

A person in a blue shirt and shorts is riding a bicycle on a paved path. The path is bordered by a white fence on the right and greenery on the left. The background shows trees and a clear blue sky.

3 Recommendations

“In the past decades, all 12 municipalities, led by the City of Raleigh, have realized and embraced the enormous social, economic and environmental benefits of greenways. With this Wake County led plan, the process of “connecting the dots” can result in a long standing goal of having a truly regional greenway system.” - Robert Hinson, Chair of the Wake County Open Space and Parks Advisory Committee (OSAPAC)

OVERVIEW

This chapter translates the vision for a regional system of connected greenway trails into a strategic set of recommendations, with proposed strategies for the development of wayfinding, trail amenities, and trail marketing.

GUIDING PRINCIPLES FOR GREENWAY TRAIL DEVELOPMENT IN WAKE COUNTY

The vision for this Plan is to create a connected and comprehensive system of greenway trails that enhances quality of life throughout Wake County. In order to begin transforming this vision into reality, it is useful to start by identifying the principles upon which the future greenway system will be built. The following guiding principles are derived from past planning efforts throughout the U.S., and reflect some of the best practices that can help guide future decisions about the greenway system in Wake County.

- ***The greenway system should be safe.*** Bicycling and walking routes should be physically safe and perceived as safe by users. Safe means minimal conflicts with vehicular traffic, and use of clear pavement markings and directional signage. Safe also means education about trail safety and etiquette, and crime prevention through environmental design.
- ***The greenway system should be accessible.*** Trails and trail crossings should permit the mobility of residents of all ages and abilities, employing principles of universal design. Bicyclists have a range of skill levels, and trails should be designed with a goal of providing for inexperienced bicyclists (especially children and seniors) to the greatest extent possible.
- ***Greenway system improvements should be economical.*** Trail improvements should achieve the maximum benefit for their cost, including initial cost and maintenance cost, as well as a reduced reliance on more expensive modes of transportation. Where possible, improvements in the right-of-way should stimulate, reinforce and connect with adjacent private improvements.
- ***Greenway trails should connect to places people want to go.*** The greenway system should provide continuous direct routes and convenient connections

between destinations such as downtowns, parks, schools, shopping centers, transit hubs, employment centers, and neighborhoods. A complete network of trails should connect seamlessly to existing and proposed sidewalks and bicycle lanes to complete recreational and commuting routes.

- ***Navigating the greenway system should be easy.*** As trails throughout the region are constructed and connected, the regional routes among them should use a comprehensive and consistent wayfinding system. Wayfinding tools should include directional signage, kiosks with detailed maps, hand-held paper maps, online components such as a website and/or app, and the overall design and branding should be consistent across the tools that are used.
- ***The greenway system should be attractive and enhance community livability.*** Greenway trails should be compatible with the nature, history and character of the environment. Context and scale should be given thoughtful consideration. Good design should integrate with and support the development of complementary uses and should encourage preservation and construction of art, landscaping and other items that add value to communities. These components might include open spaces such as plazas, courtyards and squares, and amenities like street furniture, banners, art, plantings and special paving. These, along with historical elements and cultural references, should promote a sense of place. Public activities should be encouraged and local codes should permit commercial activities such as dining, vending and advertising when they do not interfere with safety and accessibility.
- ***Greenway trail design guidelines should aim for consistency.*** With the overall goal of consistency, guidelines used should also be flexible enough to allow for the professional judgment of the design and engineering staff of local communities. This Plan references specific national guidelines for trail facility design, as well as several adopted state and local community guidelines. Statutory and regulatory guidance may change. For this reason, the guidance and recommendations in this Plan function to complement other resources considered during a design process, and in all cases, sound engineering judgment should be used.

METHODOLOGY FOR GREENWAY SYSTEM PLANNING

The main steps for developing the recommended system of greenway trails in this plan depended upon the input and involvement of community and agency representatives throughout the region (listed in the acknowledgements page), and upon the years of planning and community outreach that went into the locally adopted community plans that informed the process. The public input received from this Plan's comment forms was useful as well, both in determining the types of destinations people are interested in, and in terms of the types of amenities and uses that are most desired.

The key steps in developing this Plan's recommendations are described on the following page, including data collection, mapping existing and proposed trails, identifying a regional system, and identifying proposed recommendations.

Key Steps in Developing Recommendations for this Plan

1

COLLECT DATA: Collect and assemble GIS data, existing community plans, and maps; gather Steering Committee input on primary existing challenges and opportunities; ask for public opinions on greenways through the comment form.

2

MAP ALL EXISTING TRAILS AND TRAILS PROPOSED IN PREVIOUS PLANS: Conduct outreach for all 12 of Wake County's municipalities, neighboring jurisdictions, and regional entities; research into existing plans and studies for proposed greenway routes on adopted plans.

3

IDENTIFY A SYSTEM OF REGIONAL CONNECTOR TRAILS: Examine proposed routes from existing local and regional plans and identify routes that offer the best potential for regional connectivity, based on connections to existing trails and the ability to connect to destinations such as parks, lakes, city and town centers; solicit input on the draft network from a large group of stakeholders at a countywide trail coordination workshop; follow up with individual community planners and park system managers to confirm regional routes in their own communities.



The planning process incorporated input from nearly 50 local and regional stakeholders, and dozens of local and regional plans.

4

PRIORITIZE THE OVERALL SYSTEM INTO SETS OF RECOMMENDATIONS: Divide proposed system into segments based on logical end-points such as existing trails, parks, and town centers; Assign segments into project categories based on stakeholder and committee feedback (filling trail system gaps first) and the results of public feedback on the types of desired destinations (connecting to existing trails, parks, and natural areas).



THE COUNTYWIDE GREENWAY SYSTEM

Map 3.0 features the Countywide Greenway System, which represents the overall recommended system of regional connector trails in Wake County. Rather than including all proposed trails from existing plans, this system features only those corridors that offer the best potential for regional trail connectivity, based primarily upon connections between existing trails and the ability to connect to

destinations such as parks, lakes, and downtown/town centers. The Countywide Greenway System is designed to make walking and bicycling for both transportation and recreation more accessible, practical, and enjoyable for more people, allowing the region as a whole to benefit in terms of quality of life and economic impact. These projected impacts are quantified in Appendix A and are presented and summarized on the following pages.

BY THE NUMBERS

145

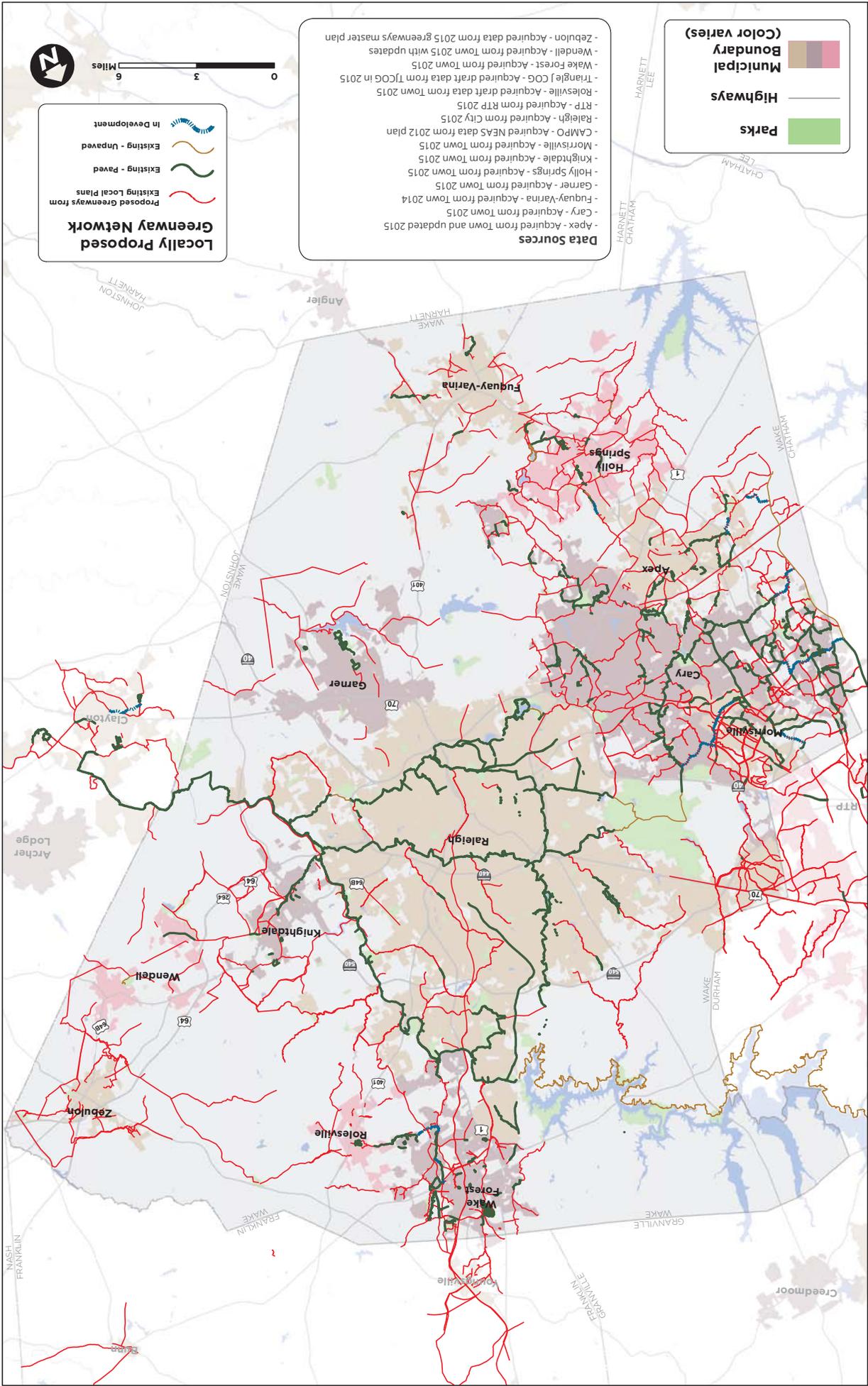
MILES OF EXISTING GREENWAYS IN THE COUNTYWIDE SYSTEM: This figure includes only the existing trails in the countywide system (shown in dark green on Map 3.0). Most of this mileage consists of well-established greenway trail corridors, such as the Neuse River Trail, Reedy Creek Trail, the Walnut Creek Trail, and the Black Creek Greenway. There are also an additional approximately 150 miles of other local existing trails (shown in light green on Map 3.0), but most of those are relatively short segments, trail spurs, and trails within parks.

274

MILES OF TOTAL PROPOSED GREENWAYS IN THE COUNTYWIDE SYSTEM: This figure includes the proposed trails in the countywide system (shown in pink on Map 3.0). These proposed trails are broken into four categories of recommendations, described in the following maps and pages.

25

MILES OF GREENWAYS IN DEVELOPMENT: This figure includes all trails that were reported as funded, in design, or under construction as of early 2016 (shown in blue on Map 3.0). These “in development” trails are mostly within the towns of Morrisville, Cary, Apex, and Wake Forest, among others.



Locally Proposed Greenway Network

- Existing Local Plans
- Existing - Paved
- Existing - Unpaved
- In Development

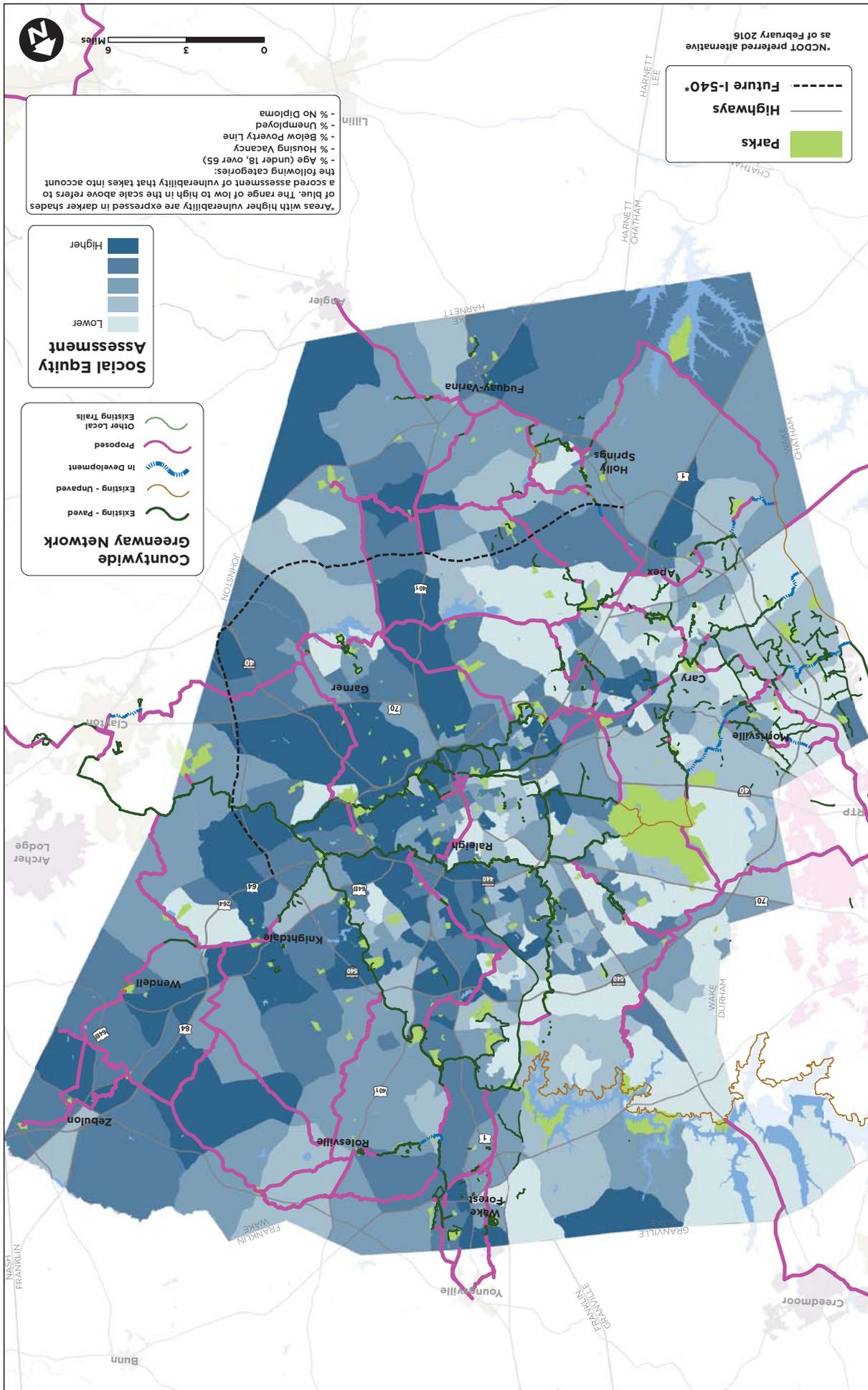
Data Sources

- Apex - Acquired from Town and updated 2015
- Cary - Acquired from Town 2015
- Fuquay-Varina - Acquired from Town 2014
- Garner - Acquired from Town 2015
- Holly Springs - Acquired from Town 2015
- Knightdale - Acquired from Town 2015
- Morrisville - Acquired from Town 2015
- CAMPO - Acquired NEAS data from 2012 plan
- Raleigh - Acquired from City 2015
- RTP - Acquired from RTP 2015
- Rolesville - Acquired draft data from Town 2015
- Triangle J COG - Acquired draft data from TJCOCG in 2015
- Wake Forest - Acquired from Town 2015
- Wendell - Acquired from Town 2015 with updates
- Zebulon - Acquired data from 2015 greenways master plan

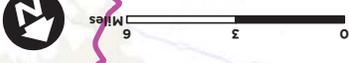
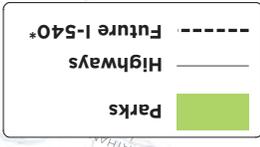
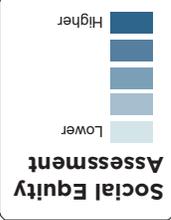
Highways

Municipal Boundary (Color varies)

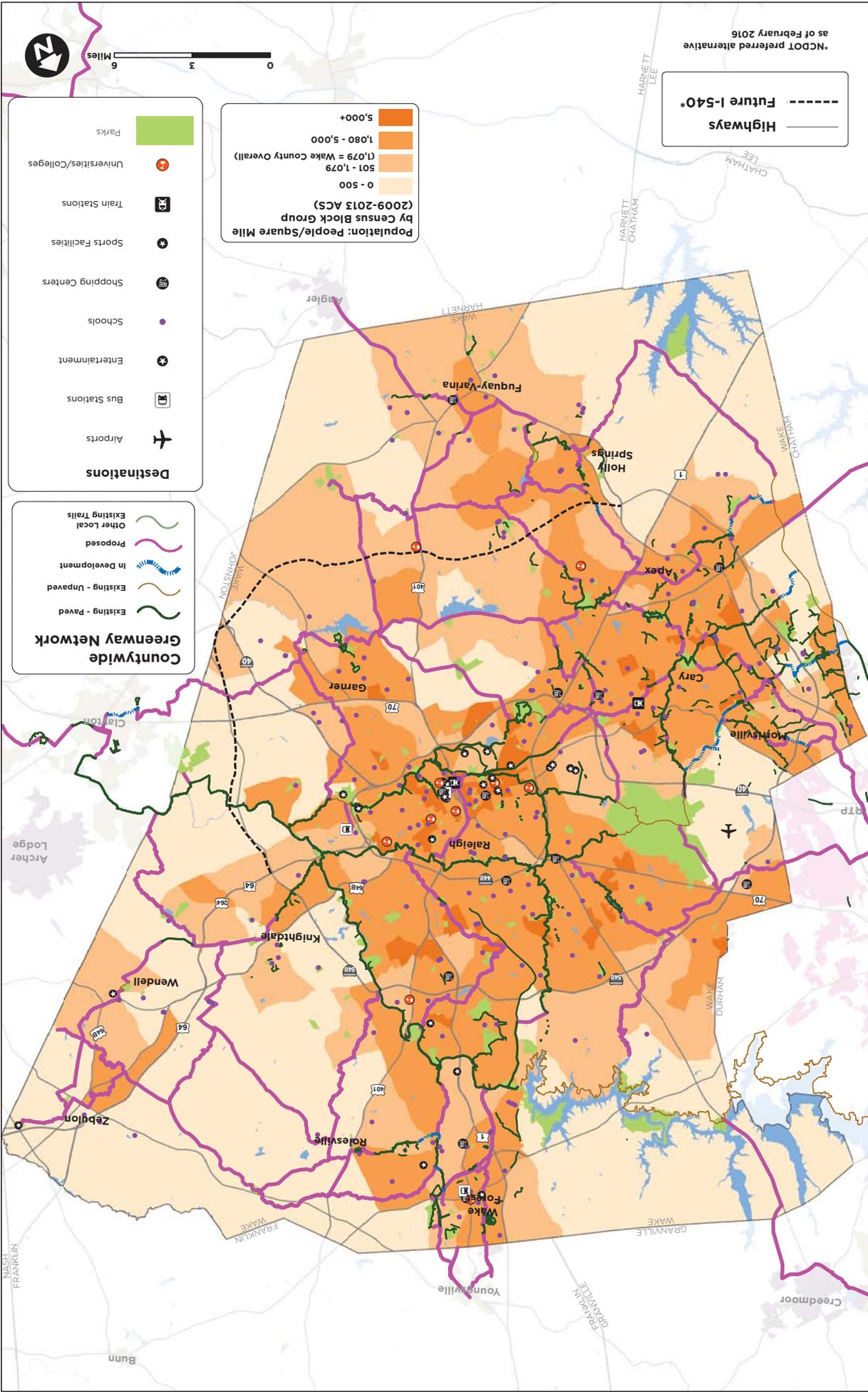
Parks



of blue. The range of low to high in the scale above refers to a scored assessment of vulnerability that takes into account the following categories:
 - % Age (under 18, over 65)
 - % Housing Vacancy
 - % Below Poverty Line
 - % Unemployed
 - % No Diploma



MAP 3.0-C SOCIAL EQUITY DATA - COUNTYWIDE GREENWAY SYSTEM OVERLAY (11X17 FOLD OUT MAP)



MAP 3.0-D POPULATION & DESTINATION DATA - COUNTYWIDE GREENWAY SYSTEM OVERLAY (11X17 FOLD OUT MAP)

Weighing Social Equity and Distribution of the Greenway System

Map 3.0-C, *Social Equity Data - Countywide Greenway System Overlay*, uses U.S. Census data to show how the proposed greenway system connects to and within areas of varying degrees of equity. The data is organized around geographic areas used by the Census, called 'block groups'. For each block group, certain factors are analyzed such as the percentages for people under age 18 and over 65, housing vacancy, people below the poverty line, the unemployed, and people with no diploma. Together, this information is used to form the social equity assessment, with higher areas of vulnerability shown in darker shades of blue. The map is used to show how and where these areas are served by the existing and proposed system of greenways.

Map 3.0-D, *Population & Destination Data - Countywide Greenway System Overlay*, is very similar in purpose to the previous map, but rather than displaying social equity information, it shows how the existing and proposed system relates to the County's most populated areas, and several types of destinations.



Shelly Lake in Raleigh, by ITRE Bicycle and Pedestrian Program.

Quantifying the Benefits of the Countywide Greenway System

The full build-out of the Countywide Greenway System will impact a variety of health, environmental, and transportation factors that directly affect the quality of life of Wake County residents and visitors (see Chapter 1 for an overview of these types of benefits). This Plan's Benefit Impact Analysis (Appendix A) uses a standard methodology for calculating health, environmental, economic, and transportation-related benefits in monetary terms. The estimated monetary values (benefits) of building the proposed system of greenways in Wake County, are presented on the following two pages, and should be considered order of magnitude estimates, rather than exact amounts. As described in Appendix A, the benefit analysis draws upon comparisons to Wake County's peer communities in order to develop low, medium, and high range projections for total benefits. The figures that follow represent the mid-range of those projects, under the argument that Wake County and its municipalities should (and could) reach the goal of performing at an at least average rate of its peer communities.

It is also important to note that there are many benefits of a connected and comprehensive greenway system in addition to those noted on the following pages. These include protected wildlife habitat, water quality protection from the preservation of vegetated buffers along waterways, the mental health benefits and reduced stress from increased exercise and spending time in nature, the positive impacts of access to parks and greenways on property values and quality of life, and the potential for increases in tourism associated with a world-class system of greenways.

Below: Annual estimated benefits of a fully built-out greenway system in Wake County. See previous page and Appendix A for more information.

ANNUAL MILES WALKED

23 MILLION
MILES WALKED
PER YEAR

That's the
equivalent of

8,000
CROSS-COUNTRY
ROAD TRIPS



ANNUAL MILES BIKED

2.2 MILLION
MILES BIKED
PER YEAR

That's the
equivalent of



85
TRIPS AROUND
THE EARTH!

REDUCED HEALTHCARE COSTS

\$4 MILLION
IN ANNUAL HEALTHCARE COST
SAVINGS

That's the equivalent of 2,400
trips to the doctor!



ANNUAL PHYSICAL ACTIVITY FROM BIKING & WALKING

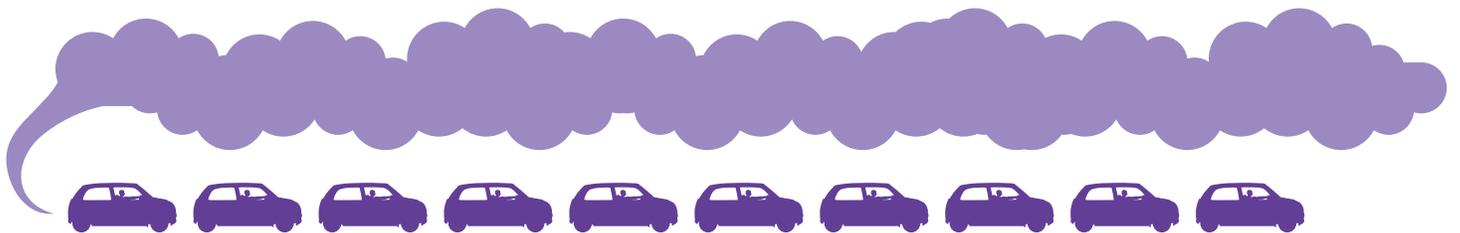
9.5%

OF WAKE COUNTY RESIDENTS MEETING
THE CDC RECOMMENDED HOURS OF
PHYSICAL ACTIVITY JUST FROM BICYCLING

(~30 minutes/day)

REDUCED VEHICLE EMISSIONS

\$600,000 SAVINGS FROM REDUCED
VEHICLE EMISSIONS PER YEAR



Below: Annual estimated benefits of a fully built-out greenway system in Wake County. See page 57 and Appendix A for more information.

HOUSEHOLD VEHICLE OPERATION COSTS



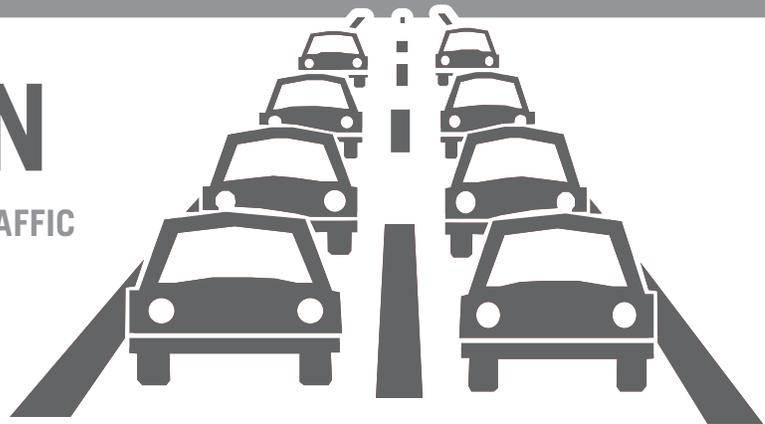
\$11 MILLION

IN REDUCED HOUSEHOLD
VEHICLE OPERATION COSTS
PER YEAR

CONGESTION COSTS

\$1.6 MILLION

IN COST SAVINGS FROM REDUCED TRAFFIC
CONGESTION



VEHICLE MILES TRAVELED



20 MILLION

FEWER MILES TRAVELLED BY
AUTOMOBILES EVERY YEAR

COLLISION COSTS

\$7 MILLION

IN REDUCED MOTOR
VEHICLE COLLISION-
RELATED COSTS



MAINTENANCE COSTS



\$3 MILLION

IN REDUCED ROAD
MAINTENANCE COSTS

GREENWAY SYSTEM RECOMMENDATIONS BY PROJECT CATEGORY

The overall system of recommendations is organized into the following set of project categories. Project stakeholder feedback, public comment, and committee input all stressed the importance of trail connectivity, hence the focus on bridging the gaps between existing trails. **These project categories will be approached by Wake County and its municipal partners with flexibility, taking into account the importance of both countywide connectivity and local priorities.** Projects that bridge gaps between communities for regional connectivity may do well in attracting funding from regional partners, such as CAMPO. See Chapter 4 for more on project funding strategies.

1

BRIDGE THE GAPS: The focus of these “Bridge the Gaps” priority projects is connectivity, featuring 48 miles of trail in 23 segments. The projects are spread throughout the county, with at least one project in each of Wake County’s 12 municipalities. These fill critical gaps within the existing network of trails, and serve as catalyst projects where trails are currently lacking. For more on these projects, see the project cutsheets starting on page 66.

48 mi.

2

CONNECT TO PARKS & LAKES: This group of projects features 60 miles of trail in 12 segments, connecting to 15 parks (seven of which feature lakes). The idea of connecting to parks and lakes was driven by public feedback on desired destinations, in which people indicated a desire to connect with existing trails, parks, and natural areas as the top choices out of a range of destination types (see the public comment form results in Chapter 2).

60 mi.

3

CONNECT THE COMMUNITIES: With this group of projects, all 12 municipalities will be connected into the greenway system, with 19 miles of trail in six segments. These projects allow for key connections in Fuquay-Varina and Zebulon, plus more direct greenway trail connections between Raleigh, Cary, Apex, and Morrisville.

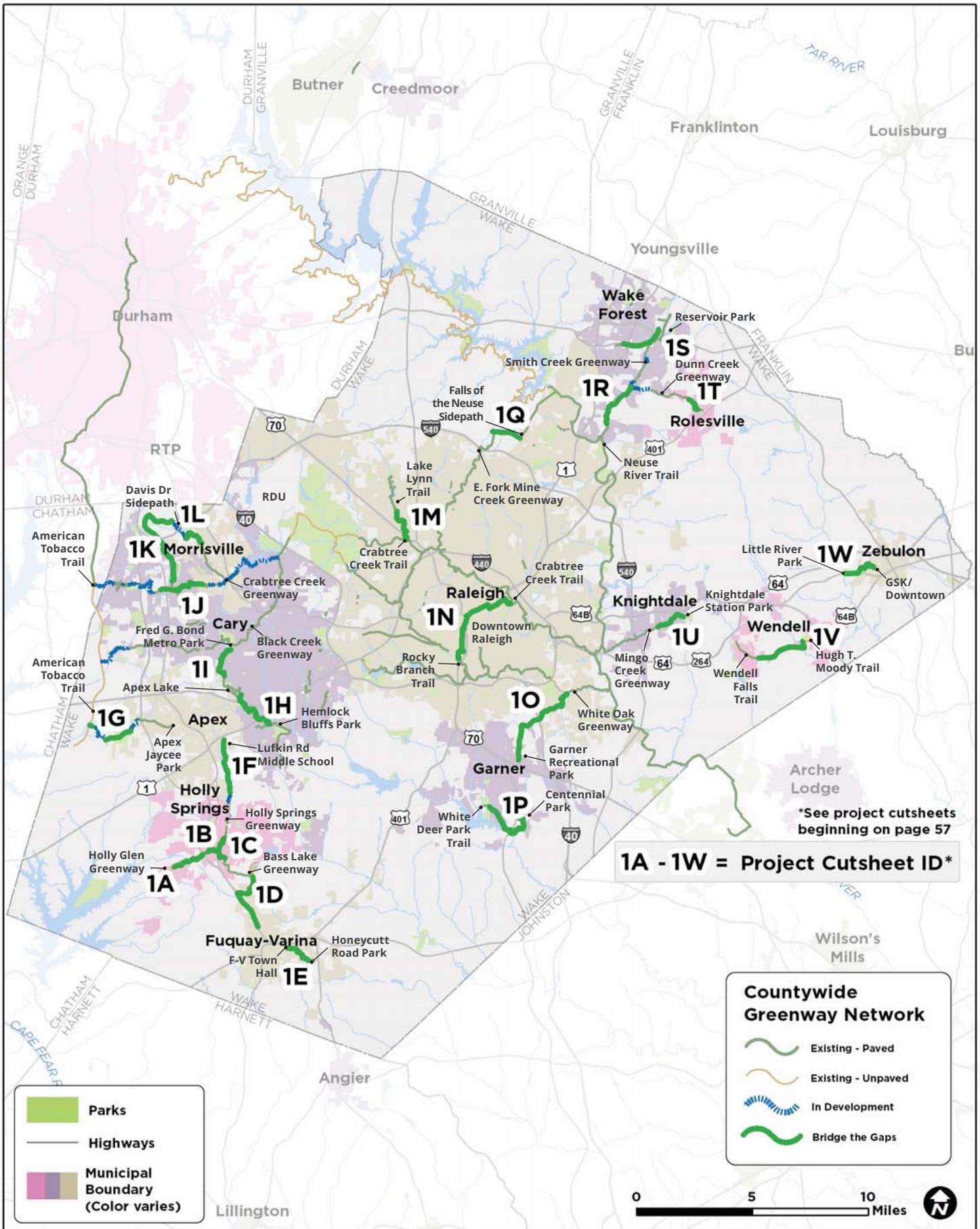
19 mi.

4

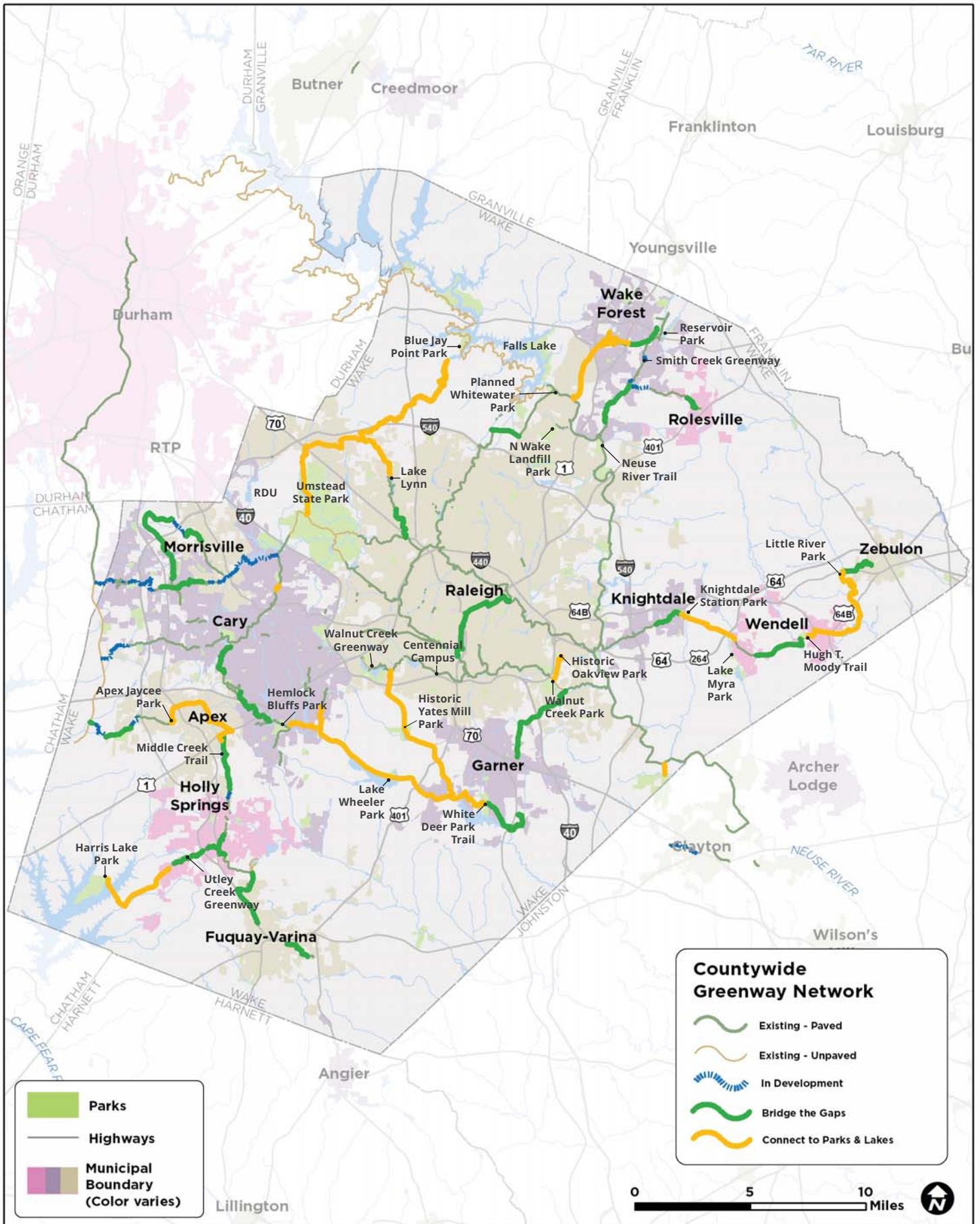
COMPLETE THE SYSTEM: There are 147 miles of proposed trail in this group, made up of over 30 project segments. These longer-term projects (like all projects) could be completed sooner, depending on how they are implemented and on the opportunities that arise to complete the system in the coming years and decades. See Chapter 4 for more on the overall implementation strategy.

147 mi.

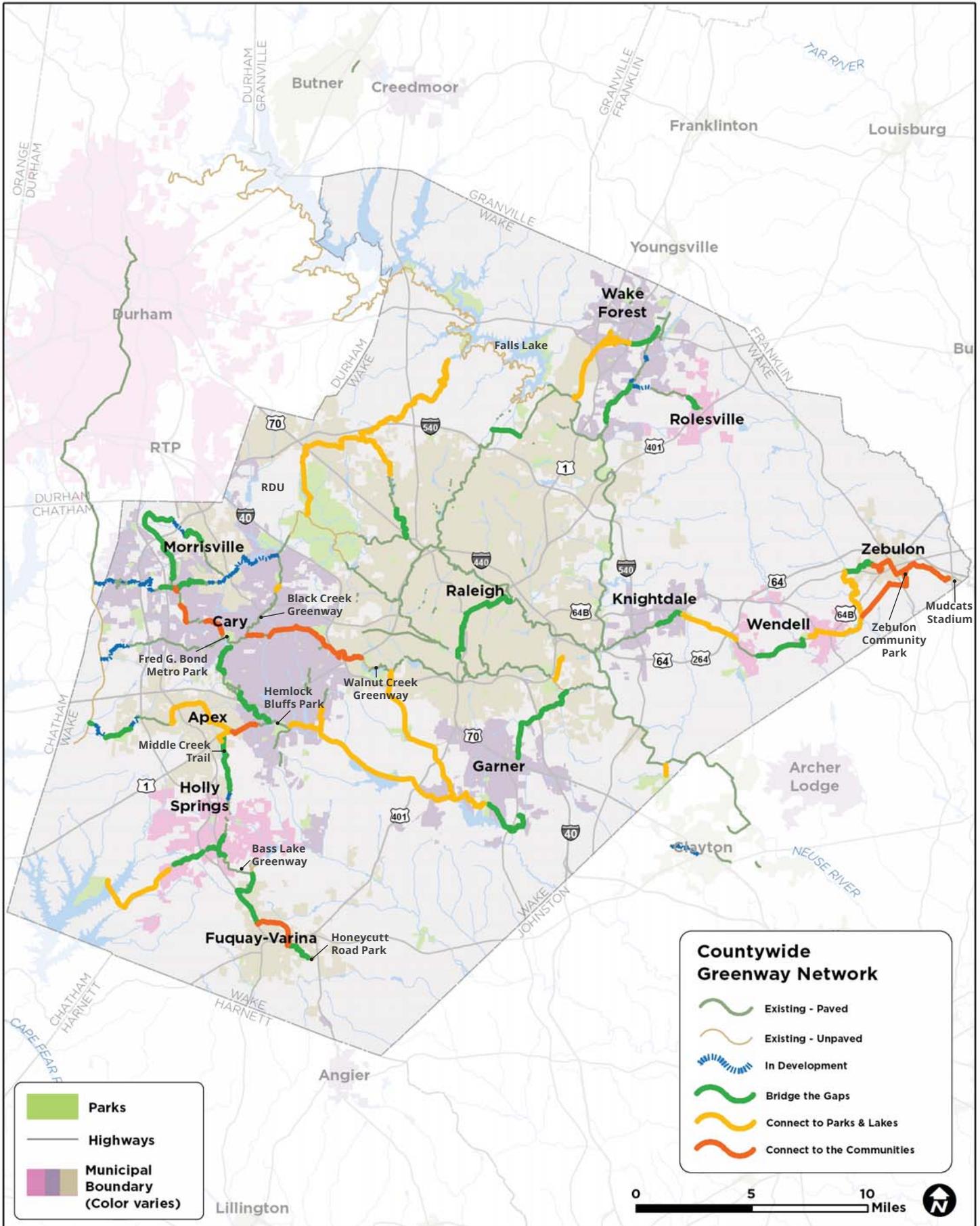
MAP 3.1 BRIDGE THE GAPS



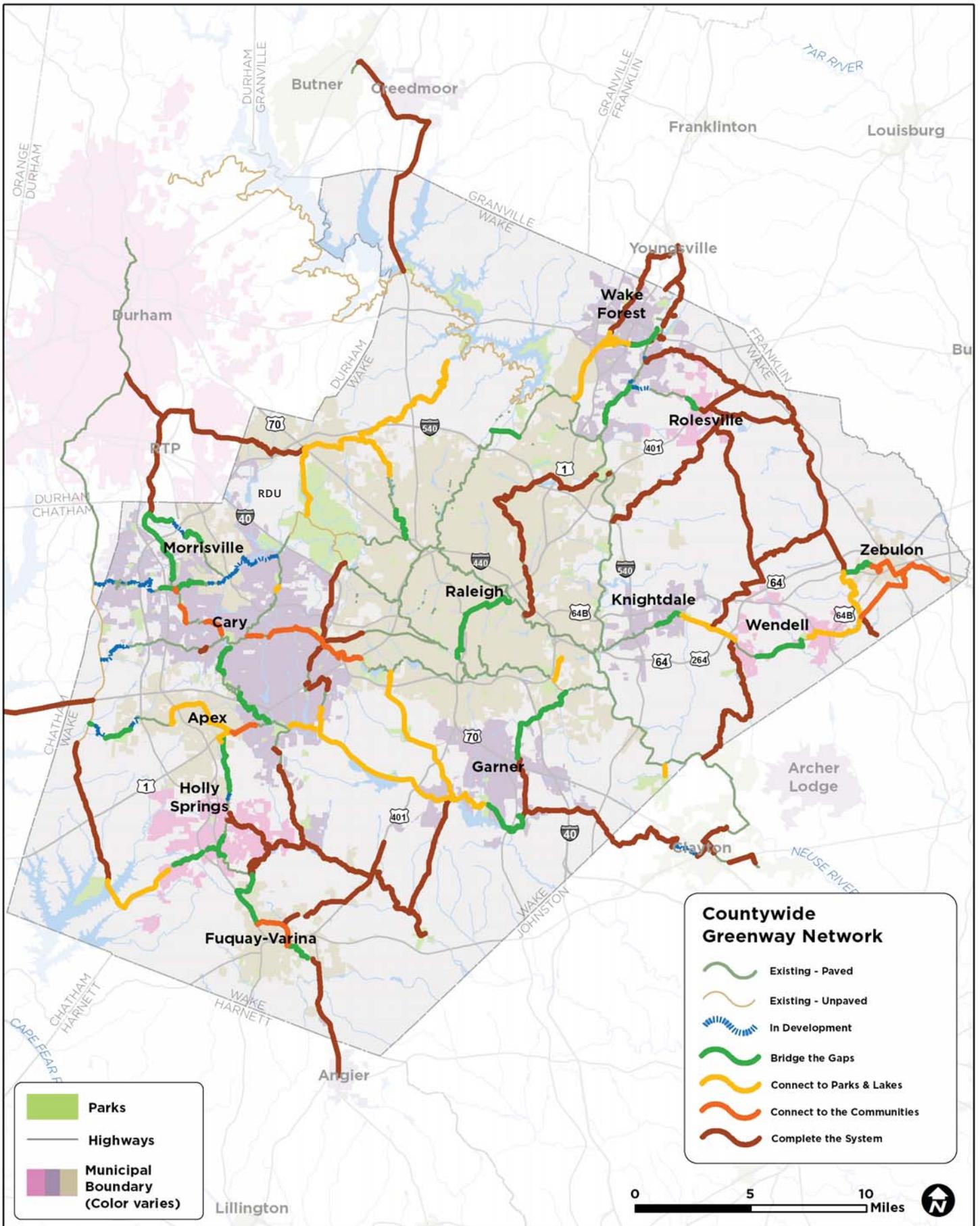
MAP 3.2 CONNECT TO PARKS AND LAKES



MAP 3.3 CONNECT THE COMMUNITIES



MAP 3.4 COMPLETE THE SYSTEM



PRIORITIZATION TOOLS

This plan is designed as a long-term visionary document that provides a general framework for Wake County to move forward as a leader in trail coordination and development. To that end, the plan identifies the groups of projects described on the previous page as a way of prioritizing the overall system. Within each group of projects, the order of actual project development may vary depending upon available funding from local municipalities, and upon funding awarded from state, federal, or other sources (see Chapter 4 for more on funding and implementation). Still, in order to make more informed decisions about project development, more detail is provided for each trail segment in the sections that follow.

Cut-Sheets for Priority Projects

The following pages offer detailed information on each of the “Bridge the Gaps” priority projects, including individual project maps. These sheets were designed based on the types of information required by potential funding partners, such as the Capital Area Metropolitan Planning Organization (CAMPO), which uses similar sheets in their own transportation planning.

Summary of Projects Table

The project table that follows the cutsheets is designed to offer more information about all projects. Although not as detailed as the project cut-sheets, it does offer valuable information to project partners as they make decisions about individual project selection.

How to Use the Estimated Costs on the Following Pages:

When reviewing the the estimated construction and land acquisition costs in the following cut sheets, please take into account the following important notes and caveats:

- The cost estimates represent a planning-level of analysis and therefore are listed in ranges.
- Costs will likely change as more information becomes available in the design phase.
- Costs are listed in the base year of 2016, and should be escalated at a rate of 5% each year thereafter.
- Cost estimates for land acquisition/ROW needs are based on Wake County assessed property values, and are an approximation only.
- Design costs are not listed per cut-sheet, but they can range between 10-15% of construction costs. Higher ranges will be encountered on projects utilizing federal funds that require a high level of regulatory compliance and on projects that impact FEMA regulated floodways that require detailed flood modeling and permitting. Small projects will also see higher percentages for design cost.

1A. HOLLY SPRINGS SOUTHWEST GREENWAY

BALLENRIDGE GREENWAY TO BRAXTON VILLAGE GREENWAY

This project connects the developing Ballenridge and Braxton Village greenways in the southwest section of Holly Springs. Half of the proposed greenway connection follows Utley Creek. A key to this project is an under crossing of NC 55 at the southwestern edge of the Ballenridge neighborhood and existing greenway. Regionally, this project will help to link Holly Springs and Harris Lake County Park with further connectivity potential to Jordan Lake and the American Tobacco Trail.

PROJECT AT A GLANCE

- Project location: Holly Springs, Wake County
- Project type: Shared use path, on-road connection (wayfinding and sidewalks)
- Length: 7,600 ft (1.4 miles)
- Total Connected Network: 1.7 miles
- Trip Generators:
 - » Holly Springs Cultural Center and Community Library
 - » Future Park at Mims Property
 - » Ballenridge Neighborhood
 - » Braxton Village
 - » Harris Lake County Park (Connect Parks + Lakes)

PREVIOUS PLANNING

- *Holly Springs Parks, Recreation, and Open Space Master Plan (2007)*
- *Holly Springs Bicycle Plan (2011)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 2.6 acres estimated right-of-way acquisition
- 9 impacted parcels
- 8 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Holly Springs Floodplain Development Permit
- Wake County/Holly Springs Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Holly Springs Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Holly Springs
- Ballenridge Homeowner's Association
- Braxton Village Homeowner's Association
- Duke Energy

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$1.6 million to \$1.9 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$63,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Holly Springs CIP
- Clean Water Management Trust Fund
- Duke Energy Water Resources Fund
- Duke Energy easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment would connect neighborhoods outside of NC 55 to the existing Ballenridge Greenway and destinations in central Holly Springs.

The existing culvert under NC 55 can be formalized as a trail underpass. The cost estimate shown assumes lighting and other minor improvements are needed, but the size of the culvert is sufficient.

Two bridge crossings of Utley Creek are required due to the proximity of the Creek to the Town's wastewater treatment plant.

Interim route would be along this funded greenway section (from CAMPO/LAPP funds) that connects to sidewalks along Avent Ferry Road.

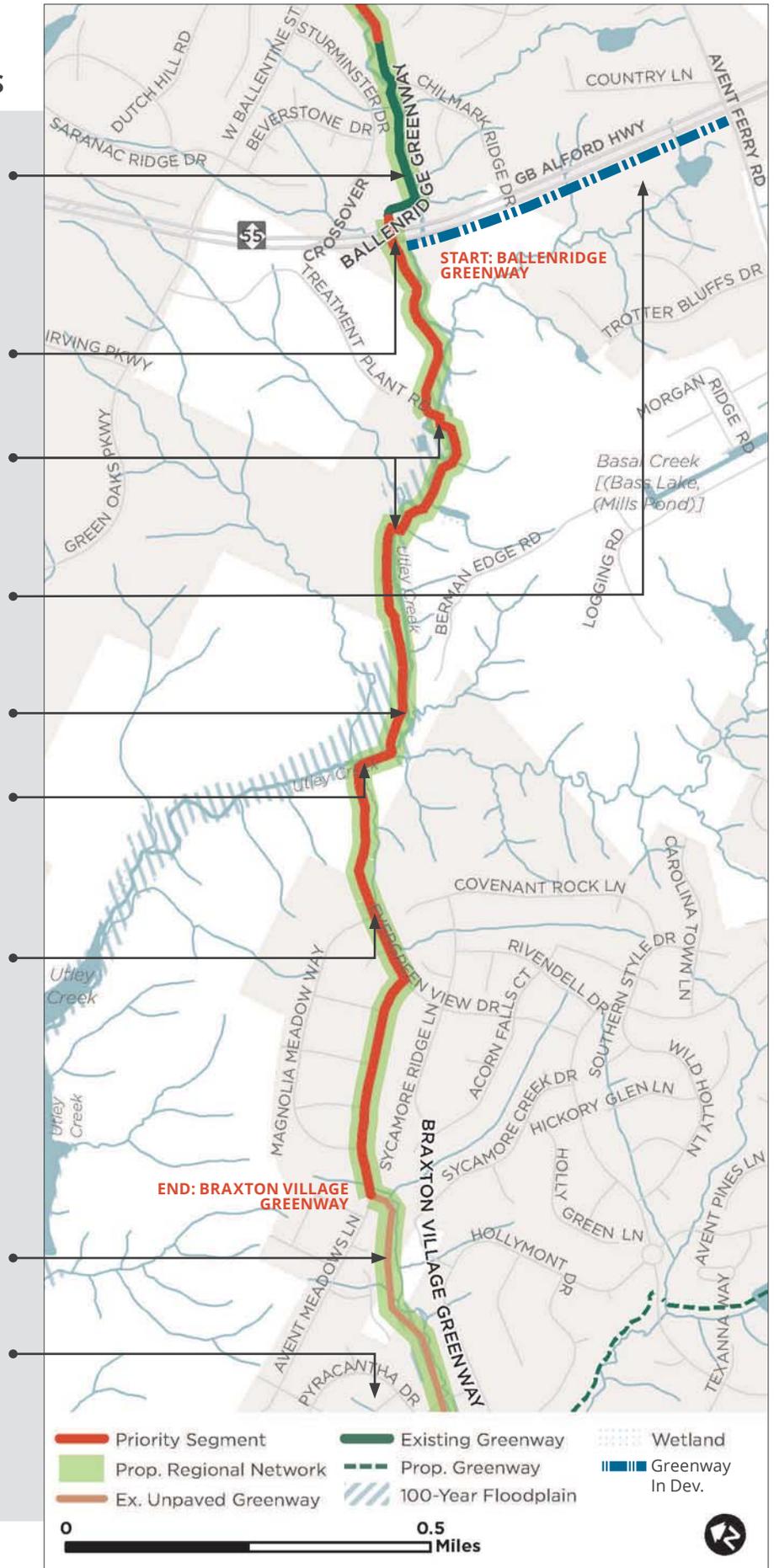
The trail's location in the floodplain will increase permitting requirements.

A third bridge crossing of the creek is required to connect the trail to Holly Glen.

An on-road connection using sidewalks and wayfinding signage is recommended along Evergreen View Drive and Avent Meadows Lane to complete the connection to the Braxton Village Greenway corridor at the southwest end of the segment.

The Braxton Village Greenway corridor is not currently maintained as a trail, yet the easement is in place. Consider continuing the on-road connection (sidewalk and wayfinding signage on Avent Meadows Lane) as an alternative to Braxton Village Greenway, if necessary.

Ultimately, this corridor supports regional connectivity to Harris Lake County Park.



1B. HOLLY SPRINGS CENTRAL GREENWAY

FROM BALLENRIDGE GREENWAY TO RALEIGH STREET

This project completes a link between the developing Ballenridge greenway toward central Holly Springs. The eastern terminus at Raleigh Road links to the proposed north/south connection between Jones Park (north Holly Springs) and Womble Park (south Holly Springs). This proposed trail through central Holly Springs is a key component in connecting the heart of Holly Springs to Apex, Fuquay-Varina, and Harris Lake County Park.

PROJECT AT A GLANCE

- Project location: Holly Springs, Wake County
- Project type: Shared use path, on-street connection (wayfinding, shared lane markings, sidewalk)
- Length: 2,800 ft (0.5 miles)
- Total Connected Network: 0.8 miles
- Trip Generators:
 - » Ballenridge Neighborhood
 - » Holly Springs Cultural Center and Community Library
 - » Future Park at Mims Property
 - » Downtown Holly Springs Business District
 - » Town of Holly Springs offices
 - » Jones Park, Womble Park, Sugg Farm, and Bass Lake

PREVIOUS PLANNING

- *Holly Springs Parks, Recreation, and Open Space Master Plan (2007)*
- *Holly Springs Bicycle Plan (2011)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 0.3 acres estimated right-of-way acquisition
- 3 impacted parcels
- 3 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Holly Springs Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Holly Springs Land Disturbance Permit
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Holly Springs
- Ballenridge Homeowner's Association
- Holly Springs Chamber of Commerce
- Rex Hospital
- Avent Acres Community Association

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$340,000 to \$410,000*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$7,200*

POTENTIAL FUNDING MECHANISMS

- Wake County CIP funding
- Holly Springs CIP
- Avent Acres Community Association easement or land donation

OPPORTUNITIES & CONSTRAINTS

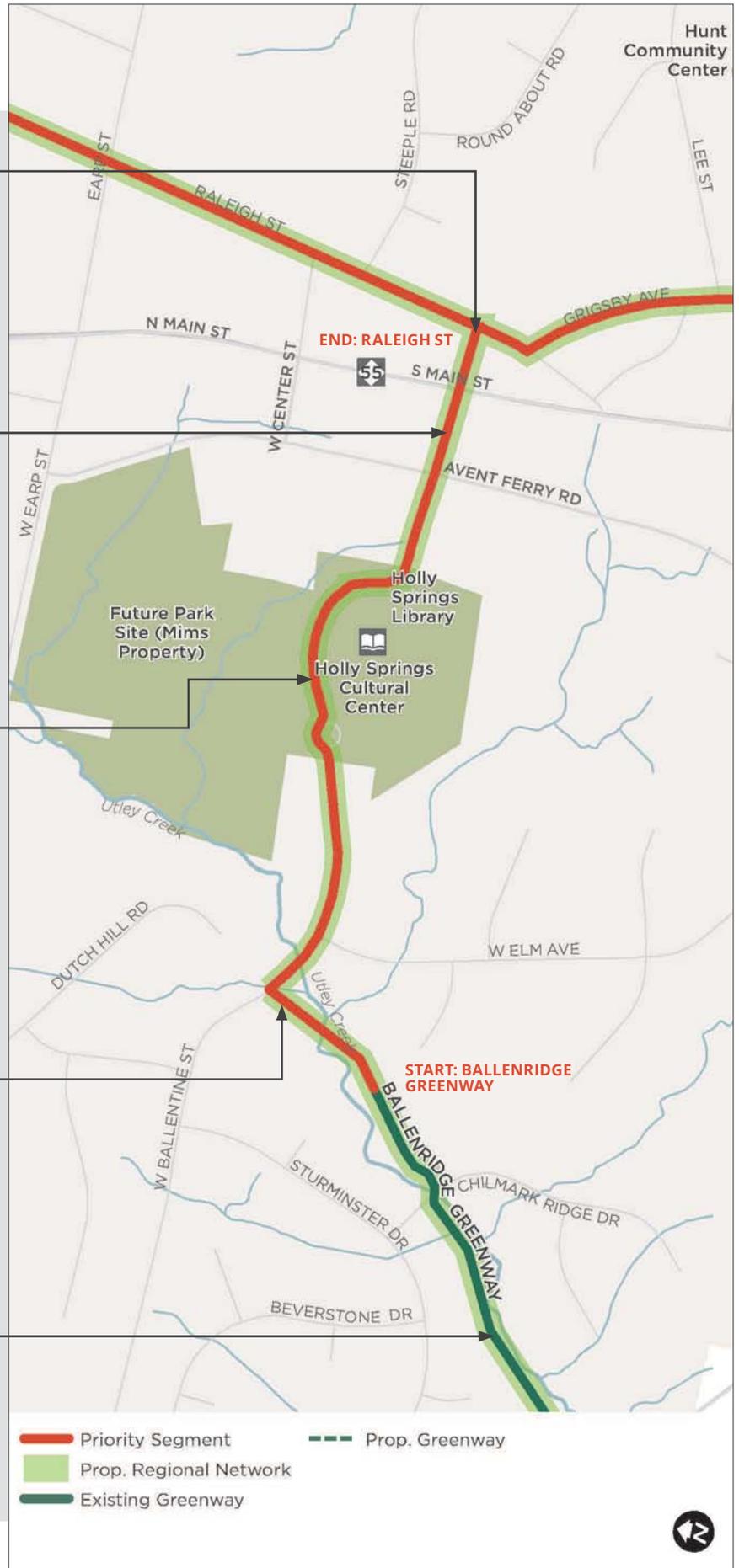
The segment connects to the proposed Holly Springs North/South Greenway on the east end, which connects Jones Park, Womble Park, Sugg Farm, and Bass Lake.

Ballentine Road is a low-traffic, low-speed street with on-street parking between Avent Ferry Road and Raleigh Street. An on-street connection using wayfinding signage, shared-lane markings, and existing sidewalks will allow the Town to maintain this configuration while guiding trail users through the area.

Ballentine Road is a calm local street between Elm Road and Avent Ferry Road and is already comfortable for cyclists and pedestrians. Constraints to a side-path include right-of-way in the residential section and lighting and landscaping in the Town section. An on-street connection using wayfinding signage and existing sidewalks is recommended.

A small pedestrian bridge is required to cross Utley Creek where the segment transitions to a shared use path south of Ballentine Street.

The segment connects to the existing Ballenridge Greenway on the west end.



1C. HOLLY SPRINGS NORTH/SOUTH GREENWAY

FROM JONES PARK TO WOMBLE PARK

This project completes a north/south link through Holly Springs between Jones Park (north Holly Springs) and Womble Park (south Holly Springs). Existing trails through Jones Park extend north through the Bridgewater subdivision toward a developing connection to Apex. Existing trails connecting through Womble Park and Sugg Farm serve as key regional links for proposed connectivity to Fuquay-Varina.

PROJECT AT A GLANCE

- Project location: Holly Springs, Wake County
- Project type: Sidepath, on-street connection (bike boulevard and sidewalk), shared use path
- Length: 6,300 ft (1.2 miles)
- Total Connected Network: 4.1 miles
- Trip Generators:
 - » Holly Springs Elementary
 - » Jones Park
 - » Downtown Holly Springs Business District
 - » Womble Park
 - » Sugg Farm
 - » Bass Lake Park, Retreat Center, and Trails

PREVIOUS PLANNING

- *Holly Springs Parks, Recreation, and Open Space Master Plan (2007)*
- *Holly Springs Bicycle Plan (2011)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 0.4 acres estimated right-of-way acquisition
- 5 impacted parcels
- 5 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Holly Springs Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Holly Springs Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit

POTENTIAL PARTNERSHIPS

- Town of Holly Springs
- Holly Springs Chamber of Commerce
- Rex Hospital
- Wake County Board of Education
- Windward Pointe Homeowners Association

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$560,000 to \$670,000*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$31,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Holly Springs CIP
- Windward Pointe Homeowners Association easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment will connect to the Jones Park Trail at Holly Springs Elementary and supports regional connectivity to Apex.

Space and right-of-way create an easy opportunity for a sidepath connection along School Days Lane.

Utility and sign relocations may be required to construct a sidepath along Holly Springs Road.

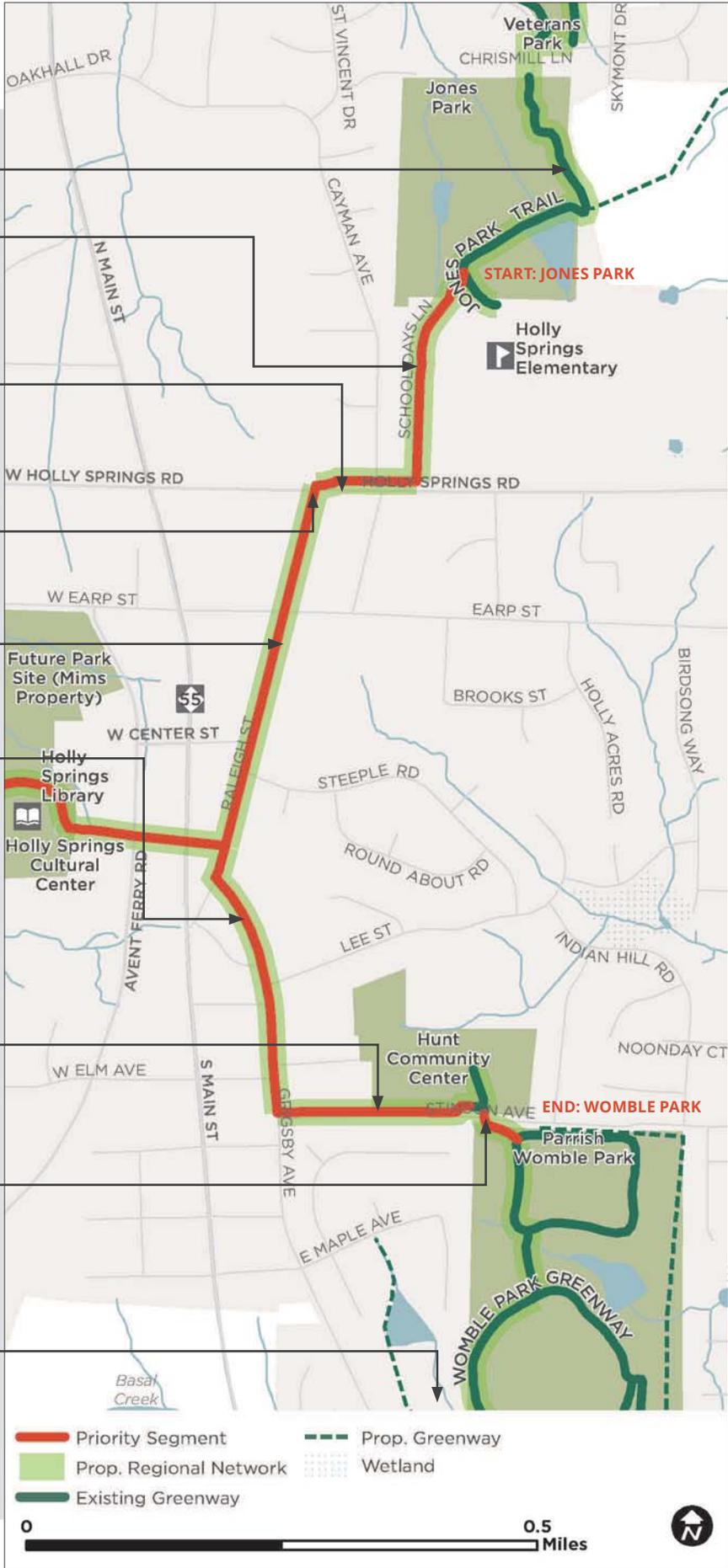
Existing crossing at Holly Springs Road and Raleigh Street should be considered for enhancement, such as installation of Rectangular Rapid Flash Beacons (RRFB).

A high-quality sidewalk is in place along Raleigh Street and Grigsby Avenue, complete with crosswalks at all crossings, but its expansion to a sidepath is constrained by utility poles and right-of-way. Bike boulevard enhancements and wayfinding are recommended to build on the existing sidewalk investment and ensure a calm environment for bicycling.

A new section of sidepath on the North side of Stinson Avenue takes advantage of Town-owned land and few physical obstacles.

An improved crossing is needed at Stinson Avenue. There is also an opportunity to widen the sidewalk connection between existing greenways here so a shared use path facility is continuous along the corridor. The segment terminates at Womble Park.

The segment links central Holly Springs to Sugg Farm and Bass Lake via an existing greenway connection and supports regional connectivity to Fuquay-Varina.



1D. BROAD STREET GREENWAY

FROM JUDD PARKWAY TO BASS LAKE

This project connects from Judd Parkway in north-west Fuquay-Varina to Bass Lake in southeast Holly Springs. From Judd Parkway, the route follows NC 55 to the Alston Pond neighborhood and connects through a wooded area to existing trails at Sugg Farm and Bass Lake. This project provides a direct link to between Fuquay-Varina and Holly Springs.

PROJECT AT A GLANCE

- Project location: Fuquay-Varina, Holly Springs, Wake County
- Project type: Sidepath, Shared-use path
- Length: 15,000 ft (2.8 miles)
- Total Connected Network: 8.8 miles
- Trip Generators:
 - » Bass Lake Park, Retreat Center, and trails
 - » Alston Ridge Park
 - » Alston Ridge, Springhill, Woodchase, and Sandy Springs Townhomes neighborhoods
 - » Broad Street Market shopping center
 - » Retail at Broad Street and Dickens Road

PREVIOUS PLANNING

- *Holly Springs Parks, Recreation, and Open Space Master Plan (2007)*
- *Fuquay-Varina Community Pedestrian Master Plan (2013)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 3.5 acres estimated right-of-way acquisition
- 36 impacted parcels
- 26 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/ Fuquay-Varina/ Holly Springs Floodplain Development Permit
- Wake County/ Fuquay-Varina/ Holly Springs Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/ Fuquay-Varina/ Holly Springs Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Fuquay-Varina, Town of Holly Springs
- Fuquay-Varina Chamber of Commerce, Holly Springs Chamber of Commerce

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$2.7 million to \$3.2 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$180,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Fuquay-Varina CIP, Holly Springs CIP

OPPORTUNITIES & CONSTRAINTS

The segment supports trail connectivity toward Holly Springs via the existing Bass Lake Outfall Greenway.

The alignment follows the edge of the Basal Creek floodplain but careful routing allows minimal impacts and no overlap with wetlands in this area. The segment traversing the floodplain will increase permitting requirements.

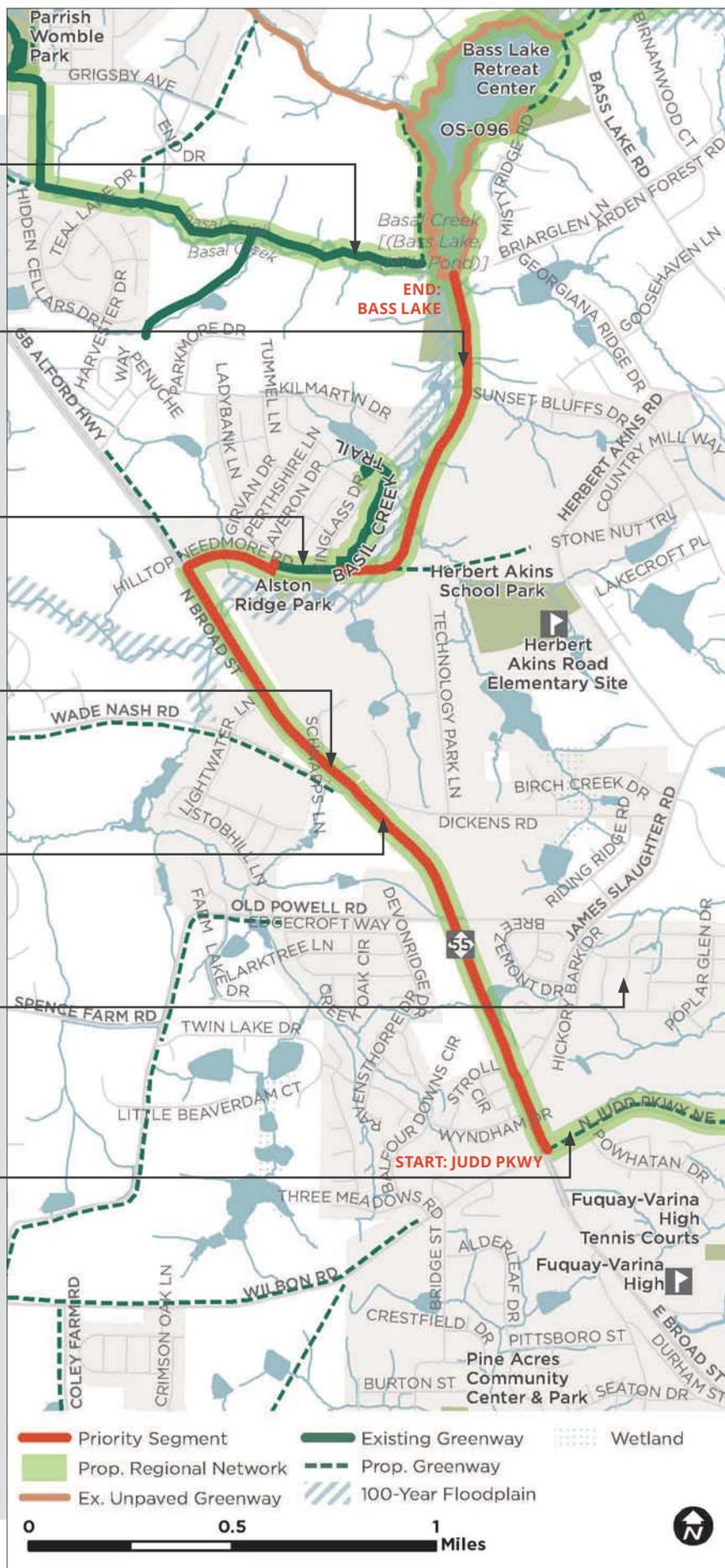
The project connects to the existing Basil Creek Trail and the Alston Pond neighborhood.

The alignment follows Broad Street between Hilltop Needmore Road and Judd Parkway.

South of Wade Nash Road, an existing sidewalk can be widened to a multi-use side-path. Because of proximity to the current sidewalk, many utility poles will require relocation at significant cost.

The project connects the Woodchase neighborhood.

The segment supports connectivity toward Fuquay-Varina via the proposed Judd Parkway greenway.



1E. FUQUAY-VARINA GREENWAY

FROM JUDD PARKWAY TO HONEYCUTT PARK

This project connects Honeycutt Park trails to Judd Parkway. This will enhance regional connectivity through proposed sidepaths along Judd Parkway and NC 55 that will extend toward greenways at Sugg Farm and Womble Park in southeast Holly Springs. To the southeast of this project, developing connectivity to the Depot Trail from Honeycutt Park will serve regional connectivity toward Angier and Harnett County.

PROJECT AT A GLANCE

- Project location: Fuquay-Varina, Wake County
- Project type: Shared use path, sidepath
- Length: 6,500 ft (1.2 miles)
- Total Connected Network: 1.7 miles
- Trip Generators:
 - » Fuquay-Varina Town Hall
 - » Southern Regional Center
 - » Food Lion shopping center
 - » Residential neighborhoods (Sunset Forest, Meadow Woods, Willow Creek South)
 - » Honeycutt Road Park
 - » ClubWorx and Crossfit Fuquay-Varina

PREVIOUS PLANNING

- *Fuquay-Varina Community Pedestrian Master Plan (2013)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 3.1 acres estimated right-of-way acquisition
- 15 impacted parcels
- 15 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Fuquay-Varina Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Fuquay-Varina Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Fuquay-Varina
- ClubWorx and Crossfit Fuquay-Varina
- Fuquay-Varina Chamber of Commerce

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$1.2 million to \$1.4 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$280,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Fuquay-Varina CIP

OPPORTUNITIES & CONSTRAINTS

A redesign of Judd Parkway is under construction.

Town Hall anchors the west end of the project, along with the nearby Southern Regional Center and Food Lion shopping center.

A sidepath on the north side of Old Honeycutt Road takes advantage of some Town-owned land and opportunities to set the sidepath back into the trees, creating a pleasant environment and avoiding the installation of curb and gutter.

Trail crossing improvements are needed at Old Honeycutt Road and Purfoy Road.

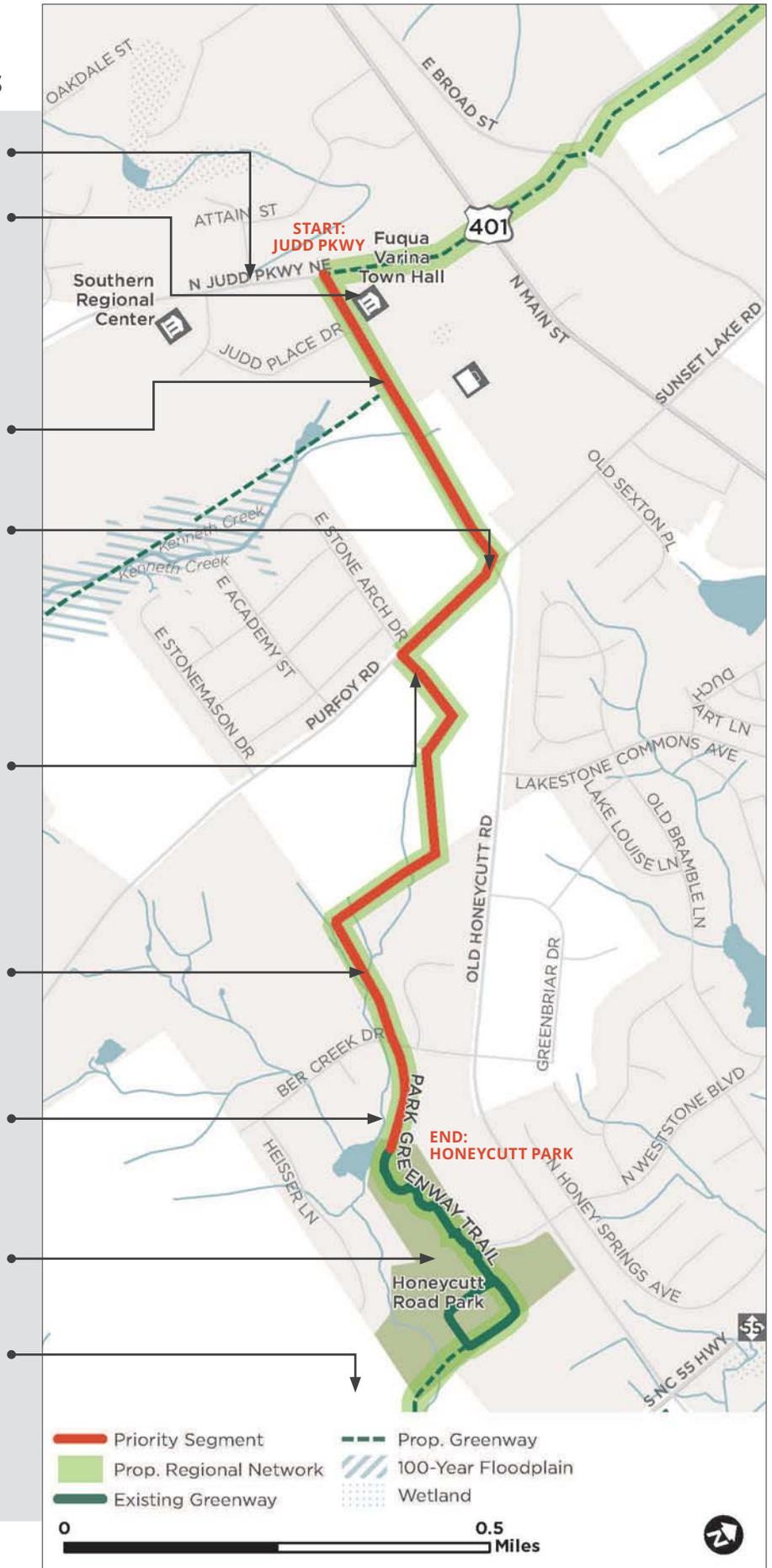
The alignment follows the east side of Purfoy Road as a sidepath and then cuts across several undeveloped properties to Ber Creek Drive. This section could likely be built as part of future development of this property.

A Town easement is in place for this section.

East of Ber Creek Drive, there is an 80' wide strip of land between water bodies that allows for a connection to existing trails at Honeycutt Road Park.

Honeycutt Park, with a variety of athletic facilities, anchors the east end of the project.

The segment supports connectivity toward Angier and Harnett County.



1F. MIDDLE CREEK GREENWAY

FROM LUFKIN ROAD MIDDLE SCHOOL TO SUNSET HILLS GREENWAY

The Middle Creek Greenway will complete a key link in the developing connection between downtown Apex and Holly Springs. To the north (the center of Apex), future trail connectivity will include a sidepath along Lufkin Road to Center Street and the Apex Peakway, eventually linking to the Beaver Creek Greenway. To the south, the Middle Creek greenway will link into the Holly Springs greenway system at Sunset Lake Road.

PROJECT AT A GLANCE

- Project location: Apex, Wake County
- Project type: Shared use path, sidepath
- Length: 12,900 ft (2.4 miles)
- Total Connected Network: 2.4 miles
- Trip Generators:
 - » Lufkin Road Middle School
 - » Classic Road industrial and office park
 - » Residential developments (Pemberley, Miramonte, Camden Reunion Park Apartments, Sunset Hills, Twisted Creek Townhomes, Arbor Creek, Bridgewater)
 - » Veterans Park
 - » Holly Springs greenway system

PREVIOUS PLANNING

- *Apex Parks, Recreation, Greenways, and Open Space Master Plan (2015)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 7.7 acres estimated right-of-way acquisition
- 17 impacted parcels
- 16 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Apex Floodplain Development Permit
- Wake County/Apex Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Apex Land Disturbance Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Apex
- Town of Holly Springs
- Wake County Board of Education
- Miramonte Homeowners Association

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$3.4 million to \$4.0 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

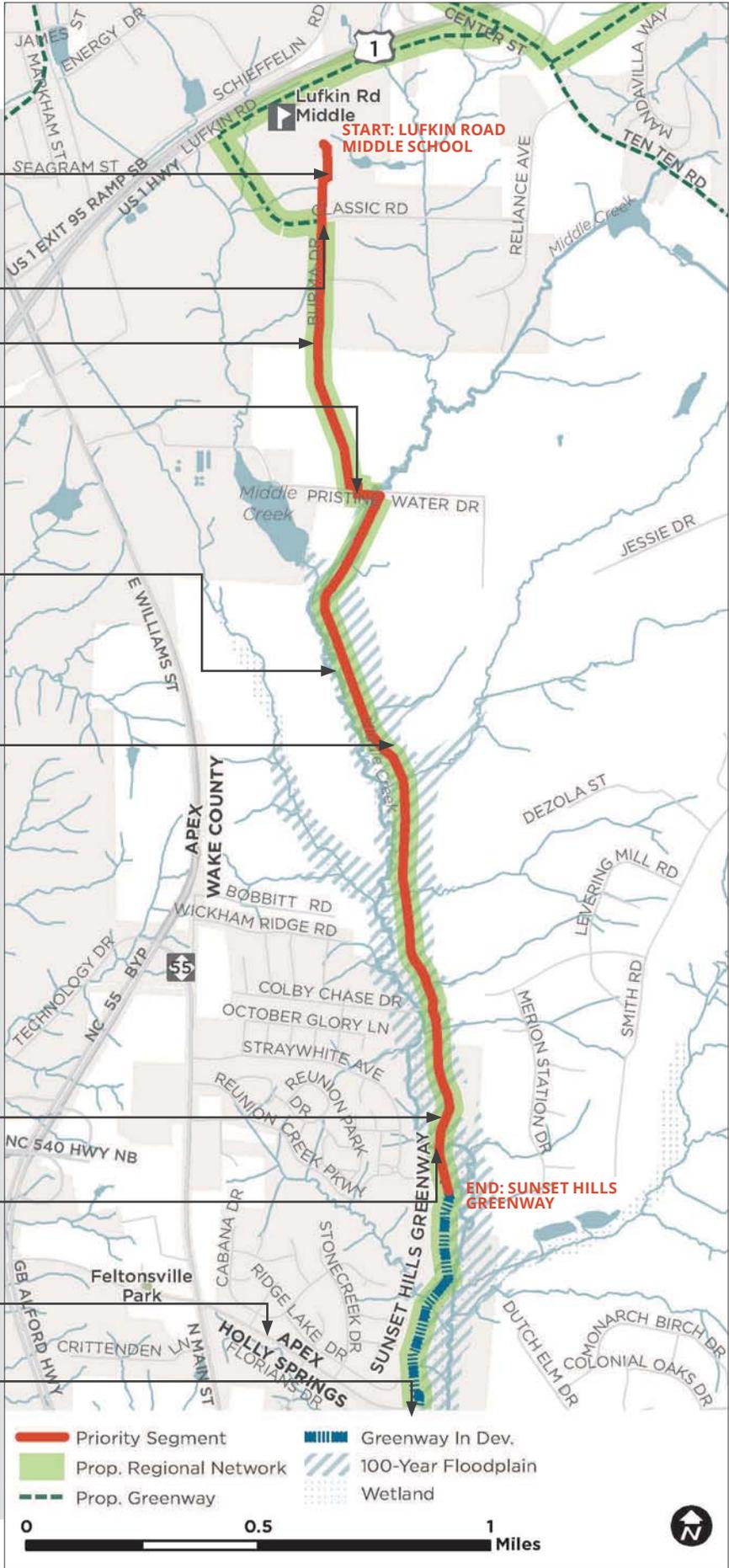
- *Based upon Wake County assessed property values acquisition estimates are approximately \$330,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Apex CIP
- Clean Water Management Trust Fund
- Duke Energy Water Resources Fund
- Miramonte Homeowners Association easement or land donation

OPPORTUNITIES & CONSTRAINTS

- A short trail extension off of the regional network connects the project to Lufkin Road Middle School at the north end. The segment supports regional connectivity toward Apex and Cary to the north.
- A new crossing is required at Classic Road.
- An existing sidewalk along Burma Drive can be expanded into a sidepath.
- A short section of sidepath and an on-road crossing are needed at Pristine Water Drive.
- The alignment follows the east side of Middle Creek between Pristine Water Drive and the southern end.
- The trail's location in the floodplain will increase permitting requirements.
- Boardwalk is required where the trail traverses wetlands near the second bridge. The alignment is generally located far enough east of Middle Creek to avoid wetlands wherever possible because of the high cost of boardwalk.
- A bridge crossing of Middle Creek is required.
- The segment supports regional connectivity between Apex and Holly Springs.
- Segment connects directly to a greenway trailhead at Sunset Lake Rd in Holly Springs.



1G. APEX WEST GREENWAY

FROM THE AMERICAN TOBACCO TRAIL TO BEAVER CREEK GREENWAY

This project is a key link in the connection between the American Tobacco Trail and the Town of Apex. The eastern half of this project is an extension of the Beaver Creek Greenway, which connects east toward the center of Apex, through Apex Nature Park. The western terminus links to the American Tobacco Trail at Olive Chapel Road near Jordan Lake.

PROJECT AT A GLANCE

- Project location: Apex, Wake County
- Project type: Shared use path, sidepath
- Length: 6,900 ft (1.3 miles)
- Total Connected Network: 31.3 miles
- Trip Generators:
 - » American Tobacco Trail
 - » Residential neighborhoods (Holland Crossings, Madden Crossing, Crocketts Ridge, Bella Casa, Parkside on the Creek)
 - » Apex Nature Park
 - » Olive Chapel Elementary School
 - » Kelly Road Park
 - » Jaycee Park

PREVIOUS PLANNING

- *Apex Parks, Recreation, Greenways, and Open Space Master Plan Map (2013) (2015 update)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 3.5 acres estimated right-of-way acquisition
- 8 impacted parcels
- 5 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Apex Floodplain Development Permit
- Wake County/Apex Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Apex Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Apex
- Apex Downtown Business Association
- Holland Crossings Homeowners Association
- Wakemed Healthplex Apex
- Arcadia West and Saddleback

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$3.4 million to \$4.1 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$31,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Apex CIP
- Parks and Recreation Trust Fund
- Clean Water Management Trust Fund
- Duke Energy Water Resources Fund
- Holland Crossings Homeowners Association easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment terminates at the American Tobacco Trail, connecting the Apex trail system to this regional amenity.

A short sidepath segment is needed along Olive Chapel Road to link the American Tobacco Trail and the portion of the greenway already under development.

A section of the greenway is being funded and constructed through private development.

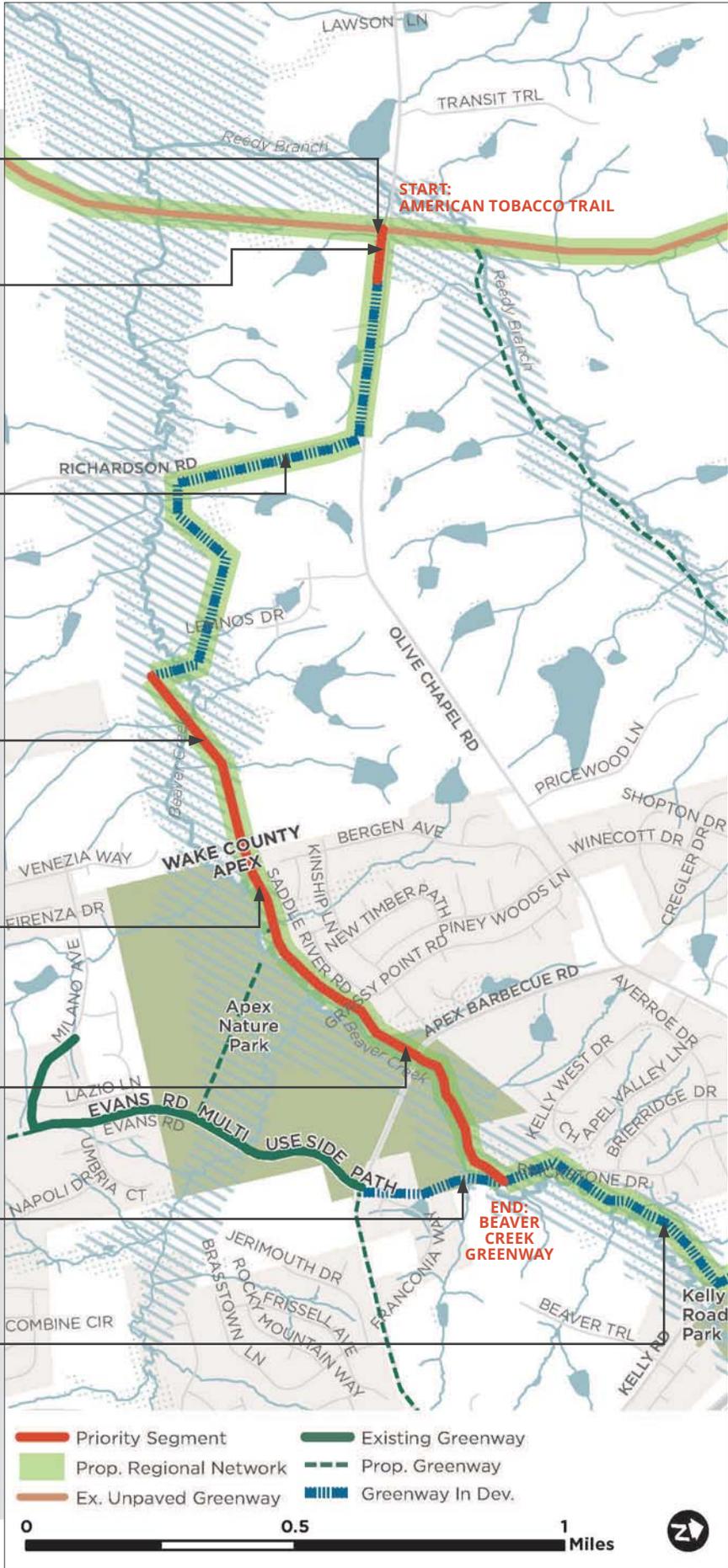
Boardwalk is recommended for the majority of the greenway to reduce impacts on the wetlands it traverses. The trail's location in the floodplain will increase permitting requirements.

The alignment follows the south side of Beaver Creek, south of the Hollands Crossing neighborhood, with opportunities to connect into the Apex Nature Park.

The alignment takes advantage of the Town-owned Apex Nature Park, reducing the required amount of property or easement acquisitions.

The segment terminates at a segment of the Beaver Creek Greenway currently under development.

The segment supports connectivity between the American Tobacco Trail and downtown Apex via the proposed network and greenways in development.



1H. LOWER WILLIAMS CREEK GREENWAY (SWIFT CREEK)

FROM LAKE PINE DR TO SYMPHONY LAKE GREENWAY

This segment of greenway is approximately 2.6 miles connecting Apex Community Park to the North and Regency Park/Koka Booth Amphitheater to the South. This project includes major bridge crossings of US-1 and US-64. Although not currently a top priority project in Cary, this segment could become one with significant new funding sources.

PROJECT AT A GLANCE

- Project location: Town of Cary, Wake County
- Project type: Greenway
- Length: 12,900 ft (2.4 miles)
- Total Connected Network: 11.6 miles
- Trip Generators: Apex Community Park, Regency Park and Koka Booth Amphitheater

PREVIOUS PLANNING

- *Town of Cary Parks, Recreation and Cultural Resources Master Plan (2012)*
- *Construction plans completed from Apex Community Park to US-1. (final bridge designs for crossing US-1 and US-64 outstanding)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 9.4 acres of right of way needed.
- There will be six privately owned parcels impacted by the greenway.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Cary
- Town of Apex
- CAMPO
- Cary Auto Park

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$7.5 million to \$9 Million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$800,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding

OPPORTUNITIES & CONSTRAINTS

This trail creates a vital recreational link between two of the larger parks in the region, Apex Community Park and Regency Park.

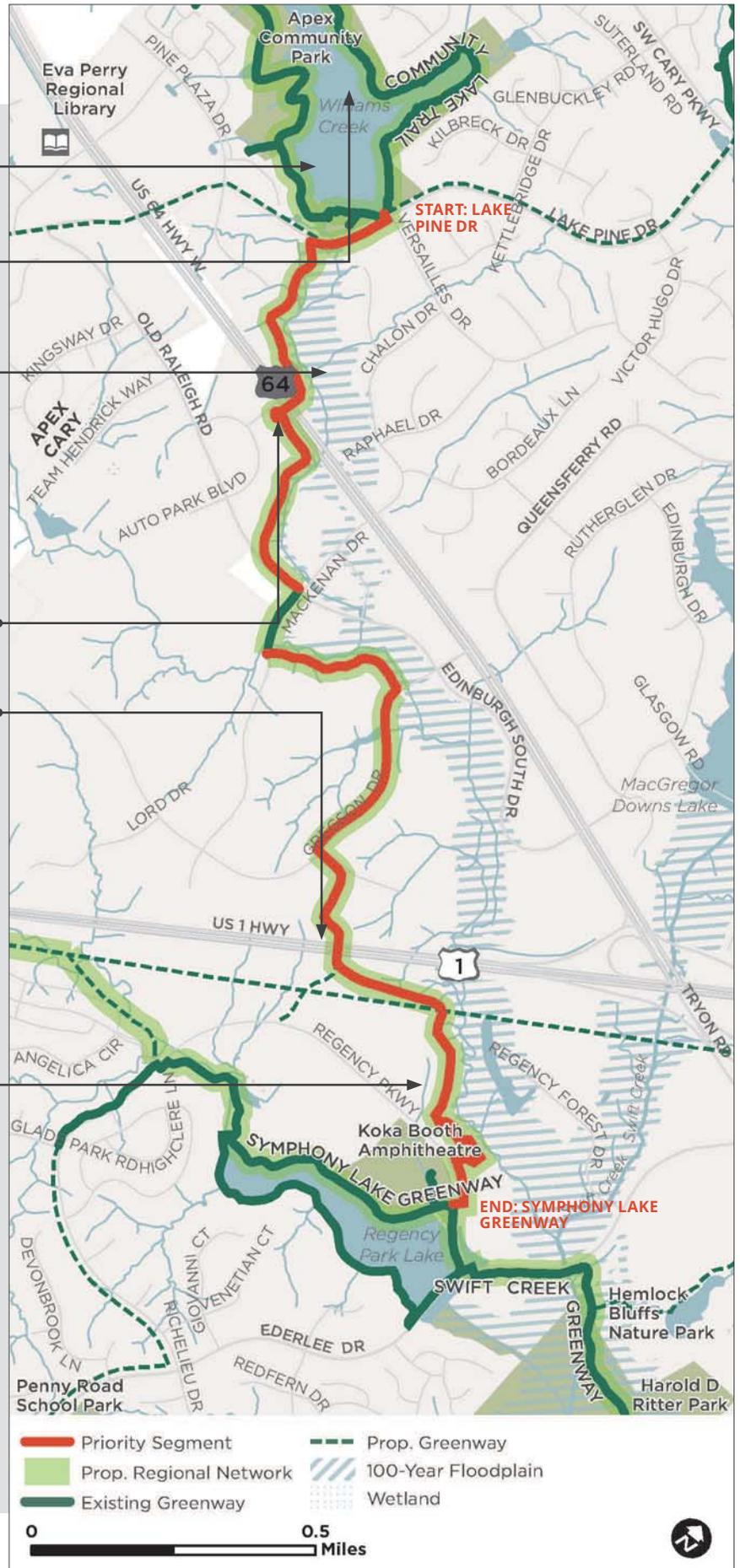
Joint partnerships opportunities may be available between the Town of Apex and the Town of Cary.

The Town of Cary owns a parcel of property located at the end of MacGregor Pines Drive that may be an ideal location for a trailhead.

Construction plans were completed in 2012 from Apex Community Park to US-1 (final bridge designs for crossing US-1 and US-64 outstanding).

Two major road crossings of US-1 and US-64 will require a large pedestrian bridge.

Much of the alignment is located in non-residential areas. Easement acquisition may cost more than typical.



11. SWIFT CREEK GREENWAY (UPPER WILLIAMS CREEK GREENWAY)

FROM FRED BOND METRO PARK TO OLD APEX ROAD

The Swift Creek Greenway, also known as Upper Williams Creek Greenway, connects two of the larger parks in the Cary/Apex area. Fred Bond Metro Park and Apex Community Park are large recreational destinations therefore this stretch of trail is a vital recreational link. This 1.5 mile stretch of greenway provides access to a large number of residential neighborhoods in addition to Laurel Park Elementary School. Although not currently a top priority project in Cary, this segment could become one with significant new funding sources.

PROJECT AT A GLANCE

- Project location: Town of Cary and Town of Apex Wake County
- Project type: Shared use path
- Length: 8,500 ft (1.6 miles)
- Total Connected Network: 147 miles
- Trip Generators: Apex Community Park, Fred Bond Metro Park and Laurel Park Elementary School

PREVIOUS PLANNING

- *Town of Cary Parks, Recreation and Cultural Resources Master Plan (2012)*
- *Town of Apex Parks, Recreation, Greenways and Open Space Master Plan (2015)*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 2 acres of easements and/or right of way will be needed
- There will be seven properties impacted by the greenway.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Cary
- Town of Apex
- Wake County Public Schools

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$1.8 million to \$2.2 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$51,000.*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund

OPPORTUNITIES & CONSTRAINTS

This trail creates a vital recreational link between two of the larger parks in the region, Fred Bond Metro Park and Apex Community Park.

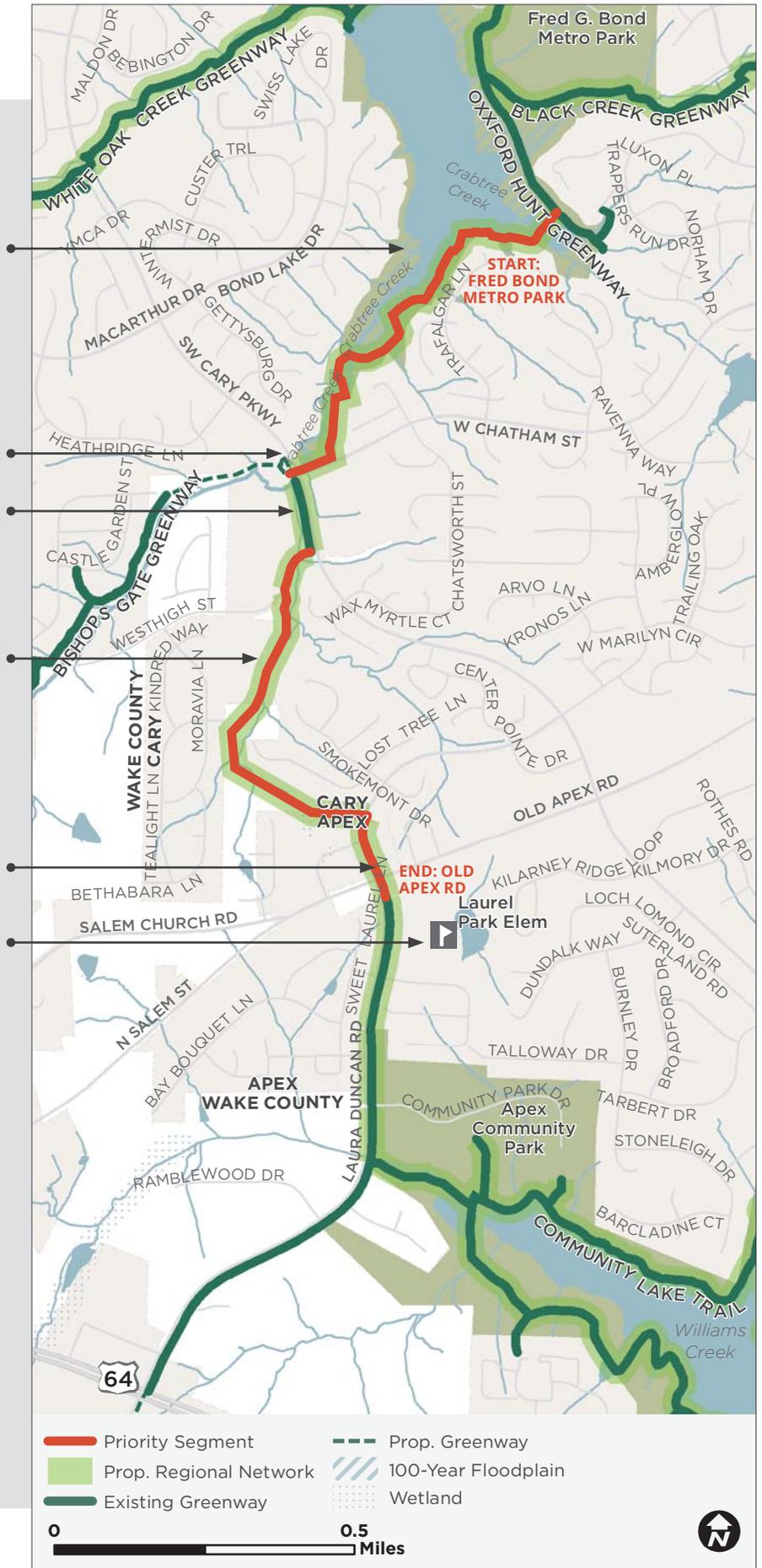
A safe pedestrian crossing will be needed at Cary Parkway. A possible rapid flashing beacon may be needed.

Wide multiuse path already exists on Cary Parkway.

Much of the trail can utilize existing utility easements.

Upgrades to the intersection at Old Apex Road will be needed.

Crossing the railroad and Old Apex Road presents a challenge for this project. Due to the proximity to Laurel Park Elementary School it is very important to provide a safe crossing.



1J. HATCHER CREEK GREENWAY

FROM EXISTING TRAIL ON SEDGEFIELD PARK LANE TO MORRISVILLE COMMUNITY PARK

Hatcher Creek Greenway connects a large high density area in western Wake County to the American Tobacco Trail. This segment runs from NC55 eastward to Davis Drive. This portion of trail includes off road greenway and side street multiuse trail. The total length of this project is 1.7 miles. Just under 1/2 of a mile will be streetside multiuse trail on Morrisville Parkway. The primary challenge to this project is crossing the railroad at the west end of the project. Carpenter Elementary School and West Regional Library will have direct benefits from this project. Although not currently a top priority project in Cary, this segment could become one with significant new funding sources.

PROJECT AT A GLANCE

- Project location: Town of Cary, Wake County
- Project type: Shared use path
- Length: 11,100 ft (2.1 miles)
- Total Connected Network: 141 miles
- Trip Generators: American Tobacco Trail, Carpenter Elementary, West Regional Library, Morrisville Community Park, Panther Creek Greenway

PREVIOUS PLANNING

- *Town of Cary Greenway Parks, Recreation and Cultural Resources Master Plan. (2012)*
- *Center of the Region Enterprise Plan (CORE) (2016)*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 3.8 acres of easements and/or right of way will be needed
- There will be nine properties impacted by the greenway.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit
- FEMA Conditional Letter of Map Revision (CLOMR)

POTENTIAL PARTNERSHIPS

- Town of Cary
- Wake County Public Schools
- Wake County Public Library
- Carpenter Village HOA

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$2.2 million to \$2.8 million*
- *Grade separations at Davis Drive and NC 55 could add about \$10 million to the project cost*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$680,000.*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund
- Safe Routes to Schools

OPPORTUNITIES & CONSTRAINTS

The crossing of Davis Drive already has a full traffic signal. Minor upgrades will be needed to accommodate pedestrian movement.

The Town of Cary owns a tract of land at Davis Drive that may be an opportunity for a trailhead.

This trail creates a connection to the trails in the Town of Morrisville to the east and eventually the American Tobacco Trail to the west.

Obtaining easements from Carpenter Village and Lakegrove Townhomes will be difficult.

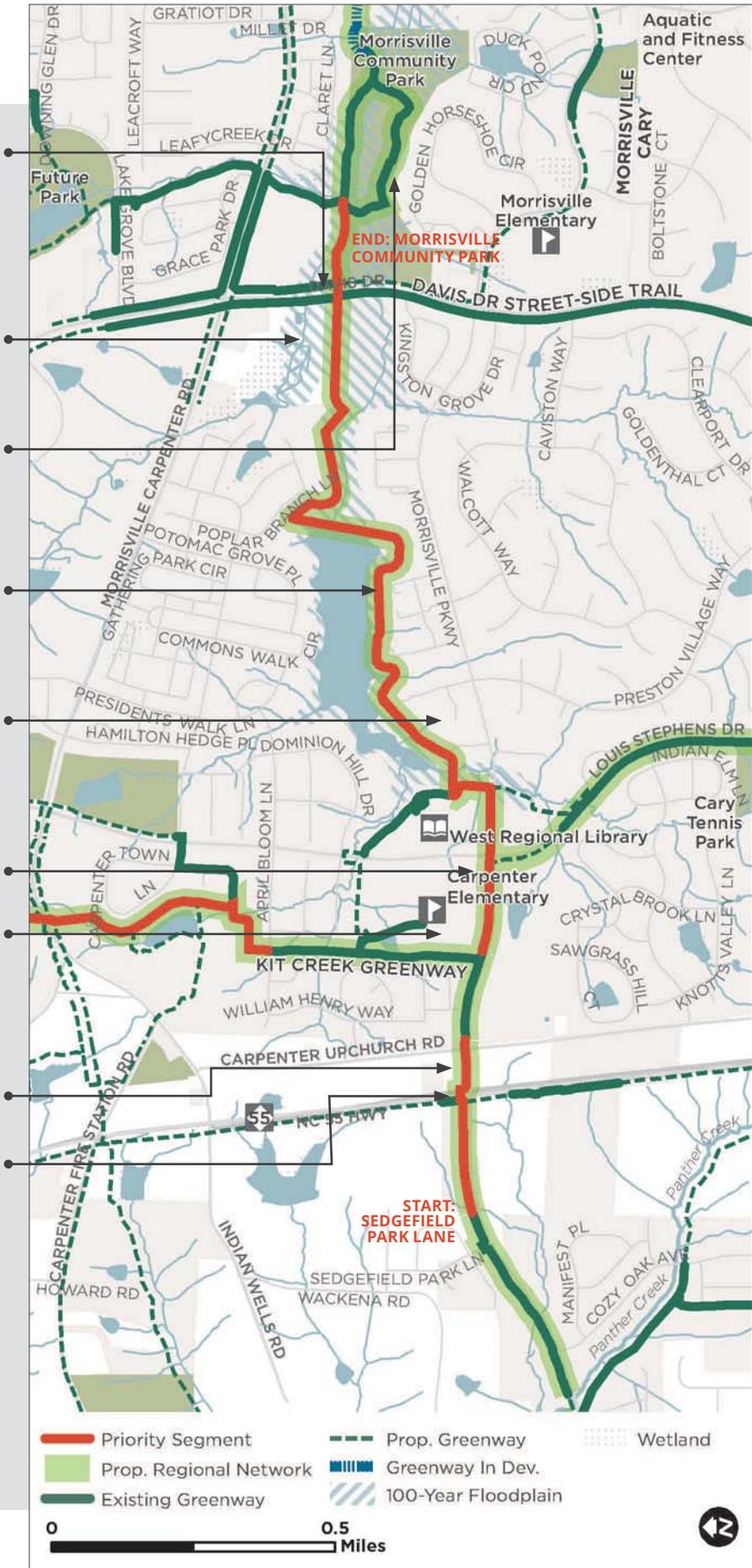
A large portion of this project will be located within the floodplain which will require a FEMA/CLOMR study.

Wetlands are located in the proximity of West Regional Library.

The project allows connection to Carpenter Elementary School and West Regional Library.

Crossing the existing railroad at grade presents the major challenge for this project.

The trail can use existing right of way along Morrisville Parkway.



1K. LOUIS STEPHENS DRIVE GREENWAY FROM KIT CREEK ROAD TO KIT CREEK GREENWAY

This project connects RTP from the Louis Stephens Drive/Kit Creek Road intersection to Cary at the existing Kit Creek Greenway. From Kit Creek Road, the route follows Louis Stephens Drive to its present terminus to the south, then connects to the existing Kit Creek Greenway by passing under the Triangle Expressway and through wooded areas between neighborhoods at the northern edge of Cary. This project serves as a regional north/south link connecting Cary and RTP. Although not currently a top priority project in Cary, this segment could become one with significant new funding sources.

PROJECT AT A GLANCE

- Project location: Cary, Wake County
- Project type: Sidepath, Shared-use path
- Length: 19,200 ft (3.6 miles)
- Total Connected Network: 12.3 miles
- Trip Generators:
 - » Northwest Park
 - » Breckenridge, Wexford, Legacy at Carpenter Village, Carpenter Village, and Olde Carpenter neighborhoods
 - » Carpenter Elementary School
 - » West Regional Library
 - » Lake Betz
 - » Employers (NetApp, Cisco Systems)

PREVIOUS PLANNING

- *Center of Regional Enterprise (CORE) Pedestrian, Bicycle, and Greenways Update (2016)*
- *Cary Comprehensive Transportation Plan*

POTENTIAL RIGHT-OF-WAY NEEDS

- 7.6 acres estimated right-of-way acquisition
- 21 impacted parcels
- 16 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/ Cary Floodplain Development Permit
- Wake County/Cary Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Cary Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Research Triangle Park (RTP)
- Town of Cary, Town of Morrisville
- Cary Chamber of Commerce, Morrisville Chamber of Commerce
- McCrimmon at the Park HOA, McCrimmon at the Park HOA, Magnolia Estates HOA, Phillips Place HOA
- NetApp

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$3.3 million to \$4.0 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$550,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Cary CIP
- Magnolia Estates HOA, Phillips Place HOA easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment supports trail connectivity toward Research Triangle Park.

The alignment terminates at the intersection of Kit Creek Road and Louis Stephens Drive. Crossing improvements are needed here.

The alignment traverses floodplain, which will increase permitting requirements. A bridge is required at this stream crossing.

The alignment includes upgrading an existing 8 foot-wide path along Louis Stephens Drive at the north end of the alignment to a 10 foot-wide multi-use path.

A bridge is required at this location.

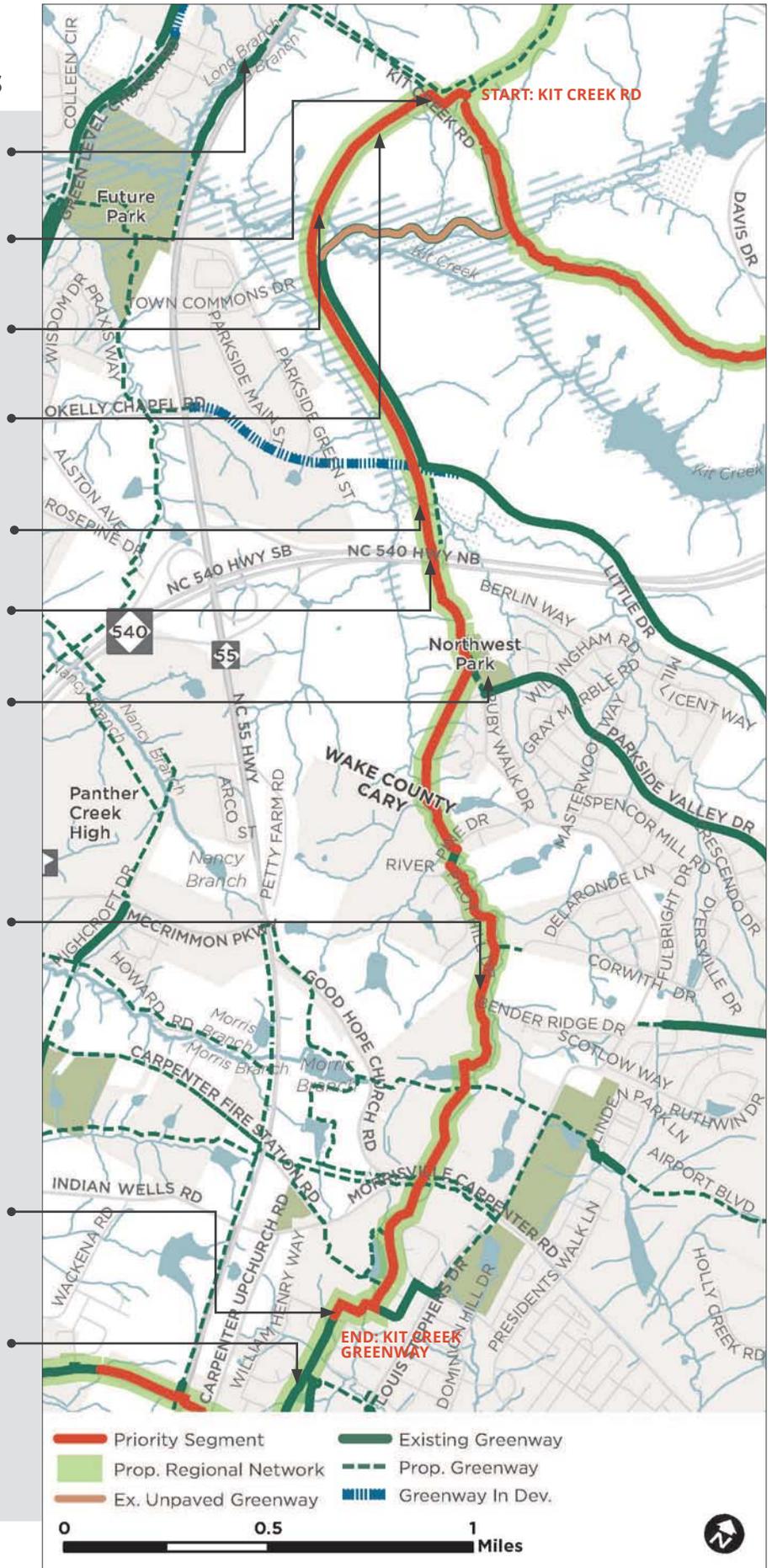
The alignment passes under NC 540 at an existing underpass.

The alignment connects Northwest Park and the Parkside Valley Drive greenway.

Between Parkside Valley Drive and April Bloom Lane, the alignment follows a stream corridor.

The segment terminates at an existing greenway at the intersection of April Bloom Road and Grant Fores Lane.

The segment supports connectivity toward Cary's Panther Creek Trail corridor.



1L. KIT CREEK ROAD GREENWAY

FROM LOUIS STEPHENS DRIVE TO SHILOH GREENWAY

This project runs from the Kit Creek Road/Louis Stephens Drive intersection in RTP to the Shiloh Greenway in Morrisville. From Louis Stephens Drive, the route follows Kit Creek Road to the trail in development along Davis Drive. The last section of this project connects from Davis Drive at the Little Drive intersection through a patch of woods to the Shiloh Greenway. This project links RTP, Cary, and Morrisville in the western edge of Wake County.

PROJECT AT A GLANCE

- Project location: Morrisville, Wake County
- Project type: Sidepath, Shared-use path
- Length: 11,500 ft (2.2 miles)
- Total Connected Network: 15.8 miles
- Trip Generators:
 - » Employers (NetApp, Cisco Systems)
 - » Church Street Park
 - » Shiloh Park
 - » Shiloh Grove and Hamlet in the Park neighborhoods

PREVIOUS PLANNING

- *Center of Regional Enterprise (CORE) Pedestrian, Bicycle, and Greenways Update (2016)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 4.5 acres estimated right-of-way acquisition
- 7 impacted parcels
- 6 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/ Morrisville Floodplain Development Permit
- Wake County/ Morrisville Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/ Morrisville Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Research Triangle Park (RTP)
- Town of Morrisville, Town of Cary
- Morrisville Chamber of Commerce, Cary Chamber of Commerce
- Shiloh Grove HOA
- Duke Energy
- Research Triangle Foundation

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$1.8 million to \$2.1 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$230,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Wendell CIP
- Duke Energy and Research Triangle Foundation easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment supports trail connectivity toward Research Triangle Park.

Lake Betz creates a constrained cross-section for 525 feet where a sidewalk is in place. This section is proposed to remain as-is with signage warning users as they approach the narrow section.

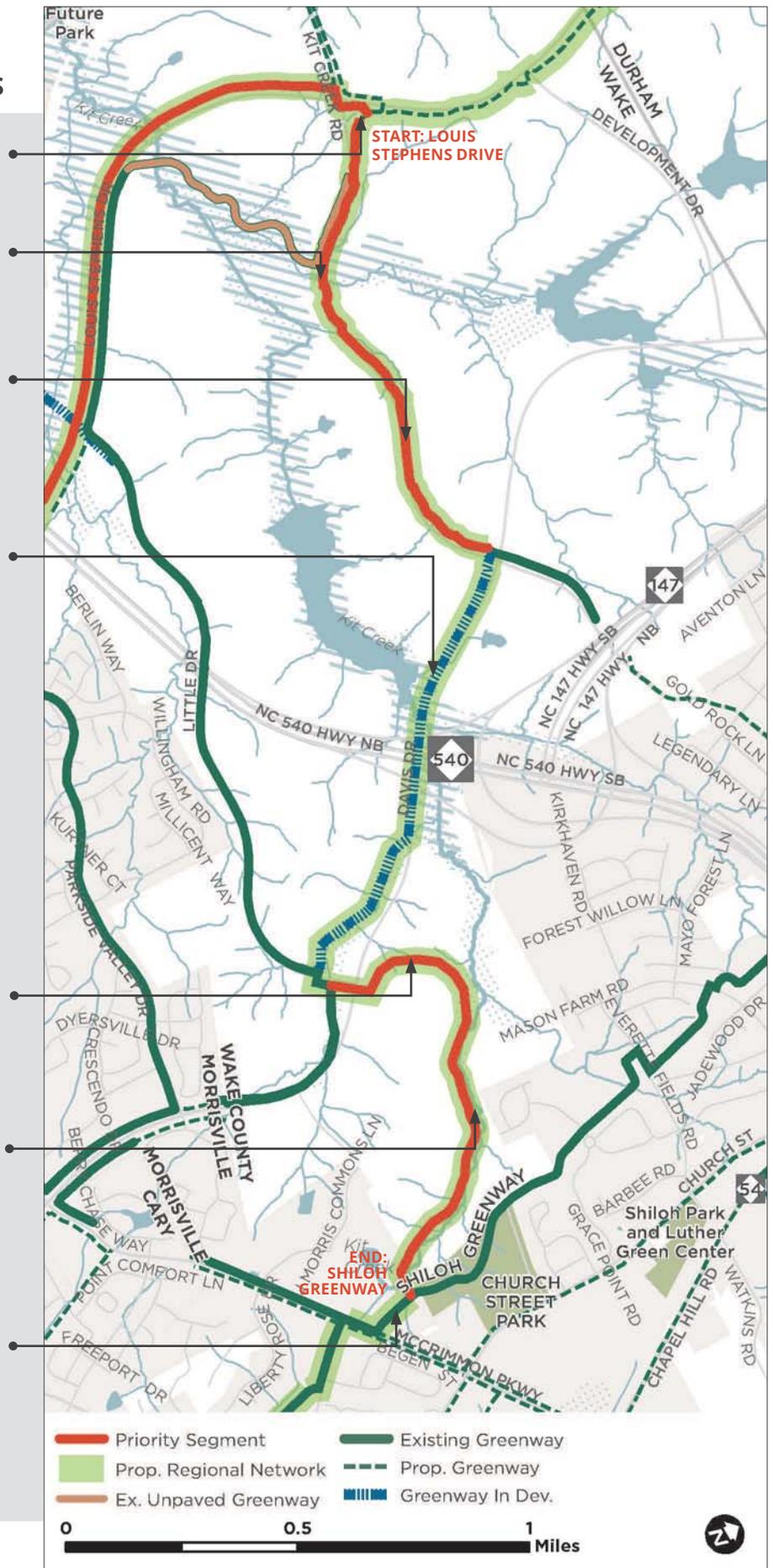
An existing 8 foot-wide paved path exists along the east side of Kit Creek Road between Louis Stephens Drive and Davis Drive. The project includes upgrading this section to a 10 foot-wide multi-use path to meet current standards.

A multi-use path is currently under development between Davis Drive and Little Drive.

The alignment follows a future roadway corridor between Davis Drive and Kit Creek. Coordination should occur between greenway and roadway development.

The alignment follows Kit Creek down to the existing Shiloh Greenway and Church Street Park.

The segment supports connectivity to Morrisville.



1M. HARE SNIPE CREEK TRAIL

FROM WOOTEN MEADOW PARK TO CRABTREE CREEK GREENWAY

This 1.6 mile segment of Hair Snipe Creek Trail connects Lake Lynn and Wooten Meadow Park to Crabtree Creek Greenway. Most of the alignment within Wooten Meadow Park is wetland, therefore a low level boardwalk will be needed. The alignment as a whole is within the flood plain. The major challenge to the project is crossing Glenwood Avenue. A tunnel crossing of at least 180 feet will be necessary.

PROJECT AT A GLANCE

- Project location: City of Raleigh, Wake County
- Project type: Shared use path
- Length: 9,000 ft (1.7 miles)
- Total Connected Network: 147 miles
- Trip Generators: Lake Lynn, Wooten Meadow Park, Crabtree Greenway, Brookhaven Nature Park and Crabtree Valley Mall

PREVIOUS PLANNING

- *City of Raleigh Parks, Recreation and Cultural Resources System Plan (2014)*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 4.7 acres of easements and/or right of way will be needed
- There will be five properties impacted by the greenway on of which is non-residential thus a higher acquisition value. Fortunately the remaining properties are undeveloped.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit
- FEMA Conditional Letter of Map Revision (CLOMR)

POTENTIAL PARTNERSHIPS

- City of Raleigh
- Crabtree Valley Mall

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$9 million to \$10.8 million*
- *Cost estimates should be escalated at a rate of 5% each year*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$490,000. Acquisition of easements on non-residential property along Glenwood Avenue increases acquisition costs*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund

OPPORTUNITIES & CONSTRAINTS

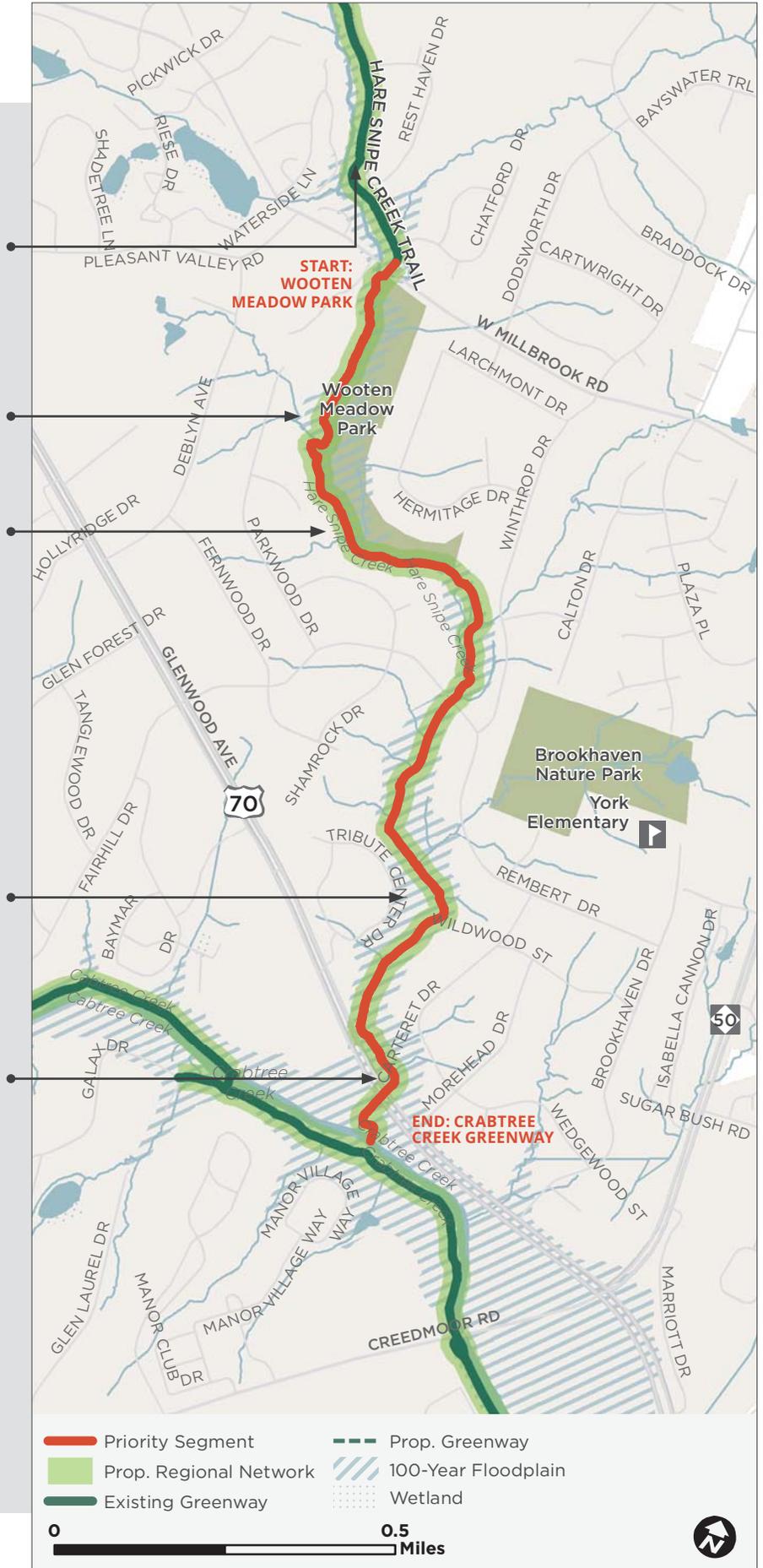
This trail creates a link from Lake Lynn and Wooten Meadow Park to Crabtree Creek Greenway.

The northern most portion of the trail is within wetlands requiring low level boardwalk.

A large portion of this project will be located within the floodplain which will require a detailed study area for FEMA/CLOMR.

The City already has several greenway easements north of Glenwood Avenue.

Crossing Glenwood Avenue will be that greatest challenge for the project. A 180 foot long tunnel will be need to get across Glenwood Avenue.



1N. RALEIGH PIGEON HOUSE TRAIL CONNECTOR

FROM CRABTREE CREEK TRAIL TO ROCKY BRANCH TRAIL

This project connects the existing Crabtree Creek Trail to the Rocky Branch Trail near downtown Raleigh. From the Rocky Branch Trail, the route follows through the Boylan Heights neighborhood, along West Street and eventually following the Capital Boulevard Corridor to the Crabtree Creek Trail. This project includes significant stream restoration and would serve as a critical regional link through the heart of Raleigh. Greater detail on the section between Crabtree Creek Boulevard and Peace Street is provided in the *Capital Boulevard Corridor Study*, which analyzed that area in depth and recommended a greenway as part of broader improvements.

PROJECT AT A GLANCE

- Project location: Raleigh
- Project type: Sidepath, Shared-use path, On-road connection (separated bike lanes and sidewalks)
- Length: 24,700 ft (4.7 miles)
- Total Connected Network: 143 miles
- Trip Generators:
 - » Capital Boulevard/Crabtree Boulevard commercial corridors
 - » William Peace University
 - » Downtown Raleigh
 - » Downtown Raleigh neighborhoods
 - » Raleigh Amtrak Station

PREVIOUS PLANNING

- *Raleigh Capital Area Greenway Planning and Design Guide (2014)*
- *Raleigh Bike Plan Update (2016)*
- *Raleigh Capital Boulevard Corridor Study (2012)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 9.6 acres estimated right-of-way acquisition
- 67 impacted parcels
- 48 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/ Raleigh Floodplain Development Permit
- Wake County/ Raleigh Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/ Raleigh Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- City of Raleigh
- Raleigh Chamber of Commerce, Raleigh Downtown Alliance
- Amtrak
- Boylan Heights Neighborhood Organization
- Businesses along West Street and Capital Boulevard

ESTIMATED CONSTRUCTION COST

- *This greenway project should be implemented as part of comprehensive corridor improvements to Capital Boulevard. See the Capital Boulevard Corridor Study for more information on costs and codependent projects.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$2,000,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Raleigh CIP
- Land easements/donations

OPPORTUNITIES & CONSTRAINTS

The segment terminates at the existing Crabtree Creek Trail on the northeast end.

Boardwalk is recommended north of Crabtree Boulevard.

The alignment along Capital Boulevard is proposed as part of a stream restoration and park project.

Pedestrian crossing improvements are needed at the intersection of Wake Forest Road and Old Louisburg Road.

A super street is proposed for Capital Boulevard through this section. This reconfiguration will allow installation of a greenway along the existing commercial service road paralleling the boulevard.

The alignment continues along Pigeon House Branch to Peace Street through the proposed Devereux Meadows Park and Stream Restoration.

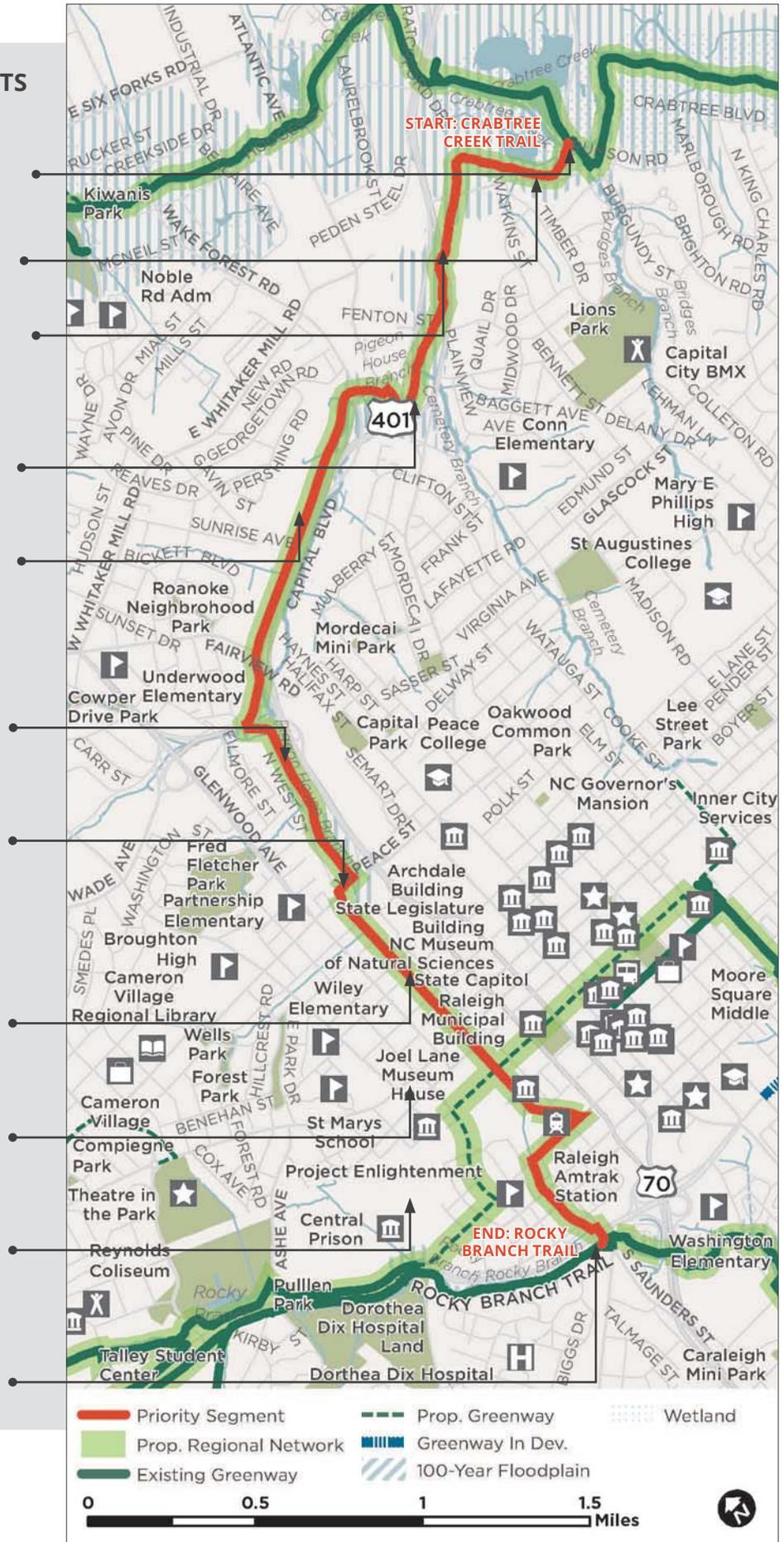
A short sidepath is proposed along Peace Street between Pigeon House Branch and West Street.

South of Peace Street, an on-road alignment is proposed along West Street including a separated bikeway and sidewalks, given constrained right-of-way. This section of the alignment links the heart of downtown Raleigh.

The alignment connects the Raleigh Amtrak Station, and then follows Cabarrus Street for two blocks with on-road bike markings, signage, and sidewalks.

The alignment follows a Rocky Branch tributary for the remaining portion and links the Lenoir Street Park. This section requires negotiation with several property owners.

The segment terminates at the existing Rocky Branch Trail.



10. CREECH ROAD GREENWAY

FROM GARNER ROAD TO WALNUT CREEK GREENWAY

This project links the center of Garner to the Walnut Creek Greenway in southeast Raleigh. From Garner Road, the route travels past the Garner Senior Center, through Garner Recreation Park to Creech Road Elementary School and Creech Road before connecting to, and following, a Walnut Creek tributary to the Walnut Creek Trail. This project provides a direct link to Raleigh's existing greenway system and the heart of Garner.

PROJECT AT A GLANCE

- Project location: Raleigh, Garner, Wake County
- Project type: Sidepath, Shared-use path
- Length: 23,200 ft (4.4 miles)
- Total Connected Network: 142 miles
- Trip Generators:
 - » Walnut Creek Park
 - » Walnut Creek Amphitheatre
 - » Creech Road Elementary School & Park
 - » Garner Recreational Park
 - » Green Valley, Parrish Meadows, Quarry Pointe, Gatewood neighborhoods

PREVIOUS PLANNING

- *Garner Comprehensive Parks, Recreation, and Greenways Master Plan (2007)*
- *Raleigh Capital Area Greenway Planning and Design Guide (2014)*
- *Raleigh Bike Plan Update (2016)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 12.3 acres estimated right-of-way acquisition
- 51 impacted parcels
- 42 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/ Garner/ Raleigh Floodplain Development Permit
- Wake County/ Garner/ Raleigh Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/ Garner/ Raleigh Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Garner, City of Raleigh
- Garner Chamber of Commerce, Raleigh Chamber of Commerce
- Hunter's Mark HOA, Riverbrooke Community Watch, Quarry Pointe HOA
- South Citizens Advisory Council
- Federal Highway Administration (FHWA)

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$8.2 million to \$9.8 million (excluding the proposed grade-separated crossing of I-40).*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$110,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Garner CIP, Raleigh CIP
- Riverbrooke Homeowner's Association easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment supports trail connectivity between Garner and the Walnut Creek entertainment complex in southeast Raleigh. It terminates at the existing Walnut Creek Trail

A bridge is required over Walnut Creek.

An underpass is proposed at Rock Quarry Road. This location requires further study. As an alternative, the trail could cross at the intersection with Jones Sausage Road.

The alignment traverses wetlands and floodplain between the Walnut Creek Greenway and I-40. Boardwalk is proposed to reduce wetland impacts at significant cost. Additional bridges may be required in this section.

A grade-separated crossing of I-40 is required. This crossing requires further study and is not included in the planning level cost estimate provided.

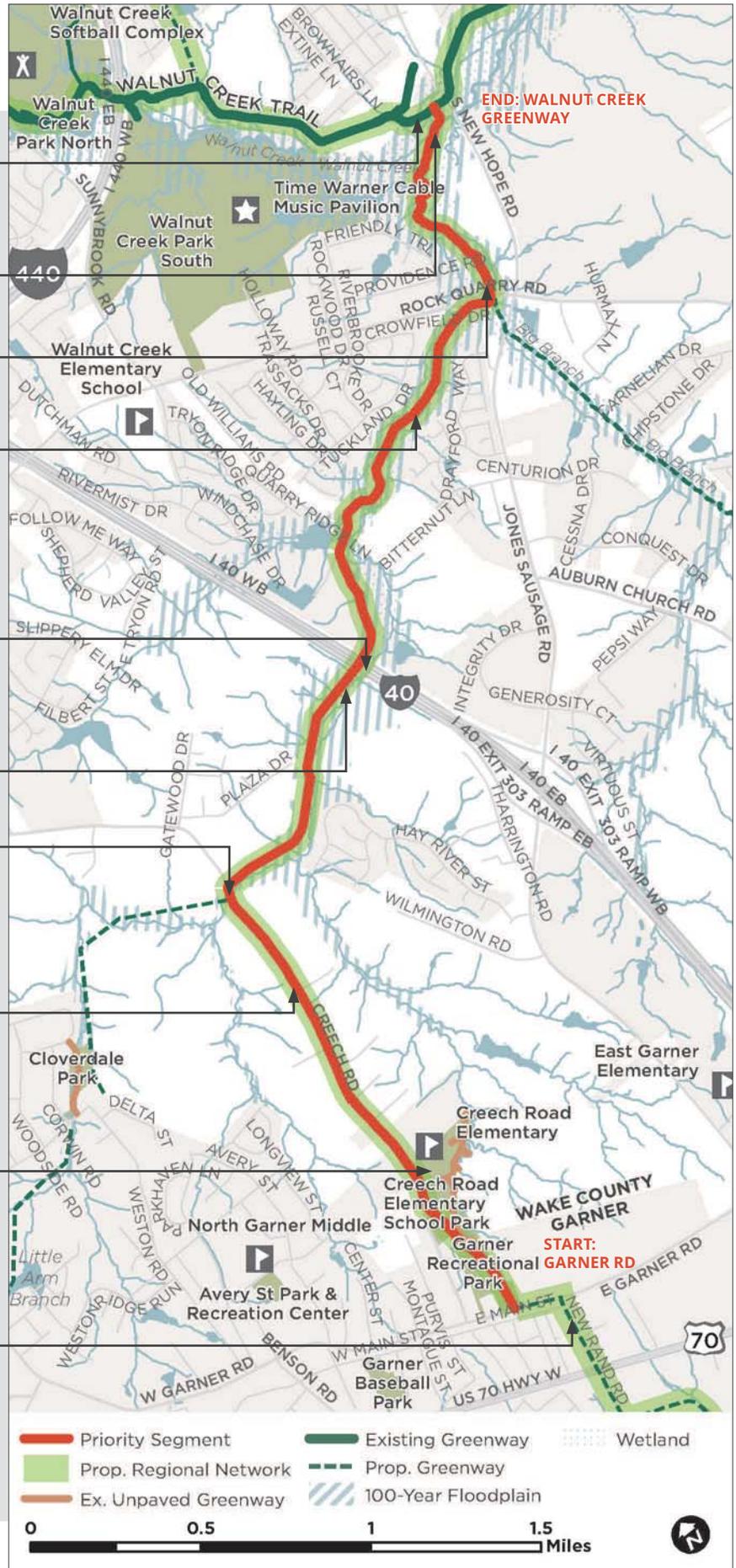
A bridge is required west of the I-40 crossing.

A bridge is required where the alignment meets Creech Road and heads south.

Curb and gutter is recommended along Creech Road in order to reduce right-of-way acquisition through this residential section.

The project connects Creech Road Elementary School Park and Garner Recreational Park before terminating at Main Street.

The segment supports connectivity toward the heart of Garner.



1P. BUFFALOE ROAD GREENWAY

FROM WHITE DEER PARK TO CENTENNIAL PARK

This project provides a connection between existing trails at Garner's White Deer Park and Centennial Park. From White Deer Park, the route follows Buffalo Road before connecting to the eastern end of Lake Benson, eventually following Mahlers Creek toward Centennial Park. This corridor will eventually serve as a key regional link connecting Cary, Lake Wheeler, Lake Benson, Garner, and Johnston County.

PROJECT AT A GLANCE

- Project location: Garner, Wake County
- Project type: Shared use path, sidepath
- Length: 15,800 ft (3 miles)
- Total Connected Network: 7.1 miles
- Trip Generators:
 - » White Deer Park
 - » Lake Benson Park
 - » Residential neighborhoods (Summer Walk, Autumn Oaks, Scarborough Ridge, Lynshire, Dunhaven, Woodsdale, Jamestowne)
 - » Centennial Park

PREVIOUS PLANNING

- *Garner Comprehensive Parks, Recreation, and Greenways Master Plan (2007)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 3.6 acres estimated right-of-way acquisition
- 29 impacted parcels
- 25 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/Garner Floodplain Development Permit
- Wake County/Garner Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Garner Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Garner
- Garner Chamber of Commerce
- Rosemoor Place Homeowners Association

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$3.4 million to \$4.1 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$81,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Garner CIP
- Clean Water Management Trust Fund
- Duke Energy Water Resources Fund
- Rosemoor Place Homeowners Association easement or land donation

OPPORTUNITIES & CONSTRAINTS

The segment terminates at White Deer Park, linking into the extensive trail network in this park and the adjacent Lake Benson Park, and ultimately connecting west Garner and Lake Wheeler. The existing striped crosswalk at Aversboro Road should be updated with a pedestrian signal.

There's an opportunity to partner with a homeowner's association to site a sidepath farther from Buffaloe Road through existing trees.

Numerous residential driveways and landscaping within road right-of-way will complicate sidepath development for some sections of Buffaloe Road. Curb and gutter will be required to construct the sidepath within existing right-of-way.

The existing shoulder of the berm through Lake Benson is not wide enough for a sidepath. The berm must be widened to accommodate the sidepath.

Right-of-way for a sidepath is constrained at the end of Bufflaoe Road where the roadway widens to accommodate a left turn lane. An on-road facility with a physical separator may be required in this location.

An underpass of NC-50 is required where the alignment moves off-road to follow Swift Creek and then Mahlers Creek.

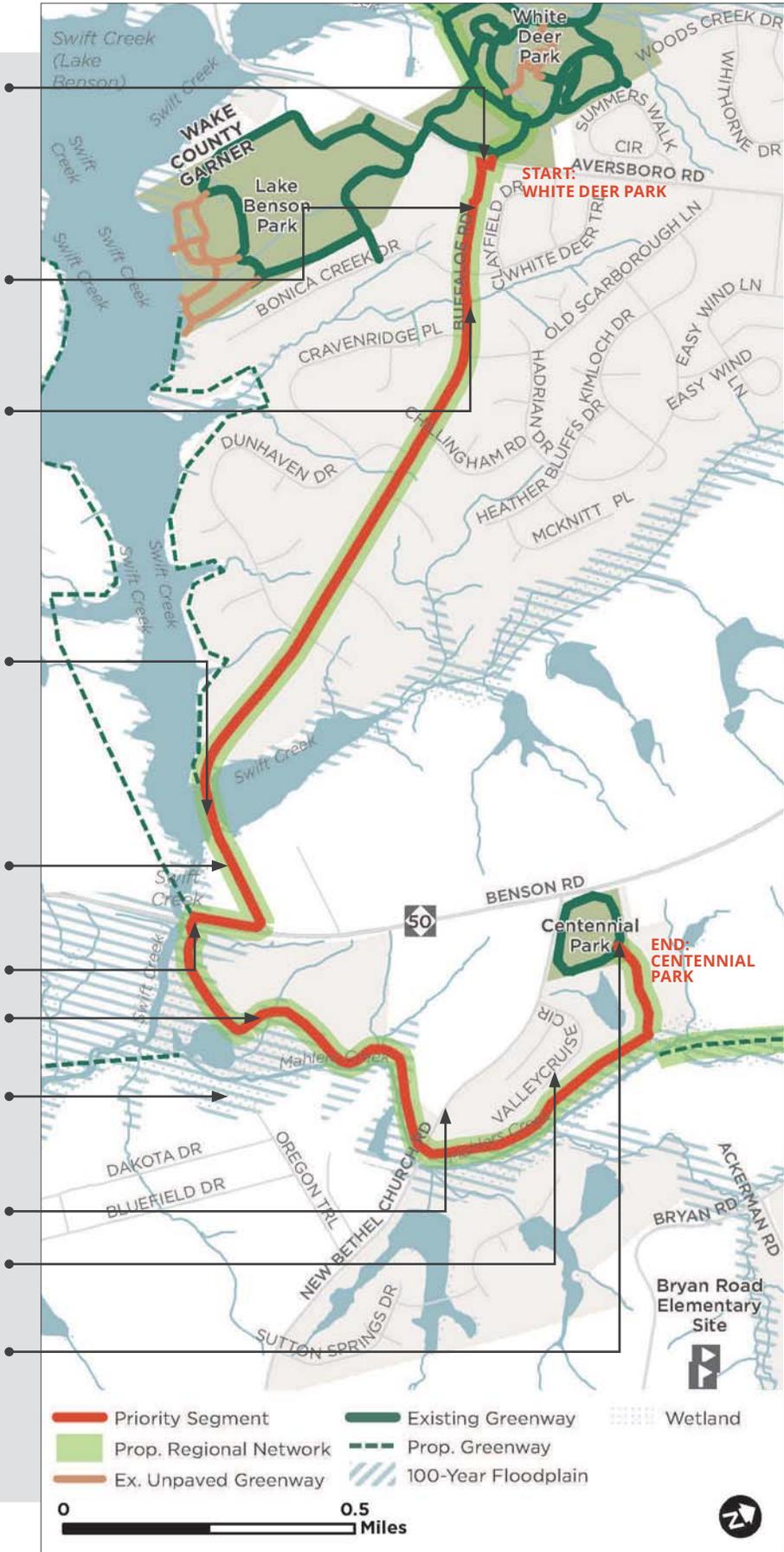
Publicly owned land provides right-of-way between Benson Road and New Bethel Church Road.

The trail's location in the floodplain will increase permitting requirements.

An improved trail crossing is required at New Bethel Church Road.

There is potential for connections to the Glens at Bethel neighborhood.

The segment connects Centennial Park on the east end. It also supports regional connectivity to downtown Garner and eastern Wake County.



1Q. DURANT ROAD TRAIL

FROM HONEYCUTT ROAD TO FALLS OF THE NEUSE ROAD

This trail will be one of the few opportunities in North Raleigh to go east-west. Durant Road street side multi-use trail is approximately 1.3 miles long.

PROJECT AT A GLANCE

- Project location: Northern Wake County
- Project type: Street side Multi-Use path
- Length: 6,900 feet (1.3 miles)
- Total Connected Network: 139 miles
- Trip Generators: This trail links the Honeycutt Creek Trail to Falls of Neuse Road.

PREVIOUS PLANNING

- None

POTENTIAL RIGHT-OF-WAY NEEDS

- The project will need up to 6.6 acres along the frontage of Durant Road
- There will be ten properties impacted by this project.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- City of Raleigh
- NCDOT
- Wake County

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are between \$1.6 million and \$1.87 million.*
- *Cost estimates should be escalation should be 5% per year*

Cost estimate for land acquisition

- *Based upon Wake County assessed property values acquisition estimates are approximately \$450,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding

OPPORTUNITIES & CONSTRAINTS

A pedestrian bridge will be needed at the creek crossing.

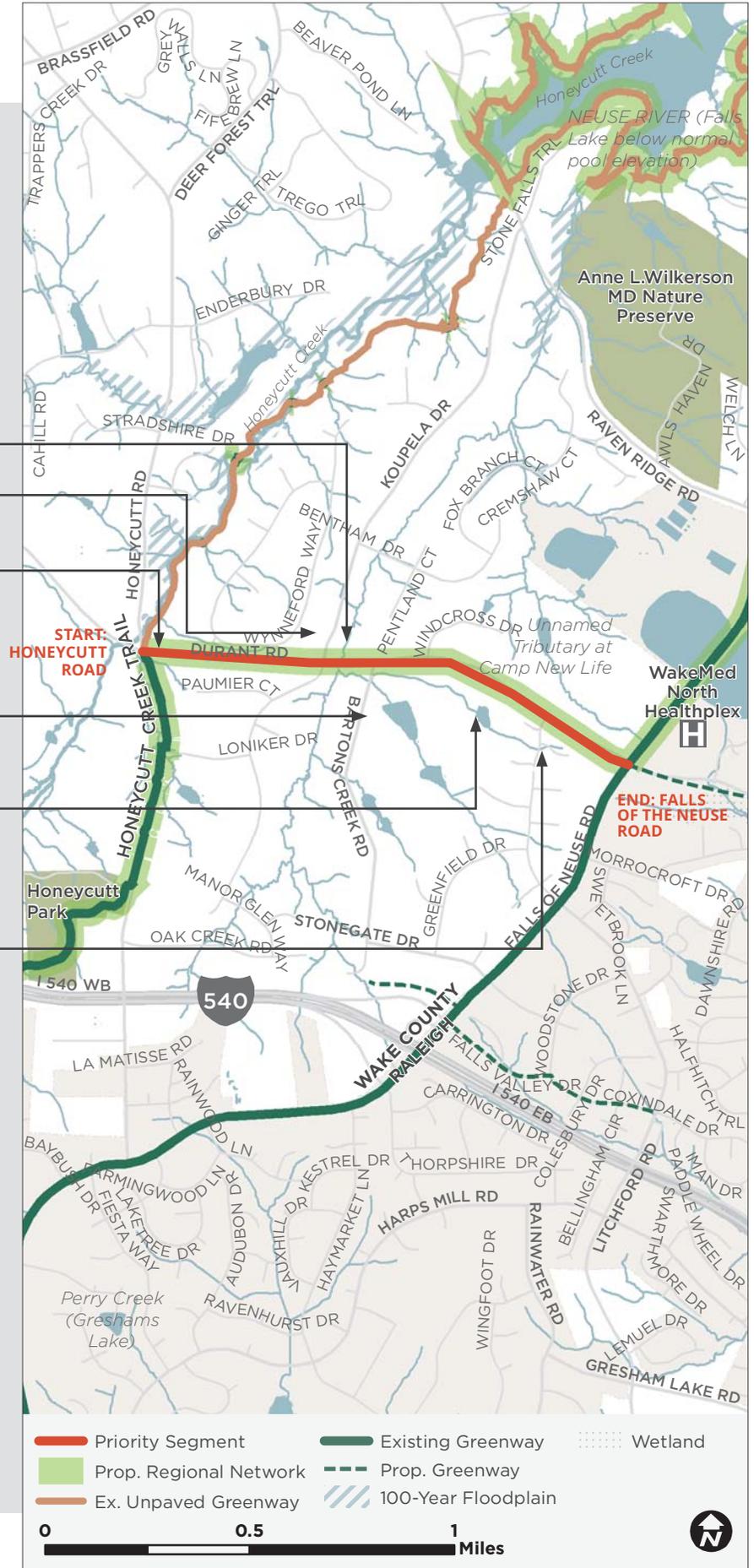
Additional right of way may be needed depending on the design.

There is a significantly steep grade approaching Honeycutt Road.

This project will likely trigger curb and gutter with closed drainage.

There are a variety of utilities on both sides of the road.

The corridor is primarily filled with valuable residential real estate. Many of the developments have existing landscaping buffers that may need to be replaced as a result of construction.



1R. SMITH CREEK GREENWAY

FROM HERITAGE SCHOOLS TO BURLINGTON MILLS ROAD

The next phase of Smith Creek Greenway runs from the existing terminus near Heritage High southward to Burlington Mills Road. The segment is approximately 2.2 miles long, has multiple creek crossings and at least one bridge structure. Much of the trail can utilize existing sanitary sewer easement. There may be long stretches of boardwalk due to the presence of wetlands. South of this segment of Smith Creek Greenway there is a bridge which directly connects to the Neuse River Greenway.

PROJECT AT A GLANCE

- Project location: Town of Wake Forest, Wake County
- Project type: Asphalt Greenway
- Length: 11,600 ft (2.2 miles)
- Total Connected Network: 142 miles
- Trip Generators: Heritage Elementary, Heritage Middle School, Heritage High School and connection to Neuse River Greenway

PREVIOUS PLANNING

- *Town of Wake Forest Open Space and Greenways Plan (2009)*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 4 of acres of easement and right of way will be needed for this project.
- This project impacts 7 properties, 4 of which are owned by the Town.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Wake County Public Schools
- Town of Wake Forest

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$3.2 million to \$3.9 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$113,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund
- Land and Water Conservation Fund
- Clean Water Management Trust Fund
- Safe Routes to Schools

OPPORTUNITIES & CONSTRAINTS

Heritage Elementary, Middle and High School anchor the north end of the project.

There are segments of the trail already completed and more in design.

Much of the needed right of way is either in place or owned fee simple by the Town of Wake Forest.

NCDOT is in the design stage for a new bridge across Smith Creek on Ligon Mill Road. Construction scheduled for 2018.

A pedestrian culvert will be needed at Ligon Mill Road.

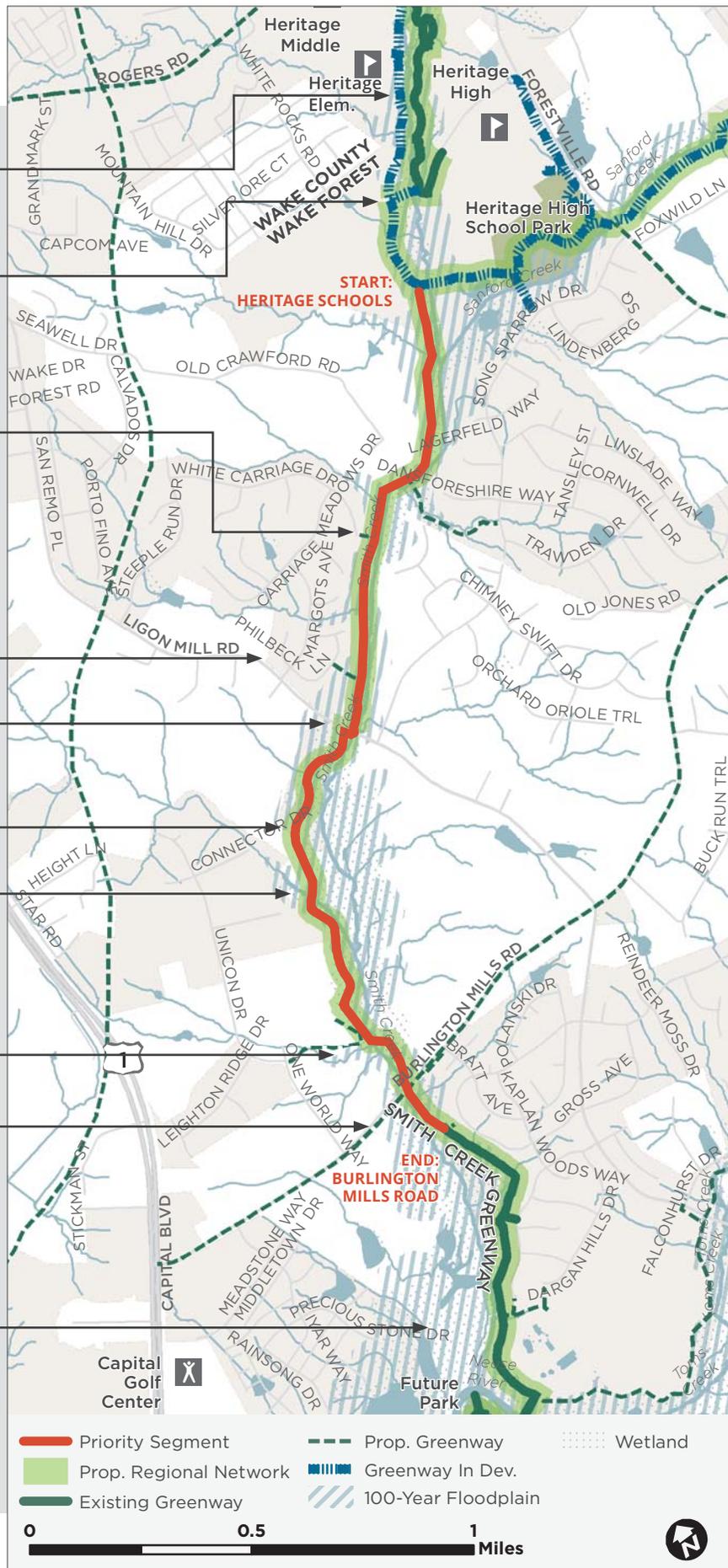
There are large wetland areas along the corridor requiring elevated boardwalks.

A large portion of the project is located within the floodplain. A CLOMR study will be needed.

There is a vacant tract of land at the intersection of Burlington Mills Road and One World Way. This property is an ideal location for a trailhead with parking

A tunnel underneath Burlington Mills Road is already in place.

There is an existing segment of the trail completed at the south end which connects to a future park site.



**1S. DR. CALVIN JONES GREENWAY/
DUNN CREEK GREENWAY**
***FROM CORPORATE CHAPLAIN MULTIUSE
PATH TO LEMON GRASS LN***

This project offers an off road safe bicycle and pedestrian movement parallel to Dr. Calvin Jones Highway. The trail is approximately 1.7 miles connecting the Corporate Chaplain Multiuse Path to the Dunn Creek Greenway, then north to Lemongrass Lane. Wake Forest has limited greenways opportunities to move east-west across Town. The trail will need two bridges, one over the railroad and one over Spring Branch.

PROJECT AT A GLANCE

- Project location: Town of Wake Forest, Wake County
- Project type: Shared use path
- Length: 9,000 ft (1.7 miles)
- Total Connected Network: 9.7 miles
- Trip Generators: Heritage Development and Dunn Creek Greenway

PREVIOUS PLANNING

None

POTENTIAL RIGHT-OF-WAY NEEDS

- 5.6 acres of right of way needed.
- There will be eight privately owned parcels impacted by the greenway.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Wake Forest

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$2.5 million to \$2.9 million.*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$200,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding

OPPORTUNITIES & CONSTRAINTS

Extension of Dunn Creek Greenway toward northern Wake Forest.

At grade crossing needed at Wait Avenue.

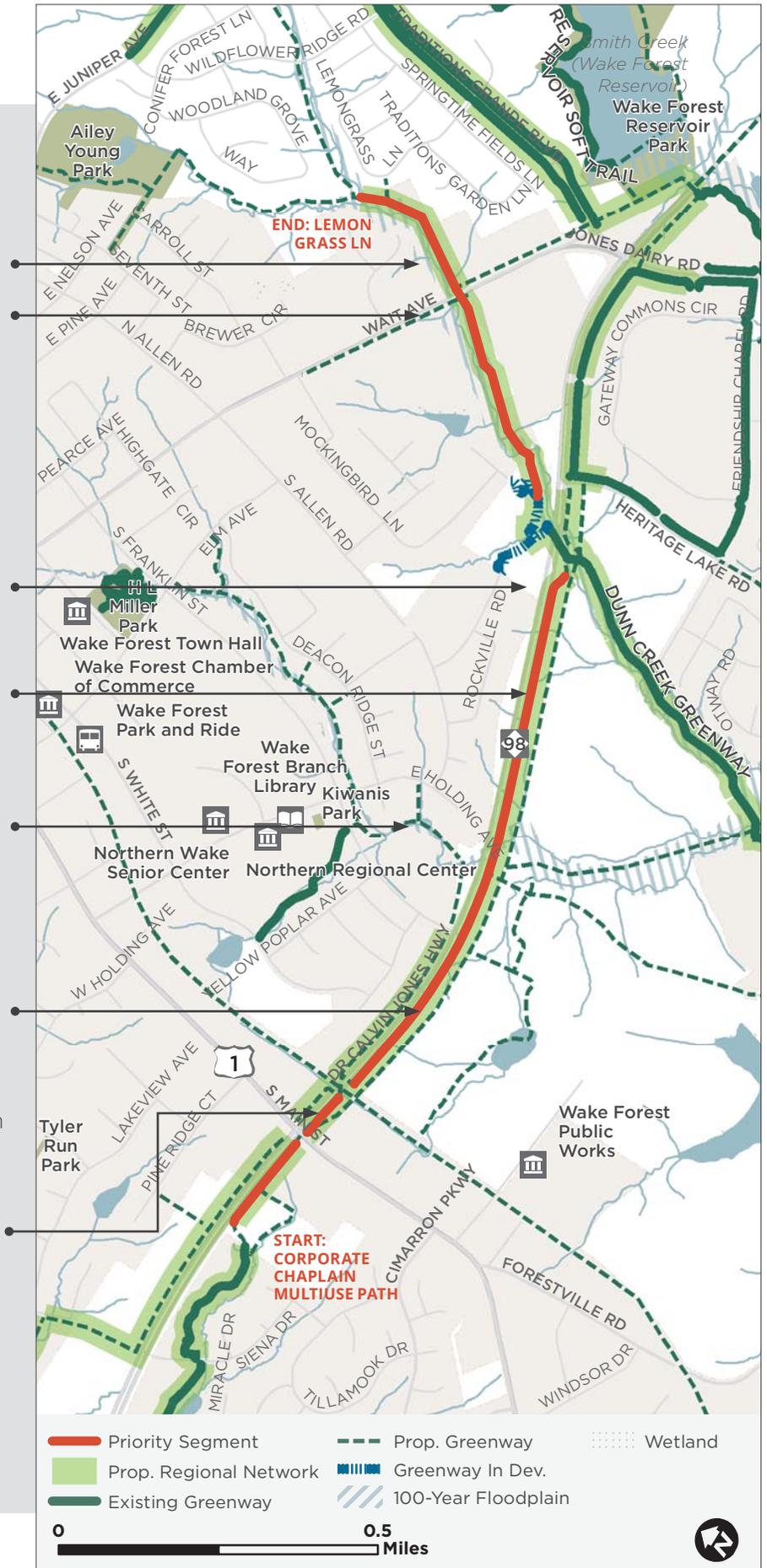
The Dunn Creek Greenway crossing underneath Dr. Calvin Jones Hwy is already constructed.

This trail creates a safe east-west off road bicycle and pedestrian opportunity through Wake Forest.

The alignment crosses a jurisdictional stream which will require a detailed study area for FEMA/CLOMR.

The alignment should be considered for placement on the south side of the road, in order to connect with existing trail to the east and west. Grading at the toe of the slope or benching into the slope will be necessary. The north side could also be considered if opportunities or constraints revealed through further study make it more feasible.

Crossing the railroad will require a 100' long prefabricated bridge.



1T. SANFORD CREEK GREENWAY

FROM EXISTING SANFORD CREEK GREENWAY TO MAIN STREET PARK

The Town of Wake Forest has already completed almost 1.4 miles of Sanford Creek Greenway. The total length of the proposed greenway when complete will be approximately 2.4 miles. This proposed segment is approximately one mile. There are two crossing of the creek requiring bridges approximate 30' -40' long with approach boardwalk and a few small creek crossings.

PROJECT AT A GLANCE

- Project location: Town of Rolesville, Wake County
- Project type: Asphalt Greenway
- Length: 5,280 ft (1 mile)
- Total Connected Network: 9.9 miles
- Trip Generators: Sanford Creek Elementary School, Heritage High School, Rolesville Main Street Park, Mill Bridge Nature Park

PREVIOUS PLANNING

- *The Town of Rolesville Open Space and Greenway Plan (2002)*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 5.5 acres of easements and/or right of way will be needed
- There will be five properties impacted by the greenway on of which is non-residential thus a higher acquisition value. Fortunately the remaining properties are undeveloped.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Wake Forest
- Town of Rolesville
- Wake County Public Schools
- This project will ultimately connect several residential developments to the nearby schools and parks.

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$1.25 million to \$1.6 million.*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$98,000.*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund
- Land and Water Conservation Fund
- Clean Water Management Trust Fund
- Safe Routes to Schools

OPPORTUNITIES & CONSTRAINTS

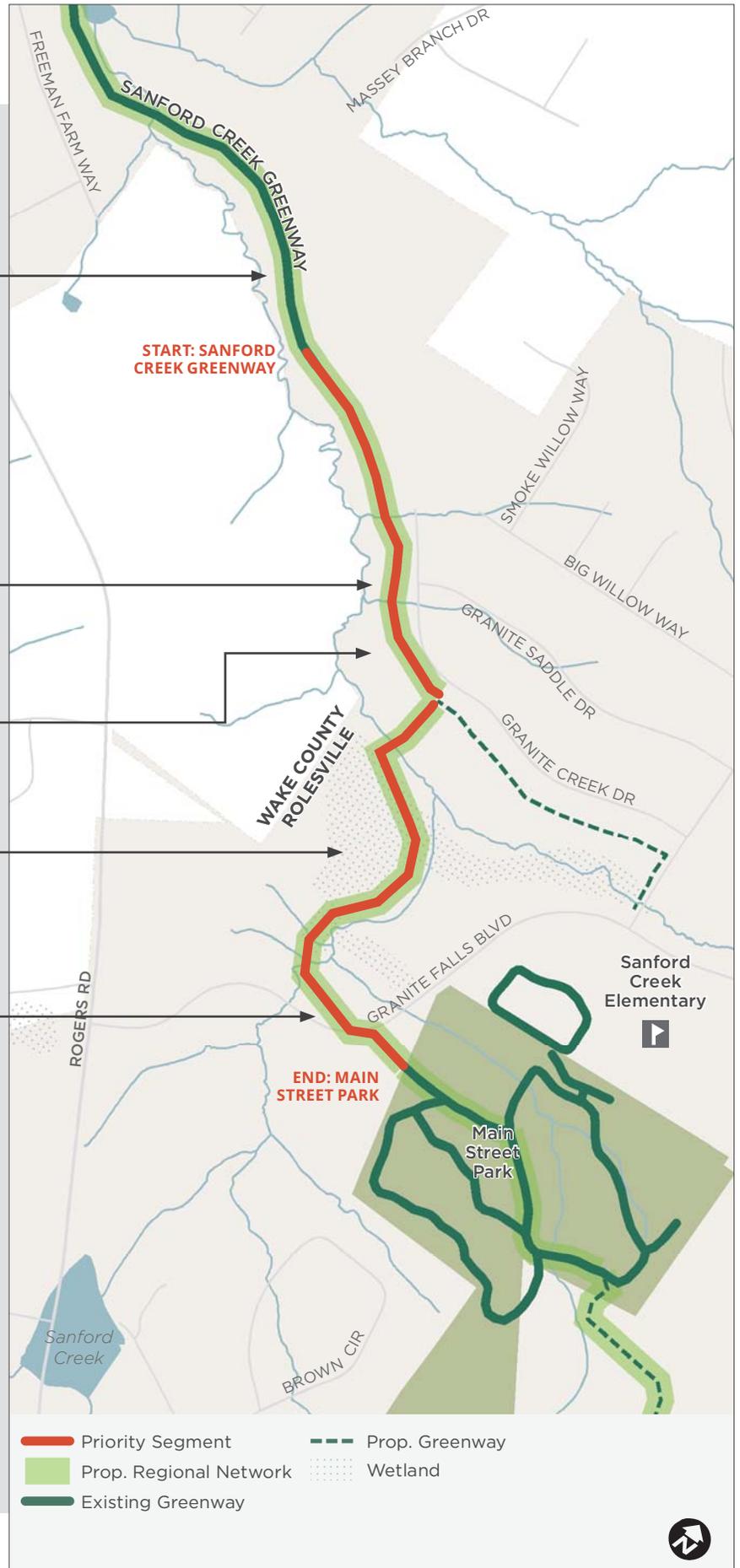
Once completed there will be a connection from the existing section of Sanford Creek Greenway in Wake Forest to Main Street Park in Rolesville and Sanford Creek Elementary School.

Two stream crossings will likely require pre-fabricated bridges up to 40 feet long.

Sewer easements along the creek can be used for the location of the trail.

Rock identified near the south end of the trail.

Crossing Granite Falls Blvd will likely require a pedestrian safe haven.



1U. MINGO CREEK GREENWAY

FROM MINGO CREEK PARK TO KNIGHTDALE STATION PARK

This next section of Mingo Creek Greenway is approximately 1.3 miles. Mingo Creek Greenway is the primary cross Town greenway corridors. It connects the existing Mingo Creek Greenway trail to the new Knightdale Station Park. Much of the corridor is within wetlands and floodprone property. Although not currently the top priority project in Knightdale, this segment could become one with significant new funding sources.

PROJECT AT A GLANCE

- Project location: Town of Knightdale, Wake County
- Project type: Shared use path
- Length: 6,900 ft (1.3 miles)
- Total Connected Network: 138 miles
- Trip Generators: Existing Mingo Creek Greenway, Knightdale Station Park

PREVIOUS PLANNING

- *Town of Knightdale Parks, Recreation and Open Space Plan (2010)*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 4.6 acres of easements and/or right of way will be needed
- There will be seven properties impacted by the greenway.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Knightdale

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$2.5 million to \$3 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$285,000. Using the existing power easement would lower acquisition costs.*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund

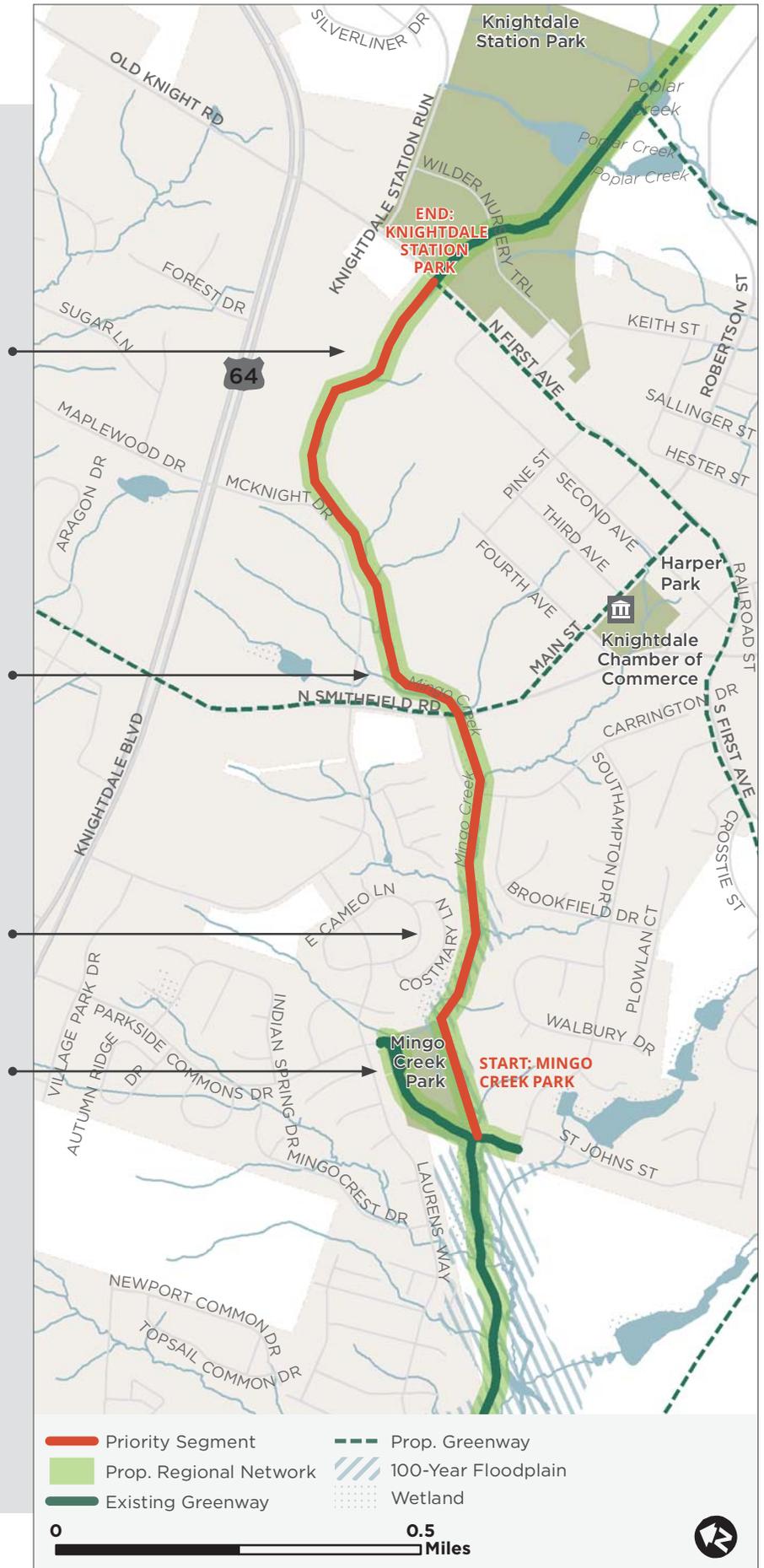
OPPORTUNITIES & CONSTRAINTS

Modifying the alignment slightly towards the power easement minimizes clearing and possibly uses more suitable soils for construction. This would save time and money during construction. Using the power easement will also save money for acquisition.

An at grade crossing on Smithfield Road presents site distance visibility conflicts. The crossing should be strategically placed for better visibility for the user.

A portion of the alignment as shown is located within wetlands and flood prone areas where low level boardwalk will be needed.

This project creates a wonderful connection between Mingo Creek Park and Knightdale Station Park. In addition to many residences along the route.



1V. WENDELL FALLS PARKWAY TRAIL

FROM MARTIN POND ROAD TO WENDELL PARK

This project connects the existing sidepath along Wendell Falls Parkway with Wendell Park, serving as a key east/west connection towards the center of Wendell. This project enhances connectivity between Knightdale and Wendell and will serve as a key artery in eastern Wake County.

PROJECT AT A GLANCE

- Project location: Wendell, Wake County
- Project type: Shared use path, sidepath
- Length: 12,800 ft (2.4 miles)
- Total Connected Network: 8.9 miles
- Trip Generators:
 - » Wendell Falls
 - » Wendell Park
 - » Lake Myra County Park (Future)
 - » Lake Myra Elementary School

PREVIOUS PLANNING

- *Zebulon & Wendell Open Space Plan (2002)*

POTENTIAL RIGHT-OF-WAY NEEDS

- 6.6 acres estimated right-of-way acquisition
- 34 impacted parcels
- 18 distinct property owners

POTENTIAL PERMITTING NEEDS

- Wake County/ Wendell Floodplain Development Permit
- Wake County/Wendell Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- Wake County/Wendell Land Disturbance Permit
- North Carolina Department of Transportation Encroachment Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- FEMA Letter of Map Revision (LOMR)
- U.S. Army Corps of Engineers Section 401/404 Permit

POTENTIAL PARTNERSHIPS

- Town of Wendell
- Wendell Falls Development – Newland Communities (Newland Real Estate Group, LLC) and Wendell Falls Homeowners Association

ESTIMATED CONSTRUCTION COST

- *2016 construction estimates are in the range of \$2.0 million to \$2.4 million*
- *Cost estimates should be escalated at a rate of 4% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$180,000*

POTENTIAL FUNDING MECHANISMS

- CAMPO/LAPP funding
- NCDOT/STI funding
- Wake County CIP funding
- Wendell CIP

OPPORTUNITIES & CONSTRAINTS

The segment supports trail connectivity between Wendell Falls and downtown Wendell.

The segment is anchored by Wendell Park and its trail network at the east end.

The alignment follows the east side of Buffalo Creek for ~1,500 feet.

A bridge crossing of Buffalo Creek is required.

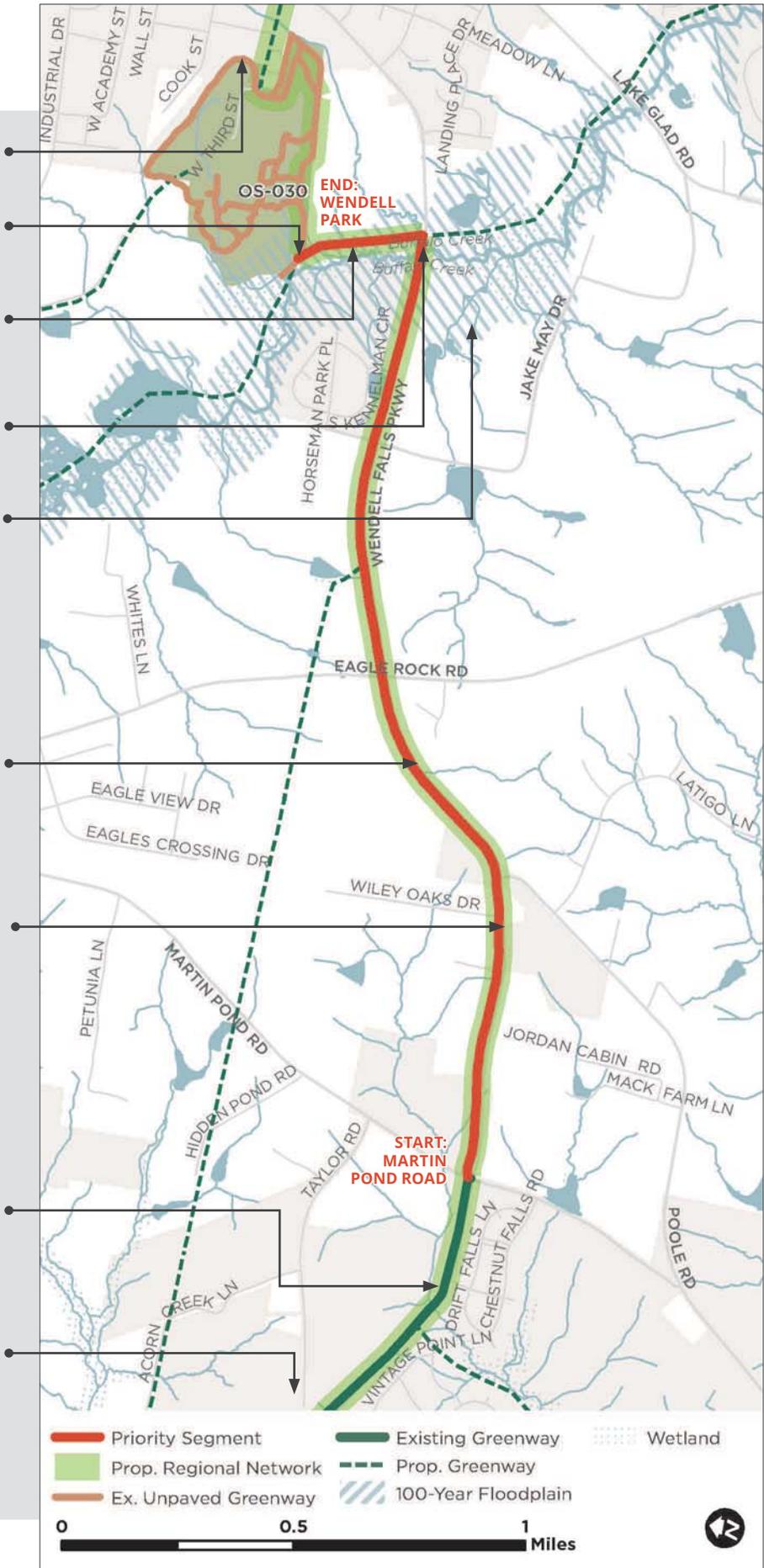
The trail's location in the floodplain will increase permitting requirements.

Much of the corridor along Wendell Falls Parkway is rural, so driveway conflicts and the number of property owners are minimized.

Significant right-of-way acquisition will be required along Wendell Falls Parkway.

Segment terminates at the existing section of the Wendell Falls Parkway greenway, which was built with the Wendell Falls development.

The segment supports connectivity toward Knightdale.



1W. LITTLE RIVER CONNECTOR

FROM WEDGEWOOD AVENUE TO LITTLE RIVER PARK

The Little River connector trail is approximately 1.6 miles of asphalt and boardwalk. The trail runs parallel to a tributary of Little River and partially within a sewer easement to W Gannon Avenue. From there a multiuse trail will be along W Gannon Avenue connecting to Little River Park. This project will also provide access to GlaxoSmithKline, one of the largest employers in the area.

PROJECT AT A GLANCE

- Project location: Zebulon, Wake County
- Project type: Shared use path, sidepath
- Length: 1.6 miles
- Total Connected Network: 1.6 miles
- Trip Generators: The trail will have direct connection to several neighborhoods, Little River Park and one of the largest employers in the area, GlaxoSmithKline.

PREVIOUS PLANNING

- *This project is identified within the Town of Zebulons 2015 Greenway Master Plan.*
- *The Town's plan does not consider this a priority corridor*

POTENTIAL RIGHT-OF-WAY NEEDS

- An estimated 4 of acres of easement and right of way will be needed for this project.
- This project will impact nine property owners.

POTENTIAL PERMITTING NEEDS

- North Carolina Department of Transportation Encroachment Permit
- NC Department of Environmental Quality
- US Army Corps of Engineers Section 401/404 Permit
- FEMA Conditional Letter of Map Revision (CLOMR)
- CLOMR

ESTIMATED CONSTRUCTION COST

Cost estimate for construction

- *2016 construction estimates are in the range of \$2 million to \$2.5 million*
- *Cost estimates should be escalated at a rate of 5% each year.*

Cost estimate for land acquisition/ROW needs.

- *Based upon Wake County assessed property values acquisition estimates are approximately \$60,500.*

POTENTIAL FUNDING MECHANISMS

- CAMPO/Local Adminstered Projects Program (LAPP) funding
- NCDOT/STI funding
- Wake County CIP funding
- Parks and Recreation Trust Fund
- Land and Water Conservation Fund
- Clean Water Management Trust Fund

OPPORTUNITIES & CONSTRAINTS

This trail creates a direct connection to GlaxoSmithKline, the major employer in the area.

Wetland areas will require elevated boardwalk.

Most of the easements needed are located on undeveloped property or within existing sanitary sewer easements.

A large portion of this project will be located within the floodplain which will require a detailed study area for FEMA/CLOMR.

Adequate right of way is available along West Gannon Ave to construct a multiuse path.

South end is anchored by Little River Park.

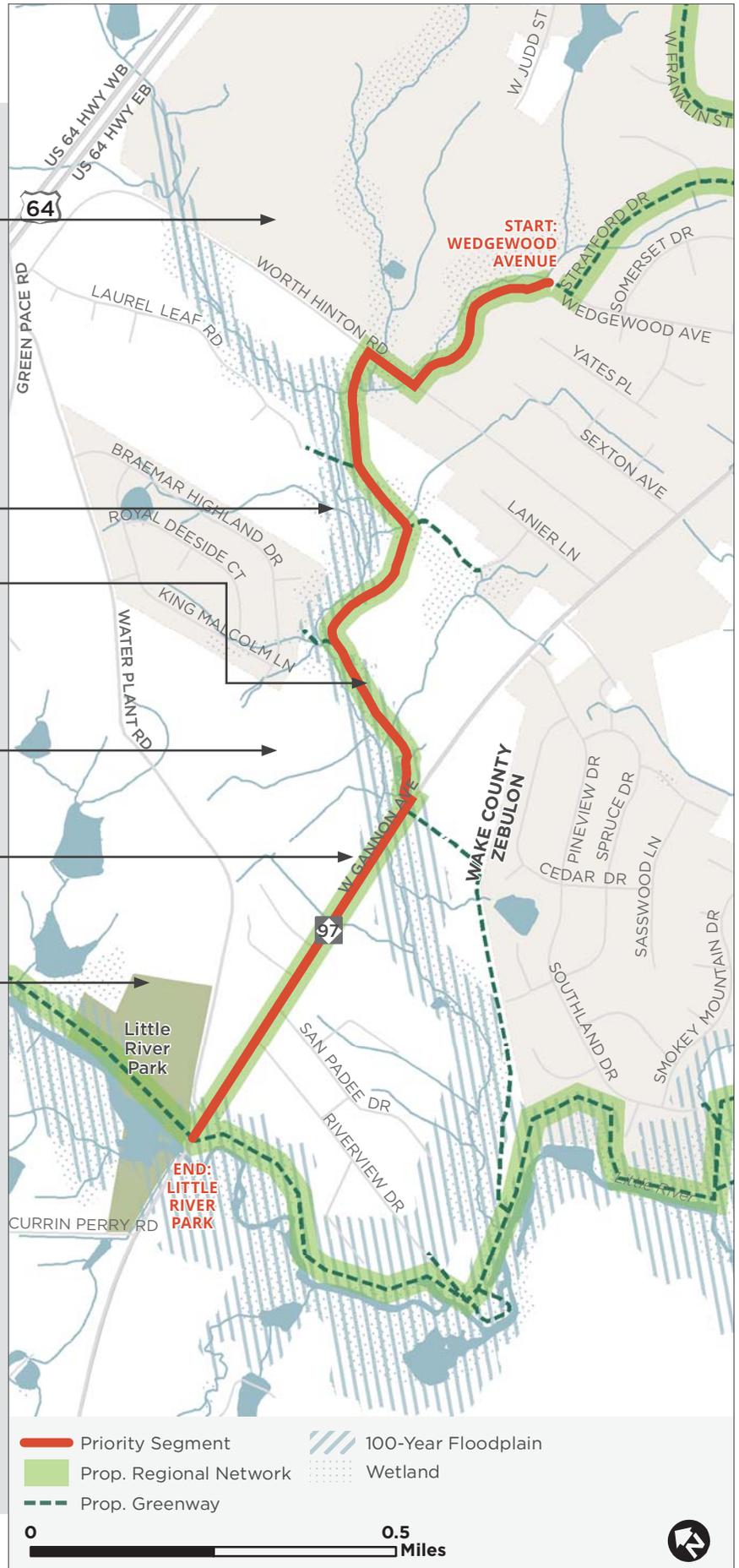




TABLE 3-1 SUMMARY OF PROJECTS

*Based on 2010 Census block-level data. Some of Full Blocks that are completely or partially within 1/2 mile radius; includes Wake County only.
 **Based on 2014 LEHD Origin-Destination Survey Products (LODES) block-level data (sum of all blocks that are completely or partially within 1/2 mile radius); includes Wake County only.
 ***Block groups from Wake County's vulnerability assessment scoring 274 or higher. Distance of 0 signifies the location of the segment within or adjacent to a block group scoring 274 or higher.

Trail ID	Trail Name	From	To	Jurisdictions	Miles	Parks Connected	Connects to existing trails (y/n)	Residents within 1/2 mile*	Employees within 1/2 mile**	Distance from proposed greenway to block groups of higher vulnerability***
Projects from Map 3-1 Bridge the Gaps										
1A	Holly Springs Southwest Greenway	Ballenridge Greenway	Braxton Village Greenway	Holly Springs/Wake County	1.4	0	Y	5,663	1,209	0
<i>Notes: An improvement will be needed on the existing culvert underneath NC-55. There are three creek crossings that will require bridges. The project is located within the floodplain.</i>										
1B	Holly Springs Central Greenway	Ballenridge Greenway	Raleigh Street	Holly Springs	0.5	1	Y	5,027	1,789	0
<i>Notes: This trail is a wonderful opportunity to connect the Holly Springs Library and Cultural Center. Existing sidewalks in place along West Ballentine Road. A pedestrian bridge will be needed over Utley Creek.</i>										
1C	Holly Springs North/South Greenway	Jones Park	Womble Park	Holly Springs	1.2	2	Y	7,157	1,953	0
<i>Notes: The proposed trail provides connections between Jones Park, Hunt Community Center and Parrish Womble Park. Existing sidewalks are located along most of the proposed alignment, however, they will need to be widened to be considered a street side-path. Utility poles and signage will be impacted and relocated as a result of widening.</i>										
1D	Broad Street Greenway	Judd Parkway	Bass Lake	Fuquay-Varina/Wake County	2.8	2	Y	6,168	1,787	0
<i>Notes: The alignment is located within the floodplain. Some sections along NC-55 will require additional right of way. Existing sidewalks along NC-55 can be widened to meet street side trail requirements. This trail creates a nice connection from Bass Lake to Fuquay-Varina.</i>										
1E	Fuquay-Varina Greenway	Judd Parkway	Honeycutt Park	Fuquay-Varina/Wake County	1.2	1	Y	3,964	3,836	0
<i>Notes: Much of the alignment is on undeveloped property and can be constructed by future developers. Pedestrian improvements need to be made at the intersection of Purfoy Rd and Old Honeycutt Road. The trail offers a connection from downtown Fuquay-Varina to Honeycutt Road Park.</i>										
1F	Middle Creek Greenway	Lufkin Road Middle School	Sunset Hills Gwy	Apex/Wake County	2.4	0	Y	4,846	4,687	0
<i>Notes: The northern end connects to Lufkin Road Middle School. The alignment is within the floodplain and wetlands, therefore boardwalk will be needed for a large portion of the trail.</i>										
1G	Apex West Greenway	American Tobacco Trail	Beaver Creek Greenway	Apex/Wake County	1.3	1	Y	5,534	324	1.5
<i>Notes: The trail provides an opportunity to connect multiple residential neighborhoods with a direct connection to the American Tobacco Trail and Apex Nature Park. Boardwalk will be needed within the floodplain and wetland areas.</i>										
1H	Lower Williams Creek Gwy (Swift Creek)	Lake Pine Drive	Symphony Lake Greenway	Cary	2.4	2	Y	5,768	10,453	1
<i>Notes: The Town of Cary owns property at the end of MacGregor Pines Drive which would be an opportunity for a trailhead parking lot. Two large pedestrian bridges are needed over US-1 and US-64. Construction plans were completed in 2012 from Apex Community Park to US-1. Plans for the bridges are still needed.</i>										
1I	Swift Creek Greenway (Upper Williams Creek Greenway)	Fred Bond Metro Park	Old Apex Road	Cary/Apex/Wake County	1.6	1	Y	10,250	1,766	1.1
<i>Notes: This trail provides a connection from Fred Bond Metro Park to Apex Community Park. A rapid flashing beacon likely needed at Cary Parkway. The southern section of the trail crosses the railroad and Old Apex Road.</i>										
1J	Hatcher Creek Greenway	Existing trail on Sedgesfield Park Ln	Morrisville Community Park	Morrisville/Cary/Wake County	2.1	1	Y	9,735	1,967	2.3
<i>Notes: The Town of Cary owns property at Davis Drive which may be an opportunity for a trailhead. The alignment provides a connection to Carpenter Elementary and West Regional Library. The western end of the project will require a grade separated crossing of the railroad and NC-55.</i>										
1K	Louis Stephens Drive Greenway	Kit Creek Road	Kit Creek Greenway	Morrisville/Cary/Wake County	3.6	1	Y	9,437	8,359	0.3
<i>Notes: Plenty of right of way along Louis Stephens Road north of NC-540. The trail is proposed to use the existing underpass of NC-540 when the road is constructed. There is an existing sewer easement along the creek that can be used as part of the alignment.</i>										
1L	Kit Creek Greenway	Louis Stephens Drive	Shiloh Greenway	Morrisville/Wake County	2.2	1	Y	5,266	8,631	0.5
<i>Notes: The proposed trail links the Town of Morrisville greenway system to the Research Triangle Park. A street side trail can be constructed as part of the potential future Town Hall Drive extension.</i>										
1M	Hare Snipe Creek Trail	Wooten Meadow Park	Crabtree Creek Greenway	Raleigh	1.7	1	Y	1,338	13,366	0
<i>Notes: The northern end of the project is located within the floodplain and wetlands which will require boardwalk. Crossing Glenwood Avenue will require significant tunnel.</i>										
1N	Raleigh Pigeon House Trail Connector	Crabtree Creek Trail	Rocky Branch Trail	Raleigh	4.7	1	Y	19,734	51,528	0
<i>Notes: Grade separated crossings will be needed over the railroad. Pedestrian treatments needed at the crossing at Peace Street. Some of the greenway can be included within the development of Devereux Meadows Park and upgrades to Capital Boulevard. Pedestrian improvements will be needed at the intersection of Old Louisburg Road and Wake Forest Road.</i>										

TABLE 3.1 SUMMARY OF PROJECTS

*Based on 2010 Census block level data (sum of all blocks that are completely or partially within 1/2 mile radius); includes Wake County only.
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Trail ID	Trail Name	From	To	Jurisdictions	Miles	Parks Connected	Connects to existing trails (y/n)	Residents within 1/2 mile*	Employees within 1/2 mile*	Distance from proposed greenway to block groups of higher vulnerability***
1O	Creech Road Greenway	Garner Road	Walnut Creek Greenway	Raleigh/Garner/Wake County	4.4	2	Y	9,688	2,362	0
		<i>Notes: The trail will require multiple bridges over creeks and boardwalks within wetlands. It will also need an underpass of Rock Quarry Road and a bridge over I-40.</i>								
1P	Buffalo Road Greenway	White Deer Park	Centennial Park	Garner/Wake County	3	2	Y	3,882	655	0
		<i>Notes: The trail is proposed to be a street side path along Buffalo Road which has many driveway crossings to accommodate. Buffalo Road across Lake Benson must be reconstructed to accommodate a trail. An underpass will be needed at NC-50.</i>								
1Q	Durant Road Trail	Honeycutt Road	Falls of the Neuse Road	Raleigh/Wake County	1.3	0	Y	4,014	1,303	1
		<i>Notes: A pedestrian bridge or boardwalk crossing will be needed at the creek. Additional right of way will be needed or a closed drainage system. The corridor primarily consists of valuable residential developments with extensive landscaping that would be impacted by the project.</i>								
1R	Smith Creek Greenway	Heritage Schools	Burlington Mills Road	Wake Forest/Wake County	2.2	0	Y	6,096	1,491	0
		<i>Notes: Much of the needed right of way is already in place. A pedestrian culvert will be needed at Ligon Mill Road. The project is located within the floodplain and wetland areas which will require boardwalk.</i>								
1S	Dr. Calvin Jones Greenway/Dunn Creek Greenway	Corporate Chaplin Multiuse Path	Lemongrass Lane	Wake Forest/Wake County	1.7	0	Y	7,329	2,108	0
		<i>Notes: Crossing the railroad will require a 100 foot long prefabricated bridge. Much of Calvin Jones Road is elevated with significant slopes on the sides. The greenway will need to be either benched into the slope or constructed at the toe of the slope.</i>								
1T	Sanford Creek Greenway	Existing Sanford Creek Greenway	Main Street Park	Rolesville	1	1	Y	2,061	770	0
		<i>Notes: The trail provides a continued connection between Rolesville and Wake Forest. There are two creek crossings that will require pre fabricated bridges up to 40 feet long. Significant rock was identified at the southern end of the trail.</i>								
1U	Mingo Creek Greenway	Mingo Creek Park	Knightsdale Station Park	Knightsdale	1.3	2	Y	6,360	2,353	0
		<i>Notes: This project will create a nice connection between Mingo Creek Park and Knightsdale Station Park. The trail is located within the floodplain and wetland areas which will require boardwalk.</i>								
1V	Wendell Falls Parkway Trail	Martin Pond Road	Wendell Park	Wendell/Wake County	2.4	1	Y	1,964	159	0
		<i>Notes: A bridge will be needed over Buffalo Creek. Right of way will be needed along Wendell Falls Parkway or a closed drainage system will be needed. Much of the street frontage along Wendell Falls Parkway is undeveloped and the trail can be built as part of the development of that corridor.</i>								
1W	Little River Connector	Wedgewood Avenue	Little River Park	Zebulon/Wake County	1.6	1	N	3,225	576	0
		<i>Notes: The trail provides a direct connection to Glaxo-Smith-Kline, one of the major employers in the area. The floodplain and wetlands areas will require boardwalk. A prefabricated structure may be needed over the creek at West Gannon Road.</i>								
Projects from Map 3.2 Connect Parks and Lakes										
2A	Lower Barton Ck/Hare Snipe Ck Greenway/Umstead Park Link	Lake Lynn Park	Six Forks Road & Umstead Park	Raleigh/Wake County/NC Parks	16.5	2	Y	22,247	9,989	0
		<i>Notes: Easements will be needed in older and valuable residential neighborhoods along the Hare Snipe Creek corridor. Westgate Road has two creek crossings that are prone to flooding. There are several industrial driveways on Westgate Road which create safety concerns for bicycle and pedestrian users. A grade separated crossing will be needed at I-540. Significant sight distance challenges crossing Creedmoor Road and Mt. Vernon Church Road. See the TICOG CORE Bike/Ped Plan for more on the proposed Sycamore Greenway connection.</i>								
2B	Richland Creek Greenway	Neuse River Trail	South Main Street	Raleigh/Wake Forest/Wake County	5.5	0	Y	16,190	6,543	0
		<i>Notes: Grade separated crossings are needed at Capital Blvd and NC-98. A high visibility signalized crossing will be needed on Falls of Neuse Road. The trail corridor is almost entirely within the floodplain.</i>								
2C	Little River Greenway	Southeast Drive	West Third Street	Wendell/Zebulon/Wake County	6.2	2	N	6,374	1,244	0
		<i>Notes: The Little River corridor has a wide floodplain and significant wetlands which will require boardwalk. Three at grade railroad crossings from Little River to downtown Wendell. Trail through downtown Wendell will have several driveway crossings.</i>								
2D	Wendell Falls North Greenway	North First Avenue	Wendell Falls Greenway	Knightsdale/Wendell/Wake County	2.6	2	Y	3,365	1,135	0
		<i>Notes: The trail follows an active railroad corridor. There is not enough shoulder on Wendell Falls Parkway bridge at US-264 for a bike/ped path, an independent bridge will be needed.</i>								
2E	Dowling Road Sidepath	Walnut Creek Trail	Pooler Road	Raleigh/Wake County	1.1	1	Y	3,073	2,062	0
		<i>Notes: Majority of the needed right of way is in place. Sidewalks and an at grade high visibility crossing will be needed on Old Poole Road.</i>								

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Trail ID	Trail Name	From	To	Jurisdictions	Miles	Parks Connected	Connects to existing trails (y/n)	Residents within 1/2 mile*	Employees within 1/2 mile*	Distance from proposed greenway to block groups of higher vulnerability***
2F	Apex Loop Greenway	Beaver Creek South Trail	Burma Drive	Apex/Wake County	4.9	2	Y	18,478	12,896	0
		<i>Notes: Adequate right of way is available along Apex Parkway for a street side trail. A pedestrian bridge will be needed across US-1.</i>								
2G	Swift Creek Greenway	Kildaire Farm Road/Cary Parkway	Lake Wheeler Road	Cary/Wake County	6.9	2	Y	13,731	32,365	0
		<i>Notes: Limited right of way available along Lochmere Drive and Lilly Adkins Road. Crossing the dam requires coordination with the ACOE. Trail alignment encroaches into the floodplain near Swift Creek.</i>								
2H	Lake Johnson to Lake Benson Greenway	Upper Walnut Creek Trail	Old Stage Rd	Raleigh/Garner/Wake County	6.9	1	Y	16,040	27,131	0
		<i>Notes: Lake Dam Road over I-40 has a safe shoulder for bike/ped though some guardrails will be needed. Alignment crosses NC State property. A grade separated crossing will be needed at Fayetteville Road. Boardwalk needed at southern section of the project.</i>								
2I	Braxton Village Greenway	Harris Lake County Park	Elm Stone Way	Holly Springs/Wake County	4.1	1	N	3,770	165	0
		<i>Notes: New Hill-Holloman Road does not have adequate right of way for a bike/ped trail. A widening or separate structure will be needed to cross the lake.</i>								
2J	Black Creek Greenway	North Cary Park	West Dynasty Drive	Cary	0.3	1	Y	6,722	1,909	0.7
		<i>Notes: Bridge will be needed to cross Black Creek, triggering a flood study.</i>								
2K	Clemmons Connector Trail	Neuse River Trail	Clemmons Educational Forest	Wake County	0.4	1	Y	918	96	1.5
		<i>Notes: There will be two tributary crossings and high visibility crossing on Old Baucom Road.</i>								
2L	Swift Creek Greenway	Lake Wheeler Road	White Deer Park	Garner/Wake County	4.9	1	Y	7,907	25,159	0
		<i>Notes: Trail alignment is located within a floodplain which will trigger a flood study. See Swift Creek Greenway Master Plan.</i>								
Projects from Map 3.3 Connect the Communities										
3A	Apex Cary Greenway	Ten Ten Road	Regency Parkway	Apex/Cary/Wake County	1.2	0	Y	5,897	11,434	0
		<i>Notes: Alignment encroaches a Duke Power easement and power transfer station.</i>								
3B	Fuquay-Varina North Greenway	North Broad Street	East Academy Street	Fuquay-Varina/Wake County	2.1	0	N	7,074	4,630	0
		<i>Notes: Bike/ped signalization will be needed at intersections and driveway crossings along Ludd Parkway. Special treatments needed at the railroad crossing.</i>								
3C	Walnut Creek Greenway	Black Creek Greenway	Lake Johnson Metro Park	Cary/Raleigh	5.8	4	Y	31,397	14,977	0
		<i>Notes: Special pedestrian treatments will be needed at the railroad crossing on Old Apex Road. A high visibility crossing with beacon and pedestrian safe haven will be needed at SE Maynard Road. Bridge will be needed over both I-40 and I-440.</i>								
3D	North Bond Park Connector Trail	Morrisville Parkway	Crabtree Creek Greenway	Cary/Wake County	2.1	3	Y	15,335	4,365	1.6
		<i>Notes: A street side trail along Louis Stephens Road will trigger a closed drainage system.</i>								
3E	Zebulon Greenway	Wedgewood Avenue	Carolina Mudcats Stadium	Zebulon/Wake County	4.6	2	N	4,375	4,084	0
		<i>Notes: Franklin Street will need curb and gutter. A road diet may be needed on North Arendell Avenue. An at grade crossing with the railroad will need special bike/ped crossing treatments. Southern end in located within the floodplain and wetland areas which will require boardwalk.</i>								
3F	South Zebulon Greenway	Proposed Little River Greenway	Zebulon Community Park	Zebulon/Wake County	3.2	1	N	2,625	1,541	0
		<i>Notes: Trail can utilize existing power easement.</i>								

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Trail ID	Trail Name	From	To	Jurisdictions	Miles	Parks Connected	Connects to existing trails (y/n)	Residents within 1/2 mile*	Employees within 1/2 mile*	Distance from proposed greenway to block groups of higher vulnerability***
Projects from Map 3.4 Complete the System										
4A	Creedmoor Road Sidepath	East Lyon Station Road	Falls Lake Recreation Area	Butner/Creedmoor/Granville County/Wake County	11.7	1	Y	774	24	2.7
		Notes: There is limited right of way along Creedmoor Road for a street side trail. The existing Creedmoor Road causeway over Falls Lake is not wide enough for bike/ped lanes, a separate structure will be needed. Several creek crossings may require individual structures. An independent bridge over the Lake Rogers Dam will be needed.								
4AA	Mahlers Creek Greenway	Garner Recreational Park	Centennial Park	Garner/Wake County	2.9	2	N	5,666	1,986	0
		Notes: The project is located within the floodplain and wetlands possibly located at the southern end. A grade separated crossing over US 70 and the railroad will be needed.								
4B	Richland Creek Greenway	West Holding Avenue	Youngsville Boulevard	Youngsville/Franklin County/Wake Forest	4.9	1	Y	7,381	2,153	0
		Notes: The project is located within the floodplain which will trigger a flood study. The trail can utilize the existing power easement to minimize clearing costs. This project allows for a joint effort with the Town of Wake Forest and the Town of Youngsville.								
4BB	Whiteoak Creek Greenway	Mahlers Creek Greenway	Amelia Church Road	Garner/Clayton/Wake County/Johnston County	8.9	0	Y	5,027	1,257	0
		Notes: A grade separated crossing will be needed over I-40. White Oak Creek is within a floodplain which will require a flood study. A portion of the alignment in Clayton is within an established residential neighborhood, this makes easement acquisition difficult.								
4C	Gilcrest Farm Road Sidepath	Winston Street	Oak Grove Church Road	Youngsville/Franklin County/Wake Forest/Wake Co	6.3	2	Y	3,617	588	0
		Notes: This is a great opportunity for joint effort between Wake County and Franklin County. A closed drainage system would likely be needed within Franklin County.								
4CC	Front Street Greenway	Sam's Branch Greenway	East Clayton Community Park	Clayton/Johnston County	4.7	0	Y	-	-	N/A Johnston Co.
		Notes: At grade crossing of the railroad needed in downtown Clayton. In order to accommodate a full sized street-side trail the road profile needs reconfiguring on a few roads.								
4D	NC 98 Sidepath Gaps	South Main Street	Traditions Grande Boulevard	Wake Forest/Wake County	0.8	1	Y	5,844	2,080	0
		Notes: A bridge would be needed to cross over the railroad. Crossing Wait Avenue will require a push button flashing beacon.								
4DD	Camp Branch Greenway	Anchor Creek Way	Fayetteville Road	Holly Springs/Cary/Fuquay-Varina/Wake County	8.4	2	Y	19,095	2,188	0
		Notes: Proposed alignment crosses within Devils Ridge Golf Course. Much if the trail is within the flood plain. Acquisition of easements for the trail within Sunset Lake HOA will be difficult. A grade separated crossing will be needed for Fayetteville Road and the railroad.								
4E	Austin Creek Greenway	Smith Creek Greenway	Zebulon Road	Wake Forest/Rolesville/Wake County	8.9	2	Y	8,807	756	0
		Notes: The alignment travels through Heritage Golf Course. A signalized push button crossing needed at Jones Dairy Road. A grade separated crossing will be needed at Louisburg Road. A signalized push button crossing or grade separation needed at Hwy 96. Portions of the trail are located within the floodplain.								
4EE	Bass Lake Trail	Bass Lake Outfall Greenway	Camp Branch Greenway	Holly Springs/Wake County	4.1	1	Y	4,015	830	0.7
		Notes: Alignment is within Sunset Lake HOA property. A high visibility crossing will be needed at Bass Lake Road.								
4F	North Main Street Sidepath	Cedar Fork Corridor	Austin Creek Greenway	Rolesville/Wake County	1.7	0	N	1,812	324	0.2
		Notes: Isolated areas may require closed drainage.								
4FF	Terrible Creek Greenway	Judd Parkway	Old McCullers Road	Fuquay-Varina/Wake County	6.0	0	N	11,409	4,493	0
		Notes: Alignment is located within the floodplain which will require a flood study. Johnson Pond and adjoining properties are privately owned. Adequate right of way along Fayetteville Road for a separated street-side trail. A separate structure may be needed at the crossing of Middle Creek. Multiple crossings will require bike/ped crossing treatments.								
4G	Neuse River Tri/Smith Creek Gwy Gaps	Burlington Mills Road	Louisburg Road	Wake Forest/Raleigh/Wake County	0.2	1	Y	6,365	1,370	0
		Notes: As of this final plan (mid-2016), segment will be completed as part of Smith Creek Greenway (1S).								
4GG	Middle Creek Greenway	Fayetteville Road	Southeast Regional Park	Fuquay-Varina/Wake County	4.8	2	N	5,818	515	0
		Notes: Special treatments for the grade crossing of the railroad tracks along Banks Road. Middle Creek is within the floodplain and wetlands which will require low level boardwalk.								

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Trail ID	Trail Name	From	To	Jurisdictions	Miles	Parks Connected	Connects to existing trails (y/n)	Residents within 1/2 mile*	Employees within 1/2 mile*	Distance from proposed greenway to block groups of higher vulnerability***
4H	Cedar Fork Greenway	Main Street Park	Mitchell Mill Park	Rolesville/Wake County	4.5	2	Y	4,022	872	0
		Notes: A grade separated crossing will be needed over US-401. The project is located within the floodplain and likely wetland areas.								
4HH	Old Stage Road Sidepath	Swift Creek Greenway	Middle Creek Greenway	Garner/Wake County	5.5	1	N	10,185	629	0
		Notes: The project has adequate right of way for a street side trail. Much of the project will need closed drainage to construct the trail. Creek crossings may need a headwall to construct the trail.								
4I	Park Center Extension	American Tobacco Trail	Glenwood Avenue	Durham/Durham County/Raleigh/Wake County	10.5	0	Y	6,634	12,803	1.9
		Notes: Several creek crossings that require flood studies. Grade separated crossings needed at Glenwood Avenue and I-540. North of Brier Creek Parkway easements will be needed through residential areas of the golf course community.								
4II	South NC 55 Side Path	Honeycutt Road Park	Depot Street	Fuquay-Varina/Angier/Wake County/Harnett County	5.8	1	Y	3,769	483	0
		Notes: Constructing a street side trail along NC-55 will require additional right of way or a closed drainage system with curb and gutter will be needed.								
4J	Perry Creek Greenway	Marsh Creek	Neuse River Trail	Raleigh/Wake County	6.0	3	Y	22,789	12,840	0
		Notes: Grade separated crossings needed at Capital Boulevard, I-540 and the Railroad. The alignment goes through an older developed residential area and golf course community. Obtaining easements for construction may be challenging.								
4K	Harris Creek Greenway	Neuse River Trail	Cedar Fork Greenway	Raleigh/Rolesville/Wake County	8.8	0	Y	9,037	888	0.2
		Notes: The trail is proposed to parallel Rolesville Bypass (US-401) which will require a separate easement or right of way. Cedar Fork is a jurisdictional floodplain.								
4L	Buffalo Creek Greenway	US 401	East Wake High Trail	Rolesville/Wake County	7.1	0	N	3,401	396	0
		Notes: This corridor is in a rural setting without any major road crossings. The alignment is almost entirely in the floodplain requiring a flood study.								
4M	Little River Greenway	Fowlers Mill Creek	Riverview Drive	Zebulon/Wake County	8.6	2	N	4,362	313	0
		Notes: The Little River greenway is located entirely within the floodplain. A grade separated crossing will be needed over US 64. Little River has been studied for a potential reservoir. If the reservoir moves forward a detail study of recreational opportunities on the lake including greenway trails should be prepared.								
4N	Park Center Loop	Cornwallis Road	Kit Creek Road	Durham County/Wake County	4.6	0	N	150	7,265	0.4
		Notes: As of this final plan (mid-2016), segment is now complete.								
4P	East Wake High Trail	Knightdale Eagle Rock Road	Little River	Knightdale/Wake County	8.9	0	N	3,403	730	0
		Notes: The alignment crosses multiple jurisdictional creeks. Each creek will require flood studies.								
4Q	Marsh Creek Greenway	Spring Forest Road	Buckeye Trail	Raleigh/Wake County	6.0	2	Y	27,532	27,024	0
		Notes: There are many road crossings that will require grade separations including Capital Blvd and I-440. Additionally the trail crosses two separate railroad corridors. The trail also is located in the floodplain which will require a flood study.								
4R	Trinity Rd Street-Side Trail	Walnut Creek Greenway	Reedy Creek Road	Cary/Raleigh/Wake County	3.6	2	Y	7,966	3,795	0
		Notes: Crossing Wade Ave/I-440 will require an individual structure. Trenton Road will require a closed drainage system or additional right of way. The crossing of the railroad should be grade separated. Crossing Walnut Creek will trigger a flood study.								
4S	Pirates Cove Greenway	Greenwood Circle	Johnes Franklin Road	Cary/Raleigh/Wake County	3.1	2	Y	15,645	6,936	0
		Notes: The road profile on Western Blvd overpass of I-40 would have to be redesigned to accommodate a greenway. Further up Western Blvd may require a closed drainage system. A portion of this project will likely be constructed as part of the Western Blvd extension.								
4T	White Oak Creek Greenway	Davis Drive	MacArthur Drive	Cary	0.4	1	Y	7,218	1,133	2.2
		Notes: The trail will be fully constructed within HOA common space. There is also a crossing of a railroad that will impact the constructability project.								
4U	Glengarry Sidewalk Connector	Pirates Grove Greenway	Macedonia Lake Loop Trail	Cary/Wake County	1.7	2	Y	8,309	8,395	0
		Notes: Crossing the creek will require a flood study. The greenway should utilize the existing power easement.								

TABLE 3.1 SUMMARY OF PROJECTS

*Based on 2010 Census block-level data (sum of all blocks that are completely or partially within 1/2 mile radius); includes Wake County only.
 **Based on 2014 LEHD Origin-Destination Employment Statistics (LODES) block-level data (sum of all blocks that are completely or partially within 1/2 mile radius); includes Wake County only.
 ***Block groups from Wake County's vulnerability assessment scoring 274 or higher. A distance of '0' signifies the location of the segment within or adjacent to a block group scoring 274 or higher.

Trail ID	Trail Name	From	To	Jurisdictions	Miles	Parks Connected	Connects to existing trails (y/n)	Residents within 1/2 mile*	Employees within 1/2 mile*	Distance from proposed greenway to block groups of higher vulnerability***
4V	Marks Creek Greenway	Neuse River Trail	Wendell Falls Parkway	Clayton/Wendell/Wake County	7.9	1	Y	4,726	133	0.8
		<i>Notes: This corridor is in a rural setting without any major road crossings. The a portion of the trail is within the floodplain which will require a flood study.</i>								
4W	Jordan Lake Sidepath Connector	Farrington Road	American Tobacco Trail	Chatham County/Wake County	4.1	0	N	262	104	3.6
		<i>Notes: Adequate right of way is available along US-64 for a street side path.</i>								
4X	New Hill Holleman Road Sidepath	American Tobacco Trail	Harris Lake County Park	Wake County	6.3	1	N	1,018	1,088	0
		<i>Notes: This project has an opportunity to use the existing rail bed thus extending the American Tobacco Trail. Once along New Hill-Holleman Road, there is an at-grade crossing of the railroad. Crossing US 1 will require an independent structure or reconstruction of the existing vehicular bridge to include a street side path. Additional right of way likely be needed along New Hill-Holleman Road.</i>								
4Y	Camp Branch Greenway	Kildaire Farm Road	Moneta Lane	Cary/Holly Springs/Wake County	4.5	1	Y	12,851	2,403	0
		<i>Notes: The route is within mostly an undeveloped corridor adjacent to the floodplain. Easements should be dedicated as the property is developed. A grade separation should be planned for the future I-540 extension.</i>								

IMPROVING TRAIL USERS' EXPERIENCE

Once more of the greenway projects outlined on the previous pages have been put in place, and once key gaps in the system have been filled, further work should be done to promote the use of greenways to both residents and visitors. With increasing investment in greenways and trails, North Carolina is poised to become a top destination for recreational tourism. The majority of Wake County residents may be aware of improvements to the greenway system, but those living outside the county and even some county residents may not be aware of all the greenways that Wake County has to offer. As a regional leader, Wake County can play a key role in coordinating efforts across three main areas of trail development in addition to the actual trail projects featured in the first part of this chapter. Wake County should work with its partners to establish a regional trail branding and wayfinding program that can be used to promote the system regionally and nationally, and encourage the placement of key amenities along and throughout the greenway system.

Regional Branding and Wayfinding

In order for greater numbers of people to enjoy the greenways, Wake County should consider a branding strategy that will market the greenways to residents, visitors, and potential funders. A brand tends to communicate what the user will experience and is applied consistently throughout all materials, messaging, and representation. It creates an emotional association and incorporates the inherent nature of an entity – its personality, character, and style. Lastly, a brand enables an entity to distinguish itself from similar options. For a greenway, a brand includes user experience, logo, signage, purpose, safety, comfort, programming, funding, sponsors, and supporters.

Branding the greenway system has multiple benefits, including:

- Creating awareness of the greenways
- Increased numbers of bicycle and walking trips
- A greater sense of security and comfort
- Improving navigation of the greenway system
- Defining the system within the larger context of trails, bicycle routes, and pedestrian routes

One component of branding is to establish a logo for the greenway system. The creation of a logo to be placed on signs, brochures, and maps would give the system a distinct identity. Branding of the greenways would reflect the uniqueness of Wake County and its municipalities. It will simultaneously set the greenway system apart from trails and greenways in other regions while also serving to improve connectivity and navigation. Part of this branding strategy would be to explore the character of the greenway system and project an image of how it should be represented. It is also critical that it be designed and implemented in a way that works well for both the County and the municipal partners.

Aside from the benefit of increased tourism, branding the greenway system offers benefits from a transportation perspective. Having signage in place to alert motorists of crossings will improve safety for pedestrians and bicyclists who use the greenway. Once a branding strategy has been identified, the next step would be to develop comprehensive wayfinding for the system. Wayfinding is generally considered to be a system of visual cues that help to orient people and give them a sense of place. As the Wake County greenway system expands, residents and visitors will have increased access to longer recreation routes, schools, commercial centers, and green spaces. Wayfinding elements such as signage and mile markers will help to draw visitors, help users to identify the best routes, and enhance their ability to connect to major destinations.

The main challenge of branding and wayfinding for a regional system in Wake County is the number of municipalities, each with their own varying degree of existing branding and signage. One way to address this would be to identify several cross-county routes (again, after at least the priority gaps are filled) and develop a memorandum of agreement among jurisdictions that outlines the agreed upon branding and wayfinding to be used for just those cross-county routes. Other local trails and trail signage could then either remain as-is, or could follow a minimum set of standards for local trails, should one be adopted regionally.

The overall experience of greenway users will be enhanced with wayfinding that ties the whole system together. Wake County could choose to conduct a wayfinding study to evaluate existing conditions as well as determine appropriate

wayfinding elements, placement of signage, and design. Wayfinding elements could include off-site elements, such as printed user maps (an update to Wake County's trail map is already overdue), digital user maps, gateway signs, and bicycle guide signs. On-site elements would include direction signs, map kiosks, and confirmation signs. A wayfinding plan would also provide guidance for design standards and installation of signs.

For trails signs within the highway right-of-way, the Manual on Uniform Traffic Control Devices (MUTCD), developed by the Federal Highway Administration (FHWA), provides standards for signs, signals, and pavement markings. While standards exist for signage, there is still opportunity to customize signage to match the character and feel of the communities in which those signs are placed.



This example signage for the Great Rivers Greenway trail system in St. Louis County shows a simple, yet effective use of signage and branding that lets the user know the name of the trail, distance to nearby destinations, the types of uses permitted, and has a reminder to share the trail. Photo by the Great Rivers Greenway.

Trail Amenities

Functional greenway trails must feature appropriate amenities to create a complete, accessible, and comfortable experience for a wide variety of expected users. As longer, connected segments of trail are built in Wake County, it will be important to accommodate longer-distance trips as well. Elements such as restrooms, lighting, benches, and other amenities create a unique identity but also provide important functions. It is important that the details work together to create a positive experience for users. The following key amenities are described briefly with more information found in the design resources listed at the end of Chapter 4.

Trailheads

Trailheads are arguably the most important amenity of a greenway trail. Trailheads provide essential access to the greenway and can include many amenities in one location: automobile parking, bicycle parking, restrooms, drinking fountains, trash and recycle receptacles, dog waste stations, bicycle repair stations, and greenway trail wayfinding and informational signage. While there is no widely accepted prescription for the frequency of trailheads, a report by the National Park Service (North Country National Scenic Trail Handbook) suggests a frequency of about 5-10 miles, depending on the

level of trail usage. User counts and surveys should be conducted to analyze effectiveness of existing trailheads in Wake County, and to determine current levels of parking demand. Major trailheads should be established where they are highly accessible and visible, usually along a major transportation corridor. Minor trailheads can be found at locally known parks or at connections to residential or commercial development.

Restrooms

Public restrooms are a critical building amenity because they need to be responsive to a wide range of human needs and abilities. Restrooms are often selected as the most important trail amenity of the general population. Careful consideration must be given to a number of factors before locating restrooms, including available land, size of trailhead, utility availability, and user need. When locating restrooms, prioritize them at trailheads within existing parks and review gaps for placement at other trailheads or locations within the system (trailheads, as noted above, are suggested at about 5-10 mile intervals). Composting toilets, similar to what is found at the current southern end of the American Tobacco Trail, should be considered in remote areas where utility connections are unavailable.



The New Hope Church Road Trailhead Park in northwest Cary.



Composting restroom at the current southern end of the American Tobacco Trail in Wake County.

Drinking Fountains

Drinking fountains provide opportunities for users to hydrate and potentially extend their trip. Long distance runners and bicyclists require replenishment and depend upon fountains to refill their water bottles. Fountains are also particularly desired by the elderly and come in handy for pets as well. Drinking fountains should be located near restrooms, at trailheads, parks, and other public gathering places along the greenway trail. Space drinking fountains 10-15 miles when potable or treatable water is not otherwise available.



Drinking fountains are key amenities for a wide variety of the population including pets.

Seating

Seating along greenway trails provides a place for users to rest, congregate, and/or reflect. Benches can be designed to create identity along the greenway trail or be strictly utilitarian. Benches should be located along the greenway where appropriate, or where there is demand by users. Seating should be provided at a minimum, every mile, and within 1/2 mile of trailheads.



Utilitarian bench along the American Tobacco Trail. Seating placed in the shade is appropriate for users in warm weather.

Lighting

Lighting for greenway trails can improve visibility along the greenway and at intersection crossings. Lighting spacing along trails depends on the type and intensity of lights, but 30-50 ft spacing is common for pedestrian scale lighting. It may also be necessary for day-time use in greenway tunnels or underpasses. Lighting should be considered on a case-by-case basis due to its expense and maintenance commitment required. It is typically not appropriate for greenway trails in remote areas, trails with low use, or where there is little to no development. Care should be taken to ensure lighting does not negatively impact nearby residents in the form of light pollution.



Lighting is useful in areas where usage is expected to be higher and along trails that commuters typically use.

Bike Repair Stations

Bike repair stations provide cyclists with an air pump for filling up tires and tools for basic repairs and adjustments. The City of Raleigh features two bike repair stations currently. Ideal locations would be at trailheads or adjoining parks.



Repair stations provide basic amenities for bicyclists.

Mile Markers

Mile markers serve two main purposes and are often one of the most requested components of a trail system. First, mile markers serve as important information for decision-making, especially for those exercising and tracking their progress. In addition, mile markers can provide a form of “addressing” or locating for emergency response. For the Wake County Greenway System, establishing mile markers should occur after longer distance cross-county connections can be made by filling gaps between existing trails. This type of amenity could be combined with an overall signage plan. Mile markers are often placed every quarter mile, although placement at tenth-mile intervals may be preferable.



Mile marker on the American Tobacco Trail.

Edible Plants Along Greenways

Low maintenance edible plantings along greenways are supported as an amenity to add to Wake County residents’ experience of the greenways. Planting edibles, primarily trees and berry bushes, in strategic and visible areas of greenways is a way to both minimize long term maintenance and management, and add value to user experience. This plan recommends a focus on native or locally adapted plants which flourish in our Piedmont region, and grow well and easily, requiring limited maintenance and resources. There are already a number of edible plants along Wake County greenways, and municipalities are encouraged to explore pilot projects to incorporate these into greenways being installed or upgraded. While there are many opportunities for

edibles along greenways, they are not recommended within gas or electric easements, or near utility service boxes or septic lines. Edibles can be included as part of the overall project cost, especially as new greenway segments are built and connections made with existing greenways. Benefits include:

- Ecological benefit – edible plantings are sustainable. They are likely to flourish with limited maintenance and without the use of chemicals.
- Improving the recreational experience – edibles are one more tactile and sensory experience of connecting greenway users with nature.
- Educational benefit – connecting kids with nature is key to their healthy physical, mental and emotional development. Data shows children who engage with nature develop stronger executive functioning skills. Edible plantings provide one more way for kids to engage with nature on the greenways.
- Health benefit – eating more fruits and vegetables is one of 3 key chronic disease prevention recommendations from the US Center for Disease Control. Providing more visible ways to do this can have a health benefit for our communities, even if the volume is small.
- Economic benefit – edible plantings do not need to cost more than traditional plantings, if installed at the time a greenway is put in. Whenever the installation occurs, native or locally adapted plants may reduce maintenance and eliminate chemicals needed, reducing costs for responsible jurisdictions. Finally, in the long term, berry bushes and fruit trees that greenway users can actually eat from will have a minor economic benefit in terms of free food. While the volume may be small initially, long term this could be thousands of pounds of food a year.

At least one pilot project is planned within Wake County (at NC State), and strong interest has been expressed in Holly Springs and Wake Forest. Other communities already have such programs in place, such as in Black Mountain, NC.