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Plan best viewed in Adobe Acrobat in two page view mode.
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GARNER
A Great Place to Be®

SOUTH GARNER GREENWAY

FEASIBILITY STUDY

2019.06.21

ACKNOWLEDGMENTS

Town of Garner
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Sonya Shaw – *Parks, Recreation and Cultural Resources Director*
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MCADAMS

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1 overview

CHAPTER 1 > OVERVIEW

The South Garner Greenway Connector is a proposed 1-mile greenway corridor that will connect White Deer Park with a proposed Wake County greenway and surrounding neighborhoods. This feasibility study provides a framework for implementing a successful greenway trail project by evaluating the opportunities and constraints of the study area such as environmental, experiential, property acqusition and financial aspects of the project.

PREVIOUS PLANNING EFFORTS

Previous planning efforts evaluated potential alignments and developed preliminary cost estimates. However, given rapidly rising construction costs and evolving community needs, the Town sought an update to the previous planning studies. Previous planning studies include the following:

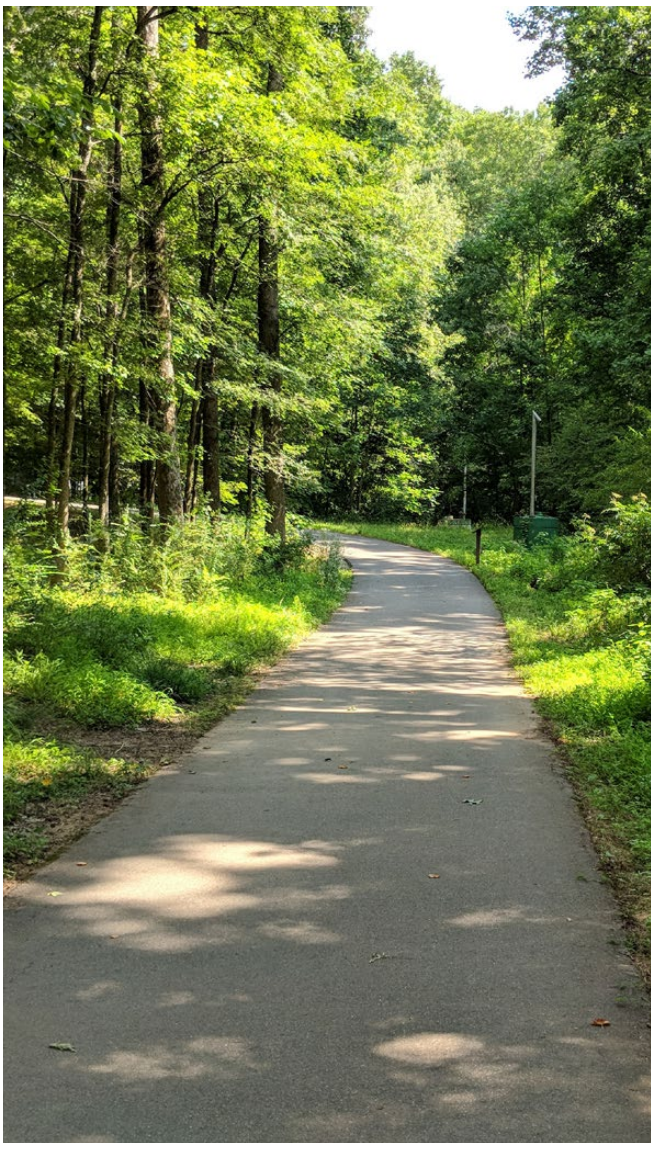
COMPREHENSIVE PLANS

- Wake County Greenway Master Plan – Level 2, connect to parks and lakes
- Garner Comprehensive Parks, Recreation, and Greenways Master Plan (2007)
- Garner Forward Comprehensive and Transportation Plans

CORRIDOR SPECIFIC STUDIES:

- Basic alignment study by McKim & Creed in 2013 – Options B and Revised B
- Breezeway Area Trail Connector Study, June 2013 by W.K. Dickson & Co., Inc.

Relevant planning studies can be found in the Appendix of this feasibility study.



PROJECT GOALS

The overarching goal of this feasibility study is to recommend the most constructible and cost-effective trail alignment that is supported by the community. The feasibility study presents design considerations for a greenway trail that will meet ADA requirements and connect the area's parks and neighborhoods in a cohesive and pleasurable manner.

Specifically, the proposed trail corridor intends to connect several residential neighborhoods to White Deer Park. The proposed trail corridor also considers a connection from the study area [Figure 1], to a proposed Wake County greenway trail, allowing Garner's trail system to join a larger, regional greenway network.

CONNECTIONS TO PARKS

White Deer Park is located on Buffaloe Road, North of Lake Benson Park. Covering approximately 96 acres, White Deer Park is Garner's largest municipal park and offers a 2,500 square-foot LEED certified nature center, two playgrounds, five shelters and over two miles of trails. A greenway connection to White Deer Park would expand the user reach and connect the park to the greater parks system.

Lake Benson Park is also located on Buffaloe Road, south of White Deer Park. Encompassing 64 acres, the Park includes large open spaces, shelters, a boat house and nearly two miles of paved and unpaved trails. Lake Benson offers approximately 400 acres of open water for non-motorized water recreation activities.

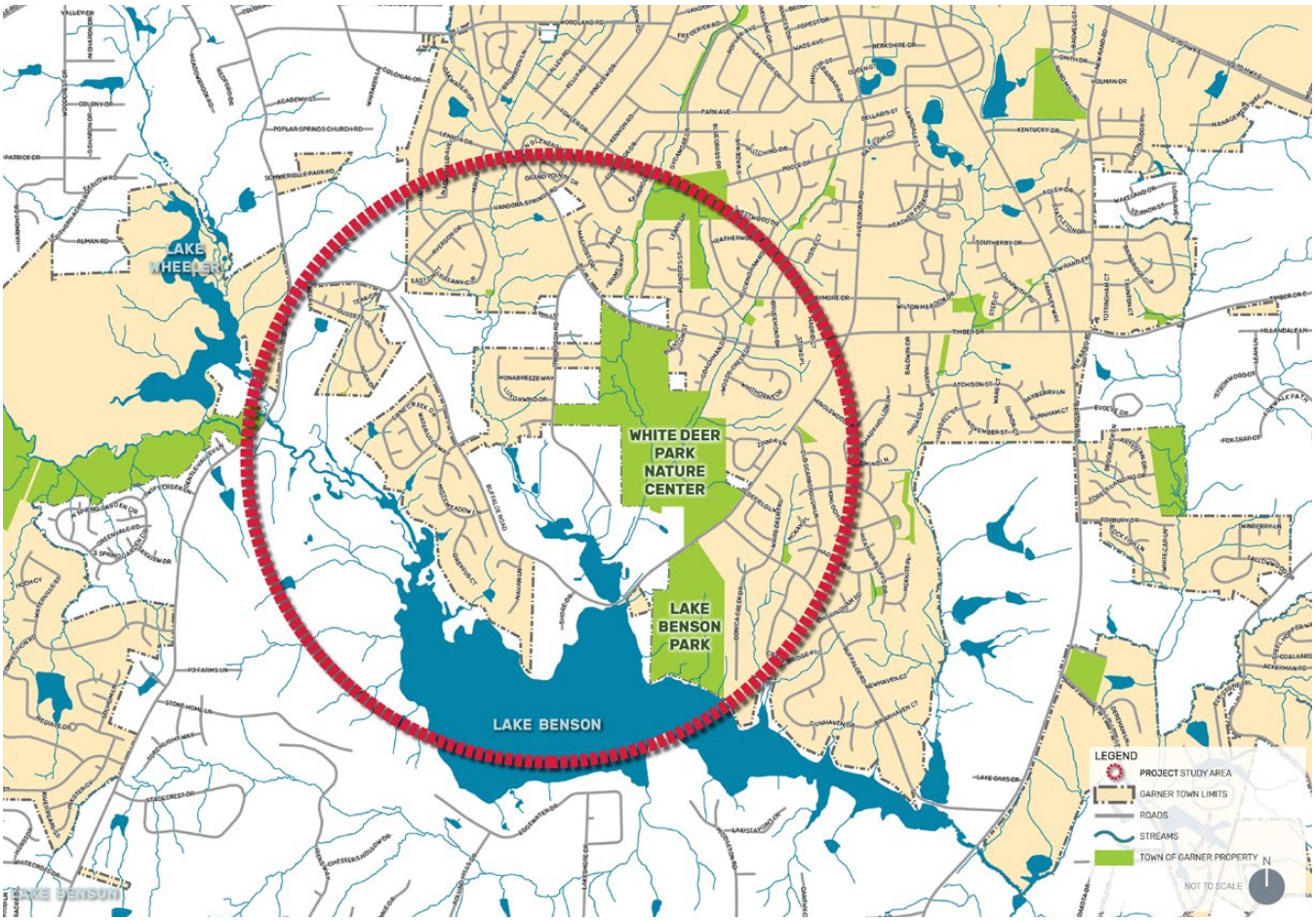


Figure 1 - Study Area

CONNECTIONS TO NEIGHBORHOODS

The project study area as depicted in the map on the bottom left serves residents within eight neighborhoods including:

- Lake Shore
- Landings at Lakemoor
- Lakemoor
- The Mead at Lakemoor
- Lakewood
- Breezeway
- Breezeway South
- Breezeway East

CONNECTIONS TO EXISTING PEDESTRIAN INFRASTRUCTURE

The South Garner Greenway will connect sidewalks that currently terminate at the Vandora Springs Road / Buffaloe Road roundabout to White Deer Park. White Deer Park, the common eastern terminus of each proposed greenway alignment, contains a network of over two miles of paved trails. The proposed greenway corridor will provide residents with safe non-vehicular access to local parks and trail networks. Such access will foster a more meaningful experience for trail and park users and expand opportunities for connection to nature, leisure and recreation.

Completed in 2013, The Vandora Springs Road / Buffaloe Road roundabout added an adjacent multi-use path terminating at the extents of roadway construction. The proposed multi-use path along Buffaloe Road would connect White Deer Park to the multi-use path at that roundabout. Depending on the alternative selected, the proposed greenway corridor would connect the area's neighborhoods with other nearby parks as discussed, in addition to Thompson Road Park.

The Breezeway neighborhoods adjacent to Thompson Road Park contain existing 5' wide sidewalks within the streets' public right-of-way. These sidewalks connect the interior lots of the neighborhoods with Thompson Road and Thompson Road Park. Currently, the paths end at Thompson Road where sidewalks do not exist. Option A would provide a direct connection from the Breezeway neighborhoods to Thompson Road Park and White Deer Park, and from Vandora Pines and Lakemoor neighborhoods to Thompson Road Park, White Deer Park and Lake Benson Park.

CONNECTIONS TO WAKE COUNTY GREENWAY SYSTEM

As depicted in Wake County's Greenway Master Plan [Figure 2], the County intends to connect the Swift Creek Greenway Corridor to Buffaloe Road, thus, the South Garner Greenway would be connected to the larger Wake County Greenway System. The Town also shows the connection on page 52 of the 2018 Transportation update to the Forward Garner Plan, see [Figure 3].

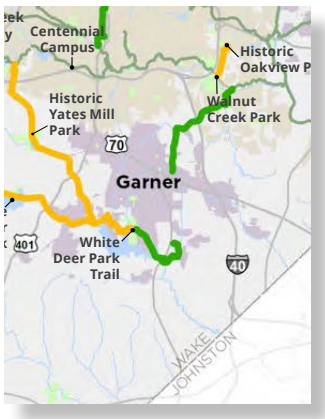


Figure 2 - Wake County Greenway Master Plan: Connect to Parks and Lakes

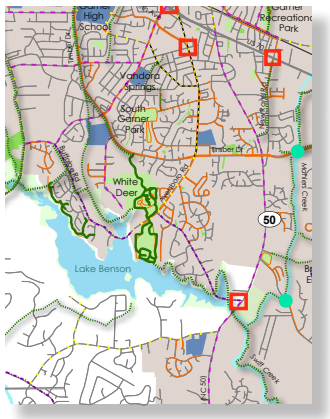


Figure 3 - Garner Forward Transprotation Plan

2 existing conditions

CHAPTER 2 > EXISTING CONDITIONS

NATURAL ENVIRONMENT

Lake Benson is a manmade reservoir covering approximately 400 acres to the south of the study area. A boathouse and adjacent trails provide anglers and non-motorized watercraft users access to the generally shallow waters. Lake Benson is fed mainly by three stream sources: Buck Branch, Reedy Branch and Swift Creek.

BUFFERS, STREAMS + WETLANDS

The study area falls within Wake County's Neuse River Basin. The Neuse Riparian Buffer Rule requires maintenance of a 50-foot riparian buffer on surface waters subject to the rule. Certain uses are permitted within the riparian buffer, including greenway trails. While allowed, greenway trails require a buffer authorization from the NC Division of Water Resources (DWR) before proceeding with construction. As part of the permitting process, the applicant must demonstrate that impacts to buffers have been avoided and minimized to the greatest extent practicable.

The study area is also located within a Conservation Buffer Area (CBA) as outlined in Town of Garner Unified Development Ordinance Article 4.8 & 7.2D. Within the CBA, buffers from 50 to 100 feet are required on the lakefront and streams, depending on their distance from Lake Benson. Buffers include the 100-year floodplain, if one is present, plus the required buffer width. Greenway trails are permitted within CBAs.

Jurisdictional streams and wetlands exist within the study area. Rivers, streams, lakes, ponds and wetlands are considered "waters of the United States" and are subject to the jurisdiction of Section 404 of the Clean Water Act. Impacts to these resources require a Section 404 permit, typically a Nationwide Permit (NWP), from the US Army Corps of Engineers (USACE) and a Section 401 Water Quality Certification (WQC) from the DWR. USACE and DWR have a joint application process for impacts to buffers, streams and wetlands. Justification for requested impacts and demonstration of avoidance and minimization of impacts to waters of the U.S and riparian buffers will be required during the permitting process.

A NWP can be utilized if the project is designed to impact less than 0.5 acres of jurisdictional waters of the U.S., including wetlands, and/or a maximum of 300 linear feet of jurisdictional stream. Pre-construction notification and approval will be required for jurisdictional stream and wetland impacts. The processing time is 45 days for a NWP and 60 days for a WQC.

Cumulative impacts for Recreational Facility projects over the NWP thresholds will require an Individual Permit. Individual Permits require an analysis to determine that the proposed impact to waters of the U.S. is the least environmentally damaging practical alternative, which typically requires compensatory mitigation, notification to adjacent property owners, a public notice and may require a public hearing.

Project Impacts to Buffers, Streams and Wetlands

Regardless of the final alignment selected, the South Garner Greenway must cross both Reedy Branch and Buck Branch. Use of an existing culvert over Buck Branch would minimize impacts to the stream and riparian buffers and limit construction costs associated with a boardwalk or bridge crossing. Similarly, a connection to the trail system within White Deer Park would require construction of a stream crossing over Reedy Branch. The final alignment should minimize impacts to buffers, streams and wetlands as well as the associated costs of impacts, if possible.

Stream, Wetland, and Riparian Buffer Mitigation

The USACE can require mitigation for any stream or wetland impacts. In most cases, mitigation is not triggered for stream impacts less than 150 linear feet and wetland impacts less than 0.1 acre. Table 1 lists the current fee schedule from the NC Division of Mitigation Services (DMS), allowing for payment to offset wetland and stream impacts when required.

FEE CATEGORY	FEE
Stream per linear foot	$507
Riparian wetland per acre	$60,187

Table 1 - 2018-19 DMS Stream & Wetland Mitigation Rates

FLOODPLAINS

Both FEMA floodway and one percent annual chance flood hazard zone (100-year floodplain) exist within the study area as shown on the FEMA Flood map firm panels 3720160900J, 3720161900J, 3720170000J, and 3720171000J.

When working within the regulatory floodway, trail design (regardless of surface type) should minimize any change in ground elevation where possible. Any construction or increase in ground elevation within the floodway triggers detailed hydraulic modeling and required approvals through the Federal Emergency Management Agency (FEMA). Alternatively, while a local Floodplain Development Permit may be required, FEMA does not regulate greenway trail development within the floodplain.

The trail alignment connecting Buffaloe Road to White Dear Park will cross both floodway and floodplain associated with Reedy Branch and Buck Branch. The final alignment through the floodway will maintain the existing base flood elevation to eliminate the need for detailed flood studies. This can be achieved by locating the trail where minimal grade change is required to maintain ADA grades of less than five percent longitudinal slope, and less than two percent cross slope. Alternatively, a boardwalk or bridge can be used to span the regulatory floodway and eliminate any changes to the existing base flood elevation.

Designing the trail outside of the regulatory floodway reduces the possibility of adding fill and triggering a detailed flood study. However, maintenance considerations still exist. Known to experience periodic flooding, greenway trails within the 100-year floodplain should be paved and will likely require additional maintenance from sedimentation and other debris.

TOPOGRAPHY + DRAINAGE

Topography across the study area is gently sloping, with areas of steep grade change. As depicted in the below slope analysis map [Figure 4], slopes range from zero percent to over 25 percent. The most challenging steep slopes are located behind the residential parcels located east of Buffalo Road.

To maintain ADA compliant slopes, the greenway must traverse a longer distance in areas where steep slopes currently exist. Outside of this area of steep slopes, the proposed trail alignments can, for the most part, remain at existing grade and will require minimal grading.

Aside from the likely culvert replacement at Buck Branch, drainage structures are not anticipated to be necessary for stormwater conveyance. Depending on the Town's capacity for trail maintenance, stormwater and runoff may either be conveyed in a swale on the uphill side of the trail, or sheet flow directly across the trails surface. While sheet flow across the trail surface may require additional maintenance, it is the preferred method of stormwater conveyance. A swale on the high side of the trail increases the limits of disturbance and in turn, grading costs. Additionally, the concentrated flow will necessitate the installation of additional drainage structures leading to the final outfall location where a structure to disperse concentrated flow in a non-erosive manner should be installed.

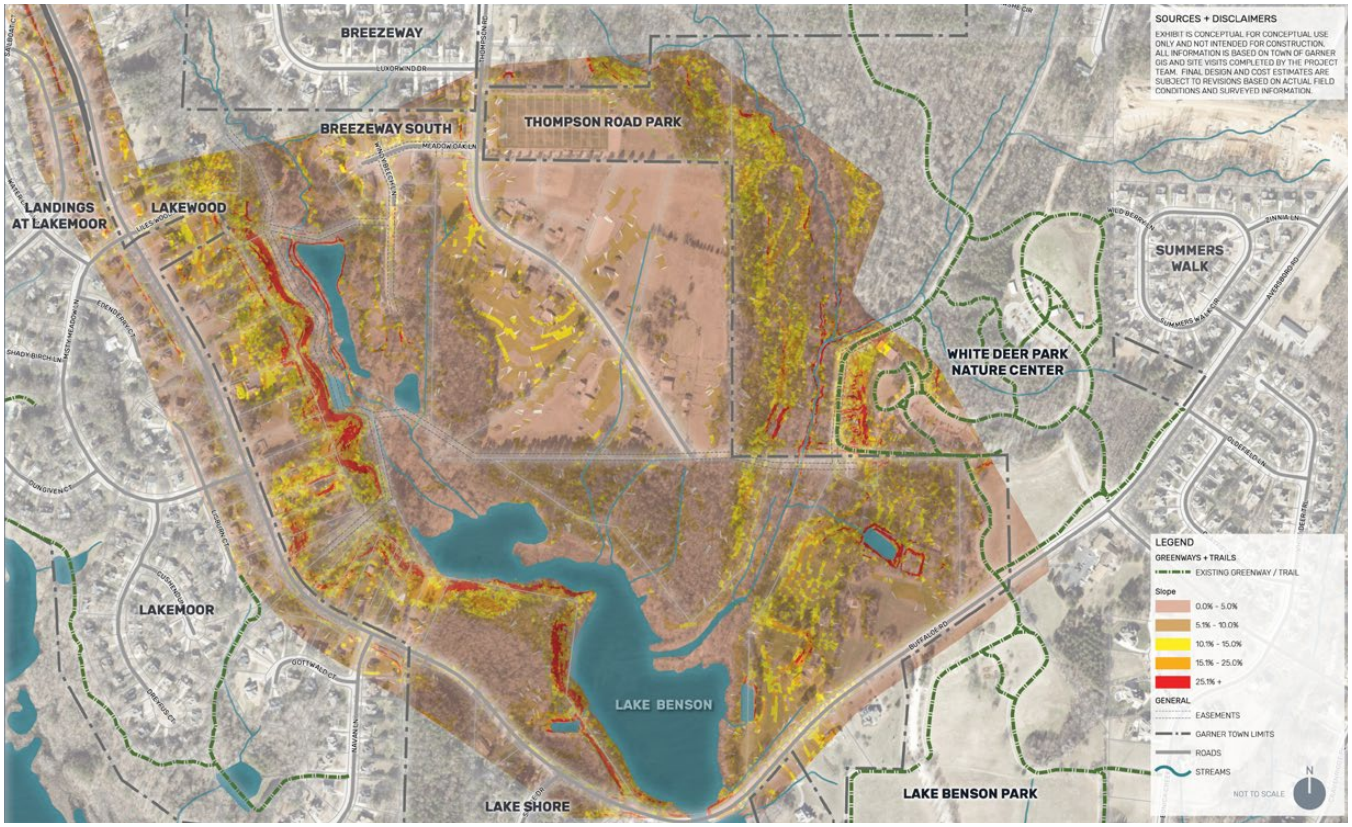


Figure 4 - Slope Analysis Map

THREATENED AND ENDANGERED SPECIES

Plants and animals with Endangered or Threatened status are protected under the Endangered Species Act (ESA) of 1973 (16 US 1531 et seq.). While not included in the scope of this feasibility study, subsequent engineering should include a review of the US Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) online tool and the NC Natural Heritage Program (NHP) online database to generate an official list of any federally protected species that may be found within the project area. If protected species are known to occur near or within the study area, additional field verification may be required.

BUILT ENVIRONMENT

The intent of the South Garner Greenway is to connect the neighborhoods within the study area to White Deer Park and Lake Benson Park. Using readily available GIS data, this analysis identified existing utilities, historic resources, roads and drainage structures. Further site reconnaissance confirmed the presence or absence of existing site features within the study area. All visible observations were documented via digital photography. This allows the project team to develop alternatives within the context of field-verified existing conditions.

The GIS data analysis coupled with site reconnaissance revealed the presence of multiple sanitary sewer easements and overhead utilities including power, phone and cable. The location of such utilities can be seen on the Slope analysis Map [Figure 5] and the Property Ownership map [Figure 6]. The three trail alignment options presented avoid the construction of structures in a sanitary sewer easement that are typically not permitted. Based on documented field data, overhead utilities were only observed within the Buffaloe Road and Thompson Road rights-of-way and therefore it does not appear the proposed trail alignments conflict with the presence of overhead utilities. Verification of underground utilities was not completed as part of this study. Subsurface utility exploration (SUE) should be completed as part of future design phases to confirm the presence and location of any and all underground utilities.

Based on review of readily available GIS data provided by the North Carolina State Historic Preservation Office, it appears no historic structures are located within the project study area. Prior to development of construction drawings, the Town should seek concurrence from the State Historic Preservation Office to document that final trail alignment will not impact historic structures.

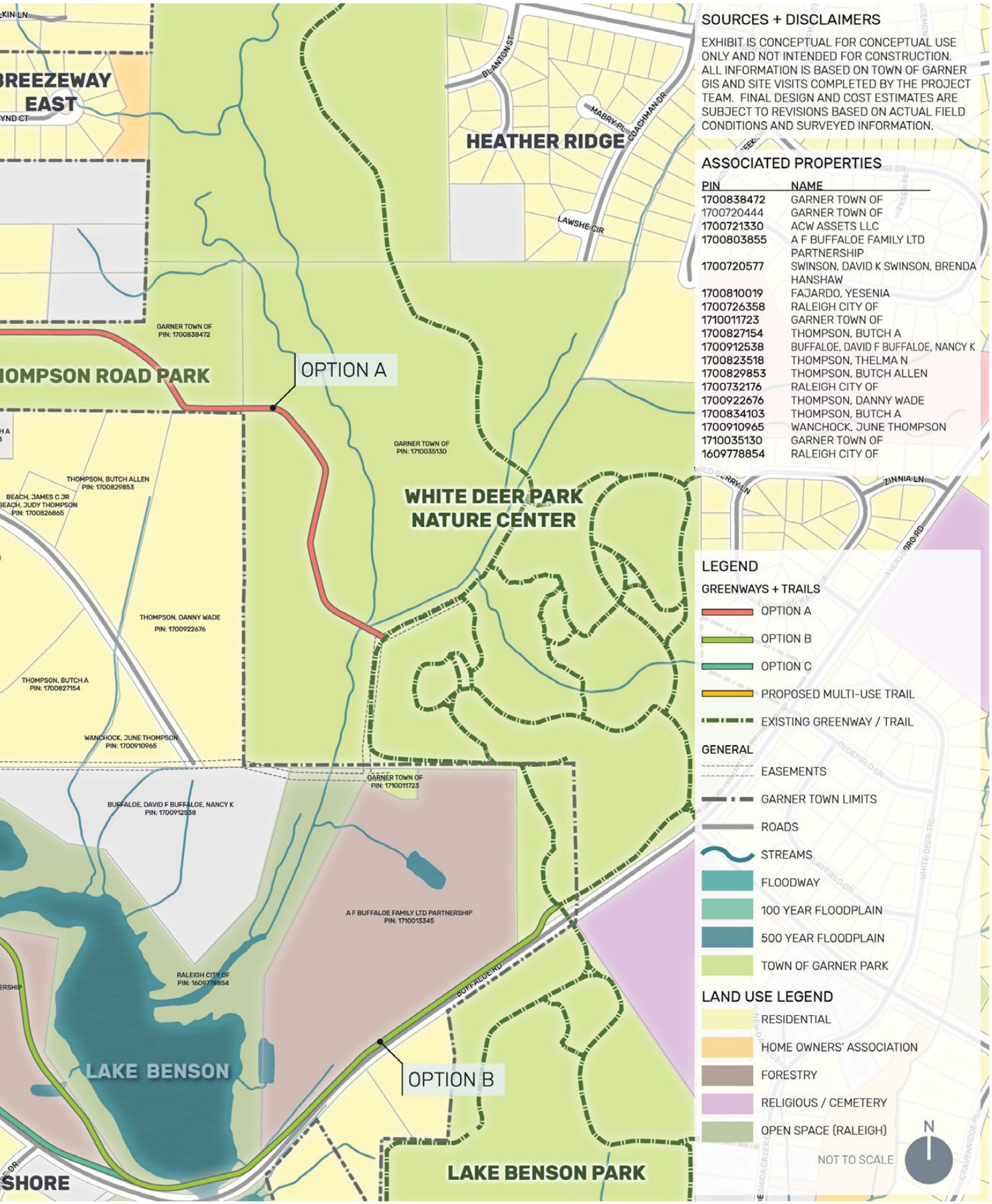
Finally, the site reconnaissance revealed the presence of one visible existing drainage structure within the project study area. The culvert servicing the Buck Branch crossing would be affected if Alternative A is selected as the preferred trail alternate. Visual inspection revealed the culvert on Buck Branch would need replacement and / or repair to improve conveyance of Buck Branch and provide structural integrity to the proposed trail if Alternative A is selected. This improvement has been considered as part of the Alternative A cost estimate.

PARCEL ANALYSIS

One driver for selecting a preferred trail alignment is the ability to secure easements or property for trail construction. The below property ownership map [Figure 5, next page] identifies property owners along the proposed trail alignments from which easements or property would need to be acquired. Limiting the number of property owners from which the Town needs to secure land or easements has the potential to expedite project implementation. Similarly, selecting trail alignments traversing Town or other publicly owned land have greater potential for immediate parcel control.

Figure 5, a map depicting property owners and land use is located on the next page.

Figure 5 - Property Ownership and Land Use Map



SOURCES + DISCLAIMERS

EXHIBIT IS CONCEPTUAL FOR CONCEPTUAL USE ONLY AND NOT INTENDED FOR CONSTRUCTION. ALL INFORMATION IS BASED ON TOWN OF GARNER GIS AND SITE VISITS COMPLETED BY THE PROJECT TEAM. FINAL DESIGN AND COST ESTIMATES ARE SUBJECT TO REVISIONS BASED ON ACTUAL FIELD CONDITIONS AND SURVEYED INFORMATION.

ASSOCIATED PROPERTIES

PIN	NAME
1700838472	GARNER TOWN OF
1700720444	GARNER TOWN OF
1700721330	ACW ASSETS LLC
1700803855	A F BUFFALOE FAMILY LTD PARTNERSHIP
1700720577	SWINSON, DAVID K SWINSON, BRENDA HANSHAW
1700810019	FAJARDO, YESENIA
1700726358	RALEIGH CITY OF
1710011723	GARNER TOWN OF
1700827154	THOMPSON, BUTCH A
1700912538	BUFFALOE, DAVID F BUFFALOE, NANCY K
1700823518	THOMPSON, THELMA N
1700829853	THOMPSON, BUTCH ALLEN
1700732176	RALEIGH CITY OF
1700922676	THOMPSON, DANNY WADE
1700834103	THOMPSON, BUTCH A
1700910965	WANCHOCK, JUNE THOMPSON
1710035130	GARNER TOWN OF
1609778854	RALEIGH CITY OF

LEGEND

GREENWAYS + TRAILS

- OPTION A
- OPTION B
- OPTION C
- PROPOSED MULTI-USE TRAIL
- EXISTING GREENWAY / TRAIL

GENERAL

- EASEMENTS
- GARNER TOWN LIMITS
- ROADS
- STREAMS
- FLOODWAY
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- TOWN OF GARNER PARK

LAND USE LEGEND

- RESIDENTIAL
- HOME OWNERS' ASSOCIATION
- FORESTRY
- RELIGIOUS / CEMETERY
- OPEN SPACE (RALEIGH)

NOT TO SCALE

N

3 public input

CHAPTER 3 > PUBLIC INPUT

Public input is an essential part of any planning process. The most effective plans are firmly rooted in the realities and visions of the communities that created them. This feasibility study collected public input through an online questionnaire and at a public drop-in meeting. This section summarizes all public input received during the planning process.

Dates

Public Drop-in Meeting: October 25, 2019

Online Questionnaire distributed through October and November.

Number of Attendees

Public Drop-in Meeting: 54 attendees

Online questionnaire received 55 responses

Purpose

To inform the public about the project, educate about greenway design and construction in general and gather input regarding the public's overall opinion of the project and desired alternative.

SUMMARY OF FINDINGS

The public input meeting enabled Town staff and the project team to present the trail alignment alternatives and to solicit feedback regarding residents' preferred alternative, questions, and concerns. The meeting was held at White Deer Park Nature Center near the project site.

Meeting results indicate overall positive support of the project, with 75 percent of meeting attendees responding "Yes" I am excited about the South Garner Greenway Project. Approximately 17 percent of attendees responded "No" I am not excited about the South Garner Greenway Project, and 8 percent of attendees did not respond.

Responses indicating excitement about the project coalesced around three main ideas. First, residents indicated a desire to have more places to be active in order to improve their physical health and wellbeing. Health and wellbeing goals ranged from wanting a place to access nature, to managing chronic illnesses with exercise.

Second, many residents indicated that they are excited to use the facilities with their families and friends. Residents reported that they would like to have group bike rides, walk their pets, and teach children how to confidently ride a bicycle.

Finally, many residents are excited about the increased connectivity the facility will create in their community. Many people indicated excitement about the possibility to connect safely to Lake Benson Park and White Deer Park.

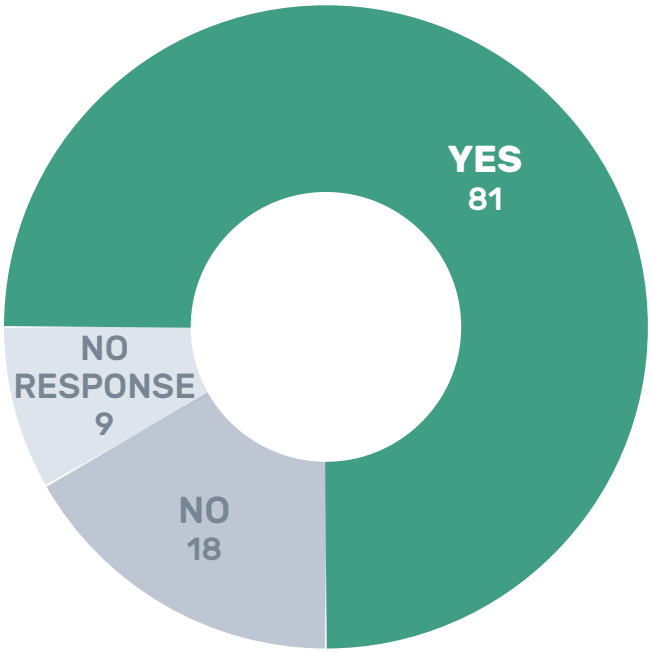


Figure 6 - Responses to "Are you excited about the South Garner Greenway Project?"

Residents who indicated they were not excited about the project cited concerns about encroachment on private property, the project's impact on the natural environment, cost of the project and safety.

Figure 7 below summarizes respondents' preferred trail alignment options. Option B received the most first choice responses, followed by Option A and Option C which nearly tied. Option B appears to be the most popular option among meeting respondents.

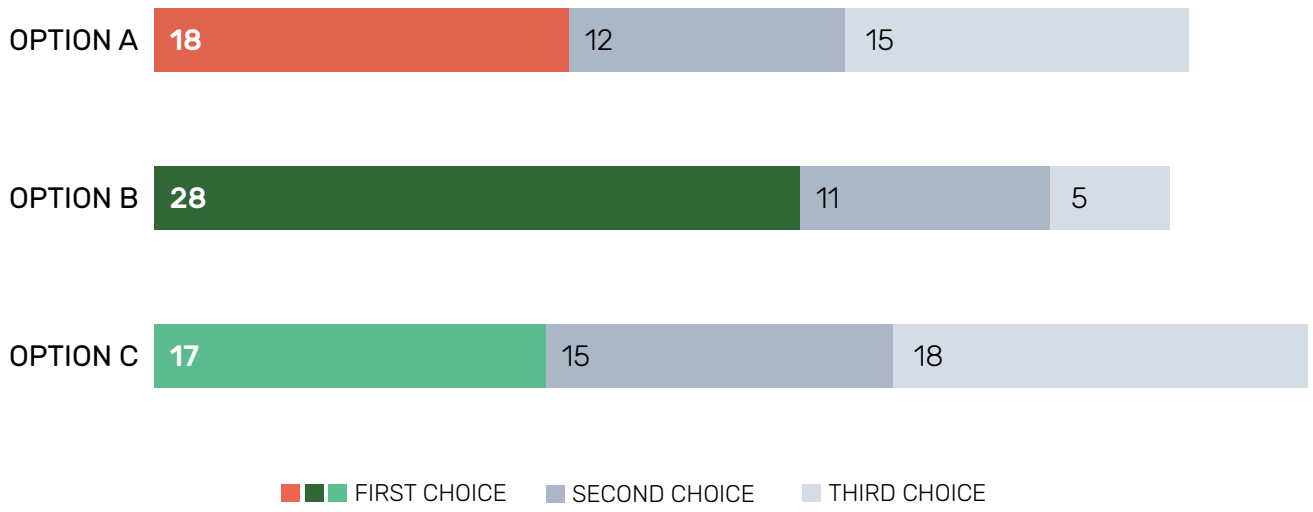


Figure 7 - Responses to "Of the three options shown, please rank from most preferred to least preferred."

PUBLIC INPUT WITHIN THE DECISION MATRIX

Public input is an important evaluation criteria weighing the alignment options for the South Garner Greenway. Public engagement revealed reservations of homeowners near the Option A trail corridor, but overall community support for the project is high. Within the decision matrix, each alignment will be rated on a scale of 1 to 3 with a score of 1 reflecting "Public did not want" and a score of 3 reflecting "Public preferred". Based on the results of this engagement process, Option A and Option B received a score of 2, and Option C received a score of 1.

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4 preliminary design

CHAPTER 4 > PRELIMINARY DESIGN

This feasibility study presents three typical trail cross sections that will define trail surface, width and relation to on-road facilities. For each of the corridor alternatives, one or more of the three trail cross sections have been selected with safety, trail use, location, and cost in mind.

TYPICAL CROSS SECTIONS

GREENWAY

This study defines a greenway as a trail corridor located within a dedicated easement or public utility right-of-way and typically not associated with a road corridor. Greenways are typically paved and wide enough to accommodate a variety of trail users from walkers to runners and bicyclists.

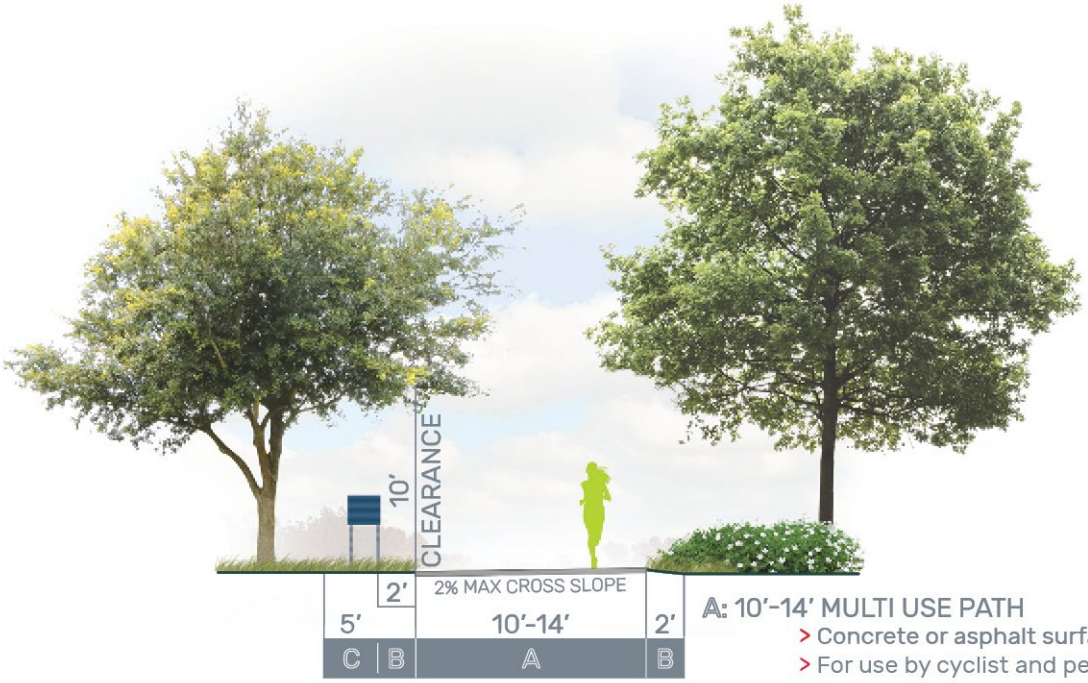


Figure 8 - Typical Greenway Section

A: 10'-14' MULTI USE PATH
- > Concrete or asphalt surface
- > For use by cyclist and pedestrians

B: 2' SHOULDER
- > Maximum slope of 4:1 (25%)

C: TRAIL SIDE CLEARANCE
- > Minimum of 2 feet. This prevents conflicts between cyclists and pedestrians with stationary objects

GREENWAY SIDE PATHS

Greenway Side Paths share the right-of-way (ROW) with streets and vehicular corridors. Usually located immediately adjacent to a street, a vegetated buffer or other separation is typically provided between the street / motor vehicles and the pedestrian path of travel.

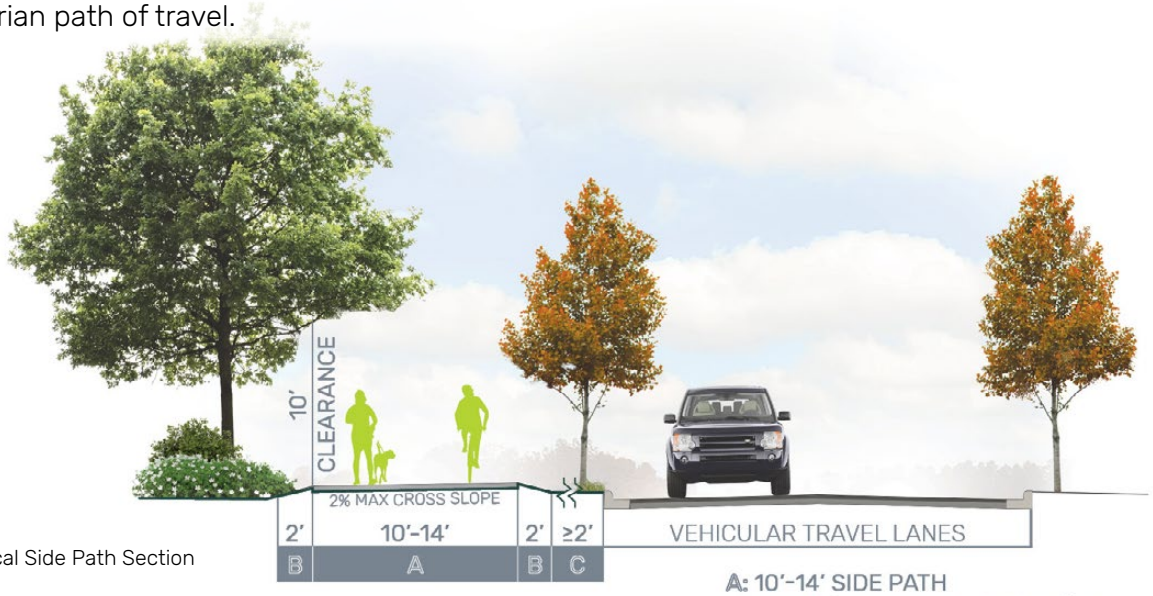


Figure 9 - Typical Side Path Section

A: 10'-14' SIDE PATH
- > Concrete or asphalt surface
- > For use by cyclists and pedestrians

B: 2' SHOULDER
- > Maximum slope of 4:1 (25%)

C: TRAIL SIDE ZONE
- > Minimum of 2 feet. Width determined

NATURAL SURFACE TRAIL

Natural surface trails are often narrower than greenways in width and located in natural settings such as adjacent to a stream or river corridors. Natural surface trails offer an opportunity to install a corridor with screenings or aggregate surface material and phase implementation of more expensive surfacing such as asphalt or concrete.

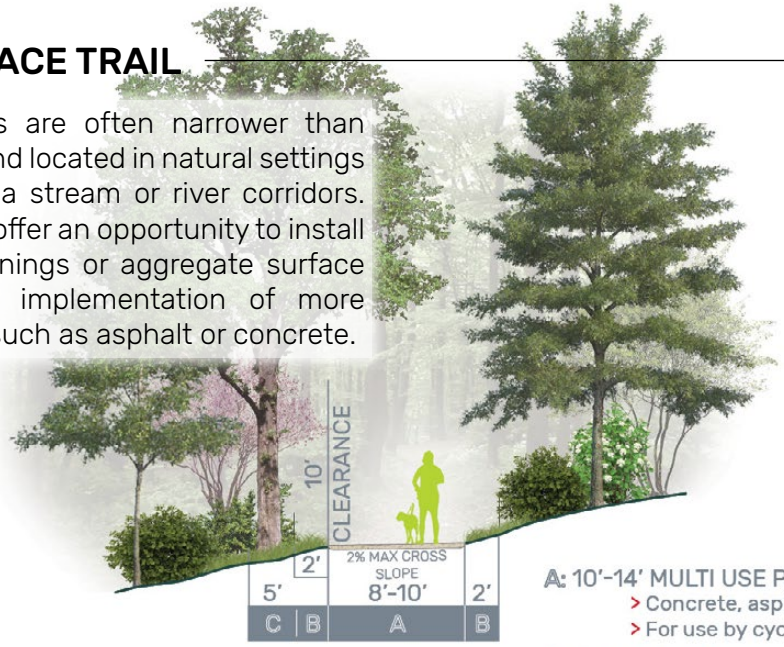


Figure 10 - Typical Natural Trail Section

A: 10'-14' MULTI USE PATH
- > Concrete, asphalt or natural surface
- > For use by cyclists and pedestrians

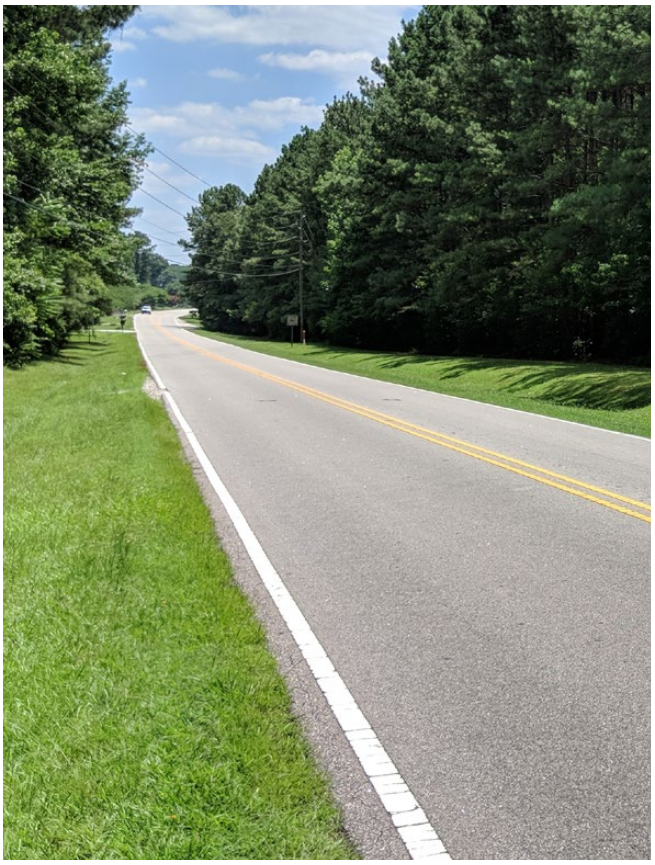
B: 2' SHOULDER
- > Maximum slope of 4:1 (25%)

C: TRAIL SIDE CLEARANCE
- > Minimum of 2 feet. This prevents conflicts between cyclists and pedestrians with stationary objects

OPPORTUNITIES + CONSTRAINTS

Implementation of each trail alignment alternative will require encroachment agreements, permitting and environmental compliances, all of which influence the greenway location and alignment. Weighed with other factors such as cost and community preference, alignments with fewer regulatory hurdles are typically given priority. At a minimum, the below will likely be required prior to construction of any of the trail alignments:

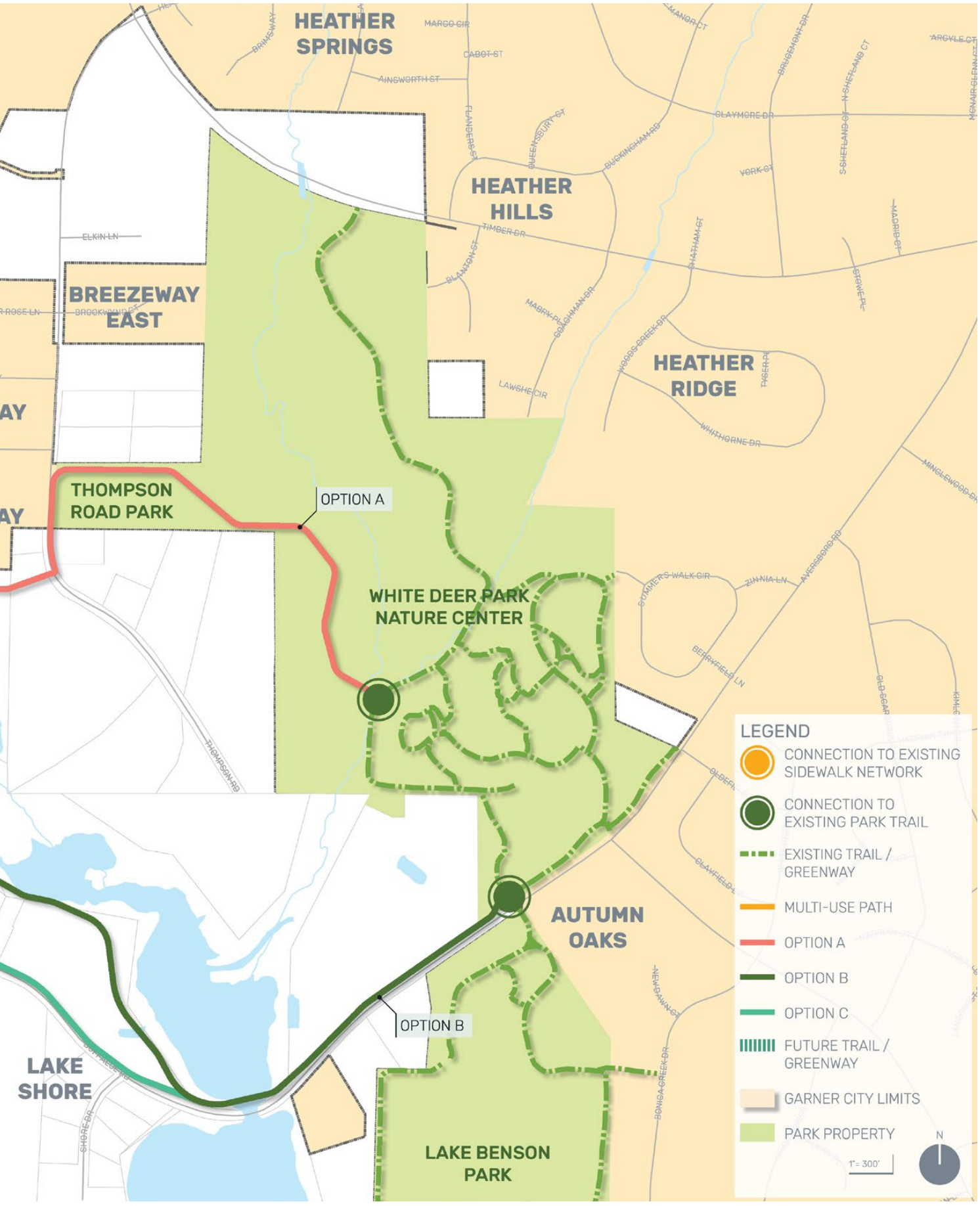
- NCDOT Encroachment Agreement
- 401/404 Permits through USACE and NCDEQ
- NCDEQ Soil Erosion and Sediment Control Permit
- FEMA Compliance, either no-rise or CLOMR/LOMR
- NCDEQ Buffer Permit – Neuse River



STUDIED ALIGNMENTS

Three corridor alignment options [Figure 11] were studied as part of the report and are described below. All three alignment options include, a proposed greenway side path adjacent to Buffaloe Road would connect the stubbed existing paths at the Vandora Springs roundabout with Lakemoor neighborhoods before providing access to the greenway alignment options' western trailhead at Buffaloe Road.

Figure 11 - Corridor Alignment Options


HEATHER SPRINGS
HEATHER HILLS
HEATHER RIDGE
BREEZEWAY EAST
THOMPSON ROAD PARK
OPTION A
WHITE DEER PARK NATURE CENTER
AUTUMN OAKS
OPTION B
LAKE SHORE
LAKE BENSON PARK
LEGEND
CONNECTION TO EXISTING SIDEWALK NETWORK
CONNECTION TO EXISTING PARK TRAIL
EXISTING TRAIL / GREENWAY
MULTI-USE PATH
OPTION A
OPTION B
OPTION C
FUTURE TRAIL / GREENWAY
GARNER CITY LIMITS
PARK PROPERTY
N
1" = 300'

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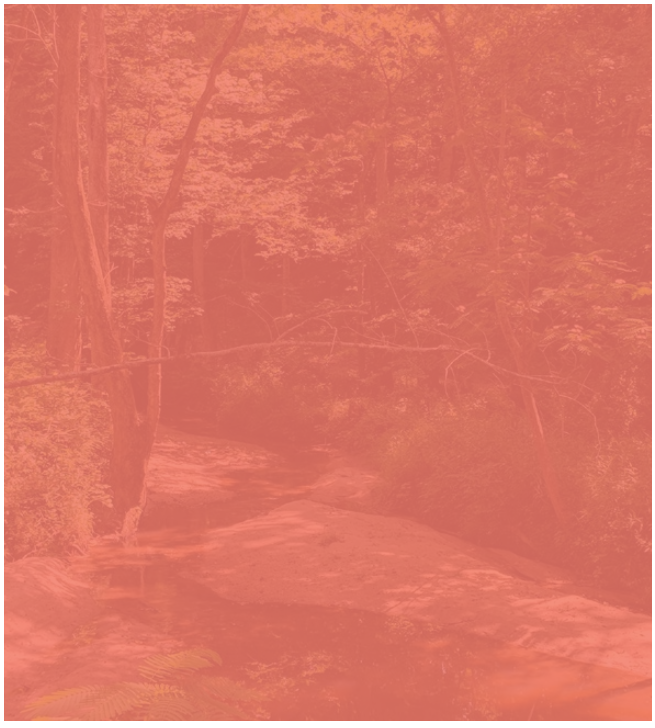
GREENWAY OPTION A

Greenway alignment Option A begins at the proposed trailhead on Buffaloe Road. Out of the three options, this option provides the best user experience by pulling the trail away from vehicular infrastructure and placing it within the natural environment through easements and land acquisition. As a result, the right-of-way needs are minimal and exposure to the natural environment is maximized.

Option A directly connects the Buffaloe Road neighborhoods with Thompson Road Park and White Deer Park as a greenway trail. Heading eastwards from the proposed Buffaloe Road trailhead, the trail meanders through native stands of trees and crosses Buck Branch at an existing culvert associated with an old roadbed. The route crosses then briefly follows Thompson Road as a greenway side path before connecting with Thompson Road Park.

Proceeding through the park, Option A creates an alternative and safe form of transit, potentially reducing the number of vehicles at Thompson Road Park. The trail continues east though an additional stand of trees before crossing Reedy Branch with a boardwalk and pedestrian bridge before connecting with the trail system at White Deer Park.



See next page for Greenway Option A map, Figure 12

Figure 12 - Greenway Option A Map

5 CONNECTION TO EXISTING TRAIL SYSTEM.

6 VIEW OF OLD ROAD BED

7 POSSIBLE RESTING NODE WITH VIEWSHED

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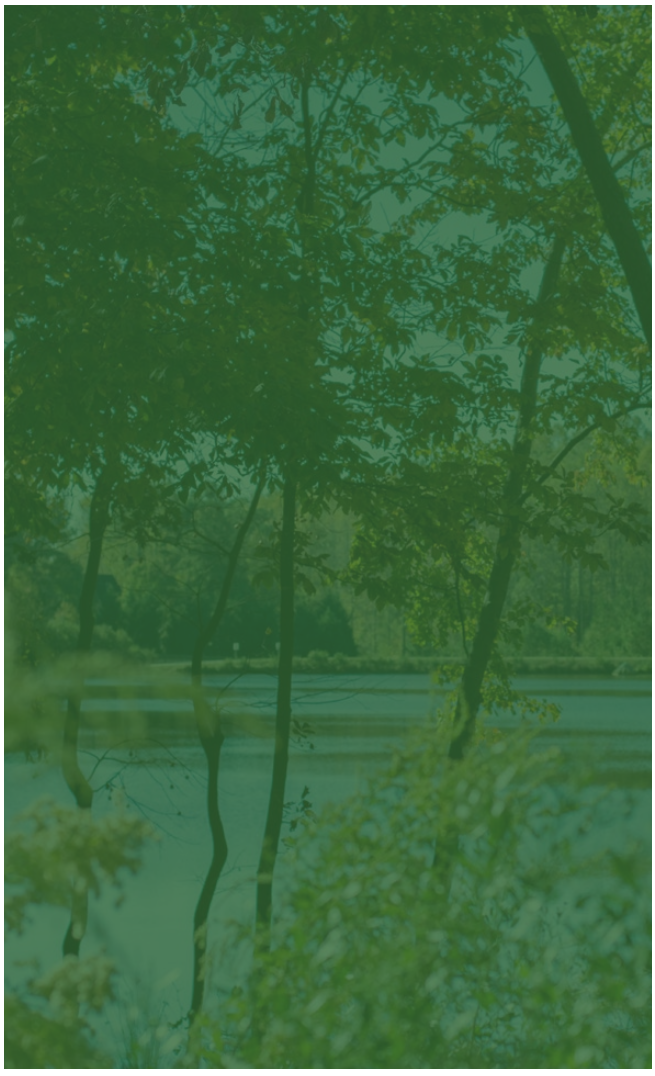
GREENWAY OPTION B

Greenway alignment Option B starts at a proposed trailhead on Buffaloe Road where it would head east/southeast, meandering through forested property primarily owned by The City of Raleigh, across wetlands associated with Lake Benson and ultimately meeting again with Buffaloe Road as greenway side path. A bridge would be required to carry pedestrians over Lake Benson parallel to the Buffaloe Road vehicular bridge. From this point, greenway alignment B follows the north side of Buffaloe Road as a greenway side path before meeting with the path at White Deer Park.

The implementation of Option B would result significant of right-of-way acquisitions and extensive grading and drainage along a portion of Buffaloe Road to accommodate the additional runoff and banking of the existing roadway.



See next page for Greenway Option B map, Figure 13

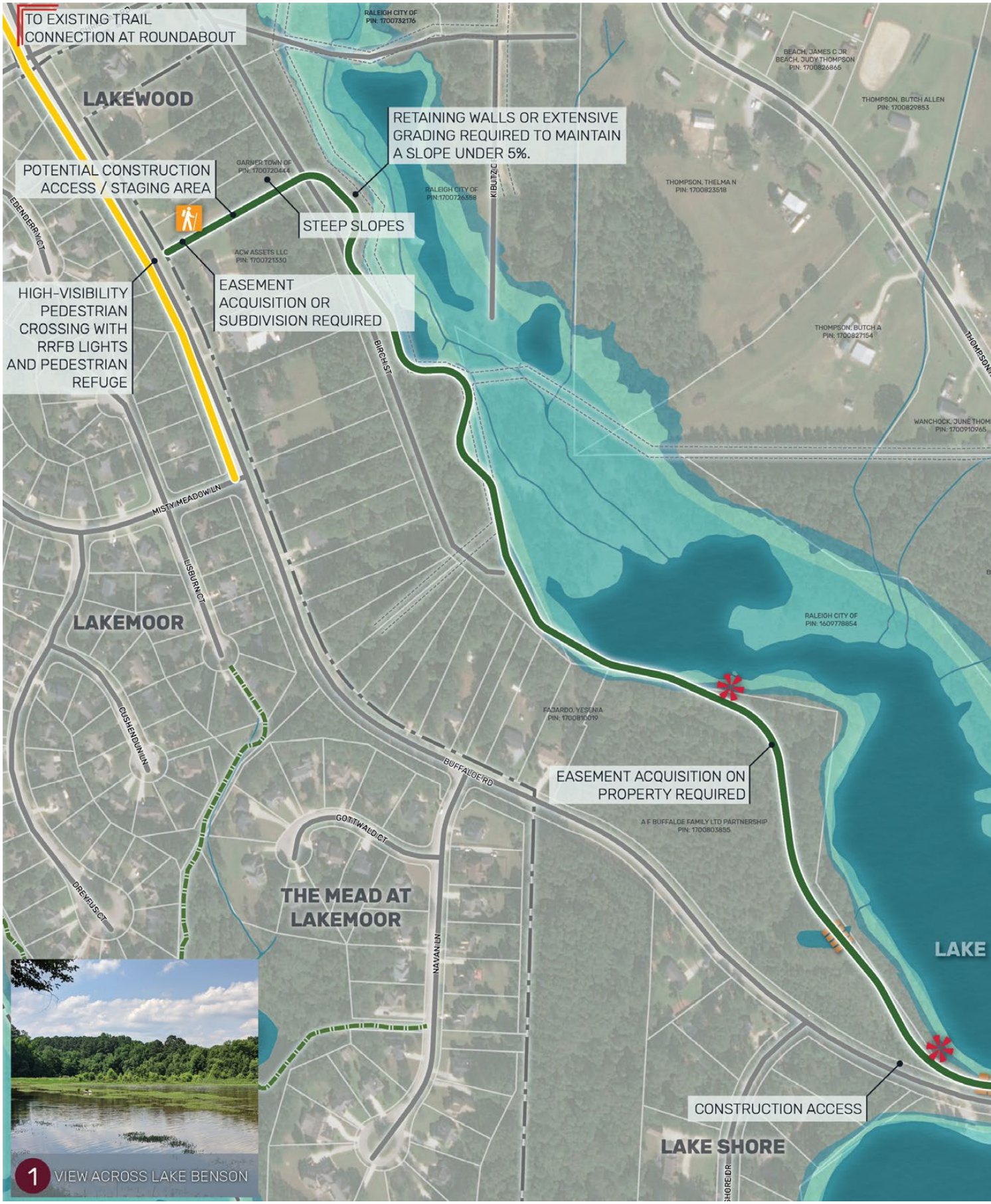


Figure 13 - Greenway Option B Map


WHITE DEER PARK
NATURE CENTER
CONNECTION TO EXISTING
TRAIL SYSTEM
E.O.P WIDTH: ±22'
R.O.W. WIDTH: ±60'
BENSON
LAKE BENSON PARK
1
LAKE BENSON CROSSING
› 160 LF OR BOARDWALK
› 135 LF BRIDGE SPAN
› CLOMR / LOMR REQUIRED
BUFFALOE RD
AVERSBORO RD
WILD BERRY LN
SUMMERS WALK CIR
THOMPSON, DANNY WADE
PIN: 1700922676
A F BUFFALOE FAMILY LTD PARTNERSHIP
PIN: 1710013345
LEGEND
GREENWAYS + TRAILS
PROPOSED GREENWAY ROUTE
PROPOSED MULTI-USE TRAIL
EXISTING GREENWAY / TRAIL
BOARDWALK
BRIDGE
POTENTIAL TRAIL HEAD WITH PARKING
POTENTIAL AREA OF INTEREST
GENERAL
EASEMENTS
GARNER TOWN LIMITS
ROADS
STREAMS
FLOODWAY
100 YEAR FLOODPLAIN
500 YEAR FLOODPLAIN
TOWN OF GARNER PARK
N
1" = 400'

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GREENWAY OPTION C

Greenway alignment Option C starts at a proposed trailhead on Buffaloe Road where it would head east/southeast as a greenway side path, paralleling Buffaloe Road within the right-of-way. Similar to Option B, a bridge would be required to carry pedestrians over Lake Benson parallel to the Buffaloe Road vehicular bridge. The alignment would continue along Buffalo Road where it would ultimately connect to White Deer Park.

Option C parallels Buffaloe Road for the entirety of the corridor. This option does not offer an off-road experience until reaching White Deer Park and limits user experience regarding access to nature. Out of the three options, Option C would require the most right-of-way acquisitions given the number of private property owners and parcels along Buffaloe Road.

See next page for Greenway Option C map, Figure 14

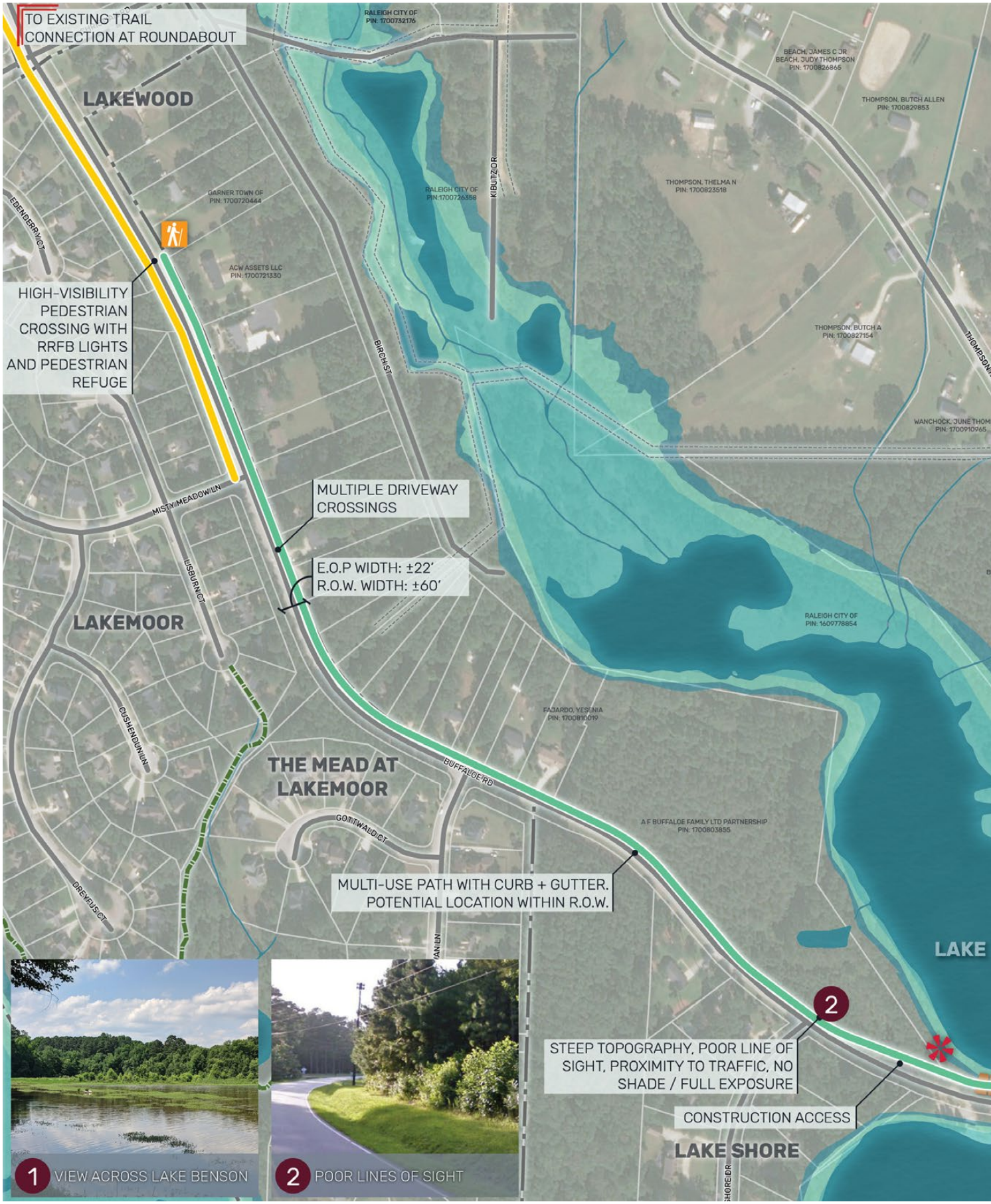

Figure 14 - Greenway Option C Map


WHITE DEER PARK
NATURE CENTER
CONNECTION TO EXISTING
TRAIL SYSTEM
E.O.P WIDTH: ±22'
R.O.W. WIDTH: ±60'
BENSON
LAKE BENSON PARK
1
LAKE BENSON CROSSING
› 160 LF OR BOARDWALK
› 135 LF BRIDGE SPAN
› CLOMR / LOMR REQUIRED
BUFFALOE RD
AVERSBOROUGH
WILD BERRY LN
SUMMERS WALK CIR
THOMPSON, DANNY WADE
PIN: 1700922676
BUFFALOE, DAVID F BUFFALOE, NANCY K
PIN: 1700912538
A F BUFFALOE FAMILY LTD PARTNERSHIP
PIN: 1710013345
GARNER TOWN OF
PIN: 1710035139
LEGEND
GREENWAYS + TRAILS
PROPOSED GREENWAY ROUTE
PROPOSED MULTI-USE TRAIL
EXISTING GREENWAY / TRAIL
BOARDWALK
BRIDGE
POTENTIAL TRAIL HEAD WITH PARKING
POTENTIAL AREA OF INTEREST
GENERAL
EASEMENTS
GARNER TOWN LIMITS
ROADS
STREAMS
FLOODWAY
100 YEAR FLOODPLAIN
500 YEAR FLOODPLAIN
TOWN OF GARNER PARK
1" = 400'
N

ESTIMATES OF PROBABLE CONSTRUCTION COST

This feasibility study includes preparation of an estimated construction cost for each trail alignment option. Cost estimates are for planning purposes only and are derived from linear foot construction costs for greenway trail, boardwalks, bridges, erosion control, temporary traffic control and other typical project elements required for implementation. Linear foot costs are based on unit price bid averages from ten comparable greenway projects constructed within the last four years. Cost estimates also include soft costs such as design fees, permitting costs, Construction Engineering and Inspections (CEI), and contingency.

Typical elements for each estimate include but are not limited to:

- Cost per linear foot (LF) of 10-foot asphalt trail - $178.87/LF. This price includes grading, base materials, basic drainage, and asphalt.
- Cost per linear foot (LF) of boardwalk - $1,136.29/LF. This price includes piles for foundation, boardwalk substructure, decking, and handrails.
- Cost per linear foot (LF) of bridge - $3,341.36/LF. This price includes bridge foundations, end bents and caps, prefabricated bridge, and bridge erection.
- Cost per linear foot (LF) of erosion control: $21.78/LF. This price includes silt fence and outlets, temporary crossings, construction entrances, etc.
- Cost per mile (MI) of temporary traffic control for construction: $9,894.35/MI. This price includes signs, traffic cones/barrels, temporary concrete barriers, flagmen, etc.

Each estimate includes a 20% contingency line for unforeseen or unknown costs that may arise during design and construction of projects. Unforeseen or unknown costs may include any flood study permit fees, such as CLOMR/LOMR, any additional construction material costs that may vary over time like steel, utility relocation, etc.

Engineering and Planning Services (design costs) can range between 8-14% of construction costs. Survey and wetland delineation are included in the design costs as well as whether a FEMA study is needed. Please note the estimated design costs will be higher on projects that encounter:

- The inclusion of structures such as bridges and boardwalks
- Impacts to FEMA regulated floodways; will require detailed flood modeling and permitting
- Where federal funding is utilized – this requires a high level of regulatory compliance

Construction Engineering and Inspection (CEI) services account for a third party CEI firm providing to the Town documentation of the construction, review submittals, approval of pay applications, and coordination with NCDOT on federally and state funded projects. Fees for CEI services range between 8% and 12% of the construction costs. The Town may also provide CEI services in-house for non-state or non-federal funded projects as a cost savings option.

2019 Construction Estimate (Basis for Calculations):	(Basic elements of the project) x (linear feet x unit cost)
Estimated CEI Services ±2%	10% of escalated cost +/-2%
20% Contingency:	20% of construction estimate
Estimated Design Services ±3%	11% of 2019 Basis cost +/-3%
Total Estimated Budget Recommendation:	**Total**

Table 2 - Estimated Budget Recommendation Key

These costs are based on the current construction year (2019) and should be escalated using the equation: $A = P(1 + r)^{rt}$

Where P is the current year cost, r is the rate of escalation, compounded yearly, and t is the number of years from the current year. It is recommended to use an escalation rate of 5% annually.

For example, to find the construction cost of Option A for the year 2025 you would use the following:

t = Year 2025-2019=6, ***P*** = $3,139,000, ***r*** = .05:

$$A = P(1 + r)^t = \$3{,}139{,}000(1 + 0.05)^6 = \$4{,}206{,}560$$

It is important to note that all base data used to prepare the alignment options and cost estimates are from Wake County Geographic Information Systems (GIS) rather than a topographic survey. Easement costs are based on land valuations taken from Wake County tax records and applied on a per square foot basis.

The below table represents preliminary estimates of probable construction cost for each section of greenway trail, including all three options. For the purposes of this study, alignment options have been broken down into sections and represented by color (salmon, green, teal).

	SOUTH GARNER GREENWAY ALIGNMENT OPTIONS		
	OPTION A	OPTION B	OPTION C
Estimated Construction Cost: *Covers the cost of materials, construction, permits, and fees + Buffaloe Road Multi-Use Path*	$3,139,000	$4,188,000	$4,208,000
Construction Engineering and Inspections (CEI) Services: *Covers construction project management + material testing, and inspections*	$314,000	$419,000	$421,000
20% Contingency: *Built in to include unexpected costs*	$628,000	$838,000	$842,000
Planning + Engineering Cost Range: *Engineering and design pertaining to the alignment*	$346,000	$461,000	$463,000
2019 (Current) Total Capital Cost Range:	**$4,427,000**	**$5,906,000**	**$5,934,000**

Table 3 - Corridor Cost Estimates

It is our understanding these estimates reflect an increase in construction cost from previous studies completed. It is important to note previous estimates were based on recession level prices and market conditions while today's economy reflects exponential increases in materials and labor. Also, the booming development market and significant number of projects for contractors to choose from can make public projects less attractive.

NOTE:

These estimates of probable costs are preliminary and based upon the conceptual design for each alignment dated May 2019, which are subject to change through the detailed construction drawings process. McAdams has no control over unforeseen subsurface conditions, the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices or competitive bidding and market conditions. These estimates of probable costs of construction are made on the basis of experience, qualifications, and best judgement of McAdams. McAdams cannot and does not guarantee the proposals, bids or actual construction costs will not vary from this or subsequent cost estimates.

5 recommendation

CHAPTER 5 > RECOMMENDATIONS

The final recommended trail alignment selection is informed by several criteria including public input, cost of construction and maintenance, and environmental impacts to name a few. To more clearly articulate and validate the design decision, a scoring matrix is used as a quantitative approach to determine the best trail alignment alternative.

SCORING MATRIX

Use of a scoring matrix can inform and validate design decisions when evaluating multiple trail alignments. Each category has also been weighted based on priorities and values of the Town administration, staff and community. As a point-based system, the scoring matrix uses a quantitative approach to select a final trail alignment that best achieves the following objectives:

Right-of-way (ROW) Impacts

Each alignment requires a certain amount of ROW be secured from private property owners. Whether obtaining an entire parcel or an easement, lower scores reflect a greater number of private property owners impacted.

Flood Study Impacts

A flood study is typically required when there is disturbance near a stream or body of water regulated by FEMA. When construction material is added to the floodplain, additional modeling and documentation is required to maintain compliance. If modeling reveals flood elevation changes with trail construction, a Conditional Letter of Map Revision (CLOMR) must be submitted to FEMA prior to construction. A Letter of Map Revision (LOMR) follows the completion of construction.

If flood modeling reveals the flood elevation will not change on account of greenway construction, a No-Rise Letter is required. This is a much shorter permitting process at the local floodplain manager level versus the formal federal review of a CLOMR as described above.

Higher scores within the matrix represent detailed flood studies and modeling are avoided.

Utility Impacts

Each alignment has been analyzed for utility conflicts based on above ground visible utilities. Based on this study's analysis, it appears that any utility relocations would happen within the ROW and thus considered "Utility By Others" (UBO). UBO means that the utility owner would be responsible for relocating any facilities required for trail construction. More utility relocations would score lower in the matrix. All alternatives would require about the same amount of utility relocations.

Structures (Boardwalks, Retaining Walls, Bridges)

Structures add complexity to a project as well as costs. Construction of structures must be completed in a certain sequence that may involve special machinery (cranes, pile drivers, concrete pump trucks) or additional ROW encroachments for construction access. The more structures an alignment required, the lower the matrix score.

User safety - Safety is one of the highest priorities for any trail design. All proposed options were designed to minimize conflicts with vehicular traffic, avoid steep slopes, and maximize visibility of the trail user.

User Experience

User experience combines safety and user perception of their surroundings. Generally, greenway users seek opportunities for leisure and recreation to connect them with nature, offer scenic views and minimize exposure to roads and vehicular traffic. The longer the length of trail with experiential qualities such as scenic views, the higher the option was scored in the matrix.

Complexity / Constructability

Similar to structures, specialty items such as pedestrian activated signals or special drainage features can add complexity to a project and in turn, increase construction costs. All options for the project are anticipated to have few specialty items but may need such things as custom signage, wayfinding and special crosswalk elements for the Buffaloe Road crossing.

Public Input

The Town invited public participation in the evaluation of each alignment option. Comments were recorded, compiled, and evaluated based on positive or negative responses. Mixed input reflects both positive and negative responses for a given alignment. More support for an option scores higher, less support or negative reactions scores lower.

Maintenance

Longevity of the trail after it is built is also considered during the planning process. Given the significant capital investment for initial greenway construction, options with lower recurring maintenance costs are preferred. Scoring maintenance can be difficult because of the many outside factors that can influence a trail after it is built. Trails incorporating timber and located in the floodplain score the lowest, trails using mainly concrete and located out of the floodplain score higher.

Connectivity

Residents' connectivity to Town and County amenities was evaluated. The more connections to popular destinations, the higher the matrix score.

Costs

High level cost estimates were completed for each alignment option. Higher construction costs receive a lower score in the matrix while lower construction costs receive higher scores in the matrix.

		SOUTH GARNER GREENWAY ALIGNMENT OPTIONS		
ROUTE ALTERNATIVE SELECTION CRITERIA	**WEIGHT**	**OPTION A**	**OPTION B**	**OPTION C**
RIGHT OF WAY IMPACTS *High - (1) - 3+ Properties or Complex Easements* *Medium - (2) - 1 to 2 Properties* *Low - (3) - No Right of Way Needed*	15	1	1	1
FLOOD STUDY IMPACTS *High - (1) - CLOMR/LOMR Probably Required* *Medium - (2) - No-Rise Probably Achievable* *Low - (3) - Outside the Floodplain*	10	2	1	1
UTILITY IMPACTS *High - (1) - Utility Relocation Required* *Medium - (2) - UBO only conflicts* *Low - (3) - No Conflicts*	5	2	2	2
STRUCTURES - BOARDWALKS, RETAINING WALLS, BRIDGES *Low - (1) - 4+ structures* *Medium - (2) - 2-3 structures* *High - (3) - 0-1 structures*	10	2	1	2
USER SAFETY *Low - (1) - Trail Users with Traffic* *Medium - (2) - Traffic Signage / Signal Protected* *High - (3) - Fully Separated*	10	2	2	2
USER EXPERIENCE *Low - (1) - Limited experiential value or connection to nature; trail is primarily off-road* *Medium - (2) - Combination of on-road and off-road experiences, moderate connection to nature* *High - (3) - Maximum experiential value or connection to nature*	10	2	2	1
CONSTRUCTION COMPLEXITY *High - (1) - More than 50% special design and construction* *Medium - (2) - Less than 50% special design and construction* *Low - (3) - All standard details*	5	2	2	2
PUBLIC INPUT *Low - (1) - Public did not want* *Medium - (2) - Public input was mixed* *High - (3) - Public preferred*	15	2	2	1
MAINTENANCE *High - (1) - Southern Yellow Pine Construction* *Medium - (2) - More than 50% route out of floodway* *Low - (3) - Low maintenance materials*	5	2	2	2
CONNECTIVITY *Low - (1) - Few connections to neighborhoods, parks, and schools* *Medium - (2) - Some connection to neighborhoods, parks, and schools* *High - (3) - Multiple connection to neighborhoods, parks, and schools*	5	2	2	2
COST *1-3 compared to other rout options (highest points for lowest cost, lowest points for highest cost)*	20	3	2	1
TOTAL UNWEIGHTED RAW SCORE		**22**	**19**	**17**
TOTAL WEIGHTED SCORE		**225**	**185**	**150**

Table 4 - Corridor Scoring Matrix

Based on the total weighted matrix score, Option A is considered the preferred route, followed by Option B, with Option C the least preferred. All three routes include a greenway side-path from Vandora Springs Road down Buffaloe road.

It is recommended that this section of the study be built. It may also be worth pursuing this section as its own standalone project funded by the Town if issues arise with Options A, B, or C.

FINAL SELECTED TRAIL ALIGNMENT

It is the recommendation of this study for the Town to pursue implementation of trail alignment Option A. As with all trail alignment options, this alignment requires construction of the greenway side path from the roundabout at Vandora Springs Road and Buffaloe Road down to the property owned by the Town in order to provide connection between neighborhoods within the study area. This corridor will also offer potential for a future connection with the Swift Creek Greenway as shown on the Wake County Greenway Plan. This section of greenway side path can be constructed using sidewalk funds and can be a stand-alone project if needed.

The greenway would begin at the town-owned parcel which would also serve as a trailhead. A high-visibility pedestrian crossing with Rectangular Rapid Flashing Beacon (RRFB) lights and a pedestrian refuge is required for users to cross Buffaloe Road. The multi-use path would continue through vacant, private land to Thompson Road. A second high-visibility crosswalk would usher pedestrians to the east side of the road where it would continue along the east side as a greenway side path to Thompson Road Park. Continuing through Thompson Road Park, the mature wooded forest of White Deer Nature Park and across Reedy Branch Creek, the greenway will terminate in a connection to the internal trail network within White Deer Park.

Rights-of-way and easement acquisition present the greatest challenge to Option A. However, this option offers the most advantages such as being the most cost-effective solution, connecting the most neighborhoods and Town parks, and providing the best user. Refining the final trail alignment and collaborating with private land owners will be critical to securing right-of-way and easements for trail construction.

If right-of-way and easement acquisition cannot be secured for Option A, Option B presents a strong alternative as reflected by the matrix score. This option presents fewer right-of-way and easement acquisition challenges, but is more expensive to construct and limits trial connections to Breezeway neighborhoods and Thompson Road Park.

While conducting this study, a fourth option, Option D, became available as another potential route connecting Buffaloe Road to Thompson Road just north of the Breezeway neighborhoods. This greenway would begin on the east side of Buffaloe Road across from the future Wake County Greenway connection. A detailed evaluation of this corridor was not completed as part of this study nor evaluated in the scoring matrix. Without adequate evaluation and analysis, presentation of this option to the public and Town Council was postponed until further assessment can be completed. If Option D continues to present opportunities for the Town, a more detailed corridor study can be completed as part of the on-going Parks, Recreation and Cultural Resources Master Plan.

ADDITIONAL DESIGN CONSIDERATIONS

Prior to beginning construction, the following additional design considerations should be studied:

SHPO + Fish & Wildlife Concurrence

The State Historic Preservation Office oversees historic places and structures throughout North Carolina. Trail implementation would need to coordinate with SHPO to ensure no such sites are located along the alignment and to mitigate those sites if they cannot be avoided.

Concurrence with the US Fish & Wildlife office must be secured to document that no threatened or endangered species will be negatively impacted by the trail construction.

Categorical Exclusion

Completion of a Categorical Exclusion (CE) is typically required if NCDOT or Federal funding is used for trail construction. Greenway trails fall within the class of actions that a Federal agency has determined to have significant effect on the human environment and for which neither an environmental assessment (EA) nor an environmental impact statement (EIS) is normally required.

6 funding strategies

CHAPTER 6 > FUNDING STRATEGIES

Next to land acquisition, funding can be one of the more challenging steps in the greenway implementation process. Below are several funding sources that can be leveraged to provide the necessary dollars to plan, design, and/or construct the proposed greenway trail. The following sources of funding have been instrumental in the successful development of bicycle and pedestrian networks in other North Carolina communities.

FEDERAL FUNDING

Federal Transportation Funding

Many North Carolina communities have partnered with the Federal Highway Administration to build multi-use paths, greenways, sidewalks, bike-lanes and improve crossings. Each of these programs is administered by NCDOT through the Locally Administered Projects Program (LAPP). Communities wishing to access Federal Funding must submit their candidate projects to their MPO or RPO so that the project can be entered into the Strategic Transportation Investment Mobility Formula. This formula ranks projects and identifies those to be funded in the State Transportation Improvement Program (STIP). These funds require a 20% match from the locality.

Transportation Alternatives Program

The Transportation Alternatives Program provides federal funds for community-based projects that expand travel choices and enhance the transportation experience by integrating modes and improving the cultural, historic, and environmental aspects of our transportation infrastructure. Projects types include:

- on and off-road pedestrian and bicycle facilities
- infrastructure projects for improving non-driver access to public transportation and enhanced mobility
- community improvement activities
- environmental mitigation
- safe routes to school projects
- streetscape improvements
- refurbishment of historic transportation facilities
- other investments that enhance communities

Congestion Mitigation & Air Quality in North Carolina

Congestion Mitigation & Air Quality (CMAQ) is a Federal program that funds transportation projects and programs in air quality nonattainment and maintenance areas to help achieve and maintain national standards for air quality. In North Carolina, NCDOT serves as the administrator for this program. Funding is apportioned to North Carolina based on the population in non-attainment and maintenance areas of the state and the severity of air quality problem. North Carolina's allocation of CMAQ funding is split in three pots available for funding, as follows:

- Statewide CMAQ funds are administered by NCDOT and are awarded to prioritized NCDOT-driven CMAQ eligible projects either on a statewide tier facility or involving a system wide improvement within nonattainment and maintenance areas. Statewide CMAQ funds are not subject to regional or subregional allocations or the allocation formula. This category accounts for 35% of the total North Carolina CMAQ apportionment.
- Regional CMAQ funds are locally-administered and awarded to projects spanning more than one air quality region that cannot be considered subregional projects. Air quality regions are Catawba, Great Smoky Mountains National Park, Metrolina, Rocky Mount, Triad and Triangle. The local project sponsor is responsible for providing the required match. This category accounts for 5% of the total North Carolina CMAQ apportionment.
- Subregional CMAQ funds are locally-administered and awarded at the MPO/RPO level to projects within eligible counties. The local project sponsor is responsible for providing the required match and meeting federal funding requirements. This category accounts for 60% of the total North Carolina CMAQ apportionment.

Recreational Trails Program (RTP)

The intent of the RTP is to help fund trails and trail-related recreational needs at the State level. Funding for the RTP comes from federal gas taxes paid on non-highway fuel used in off-highway vehicles. The program is administered at the Federal level by the Federal Highway Administration. Grants range from $10,000 - $100,000 and require a 25% match by the locality. Approved Uses - New Trail/Greenway Construction Trail/Greenway Renovation Approved Trail/Greenway Facilities & Trail Head/Trail Markers Purchase of Tools to Construct &/or Renovate Trail/ Greenway Land Acquisition for Trail Purposes Planning, Legal, Environmental, and Permitting Costs - up to 10% of grant amount Combination of the Above.

https://files.nc.gov/dncr-trails/documents/files/rtp-general-information.pdf

Community Development Block Grant (CDBG)

CDBG is a flexible program that provides communities with resources to address a wide range of unique community development needs. Beginning in 1974, CDBG is one of the longest continuously run programs at HUD. CDBG provides annual grants on a formula basis to 1,209 general units of local government and the States. Over a 1, 2, or 3-year period, as selected by the grantee, not less than 70 percent of CDBG funds must be used for activities that benefit low- and moderate-income persons. In addition, each activity must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevention or elimination of slums or blight, or address community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community for which other funding is not available.

STATE FUNDING

STATE TRANSPORTATION FUNDING

Bicycle & Pedestrian Facilities with Roadway Projects

NCDOT's Complete Streets Policy calls for design and construction of roadways that complement the context and character of the communities they serve. For many roadway improvement projects in urban, suburban and small towns, bicycle and pedestrian accommodation is appropriate. There is discretion within NCDOT for how these elements of a roadway improvement projects are funded and maintained. Communities should work with their MPO/RPOs, local transportation planning officials, NCDOT Division and Central staffs to identify priority projects and to negotiate details associated with the type, location, funding and maintenance of biking and walking infrastructure associated with upcoming projects.

Independent Bicycle & Pedestrian Facilities

Historical state funding has been a critical component in funding independent bicycle and pedestrian projects, including the 34-mile-long Neuse River Greenway, early sections of Little Sugar Creek Greenway and many more. The 2013 Strategic Transportation Investment Law prohibited state investment in stand-alone or independent bicycle and pedestrian facilities. Currently there are no state transportation funds available to communities in North Carolina. There is a great deal of support throughout North Carolina for removing this prohibition from the Strategic Transportation Investments (STI) Law.

STATE PARKS FUNDING

Funding is available through the Parks and Recreation Trust Fund (PARTF), which provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the public. PARTF is the primary source of funding to build and renovate facilities in the state parks as well as to buy land for new and existing parks.

https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund

LOCAL FUNDING

Bonds

Wake County, City of Raleigh, and City of Wilmington have all passed bonds to protect open space corridors and build greenway networks. These bonds generally pass with high community support, often leading to future bond initiatives that keep building the network. Communities that have used bonding for greenways include the Town of Chapel Hill, Town of Cornelius and the City of Greenville. Multi-use paths and greenways are often included in municipal transportation bond packages.

Successful bond campaigns require a well-defined plan with specific projects supported by the community. Bond campaigns should be well organized with a community's public affairs department and thoroughly coordinated across all internal departments. Public outreach during the campaign is essential to educate residents about the benefits of infrastructure investment and to understand which projects garner the highest community support. Communication should continue after a successful bond to inform voters how bond dollars are spent and to highlight when projects are completed. This is an essential step to make future bond campaigns more successful.

PUBLIC PRIVATE PARTNERSHIP

The City of Greensboro is leading North Carolina in leveraging public-private partnerships to complete their Downtown Greenway Loop. Through the Action Greensboro Foundation, the project has raised over $10 M in private funds by working with foundations and private givers. This money leverages over $21 M in local and federal funds.

DEVELOPER DEDICATED LAND

The Town of Cary built its first greenway 40 years ago and now has more than 80 miles of greenway trails. A big part of their network development has been the result of developer-built trails. The Town of Cary works with developers to set aside important open space providing trail connectivity, wildlife habitat corridors, and water quality protection. Per the Cary Land Use Ordinance, developers must dedicate land or make payment in lieu for public park and or greenway development to serve the recreational needs of the residents. Land dedications for greenways are required for both residential and commercial development for those locations in the Town's latest greenway master plan. Easement dedication for greenway purposes is a separate requirement from parkland dedication. Though the land dedicated for greenway purposes may be counted towards parkland dedication requirements with the exception of easements for street-side trails. If the Town of Cary's Parks, Recreation and Cultural Resources Facilities Master Plan indicates a future greenway through a proposed development, whether residential or non-residential, a strip of greenway land through this area shall be dedicated to the Town, at a minimum of thirty (30) feet, but not to exceed fifty (50) feet in width; widths of easements may be reduced to twenty (20) feet in those cases where the developer is constructing the greenway trail. Widths of greenway easements for street-side trails [see Section 7.10.4 (C)] shall be determined by the Parks, Recreation and Cultural Resources Director.

CHARITABLE DONATIONS / FOUNDATIONS

Greenway Foundations focus on developing and maintaining trails and green corridors on a County-wide basis. The Town could seek land leases along their trails as a funding source, in addition to selling miles of trails to community corporations and nonprofits in the Town. The development rights along the trails can also be sold to local utilities for water, sewer, fiber optic, and cable lines on a per mile basis to support development and management of these corridors. Some greenway foundations have created its own specific Greenway Trail license plate to help support the development, maintenance, and expansion of trails in their city. Cities receive $45 dollars from each greenway tag sold, which could really be expanded if promoted on trails, in publications and on the Town's website.

Greenways Conservation Groups

Greenway conservation groups adopt green corridors to support the operations and assist municipalities in raising money to pay for capital costs for specific greenway corridors.

An additional strategy used by several communities is the creation of a greenway trust fund for land acquisition and facility development, administered by a private greenway advocacy group, or local greenway commission. A trust fund can aid in the acquisition of large parcels of high priority properties that may be lost if not acquired by private sector initiative. Money may be contributed to the trust fund from a variety of sources, including municipal and county general funds, private grants, and gifts.

6 conclusion + implementation

CHAPTER 7 >
CONCLUSION & IMPLEMENTATION

Thorough analysis has been completed for the three trail alignment options which included field visits and ground-verification, public engagement, collaboration with staff and a quantitative assessment of 11 evaluation criteria. Combined, the outcome of these tasks informs a recommendation to implement construction of trail alignment Option A. This study further outlines additional studies, design considerations and funding strategies to catalyze the implementation of trail construction.

NEXT STEPS

While securing funding, the Town should begin negotiations with private property owners to secure the rights-of-way and easements required to begin trail construction. Once negotiations are in place and funding is secured, the Town can pursue preparation of construction drawings, followed by a public bidding process and trail construction.

Additionally, the greenway sidepath from Vandora Springs road down Buffaloe Road may be better positioned as a standalone project as no additional Right of Way will be required and the Town may want to use sidewalk funding for construction. McAdams recommends including section in the budget with Option A, B, or C for any outside funding applications and grants. McAdams advises against obtaining a grant for just this single section as the cost/benefit ratio would most likely be too high due to the additional requirements.

If rights-of-way and easement acquisition prove impractical, the Town may revisit one of the other trail alignment options. Further investigation of Option D which takes advantage of new development and greenway easement dedication should also be considered to complete this connection.

A appendix