2024

City of Hendersonville Above the Mud Greenway

Feasibility Study

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Resolution #R-24-79

RESOLUTION BY THE CITY OF HENDERSONVILLE CITY COUNCIL TO ADOPT THE ABOVE THE MUD GREENWAY FEASIBILITY STUDY

WHEREAS, the North Carolina Department of Transportation (NCDOT)'s Division of Integrated Mobility (IMD) has implemented a Paved Trails and Sidewalk Feasibility Studies Grant Program; and

WHEREAS, the purpose of the Paved Trails and Sidewalk Feasibility Studies Grant Program is to improve the pipeline of bicycle and pedestrian projects accessing state and federal funding, resulting in successful implementation of projects led by communities prioritizing multimodal infrastructure; and

WHEREAS, the City of Hendersonville requested and received funding from this program to complete the Above the Mud Greenway Feasibility Study; and

WHEREAS, the City, along with NCDOT and Traffic Planning and Design, Inc., completed the Above the Mud Greenway Feasibility Study and recently received final approval by NCDOT. This study produced a well-conceived project with demonstrated community support that will be competitive in the State Transportation Improvement Program (STIP) and for federal investment. Quantity-based preliminary cost estimates were generated for route alignments to help inform further decision making, identify funding needs, and develop next steps for project implementation; and

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Hendersonville, North Carolina that:

1. The Above the Mud Greenway Feasibility Study as funded by the North Carolina Department of Transportation and as completed and presented by Traffic Planning and Design, Inc. is hereby approved as presented.

Adopted by the City Council of the City of Hendersonville, North Carolina on this 5th day of September, 2024.

Barbara G. Volk, Mayor, City of Hendersonville

Attest:

Jill Murray, City Clerk

Approved as to form:

Angela S. Beeker, City Attorney

ACKNOWLEDGMENTS

STEERING COMMITTEE

Matthew Manley, *City of Hendersonville*
Brent Detwiler, *City of Hendersonville*
Brendan Shanahan, *City of Hendersonville*
Mike Huffman, *City of Hendersonville*
Mark Stierwalt, *City of Hendersonville*
Darcy Downs, *NCDOT Integrated Mobility Division*

Adopted on September 5, 2024

PREPARED FOR:

City of Hendersonville

305 Williams Street
Hendersonville, NC 28792

Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION

North Carolina Department of Transportation (NCDOT) Integrated Mobility Division

1 South Wilmington St
Raleigh, NC 27699

PREPARED BY:

Christy Staudt, PE
Kristy Carter, AICP
Teresa Buckwalter, RLA
Rachael Bronson, AICP
Kenny Armstrong, AICP
Jon Muthersbaugh
Danielle Kauffman

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00 Executive Summary

Live
Honeybees

EXECUTIVE SUMMARY

The Above the Mud Greenway Feasibility Study evaluates the possibility of completing a greenway connection between the Oklawaha Greenway in Jackson Park with the Ecusta Trail. This project will complete a key connection in Hendersonville's local greenway network and the regional Hellbender system. It is called Above the Mud in reference to its proximity to Mud Creek. The project will also provide greenway access to downtown Hendersonville and the 7th Avenue Historic District.

Study Area

The study area has many constraints, which include flood hazard zones and railroad corridors. **Map 10 – Rail Corridors** (on page 45) illustrates the study area and its active and inactive rail corridors, which are owned and operated by Watco, except the Ecusta Trail line. As the City proceeds with implementing this plan, the rail lines present an unknown degree of opportunity or challenge depending on Watco's willingness to allow trail use in their right-of-way or openness to selling a portion of the right-of-way. Three potential outcomes to railroad negotiations are described below and have implications for routing:

1. **Rail-to-Trail Option Allowed:** In this option Hendersonville would use the rail banking process to remove the rail infrastructure to repurpose the corridor with a paved greenway, similar to the Ecusta Trail.
2. **Rail-with-Trail Option Allowed:** This option would leave the existing rail infrastructure in place. Hendersonville would construct a greenway in the rail right-of-way that is offset from the rail line and is separated by a fence.
3. **No Encroachment Allowed:** If Watco is unwilling to allow a greenway encroachment or divest of the rail line right-of-way, Hendersonville would need to pursue options that do not use rail corridors.

Coordination with Watco will take time and their sentiment may change over time depending on future operational plans and safety

Figure 1. Survey Response Quotes

concerns. As such, alignments and greenway cross sections were developed in a manner to allow flexibility during implementation to respond to future Watco coordination outcomes.

Alternative Development

The Above the Mud Greenway Feasibility Study developed the greenway alternatives and implementation plan through the following steps:

Step 1. Review of study area conditions: Through a detailed evaluation of opportunities and constraints, the team identified numerous potential greenway segments.

Step 2. Greenway segment analysis: This step vetted the route segments identified in Step 1. This included an analysis of potential railroad responses and identified constructibility challenges. This work resulted in a short list of the most viable connections to carry forward into Step 3.

Step 3. Alternatives development and evaluation: In this step, the team combined viable segments (from Step 2) into route alternatives, established design standards, and estimated costs. Each alignment was evaluated based on criteria developed to identify the preferred alternative(s).

Step 4. Community engagement: The team obtained feedback from the study steering committee, held discussions with key stakeholders, and solicited broad community input using an online survey.

Step 5. Implementation + final study: This step identified and developed an implementation plan and funding options for the preferred alternative(s).

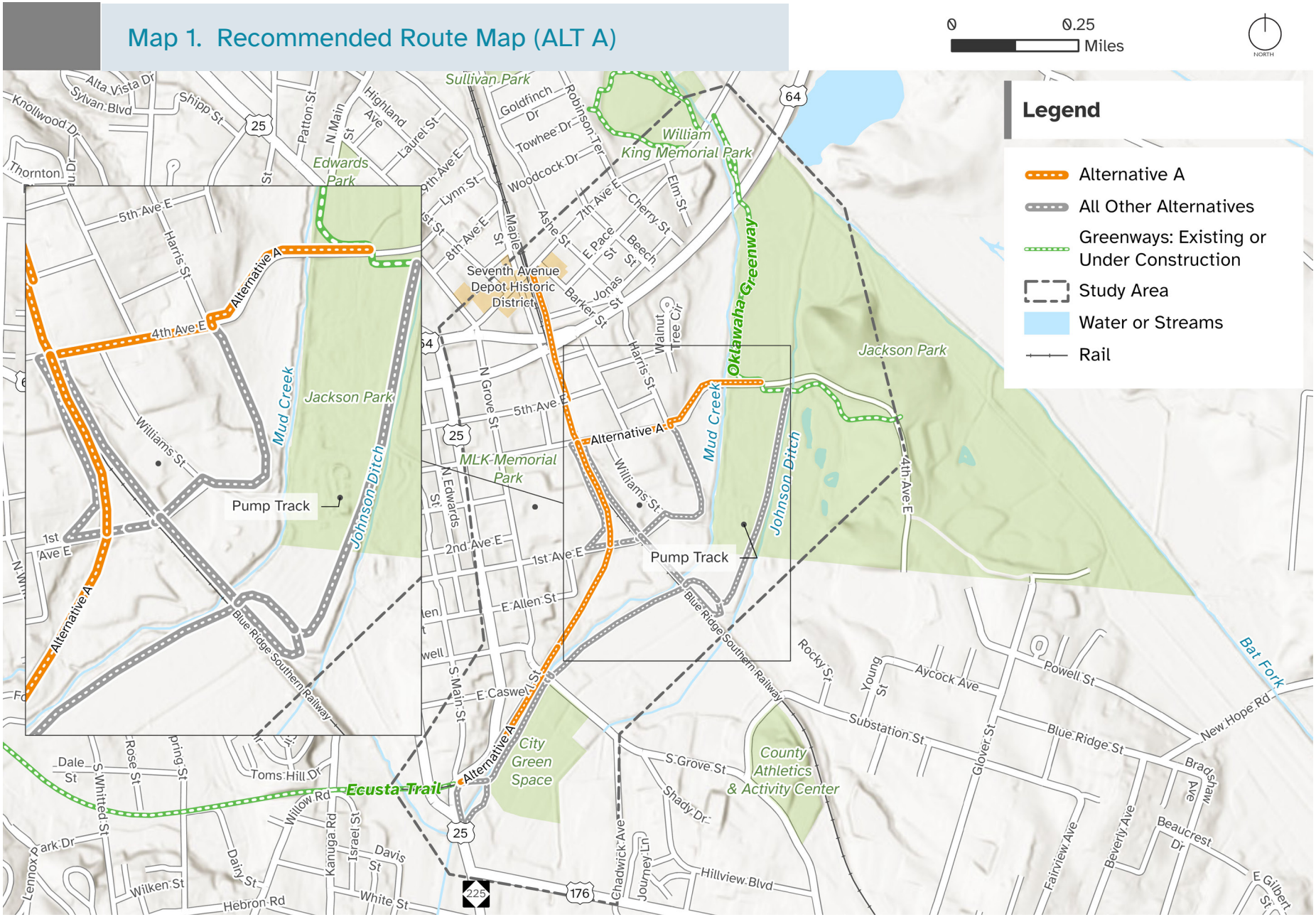
The alternatives that were developed are as follows:

- **Alternative A**: This alternative assumes the City of Hendersonville *can* acquire the remaining active Ecusta Line (owned by Watco) that extends from the Ecusta Trail north to 4th Avenue East. Alternative A would convert the remaining rail line to a paved shared use path extending to a point just north of 4th Avenue East to form an extension of the Ecusta Trail. From the end of the Ecusta Line, a sidepath along 4th Avenue East would continue east into Jackson Park to connect with the existing Oklawaha Greenway. A rail-with-trail segment is also included between 4th Avenue East and 7th Avenue East along the active Zirconia Line (owned by Watco) to the 7th Avenue Historic District.
- **Alternative B**: This alternative assumes that it is *not* feasible to convert the remaining active Ecusta Line to a greenway. From the Ecusta Trail section (under construction), Alternative B would depart from the rail bed at a point just east of South King Street and turn south to cross Mud Creek via a proposed pedestrian bridge. On the south side of Mud Creek, it would continue to the east on City-owned land, crossing South Grove Street and then following a proposed sewer easement to connect to Jackson Park as it passes under a railroad bridge. This alternative would connect to the existing Oklawaha Greenway in Jackson Park and then continue west towards downtown as a sidepath along 4th Avenue East. This alternative also includes a greenway spur between 4th Avenue East and 7th Avenue East along the Watco rail right-of-way to the 7th Avenue Historic District.

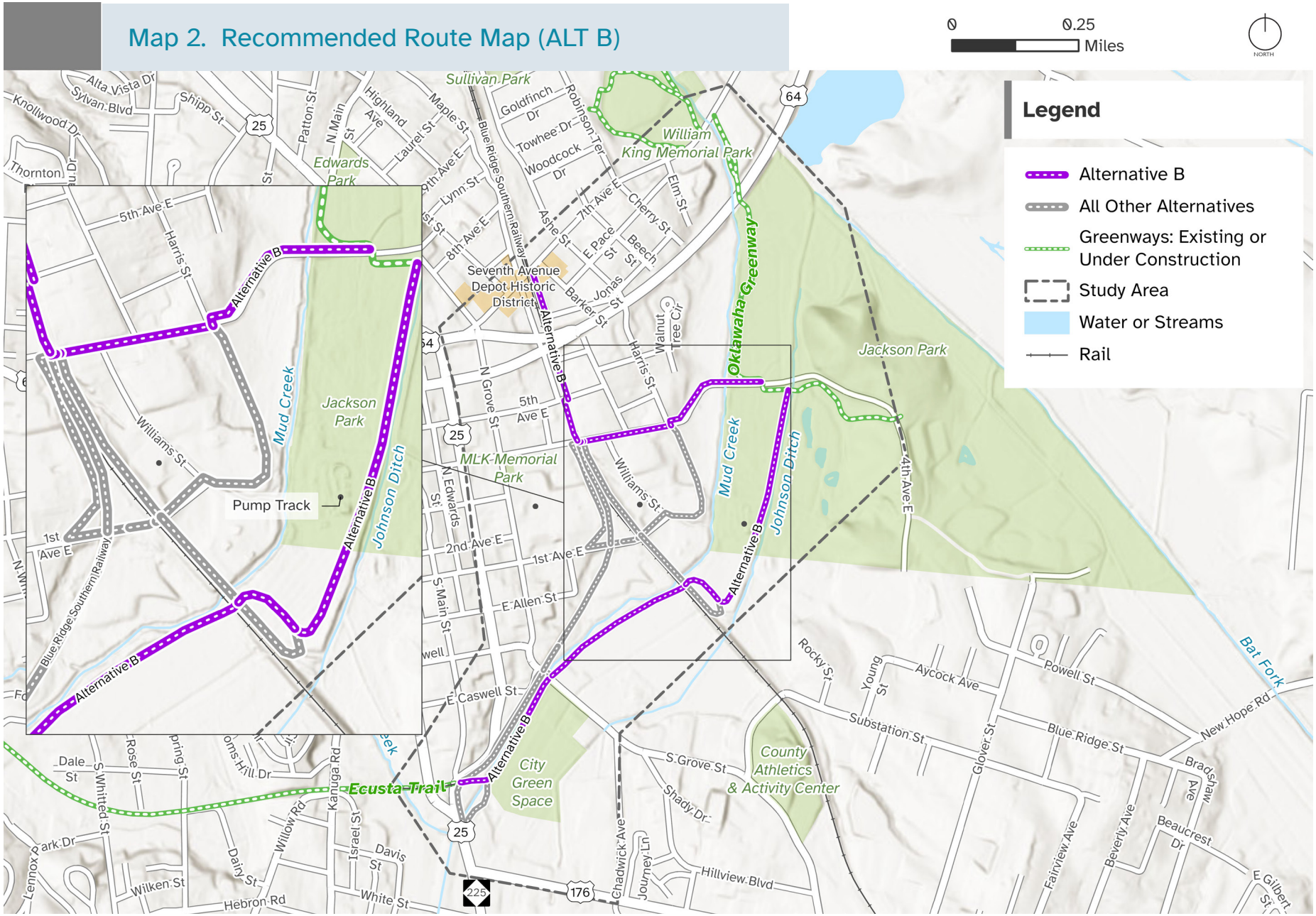
Preferred Alternative

To determine the preferred alignment(s), the team developed evaluation criteria, and gave each viable alternative a score for each of the criteria. The evaluation criteria encompassed eleven factors ranging from "aligning with community goals" to "quality of user experience". Both Alternative A and Alternative B ranked highly and accomplish the project goals while providing slightly varied connections and user experiences. Both alternatives are recommended for advancement to implementation.

Map 1. Recommended Route Map (ALT A)



Map 2. Recommended Route Map (ALT B)



IMPLEMENTATION

Several early action implementation recommendations were identified based on the following understanding:

- Implementation of Alternative A and B will require early coordination with other partners and planned projects.
- Alternative B has elements that make it more time sensitive to build upon synergies with other projects in progress.
- Alternative A will require more time to reach an agreement with the railroad. Therefore, coordination should begin as soon as possible.

Early Action Implementation Recommendations

1. Begin coordination with Watco to negotiate railroad right-of-way purchase and/or easements as needed.
2. Work with Henderson County Parks and Recreation to develop a unified approach to the greenway sections in Jackson Park. This approach may address items such as who will fund, maintain and design the greenway in the park. This conversation may also include items such as the exact alignment of the greenway, design standards, funding and ownership/maintenance decisions.
3. Apply for design and construction funding grants and reimbursement programs (see funding section). Prioritization recommendations are as follows:
    - Prioritize funding for the Mud Creek Bridge: The City is conducting a floodplain restoration for the City-owned green space on South Grove Street which requires floodway modeling and permitting. A bridge over Mud Creek on this property should be incorporated into the floodway permitting and final grading for the site. As such, funding and design for a greenway bridge at this location is a high priority. If this connection is not integrated with the project, floodway permits may be challenging to acquire as a standalone project.
    - Incorporate the Alternative B segment from South Main Street to Jackson Park with other City projects.
    - Prioritize, or phase, remaining sections of the preferred alignments together or as smaller stand-alone projects as funding opportunities and partnerships become available.

Sections that will function as stand-alone facilities are as follows:

- **Alternative A:** Rail-to-trail conversion of remaining section of the active Ecusta Line between South Main Street and 4th Avenue.
- **Alternative A and B:** Rail-with-trail connection between 4th Avenue and 7th Avenue.
- **Alternative A and B:** 4th Avenue sidepath from the northern end of the Ecusta Line to the Oklawaha Greenway in Jackson Park.

This approach to prioritization is intended to be nimble allowing the City and greenway partners to pivot based on funding opportunities and partnerships as they arise.

Image 1. Typical Greenway Cross-Section

The greenway width should be 12 feet wide with 3 foot shoulders and a 5 foot buffer if adjacent to a roadway. In constrained locations, the greenway may be reduced to the minimum width of 10 feet wide.

Project Partnerships

Project partners will vary during implementation and may include community stakeholders, property owners along the corridor (such as Watco), the French Broad River MPO, NCDOT, Henderson County, advocacy groups, private partners, and community members. Together, these partners can collaborate on the many tasks involved in funding, designing, permitting, building, and maintaining this paved greenway.

In the end, the goal of this plan is to implement a greenway connection that is in line with Hendersonville's City Council fiscal year 2025 goals which include a focus on strong infrastructure, investing in parks, enhancing city sustainability, and transportation planning. When completed, this project will expand the City's multimodal transportation network, recreation opportunities, and connections to adjacent greenways and parks. In addition, it will fill a current gap in the regional greenway network, bringing the region one step closer to a complete Hellbender Trail system.

Figure 2. Key Implementation Partners

01 Introduction

TO
WEST
26

OVERVIEW & STUDY GOALS

At the core of the Above the Mud (ATM) project is the goal to add to Hendersonville's multimodal network connecting parks, neighborhoods, and other places in between as well as linking the Ecusta Trail with the Oklawaha Greenway. As part of the Great Trails State vision, this project strengthens the regional active transportation network, connecting people to key destinations and catering to the recreational needs of both residents and visitors. The City of Hendersonville and NCDOT's Integrated Mobility Division (IMD) have funded and spearheaded this project, in collaboration with Henderson County, key stakeholders, and the community.

Figure 3 - Project Goals illustrates the four key project goals: enhance safety; expand mobility and transportation choices; elevate equity; and alleviate traffic congestion.

The Above the Mud greenway will connect Hendersonville and Henderson County's growing and extensive network of miles-long greenways, positioning Hendersonville as a prime destination for individuals seeking active transportation and recreational pursuits. The city is on the verge of transforming into a thriving hub for multimodal infrastructure, thanks to the foresight of local government and community leaders.

Figure 3. Project Goals

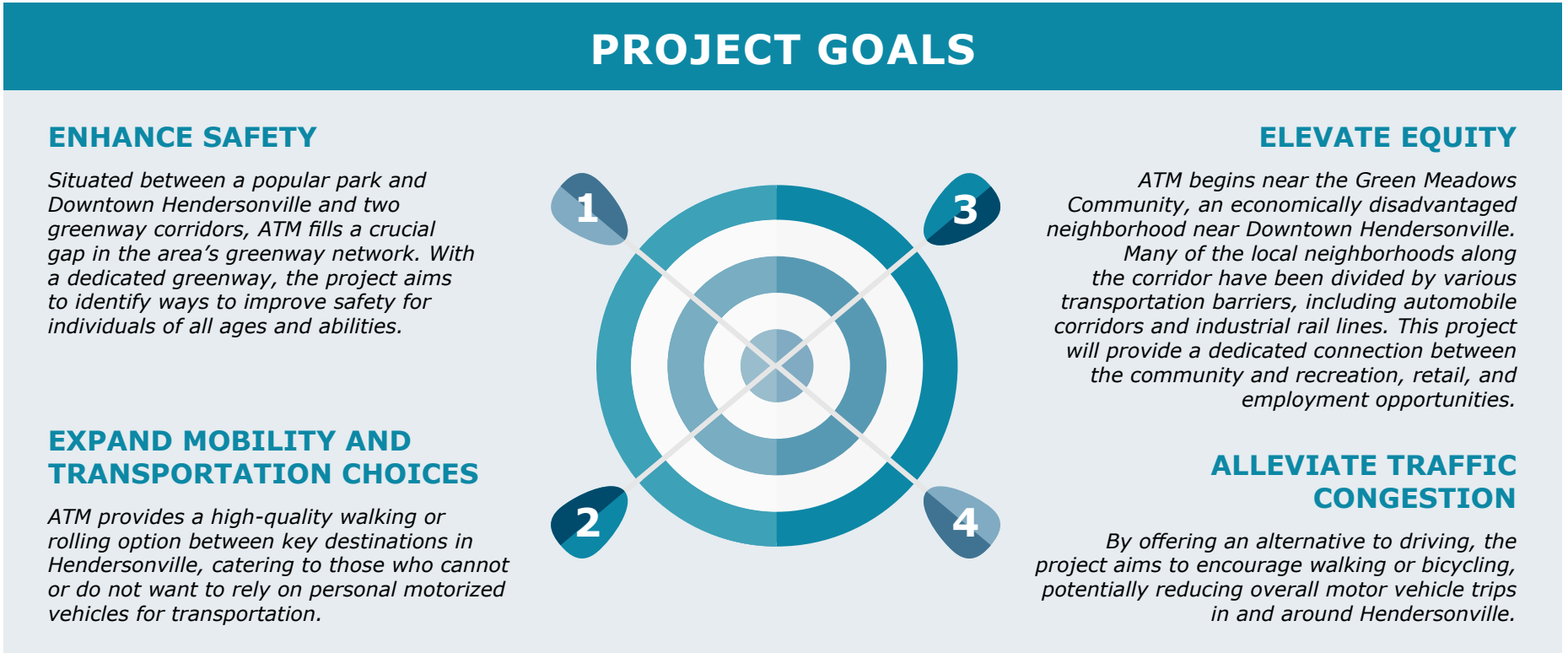
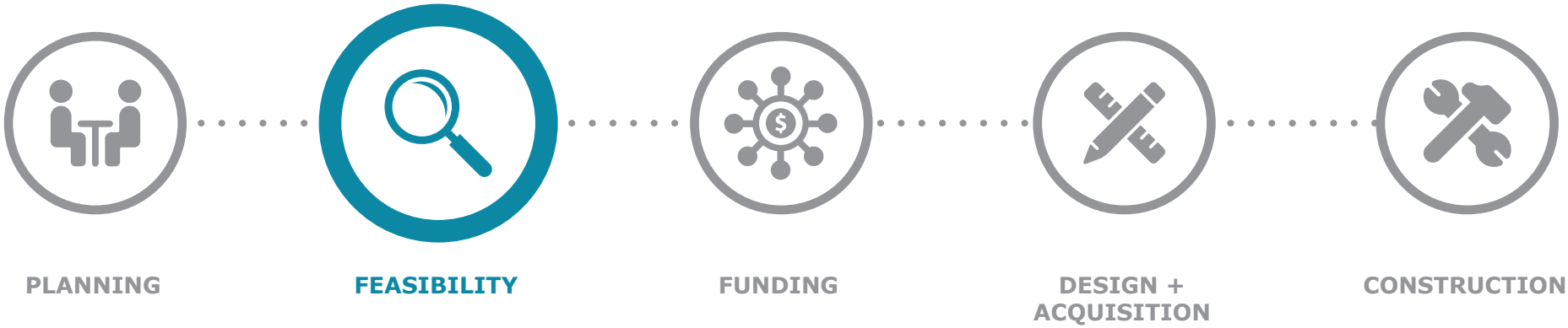


Figure 4. What Is A Feasibility Study?



WHAT IS A FEASIBILITY STUDY?

A feasibility study is a technical investigation of physical and environmental constraints that may impact the ability and/or cost to construct a new multimodal facility or upgrade existing facilities. It is a step in the process to build infrastructure that identifies key project risks that may need additional investigation before the scope and cost can be defined. Feasibility studies bridge the gap between high-level planning studies and prioritization, programming, and design.

Once completed, this feasibility study will equip the City and its partners to identify funding and work with willing property owners to determine the final design and path towards construction.

Feasibility studies include items such as:

- Input from local stakeholders and community members
- Environmental features (e.g. wetlands, threatened and endangered species, waterways)
- Physical constraints (e.g. steep slopes, buildings, and private property impacts)
- Right-of-way availability (property ownership or the ability to acquire property for facilities)
- Utilities and railroad lines

OUTCOMES

A feasibility study yields several specific outcomes, including:

Assess Possible Route Alternatives: By analyzing site conditions, the study identifies opportunities and constraints to develop various route alternatives for this new bicycle and pedestrian connection.

Identify Key Stakeholders: Engagement with project stakeholders helps shape study recommendations and establishes ongoing relationships for the project's progression into the design phase.

Estimate Project Costs: Through thorough analysis, the study calculates anticipated costs associated with designing and constructing the recommended facility, facilitating the development of a project funding plan and future programming.

Plan of Action: Based on informed assessments, the study provides recommendations for preferred route alternatives and outlines a range of potential implementation scenarios and funding sources to guide the project's progression.

BACKGROUND & SITE HISTORY

The Oklawaha Greenway is a 3.7-mile bicycle and pedestrian facility that runs north-south between the recreational facilities of Jackson Park and historic Berkeley Mills Ball Field and is one of the longest contiguous greenways in the region. The City of Hendersonville is currently designing and will soon construct the Clear Creek Greenway, a 1.3-mile extension to the northern end of the Oklawaha Greenway. The Ecusta Trail is a nearly 20-mile rail-to-trail project that, once completed, will connect the cities of Hendersonville and Brevard. It is expected to be one of the largest infrastructure projects in Henderson County history and is currently under construction. The Ecusta Trail will terminate at South Main Street in downtown Hendersonville, leaving nearly a mile gap between it and the Oklawaha Greenway.

Image 2. Oklawaha Greenway

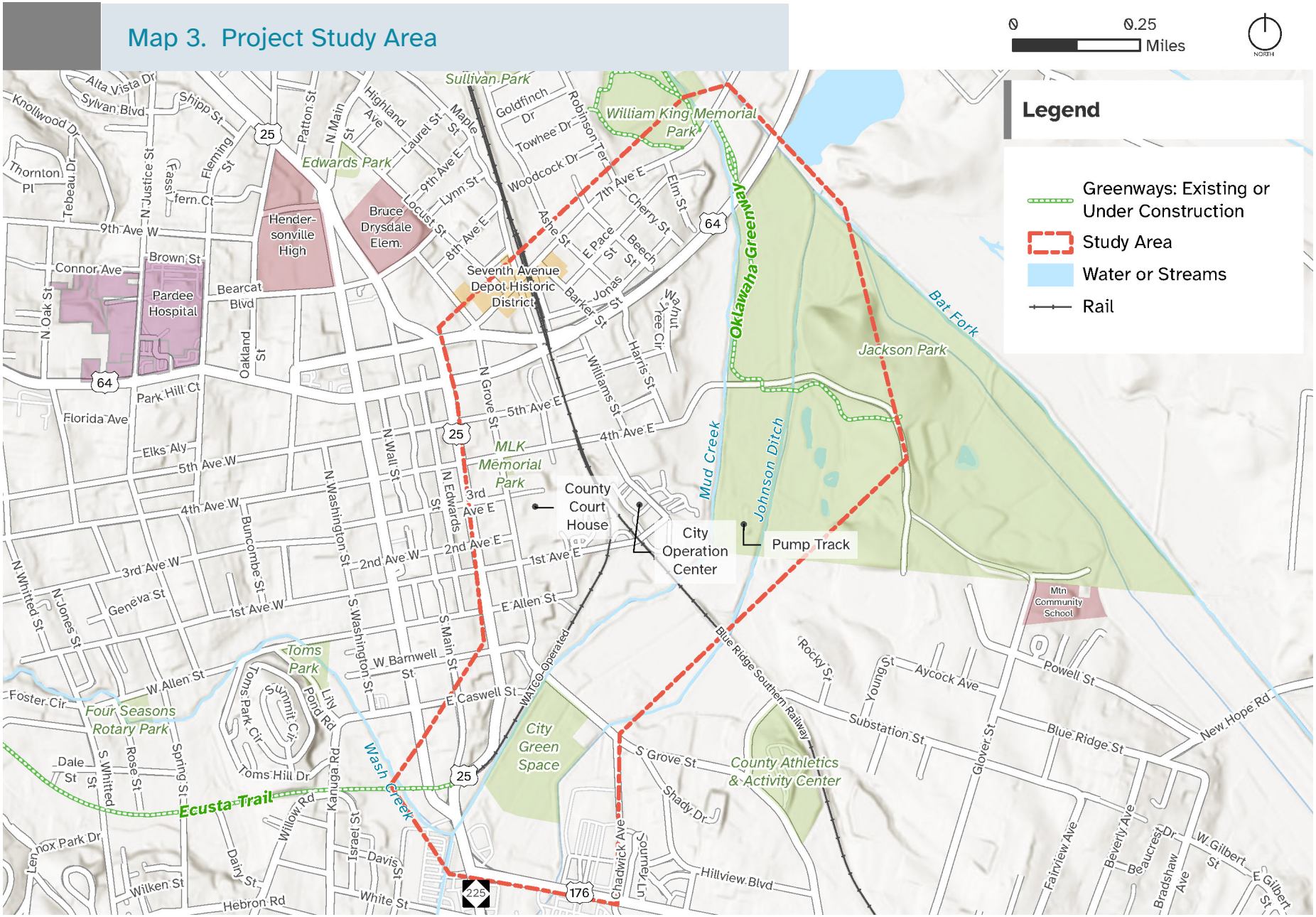
Source: TPD

Image 3. Ecusta Trail Prior to Construction

Source: TPD

The Above the Mud greenway feasibility study came about once efforts to develop the new Ecusta Trail rail-to-trail project intensified. It became clear that there was a need to seamlessly connect the Ecusta Trail with the Oklawaha Greenway to maximize the benefit of these greenway systems. Above the Mud is primarily a unifying link in Hendersonville's active transportation network and will simultaneously create a cross-municipality transportation and recreational space for residents and visitors. The system is a key connection in the French Broad River Metropolitan Planning Organization's Hellbender Trail Plan and NCDOT State Great Trails Plan. The study area, showing the gap between the Oklawaha and Ecusta Trails, is visually represented in **Map 3 – Project Study Area.**

Map 3. Project Study Area



PROCESS & SCHEDULE

The development of recommendations within this study benefits from the guidance of a locally appointed steering committee, ensuring that the collective vision aligns with the needs and aspirations of the community. Input from diverse sources, including community members, landowners, and various interested parties, has played a role in shaping these recommendations.

The study began in June of 2023 and concluded in June 2024. The City of Hendersonville identified a project steering committee to guide the process with their local knowledge and provide input for key decisions.

There are four primary phases of the study, as illustrated in **Figure 5 - Project Process & Schedule.**

STUDY CONDITIONS

Data collection, site visit and field work, and mapping exploration and analyses.

ROUTE ANALYSIS

Identification of route alternatives, route selection criteria and decision matrix, and stakeholder meetings.

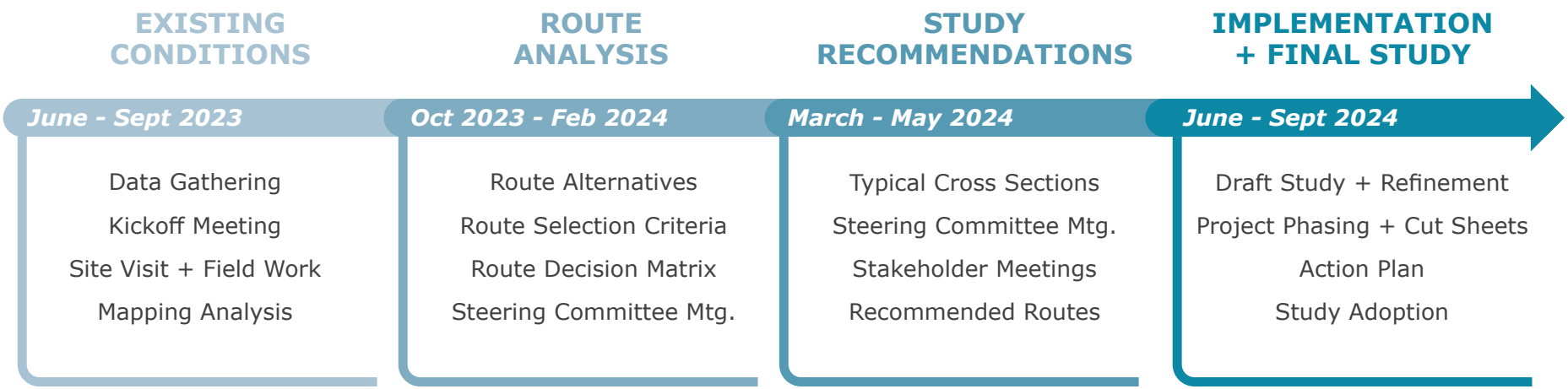
STUDY RECOMMENDATIONS

Identification of recommended routes, design considerations, and continued stakeholder meetings.

FINAL STUDY & IMPLEMENTATION

Creation of project phasing and cutsheets, draft study and refinement, action plan and study adoption.

Figure 5. Project Process & Schedule



PREVIOUS PLANS & EXISTING POLICIES REVIEW

Reviewing previously adopted plan documents in a community is helpful to understand desires and project ideas. The Appendix provides the full review of relevant plans. The plans reviewed include:

- FBRMPO 2024-2033 Transportation Improvement Plan (2024)
- Gen H 2045 Comprehensive Plan (2024)
- Walk Hendo Pedestrian Plan (2023)
- NCDOT Roadway Design Manual (2023)
- Ecusta Trail 100% Designs (2023)
- Above the Mud Greenway Project (2022)
- Mud Creek Greenway Feasibility Study (2021)
- FBRMPO The Hellbender Trail Plan (2020)
- Henderson County Oklawaha Greenway Extension (2019)
- NCDOT Complete Streets Policy (2019)
- Henderson County Greenway Master Plan (2019)
- Hendersonville Bicycle Plan (2018)
- FBRMPO Blue Ridge Bike Plan (2013)
- Ecusta Rail Trail Planning Study & Economic Analysis (2012)
- Park and Greenspace Master Plan (2011)

The City of Hendersonville, Henderson County, and regional partners have a strong legacy of multimodal planning as evidenced by the number of plan documents that relate to multimodal topics in the city, all of which are described below. These plan documents offer a foundation on which to develop the Above the Mud Greenway.

Frequent themes throughout the plan documents are connecting parks, neighborhoods, and destinations; expansion of existing greenway systems; and connecting to a regional system of greenways. The Above the Mud Greenway was identified in the Mud Creek Greenway Feasibility Study, the City's

Image 4. Existing Plan Cover Pages

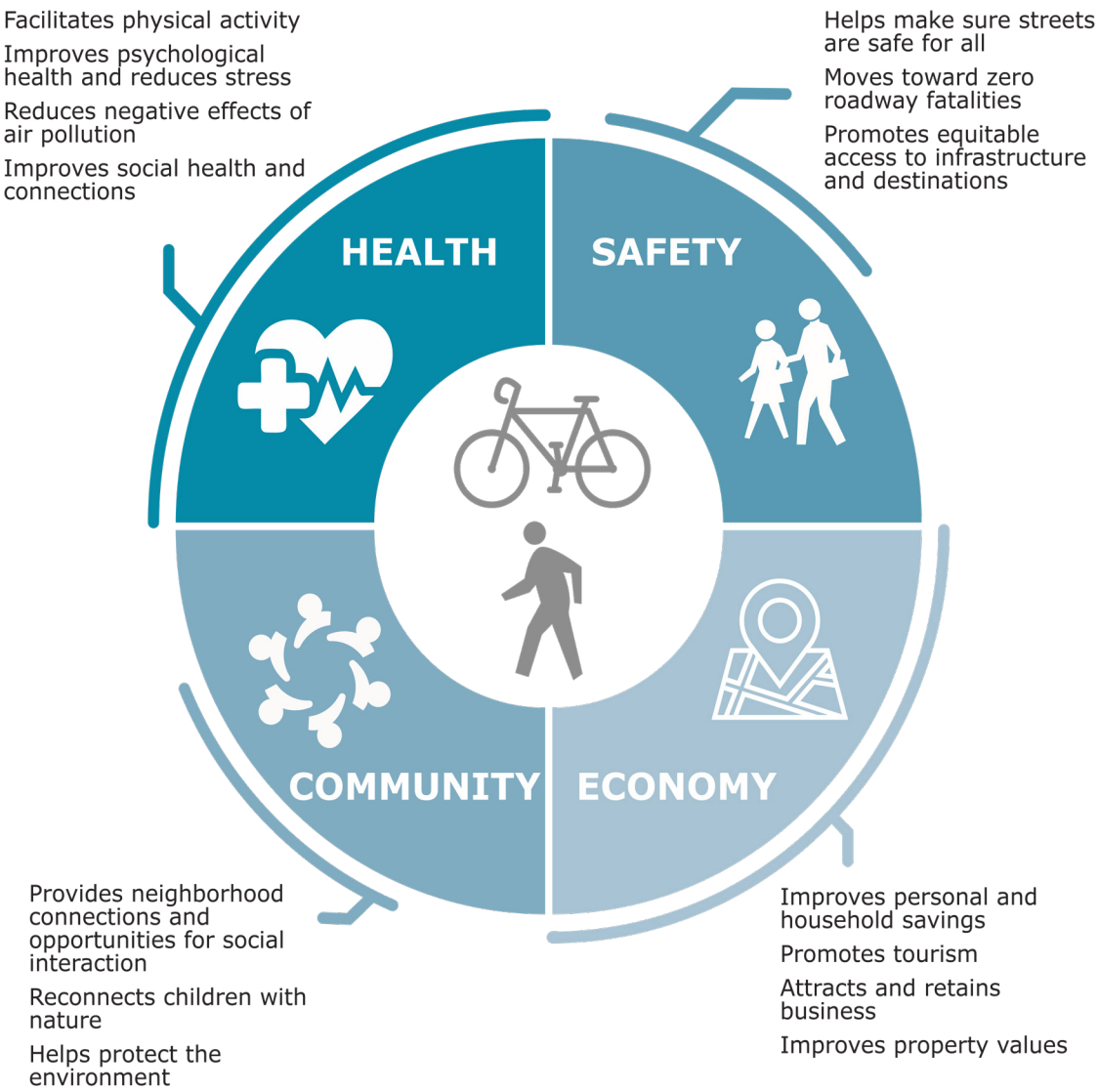
Comprehensive Plan, the 2012 Ecusta study, the City's 2022 RAISE grant proposal, and in the Hellbender Trail Plan. Since the Ecusta Trail does not connect directly to the Oklawaha Greenway as part of that project's rail-to-trail development, a gap in connectivity remains. The Above the Mud feasibility study is needed to examine all possible alignments to produce the most effective means to connect the two greenways and complete the Great Trails State network within Henderson County.

PROJECT BENEFITS

Linking two core greenways in the city – the Ecusta and Oklawaha – will enhance mobility, transportation choice, and recreation in the city and region.

Creating a greenway system in this way can benefit the safety and health of the community. The following describes how walking and biking infrastructure, like greenways, benefits our safety, health, economy, and community.

Figure 6. The Many Benefits of Bicycle & Pedestrian Infrastructure



The positive impact of
WALKING & BIKING

SAFETY

Estimated 60,000 pedestrians
were injured nationwide in 2021.[1]

More than 7,388 people
(an average of nearly 21 per day)
nationwide were struck and killed while walking in 2021.[1]

Approximately 17%
of all traffic fatalities in the U.S. in 2021 were pedestrians, a rate that has been increasing over time *(up from 14% in 2012).*[2]

Hendersonville rated #1 (highest rate) for pedestrian fatalities and severe injuries.*
*Based on crash data from 2010-2019 and including pedestrians killed or severely injured in cities with populations between 10,000 and 25,000 in North Carolina. *This is the highest rate per capita in the state.*[3]

265 **people killed while walking**
in North Carolina in 2022
(a 3% increase from 2021).[3]

Despite the disruptions caused by the COVID-19 pandemic to various facets of daily life, one persistent trend remained unchanged: the rise in pedestrian fatalities. Despite a decrease in driving during 2020 due to the pandemic, pedestrian deaths increased by 4.7% compared to the previous year.

While walking and bicycling comprises a smaller portion of total trips compared to other modes of transportation, people who walk and bike disproportionately bear the burden of traffic fatalities. Referred to as vulnerable users of our streets, pedestrians and bicyclists face a heightened risk of severe injury when involved in collisions with automobiles. Often lacking dedicated infrastructure, they are forced to navigate in unsafe conditions, such as alongside shoulders or roads shared with much faster vehicles. These conditions can make walking and bicycling intimidating or hazardous, leading to decreased levels of active transportation and a greater reliance on private vehicles among those who can drive, or increased vulnerability, isolation and unmet needs for those who cannot.

Investing in dedicated infrastructure and promoting road safety education are steps communities can take to mitigate their risks pedestrians and bicyclists face. Everyone benefits when a community designs transportation systems that prioritize the safety of the most vulnerable users.[4] Investments in sidewalk, bike lane, and greenway infrastructure yield positive safety outcomes for all roadway users by establishing separate spaces for different modes of travel, thereby minimizing speed differentials and conflicts.

The positive impact of
WALKING & BIKING

HEALTH

5 Reasons to Walk & Bike

Walking or bicycling for as little as 20 minutes a day has been found to show significant improvements in your overall health, including:

- **Improving cardiovascular health**
- **Strengthening muscles & bones**
- **Increasing focus, mood & memory**
- **Boosting immune system function**
- **Preventing & managing common health problems**

Developing a walkable environment, as Hendersonville is endeavoring to do, can encourage incremental increases in physical activity, such as walking to school or substituting short driving trips with walking. These small changes can yield significant public health benefits, particularly for individuals who are currently inactive.

According to the Centers for Disease Control and Prevention (CDC), adults can derive substantial health benefits from as little as 20-25 minutes of physical activity per day, with even greater benefits achieved with 40-45 minutes of daily activity.[5] Despite these recommendations, only half of adults in the US currently meet the recommended levels of physical activity.[6] For children, the target should be around 60 minutes of physical activity per day. Walking and bicycling have been proven to yield numerous health benefits for the brain, heart, and overall physical health, including a reduction in chronic diseases such as heart disease and certain cancers.[7]

Increased physical activity has been demonstrated to slow down the aging process in the elderly, reduce the risk of falls, prevent osteoporosis, and delay the onset of cognitive decline. In children, physical activity has been linked to improved attention, memory, enhanced learning capacity, reduced risk of depression, and improved bone health.[7] Whether for transportation or recreation, walking and bicycling contribute to active lifestyles that foster these health outcomes.

The positive impact of
WALKING & BIKING

ECONOMY

Greenway users' annual expenditures supported an additional **43 jobs, $1.3 million in employee compensation,** and **$4.9 million** in gross business revenues.[12]

A recent study estimated that **every $1.00 invested** in greenway construction resulted in approximately **$1.72 in annual benefits**, including local business revenue, sales tax revenue, and health and transportation-related benefits.

1.5X to 3X MORE **economic benefit**
generated for a dollar spent at an independent business compared to spending that same dollar at a retail chain.[13]

13:1 **13:1 benefits vs costs**
Recent studies on the economic benefits of walking interventions show an average benefit-to-cost ratio of 13:1.[14]

Several studies conducted in North Carolina have underscored the significant economic benefits associated with investments in bicycle and pedestrian infrastructure. For example, research conducted by the Institute for Transportation Research and Education (ITRE) highlighted the economic benefits of greenways, including enhanced property values and increased spending on recreational activities such as dining, equipment purchases, and accommodations.[8]

Research has indicated that well-designed non-motorized transportation enhancements can stimulate local business activity.[9] Pedestrians tend to notice storefront displays, explore multiple shops, and spend more time in areas with pedestrian-friendly infrastructure, leading to potential increases in sales. Studies have shown that the availability of outdoor recreation, including greenways, is a key factor for businesses when deciding where to locate. For example, a study by the Urban Land Institute noted that businesses are drawn to places with strong recreational amenities as they help attract and retain top talent. By prioritizing and promoting walkable and bikeable communities, we create an environment conducive to the success of independent businesses, thereby bolstering economic growth and strengthening the local economy.[10]

Furthermore, robust active transportation networks have the potential to attract tourists seeking outdoor recreational opportunities and walkable downtown areas. Investments in greenways not only improve the quality of life for residents but also contribute to job creation, higher wages, and increased business output for outdoor recreation-related industries and nearby establishments. Thus, investing in bicycle and pedestrian infrastructure not only promotes healthier and more sustainable modes of transportation but also yields tangible economic benefits for communities.[11]

The positive impact of
WALKING & BIKING

COMMUNITY

+3.1 friends per person
Residents of a street with 2,000 vehicles per day have three times as many friends as one with 16,000 vehicles.[16]

Residents of highly walkable, mixed use neighborhoods exhibited at least **80% greater levels of four indicators of social capital** (knowing neighbors, sociability, trust and political participation) than those in less walkable neighborhoods.[17]

> **If you plan cities for cars and traffic, you get cars and traffic. If you plan for people and places, you get people and places.**
>
> *- Fred Kent, Project for Public Spaces*

Improving walking and biking infrastructure within communities not only enhances quality of life but also ensures equitable access to essential services and opportunities for all individuals, regardless of their circumstances or preferences. By prioritizing and supporting a diverse range of transportation options, we empower individuals to choose how they navigate their surroundings, fostering a vibrant and inclusive place where everyone can thrive.

Research also suggests that individuals living in walkable and bikeable communities tend to exhibit higher levels of trust in their neighbors, actively participate in community initiatives, and volunteer more frequently compared to those in less walkable and bikeable areas.[15]

Furthermore, transitioning more trips from motor vehicles to walking or biking helps alleviate traffic and parking congestion in communities. As traffic diminishes, conditions for walking and biking improve, making these modes of transportation more appealing and accessible.

Greenways play a role in supporting the natural environment. They contribute to enhancing air quality by effectively reducing harmful pollutants such as ozone, sulfur dioxide, carbon monoxide, and airborne heavy metal particles. Additionally, greenways can aid in improving water quality by serving as natural buffer zones, protecting streams, rivers, and lakes from pollutants, preventing soil erosion, and filtering out contamination resulting from agricultural and road runoff. Moreover, greenways serve as a protective barrier against natural disasters like flooding by protected open space.

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ENDNOTES

1 National Center for Statistics and Analysis. (2023, June). Pedestrians: 2021 data (Traffic Safety Facts. Report No. DOT HS 813 458). National Highway Traffic Safety Administration

2 National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS)

3 *NC Vision Zero, a statewide traffic safety initiative*

4 Jacobsen,P.L., *Safety in numbers: more walkers and bicyclists, safety walking and bicycling.* Injury Prevention, 2003(9): p.205-209.

5 Centers for Disease Control and Prevention. (2019). *Physical Activity Builds a Healthy and Strong America*. https://www.cdc.gov/physicalactivity/about-physical-activity/pdfs/healthy-strong-america-201902_508.pdf

6 Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. https://www.cdc.gov/nchs/nhis/index.htm

7 Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. https://www.cdc.gov/nchs/nhis/index.htm

8 Institute for Transportation Research and Education. (2017). *Evaluating the Economic Contribution of Shared Use Paths in NC*. https://itre.ncsu.edu/wp-content/uploads/2018/03/NCDOT-2015-44_SUP-Project_Final-Report_optimized.pdf

9 Hass-Klau C: *Impact of pedestrianisation and traffic calming on retailing, A review of the evidence from Germany and the UK.* Transport Policy. 1: 21-31, 1993.

10 American Independent Business Alliance: Multiplier effect, quoted in WalkBoston, Good walking is good business 2003.

11 Nick Cavill, Sonja Kahlmeier, Harry Rutter, Francesca Racioppi, Pekka Oja, *Economic analyses of transport infrastructure and policies including health effects related to cycling and walking: A systematic review*, Transport Policy, Volume 15, Issue 5, 2008, Pages 291-304, ISSN 0967-0967-070X, https://doi.org/10.1016/j.tranpol.2008.11.001.

12 Institute of Transportation Research and Education. (2014). Bridging the Gap: Economic, Health and Transportation Impacts from Completing a Critical Link in a 22-mile rail trail. https://itre.ncsu.edu/focus/bike-ped/att-beforeafter/

13 Michael Shuman & Kate Poole, "Growing Local Living Economies: A Grassroots Approach to Economic Development" (BALLE, 2012)

14 *Value for Money: Economic Assessment of Investment in Walking and Cycling, by Dr. Adrian Davis for the Department of Health. 2010*

15 Rogers, S., J. Halstead, K.H. Gardner, C. Carlson, "Examining Walkability and Social Capital as Indicators of Quality of Life at the Municipal and Neighborhood Scales," Journal of Applied Research in Quality of Life, Volume 6, Issue 2 (2011), Page 201. (DOI: 10.1007/s11482-010-9132-4).

16 *Livable Streets, by Donald Appleyard, M. Sue Gerson, Mark Lintell. 1981. University of California Press*

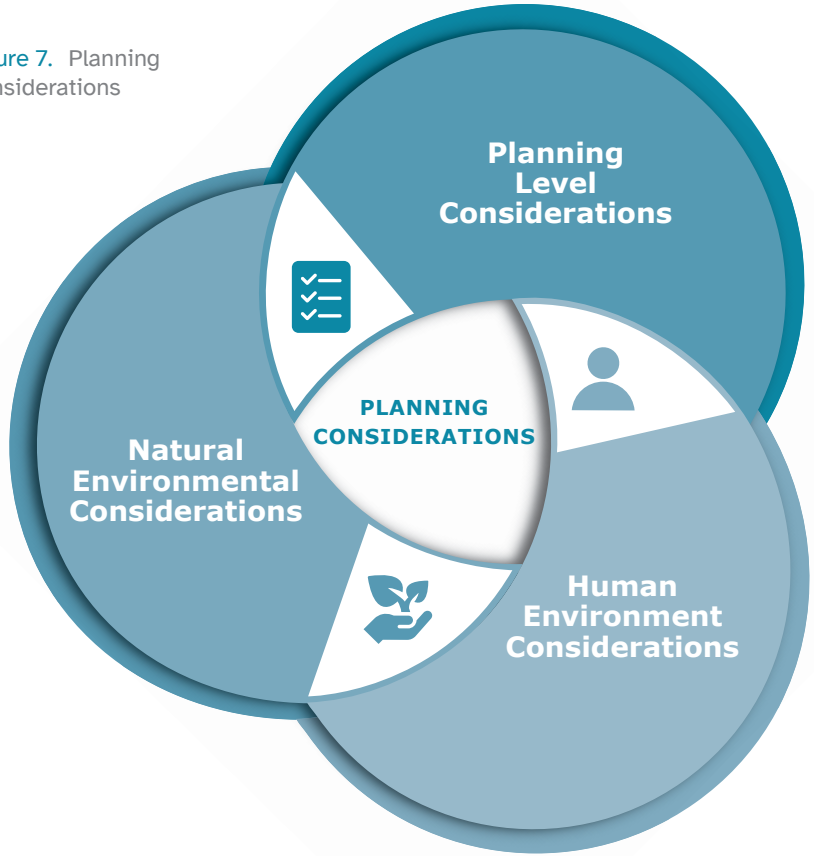
17 *Making the case for investment in the walking environment: A review of the evidence, by Danielle Sinnett, Katie Williams, Kiron Chatterjee and Nick Cavill. 2011*

02 Study Considerations + Alternatives Development

INTRODUCTION

The focus of this chapter is on the natural environment, human environment, and planning considerations that define the study area. The natural environment includes water bodies (such as streams and floodplains) and land features (like topography), while the human environment encompasses human-made settings like urban areas and rail. Planning considerations entail the specifics that characterize the community and its people (such as age and race). Understanding this framework is important because each consideration shapes this study's project approach and recommendations.

Figure 7. Planning Considerations



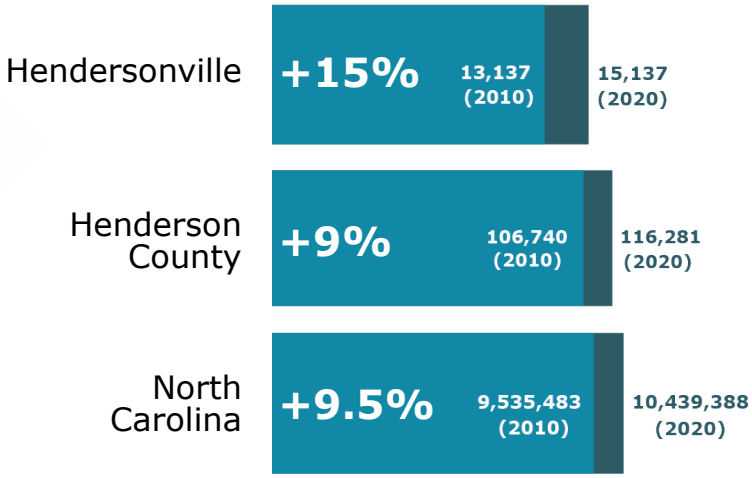
PLANNING LEVEL CONSIDERATIONS

To understand the current community profile, the project team used data from the U.S. Census Bureau's 2020 Decennial Census and the 2018-2022 American Community Survey for the City of Hendersonville, Henderson County, and North Carolina. In certain instances, comparing data from the study area with that of the county and state can be insightful. These findings played a role in shaping the project's focal points and criteria for evaluating route alternatives. Planning level considerations can be found in the following narratives, figures, and maps.

Population

Between 2010 and 2020, the population in the city increased by 15%; this change was greater than that of the county (9% growth) and the state (9.5% growth). This indicates that the city is growing at a relatively fast rate.

Figure 8. Population Growth



Data Source: U.S. Census 2020 Decennial Census

Age Groups

There are clear age differences between the city and county when compared to the state. The median age in Hendersonville is 52 whereas the median age in North Carolina is 39. Relative to the state, both Hendersonville and Henderson County have a smaller population of residents under the age of 49. In the 50–54 age group, the spread in ages levels out, where this age group represents just over 6% of the population in the city, county, and state. From ages 55 and over, the trend reverses and the city and county has more population in these older ages than the state. This gap is significant in the 70–75 age group where the population in the city is 7.5% while the state is 3%. Understanding these age disparities is essential for tailoring transportation and pedestrian infrastructure to meet the mobility needs of different age groups, especially older adults.

Figure 9. Median Age

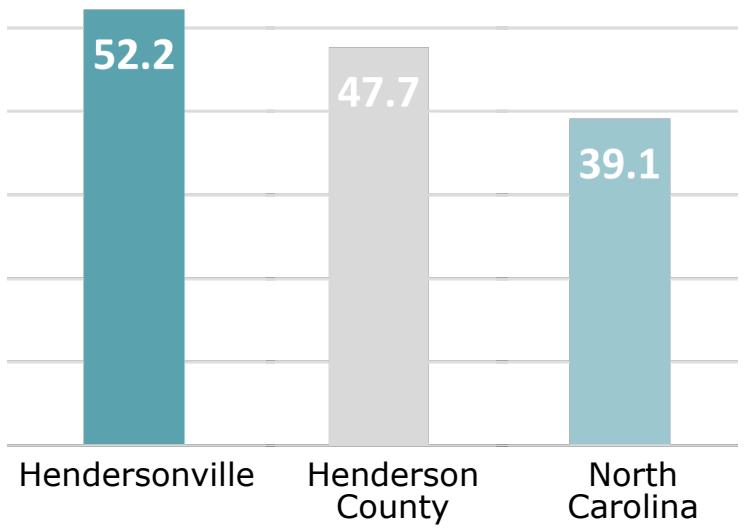
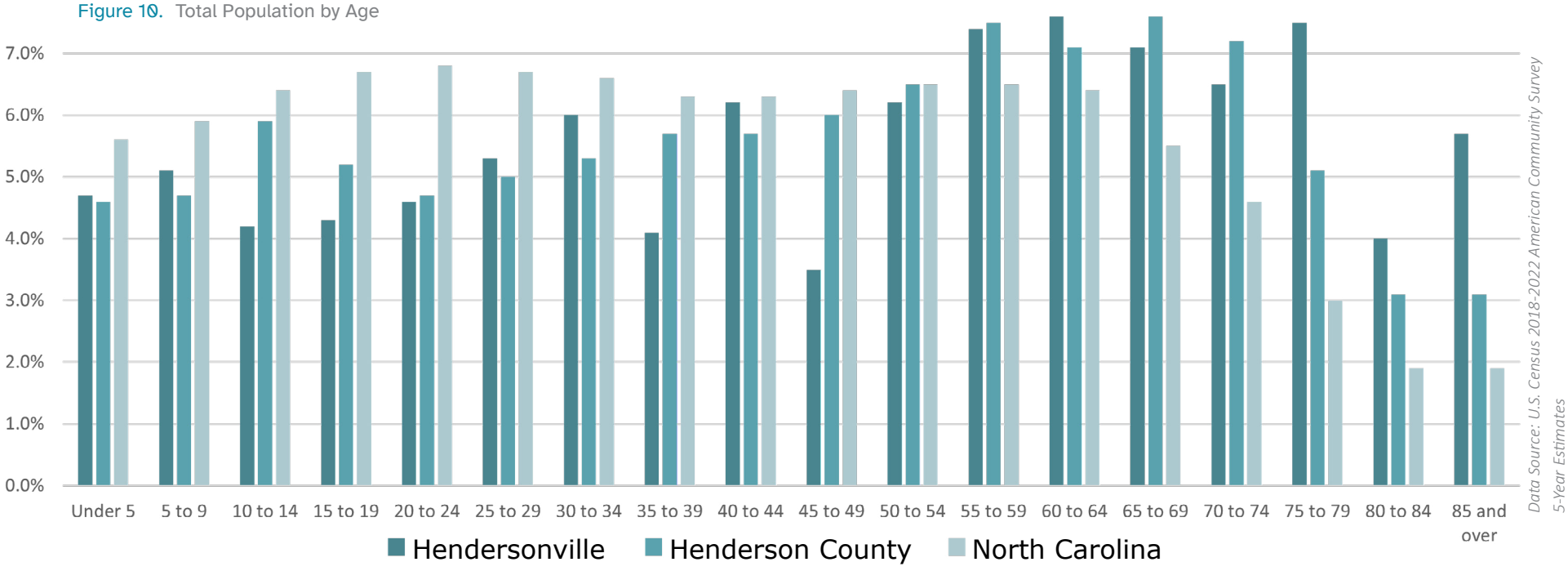


Figure 10. Total Population by Age

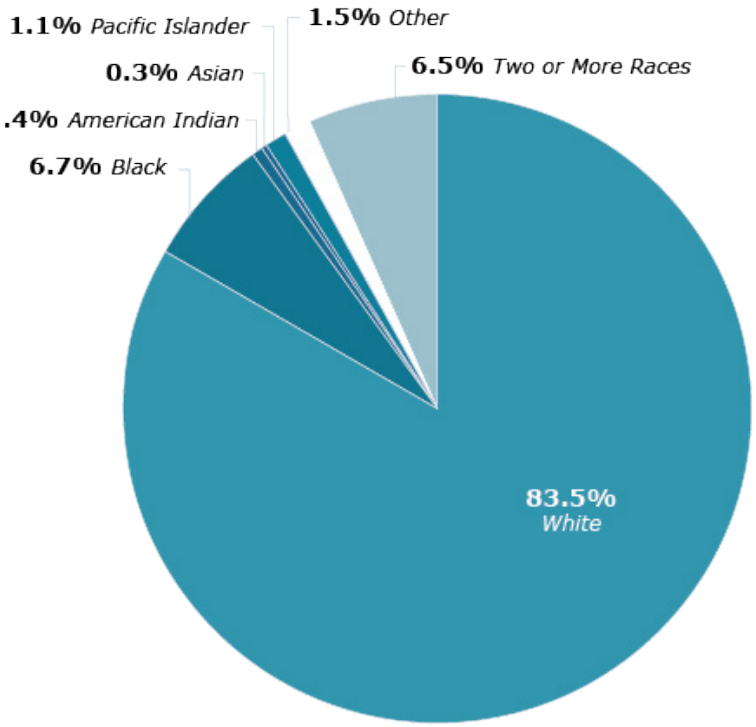


Diversity

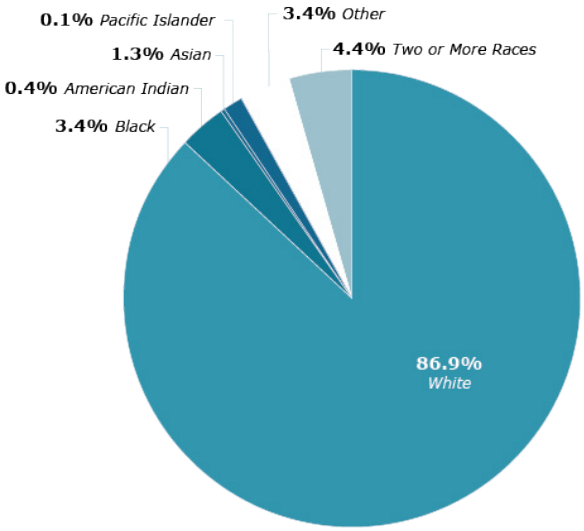
The ethnic and racial diversity in the city area is slightly more than the County, but less diverse than the state. The city area has a population that is 16.5% non-white, compared to 13.1% people who consider themselves non-white in the county and 35% people who are non-white in the state. Fifteen percent (15%) of people identified as Hispanic or Latino in the city of Hendersonville.

Figure 11. Racial Composition

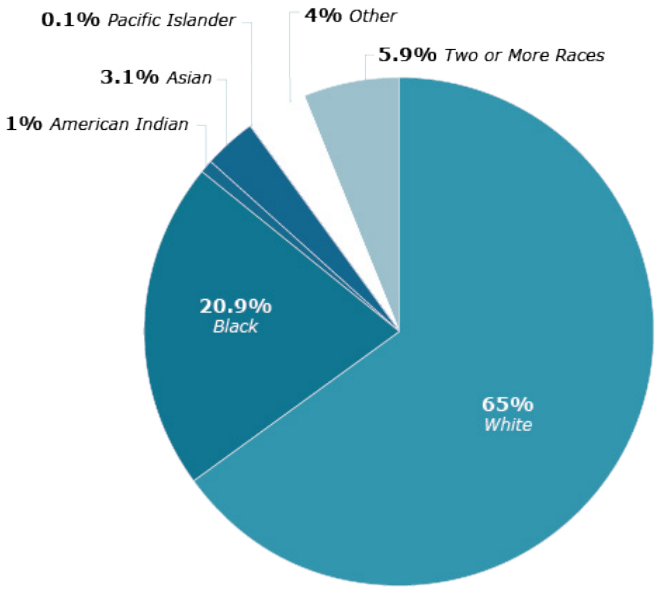
Data Source: U.S. Census 2020 Decennial Census



Hendersonville



Henderson County

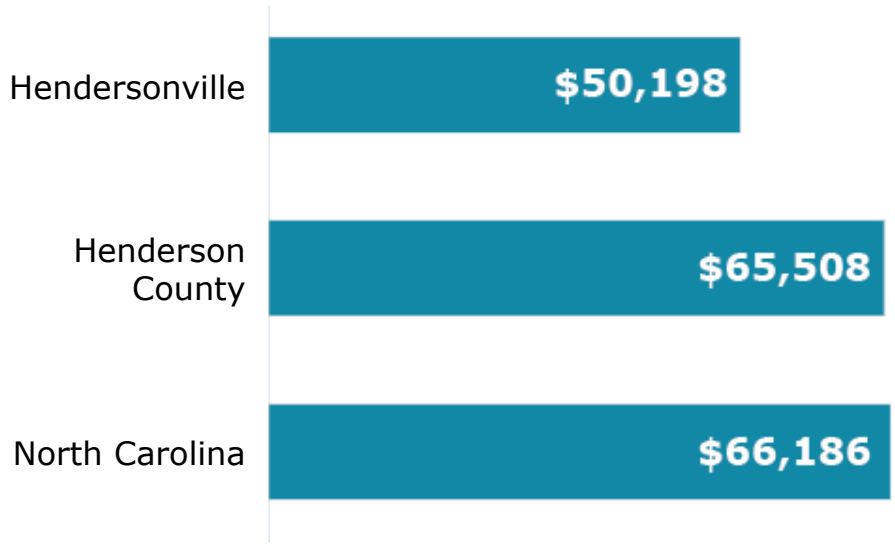


North Carolina

Household Income & Poverty

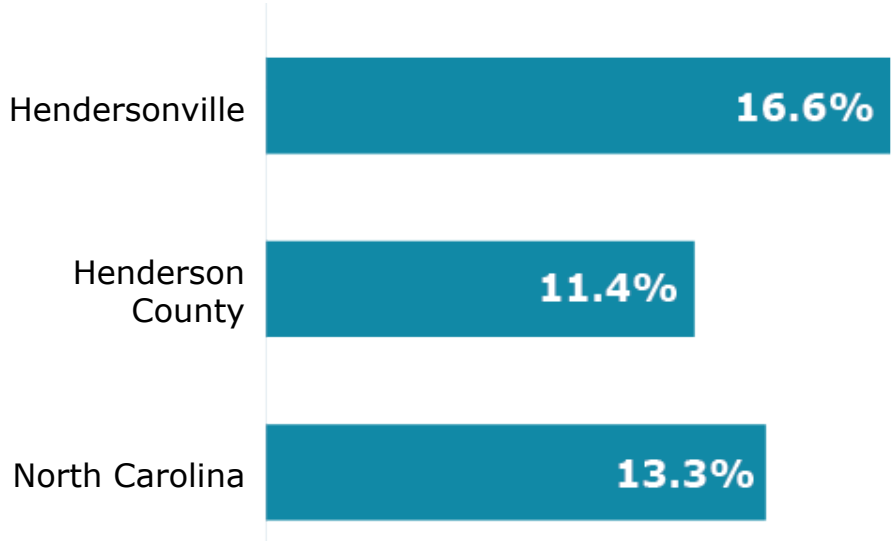
With a median household income of $50,198, the city has less wealth than the county ($65,508) and the state ($66,186). The population of households with income below the poverty line is highest in the city when compared to the other geographies: 16.6% of city households live below the poverty line compared to 11.4% in the county and 13.3% in the state. Connected, high-quality multimodal transportation networks such as the Above the Mud Greenway can help households offset the burden of transportation and housing costs which can consume more than half of monthly incomes.

Figure 12. Median Household Income



Data Source: U.S. Census 2018-2022 American Community Survey 5-Year Estimates

Figure 13. Households Below the Poverty Level

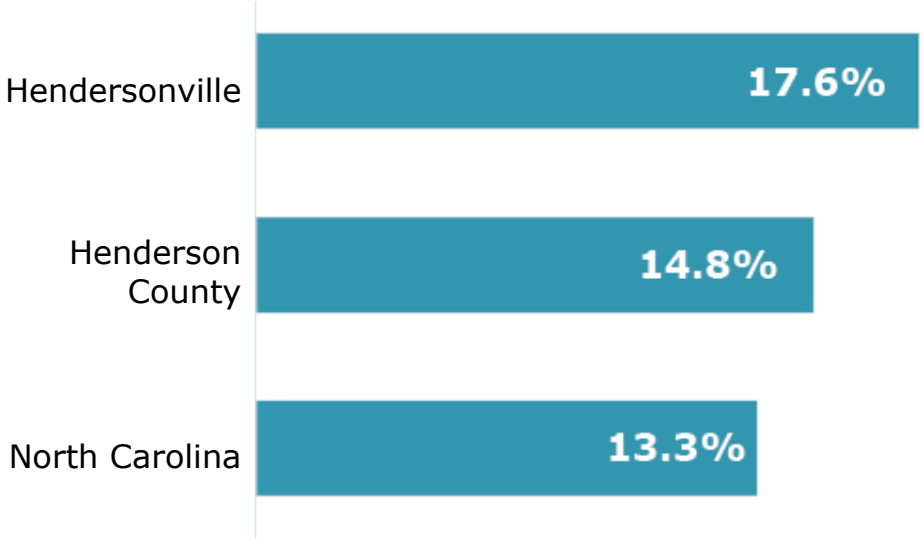


Data Source: U.S. Census 2018-2022 American Community Survey 5-Year Estimates

Disability Status

The percentage of people in the city with a disability (15.5%) is higher than the county (14.1%) and the state (13.7%). The higher percentage of individuals with disabilities in the city suggests a greater demand for accessible transportation infrastructure. This includes sidewalks, curb ramps, crosswalks, and other pedestrian facilities designed to accommodate individuals with varying mobility needs.

Figure 14. Disability Status

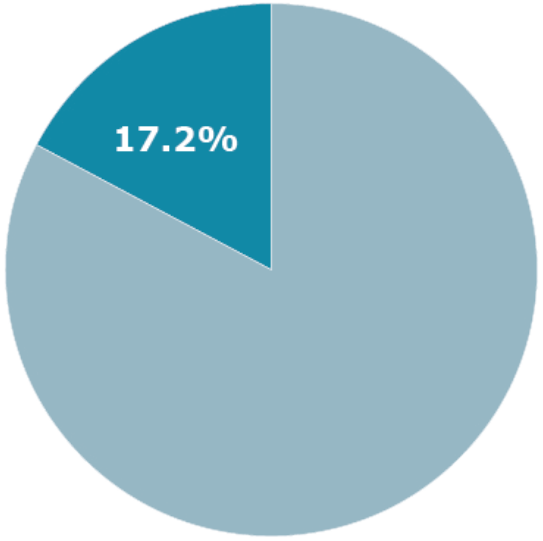


Data Source: U.S. Census 2018-2022 American Community Survey 5-Year Estimates

Households with Children

Just over seventeen percent (17.2%) of households in the city have children under the age of 18. Pedestrian and multiuse path improvements become important for enabling children to walk and bike to school, and to recreate and experience the outdoors.

Figure 15. Hendersonville Households with Children



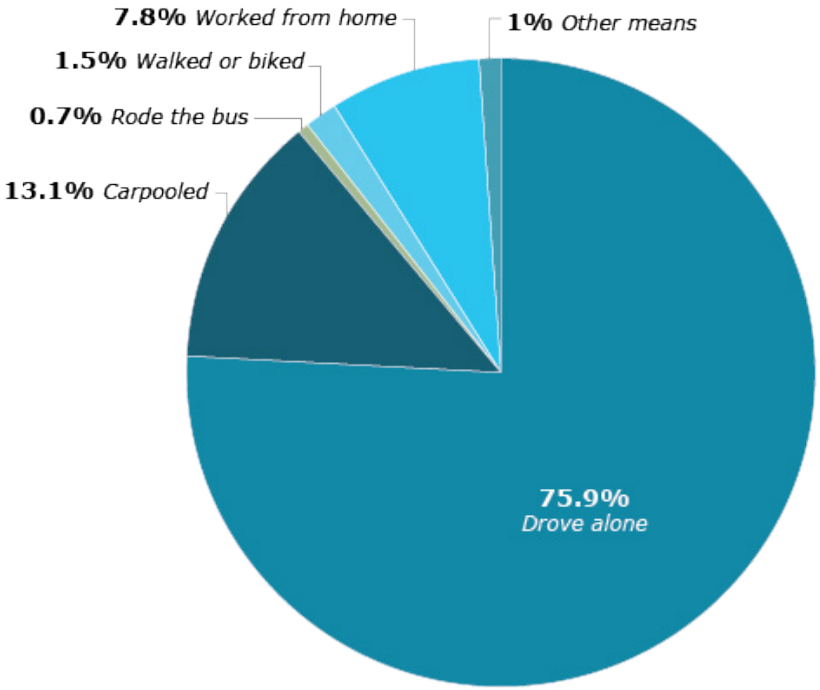
Data Source: U.S. Census 2018-2022 American Community Survey 5-Year Estimates

Commuting & Access to Vehicles

In the city, 89% of the population drove to work, with the majority – 75.9% – of those driving alone. A small percentage, 0.7%, rode the bus; 1.5% walked or biked; and 7.8% worked from home.

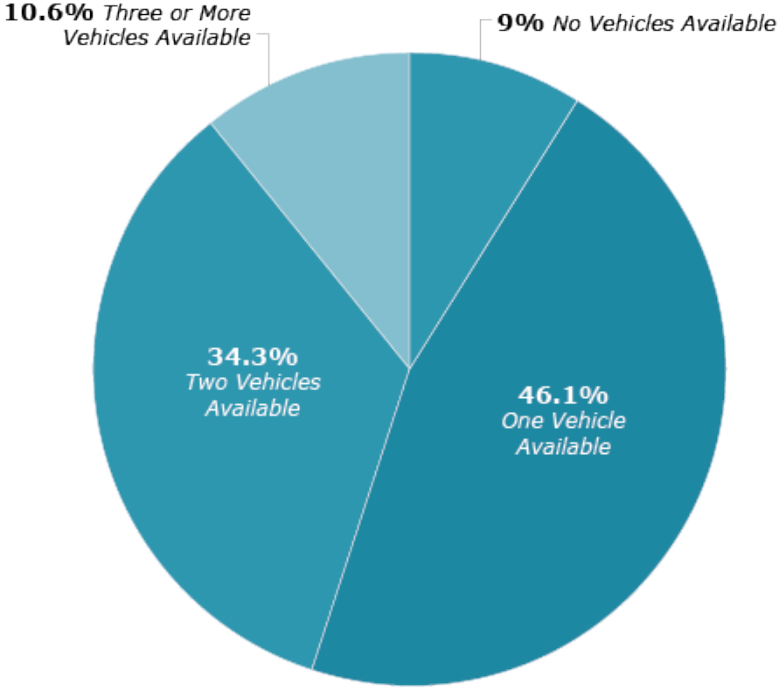
In the city, 34.3% of households have access to two or more vehicles and 9.0% of households are without vehicles entirely. These vehicle-less households may benefit from a new option to get around without a car.

Figure 16. Hendersonville Means of Transportation to Work



Data Source: U.S. Census 2018-2022 American Community Survey 5-Year Estimates

Figure 17. Hendersonville Access to Personal Motor Vehicles



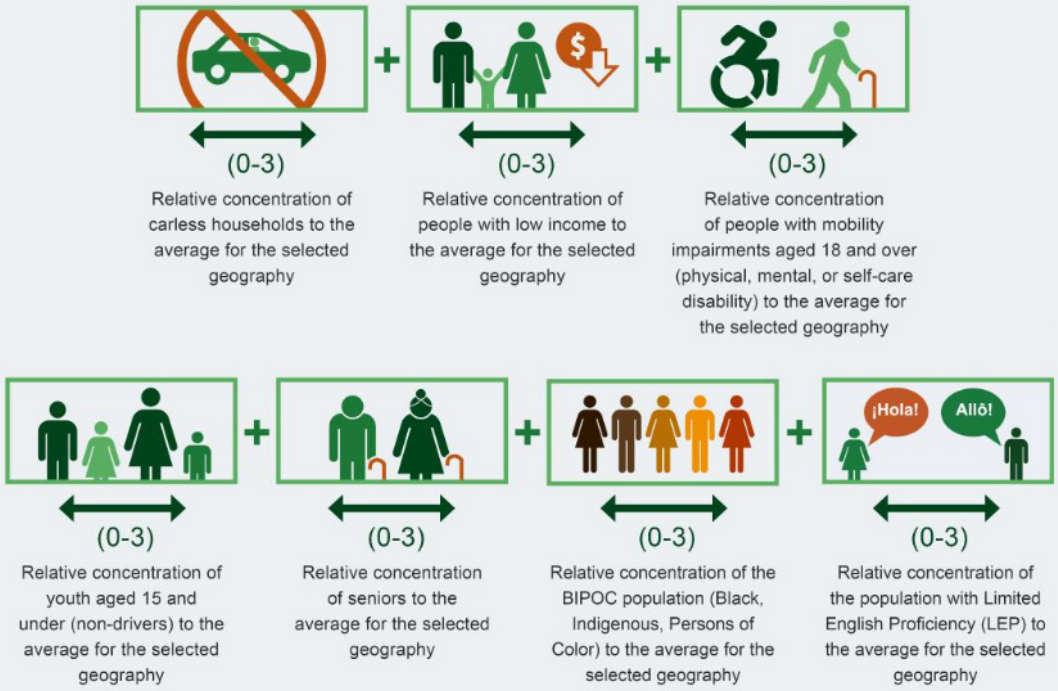
Data Source: U.S. Census 2018-2022 American Community Survey 5-Year Estimates

Special Populations & User Groups

Addressing equity in transportation requires consideration of special populations and user groups. Interpreting census data at a broad geographic scale can be challenging and may lead to inaccuracies and limited insights into relative equity needs. Engaging with local stakeholders provides insights into areas that have experienced under-investment or disinvestment in pedestrian and bicycle infrastructure and can help make the case for one greenway route alternative over another.

To measure equity, the Project Team used NCDOT's statewide environmental justice map, known as the Transportation Disadvantage Index (TDI). Using the scores from the TDI, the Project Team assigned equity scores ranging from 1 to 5 points based on a relative comparison of an area's TDI score. The team then adjusted (increased) project scores in some areas based on local knowledge of equity need. **Map 4 - NCDOT Transportation Disadvantage Index (TDI)** shows the TDI scoring for this project's study area. A higher score indicates an area of greater relative disadvantage.

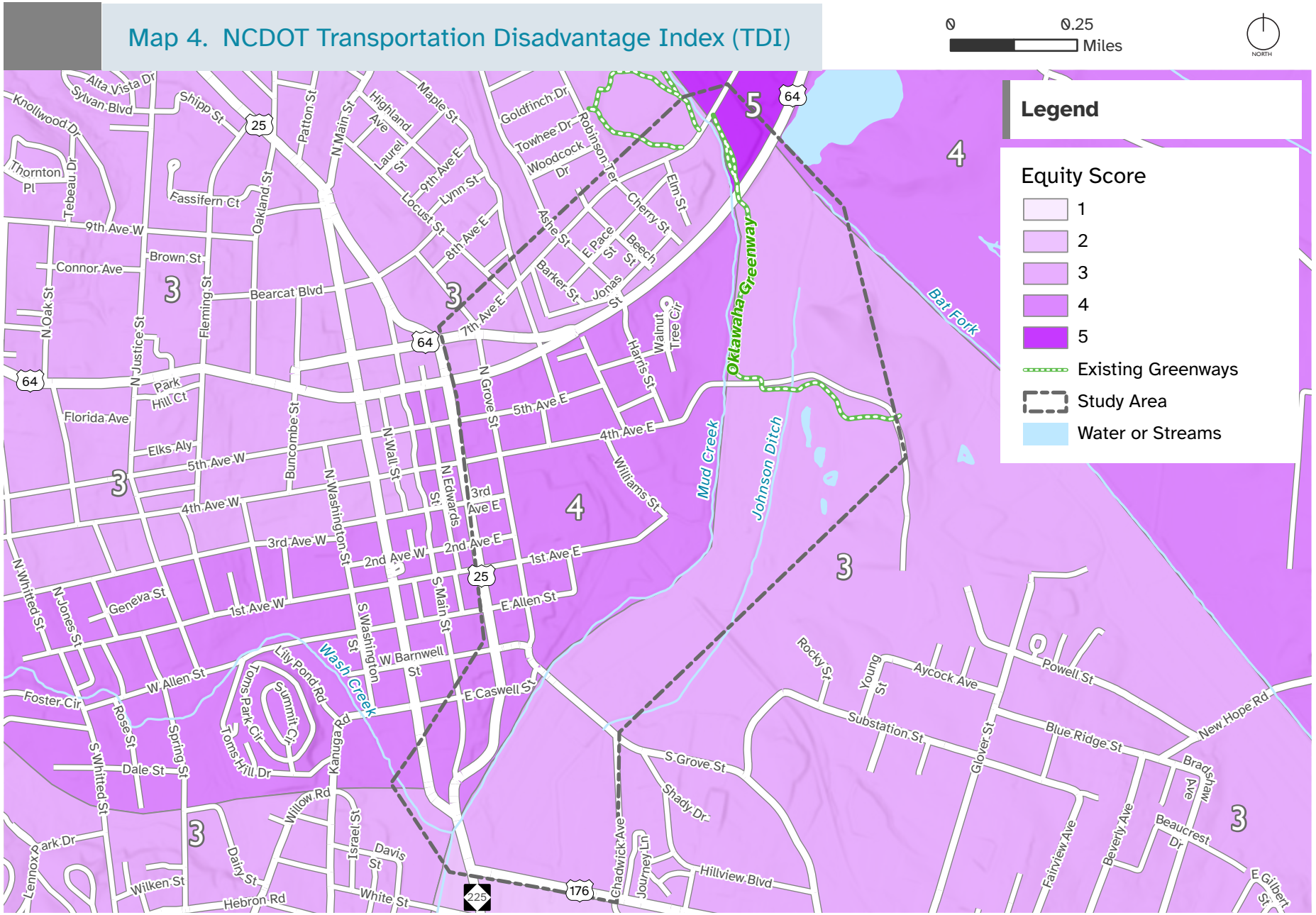
Image 5. NCDOT Transportation Disadvantage Index (TDI) Scoring Metrics



Source: NCDOT

NCDOT uses a range of factors in its Transportation Disadvantage Index (TDI) scoring that together help indicate areas with a higher relative concentration of people who might face mobility challenges and could benefit from improved transportation options.

Map 4. NCDOT Transportation Disadvantage Index (TDI)



Employment Information

The U.S. Census Bureau's web-based mapping and reporting application, OnTheMap, was used to retrieve 2021 employment information for a two-mile radius from the study area. **Map 5 - Employment Density & Inflow/Outflow Analysis** illustrates both employment density as points and inflow/outflow analysis, which indicates how people are moving about to get to their job. The employment density points show the greater density of employment around downtown and the hospital, as well as outlying commercial areas. This data is further expanded in the inflow/outflow analysis: more people travel to the study area to work than those that live in the study area. In total 11,272 people are employed in the study area but live outside. The greenway's proximity to employers offers benefits such as the need for fewer employee parking locations.

Image 6. Downtown Hendersonville

Source: Visit Hendersonville

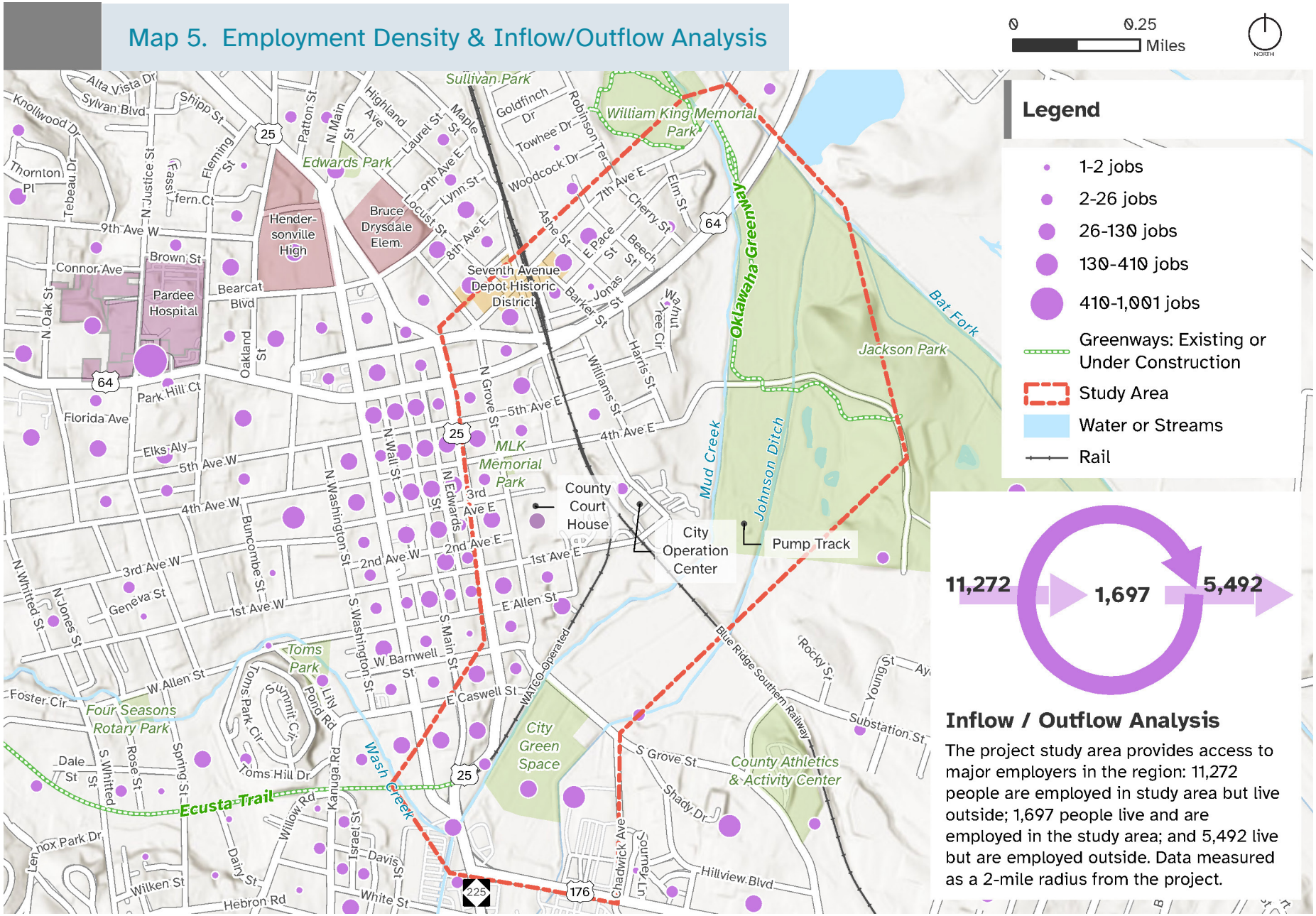
Hendersonville's downtown is a thriving business sector with numerous local businesses and employment opportunities.

Image 7. Henderson County Courthouse and Sheriff's Department

Source: William Crumpler

The nearby Henderson County Courthouse, Sheriff's Department, and Detention Center are major employers in the area. This greenway connection would directly affect people who work here, giving people new opportunities to commute on foot or by bicycle.

Map 5. Employment Density & Inflow/Outflow Analysis



NATURAL ENVIRONMENT CONSIDERATIONS

Much of the natural land encompassed by this project study area has been shaped by humans – hillsides and slopes have been graded, streams piped and relocated, and rail and roads built. As this project looks to further shape the natural environment, it is important to consider the following factors.

Flooding

Map 6 - Flood Map illustrates the Federal Emergency Management Agency (FEMA) designated regulatory floodway, 100-year floodplain, and 500-year floodplain in the study area:

- The regulatory floodway is the area adjoining a waterway that will allow floodwaters to pass without increasing the water surface elevation by more than one foot. This is the first land to flood during heavy rains.
- The 100-year floodplain is also known as the 1% chance of annual flood, meaning that the land has a 1% chance of being flooded in any given year during a 100-year storm.
- The 500-year floodplain designation means that the land has a 0.2% chance of being flooded in any given year during a 500-year storm.

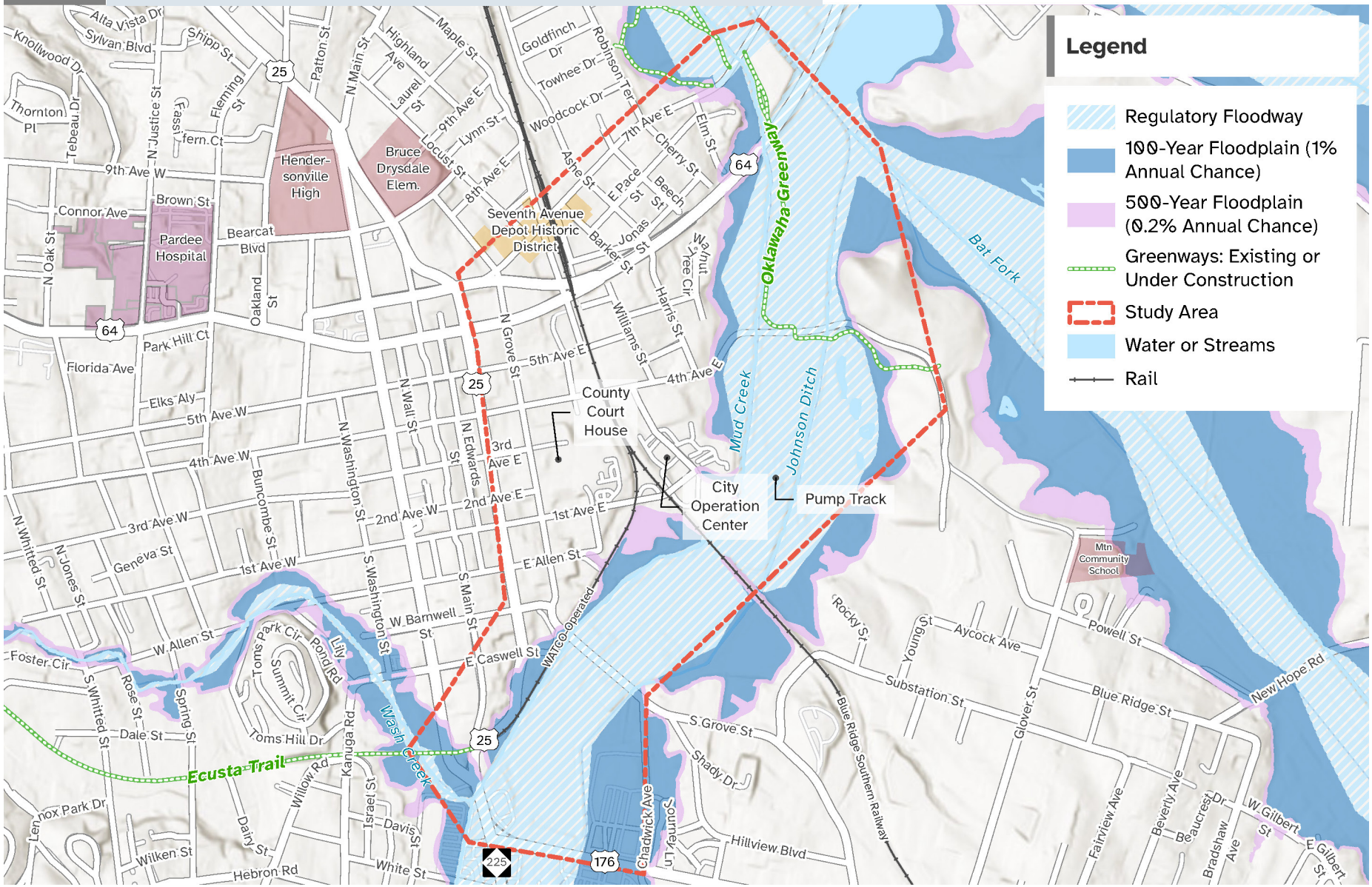
Almost half of the study area is within the floodway and floodplain, including a few roads, structures, Jackson Park, and the Oklawaha Greenway. When water flows over the banks of the Mud Creek and Johnson Ditch, these areas are periodically inundated by flood waters. Any development, even recreational greenways, can impact the ability of the floodplain to store and slow floods, so it will be critical to design a greenway (and any amenities) with stormwater best management practices and to anticipate regular maintenance to ensure long-term function of the greenway infrastructure. The City is leading a floodplain restoration project for portions of Mud Creek and Johnson's Ditch. The project is aimed at allowing flood storage on key parcels. The consultant team developing the flood model worked in close coordination with the Above the Mud Greenway Feasibility Study team to ensure a greenway could be built on the high ground on these City-owned parcels.

Image 8. Mud Creek

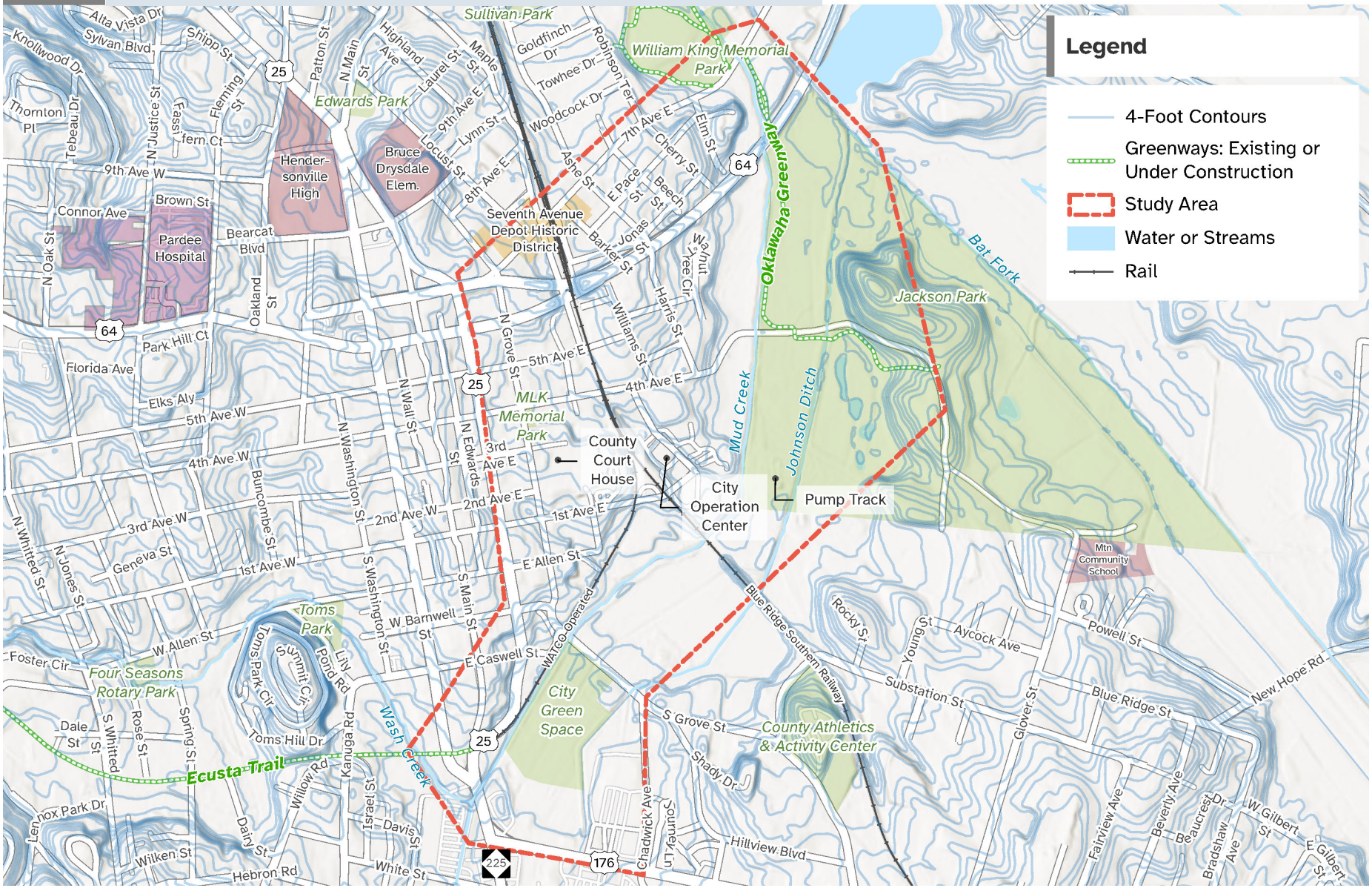
Source: TPD

Since portions of the greenway will be in the floodway to connect to Jackson Park, the greenway will need to be designed to handle periodic flooding.

Map 6. Flood Map



Map 7. Topography (4-Foot Contours)



Topography

NC One Map data was consulted for 4-foot contour data for the study area, as shown in **Map 7 - Topography (4-Foot Contours)**. Where these elevation lines are spaced far apart, it is clear where the floodplain and waterways exist; where the lines are close together, the land outside of the floodplain is elevated with slopes. Additionally, the rail structures and roadways are elevated as are some buildings (e.g., County Courthouse). Working within the constraints of the topography will require planning and engineering to ensure a direct and accessible greenway connection.

Image 9. Study Area Flat Floodplain

Source: TPD

Threatened or Endangered Species

The project team researched rare and endangered species data for the study area from NCDOT's ATLAS, a GIS-model that contains data that could impact project development. From this analysis, only one known occurrence of a rare or endangered species was found in the study area: the Rusty-Patched Bumble Bee (*bombus affinis*), which is considered endangered.

Image 10. The Rusty-Patched Bumble Bee

Source: Heather Holm

The 2021 Mud Creek Interceptor (a City-led sewer project) Habitat Review lists 10 threatened or endangered species as potentially occurring in the study area of the proposed sewer project. Some of the species identified in the interceptor study may also apply to this project's study area, which is smaller. The report concluded that the installation of the Mud Creek Sewer Interceptor is not likely to adversely affect protected species listed as potentially occurring within the boundary. Further investigation of species and habitat may be needed during the design and construction phase of this project.

Image 11. 2021 Mud Creek Interceptor Habitat Review Species List

Common Name	Scientific Name	Status
Appalachian elktoe	*Alasmidonta raveneliana*	Endangered
Bald Eagle	*Heliaeetus leucocephalus*	BGPA[1]
Bog turtle	*Glyptemys muhlenbergii*	Threatened (S/A)[2]
Bunched arrowhead	*Sagittaria fasciculata*	Endangered
Gray bat	*Myotis grisescens*	Endangered
Mountain sweet pitcherplant	*Sarracenia rubra ssp. jonesii*	Endangered
Northern long-eared bat	*Myotis septentrionalis*	Threatened
Small whorled pogonia	*Isotria medeoloides*	Threatened
Swamp pink	*Helonia bullata*	Threatened
White irisette	*Sisyrinchium dichotomum*	Endangered

[1] Protected by the Bald and Golden Eagle Protection Act.
[2] Threatened due to similar appearance; not subject to Section 7 consultation.

Source: City of Hendersonville

HUMAN ENVIRONMENT CONSIDERATIONS

The study area is in downtown Hendersonville where the human footprint is pronounced. The following aspects explore considerations of the human environment:

- Land parcel ownership
- Existing and planned transportation network
- Points of interest
- Historic resources
- Brownfields
- Annual Average Daily Traffic (AADT)
- Posted speed limit
- Pedestrian crash history and corridor safety scores

Land Parcel Ownership

Henderson County parcel data provides a record of land ownership, which is helpful to consider as the greenway will traverse through publicly- and privately-owned property. **Map 8 - Parcel Ownership** illustrates the land that is either City- or County-owned, which is much of the land found in the gap between where the Ecusta Trail ends and the Oklawaha Greenway begins. Having these large, publicly owned parcels is favorable towards the development of a greenway.

Existing Network

Being in downtown Hendersonville, the study area contains an existing network of sidewalks, traffic signals, bus routes, and bus stops as illustrated in **Map 9 - Existing Sidewalks, Greenways, & Traffic Signals** and **Map 10 - Apple Country Public Transit Bus Routes & Stops**.

- The existing sidewalks are on both NCDOT- and City-maintained streets, and while the sidewalk network in downtown and west of the study area is more comprehensive, the sidewalks become sparser in the Above the Mud study area.
- The traffic signals are clustered around downtown streets where traffic volume is higher; the traffic control at most intersections in the study area is either non-signalized or the road is grade-separated and does not require a traffic signal.
- The transit system, Apple Country Transit, is operated by Henderson County and the study area includes three routes and various bus stops.

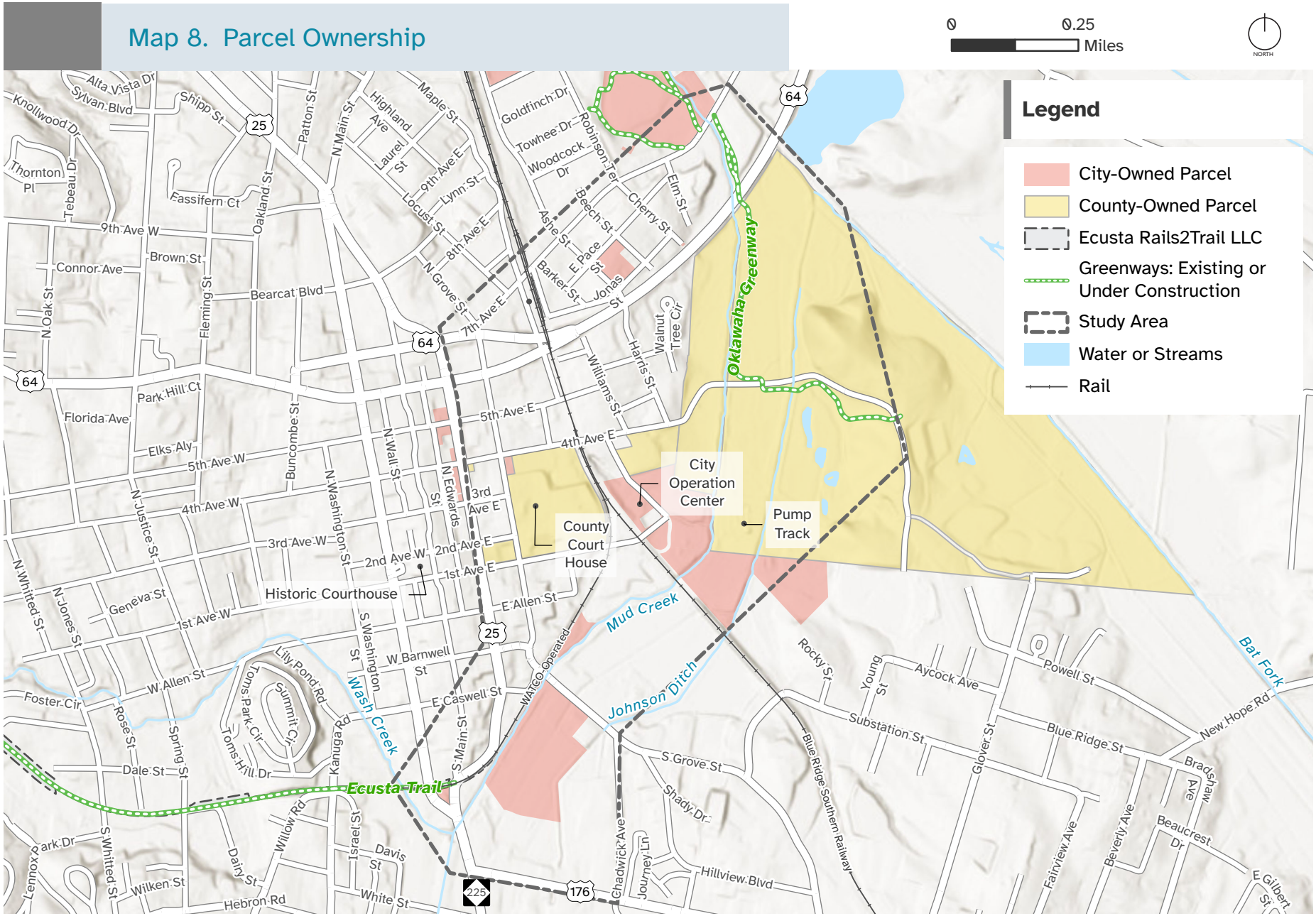
Image 12. Lack of Sidewalk on South King Street

Source: TPD

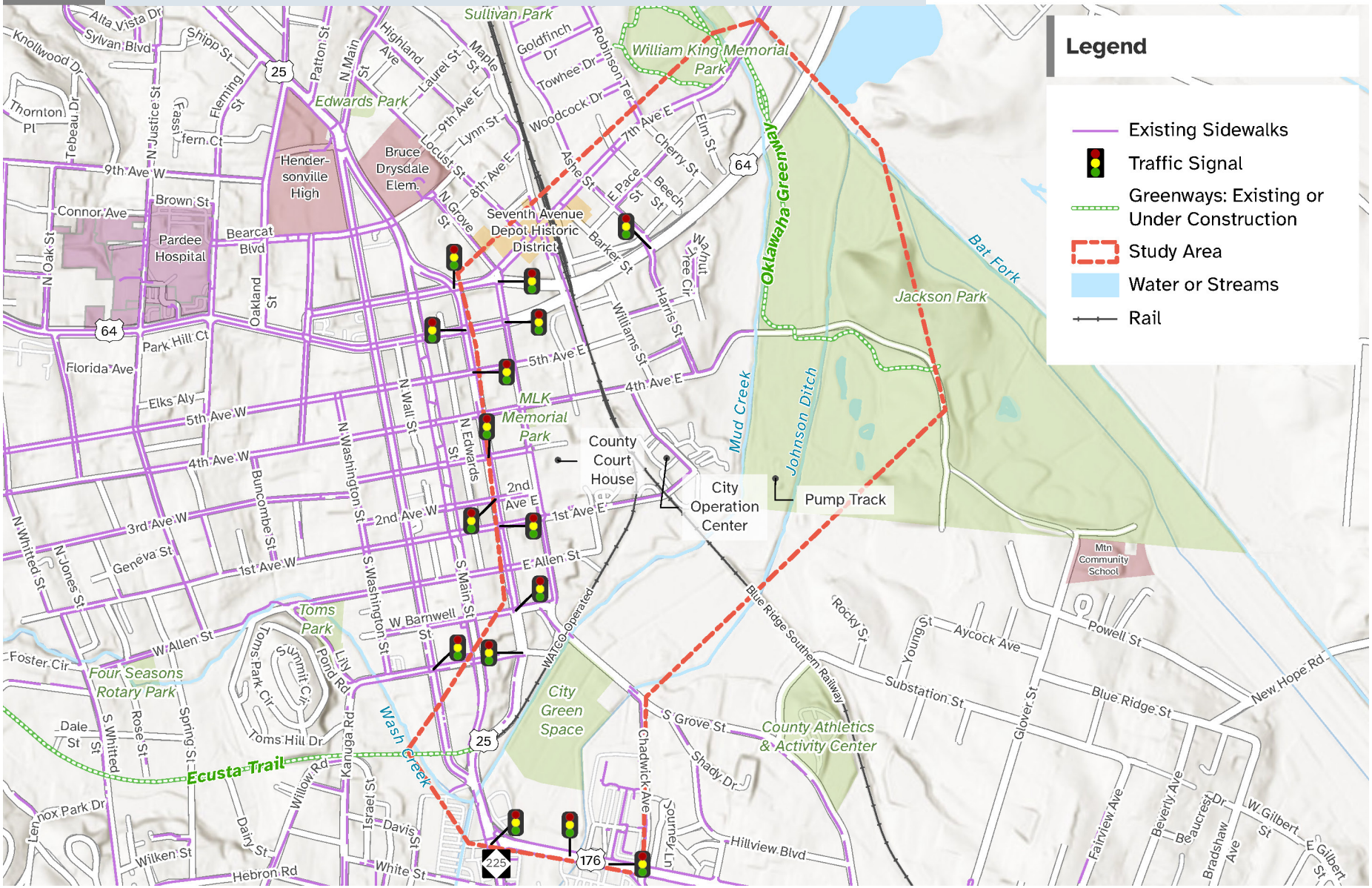
Image 13. 4th Avenue Shared Lane Markings

Source: TPD

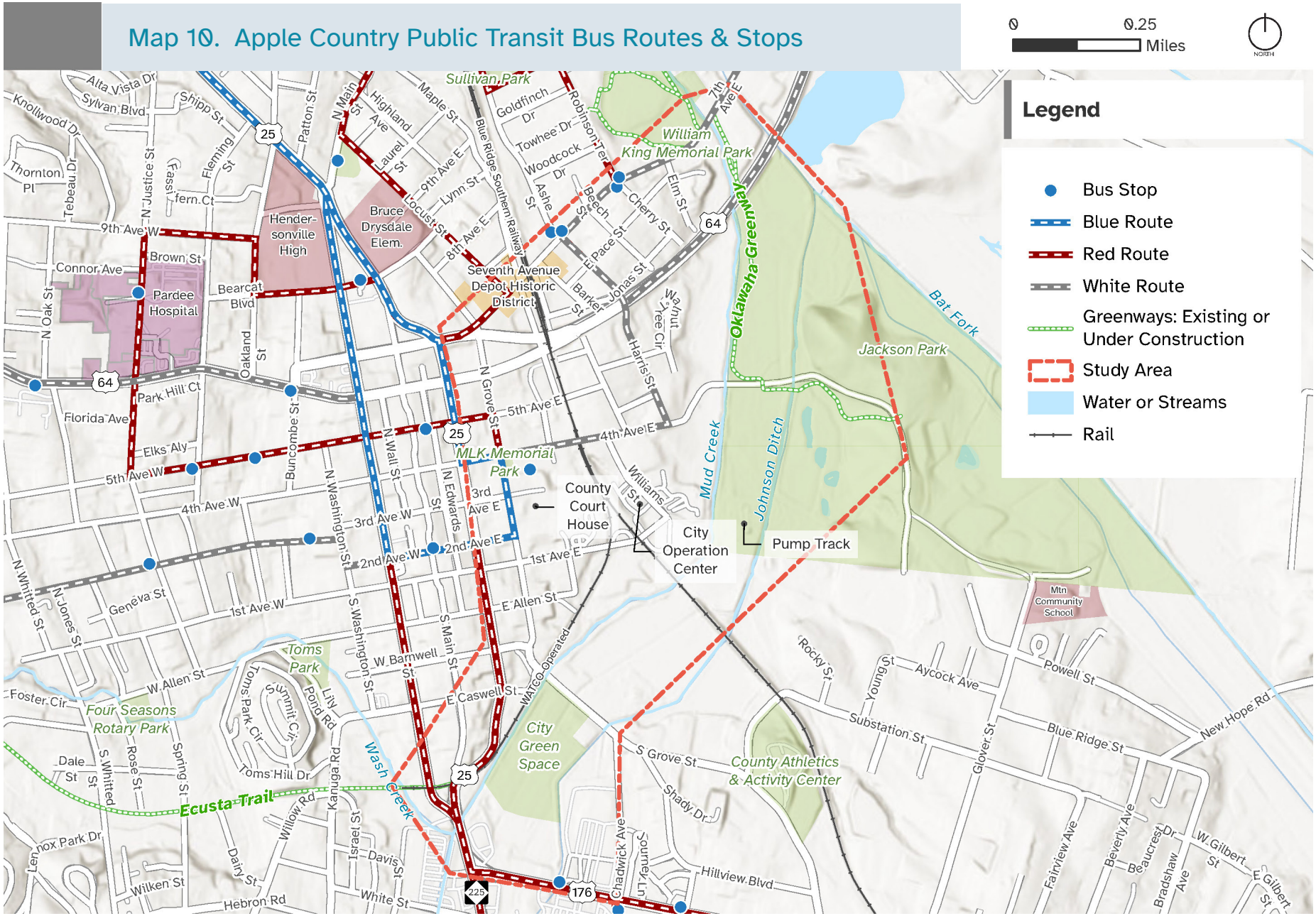
Map 8. Parcel Ownership



Map 9. Existing Sidewalks, Greenways, & Traffic Signals



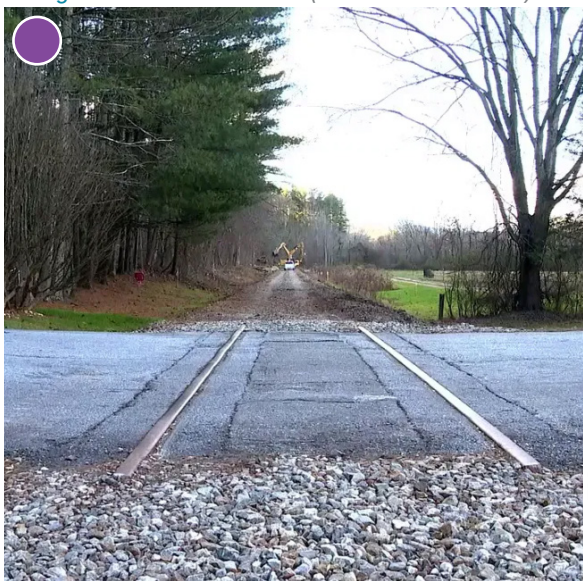
Map 10. Apple Country Public Transit Bus Routes & Stops



Railroad Corridors

The Above the Mud study area has rail corridors that present both opportunities and challenges for greenway development. The ownership and current operational status (active or inactive) of the rail lines are integral to alignment evaluation. To aid in understanding the multiple rail lines that traverse the study area, and how the proposed alignments interact with the rail lines, these have been given informal names for the purposes of this project. **Map 11 - Rail Corridors** illustrates these rail lines and their informal names, which are used throughout this document.

Image 14. The Ecusta Trail (Under Construction)



Source: TPD

Image 15. The Ecusta Line

Source: TPD

Image 16. The Ecusta Line Joining The Zirconia Line

Source: Google

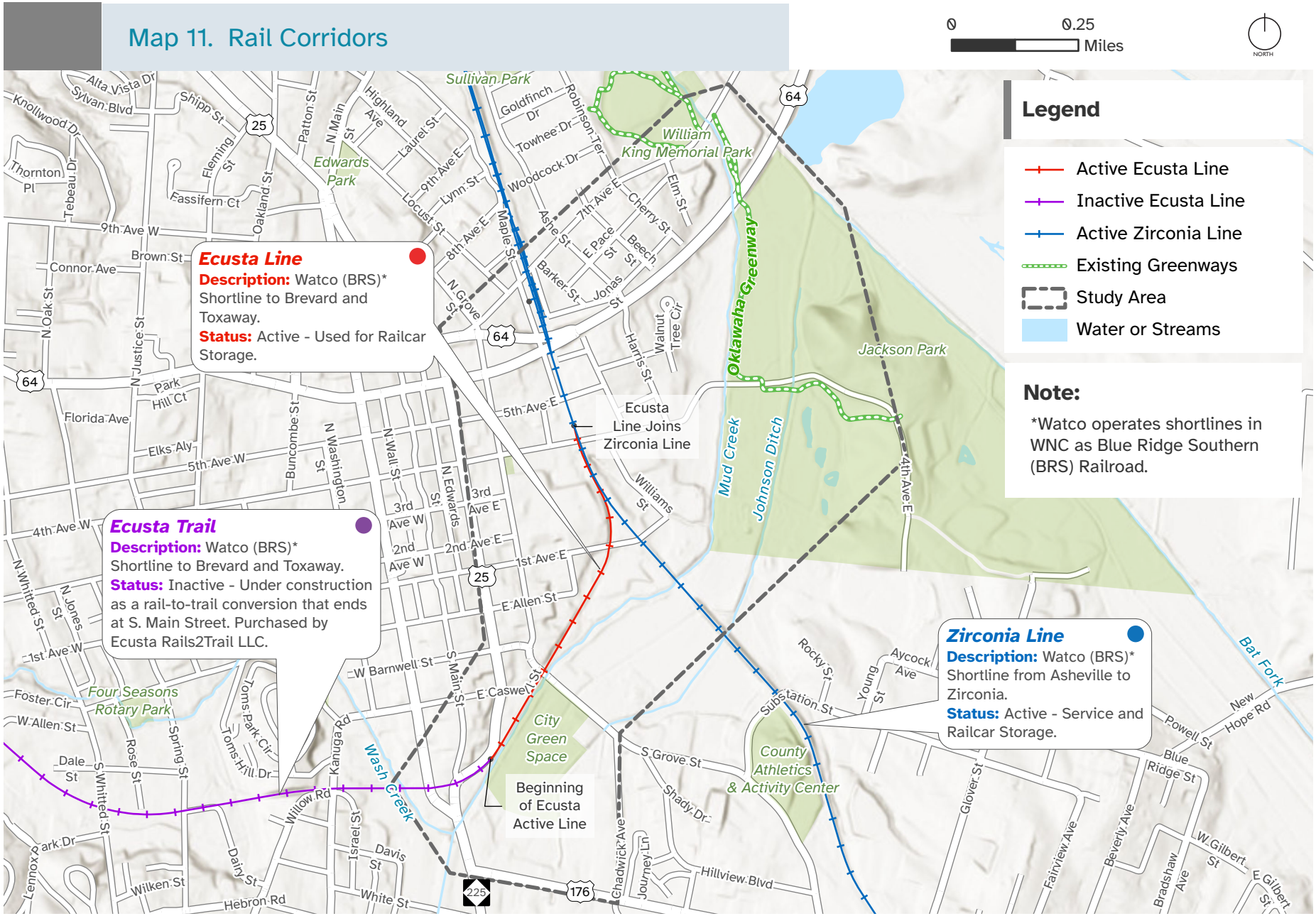
Image 17. The Zirconia Line (North of 5th Avenue)

Source: TPD

Image 18. The Zirconia Line (Near the Dog Park)

Source: TPD

Map 11. Rail Corridors



Planned & Programmed Projects

The previous chapter and Appendix describe the many planning projects that have come before this study. A successful plan incorporates institutional knowledge and avoids duplicating previous project and planning efforts. Many of the projects that came before this planning effort are illustrated in both **Map 12 - Planned Projects (Walk Hendo Pedestrian Plan)** and **Map 13 - Planned Projects (NCDOT HMIP & STIP)**, which together illustrate the linear projects from the State Transportation Improvement Program (STIP), the State Highway Maintenance Improvement Program (HMIP), and the 2023 *Walk Hendo* (WH) Pedestrian Plan.

Within the study area, the STIP projects include:

- Sidewalks on Grove Street from Barnwell Street to US 176 (EB-5963)
- South Main Street widening from US 176 to South King Street (U-6049)
- Realignment and extension of White Street (U-5886)
- North Grove Street and 7th Avenue upgrades (HS-2014N)

The HMIP is the state's plan for resurfacing and rehabilitating pavement. The most recent publicly available data for the HMIP is for 2022-2026. Coordinating with this plan offers opportunities to upgrade pedestrian and bicycle facilities. Within the study area, the HMIP indicates that South King Street will undergo resurfacing soon. The City is also leading a streetscape project along 7th Avenue, which began construction in February 2024. The project includes investment in pedestrian, water, sewer and stormwater infrastructure, lighting, and landscaping. The project is anticipated to finish in the fall of 2024.

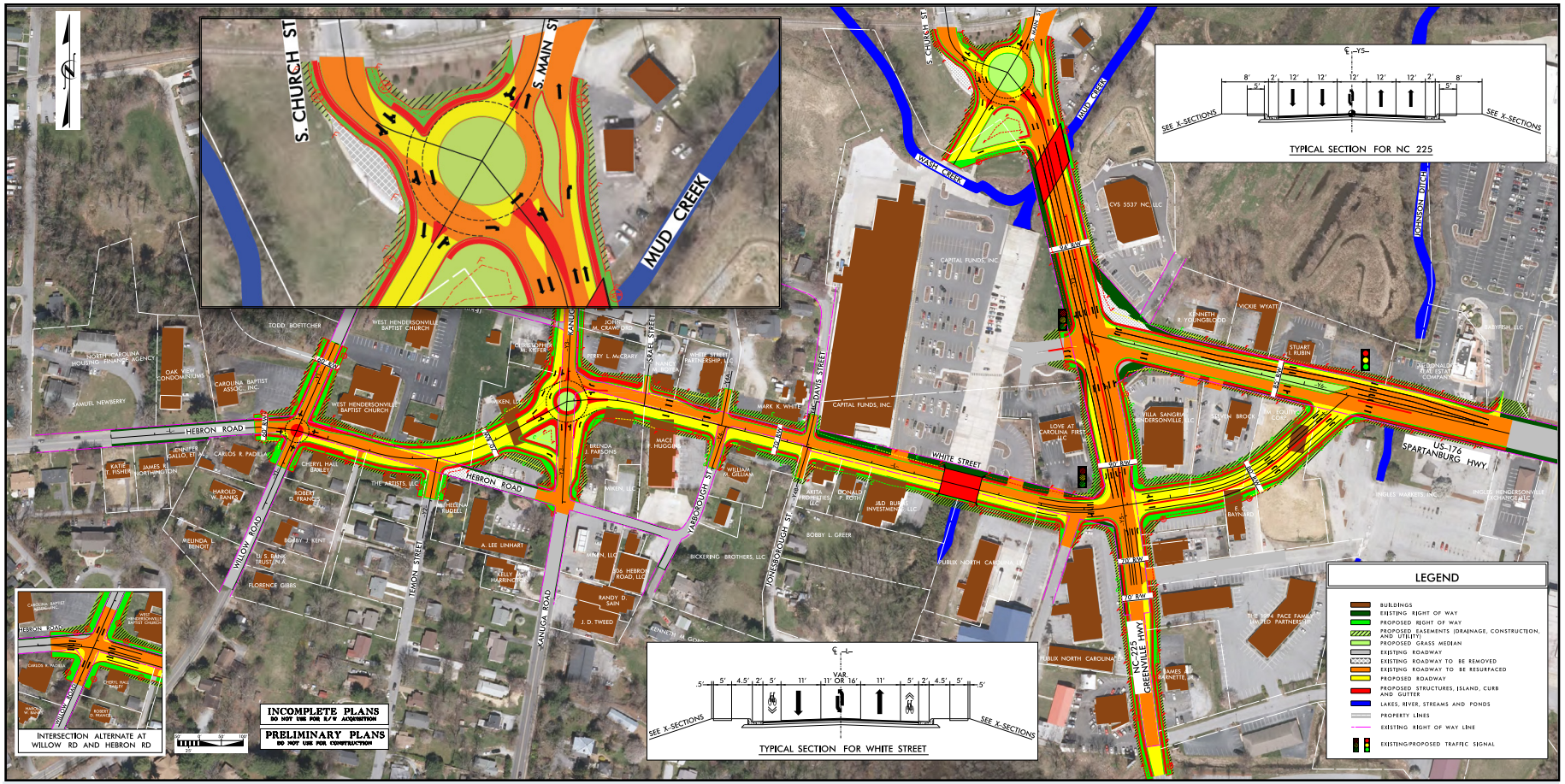
Finally, while the *Walk Hendo* plan focused solely on sidewalk improvements and corridor upgrades. The plan recommends several sidewalk segments that will connect the study area to downtown and nearby destinations. The *Walk Hendo* priority projects within the study area include North/South King Street sidewalks and South Main Street sidewalks.

Image 19. 7th Avenue Streetscape Rendering

Source: City of Hendersonville

The 7th Ave Historic District is becoming more of a destination as new businesses locate in the area. Walkability is important for its continued success, and having a greenway connection will further improve access for residents and visitors. This rendering by Watermark Landscape Architecture shows enhanced crossings.

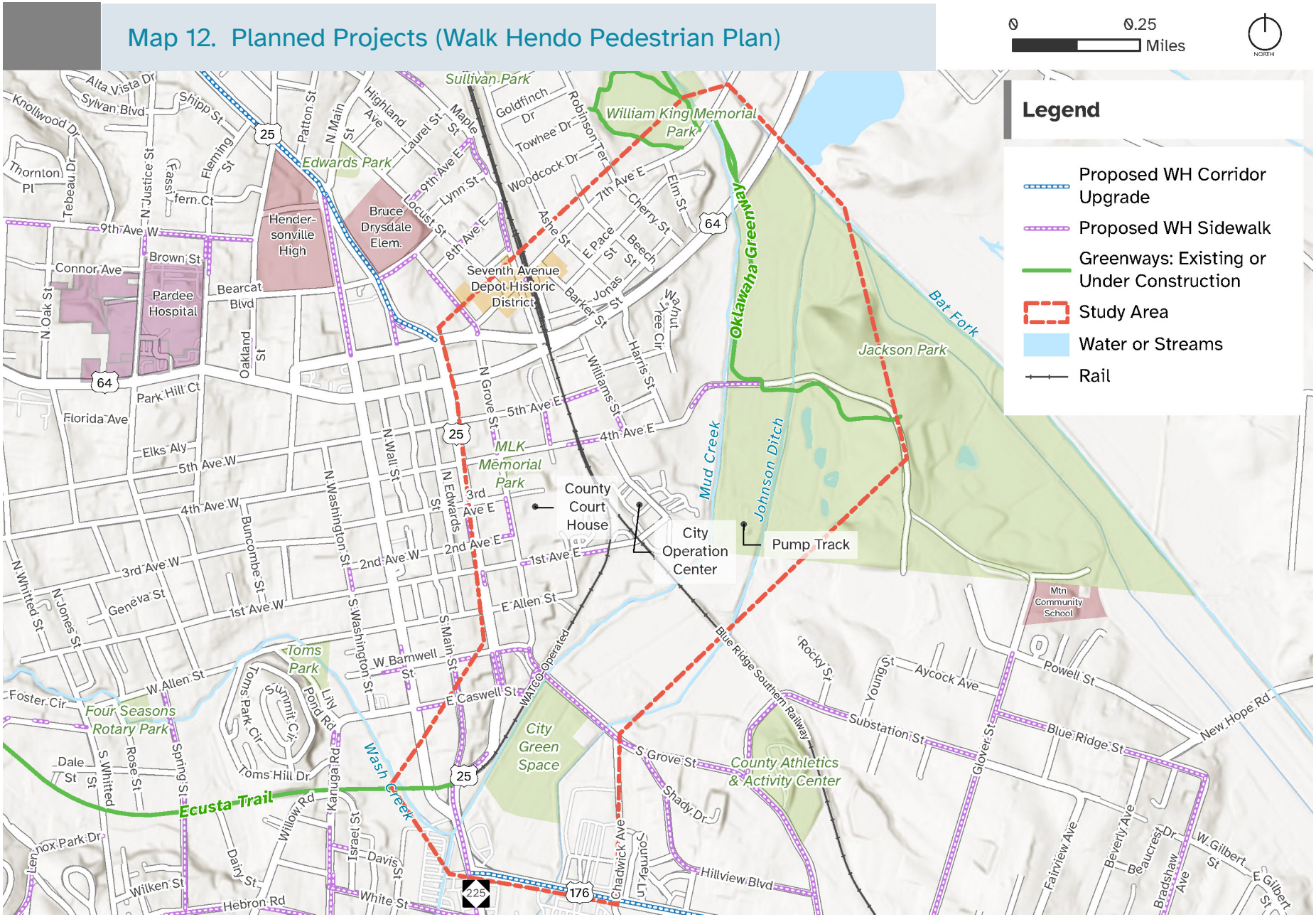
Image 20. Preliminary Map for NCDOT STIP Project U-6049



Source: NCDOT

The North Carolina Department of Transportation (NCDOT) is implementing projects U-6049 and U-5886 to reconfigure several streets in the area south of downtown. These plans include adding roundabouts, sidewalks, and modifying lanes and intersections. Such projects will affect mobility in this area, influencing access to the Ecusta Trail and Above the Mud Greenway. For instance, the planned roundabout at the intersection of South Main Street, South Church Street, and South King Street could enhance access to nearby greenways and overall bicycle/pedestrian mobility by reducing vehicle speeds and creating safer crossing points. Compared to traditional intersections, roundabouts can decrease the likelihood and severity of accidents, potentially providing a more secure environment for pedestrians and cyclists.

Map 12. Planned Projects (Walk Hendo Pedestrian Plan)



Map 13. Planned Projects (NCDOT HMIP & STIP)

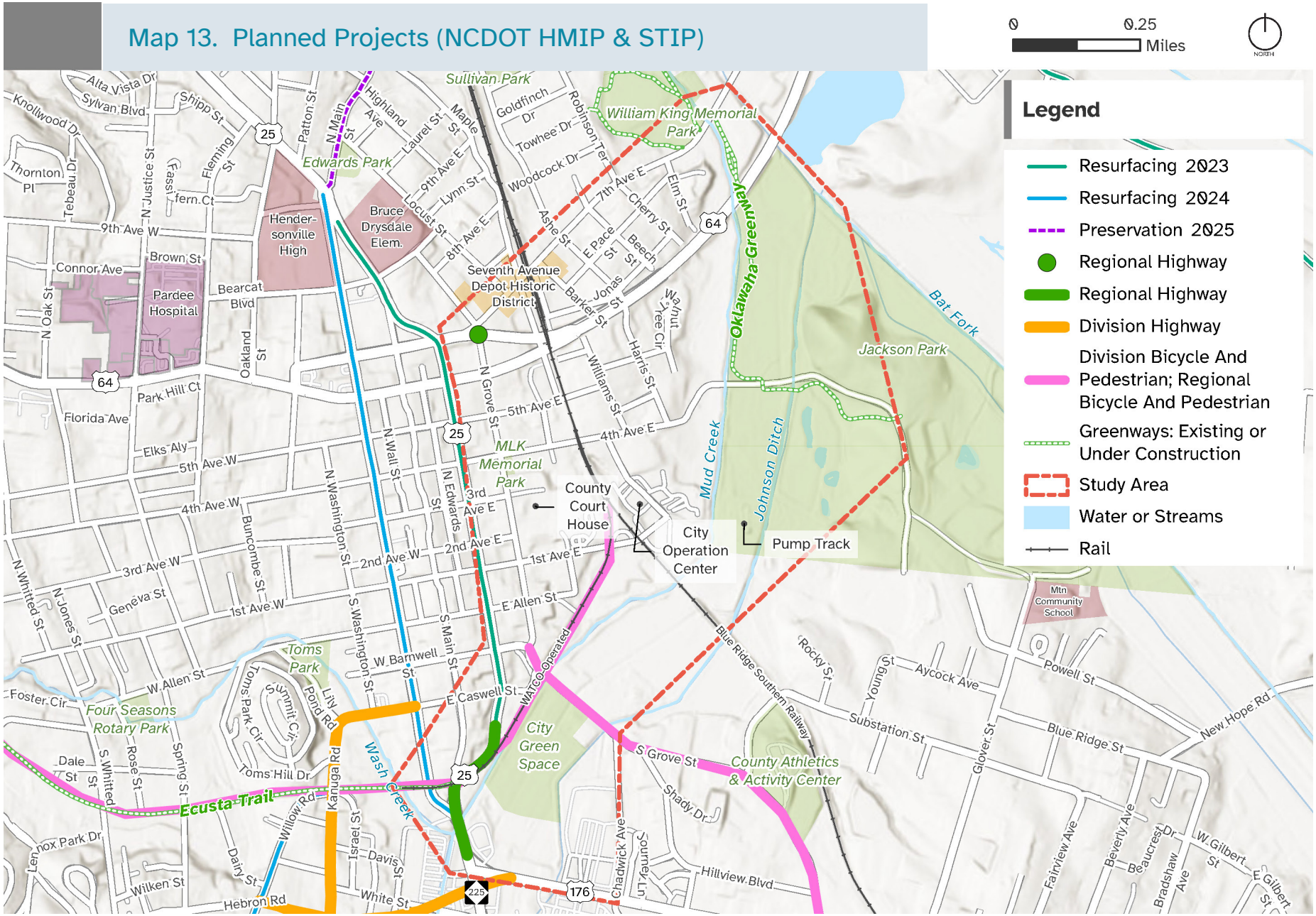
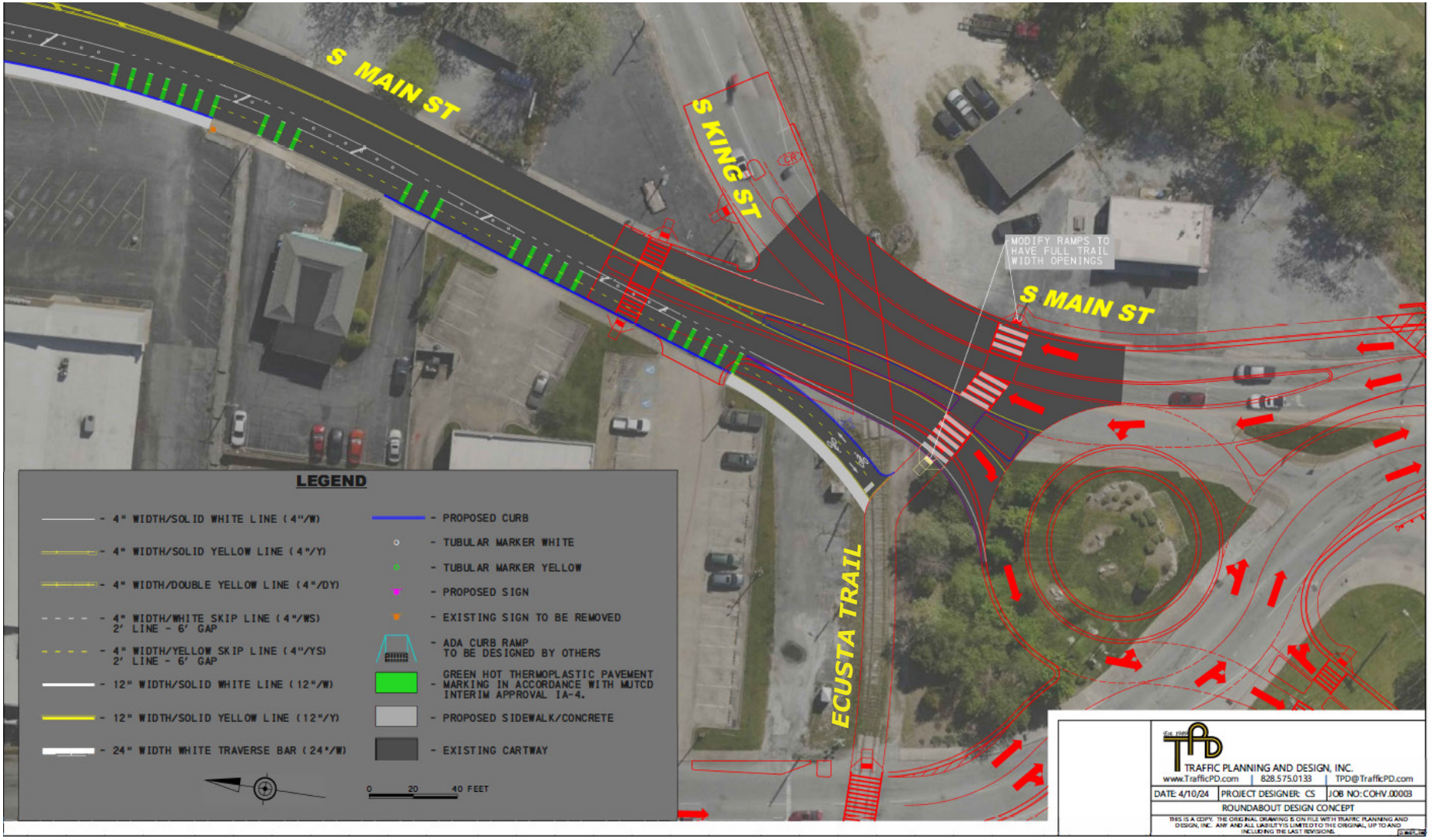


Image 21. South Main Street Before & After Rendering (Walk Hendo)

The City's pedestrian plan, Walk Hendo, *included recommendations specifically to connect people to the Ecusta Trail. The plan makes the case that new greenway developments are good for residents' day-to-day life, while also helping to support local businesses and spur recreational tourism.*

Source: City of Hendersonville

Image 22. South Main Street Bicycle Lane Ecusta Connection (Preliminary Concept)



Source: City of Hendersonville

The City is moving forward with a plan to re-stripe South Main Street with new bicycle lanes and reconfigured parking. The project will be completed in conjunction with paving improvements to provide a safer experience for Ecusta Trail users to access downtown and the Henderson County Visitor Center. This highlights the City's intent to make sure that people can access these greenways using a dedicated facility and that they are viable transportation corridors for the community. The final design will be incorporated with NCDOT roundabout design.

Points of Interest

The study area is located adjacent to downtown; as such, points of interest are abundant. Within the study area, destinations are largely defined by government services and parks as shown in **Map 14 - Points of Interest**. Jackson Park is a popular point of interest with ballfields, a bicycle pump track, the Oklawaha Greenway, a dog park, and more. The Seventh Avenue Historic District, with the Railroad Depot, is also within the study area. Government service buildings include the Sheriff's Office, City Operation Center, County Court House, and Henderson County Offices. Harris Street Housing Authority offers affordable housing, and the Latino Advocacy Coalition is a community center by and for the Latinx community. Public and private schools are in or near the study area including Hendersonville High School, the Mountain Community School, Bruce Drysdale Elementary School, and Faith-Covenant Christian Academy. These destinations would all be well-served by a greenway nearby, where people may be able to walk to go shopping, to go to school, to receive services, or to go to work.

Image 23. Seventh Avenue Historic District Farmers Market

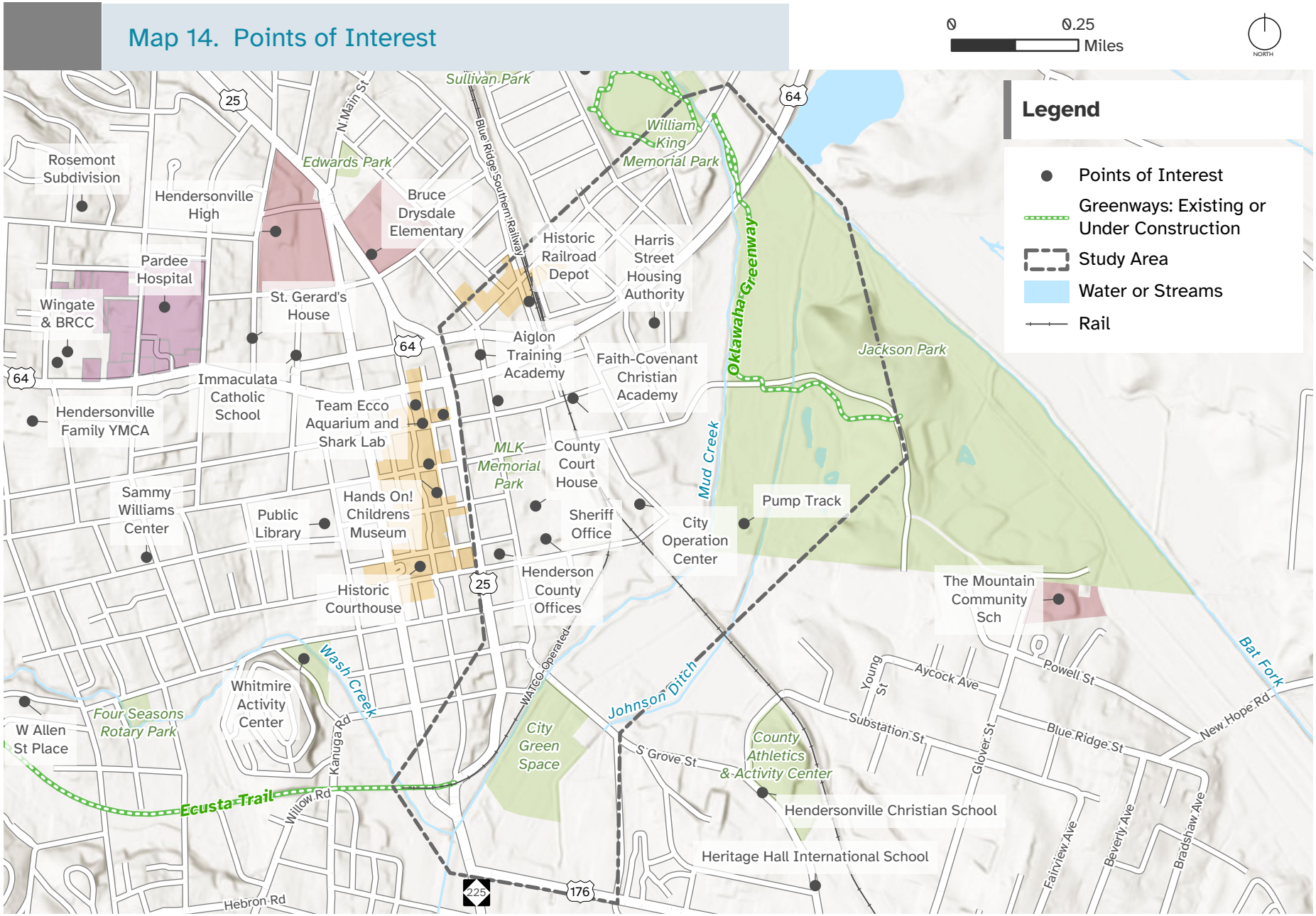
Source: City of Hendersonville

Image 24. Jackson Park Sign

Source: TPD

Not only will the Above the Mud Greenway connect two key greenway systems, it will also link community destinations.

Map 14. Points of Interest



Data Source: NC One Map

Historic Resources

The North Carolina State Historic Preservation Office (SHPO) houses research reports, National Register nominations, and other materials related to the statewide survey of historically significant sites, buildings, and districts. By cataloging a wide spectrum of structures and places, SHPO creates a comprehensive inventory that reflects North Carolina's diverse history and development. **Map 15 - Historic Resources** displays a variety of historic properties and buildings in the study area, including some, like the Seventh Avenue Depot Historic District and the Grey Hosiery Mill, that are on the National Register of Historic Places. Other properties in the study area are determined eligible for National Register status, including the Railroad Depot, which was registered by the North Carolina Historical Society as a Historical Landmark.

Listing a property in the National Register imposes no obligations or restrictions on a private owner using their own resources to maintain or alter the property. Over the years, various federal incentives have been introduced to support private preservation efforts. A private owner of a National Register property is required to adhere to federal preservation standards only if federal funding or licensing is used for work on the property, or if the owner seeks and receives a special benefit from the National Register designation, such as a grant or tax credit.

Greenway projects are certainly compatible with historic areas, but must balance providing a public recreational amenity with respect for the historical significance of the area. By integrating interpretive signage, markers, and public art, greenway projects can offer visitors a meaningful experience that celebrates both the natural beauty and the rich history of the area, fostering a deeper appreciation for the community and its heritage.

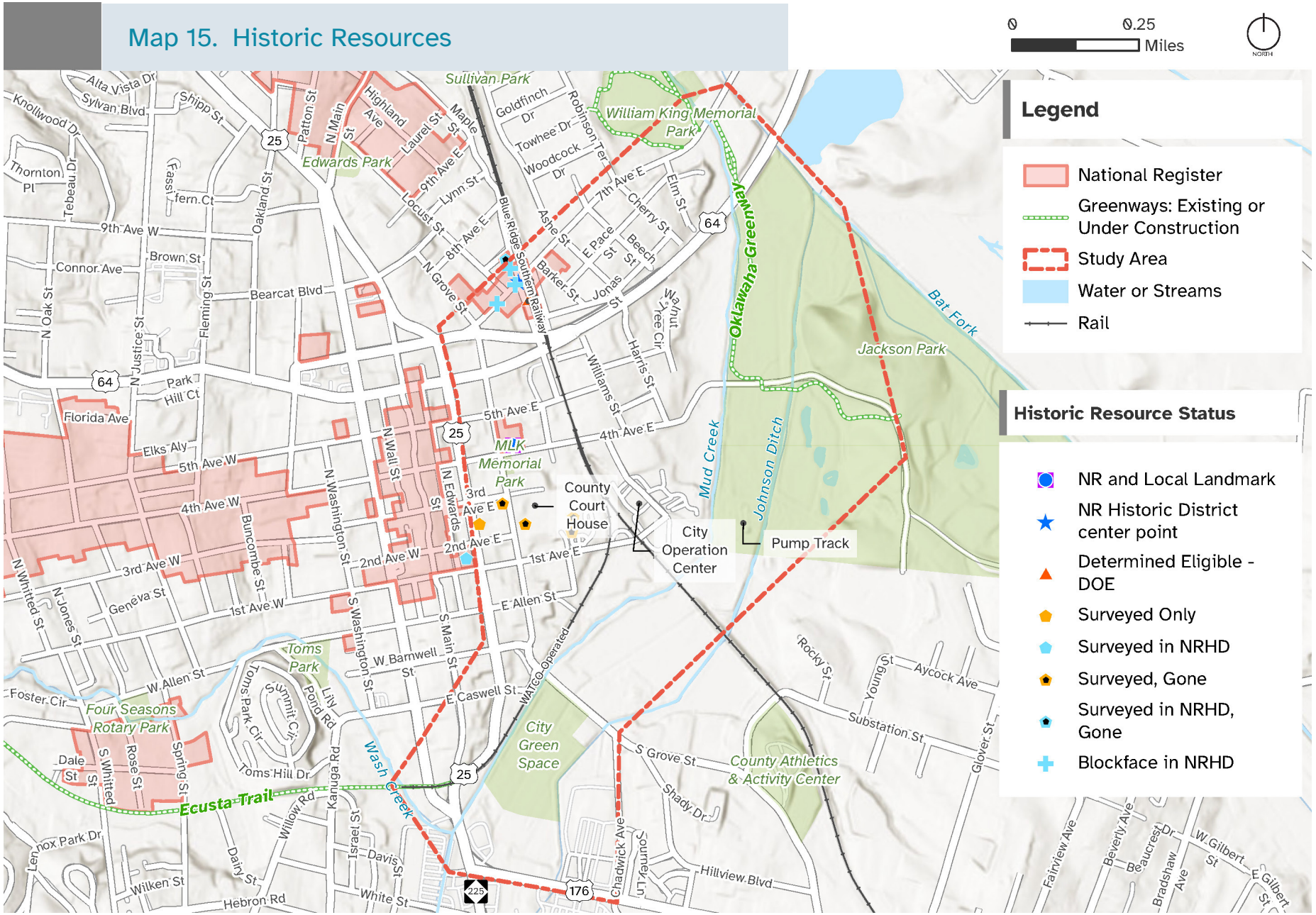
Image 25. The Historic Railroad Depot

Source: City of Hendersonville

Image 26. The Historic Grey Hosiery Mill in 1921

Source: Hendeson County Genealogical & Historical Society

Map 15. Historic Resources



Brownfields

Planning a greenway near a brownfield or existing industrial site requires addressing several potential pitfalls to ensure the success and safety of the project. These sites may retain hazardous materials or pollutants from past activities, posing environmental risks to both users and the surrounding area. The lasting ecological impacts stemming from years of polluting land uses within the study area may include soil contamination, water pollution, habitat degradation, and negative effects on local biodiversity. **Map 16 - Brownfields** illustrates several brownfield sites in the study area, which include:

- Robinson Terrace (location of former dump and coal yard)
- Grey Hosiery Mill (former textile/hosiery mill)
- Auto Undertakers (former used auto parts store)
- Baxter Oil (former oil distribution facility)

Despite these challenges, repurposing these areas into open spaces like greenways offers communities the opportunity to reclaim degraded land, mitigate environmental hazards, and foster sustainable development while providing accessible recreational spaces. For instance, the Grey Hosiery Mill has successfully been redeveloped into affordable apartments. Thoughtful planning preserved much of the material and lines of the original architecture, including coursed stone foundations, exposed heavy timbers, steel beams, weathered brick, wood floors, beaded-board ceilings and clerestory windows.

Through careful planning and cooperation between environmental agencies, local communities, and greenway developers, several strategies can be employed to make the sites compatible with a greenway. This could involve remediation efforts to clean up contaminated soil and water, restoration projects to enhance habitat quality and biodiversity, and implementing sustainable design practices to minimize ongoing ecological impacts.

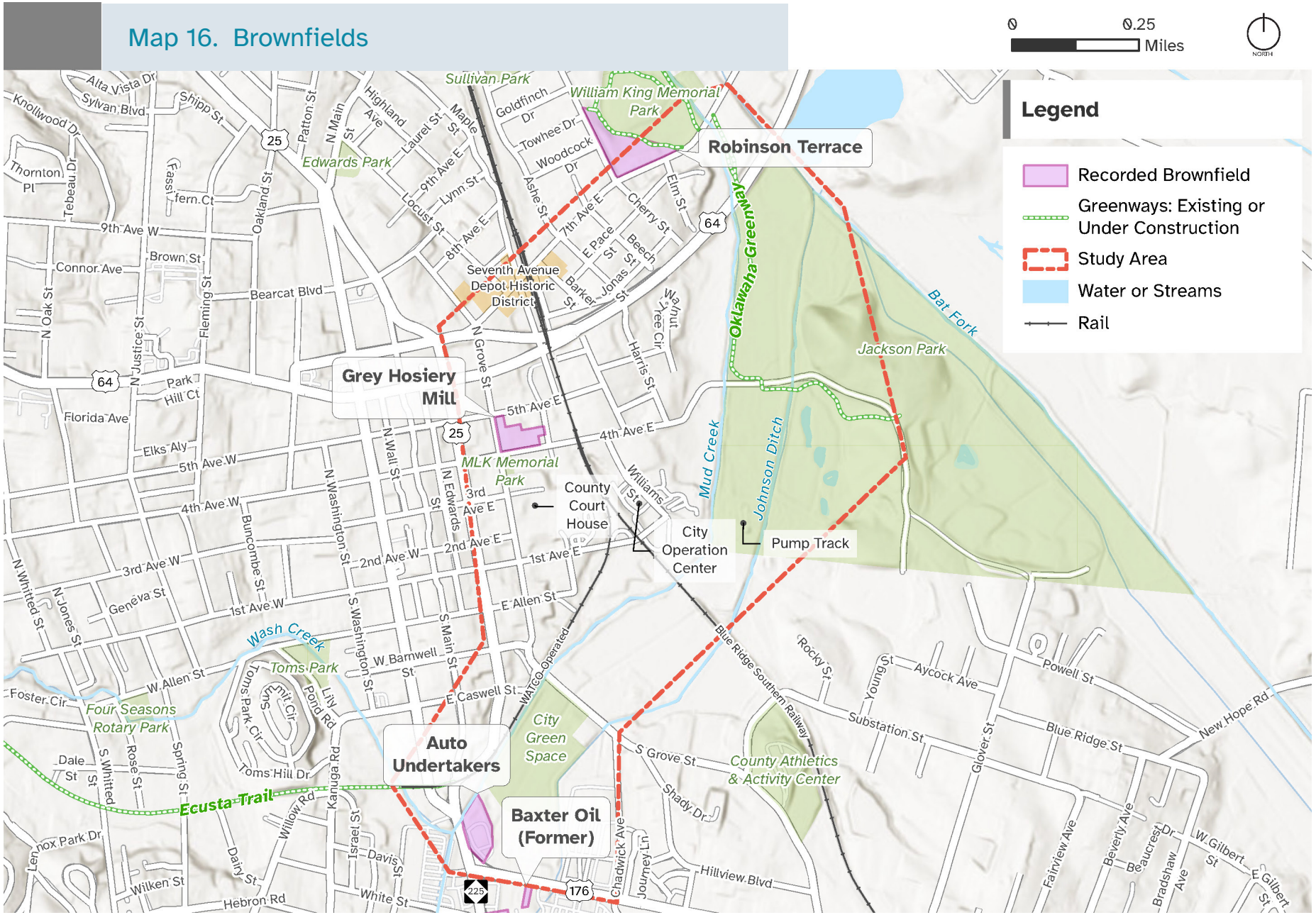
Image 27. Auto Undertakers Site

Source: Google

Image 28. Grey Mill Apartments

Source: ForRent.com

Map 16. Brownfields



Traffic Volumes

Leveraging data from NCDOT (2021), we can understand the traffic volume on key corridors influencing the study area. **Map 17 - Annual Average Daily Traffic (AADT)** illustrates traffic volume on streets that are maintained by NCDOT. The study area is bounded on three sides by high volume roads, including US 176, US 64, and NC 225. US 176 and US 64 carry volumes over 20,000 vehicles per day (vpd). The one-way north-south couplet streets of South Church Street and South King Street also carry high volumes, in the range of 10,500 vpd – 14,000 vpd. Many of these roads are designed to serve high volumes of traffic into and out of the city. Lower-volume streets exist but within or serving residential areas.

While a greenway, such as Above the Mud, is separated from traffic, portions must cross at roadway-grade and people must travel along roadways to arrive on foot or bicycle. As such, it is important to consider how traffic volume may impact the greenway experience and ultimate alignment

Image 29. Traffic on Spartanburg Highway

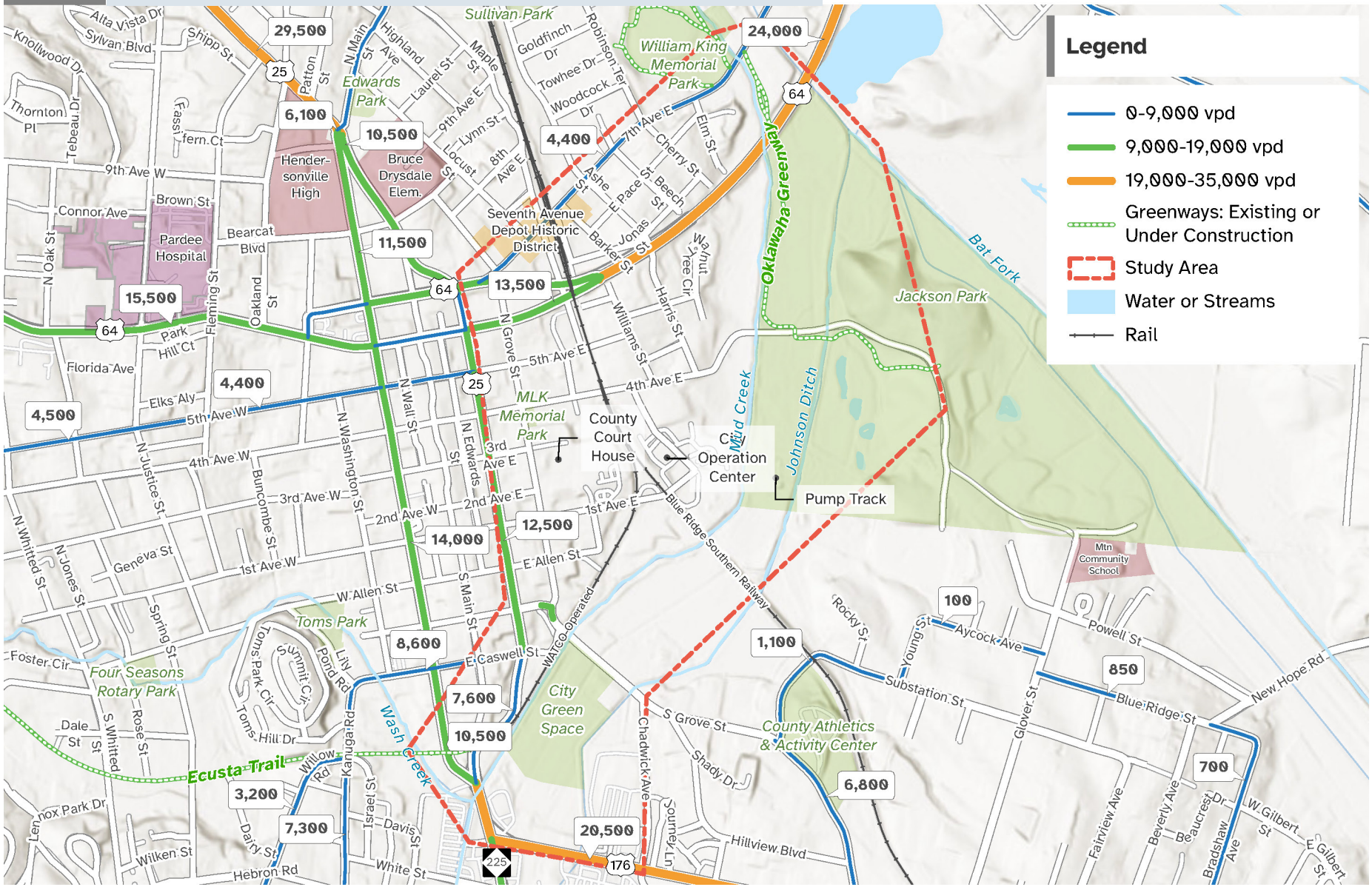
Source: TPD

Image 30. Traffic on US 64

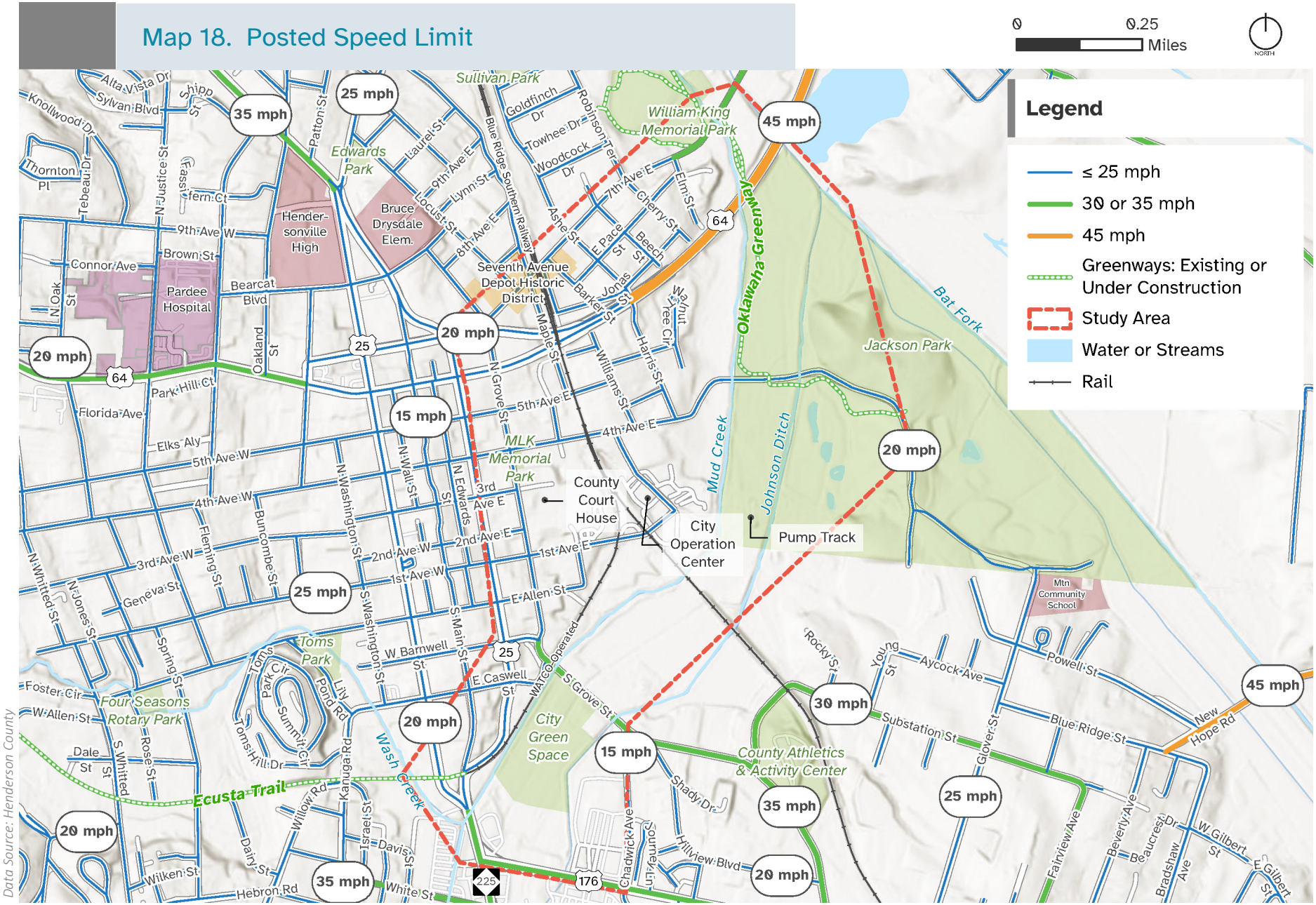
Source: TPD

The Above the Mud Greenway will offer an alternative route away from high-traffic roadways, providing a protected pathway for people of all ages and abilities.

Map 17. Annual Average Daily Traffic (AADT)



Map 18. Posted Speed Limit



Posted Speed Limit

Tapping into roadway data from the County, **Map 18 - Posted Speed Limit** illustrates the varying posted speed limits on segments throughout the study area. This includes both state-maintained and non-state-maintained roads. Except for US 64, US 176, South Main Street, and South Grove Street, all the roads in the study area are posted at a speed of 25 mph or less. As speed is an important predictor of safety, these low posted speed limits are important for protecting people walking and bicycling.

Pedestrian Crash History and Corridor Section Safety Scores

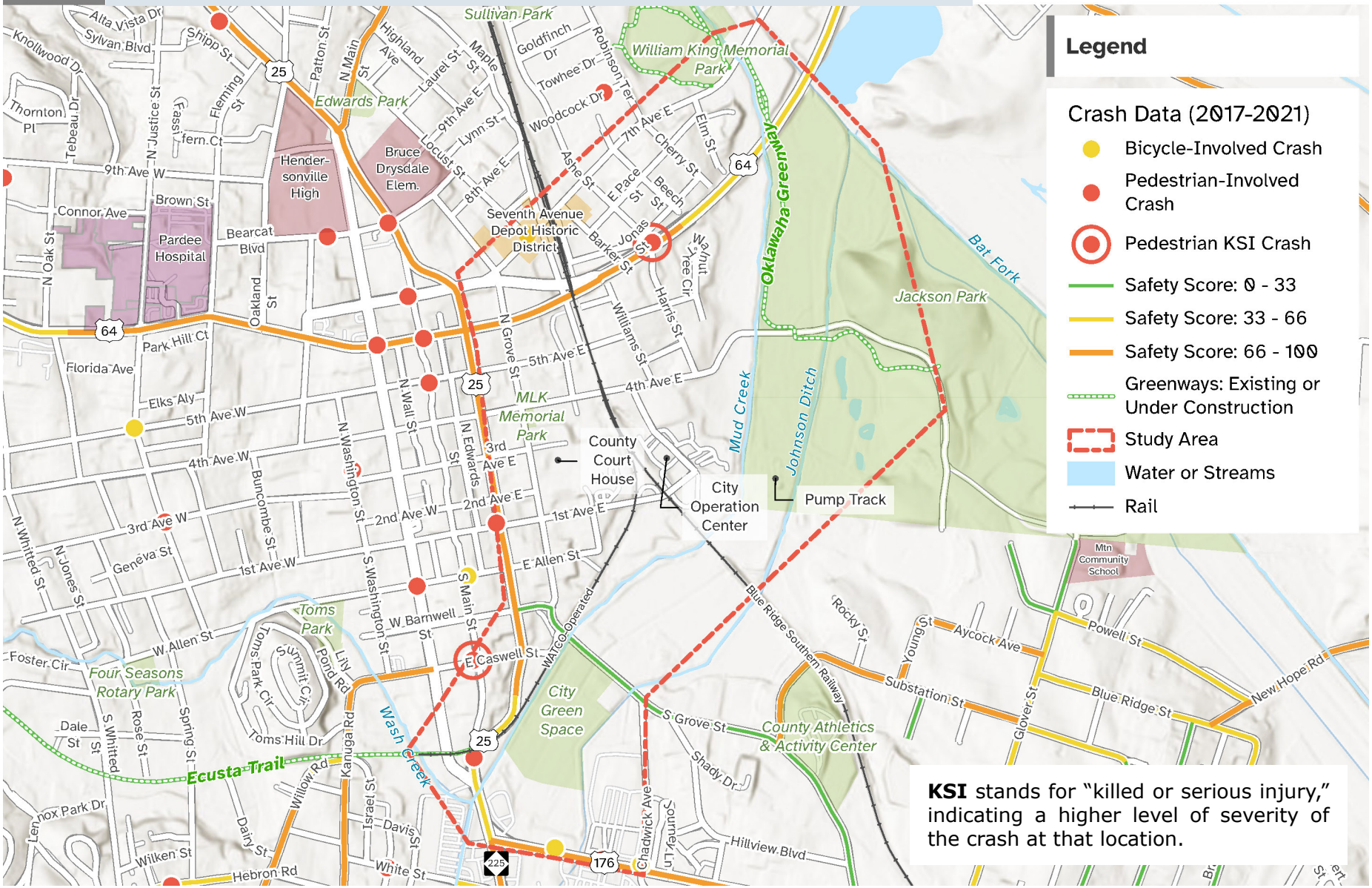
Map 19 - Crash History & Corridor Safety Scores illustrates the reported pedestrian- and bicycle-involved crashes (2017-2021) and the NCDOT Corridor Section Safety Scores within the study area. There was a total of seven crashes in this time frame: two crashes involved a person bicycling; five crashes involved a person walking; and two of the five pedestrian-involved crashes resulted in a pedestrian death. Although no crash is acceptable, it is important to acknowledge that crashes can be unique events so in addition to understanding crash frequency, it is important to study other indicators of safety. Number of travel lanes, AADT, and posted speed limits provide a better understanding of crash risk and perception of safety for people walking and bicycling. These higher volume and higher-speed roadways are addressed earlier in this chapter.

The NCDOT Section Safety Scores provide summarized crash and safety data by intersections or sections of road. The data is intended to be used for high-level prioritization and network programming. Points are assigned to the road segments based on three areas: 1) density of crashes in the study area versus the average crash density of similar facilities; 2) crash severity index; and 3) the actual crash rate for the study area versus the critical crash rate. Segments with a higher score are more problematic and include US 64, US 25, and US 176.

Image 31. Speed Limit Sign on South King Street

Source: TPD

Map 19. Crash History & Corridor Safety Scores



FIELD OBSERVATIONS

To fully understand a project, it is necessary to visit the site and record photographs, measurements, and observations of the natural/human environment. On September 8, 2023, the project team visited the study area to fully understand the opportunities and constraints related to a greenway connection. The team paid close attention to the following considerations, which strongly shaped the identification of the preferred alignments.

- Publicly owned parcels
- Rights-of-way, private property impacts, and building setbacks
- Topography
- Floodplains and water bodies
- Structures (rail, bridges)
- Roadway environment (AADT, posted speed, traffic control, guardrail, sidewalks, crossings, parking)
- Existing greenways and sidewalk connections
- Land uses and new developments
- Driveways and access
- Natural environment (invasive vegetation, erodible soils)
- Utilities
- Drainage

These opportunity and constraint considerations are illustrated in the following maps and photographs, which are grouped geographically throughout the study area. Photograph numbers are allocated based on area and type, so may not appear sequentially on the map.

The team conducting fieldwork for the project.

Source: TPD

Map 20. Opportunities: South Main Street & South King Street

OPPORTUNITIES: SOUTH MAIN STREET & SOUTH KING STREET

The intersection of South Main Street and South Church Street is a gateway into the City. NCDOT has plans to construct a roundabout at this intersection.

This study begins at the terminus of the future Ecusta Trail, which will be located in proximity to South Church Street.

The right-of-way purchased for the Ecusta Trail extends beyond South Main Street for a short section, creating an opportunity to transition to a paved greenway.

This underutilized property could provide a connection across Mud Creek to City-owned land.

Map 21. Constraints: South Main Street & South King Street

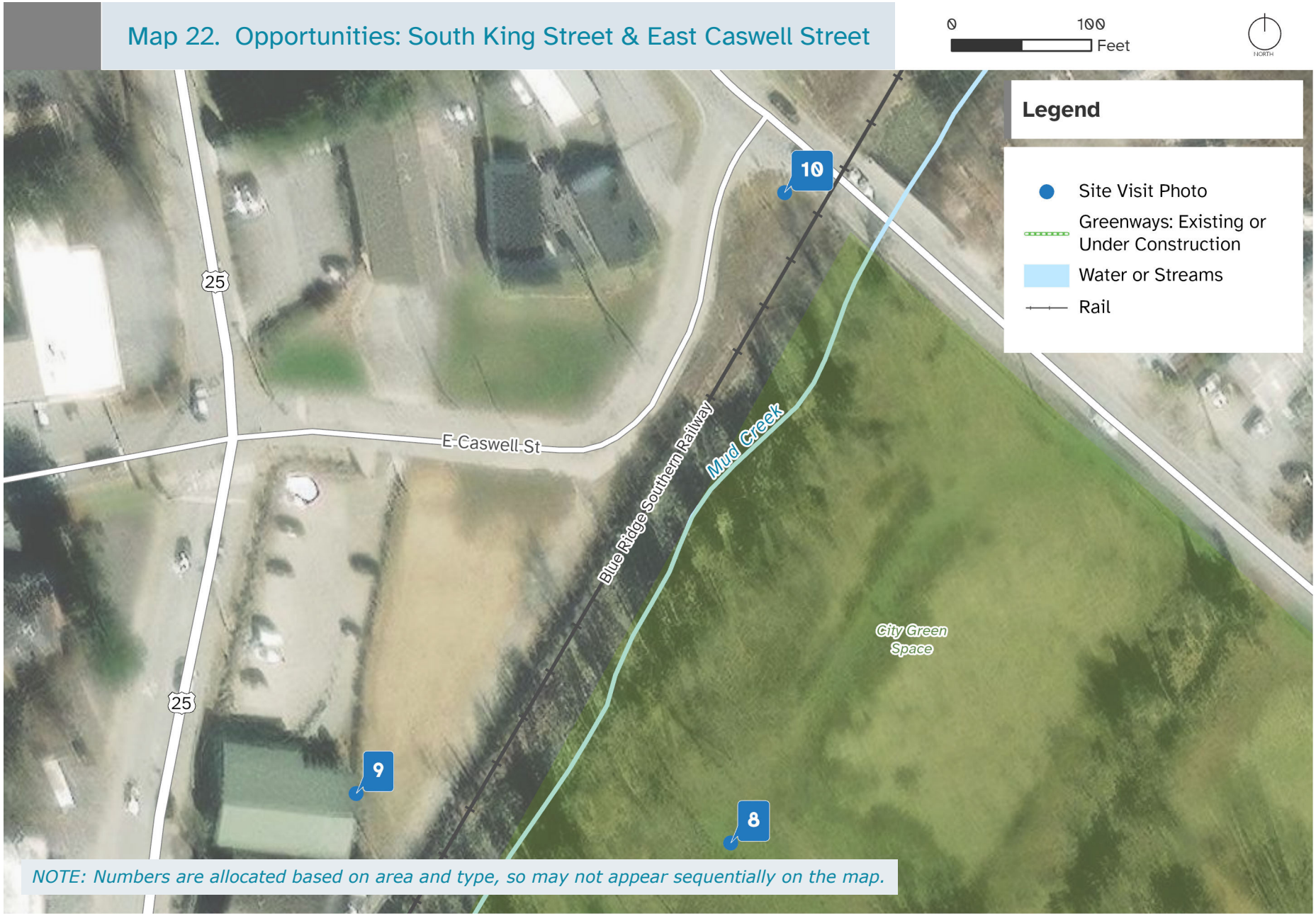
CONSTRAINTS: SOUTH MAIN STREET & SOUTH KING STREET

The crossing where the Above the Mud greenway would traverse South Main Street is currently unsafe for pedestrians.

The proximity of the rail lines along South King Street would make a rail-with-trail more difficult as modifications to US 25 would be required.

A pedestrian bridge would be required over Mud Creek to access City-owned land.

Map 22. Opportunities: South King Street & East Caswell Street



NOTE: Numbers are allocated based on area and type, so may not appear sequentially on the map.

OPPORTUNITIES: SOUTH KING STREET & EAST CASWELL STREET

This City-owned land is part of a flood restoration project and provides an opportunity for a paved greenway parallel to Mud Creek.

East Caswell Street is a low traffic volume street that has potential to accommodate a greenway if reconfigured.

Open land between commercial buildings on South King Street and the rail line offers an opportunity for a greenway.

Map 23. Constraints: South King Street & East Caswell Street

CONSTRAINTS: SOUTH KING STREET & EAST CASWELL STREET

The rail line northeast of South Grove Street is covered with invasive vegetation. The constraints here make a rail-with-trail unlikely. This alignment may only be feasible if the line was converted from rail-to-trail.

There is very little room for a paved greenway between the rail line and Mud Creek in this location.

This unnamed tributary runs between several buildings, which limits a greenway connection between South Grove Street and parcels to the east.

Map 24. Opportunities: South Grove Street

OPPORTUNITIES: SOUTH GROVE STREET

The South Grove Street vehicle bridge over Mud Creek has 5′ sidewalks on both sides, providing an opportunity for pedestrian connection but not wide enough for a multiuse path. This connection could be possible if an additional bridge is constructed or if the existing bridge is replaced.

This commercial property off of South Grove Street parallels Mud Creek. An easement on private property would be needed for a greenway here.

Sidewalks are planned for South Grove Street, a key connection for residents from the south side to the north side of town.

This City-owned property is planned for flood restoration and a passive park. A paved greenway could parallel Mud Creek here.

Map 25. Constraints: South Grove Street

CONSTRAINTS: SOUTH GROVE STREET

This section of Mud Creek is popular with dog owners. The soils in this area are erodible, making this section difficult for greenway construction.

The rail line operated by Watco is being used for storing cars. There is a steep slope west of the tracks.

Currently, the Watco line is not available for a rail-to-trail conversion. If this section becomes available, it could be used to connect areas north (e.g. 7th Avenue and the City Operations Center area) to Jackson Park and areas south of Mud Creek, including a future Saluda Grade Trail connection. Alternatively, an additional greenway bridge to the west could be added to make this connection.

Map 26. Opportunities: Fourth Avenue Area

OPPORTUNITIES: FOURTH AVENUE AREA

The rail trestle bridge has piers that are wide enough apart to accommodate a greenway underneath.

Fourth Avenue East was recommended as an important multimodal link in past studies. Connecting to this location via the rail line would create a connection to downtown.

The open land between the rail tracks and the Henderson County facility provides an opportunity for a greenway alongside the tracks.

Adjacent to the rail line, north of 4th Avenue, there is currently a wide, undeveloped area on the west side of the rail line and provides an opportunity to connect to the commercial district north of 5th Avenue.

Map 27. Constraints: Fourth Avenue Area

CONSTRAINTS: FOURTH AVENUE AREA

Fourth Avenue to the east (towards Jackson Park) currently has a sidewalk and shared bicycle facility on road. Additional right of way is needed to provide for a greenway connection (sidepath) along this section.

A ditch between the building supply and the rail line is a possible constraint.

The entry road into Jackson Park from 4th Avenue has a significant slope to traverse. Since this is in a floodway, flood impacts would need to be assessed for any modifications.

Map 28. Opportunities: Fifth Avenue Area

NOTE: Numbers are allocated based on area and type, so may not appear sequentially on the map.

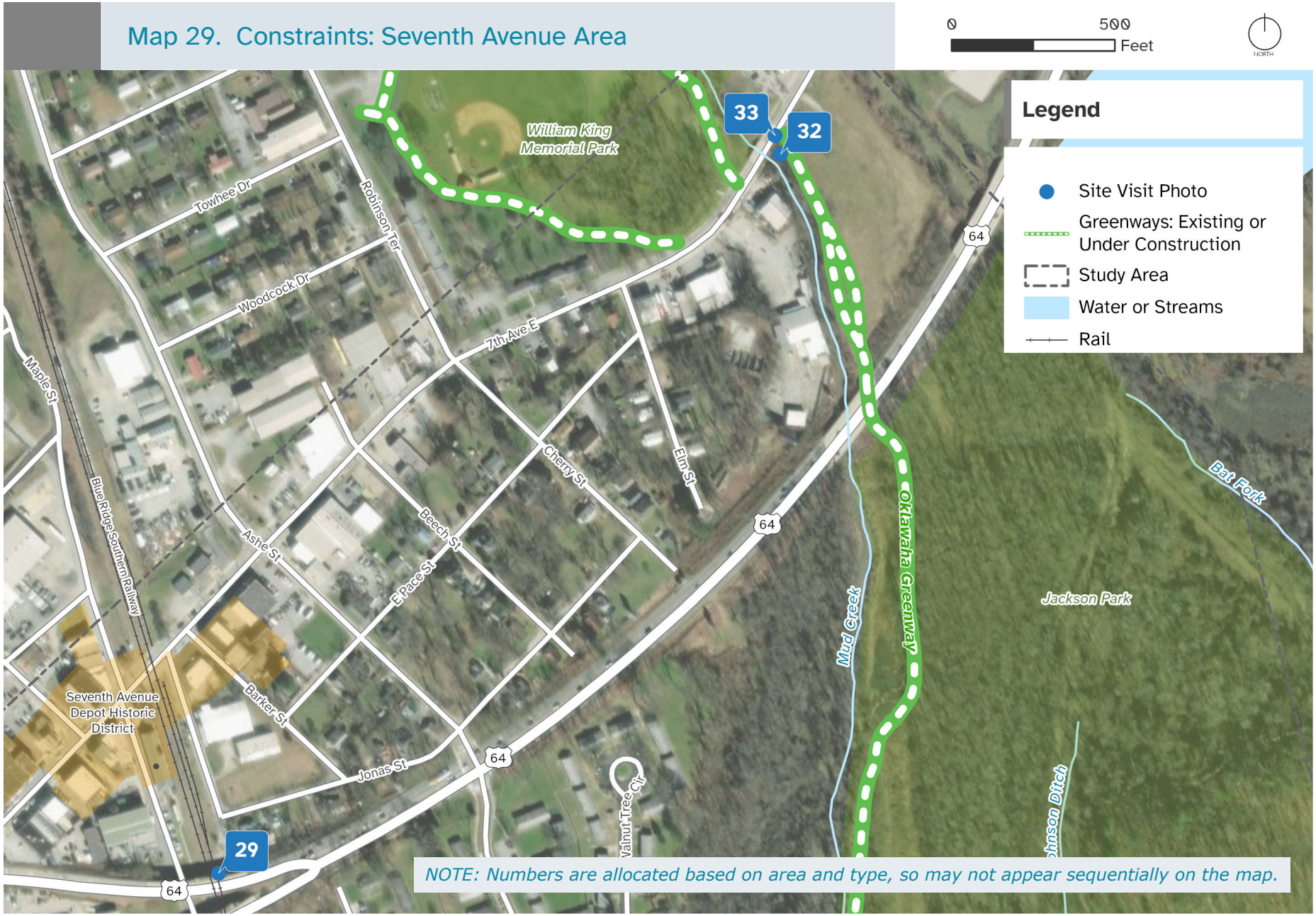
OPPORTUNITIES: FIFTH AVENUE AREA

Where the rail line intersects with 5th Avenue East, the "beeline" walk is on the west side, providing a pedestrian connection.

The east side of the tracks between 5th Avenue and 6th Avenue has a wide, underutilized space along the right-of-way.

The entry road to Jackson Park has a wide green space making it possible for a greenway to connect to the existing Oklawaha Greenway on the opposite side of the vehicle bridge. Where this route crosses Mud Creek, floodway analysis will be required for any modifications.

Map 29. Constraints: Seventh Avenue Area



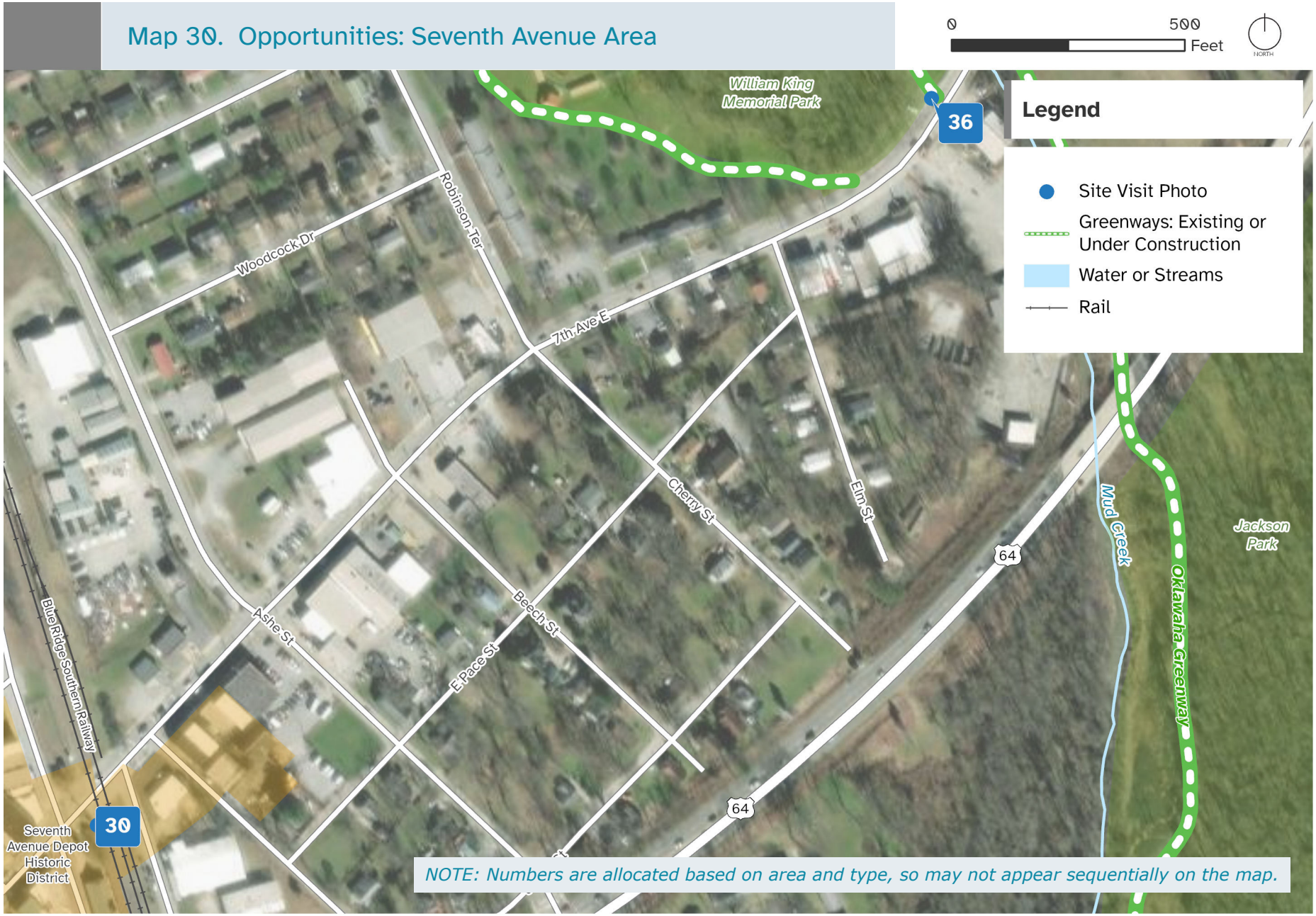
CONSTRAINTS: SEVENTH AVENUE AREA

Boxcar Street, a gravel street, is very close to the rail line under US 64. Coordination with local businesses and the railroad will be necessary.

The Oklawaha Greenway crossing at 7th Avenue has some challenges for users.

The vehicle bridge over Mud Creek on 7th Avenue includes sidewalks on both sides, but they are narrow.

Map 30. Opportunities: Seventh Avenue Area



OPPORTUNITIES: SEVENTH AVENUE AREA

The commercial district on 7th Avenue East will be a destination for future greenway users.

The goal of the project is to connect the Oklawaha Greenway to the future Ecusta Trail.

ALTERNATIVES DEVELOPMENT

Design Parameters

Design parameters are a set of guidelines that steer a project towards the outcomes that are consistent with community goals. Based on project team and steering committee feedback, this project seeks to achieve the following for the Above the Mud greenway:

- **Pedestrian- and Bicycle-Focused Design Solution:** This entails creating a pathway that caters to the needs of people who walk and bike, with features such as wide paths, separation from motor vehicle traffic, and vehicle and pedestrian oriented signage and pavement markings to enhance safety and navigation.
- **Physical Separation from Traffic:** Achieving physical separation from vehicular traffic involves employing barriers, buffers, or other infrastructure to create a safe and protected space for greenway users, minimizing the risk of crashes or conflicts with vehicles.
- **Accessibility for All Ages and Abilities:** Designing the greenway to be accessible to people of all ages and abilities necessitates features such as gentle gradients, smooth surfaces, ample seating areas, and amenities like restrooms and water fountains placed at convenient intervals along the greenway.
- **Resilience to Flood Events:** Given the likelihood of flood events, the greenway's design should incorporate measures designed to withstand flood damage. Examples include elevated pathways, drainage systems, and the use of flood resistant materials. The goal is to design a greenway that is easy to maintain, is resilient to damage during flood events, and facilitates quick recovery post-flooding.
- **Adherence to Standards and Best Practices:** Designing the greenway to comply with guidelines and regulations governing greenway design, construction, and accessibility to deliver a high-quality facility using national guidance to the maximum extent feasible.
- **Minimization of Property Impact:** Minimizing the impact on private property and maximizing the use of publicly owned land requires careful planning, negotiation, and collaboration with property owners, as well as innovative design solutions to mitigate any potential adverse effects on adjacent properties.
- **Phased Implementation:** Identifying phases for greenway development provides project delivery flexibility that can adjust to conditions such as resource and funding availability or changing priorities while ensuring continuity throughout the project development process.

For the Above the Mud greenway to connect the Ecusta Trail to the Oklawaha Greenway, it must cross roadways. While grade-separated crossings are preferred, they are not always possible. When the greenway crosses a roadway at-grade, the primary design feature to consider is how to reduce the exposure to, and increase the visibility of, when people who walk and bike mix with vehicular traffic. Crossings should be high visibility at a minimum, and other treatments (advanced warning signage, signals, pavement markings, etc.) may be considered based on-site conditions. Chapter 4 and the Appendix offer design resources for crossing considerations.

Segment Alternatives

The project team investigated the study area to identify opportunities for greenway connections. Each opportunity (or potential greenway segment) was reviewed to evaluate constructibility factors such as right of way needs, topography, impacts to adjacent properties, environmental and permitting needs, directness of connection, etc. A summary of findings is presented in **Table 1 - Preliminary Segment Investigations**. **Map 31 - Preliminary Segment Investigations** shows the greenway segments that were investigated within the study area.

By evaluating all possible routes and eliminating those that are not practical or feasible, the team identified the most viable alignment between the Ecusta Trail and the Oklawaha Greenway, while also providing access to downtown.

Map 31. Preliminary Segment Investigations

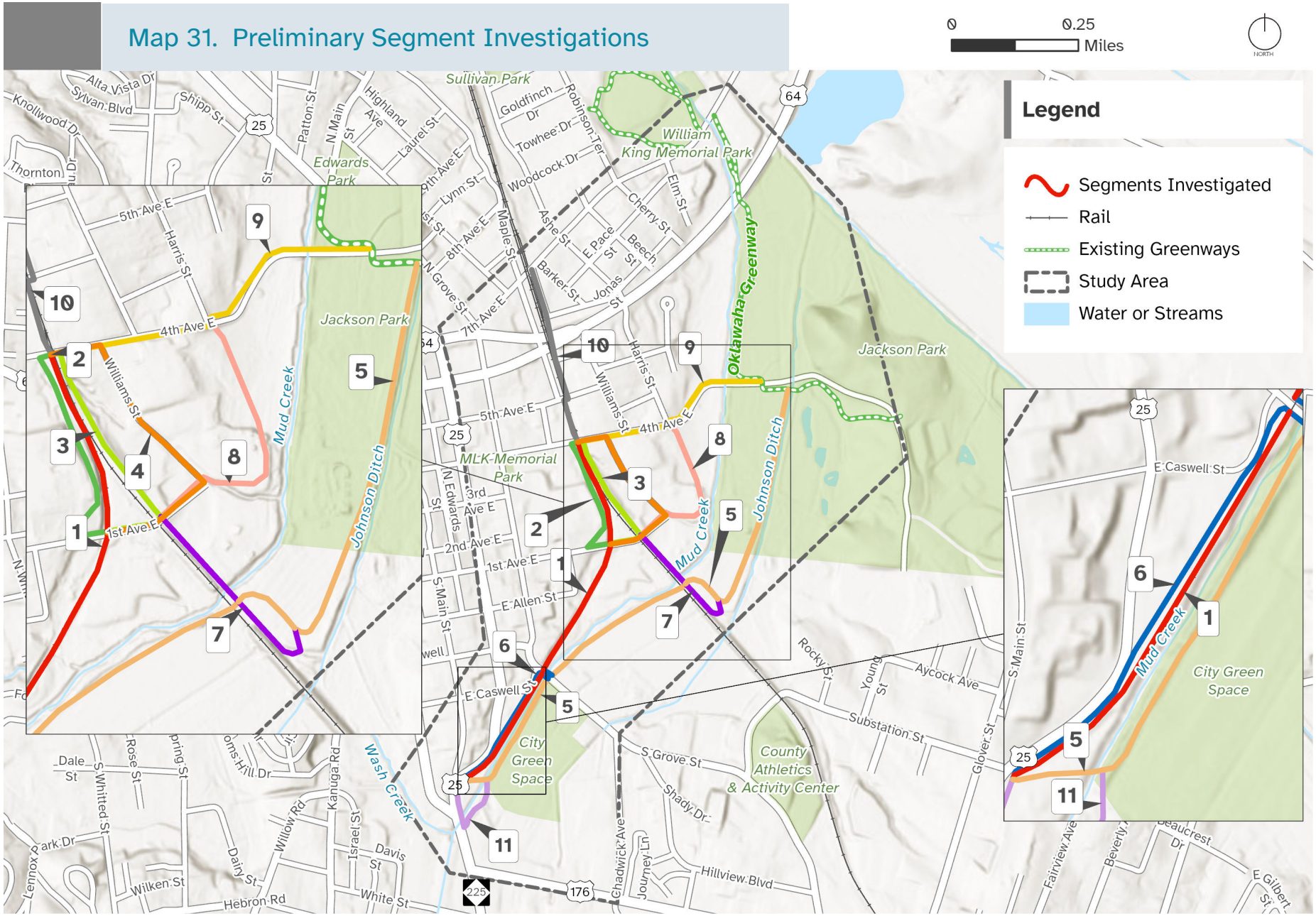


Table 1. *Preliminary Segment Investigations*

ID	Segment Description	Opportunity	Challenges/Constraints	Status
1	Rail-to-trail conversion for the remaining section of the active Ecusta Line between South King Street and 4th Avenue East.	Extends Ecusta Trail with the most direct connection on same alignment.	Requires approval from rail owner/operator. Construction cost relatively low; however, ROW acquisition will be required.	Under consideration, pending railroad coordination.
2	Rail-with-trail following the west side of the Ecusta Line along County property between 1st Avenue East and 4th Avenue East.	Wide grass buffer between County Detention Center and the Ecusta Line could be graded with retaining walls to make space for a greenway along the edge of County parcels.	Security issues with County Detention Center. Retaining walls would be needed driving up costs. County has plans to expand on site which eliminates the ability to accommodate a greenway on this site.	Eliminated due to ROW constraints.
3	Rail-with-trail following the east side of the Ecusta Line along City property between 1st Avenue East and 4th Avenue East.	Wide grass buffer between City buildings and the Zirconia Line could be graded and use retaining walls to make space for a greenway along the edge of City parcels.	Approval from rail owner/ operator for greenway in ROW. Retaining walls would be needed driving up costs. May not be constructible, more engineering would be required to determine feasibility.	Eliminated due to high cost and City property impacts with constructibility challenges.
4	Sidepath connecting the Ecusta Line where it intersects 1st Avenue East to 4th Avenue East. Parallels portions of 1st Avenue East, Williams Street, and 4th Avenue East.	With retaining walls and parking lot adjustments, a sidepath could be possible along the east side of Williams Street.	Indirect route; requires retaining walls and easements with site modifications for a number of properties. May have utility conflicts.	Eliminated due to poor quality of connection with constructibility challenges.
5	Crosses Mud Creek on a new bridge from the Ecusta Line near South King Street onto planned City floodplain restoration parcels. Parallels Mud Creek north into Jackson Park along a planned sewer easement and additional floodplain restoration properties.	Underutilized parcels and lots can be used to make a high quality connection to expand the urban context between 4th Avenue East and 7th Avenue East.	Requires pedestrian bridge over Mud Creek.	Under consideration. Needed connection independent of this project.

Table 1. *Preliminary Segment Investigations (Continued)*

ID	Segment Description	Opportunity	Challenges/Constraints	Status
6	Follows Ecusta Line from King Street to South Grove Street. Crosses Mud Creek on a new bridge to connect to planned City floodplain restoration parcels.	Opportunity to utilize extra pavement width along South King Street on the north side of the Ecusta Line, pass along one existing building and then utilize a vacant parcel near South Grove Street.	Requires approval from rail owner/ operator; South Grove Street bridge is too narrow for sidepath. Challenges may arise with proposing to narrow South King Street. Pinch point between rail line and private building structure.	Eliminated due to pinch point between private building and railroad line.
7	From Dog Park and Jackson Park, ramps up to cross Mud Creek on a new bridge that runs parallel to the Zirconia Line and connects to 1st Avenue East through City property on the north side of Mud Creek. Follows 1st Avenue East as a sidepath to connect to greenway.	Opportunity to build a new greenway bridge over Mud Creek running parallel to the Zirconia Line bridge and connect to City parcels from Jackson Park.	Indirect connection to Oklawaha Greenway. Permitting a new pedestrian bridge at this location could be challenging due to floodway and floodplain constraints and the need to elevate a greenway ramp to a structure.	Eliminated, indirect route with permitting challenges.
8	Greenway connection through City property that provides an alternate route between Williams Street and 4th Avenue East sidepath into Jackson Park.	Properties owned by City present an opportunity to connect to Jackson Park on the north side of Mud Creek.	Combined with Segment 7. Permitting a new pedestrian bridge at this location could be challenging due to floodway and floodplain constraints and the need to elevate a greenway ramp to a structure. Less direct connection.	Eliminated, indirect route with permitting challenges.
9	Sidepath on 4th Avenue East running from Jackson Park to Ecusta and Zirconia Line rights of way.	This connection is independently needed to connect downtown to Jackson Park and would utilize fields and some wider industrial parcel frontages.	Planned route between Main Street and Jackson Park. Connects to wide sidewalks along County Courthouse site. Requires retaining walls and easements with site modifications for a number of properties. May have utility conflicts.	Under consideration. Needed connection independent of this project.

Table 1. *Preliminary Segment Investigations (Continued)*

ID	Segment Description	Opportunity	Challenges/Constraints	Status
10	Rail-with-trail along the Zirconia Line between 4th Avenue East and 7th Avenue East. Parallels rail line on the west side between 4th and 5th Avenue East before crossing the railroad and running north to 7th Avenue East on the east side of the rail corridor.	Underutilized parcels and lots can be used to make a high quality connection to 7th Avenue East to expand the urban context	Requires approval from rail owner/operator. Construction cost relatively low; however, ROW acquisition will be required.	Under consideration, pending railroad coordination. Needed connection independent of this project.
11	From Ecusta Trail terminus at South Main Street, connects to planned City floodplain restoration project via a sidepath along the east side of South Main Street, a new pedestrian bridge and a new greenway connection along the northern edge of the CVS property near the stormwater basin.	New greenway bridge over Mud Creek would be adjacent to the S. Main Street bridge which may help with floodway permits.	Indirect connection; permitting challenges with Mud Creek bridge, CVS storm basin impacts and potential brownfield.	Eliminated, indirect route with permitting challenges.

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03 Community Engagement

STOP
RAM
white duck taco shop

OVERVIEW

Community participation offers valuable perspectives on local observations, concerns, and hopes, thereby enhancing project designs and decisionmaking. Additionally, engagement opportunities allow the project team to communicate project objectives, manage expectations, and share results. This section summarizes the community engagement efforts for the Above the Mud project and input collected from stakeholders, such as residents, agencies, and nonprofit organizations, all of whom have played a role in shaping the feasibility study for the Above the Mud Greenway feasibility study.

PREVIOUS ENGAGEMENT EFFORTS

This Above the Mud study builds upon previous engagement initiatives that provide insight into the needs, preferences, and concerns of stakeholders, residents, advocacy groups, local businesses, and governmental organizations. The results from the previous engagement efforts are summarized below.

Above the Mud Public Input Meeting

In order to gauge interest and hear concerns as well as improve the chances of winning competitive grants (including a USDOT RAISE grant - Rebuilding American Infrastructure with Sustainability and Equity) for the Above the Mud project, the City of Hendersonville hosted a preliminary public input meeting on Tuesday, March 29, 2022. This drop-in meeting (with a virtual participation option) was designed as a catch-all meeting to capture input on Mud Creek greenway considerations, Oklawaha Greenway flood remediation strategies, and 7th Ave streetscape improvements. The meeting provided grant proposal project information, allowing participants to provide feedback and show their local support for improving bicycle and pedestrian infrastructure.

Image 32. Public Input Meeting Advertisement (2022)

Source: City of Hendersonville

COMMUNITY ENGAGEMENT PLAN

At the beginning of the feasibility project, the project team developed a Community Engagement Plan to outline upcoming outreach endeavors and help ensure equitable public engagement throughout the project's progression. Serving as a flexible document over the project's lifespan, it was designed to:

- Offer a retrospective analysis of prior community involvement and planning initiatives.
- Evaluate public interest in the planning procedure and explore avenues for stakeholder contribution.
- Identify areas where the community wants to see multimodal connections.
- Determine strategies for segmenting and prioritizing project components for future investment and advancement.

Figure 18. Above the Mud Greenway Engagement by the Numbers

SUMMARY OF PROJECT MEETINGS

Kickoff Meeting

This meeting was held virtually on July 21, 2023, to launch the project and begin discussing important tasks, milestones, and goals. The team shared a ConceptBoard map set to add comments to points of interest or challenges in the study area.

KEY FINDINGS:

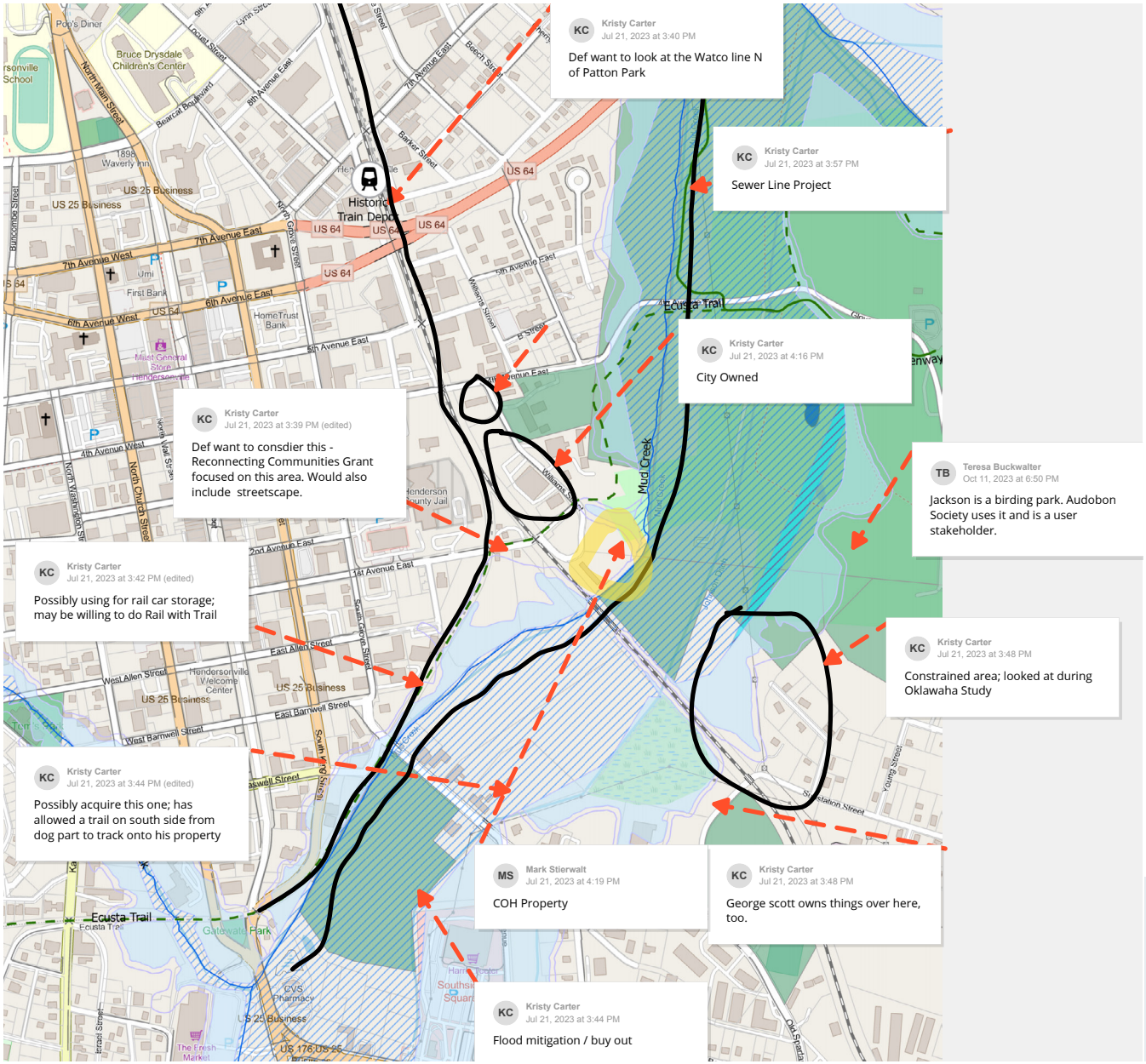
- A major stakeholder is Watco, as well as Conserving Carolina.
- This study has many other concurrent projects to consider (NCDOT U-5886 roundabout, Mud Creek riparian restoration, Oklawaha Greenway extension plans, 7th Avenue streetscape, Ecusta Trail construction updates, new City sewer line project, and a Reconnecting Communities Grant).
- The City is moving forward with a Parks & Recreation Master Plan.The dog park has been identified as something to keep.
- The feasibility study may result in a "working" document that identifies multiple greenway alignments, leaving the final pursuit strategy up to landowner amenability.

Image 33. Ecusta and Saluda Grade Connection Meeting

Source: TPD

Stakeholder groups, including municipal and county leaders, nonprofit agencies, NCDOT, and railroad owners, continue to strategize about key connections. One big regional connection is filling the gap between the Ecusta Trail and the Saluda Grade Trail, with Above the Mud providing a crucial link.

Image 34. Kickoff Meeting ConceptBoard Screenshot



Source: TPD

Initial routing options, notes on important connections, and challenges and opportunities were considered during the project kickoff. These elements were crucial in shaping the development of the greenway alignment alternatives.

Saluda Grade Trail to Ecusta Trail Connection Meeting

The Saluda Grade Trail project is under development, with three nonprofit partner organization spearheading the study. This 31-mile rail-to-trail project will link Henderson County (Zirconia) to Inman, SC through a purchase and conversion of an inactive Norfolk Southern rail line. A meeting was held on October 4, 2023 with the nonprofit partners and City of Hendersonville staff to discuss a potential connection between the Ecusta Trail and the Saluda Grade Trail. Making this connection would solidify Hendersonville as a greenway "hub" and have huge recreation, economic development, and local connectivity implications.

KEY FINDINGS:

- The rail line is not currently for sale so other routes to connect Hendersonville to the future Saluda Grade Trail will need to be identified.
- Historically, the Village of Flat Rock has not been amenable to greenway connections through the community.
- Following Bat Fork Creek would provide connections to Blue Ridge Community College, East Henderson High School, and access from nearby I-26.

STEERING COMMITTEE

The steering committee was comprised of key local government staff, with representation from the French Broad River Metropolitan Planning Organization (MPO), City of Hendersonville, and NCDOT's Integrated Mobility Division. Meeting three times during the project, the committee provided guidance by examining and giving feedback on relevant data, community engagement efforts, alternate route proposals, and implementation plans.

MEMBERS

- *Brent Detwiler, City of Hendersonville*
- *Mark Stierwalt, City of Hendersonville*
- *Tom Wooten, City of Hendersonville*
- *Lew Holloway, City of Hendersonville*
- *Matt Manley, City of Hendersonville*
- *Darcy Downs, NCDOT Integrated Mobility Division*

Steering Committee Meeting #1 (Presentation)

The first meeting of the Steering Committee was held on January 22, 2024. It was a virtual meeting and included a comprehensive presentation covering project progress, scheduling updates, preliminary route evaluation criteria, key stakeholder analysis, and observations from site visits. Furthermore, The Team presented all potential route options, highlighting considerations for each, such as existing utility easements, flood zones, existing greenway connections, and railroad rights-of-way.

KEY FINDINGS:

- Routing will depend on final outcome of Watco rail line availability (for purchase or rail-with-trail).
- The CVS drainage basin on South Main Street might be a constraint (soil/water contaminants).
- City-led Brevard Church flood restoration project could be integrated with the greenway and new pedestrian bridge.
- Watco may not be receptive to a short parallel bridge over Mud Creek, so other land would need to be identified.
- Some potential conflicts with security for County jail.
- Several preliminary alignments may not be feasible - alternatives are developed under different assumptions regarding rail line options.
- Stakeholder analysis includes a range of organizations, with varied levels of anticipated cooperation and project impact.

Steering Committee Meeting #2 (Check-in)

The group gathered for a check-in meeting on January 30, 2024 to discuss stakeholder engagement. This included a review of communication between elected officials at the state level, Watco rail line, and outreach to Henderson County.

KEY COMMUNICATION POINTS:

- The Above the Mud routing needs to be specific about rail segments and what each alignment needs.
- Clarify with Watco if rail-with-trail would be an option (rather than rail-to-trail conversion).
- Update on the County Courthouse expansion project (limits, scale, etc.)
- Slope constraints/opportunities for collaboration.
- Detention Center separation rules regarding adjacent greenway alignments.
- Henderson County Comprehensive Plan proposed future land use changes in the project area.
- NCDOT thoughts on removing a turning lane on North King Street to better accommodate the greenway.

Stakeholder Engagement

The project team provided guidance to the City of Hendersonville so that they could confer with key stakeholders and communicate effectively about the Above the Mud considerations. The City met with representatives from Watco, Henderson County, and NCDOT Division 14.

City staff led these discussions in early February 2024, which helped narrow the possible route options and clarify feasibility obstacles and specific needs for the project's success.

KEY FINDINGS:

- Watco is not currently pursuing rail line sales for conversion to greenways, but would entertain an excursion line. They are depending on rail car storage revenue since Pactiv Evergreen's paper mill closure in Canton has affected their revenue.

In addition to Watco, Henderson County and NCDOT are key stakeholders in the project study area.

City staff met with Henderson County staff in February 2024 to discuss potential alignments as several possibilities would be on Henderson County property.

KEY FINDINGS:

- The County was favorable to a direct connection to Jackson Park. The challenge is the existence of an unfenced dog park that needs to be considered in any alignment and design.
- The County identified continued flooding of the existing trails in Jackson Park, making them temporarily unusable during flooding events. Further flood studies are ongoing.
- The County is expanding the courthouse campus and is proposed significant grading onto the railroad ROW which would complicate any trail projects in the same area.
- There is a desire to separate the jail from trail use where the general public would be in close proximity.

The project team also met with Steve Williams, Corridor Development Engineer for NCDOT Division 14. The team shared the content of the first steering committee meeting, including potential alignments that would encroach in NCDOT rights-of-way. There were no significant issues with the alignments shared.

ONLINE SURVEY

The project team launched an online survey to gauge public opinions on three distinct route options and general usage of the greenway, including concerns and suggestions. The survey remained open for just over 30 days in early 2024. This method holds significant value in shaping the final route selection and recommendations for several reasons.

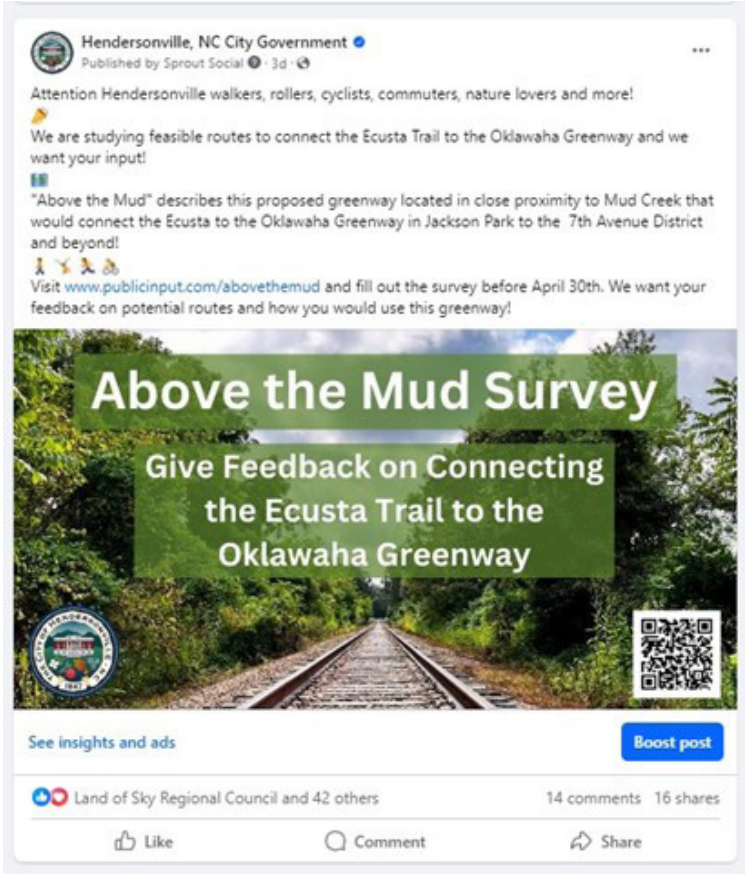
First, by directly engaging with the community, the study can ensure that the chosen route resonates with the public. Second, understanding public perceptions about greenway usage in general provides insight into potential demand and usage patterns. Moreover, by inviting input through an online survey, a wider and more diverse range of voices can be captured, ensuring that the final design and development decisions encompass the perspectives of various stakeholders.

Survey Promotion

The City took steps to promote the online survey in March and April 2024:

- A press release was sent to local media outlets.
- Social media copy and graphics (in both English and Spanish) were shared with various committees and community stakeholders.
- A news item was posted to the City of Hendersonville website, with a link to the survey on the City's public engagement hub and project webpage.
- The survey was advertised on Instagram, Facebook, and Nextdoor.
- Information about the project and survey was provided to the local high school to incorporate into lesson plans.
- The local newspaper ran a story and the radio broadcast an interview with City staff about the project.
- Information about the project and a link to the survey was included in both the Friends of the Ecusta Trail and Friends of the Oklawaha April newsletters.

Image 35. Online Survey Promotion (Facebook)



Source: City of Hendersonville

The survey was promoted across platforms, with information available on social media, City websites, radio, newspapers, newsletters, and more. It was also promoted in Spanish (and the survey itself had a "translate" option) in order to reach as many people as possible.

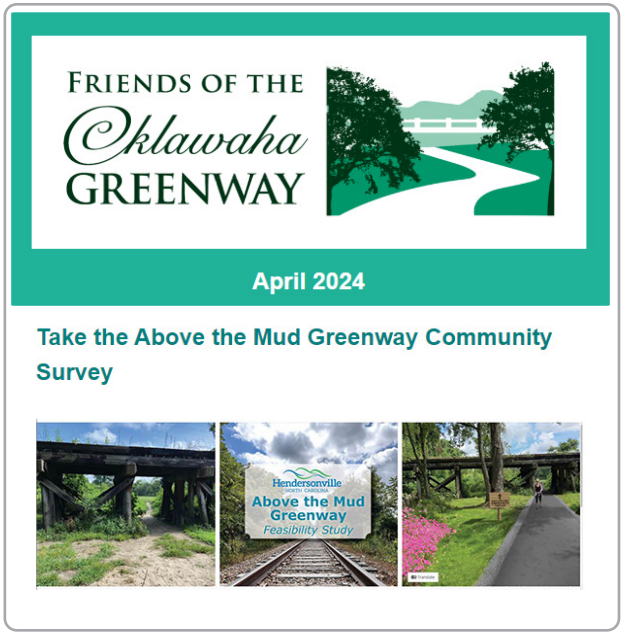
Image 36. Online Survey Promotion (Twitter/X)

Source: City of Hendersonville

Image 37. Spanish Online Survey Promotion (Facebook)

Source: City of Hendersonville

Image 38. Online Survey Promotion (Agency Newsletter)



Source: Friends of the Oklawaha Greenway

Image 39. Online Survey Promotion (Newspaper Article)

Source: Hendersonville Lightning

Survey Results

A total of 732 people took the survey. About 3/4 of respondents currently walk or bike through the study area, and 92% say they would use this greenway if it is implemented.

There was not much of a change in stated current greenway use versus future use. People indicated that they would use the future Above the Mud greenway in the same ways they use the city's other greenways. Sixty-two percent of respondents use greenways for bicycling, 80% for walking/running, 53% to enjoy nature and relaxation, 37% for dog-walking, 19% for bird-watching, and 16% for taking the kids out for the day.

The percentage of people who said they would use the greenway to commute jumped from 8% who currently commute to 20% who would use it for commuting once this connection was constructed. This reflects how important this link is for the overall network to be successful, showing a demand for greenways as transportation corridors. While the Oklawaha Greenway follows Mud Creek between various recreation amenities, the Ecusta Trail creates new links to residential neighborhoods, commercial districts, and other municipalities.

732

ONLINE SURVEY PARTICIPANTS

92%

OF SURVEY RESPONDENTS SAID THEY WOULD USE THIS GREENWAY CONNECTION

The Above the Mud connection means that people will be able to reach more destinations, including downtown and the 7th Avenue historic district, access the greenway from their neighborhood, and get to work on foot or by bike. People want this be a greenway they can use in day-to-day life, not just for a weekend workout. It needs to be easily accessible and connect to various destinations.

Overall, most respondents value connectivity - making sure the greenway connects to the 7th Avenue district and seamlessly links the Ecusta Trail and Oklawaha Greenway. People expressed a desire to reach nearby destinations, including coffee shops and beer gardens downtown, nearby grocery stores, the bus transfer station, and the farmer's market.

Some concerns included safety on the greenway as a critical consideration, particularly regarding issues related to crime and visibility through adequate lighting. Some survey respondents also suggested that greenways are luxury amenities and that resources allocated to greenway projects could be better spent addressing more pressing issues such as affordable housing, public safety, and infrastructure needs. Balancing investment in greenways with addressing critical urban challenges remains a key consideration for city planners and policymakers.

There was not a clear preference for either alternative, with comments about the various challenges associated with Alternative A (railroad collaboration) and B (flooding). Some suggested that having both options would be beneficial and equally useful to the community. Respondents expressed enthusiasm for the greenway project and were optimistic about whichever alternative is chosen for implementation. As one respondent said, *"Generally prefer Option A, but will be happy with whichever puts greenway pavement on the ground first!"* The prospect of having safe options for bicycling and walking in the area is a source of hope for many.

Many people would like to see wayfinding signs, lighting, and bathrooms on the greenway. There is a strong desire for access, with demand for parking and trailheads. While some stated that this greenway segment needs to be a greenway and nothing more, most people want to be able to get on the greenway from various points. As this greenway system expands, having wayfinding signage and trailheads will become more important; but in the short-term getting it constructed is the main priority.

Also important is sustainability, with many people hoping to preserve mature trees, incorporate native landscaping, and keep the greenway Above the Mud by ensuring it is sensitive to flooding through elevation and stormwater best management practices.

Survey respondents are clear about the importance of having trailheads with parking and informative signs guiding users along the trail. People also indicate a desire for comfort on this greenway, with shade trees and bathrooms seen as important amenities.

Figure 19. Survey Response Quotes

04 Evaluation + Recommendations

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ALTERNATIVE A

Ecusta Line Extension Alignment

Route Description

This alternative assumes the City of Hendersonville *can* acquire the remaining active Ecusta Line (owned by Watco) that extends from the Ecusta Trail (under construction) north to 4th Avenue East. Alternative A would convert the remaining rail line to a paved shared use path that would extend to a point just north of 4th Avenue East to form an extension of the Ecusta Trail. From the end of the Ecusta Line, a sidepath along 4th Avenue East would continue east into Jackson Park to connect with the existing Oklawaha Greenway. An optional rail-with-trail segment is also included between 4th Avenue East and 7th Avenue East. This rail-with-trail is along the active Zirconia Line (owned by Watco) and connects the 7th Avenue Historic District.

Length

~6,240 linear feet (1.2 miles)

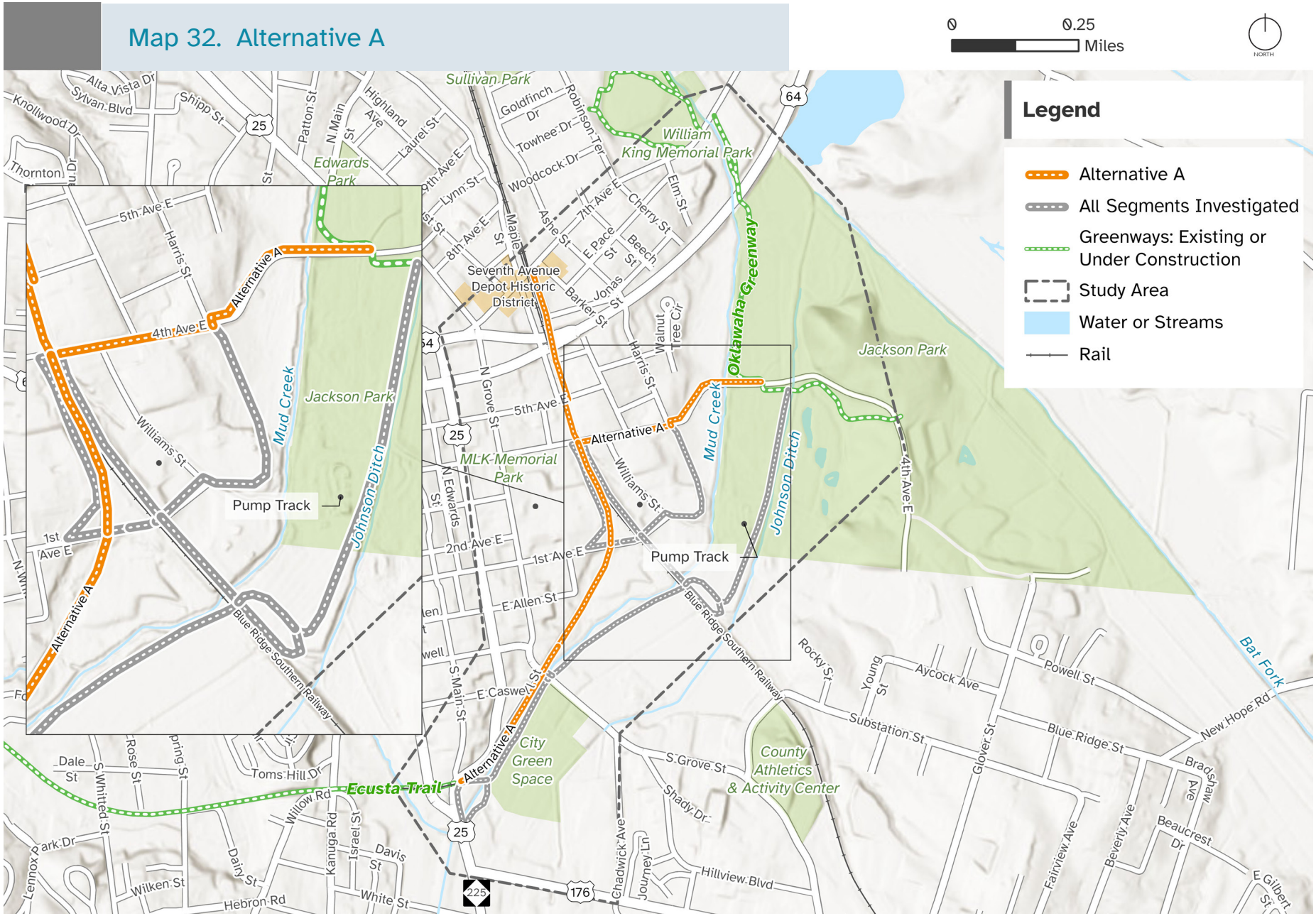
Alternative A Pros

- Most direct route to downtown and 7th Avenue.
- Provides access to neighborhoods that could use the greenway for transportation.
- Mostly off-road alignment would separate users from vehicular traffic.
- Avoids many floodway and environmental constraints.
- Provides a variety of user experiences.

Alternative A Cons

- Less direct connection to the Oklawaha Greenway and Hellbender Trail system.
- The connection to the Oklawaha Greenway and the Hellbender System will require a new sidepath along 4th Avenue East and a new bridge over Mud Creek.
- Would need to receive NCDOT approval to travel under the US 64 elevated structure.
- Requires right of way purchase from Watco.
- The segment between 4th Avenue East and 7th Avenue East will require Watco rail-with-trail approval. If that is not feasible, this segment will need to be removed from Alternative A.
- Crossing on South Grove Street has some sight line limitations and would require installation of a Rectangular Rapid Flashing Beacon (RRFB).

Map 32. Alternative A



ALTERNATIVE B

Floodplain Restoration Projects Alignment

Route Description

This alternative assumes that it is *not* feasible to convert the remaining active Ecusta Line to a greenway. From the Ecusta Trail section that is under construction, Alternative B would depart from the rail bed at a point just east of South King Street and turn south to cross Mud Creek via a proposed pedestrian bridge. On the south side of Mud Creek, it would continue to the east on City-owned land. It would cross South Grove Street and then follow a proposed sewer easement to connect to Jackson Park as it passes under a railroad bridge. This alternative would connect to the existing Oklawaha Greenway in Jackson Park and then continue west towards downtown as a sidepath along 4th Avenue East. This alternative also includes an optional* greenway spur between 4th Avenue East and 7th Avenue East, generally following the Watco rail right-of-way, connecting to the 7th Avenue Historic District. This alternative will require modifications to the existing dog park layout and fencing in order to separate the greenway.

**In the event that Watco will not allow the segment between 4th Ave and 7th Ave, this spur trail to 7th Ave will need to be removed from Alternative B.*

Length

~8,045 linear feet (1.5 miles)

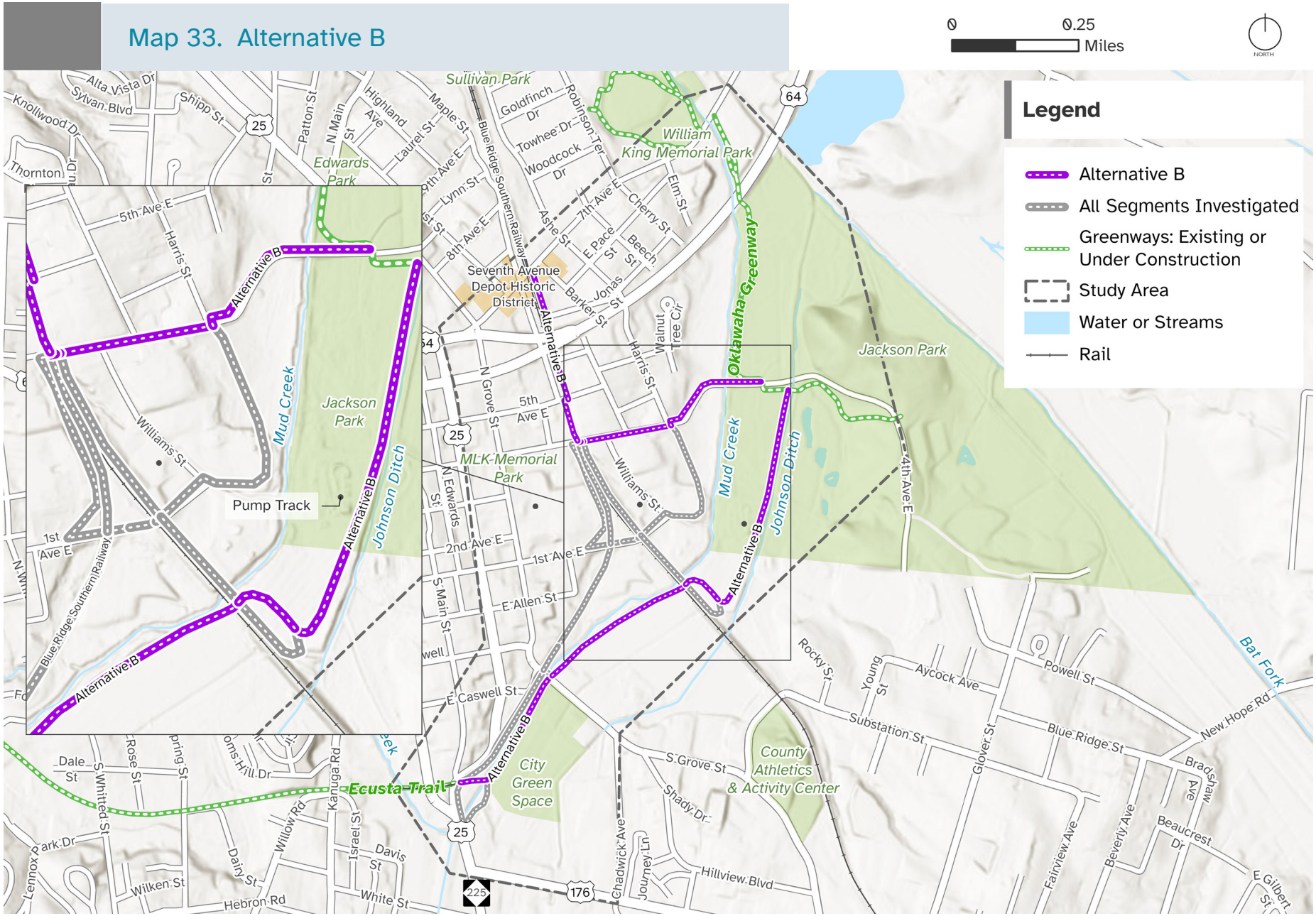
Alternative B Pros

- Provides a more direct connection to Jackson Park, the Oklawaha Greenway, and the Hellbender Trail system.
- High quality user experience along Mud Creek.
- A mostly off-road route that separates greenway users from vehicular traffic.
- Much of the greenway can be designed, permitted, and constructed with other City projects that are already underway.

Alternative B Cons

- Would require a pedestrian bridge over Mud Creek.
- Less direct route to downtown and 7th Avenue than Alternative A.
- The connection to downtown from the Oklawaha Greenway and the Hellbender System, will require a new sidepath along 4th Avenue and a new bridge over Mud Creek.
- Much of this route is in the Mud Creek floodway and will be prone to flooding. Regular maintenance will be required after flooding events.

Map 33. Alternative B



EVALUATION CRITERIA

By considering all possible segments that could comprise a greenway connection, the project team could then determine the preferred alignments. To arrive at those preferred alignments, a prioritization strategy was necessary.

Evaluation criteria aid this decision-making process by assigning a value to each criterion and alignment. The evaluation criteria considered for the Above the Mud Greenway include those in **Table 2 - Evaluation Criteria**.

Table 2. Evaluation Criteria

ABOVE THE MUD GREENWAY EVALUATION CRITERIA	
	DIRECTNESS OF CONNECTION Based on a comparison of alternatives, how direct is this route for users to access Jackson Park, the Oklawaha Greenway (Hellbender Trail system), downtown, and the 7th Avenue Depot Historic District?
	ABILITY TO ACQUIRE ENVIRONMENTAL PERMITS Based on known natural and human environmental impacts (e.g. flood zones), how likely is it that this option can be permitted?
	QUALITY OF USER EXPERIENCE What level of user experience does this route alternative offer in terms of visual surroundings, separation from hazards, personal safety, and connection to nature and topography (including accessible grades)?
	AVAILABILITY OF RIGHT-OF-WAY/ANTICIPATED PROPERTY OWNER COOPERATION To what degree is right of way available or held by cooperative property owners?
	SECONDARY BENEFITS Beyond the primary project goal, how well does this project provide opportunity for secondary benefits such as access to under-served populations (equity), economic development, connections to community resources, sense of place, etc.?
	SEPARATION FROM MOTORIZED TRAFFIC CONFLICTS How well does this alternative separate users from motorized traffic conflicts to provide higher levels of comfort and to limit traffic impacts?

Table 2. Evaluation Criteria (Continued)

ABOVE THE MUD GREENWAY EVALUATION CRITERIA	
	ABILITY TO CONSTRUCT Based on an investigation of physical obstacles and constraints (e.g. roads, utilities, topography, buildings, waterways, etc.), how likely is it that this alternative can be built?
	ALIGNMENT WITH COMMUNITY GOALS Based on community leadership, public feedback, adopted planning efforts and stated local goals and objectives, what is the anticipated level of community support for this alternative?
	COST EFFECTIVENESS Based on a comparison of alternatives, what is the cost effectiveness of this alternative?
	POTENTIAL FOR FUNDING Compared to other alignments, how likely is this route to qualify for known grant and funding opportunities?
	POTENTIAL FOR TIMELY IMPLEMENTATION How likely will this project be able to be funded, designed, permitted, and constructed as compared to other alternatives?

DECISION MATRIX & SCORING

The project team developed a systematic scoring methodology to assist in identifying preferred alignments that will contribute to the overall goals of the project and to meet stated evaluation criteria. Based on a comparison of alternatives, the two primary alternatives (and their respective sub-alternatives) were assigned a ranking based on how it meets the criteria:

1 – Below Average
2 – Average
3 – Above Average
4 – Highest

The outcome of this scoring is illustrated in **Table 3 - Evaluation Criteria Scoring**. After the ranking was completed, the alignments were presented to the committee and stakeholders. After this feedback was gathered, the highest ranked alignments were studied for cost estimating purposes.

Table 3. Evaluation Criteria Scoring

CRITERIA	ALTERNATIVE/ SCORE	
	ALT A	ALT B
Directness of connection to Jackson Park, Oklawaha Greenway (Hellbender Trail system), downtown and 7th Avenue Historic District	4	4
Ability to acquire environmental permits	4	3
Quality of user experience	4	4
Availability of right-of-way (anticipated property owner cooperation)	2	4
Secondary benefits	4	4
Separation from motorized vehicle conflicts	4	4
Ability to construct	4	4
Alignment with community goals	4	4
Cost effectiveness	4	3
Potential for funding	4	4
Potential for timely implementation	3	4
TOTAL	**41**	**42**

RECOMMENDATIONS

The evaluation criteria scoring resulted in two highest scoring alternatives for the Above the Mud greenway: Alternative A and B, both scoring 40.

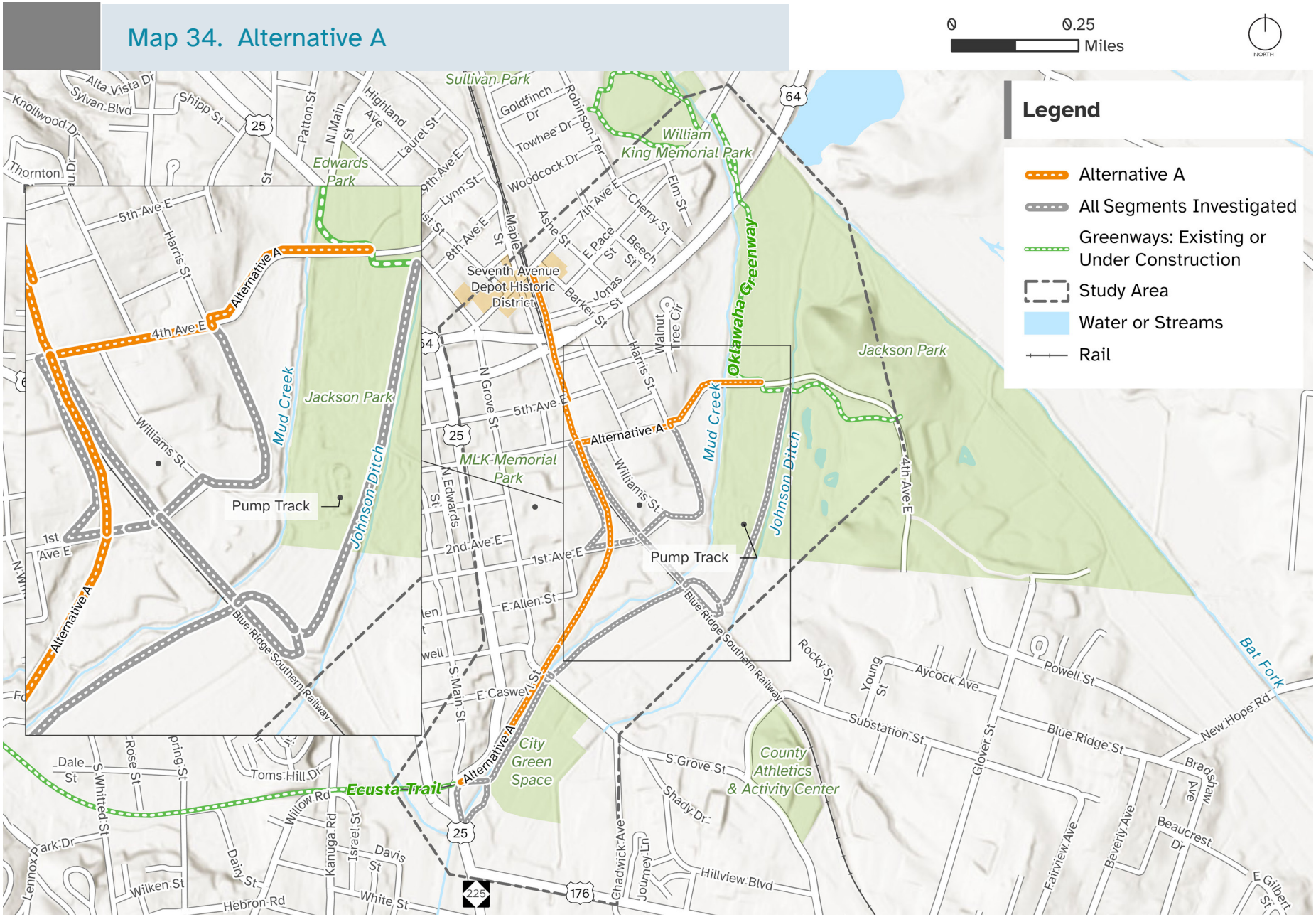
Both alignments ranked the highest (a value of 4) for directness of connection, quality of user experience, secondary benefits, separation from motorized vehicle conflicts, and alignment with community goals.

Alternative A ranked higher for ability to acquire environmental permits, cost effectiveness, and potential funding. Alternative B ranked higher for ability to acquire right-of-way, ability to construct, and potential for timely implementation. This suggests that while Alternative A provides some cost-effectiveness, the implementation schedule of Alternative A may be more than Alternative B.

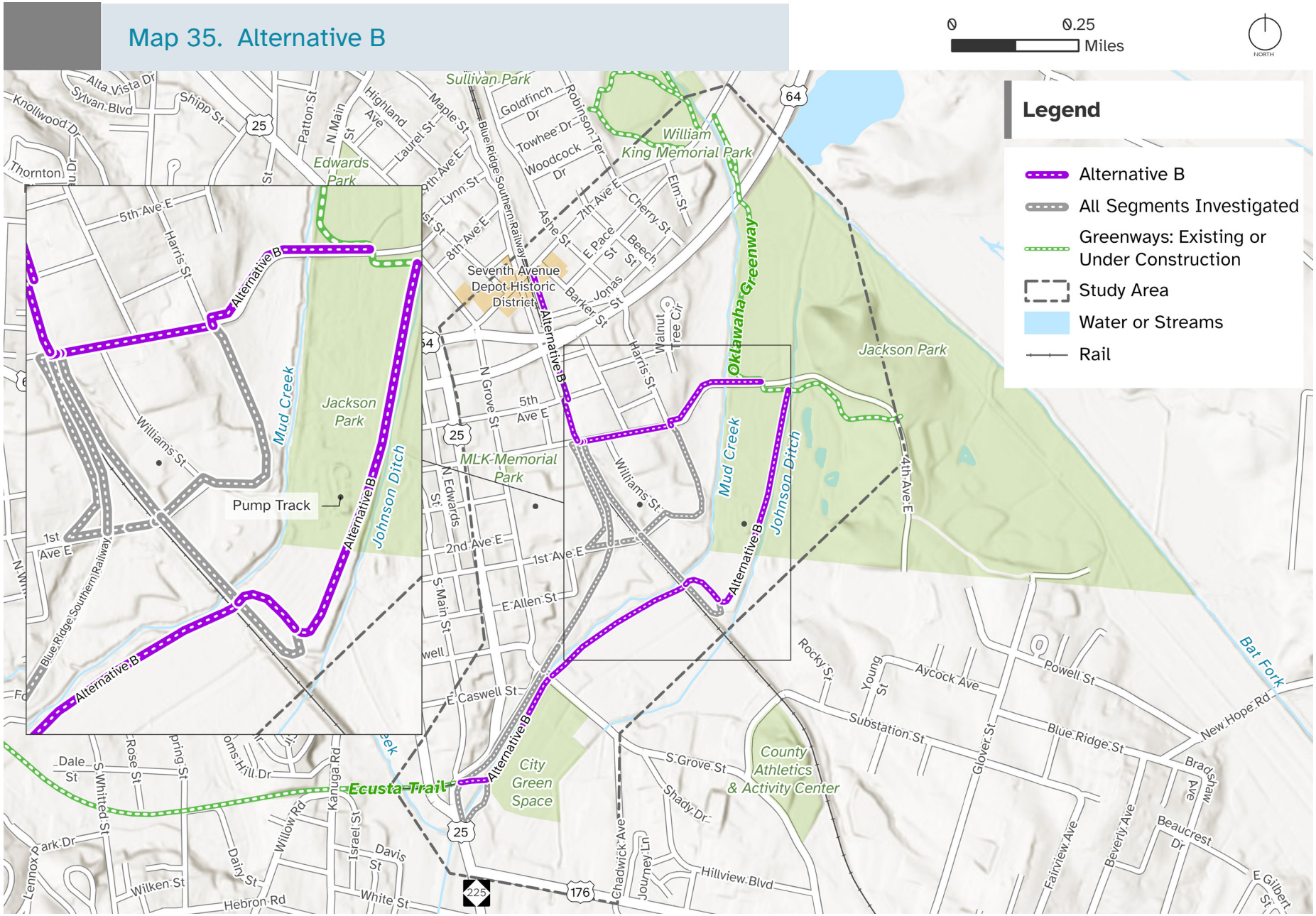
Given the high scores of both projects and how each provides a benefit that is unique from the other, both alternatives are recommended as a part of this study.

Chapter 5 presents a phasing strategy that will enable both to be implemented as funding becomes available. Individually, Alternative A or B would provide a much-needed connection. Together, they will create a truly comprehensive network for people walking and biking.

Map 34. Alternative A



Map 35. Alternative B



DESIGN CONSIDERATIONS

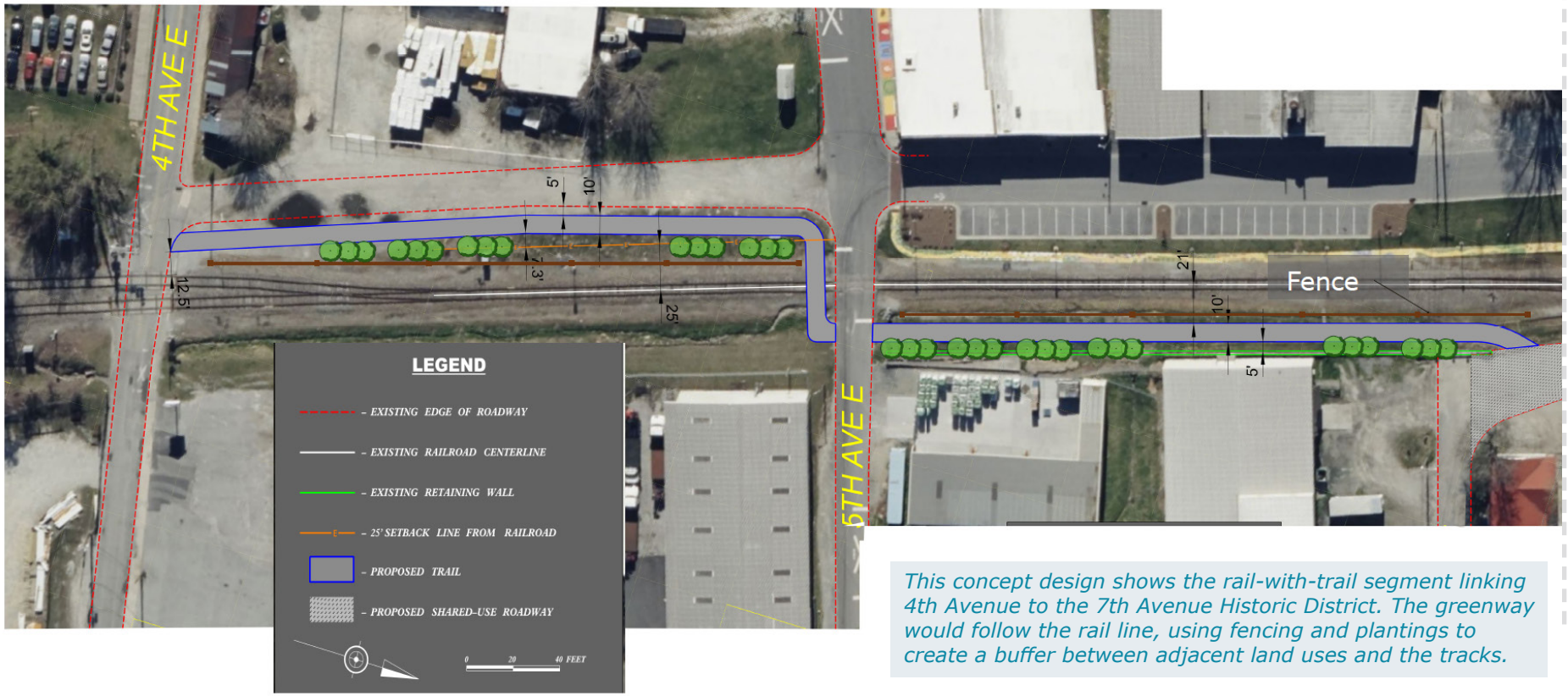
Design considerations for greenways are crucial to their success and sustainability. Thoughtful design ensures that greenways are safe, accessible, and welcoming for all users, incorporating elements like adequate lighting, clear signage, and connectivity to key community areas. These considerations include:

- Greenways in active rail corridors
- Materials selection
- Trailhead/parking
- Greenway amenities
- Wayfinding and branding
- Retaining walls
- Greenway crossing design

Greenways in Active Rail Corridors

When planning for greenway corridors in active rail corridors, safety for the trail users, rail line operators, and general public is paramount. Numerous challenges, including limited right-of-way width, insufficient space for setbacks, concerns about trespassing, and the need for multiple crossings can significantly

Image 40. Rail-with-Trail Concept Design Section 1



This concept design shows the rail-with-trail segment linking 4th Avenue to the 7th Avenue Historic District. The greenway would follow the rail line, using fencing and plantings to create a buffer between adjacent land uses and the tracks.

impact project feasibility. Moreover, there may be a need to allocate space for potential future freight or commuter rail service expansion. These considerations must be addressed during the planning and design phases to effectively navigate constraints and challenges and align with Watco standards to gain formal approval.

In many cases, the installation of fencing will be essential to delineate greenway usage. Many standards indicate that fencing should be at least 5 feet tall. Setbacks from active rail lines will vary based on factors such as train speed, frequency, and available right-of-way, all in alignment with safety standards and regulatory guidelines. Whenever possible, wider paths and enhanced landscaping should be incorporated for added safety and aesthetic appeal.

The concept design illustrated in **Image 40 - Rail-with-Trail Concept Design Section 1** and **Image 41 - Rail-with-Trail Concept Design Section 2** shows the rail-with-trail alignment between 4th and 7th Avenues. The concept calls out the existing edge of roadway, railroad centerline, existing retaining wall, and the 25’ setback from the rail line.

Image 41. Rail-with-Trail Concept Design Section 2

This concept design shows how the greenway will utilize an existing (low volume) street for a constrained segment under the US 64 bridges and connect directly to the 7th Avenue Historic

MATERIALS & AMENITIES CONSIDERATIONS

Various factors should be considered when deciding on what surface material a greenway or sidepath should comprise. Considerations include user type (e.g., bicycle or horseback), user demographics (e.g., age which could be an indication of ability level), environmental factors (e.g., topography), cost, maintenance, and funding requirements. Options for surfaces include:

Paved Surfaces

For paved surfaces, asphalt and concrete are common options. Asphalt is popular due to its cost-effectiveness and suitability for various trail types. On the other hand, concrete offers greater durability but comes with a higher initial cost. Concrete surfaces are often preferred for urban settings or areas prone to heavy flooding, where resilience to high volumes of users and water damage is essential.

Image 42. Asphalt Greenway Example

Source: Martin Johnson

Image 43. Concrete Greenway Example

Source: High Line Network

Natural Surfaces

Natural surface options include compacted aggregates and compacted native soil. Compacted aggregates, typically using granite fines, offer a durable and affordable alternative to paved greenways. However, proper compaction and drainage management are needed to prevent erosion and maintain accessibility. Compacted native soil is another economical choice but requires careful compaction and drainage control to maintain trail integrity and accessibility requirements. Both options necessitate annual maintenance, including re-compaction and potential soil additions in erosion-prone areas.

Image 44. Aggregate Trail Example

Source: Vermont Rail Trails

Image 45. Native Soil Trail Example

Source: Green Circle Trail

Retaining Wall Considerations

In areas with topography such as Hendersonville, constructing a greenway will likely require a retaining wall to achieve accessible grades - The Americans with Disabilities Act (ADA) requires a greenway to have a 5% or less longitudinal slope. Retaining wall design offers a multitude of approaches and a variety of retaining systems, each tailored for specific applications in soil retention and slope stability. When future retaining walls are designed and constructed, careful attention should be given to the intricacies of each design approach, including construction methods and the conditions under which they are used.

Image 46. Retaining Wall Example (Purple Martin Trail)

Source: Town of Rutherfordton, NC

In greenway design, retaining walls may be necessary to address slopes or elevation changes along the greenway route. These walls provide stability and prevent soil erosion while ensuring the safety and accessibility of the pathway for users.

Maintenance Considerations

Proper maintenance is critical to ensure that the infrastructure we build can be safely accessed well into the future. Shared use paths should be kept clear of debris and damage so that their surfaces are traversable and curb ramps should be ADA accessible. As much of the study area is in a floodway, it is important to install stormwater mitigation elements and make sure to address maintenance issues after heavy rains and flooding. The following includes maintenance considerations for the long-term viability of this pedestrian connector project:

- Developing an inventory of facilities and assets (signs, bridges, pavement, etc), which will allow the City to understand routine vs. substantial maintenance needs.
- Estimate of baseline maintenance based on City and County costs on other systems.
- Consider available technologies to monitor maintenance, including Esri systems.
- Acquire the final ADA inspection checklist from the contractor prior to project acceptance.
- Establish a maintenance plan and funding resources for repairs to sidewalks, greenways, and curb ramps. More details on development of a maintenance plan are provided in the FHWA 2013 publication, *A Guide for Maintaining Pedestrian Facilities for Enhanced Safety.*

Greenways in Floodplains

Areas along creeks and rivers are prime for greenway development, however, these corridors are also susceptible to flooding - people in Hendersonville experience this conflict every time the Oklawaha Greenway closes after a flood event. Following are some of the materials to consider when developing greenways in flood prone areas, with a focus on the durability of surfaces:

- Crushed rock is prone to erosion, asphalt can be damaged by running water, and while concrete may withstand submersion, severe stream bank erosion can still pose a threat.
- Concrete with transverse saw cuts offers resilience in flood-prone regions, but at a significant cost.
- Alternatively, asphalt provides a smoother and more cost-effective option, though it requires more frequent repairs and can retain heat. Reinforcing asphalt paths with a deep base and strategic stone placement can enhance their durability during floods.

Designing greenway facilities with flooding in mind can safeguard habitats and riparian zones. Implementing erosion control measures like vegetative buffers and stormwater retention devices can prevent soil erosion and protect water quality.

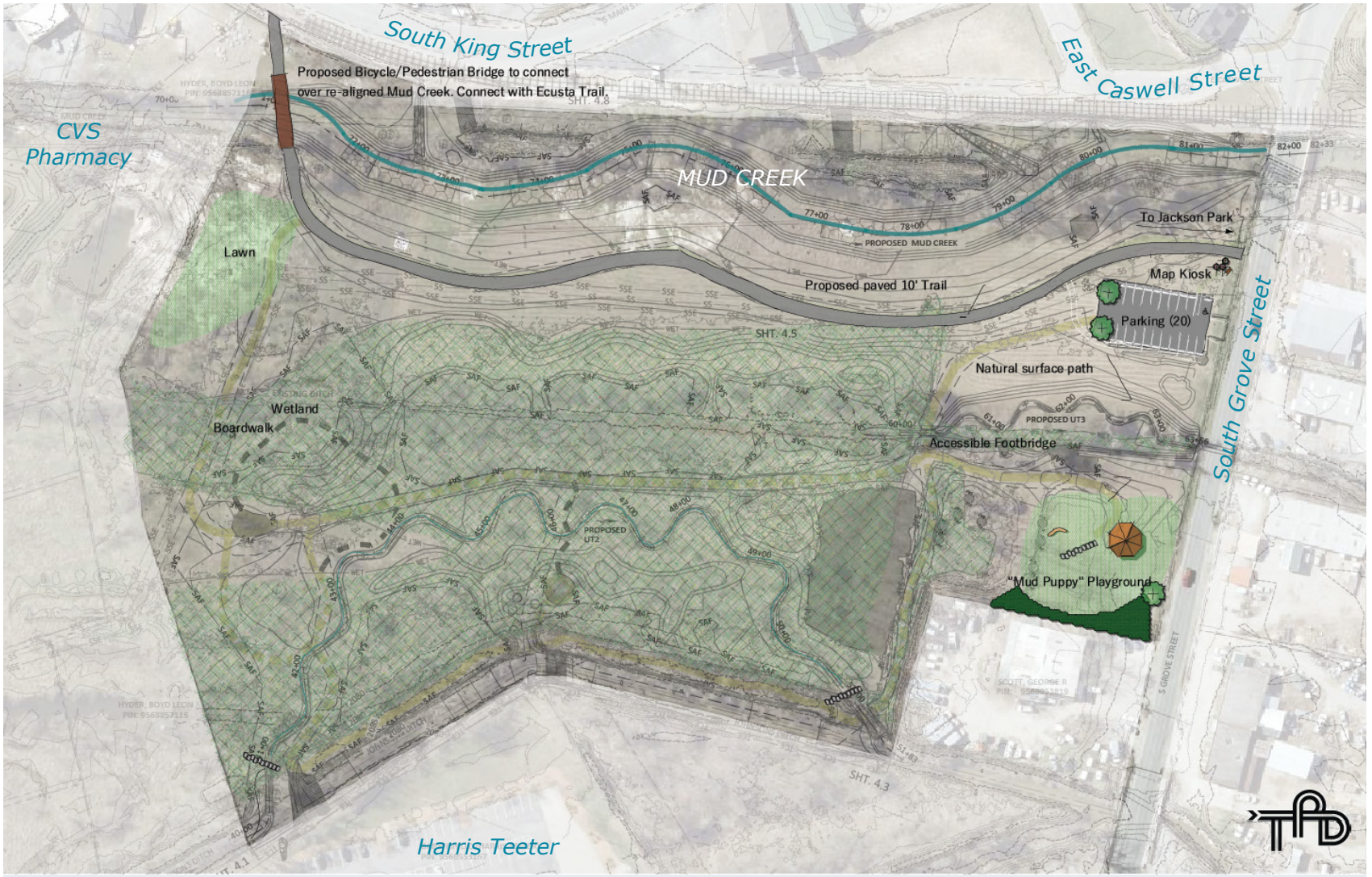
For the Above the Mud greenway, materials resistant to water, corrosion, and erosion—such as concrete, steel, or composite materials—are recommended for bridges and other infrastructure. While these areas are prime for greenway development, it is crucial to weigh the maintenance costs, particularly when they face sediment inundation during floods.

Image 47. Flooding on the Oklawaha Greenway (2024)

Source: Dean Hensley (Hendersonville Times-News)

Mud Creek is prone to flooding following heavy rainfall, leading to temporary closures of greenways like the Oklawaha Greenway. Post-flooding maintenance is needed to ensure these greenways remain open and functional. Tasks include clearing debris, addressing silt buildup, and repairing any damaged amenities.

Image 48. Concept Design for City-owned Greenspace on South Grove Street



Source: City of Hendersonville

The City of Hendersonville is conducting extensive floodplain restoration. The design team collaborated on that project to identify a location for a future greenway to be used for the "Above the Mud" connector. This concept for the City green space on S. Grove Street shows a greenway trail running parallel to Mud Creek. The trail will be elevated higher than the rest of the property so that when floods occur, the trail will be less impacted.

Trailhead/Parking

Jackson Park is a gateway to recreation, outdoor activities, and multimodal transportation. Connecting the Above the Mud greenway to Jackson Park will bolster the park's amenities and offer people a way to arrive at the park on foot and bike. Jackson Park currently offers parking and a trailhead to the Oklawaha Trail. For the Above the Mud project, the park will also serve as a trailhead, parking, and greenway access point.

The City of Hendersonville is working on a flood restoration project on City-owned property (shown on maps in Chapter 2). As a part of this project, parking and a trailhead are recommended. **Image 48 - Concept Design for City-owned Greenspace on South Grove Street** illustrates the site concept for this project.

This project incorporates the City's previous design efforts for a trailhead at the Ecusta Trail terminus, at the intersection of South Main Street, South Church Street, and South King Street. This concept, shown in **Image 49 - Trailhead Concept at Ecusta Trail Roundabout**, integrates NCDOT's plans to build a roundabout at the Ecusta Trail terminus. It provides a vision for a gateway to downtown, with the Ecusta and Above the Mud Greenways front and center.

Image 49. Trailhead Concept at Ecusta Trail Roundabout

Source: Kimley-Horn

This early concept provided by Kimley-Horn consultants shows how multiple projects can work in tandem to result in the best possible outcome for the community. This effort takes ongoing communication and coordination across various agencies and decision points.

Greenway Amenities

Greenways such as the Above the Mud can offer a range of amenities to enhance the user experience. These amenities include benches, trash receptacles, restrooms, dog waste stations, entrance signs, and wayfinding signage, such as those currently offered in Jackson Park and along the Oklawaha Greenway. The City is exploring opportunities for additional restrooms on City-owned property within the Above the Mud greenway study area.

Lighting is important in high-traffic areas, intersections with roads, and areas with low visibility such as beneath bridges or overpasses. To ensure that Above the Mud operates well as a transportation option, lighting will be an important consideration to foster a sense of safety.

Centerline striping on the greenway is recommended in areas with high user volumes, tight or blind corners, intersections, or under bridges. Lane markings can help separate traffic flow, reduce conflicts, and enhance user experience. This feature is beneficial in extensive greenway networks, such as the future 30+ mile system comprised of the Above the Mud, Ecusta, and Oklawaha greenways.

Image 50. Jackson Park Picnic Shelter

Source: Henderson County

Places of respite, with shade and seating, are important for parks and can be useful at trailheads and along the length of a greenway.

Image 51. Center Line Striping on the Oklawaha Greenway

Source: Friends of the Oklawaha Greenway

Wayfinding & Branding

Users of greenways generally are unconcerned about municipal boundaries or what agency owns a particular facility. What matters more to a user is that the facility is intuitive, accessible, and gets them where they need to go. As the Above the Mud greenway will be a part of a network of City- and County-maintained facilities crossing through public and private land, it is important that partners collaborate on a branded wayfinding system that is consistent across all segments of the trail network. These planning efforts are currently underway with the Ecusta Trail partners and will ensure that users have the information they need to make decisions about their trip.

Image 52. Wayfinding Signs on the Oklawaha Greenway

Source: Dean Hensley (Hendersonville times-News)

Signs for nearby parks are located along the Oklawaha Greenway. This type of wayfinding is helpful for visitors and will be especially important once the Ecusta Trail connection is made and there are more crossings and access points.

Image 53. Ecusta Trail Logo

ecusta TRAIL

Source: Friends of the Ecusta Trail

The Ecusta Trail has its own branding and logo. Since Above the Mud is a short segment, it likely will not have its own branding.

Source: FHWA

Rectangular Rapid Flashing Beacons (RRFB)

Pedestrian and bicyclist visibility enhancement at a midblock crossing that accompanies a warning sign and consists of two rectangular yellow indicators each with an LED light that flash with an alternating high frequency.

Source: Portland Bureau of Transportation

Crosswalks

Designated areas where pedestrians should cross the street. A crosswalk can be marked or un-marked at an intersection, or can be marked as a mid-block crossing. They may feature signage, pavement markings, and traffic control measures such as stop signs, traffic lights, or flashing devices.

Source: City of San Francisco

Curb Ramps

Sloped surfaces that facilitate the transition between the greenway and the street. When designed in compliance with ADA regulations, ramps enable individuals using mobility devices to easily access and leave the greenway to cross a street or get to a parking facility.

Source: New York Post; Maricopa Association of Governments

Pedestrian Signal Heads & Push Buttons

Installed at signalized intersections, these allow people to activate the walk/don't walk pedestrian signal, indicating whether it is safe to cross the street. A countdown timer is helpful for people to gauge remaining time to cross.

Greenway Crossing Design

At-grade roadway crossings present potential conflicts between greenway greenway users and motorists. However, with well-designed crossings, many operational issues can be mitigated, enhancing safety and comfort for all users. Each crossing should be studied and designed to meet state and national standards for crossings. These standards indicate various safety countermeasures that can be applied based on location specific factors and engineering judgment. In busier urban crossing scenarios, additional safety measures such as physical mid-crossing protection, user-activated signals, and proactive traffic calming treatments may be necessary. Several key assumptions apply to all crossings:

Vehicular Scale Signage: Signage alerting motorists to the presence of the greenway should be placed near the crossing, adhering to Manual on Uniform Traffic Control Devices (MUTCD) standards. If the greenway runs parallel to the street, signage should be installed beforehand to notify motorists in advance.

High Visibility Design: Crossings should be designed for high visibility, using lane markings and signage in compliance with MUTCD standards.

Surface Material: Where the greenway intersects with sidewalks, a concrete surface should be applied for durability and accessibility.

Pedestrian Activated Signals: Mid-block crossings of major streets should feature pedestrian-activated traffic signals.

ADA Compliance: All crossings must comply with Americans with Disabilities Act (ADA) and/or Public Right-of-Way Accessibility Guidelines (PROWAG) guidelines, incorporating detectable warnings and other ADA components according to the latest standards and local regulations.

Stormwater Management: Opportunities to integrate stormwater management elements and pervious surfaces should be considered to establish the greenway corridor as a resilient amenity.

The following resources represent some of the best practices and should be considered in the planning and design of pedestrian crossings for the Above the Mud greenway. Hendersonville's pedestrian plan, *Walk Hendo*, is another helpful resource.

North Carolina Pedestrian Crossing Guidelines (2018) provides guidance on when to consider marking crosswalks at uncontrolled approaches for pedestrians, when to install pedestrian signal heads at existing signalized intersections, and when to provide supplemental treatments at a crossing location. More information can be found **HERE**.

FHWA's Proven Safety Countermeasures Initiative is the culmination of over 15 years of safety work available in an online tool that can be used to address a variety of areas that impact pedestrian crossing safety including:

- Crosswalk visibility enhancements and lighting.
- Leading pedestrian intervals.
- Medians and pedestrian refuge islands.
- Rectangular Rapid Flashing Beacons (RRFBs).
- Pedestrian Hybrid Beacons (PHBs).

More information can be found **HERE**.

FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations provides guidance for uncontrolled crossings to help local and state agencies "improve quality of life for pedestrians of all ages and abilities." The guide includes a process for evaluating crossings and determining appropriate countermeasures for specific crossing conditions based on engineering which includes data collection, site condition analysis and crash history review. More information can be found **HERE**.

FHWA's Improving Visibility at Trail Crossings presents a systemic approach to reviewing existing crossings or planning for improved at-grade trail crossings with engineering countermeasures, such as enhanced signs and traffic controls. More information can be found **HERE**.

Image 54. Midblock Crossing (Oklawaha Greenway)

Source: Google Streetview

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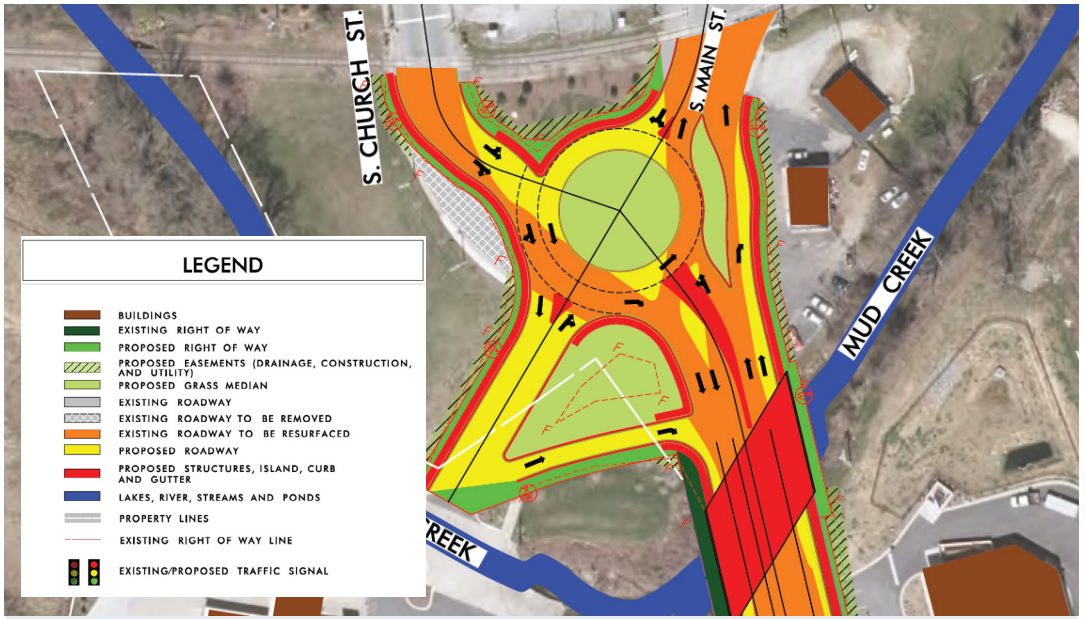
05 Implementation

OVERVIEW

The findings presented in this report offer an implementation plan for multimodal investments that will connect the Ecusta Trail with the Oklawaha Greenway. This chapter presents project cutsheets, which provide a concise project snapshot to enable the City and its partners to advance these projects. The cutsheets are standalone details that provide route alternative descriptions, phasing options, cross-sections, maps, visual representations, and planning-level cost estimates.

Also essential to project advancement are key local and regional partnerships, which are outlined in this chapter. Finally, this chapter contains an action plan, delineating tasks, designating lead agencies and primary partners, establishing an implementation timeline, and defining metrics for gauging success.

Image 55. U-6049 Preliminary Design Concept



Source: NCDOT

Coordination and communication between NCDOT and the City of Hendersonville can help make sure that final designs reflect recommendations for the Above the Mud greenway connection.

PHASING STRATEGIES

When developing an implementation and phasing plan, certain factors are reviewed that may impact the timing of project implementation. During this analysis, we often split projects into phases based on the following factors:

- Availability of right-of-way and property ownership.
- Permitting challenges including NCDOT coordination, flood impacts, environmental impacts, etc.
- Project needs, such as a segments with a known safety and crash history that is constructed first to prioritize for safety improvements.
- Project cost.
- Potential funding and matching funds.
- Project partnerships.

For example, NCDOT's South Main Street bridge replacement and intersection improvement project (U-6049) is still in the preliminary design stage. This presents an opportunity to coordinate design efforts of the Ecusta Trail and the Above the Mud connection into the final engineering plans. By aligning these projects early on, there is flexibility for revisions and the introduction of new ideas as NCDOT progresses with the project. This proactive approach may prevent redundancies and potentially save costs during the design and construction phases.

Note that the lower ranked route alternatives are also potentially viable and should not be wholly ruled out. If future opportunities and constraints arise that change the dynamic of the final outcome, the City should adapt.

When developing an implementation and phasing plan, certain factors are reviewed that may impact the timing of project implementation. For the implementation phasing analysis, we often split projects into phases based on the following factors:

- Availability of right-of-way and property ownership (including railroads)
- Permitting challenges including NCDOT coordination, flood impacts, environmental impacts, and the like.
- Project needs such as segments with a known safety and crash history or key network gaps may be prioritized for implementation sooner.
- Project cost
- Potential funding sources and the availability of matching funds.
- Project partnerships

The phasing and prioritization strategies are relatively simple for this project since there are two recommended alternatives (Alternative A and B) that can be advanced immediately. These alternatives serve different connections yet work together for a more complete greenway network.

Several early action implementation recommendations were identified based on the following understanding:

- Implementation of Alternative A and B will require early coordination with other partners and planned projects.
- Alternative B has elements that make it more time sensitive to build upon synergies with other projects in progress.
- Alternative A will require more time to reach an agreement with the railroad. Therefore, coordination should begin as soon as possible.

Early Action Implementation Recommendations

1. Begin coordination with Watco to negotiate railroad right-of-way purchase and/or easements as needed.
2. Work with Henderson County Parks and Recreation to develop a unified approach to the greenway sections in Jackson Park. This approach may address items such as who will fund, maintain and design the greenway in the park. This conversation may also include items such as the exact alignment of the greenway, design standards, funding and ownership/maintenance decisions. Note that community members have indicated the importance of maintaining access to the creek from the dog park. This alternative will require modifications to the existing dog park layout and fencing in order to separate the greenway.
3. Apply for design and construction funding grants and reimbursement programs (see funding section). Prioritization recommendations are as follows:
    - Prioritize funding for the Mud Creek Bridge: The City of Hendersonville is currently working on a design and permitting for the Brevard Church Site, just south of Mud Creek where a new greenway bridge would need to be incorporated into the floodway permitting and final grading plans for the site. As such, funding and design for a greenway bridge at this location is a high priority. If this connection is not integrated with the project, floodway permits may be challenging to acquire as a standalone project.
    - Incorporate the Alternative B segment from South Main Street to Jackson Park with other City projects.
        - City of Hendersonville "Brevard Church" Site: This funded project is a floodplain restoration project that is currently in the design stage. The project will include design and construction of the portion of Alternative B that runs through the site. Given site constraints and complex floodway modeling that is underway, the future Mud Creek Bridge should be advanced quickly in order to ensure that floodway impacts can

be minimized and that engineering efforts can work together to achieve the floodplain restoration and greenway connectivity goals.

- City of Hendersonville Sewer Project ("Interceptor"): The City is working on a sewer extension project that could include a trail easement allowing for Alternative B to be constructed between South Grove Street and the Scott Site Floodplain Restoration Project.
- City of Hendersonville "Scott Site" Floodplain Restoration Project: This floodplain restoration project is in the early planning stages and funding is pending. Similar to the Brevard Church Site, this project would include the design and construction of the Alternative B greenway through the site and complete the connection to the Watco Zirconia Line railroad underpass into Henderson County property which connects to Jackson Park.

- Prioritize, or phase, remaining greenway segments together or as smaller stand-alone projects as funding opportunities and partnerships become available. Sections that will function as stand-alone facilities are as follows:
  - Alternative A Segment: Rail-to-trail conversion of remaining section of the active Ecusta Line between South Main Street and 4th Avenue.
  - Alternative A and B Segment: Rail-with-trail connection between 4th Avenue and 7th Avenue.
  - Alternative A and B Segment: 4th Avenue sidepath from the northern end of the Ecusta Line to the Oklawaha Greenway in Jackson Park.

This approach to prioritization is intended to be nimble allowing the City and greenway partners to pivot based on funding opportunities and partnerships that may arise.

PREFERRED ALTERNATIVE CUTSHEETS

In order to evaluate phasing strategies, project cut sheets were developed for both Alternative A and B, presented on the following pages. They include implementation details such as:

- Project map and description of improvements
- Right-of-way availability and property acquisition needs
- Permitting needs
- Cost estimates for survey, design and construction

Explanation of Cost Estimate Items

It should be noted that cost estimates are not based on actual survey and design. As such, these planning level costs should be revisited as the project details and preliminary design investigations are completed.

Baseline Construction

This value reflects an opinion of the probable cost for a contractor to construct the described improvements during the current calendar year and is based on recent bid prices for similar projects. These detailed estimates for various project elements are included in the Appendix.

Survey / Design Services

This value reflects an opinion of the cost for consulting firms to obtain survey, design the project for permitting and approvals, and provide construction documents to be used in bidding the project for construction. Various funding sources can impact the necessary approvals, design formats/standards, and permitting requirements. In addition, certain environmental items identified during preliminary design can escalate costs. As such, this cost should be revisited as funding is identified, with completion of design work in stages and an evaluation of project cost and permitting needs to be revisited after preliminary design.

Right-Of-Way (ROW) Acquisition

Many projects have impacts on properties that are outside of the public right-of-way (ROW). Before construction can begin, there are various ROW tasks that must be completed, ranging from purchasing property to obtaining permanent or temporary

easements for the facility and related construction impacts. Depending on the type of ROW task, there is a cost associated with property purchase and/or easements as well as the cost for legal work and right-of-way survey and exhibits. If federal funds are used for the project, the ROW negotiations must be in line with the Federal Relocation Assistance and Real Property Acquisition Policies Act of 1970 (aka Uniform Act). Accurate ROW costs require current market research and appraisals; as such, a special ROW firm may need to be hired to navigate the process. Any ROW costs should be calculated at a later date after additional investigation, as individual segments of the preferred route move into design and implementation.

Escalated Construction

The baseline construction estimate is based on current year costs. Given that it will take time to get a project through funding, ROW, design and permitting stages, there is a need to escalate costs to account for inflation that will occur between now and the estimated year of construction.

Construction Engineering + Inspection Services

Depending on the funding source, varying levels of construction engineering and inspection (CEI) services are expected. CEI services are typically a percentage of the estimated construction cost based on the project size and elements of construction. This study assumes 7.5% for preliminary engineering and another 7.5% for final engineering.

Total Budget Estimates

At the planning level or project cost estimating, there are always detailed items that may be necessary that are unforeseen at the planning stage. As such, a project contingency is assumed to help address these unknown and unforeseen costs. Contingency percentages can vary depending on how advanced the design of the project is and the likelihood of unknowns. At the planning level, a higher contingency is often used to ensure that the project is not underfunded. A 20% contingency was assumed for this project given that no actual design has been completed. The final budget for the project is based on the sum of the above items. The values were rounded to the nearest dollar.

ALTERNATIVE A

Ecusta Line Extension Alignment

This alternative assumes the City of Hendersonville can acquire the remaining active Ecusta Line (owned by Watco) that extends from the Ecusta Trail (under construction) north to 4th Avenue East. Alternative A would convert the remaining rail line to a paved shared use path that would extend to a point just north of 4th Avenue East to form an extension of the Ecusta Trail. From the end of the Ecusta Line, a sidepath along 4th Avenue East would continue east into Jackson Park to connect with the existing Oklawaha Greenway. An optional rail-with-trail segment is also included between 4th Avenue East and 7th Avenue East. This rail-with-trail is along the active Zirconia Line (owned by Watco) and connects the 7th Avenue Historic District.

PROJECT SNAPSHOT

Location: Extends the Ecusta Trail from the terminus at South Main Street up to 4th Avenue East and connects to Jackson Park along 4th Avenue East. Optional spur (pending Watco approval): Extension north to 7th Avenue East.

Facility Type(s): Conversion of rail line to paved greenway; Paved sidepath along 4th Avenue East; Optional spur (pending Watco approval): Paved greenway extension to 7th Avenue East.

Total Length: ~6,240 linear feet

Structures: One (1) greenway bridge over Mud Creek at 4th Avenue East

At-Grade Road Crossings: Five (5)

Greenway Connections: Oklawaha Greenway (Hellbender Trail system); Ecusta Trail

Destinations Served:

- Jackson Park
- City Operations Center
- 7th Avenue Historic Depot and commercial district

POTENTIAL REAL ESTATE ACQUISITION NEEDS

- Railroad right-of-way

POTENTIAL PERMITTING NEEDS

- Erosion and sedimentation control permit
- NCDOT encroachment agreement
- Optional 7th Avenue East extension requires Watco encroachment permit
- Floodway permits for Mud Creek crossings

COST ESTIMATE

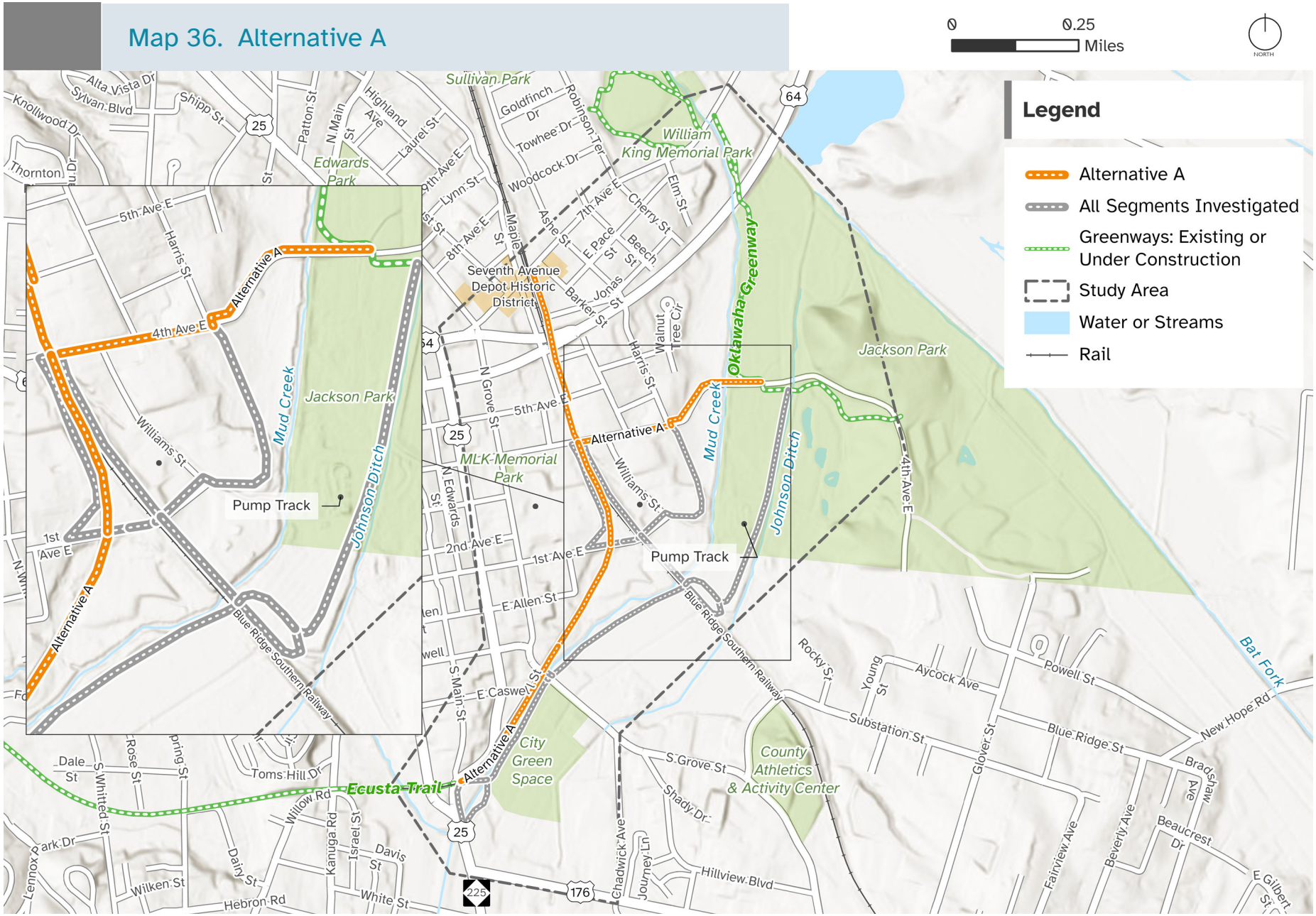
Baseline Construction	$3,000,000
Engineering Design & Inspection	$1,010,000
Utilities	$110,000
Right-of-Way	$600,000 *
Additional Contingency *(20%)*	$950,000
Total Estimated Budget	**$5,670,000**

See Cost Estimate Summary in Appendix for breakdown, assumptions, and exclusions.

* Value is estimated pending negotiations with the rail corridor owner. Based on recent rail line acquisitions in the region, the purchase of the remaining 3,300 linear feet of the Ecusta line could range from $325,000 - $625,000.

NOTE: The segment from 4th Avenue East to 7th Avenue East is included in the cost estimate (approximately $1.4 million).

Map 36. Alternative A



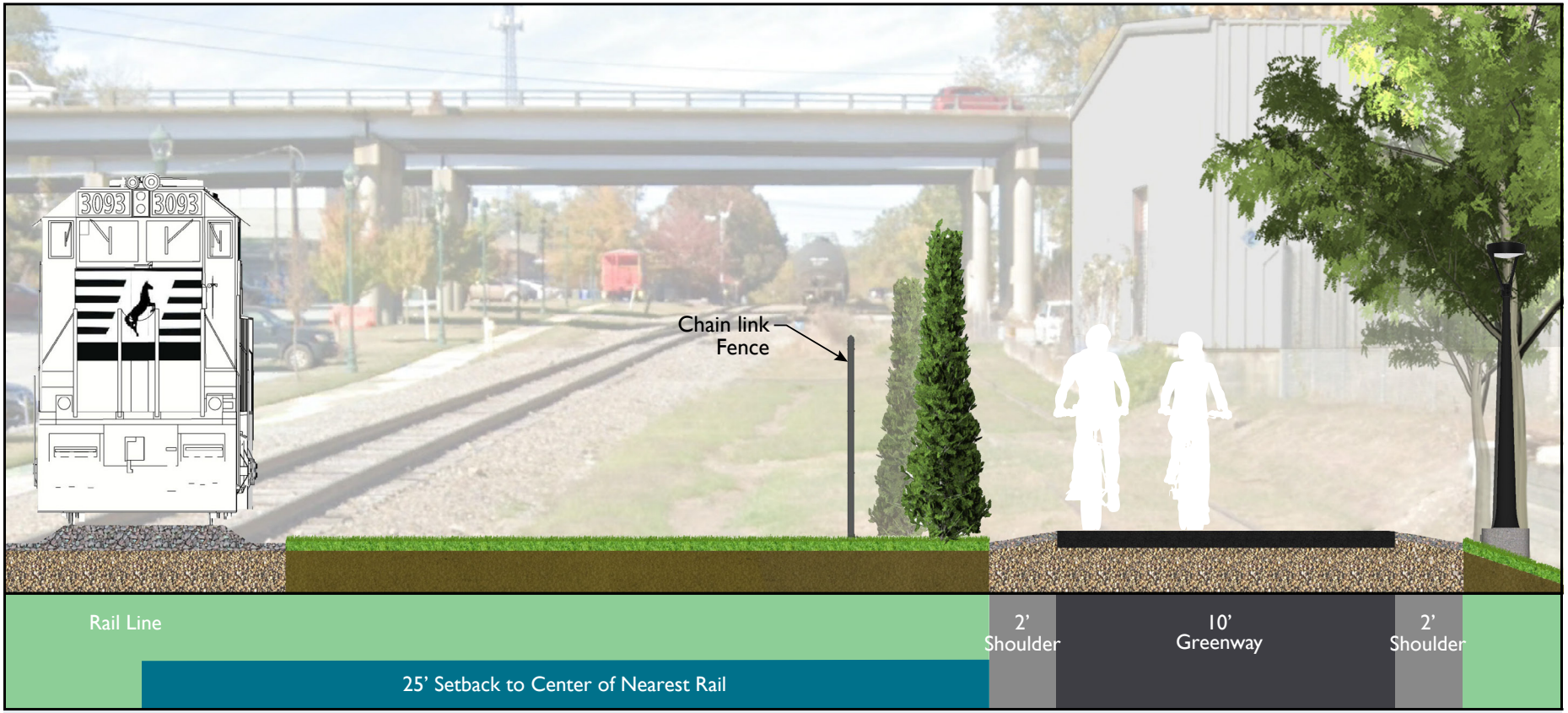
Typical Cross-Section

ALT A

For Alignment A, there are two typical treatments:

1. A 12’ greenway as a rail-to-trail conversion from South King Street to the Seventh Avenue Depot Historic District.
2. Along 4th Avenue East, the treatment is a 10’ paved sidepath (12’ where feasible) that parallels the roadway.
3. From 4th Avenue East to 7th Avenue East, the recommended treatment is a 10’ rail-with-trail (12’ where feasible) as illustrated in **Image 57 - 10-Foot Rail-With-Trail Typical Cross-Section.**

Image 56. 10-Foot Rail-With-Trail Typical Cross-Section



When considering a greenway alongside a rail line, it’s crucial to recognize that while these greenways can provide connectivity and accessibility, they also pose safety concerns due to the proximity of active rail operations. Therefore, ensuring a safe distance and appropriate barriers between the greenway and the railway is paramount to prevent accidents and enhance user security.

Image 57. Rail-With-Trail Rendering

It might be a good idea to address potential issues such as noise, vibrations, and visual impacts associated with train traffic. Implementing sound barriers, landscaping, and aesthetic enhancements can help mitigate these challenges and create a more pleasant greenway experience.

ALTERNATIVE B

Floodplain Restoration Projects Alignment

This alternative assumes that it is *not* feasible to convert the remaining active Ecusta Line to a greenway. From the Ecusta Trail section that is under construction, Alternative B would depart from the rail bed at a point just east of South King Street and turn south to cross Mud Creek via a proposed pedestrian bridge. On the south side of Mud Creek, it would continue to the east on City-owned land. It would cross South Grove Street and then follow a proposed sewer easement to connect to Jackson Park as it passes under a railroad bridge. This alternative would connect to the existing Oklawaha Greenway in Jackson Park and then continue west towards downtown as a sidepath along 4th Avenue East. This alternative also includes an optional greenway spur between 4th Avenue East and 7th Avenue East, generally following the Watco rail right-of-way, connecting to the 7th Avenue Historic District. This alternative will require modifications to the existing dog park layout and fencing in order to separate the greenway.

PROJECT SNAPSHOT

Location: Connects to the Ecusta Trail terminus at South Main Street and crosses Mud Creek to south side to Jackson Park. Also includes sidepath on 4th Avenue East to downtown. Optional spur (pending Watco approval): Extension north to 7th Avenue East.

Facility Type(s): Paved off road greenway from Ecusta Trail to Jackson Park; Paved sidepath on 4th Avenue East; Optional spur (pending Watco approval): Paved greenway adjacent to rail line between 4th Avenue and 7th Avenue.

Total Length: ~8,045 linear feet

Structures: Two (2) greenway bridges over Mud Creek (one near South Main Street and one near 4th Avenue East)

At-Grade Road Crossings: Six (6)

Greenway Connections: Oklawaha Greenway (Hellbender Trail system); Ecusta Trail

Destinations Served:

- Downtown via 4th Avenue East
- Jackson Park
- City Operations Center
- 7th Avenue Historic Depot and commercial district

POTENTIAL REAL ESTATE ACQUISITION NEEDS

- Easements will be needed along 4th Avenue East

NOTE: The majority of this alternative is on current or planned City or County land as well as a planned sewer easement.

POTENTIAL PERMITTING NEEDS

- Erosion and sedimentation control permit
- NCDOT encroachment agreement
- Optional 7th Avenue East extension requires Watco encroachment permit
- Floodway permits for Mud Creek crossings

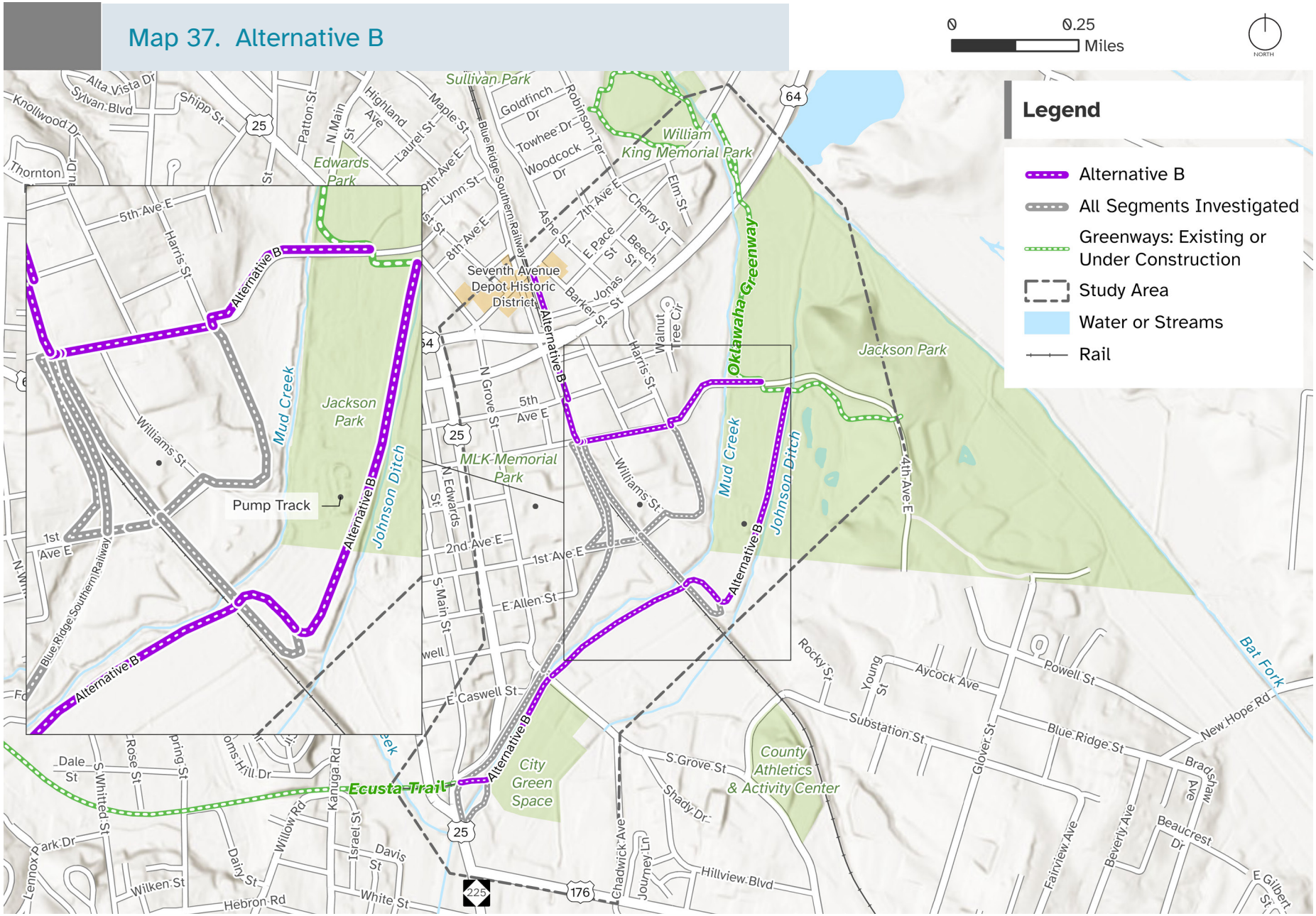
COST ESTIMATE

Baseline Construction	$3,720,000
Engineering Design & Inspection	$1,250,000
Utilities	$110,000
Right-of-Way	$200,000
Additional Contingency *(20%)*	$1,060,000
Total Estimated Budget	**$6,340,000**

See Cost Estimate Summary in the Appendix for breakdown, assumptions, and exclusions.

NOTE: The segment from 4th Avenue East to 7th Avenue East is included in the cost estimate (approximately $1.4 million).

Map 37. Alternative B



Typical Cross-Section

ALT B

Alignment B includes three typical treatments:

1. A 12’ greenway connecting from South King Street to Jackson Park, traversing City-owned land and a proposed sewer easement.
2. Along 4th Avenue, the treatment is a 10’ paved sidepath (12’ where feasible) that parallels the roadway. This is illustrated in **Image 59 - 10-Foot Sidepath Typical Cross-Section.**
3. From 4th to 7th Avenue, the recommended treatment is a 10’ rail-with-trail (12’ where feasible). *See Images 40 and 41 for a conceptual design.*

Image 58. 10-Foot Sidepath (12-Foot Where Feasible) Typical Cross Section on 4th Avenue East

Image 59. Trail Along Mud Creek Rendering

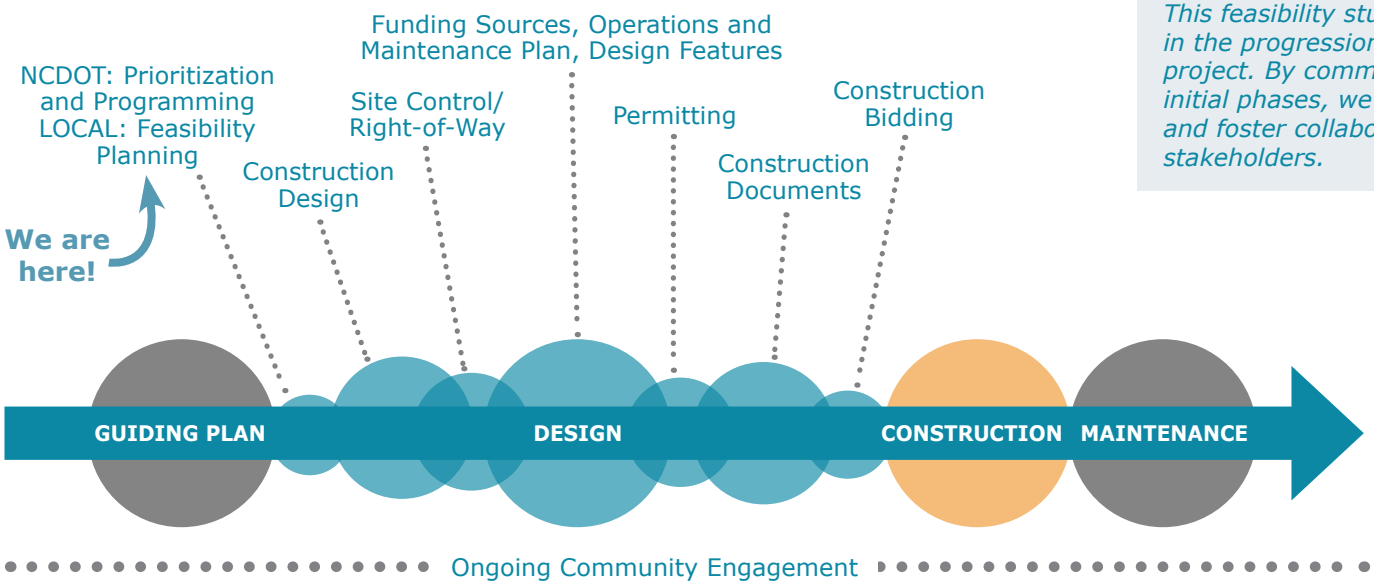
Railroad rights-of-way and creek beds frequently present optimal locations for greenway placement due to their level ground, few obstructions, and direct connectivity to transportation routes. By capitalizing on the natural features of these areas and integrating thoughtful design solutions, greenways situated within rail corridors and creek beds can provide both practical connectivity and enriching recreational experiences for users.

LIFECYCLE OF A PROJECT

One of the most asked questions in the work of building pedestrian and bicycle networks is *"when will the project be finished so I can take a walk or bike?"* While seemingly straightforward, the answer is often complex. **Figure 20 - Lifecycle of a Transportation Project** illustrates the typical lifecycle of an active transportation project. The time it takes to implement a project depends on the project's complexity, managerial oversight (whether by local authorities or NCDOT), the type of funding involved, how much ROW is needed, and the scale (size) of the project.

The Above the Mud greenway project represents the 'Feasibility Planning' stage of projects, and from there it will move into the subsequent stages of funding (programming), design, construction, and then maintenance. The cutsheets will enable these projects to be well-presented for funding opportunities, facilitating their advancement through the subsequent lifecycle stages.

Figure 20. Lifecycle of a Transportation Project



This feasibility study marks a crucial stage in the progression of a transportation project. By committing resources to these initial phases, we lay a solid foundation and foster collaboration with essential stakeholders.

KEY PARTNERS FOR IMPLEMENTATION

Future success for the Above the Mud Greenway will involve collaboration with regional and state agencies, local partners, the private sector, and nonprofit organizations. **Figure 21 - Key Implementation Partners** indicates the key partners whose roles are described below.

Hendersonville City Council

Through their leadership and decision-making, the City Council contributes to the successful realization of Above the Mud's goals and objectives. As the governing body, the City Council has the authority to guide implementation, including making budget decisions related to the greenway's progress and affirming their support of walking and bicycling. Additionally, they play a role in collaborating with entities such as NCDOT and the French Broad River MPO to ensure effective coordination.

City Staff

City of Hendersonville staff play a crucial role in facilitating the coordination and collaboration necessary for the successful implementation of walking and biking projects and initiatives in Hendersonville, such as Above the Mud. Staff coordinates with the City Council to develop and refine project plans, seeking their guidance and support throughout the process. They work closely with key stakeholders such as the French Broad River MPO, the County, and NCDOT to secure funding and ensure smooth project implementation. They seek other funding opportunities, they work with private development, and they and guide projects through design, construction, and maintenance. They direct the creation and implementation of policies to ensure smooth project development.

French Broad River MPO

The French Broad River Metropolitan Planning Organization (MPO) assumes a role in facilitating funding opportunities and coordinating collaboration between the City, Henderson County, and NCDOT. Their responsibilities encompass the coordination of funding for various projects through programs like the State Transportation Improvement Program (STIP) and other available avenues, such as discretionary funding.

Henderson County

Collaboration between the City and County on multimodal projects is of utmost importance, especially considering the potential for growth and connectivity opportunities in areas located just beyond the city limits. It is important for both the City and County to work in tandem to establish connections, develop maintenance agreements, and coordinate policy decisions. The Henderson County Transportation Advisory Committee (TAC) is a great avenue for intergovernmental collaboration, working to ensure that various parties coordinate on local transportation decisions.

What is an MPO?

The French Broad River Metropolitan Planning Organization (FBRMPO) is a partnership between local and state government that makes decisions about transportation planning in urbanized areas and meets planning requirements established by federal authorizing legislation for transportation funding. FBRMPO is required to prepare long range transportation plans for the planning area and assist in prioritization of projects to be included in the State Transportation Improvement Program (NCDOT's funding for a 10-year period). FBRMPO was created in 1962 as the region centered around Asheville continued to experience growth and reached a population density threshold of 50,000 which constitutes the federally-mandated creation of a Metropolitan Planning Organization (MPO). The MPO currently serves over 414,000 people across 21 municipalities.

NCDOT Division 14

There are ample opportunities to foster coordination with NCDOT Division 14. These opportunities encompass a range of initiatives, such as projects outlined in the State Transportation Improvement Program (STIP), as well as resurfacing, roadway, and bridge reconstruction projects. Additionally, Division 14 offers other funding opportunities that can be explored to support and enhance transportation endeavors in the region. By actively engaging with the Division, the City can tap into their expertise, resources, and funding mechanisms to implement transportation initiatives.

Community & Business Members

Hendersonville benefits from a committed group of community and business volunteers who contribute their time and efforts to enhance the city. Their contributions have played a significant role in the progress and achievements of the city over the past decade. This is evident through the progress led by partners such as Friends of the Oklawaha Greenway and Friends of the Ecusta Trail. Furthermore, community members contribute to promoting walking by engaging in conversations with their neighbors, friends, colleagues, and other individuals in their networks. Through these interactions, they generate public support and enthusiasm for pedestrian initiatives. They also advocate for improved projects and initiatives by engaging with elected officials and other relevant stakeholders, effectively conveying the community's needs and aspirations.

NCDOT Integrated Mobility Division

Based out of Raleigh, this division of NCDOT develops guidance on bicycle and pedestrian policy and complete streets, which is critical to project development. They also provide funding for plans and studies, which can include more detailed analysis of greenway or sidewalk alignments and help move a specific project closer to implementation.

Private Sector (developers, other funders such as nonprofits)

By engaging with developers, the City can explore additional avenues for incorporating infrastructure improvements, such as greenways, into new development projects. This proactive approach ensures that new developments contribute to the overall walkability and accessibility of the city.

Figure 21. Key Implementation Partners

ACTION PLAN

For this Feasibility Study to be effective, it needs a clear action plan that identifies the next steps to achieving its vision. The following action plan indicates a time frame to implementation, lead agency, key partners, and performance measures to evaluate success. This approach will allow the city to be strategic yet flexible as opportunities arise.

Table 4. Action Plan

TASK #	DESCRIPTION	LEAD	PARTNER	TIME FRAME	HOW WILL SUCCESS BE MEASURED
1	Adopt this plan, which allows the study to become the official planning document for the Above the Mud Greenway and shows intention to support implementation over time.	City Council	City Staff, NCDOT IMD and Division 14, FBRMPO	Fall/Winter 2024	Adopted plan.
2	Ensure that the preferred route alternatives from this study are incorporated into regional plans, such as the CTP/MTP.	NCDOT, FBRMPO	City Staff, City Council, NCDOT IMD and Division 14	Winter 2024	Amendments to Plan documents.
3	Consider the creation of an annual work plan to guide the development of this study. The work plan may include key milestones, timelines, and roles.	City Staff	FBRMPO, NCDOT Division 14	Ongoing	Annual work plan document.
4	Coordinate with NCDOT Division 14 on the U-6049 and EB-3963 STIP projects to understand project designs and timelines.	NCDOT Division 14, City Staff	FBRMPO	Summer 2024	Coordination notes/ meeting minutes.
5	Coordinate with City projects such as the South Main Street bike and pedestrian improvements and Mud Creek floodplain restoration projects.	City Staff	City Council	Summer 2024	Coordination notes/ meeting minutes.
6	Coordinate with NCDOT and the MPO on submitting the project to a future round of the NCDOT SPOT process (SPOT 8.0). All project segments would be eligible for funding.	FBRMPO, NCDOT Division 14, City Staff	City Council	Fall 2024	SPOT submittal.
7	Develop a landowner outreach approach to coordinate with landowners along the project corridor - specifically along 4th Avenue East. Develop strategies to acquire easements from willing landowners.	City Staff	City Council	Spring 2025	Landowner outreach approach.
8	Continue to work with key stakeholder Watco to pursue route alternatives that involve a rail-to-trail or rail-with-trail conversion.	City Staff	County, City Council	Fall/Winter 2024	Coordination notes/ meeting minutes.

Table 4. Action Plan (Continued)

TASK #	DESCRIPTION	LEAD	PARTNER	TIME FRAME	HOW WILL SUCCESS BE MEASURED
9	Coordinate with Henderson County to create the optimal trail connection to Jackson Park.	City Staff	Henderson County	Fall/Winter 2024	Connection point determined.
10	Coordinate with key project partners to evaluate and advance phasing options based on the scenarios presented in Chapter 5.	City Staff	NCDOT Division 14, FBRMPO	Ongoing, Winter 2025	Coordination notes/ meeting minutes.
11	Seek future funding opportunities for construction.	City Staff, FBRMPO	NCDOT Division 14 and IMD	Ongoing	Funding sources identified.
12	Coordinate with community partners such as Friends of the Oklawaha Greenway and Friends of the Ecusta Trail to advocate for project prioritization and funding.	City Staff	Community partners, County	Ongoing	Coordination notes/ meeting minutes.
13	Coordinate with regional partners to ensure system-wide branding, design consistency, and wayfinding.	City Staff, Henderson County	Transylvania County, NCDOT Division 14, FBRMPO, Community partners	Summer 2025	Branding and wayfinding plan.
14	Develop a maintenance plan for the project.	City Staff	County, NCDOT Division 14	Summer 2026	Maintenance plan document.

FUNDING RESOURCES

The following provides possible funding sources to advance the design and development of the Above the Mud greenway. For additional funding sources, see the Appendix.

Henderson County Tourism Project Development Fund

Overnight visitors to Henderson County pay a lodging tax that generates occupancy tax revenue and supports the Tourism Product Development Fund. The Henderson County Tourism Development Authority oversees this fund with the goal to encourage more tourism related activities, attracting people to the County to stay overnight and spend more money. The funds can be used for the development of plans/studies that support the tourism industry, which greenway design and development may fall within. Other projects that will expand, strengthen, and sustain local tourism.

The funding requires a 50% match. Any organization or business including public or private, for-profit, or nonprofit is eligible to apply for a Tourism Product Development Grant. More **HERE**.

NCDOT STIP (State Transportation Improvement Program)

The current STIP identifies transportation projects that will receive funding from 2024-2033. The next round of Strategic Transportation Prioritization, referred to as "P8.0", will be underway soon to update the STIP. This project could be submitted to P8.0; the City of Hendersonville would need to supply the 20% match. More **HERE**.

NC Land and Water Fund (NCLWF)

The North Carolina Land and Water Fund improves water quality, sustains ecological diversity, and protects historic sites and military installations by funding projects to acquire lands, restore the habitat for fish, wildlife, and other species, and enhance the filtering of stormwater runoff to reduce pollutants from entering water supplies. Bike/ped projects are eligible for funding under their planning grants. More **HERE**.

Transportation Alternatives Program (TAP)

The Transportation Alternative Program (TAP) projects are federally-funded community-based projects, disbursed on a reimbursement basis. TAP is the leading source of federal funding for bicycling and walking projects, accounting about half of federal funding for walking and bicycling. Under the new Infrastructure Law, TAP funding increased by 60%. More **HERE**.

Recreation Trails Program (RTP)

The NC Division of Parks and Recreation, part of the NC Department of Natural and Cultural Resources, administers the Recreation Trails Program under the approval of the Federal Highway Administration. The goal of the program is to help states provide and maintain recreational trails for both motorized and non-motorized recreational use. A 25% local match is required for funding, and the minimum grant amount for on-the-ground trail projects is $10,000 with a maximum of $100,000. RTP funding flows through the TAP program. More **HERE** and **HERE.**

NC Parks & Recreation Trust Fund (PARTF)

Managed by the North Carolina State Parks, PARTF provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the public. The grant helps fund and maintain recreational resources, which includes parks, greenways, and trails. More **HERE**.

Safe Streets & Roads for All (SS4A)

Safe Streets and Roads for All (SS4A) discretionary program supports regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. The funding can be used to:

- Develop or update a Comprehensive Safety Action Plan.
- Conduct planning, design, and development activities in support of an Action Plan.
- Carry out projects and strategies identified in an Action Plan.

Note that to be eligible for design funding, an applicant must have an approved Safety Action Plan. The MPO is undertaking a regional planning study, which may open up implementation funding. More **HERE**.

2024

APPENDIX

City of Hendersonville Above the Mud Greenway

Feasibility Study

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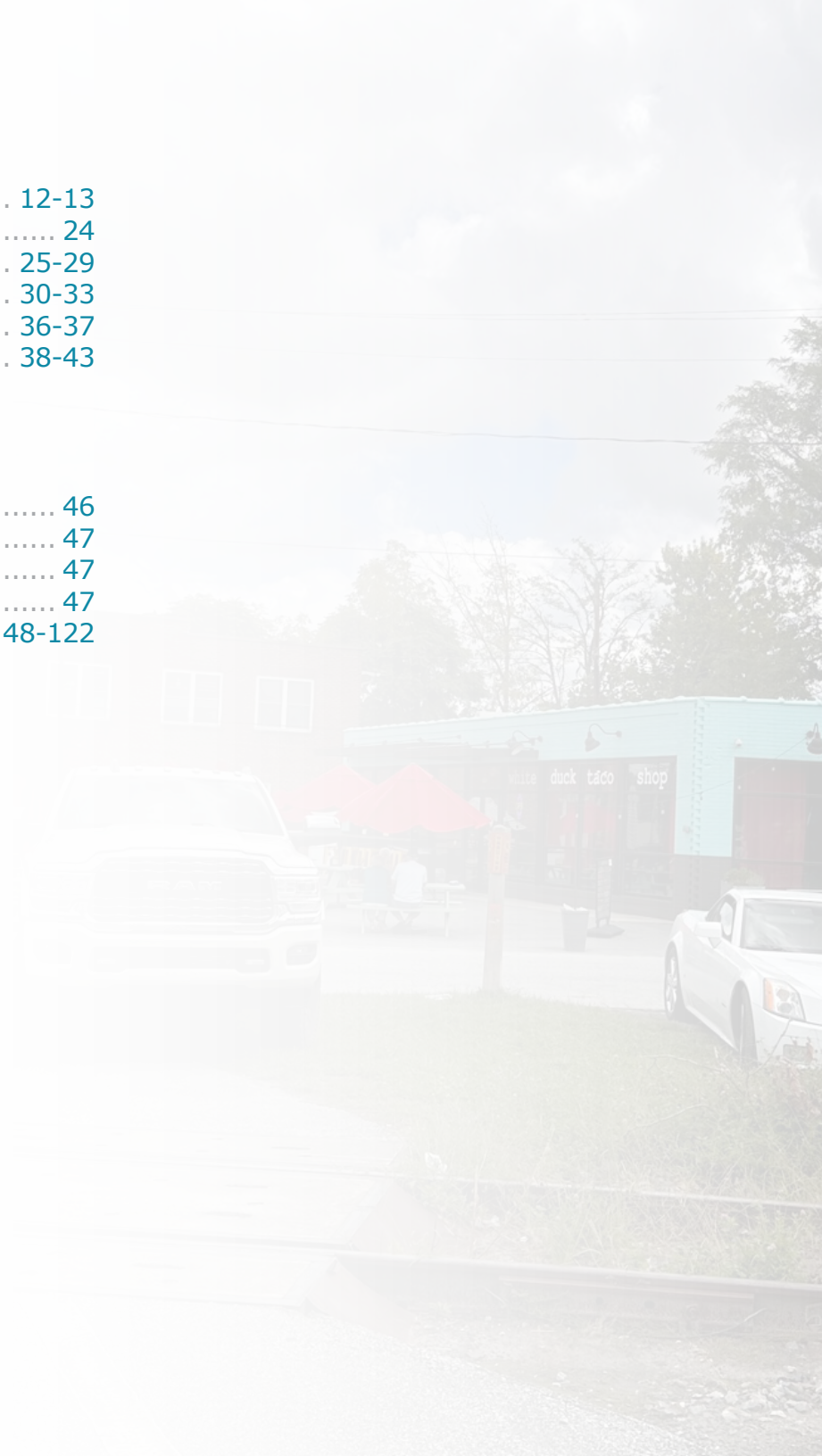

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APPENDIX A

Funding Sources

OVERVIEW

This resource lists major eligible funding sources for walking and bicycling infrastructure in North Carolina at the state and federal levels. This resource can be used to advance projects through planning, design, construction, and maintenance. Each funding source has unique eligibility requirements related to applicants, projects, and costs that are not detailed in this document. Note that many funding requirements, eligibility, amounts, or programs may change, so the information provided is accurate at the time of publication of this Plan.

STATE SOURCES

There are a variety of funding sources that can be used towards bicycle and pedestrian projects in North Carolina. These funds can be used as matching sources or to fully fund standalone projects. Various funding at the state level originates from the Federal Government.

NCDOT Statewide Project Funds

NCDOT has division-led funding opportunities that are sourced from statewide funds. Division 14 can provide more information about these opportunities, which may include:

Small Construction Funds

Established to fund small projects in and around cities and towns which could not be funded in the STIP Provisions currently allow for use on a variety of transportation projects for municipalities, counties, schools throughout the state.

- Funds allocated equally to each Division.
- $250,000 maximum amount per project per Fiscal Year, unless otherwise approved by the Secretary of Transportation.
- Right-of-way should be provided at no cost to NCDOT.
- Utility relocations should be accomplished at no cost to NCDOT.
- Requests received from municipalities, counties, businesses, schools, and industrial entities, and NCDOT staff.
- Request should be submitted to the Division Engineer providing technical information such as location, improvements being requested, timing, etc. for thorough review.

Statewide Contingency Funds

Created for statewide rural or small urban highway improvements and related transportation enhancements to public roads/public facilities, industrial access roads, and spot safety projects.

- The President Pro Tempore of the Senate, the Speaker of the House, and the Secretary of Transportation sponsor project requests from this fund.
- $12 million fund administered by the Secretary of Transportation.
- Requests received from municipalities, counties, businesses, schools, citizens, legislative members, and NCDOT staff.
- Request should include a clear description and justification of the project.

Economic Development Funds

Created to expedite transportation projects that promote commercial growth as well as either job creation or job retention.

- Established to expedite transportation projects that promote commercial growth as well as either job creation or job retention.
- $2,500 per job (new & retained) allowed unless waived by the Secretary of Transportation.
- $400,000 maximum amount per project, unless otherwise approved by the Secretary of Transportation.

High Impact/Low-Cost Funds

Established to provide funds to complete low-cost projects with high impacts to the transportation system including intersection

improvements, minor widening projects and operational improvements.

- Funds allocated equally to each Division.
- Each Division is responsible for selecting their own scoring criteria for determining projects funded in this program.
- $1.5M maximum per project unless otherwise approved by the Secretary of Transportation.
- Projects are expected to be under contract within 12 months of funding approval from the Board of Transportation.

NCDOT Strategic Transportation Investment (STI)

Funds: Infrastructure projects.

The NCDOT Strategic Transportation Investment law was passed in 2013, and it establishes a strategic framework for prioritizing transportation projects in the state. The STI law allocates available revenues based on data-driven scoring and local input, including analysis of the existing and future conditions, the benefits the project is expected to provide, the project's multi-modal characteristics and how the project fits in with local priorities. This prioritization process is called the Strategic Transportation Prioritization (SPOT), the outcome of which is the Draft State Transportation Improvement Program (STIP). The process involves scoring all roadway, public transportation, bicycle, pedestrian, rail, and aviation projects on several criteria; the projects are submitted into three different funding categories based on facility and project types (Statewide Mobility, Regional Impact, Division Needs). Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), and the NCDOT Divisions also contribute to the final project score by assigning local priority points to projects.

The current STIP identifies transportation projects that will receive funding from 2024-2033. Currently, the round of prioritization referred to as "P7.0" is underway to update the 2026-2035 STIP.

Note that Federal funding requires a 20% local match, and NC law prohibits state match of standalone bicycle and pedestrian projects. In this case, the City of Hendersonville would need to supply the 20% match from other sources for any bike/ped projects being pursued from the Town.

https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/strategic-transportation-investments.aspx

NCDOT Spot Safety Program

Funds: Among other activities, improvements for pedestrian including signals, crosswalks, and curb ramps.

The Spot Safety Program is a program of the NCDOT that is intended to fund smaller improvement projects that address safety, potential safety, and operational issues. The program is funded with state funds; however, any bike/ped projects are funded with Federal Transportation Alternatives Program funds. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is $400,000. A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include but are not limited to: the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest. Staff from the NCDOT Division 14 office can be consulted for the status of this Program.

https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx

NCDOT Highway Hazard Elimination Program

Funds: Larger projects that address safety and potential safety issues.

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90% federal funds and 10% state funds. The cost of Hazard Elimination Program projects typically ranges between $400,000 and $1 million. Like the Spot Safety Program, the SOC reviews and recommends Hazard Elimination projects to the state BOT for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's STIP.

https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx

NC Land and Water Fund (NCLWF)

Funds: Among other activities, planning grants for greenways.

The NCLWF is a non-regulatory organization whose focus is on protecting and restoring the State's land and water resources. They award annual grants to non-profit and governmental organizations for the following purposes: land acquisition, stream restoration, innovative stormwater, planning and donated property mini-grants. Bike/ped projects are eligible for funding under their planning grants, which funds efforts that:

- Enhance or restore degraded waters.
- Protected unpolluted waters.
- Contribute towards a network of riparian buffers and greenways for environmental, education and recreational benefits.
- Provide buffers around military bases.
- Acquire land that represents the ecological diversity of the state or that contributes to the development of a balanced State program of historic properties.
- Facilitate efforts to improve stormwater treatment.

https://nclwf.nc.gov/

NC Parks and Recreation Trust Fund (PARTF)

Funds: Construction and renovation of facilities in parks and to purchase land for new and existing parks.

Managed by the North Carolina State Parks, PARTF 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. North Carolina counties and incorporated municipalities are eligible for PARTF grants. Public authorities, as defined by N.C. General Statute 159-7, are also eligible if they are authorized to acquire land or develop recreational facilities for the public. The maximum allowable grant request is $500,000. The Parks and Recreation Authority, a 9-member board appointed by the Governor and the General Assembly, selects which applicants will receive funding.

https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund https://rrs.cnr.ncsu.edu/partf/

FEDERAL SOURCES

In November 2021, Congress passed the $1.2 trillion Infrastructure Investment and Jobs Act (IIJA) which now governs federal transportation policy and funding through 2026 and replaces the FAST Act. The following section describes pedestrian and bicycle funding opportunities available through existing programs (some with new eligibility and significant increase in funding amounts) and new programs of the IIJA. Those new programs under IIJA are indicated as such in the following. The DOT Discretionary Grants Dashboard can also be used to navigate USDOT sourced grants: https://www.transportation.gov/grants/dashboard

Land and Water Conservation Fund (LWCF)

Funds: Construction and renovation of facilities in parks and to purchase land for new and existing parks.

Managed by the North Carolina State Parks, PARTF 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. North Carolina counties and incorporated municipalities are eligible for PARTF grants. Public authorities, as defined by N.C. General Statute 159-7, are also eligible if they are authorized to acquire land or develop recreational facilities for the public. The maximum allowable grant request is $500,000. The Parks and Recreation Authority, a 9-member board appointed by the Governor and the General Assembly, selects which applicants will receive funding.

https://www.ncparks.gov/more-about-us/grants/lwcf-grants

https://www.lwcfcoalition.com/

Transportation Alternatives Program (TAP)

Funds: Pedestrian and bicycle facilities, streetscaping projects.

The Transportation Alternative Program (TAP) projects are federally-funded community-based projects, disbursed on a reimbursement basis. Under IIJA, **funding increased by 60%**. TAP is the leading source of federal funding for bicycling and walking projects, accounting about half of federal funding for walking and bicycling. There have been many changes to the program under IIJA, including that it will now grow in proportion to other surface transportation spending (rather than being a fixed amount).

https://www.fhwa.dot.gov/environment/transportation_alternatives/

Active Transportation Infrastructure Investment Program (ATIIP)

Funds: Active transportation networks (within communities) and spine (between communities) projects.

Discretionary program to fund the building of active transportation networks and spines.

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/atiip/

Healthy Streets Program

Funds: Streetscape improvements to reduce the urban heat island effect.

A discretionary grant program to provide grants to eligible entities to deploy cool pavements and porous pavements and to expand tree cover. Goals of the program include mitigating urban heat islands, improving air quality, and reducing the extent of impervious surfaces, stormwater runoff and flood risks, and heat impacts to infrastructure and road users.

Safe Streets and Roads for All

Funds: Funds Safety Action Plans and implementation projects.

Safe Streets and Roads for All (SS4A) discretionary program will provide **$5-6 billion in grants** over the next 5 years. Funding supports regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. The SS4A program supports Secretary of Transportation Pete Buttigieg's National Roadway Safety Strategy and a goal of zero deaths and serious injuries on our nation's roadways. The funding can be used to:

- Develop or update a Comprehensive Safety Action Plan.
- Conduct planning, design, and development activities in support of an Action Plan.
- Carry out projects and strategies identified in an Action Plan.

Who is eligible:

- Metropolitan planning organizations.
- Counties, cities, towns, other special districts that are subdivisions of a State, and transit agencies.
- Federally recognized Tribal governments.
- Multijurisdictional groups comprised of the above entities.

https://www.transportation.gov/grants/SS4A

Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT)

Funds: Extreme weather resilience and emergency response infrastructure.

Provide evacuation and recovery mobility to all road users. Build biking, walking, and rolling infrastructure into all resiliency plans and evacuation routes. The PROTECT discretionary program offers two types of awards: planning grants and Competitive Resilience Improvement Grants.

https://www.transportation.gov/rural/grant-toolkit/promoting-resilient-operations-transformative-efficient-and-cost-saving

Rebuilding American Infrastructure with Sustainability and Equity (RAISE)

Funds: Projects to build or repair transportation systems nationally.

This grant opportunity funds road, rail, transit, and port projects that promise to achieve national objectives. Previously known as BUILD or TIGER Discretionary Grants, Congress has dedicated nearly $9.9 billion to fund 700 projects that have a significant local or regional impact

https://www.transportation.gov/rural/grant-toolkit/rebuilding-american-infrastructure-sustainability-and-equity-raise

Recreation Trails Program (RTP)

Funds: Recreational trails and trailhead facilities that are open to the public.

In North Carolina, the Division of Parks and Recreation, part of the North Carolina Department of Natural and Cultural Resources, administers the Recreation Trails Program under the approval of the Federal Highway Administration. The goal of the program is to help states provide and maintain recreational trails for both motorized and nonmotorized recreational trail use. A 25% local match is required for funding, and funding is provided on a reimbursement basis. The minimum grant amount for on-the-ground trail projects is $10,000 with a maximum of $100,000. RTP funding flows through the TAP program.

https://www.fhwa.dot.gov/environment/recreational_trails/

https://trails.nc.gov/trail-grants

Highway Safety Improvement Program (HSIP)

Funds: Safety projects for bike and pedestrian infrastructure, educational programs, and evaluation programs.

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land. The HSIP received major updates in the IIJA along with a **24% increase in funding**. The updated HSIP is based on four pillars: VRU Safety Assessment, Safe Systems Approach, VRU Special Rule and FHWA Research.

https://highways.dot.gov/safety/hsip

Safe Routes to School (SRTS)

Funds: Active transportation and complete streets projects, plus education or enforcement activities that allow students to walk, bike, and roll to school safely.

The BIL codifies SRTS into the current law, **increased funding by 60%**, and expands programming to high schools. Other updates under the IIJA include SRTS infrastructure becoming an eligible use of HSIP, and funds may be used for staffing of local coordinators. SRTS does remain under the Transportation Alternatives Program and is not a standalone program.

https://www.fhwa.dot.gov/environment/safe_routes_to_school/

Thriving Communities Program

Funds: Technical assistance, planning, or capacity building services to help disadvantaged communities.

The Thriving Communities Program (TCP) aims to ensure that disadvantaged communities adversely or disproportionately affected by environmental, climate, and human health policy outcomes have the technical tools and organizational capacity to compete for federal aid and deliver quality infrastructure projects that enable their communities and neighborhoods to thrive. The program will provide 2 years of deep-dive assistance and 3 years of facilitated peer learning support to selected communities to help them plan and develop a pipeline of comprehensive transportation, housing, and community revitalization activities.

https://www.transportation.gov/rural/grant-toolkit/thriving-communities-program

LOCAL, PRIVATE, AND NON-PROFIT FUNDING SOURCES

Tourism Product Development Fund

Funds: Community projects like parks, theaters, greenways, and bicycle/pedestrian infrastructure projects.

Overnight visitors to Henderson County pay a lodging tax that generates occupancy tax revenue and supports the Tourism Product Development Fund. This revenue is administered by the Henderson County Tourism Development Authority, who then in turn provide the funding as grants to the community. The intent of the funding is to encourage more tourism related activities, attracting people to the County to stay overnight and spend more money. The funds are not intended to be used for marketing or administrative costs. In Henderson County, the funds can be used for the following:

- Development of plans/studies that support the tourism industry.
- Historic preservation projects.
- Art projects; festivals; performances and exhibits.
- Promote or enhance the community culture; heritage and nature-based attractions.
- Directional signage that meets the TDA Master Wayfinding Program.
- Other projects that will expand, strengthen, and sustain local tourism.

The funding requires a 50% match. Any organization or business including public or private, for-profit or non-profit is eligible to apply for a Tourism Product Development Grant.

https://visithendersonvillenc.org/grants

Conserving Carolina

Funds: Programs to connect people and nature.

Conserving Carolina's key values include connecting people and nature, and one way they do that is through a focus on trails and recreation. They have helped open over 23,000 acres to the public for recreation, including Chimney Rock State Park, DuPont State Recreational Forest, Headwaters State Forest and many local parks and greenways. One local park greenway system they supported is the Cane Creek Greenway in Fletcher, where they in part helped fund a trail feasibility study to connect the greenway from the existing Bill Moore Community Park to the Future Fletcher Park

https://conservingcarolina.org/

Robert Wood Johnson Foundation (RWJF) Grants and Grant Programs

Funds: Among other activities, planning and demonstration projects, community engagement, and public education.

The RWJF grant programs have three objectives: to discover and explore bold ideas with transformational potential; to spread model interventions that have a meaningful impact on health; and to conduct research and evaluation. Types of projects they fund include, but are not limited to:

- Planning and demonstration projects.
- Research and evaluations.
- Policy and statistical analysis.
- Learning networks and communities.
- Public education and strategic communications.
- Community engagement and coalition-building.
- Training and fellowship programs.
- Technical assistance.

The foundation typically issues a competitive call for proposals which defines the challenges, activities to achieve desired outcomes, and eligibility criteria. They also provide funding through open calls for ideas and different types of challenges and prize competitions, and direct solicitations for projects.

https://www.rwjf.org/en/grants.html

The Community Foundation of WNC

Funds: Various activities in the 18 counties of Western NC.

The Community Foundation makes grants and works with fundholders to support promising projects across Western North Carolina. They provide grants to 501(c)3 organizations that may be willing partners to support bicycle, pedestrian, and greenway projects.

https://cfwnc.org/

Blue Cross Blue Shield of North Carolina Foundation Grants

Funds: Programs related to health.

BCBSNC Foundation funds organizations that improve the health and well-being of all North Carolinians in communities big and small throughout the state. Their grants are a commitment by the foundation to invest in organizations for an established period to further the work of organizations, collaborations, and communities across the state. They do not have a traditional grant cycle, but rather announce opportunities to apply for grant funding on a periodic basis. Available grants range from small-dollar grants to larger, multi-year partnerships. They fund initiatives that align with their values, which include:

- Transforming the health care system (including oral health).
- Expanding access to healthy food.
- Supporting a healthy start for children.
- Improving the places where people live.
- Strengthening the ability of communities to improve their own health.

http://www.bcbsncfoundation.org/

Duke Energy Foundation

Funds: Programs and projects supporting conservation and access.

The Duke Energy Foundation is committed to making strategic investments to build powerful communities where nature and wildlife thrive, students can excel, and a talented workforce drives economic prosperity for all. They fund projects in strategic areas, including programs supporting conservation and access.

https://www.duke-energy.com/community/duke-energy-foundation

America Walks Community Change Grants

Funds: Programs and projects supporting physical activity and active communities.

This grant program will work to provide support to the growing network of advocates, organizations, and agencies using innovative, engaging, and inclusive programs and projects to create change at the community level. This program will award grantees $1,500.00 in community stipends for projects related to creating healthy, active, and engaged places to live, work, and play. Funded projects should:

- Increase physical activity and active transportation in a specific community.
- Work to engage people and organizations new to the efforts of walking and walkability.
- Demonstrate a culture of inclusive health.
- Create and support healthy, active, and engaged communities.

https://americawalks.org/community-change-grants/

National Safety Council Community Traffic Safety Grants

Funds: Projects supporting programs, research, and infrastructure to achieve vision zero goals.

The focus of the Road to Zero Community Traffic Safety Grant Program is focused on supporting innovative and promising approaches for implementing evidence-based countermeasures, supporting a Safe System approach, and performing necessary research to address traffic fatalities, disparities in mobility safety and access, and overall improve traffic safety.

https://www.nsc.org/road-safety/get-involved/road-to-zero/grants

Dogwood Health Trust Immediate Opportunities and Needs Grant

Funds: One-time immediate pressing needs or opportunities for non-profit organizations and tribal governments.

Grants ranging from $500-$25,000 are available to help with one-time pressing needs or new opportunities. Immediate Opportunities and Needs grants are not available for ongoing programmatic or general operating expenses. Organizations may submit one grant application for each round of funding. Once a request is funded, organizations may not apply again during the next cycle.

https://dogwoodhealthtrust.org

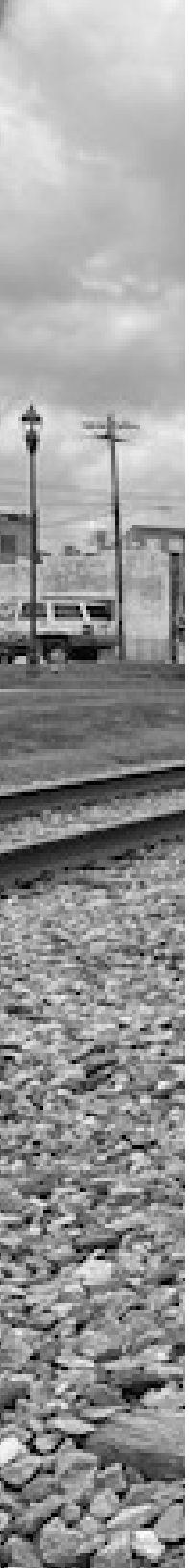
AARP Community Challenge

Funds: "Quick-action" projects that can help communities become more livable for people of all ages.

The AARP Community Challenge provides small grants to fund "quick-action" projects that can help communities become more livable for people of all ages. Applications are accepted for projects to improve housing, transportation, public space, technology ("smart cities"), civic engagement and more. AARP Community Challenge grants can be used to support the following types of projects:

- Permanent physical improvements in the community.
- Temporary demonstrations that lead to long-term change.

https://www.aarp.org/communitychallenge



APPENDIX B

Design Resources

DESIGN GUIDELINE RESOURCES

Planners, engineers, and project designers require standards and guidance to effectively implement pedestrian and bicycle facilities that prioritize safety, consistency, and predictability. In the past, the resources available for designing such multimodal facilities were limited, and existing guidance only covered specific street or geographic contexts, lacking the necessary level of detail for certain conditions or applications. However, significant advancements have been made in design guidance over the past 15 years, providing practitioners with valuable resources to explore innovative ideas and draw inspiration from successful projects implemented in other communities and internationally. This progress has led to the development of more inclusive multimodal designs that cater to individuals of all ages and abilities, while also allowing for customization to local contexts, whether urban or rural.

Creating well-designed pedestrian and bicycle facilities relies on various factors, including connectivity, comfort, continuity, and convenience. To achieve these goals, the following state and national design guideline resources have been compiled. Together, these resources provide the necessary guidance for planners and designers in Hendersonville to ensure that the transportation system effectively serves the needs of multimodal users, encouraging a shift in transportation modes.

It is important to note that pedestrian and bicycle design is an evolving field with continuous innovation. Therefore, it is recommended to seek updates for the following resources after the publication of this Plan. Given the complexity of design considerations, it should also be acknowledged that treatments must be tailored to individual situations and contexts. It is essential to exercise good engineering judgment and thoroughly document decisions throughout the design process.

Table 1. Design Resources

North Carolina Department of Transportation	
Roadway Design Manual	2021
Complete Streets Policy A.09.0106	2019 (2022 update to methodology)
Evaluating Temporary Accommodations for Pedestrians	2018
Pedestrian Crossing Guidelines	2018
Greenway Accommodations Guidelines	2015
WalkBike NC: The Statewide Pedestrian and Bicycle Plan	2013
Manual on Uniform Traffic Control Devices (MUTCD)	
MUTCD 11th Edition Guidance and Supplemental Information (including NC Supplement)	2024
American Association of State Highway and Transportation Officials (AASHTO)	

Table 1. Design Resources (Cont'd)

Guide for the Development of Bicycle Facilities	2012
Guide for the Planning, Design and Operation of Pedestrian Facilities	2004
Federal Highway Administration (FHWA)	
Strategies for Accelerating Multimodal Project Delivery	2019
Bikeway Selection Guide	2019
Guide for Improving Pedestrian Safety at Uncontrolled Crossing Intersections	2018
Small City and Rural Multimodal Networks Design Guide	2016
Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts	2016
Guidebook for Developing Pedestrian and Bicycle Performance Measures	2016
Separated Bike Lane and Planning Design Guide	2015
US Access Board	
Proposed Public Rights-of-Way Accessibility Guidelines (PROWAG)	2011
Guide to the Standards	2010
USDOT/Department of Justice	
USDOT ADA Standards for Transportation Facilities	2006
DOT/DOJ Joint Technical Assistance Memos	Varies
ADA Standards	2010
National Association of City Transportation Officials (NACTO)	
Transit Street Design Guide	2016
Urban Street Design Guide	2013
Urban Bikeway Design Guide	2013

APPENDIX C

Plan Document Review

10% OFF

OVERVIEW & TAKEAWAYS

Hendersonville, the County, and its regional partners have a strong legacy of multimodal planning as evidenced by the number of plan documents that relate to multimodal topics in the city, all of which are described below. These plan documents offer a basis on which to develop the Above the Mud Greenway. Frequent themes throughout the plan documents are connecting parks, neighborhoods, and destinations; expansion of existing greenway systems; and connecting to a regional system of greenways. The Above the Mud Greenway was specifically identified in the Mud Creek Greenway Feasibility Study, in the City's 2022 RAISE grant proposal, and in the Hellbender Trail Plan. Together, these recommendations make this project eligible for the NCDOT Complete Streets Policy whereby NCDOT would be responsible for the full cost of the project.

FBRMPO 2024-2033 Transportation Improvement Plan (2024)

The Transportation Improvement Program (TIP) is a ten-year work program that includes all regionally significant transportation projects in the FBRMPO planning area. The TIP includes projects for all modes of transportation including roadway, public transportation, rail, aviation, bicycle and pedestrian. The TIP includes the following multi-modal projects within the City of Hendersonville:

- **BL-0008: Clear Creek Greenway / Hendersonville.** This project description entails the construction of a multi-use path from Berkeley Mills Park to Lakewood Rd. Construction is slated for 2024.
- **EB-5860: Blythe Street.** This project involves the construction of sidewalks from US 64 (Brevard Rd) to NC 191 (Haywood Rd). Right-of-Way in 2025; Construction in 2026.
- **BL-0007A-C: Ecusta Trail.** This involves the construction of a multi-use sidepath from Kanuga Road to Hendersonville. Construction is underway.
- **BL-0078: Ecusta Trail.** This section involves design for the greenway from US 64 to the Transylvania County line. Construction is anticipated for 2027.
- **EB-5963: Grove Street.** This involves the construction of sidewalks from Barnwell Street to US 176 (Spartanburg Highway). Right-of-Way in 2025 and Construction in 2026.
- **U-5783: US 64.** Modernize roadway with bike lanes and paved shoulders from Blythe St to White Pine Dr.

All projects above were amended with the 2020-2029 TIP due to NCDOT financial issues.

Gen H, Hendersonville Comprehensive Plan (2024)

This Plan places an emphasis on connecting people to the outdoors. This includes greenways and parks, and integrating greenways into the fabric of residential areas.

https://www.hendersonvillenc.gov/community-development/comprehensive-plan-0

Walk Hendo Pedestrian Plan (2023)

The purpose of *Walk Hendo* is to create a plan that lays the groundwork for new and improved sidewalk connections between important destinations in the city. While the plan does not make any greenway recommendations, it does emphasize the importance of network connections such as those from greenways to sidewalks. The plan calls for several sidewalk recommendations that will provide a direct connection to the Ecusta and Oklawaha Greenways, thereby ensuring that pedestrians accommodations are provided without interruption.

https://www.hendersonvillenc.gov/projects/walk-hendo

NCDOT Roadway Design Manual (2023)

The Roadway Design manual offers general design information and design criteria for NCDOT roadways. It was most recently updated in November 2023, and with it came many updates to multimodal design guidance. These resources will be critical to the City of Hendersonville; guidance on multimodal design elements can be found in sections 4.14 (Pedestrian Facilities) and 4.15 (Bicycle Facilities).

Ecusta Trail Final Designs (2023)

Reviewing the final designs for the Ecusta Trail was an important part of the Above the Mud project, as it helps in the planning for connectivity between the Ecusta and ATM. These designs were consulted particularly in reference to the Ecusta termini at South Main Street, to ensure that there is a continuous facility and also in understanding the feasibility options for the Above the Mud greenway.

Above the Mud Greenway Project (2022)

In this project, the City of Hendersonville was developing a grant proposal for the Above the Mud. The project involved three key improvements:

- Constructing a new greenway along Mud Creek to connect the Oklawaha Greenway and Ecusta Trail.
- Improving an existing section of the Oklawaha Greenway that frequently floods.
- Constructing streetscape improvements on 7th Avenue from the railroad to the Oklawaha Greenway.

The US Department of Transportation RAISE grant (Rebuilding American Infrastructure with Sustainability and Equity) was sought after for this project.

Mud Creek Greenway Feasibility Study (2021)

The purpose of this study is to examine the feasibility of a greenway along Mud Creek from Erkwood Drive to White Street, connecting neighborhoods and commercial areas. Most of this study is within Henderson County but it provides critical access to the City. The Study offers three trail alignment recommendations and five trailheads. The preferred alignment follows Mud Creek from Erkwood on the east side, includes a boardwalk over a wetland, crosses the creek at a proposed bridge, follows Jonesborough Street with a multi-use sidepath, and connects to a trailhead on White Street with a sidewalk. The Study offers a phasing plan for design and construction, funding sources, land acquisition strategies and a maintenance plan.

This connection is important as it will tie into the Ecusta Trail and work towards creating a network of greenways for the City and County.

FBRMPO The Hellbender Trail Plan (2020)

The Hellbender Trail is a concept for a regional trail that is derived from existing plans in Buncombe, Henderson, Haywood, Madison, and Transylvania counties. The Trail intends to piece together existing and planned infrastructure – taking it from a local to regional level. As captured in the Plan, "the goal of this approach is to form a regional bicycle and pedestrian network that is more than a sum of its parts, connects the communities of Western North Carolina, and enables a safe way for residents and visitors to explore our region on foot or bike." The Hendersonville plans that contributed to the Hellbender include the Henderson County Greenway Master Plan and the Hendersonville Bicycle Plan. Most of the Hellbender is made up of trails in long-range master plans such as these documents.

The concept of the Hellbender Trail passes through Hendersonville via the Oklawaha Greenway which exists in planned and proposed segments, and the Ecusta Trail. The Oklawaha section is along the Orange Line, the primary north-south connection of the Hellbender. The Ecusta section is along the Gold Line, a direct connection between Brevard and Hendersonville. Above the Mud will be the integral connection between the Orange and Gold Lines, unifying the regional network. The Plan has key steps to move towards implementation, including furthering discussions of partnerships and seeking funding for implementation.

NCDOT Complete Streets Policy (2022)

NCDOT adopted a Complete Streets policy in 2022, which was updated in 2019. The policy directs transportation engineers and planners to consider and incorporate multimodal facilities in the design and improvement of all appropriate transportation projects in North Carolina. The 2022 update to the policy offers additional methodology and guidance for Complete Streets review.

This policy sets forth the protocol for the development of multimodal transportation networks. The purpose of the policy is to guide existing decision making and design processes to ensure that all users are included during the planning, design, construction, funding, operation, and maintenance of North Carolina's transportation network, and will not create barriers or hazards to the movements of those users. Consideration of multimodal elements will begin at the inception of the transportation planning process and the decisions documented. The 2022 updates introduce a Project Evaluation Methodology, which provides planners and designers with additional guidance on facility selection and balancing needs within the public right-of-way.

The process for project advancement under the new policy is through Strategic Prioritization and the local Comprehensive Transportation Plan (CTP). The importance of this new policy to local governments like Hendersonville cannot be underscored; it reduces or eliminates cost-sharing requirements by the local government, which has been a burden and barrier for many communities to implement multimodal projects.

With the Above the Mud project identified in several City and NCDOT plans, the project is eligible for NCDOT to cover the full cost of the project.

Henderson County Oklawaha Greenway Extension (2019)

This Plan outlines the extension of the existing Oklawaha Greenway, to the north and to the south, thus making this an 18-mile corridor that is a spine for bicycle and pedestrian travel in the County. For the Northern Alignment, or the section to the north of the existing trail, the Plan identified a total of 19 alignment options, for which a decision matrix guided the final proposed alignment. For the Southern Alignment, the Plan identified 16 alignment options, which is also guided by a decision matrix to determine the preferred alignment. Each alignment option offers a corridor design that details constraints, opportunities, and design considerations.

The Plan provides a 10-year action plan which includes design/planning, landowner outreach and acquisition, community engagement, funding, and maintenance/management. A summary of actions and costs breaks down an implementation strategy for the County to pursue, as well as detailed cost estimates for each section.

Understanding the plans for the extension of the Oklawaha Greenway is critical as the Above the Mud connection is envisioned.

Henderson County Greenway Master Plan (2019)

The Henderson County Greenway Master Plan establishes and communicates a broad vision for a countywide greenway network, and provides guidance to Henderson County and its partners, so that all involved can collaboratively work towards and benefit from that vision. This document is a 30-year Plan that is considered a working document, to be updated every 5 to 10 years. The Plan identifies three priority greenways, two of which are in the city boundaries or come very close: the Ecusta Trail and Oklawaha Greenway. One other Hendersonville greenway featured in this Plan include the Community of Edneyville greenway, known as a Destination Greenway. Collectively, these regional and local greenways connect communities and into the broader regional greenway vision, known as the Hellbender Regional Trail.

The Master Plan identifies several policy recommendations as well as action recommendations in the following categories:

- Adopt the plan
- Complete priority greenway segments
- Explore feasibility of destination and connection greenways
- Evaluate greenway easement options
- Identify funding and community partnerships
- Design and construct trails
- Maintain trails

Additional efforts involving Hendersonville include creating an inter-governmental agreement between Henderson County and the City of Hendersonville to garner equipment and resources and the creation of a Municipal Inner Loop to connect Historic Hendersonville, Laurel Park and the Village of Flat Rock to Priority and Destination Greenways (not yet identified).

Understanding the County's plan for greenway expansion is important to ensure that the City's system is connected and consistent. Also helpful to coordination with the County on greenways are items such as wayfinding, where a county-wide, or even region-wide, wayfinding signage system would be great benefit to all users.

FBRMPO Blue Ridge Bike Plan (2013)

The purpose of the Blue Ridge Bike Plan is to identify and define improvements to both create and enhance a regional bicycle route system in seven counties of Western North Carolina. A key goal of the Plan is to provide bicycle mobility and connections in the region. The Blue Ridge Bike Plan identifies several Regional Priority Corridors for bicycle improvements, which connect various communities and key destinations. Although this is a bicycle-centric plan, these facilities are noted because some serve pedestrian needs (such as greenways) and other on-street facilities are proven to improve conditions for people walking. In Hendersonville, these include:

- **NC 191 (NC 280 to US 25):** shared lane markings and bike lanes
- **US 64 (Blythe St to Howard Gap Rd):** bicycle lanes or greenway
- **US 225/US 25 (Fletcher to Flat Rock):** bike lanes and shoulders

The highest priority recommendation from public input and the steering committee was the following: "Develop, implement and maintain a core network of safe and well-connected bicycle facilities (bike lanes and greenways)."

These connections and project goals are important to consider for the Above the Mud project.

Ecusta Rail Trail Planning Study & Economic Impact Analysis (2012)

The City of Hendersonville initiated this study to determine the feasibility of converting an existing inactive rail corridor into a paved shared-use trail for alternative transportation, recreation, and economic development. This exhaustive study accomplishes the following:

- Evaluates the existing rail corridor
- Determines project feasibility
- Develops an economic impact analysis
- Establishes next steps for the rail-trail conversion
- Identifies partnerships
- Prepares an operational and management structure for the facility through two counties and three jurisdictions

Since the development of this analysis, jurisdictions and organizations have made significant progress on advancing this towards implementation. That includes a trail purchase in 2021 and advancement of the Henderson County portions of the greenway (11-mile section, for which the first 6 miles is being constructed and the remaining 5 miles are being designed). A study is now underway for the 8-mile Transylvania County portion of the Ecusta Trail.

As stated earlier, the Ecusta Trail connection is central to the purpose of this study.

Park and Greenspace Master Plan (2011)

This Plan came out of a recommendation from the City's 2030 Comprehensive Plan to analyze existing park facilities and to develop a long-range plan for park improvements, new parks, and preservation of greenspaces. Based on survey results and Task Force recommendations, there is a desire for more walking and bicycle paths, greenways, and nature trails. At the time of the publication of this document, Hendersonville had 11 parks and one greenway. The Plan reviews these parks, as well as gaps in the service areas.

Some recommendations relevant to multimodal needs include:

- Create "park streets" that extend parks into neighborhoods by utilizing unique signage, landscaping, street trees and pedestrian path treatment.
- Preserve and expand the public greenway system as a means of connecting neighborhoods to parks and increasing recreational amenities and green infrastructure.
- Recommendations of additional amenities at Oklawaha Greenway.
- Oklawaha Greenway Connection to Berkeley Mills Park (this received the most votes from both the Task Force and Mayor/ Council and has since been constructed).
- Ecusta Greenway completion.
- Oklawaha Existing Greenway – Maintenance and Management Plan, Marketing Strategies.

Understanding these priorities emphasizes the city and community's strong desires for multimodal and greenway connections.

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APPENDIX D

Detailed Cost Estimates

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Table 2. Cost Estimate Summaries

ECUSTA TRAIL - CITY OF HENDERSONVILLE EXTENSION
CONCEPTUAL COST ESTIMATE

Updated: 06/07/2024

COST ESTIMATE SUMMARY BY ALTERNATIVE			
Alt. #	**Project Alternative**	**Length**	**Estimate**
A	Rail-trail; 4th Ave Sidewalk	6420'	$ 5,660,000.00
B	Greenway; 4th Ave Sidewalk; Rail-trail	8045'	$ 6,330,000.00

**Optional 4th to 7th Extension Included in Above Estimate at $1.4M*

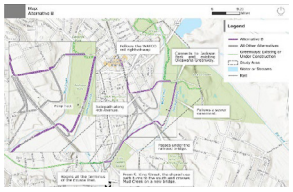
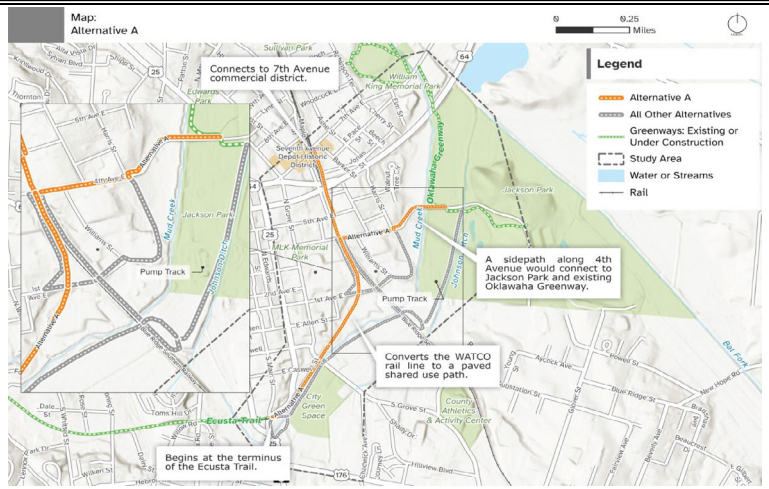
	ALTERNATIVE A **Rail-to-Trail/Rail-w-Trail Conversion**	**ALTERNATIVE B** **Greenway to Jackson Park/Rail-to-Trail Conversion**
PLAN		

Table 3. Alternative A Cost Estimate

ALTERNATIVE:	**A**		
PROJECT ALTERNATIVE:	**Rail-to-Trail/Rail-w-Trail; 4th Aveneue Sidewalk**		
DESCRIPTION:	Assumes Ecusta Rail Line is available for purchase and Watco allows rail-w-trail in key segments. Tie to 4th Avenue sidewalk East of the rail line and connect to Jackson Park/Oklawaha Greenway. Extend North from 4th Avenue to 7th Avenue via greenway along active railway.	**ALTERNATIVE A ESTIMATE:**	$ 5,660,000.00

COST ESTIMATE

LINE ITEM	UNIT	TOTAL COST	DESCRIPTION
Construction	LS	$3,000,000.00	Assumes 2028 Construction
Engineering Design, Environmental, & Inspection	LS	$1,005,000.00	Includes Prelim. & Final Design
Utilities	LS	$108,000.00	Aboveground Conflicts Only
Right-of-Way	LS	$600,000.00	Estimated Property Impacts
Recommended Contingency		$942,600.00	20% Consideration
TOTAL ESTIMATE		**$5,660,000.00**	**Alternative A**



NOTES:

Cost based on BL-0007 Bid Tabs and 2028 Construction Year

Excludes any purchase of rail lines

Assumes 0.6 acres for primary greenway, 0.2 acres for 4th Ave extension, and 0.2 acres for 4th Ave to 7th Ave connection

Table 3. Alternative A Cost Estimate (Cont'd)

Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
1	0000100000-N	800	Mobilization	LS	$ 406,614.11	0.3	$ 121,984.23
2	0000400000-N	801	Construction Surveying	LS	$ 123,481.67	0.3	$ 37,044.50
3	0043000000-N	226	Grading	LS	$ 1,885,084.33	0.3	$ 565,525.30
4	0008000000-E	226	Supplemental Clearing and Grubbing	Acres	$ 2,237.33	0.5	$ 1,118.67
5	0134000000-E	240	Drainage Ditch Excavation	CY	$ 22.17	115	$ 2,549.17
6	0223000000-E	275	Rock Plating	SY	$ 122.00	235	$ 28,670.00
7	0318000000-E	300	Foundation Conditioning Material, Minor Structures	Tons	$ 45.97	90	$ 4,137.00
8	0320000000-E	300	Foundation Conditioning, Geotextile	SY	$ 4.80	245	$ 1,176.00
9	0536000000-E	310	30" HDPE Pipe Culverts	LF	$ 113.93	0	$ -
10	0536000000-E	310	36" HDPE Pipe Culverts	LF	$ 134.27	80	$ 10,741.33
11	0536000000-E	310	42" HDPE Pipe Culverts	LF	$ 191.30	0	$ -
12	0536000000-E	310	48" HDPE Pipe Culverts	LF	$ 231.00	0	$ -
13	0576000000-E	310	6" CS Pipe Culverts, 0.064" Thick	LF	$ 59.00	0	$ -
14	0360000000-E	310	12" RC Pipe Culvert CL. III	LF	$ 89.00	0	$ -
15	0366000000-E	310	15" RC Pipe Culvert CL. III	LF	$ 73.17	0	$ -
16	0372000000-E	310	18" RC Pipe Culvert CL. III	LF	$ 83.17	0	$ -
17	0378000000-E	310	24" RC Pipe Culvert CL. III	LF	$ 104.67	20	$ 2,093.33
18	0384000000-E	310	30" RC Pipe Culvert CL. III	LF	$ 158.67	0	$ -
19	0390000000-E	310	36" RC Pipe Culvert CL. III	LF	$ 191.33	20	$ 3,826.67
20	0426000000-E	310	72" RC Pipe Culvert CL. III	LF	$ 739.00	0	$ -
21	0448300000-E	310	18" RC Pipe Culvert CL. IV	LF	$ 88.67	0	$ -
22	0448400000-E	310	24" RC Pipe Culvert CL. IV	LF	$ 131.67	0	$ -
23	0448500000-E	310	30" RC Pipe Culvert CL. IV	LF	$ 187.00	0	$ -
24	0448600000-E	310	36" RC Pipe Culvert CL. IV	LF	$ 234.00	80	$ 18,720.00
25	0448700000-E	310	42" RC Pipe Culvert CL. IV	LF	$ 311.00	0	$ -
26	0354000000-E	310	18" RC Pipe Culvert, Class V	LF	$ 108.33	0	$ -
27	0354000000-E	310	24" RC Pipe Culvert, Class V	LF	$ 153.00	0	$ -
28	0354000000-E	310	30" RC Pipe Culvert, Class V	LF	$ 230.33	0	$ -
29	0354000000-E	310	36" RC Pipe Culvert, Class V	LF	$ 264.00	0	$ -
30	0354000000-E	310	42" RC Pipe Culvert, Class V	LF	$ 358.67	0	$ -
31	0654000000-E	310	22" x 24" CS Pipe Arch Culverts, 0.064" Thick	LF	$ 155.33	0	$ -
32	0654000000-E	310	24" x 18" CS Pipe Arch Culverts, 0.064" Thick	LF	$ 129.67	0	$ -
33	0654000000-E	310	28" x 20" CS Pipe Arch Culverts, 0.064" Thick	LF	$ 138.67	0	$ -
34	0654000000-E	310	35" x 24" CS Pipe Arch Culverts, 0.079" Thick	LF	$ 162.33	0	$ -
35	0654000000-E	310	42" x 29" CS Pipe Arch Culverts, 0.079" Thick	LF	$ 180.00	0	$ -
36	0654000000-E	310	57" x 38" CS Pipe Arch Culverts, 0.079" Thick	LF	$ 258.67	0	$ -
37	0986000000-E	SP	14" x 23" RC Elliptical Pipe, Class III	LF	$ 133.00	0	$ -
38	0986000000-E	SP	22" x 34" RC Elliptical Pipe, Class IV	LF	$ 250.00	0	$ -
39	2190000000-N	828	Temporary Steel Plate Covers	EA	$ 2,085.00	1	$ 2,085.00
40	0995000000-E	340	Pipe Removal	LF	$ 38.33	0	$ -
41	1121000000-E	520	Aggregate Base Course	Tons	$ 36.80	3425	$ 126,040.00
42	1220000000-E	545	Incidental Stone Base (Contingency Item)	Tons	$ 43.67	82	$ 3,580.67
43	1491000000-E	610	Asphalt Conc Base Course, Type B25.0C	Tons	$ 122.87	130	$ 15,972.67
44	1519000000-E	610	Asphalt Conc Surface Course Type S9.5B	Tons	$ 107.17	1300	$ 139,316.67
45	1575000000-E	620	Asphalt Binder for Plant Mix	Tons	$ 694.51	95	$ 65,978.45
46	1693000000-E	654	Patching Existing Pavement - Asphalt Conc Surface Course Type S9.5B	Tons	$ 204.53	30	$ 6,136.00
47	1693000000-E	654	Asphalt Binder for Plant Mix (Patching Existing Pavement)	Tons	$ 694.51	12	$ 8,334.12
48	1891500000-N	SP	Generic Paving Item - Stockpiling of Rails	LS	$ 19,987.33	0.5	$ 9,993.67
49	2209000000-E	838	Endwalls	CY	$ 1,725.33	2	$ 3,450.67
50	2253000000-E	840	Pipe Collars Class B, STD 840.72	CY	$ 1,031.33	3	$ 3,094.00
51	2275000000-E	SP	Flowable Fill	CY	$ 524.00	0	$ -
52	2286000000-N	840	Masonry Drainage Structures	EA	$ 3,638.00	7	$ 25,466.00
53	2364000000-N	840	Frame with 2 Grates, STD 840.16	EA	$ 1,004.00	5	$ 5,020.00
54	2367000000-E	840	Frame with 2 Grates, STD 840.29	EA	$ 901.67	2	$ 1,803.33

Pipe Crossings

Paving

Stormwater Mgmt.

Table 3. Alternative A Cost Estimate (Cont'd)

Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
55	2374000000-N	840	Frame with Grate & Hood, Std. 840.03 Type E	EA	$ 973.00	0	$ -
56	2549000000-E	846	2'-6" Concrete Curb & Gutter	LF	$ 78.67	0	$ -
57	2591000000-E	848	4" Concrete Sidewalk	SY	$ 55.43	75	$ 4,157.50
58	2605000000-N	848	Curb Ramps - Detectable Warning Surface	EA	$ 1,234.83	17	$ 20,992.17
59	2605000000-N	848	Concrete Curb Ramps	EA	$ 3,510.50	25	$ 87,762.50
60	2761000000-E	848	Generic Paving Item - 8" Concrete for Detectable Warning Surface	SY	$ 106.23	210	$ 22,309.00
61	2444000000-N	852	Concrete Transitional Section for Catch Basin	EA	$ 2,577.67	0	$ -
62	2905000000-N	859	Convert Existing Drop Inlet to Junction Box	EA	$ 3,336.67	0	$ -
63	3030000000-E	SP	Weathered Steel Beam Guradrail	LF	$ 37.03	0	$ -
64	3150000000-N	SP	Additional Guardrail Posts, Weathered	EA	$ 68.63	0	$ -
65	3145000000-E	SP	Extra Length Guardrail Posts, Weathered	EA	$ 93.77	0	$ -
66	3195000000-N	862	Painted Galvanized Guardrail End Units, Type AT-1	EA	$ 1,970.67	0	$ -
67	3288000000-N	862	Painted Galvanized Guardrail End Units, Type TL-2	EA	$ 5,369.67	0	$ -
68	3574000000-E	867	Generic Fencing Item - Reset Existing Fence	LF	$ 28.83	370	$ 10,668.33
69	3574000000-E	867	Generic Fencing Item - Remove and Stockpile Existing Fence	LF	$ 8.53	0	$ -
70	3575000000-E	SP	Generic Fencing Item - Pedestrian Guard Rail	LF	$ 198.10	1800	$ 356,580.00
71	3575000000-E	SP	Generic Fencing Item - Pedestrian Safety Rail	LF	$ 192.43	0	$ -
72	3628000000-E	876	Rip Rap, Class I	Tons	$ 66.10	70	$ 4,627.00
73	3635000000-E	876	Rip Rap, Class II	Tons	$ 65.07	365	$ 23,749.33
74	0220000000-E	SP	Rock Embankments	TON	$ 121.67	12	$ 1,460.00
75	3642000000-E	876	Class A, Rip Rap	Tons	$ 120.00	15	$ 1,800.00
76	3649000000-E	876	Class B, Rip Rap	Tons	$ 56.00	25	$ 1,400.00
77	1077000000-E	SP	Stone for Erosion Control, #57	TON	$ 54.33	25	$ 1,358.33
78	3656000000-E	SP	Geotextile For Rock Embankments	SY	$ 10.43	15	$ 156.50
79	3832000000-E	SP	Railroad Track To Be Removed	LF	$ 33.50	3475	$ 116,412.50
80	4025000000-E	901	Contractor Furnished, Type E Sign	SF	$ 15.62	295	$ 4,606.92
81	4025000000-E	901	Contractor Furnished, Type F Sign	SF	$ 21.15	100	$ 2,115.00
82	4072000000-E	903	Supports, 3-lb. Steel U-Channel	LF	$ 9.75	800	$ 7,800.00
83	4102000000-N	904	Sign Erection, Type E	EA	$ 71.33	60	$ 4,280.00
84	4108000000-N	904	Sign Erection, Type F	EA	$ 78.00	55	$ 4,290.00
85	4154000000-N	907	Disposal of Sign System, U-Channel	EA	$ 20.67	16	$ 330.67
86	4445000000-E	1145	Barricades, Type III	LF	$ 91.33	6	$ 548.00
87	4457000000-N	SP	Temporary Traffic Control	LS	$ 127,595.33	0.4	$ 51,038.13
88	4685000000-E	1205	Thermoplastic Pavement Marking Lines (4", 90 Mils)	LF	$ 1.93	2600	$ 5,026.67
89	4695000000-E	1205	Thermoplastic Pavement Marking Lines (8", 90 Mils)	LF	$ 4.80	0	$ -
90	4700000000-E	1205	Thermoplastic Pavement Marking Lines (12", 90 Mils)	LF	$ 6.73	0	$ -
91	4710000000-E	1205	Thermoplastic Pavement Marking Lines (24", 90 Mils)	LF	$ 12.00	684	$ 8,208.00
92	4720000000-E	1205	Thermoplastic Pavement Marking Character (90 Mils)	EA	$ 310.67	16	$ 4,970.67
93	4725000000-E	1205	Thermoplastic Pavement Marking Symbol (90 Mils)	EA	$ 202.00	16	$ 3,232.00
94	4726100000-E	1205	Bicycle Character (90 Mils)	EA	$ 396.33	14	$ 5,548.67
95	4850000000-E	1205	Removal of Pavement Marking Lines, 4"	LF	$ 1.77	0	$ -
96	4870000000-E	1205	Removal of Pavement Marking Lines, 24"	LF	$ 5.13	12	$ 61.60
97	4875000000-N	1205	Removal of Pavement Marking Symbols & Characters	EA	$ 85.67	0	$ -
98	3656000000-E	876	Geotextile for Drainage	SY	$ 4.83	805	$ 3,890.83
99	6000000000-E	1605	Temporary Silt Fence	LF	$ 4.90	12400	$ 60,760.00
100	6006000000-E	1610	Stone for Erosion Control, Class A	TON	$ 47.93	335	$ 16,057.67
101	6009000000-E	1610	Stone for Erosion Control, Class B	TON	$ 47.93	250	$ 11,983.33
102	6012000000-E	1610	Sediment Control Stone	TON	$ 46.67	250	$ 11,666.67
103	6015000000-E	1615	Temporary Mulching	Acres	$ 1,828.67	3.75	$ 6,857.50
104	6018000000-E	1620	Seed for Temporary Seeding	LB	$ 5.77	240	$ 1,384.00
105	6021000000-E	1620	Fertilizer for Temporary Seeding	TON	$ 1,898.67	2.25	$ 4,272.00
106	6024000000-E	1622	Temporary Slope Drains	LF	$ 38.73	80	$ 3,098.67
107	6029000000-E	SP	Safety Fence	LF	$ 3.88	480	$ 1,864.00
108	6030000000-E	1630	Silt Excavation	CY	$ 18.33	280	$ 5,133.33

Table 3. Alternative A Cost Estimate (Cont'd)

Erosion Cc

Traffic/Pedestrian Signal

Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
109	6038000000-E	SP	Permanent Soil Reinforcement Mat (Slope/Ditch Matting)	SY	$ 4.55	2575	$ 11,716.25
110	6042000000-E	1632	1/4" Hardware Cloth	LF	$ 6.33	890	$ 5,636.67
111	6070000000-N	1639	Special Stilling Basin	EA	$ 879.67	1	$ 879.67
112	6111000000-E	SP	Impervious Dike	LF	$ 109.40	80	$ 8,752.00
113	6048000000-E	SP	Floating Turbidity Curtain	SY	$ 44.33	100	$ 4,433.33
114	6084000000-E	1660	Seeding & Mulching	Acres	$ 2,877.00	3.75	$ 10,788.75
115	6087000000-E	1660	Mowing	Acres	$ 310.33	1.5	$ 465.50
116	6090000000-E	1661	Seed for Repair Seeding	LB	$ 10.50	55	$ 577.50
117	6093000000-E	1661	Fertilizer for Repair Seeding	TON	$ 2,373.67	1.15	$ 2,729.72
118	6096000000-E	1662	Seed for Supplemental Seeding	LB	$ 9.77	95	$ 927.83
119	6108000000-E	1665	Fertilizer Topdressing	Ton	$ 1,897.00	3.5	$ 6,639.50
120	6114500000-N	1667	Specialized Hand Mowing	MHR	$ 84.60	4.5	$ 380.70
121	6117000000-N	1675	Response for Erosion Control	EA	$ 383.33	10	$ 3,833.33
122	6117500000-N	SP	Concrete Washout Structure	EA	$ 760.33	9	$ 6,843.00
123	7048500000-E	1705	Pedestrian Signal Head (16", 1 Section w/ Countdown)	EA	$ 1,155.53	0	$ -
124	7060000000-E	1705	Signal Cable	LF	$ 3.17	0	$ -
125	7120000000-E	1705	Vehicle Signal Head (12", 3 Section)	EA	$ 1,155.53	0	$ -
126	7229000000-N	SP	APS Detector Station	EA	$ 1,393.90	0	$ -
127	7230000000-N	SP	Central Control Units for APS Detector Stations	EA	$ 2,617.33	0	$ -
128	7288000000-E	1715	Paved Trenching (1, 2")	LF	$ 105.37	0	$ -
129	7288000000-E	1715	Paved Trenching (4, 2")	LF	$ 132.53	0	$ -
130	7300000000-E	1715	Unpaved Trenching (1, 2")	LF	$ 79.00	0	$ -
131	7300000000-E	1715	Unpaved Trenching (4, 2")	LF	$ 23.17	0	$ -
132	7301000000-E	1715	Direction Drill (1, 2")	LF	$ 36.70	0	$ -
133	7301000000-E	1715	Direction Drill (2, 2")	LF	$ 47.67	0	$ -
134	5326200000-E	1510	12" Ductile Iron Conduit	LF	$ 448.67	0	$ -
135	7324000000-N	1716	Junction Box (Standard Size)	EA	$ 897.33	0	$ -
136	7384000000-E	1722	1/2" Riser	EA	$ 792.00	0	$ -
137	7384000000-E	1722	2" Riser	EA	$ 1,053.50	0	$ -
138	7420000000-E	1722	2" Riser w/ Weatherhead	EA	$ 1,291.00	0	$ -
139	7444000000-E	1725	Inductive Loop Sawcut	LF	$ 14.67	0	$ -
140	7456000000-E	1726	Lead-In Cable	LF	$ 2.88	0	$ -
141	7574500000-N	SP	Furnish Wireless Radio Modem	EA	$ 3,160.67	0	$ -
142	7575142010-N	1736	900MHz Serial/Ethernet Spread Spectrum Radio	EA	$ 5,777.67	0	$ -
143	7574550000-N	SP	Furnish Wireless Lightning Arrestor	EA	$ 527.00	0	$ -
144	7566000000-N	1098	Delineator Marker	EA	$ 262.00	0	$ -
145	7588000000-N	SP	Metal Pole with Single Mast Arm	EA	$ 22,090.33	0	$ -
146	7590000000-N	SP	Metal Pole with Dual Mast Arm	EA	$ 33,645.33	0	$ -
147	7613000000-N	SP	Soil Test	EA	$ 2,650.67	0	$ -
148	7614100000-E	SP	Drilled Pier Foundation	CY	$ 1,213.33	0	$ -
149	7631000000-N	SP	Mast Arm with Metal Pole Design	EA	$ 527.00	0	$ -
150	7980000000-N	SP	Protective Coating for Single Mast Arm Pole (Hunter Green)	EA	$ 4,214.00	0	$ -
151	7980000000-N	SP	Protective Coating for Dual Mast Arm Pole (Hunter Green)	EA	$ 4,724.33	0	$ -
152	7980000000-N	SP	Protective Coating for Signal Pedestal (Hunter Green)	EA	$ 262.00	0	$ -
153	7636000000-N	1745	Sign For Signals	EA	$ 316.33	0	$ -
154	7642100000-N	1743	Type I Post with Foundation	EA	$ 3,160.67	0	$ -
155	7642200000-N	1743	Type II Pedestal with Foundation	EA	$ 4,214.00	0	$ -
156	7684000000-N	1750	Signal Cabinet Foundation	EA	$ 2,617.33	0	$ -
157	7756000000-N	1751	Controller with Cabinet (Type 2070LX, Base Mounted)	EA	$ 29,498.00	0	$ -
158	7780000000-N	1751	Detector Card, Type 170	EA	$ 316.33	0	$ -
159	7912000000-N	1755	Beacon Controller Assembly & Cabinet (RRFB w Thermal Detection and Radio Commur	EA	$ 13,695.67	1	$ 13,695.67
160	7980000000-N	SP	Generic Signal Item - Remove and Stockpile Railroad Signal Structure	EA	$ 3,394.00	2	$ 6,788.00
161	8802012000-E	SP	Soldier Pile Retaining Wall - No. 1	SF	$ 451.77	0	$ -
162	8802012000-E	SP	Soldier Pile Retaining Wall - No. 2	SF	$ 553.27	0	$ -
163	8021000000-N	402	Removal of Existing Structure	EA	$ 40,135.00	0	$ -
164	8065000000-N	SP	Asbestos Assessment	LS	$ 7,927.00	0	$ -

Table 3. Alternative A Cost Estimate (Cont'd)

Bridge/Structures

Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
165	8070000000-E	410	Foundation Excavation for End Bent	CY	$ 72.47	75	$ 5,435.00
166	8121000000-N	412	Unclassified Structure Excavation	CY	$ 72.47	65	$ 4,710.33
167	8182000000-E	420	Class A Concrete, Bridge	CY	$ 2,907.27	25	$ 72,681.67
168	8217000000-E	425	Reinforcing Steel, Bridge	LB	$ 3.63	2165	$ 7,866.17
169	8096000000-E	450	Pile Excavation, In Soil	LF	$ 880.50	15	$ 13,207.50
170	8096000000-E	450	Pile Excavation, Not In Soil	LF	$ 889.60	5	$ 4,448.00
171	8328200000-E	450	Pile Driving Equipment Setup for Steel Piles, HP12X53	EA	$ 663.13	5	$ 3,315.67
172	8364000000-E	450	HP12X53 Piles	LF	$ 127.87	135	$ 17,262.00
173	8391000000-N	450	Steel Pile Points	EA	$ 216.50	2	$ 433.00
174	8590000000-E	876	Rip Rap, Class II	Tons	$ 101.17	80	$ 8,093.33
175	8622000000-E	876	Geotextile for Drainage, Structures	SY	$ 9.47	85	$ 804.67
176	8897000000-N	SP	Generic Structure Item - Structure 11	EA	$ 101,619.67	0	$ -
177	8897000000-N	SP	Generic Structure Item - Structure 12	EA	$ 109,361.00	1	$ 109,361.00
178	8897000000-N	SP	Generic Structure Item - Structure 13	EA	$ 70,024.00	0	$ -
179	8897000000-N	SP	Generic Structure Item - Structure 14	EA	$ 66,038.33	0	$ -
180	8897000000-N	SP	Generic Structure Item - Structure 15	EA	$ 98,056.00	0	$ -
181	8897000000-N	SP	Generic Structure Item - Structure 16	EA	$ 94,736.67	0	$ -
182	0000915000-N	SP	Generic Miscellaneous Item - Boulder	EA	$ 2,385.67	55	$ 131,211.67
			TOTAL				

CONSTRUCTION TOTAL			**$ 2,560,232.34**
CONSTRUCTION ESCALATED TO 2028 - Rounded			**$ 3,000,000.00**
ENVIRONMENTAL	5% of Construction	$	150,000.00
PRELIMINARY ENGINEERING	7.5% of Construciton	$	225,000.00
FINAL ENGINEERING	9% of Construction	$	270,000.00
CONSTRUCTION INSPECTION & MANAGEMENT	12% of Construciton	$	360,000.00
ENGINEERING & MANAGEMENT TOTAL		**$**	**1,005,000.00**
UTILITY	$10K per pole + $30/LF	$	108,000.00
UTILITY TOTAL		**$**	**108,000.00**
ROW	$200K/ACRE min	$	600,000.00
ROW TOTAL		**$**	**600,000.00**
ALTERNATIVE A COST ESTIMATE - Rounded		**$**	**4,720,000.00**

Table 4. Alternative B Cost Estimate

ALTERNATIVE: **B**

PROJECT ALTERNATIVE: **Greenway; 4th Aveneue Sidewalk; Rail-w-Trail**

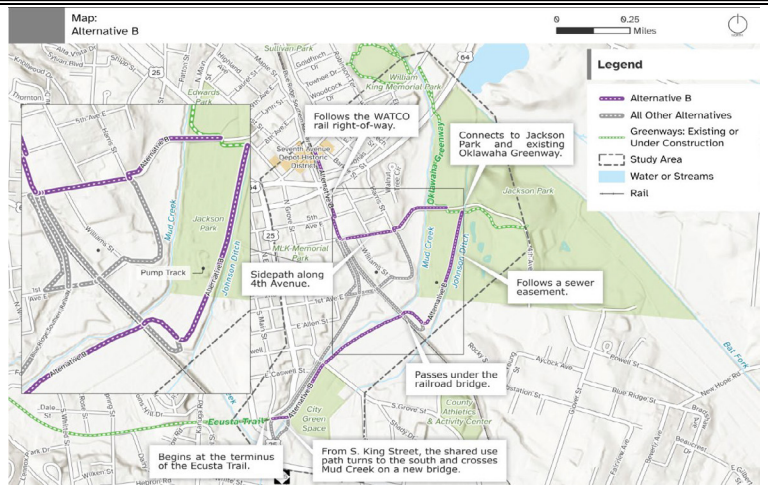
TRAFFIC PLANNING AND DESIGN, INC.

DESCRIPTION: Assumes Ecusta Rail Line is not available for purchase and WATCO does not allow rail-w-trail in key segments. Bridge over Mud Creek would be included to access City Green Space. Connect to Jackson Park/Oklawaha Greenway, move East along 4th Avenue, and finally turn North along WATCO until reaching 7th Avenue.

ALTERNATIVE B ESTIMATE: $ 6,330,000.00

COST ESTIMATE

LINE ITEM	UNIT	TOTAL COST	DESCRIPTION
Construction	LS	$3,720,000.00	Assumes 2028 Construction
Engineering Design, Environmental, & Inspection	LS	$1,246,200.00	Includes Prelim. & Final Design
Utilities	LS	$105,000.00	Aboveground Conflicts Only
Right-of-Way	LS	$200,000.00	Estimated Property Impacts
Recommended Contingency		$1,054,240.00	20% Consideration
TOTAL ESTIMATE		**$6,330,000.00**	**Alternative B**



NOTES:

Cost based on BL-0007 Bid Tabs and 2028 Construction Year

Excludes any purchase of rail lines

Assumes 0.6 acres for primary greenway, 0.2 acres for 4th Ave extension, and 0.2 acres for 4th Ave to 7th Ave connection

Table 4. Alternative B Cost Estimate (Cont'd)

	Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
	1	0000100000-N	800	Mobilization	LS	$ 406,614.11	0.35	$ 142,314.94
	2	0000400000-N	801	Construction Surveying	LS	$ 123,481.67	0.35	$ 43,218.58
	3	0043000000-N	226	Grading	LS	$ 1,885,084.33	0.35	$ 659,779.52
	4	0008000000-E	226	Supplemental Clearing and Grubbing	Acres	$ 2,237.33	0.6	$ 1,342.40
	5	0134000000-E	240	Drainage Ditch Excavation	CY	$ 22.17	140	$ 3,103.33
	6	0223000000-E	275	Rock Plating	SY	$ 122.00	290	$ 35,380.00
	7	0318000000-E	300	Foundation Conditioning Material, Minor Structures	Tons	$ 45.97	115	$ 5,286.17
	8	0320000000-E	300	Foundation Conditioning, Geotextile	SY	$ 4.80	320	$ 1,536.00
	9	0536000000-E	310	30" HDPE Pipe Culverts	LF	$ 113.93	0	$ -
	10	0536000000-E	310	36" HDPE Pipe Culverts	LF	$ 134.27	80	$ 10,741.33
	11	0536000000-E	310	42" HDPE Pipe Culverts	LF	$ 191.30	0	$ -
	12	0536000000-E	310	48" HDPE Pipe Culverts	LF	$ 231.00	0	$ -
	13	0576000000-E	310	6" CS Pipe Culverts, 0.064" Thick	LF	$ 59.00	0	$ -
	14	0360000000-E	310	12" RC Pipe Culvert CL. III	LF	$ 89.00	0	$ -
	15	0366000000-E	310	15" RC Pipe Culvert CL. III	LF	$ 73.17	0	$ -
	16	0372000000-E	310	18" RC Pipe Culvert CL. III	LF	$ 83.17	0	$ -
	17	0378000000-E	310	24" RC Pipe Culvert CL. III	LF	$ 104.67	20	$ 2,093.33
	18	0384000000-E	310	30" RC Pipe Culvert CL. III	LF	$ 158.67	0	$ -
	19	0390000000-E	310	36" RC Pipe Culvert CL. III	LF	$ 191.33	20	$ 3,826.67
	20	0426000000-E	310	72" RC Pipe Culvert CL. III	LF	$ 739.00	0	$ -
	21	0448300000-E	310	18" RC Pipe Culvert CL. IV	LF	$ 88.67	0	$ -
	22	0448400000-E	310	24" RC Pipe Culvert CL. IV	LF	$ 131.67	0	$ -
	23	0448500000-E	310	30" RC Pipe Culvert CL. IV	LF	$ 187.00	0	$ -
	24	0448600000-E	310	36" RC Pipe Culvert CL. IV	LF	$ 234.00	20	$ 4,680.00
	25	0448700000-E	310	42" RC Pipe Culvert CL. IV	LF	$ 311.00	0	$ -
	26	0354000000-E	310	18" RC Pipe Culvert, Class V	LF	$ 108.33	0	$ -
	27	0354000000-E	310	24" RC Pipe Culvert, Class V	LF	$ 153.00	40	$ 6,120.00
	28	0354000000-E	310	30" RC Pipe Culvert, Class V	LF	$ 230.33	0	$ -
	29	0354000000-E	310	36" RC Pipe Culvert, Class V	LF	$ 264.00	60	$ 15,840.00
	30	0354000000-E	310	42" RC Pipe Culvert, Class V	LF	$ 358.67	0	$ -
	31	0654000000-E	310	22" x 24" CS Pipe Arch Culverts, 0.064" Thick	LF	$ 155.33	0	$ -
	32	0654000000-E	310	24" x 18" CS Pipe Arch Culverts, 0.064" Thick	LF	$ 129.67	0	$ -
	33	0654000000-E	310	28" x 20" CS Pipe Arch Culverts, 0.064" Thick	LF	$ 138.67	0	$ -
	34	0654000000-E	310	35" x 24" CS Pipe Arch Culverts, 0.079" Thick	LF	$ 162.33	0	$ -
	35	0654000000-E	310	42" x 29" CS Pipe Arch Culverts, 0.079" Thick	LF	$ 180.00	0	$ -
	36	0654000000-E	310	57" x 38" CS Pipe Arch Culverts, 0.079" Thick	LF	$ 258.67	0	$ -
	37	0986000000-E	SP	14" x 23" RC Elliptical Pipe, Class III	LF	$ 133.00	0	$ -
	38	0986000000-E	SP	22" x 34" RC Elliptical Pipe, Class IV	LF	$ 250.00	0	$ -
	39	2190000000-N	828	Temporary Steel Plate Covers	EA	$ 2,085.00	1	$ 2,085.00
	40	0995000000-E	340	Pipe Removal	LF	$ 38.33	0	$ -
	41	1121000000-E	520	Aggregate Base Course	Tons	$ 36.80	4275	$ 157,320.00
	42	1220000000-E	545	Incidental Stone Base (Contingency Item)	Tons	$ 43.67	82	$ 3,580.67
	43	1491000000-E	610	Asphalt Conc Base Course, Type B25.0C	Tons	$ 122.87	155	$ 19,044.33
	44	1519000000-E	610	Asphalt Conc Surface Course Type S9.5B	Tons	$ 107.17	1625	$ 174,145.83
	45	1575000000-E	620	Asphalt Binder for Plant Mix	Tons	$ 694.51	120	$ 83,341.20
	46	1693000000-E	654	Patching Existing Pavement - Asphalt Conc Surface Course Type S9.5B	Tons	$ 204.53	35	$ 7,158.67
	47	1693000000-E	654	Asphalt Binder for Plant Mix (Patching Existing Pavement)	Tons	$ 694.51	17	$ 11,806.67
	48	1891500000-N	SP	Generic Paving Item - Stockpiling of Rails	LS	$ 19,987.33	0	$ -
	49	2209000000-E	838	Endwalls	CY	$ 1,725.33	2	$ 3,450.67
	50	2253000000-E	840	Pipe Collars Class B, STD 840.72	CY	$ 1,031.33	3	$ 3,094.00
	51	2275000000-E	SP	Flowable Fill	CY	$ 524.00	0	$ -
	52	2286000000-N	840	Masonry Drainage Structures	EA	$ 3,638.00	7	$ 25,466.00
	53	2364000000-N	840	Frame with 2 Grates, STD 840.16	EA	$ 1,004.00	5	$ 5,020.00
	54	2367000000-E	840	Frame with 2 Grates, STD 840.29	EA	$ 901.67	2	$ 1,803.33
	55	2374000000-N	840	Frame with Grate & Hood, Std. 840.03 Type E	EA	$ 973.00	0	$ -
	56	2549000000-E	846	2'-6" Concrete Curb & Gutter	LF	$ 78.67	0	$ -
	57	2591000000-E	848	4" Concrete Sidewalk	SY	$ 55.43	75	$ 4,157.50
	58	2605000000-N	848	Curb Ramps - Detectable Warning Surface	EA	$ 1,234.83	15	$ 18,522.50
	59	2605000000-N	848	Concrete Curb Ramps	EA	$ 3,510.50	23	$ 80,741.50
	60	2761000000-E	848	Generic Paving Item - 8" Concrete for Detectable Warning Surface	SY	$ 106.23	190	$ 20,184.33
	61	2444000000-N	852	Concrete Transitional Section for Catch Basin	EA	$ 2,577.67	0	$ -
	62	2905000000-N	859	Convert Existing Drop Inlet to Junction Box	EA	$ 3,336.67	0	$ -
	63	3030000000-E	SP	Weathered Steel Beam Guradrail	LF	$ 37.03	0	$ -
	64	3150000000-N	SP	Additional Guardrail Posts, Weathered	EA	$ 68.63	0	$ -
	65	3145000000-E	SP	Extra Length Guardrail Posts, Weathered	EA	$ 93.77	0	$ -
	66	3195000000-N	862	Painted Galvanized Guardrail End Units, Type AT-1	EA	$ 1,970.67	0	$ -
	67	3288000000-N	862	Painted Galvanized Guardrail End Units, Type TL-2	EA	$ 5,369.67	0	$ -
Pipe Crossings								
Paving								
Stormwater Mgmt.								

Table 4. Alternative B Cost Estimate (Cont'd)

Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
68	3574000000-E	867	Generic Fencing Item - Reset Existing Fence	LF	$ 28.83	370	$ 10,668.33
69	3574000000-E	867	Generic Fencing Item - Remove and Stockpile Existing Fence	LF	$ 8.53	0	$ -
70	3575000000-E	SP	Generic Fencing Item - Pedestrian Guard Rail	LF	$ 198.10	1800	$ 356,580.00
71	3575000000-E	SP	Generic Fencing Item - Pedestrian Safety Rail	LF	$ 192.43	0	$ -
72	3628000000-E	876	Rip Rap, Class I	Tons	$ 66.10	90	$ 5,949.00
73	3635000000-E	876	Rip Rap, Class II	Tons	$ 65.07	485	$ 31,557.33
74	0220000000-E	SP	Rock Embankments	TON	$ 121.67	17	$ 2,068.33
75	3642000000-E	876	Class A, Rip Rap	Tons	$ 120.00	15	$ 1,800.00
76	3649000000-E	876	Class B, Rip Rap	Tons	$ 56.00	30	$ 1,680.00
77	1077000000-E	SP	Stone for Erosion Control, #57	TON	$ 54.33	25	$ 1,358.33
78	3656000000-E	SP	Geotextile For Rock Embankments	SY	$ 10.43	15	$ 156.50
79	3832000000-E	SP	Railroad Track To Be Removed	LF	$ 33.50	150	$ 5,025.00
80	4025000000-E	901	Contractor Furnished, Type E Sign	SF	$ 15.62	390	$ 6,090.50
81	4025000000-E	901	Contractor Furnished, Type F Sign	SF	$ 21.15	125	$ 2,643.75
82	4072000000-E	903	Supports, 3-lb. Steel U-Channel	LF	$ 9.75	1030	$ 10,042.50
83	4102000000-N	904	Sign Erection, Type E	EA	$ 71.33	80	$ 5,706.67
84	4108000000-N	904	Sign Erection, Type F	EA	$ 78.00	75	$ 5,850.00
85	4154000000-N	907	Disposal of Sign System, U-Channel	EA	$ 20.67	23	$ 475.33
86	4445000000-E	1145	Barricades, Type III	LF	$ 91.33	5	$ 456.67
87	4457000000-N	SP	Temporary Traffic Control	LS	$ 127,595.33	0.4	$ 51,038.13
88	4685000000-E	1205	Thermoplastic Pavement Marking Lines (4", 90 Mils)	LF	$ 1.93	2200	$ 4,253.33
89	4695000000-E	1205	Thermoplastic Pavement Marking Lines (8", 90 Mils)	LF	$ 4.80	0	$ -
90	4700000000-E	1205	Thermoplastic Pavement Marking Lines (12", 90 Mils)	LF	$ 6.73	0	$ -
91	4710000000-E	1205	Thermoplastic Pavement Marking Lines (24", 90 Mils)	LF	$ 12.00	624	$ 7,488.00
92	4720000000-E	1205	Thermoplastic Pavement Marking Character (90 Mils)	EA	$ 310.67	16	$ 4,970.67
93	4725000000-E	1205	Thermoplastic Pavement Marking Symbol (90 Mils)	EA	$ 202.00	16	$ 3,232.00
94	4726100000-E	1205	Bicycle Character (90 Mils)	EA	$ 396.33	14	$ 5,548.67
95	4850000000-E	1205	Removal of Pavement Marking Lines, 4"	LF	$ 1.77	0	$ -
96	4870000000-E	1205	Removal of Pavement Marking Lines, 24"	LF	$ 5.13	12	$ 61.60
97	4875000000-N	1205	Removal of Pavement Marking Symbols & Characters	EA	$ 85.67	0	$ -
98	3656000000-E	876	Geotextile for Drainage	SY	$ 4.83	1010	$ 4,881.67
99	6000000000-E	1605	Temporary Silt Fence	LF	$ 4.90	15650	$ 76,685.00
100	6006000000-E	1610	Stone for Erosion Control, Class A	TON	$ 47.93	510	$ 24,446.00
101	6009000000-E	1610	Stone for Erosion Control, Class B	TON	$ 47.93	320	$ 15,338.67
102	6012000000-E	1610	Sediment Control Stone	TON	$ 46.67	320	$ 14,933.33
103	6015000000-E	1615	Temporary Mulching	Acres	$ 1,828.67	4.75	$ 8,686.17
104	6018000000-E	1620	Seed for Temporary Seeding	LB	$ 5.77	315	$ 1,816.50
105	6021000000-E	1620	Fertilizer for Temporary Seeding	TON	$ 1,898.67	2.25	$ 4,272.00
106	6024000000-E	1622	Temporary Slope Drains	LF	$ 38.73	115	$ 4,454.33
107	6029000000-E	SP	Safety Fence	LF	$ 3.88	605	$ 2,349.42
108	6030000000-E	1630	Silt Excavation	CY	$ 18.33	355	$ 6,508.33
109	6038000000-E	SP	Permanent Soil Reinforcement Mat (Slope/Ditch Matting)	SY	$ 4.55	3325	$ 15,128.75
110	6042000000-E	1632	1/4" Hardware Cloth	LF	$ 6.33	1115	$ 7,061.67
111	6070000000-N	1639	Special Stilling Basin	EA	$ 879.67	2	$ 1,759.33
112	6111000000-E	SP	Impervious Dike	LF	$ 109.40	160	$ 17,504.00
113	6048000000-E	SP	Floating Turbidity Curtain	SY	$ 44.33	300	$ 13,300.00
114	6084000000-E	1660	Seeding & Mulching	Acres	$ 2,877.00	4.75	$ 13,665.75
115	6087000000-E	1660	Mowing	Acres	$ 310.33	2	$ 620.67
116	6090000000-E	1661	Seed for Repair Seeding	LB	$ 10.50	65	$ 682.50
117	6093000000-E	1661	Fertilizer for Repair Seeding	TON	$ 2,373.67	0.35	$ 830.78
118	6096000000-E	1662	Seed for Supplemental Seeding	LB	$ 9.77	120	$ 1,172.00
119	6108000000-E	1665	Fertilizer Topdressing	Ton	$ 1,897.00	3.5	$ 6,639.50
120	6114500000-N	1667	Specialized Hand Mowing	MHR	$ 84.60	5.5	$ 465.30
121	6117000000-N	1675	Response for Erosion Control	EA	$ 383.33	15	$ 5,750.00
122	6117500000-N	SP	Concrete Washout Structure	EA	$ 760.33	10	$ 7,603.33
123	7048500000-E	1705	Pedestrian Signal Head (16", 1 Section w/ Countdown)	EA	$ 1,155.53	0	$ -
124	7060000000-E	1705	Signal Cable	LF	$ 3.17	0	$ -
125	7120000000-E	1705	Vehicle Signal Head (12", 3 Section)	EA	$ 1,155.53	0	$ -
126	7229000000-N	SP	APS Detector Station	EA	$ 1,393.90	0	$ -
127	7230000000-N	SP	Central Control Units for APS Detector Stations	EA	$ 2,617.33	0	$ -
128	7288000000-E	1715	Paved Trenching (1, 2")	LF	$ 105.37	0	$ -
129	7288000000-E	1715	Paved Trenching (4, 2")	LF	$ 132.53	0	$ -
130	7300000000-E	1715	Unpaved Trenching (1, 2")	LF	$ 79.00	0	$ -
131	7300000000-E	1715	Unpaved Trenching (4, 2")	LF	$ 23.17	0	$ -
132	7301000000-E	1715	Direction Drill (1, 2")	LF	$ 36.70	0	$ -
133	7301000000-E	1715	Direction Drill (2, 2")	LF	$ 47.67	0	$ -
134	5326200000-E	1510	12" Ductile Iron Conduit	LF	$ 448.67	0	$ -

Pavement Markings

Erosion Control

Table 4. Alternative B Cost Estimate (Cont'd)

	Item No.	Line Item	Sect. No.	Description	Unit	Average Unit Price	Quantity (Engineering Judgement)	Total Unit Price
Traffic/Pedestrian Signal	135	7324000000-N	1716	Junction Box (Standard Size)	EA	$ 897.33	0	$ -
	136	7384000000-E	1722	1/2" Riser	EA	$ 792.00	0	$ -
	137	7384000000-E	1722	2" Riser	EA	$ 1,053.50	0	$ -
	138	7420000000-E	1722	2" Riser w/ Weatherhead	EA	$ 1,291.00	0	$ -
	139	7444000000-E	1725	Inductive Loop Sawcut	LF	$ 14.67	0	$ -
	140	7456000000-E	1726	Lead-In Cable	LF	$ 2.88	0	$ -
	141	7574500000-N	SP	Furnish Wireless Radio Modem	EA	$ 3,160.67	0	$ -
	142	7575142010-N	1736	900MHz Serial/Ethernet Spread Spectrum Radio	EA	$ 5,777.67	0	$ -
	143	7574550000-N	SP	Furnish Wireless Lightning Arrestor	EA	$ 527.00	0	$ -
	144	7566000000-N	1098	Delineator Marker	EA	$ 262.00	0	$ -
	145	7588000000-N	SP	Metal Pole with Single Mast Arm	EA	$ 22,090.33	0	$ -
	146	7590000000-N	SP	Metal Pole with Dual Mast Arm	EA	$ 33,645.33	0	$ -
	147	7613000000-N	SP	Soil Test	EA	$ 2,650.67	0	$ -
	148	7614100000-E	SP	Drilled Pier Foundation	CY	$ 1,213.33	0	$ -
	149	7631000000-N	SP	Mast Arm with Metal Pole Design	EA	$ 527.00	0	$ -
	150	7980000000-N	SP	Protective Coating for Single Mast Arm Pole (Hunter Green)	EA	$ 4,214.00	0	$ -
	151	7980000000-N	SP	Protective Coating for Dual Mast Arm Pole (Hunter Green)	EA	$ 4,724.33	0	$ -
	152	7980000000-N	SP	Protective Coating for Signal Pedestal (Hunter Green)	EA	$ 262.00	0	$ -
	153	7636000000-N	1745	Sign For Signals	EA	$ 316.33	0	$ -
	154	7642100000-N	1743	Type I Post with Foundation	EA	$ 3,160.67	0	$ -
	155	7642200000-N	1743	Type II Pedestal with Foundation	EA	$ 4,214.00	0	$ -
	156	7684000000-N	1750	Signal Cabinet Foundation	EA	$ 2,617.33	0	$ -
	157	7756000000-N	1751	Controller with Cabinet (Type 2070LX, Base Mounted)	EA	$ 29,498.00	0	$ -
	158	7780000000-N	1751	Detector Card, Type 170	EA	$ 316.33	0	$ -
	159	7912000000-N	1755	Beacon Controller Assembly & Cabinet (RRFB w Thermal Detection and Radio Communic	EA	$ 13,695.67	1	$ 13,695.67
	160	7980000000-N	SP	Generic Signal Item - Remove and Stockpile Railroad Signal Structure	EA	$ 3,394.00	0	$ -
Bridge/Structures	161	8802012000-E	SP	Soldier Pile Retaining Wall - No. 1	SF	$ 451.77	200	$ 90,353.33
	162	8802012000-E	SP	Soldier Pile Retaining Wall - No. 2	SF	$ 553.27	0	$ -
	163	8021000000-N	402	Removal of Existing Structure	EA	$ 40,135.00	0	$ -
	164	8065000000-N	SP	Asbestos Assessment	LS	$ 7,927.00	0	$ -
	165	8070000000-E	410	Foundation Excavation for End Bent	CY	$ 72.47	150	$ 10,870.00
	166	8121000000-N	412	Unclassified Structure Excavation	CY	$ 72.47	130	$ 9,420.67
	167	8182000000-E	420	Class A Concrete, Bridge	CY	$ 2,907.27	50	$ 145,363.33
	168	8217000000-E	425	Reinforcing Steel, Bridge	LB	$ 3.63	4330	$ 15,732.33
	169	8096000000-E	450	Pile Excavation, In Soil	LF	$ 880.50	30	$ 26,415.00
	170	8096000000-E	450	Pile Excavation, Not In Soil	LF	$ 889.60	10	$ 8,896.00
	171	8328200000-E	450	Pile Driving Equipment Setup for Steel Piles, HP12X53	EA	$ 663.13	10	$ 6,631.33
	172	8364000000-E	450	HP12X53 Piles	LF	$ 127.87	270	$ 34,524.00
	173	8391000000-N	450	Steel Pile Points	EA	$ 216.50	4	$ 866.00
	174	8590000000-E	876	Rip Rap, Class II	Tons	$ 101.17	160	$ 16,186.67
	175	8622000000-E	876	Geotextile for Drainage, Structures	SY	$ 9.47	170	$ 1,609.33
	176	8897000000-N	SP	Generic Structure Item - Structure 11	EA	$ 101,619.67	0	$ -
	177	8897000000-N	SP	Generic Structure Item - Structure 12	EA	$ 109,361.00	3	$ 328,083.00
	178	8897000000-N	SP	Generic Structure Item - Structure 13	EA	$ 70,024.00	0	$ -
	179	8897000000-N	SP	Generic Structure Item - Structure 14	EA	$ 66,038.33	0	$ -
	180	8897000000-N	SP	Generic Structure Item - Structure 15	EA	$ 98,056.00	0	$ -
	181	8897000000-N	SP	Generic Structure Item - Structure 16	EA	$ 94,736.67	0	$ -
	182	0000915000-N	SP	Generic Miscellaneous Item - Boulder	EA	$ 2,385.67	55	$ 131,211.67
				TOTAL				

CONSTRUCTION TOTAL			**$ 3,177,298.46**
CONSTRUCTION ESCALATED TO 2028 - Rounded			**$ 3,720,000.00**
ENVIRONMENTAL	5% of Construction	$	186,000.00
PRELIMINARY ENGINEERING	7.5% of Construciton	$	279,000.00
FINAL ENGINEERING	9% of Construction	$	334,800.00
CONSTRUCTION INSPECTION & MANAGEMENT	12% of Construciton	$	446,400.00
ENGINEERING & MANAGEMENT TOTAL		**$**	**1,246,200.00**
UTILITY	$10K per pole + $30/LF	$	105,000.00
UTILITY TOTAL		**$**	**105,000.00**
ROW	$200K/ACRE min	$	200,000.00
ROW TOTAL		**$**	**200,000.00**
ALTERNATIVE B COST ESTIMATE - Rounded		**$**	**5,280,000.00**

APPENDIX E

Project Screening Reports

LRYX
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TRD 4X4
SPORT

Table 5. NCDOT ATLAS Natural Heritage Data Report

Project ATLAS Natural Heritage Data Report

This report is not an official correspondence from the North Carolina Natural Heritage Program

ATM Feas IMD

Species Element Occurrences with federal status in study area

Scientific Name	Common Name	Federal Status	EO Status	Sensitive Record
Bombus affinis	Rusty-patched Bumble Bee	E	Historical	N

Species Element Occurrences with federal status within 1 mile of study area

Scientific Name	Common Name	Federal Status	EO Status	Sensitive Record
Bombus affinis	Rusty-patched Bumble Bee	E	Historical	N
Cambarus reburrus	French Broad Crayfish		Current	N
Crotalus horridus	Timber Rattlesnake		Historical	Y
Erimystax insignis	Blotched Chub		Current	N
Hasteola suaveolens	Sweet Indian-plantain		Current	N
Helonias bullata	Swamp Pink	T	Current	Y
Lilium canadense	Canada Lily		Current	N

Table 5. NCDOT ATLAS Natural Heritage Data Report (Cont'd)

Species Element Occurrences with federal status within 1 mile of study area

Scientific Name	Common Name	Federal Status	EO Status	Sensitive Record
Platanthera integrilabia	White Fringeless Orchid	T	Historical	Y
Sagittaria fasciculata	Bunched Arrowhead	E	Current	Y
Sarracenia jonesii	Mountain Sweet Pitcherplant	E	Historical	Y
Stachys eplingii	Epling's Hedge-nettle		Historical	N
Thalictrum macrostylum	Small-leaved Meadowrue		Current	N

Report Metadata

Created by: TeresaKBuckwalter **Date/Time Executed:** 05/13/2024 3:11 PM

For definitions of terms and values please refer to the North Carolina Natural Heritage Program's documentation found at: **https://ncnhde.natureserve.org/help**. To obtain or request an official correspondence from the North Carolina Natural Heritage Program, please visit **https://ncnhde.natureserve.org/**.

This report is not an official correspondence from the North Carolina Natural Heritage Program.

Table 6. NCDOT Project Development Screening Report

Project Development Screening Report

This report is for high-level screening purposes only. Staff and consultants must continue to adhere to NCDOT standard operating procedures including, but not limited to, ETRACS requests and field validations.

Report Date: 05/13/2024

ATM Feas IMD

Cultural and Env. Screening

County: Henderson

Division: 14

Study Area Size: 119.5 Acres

Buffer Size: N/A

User Customized Screening

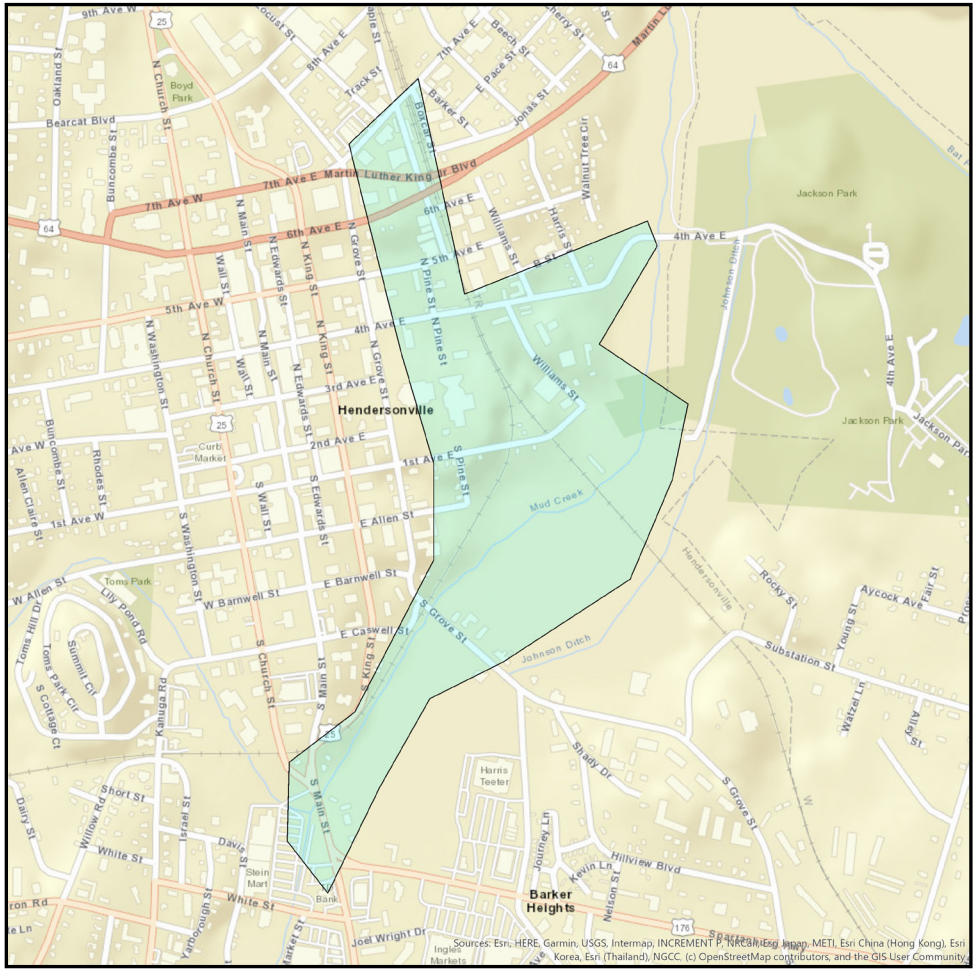


Table 6. NCDOT Project Development Screening Report (Cont'd)

EPA Level III Ecoregion:	Blue Ridge
EPA Level IV Ecoregion:	Broad Basins
HUC8:	06010105
Riparian Buffer:	No
CAMA:	No
Airport within 4 miles:	Yes

Human Environment

Cultural Resources	Feature Count	Total Coverage	Nearest Feature
NC Historic Preservation NR Points	1	N/A	25.2 ft
American Indian Reservations-Federally Recognized Tribal Entities	0	0 ac	0
NC Archaeological Site Hexagons	0	0	0
NCDOT ATLAS NC Cemeteries	0	0	683.7 ft
Geo Environmental	**Feature Count**	**Total Coverage**	**Nearest Feature**
NC Brownfields Locations	4	N/A	317.0 ft
NC Brownfields Boundary	3	3.2 ac	221.0 ft
NC DEQ Underground Storage Tank Incidents	3	N/A	17.5 ft
NC DEQ Non-UST AST Incidents	2	N/A	358.8 ft

Table 6. NCDOT Project Development Screening Report (Cont'd)

Human Environment			
Geo Environmental	**Feature Count**	**Total Coverage**	**Nearest Feature**
EPA NEPA Assist Toxic Releases (TRI)	0	0	0
NC DEQ Active Permitted Landfills	0	0	0
NC DEQ Coal Ash Structural Fills (CCB) (CLOSED)	0	0	0
NC DEQ Dry Cleaning Solvent Cleanup Act Sites	0	0	84.7 ft
NC DEQ Federal Remediation Branch Sites	0	0	0
NC DEQ Hazardous Waste Sites	0	0	704.8 ft
NC DEQ Inactive Hazardous Sites	0	0	95.3 ft
NC DEQ Pre Regulatory Landfill Sites	0	0	283.0 ft
NCDOT ATLAS NC Geo Environmental Sites of Concern Pre 2018	0	0	882.3 ft
Other Permitted Solid Waste Facilities (Open)	0	0	0
US EPA Superfund Sites	0	0 ac	0
Utilities	**Feature Count**	**Total Coverage**	**Nearest Feature**
WasteWater Service Areas	1	110.4 ac	N/A
Duke Transmission Easements	0	0	68.5 ft
NC DEQ Groundwater Sources	0	0	0
NC Water Supply Intakes	0	0	0

Table 6. NCDOT Project Development Screening Report (Cont'd)

Natural Environment			
Fish and Aquatics	**Feature Count**	**Total Coverage**	**Nearest Feature**
NC DEQ Primary Fish Nursery Areas	0	0 ac	0
NC Shellfish Growing Area Classifications	0	0 ac	0
NC WRC Public Mountain Trout Waters	0	0 ft	0
NC WRC Public Mountain Trout Waters Impoundments	0	0 ac	0
NOAA Essential Fish Habitat	0	0 ac	0
Submerged Aquatic Vegetation 1981 to 2021	0	0 ac	0
USACE Trout Watersheds	0	0 ac	0
USACE Western NC Water Buffers	0	0 ac	0
USACE Western NC Waters	0	0 ft	0
Mitigation	**Feature Count**	**Total Coverage**	**Nearest Feature**
NCDOT Mitigation Site Points	0	0	0
Threatened and Endangered	**Feature Count**	**Total Coverage**	**Nearest Feature**
Bat Bridges Habitat Probability	4	N/A	102.6 ft
NC Natural Heritage Element Occurrences	1	11.4 ac	910.5 ft
Appalachian elktoe (Alasmidonta raveneliana) potential habitat	0	0 ac	0
ATLAS USFWS Critical Habitat (polygon)	0	0 ac	0
Carolina heelsplitter (Lasmigona decorata) potential habitat	0	0 ac	0

Table 6. NCDOT Project Development Screening Report (Cont'd)

Natural Environment			
Threatened and Endangered	**Feature Count**	**Total Coverage**	**Nearest Feature**
Carolina madtom (Noturus furiosus) Potential habitat	0	0 ac	0
Dwarf wedgemussel (Alasmidonta heterodon) potential habitat	0	0 ac	0
Eastern Black Rail Potential Habitat	0	0 ac	0
Green floater (Lasmigona subviridis) potential habitat	0	0 ac	0
Hawksbill Turtle Potential Habitat	0	0	0
James spinymussel (Pleurobema collina) Potential habitat	0	0 ac	0
Kemps Ridley Turtle Potential Habitat	0	0	0
Roanoke logperch (Percina rex) Potential habitat	0	0 ac	0
Roseate Tern Potential Habitat	0	0 ac	0
Rufa Red Knot Potential Habitat	0	0 ac	0
Spotfin chub (Erimonax monachus) potential habitat	0	0 ac	0
Tar River spinymussel (Elliptio steinstansana) potential habitat	0	0 ac	0
Yellow lance (Elliptio lanceolata) potential habitat	0	0 ac	0
Water Quality	**Feature Count**	**Total Coverage**	**Nearest Feature**
NCDOT Hosted NC DEQ 303d and 305b Streams	20	4283.7 ft	67.8 ft
NC DEQ DRAFT 2016 DWR 303(d) Water Quality Assessment	2	4127.4 ft	1664.6 ft
NC DEQ High Quality Waters	0	0	0

Table 6. NCDOT Project Development Screening Report (Cont'd)

Natural Environment

Water Quality	Feature Count	Total Coverage	Nearest Feature
NC DEQ Outstanding Resource Waters	0	0	0
NC DEQ Water Supply Watershed II	0	0 ft	0
NC DEQ Water Supply Watershed III	0	0	0
NC DEQ Water Supply Watershed IV	0	0	0
NC DEQ Water Supply Watersheds	0	0	0
NC High Rock Watershed Boundary	0	0 ac	0
NCDOT Industrial Outfalls	0	0	0
Wetlands	**Feature Count**	**Total Coverage**	**Nearest Feature**
USFWS National Wetland Inventory	3	2.6 ac	37.1 ft
NC DEQ Unique Wetlands	0	0	0
NCDOT ATLAS NC NRTR Preliminary Jurisdictional Wetlands	0	0	0

Report Metadata

Created by: TeresaKBuckwalter **Date/Time Executed:** 05/13/2024 3:11 PM

Application version: 1.22.0.0

APPENDIX F

Online Survey Promotion & Results

ONLINE SURVEY PROMOTION

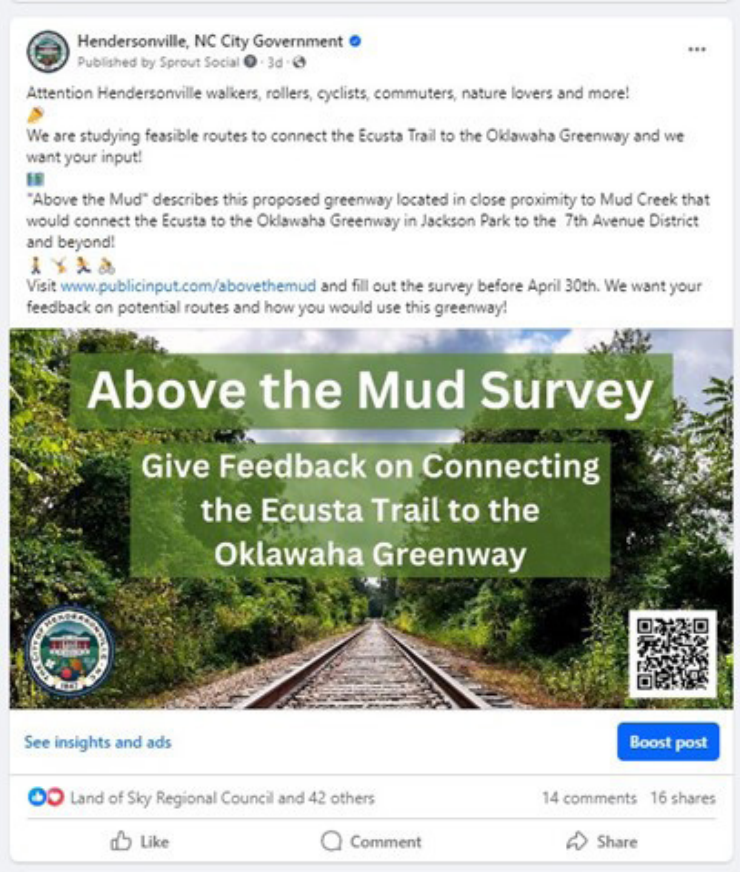
City of Hendersonville staff diligently promoted the online survey for the project, effectively reaching a wide audience and ensuring diverse community input. By strategically advertising the survey through social media, local newsletters, and community events, they maximized engagement and encouraged residents to share their insights and preferences. This comprehensive promotion not only increased survey participation but also helped the staff gather valuable feedback that accurately reflects the community's needs and desires, ultimately guiding the development of a greenway that aligns with local priorities.

- 3/28/24 - Press Release Sent to Local Media List
- 3/28/24 - Press Release, Social Media Copy & Graphics in English & Spanish sent to City of Hendersonville DEI Committee
- 3/28/24 - Press Release, Social Media Copy & Graphics in English & Spanish sent to community stakeholders via emails (previous greenway supporters & public health organizations, DEI committee members)
- 3/28/24 - News item posted to City of Hendersonville Website
- 3/28/24 - News item promoted to City of Hendersonville Website Homepage
- 3/28/24 - Survey link added to the City of Hendersonville Public Engagement HUB
- 3/28/24 - Above the Mud Project webpage updated with survey link added
- 3/28/24 - Post added to the City's Public Notice webpage for Above the Mud Survey
- 3/28/24 - Facebook Post promoting Above the Mud Survey
- 3/28/24 - Instagram Post promoting Above the Mud Survey
- 3/28/24 - Nextdoor Post promoting Above the Mud Survey
- 4/1/24 - WHKP Radio Interview and web posting on Above the Mud Survey
- 4/1/24 - Hendersonville Lightning runs story on Above the Mud Survey
- 4/2/24 - Information & survey link included in Gen H Comprehensive Plan Subscriber Newsletter
- 4/3/24 - Spanish Facebook Post promoting Above the Mud Survey
- 4/4/24 - Received survey approval from Henderson County Public Schools and provided to two local high school teachers in the event they can incorporate into their lesson plans
- 4/6/24 - Information & survey link included in Friends of Ecusta Trail April Newsletter
- 4/13/24 - Information & survey link included in the Friends of the Oklawaha April Newsletter
- 4/29/24 - Facebook & Instagram survey close reminder posts scheduled

Image 1. Online Survey Promotion (Twitter/X)

Source: City of Hendersonville

Image 2. Online Survey Promotion (Facebook)



Source: City of Hendersonville

Image 3. Spanish Online Survey Promotion (Facebook)

Source: City of Hendersonville

Image 4. Online Survey Promotion (Newspaper Article)

Source: Hendersonville Lightning

Image 5. Online Survey Response Summary

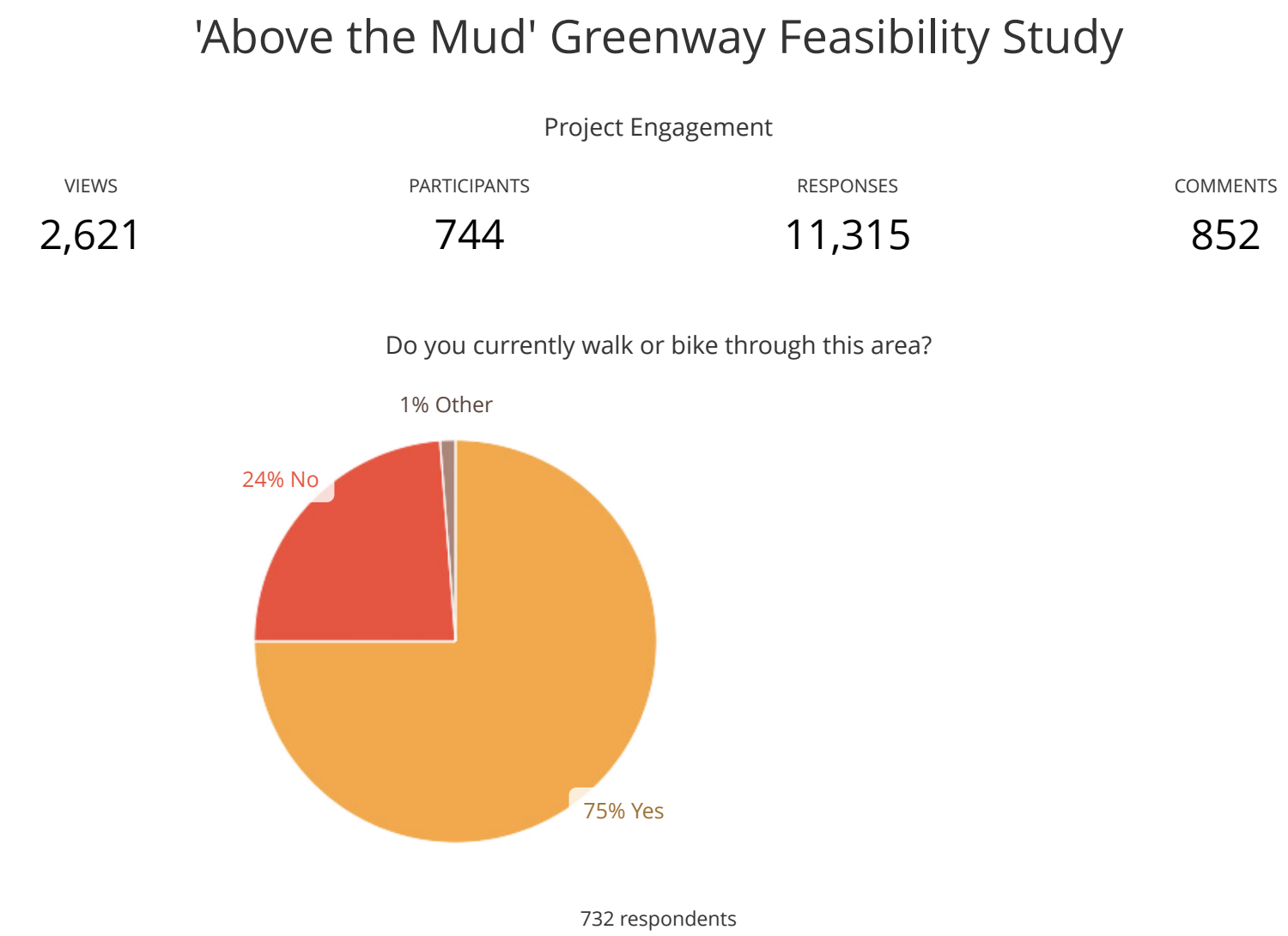
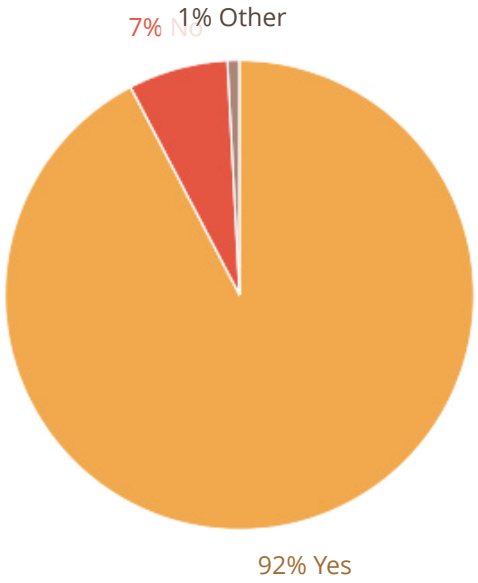


Image 5. Online Survey Response Summary (Cont'd)

Would you use the proposed Above the Mud Greenway if it were fully complete, extending from the Ecusta Trail to the Oklawaha Greenway in Jackson Park?



728 respondents

Image 5. Online Survey Response Summary (Cont'd)

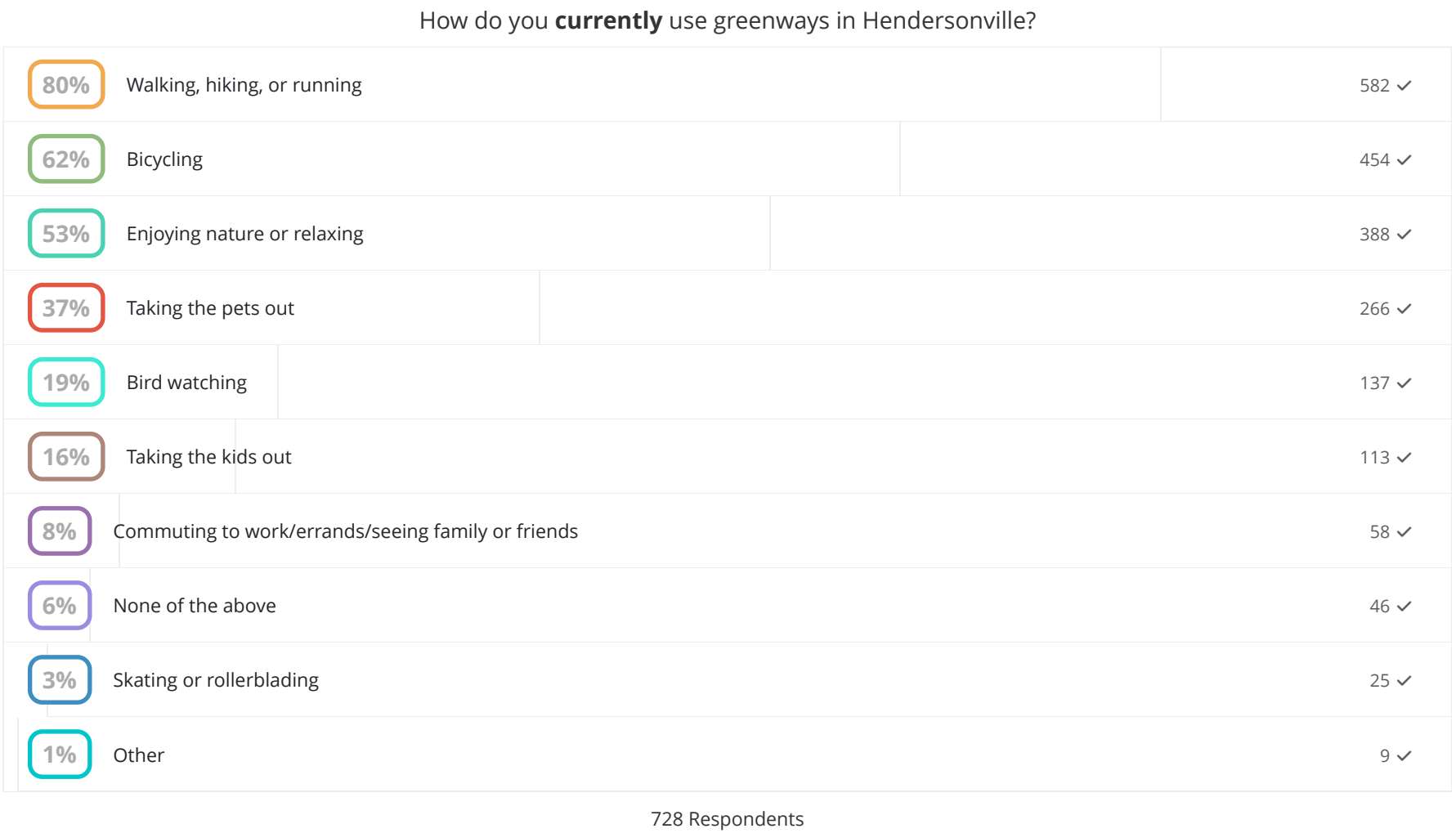


Image 5. Online Survey Response Summary (Cont'd)

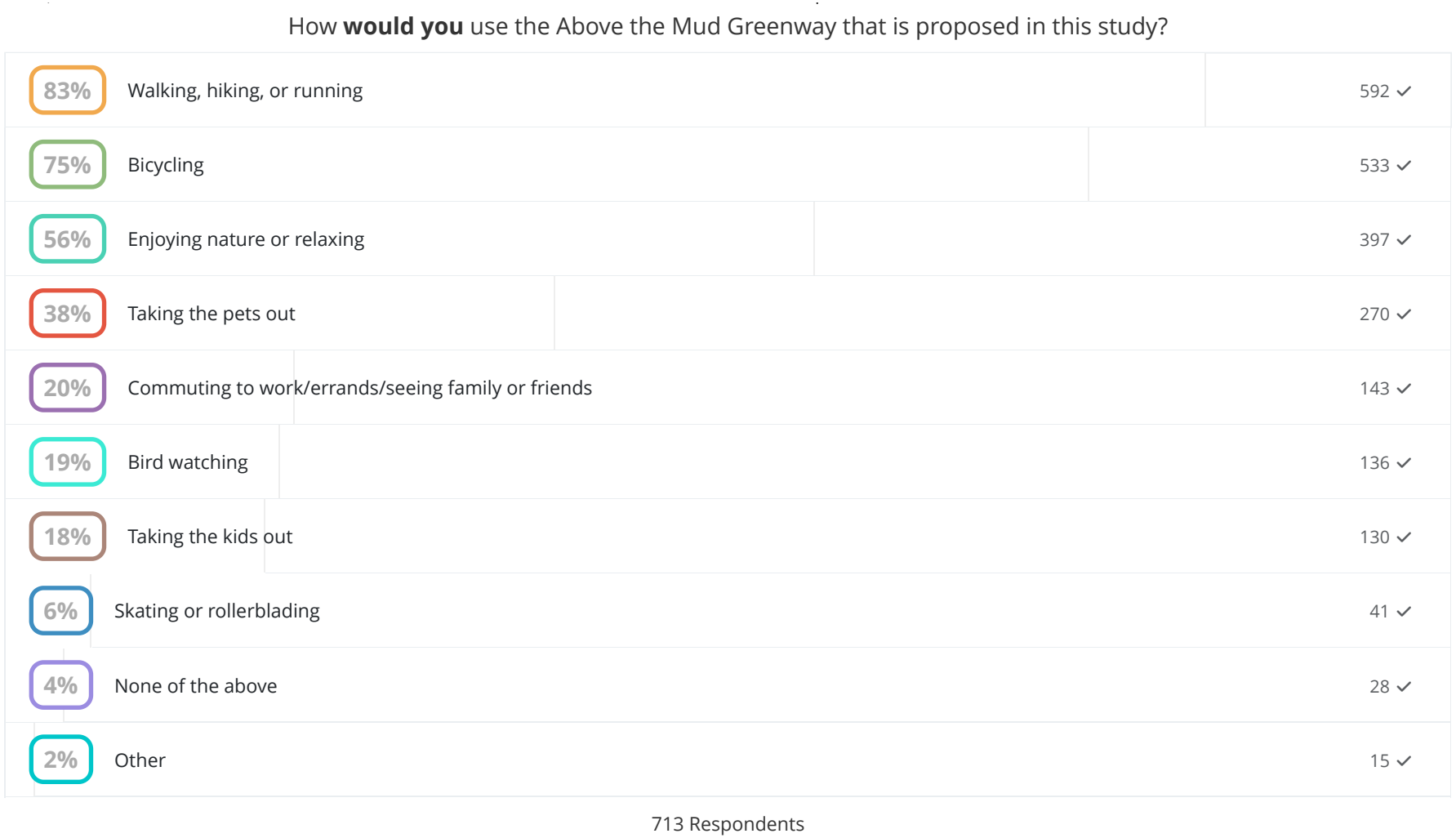


Image 5. Online Survey Response Summary (Cont'd)

Image 5. Online Survey Response Summary (Cont'd)

What do you think would help make the proposed Above the Mud Greenway exciting and successful?

Make sure it really is above the mud and doesn't flood. I would recommend Option B now and maybe acquire the other option later. It would be nice to have a greenway that goes through downtown like Greenville has. As I said, we need bicycle parking areas, so we can stop and get out and walk downtown or the park.

5 months ago — 35 Agree

Will this greenway be truly above the mud, unlike the section from Jackson park to 7th which can be impassable quite often?

5 months ago — 28 Agree

Accessibility from downtown corridors, complete sidewalk routes to trailheads, ADA accessibility.

5 months ago — 23 Agree

Connecting the trail through 7th Avenue by the farmers market and downtown 7th Avenue as proposed would be an absolute dream. If possible it would be great to increase local businesses by the greenway for food/drinks/bike rental/etc.

5 months ago — 18 Agree

Have a festival or 5k walk to celebrate the trail and space. Combine it with events for downtown Hendersonville.

5 months ago — 6 Agree

Ease of walking and biking from uptown and downtown to areas around town would be wonderful. For walking to work and lunch and dinner to visiting friends and shopping. It would reduce pollution and improve the health of the population. We really support this project. Option A gets us above the mud much more than B. B will be subject to flooding in lots of places. Option A has a section at the start of King street but comes above the mud for 98% of the walk to town. Option B goes underwater about 70% of the trail in heavy rains.

5 months ago — 4 Agree

Connecting with the farmer's market and parks, having places to park bikes and walk around, having bathroom access would be amazing!

5 months ago — 3 Agree

Making it useable (safe) before dawn and after dusk. Lots of shade: it's concerning to me how many trees have been cut during the work on the Ecusta Trail. Drinking water accessibility would be great too

Image 5. Online Survey Response Summary (Cont'd)

As a connector between two trails and a large park it will be successful...just build it.

5 months ago

3 Agree

bike parking at 7th avenue so that we can get off of our bikes and shop and/or walk to downtown.

5 months ago

2 Agree

A safe route for pedestrians and cylcists to travel between the Ecusta Trail and the Oklawaha Greenway, with access to Main St and 7th Avenue farmers markets and businesses, would be wonderful.

5 months ago

2 Agree

Parking near Main Street. Well engineered street crossings, especially in downtown area. If the street crossings are safe and convenient, many trail users will probably park and ride from Jackson Park.

5 months ago

2 Agree

My only additional suggestion is to make the crossing at 7th Ave easier and safer

5 months ago

2 Agree

Accessibility to Main St and 7th Ave, as well as from neighborhoods, will not only tie the Ecusta and Oklawaha Trails but increase access to local businesses - great for visitors as well locals!

5 months ago

2 Agree

Please save as many trees as possible. So many have been destroyed for other trails that environmental protection has been lost in the shuffle. The preservation of open space is about far more than entertaining humans. Habitat is being lost at a rapid pace. Too much lighting is one example. Check out the Dark Sky Initiative before choosing any lighting.

5 months ago

2 Agree

Image 5. Online Survey Response Summary (Cont'd)

For the City of Hville to stop wasting taxpayer dollars, time, and efforts to promote "Greenways". We live in the mountains...greenways are everywhere. Greenways are unnecessary.

5 months ago

2 Agree

I definitely agree that we need to be more cautious with the city funds, however I've been reading up on this stuff and it appears as though Greenways and multi use paths typically generate more revenue for cities than they cost. I don't really see why they wouldn't.

5 months ago

Native nature gardens would be great.
Kid friendly places to stop - picnic tables.

5 months ago

2 Agree

High focus on safety and a wide enough path for pedestrians and bicyclists. Trees and other beautifying plants focusing on natives would elevate the project. Access to local businesses with bike racks would be helpful for those hoping to use these paths for work/errands.

5 months ago

2 Agree

Wide pathway, FREE parking

5 months ago

2 Agree

Adequate parking spots, more access locations especially near downtown, preservation of greenery, eliminate flooded areas…

5 months ago

2 Agree

Properly maintained trailways, well-lit and periodically patrolled by security personnel ensuring both enjoyment and safety of users.

5 months ago

2 Agree

things like benches, play areas/activities for kids, art along the way and shade, safety button things in case of emergencies interspersed along the trail like they are on the oklawaha, and good connections to key areas like schools, grocery stores, the farmer's market, downtown, and workplaces

5 months ago

2 Agree

Safety

5 months ago

2 Agree

Image 5. Online Survey Response Summary (Cont'd)

FREE parking. No lighting at night so people won't use it when it's dark and creepy.

5 months ago

2 Agree

No lighting makes it much less safe. Consider that in the winter months, daylight becomes much shorter and this would limit people's access..

5 months ago

Making an effort to have greenways used for errands by having them go near the places a person might go on an errand to.

5 months ago

2 Agree

Rezoning where possible to allow new businesses that might serve the greenway to exist/thrive

5 months ago

2 Agree

Ease of use between the Oklawaha Greenway connecting to the Ecusta Trail with minimal road crossings.

5 months ago

2 Agree

Areas for kids to play - climbing and such. Maybe picnic tables if people want to stop. A walking trail to the creek would be fun.

5 months ago

2 Agree

Benches

5 months ago

2 Agree

Proper drainage and maintenance so that the trail could still be used after rainstorms and not be covered in mud and silt or become breeding grounds for tadpoles even during dry spells

5 months ago

2 Agree

FLOOD MITIGATION. Wayfinding to connect to businesses. Coordinated directions for multiple access points with parking.

4 months ago

1 Agree

Flood remediation/prevention

4 months ago

1 Agree

Image 5. Online Survey Response Summary (Cont'd)

Make sure that the greenway is truly above the mud. The Oklawaha frequently floods and is impassible.

5 months ago

1 Agree

This is a wonderful idea and I can't wait until it's complete!

5 months ago

1 Agree

Interconnectivity. That is the key factor.

5 months ago

1 Agree

Do NOT go through the dog park at Jackson Park.

5 months ago

1 Agree

Raised so no flooding. Cheaper to buy the existing rail bed and go straight to 7th which will really help that district.

5 months ago

1 Agree

I would like to see the Ecusta and the entire Greenway System be Green with trees and garden spots as much as possible to be used safely by pedestrians, parents with strollers, leashed dog walkers and slow bike riders. Police call boxes every quarter mile and small restrooms and trash/dog do recepticles. Safety and the perception of safety is a priority. The more nice responsible people use the trail the less vagrants will be tempted to be there. This will be a great tourist asset and boost to the economy when successful but it would only take one headline incident to sour things. Having volunteer safety guides like at Carl Sandburg might be an idea.

5 months ago

1 Agree

Shaded areas and places to rest for those of us who need exercise but need to sit a few minutes after a while.

5 months ago

1 Agree

Connecting to the other greenways is the most important thing. Since the greenways are often short and dont connect to much, they cant really be used as a safe passage for commuting. These greenways need to connect or at least have a safe sidewalk to apartment complexes and neighborhoods, maybe even access to commercial shopping centers such as the fresh market or ingles just north of Hendersonville. I would love to be able to walk/bike/run from Grimesdale, or anywhere on brookside camp, to downtown, 7th avenue, and the growing commercial area out towards HenDough. At this point we have to get in the car to go to a trail to bike into town, but I hope that one day we can walk/bike/run directly from our neighborhood to a greenway, perhaps only using a small secondary road (sidewalk?) instead of Asheville Hwy.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Would be amazing because I could then I would be able to take Greenways almost all the way to work

5 months ago

1 Agree

Promote as often and wherever possible. Downtown events, all public facilities (libraries, rec buildings, offices where public go (bills, …).

5 months ago

1 Agree

Keep in mind that vehicle traffic on two busy streets will not only be dangerous to pedestrians but a complete nuisance to drivers trying to make a living and arrive on time for appointments. Ie: citizens actually contributing to the town and not playing in the street.

5 months ago

1 Agree

A bike lane through downtown.

5 months ago

1 Agree

Events taking place along the Greenway. E.g., light displays in the winter, concerts or festivals in the summer. Tie in with 7th avenue businesses to incorporate this area more into the wider community.

5 months ago

1 Agree

Safety first.

5 months ago

1 Agree

More native edible plants! There are already a handful along the Oklawaha greenway, but I would love to see more paw paw, serviceberry, and other native edibles available for foraging.

5 months ago

1 Agree

Making sure that it is out of the "mud zone".

5 months ago

1 Agree

Must not flood.

5 months ago

1 Agree

Just do it. If you build it they will come.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Being able to access downtown and the new seventh ave districts on bicycle or walking . Giving Hendersonville a park like feel downtown

5 months ago

1 Agree

We need bike parking, bike friendly businesses, and good clear signs

5 months ago

1 Agree

Easy public access points that include bathrooms and signage

5 months ago

1 Agree

Keep going, longer trails. Access to trailside amenities such food, snacks

5 months ago

1 Agree

Please find another route, avoid Jackson park dog area. Our dogs need access to Mud creek for drinking water and play, don't destroy our dog park with a trail that will flood and probably be washed away during heavy rainstorms, your building on a flood plane, you can't beat mother nature. Find another route and save our dog park.

5 months ago

1 Agree

Connections! People want safe places to recreate, and this means apart from vehicular traffic.

5 months ago

1 Agree

Something needs to be done to actually put the section of the Oklawaha Greenway from Jackson park to US 64 "above the mud" This section is, more often than not, inaccessible due to being under water.

5 months ago

1 Agree

Easily accessible and well maintained

5 months ago

1 Agree

Good trail signs in town and in adjacent neighborhoods directing users to the trails.

5 months ago

1 Agree

Businesses like coffee bars near the trail.

Image 5. Online Survey Response Summary (Cont'd)

Businesses like coffee shop near trail

5 months ago

1 Agree

Have planned connection to the Saluda Greenway trail.

5 months ago

1 Agree

Keep it dry

5 months ago

1 Agree

It's a good idea to use this area for limited recreation and not too developed. It is a flood zone so any minimal damage to the community-unless some idiot drives into a flooded area!

5 months ago

1 Agree

Lighting would be very important if people are going to use this to commute to work

5 months ago

1 Agree

Parking adjacent to trail

5 months ago

1 Agree

The connection of neighborhoods and shopping by adding sidewalks and entryways. A safe place for pedestrians to stroll or get from place to place. Making it a nice quality place to venture. Making it sustainable.

5 months ago

1 Agree

It should be made safe with lightning, but also keep the natural beauty of the creek and trees. Adding flowering trees and shrubs in smattered areas along the trail with several benches and picnic tables.

5 months ago

1 Agree

Make sure it really is above the mud. I lose the current greenway for weeks at a time because of flooding. Don't spend thousands to consult it - just do it.

5 months ago

1 Agree

Image 5. Online Survey Response Summary (Cont'd)

This proposal would be an excellent addition to Henderrsonville and would bennefit many of its citizens and I would use it often. I have ebiked from Jackson Park to Trails End Brewery on the Acusta trail on a Sunday morning to test the route and I couldn't imagine biking this safely any other time, especially with children. My biggest concern is the challange of getting past Church Street and Main street safely.

5 months ago — 1 Agree

The trail itself is most important

5 months ago — 1 Agree

Accommodate both bicycles/ walkers

5 months ago — 1 Agree

make it wide enough for shared use, consider that the portion of Oklawaha Greenway from Jackson Park to 64 floods frequently and is impassable

5 months ago — 1 Agree

Quit wasting our money.

5 months ago — 1 Agree

Allowing everyone access so they can enjoy nature, get needed exercise, and actively interface with others in order to understand how a freely Democratic Society works for all of our interests.

5 months ago — 1 Agree

Successful completion and communication about the trail system to the masses.

5 months ago — 1 Agree

Connected trail systems allow for more use cases

5 months ago — 1 Agree

24 hr police presence

5 months ago — 1 Agree

Image 5. Online Survey Response Summary (Cont'd)

Informed, friendly "ambassadors" who could provide information to visitors and aid to those in need of assistance. HCSO VIPs could be a possible source for these.

5 months ago

1 Agree

More exposure to, and exercise in, natural environments will enhance physical and mental health, benefiting individuals and the community as a whole. Also, we need more education of children and the public about the natural beauty and its wonders that we need to maintain!

5 months ago

1 Agree

Address or prevent mud and debris post Mud River flooding is paramount for this to be considered 'successfulk.

5 months ago

1 Agree

Keep it from flooding frequently.

5 months ago

1 Agree

Route to avoid 7 th ave

5 months ago

1 Agree

Cafes and businesses along the route.

5 months ago

1 Agree

Connecting to 7th ave area and greenways would be amazing! Would definitely increase the appeal of using the trail.

5 months ago

1 Agree

Really "above the mud" is critical.

5 months ago

1 Agree

Police patrols

5 months ago

1 Agree

Police patrols by bike

5 months ago

1 Agree

Image 5. Online Survey Response Summary (Cont'd)

community involvement in the projects 5 months ago	1 Agree
Clear linkage between amenities including businesses (cafes, bike shops). Safety. 5 months ago	1 Agree
Regular patrols for safety, maybe a few cameras 5 months ago	1 Agree
Above flood plains, also, more accessible trail head 5 months ago	1 Agree
Connectivity….you are on the right track 5 months ago	1 Agree
relocating the oklawaha above the mud 5 months ago	1 Agree
Interval police surveillance by Bicycle, horse/ mounted , or ATV . Design features to ensure it's not just a miles of linear pavement . The pollinator gardens and bridges on the Okalawaha Greenway are nice features 5 months ago	1 Agree
Water view 5 months ago	1 Agree
Increase connectivity, accessability, improve health of residents, expose more people to our natural resources 5 months ago	1 Agree
Awareness. I've seen the use of the greenway expand a lot over the past few years. The more people who know the more it will get used. 5 months ago	1 Agree

Image 5. Online Survey Response Summary (Cont'd)

Parking at trail access sites and sidewalks between residential areas to encourage use

5 months ago

1 Agree

Easily accessible; bathrooms open year-round

5 months ago

1 Agree

Constructing the greenway actually ABOVE the mud - as in above the frequent flooding level in that area - will ensure its success + maximize use by the public. This will be critical, in my opinion and experience. THANK YOU!!! . (Also, can ANYBODY fix the killer water weed problem in wetland pond between Jackson Pk and Hwy 64? It has decimated oxygen, migratory fowl, etc. thank you)

5 months ago

1 Agree

Rout it directly through to Jackson Park

5 months ago

1 Agree

The connection with businesses and restaurants

4 months ago

I think the Mud Greenway is a wonderful means to enhancing our community. It encourages health and fitness, camaraderie, reduction of vehicle use, and time in nature.

4 months ago

good design, build the path above the floodplain so it can be used during and after rain events, maintain the path so it doesn't turn into a mud path post rainevents.

4 months ago

A 100% promise to leave trees older than the youngest planner!!!

4 months ago

colorful nature, good signage, access to businesses, dedicated bike lane, local art/installations

4 months ago

Frequent trashcans to hopefully minimize littering

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Choose option A, keep the current dog park area viable. Thanks. Prefer no lighting to keep things closer to nature.

4 months ago

Keeping the current dog park in Jackson Park as a dog park; sounds like Alternative A would connect the trails without disturbing the existing dog park - please make this one happen!! That dog park is literally one-of-a-kind and is awesome for dogs and people! Thank you

4 months ago

If the whole area wouldn't flood every time it rains. For this to be worth it and usable, the section between Jackson Park and 7th must be addressed and maintained!

4 months ago

Please do not take the "unofficial " dog park in Jackson park to use as a connection point. It is an amazing off leash park that is well used

4 months ago

Connecting the trails would give even more people closer access to the whole trail system. It would be so nice to really have the trail above the mud. The flooding can be awful.

4 months ago

More events like the Blue Ridge Humane Society dog walk fund-raiser.

4 months ago

Not particularly interesting in the Above the Mud Greenway.

4 months ago

I vote for Alternate A. Would prefer the NOT be connected.

4 months ago

native pollinator gardens would be unique and draw more wildlife, along with being easier to maintain (less water consumption)

4 months ago

I think having a connecting network of trails is a natural and it will encourage people to use them. I do think that drainage along any new trails should be a priority, trying keep the trails open and clear as much as possible.

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Above the mud is important to make this work. And above the flooding as well!

4 months ago

Neighborhood connectors are absolutely crucial, so that people don't have to get in their cars just to take a nice ride or walk on the greenway. Door-to-trail connectivity for as many people as possible should be the goal.

4 months ago

Build it up so it doesn't flood.

4 months ago

Revitalizing all of the Seventh Avenue District (not just the one street 7th Ave). More parking in Seventh Ave so you could start there and do Jackson Park and Main Street and back too.

4 months ago

Less development is more. We are currently ruining the charm our community has. More people means more cars, parking, traffic ... etc.

4 months ago

I believe using the trail through the Dog Park will be a failure. Walkers and Bicycles will interfere with the dogs having fun in their park. Dogs will run over to met them. The dogs need an area where they can play, be free and have water. There are too many trails for the bicycle crowd already.

The bicycle people are rude. They cut off the children trying to use Jackson Park fields and don't obey the stop signs.

Homeless will sleep on the benches and use the bathrooms. Safety becomes an issue.

4 months ago

Don't build boardwalks in heavily shaded areas. From experience, these don't dry out and create very dangerous conditions for users when repeated wetness causes slickness over time.

4 months ago

Accessibility to downtown from either trail via the connection would be very beneficial. Connecting the trails in general will make it successful and accessible. The downtown connection (safe for biking) would connect with the downtown businesses. If not currently available, then having bike racks somewhere would be an amazing add.

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Xxr

4 months ago

ADA

4 months ago

More bike paths are always a plus!

4 months ago

Wide enough for those on wheels and walkers, safety patrol

4 months ago

I'm surprised how many trees have been cut down!

4 months ago

Just being able to connect to everything would be amazing!

4 months ago

Having a usable and dependable interconnected trail system would benefit residents, visitors and businesses. I would use it weekly,or more often. Cycling on county and city roads is dangerous. But there aren't any other options.

4 months ago

bilingual signage, less propensity to be flooded than the current Oklawaha Greenway, greater attention to neighborhood connections to make sure folks can access from their home and truly be zero-emission (not having to drive your bike to an access point), yes, connect to the farmer's market!

4 months ago

Just build it, it will make a huge pack on both Ecusta trail and Downtown Hendersonville.
Bike racks near intersections with roads do folks could safely lock up bikes if wanted

4 months ago

Lighting and a feeling of not being too remote

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Easy access to businesses and well marked street crossings. Seating to enjoy a snack near businesses.

4 months ago

Art, gardens, picnic tables, flowering trees, bird houses

4 months ago

no areas for potential crimes, open walkways, no under bridge areas

4 months ago

Designed so it doesn't flood. Access to the 7th Avenue District. Lots of shade!

4 months ago

Mimic the Virginia Creeper Trail. It gives locals a great trail but also brings people here

4 months ago

Make it known!

4 months ago

Wireless Help/Alert stations. They could be solar charged,

4 months ago

Small restaurants, ice cream shops, breweries, to keep people coming back and to build the economic impact to our residents.

4 months ago

Publish bike and pet rules, (bikes call out when passing, pets leashed), provide pet waste bags, trash bins (and pickup), paint an orange divider to encourage two-way ettiquette, add water fountains / bottle fillers in a few spots.

4 months ago

The connection from town to nature would attract people looking to gather, exercise, and dine.

4 months ago

Accessibility

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Exciting to have this in Hendersonville, we will use this

4 months ago

Accessibility

4 months ago

No flooding!

4 months ago

Getting from the Kanuga area to the other side of town on bike or on foot is dangerous now due to terrible sidewalks and a lack of crosswalks. If the Ecusta can be extended to Oklawaha my family would be far more likely to leave the car at home.

4 months ago

Safety and maintenance

4 months ago

Have lots where food trucks could sell food/drinks in as many locations close and along the trail. Also raise the trail above the flood plane.

4 months ago

Connect to where people actually use, like 191 traffic heavy area, DT area to greenway.

4 months ago

Having a trail that does not flood and get covered in mud. We have biked the Oklawaha multiple times, and it floods and is covered in mud frequently after heavy rains. Either drainage needs to be better or the trail raised. Have safe and easy road crossings. Have signs to businesses close by. Have some bike police patrols.

4 months ago

Neighborhood connections will be key to ease any frictions to access the trails. Connecting the greenway using "social trails" and the most direct methods will go a long way in helping everyone use the trail. I'd love to see safe trail and pedestrian crossings that connect and expand beyond the main trail at every intersection and crossing.

4 months ago

Make it easy to access, keep it clean (debris, flooding, etc.), and ensure safety/supervision.

Image 5. Online Survey Response Summary (Cont'd)

In addition to connecting south to the Saluda Grade Trail, also connect north to AVL, the Arboretum, and Asheville for a truly regional tourism magnet.

4 months ago

Specifically poll those that live along it to ask about neighborhood access points otherwise you'll build some that will go unused and people will just make their own paths (desire path with dead grass or destroyed fauna). Consider drainage as well. As it stands now, half of the Greenway is unusable after rainfall.

4 months ago

set up for all ages for outdoor fun

4 months ago

People using it.

4 months ago

Connecting it to local schools and neighborhoods, more signage making it well known to locals and visitors

4 months ago

.

4 months ago

Parking

4 months ago

Finish it in a timely manner and do it right - don't cheap out on things.

4 months ago

Doing it!!!!

4 months ago

Make sure it is patrolled regularly by law enforcement to ensure the safety of trail users. A law enforcement presence would deter any illegal activity.

4 months ago

Educating the public! Connectivity is key!

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Easy access with plenty of FREE parking, multiple entry points, spots along the greenway to sit, relax, etc.

4 months ago

Offer group hikes

4 months ago

In addition to the proposed amenities, youth should be encouraged and challenged to use the trail by providing reward incentives-such as patch, T-shirt-certificate.

4 months ago

I think signage would be a big way to promote, just generally making sure people are aware the greenways exist and how to follow them/where they go.

4 months ago

It must be secure and safe so you would be comfortable using it with your family. If you have unhoused people living along the route and abusing the use of public facilities then most of your intended users will not use it and it will only be a liability.

4 months ago

Being a proper mover of people from where they need to go. I love Okla but a proper way to move around Hendersonville that isn't a car would be great.

4 months ago

This will help with local ectomeres. People will come for the path and stop in town for stores and restaurants. It could put Hendersonville on the map for other things then the Apple fest and fall actives. This could be a year-round help for our economics.

4 months ago

Educate the Communities through publications, etc.

5 months ago

Minimize flooding if possible and put in rain gardens.

5 months ago

No flooding and access to local businesses especially eateries, etc.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Being able to feel safe while using the Greenway alone. Some of the best hours to enjoy the outside are close to the hours where darkness is leaving or beginning. Keeping it clean and well-lit, especially around parking areas, would certainly draw more people into enjoying the space.

5 months ago

Scheduled events, group rides...more bike racks downtown. Signage pointing to downtown points of interest.

5 months ago

Properly maintained, tree & plant identification. Signs showing amenities in town and directions. Water ways cleaned up, benches. Keeping a natural as possible.

5 months ago

Currently, the oklawaha greenway is very sketchy and does not feel safe for a single woman or children. This path needs to have a ton of community buy in so that it is well trafficked, as well as clear space around the path so that there isn't so much underbrush or hidden spaces for loitering.

5 months ago

Completion. I can't wait!

5 months ago

Make people keep their pets on a leash.

5 months ago

As a side issue, I would hope it might provide an easier way for pedestrians to cross to King St and Main St. from the sidewalk which ends at Mud Creek.

5 months ago

Actually being above the mud. Eventually connecting to Saluda.

5 months ago

Provide parking for bicyclists in the 7th St Historic District to encourage lunch/shopping options for long-distance travelers along the Ecusta Trail.

5 months ago

Option B because of the uncertainty of every getting the railway land.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Safety first!

5 months ago

police patrols

5 months ago

Planned events.

5 months ago

All of above! And connecting to mills river and fletcher eventually

5 months ago

A pedestrian safe walking area.

5 months ago

Leave area for dogs to enjoy going into water and trail running off leash

5 months ago

Keep it simple, at thee beginning time will tell what il s needed.

5 months ago

Safety; Accessibility (ample parking, safe crossings, no mud/water blocked paths, etc.); Interesting and sturdy signage (educational, historical, interactive, clear trail maps/distances); Interesting features and lovely spaces to sit and rest or picnic; Monitored bathrooms; Perhaps painted lines to divide the path and aid bikers going around pedestrians (if this tactic works)

5 months ago

I am against this proposal. It would eliminate the Jackson Park dog running area and swimming completely. Connect the new greenway on the opposite side of the creek, thereby having a place for pets and their owners, and a place for the greenway along the creek.

5 months ago

Separate lanes for less vs bikes

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Connecting the trails together and from downtown would allow more folks to access and use the trail system safely.

5 months ago

Bike lanes throughout the county so we can access on bikes safely without needing to drive.

5 months ago

Supporting businesses such as bike rentals (including electric) an food & beverage

5 months ago

This will be successful if events are held or parking is provided so people can walk or bike to Jackson park or Fletcher park from other areas in the county via the trail. I would use it at lunch, or to commute to and from work. Visitors would love it. Maybe even a scavenger hunt along it like the mouse trail in Greenville.

5 months ago

The more connections and longer the trail the better!

5 months ago

Having small /medium size restaurants/ brewery / misuc venues throughout the greenways.

5 months ago

Promotion by local merchants and joint marketing with Ecusta Trail to direct people from one trail to the other. Host special events like Birding.

5 months ago

Can't wait to ride the new trails

5 months ago

Holding events there.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Better crossway markings at Main St. and 7th Avenue. Those crossways are not marked as well as they could be and are often dangerous, especially for those who are new to the greenway. Also, I think it would be great to open up the trail near Patton Park (around the pond) to bicyclers as well as walkers. I agree with the others that the stretch from 7th Ave. going toward Jackson Park will be tricky as it floods quite often. There is only an area of about 200 ft. that floods for more than a day or so, though, as I've seen.
I ride my bike there at least three times a week, so I've encountered several floodings.

5 months ago

If you build it, we'll use it

5 months ago

Lots and lots of community education and buy in!

5 months ago

Safe walkable teail

5 months ago

It may have already been discussed, but the visitors to Hendersonville should be able to access informative pamphlets that give an overview of our trails. In addition, maps should be printed and distributed at the Visitor Center.

To augment funding for the trail, sell ball caps, t shirts, sweatshirts, and car stickers, etc. to raise additional money for the services needed along the trail. Confident that these items would sell to residents as well as to visitors, I would be among the first to purchase.

5 months ago

Keeping it truly 'Above the Mud', no flooded trails!

5 months ago

It has to be not prone to flooding like the Oklawaha Greenway trail which is unusable many times a year when Mud Creek floods. Parking areas (free/no cost) are a must. Rest rooms will be beneficial for users.

5 months ago

Make sure drainage is good and it won't flood.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Move existing trail between Jackson Park and Seventh Avenue away from Mud Creek so it's not underwater or covered by sand.

5 months ago

Fastest completion possible :-)

5 months ago

Police patrolling to keep the homeless from camping in the areas.

5 months ago

Integration into public transportation, clear maps (and signage) available for use by locals and tourists, promoting the trails as a way to access the downtown area (decentralized parking) as well as walking in nature

5 months ago

This will be a very needed connector, once Ecusta is complete it will be dangerous for families trying to make the connection between the trails unless this connector is made. Thank you for planning ahead!

5 months ago

Frequent events to promote a safe feeling of constant usage and presence of regular folks (ex "Tuesday morning walks for the Over 70 Club" or "Wednesday Gardeners" meet at such & such bench to weed this week"

5 months ago

Avoid having to cross roads/traffic. Ensure ample parking at trail heads and restrooms at appropriate intervals.

5 months ago

Easily accessible

5 months ago

Free parking and good access.

5 months ago

Making sure safe areas for the older residents.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Do both option A and B. You really need a bigger network of off-street bike/pedestrian infrastructure so people can reach more places with minimal street riding.

5 months ago

Artwork and environmental info along the trail

5 months ago

A way to connect different parts of town with good info and user infrastructure

5 months ago

Organized Greenway 5k/10k/Half-Marathon races

5 months ago

Connectivity. with other trails.

5 months ago

Connectivity with other trails.

5 months ago

Motorized or bicycle police, qualified volunteer, or maintenence staff maintaining a presence during "open" trail hours.

5 months ago

Keep out bums and keep litter free!

5 months ago

I think it would stand alone and be exiting by its self with out anything more.

5 months ago

Lots of parking. Easy to connect businesses and attractions.

5 months ago

Width to allow both hikers and bikers to pas each other comfortably

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Adequate width to allow both walkers and bikers to pass each other

5 months ago

Advise a timeline to our community.

5 months ago

Making sure that non motorized cycles and scooters are not allowed.

5 months ago

Enhance safety

5 months ago

All the features listed above. Some concerns with frequent flooding of Alt B

5 months ago

If you build it - they will come. Start with the basics add lights, landscaping etc at a future date. It will be easier to generate donations once people are already using the trail.

5 months ago

The existing Section from Hwy 64 to Jackson Park needs to be raised to stop flooding

5 months ago

Having longer sections that connect is important and encourage more people to use the trails. It might even help to reduce some cars on our roads because people would use other active means to get around which would improve more people's health.

5 months ago

I think Alternative A is a stronger, safer option, but if right-of-way is not possible, Alternative B is a good second choice.

5 months ago

easy access and facilities for all. Bathrooms, parking, safety being a priority.

5 months ago

Media promotion of the trail(s). Special events that make use of the trail..

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

A greenway map along the path and at trailheads. Connections to transit. Bicycle parking or bike lockers.

5 months ago

Restrooms, water stations, parking. Safety: lighting, emergency call boxes, flashing lights for drivers to know pedestrians, cyclists are approaching/ crossing roadways, bike racks to lock bikes in areas with businesses.
Restrooms should be priority, since businesses don't like sharing these with the general public. Also some kind of community officer at said rest stop to keep the ever growing population of aggressive drug users from harassing Hendo residents and visitors while they enjoy the Hendersonville area.

5 months ago

There is already a trailhead at 7th Avenue and technically all downtown parking. Worrying about placement of trailheads and bathrooms would be a waste of time when there are so many resources readily available in the area. Focus on building the trail itself.

5 months ago

Communty support, usage and funding

5 months ago

The

5 months ago

Connections to streets with sidewalks, and available public parking areas, to facilitate access.

5 months ago

Multiple access trailheads so minimal driving would be necessary to start the trail.

5 months ago

Make more people aware

5 months ago

All of the above and access to amenities like restaurants, coffee shops, ice cream stands, bike shops, sports wear and equipment, art and music venues. Bike stands.

5 months ago

parking

Image 5. Online Survey Response Summary (Cont'd)

Do it

5 months ago

Flashing lights at road crossings would be a plus

5 months ago

Charge access fees

5 months ago

Having a trail system that is truly "Above the Mud" and allows for access around the city without using streets would be outstanding

5 months ago

No flooding and ample shade

5 months ago

locals and visitors not using cars, more social interaction & excersize

5 months ago

My concern is how this will affect the large dog park at Jackson park. I can see from photos it would go right through there.

5 months ago

Build it.

5 months ago

Above the mud, does not flood, and easy access to seventh and fourth Avenue

5 months ago

Just doing it well. People will use and be delighted

5 months ago

Just being able to use the entire greenway at anytime of year would be awesome. I love the parks in our county and am excited to see the grow and be connected to each other.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

wide enough to separate fast bikes from slow walkers

5 months ago

Just having it connected with the other trails would be beneficial

5 months ago

Just completing and connecting the trail to the Greenway will be spectacular. As a cyclist, I can't wait . It's nerve racking to cycle on the road with cars. The city needs to enforce the speed limit already!!

5 months ago

Just get it done in a reasonable amount of time

5 months ago

Just get it done in a reasonable amount of time.

5 months ago

Minimizing flooding events that make the greenway inaccessible

5 months ago

Having it be a beautiful and tranquil setting.

5 months ago

Signage, parking

5 months ago

Make it a priority to correct the flood prone areas.

5 months ago

Being true to its name ... above the mud. Improving connectivity to 7th St. area, avoiding downtown congestion is a plus.

5 months ago

I recommend Alternative A to minimize/prevent flooding!

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

The option you choose needs to be out of the floodplain and above the mud all the time. I recommend Alternative A.

5 months ago

It really needs to be above the mud; not having it so would severely limit its usefulness.

5 months ago

Drainage solutions for ALL flood zones. Better repair of existing asphalt trails

5 months ago

Drainage solutions!

5 months ago

Making it wide enough for both walkers and bikers

5 months ago

get the word out anyway possible

5 months ago

Multiple access points, width sufficient for two bikes to pass with walkers present

5 months ago

Any and all options that make being outdoors pleasing to everyone

5 months ago

Follow through and completion by 2026

5 months ago

Appropriate security and periodic emergency call stations

5 months ago

Ensuring it is above the flood plain. We all know how that area floods every time it rains.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

If it' was completed sooner than later!

5 months ago

Have it elevated anywhere it could potentially flood. That is the biggest problem with the current Oklawaha trail.

5 months ago

Ways to access and enjoy downtown Hendersonville via bike are very exciting. Safe and secure bike parking areas in downtown would be essential

5 months ago

I have more thoughts about funding and safety as I read the comments and think about the realities of managing a trail system and two realities are Safety and Money. When we first visited Biltmore House we were struck by how much a day pass was but when we moved here I bought the annual pass. The same thing for the Arboretum. I now buy the annual passes and go as often as I want to enjoy the park atmosphere. I think selling day and annual passes for the Ecusta/ City Trail Park System might be a good idea. Just like parking, I think that paying our way is a good option as a funding source but also as a means of controlling the population. We do not want the trail system to become a corridor of vagrancy and one way to discourage that is to sell passes. Ok so a vagrant could beg for a pass??? Maybe but probably not. Now some tax payers might get all in a huff about it but what's the alternative? Higher taxes or worse yet crime? So it's just an idea but most all parks and nice places have costs attached and our greenways might follow that path.

5 months ago

Safe trail system, care and attention to flooding

5 months ago

I would choose Option B, but the City needs to make sure the trail is accessible following rain events.

5 months ago

Making sure there is trail access after rain events.

5 months ago

Access to restaurants, bike shops and bike rental, bathrooms, parking.

5 months ago

Access to public services like bike shop, bike rental, restaurants, brewery, and parks, and parking. Also, needs stop lights like the Thermal Belt has in Springdale and Swamp Rabbit crossings.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

I also think that safety and the perception of safety is very important to the long term success of the trail so that call boxes and parking and small restrooms are a priority and not necessarily night lighting which might encourage night use. It's probably best to have a dawn to dusk policy like other parks.

5 months ago

Once the Ecusta Trail is usable it would be very nice to connect directly to downtown restaurants and shops. Also to be able to continue to Jackson Park and also to Blue Ridge Community College.

5 months ago

Getting the Ecusta Trail Usable is the First Priority! We moved to Wash Creek Dr 15 years ago. They finally got started but it's more like building a Road than a Trail right now and needs to be finished to a point where it is walkable and bike rideable.

5 months ago

Making it easier for a variety of safe pathways.

5 months ago

Fixing the flooding and muddy sections of the trails.

5 months ago

Fix flooding and muddy trails.

5 months ago

NA

5 months ago

Ensure multiple safety features at any cross section with vehicular traffic; Maybe an occasional water fountain. Also, please plan for Greenway routes in the Eastern half of Henderson County, possibly near Chimney rock or upward road towards Edneyville....A proposed eastern greenway route was marked in earlier county greenway plans, but later "disappeared". If the county is planning for growth in this half of the county, a greenway spur will be critical!

5 months ago

Connectivity between greenways and parks! Above floodplain level will be less maintenance.

5 months ago

Remediation of flooding obviously, finish it before ecusta would be exciting

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Be sure to include planning for flood areas, it can be done to look pretty, They just did something similar in Laurel Park by that new coffee shop. It looks great!

5 months ago

Easy connection through a vital downtown area. Keeping it above the mud.

5 months ago

I hope the above the mud connector will be built on land that floods less often than current greenway

5 months ago

Easy access with minimal car interaction. Connecting the Ecusta Trail to the Oklawaha Greenway would be excellent! I would change the name from Above the Mud to something else perhaps.

5 months ago

Once the option is chosen, post signage with the map and point out how many miles are available to recreate. Have free presentations at the Library and elsewhere that will educate about the birds, the benefits to the community and the history of the areas that will be included. Also, as other comments have addressed, make sure the greenway bridges the flood areas. Include community in clean up and beautification by having sponsorship of certain areas, just as we do on our driving roadways.

5 months ago

Better drainage to minimize flooding

5 months ago

The completion of phase 1 of the Ecusta Trail.

5 months ago

Just build it

5 months ago

Building it

5 months ago

All of the above

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Do it now!

5 months ago

Safe areas to walk and bike would make it successful

5 months ago

Longer the better

5 months ago

The support of the local government, community and use by the residents. Occasional bike patrol ride through on bike or motorcycle so the community feels safe would be a benefit to the trail users. It could be very much like the Swamp Rabbit Trail in Greenville which has proven to be a popular trail. While the bike repair stations would be nice, they are so prone to vandalism that they soon lose their benefit much like the nice ones that they put up on the Thermal Belt Trail that have now been damaged. Option A is my preference.

5 months ago

Future expansion of network to include access to County Athletic center, and to downtown. Always design in secure bicycle parking areas. The crossing at US25 at the base of Main Street needs to be well designed to ensure safety of greenway users: well-marked and lit crossing with on-demand crossing lights and traffic calming features.

5 months ago

Continued publicity.

5 months ago

Connectivity with Ecusta will draw more users

5 months ago

Paved

5 months ago

It needs to provide a way from Jackson Park to the Greenway off 7th Avenue since the connector trail between Jackson Park and 7th is almost always flooded.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

A critical access connection for future cycling connections to the proposed SC path that would make Hendersonville a start and finish destination for North Carolina bike trails.

5 months ago

NA

5 months ago

Hendersonville and Henderson County already have thousands of acres with miles and miles of walking trails and biking routes. What is totally missing is equestrian trails.

5 months ago

Accessability from neighborhoods

5 months ago

I'm not sure

5 months ago

Educational field trips or nature walks.

5 months ago

??

5 months ago

It's existence.

5 months ago

The impact of all the trails being tied together.
Big Picture…

5 months ago

Connection of the escusta to the existing greenway trail adding lighting and bathrooms will be great!

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Informed and friendly "ambassadors" who could provide information and assistance to those in need. HCSO VIPs are a possible source for these.

5 months ago

Strong safety programs to minimize nimby complaints and accessibility to downtown commercial areas

5 months ago

Getting local businesses and community groups involved in the place making

5 months ago

a reliable non-flooding connection between the ET and OG. Ideally, it could provide access to a farmers market.

5 months ago

Sponsoring local school field trips with biology, PE, history, and geography classes classes, etc.

5 months ago

Add features as affordable. Think it would be popular even without features. Show fiscal responsibility. Even tho I probably won't use the trail, I think it would be wonderful for the community.

5 months ago

Safety patrols, safe & clean bathrooms, no mud, business and community access, stopping points to enjoy water & scenery. I agree with the other comments.

5 months ago

Looking good for now

5 months ago

Regular police patrols. Emergency contact stations.

5 months ago

Small kiosks to meet up with fellow walkers.

5 months ago

What do you think would help bring new users and a more diverse and inclusive trail user group to the proposed Above the Mud Greenway?

Image 5. Online Survey Response Summary (Cont'd)

Eateries, shops, parks all near the greenway making it a destination like Swamp Rabbit in Greenville

5 months ago — 26 Agree

MANY neighborhood access points + sidewalks leading into same. W/ safety lighting at those intersects.

5 months ago — 19 Agree

Safety

5 months ago — 13 Agree

A spur route to the Henderson County Athletics and Activity Center

5 months ago — 4 Agree

Connect to Ecusta

5 months ago — 2 Agree

Definitely putting it through town and convenient parking. Parking is a must.

5 months ago — 2 Agree

Vehicle parking, bathrooms, directory signage. Local advertisements on this new area with directions. Involve local bike shops for group rides, kids day with supervision & food trucks near by (ice cream / basic food) The area should include picnic tables and limited seating (benches)

5 months ago — 2 Agree

You can lead a horse to water, but you can't make it drink. If you make the trail information known (local public service announcements, visitor's information guides, etc.), then you (the city and local government, trail administration) have done all you need to do.

5 months ago — 2 Agree

gardens, rain shelters, pocket parks, gazebos/plazas

5 months ago — 2 Agree

Free parking. Wide trail. No speed demon bicyclists riding 100 mph in bright yellow spandex skimming by baby carriages.

Image 5. Online Survey Response Summary (Cont'd)

Close parking and safety features including bicycle signal heads for crossing any intersections and appropriate measures to slow cars where bicycles will cross.

5 months ago — 2 Agree

Safe pedestrian pathway through Jackson Park from Glover St entrance side, improved engineering of flooded portion in Jackson Park to increase connectivity to Patton Park, welcoming signage and route finding from Main Street and Historic Hendersonville neighborhoods, free and accessible parking for greenway users.

5 months ago — 2 Agree

making it safe for everyone by having leash laws. this would keep pet owners and non-pet owners safe. additionally, making it truly accessible to everyone. connecting as many greenways as possible would be another draw and a means to access different neighborhoods.

4 months ago — 1 Agree

I like Alternative B best as it uses the RR bed. Good use of abandoned train tracks.

4 months ago — 1 Agree

Making the trail systems connected with free parking and restrooms. I don't pay for parking when I drive to Traveler's Rest to use the Swamp Rabbit.

4 months ago — 1 Agree

I think if the public feels it is SAFE, people will try using it. Food, shops, parks near the greenway will make it more appealing as well.
As long as their experience is positive, word of mouth will attract new users. SAFETY will be critical. Need lighting, call stations, etc...

4 months ago — 1 Agree

Adequate parking at trailheads. Parking for food trucks to make the trail a destination for eating as well as access to nature.

5 months ago — 1 Agree

Have road crossings avoid requiring traffic to stop. Ample trail access parking and restrooms at appropriate intervals.

5 months ago — 1 Agree

Easy and safe neighborhood access. Much better trail maintenance than is now provided. Direct funding to improve walking trails in Jackson Park. Easy and safe access to Main Street. Places to park bikes.

5 months ago — 1 Agree

Image 5. Online Survey Response Summary (Cont'd)

Do NOT go through Jackson Park's dog park.

5 months ago

1 Agree

Planning for aesthetics, so that the natural beauty attracts users; and make trail improvements to minimize flooding on the existing Jackson Park section of the Oklawaha greenway. Publicity at various community centers and local businesses.

5 months ago

1 Agree

Security
Raise public awareness the trail exists.
Make it a crown Jewell instead of a homeless highway.

5 months ago

1 Agree

Easy FREE parking and neighborhood access, as well as safe sidewalks from other parts of town.

5 months ago

1 Agree

Having it highlighted by Rails to Trails, Blue Ridge Outdoors the Local press and on social media would bring in people to ride the trail who are outside of the area especially as it ties in to the Ecusta Trail. Those visitors spend money in local businesses after they ride for dining and refreshment. The idea of "am I safe on the trail" has to be established.

5 months ago

1 Agree

Option A because it is a much more straightforward connection to the Seventh Street area and the nearby neighborhood. Option B requires a "steep" climb out of Jackson Park to get to the 7th street area. The grade down into the Grove Street area might result in bikes approaching the street crossing too fast.

5 months ago

1 Agree

Safety lighting, signage with clear directions.

5 months ago

1 Agree

The comple trail system should attract plenty of locals and tourists.

5 months ago

1 Agree

Keep access to the Creek open for dog owners using the Dog Park at Jackson Park

Image 5. Online Survey Response Summary (Cont'd)

Making the Above the Mud Trail the central hub by also joining the future Saluda Grade Trail to the Ecusta Trail together should bring many new users into town.

5 months ago

1 Agree

Sidewalks connecting neighborhoods to trails. Quality structures- signage, benches, trees, gardens. Connecting shopping , restaurants. Coffeehouses, etc. to downtown, 7th ave. Farm markets Etc.

5 months ago

1 Agree

Parking. Have organized events that would utilize it, such as footraces.
Find a creative nickname for the combination of the trails (other than "above the mud").

5 months ago

1 Agree

Stupid question.

5 months ago

1 Agree

Accessibility for chairs, benches for people with limited mobility, lighting, staff to keep it clean, neighborhood accessibility

5 months ago

1 Agree

Time and word of mouth

5 months ago

1 Agree

Invite diverse groups to the table to help with planning and implementation; encourage things like walking groups or small business involvement to get more people on the trail; work on place making to make it feel safe for families with children

5 months ago

1 Agree

amenities including gardens, gazebos/plazas, rain shelters, pocket parks

5 months ago

1 Agree

If you build it they will come

5 months ago

1 Agree

Image 5. Online Survey Response Summary (Cont'd)

Free parking and diverse interesting places to stop along the way—shops, restaurants, playgrounds, etc.—easy access from many points along the trail, publicize.

5 months ago

1 Agree

Plenty of benches and lots of publicity about sites seen on the greenway.

5 months ago

1 Agree

Publisize trail system through organizations, tourism, local media, use for education with local groups

5 months ago

1 Agree

Safety. Lights. Parking away from residency areas. Definitely need safety lights at intersections. Community area with playground and picnic tables. Popup shop tables(areas) where people can sell their homemade goods. Not more brewerys!!

5 months ago

1 Agree

Connecting to residential areas for ease of use as a commuter option, full ADA access.

5 months ago

1 Agree

Free parking.

5 months ago

1 Agree

Accessibility, signage that promotes inclusivity

4 months ago

safety and lighting. Ensure that the unhoused (they do need options, however) don't make the trail their camp and cause people to feel unsafe

4 months ago

Safety

4 months ago

access to local business, informational/educational/historical information/markers

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Easy access and maps posted to AllTrails, websites, social media, etc

4 months ago

More educational programs, themed walks, events

4 months ago

Nature puzzles, workout stations

4 months ago

Connect the greenway to ALL areas of town and provide better, clearer signage on the trail and the connector routes. Improve safety by improving busy road crossings-- for example the current 7th Ave crossing for the Oklawaha is unbelievably dangerous. Traffic controls need to be installed to force cars to slow down at these points, otherwise it's a recipe for disaster

4 months ago

My suggestions above

4 months ago

Do we really want more? Why? $$$? It will cost more in infrastructure to support.

4 months ago

I don't want more tourists. The bulk of our population is elderly. They will not be using these trails. We are catering to the few. I would not want these paths near my home: garbage, noise and trespassers.

4 months ago

Programs for people from all walks of life.

4 months ago

Having a trailhead at places such as 7th Ave. will accomplish that. Also, protected lanes on city streets to connect with Main St, for ex.

4 months ago

Advertise with Henderson County and city of Hendersonville. Tourist information brochures and website. Signage from downtown. Ensure accessibility of info to apps like AllTrails of Komoot.

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

ADA playground or swings

4 months ago

Playgrounds along the trail for families.

4 months ago

Organized walks/strolls or bird watching groups through Parks and Recreation. Family fun days. Mile markers. Events that would interest roller bladers/skaters or bikers. It will be important that people know the trails are safe.

4 months ago

bilingual signage, festivals and events to introduce folks to this resource

4 months ago

Access to streets, businesses and rest rooms.

4 months ago

Neighborhood access, 5k walk/run, special occasion events

4 months ago

Agree with eateries!

4 months ago

Make sure trails and access are ADA compliant. Bathrooms at regular intervals. Shaded picnic areas and access to food and drink kiosks or small shops along the route.

4 months ago

Spreading public awareness via social media and newspapers

4 months ago

Encouraging school programs to use the greenway, local summer camp usage, special events involving the trail, hosting a group walk once or twice a month (I work with seniors and many of them don't feel safe walking alone, even in the daytime)

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Restaurants, brewers, shops, plenty of secure parking and access locations.

4 months ago

Address any safety concerns promptly and publicly - anticipate worse case scenarios by looking at how other new trails were received in other areas and consult with those groups for scenario planning.

4 months ago

Work the school System into it so kids can be outdoors more!

4 months ago

Places to eat, swamp Rabbit trail is a favorite

4 months ago

Greenbelt through downtown

4 months ago

If it's a pleasant place to walk it will be used by all.

4 months ago

Vital connections to local vendor/brewery, restaurants

4 months ago

Connected to near by school, neighborhood, downtown, connect it with other greenway accessible area.

4 months ago

Connections to everything around the trail and making the user feel safe and respected at crossings and intersections. The perception of safety is tough to create and measure. I recommend starting with patrols of cops, a group of volunteer ambassadors to ride up and down and answer questions, creating volunteer opportunities so the locals can meet and greet each other and feel invested. I recommend having events early and often to bring people out to change their perception of the space and welcome the new amenities as they open.

4 months ago

safety for families and individuals

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Marketing. Once you finish it, simply promote it to the surrounding counties in WNC and Upstate SC.

4 months ago

Finishing it!!!

4 months ago

I think you let people use it who want to use it. I don't buy into DEI.

4 months ago

Advertising and marketing..not flooding! Farmer's market access

4 months ago

Offer group hikes.

4 months ago

Signage, promotion, eateries, neighborhood access

4 months ago

Good spurs to places people actively visit or live. Make the trail useful and people will use it from all backgrounds.

4 months ago

Mountain bike and BMX park near the trail.

4 months ago

Small picnic areas, access to local businesses and eateries.

5 months ago

Scheduled group outings. More signage. More drinking fountains.

5 months ago

Access Points would be very important.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Hendersonville is NOT walker friendly so neighborhood access points to the trail would be great.

5 months ago

Don't overrun it with businesses along the route. Let it be out in nature

5 months ago

Parking areas and interconnectivity within the trails.

5 months ago

Offer "beginner" classes to acquaint new users to the trail (bicycle, walking).

5 months ago

"Build it and they will come" There are a few businesses starting along the Ecusta path which will act to bring in bike riders. People will want to go from one end to the other. The longer the more people will like it.

5 months ago

Adequate parking at the trailhead areas.

5 months ago

Off leash section for dogs that includes access to water for swimming.

5 months ago

Ease of access

5 months ago

Wide, smooth paths with appropriate curbs; Access to and from neighborhoods; Bright, fun, welcoming and explanatory signage; Interesting and beautiful places to relax, picnic, enjoy nature; Access to eateries, restrooms; Safety patrols/presence; PSAs wherever possible to inform about trail and encourage use.

5 months ago

Fully fenced dog park

5 months ago

Bike lanes throughout the county so the trails can be safely accessed without needing to drive.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Neighborhood connectors.

5 months ago

Social venues built along the Greenway to have an interactive trip or day on the trail.

5 months ago

Maybe brighter signage about birds, plants, trees & wildlife for the children. Perhaps some signage near the long-leaf pine that has been planted along the greenway near Berkeley Rd. overpass (and is thriving!). The memorial to Josh "Too Tall" Hensley could have more information, too, IMO.

5 months ago

Easy access and adequate parking.

5 months ago

A little playground along the way is also a great draw for kids

5 months ago

Restaurants, shops etc. like swamp rabbit.

5 months ago

Promote usage by having events along them; fun runs, parades, festivals in the parks that adjoin the trails. Clear maps and signage!

5 months ago

Frequent volunteer projects which will introduce many to the trails and give incentive to repeat visits

5 months ago

Accessibility

5 months ago

Some restaurants and small commercial zoned prop. Bring in more foot traffic to the south side of downtown

5 months ago

More neighborhood connections, better street crossings, multiple language signs

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Organized Greenway 5k/10k races

5 months ago

Saffety features such as police surveillance. Well-paved walkways.

5 months ago

Activities such as nature walks that would introduce more people to the Greenway.

5 months ago

Activities such as nature walks that would introduce new folks to the Greenway.

5 months ago

Keeping out the bums and keeping it litter free!

5 months ago

Access to shopping and underserved neighborhoods.

5 months ago

Build it first & cyclists will come!

5 months ago

Tourism for cyclers visiting the area for the summer and training.

5 months ago

.

5 months ago

Accessibility, bathrooms and lighting

5 months ago

Wayfinding signage and thoughtful connection to downtown and neighborhoods. Well-publicized trail events. Allow supporting commercial uses with access to the trail to support trail activity with food and programming.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Visitor Center Info, Maps posted on the web, flyers in bike shops, locations near the trail

5 months ago

Raise the section from Hwy 64 to Jackson Park so it is usable. Add some lighting there so people notice that it is there and feel safe using it.

5 months ago

Connections to where folks want and need to travel to.

5 months ago

Multiple access points plus available parking within a reasonably close distance.

5 months ago

connection to other greenways, parks, businesses would help with drawing a diverse group of users.

5 months ago

All of the above I agree on.

5 months ago

Connections to minority neighborhoods, ADA accessibility, education along the trail including community groups, etc.

5 months ago

Ease of access and friendly accessability

5 months ago

Making the trail 100% "flood free"

5 months ago

Easy access with free parking.

5 months ago

access to neighborhoods, involving community organizations like the scouts, Boys and Girls club, the art association

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Charge access fees

5 months ago

Neighborhood access points and accessibility for all.

5 months ago

you build, they will arrive

5 months ago

Availability of trailheads and parking along with connecting it to other trails.

5 months ago

That people feel safe while using said trails. Safe from automobiles, trucks.

5 months ago

good drainage

5 months ago

Publicity

5 months ago

A safe, serene setting that connects to eateries and points of interest.

5 months ago

Connectivity to the Ecusta Trail and Oklawaha trails and direct access to the 7th Avenue District.

5 months ago

Drainage solutions Repairs to existing asphalt trails.More emergency calls stations

5 months ago

Drainage solutions. Rpair to existing asphalt trails. More.
Emergency call stations.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

using social media

5 months ago

Longer trails as proposed by Ecusta-Above the mud connections. Easy/safe bike/walk access to restaurants and lodging

5 months ago

Community events and engagement through neighborhoods. Also, bike share programs at affordable costs to all. Lastly, free bike clinics to under privileged community.

5 months ago

Well designed trail with access points from several downtown and nearby areas

5 months ago

Build it and "they will come"

5 months ago

Safety and ease of use

5 months ago

Good informational signage.

5 months ago

Neighborhood access.

5 months ago

Use b with no flooding

5 months ago

Signage downtown, maps at the YMCA, posts on Facebook and Nextdoor.

5 months ago

Facebook, Next Door, trail forums beyond Henderson County, posters and maps at the YMCA

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

The more safe way to get from a home to a train without using roadways the better.

5 months ago

An awareness campaign once completed

5 months ago

Safety and ownership by the city and county = foot/bike patrols by law enforcement. Free public programs and events, especially highlighting community resources and bilingual education

5 months ago

Ease of access, and connections to desired destinations

5 months ago

easy access from downtown would encourage people to add to their walk from the shopping area, plus adding the bathrooms downtown lacks.

5 months ago

Clear directional signage and parking for bikes and cars.

5 months ago

Attractive Access points, good signage and good traffic patterns.

5 months ago

Community events that celebrate healthy exercise, family participation, pets and typical cycle/hiking/running events

5 months ago

Signs near the trails promoting easy access and use.

5 months ago

Signs near all our greenways pointing and distance to access points. A few downtown. Indicate if parking available at access point. Use icons: walk, bike, stroller, handicap, …

5 months ago

Neighborhood access

Image 5. Online Survey Response Summary (Cont'd)

Guided nature walks. Contests for area artists and children to display along the path. School outings along the Greenway.

5 months ago

Just build it

5 months ago

???

5 months ago

Promotion and local news and articles

5 months ago

If long enough to provide adequate exercise

5 months ago

Multiple trailheads with adequate parking and bathrooms. Promote events featuring the new trails.

5 months ago

Signage

5 months ago

advertise

5 months ago

Safe ways to get from neighborhoods to the greenway.

5 months ago

Parking near access points

5 months ago

Access to businesses so users can not only exercies, but get lunch or a drink.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Publicity

5 months ago

Not diverse as much as more users in general.

5 months ago

This is a waste of time. The trail is currently accessible to anyone who wants to use it. No one is excluded. You literally cannot be more inclusive than that.

5 months ago

A more diverse and inclusive group of users includes equestrian users.

5 months ago

Social media coverage; good access points in residential areas, with safe sidewalks leading to the trail; community meeting before and after construction.

5 months ago

Adequate parking

5 months ago

Access from neighborhoods as well as trailhead parking.

5 months ago

Ensure access to the trail from other areas are save for cyclists and pedestrians.

5 months ago

Businesses/restaurants on route

5 months ago

Handicap accessibility

5 months ago

Everyone is already able to use all public amenities. No one is discriminated against. This is a politically correct question, not a useful one.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

A spur up 7th avenue with bike parking area and neighborhood access points where possible

5 months ago

Neighborhood access

5 months ago

trailside places to get a drink and a snack, or at least easy and safe access to existing local businesses that provide this service

5 months ago

Neighborhood access points + sidewalks lead into the same. Withsafety lighting at those intersects.

5 months ago

Associating with a national trail information system and addition to the "things to do in Hendersonville" pages. Certifications can help with this!

5 months ago

Connections to other activities like eating, playing, shopping and also for commuting

5 months ago

Cafes businesses

bn

Cafes, businesses, BnBs Motels

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Places to park. Restrooms along the trail. Water fountains. If possible separate bicycles from walkers.

5 months ago

Programs to involve locals and encourage use of the trails (like Walk with a Doc),

5 months ago

Better advertising that it's there

5 months ago

Connections to area neighborhoods; a small playground and picnic area at trailhead; advertisement as a meet up spot for free, community events on the trail

5 months ago

Areas for kids to play - climbing and such. Maybe picnic tables if people want to stop. A walking trail to the creek would be fun.

5 months ago

Public outreach and advertising is needed. Before the signage went up on Asheville Hwy and adjacent streets, few people knew about the Oklawaha Greenway. Also, clearly marked crosswalks with flashing light signs where needed.

5 months ago

Public outreach and advertising. Before the city/county put the signs along Asheville Hwy and adjacent streets, many people did not know about the Oklawaha Greenway.

5 months ago

As proposed this does a great job already since 7th Avenue is a historically diverse and minority population. I would also say having bike rentals for folks who can't afford a bike and signs in spanish as well as english would be other considerations.

5 months ago

Connect it to the Oklawaha.

5 months ago

Image 5. *Online Survey Response Summary (Cont'd)*

Do you have any final comments, ideas, concerns or thoughts regarding the proposed Above the Mud Greenway?

I think connecting Oklahawa Trail to The Ecusta Trail is awesome! Please consider doing the same to the future Saluda Grade (Trail)!

5 months ago

25 Agree

> Came to say this haha. While I doubt the average person is riding from say Landrum to Hendersonville entirely on bike, the connectivity makes it plausible and better for tourism/local business.
>
> 4 months ago
>
> 3 Agree

Love the idea of making as many trails connected as possible and connecting downtown areas to the trails

5 months ago

20 Agree

I also agree with a connection to Saluda Grade and also Flat Rock Park and Summit Lake

5 months ago

17 Agree

Please make the connection to the Saluda Grade Trail! It is more important than the Ecusta Trail.

5 months ago

11 Agree

> Hold up. Let's do both. "More important"? They're all important and will be fabulous!
>
> 5 months ago

So THANKFUL that you are prioritizing this project & other greenway, green spaces, farmland conservation, etc. Our health, the pleasure and nurture nature provides, bio diversity, OXYGEN to breathe, clean water - and economics - depend upon this type of visionary forward thinking. Protect, conserve, and steward this beautiful environment that we in WNC and Hville are so blessed to have. County Comms presently do Not understand or care re public bow or bio necessity, and ALL will very soon be degraded beyond $repair 😖 but for those working like you guys to uphold nature. Again, thank you, and please Move Fast!

5 months ago

5 Agree

Image 5. Online Survey Response Summary (Cont'd)

The efforts to provide and connect greenways is a significant contribution to improving the quality of life for Henderson County residents. I support these efforts and am grateful to see them advancing.

5 months ago — 3 Agree

I have biked the pre-built Ecusta trail to/and down the Oklawaha Trail of the last couple of years by traversing city streets in between which is not ideal with the traffic in downtown. This connector would make it a much safer and enjoyable experience.

5 months ago — 2 Agree

I love these proposals. These kinds of projects increase quality of life in our area and drive positive development in our community. Please keep it up!

5 months ago — 2 Agree

It would be nice to have parking near Fresh Market / Main Street.

5 months ago — 2 Agree

The longer the trail the better. It will draw more people from out of town who will stay over night in the area. Connect the Saluda Grade trail.

5 months ago — 1 Agree

Add a few benches that are skateable. grindable for a skateboard. skateboarding is very popular here and folks would love to roll from patton park skatepark down onto the trail. having a couple simple skateable objects along the trail would be so cool. concrete benches with metal edge or granite benches. maybe a rail along one side? it would be inexpensive and a blast.

5 months ago — 1 Agree

Definitely prefer Option A if feasible.

5 months ago — 1 Agree

Generally prefer Option A, but will be happy with whichever puts trail pavement on the ground first!

5 months ago — 1 Agree

connect as many greenways as possible

5 months ago — 1 Agree

Image 5. Online Survey Response Summary (Cont'd)

Ecusta and Oklawaha need to be connected - it's such a waste if they are not. I'd like to see all greenways and parks connected - Raleigh is an example.

5 months ago

1 Agree

I also agree with a connection to Saluda Grade and also Flat Rock Park and Summit Lake

5 months ago

1 Agree

Thank you for doing this. i can't wait!

5 months ago

1 Agree

This connection with the Ecusta Trail will make both systems more valuable and increase usage. It brings high potential for tourism dollars on the east side of Hendersonville, and also new businesses adjacent to trail. Infill housing construction on vacant lots in the study area to take advantage of the trail system would be very good for Hendersonville.

5 months ago

1 Agree

We agree with the trail and all the city does to make it accessible to all our people. Option A is the better and drier option for all weather use. B could be added later. Thank you for asking our input and for all you do to improve our city.

5 months ago

1 Agree

Very excited about this connection, thank you. If there can be a connection to BRCC, flat rock park and Sandburg park then even more people will find a use for the trail.

5 months ago

1 Agree

Its a great idea. Lets do this and then add even more bike trails

5 months ago

1 Agree

Let's make this happen!! Starting with obvious connections like this can only propel us in a good direction to create more important connections that will benefit the community to places like Blue Ridge CC, the new Saluda grade trail, and ultimately to other areas of the county to help residents get to Hendersonville for work, errands, play, and more. Very supportive of this work! Thank you!

5 months ago

1 Agree

needs to eventually connect to the Hellbender Regional Trail System and the Saluda Grade Trail.

Image 5. Online Survey Response Summary (Cont'd)

I'd like to see education and emphasis on biking the trail as it is long.

5 months ago

1 Agree

Thank you for your vision and action!

5 months ago

1 Agree

Thank you for thoughtfully planning this trail. I am very excited to be able to ride from Mountain Home to Downtown Hendersonville to connect to the Ecusta trail safely.

5 months ago

1 Agree

Access to Mnt Home/Hwy 25

4 months ago

don't cut corners in the design or building process. A successful project encourages and allows people to know the trail is safe, accessible, and useable.

4 months ago

Vote for alternate A to preserve the dog park at jackson park, there is no where else like it. It is amazing

4 months ago

so excited to continue connecting to my city on bike and foot!

4 months ago

Concerned about minimizing damage to existing trees, ecosystems and floodplains

4 months ago

Please save the Jackson Park dog park!

4 months ago

Alternate A.

4 months ago

very excited for more opportunities to get outdoors!

4 months ago

Image 5. Online Survey Response Summary (Cont'd)

Connecting parks and trails to each other is a natural, doing as much of that as possible would be great!

4 months ago

The dog park area of Jackson park is extensively used. The trail connections appear to have negative impacts to the area used and enjoyed by the dogs and their owners.

4 months ago

I do not want Flat Rock Park connected. Too many people already use this park. We will over crowd and wear it out.

4 months ago

More pet waste stations or trash bins along the trail to help keep it looking nice

4 months ago

Having connectivity between the Oklawaha and the Ecusta trail is vital for success. Especially for county residents, like myself. The longer the trail, the more opportunities there will be to access and use the trails.

4 months ago

This needs to be done in order to raise the success of both the Oklawaha Greenway and Ecusta Trail!

4 months ago

I am so excited to have safe access all the way from Patton Park to Brevard for cycling and hiking.

4 months ago

Connecting these trails will be great for any residents in the area, even tourists!

4 months ago

Connect other greenways

4 months ago

Love the ideas. Let's do it!

4 months ago

Connecting to Oklahawa greenway to Ecusta trail, or other greenway, or 191. that way kids can ride bike to schools.

Image 5. Online Survey Response Summary (Cont'd)

More trails are better! Let's get them done. Would love to have a safe route all of the way from Jackson Park up to Jump Off Rock with bike lanes, trails, and safe intersections.

4 months ago

no

4 months ago

Consider adding that rubber texture that makes walking easier. It should also be wide enough so that bikes and people can pass each other safely. Look at what Greenville, SC, did with the Swamp Rabbit trail. Also, more than anything, this definitely needs to be connected to the upcoming Saluda Grade trail.

4 months ago

I live in Brevard. Once it is finished I look forward to using it often

4 months ago

no

4 months ago

Keep moving forward..greenways make a great community!

4 months ago

Great idea!

4 months ago

I think this is going to be great for Hendersonville.

4 months ago

Fantastic opportunity!!

5 months ago

This will be so awesome for our community!

5 months ago

I think connecting the trails would be awesome. Great for the people of Henderson county and tourists to enjoy

Image 5. Online Survey Response Summary (Cont'd)

Please consider connecting the trails, having parking areas along the trail (a few), and some picnic benches. Thank you. This is great.

5 months ago

Makes logical sense to connedt the two trails

5 months ago

I have a concern that the Ecusta trail and the Oklawaha Trail will become a magnet for the homeless and unsavory characters.

5 months ago

Thankful to have green space

5 months ago

As a female who is often out alone, I admit to concerns about safety and vagrancy. (I also strongly support mental health, addiction recovery, and food/living security initiatives.) I use trails at Jackson Park and the Oklawaha during the daylight hours only. I know folks live in the swamp when possible (the camp is visible from JP), and I've just recently seen law enforcement arrive to assist a man in mental distress. I also cringed a bit when you mentioned sewer easement. Where the Swamp Rabbit and Biltmore trails run along the sewer lines, foul odor is often present and at times overwhelming. It makes exercising for a deep breath especially off-putting. I also avoid Oklawaha due to mud and water impassses. I hope for ease of parking, bc if you travel to a trail and can never access it, you're likely to just give up on it (hello Dupont). That said, we LOVE the idea of more trails, natural attractions and interactions. We love the natural world, greenspaces, public art and exercise. it builds a vibrant, active community that is happier, with a pleasant energy and pride for where you live. It just has to be monitored, kept up, accessible and fun. Building and long-term sustainable care are two totally different creatures. Thank you!

5 months ago

Thank you for all the hard work and diligence.

5 months ago

Love the idea of connecting Oklahawa Trail to the Ecusta Trail! Yes, definitely consider future connections of the Saluda Grade and also Flat Rock! Bringing these trails and interlocking these beautiful greenways will only make this area even more attractive, beautiful and enjoyable plus bring a boost to many small/local businesses that we love!

5 months ago

Our family really looks forward to biking and running on this trail!!

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Wonderful idea! The more we can access businesses downtown or other businesses along the way, the better it will be for the economy here. And combining exercise with places to shop eat play makes it more fun.

5 months ago

Thank you for the City and non-profits' collaboration!!!

5 months ago

Making the trail family friendly, a biking destination, a dog-walking opportunity, and a visitors' destination will weave a safe and enjoyable atmosphere to keep the trails beneficial and well-used by many

5 months ago

Get it done!

5 months ago

Why was I not asked about a preference for Alternative A or Alternative B?

5 months ago

Cannot wait for this to be finished.

5 months ago

THANK YOU!

5 months ago

Great Idea!

5 months ago

Linking the Ecusta Trail to the Oklawaha Greenway Trail and eventually to Clear Creek trails behind North Henderson High School would be an economic win for the area.

5 months ago

Making sure that the trail is marked with signs and directions.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Connecting the Oklawaha and Ecusta Trails to each other and to other destinations and walkable centers will vastly improve overall walkability.

5 months ago

Go for it

5 months ago

Thanks for the work you are doing

5 months ago

The more options for feeder paths from neighborhoods the better for overall success of the project.

5 months ago

The City of Hendersonville has been negligent in park development and care. Hopefully, this proposal will spur the City to invest in city parks and amenities.

5 months ago

This is so important .....getting people around without the glorious automobile

5 months ago

Alternative A is a better option because it is not in the floodplain and provides more direct access to 4th and 7th avenues. The boardwalks on Alternative B are not the best option for cycling when it is rainy or wet, plus the trail on Alternative B could still have problems with major flooding.

5 months ago

I am concerned that Alternative B will too frequently lead to flooding and muddying of the trail and therefore recommend Alternative A.

5 months ago

I love that the community is considering options to provide neighborhood access points. Sometimes, half the battle is getting to the trail systems without getting in a car.

5 months ago

Trails become destinations for non-residents and they enhance quality of life for residents. Greenways have a measurable return on investment and those that worry about tax dollars being spent, should be educated to that fact.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Connecting to Flat Rock would be great

5 months ago

Connecting the oklawaha to ecusta will be great.

5 months ago

Creating a Connected Network of Safe and walkable/slow rideable trails will be a great asset to the community and to businesses. People are looking to move to towns and communities like Hendersonville. We did and were glad to see the city planner see and leaders recognize and build on Hendersonville's future this way. Bigger, by itself is not better. Better is Better. I never thought that I would see the day when Breweries are like family friendly parks but they are and it's because of the music and the dogs and the play areas and food trucks that make the whole experience good clean fun. Police presence is welcome. Police on Segway's and Bikes on the trail would be a great beat.

5 months ago

Thanks for all your work and dedication! We used to live fairly close to the Falls Lake greenway and Mountains to sea trail in Wake County...once these trails are finished, people will come use them! Just be sure to have maintenance and clean up projects in place to clear creeks after high storm water, trash receptacles, etc etc

5 months ago

The safer the trail is, the greater the turn-out will be.

5 months ago

Thank you for the opportunity to provide feedback!

5 months ago

Get as many trails connected as possible. If needed via bike lanes and attractive stopping points.

5 months ago

Great idea. Eventually connecting this to Saluda Grade Trail will make this a magnet for cyclists and walkers.

5 months ago

This would be awesome if it happens! Looking forward to the Ecusta Trail this year, and connecting to the Oklawaha Greenway would be a great bonus!

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Connecting to the Saluda Grade would truly make us a destination for hikers and bikers who want some distance and terrain change in their experience.

5 months ago

A walking/biking trail with green spaces AND access to 7th Ave area is a great idea.

5 months ago

Just buildnit

5 months ago

The opportunity to expand linear parks for walking, running, hiking, biking happens rarely. Take advantage of this opportunity. It will benefit the community. There will be opposition as some always complain but the success of those praising the trail helps to offset the negative.

5 months ago

no

5 months ago

Do we really need more greenways? They're a nicety, not a necessity. Housing is a much higher priority.

5 months ago

Definitely needs to be where it won't flood because that can limit access for days, sometimes weeks if the flooding is and enough. Safety is my number one concern. After that, it would be nice if it felt more like a park. Right now the oklawaha greenway is so ugly and it could have had so much potential if there had been a creek restoration project and make it feel more like a park instead of a trail next to an ugly creek.

5 months ago

Glad it will be made

5 months ago

Safe crossing for S. Main / S. King. Kill the roundabout as they're okay for cars, but terrible for pedestrians.

5 months ago

Image 5. Online Survey Response Summary (Cont'd)

Total waste of city efforts. Will be nothing more than a crime ridden area. Greenways are unnecessary, given the litany of problems facing the city.

5 months ago

> Sadly, homeless and vagrant people can ruin any area, even high rent areas but good people deserve nice safe areas to push their strollers and walk their dogs etc. to your point I hope that the city will provide adequate police coverage including police on segways and bikes. I've never been a real victim of crime but having been to cities from NYC to New Orleans to Greenville and Asheville I know that Safety and the Perception of Safety is Very Important. There are places you go and places you avoid and it all goes to perception and reputation. No one likes crime or criminal types. I hope that you will feel safe using the trails and that your presence will be part of our population of good citizens that discourage bad behavior.
>
> 5 months ago 1 Agree

> I have more thoughts about funding and safety as I read the comments and think about the realities of managing a trail system and two realities are Safety and Money. When we first visited Biltmore House we were struck by how much a day pass was but when we moved here I bought the annual pass. The same thing for the Arboretum. I now buy the annual passes and go as often as I want to enjoy the park atmosphere. I think selling day and annual passes for the Ecusta/ City Trail Park System might be a good idea. Just like parking, I think that paying our way is a good option as a funding source but also as a means of controlling the population. We do not want the trail system to become a corridor of vagrancy and one way to discourage that is to sell passes. Ok so a vagrant could beg for a pass??? Maybe but probably not. Now some tax payers might get all in a huff about it but what's the alternative? Higher taxes or worse yet crime? So it's just an idea but most all parks and nice places have costs attached and our greenways might follow that path.
>
> 5 months ago

Same comments as above

5 months ago

Would like Hendersonville/Mud Trail and Ecusta trail to be connected to Saluda grade

5 months ago

Great proposal we can make it happen this magic!

5 months ago

Concerned about access/traffic at the southernmost trailhead at S. Main St. especially if there's a roundabout there.

5 months ago

Image 5. *Online Survey Response Summary (Cont'd)*

Listen to the community.

5 months ago

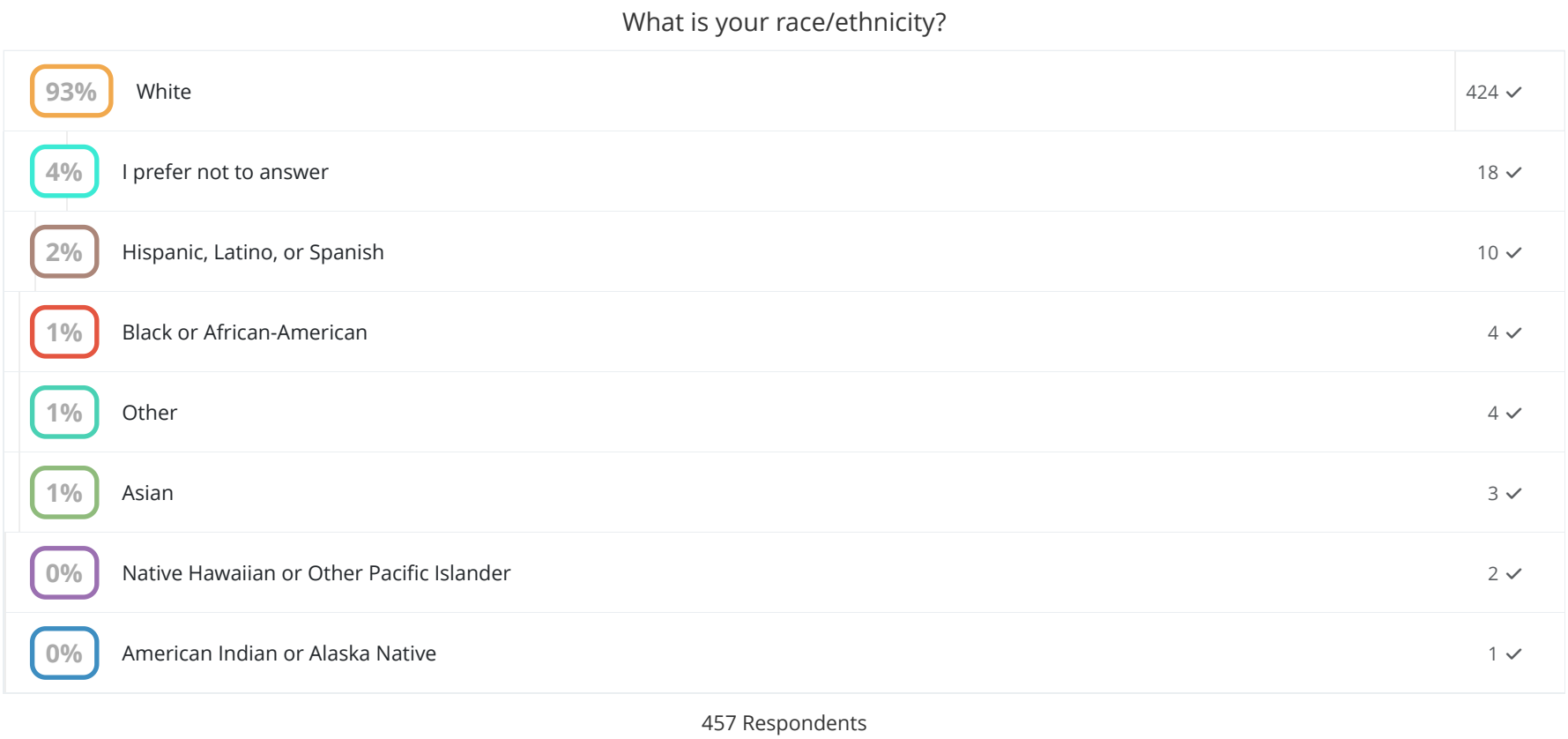
do what you can.

5 months ago

What is your age?

460 respondents

Image 5. Online Survey Response Summary (Cont'd)



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