Impact (30 percent)
 - Statewide Mobility (40 percent)

Pedestrian (and bicycle) projects that are independent of larger roadway projects are only funded through the Division Needs category. Projects in this category compete equally against all six transportation modes within the division. The Cape Fear RPO has 19 submission slots and NCDOT Division 3 has up to 14 submission slots. Selection is based on 50 percent on the quantitative score and 50 percent on local input. Local input is split evenly between the NCDOT division and metropolitan planning organization Rural Planning Organization (or RPO). The public may comment on the local input point assignment, which the Division Engineer will review prior to final local input point assignment. Cape Fear RPO also provides a public comment period.

Powell Bill Funds

The City may use its allocation of Powell Bill funds from the state to fund pedestrian (and bicycle) infrastructure projects. These funds are generated by the motor fuel sales tax and appropriated annually by the State to qualifying municipalities. Boiling Spring Lakes is an eligible municipality and received \$311,700 in 2019 (North Carolina State Street-Aid Allocations to Municipalities, 2019). According to state statutes, municipalities may use Powell Bill funds to resurface, repair, or widen streets, or for the planning, construction and maintenance of bikeways, greenways, or sidewalks. The use of these funds would be at the discretion of the Board of Commissioners.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

North Carolina Main Street and Rural Planning Center

The North Carolina Main Street and Rural Planning Center works in regions, counties, cities, towns, downtown districts, and in designated North Carolina Main Street communities to inspire placemaking through building asset-based economic development strategies that achieve measurable results such as investment, business growth, and jobs. It provides towns across the state with technical assistance for downtown revitalization through its Downtown Associate Community Program.

The center selects communities every other year via a competitive application process. Municipalities with an identifiable traditional downtown business district and a certified population under 50,000 not already designated as an active Main Street or Small-Town Main Street community are eligible to apply to the Center for services under the Downtown Associate Community Program. Selected communities will receive up to three years of downtown revitalization technical assistance services from the center and may have the opportunity to move up to Main Street designation upon successful completion of the program. This could be a potential funding source for the pedestrian, active transportation, and streetscape improvements in Boiling Spring Lakes.

Better Utilizing Investments to Leverage Development (BUILD) Grants

The BUILD Transportation Discretionary Grant program is a federal program by the United States Department of Transportation (USDOT) to fund projects that build or repair critical pieces of freight and passenger transportation networks. The eligibility requirements of BUILD allow project sponsors at the state and local levels to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional USDOT programs. BUILD can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or others in contrast to traditional federal programs which provide funding to very specific groups of applicants (mostly state departments of transportation and transit agencies). Pedestrian (and bicycle) projects are eligible for funding under the BUILD program. BUILD grants are competitive and are selected based on merit. The application and award process occur annually.

National Endowment for the Arts

The National Endowment for the Arts' Our Town program is a creative placemaking initiative that would likely be appropriate for Boiling Spring Lakes, given the City's focus on placemaking. Our Town program's objective is to: "support projects that integrate arts, culture, and design activities into efforts that strengthen communities by advancing local economic, physical, and/or social outcomes" (NEA, 2020). The grant requires "a partnership between a local government entity and nonprofit organization, one of which must be a cultural organization; and should engage in partnership with other sectors (such as agriculture and food, economic development, education and youth, environment and energy, health, housing, public safety, transportation, and workforce development)" (NEA, 2020). Additional information regarding specific grant requirements and the application can be found on the National Endowment for the Arts' website: <https://www.arts.gov/grants/apply-grant/grants-organizations>.

Other Funding Sources

Boiling Spring Lakes may consider alternate funding sources to augment state funds for pedestrian projects, which are limited and competitive. The programs listed below may be used to fund entire projects or be directed towards covering the cost of spot improvements like crosswalks or amenities such as benches and signage. Note that many of the federal funding sources are distributed by NCDOT through the prioritization process and are not directly attributed to municipalities or RPOs. Additional and



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

more detailed information concerning what these funds can be used for, the required local match, and other characteristics is included in Appendix F: Funding Sources.

Federal Funding Sources

- Congestion Mitigation and Air Quality Improvement
- Highway Safety Improvement Program
- National Priority Safety Program (Section 405)
- State and Community Highway Safety Grant Program (Section 402)
- Surface Transportation Block Grant Program
- Transportation Alternatives

State Funding Sources

- Clean Water Management Trust Fund
- Land and Water Conservation Fund
- Parks and Recreation Trust Fund
- Recreational Trails Program
- Safe Routes to School

Local Funding Sources

- Capital Reserve Fund
- Fees (citywide/local)
- General Obligation Bonds
- Special Tax District
- Tax Increment Financing

Nonprofit Funding Sources

- Blue Cross Blue Shield of North Carolina Foundation
- Kate B. Reynolds Charitable Trust
- North Carolina Community Foundation
- Robert Wood Johnson Foundation



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Community Crowdfunding

In the last several years the internet has revolutionized fundraising. This new form of fundraising, called crowdfunding enables people all over the world to start a fundraising effort and provides an easy mechanism for others to make donations. Platforms such as Kickstarter and Indiegogo are online communities that act as funding platforms for a diverse range of projects. Individuals or organizations post projects for a nominal fee and individuals make contributions via credit card. This type of fundraising is likely to be a minor source, but might be useful for funding spot improvements, such as crosswalk markings or benches.

Kickstarter: Crowdfunding platform to help artists, musicians, filmmakers, designers, and creators fund new ideas and projects. <https://www.kickstarter.com/>

Indiegogo: Similar to the successful crowdfunding platform, Kickstarter, Indiegogo is more locally oriented and trends toward civic-based projects. <http://www.indiegogo.com/>

5.4 Performance and Evaluation Measures

In order to evaluate the progress and effectiveness of the Boiling Spring Lakes Comprehensive Pedestrian Plan, Table 27 lists evaluation criteria and examples of achieved progress that the ATAC and Board of Commissioners can use. These criteria and milestones are based on the goals and objectives of this Plan. The table is intended to serve as a general guide—the ATAC should tailor these evaluation criteria to the community by adopting more specific, locally applicable quantitative metrics.

The evaluation of the Plan should occur annually and be published in the form of a memo or report made available to the residents of Boiling Spring Lakes. The report should detail the progress made to date and the priorities for the coming year. This annual report will help to demonstrate the benefits of pedestrian infrastructure and programs as well as generate further support for the ongoing work of the ATAC.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Table 27: Implementation Evaluation Criteria

Goals	Performance Evaluation	Examples of Progress Achieved
Identify and develop pedestrian programs and infrastructure projects to improve safety and enhance connectivity within the City of Boiling Spring Lakes that complement the city's focus on the natural environment and public space.	Miles of pedestrian facilities constructed and number of spot improvements	Miles of bicycle and pedestrian facilities constructed in a specific period of time (e.g., 1 mile within 5 years)
	Number of programs implemented to encourage walking and safety	Participation in the Watch for Me NC program annually or bi-annually
	Number of ATAC meetings held	ATAC meets quarterly
Prioritize pedestrian infrastructure projects for NC 87 in order to improve walkability, increase safety, and encourage economic development.	Compliance of pedestrian facilities with ADA standards	Number of curb cuts updated to meet ADA standards
	Reduction in speeding vehicles along the roadway	Reduced number of speeding cars recorded (e.g., 20 percent reduction in speeding vehicle recording following upgrades to NC 87)
	Number of local stores along NC 87 that can be accessed from pedestrian facilities	Increase number of stores that are accessible from multiuse paths (e.g., 5 additional local businesses adjacent)
Provide wayfinding for pedestrian navigation between community origins and destinations, including local parks and the Community Center.	Implementation of wayfinding system	City adopted wayfinding design and strategy.
	Number of wayfinding signs located within Boiling Spring Lakes	Wayfinding signs that direct tourists to the Community Center
Recognize and promote the health, economic, safety, and mobility benefits of active transportation.	Consecutive miles of pedestrian facilities to encourage walking to resources as well as walking recreationally	Establishment of a walkable "loop" for recreational purposes that connects the various public spaces in Boiling Spring Lakes.
Educate the community as to the benefits of pedestrian activity, applicable rules, and regulations.	Number of programs, campaigns or events annually in the community meant to encourage pedestrian activity	Number of programs or partnerships annually
Coordinate with Cape Fear RPO and NCDOT to implement the recommendations of the Plan.	Successful adoption the Boiling Spring Lakes Comprehensive Pedestrian Plan	Plan is approved by NCDOT and the Cape Fear RPO
	Implementation of projects proposed in the Boiling Spring Lakes Comprehensive Pedestrian Plan	Number of programs and infrastructure projects implemented following the adoption of the Plan

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AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities:
[http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07\(263\)_FR.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07(263)_FR.pdf)

Brunswick County Trail Plan: <https://www.brunswickcountync.gov/planning/trails/>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

El Valle Golden Frog Festival: <https://playacommunity.com/panama-articles/coronado-community/7756-el-valle-golden-frog-festival-2019.html>

Indiegogo: <http://www.indiegogo.com/>

Kickstarter: <https://www.kickstarter.com/>

Let's Go NC! www.connect.ncdot.gov/projects/BikePed/Pages/LetsGoNC.aspx

National Endowment for the Arts': <https://www.arts.gov/grants/apply-grant/grants-organizations>

North Carolina Bicycle and Pedestrian Laws: www.ncdot.gov/divisions/bike-ped/Pages/bike-ped-laws.aspx

North Carolina Department of Transportation Complete Streets Planning and Design Guidelines: http://www.pedbikeinfo.org/pdf/PlanDesign_SamplePlans_CS_NCDOT2012.pdf

North Carolina Division of Motor Vehicles: www.ncdot.gov/dmv

Open Street Events: www.openstreetsproject.org

Safe Routes to School: <https://www.ncdot.gov/bikeped/safetyeducation/safeRoutesToSchools/>

Smart Growth Codes: <https://www.epa.gov/smartgrowth/codes-support-smart-growth-development> and <https://formbasedcodes.org/>

Step On It!: https://www.kindredhealthcare.com/docs/default-source/default-document-library/kindred-homecare-step-on-it.pdf?sfvrsn=453e84ea_2

WalkBikeNC North Carolina Statewide Pedestrian and Bicycle Plan: <https://altaplanning.com/wp-content/uploads/WalkBikeNCPlanChapterslowres.pdf>

Walk with a Doc: <https://walkwithadoc.org/>

Walk Score: Walkscore.com

Watch for Me NC at: <http://www.watchformenc.org/>

PHOTO CREDITS

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APPENDICES



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

APPENDIX A: COMMITTEE AND PUBLIC INVOLVEMENT

Steering Committee Meeting #1

Agenda Packet

Agenda

Steering Committee Kick-off and Working Session

Commissioner's Chambers at City Hall

September 19, 2019 6:30 PM

- 5:00PM **WALKING / DRIVING TOUR (Optional)**
See Attachment B
- 6:30 PM **INTRODUCTIONS**
- A) Introductions**
 City Staff, Steering Committee, NCDOT, and AECOM Team
- 6:40 PM **PROJECT OVERVIEW**
- A) Review the Purpose, Tasks, and Project Schedule**
 Discuss the role of the Steering Committee
 See schedule below
- B) NCDOT Complete Streets Overview**

Project Schedule

City of Boiling Spring Lakes Pedestrian Plan

Project Schedule

Task	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April
Task 1: Inventory and Evaluation of Current Conditions								
Task 2: Project Kick-off Meeting, First Steering Committee	★							
Task 3: Second Steering Committee and First Open House Public Meeting					★			
Task 4: Preliminary Pedestrian Plan								
Task 5: Third Steering Committee Meeting							★	
Task 6: Public Meeting to Present Final Plan								★

★ Denotes a Steering Committee or Public Meeting.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

6:50 PM **VISION, GOALS, AND OBJECTIVES**

Introduce and review the vision, goals, and objectives of the City of Boiling Spring Lakes Pedestrian Plan. (Refer to Attachment A)

7:10 PM **WORKING SESSION**

The steering committee will be asked to participate in two mapping exercises intended to lay the groundwork for developing projects that will be presented in the plan.

Mapping exercise 1: Identify pedestrian origins, destinations, constraints, and opportunities, based on the findings of the walking tour, as well as Steering Committee input. The Committee will also help identify community features that would benefit from having additional pedestrian connections.

Mapping exercise 2: Based on the results of the first exercise, the Committee will begin to identify pedestrian infrastructure projects as part of the recommendations development. As part of this exercise, the AECOM team will discuss the criteria that will be used for project prioritization.

8:00 PM **NEXT STEPS**

8:05 PM **ADJOURN**

Attachment A Vision, Goals, and Objectives

Vision of the Plan

Boiling Spring Lakes will be a place that fosters community connectivity through multimodal transportation options, development of complete streets, and programs and policies that link City assets and resources to create a more walkable, attractive, and identifiable community.

Goals of the Plan

- Improve on-road pedestrian safety, with an emphasis on heavily used routes.
- Create pedestrian opportunities that boost development and positively influence land use and resiliency to potential future storm/weather events.
- Create a network of multimodal transportation options for active and passive recreation that will enhance connections between community origins and destinations such as schools, stores, churches, parks, and recreation areas.
- Organize and support programs to become a walkable and multimodal community.
- Provide a hierarchy of recommended pedestrian infrastructure projects and programmatic support services.
- Have clear policies and development guidelines in coordination with the 2018-2023 Parks, Recreation and Open Space Master Plan, the 2017 Land Use Plan, and regulations consistent with the pedestrian master plan.
- Educate the community as to the benefits of pedestrian activity and applicable rules and regulations.

Objectives of the Plan

- Identify and develop pedestrian accommodations along Boiling Spring Lakes' roadways.
- Survey the Boiling Spring Lakes' community in order to craft a pedestrian plan representative of the community.
- Partner with diverse stakeholders, including vulnerable populations, such as schools, community groups, the county health department, environmental groups, other stakeholders, and city government to plan and hold events that recognize and promote the health and environmental benefits of walking and biking and promote active living.
- Implement policies and programs to improve pedestrian safety and educate the community.
- Improve links between existing pedestrian infrastructure, organize and support programs and events on the benefits of pedestrian activity, and create incentives to encourage walking.

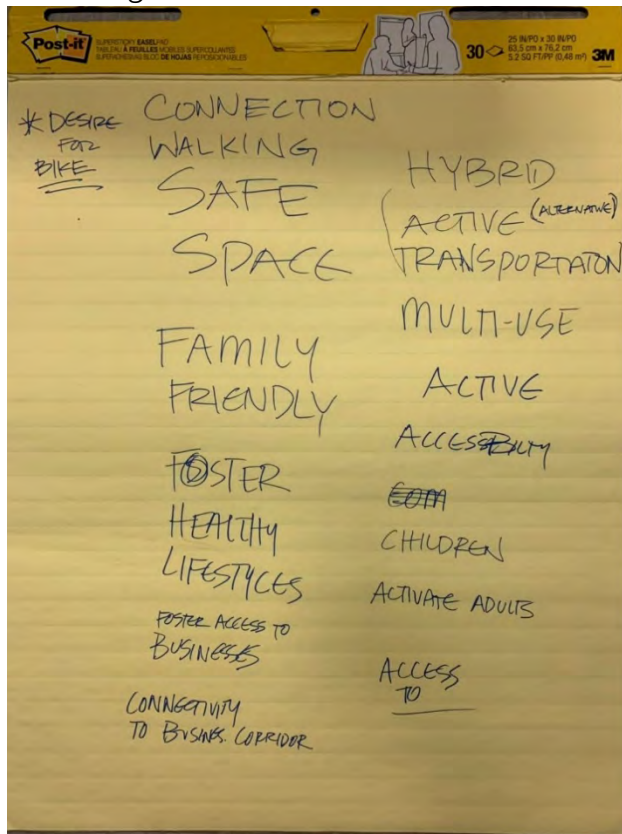


CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Attachment B FIELD VISIT – WALKING / DRIVING TOUR 5:00 PM, prior to start of Steering Committee Meeting

Please let us know of any concerns prior to the meeting by contacting Mary Green, Parks and Recreation Director at mgreen@cityofbsl.org or (910) 363-0018, or Sarah Bassett, Project Contact at sarah.bassett@aecom.com.

Visioning Exercise





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Goals and Objectives

<p><u>Goals</u> <i>interconnected</i></p> <p>An network that improves accessibility for all of the city's residents allowing them a non motorized option to reach popular destinations in the city.</p> <p>To eventually connect to the rest of Brunswick county - Greenway</p> <p>To improve health, safety & well being of our residents.</p>	<p><u>Goals</u></p> <p>① Section of the route that is a complete circuit for bicycles.</p> <p>② Kids can walk or ride their bikes to school.</p> <p>③ Lighting Well-lit for use after dark</p> <p>④ All levels of physical ability could use</p>
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<p><u>GOALS</u></p> <p>1. Prioritize the <i>ped. needs</i> for funding</p> <p>2. Improve safety for all users</p> <p>3. Enhance community attractiveness to business & the <i>residents</i></p> <p>4. Support policies/initiatives to encourage development for the <i>franked ped. infrastructure</i></p> <p>5. Connect to Southport / Oak Island / St. James</p> <p>6. Safe crossings of the <i>NC 87</i> & rail & water bodies</p>	<p><u>Goals</u></p> <p>① Improve pedestrian safety with emphasis on E. Boiling Spring Rd, Fifty Lakes Dr, George H. Hwy (87), Cavender Dr, Alton Lennon Rd.</p> <p>② Foster connectivity between parks, community centers, local businesses, the schools, the police dept. and City Hall.</p> <p>③ Foster healthier lifestyles.</p> <p>④ Crosswalks @ 87 and E. Boiling Spring Rd / 87 and S. Shore at the middle and high schools on cougar</p>
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<p><u>Goals</u></p> <p>1. Provide Access to Locations / Destinations</p> <p>2. Promote Active, Healthy Lifestyle</p> <p>3. Connect neighborhoods and businesses for all ages</p>	<p><u>Goals</u></p> <p>- Provide safe walking / running paths for all residents, especially children, to foster a more connected & community feel to BSL.</p> <p>- How to cross the highway (87)?</p> <p>- Encourage healthy lifestyle choices for all residents.</p> <p>- Provide improved access to community amenities.</p> <p>- Provide opportunities for residents & visitors to view and enjoy the unique wildlife that inhabits our community.</p>
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<p><u>Objectives</u></p> <p>All Good</p> <p>You will probably get questions on Feb 8 Day walking.</p> <p>Not sure if it should be addressed as goals or objectives</p>	<p><u>Goals</u></p> <p>definition of "on road" (i.e. sidewalks)</p> <p>Not too much changes</p>
--	---

<p><u>Objectives</u></p> <ul style="list-style-type: none"> - Save routes to schools - Crosswalks - Access to Food Pantry & New Hope clinic - 10 minute walk to a park from any residence - increase safe & accessible walking areas - Educate community on active transportation 	<p><u>GOALS</u></p> <p>① Increase walkability in the Commercial Corridor with crosswalks to schools and city hall areas.</p> <p>② Create a network of active transportation options to interconnect parks, municipal building & business corridor.</p>
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<p><u>Objectives</u></p> <p>1.a. Ensure identifiable crossing areas even at <i>after</i> dusk</p> <p>2.a. Able to walk and <i>or</i> bikes along as many areas as possible</p> <p>3.a. Pathways are accessible from neighborhoods and business areas</p>	<p><u>Objectives</u></p> <p>Sidewalks along major roads & commercial corridors</p> <p>Shared use paths through neighborhoods</p> <p>Connect parks, schools, city hall, community center</p> <p>Improve crossings at major intersections (including rail)</p> <p>Develop fund for sidewalks/paths along city streets</p>
--	---

<p><u>Objectives</u></p> <p>① Wider shoulders on E. Boiling Spring, 87, Alton Lennon, Fifty Lakes Dr.</p> <p>② Crosswalks on 87 and on cougar Dr.</p> <p>③ Promote healthier living through educational material</p> <p>④ Promote local businesses by increasing accessibility</p>
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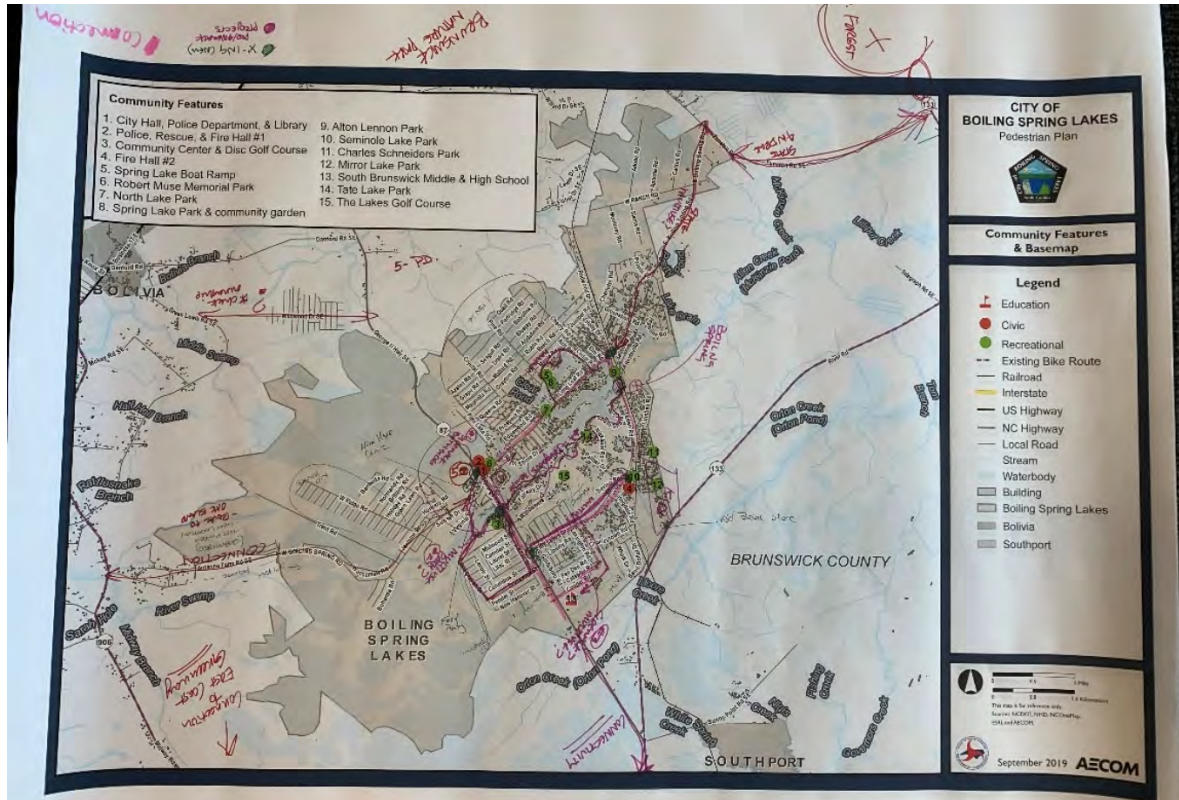
<p><u>Objectives</u></p> <ul style="list-style-type: none"> - crosswalk @ 87/101a spaced to commercial district - Route connecting to middle/high school - Build support among general population to implement the plan - Build multi-use trails facilities wherever possible

<p><u>Objectives</u></p> <ul style="list-style-type: none"> - Require new subdivisions / PUD to install sidewalks in new communities that connect to BSL master plan - Long-term, provide area for vending, relaxing and restroom facilities at select parks. - Install at least 1, (maybe 2) crosswalk @ intersections.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Workshop Maps





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Steering Committee Meeting #2

Agenda and Exercise Outputs

Agenda

January 28, 2020 at 5pm
Commissioner's Chambers at City Hall

5:00 PM PROJECT UPDATE

Discuss project updates since our last Steering Committee Meeting, including the results from the Boiling Spring Lakes Pedestrian Plan Survey.

5:10 PM QUESTION EXERCISE

5:20 PM PRELIMINARY PROJECTS WORKING SESSION

Working session to discuss the preliminary pedestrian projects for the City with a goal to receive feedback from the Steering Committee.

5:50 PM PRIORITIZATION EXERCISE

Complete prioritization worksheet for infrastructure projects, programs, and policies.

6:00 PM NEXT STEPS/QUESTIONS

6:10 PM ADJOURN

6:15 PM FACILITATOR MEET-UP

Please contact us with any questions: Sarah Bassett, Consultant Project Manager at sarah.bassett@aecom.com. Mary Green, City of Boiling Spring Lakes Parks and Recreation Director at 910-363-0018 or mgreen@cityofbsl.com.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Project Schedule

City of Boiling Spring Lakes Pedestrian Plan

Project Schedule

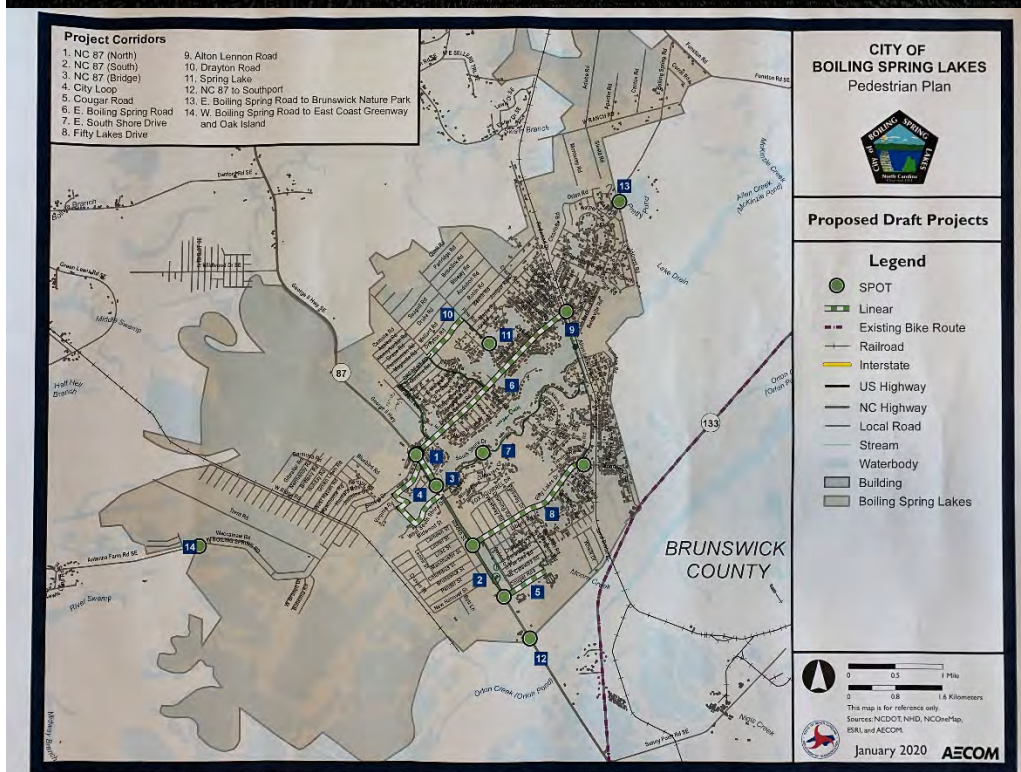
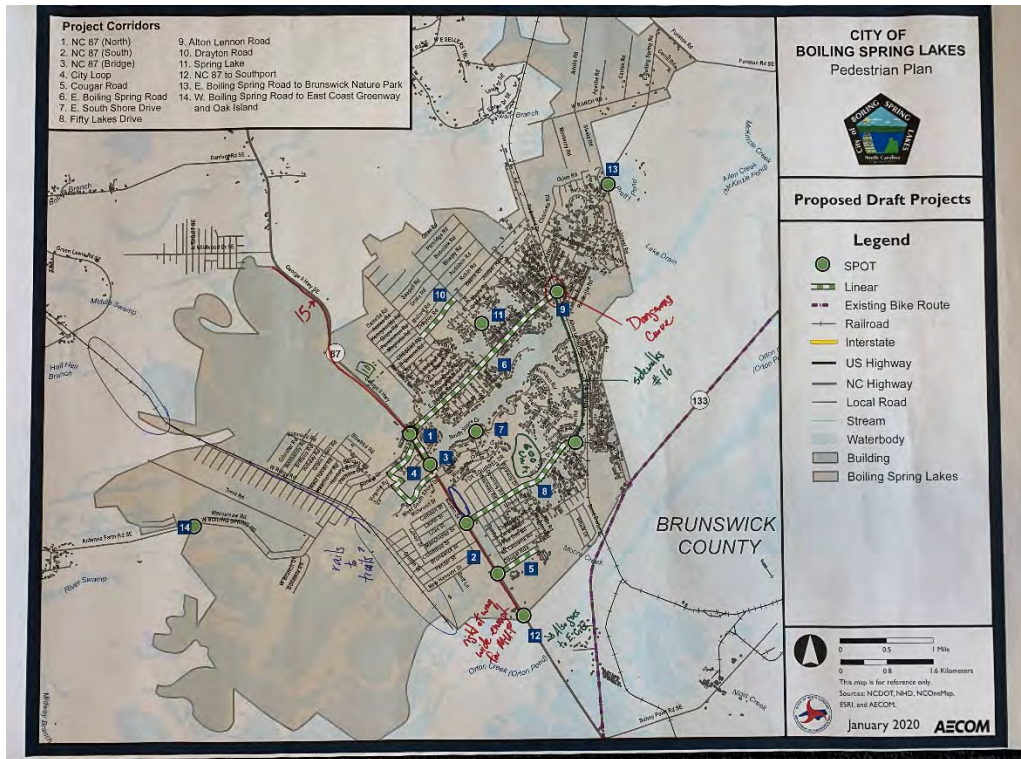
Task	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April
Task 1: Inventory and Evaluation of Current Conditions	■							
Task 2: Project Kick-off Meeting, First Steering Committee	★							
Task 3: Second Steering Committee and First Open House Public Meeting					★			
Task 4: Preliminary Pedestrian Plan				■				
Task 5: Third Steering Committee Meeting							★	
Task 6: Public Meeting to Present Final Plan								★

★ Denotes a Steering Committee or Public Meeting.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Workshop Maps





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Steering Committee Meeting #3

Agenda

Agenda

April 23, 2020 at 3pm

Conference Call via Microsoft Teams

3:00 PM WELCOME AND PROJECT UPDATES

3:10 PM RECOMMENDED PEDESTRIAN INFRASTRUCTURE PROJECTS

Review the proposed sidewalks, multi-use projects, and spot improvements to make Boiling Spring Lakes a more walkable place.

3:40 PM RECOMMENDED PEDESTRIAN PROGRAMS AND POLICIES

Review the recommended pedestrian programs and policies that would accompany the infrastructure projects in improving pedestrian safety and connectivity.

4:00 PM IMPLEMENTATION STRATEGY

Discuss the implementation strategy and key action steps for achieving the goals and objectives of the Boiling Spring Lakes Pedestrian Plan.

4:15 PM PEDESTRIAN PLAN COMMENTS

Discuss distribution and review period of the Draft Boiling Spring Lakes Pedestrian Plan.

4:20 PM NEXT STEPS/QUESTIONS

4:30 PM ADJOURN

Please contact us with any questions: Sarah Bassett, Consultant Project Manager at sarah.bassett@aecom.com. Mary Green, City of Boiling Spring Lakes Parks and Recreation Director at 910-363-0018 or mgreen@cityofbsl.com.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Public Meeting #1

Agenda and Exercise Outputs

Agenda

January 28, 2020 at 6:30pm

Commissioner's Chambers at City Hall

6:30 PM OVERVIEW OF THE BOILING SPRING LAKES PEDESTRIAN PLAN

Provide an overview of the Boiling Spring Lakes Pedestrian Plan purpose, goals and objectives, progress to-date, and project timeline.

6:40 PM WORD CLOUD EXERCISE

Complete the Word Cloud exercise describing Boiling Spring Lakes in one word.

7:00 PM IDENTIFY PEDESTRIAN ACTIVITY, AREAS OF CONCERN, AND POTENTIAL PROJECTS

Engage the community in identifying obstacles, opportunities, and destinations of where pedestrian activity takes place currently, areas of concern for pedestrians, and potential projects in Boiling Spring Lakes. The following dots will be used to note these locations on plotted maps.

- Blue dots to show common pedestrian activity
- Red dots to show areas of concern
- Green dots to show potential project locations
- Indicate destinations by writing in them on the map directly

7:50 PM NEXT STEPS

8:00 PM ADJOURN



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Public Meeting #2

Agenda and Exercise Outputs

Agenda

August 26, 2020 at 5:00pm

Virtual Webinar

- 5:00 PM OVERVIEW OF THE BOILING SPRING LAKES PEDESTRIAN PLAN**
- Introduction and update of the Boiling Spring Lakes Pedestrian Plan including recap of Public Meeting #1, progress to-date, and project timeline.
- 5:10 PM REVIEW OF PROPOSED PROJECTS**
- Review of project prioritization, review of proposed tier 1 projects, tier 2 and 3 projects with Poll Everywhere activity.
- 5:40 PM REVIEW OF PROPOSED PROGRAMS AND POLICIES**
- Review of proposed programs and policies with Poll Everywhere activity.
- 5:50 PM NEXT STEPS: OVERVIEW OF FUNDING AND IMPLEMENTATION**
- 6:05 PM OPEN DISCUSSION**
- 6:30 PM ADJOURN**



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Webinar Poll Everywhere Activity

Respond at PollEv.com/bslwalks
Text **BSLWALKS** to **37607** once to join, then text your message

What would you like to see changed in the Tier 1 proposed projects for the Boiling Spring Lakes Pedestrian Plan?

"I like the projected plan! Would there be sidewalks on both sides of 87?" "Glad to see that entire route is multi-use rather than pedestrian only"

"I think Tier 1 would align well with NCDOT Improvements" "I think this looks great. A round about on 87 or think is a stretch with the amount of traffic"

"Possibly high visibility crosswalk with flash beacon on Alton Lennon connecting the parking lot and the park"

"Would delays on the repair of Alton Lennon delay the finishing of Tier 1 and the progression to subsequent tiers?"

Respond at PollEv.com/bslwalks
Text **BSLWALKS** to **37607** once to join, then text your message

What would you like to see changed in the Tier 2 and 3 proposed projects for the Boiling Spring Lakes Pedestrian Plan?

"E Boiling Spring Rd is on one side entire length?" "I think 14 should be a tier 2"

"Is there just one crossing on E. BSL Road?" "Will the wayfinding be specific to the different routes?"

Respond at PollEv.com/bslwalks

What changes would you like to see made to the proposed programs and policies for the Boiling Spring Lakes Pedestrian Plan?

Top

3 | In regards to 7.9.2 will new developments be required to include sidewalks within the new development?



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

APPENDIX B: COMMUNITY SURVEY

Paper Survey



Comprehensive Pedestrian Plan Community Survey | City of Boiling Spring Lakes

Comprehensive Pedestrian Plan Community Survey City of Boiling Spring Lakes

Priority Rankings

What matters to you most? Have a voice in the prioritization process! Please review the priorities list and rank the top three that you think will be most important to the City knowing there are limited resources available.



Aesthetics/Local Feel

I care about my community being welcoming and attractive to my fellow residents and visitors. Aesthetics and local feel should be at the forefront of all pedestrian improvements. This may include artistic crosswalk designs, creative signage and wayfinding, and/or beautification projects.



Connectivity of Resources

It is important to me that Boiling Spring Lakes has a strong connection between its many important features. I hope that pedestrian access better connects our resources such as the Community Center, numerous lakes and parks, schools, and City Hall.



Education and Enforcement

I think efforts to inform the public about proper pedestrian and vehicular behavior are important to Boiling Spring Lakes. I also see a need for increased enforcement of traffic laws in order to improve pedestrian safety.



Infrastructure Projects

I would like to see more pedestrian-oriented facilities in BSL. Future projects should focus on expanding pedestrian facilities. This includes extending or constructing new sidewalks, crosswalks, and other pedestrian infrastructure.



Policy/Zoning

I think Boiling Spring Lakes needs to revise policy and zoning codes to encourage the development of pedestrian facilities and land use that supports pedestrian facilities.



Safety Improvements

I see motorist behavior in Boiling Spring Lakes as an inhibitor and danger to pedestrian activity. Efforts should be made to slow traffic and create a safer environment for pedestrians along roadways and at intersections.

AECOM | 1



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN



Comprehensive Pedestrian Plan Community Survey | City of Boiling Spring Lakes

Visioning

We want to learn more about local preferences. For each, please choose the image you find the MOST appealing. Remember to leave comments!

Pedestrian Facilities

Which of the following would you feel most comfortable using?



Sidewalks



Trails and Greenways



Multi-Use Paths



Other Facility Improvements

Pedestrian Crossing

Which of the following would you feel most comfortable using?



Traditional Crosswalks



Midblock Crosswalks



Creative Crosswalks



Bulb-outs at intersections (Improved visibility)



Other Crossing Improvements



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN



Comprehensive Pedestrian Plan Community Survey | City of Boiling Spring Lakes

Visioning Continued

We want to learn more about local preferences. For each, please choose the image you find the MOST appealing. Remember to leave comments!

Placemaking

Which of the following would be most helpful for Boiling Spring Lakes?



Green Infrastructure and Resiliency to Flooding



Public Space



Wayfinding



Street Lighting



Other Placement Improvements

Pedestrian Programs

Which of the following would be most helpful for Boiling Spring Lakes?



Safe Routes to School



City Walking Day



Speed Enforcement



Watch for Me NC



Other Pedestrian Programs



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN



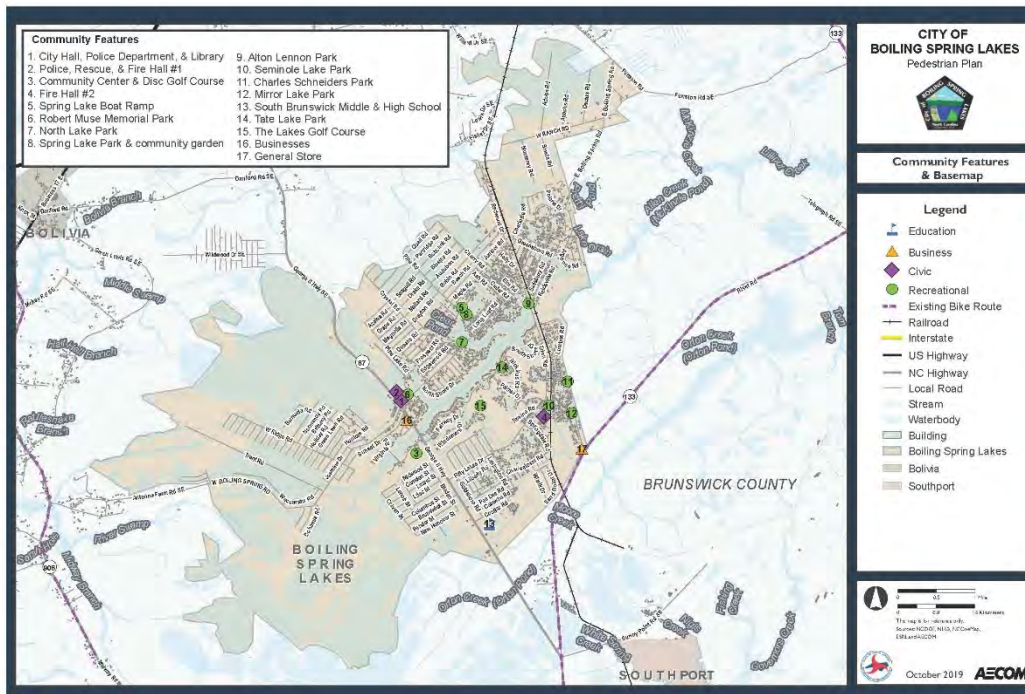
Comprehensive Pedestrian Plan Community Survey | City of Boiling Spring Lakes

Map Pedestrian Activity

Please give us location specific information on the map below by:

- Drawing a circle where you live
- Drawing a line to indicate where you walk
- ! Writing an exclamation point on areas that are safety concerns
- ★ Drawing a star on locations for potential pedestrian projects you think would benefit Boiling Spring Lakes

Feel free to make any additional marks and notes on the map below.





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN



Comprehensive Pedestrian Plan Community Survey | City of Boiling Spring Lakes

Final Questions!

Thank you for your input so far!

Please answer a few optional questions. Your personal information will be kept anonymous.

How often do you walk in the City?

- Everyday
- Three or more times per week
- Several times per month
- Less than 1-2 times per month

What is your primary reason for walking?

- Exercise/recreation
- Commuting to work
- Walking to school
- Shopping
- Government services
- I do not typically walk

What makes it difficult to walk in the City?

- Lack of sidewalks and crosswalks
- Heavy traffic
- Speeding
- Poor lighting
- Don't know
- Other (Please describe)

Gender

- Male
- Female
- Choose not to identify

Age

- 17 or younger
- 18-24
- 25-34
- 35-44
- 45-54
- 65-74
- 75 or older

What else should we know?

Thank You!

Please return completed surveys by Monday **DECEMBER 16, 2019** to the following locations:

CITY HALL: 9 East Boiling Spring Rd, Boiling Spring Lakes, NC 28461

COMMUNITY CENTER: 1 Leeds Rd, Southport, NC 28461

For additional information, please contact:

Mary L. Green, CPRE
 Parks and Recreation Director
 City of Boiling Spring Lakes
 910-363-0018
 mgreen@cityofbsl.com

The survey is also available online at the following link: <https://walkbsl.metroquest.com>



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Online Survey (MetroQuest)

Boiling Spring Lakes Comprehensive Pedestrian Plan

Progress

Boiling Spring Lakes

WELCOME!

Comprehensive Pedestrian Plan Survey

The City of Boiling Spring Lakes is developing a comprehensive transportation plan! Including your thoughts and ideas into the plan is essential as we determine the types of projects and programs being explored.

Begin



Your participation in this survey will take approximately 20-30 minutes or less and is greatly appreciated as part of the planning process for this pedestrian plan.



2 PRIORITY RANKING

3 PROJECT TYPES

4 SHOW US

5 WRAP UP



Boiling Spring Lakes Comprehensive Pedestrian Plan

Progress

2 Top Priorities

WELCOME!

PRIORITY RANKING

Order your top 3 items above this line

- Infrastructure Projects
- Aesthetics/Local Feel
- Education and Enforcement
- Safety Improvements
- Connectivity of Resources
- Policy/Zoning

What matters to you most? Have a voice in the prioritization process! Please review the priorities list (list to the left) and rank the top three that you think will be most important to the City knowing there are limited resources available.



Please drag 3 of the items above the line in your preferred order.

Suggest another

What to do Next Task

3 PROJECT TYPES

4 SHOW US

5 WRAP UP





CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Boiling Spring Lakes Comprehensive Pedestrian Plan

Progress

Local Preference

WELCOME! 2 PRIORITY RANKING 3 PROJECT TYPES 4 SHOW US 5 WRAP UP

What to do Next Task

Pedestrian Facilities

Pedestrian Crossings

Placemaking

Pedestrian Programs

Which of the following would you feel most comfortable using?

Sidewalks

Trails and Greenways

Multi-Use Path

Other Facility Improvement

Previous Optional Comment Next Choice

Boiling Spring Lakes Comprehensive Pedestrian Plan

Progress

Map Pedestrian Activity

WELCOME! 2 PRIORITY RANKING 3 PROJECT TYPES 4 SHOW US 5 WRAP UP

What to do Next Task

Please drag and drop at least 3 markers on the map.

Legend

My Home

Where I Walk

Safety Concerns

My Project Idea

Anything Else?

Boiling Spring Lakes

Orton Pond

Map data ©2020 Terms of Use Report a map error



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Boiling Spring Lakes Comprehensive Pedestrian Plan

Progress

1 WELCOME!

2 PRIORITY RANKING

3 PROJECT TYPES

4 SHOW US

5 WRAP UP

Final Questions (Optional)

What to do

Final Questions (Optional)

How often do you walk in the City?

What is your primary reason for walking?

What makes it difficult to walk in the City?

Gender

Age

What else should we know?

[Submit Final Questions](#)Skip

Thank You

Thank you so much for filling out the survey!

If you have any questions, please contact **Mary Green**, Parks & Recreation Director, by phone **(910-363-0018)** or email mgreen@cityofbsl.com.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

APPENDIX C: ROADWAY INVENTORY

Table: Boiling Spring Lakes Pedestrian Facilities Inventory by Street

Street	Ownership	Length (miles)	Speed Limit (mph)*	Traffic (2017 AADT)	Right-of-Way (feet)**	Pavement Width (without gutter pan) (feet)**	Curb/Gutter	Existing Pedestrian Facilities	Constraints
Acacia Rd	City	0.10	n/a	n/a	30	15	No	None	Utility poles and fences
Adams Rd	City	0.13	n/a	n/a	60	n/a	No	None	Unpaved and partial gravel path
Adobe Rd	City	1.07	n/a	n/a	34	n/a	No	None	No road and unpaved
Albemarle Rd	City	0.27	n/a	n/a	65	n/a	No	None	Unpaved
Alcor Ln	City	0.09	n/a	n/a	60	n/a	No	None	Unpaved and cul-de-sac
Alton Lennon Rd	City	0.79	35	n/a	60	24	No	None	Collapsed dam, vegetation, and water
Antenna Farm Rd SE	City	0.04	n/a	n/a	60	n/a	No	None	Unpaved
Apache Rd	City	0.51	n/a	n/a	60	n/a	No	None	Unpaved
Argonne Rd	City	1.05	n/a	n/a	60	n/a	No	None	Unpaved
Ariel Ln	City	0.09	n/a	n/a	60	18	No	None	Cul-de-sac
Ash Rd	City	0.57	25	n/a	60	15	No	None	Sloped shoulders
Ashville Ln	City	0.05	n/a	n/a	60	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Audubon Rd	City	0.61	n/a	n/a	60	n/a	No	None	Unpaved
Azalea Rd	City	0.43	n/a	n/a	60	n/a	No	None	Unpaved
Barber Rd	City	0.39	n/a	n/a	60	18	No	None	Cul-de-sacs and utility poles
Barclay Rd	City	0.36	n/a	n/a	60	15	No	None	Ditches and utility poles
Bass Rd	City	0.04	n/a	n/a	60	n/a	No	None	Unpaved
Batton Rd	City	0.17	n/a	n/a	60	19	No	None	Cul-de-sac
Bavarian Way	City	0.29	n/a	n/a	60	n/a	No	None	Unpaved
Bay Rd	City	0.34	n/a	n/a	60	n/a	No	None	Fencing and utility poles
Baymeade Rd	City	0.28	n/a	n/a	60	18	No	None	Ditches
Bayside Ln	City	0.11	n/a	n/a	30	13	No	None	Dead-end
Beaufort Rd	City	0.58	n/a	n/a	60	n/a	No	None	Unpaved
Beech Rd	City	1.13	n/a	n/a	60	n/a	No	None	Unpaved
Bermuda Rd	City	1.09	n/a	n/a	60	n/a	No	None	Unpaved
Berryhill Rd	City	0.15	n/a	n/a	60	16	No	None	Vegetation
Bett Ln	Private	0.20	n/a	n/a	30	n/a	No	None	Vegetation
Birdie Ln	City	0.07	n/a	n/a	60	19	No	None	Cul-de-sacs
Black Hawk Rd	City	0.34	n/a	n/a	60	n/a	No	None	Unpaved
Bladen St	City	0.72	n/a	n/a	60	n/a	No	None	Unpaved
Blueberry Rd	City	0.15	n/a	n/a	60	n/a	No	None	Unpaved and utility poles



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Bluebird Rd	City	0.34	n/a	n/a	60	n/a	No	None	Unpaved and ditches
Bluejay Rd	City	0.61	n/a	n/a	60	n/a	No	None	Unpaved
Bobolink Rd	City	0.61	n/a	n/a	60	n/a	No	None	Unpaved
Bohemia Rd	City	0.48	n/a	n/a	60	n/a	No	None	Unpaved
Bordeaux Ln	City	0.14	n/a	n/a	60	n/a	No	None	Unpaved
Boros Rd	City	0.30	n/a	n/a	60	20	No	None	Utility poles
Bream Rd	City	0.04	n/a	n/a	60	16	No	None	Partially paved and dead-end
Briarwood St	City	0.36	n/a	n/a	60	n/a	No	None	Unpaved
Bridges Rd	City	0.24	n/a	n/a	60	14	No	None	Unpaved and ditches
Brittany Rd	City	0.61	n/a	n/a	60	n/a	No	None	Unpaved
Brunswick St	City	0.61	n/a	n/a	60	n/a	No	None	Unpaved
Buchanan Rd	City	0.13	n/a	n/a	60	n/a	No	None	Unpaved
Buckbee Rd	City	0.03	n/a	n/a	30	16	No	None	Cul-de-sac
Burgaw Rd	City	0.05	n/a	n/a	60	15	No	None	Utility poles
Burlington Rd	City	0.19	n/a	n/a	60	n/a	No	None	Unpaved
Burton Rd	City	0.27	n/a	n/a	60	n/a	No	None	Ditches and utility poles
Cactus Rd	City	0.71	n/a	n/a	60	n/a	No	None	Unpaved and dead-end
Cambridge Rd	City	0.32	n/a	n/a	60	n/a	No	None	Potentially flooding and utility poles
Camden St	City	0.41	n/a	n/a	60	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Camelia Rd	City	0.43	n/a	n/a	60	n/a	No	None	Unpaved
Canal Dr	City	0.20	n/a	n/a	60	17	No	None	Cul-de-sac
Cape Fear Rd	City	0.07	n/a	n/a	60	n/a	No	None	Unpaved
Cardinal Rd	City	0.27	n/a	n/a	60	n/a	No	None	Unpaved
Carolina Rd	City	0.48	n/a	n/a	60	n/a	No	None	Unpaved
Carp Rd	City	0.05	n/a	n/a	60	n/a	No	None	Unpaved
Casper Rd	City	0.20	n/a	n/a	60	20	No	None	Cul-de-sacs
Castor Ln	City	0.09	n/a	n/a	60	n/a	No	None	Unpaved and dead-end
Catawba Rd	City	0.48	n/a	n/a	60	n/a	No	None	Majority is unpaved
Cedar Rd	City	0.59	n/a	n/a	60	15	No	None	Ditches and vegetation
Chapel Hill Rd	City	0.27	n/a	n/a	60	20	No	None	Unpaved and sloped shoulders
Charlestown Rd	City	1.20	n/a	n/a	60	17	No	None	Unpaved
Charlotte Rd	City	0.57	n/a	n/a	60	n/a	No	None	Unpaved
Cherokee Dr	City	0.46	n/a	n/a	60	17	No	None	Vegetation and ditches
Cherry Rd	City	1.37	n/a	n/a	60	n/a	No	None	Unpaved
Clinton Rd	City	0.14	n/a	n/a	60	17	No	None	Vegetation
Colonial Rd	City	0.18	n/a	n/a	60	17	No	None	Vegetation
Columbus St	City	0.66	n/a	n/a	60	n/a	No	None	Unpaved
Corral Rd	City	0.26	n/a	n/a	60	n/a	No	None	Unpaved
Cottage Ln	City	0.16	n/a	n/a	40	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Cougar Rd	State	0.52	35	3,100	100	26	No	None	Drainage ditches
Cowrie Dr	City	0.24	n/a	n/a	60	n/a	No	None	Unpaved
Crabapple Rd	City	0.44	n/a	n/a	60	20	No	None	Vegetation and fences
Craven St	City	0.72	n/a	n/a	60	n/a	No	None	Unpaved
Crescent Rd	City	0.43	n/a	n/a	60	n/a	No	None	Unpaved
Crestview Dr	City	0.20	n/a	n/a	60	19	No	None	Vegetation
Crystal Rd	City	1.64	n/a	n/a	60	n/a	No	None	Unpaved
Cumberland St	City	0.18	n/a	n/a	60	n/a	No	None	Unpaved
Dam Rd	City	0.25	n/a	n/a	n/a	n/a	No	None	Unpaved
Darnell Rd	City	0.27	n/a	n/a	60	n/a	No	None	Unpaved
Dartmouth Rd	City	0.07	n/a	n/a	60	18	No	None	Sloped shoulders
Deeprun Rd	City	0.10	n/a	n/a	60	n/a	No	None	Unpaved
Dix Ln	City	0.09	n/a	n/a	60	20	No	None	Sloped shoulders
Dixon Rd	City	0.24	n/a	n/a	60	n/a	No	None	Unpaved
Dogwood Dr	City	0.04	n/a	n/a	60	n/a	No	None	Unpaved and dead-end
Dorado Ln	City	0.10	n/a	n/a	60	n/a	No	None	Unpaved and dead-end
Dove Rd	City	0.20	n/a	n/a	60	n/a	No	None	Unpaved
Dover Cir	City	0.05	n/a	n/a	60	n/a	No	None	Unpaved
Downing Rd	City	0.32	n/a	n/a	60	n/a	No	None	Sloped shoulders
Drake Rd	City	0.55	n/a	n/a	60	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Drayton Rd	City	1.06	n/a	n/a	60	n/a	No	None	Unpaved
Druid Rd	City	0.18	n/a	n/a	60	n/a	No	None	Unpaved
Duke Rd	City	0.07	n/a	n/a	60	20	No	None	Vegetation and sloped shoulder
Dunn Rd	City	0.07	n/a	n/a	60	n/a	No	None	Unpaved
Duplin St	City	0.20	n/a	n/a	60	n/a	No	None	Unpaved
Durham Rd	City	0.07	n/a	n/a	60	17	No	None	Sloped shoulders
Fayetteville Rd	City	0.16	n/a	n/a	60	n/a	No	None	Unpaved
E Lake Keziah Dr	City	0.23	n/a	n/a	60	16	No	None	Utility poles
E Ranch Rd	City	0.18	n/a	n/a	60	n/a	No	None	Unpaved
E Boiling Spring Rd	State	4.47	35-45	3,100-6,300	60	25	No	None	Utility poles, signage, and drainage ditches
Eagle Ln	City	0.09	n/a	n/a	60	17	No	None	Unpaved and cul-de-sac
East Pl	City	0.08	n/a	n/a	60	n/a	No	None	Unpaved and cul-de-sac
Eastwood Rd	City	0.10	n/a	n/a	60	17	No	None	Paved
Eden Rd	City	0.93	35	n/a	60	22	No	None	Utility poles
Edgewood Rd	City	0.60	n/a	n/a	60	17	No	None	Unpaved and ditches
Elkhorn Rd	City	0.07	n/a	n/a	60	n/a	No	None	Unpaved
Elm Rd	City	0.61	n/a	n/a	60	15	No	None	Vegetation and ditches
Fairway Dr	City	0.56	35	n/a	30	18	No	None	Cul-de-sac



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Fieldcrest Rd	City	0.41	n/a	n/a	60	n/a	No	None	Unpaved
Fifty Lakes Dr	City	2.41	35	n/a	100	22	No	None	Drainage ditches
Filmore Rd	City	0.47	n/a	n/a	60	n/a	No	None	Partially unpaved
Firebird Cir	City	0.02	n/a	n/a	60	n/a	No	None	Unpaved and dead-end
Floral Ln	City	0.07	n/a	n/a	30	n/a	No	None	Dead-end
Forest Lake Rd	City	0.12	n/a	n/a	60	18	No	None	Sloped shoulders
Forest Ln	City	0.09	n/a	n/a	30-40	n/a	No	None	Cul-de-sacs
Fox Squirrel Dr	City	0.58	n/a	n/a	60	n/a	No	None	Paved; road condition is poor
Foxcroft Rd	City	0.18	n/a	n/a	60	n/a	No	None	Unpaved
Frink Lake Dr	City	0.35	n/a	n/a	60	n/a	No	None	Vegetation and sloped shoulders
Garage Rd	City	0.21	n/a	n/a	60	n/a	No	None	Partially paved and ditches
Gastonia Rd	City	0.32	n/a	n/a	60	n/a	No	None	Vegetation and utility poles
George II Highway (Hwy 87)	State	3.72	35-55	8,900-11,000	150	20	No	None	Bridge without pedestrian accommodations, vegetation, and water
George II Hwy SE	City	0.01	35-55	n/a	150	20	No	None	Drainage ditches
Gibraltar Rd	City	0.62	n/a	n/a	60	n/a	No	None	Unpaved
Glen Oak Dr	City	0.20	n/a	n/a	60	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Glenwood Dr	City	0.22	n/a	n/a	60	n/a	No	None	Utility poles, sloped shoulders, and vegetation
Goldsboro Rd	City	0.63	n/a	n/a	60	n/a	No	None	Sloped shoulders and drainage ditches
Golf View Dr	City	0.30	n/a	n/a	60	n/a	No	None	Sloped shoulders and pavement in poor condition
Grace Rd	City	0.68	n/a	n/a	60	n/a	No	None	Vegetation and utility poles
Graham Cir	City	0.07	n/a	n/a	60	n/a	No	None	Cul-de-sac
Grant Cir	City	0.39	n/a	n/a	n/a	n/a	No	None	n/a
Grape Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Green Lawn Rd	City	0.74	n/a	n/a	n/a	n/a	No	None	Unpaved
Green March Ln	City	0.03	n/a	n/a	n/a	n/a	No	None	Unpaved
Greenbay Rd	City	0.12	n/a	n/a	n/a	n/a	No	None	n/a
Greendale Rd	City	0.15	n/a	n/a	n/a	n/a	No	None	n/a
Greenmoss Rd	City	0.39	n/a	n/a	n/a	n/a	No	None	Unpaved
Greensboro Rd	City	0.58	n/a	n/a	n/a	n/a	No	None	Unpaved
Greenview Rd	City	0.11	n/a	n/a	n/a	n/a	No	None	Unpaved
Greenville Rd	City	0.41	n/a	n/a	n/a	n/a	No	None	n/a
Greenwood Rd	City	0.12	n/a	n/a	n/a	n/a	No	None	n/a
Gum Rd	City	0.14	n/a	n/a	n/a	n/a	No	None	n/a



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Hamlet Rd	City	0.07	n/a	n/a	n/a	n/a	No	None	n/a
Harper Lake Dr	City	0.64	n/a	n/a	n/a	n/a	No	None	n/a
Hartsville Rd	City	0.11	n/a	n/a	n/a	n/a	No	None	Unpaved
Hawthorne Rd	City	0.37	n/a	n/a	n/a	n/a	No	None	Unpaved
Heron Rd	City	0.09	n/a	n/a	n/a	n/a	No	None	Unpaved
Hickory Rd	City	0.12	n/a	n/a	n/a	n/a	No	None	Unpaved
Holiday Rd	City	0.60	n/a	n/a	n/a	n/a	No	None	Unpaved
Holly Dr	City	0.36	n/a	n/a	n/a	n/a	No	None	n/a
Holly Point Rd	City	0.34	n/a	n/a	n/a	n/a	No	None	n/a
Honeysuckle Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Hunters Rd	City	0.17	n/a	n/a	n/a	n/a	No	None	Unpaved
Huntley Rd	City	0.65	n/a	n/a	n/a	n/a	No	None	n/a
Jack Rd	City	0.06	n/a	n/a	n/a	n/a	No	None	Unpaved
Jackson Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Jacksonville Rd	City	0.38	n/a	n/a	n/a	n/a	No	None	Unpaved
Jamesville Ln	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Jasmine Dr	City	0.47	n/a	n/a	n/a	n/a	No	None	Unpaved
Jefferson Rd	City	0.09	n/a	n/a	n/a	n/a	No	None	Unpaved
Juniper Rd	City	1.09	n/a	n/a	n/a	16	No	None	n/a
Kannapolis Rd	City	0.31	n/a	n/a	n/a	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Kennedy Cir	City	0.20	n/a	n/a	n/a	n/a	No	None	n/a
Knox Rd	City	0.25	n/a	n/a	n/a	n/a	No	None	Unpaved
Lake Mount Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Lake View Dr West	City	0.18	n/a	n/a	n/a	n/a	No	None	Unpaved
Lakeview Dr East	City	0.10	n/a	n/a	n/a	n/a	No	None	Unpaved
Lakewood Rd	City	0.15	n/a	n/a	n/a	n/a	No	None	n/a
Laurel St	City	0.41	n/a	n/a	n/a	n/a	No	None	Unpaved
Laurinburg Rd	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
Leeds Rd	City	0.17	n/a	n/a	n/a	n/a	No	None	n/a
Lenoir St	City	0.45	n/a	n/a	n/a	n/a	No	None	Unpaved
Lexington Rd	City	0.62	n/a	n/a	n/a	n/a	No	None	Unpaved
Liberty Rd	City	0.63	n/a	n/a	n/a	n/a	No	None	Unpaved
Libra Ln	City	0.07	n/a	n/a	n/a	n/a	No	None	Unpaved
Lilac St	City	0.41	n/a	n/a	n/a	n/a	No	None	Unpaved
Lilliput Valley Ln	City	0.07	n/a	n/a	n/a	n/a	No	None	Unpaved
Lisa Rd	City	0.06	n/a	n/a	n/a	n/a	No	None	Unpaved
Littler Ct	City	0.07	n/a	n/a	n/a	n/a	No	None	n/a
Long Leaf Rd	City	0.60	n/a	n/a	n/a	n/a	No	None	n/a
Longwood Rd	City	0.09	n/a	n/a	n/a	n/a	No	None	n/a
Lumbree Rd	City	0.52	n/a	n/a	n/a	n/a	No	None	n/a



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Lumberton Rd	City	0.44	n/a	n/a	n/a	n/a	No	None	n/a
Madison Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Magnolia Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Mallard Rd	City	0.55	n/a	n/a	n/a	n/a	No	None	Unpaved
Manchester St	City	0.45	n/a	n/a	n/a	n/a	No	None	Unpaved
Maple Rd	City	0.40	n/a	n/a	n/a	n/a	No	None	Unpaved
Masters Dr	City	0.54	n/a	n/a	n/a	n/a	No	None	n/a
Meadowood Rd	City	0.32	n/a	n/a	n/a	n/a	No	None	Unpaved
Merok Ln	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Merrimac Dr	City	0.09	n/a	n/a	n/a	n/a	No	None	Unpaved
Midwood St	City	0.41	n/a	n/a	n/a	n/a	No	None	Unpaved
Miller Rd	City	0.20	n/a	n/a	n/a	n/a	No	None	n/a
Miller Rd Ext	City	0.04	n/a	n/a	n/a	n/a	No	None	Unpaved
Mirror Lake Dr	City	0.47	n/a	n/a	n/a	n/a	No	None	n/a
Mission Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Mohawk Rd	City	0.28	n/a	n/a	n/a	n/a	No	None	n/a
Monroe Rd	City	0.13	n/a	n/a	n/a	n/a	No	None	Unpaved
Monterey Rd	City	0.57	n/a	n/a	n/a	n/a	No	None	Unpaved
Morehead Rd	City	0.41	n/a	n/a	n/a	n/a	No	None	n/a
Morningside Dr	City	0.34	n/a	n/a	n/a	n/a	No	None	n/a



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Mt Airy Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	n/a
Myrtle Ln	City	0.14	n/a	n/a	n/a	n/a	No	None	Unpaved
N Lake Keziah Dr	City	0.19	n/a	n/a	n/a	n/a	No	None	Unpaved
Nassau Rd	City	0.58	n/a	n/a	n/a	n/a	No	None	n/a
Navajo Rd	City	0.22	n/a	n/a	n/a	n/a	No	None	n/a
New Bern Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
New Hanover St	City	0.63	n/a	n/a	n/a	n/a	No	None	Unpaved
Nicklaus Rd	City	0.61	n/a	n/a	n/a	n/a	No	None	n/a
Normandy Rd	City	0.62	n/a	n/a	n/a	n/a	No	None	Unpaved
North Hills Dr	City	0.09	n/a	n/a	n/a	n/a	No	None	Unpaved
North Lake Dr	City	0.29	n/a	n/a	n/a	n/a	No	None	n/a
North Shore Dr	City	2.67	n/a	n/a	n/a	14	No	None	n/a
Oak Rd	City	0.21	n/a	n/a	n/a	n/a	No	None	n/a
Oakcrest Rd	City	0.17	n/a	n/a	n/a	n/a	No	None	Unpaved
Oakdale Dr	City	0.34	n/a	n/a	n/a	n/a	No	None	Unpaved
Oakhurst Rd	City	0.10	n/a	n/a	n/a	n/a	No	None	n/a
Oakley Rd	City	0.09	n/a	n/a	n/a	n/a	No	None	Unpaved
Onslow St	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
Orion Rd	City	0.33	n/a	n/a	n/a	n/a	No	None	Unpaved
Overlook Cir	City	0.05	n/a	n/a	n/a	n/a	No	None	Unpaved
Palmer Dr	City	0.65	n/a	n/a	n/a	n/a	No	None	n/a



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Palmetto Rd	City	0.18	n/a	n/a	n/a	n/a	No	None	n/a
Parkway Dr	City	0.32	n/a	n/a	n/a	n/a	No	None	Unpaved
Partridge Rd	City	1.16	n/a	n/a	n/a	n/a	No	None	Unpaved
Pathfinder Ln	City	0.05	n/a	n/a	n/a	n/a	No	None	Unpaved
Pee Dee Rd	City	0.48	n/a	n/a	n/a	n/a	No	None	Unpaved
Pender St	City	0.64	n/a	n/a	n/a	n/a	No	None	Unpaved
Pepperhill Rd	City	0.57	n/a	n/a	n/a	n/a	No	None	n/a
Perch Rd	City	0.06	n/a	n/a	n/a	n/a	No	None	n/a
Perryclear Pt	City	0.04	n/a	n/a	n/a	n/a	No	None	Unpaved
Persimmon Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Pheasant Rd	City	0.19	n/a	n/a	n/a	n/a	No	None	Unpaved
Pierce Rd	City	0.28	n/a	n/a	n/a	n/a	No	None	n/a
Pike Rd	City	0.06	n/a	n/a	n/a	n/a	No	None	n/a
Pine Haven Rd	City	0.34	n/a	n/a	n/a	n/a	No	None	Unpaved
Pine Lake Rd	City	1.19	30	n/a	60	18	No	None	Narrow travel lanes, vegetation, and water
Pine Needles Rd	City	0.32	n/a	n/a	n/a	n/a	No	None	n/a
Pine Rd	City	1.39	n/a	n/a	n/a	n/a	No	None	Unpaved
Pine Shores Dr	City	0.11	n/a	n/a	n/a	n/a	No	None	n/a
Pinecrest Rd	City	0.28	n/a	n/a	n/a	n/a	No	None	n/a
Pinedale Rd	City	0.11	n/a	n/a	n/a	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Pinehurst Rd	City	0.34	n/a	n/a	n/a	n/a	No	None	Unpaved
Plymouth Rd	City	0.32	n/a	n/a	n/a	n/a	No	None	n/a
Polaris Dr	City	0.40	n/a	n/a	n/a	n/a	No	None	Unpaved
Polk Rd	City	0.07	n/a	n/a	n/a	n/a	No	None	n/a
Poplar Rd	City	0.18	n/a	n/a	n/a	n/a	No	None	n/a
President Rd	City	0.31	n/a	n/a	n/a	n/a	No	None	Unpaved
Prospect Rd	City	0.44	n/a	n/a	n/a	n/a	No	None	Unpaved
Quail Rd	City	0.95	n/a	n/a	n/a	n/a	No	None	Unpaved
Queens Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Raeford Rd	City	0.50	n/a	n/a	n/a	n/a	No	None	n/a
Raleigh Rd	City	0.09	n/a	n/a	n/a	n/a	No	None	Unpaved
Redwood Dr	City	1.72	n/a	n/a	n/a	20	No	None	n/a
Reeves Rd	City	0.26	n/a	n/a	n/a	n/a	No	None	Unpaved
Reidsville Rd	City	0.59	n/a	n/a	n/a	n/a	No	None	n/a
Revere Rd	City	0.30	n/a	n/a	n/a	n/a	No	None	n/a
Ridgewood Rd	City	0.22	n/a	n/a	n/a	n/a	No	None	Unpaved
River Rd	City	0.09	55	6,200	100	22	No	None	Railroad crossing
Robeson St	City	0.16	n/a	n/a	n/a	n/a	No	None	Unpaved
Robin Rd	City	1.18	n/a	n/a	n/a	n/a	No	None	Unpaved
Rockingham Rd	City	0.31	n/a	n/a	n/a	n/a	No	None	Unpaved
Russell Rd	City	0.23	n/a	n/a	n/a	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

S High Point Rd	City	0.25	n/a	n/a	n/a	n/a	No	None	unpaved
Salisbury Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	n/a
Sampson St	City	0.19	n/a	n/a	n/a	n/a	No	None	Unpaved
Sand Dollar Dr	City	0.58	n/a	n/a	n/a	n/a	No	None	Unpaved
Sanders Rd	City	0.18	n/a	n/a	n/a	n/a	No	None	n/a
Sandhill Rd	City	0.05	n/a	n/a	n/a	n/a	No	None	Unpaved
Sanford Rd	City	0.13	n/a	n/a	n/a	n/a	No	None	Unpaved
Seagull Rd	City	0.55	n/a	n/a	n/a	n/a	No	None	Unpaved
Seminole Ln	City	0.05	n/a	n/a	n/a	n/a	No	None	Unpaved
Shady Brook Dr	City	0.37	n/a	n/a	n/a	n/a	No	None	Unpaved
Shands Rd	City	0.24	n/a	n/a	n/a	n/a	No	None	n/a
Shelby Rd	City	0.26	n/a	n/a	n/a	n/a	No	None	n/a
Siesta Rd	City	0.57	n/a	n/a	n/a	n/a	No	None	Unpaved
Sigman Rd	City	0.24	n/a	n/a	n/a	n/a	No	None	n/a
Sioux Rd	City	0.12	n/a	n/a	n/a	n/a	No	None	n/a
Skyward Cir	City	0.03	n/a	n/a	n/a	n/a	No	None	Unpaved
Souchak Rd	City	0.11	n/a	n/a	n/a	n/a	No	None	n/a
S Shore Dr	City	2.79	30	n/a	65	20	No	None	Drainage ditches
Southport Ln	City	0.17	n/a	n/a	n/a	n/a	No	None	Unpaved
Sparrow Rd	City	0.26	n/a	n/a	n/a	n/a	No	None	Unpaved
Spring Lake Dr	City	0.46	n/a	n/a	n/a	n/a	No	None	n/a



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Springdale Rd	City	0.51	n/a	n/a	n/a	n/a	No	None	n/a
Spruce Rd	City	0.19	n/a	n/a	n/a	n/a	No	None	n/a
Stag Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Statesville Rd	City	0.31	n/a	n/a	n/a	n/a	No	None	n/a
Summit Rd	City	0.10	n/a	n/a	n/a	n/a	No	None	n/a
Sunset Dr	City	1.06	n/a	n/a	n/a	n/a	No	None	Unpaved
Sweetbrier Rd	City	0.14	n/a	n/a	n/a	n/a	No	None	n/a
Sycamore Rd	City	0.57	n/a	n/a	n/a	n/a	No	None	n/a
Tarheel Rd	City	0.14	n/a	n/a	n/a	n/a	No	None	n/a
Tate Lake Dr	City	0.34	n/a	n/a	n/a	n/a	No	None	n/a
Taurus Ln	City	0.23	n/a	n/a	n/a	n/a	No	None	Unpaved
Toney Dr	City	0.04	n/a	n/a	n/a	n/a	No	None	n/a
Trent Rd	City	1.97	n/a	n/a	n/a	n/a	No	None	Unpaved
Trevino Rd	City	0.45	n/a	n/a	n/a	n/a	No	None	n/a
Turner Rd	City	0.19	n/a	n/a	n/a	n/a	No	None	n/a
Tuscarora Dr	City	0.22	n/a	n/a	n/a	n/a	No	None	Unpaved
Twin Lakes Dr	City	0.55	n/a	n/a	n/a	n/a	No	None	n/a
Tyler Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Van Buren Rd	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Vesta Ln	City	0.08	n/a	n/a	n/a	n/a	No	None	Unpaved
Virginia Rd	City	0.54	n/a	n/a	n/a	n/a	No	None	Unpaved



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

W 10th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 11th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 12th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 13th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 14th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 15th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 16th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 17th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 1st Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 2nd Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 3rd Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 4th Ave	City	0.21	n/a	n/a	n/a	n/a	No	None	Unpaved
W 5th Ave	City	0.20	n/a	n/a	n/a	n/a	No	None	Unpaved
W 6th Ave	City	0.20	n/a	n/a	n/a	n/a	No	None	Unpaved
W 7th Ave	City	0.20	n/a	n/a	n/a	n/a	No	None	Unpaved
W 8th Ave	City	0.20	n/a	n/a	n/a	n/a	No	None	Unpaved
W 9th Ave	City	0.20	n/a	n/a	n/a	n/a	No	None	Unpaved
W Boiling Spring Rd	City	3.25	45	n/a	65	20	No	None	Drainage ditches
W Branch Dr/Orton Rd	City	0.38	n/a	n/a	n/a	n/a	No	None	Unpaved
W Lake Keziah Dr	City	0.26	n/a	n/a	n/a	n/a	No	None	n/a
W South Shore Dr	City	0.66	30	n/a	65	20	No	None	Drainage ditches



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

W Ranch Rd	City	1.37	n/a	n/a	n/a	n/a	No	None	Unpaved
W Ridge Rd	City	1.74	n/a	n/a	n/a	n/a	No	None	Unpaved
Waccamaw Rd	City	1.40	n/a	n/a	n/a	n/a	No	None	Unpaved
Walnut Rd	City	0.23	n/a	n/a	n/a	n/a	No	None	Unpaved
Warmouth Rd	City	0.10	n/a	n/a	n/a	n/a	No	None	n/a
Washington Rd	City	0.15	n/a	n/a	n/a	n/a	No	None	Unpaved
Watts Rd	City	0.09	n/a	n/a	n/a	n/a	No	None	n/a
W Haven Rd	City	0.43	n/a	n/a	n/a	n/a	No	None	Unpaved
Westview Point Rd	City	0.04	n/a	n/a	n/a	n/a	No	None	Unpaved
Westway Rd	City	0.33	n/a	n/a	n/a	n/a	No	None	n/a
Westwood Rd	City	0.45	n/a	n/a	n/a	n/a	No	None	n/a
Whelk Dr	City	0.40	n/a	n/a	n/a	n/a	No	None	Unpaved
Willets Dr	City	0.26	n/a	n/a	n/a	n/a	No	None	n/a
Wilmington Rd	City	0.22	n/a	n/a	n/a	n/a	No	None	Unpaved
Wimberley Rd	City	0.45	n/a	n/a	n/a	n/a	No	None	n/a
Windemere Dr	City	0.67	n/a	n/a	n/a	n/a	No	None	n/a
Windover Dr	City	0.25	n/a	n/a	n/a	n/a	No	None	Unpaved
Winston-Salem Rd	City	0.31	n/a	n/a	n/a	n/a	No	None	n/a
Woodcrest Rd	City	0.50	n/a	n/a	n/a	n/a	No	None	n/a



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Woodhaven Rd	City	0.35	n/a	n/a	n/a	n/a	No	None	Unpaved
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*Unless otherwise posted, contact the City Clerk's office to find speed limits and other traffic regulations for specific streets.

**ROW and pavement width approximations were measured from parcel to parcel across the width of the road using the measuring tool in ArcMap.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

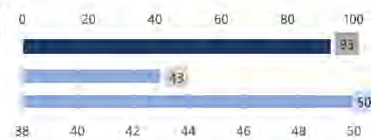
APPENDIX D: PRIORITIZATION

Corridor Description	Quantitative Score	Qualitative Score	Total Score	Rank
NC 87 from City Hall to Cougar Road	43	50	93	1
Fifty Lakes Drive	45	40	85	2
NC 87 to City Limits (South)	32	44	76	3
Alton Lennon Drive	34	40	74	4
Cougar Road	33	36	69	5
East Boiling Spring Road	36	25	61	6
NC 87 to City Limits (North)	33	26	59	7
Spring Lake Loop	36	22	58	8
City Loop	33	23	56	9
South Shore Drive	33	21	54	10
Tate Lake Park Loop	36	18	54	11
West Boiling Spring Road to East Coast Greenway and Oak Island	31	10	41	12
Rail to Trails	29	10	39	13
East Boiling Spring Road to Brunswick Nature Park	28	10	38	14



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	NC 87 from City Hall to Cougar Road	
Total Score:	93	out of 100
Quantitative Score:	43	out of 50
Qualitative Score:	50	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	2	75.19
Crash Severity	A, C	60.00
Safety Risk	See Safety Risk tab	82.86
Safety Benefit	7	100.00
Safety Score		78.65

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scaling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	12	70.59
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		170.59

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	260	12.98
Jobs per square mile	112	15.84
Demand/Density Score		14.41

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$12,442,000
Cost Effectiveness	2.119E-05	0
Cost Effectiveness Score		0.00

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	76	100.0

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

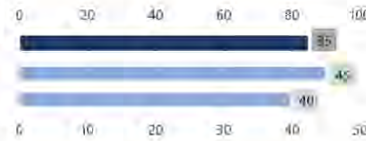
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	1	20
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	5	100

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	Fifty Lakes Drive	
Total Score:	85	out of 100
Quantitative Score:	45	out of 50
Qualitative Score:	40	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	2	75.19
Crash Severity	C	40.00
Safety Risk	See Safety Risk tab	91.43
Safety Benefit	7	100.00
Safety Score		76.36

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scaling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	15	88.24
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		188.24

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	241	11.83
Jobs per square mile	124	17.37
Demand/Density Score		14.60

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$5,962,000
Cost Effectiveness	4.68294E-05	2.29
Cost Effectiveness Score		2.29

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	50	58.7

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

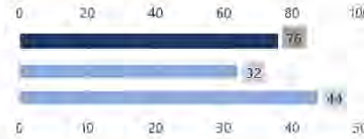
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	1	20
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	5	100

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	NC 87 to City Limits (South)	
Total Score:	76	out of 100
Quantitative Score:	32	out of 50
Qualitative Score:	44	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	1	63.55
Crash Severity	C	40.00
Safety Risk	See Safety Risk tab	77.14
Safety Benefit	7	100.00
Safety Score		68.85

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	2	11.76
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		111.76

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	176	8.78
Jobs per square mile	47	8.21
Demand/Density Score		8.50

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$1,498,000
Cost Effectiveness	0.000126241	21.76
Cost Effectiveness Score		21.76

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	73	95.2

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

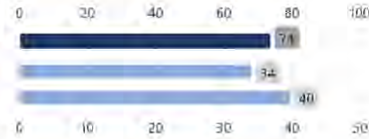
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	4	80

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	Alton Lennon Drive	
Total Score:	74	out of 100
Quantitative Score:	34	out of 50
Qualitative Score:	40	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	91.43
Safety Benefit	7	100.00
Safety Score		38.29

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Measure:	Raw Data	Normalized Score
Accessibility/Connectivity		
Points of Interest (1.5 mile)	11	64.71
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		164.71

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Measure:	Raw Data	Normalized Score
Demand/Density		
Households per square mile	297	15.08
Jobs per square mile	53	9.35
Demand/Density Score		12.22

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Measure:	Raw Data	Normalized Score
Cost Effectiveness		
Corridor Cost		\$7,580,000
Cost Effectiveness	2.83914E-05	0
Cost Effectiveness Score		0.00

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	50	58.7

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

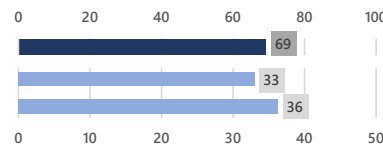
Measure:	Raw Data	Normalized Score
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	1	20
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	5	100

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	Cougar Road	
Total Score:	69	out of 100
Quantitative Score:	33	out of 50
Qualitative Score:	36	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	77.14
Safety Benefit	7	100.00
<i>Safety Score</i>		35.43

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scaling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	10	58.82
Connections	1	100
Bike Routes	0	0
<i>Accessibility/Connectivity Score</i>		158.82

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	238	11.83
Jobs per square mile	111	15.84
<i>Demand/Density Score</i>		13.84

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$3,731,000
Cost Effectiveness	5.57725E-05	5.15
<i>Cost Effectiveness Score</i>		5.15

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	54	65.1

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

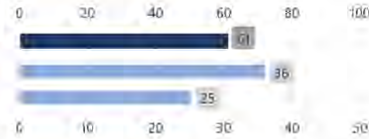
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
<i>Context Sensitivity:</i>	4	80

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	East Boiling Spring Road	
Total Score:	61	out of 100
Quantitative Score:	36	out of 50
Qualitative Score:	25	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	82.86
Safety Benefit	7	100.00
Safety Score		36.57

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	14	82.35
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		182.35

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	287	14.89
Jobs per square mile	101	14.69
Demand/Density Score		14.79

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$9,527,000
Cost Effectiveness	2.45318E-05	0
Cost Effectiveness Score		0.00

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	26	20.6

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

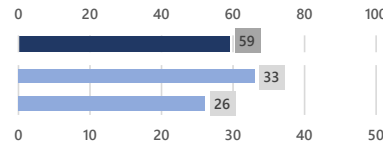
Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	1	20
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	4	80

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	NC 87 to City Limits (North)	
Total Score:	59	out of 100
Quantitative Score:	33	out of 50
Qualitative Score:	26	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	1	63.55
Crash Severity	C	40.00
Safety Risk	See Safety Risk tab	91.43
Safety Benefit	6	85.71
<i>Safety Score</i>		68.85

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scaling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (0.5 mile)	1	5.88
Connections	1	100
Bike Routes	0	0
<i>Accessibility/Connectivity Score</i>		105.88

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	363	18.13
Jobs per square mile	68	10.31
<i>Demand/Density Score</i>		14.22

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$918,000
Cost Effectiveness	0.000205829	33.97
<i>Cost Effectiveness Score</i>		33.97

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	41	44.4

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

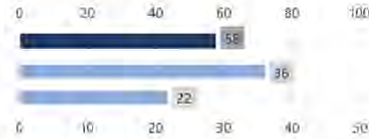
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	1	20
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	0	0
<i>Context Sensitivity:</i>	3	60

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
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 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	Spring Lake Loop	
Total Score:	58	out of 100
Quantitative Score:	36	out of 50
Qualitative Score:	22	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	85.71
Safety Benefit	7	100.00
Safety Score		37.14

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	14	82.35
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		182.35

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	272	13.36
Jobs per square mile	95	14.31
Demand/Density Score		13.84

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$9,587,000
Cost Effectiveness	2.43382E-05	0
Cost Effectiveness Score		0.00

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	30	27.0

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

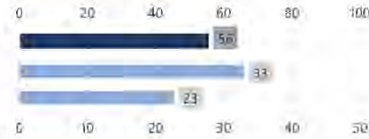
Improves access during and after hazard or flood events	1	20
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	3	60

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	City Loop	
Total Score:	56	out of 100
Quantitative Score:	33	out of 50
Qualitative Score:	23	out of 50



Quantitative Score		
Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	85.71
Safety Benefit	7	100.00
Safety Score		37.14

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity		
Points of Interest (1.5 mile)	10	58.82
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		158.82

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density		
Households per square mile	266	13.17
Jobs per square mile	136	18.7
Demand/Density Score		15.94

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness		
Corridor Cost		\$3,983,000
Cost Effectiveness	5.32015E-05	4.77
Cost Effectiveness Score		4.77

*Normalized using P5.0 scaling

Qualitative Score		
Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	45	50.8

*Normalized internally to BSL in comparison to other corridors

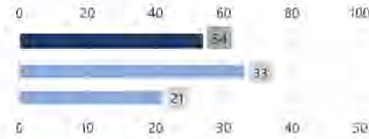
Context Sensitivity:		
Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	2	40

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	South Shore Drive	
Total Score:	54	out of 100
Quantitative Score:	33	out of 50
Qualitative Score:	21	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	91.43
Safety Benefit	4	57.14
Safety Score		29.71

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Measure:	Raw Data	Normalized Score
Accessibility/Connectivity		
Points of Interest (0.5 mile)	5	29.41
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		129.41

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Measure:	Raw Data	Normalized Score
Demand/Density		
Households per square mile	443	20.8
Jobs per square mile	409	43.32
Demand/Density Score		32.06

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Measure:	Raw Data	Normalized Score
Cost Effectiveness		
Corridor Cost		\$119,000
Cost Effectiveness	0.001606605	90.46
Cost Effectiveness Score		90.46

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	53	63.5

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

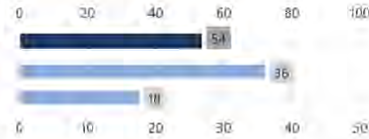
Measure:	Raw Data	Normalized Score
Context Sensitivity:		
Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	0	0
Context Sensitivity:	1	20

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	Tate Lake Park Loop	
Total Score:	54	out of 100
Quantitative Score:	36	out of 50
Qualitative Score:	18	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	1	63.55
Crash Severity	C	40.00
Safety Risk	See Safety Risk tab	91.43
Safety Benefit	1	14.29
Safety Score		54.56

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (0.5 mile)	4	23.53
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		123.53

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	529	23.47
Jobs per square mile	107	15.08
Demand/Density Score		19.28

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$3,000
Cost Effectiveness	0.06578909	98.28
Cost Effectiveness Score		98.28

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	32	30.2

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	2	40

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	West Boiling Spring Road to East Coast Greenway and Oak Island	
Total Score:	41	out of 100
Quantitative Score:	31	out of 50
Qualitative Score:	10	out of 50



Quantitative Score		
Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	77.14
Safety Benefit	7	100.00
Safety Score		35.43

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scaling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity		
Points of Interest (1.5 mile)	9	52.94
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		152.94

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density		
Households per square mile	164	8.02
Jobs per square mile	81	12.4
Demand/Density Score		10.21

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness		
Corridor Cost		\$8,329,000
Cost Effectiveness	2.3842E-05	0
Cost Effectiveness Score		0.00

*Normalized using P5.0 scaling

Qualitative Score		
Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	14	1.6

*Normalized internally to BSL in comparison to other corridors

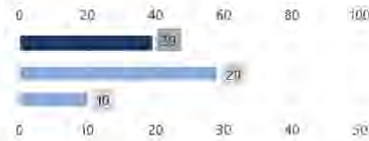
Context Sensitivity:		
Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	2	40

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	Rail to Trails	
Total Score:	39	out of 100
Quantitative Score:	29	out of 50
Qualitative Score:	10	out of 50



Quantitative Score		
Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	85.71
Safety Benefit	7	100.00
Safety Score		37.14

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scalling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity		
Points of Interest (1.5 mile)	6	35.29
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		135.29

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density		
Households per square mile	97	4.39
Jobs per square mile	75	11.45
Demand/Density Score		7.92

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness		
Corridor Cost		\$8,329,000
Cost Effectiveness	2.16541E-05	0
Cost Effectiveness Score		0.00

*Normalized using P5.0 scaling

Qualitative Score		
Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	13	0.0

*Normalized internally to BSL in comparison to other corridors

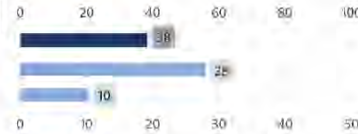
Context Sensitivity:		
Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	2	40

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Corridor Name:	East Boiling Spring Road to Brunswick Nature Park	
Total Score:	38	out of 100
Quantitative Score:	28	out of 50
Qualitative Score:	10	out of 50



Quantitative Score

Measure:	Raw Data	Normalized Score
Safety		
Crashes	0	0
Crash Severity	N/A	
Safety Risk	See Safety Risk tab	82.86
Safety Benefit	7	100.00
Safety Score		36.57

*Normalized using P5.0 scaling
 *Crash severity types converted to 0-100 equal interval scale
 *Measure substantially different from P5.0. Scaling developed for BSL Pedestrian Plan using P6.0 criteria
 *P6.0 raw values of 1-7 converted to 0-100 scale

Accessibility/Connectivity

Points of Interest (1.5 mile)	6	35.29
Connections	1	100
Bike Routes	0	0
Accessibility/Connectivity Score		735.29

*Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors
 *Normalized internally to BSL in comparison to other corridors

Demand/Density

Households per square mile	221	10.88
Jobs per square mile	25	4.39
Demand/Density Score		7.64

*Normalized using P5.0 scaling
 *Normalized using P5.0 scaling

Cost Effectiveness

Corridor Cost		\$4,401,000
Cost Effectiveness	4.07863E-05	1.53
Cost Effectiveness Score		7.53

*Normalized using P5.0 scaling

Qualitative Score

Measure:	Raw Data	Normalized Score
Steering Committee:		
Steering Committee:	14	1.6

*Normalized internally to BSL in comparison to other corridors

Context Sensitivity:

Improves access during and after hazard or flood events	0	0
Provides access to critical infrastructure during and after hazard or flood events	0	0
Considers green and/or blue infrastructure in its design as mitigative infrastructure	0	0
Provides active lifestyle and social benefits not previously available	1	20
May encourage economic growth	1	20
Context Sensitivity:	2	40

*Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0/1 converted to 0/20 point scale
 *Raw data score of 0-5 converted to 0-100 scale



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

APPENDIX E: FUNDING SOURCES

Table 28 below provides a list of funding sources, eligible projects, potential award amounts, and match requirements for active transportation infrastructure projects and programs in Boiling Spring Lakes.

Table 28: Funding Sources

Source	Eligible Activities	Characteristics and Requirements
Federal Funding Sources		
Better Utilizing Investments to Leverage Development (BUILD) Grants	<ul style="list-style-type: none"> Bicycle and pedestrian planning and construction projects are eligible 	<ul style="list-style-type: none"> Federal program by the USDOT Annual, competitive grant program that is merit-based.
Highway Safety Improvement Program (HSIP)	<ul style="list-style-type: none"> Safety projects that are consistent with the state's Strategic Highway Safety Plan (SHSP) Pedestrian hybrid beacons Roadway improvements that provide separation between pedestrians and motor vehicles, including medians and pedestrian crossing islands. Road diets 	<ul style="list-style-type: none"> Typically requires 10% match \$2.318 billion authorized in FY 2018
National Priority Safety Program (Section 405)	<ul style="list-style-type: none"> Training law enforcement on state laws applicable to pedestrian and bicycle safety Enforcement mobilizations and campaigns designed to enforce those state laws Public education and awareness programs designed to inform motorists, pedestrians and bicyclists of those state laws 	<ul style="list-style-type: none"> Only states where the annual combined pedestrian and bicyclist fatalities exceed 15 percent of the total annual crash fatalities are eligible Requires 20% state match \$14 million authorized in FY 2017
State and Community Highway Safety Grant Program (Section 402)	Education, enforcement, and research programs designed to reduce traffic crashes, deaths, injuries, and property damage	<ul style="list-style-type: none"> Administered by the Governor's Representative for Highway Safety \$250 million authorized in FY 2017
Surface Transportation Block Grant (STBG) Program	<ul style="list-style-type: none"> Recreational trail projects eligible under 23 U.S.C. 206 Pedestrian and bicycle projects in accordance with 23 U.S.C. 217 Modifications to comply with accessibility requirements under the ADA Safe Routes to School Program 	<ul style="list-style-type: none"> Project must be identified in STIP and consistent with the Long-Range Statewide Transportation Plan and the Metropolitan Transportation Plan(s) State may obligate up to 15 percent of the STBG amounts suballocated for that year for use in areas with a population of 5,000 or less on roads functionally classified as minor collectors. \$11.7 billion authorized in FY 2018
Transportation Alternatives (TA)	<ul style="list-style-type: none"> Bicycle and pedestrian facilities Recreational trails Safe Routes to School projects Technical assistance 	<ul style="list-style-type: none"> Typically requires 20% match Can be received directly by local governments Competitive funding process



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Source	Eligible Activities	Characteristics and Requirements
<i>Set-aside of the STBG Program</i>	<ul style="list-style-type: none"> Programmed through the Strategic Transportation Investments – Strategic Mobility Formula process 	<ul style="list-style-type: none"> \$850 million set aside in FY 2018
State Funding Sources		
Clean Water Management Trust Fund (CWMTF)	<ul style="list-style-type: none"> Projects that enhance or restore degraded waters, acquire land with ecological, cultural, and historic significance Greenway (shared use path) projects are eligible Innovative stormwater projects 	<ul style="list-style-type: none"> Requires matching funds Annual grant cycle
Downtown Associate Community Program	<ul style="list-style-type: none"> Technical assistance for downtown revitalization projects from the NC Main Street & Rural Planning Center 	<ul style="list-style-type: none"> Competitive application process every other year Municipalities with populations less than 50,000 and that are not already designated as an active Main Street or Small Town Main Street community
Land and Water Conservation Fund (LWCF)	<ul style="list-style-type: none"> Land acquisition and/or development projects for public outdoor recreation and/or to protect outstanding natural or scenic resources Can include new or renovated outdoor recreational facilities and support facilities 	<ul style="list-style-type: none"> Requires 50% match Projects must be on a single site Administered by the Division of Parks and Recreation
Parks and Recreation Trust Fund (PARTF)	Acquisition and/or development of park and recreational projects	<ul style="list-style-type: none"> Requires 50% match Administered by the Division of Parks and Recreation
Powell Bill	Municipalities may use Powell Bill funds to resurface, repair, or widen streets, or for the planning, construction and maintenance of bikeways, greenways, or sidewalks.	<ul style="list-style-type: none"> Annual allocation from the State to qualifying municipalities
Recreational Trails Program (RTP)	<ul style="list-style-type: none"> Trail construction Trail facilities and amenities Programs that promote safety and environmental protection as they relate to recreational trail projects 	<ul style="list-style-type: none"> Maximum grant award \$200,000 Requires 25% match Federal funds managed by the Division of Parks and Recreation
Safe Routes to School (SRTS)	<ul style="list-style-type: none"> Infrastructure projects within 2 miles of a K-8 school Project must be within the public right-of-way 	<ul style="list-style-type: none"> No match required Currently funding with leftover SRTS funds, once expended TA funds will be used and programmed through the Strategic Transportation Investments – Strategic Mobility Formula process
Local Funding Sources		



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Source	Eligible Activities	Characteristics and Requirements
Capital Reserve Fund	May be used to fund pedestrian infrastructure projects	<ul style="list-style-type: none"> The City Council would establish the fund through an ordinance May be financed through City budget allocations, grants, and donations
Community Crowdfunding	Unrestricted source of funds, would apply to pedestrian infrastructure projects and programs	<ul style="list-style-type: none"> Residents make monetary contributions through online platforms such as Indiegogo City would pay a nominal fee
Fees	The fee ordinance would establish which projects are eligible	<ul style="list-style-type: none"> Would require adoption by the City Council Fee types may include stormwater fees assessed per area of impervious surface or streetscape fees assessed per length of street frontage
General Obligation Bonds	May be used to fund pedestrian infrastructure projects	<ul style="list-style-type: none"> Would require adoption by the City Council Would require approval by City residents
Special Tax District	May be levied by the municipality to raise funds to provide services or fund projects such as pedestrian infrastructure projects	Would require adoption by the City Council
Tax Increment Financing	Pedestrian infrastructure improvements, land acquisition, utilities, and other improvements	Increased property values resulting from the constructed facility are used to pay the debt borrowed to build the facility



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Figure 24: Federal Funding Matrix

Pedestrian and Bicycle Funding Opportunities U.S. Department of Transportation Transit, Highway, and Safety Funds Revised May 24, 2018

This table indicates potential eligibility for pedestrian and bicycle projects under U.S. Department of Transportation surface transportation funding programs. Additional restrictions may apply. See notes and basic program requirements below, and see program guidance for detailed requirements. Project sponsors should fully integrate nonmotorized accommodation into surface transportation projects. Section 1404 of the Fixing America's Surface Transportation (FAST) Act modified 23 U.S.C. 109 to require federally-funded projects on the National Highway System to consider access for other modes of transportation, and provides greater design flexibility to do so.

Key: \$ = Funds may be used for this activity (restrictions may apply) \$* = See program-specific notes for restrictions. -\$ = Eligible, but not competitive unless part of a larger project.															
Pedestrian and Bicycle Funding Opportunities															
U.S. Department of Transportation Transit, Highway, and Safety Funds															
Activity or Project Type	BUILD	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTPP
Access enhancements to public transportation (includes benches, bus pads)	\$	\$	\$	\$	\$		\$	\$	\$						\$
ADA/504 Self Evaluation / Transition Plan								\$	\$	\$		\$			\$
Bicycle plans			\$					\$	\$		\$	\$			\$
Bicycle helmets (project or training related)								\$	\$SRTS		\$		\$*		
Bicycle helmets (safety promotion)								\$	\$SRTS		\$				
Bicycle lanes on road	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$				\$
Bicycle parking	-\$	-\$	\$	\$	\$		\$	\$	\$	\$	\$				\$
Bike racks on transit	\$	\$	\$	\$	\$			\$	\$						\$
Bicycle repair station (air pump, simple tools)	-\$	-\$	\$	\$	\$			\$	\$						\$
Bicycle share (capital and equipment; not operations)	\$	\$	\$	\$	\$		\$	\$	\$						\$
Bicycle storage or service centers (example: at transit hubs)	-\$	-\$	\$	\$	\$			\$	\$						\$
Bridges / overcrossings for pedestrians and/or bicyclists	\$	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$				\$
Bus shelters and benches	\$	\$	\$	\$	\$		\$	\$	\$						\$
Coordinator positions (State or local)					\$ 1 per State			\$	\$SRTS		\$				
Crosswalks (new or retrofit)	\$	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$				\$
Curb cuts and ramps	\$	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$				\$
Counting equipment			\$	\$		\$	\$	\$	\$	\$	\$	\$*			\$
Data collection and monitoring for pedestrians and/or bicyclists			\$	\$		\$	\$	\$	\$	\$	\$	\$*			\$
Historic preservation (pedestrian and bicycle and transit facilities)	\$	\$	\$	\$				\$	\$						\$
Landscaping, streetscaping (pedestrian and/or bicycle route; transit access); related amenities (benches, water fountains); generally as part of a larger project	-\$	-\$	\$	\$			\$	\$	\$						\$
Lighting (pedestrian and bicyclist scale associated with pedestrian/bicyclist project)	\$	\$	\$	\$		\$	\$	\$	\$	\$	\$				\$
Maps (for pedestrians and/or bicyclists)			\$	\$	\$			\$	\$		\$	\$*			
Paved shoulders for pedestrian and/or bicyclist use	\$	\$			\$*	\$	\$	\$	\$		\$				\$



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

Key: \$ = Funds may be used for this activity (restrictions may apply). \$* = See program-specific notes for restrictions. ~\$ = Eligible, but not competitive unless part of a larger project.

Activity or Project Type	Pedestrian and Bicycle Funding Opportunities														
	U.S. Department of Transportation Transit, Highway, and Safety Funds														
	BUILD	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTP
Pedestrian plans			\$					\$	\$		\$	\$			\$
Recreational trails	~\$	~\$						\$	\$	\$					\$
Road Diets (pedestrian and bicycle portions)	\$	\$					\$	\$	\$	\$					\$
Road Safety Assessment for pedestrians and bicyclists							\$		\$	\$		\$			\$
Safety education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on ped/bike safety									\$SRTS	\$SRTS		\$	\$*	\$*	\$*
Safety education positions									\$SRTS	\$SRTS		\$		\$*	
Safety enforcement (including police patrols)									\$SRTS	\$SRTS		\$		\$*	\$*
Safety program technical assessment (for peds/bicyclists)									\$SRTS	\$SRTS		\$	\$*	\$	
Separated bicycle lanes	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$				\$
Shared use paths / transportation trails	\$	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$				\$
Sidewalks (new or retrofit)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$				\$
Signs / signals / signal improvements	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$				\$
Signed pedestrian or bicycle routes	\$	\$	\$	\$	\$		\$	\$	\$		\$				\$
Spot improvement programs	\$	\$	\$			\$	\$	\$	\$	\$	\$				\$
Stormwater impacts related to pedestrian and bicycle projects	\$	\$	\$	\$		\$	\$	\$	\$	\$	\$				\$
Traffic calming	\$	\$	\$			\$	\$	\$	\$		\$				\$
Trail bridges	\$	\$			\$*	\$	\$	\$	\$	\$	\$				\$
Trail construction and maintenance equipment								\$RTP	\$RTP	\$					
Trail/highway intersections	\$	\$			\$*	\$	\$	\$	\$	\$	\$				\$
Trailside and trailhead facilities (includes restrooms and water, but not general park amenities: see program guidance)	~\$*	~\$*						\$*	\$*	\$*					\$
Training					\$	\$		\$	\$	\$	\$	\$*	\$*		
Training for law enforcement on ped/bicyclist safety laws								\$SRTS	\$SRTS		\$			\$*	
Tunnels / undercrossings for pedestrians and/or bicyclists	\$	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$				\$

Abbreviations

ADA 504: Americans with Disabilities Act of 1990 / Section 504 of the Rehabilitation Act of 1973
BUILD: Better Utilizing Investments to Leverage Development Transportation Discretionary Grants
TIFIA: Transportation Infrastructure Finance and Innovation Act (loans)
FTA: Federal Transit Administration Capital Funds
ATI: Associated Transit Improvement (1% set-aside of FTA)
CMAQ: Congestion Mitigation and Air Quality Improvement Program
HSIP: Highway Safety Improvement Program
NHPP: National Highway Performance Program
STBG: Surface Transportation Block Grant Program

TA: Transportation Alternatives Set-Aside (formerly Transportation Alternatives Program)
RTP: Recreational Trails Program
SRTS: Safe Routes to School Program / Activities
PLAN: Statewide Planning and Research (SPR) or Metropolitan Planning funds
NHTSA 402: State and Community Highway Safety Grant Program
NHTSA 405: National Priority Safety Programs (Nonmotorized safety)
FLTP: Federal Lands and Tribal Transportation Programs (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program, Nationally Significant Federal Lands and Tribal Projects)

Program-specific notes

Federal-aid funding programs have specific requirements that projects must meet, and eligibility must be determined on a case-by-case basis. For example:

- **BUILD**: Subject to annual appropriations. See <https://www.transportation.gov/BUILDgrants> for details.



CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

- TIFIA: Program offers assistance only in the form of secured loans, loan guarantees, or standby lines of credit, but can be combined with other grant sources, subject to total Federal assistance limitations.
- FTA/ATI: Project funded with FTA transit funds must provide access to transit. See [Bicycles and Transit](#) and the FTA Final Policy Statement on the [Eligibility of Pedestrian and Bicycle Improvements under Federal Transit Law](#).
 - Bicycle infrastructure plans and projects funded with FTA funds must be within a 3 mile radius of a transit stop or station, or if further than 3 miles, must be within the distance that people could be expected to safely and conveniently bike to use the particular stop or station.
 - Pedestrian infrastructure plans and projects funded with FTA funds must be within a ½ mile radius of a transit stop or station, or if further than ½ mile, must be within the distance that people could be expected to safely and conveniently walk to use the particular stop or station.
 - FTA funds cannot be used to purchase bicycles for bike share systems.
 - FTA encourages grantees to use FHWA funds as a primary source for public right-of-way projects.
- CMAQ projects must demonstrate emissions reduction and benefit air quality. See the CMAQ guidance at www.fhwa.dot.gov/environment/air_quality/cmaq/ for a list of projects that may be eligible for CMAQ funds. Several activities may be eligible for CMAQ funds as part of a bicycle and pedestrian-related project, but not as a highway project. CMAQ funds may be used for shared use paths, but may not be used for trails that are primarily for recreational use.
- HSIP projects must be consistent with a State's [Strategic Highway Safety Plan](#) and either (1) correct or improve a hazardous road location or feature, or (2) address a highway safety problem.
- NHPP projects must benefit National Highway System (NHS) corridors.
- STBG and TA Set-Aside: Activities marked "SSRTS" means eligible only as an SRTS project benefiting schools for kindergarten through 8th grade. Bicycle transportation nonconstruction projects related to safe bicycle use are eligible under STBG, but not under TA (23 U.S.C. 217(a)).
- RTP must benefit recreational trails, but for any recreational trail use. RTP projects are eligible under TA and STBG, but States may require a transportation purpose.
- SRTS: FY 2012 was the last year for SRTS funds, but SRTS funds are available until expended.
- Planning funds must be used for planning purposes, for example:
 - Maps: System maps and GIS;
 - Safety education and awareness: for transportation safety planning;
 - Safety program technical assessment: for transportation safety planning;
 - Training: bicycle and pedestrian system planning training.
- Federal Lands and Tribal Transportation Programs (FLTTP) projects must provide access to or within Federal or tribal lands:
 - Federal Lands Access Program (FLAP): Open to State and local entities for projects that provide access to or within Federal or tribal lands.
 - Federal Lands Transportation Program: For Federal agencies for projects that provide access within Federal lands.
 - Tribal Transportation Program: available for federally-recognized tribal governments for projects within tribal boundaries and public roads that access tribal lands.
- NHTSA 402 project activity must be included in the State's Highway Safety Plan. Contact the State Highway Safety Office for details: <http://www.ghsa.org/html/about/shsos.html>
- NHTSA 405 funds are subject to State eligibility, application, and award. Project activity must be included in the State's Highway Safety Plan. Contact the State Highway Safety Office for details: <http://www.ghsa.org/html/about/shsos.html>

Cross-cutting notes

- FHWA Bicycle and Pedestrian Guidance: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/
- **Applicability of 23 U.S.C. 217(i) for Bicycle Projects:** 23 U.S.C. 217(i) requires that bicycle facilities "be principally for transportation, rather than recreation, purposes". However, sections 133(b)(6) and 133(h) list "recreational trails projects" as eligible activities under STBG. Therefore, the requirement in 23 U.S.C. 217(i) does not apply to recreational trails projects (including for bicycle use) using STBG funds. Section 217(i) continues to apply to bicycle facilities other than trail-related projects, and section 217(i) continues to apply to bicycle facilities using other Federal-aid Highway Program funds (NHPP, HSIP, CMAQ). The transportation requirement under section 217(i) is applicable only to bicycle projects; it does not apply to any other trail use or transportation mode.
- There may be occasional DOT or agency incentive grants for specific research or technical assistance purposes.
- Aspects of many DOT initiatives may be eligible as individual projects. For example, activities above may benefit Ladders of Opportunity; safe, comfortable, interconnected networks; environmental justice; equity; etc.

Source: FHWA Pedestrian and Bicycle Funding Opportunities, May 24, 2018, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm