

West Jefferson, NC

# Sidewalk and Multi-Use Path Feasibility Study Report

December 2024



Integrated Mobility Division  
N.C. DEPARTMENT OF TRANSPORTATION



Kimley»»Horn

# Acknowledgments

## *Local Partners*

Brantley Price, Town Manager, Town of West Jefferson

Rebecca Eldreth, Town Clerk, Town of West Jefferson

## *State Partners*

Hart Evans, Statewide Planning and Programming Manager, NCDOT Integrated Mobility Division

Michael Stafford, Project Manager, NCDOT Integrated Mobility Division

## *Project Consultants*

Alex McIntyre, PE, Kimley-Horn

John Moore, EIT Kimley-Horn

**Table of Contents**

**Acknowledgments** ..... 2

**Table of Contents**..... 3

**Executive Summary** ..... 4

**Introduction and Project Description** ..... 6

    Why is Pedestrian Connectivity So Important?.....6

    Existing and Future Plans .....7

    Project Background .....7

    What is a Feasibility Study?.....7

**Study Considerations** ..... 7

    Natural Environment Considerations .....7

    Existing Demographics Conditions .....8

    Existing Site Conditions .....10

    Existing Community Destinations and Infrastructure .....11

    Existing Bike and Pedestrian Safety Conditions.....11

    Community Involvement .....12

**Design Development**..... 15

    Scope and Objectives.....15

    Design Criteria.....15

    Proposed Design Development.....16

    Typical Sections .....17

    Proposed Design Summary .....18

**Results and Recommendations** ..... 22

**Cost, Funding, and Implementation**..... 23

    Cost Estimate .....23

    Implementation .....23

    Feasibility Study Funding Document (Federal, State, Local, and Private Funding Mechanisms) .....24

**Appendices**..... 27

    Appendix A: Opinions of Probable Construction Cost.....28

    Appendix B: Demographic Maps .....29

    Appendix C: West Jefferson Sidewalk Exhibit .....40

    Appendix D: Public Survey Results .....43

# Executive Summary

The North Carolina Department of Transportation (NCDOT) awarded the Town of West Jefferson a Multimodal Planning Grant to complete a study to determine the Town's feasibility for bike and pedestrian infrastructure. The study evaluated a route from Beaver Creek School Road to East Buck Mountain Road along the western side of South Jefferson Avenue. The proposed multi-use path (MUPs) would provide bike and pedestrian infrastructure from Downtown West Jefferson to commercial areas outside the center of Town. The Town has identified this area as a primary candidate for bike and pedestrian infrastructure.

The feasibility study recommends for the design and construction:

- 1.2 miles of 8-foot MUP along South Jefferson Avenue from Beaver Creek School Road to East Buck Mountain Road
- Intersection improvements to provide pedestrian accommodations at Beaver Creek School Road/South Jefferson Avenue and East Buck Mountain Road/South Jefferson Avenue

This report will outline the study process and provide insight into the project. It includes the following sections:

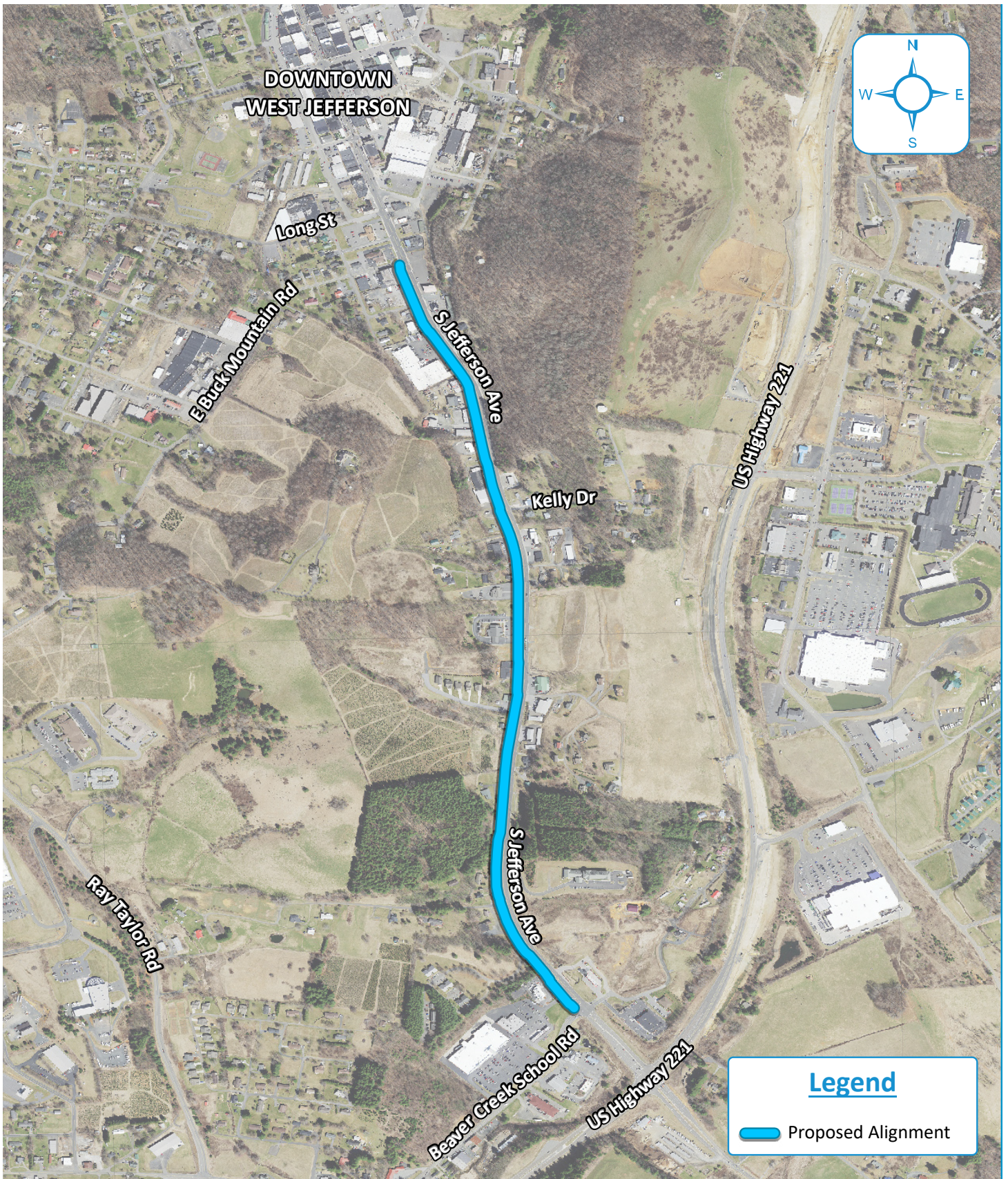
- Introduction and Project Background
- Study Considerations
- Design Development
- Results and Recommendations



*Intersection of Davidson Street and Jordan Place (Charlotte, NC)*



*Irwin Creek Greenway (Charlotte, NC)*



Proposed Alignment Overview

# Introduction and Project Description

## Why is Pedestrian Connectivity So Important?

### Health

Alternatives to vehicular travel, such as MUPs, greenways, sidewalks, and bike lanes, encourage people to be more healthy and physically active. People in walkable communities had 0.75 times the likelihood of being obese and were 1.5 times more likely to be physically active. Creating an environment where people feel safe and physically active is critical to encouraging healthier communities. Citizens of all ages in West Jefferson are entitled to a lifestyle that promotes good physical health, and providing areas that allow active commuting is a step in that direction.<sup>1</sup>

### Safety

Adding MUPs, sidewalks, and bike lanes to existing roadways improves safety for cyclists and pedestrians. Bike lane additions on two-lane roads can reduce vehicle-bike crashes by up to 30% by offering cyclists a viable option outside the traditional vehicle lanes. Additionally, adding sidewalks on both sides of a road was noted to halve the vehicle-pedestrian crashes observed. Allowing the space for pedestrians and cyclists of West Jefferson to share the road with their vehicular commuting community members results in less stress and more safety for everyone.<sup>2</sup>

### Alternative Modes of Transportation

When building transportation networks, all users need to be considered. While cars are the primary mode of transportation for most Americans, up to 37% of the US population consists of people who cannot drive a car, such as children, older adults, and people with disabilities. Infrastructure design must account for providing means of alternative transportation for those who may not have another option. Having various modes of transportation for people helps make West Jefferson a more inclusive community.<sup>3</sup>

### Increased Property Values

Often, properties in more walkable areas are perceived as more valuable. In a study focusing on 15 independent real estate markets, 13 markets were found to have links between increases in walkability and property value. Some people view walkable neighborhoods and communities as more desirable. Adding MUPs, greenways, sidewalks, and bike lanes to West Jefferson can create a positive economic impact when implemented.<sup>4</sup>

<sup>1</sup> McKoy, J. (2023, February 2). US Neighborhood Walkability Influences Physical Activity, BMI Levels. *Www.bu.edu*.  
<https://www.bu.edu/sph/news/articles/2023/us-neighborhood-walkability-influences-physical-activity-bmi-levels/#comments>

<sup>2</sup> Bicycle Lanes | FHWA.(2019). Dot.gov.  
<https://highways.dot.gov/safety/proven-safety-countermeasures/bicycle-lanes#psc-footnote>

<sup>3</sup> Federal Highway Administration. (n.d.). *FHWA Safety Program Safety Benefits of Walkways, Sidewalks, and Paved Shoulders*  
[https://safety.fhwa.dot.gov/ped\\_bike/tools\\_solve/walkways\\_brochure/walkways\\_brochure.pdf](https://safety.fhwa.dot.gov/ped_bike/tools_solve/walkways_brochure/walkways_brochure.pdf)

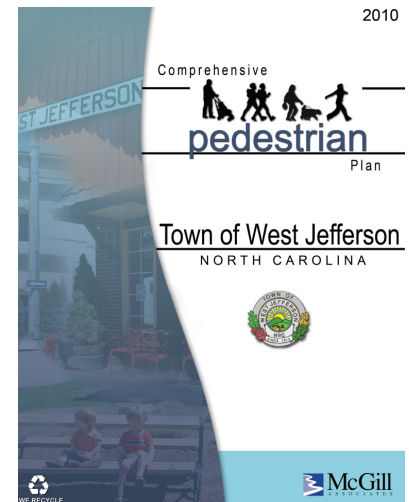
<sup>4</sup> Cortright, J. (2009). *Walking the Walk How Walkability Raises Home Values in U.S. Cities*.  
[https://nacto.org/wp-content/uploads/2015/04/walking\\_the\\_walk\\_cortright.pdf](https://nacto.org/wp-content/uploads/2015/04/walking_the_walk_cortright.pdf)

## Existing and Future Plans

This feasibility study connects past planning to the actual design and construction of bike and pedestrian infrastructure. The study will identify the best route for design implementation by translating the future visions outlined in the plans into actionable steps and helping secure funding to turn the initial designs into reality.

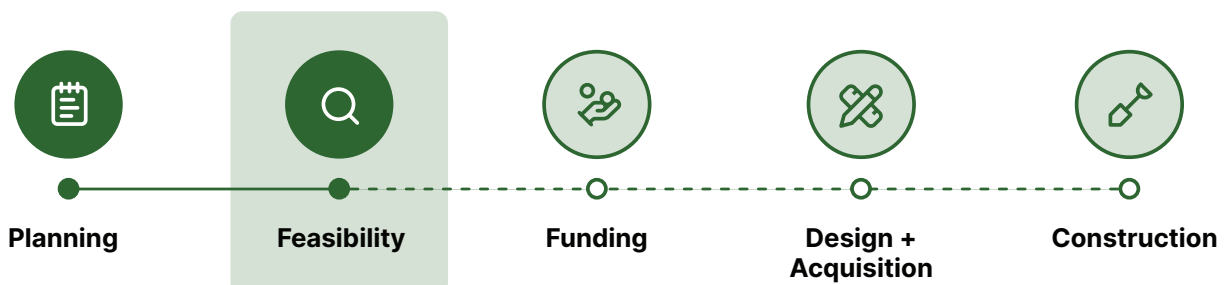
## Project Background

Published in 2010, the Town of West Jefferson Comprehensive Pedestrian Plan specifically identifies South Jefferson Avenue from downtown to US-221 as a prime candidate for new pedestrian and bike infrastructure as well as upgrades to existing infrastructure. It connects downtown West Jefferson to other thriving areas, providing a solid connection through an area of West Jefferson without a robust bike and pedestrian infrastructure. Numerous attractive destinations in this area, such as grocery stores, commercial centers, and various neighborhoods, would benefit from additions to the existing pedestrian network.



## What is a Feasibility Study?

Feasibility studies are essential in transitioning from conceptual planning to prioritizing and programming projects. These studies build upon higher-level planning efforts and thoroughly evaluate potential alignment alternatives. The primary objective is to assess technical feasibility regarding design, permitting, and constructability. Local community input and stakeholder feedback are vital in shaping the recommended alignments. High-level cost estimates based on quantities are prepared to aid decision making, which also helps identify funding needs and outline the next steps for project implementation. The ultimate alignment of a project will depend on the cooperation of property owners and the availability of funding.



## Study Considerations

### Natural Environment Considerations

The Town of West Jefferson is located in the northwest corner of North Carolina, a region known for mountainous terrain. The most pressing natural environmental concern is the topography surrounding the existing roadway. The proposed MUP would be located along previously developed road frontage through most portions of the corridor. The proposed MUP replaces existing pavement in these areas, which does not cause environmental concern. In other areas, there is no existing development. Still, there is enough room along the existing roadway to allow for the proposed MUP without significant changes to the surrounding environment. Other areas do not accommodate the proposed design without significant grading impacts. Special structures may be necessary in these areas to prevent any unnecessary impacts.

While no formal environmental review was conducted, it is assumed from initial field observation that this project will have no major environmental impacts. The proposed project boundary does not cross or approach jurisdictional streams, delineated wetlands, or Federal Emergency Management Agency (FEMA) floodplains, making a hydraulic assessment, wetland or stream delineation, and preliminary judicial determination unnecessary as part of the study.

## Existing Demographics Conditions

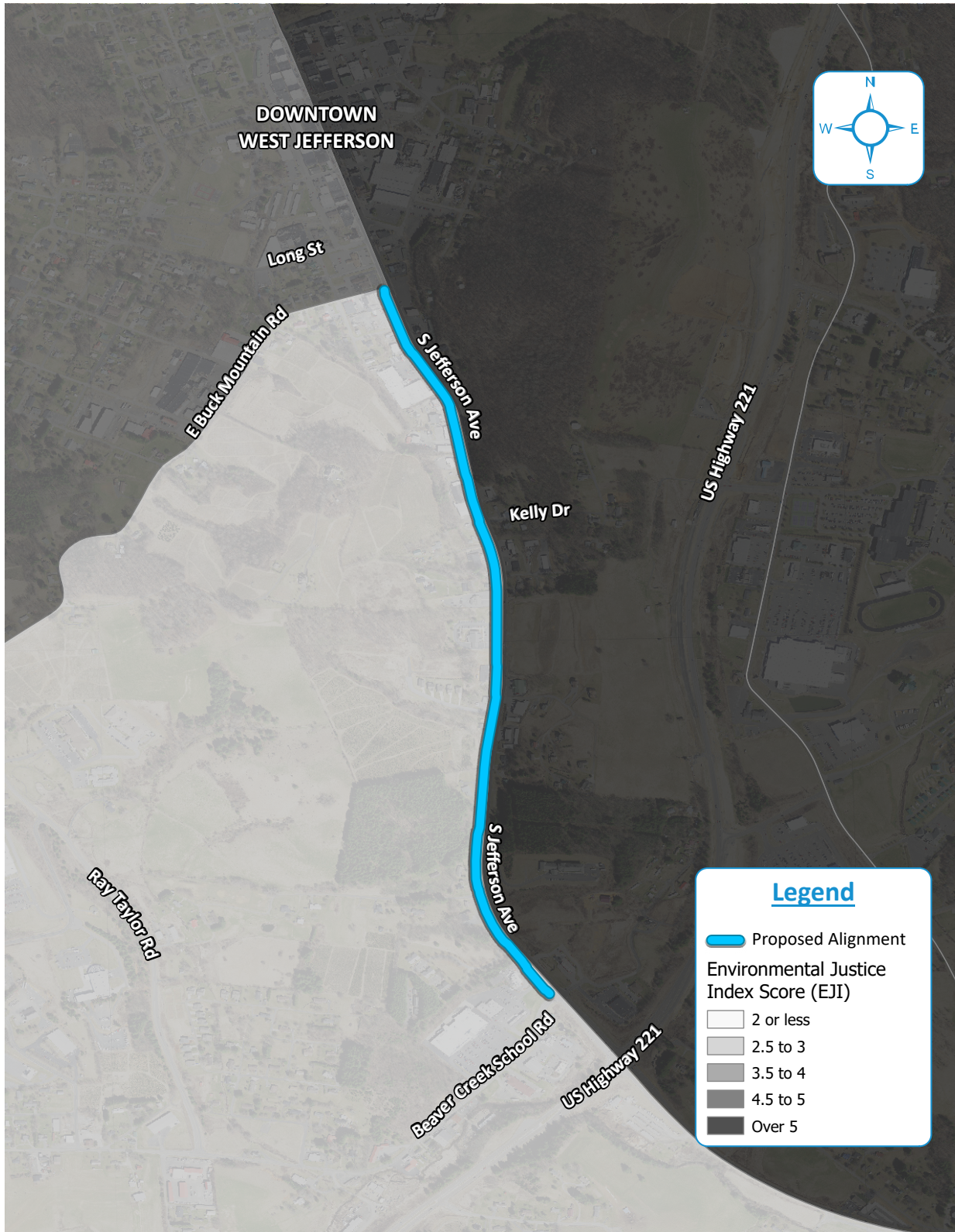
The existing demographics of this project area reveal a diverse community with various needs and challenges. The map below shows the project area's Transportation Disadvantage Index (TDI). The TDI is a composite score based on seven indicators of potential transportation disadvantage:

- 1) Relative concentration of carless households to the average for the selected geography.
- 2) Relative concentration of low-income people to the average for the selected geography.
- 3) Relative concentration of people with mobility impairments aged 18 and older (physical, mental, or self-care disability) to average for the selected geography.
- 4) Relative concentration of youth aged 15 and younger (non-drivers) to the average for the selected geography.
- 5) Relative concentration of seniors to the average for the selected geography.
- 6) Relative concentration of the (Black, Indigenous, Persons of Color) BIPOC population to the average for the selected geography.
- 7) Relative concentration of the Limited English Proficiency (LEP) population to the average for the selected geography.



The map below shows the project area's Environmental Justice (EJ) Index Score. The EJ index score is a composite score based on:

- Relative concentration of racial minorities to the average for the selected geography
- Relative concentration of ethnic minorities to the average for the selected geography
- Relative concentration of people with low incomes to the average for the selected geography



## Existing Site Conditions

The field walk of the proposed corridor occurred on August 29, 2023, with participation from the Town of West Jefferson, NCDOT Integrated Mobility Division (IMD), and Kimley-Horn. The walk intended to gather information and cultivate a deeper understanding of existing conditions. One of the important things observed was the proximity of some buildings to the existing road. In these areas, the planting strip will not be viable. The proposed path will be along the back of the curb and pavement will be added to the edge of the existing buildings to maintain a continuous surface. Another important thing observed was the condition of unpaved existing ground along the roadway. While much of the developed land had flatter asphalt or concrete pavement up to the road, the unpaved areas were often much steeper and would challenge the proposed design. Finally, the field walk presented an opportunity to observe portions of the corridor where the proposed design departs from the roadway alignment due to an existing guardrail. The area behind the guardrail is extremely steep and was not easily observed from existing imagery. It was confirmed that a structure, like a boardwalk or retaining wall, would be necessary in this area to make the MUP feasible.



*Existing utilities and commercial monument along South Jefferson Avenue*



*Existing building located close to roadway along South Jefferson Avenue*



*828 South Jefferson Avenue, facing south*

## Existing Community Destinations and Infrastructure

The study area contains several parts of West Jefferson, each with unique characteristics that make them candidates for the proposed bike and pedestrian network. Several important destinations line the proposed corridor, which can be primarily classified into two categories: commercial and residential. The corridor begins at Beaver Creek School Road and South Jefferson Avenue intersection, providing connectivity to an expanding commercial area.

Ingle's, CVS, and McDonald's are important commercial areas near this intersection. Other important retail locations along the corridor include The Happy Shack and Antiques on Main. Several other commercial locations along South Jefferson Avenue include restaurants like Oshu House and Smoky Mountain Barbecue, a bank, and the State Employees' Credit Union. Downtown West Jefferson and its existing pedestrian network also are connected to the proposed corridor, offering access to its numerous commercial and residential areas.

West Jefferson is a thriving town with numerous restaurants, shops, and government buildings. These destinations generate large quantities of vehicular trips, making them prime candidates for connection into the pedestrian network. Reducing vehicular trips generated by these two destinations could alleviate traffic and congestion. The study area also contains several neighborhoods in the community. These residential neighborhoods include housing along Tolbert Lane, West Town Way, Speaks Road, and Vista Drive. Residential areas are critical to connect to the proposed pedestrian network since they promote the network's usage for recreation and transportation.

## Existing Bike and Pedestrian Safety Conditions

Introducing dedicated bike and pedestrian infrastructure is key to increasing feelings of safety among West Jefferson's cyclist and pedestrian populations. According to NCDOT, the Town of West Jefferson experienced 12 pedestrian-involved crashes from 2010–2022. During the same time, Ashe County experienced 26 pedestrian and four bike-involved crashes.<sup>5,6,7</sup> It is important to make investments to improve the current bike and pedestrian network to create a safer environment for bicyclists and pedestrians in West Jefferson and Ashe County.



*Bike and pedestrian infrastructure at intersection of Davidson Street and Jordan Place*

<sup>5</sup> Jessup, Torre J., Timothy P. Hayworth, and Shawn Troy. Rep. *North Carolina 2020 Traffic Crash Facts*. Raleigh, NC: North Carolina Division of Motor Vehicles, 2021. <https://connect.ncdot.gov/business/DMV/CrashFactsDocuments/2020%20Crash%20Facts.pdf>.

<sup>6</sup> Boyette, J. Eric, Wayne Goodwin, James C. Moore, and Shawn Troy. Rep. *North Carolina 2021 Traffic Crash Facts*. Raleigh, NC: North Carolina Division of Motor Vehicles, 2022. <https://connect.ncdot.gov/business/DMV/CrashFactsDocuments/2021%20Crash%20Facts.pdf>.

<sup>7</sup> Boyette, J. Eric, Wayne Goodwin, Janna Allison, and Brian Murphy. Rep. *North Carolina 2022 Traffic Crash Facts*. Raleigh, NC: North Carolina Division of Motor Vehicles, 2023. <https://connect.ncdot.gov/resources/safety/Documents/Crash%20Data%20and%20Information/2022.pdf>.

## Community Involvement

Public engagement is crucial for such feasibility studies because it allows community members to voice their needs, concerns, and ideas. By involving the public in the planning process, stakeholders can gain valuable insights, build support, and help ensure that the project aligns with the community's priorities and aspirations.

As part of this study, two steering committee meetings, one stakeholder meeting, one public meeting, and one public survey were conducted.

The steering committee members were the Town of West Jefferson Manager, NCDOT IMD, Kimley-Horn, and NCDOT Division 11. The steering committee meetings were held on **October 30, 2023**, and **January 5, 2024**.

The stakeholder meeting was held on **August 24, 2023**. Nearby homeowners and business owners throughout the corridor were invited.

A public outreach session for this project was held on **February 5, 2024**. The project team hosted a drop-in event before the Town Council meeting, answering questions from community members and addressing concerns they may have. The alignment, typical section, and constraints were presented at the outreach session. A preliminary cost estimate was also shared to give attendees an understanding of the financial scope of the project.

The public survey questionnaire was initiated in **January 2024** and remained open for public input for four months, during which it garnered participation from 23 individuals and received 256 responses. The survey results in **Appendix E** reflected the community's preference for using the proposed MUP for access to grocery stores, work and shopping, and parks and community amenities. Moreover, the findings underscored the significance of connectivity, safety, and user experience as the most important factors for the residents of West Jefferson.



# US-221 Multi-Use Path Feasibility Study

## PUBLIC MEETING



*Town of West Jefferson*

The Town of West Jefferson, in collaboration with the North Carolina Department of Transportation's Integrated Mobility Division (NCDOT IMD), is currently conducting a comprehensive feasibility study. This study aims to assess the potential for a multi-use path from East Buck Mountain Road to Beaver Creek School Road along US 221. This project will establish a vital connection for pedestrians from the existing sidewalk network in Downtown West Jefferson to the Ingles grocery shopping center.

We value your insights and would appreciate your participation in our brief survey. Please take a moment to share your thoughts by scanning the QR code below. The survey will remain open until **January 31st**.

~insert QR Code~

Please mark your calendars for an open house public meeting scheduled for **February 05, 2024**. You can attend anytime between **5pm and 7pm** at the West Jefferson Town Hall. Your presence and active engagement are vital in shaping this project for the benefit of our community.

Members of the project team will be available at the meeting to provide information, answer questions, and gather feedback on the proposed projects. Preliminary designs will be available for viewing and comment at the meeting.



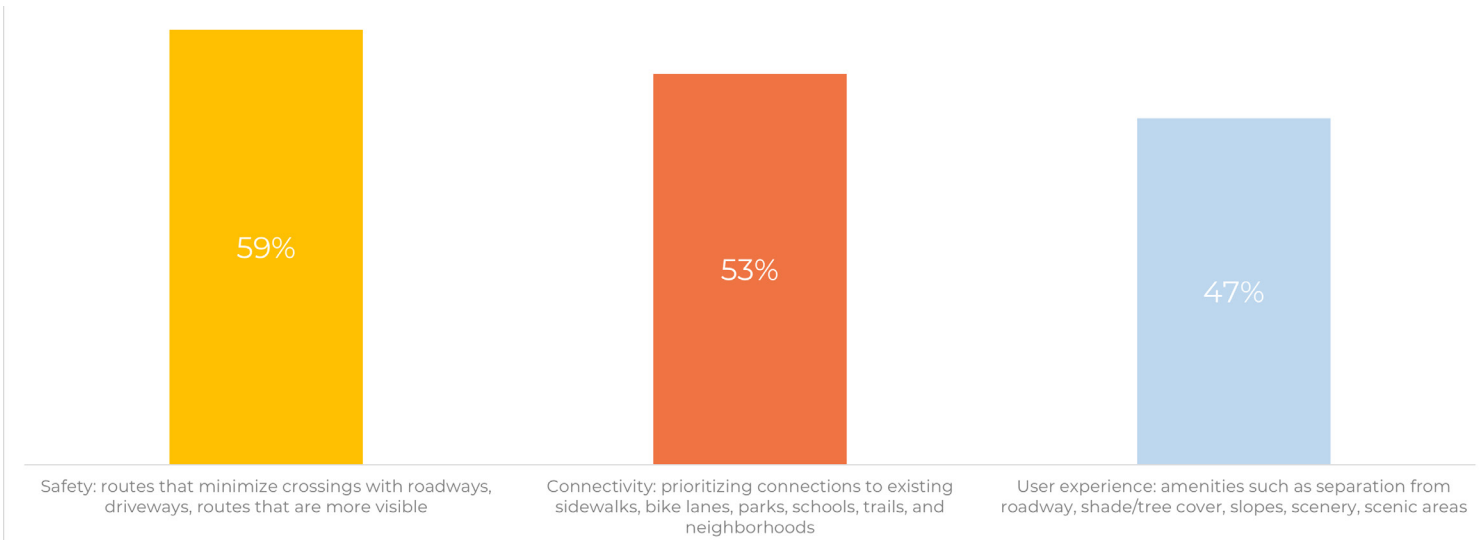
**WHAT? Open House Public Meeting**  
**WHEN? Monday, February 05 from 5pm - 7pm (drop-in)**  
**WHERE? West Jefferson Town Hall**

**PROJECT CONTACT**  
Brantley Price  
Town of West Jefferson  
Town Manager  
P 336.246.3551  
[admin@townofwj.com](mailto:admin@townofwj.com) | [www.townofwjnc.com](http://www.townofwjnc.com)

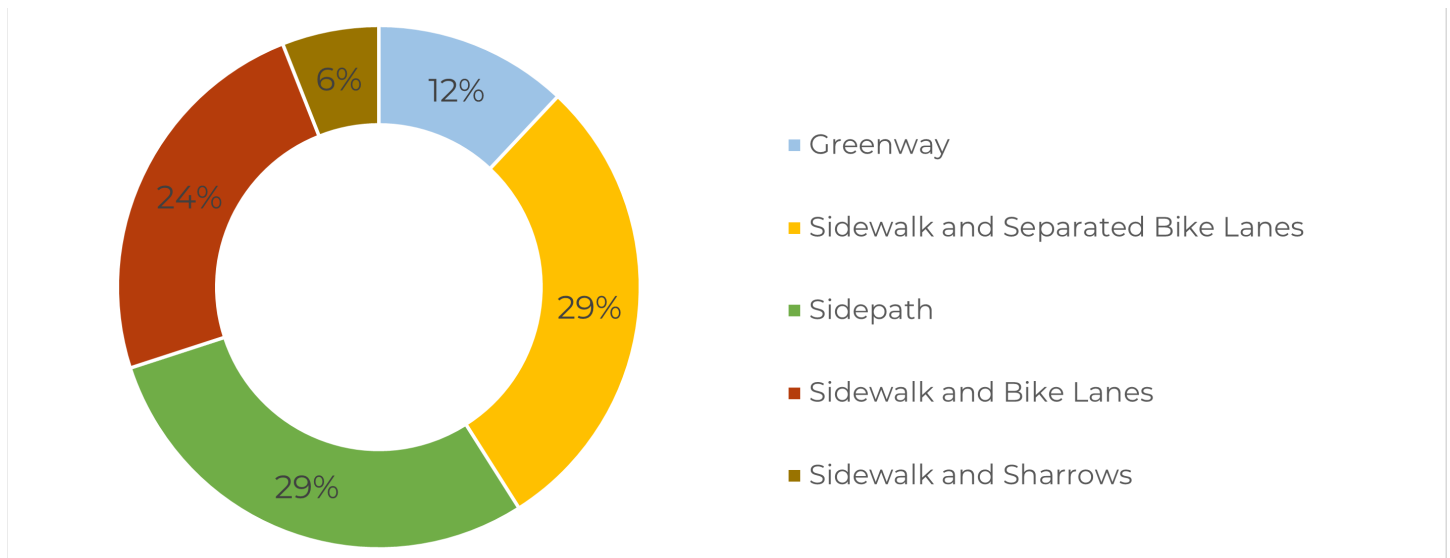


Community feedback on the project was positive, as reflected in the public meeting and the survey responses. Residents emphasized the need for a safe and accessible route for walking and biking from downtown to key destinations such as grocery stores, retail outlets, and restaurants. There was a consensus on the importance of creating infrastructure that enables low-income and historically underserved populations to travel safely without relying on cars. Additionally, the community recognized the significant health and economic benefits of the MUP, underscoring its value to the broader community.

Survey Responses to “Which criteria are most important when considering a route for the trail?”



Survey Responses to “Which facility type do you prefer when walking or biking in West Jefferson?”



# Design Development

## Scope and Objectives

The purpose and scope of this feasibility study was to examine the feasibility of bike and pedestrian infrastructure between Beaver Creek School Road and East Buck Mountain Road along South Jefferson Avenue. Throughout the progression of the feasibility study, several objectives remained paramount, including the following:

- Safety of users
- Accessibility
- Connectivity
- Opportunity for future improvements
- Utilization of existing infrastructure
- Utilization of existing right-of-way

## Design Criteria

Design criteria for the feasibility study are based on recommendations from various state and national guidelines on bicycle and pedestrian infrastructure. Different sources were examined and compared based on their applicability to the varied existing infrastructure. The design criteria were used to develop the proposed design:

Proposed Design Criteria	Value	Design Reference	Comments
Sidewalk Width	8.0' (preferred) 5.0' (minimum)	<ul style="list-style-type: none"> <li>• NCDOT Std. 848.01</li> <li>• American Association of Highway and Transportation Officials (AASHTO)</li> <li>• West Jefferson Comprehensive Pedestrian Plan 2010</li> </ul>	
Planting Strip Width	8.0' (preferred) 5.0' (minimum)	<ul style="list-style-type: none"> <li>• AASHTO</li> <li>• West Jefferson Comprehensive Pedestrian Plan 2010</li> </ul>	
Shoulder Width	5.0' (preferred) 2.0' (minimum)	<ul style="list-style-type: none"> <li>• AASHTO</li> </ul>	
Minimum Profile Grade	0.5% minimum Or match existing road grade if along road	<ul style="list-style-type: none"> <li>• AASHTO</li> </ul>	
Maximum Profile Grade	5.0% maximum Or match existing road grade if along road	<ul style="list-style-type: none"> <li>• AASHTO</li> </ul>	
Maximum Cross Slope	1.5% (preferred) 2.0% (max)	<ul style="list-style-type: none"> <li>• AASHTO</li> <li>• Public Right-of-Way Accessibility Guidelines (PROWAG)</li> </ul>	
Minimum Horizontal Curve Radius	100' (preferred) 50' (minimum) Or follow existing road alignment	<ul style="list-style-type: none"> <li>• AASHTO</li> </ul>	
Typical Section (see next sheet)	4" concrete (sidewalk) 6" concrete (driveway crossings)	<ul style="list-style-type: none"> <li>• AASHTO</li> </ul>	
Driveways	Maximum Driveway Grades (see next sheet)	<ul style="list-style-type: none"> <li>• NCDOT Std. 848.02</li> </ul>	

*Note: Project will be designed in accordance with the latest guidance from AASHTO and the National Association of City Transportation Officials (NACTO) and will comply with the American with Disabilities Act (ADA) requirements and PROWAG guidelines.*

# Proposed Design Development

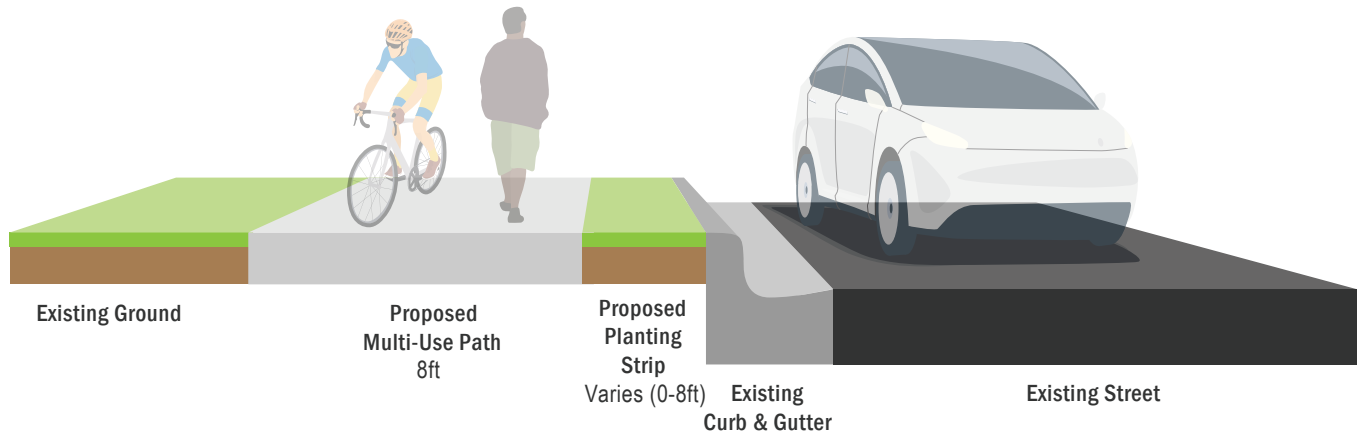
Based on the objectives and design criteria outlined above, a proposed design was created to test the feasibility of a Beaver Creek School Road route to East Buck Mountain Road along South Jefferson Avenue—only one mainline alignment alternative.



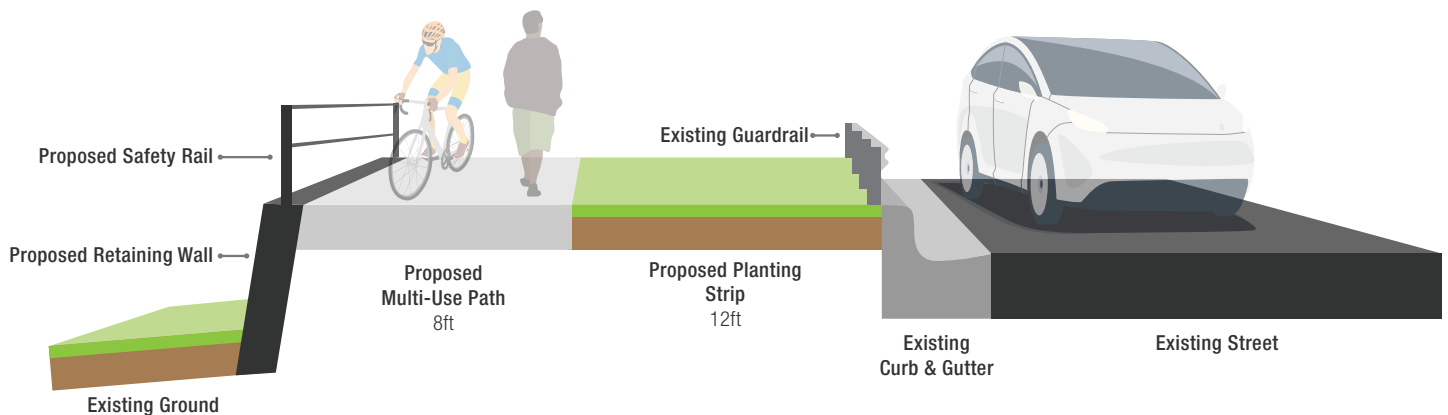
## Typical Sections

Based on the corridor's context, different typical sections of the feasibility study were developed. They were chosen to accommodate existing conditions, community feedback, and overall feasibility.

In areas not constrained by steep terrain, the typical section chosen for this design was an 8-foot concrete MUP. The planting strip will vary from 0–8 feet wide. The planting strip is designed to avoid roadside obstructions along South Jefferson Avenue while maximizing horizontal separation from the roadway. The MUP design is meant to accommodate bikes and pedestrians safely in the same space. The path will allow cyclists to stay out of vehicle travel lanes while allowing space for pedestrians to travel as well.



In a very steep area along the roadside, a standard 8-foot MUP was deemed unsuitable due to existing terrain, and special structures were deemed necessary. This area also contains an unmoveable guardrail, meaning the path must go behind. Two possible typical sections were developed. The first option was an elevated boardwalk structure, allowing the elevation of the trail surface to change independently of the existing ground, mitigating the steep drop-off along the roadside. The second option was a retaining wall system that simplifies the grading by installing a wall off the path's edge, mitigating any slope changes that occur past the wall. Since both alternatives are more expensive than standard MUP, it was minded to limit their usage to only when necessary. Ultimately, the retaining wall alternative was chosen after in-depth analysis and cost considerations.



## Proposed Design Summary

The first intersection modification occurs at Beaver Creek School Road and South Jefferson Avenue. With the addition of the MUP, intersection modifications would need to be made, including a crosswalk, signal modifications, and other pavement marking adjustments. However, a separate intersection project has been designated in the State Transportation Improvement Plan (R-5833) to improve this intersection, so coordination with this project will be necessary as it progresses.

The proposed path starts north along the west side of South Jefferson Avenue. The planting strip, whenever possible, was designed to be 8 feet, maximizing horizontal separation from cyclists and pedestrians and increasing users' safety and comfort. However, due to some areas' existing infrastructure or terrain, the planting strip was reduced to 2 feet or 0 feet in extreme circumstances.



*Location of beginning of proposed design at South Jefferson Avenue and Beaver Creek School Road*



*1202 South Jefferson Avenue, facing south*

Commercial developments constrain the MUP's space in front of Farmhouse Cottage (1102 South Jefferson Avenue) and Antiques on Main (842 South Jefferson Avenue). The planting strip can be reduced to 2 feet in these areas to avoid unnecessarily impacting commercial business buildings and their parking. In areas with proposed pavement close to an existing building, the proposed pavement will be poured up to the existing building to create a more desirable and accessible surface.

The planting strip must be reduced even further to 0 feet in places with more restrictive constraints, with the path directly behind the back of the curb. These areas include 1216 South Jefferson Avenue to The Happy Camper (1116 South Jefferson Avenue) and Taylor's Collision Center (710 South Jefferson Avenue) to Leviton Manufacturing (618 South Jefferson Avenue). The two sections mentioned have very tight space constraints due to buildings with minimal setbacks from the road or extreme terrain close to the existing roadway. The constraints are so intense that there is only enough room for the MUP. In areas where the path is close to an existing building, the proposed design calls for pavement from the back of the curb to the existing building to create a continuous surface.



618 South Jefferson Avenue, facing south



842 South Jefferson Avenue, facing south

In some areas of the corridor, the terrain and existing obstacles are too extreme to make a typical MUP feasible. North of Speaks Road, there is a section that requires special structures. The two types of special structures considered for this area were a boardwalk and a retaining wall. These systems are necessary in this area to avoid the roadside guardrail and mitigate the steep terrain behind the guardrail. After an extensive analysis, a retaining wall was chosen in the proposed design because it is cheaper and easier to construct. The retaining wall continues for approximately 420 feet, transitioning back to a typical MUP at the back of the curb after the guardrail ends.



*Steep terrain behind guardrail along South Jefferson Avenue*

Along the corridor, an area near Smoky Mountain Barbecue (1008 South Jefferson Avenue) presents another unique design challenge. The State Employees' Credit Union discharges storm runoff into a retention pond. However, the emergency spillway of the retention pond discharges directly into the curb and gutter of South Jefferson Avenue, meaning the proposed MUP would have to cross the spillway. To remedy this, the proposed design calls for a swale bridge that will span the spillway and allow water to pass underneath and discharge into the road, maintaining existing hydraulic conditions as closely as possible.



*Retention pond and outlet ditch into roadway along South Jefferson Avenue*

The entire length of the proposed corridor contains driveways that must be adjusted to accommodate the path. Due to the changes in grading that the path design will bring to the bordering properties, existing driveways will no longer match the existing grade, so the proposed design includes driveway grading and paving. The repaved driveways will have standard concrete aprons, but any repaving beyond the path will be done using the driveway's original material. When properties have multiple driveway curb cuts, some curb cuts will be closed with proposed curb and gutter. Reducing redundant access points to properties improves safety for pedestrians and vehicles alike. At least one access point is maintained for each property along the corridor.

The proposed design ends at East Buck Mountain Road and South Jefferson Avenue. In its current configuration, the intersection does not have any pedestrian facilities. Signal improvements will be made to accommodate pedestrian crossings, including crosswalks, signal modifications, and other pavement marking adjustments. One crosswalk will be across East Buck Mountain Road, connecting the end of the proposed design to the existing sidewalk network. The other crosswalk will cross South Jefferson Avenue. While there is no current connection on the east side of South Jefferson Avenue, there are plans for development in this area. They will eventually tie into the proposed MUP at this point.



714 South Jefferson Avenue, facing south



Existing and proposed conditions of East Buck Mountain Road/South Jefferson Avenue intersection

An exhibit showing the proposed design in more detail can be found in **Appendix B**.

# Results and Recommendations

The design shown was selected as the preferred. The selected design is the most suitable choice because it is:

- Accessible—The design complies with the latest accessibility guidelines from AASHTO and NACTO and requirements set forth by the ADA.
- Economical—By choosing to use retaining wall rather than boardwalk, the proposed design is significantly less expensive.
- Safe—The design has minimized the number of driveway crossings by removing existing curb cuts, reducing conflict points between vehicles and pedestrians.

Currently, the recommended alternative only includes the mainline alignment outlined in the report. This decision is influenced by funding limitations and community feedback. However, if circumstances change, making other connectors to other proposed designs possible, this design can be adjusted accordingly to accommodate their implementation.



# Cost, Funding, and Implementation

## Cost Estimate

Based on planning and preliminary engineering efforts, estimated project costs are shown for the proposed design in the table below. Construction costs for the proposed design were estimated separately, including earthwork/grading, retaining walls, pavement materials, and special structures. Costs are driven largely by topography (grading and retaining walls) and elevated structures (swale bridge). Assumptions for the estimate include the following:

- 4-in concrete MUP
- 8-foot wide MUP
- Mobilization of 10%
- Traffic Control of 5%
- Storm Drainage of 5-10%
- Erosion Control of 5-10%
- Construction Cost Contingency of 30%
- Additional cost of inflation of 10% over 3 years
- Real estate costs not included

Complete construction cost breakdowns for all trail segments for Alternative 1 are included in **Appendix A**.

Opinion of Probable Construction Cost	\$1,701,530
Construction Cost Inflation (Summer '27)	\$563,206.43
Engineering and Construction Administration (30%)	\$679,420.93
Town Led Project Administration (15%)	\$339,710.46
Permitting Fees	\$20,000
<b>Subtotal</b>	<b>\$3,303,867.82</b>
Project Contingency (30%)	\$991,160.35
<b>Total Project Cost</b>	<b>\$4,295,028.17</b>

## Implementation

Securing adequate funding is crucial for completing this project's full design, real estate acquisition, and construction. The next two pages are a comprehensive funding strategy for the project. This strategy outlines the funding mechanisms and considers the estimated application deadlines, funded project phases, required minimum matching funds, and award requests as well as our recommended award requests to help ensure a competitive application. Additionally, the proposed strategy includes estimated timelines for each project phase.

# Feasibility Study Funding Document (Federal, State, Local, and Private Funding Mechanisms)

## **The Bipartisan Infrastructure Law (BIL)**

BIL, officially known as the Infrastructure Investment and Jobs Act (IIJA), is a landmark piece of legislation signed into law in 2021. This law represents a significant investment in the United States infrastructure, allocating approximately \$1.2 trillion to various projects throughout five years. The BIL aims to modernize the nation's transportation systems, including roads, bridges, and public transit as well as address critical needs for broadband internet access, clean water, and the electric grid. Additionally, the law focuses on enhancing climate resilience and improving environmental justice. By addressing these diverse infrastructure needs, the BIL seeks to boost economic growth and improve the quality of life for all Americans.

## **Surface Transportation Block Grant Program (STBGP)**

STBGP is a federal-aid highway funding program administered by NCDOT that provides flexible funding for various transportation projects. These projects include highways, bridges, transit systems, and pedestrian and bicycle infrastructure improvements. The STBGP funds are allocated to states and localities based on a formula that considers population and road mileage. This program aims to enhance the safety, efficiency, and accessibility of transportation networks, supporting economic growth and improving the quality of life for residents. The STBGP also emphasizes the importance of maintaining and upgrading existing infrastructure to ensure long-term sustainability.

## **Transportation Alternatives (TA) Set-Aside**

The TA Set-Aside program is a subset of the STBGP, managed by NCDOT, which allocates federal funds for nontraditional transportation projects. The program supports various initiatives, including developing pedestrian and bicycle facilities, construction of turnouts and overlooks, community improvements like historic preservation and vegetation management, environmental mitigation related to stormwater and habitat connectivity, and recreational trails. By focusing on smaller-scale projects, the TA Set-Aside program helps create safer, more connected, and equitable transportation networks across the state.

## **Employing STBGP Money at a State Level**

The NCDOT Strategic Transportation Investments (STI) law, passed in 2013, equips NCDOT to use funding efficiently and effectively to enhance infrastructure while supporting economic growth, job creation, and a higher quality of life. The STI law establishes the Strategic Mobility Formula, which allocates available revenues based on data-driven scoring and local input. This formula is used to develop the State Transportation Improvement Program (STIP), identifying projects that will receive funding during a 10-year period.

NCDOT's STIP is a comprehensive plan that outlines the funding and scheduling of transportation projects statewide for 10 years. The program enhances the state's transportation infrastructure, improves traffic flow, and supports economic growth. The STIP includes various projects such as highway improvements, public transit expansions, and bicycle and pedestrian pathways. Funding for these projects comes from federal and state sources as well as the program is updated every two years to reflect changing priorities and available resources.

## **Active Transportation Infrastructure Investment Program (ATIIP)**

ATIIP is a federal competitive grant initiative aimed at enhancing active transportation networks. It focuses on constructing safe and connected facilities like sidewalks, bikeways, and trails that link key destinations such as schools, workplaces, and recreation areas. The program also emphasizes integrating these networks with public transportation to improve accessibility and connectivity. ATIIP aims to boost safety, efficiency, and quality of life by investing in these projects, particularly in disadvantaged communities.

## **Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Discretionary Grant Program**

RAISE Discretionary Grant Program provides substantial funding for essential transportation infrastructure projects across North Carolina. This program provides federal aid that supports various initiatives, including road, rail, transit, and port improvements, focusing on enhancing safety, efficiency, and sustainability. RAISE grants prioritize projects with significant local or regional impacts, promote economic competitiveness, and improve quality of life, particularly in underserved communities. Additionally, the program emphasizes environmental sustainability and resilience, helping ensure that funded projects contribute to a more sustainable and equitable transportation network.

### **Safe Streets and Roads for All (SS4A)**

SS4A Grant Program, established under the BIL, provides \$5 billion in funding for five years to support regional, local, and tribal initiatives to prevent roadway deaths and serious injuries. The program funds developing comprehensive safety action plans as well as implementing projects and strategies to address significant roadway safety concerns. Eligible applicants include political subdivisions of states, metropolitan planning organizations, and federally recognized tribal governments. The SS4A grants support various activities, including planning, construction, equipment and materials, operations and maintenance, and technology demonstrations.

### **Environmental Protection Agency (EPA) Community Change Grants**

The EPA's Community Change Grants program, funded by the Inflation Reduction Act, allocates funding to support disadvantaged communities. These grants aim to reduce pollution, enhance community climate resilience, and build capacity to address environmental and climate justice challenges. The program emphasizes community driven initiatives, helping ensure projects are responsive to local needs and stakeholder input. Eligible applicants include partnerships between community-based non-profits, local governments, and educational institutions.

### **North Carolina Recreational Trails Program (RTP)**

North Carolina RTP provides federal funding to support the development and maintenance of recreational trails statewide. This program is managed by the North Carolina Division of Parks and Recreation and aims to enhance outdoor recreational opportunities for residents and visitors alike. Funding from the RTP can be used for various purposes, including constructing new trails, maintaining and repairing existing trails, land acquisition, and purchasing trail tools and planning. The program also covers legal, environmental, and permitting costs associated with trail projects.

### **North Carolina Parks and Recreation Trust Fund (PARTF)**

The North Carolina PARTF is a program established in 1994 to provide matching grants to local governments to acquire, develop, and improve parks and recreational facilities. Administered by the North Carolina Division of Parks and Recreation, PARTF aims to enhance the quality of life for residents by increasing access to public parks, beaches, and recreational areas. The fund supports many projects, including land acquisition, park development, and renovations of existing facilities. Local governments can apply for these grants, which require a dollar-for-dollar match, to help achieve their community's recreational goals.

### **Sales Tax Increases**

Sales tax can be an effective tool for funding infrastructure projects by providing a steady stream of revenue that can be allocated to various public works. When implemented, a small percentage of sales tax is added to the cost of goods and services purchased within a specific area. This additional revenue is then earmarked for infrastructure improvements. By spreading the cost across all consumers, including residents and visitors, sales tax ensures that everyone who benefits from the infrastructure contributes to its maintenance and development. This funding method can help communities address critical infrastructure needs without relying solely on property taxes or state and federal funding, making it a versatile and community-driven approach to public investment.

## Developer Contributions

Developer contributions to infrastructure, often called development contributions or infrastructure contributions, are payments made by developers to help fund the infrastructure needed to support new developments. These contributions can take several forms, including monetary payments, providing land, or constructing infrastructure directly (“works-in-kind”). The funds collected from these contributions are typically used for essential infrastructure such as roads, water and drainage systems, parks, schools, and community facilities, helping ensure that new developments are well-integrated into existing communities and have the necessary services and amenities. The process usually involves local councils or planning authorities determining the infrastructure needs based on projected growth and development plans. Developers are then required to contribute a fair share towards these costs, which helps mitigate their developments’ impact on the community.

Funding Source	Application Window	Eligible Project Phases	Minimum Required Match from Town	Minimum Award Amount	Maximum Award Amount
NCDOT STIP	June–July	Construction	20%	N/A	N/A
ATIIP	March–June	Planning, Design, and Construction	20% (0% if Poverty Rate is >40%)	\$100,000 (Planning/ Design), \$15,000,000 (Construction)	N/A
RAISE	February	Planning, Design, and Construction	20% (maybe 0%, APP/HDC)	\$1,000,000	\$25,000,000
SS4A	March	Planning, Design, and Construction	20%	\$100,000 (Planning), \$2,500,000 M (Construction)	\$1,000,000 (Planning) \$25,000,000
Community Charge Grant	November	Construction	0%	N/A	N/A
NC Recreational Trails Program	August	Acquisition	25%	\$10,000	\$100,000
NC PARTF	May	Acquisition	50%	N/A	\$500,000

Sales tax increases and developer contributions do not fit within the framework of this table. They can be implemented at any time by the Town itself.

## Phasing Scenarios

Project phasing is possible in this project, although it may result in a loss of efficiency and an increase in cost. The loss of efficiency comes in the form of the duplication of mobilization, permitting, and other construction activities. However, phasing may be deemed necessary because of lack of sufficient funding or any other reason.

The first potential phasing plan would divide the project into 2 phases. The first phase would be constructing the path from West Town Way to East Buck Mountain Road. This first phase would serve many of the commercial properties along South Jefferson Avenue, passing through the densest portion of the corridor. It also ties to the existing sidewalk network in Downtown West Jefferson, giving West Jefferson pedestrians added connectivity and more places to travel. The second phase would be constructing the portion of the path from Beaver Creek School Road to West Town Way. This completes the project and fulfills its purpose of providing pedestrian access from Downtown West Jefferson to the grocery store and other commercial areas on the outer edge of town.

Another potential phasing concern results from the construction associated with R-5833, the intersection redesign at South Jefferson Avenue and Beaver Creek School Road. This multimillion-dollar project will likely significantly impact the current layout of the intersection, and as of the date of this report, it is unknown when the project will be constructed. This phasing suggestion is subject to change as plans regarding the intersection redesign change.



# Kimley»»Horn

Expect More. Experience Better.



# Appendix A: Opinions of Probable Construction Cost

## West Jefferson Multi-Use Path Feasibility Study

Project Location: West Jefferson, NC

Project Description: Multi-Use Path

Client: Town of West Jefferson

Client Project No. 011036735

### ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - FEASIBILITY

SIDEWALK ALT 1					
Section	Item Description	Quantity	Unit	Unit Price	Cost
800	MOBILIZATION (10%)	1	LS	\$ 100,480.00	\$ 100,480.00
SP	COMPREHENSIVE GRADING (5%)	1	LS	\$ 50,240.00	\$ 50,240.00
848	4" CONCRETE SIDEWALK	4500	SY	\$ 60.00	\$ 270,000.00
SP	RELOCATE COMMERCIAL SIGNAGE	12	EA	\$ 2,500.00	\$ 30,000.00
846	2'-6" CONCRETE CURB & GUTTER	470	LF	\$ 62.00	\$ 29,140.00
848	CONCRETE CURB RAMPS	16	EA	\$ 4,000.00	\$ 64,000.00
848	6" CONCRETE DRIVEWAY	1900	SY	\$ 100.00	\$ 190,000.00
1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	290	LF	\$ 35.00	\$ 10,150.00
1515	RELOCATE FIRE HYDRANT	2	EA	\$ 7,500.00	\$ 15,000.00
1746	RELOCATE EXISTING SIGN	8	EA	\$ 400.00	\$ 3,200.00
455	PRECAST GRAVITY RETAINING WALL	2350	SF	\$ 135.00	\$ 317,250.00
1510	GUY RELOCATION	1	EA	\$ 1,000.00	\$ 1,000.00
1510	UTILITY RELOCATION	5	EA	\$ 15,000.00	\$ 75,000.00
SP	EROSION CONTROL (5%)	1	LS	\$ 50,240.00	\$ 50,240.00
SP	STORM DRAINAGE (5%)	1	LS	\$ 50,240.00	\$ 50,240.00
SP	TRAFFIC CONTROL (10%)	1	LS	\$ 100,480.00	\$ 100,480.00

SUBTOTAL \$1,356,420.00

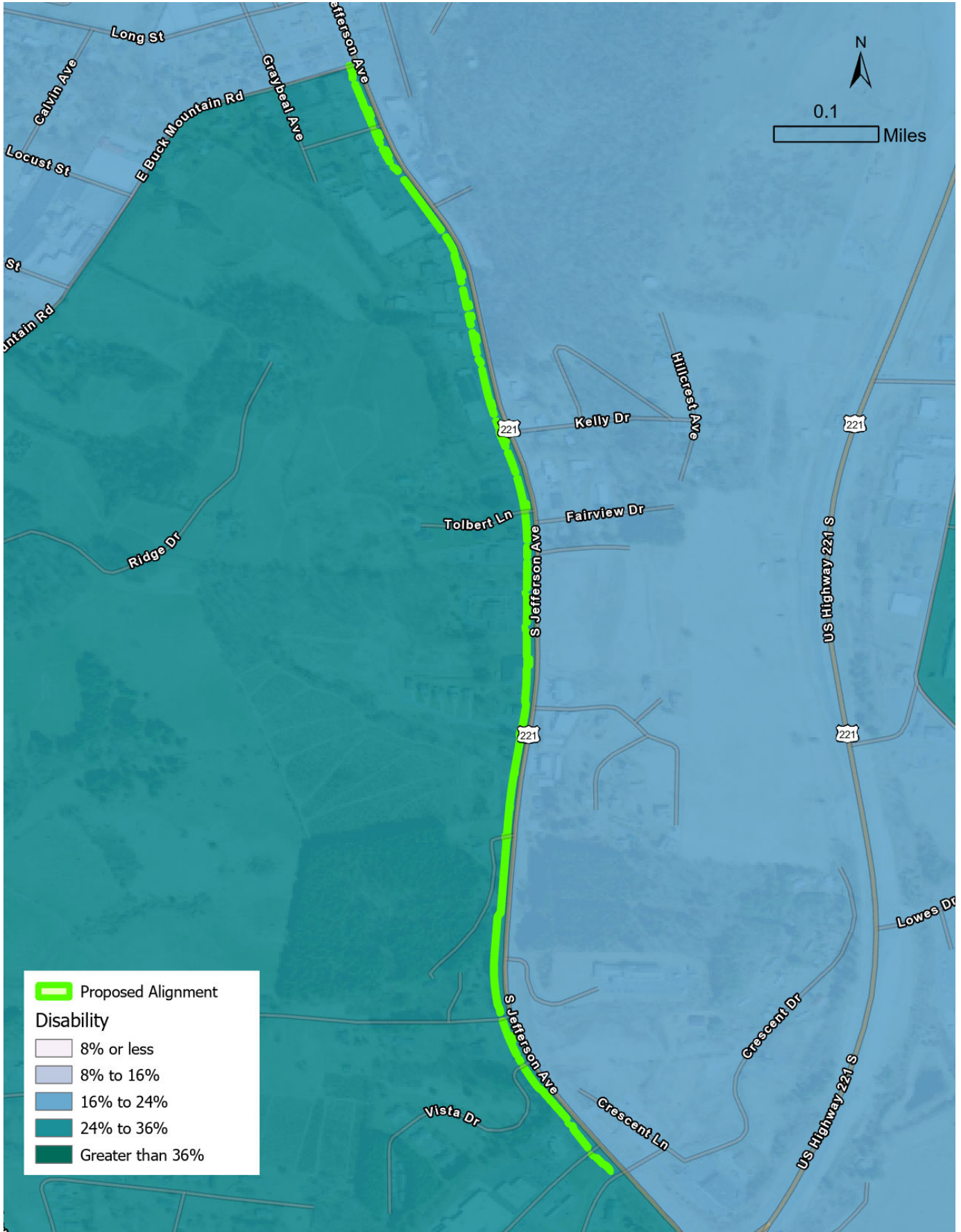
CONTINGENCY @ 30% \$406,926.00

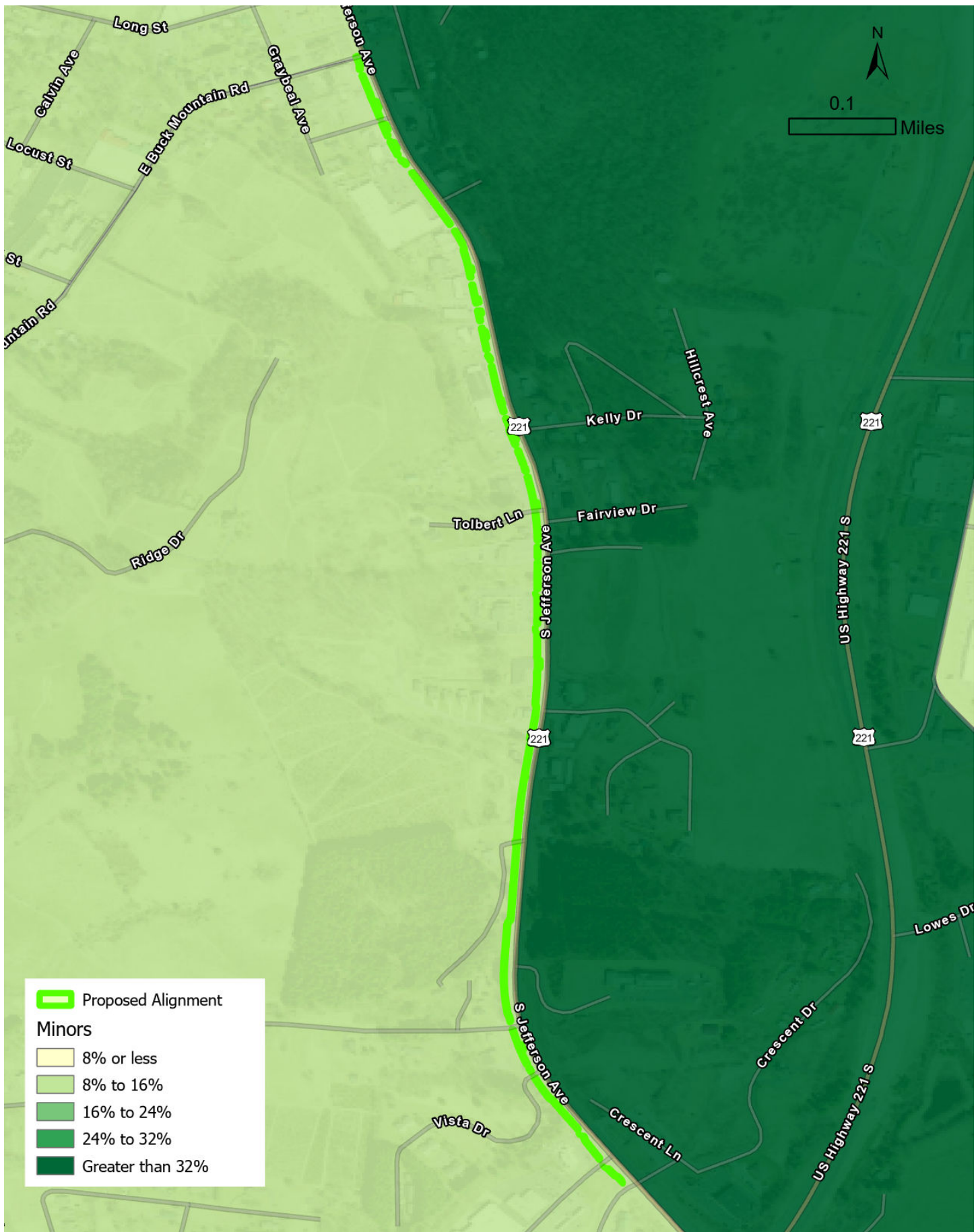
CONSTRUCTION COST SAY \$1,764,000

#### Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based Concept Exhibit by Kimley-Horn dated 08-25-2023 and are subject to revision prior to bid.
6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

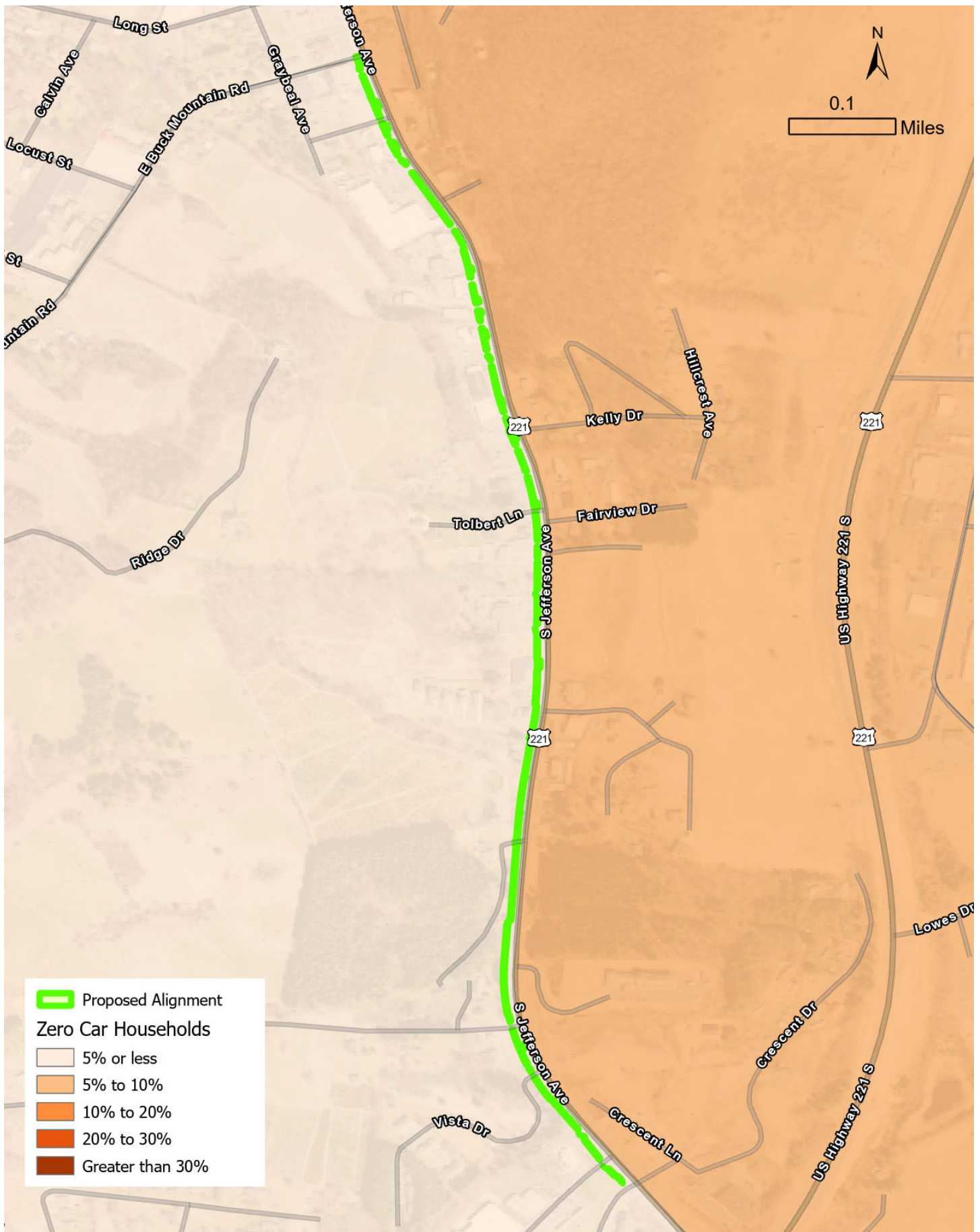
# Appendix B: Demographic Maps

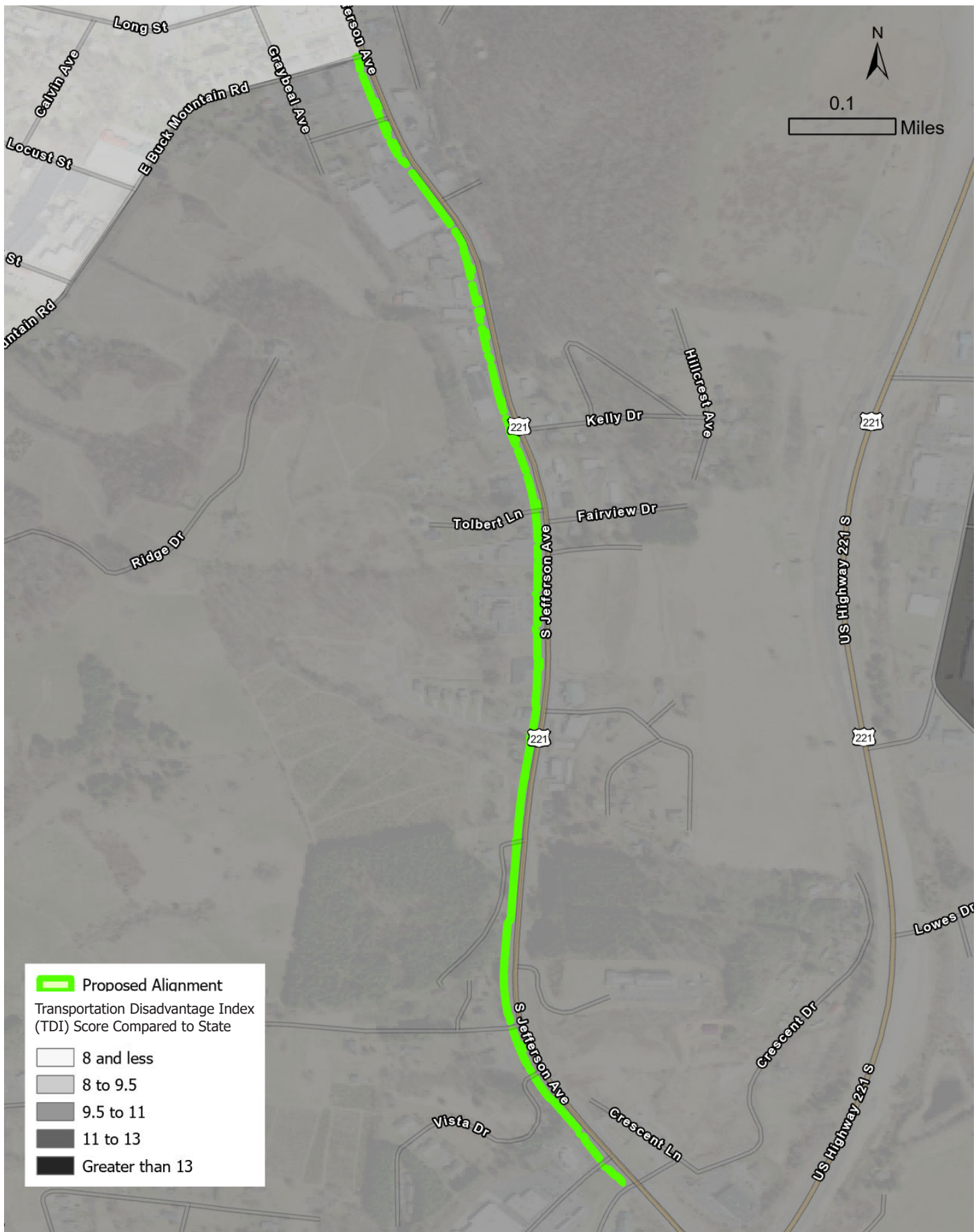




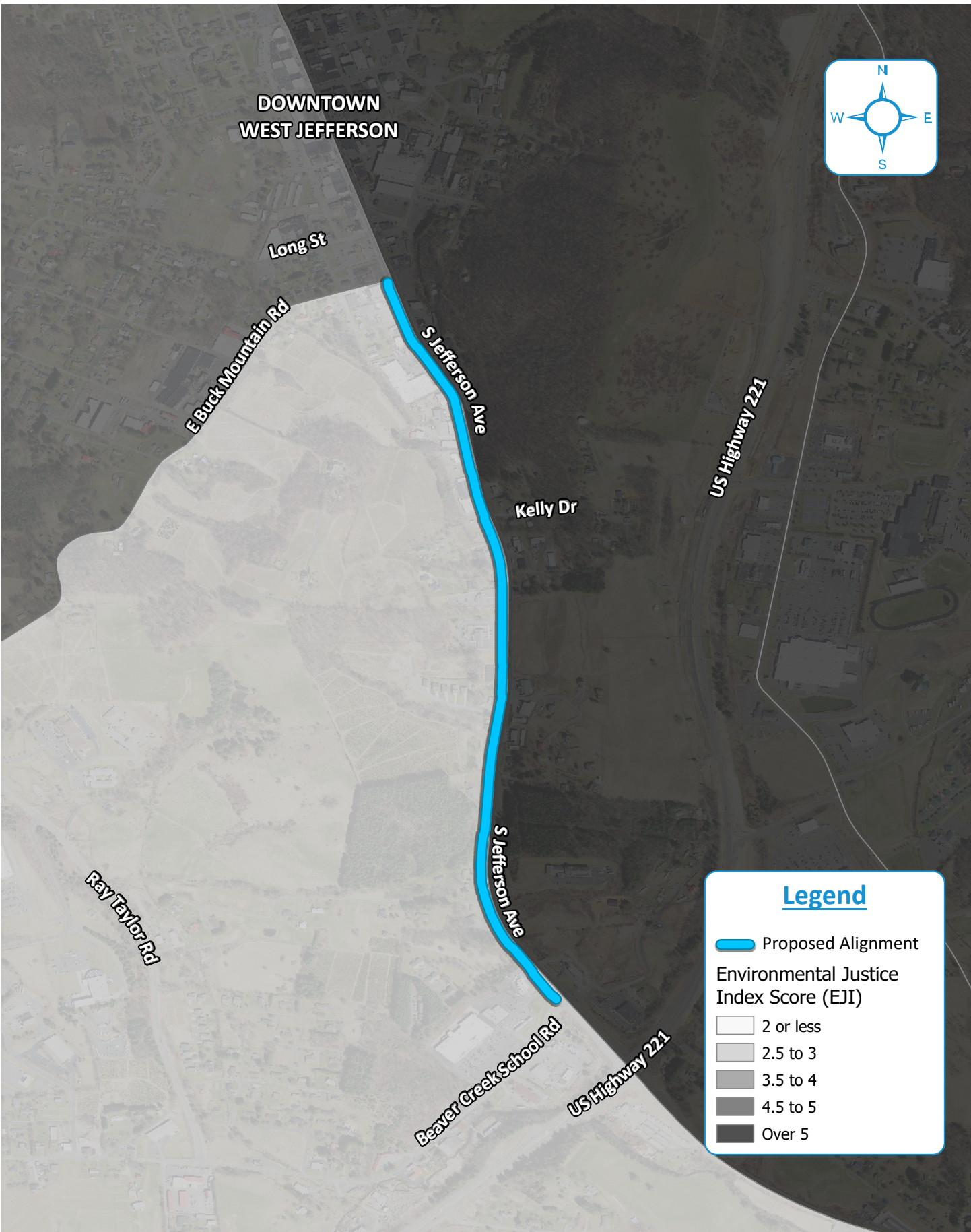


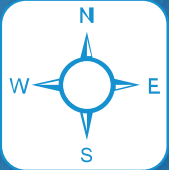
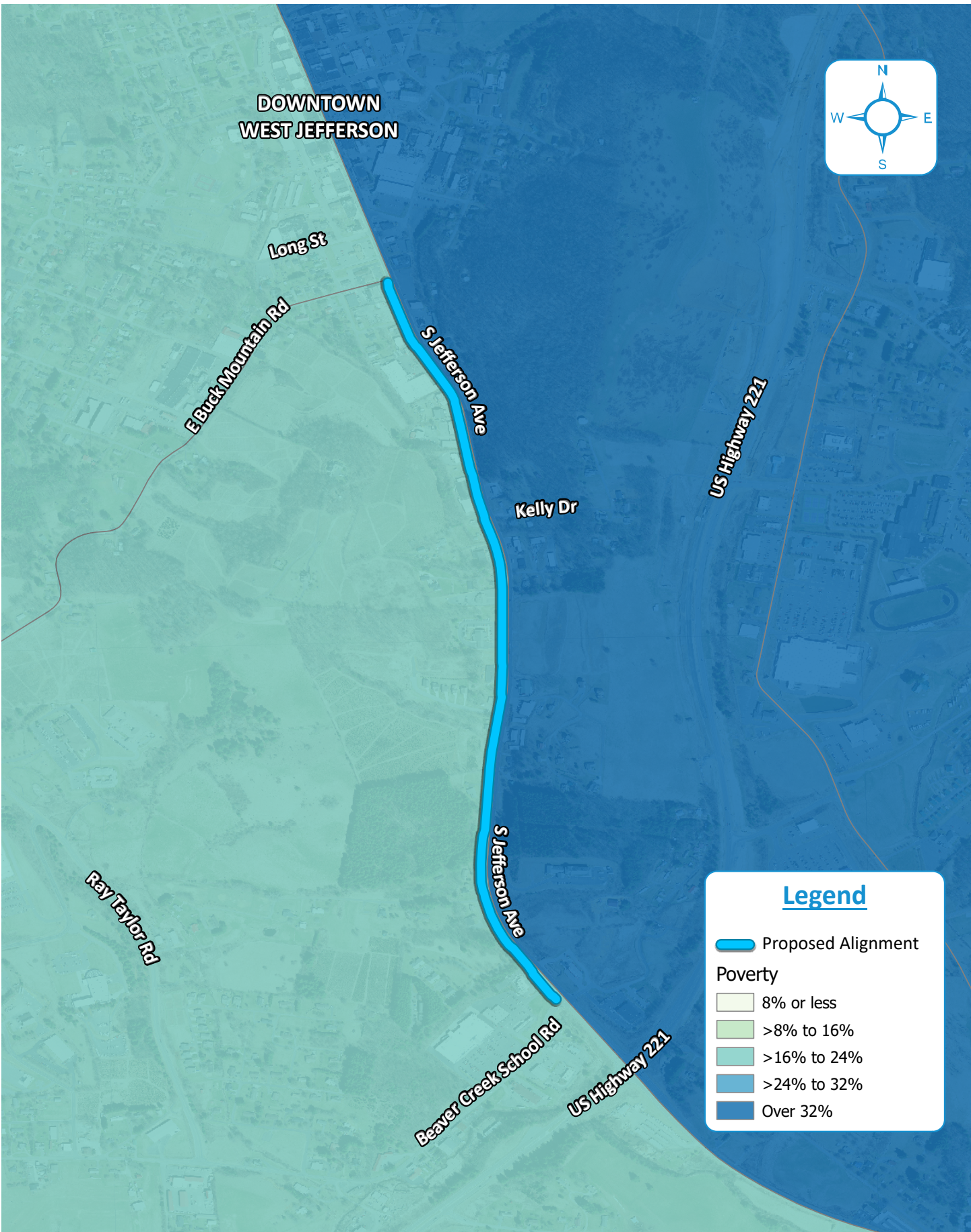
















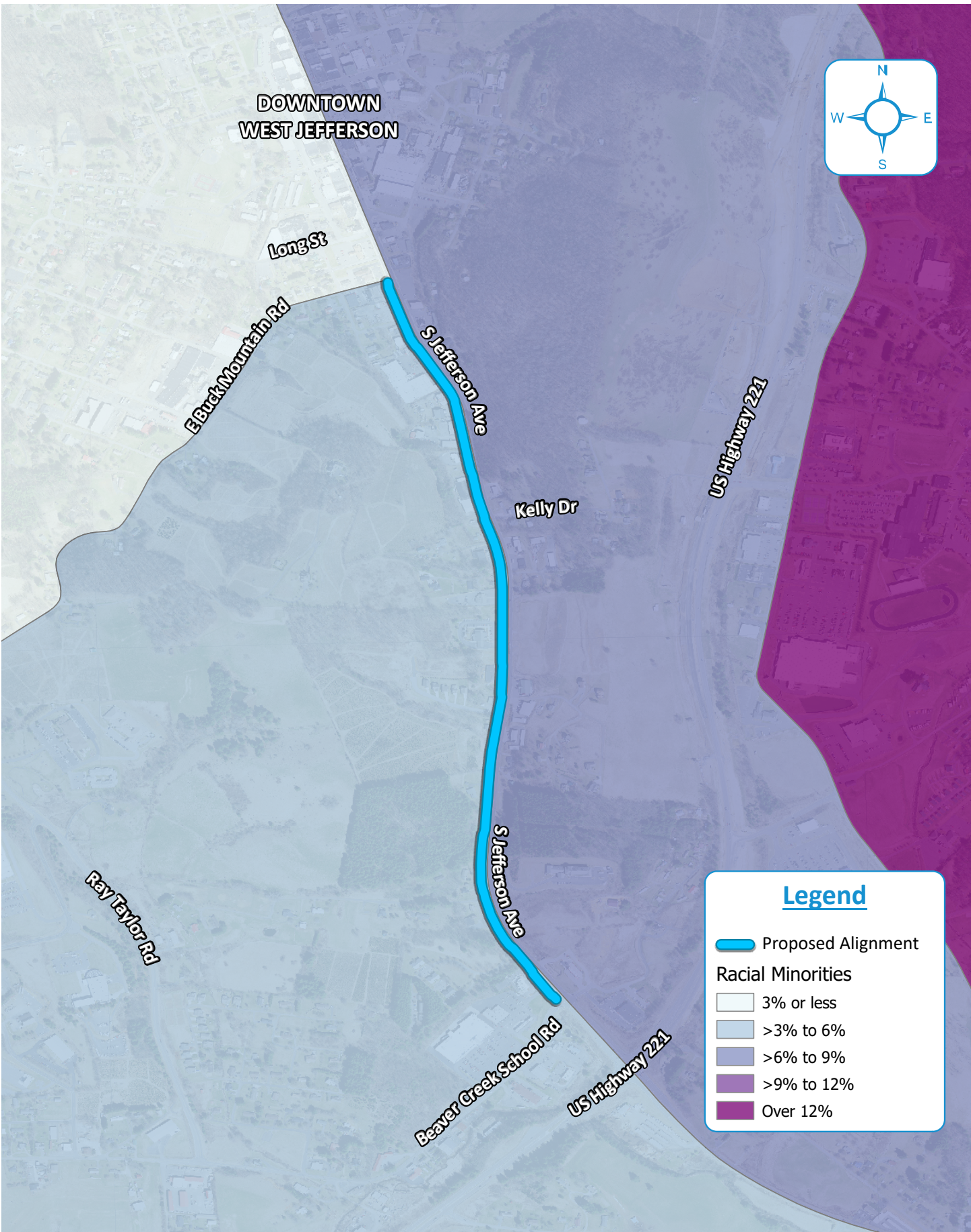


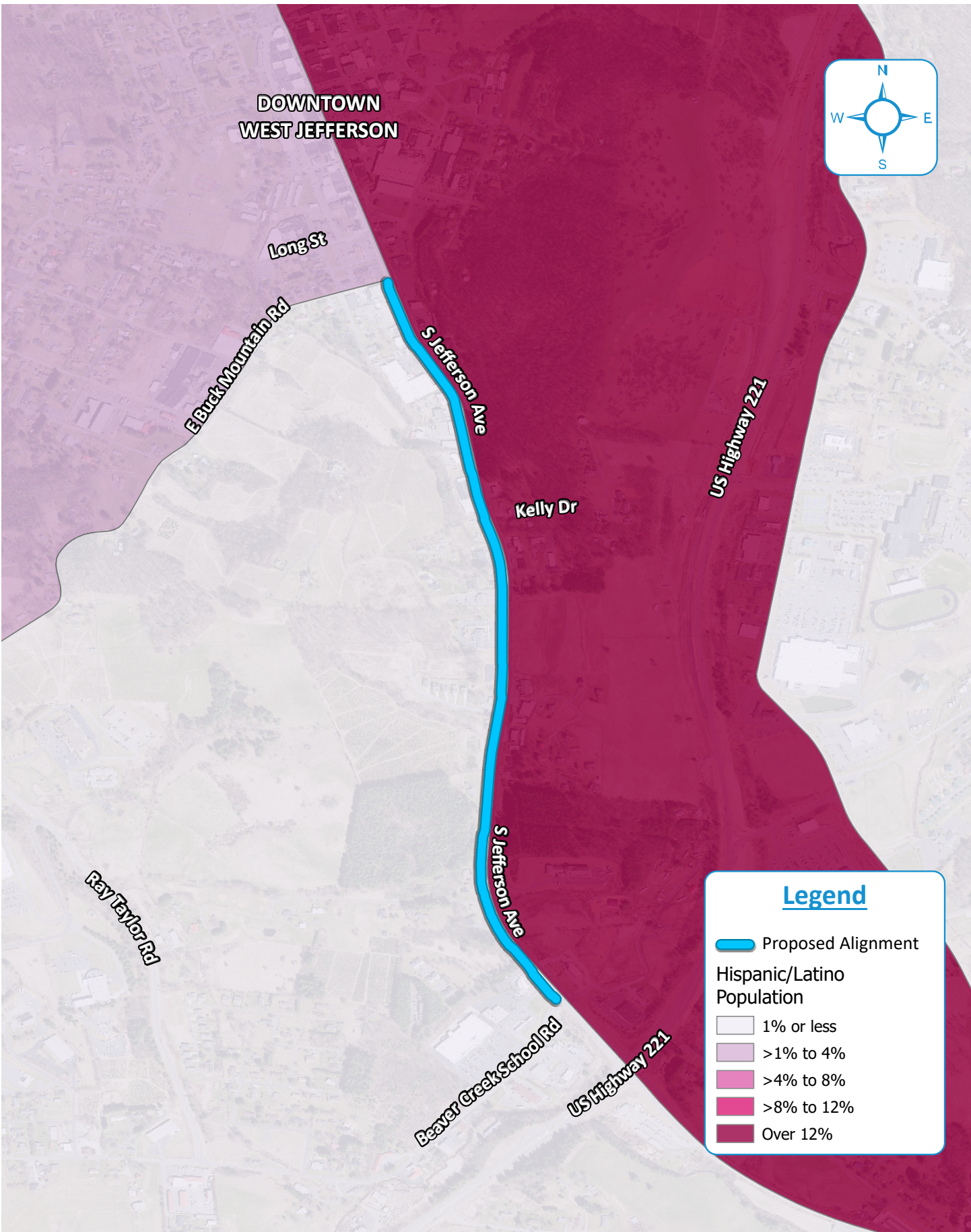
**Legend**

 Proposed Alignment

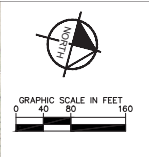
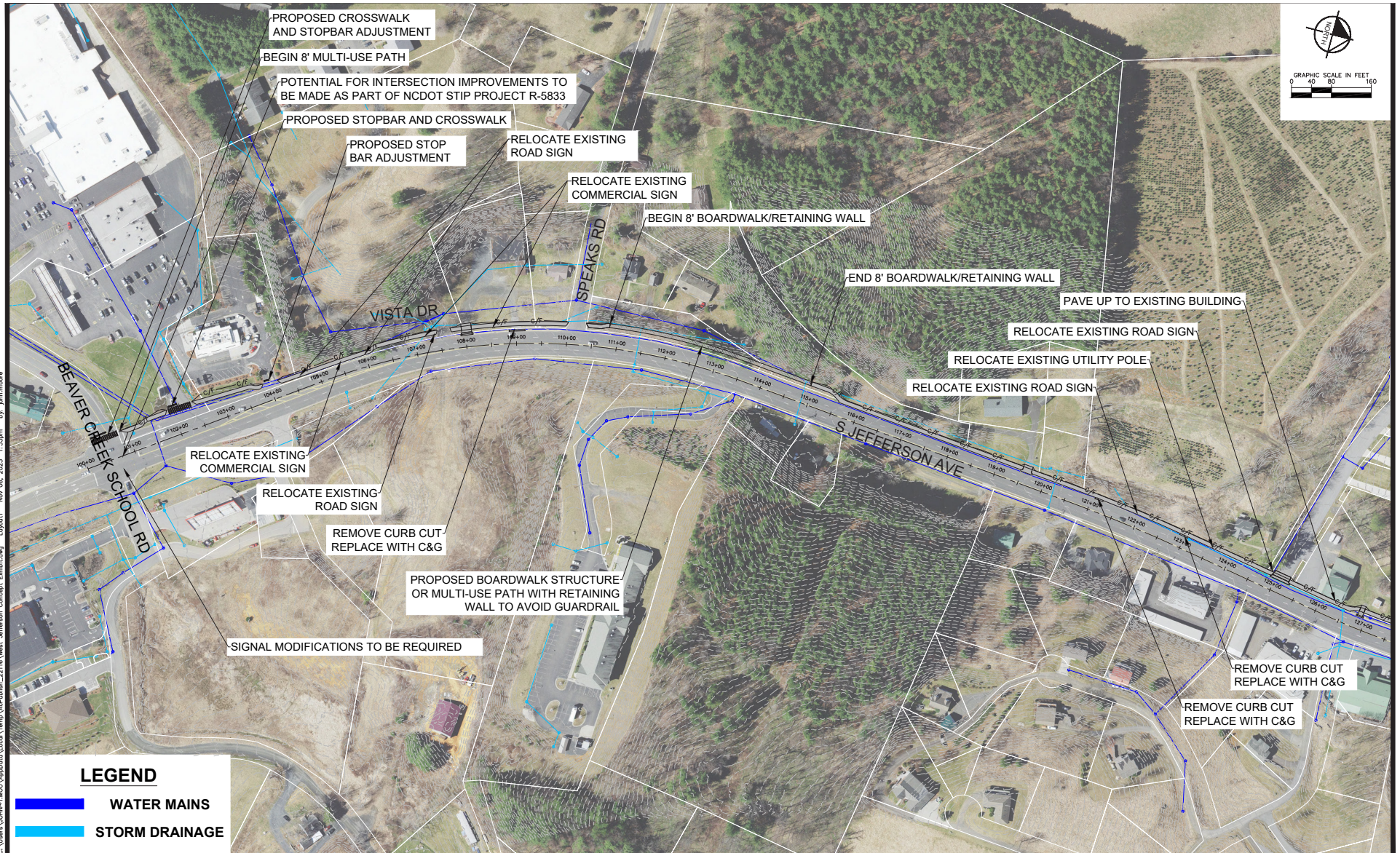
**Poverty**

-  8% or less
-  >8% to 16%
-  >16% to 24%
-  >24% to 32%
-  Over 32%





# Appendix C: West Jefferson Sidewalk Exhibit

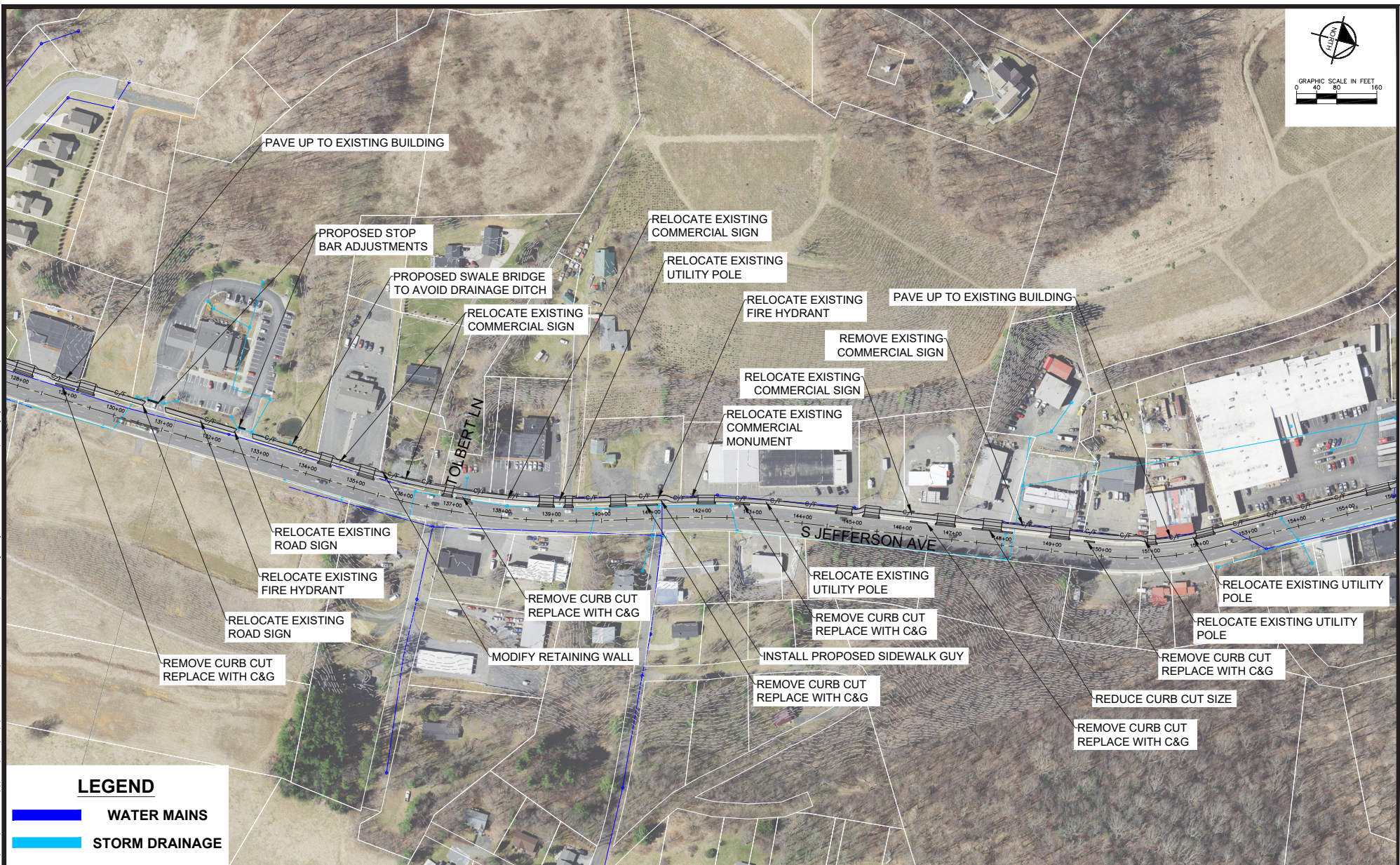
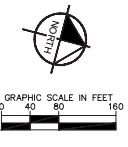


Drawing name: C:\Users\johnd... \Temp\MapData\Local\MapData\22118\West Jefferson Concept Exhibit.dwg Layout1 Nov 06, 2023 11:30am by: jhnmoores

**WEST JEFFERSON SIDEWALK EXHIBIT**  
DATE: 11-6-2023

SHEET 1 OF 3 **Kimley»Horn** NO LICENSE # 0110 200 SOUTH TRYON STREET, SUITE 200 CHARLOTTE, NORTH CAROLINA 28202 PHONE 704.333.9191

Drawing name: C:\Users\jwhorn-1\OneDrive\AppData\Local\Temp\AsPublish\_22116\West\_Jefferson\_Concept\_Exhibit.dwg  
Layout2 Nov 06, 2023 1:35pm by: jwhorn



PAVE UP TO EXISTING BUILDING

PROPOSED STOP BAR ADJUSTMENTS

PROPOSED SWALE BRIDGE TO AVOID DRAINAGE DITCH

RELOCATE EXISTING COMMERCIAL SIGN

RELOCATE EXISTING COMMERCIAL SIGN

RELOCATE EXISTING UTILITY POLE

RELOCATE EXISTING FIRE HYDRANT

PAVE UP TO EXISTING BUILDING

REMOVE EXISTING COMMERCIAL SIGN

RELOCATE EXISTING COMMERCIAL SIGN

RELOCATE EXISTING COMMERCIAL MONUMENT

RELOCATE EXISTING ROAD SIGN

RELOCATE EXISTING FIRE HYDRANT

RELOCATE EXISTING ROAD SIGN

REMOVE CURB CUT REPLACE WITH C&G

REMOVE CURB CUT REPLACE WITH C&G

MODIFY RETAINING WALL

REMOVE CURB CUT REPLACE WITH C&G

REMOVE CURB CUT REPLACE WITH C&G

INSTALL PROPOSED SIDEWALK GUY

RELOCATE EXISTING UTILITY POLE

RELOCATE EXISTING UTILITY POLE



RELOCATE EXISTING UTILITY POLE

REMOVE CURB CUT REPLACE WITH C&G

REDUCE CURB CUT SIZE

REMOVE CURB CUT REPLACE WITH C&G

**LEGEND**

-  WATER MAINS
-  STORM DRAINAGE

**WEST JEFFERSON SIDEWALK EXHIBIT**

DATE: 11-6-2023

SHEET 2 OF 3





## Appendix D: Public Survey Results

# West Jefferson Sidewalk Feasibility Study Public Survey

### Project Engagement

VIEWS

106

PARTICIPANTS

23

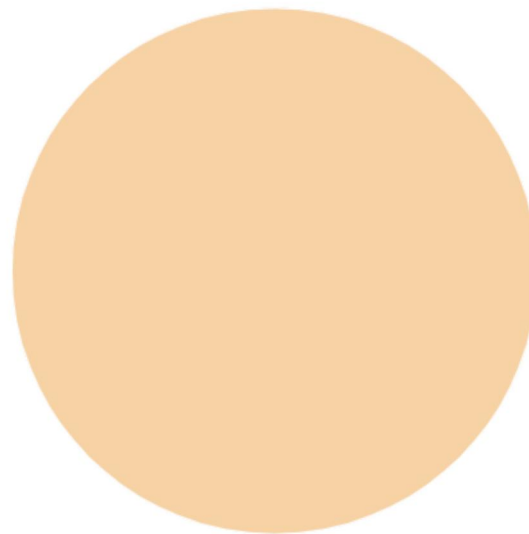
RESPONSES

256

COMMENTS

8

\* Do you have access to a personal vehicle at least most of the time?



100% Yes

19 respondents

No data to display...

No data to display...

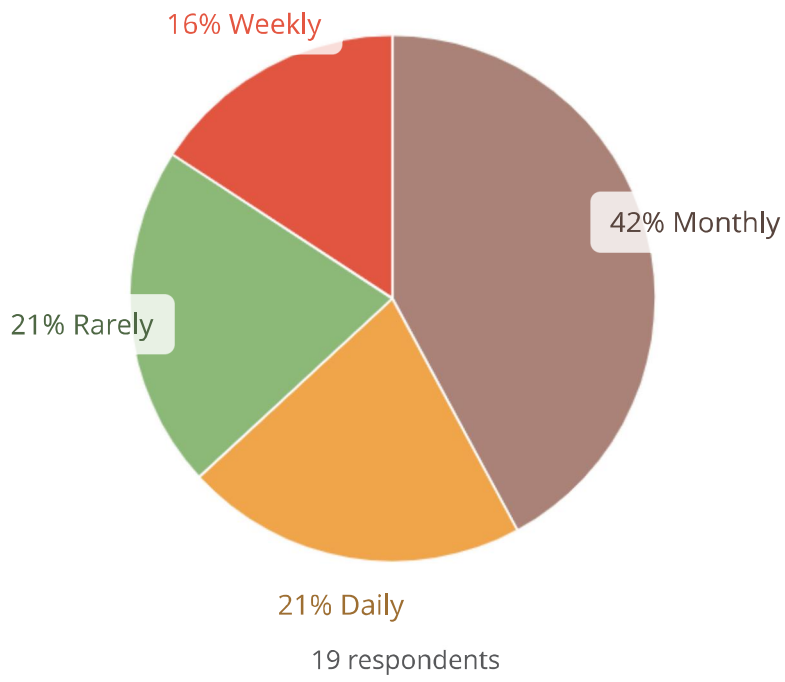
If you responded no to question 1, how do you usually get around?

n.a  
4 months ago

n/a  
4 months ago

n/a  
4 months ago

\* How often do you bike, walk, or roll around West Jefferson?

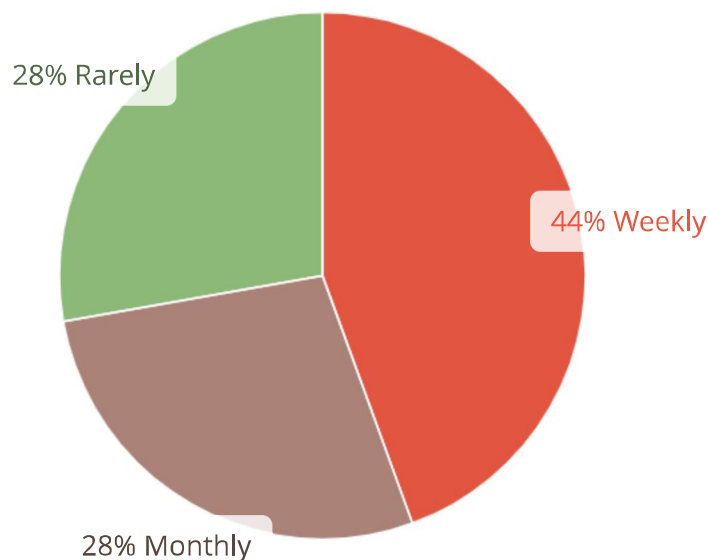


If you walk, bike, or roll, what is the purpose/where are you going? **Drag your choices into the box**

40%	Work	Rank: 1.33	6 ✓
73%	Access destinations like shopping, groceries, etc.	Rank: 1.82	11 ✓
73%	Exercise	Rank: 2.18	11 ✓
40%	No particular reason	Rank: 2.67	6 ✓
20%	Medical-related appointments and destinations	Rank: 3.67	3 ✓
20%	Other	Rank: 3.67	3 ✓

15 Respondents

\* If a greenway/trail system was available in the study area as shown on exhibit above, how often would you use it?



18 respondents

\* Which destinations around West Jefferson are most important to access?

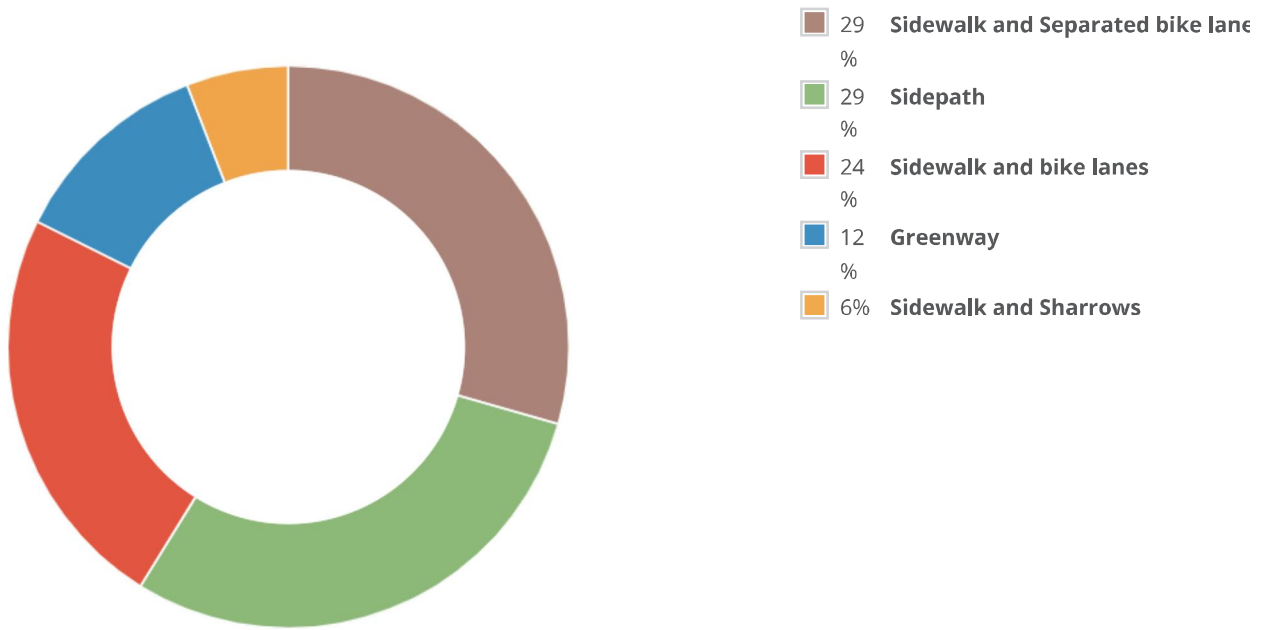
76%	Grocery Stores	13 ✓
53%	Work	9 ✓
53%	Shopping	9 ✓
47%	Parks/Community Amenities	8 ✓
41%	Medical	7 ✓
18%	School	3 ✓
12%	Social Services	2 ✓
6%	Other	1 ✓

17 Respondents

\* How important are greenways, sidewalks, bike lanes, and other multimodal infrastructure to you?



\* Which facility type do you prefer when walking or biking in West Jefferson?



17 respondents

\* Which criteria are most important when considering a route for the trail?

59%	Safety: routes that minimize crossings with roadways, driveways, routes that are more visible	10 ✓
53%	Connectivity: prioritizing connections to existing sidewalks, bike lanes, parks, schools, trails, and neighborhoods	9 ✓
47%	User experience: amenities such as separation from roadway, shade/tree cover, slopes, scenery, scenic areas	8 ✓
29%	Cost: influenced by factors including land acquisition, environmental impacts, bridge crossings, trail/path length and surface	5 ✓
24%	Environment: routes that have less environmentally-damaging impacts (i.e. wetlands, streams, tree canopy)	4 ✓
18%	Ease of implementation: select the alternatives that allow the path to be incorporated the soonest. This can include cost, property acquisition, and environmental impacts.	3 ✓
18%	Equity: prioritizing connections to low-income and historically underserved/underfunded communities	3 ✓
12%	Property Acquisition: alternatives that prioritize utilizing existing ROW, easements, and publicly owned property	2 ✓
0%	Other	0 ✓

17 Respondents

Do you have any other comments?

Creating safe sidewalks and biking routes will create a safe place for people to walk/vrun/bike, improvinprove or local health markers, makes a away for people to get to restaurants, this creates a safe way for people to go to a grocery store for those with lower economic abilities, we have a large population of people who are into the environment and being outdoors so it's creating another form of safe recreation for locals and bring more people to our area.

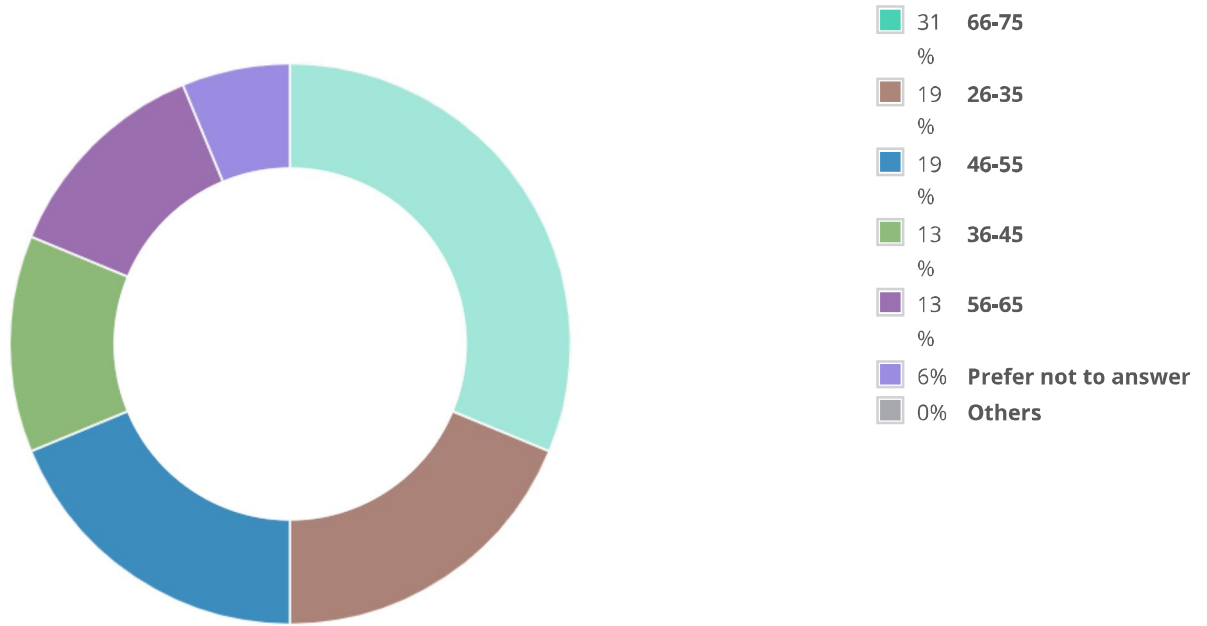
4 months ago

What street do you live on?

NC HWY 194 south

4 months ago

### What is your age?



16 respondents

### What is your race/ethnicity?

88%	White	15 ✓
12%	I prefer not to answer	2 ✓
0%	Black or African-American	0 ✓
0%	Hispanic, Latino, or Spanish	0 ✓
0%	Asian	0 ✓
0%	American Indian or Alaska Native	0 ✓
0%	Native Hawaiian or Other Pacific Islander	0 ✓
0%	Other	0 ✓

17 Respondents