Town of Mars Hill
BICYCLE + PEDESTRIAN PLAN

Town Council Presentation

February 3, 2025

Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION

McAdams

Image credit: Appily

PROJECT OVERVIEW

PLAN VISION

FEB - MAR 2024

KICK-OFF MEETING
COMMUNITY ENGAGEMENT PLAN
DATA GATHERING
PLAN + POLICY REVIEW

EXISTING CONDITIONS

MAR - JUNE 2024

SITE VISIT + FIELD WORK
DEMOGRAPHIC ANALYSIS
MAPPING ANALYSIS
STEERING COMMITTEE MTG.
COMMUNITY SURVEY

PLAN RECOMMENDATIONS

JUNE - AUG 2024

MULTIMODAL NETWORK
TYPICAL CROSS SECTIONS
INTERSECTION TREATMENTS
POLICIES + PROGRAMS
STEERING COMMITTEE MTG.
PUBLIC MEETING

IMPLEMENTATION + FINAL STUDY

AUG 2024 - FEB 2025

PLAN DEVELOPMENT
PROJECT PRIORITIZATION
CUT SHEETS
IMPLEMENTATION + FUNDING
STEERING COMMITTEE MTGS.
DRAFT PLAN + ADOPTION

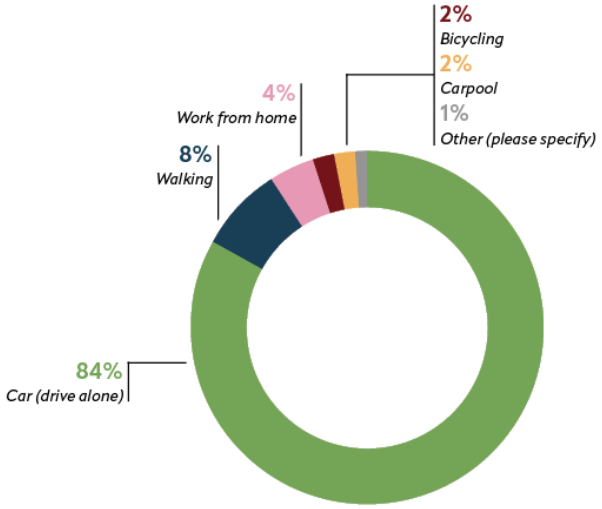
STEERING COMMITTEE

- Nathan Bennett, Town of Mars Hill
- Larry Davis, Town of Mars Hill
- Nicholas Honeycutt, Town of Mars Hill
- Chad Wilson, Town of Mars Hill
- Nathan Waldrup, Town of Mars Hill
- Alexius Farris/Bryan Lopez, NCDOT Integrated Mobility Division
- Hannah Smith, NCDOT Division 13
- Daniel Sellers, NCDOT
- Tristan Winkler, French Broad River Metropolitan Planning Organization (FBRMPO)
- Kaitland Finkle, Land of Sky Regional Council
- Grainger Caudle, Mars Hill University
- Allen Shelley, Mars Hill University
- Kevin Barnette, Mars Hill University
- Ryan Bell, Mars Hill University
- Brad Guth, Madison County
- Daniel Metcalf, Madison County
- Deana Stephens, Madison County
- Sherrye Perry, NC Senior Tarheel Legislature
- Larry Burda, Hot Springs Health Program
- Sebastian Dunn
- Lucy Pearson
- Bill Downey
- Meredith Doster
- Lee Hoffman
- Augusta Jenkins-Gladding

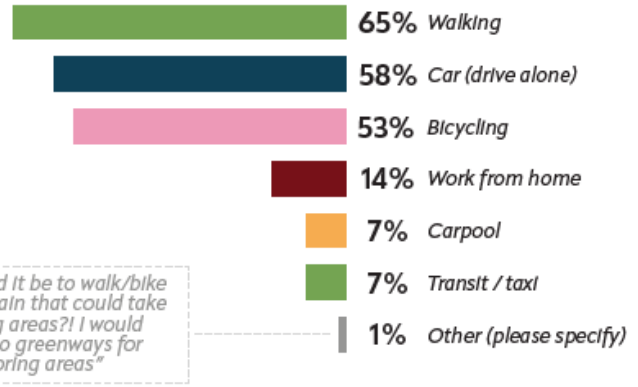
COMMUNITY SURVEY

May 02 – July 5, 2024
536 participants
408 comments

What is your primary mode of transportation?

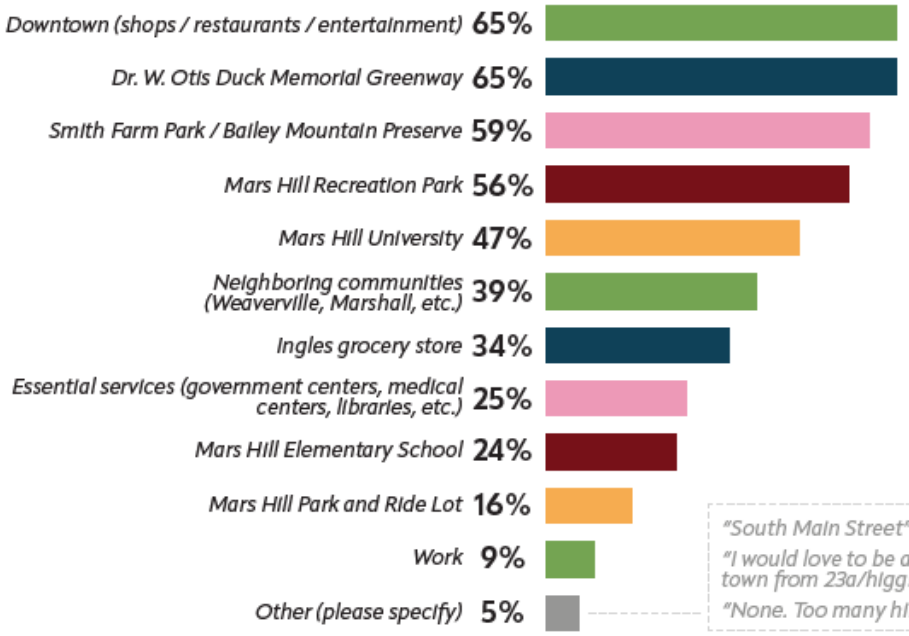


Consider your desired modes of transportation in the future. Which modes would you like to use?



"How great would it be to walk/bike to a public bus/train that could take us to neighboring areas?! I would also love access to greenways for biking to neighboring areas"

Which destinations would you like to walk or bike to in Mars Hill if bicycle and pedestrian facilities were improved?



"South Main Street"
"I would love to be able to bike into town from 23a/higgins branch area"
"None. Too many hills"

VISION STATEMENT

"The Town of Mars Hill is a livable community with an accessible and connected network of sidewalks, trails, and bicycle facilities where residents and visitors of all ages and abilities can safely and conveniently walk and bike to their destinations while enjoying mountain landscapes and small-town charm."

GOALS

SAFETY: Address safety concerns related to walking and biking in Mars Hill through the design and maintenance of multimodal facilities, and propose safety improvements at critical intersections, crossings, and corridors.

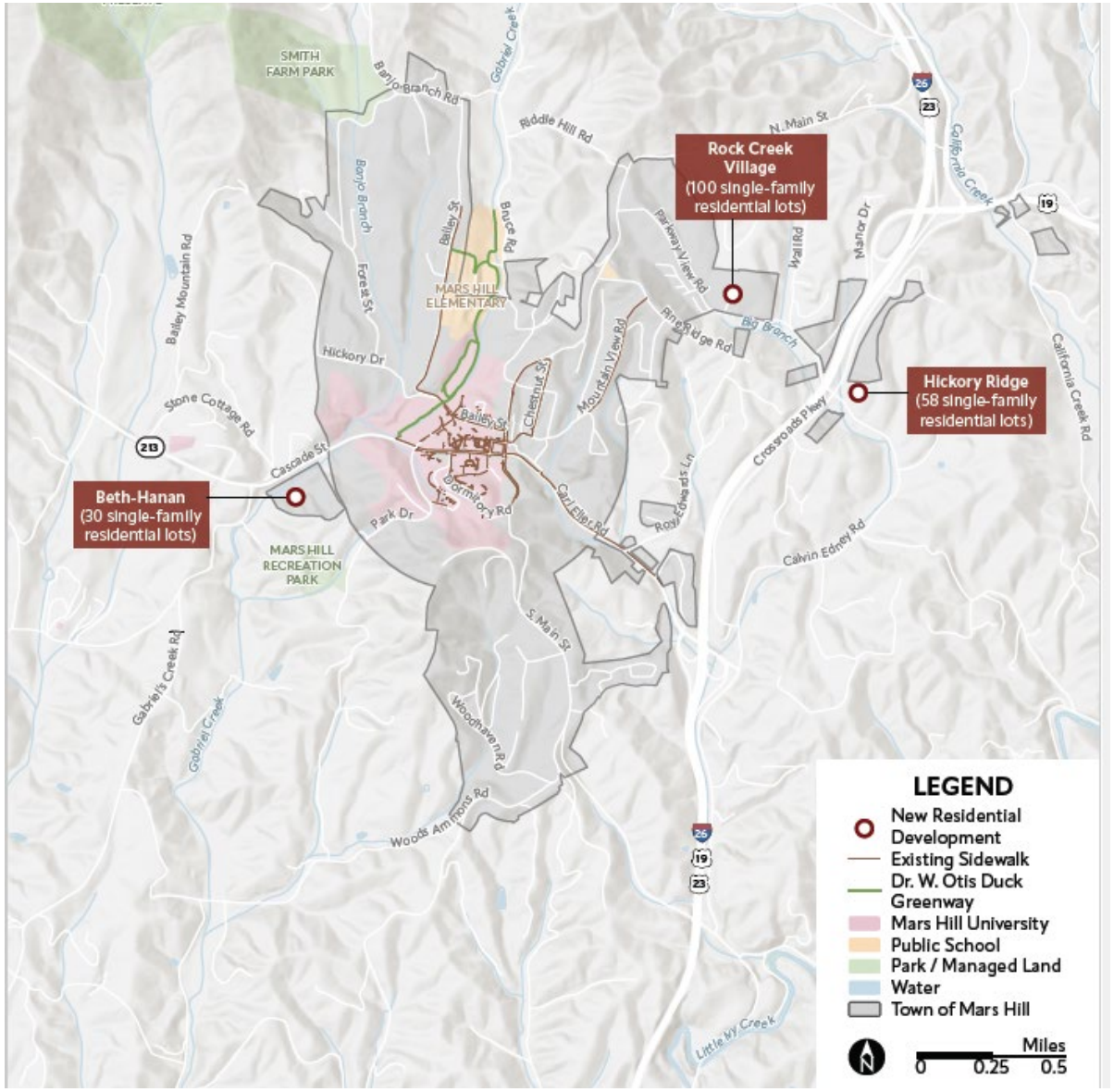
CONNECTIVITY: Provide seamless connections between existing multimodal facilities and destinations to support walking and biking in Mars Hill and establish links with neighboring communities in the greater Asheville region.

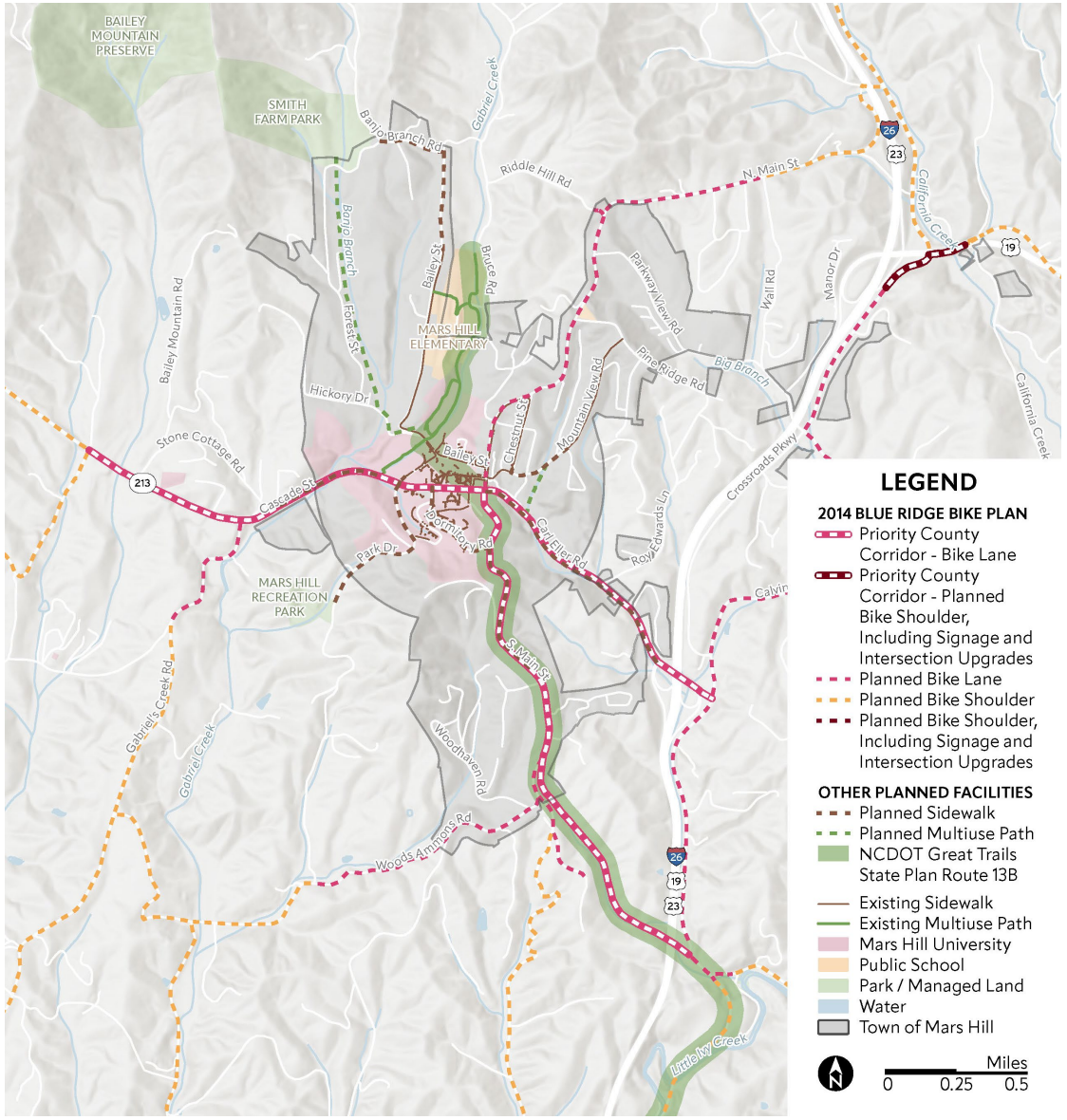
ACCESSIBILITY + EQUITY: Improve bicycle and pedestrian access to social and economic opportunities in Mars Hill via an active transportation network that comfortably accommodates users of all ages and abilities.

COMMUNITY: Emphasize Mars Hill's natural and cultural landscapes through active transportation facilities that create space for both residents and visitors to engage with the community and appreciate its offerings.

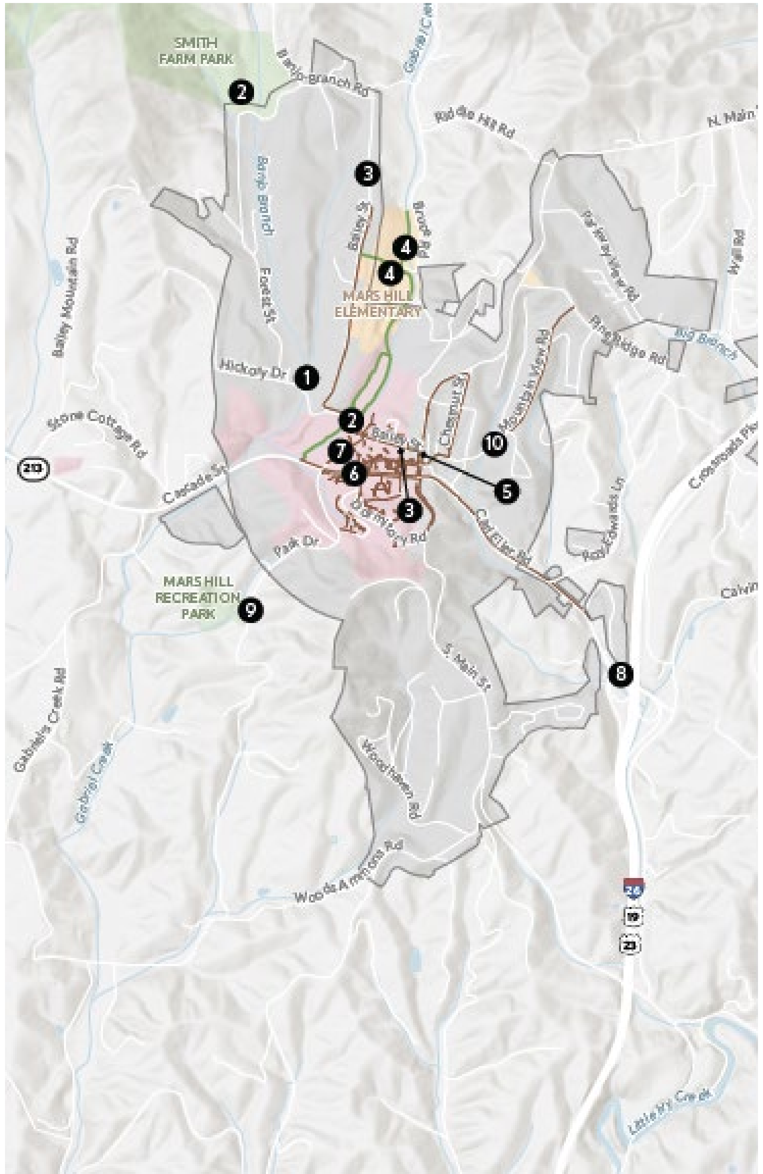
GROWTH: Support the provision of bicycle and pedestrian facilities within future development in Mars Hill, encouraging multimodal travel and sustainable growth patterns that contribute to the small-town charm of Mars Hill.

EXISTING CONDITIONS





SITE VISIT


SMITH FARM PARK
MARS HILL ELEMENTARY
MARS HILL RECREATION PARK
Banjo Branch Rd
Bailey Mountain Rd
Forest St
Hickory Dr
Stone Cottage Rd
Cascade St
Bailey St
Chestnut St
Mountain View Rd
Park Dr
S Main St
Woodhaven Rd
N Main
Big Branch
Calvin
Little Ivy Creek
1
2
3
4
5
6
7
8
9
10


25

OPPORTUNITIES

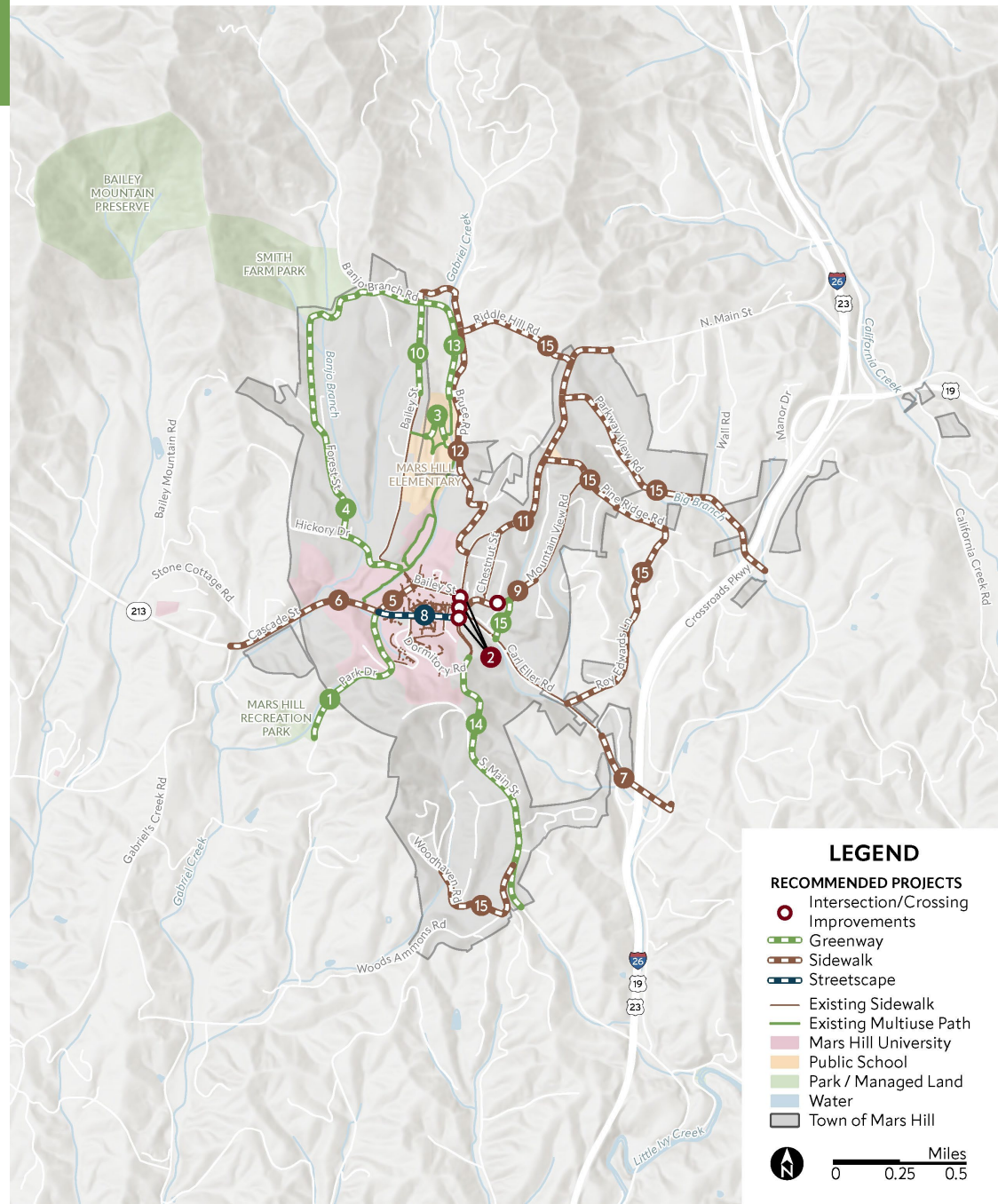
- Connect newer residential developments to the Town's existing bike/ped network, activity centers, parks, and employment
- Future development to add bicycle/pedestrian improvements along frontage and within development
- Leverage low traffic volumes for flexible facility design
- Strong destinations to anchor network development
- Well-established partnerships

CONSTRAINTS

- Steep slopes increase construction cost + complexity
  Mountain topography is not conducive to a traditional street grid which decreases connectivity and requires all users to travel on main collector streets
- Limited funding resources at the municipal level for large infrastructure projects

DRAFT BICYCLE + PEDESTRIAN NETWORK

1. Park Dr Sidepath
2. Main St Pedestrian Crossing Improvements
3. Otis Duck Greenway Realignment
4. Banjo Branch/Forest St Greenway to Smith Farm Park
5. Athletic St Sidewalk
6. NC-213 Sidewalk to Stone Cottage Rd/Beth-Hanan Community
7. Carl Eller Rd Sidewalk
8. Cascade St Traffic Calming and Streetscape
9. Mountain View Rd Sidewalk
10. Bailey St Sidepath
11. N. Main St Sidewalk Extension
12. Bruce Rd Sidewalk
13. Extension of Otis Duck Greenway
14. S. Main St Sidepath
15. Various Sidewalk and Greenway Projects

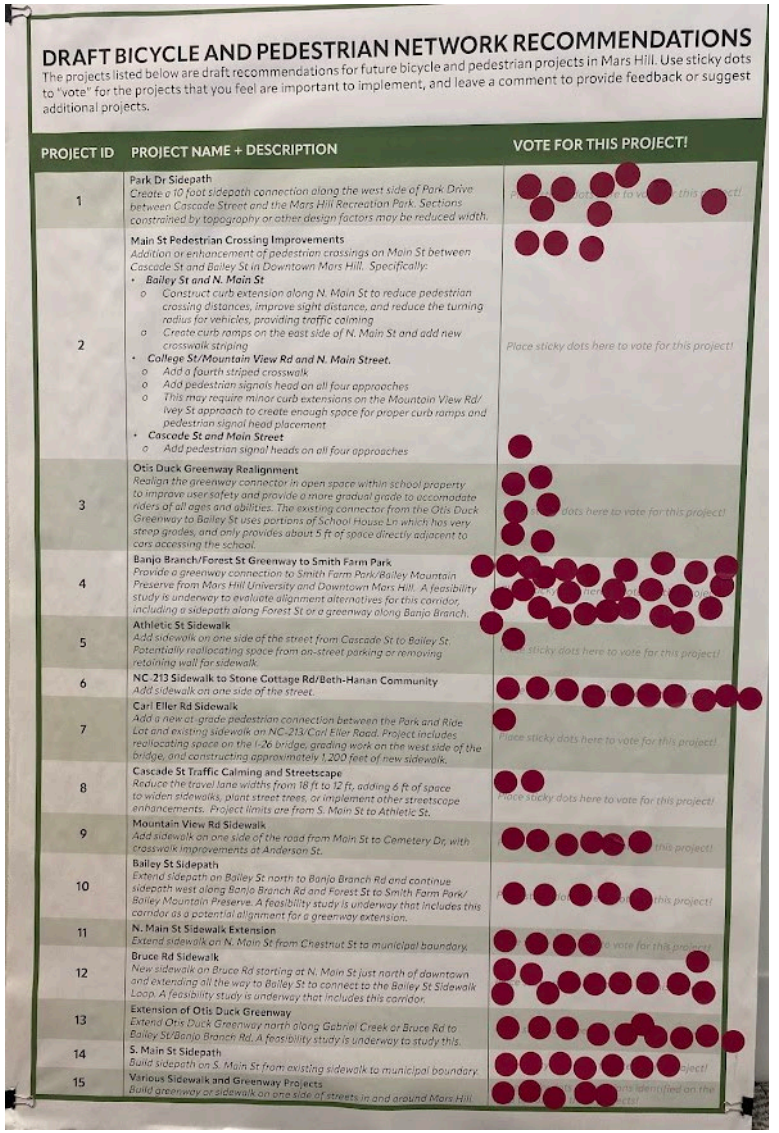


PUBLIC ENGAGEMENT

POP-UP EVENT

August 2, 2024, 5-8pm
First Friday in Downtown Mars Hill

- Overall enthusiasm/support for planning effort
- Lots of questions/interest in Banjo Branch Greenway and Otis Duck Greenway Realignment
- Safety concerns for pedestrians who currently walk along existing roads
- Suggestions to create a loop between #1 and #15; #1 and #6



DRAFT BICYCLE AND PEDESTRIAN NETWORK RECOMMENDATIONS

The projects listed below are draft recommendations for future bicycle and pedestrian projects in Mars Hill. Use sticky dots to "vote" for the projects that you feel are important to implement, and leave a comment to provide feedback or suggest additional projects.

PROJECT ID	PROJECT NAME + DESCRIPTION	VOTE FOR THIS PROJECT!
1	**Park Dr Sidepath** *Create a 10 foot sidepath connection along the west side of Park Drive between Cascade Street and the Mars Hill Recreation Park. Sections constrained by topography or other design factors may be reduced width.*	
2	**Main St Pedestrian Crossing Improvements** *Addition or enhancement of pedestrian crossings on Main St between Cascade St and Bailey St in Downtown Mars Hill. Specifically:* • ***Bailey St and N. Main St*** o *Construct curb extension along N. Main St to reduce pedestrian crossing distances, improve sight distance, and reduce the turning radius for vehicles, providing traffic calming* o *Create curb ramps on the east side of N. Main St and add new crosswalk striping* • ***College St/Mountain View Rd and N. Main Street.*** o *Add a fourth striped crosswalk* o *Add pedestrian signals head on all four approaches* o *This may require minor curb extensions on the Mountain View Rd/ Ivey St approach to create enough space for proper curb ramps and pedestrian signal head placement* • ***Cascade St and Main Street*** o *Add pedestrian signal heads on all four approaches*	Place sticky dots here to vote for this project!
3	**Otis Duck Greenway Realignment** *Realign the greenway connector in open space within school property to improve user safety and provide a more gradual grade to accomodate riders of all ages and abilities. The existing connector from the Otis Duck Greenway to Bailey St uses portions of School House Ln which has very steep grades, and only provides about 5 ft of space directly adjacent to cars accessing the school.*	
4	**Banjo Branch/Forest St Greenway to Smith Farm Park** *Provide a greenway connection to Smith Farm Park/Bailey Mountain Preserve from Mars Hill University and Downtown Mars Hill. A feasibility study is underway to evaluate alignment alternatives for this corridor, including a sidepath along Forest St or a greenway along Banjo Branch.*	
5	**Athletic St Sidewalk** *Add sidewalk on one side of the street from Cascade St to Bailey St. Potentially reallocating space from on-street parking or removing retaining wall for sidewalk.*	
6	**NC-213 Sidewalk to Stone Cottage Rd/Beth-Hanan Community** *Add sidewalk on one side of the street.*	
7	**Carl Eller Rd Sidewalk** *Add a new at-grade pedestrian connection between the Park and Ride Lot and existing sidewalk on NC-213/Carl Eller Road. Project includes reallocating space on the I-26 bridge, grading work on the west side of the bridge, and constructing approximately 1,200 feet of new sidewalk.*	Place sticky dots here to vote for this project!
8	**Cascade St Traffic Calming and Streetscape** *Reduce the travel lane widths from 18 ft to 12 ft, adding 6 ft of space to widen sidewalks, plant street trees, or implement other streetscape enhancements. Project limits are from S. Main St to Athletic St.*	Place sticky dots here to vote for this project!
9	**Mountain View Rd Sidewalk** *Add sidewalk on one side of the road from Main St to Cemetery Dr, with crosswalk improvements at Anderson St.*	
10	**Bailey St Sidepath** *Extend sidepath on Bailey St north to Banjo Branch Rd and continue sidepath west along Banjo Branch Rd and Forest St to Smith Farm Park/ Bailey Mountain Preserve. A feasibility study is underway that includes this corridor as a potential alignment for a greenway extension.*	
11	**N. Main St Sidewalk Extension** *Extend sidewalk on N. Main St from Chestnut St to municipal boundary.*	
12	**Bruce Rd Sidewalk** *New sidewalk on Bruce Rd starting at N. Main St just north of downtown and extending all the way to Bailey St to connect to the Bailey St Sidewalk Loop. A feasibility study is underway that includes this corridor.*	
13	**Extension of Otis Duck Greenway** *Extend Otis Duck Greenway north along Gabriel Creek or Bruce Rd to Bailey St/Banjo Branch Rd. A feasibility study is underway to study this.*	
14	**S. Main St Sidepath** *Build sidepath on S. Main St from existing sidewalk to municipal boundary.*	
15	**Various Sidewalk and Greenway Projects** *Build greenway or sidewalk on one side of streets in and around Mars Hill.*	

RECOMMENDED BICYCLE + PEDESTRIAN NETWORK

1. Park Dr Sidepath
2. Main St Pedestrian Crossing Improvements
3. Otis Duck Greenway Realignment
4. Banjo Branch/Forest St Greenway to Smith Farm Park
5. Athletic St Sidewalk
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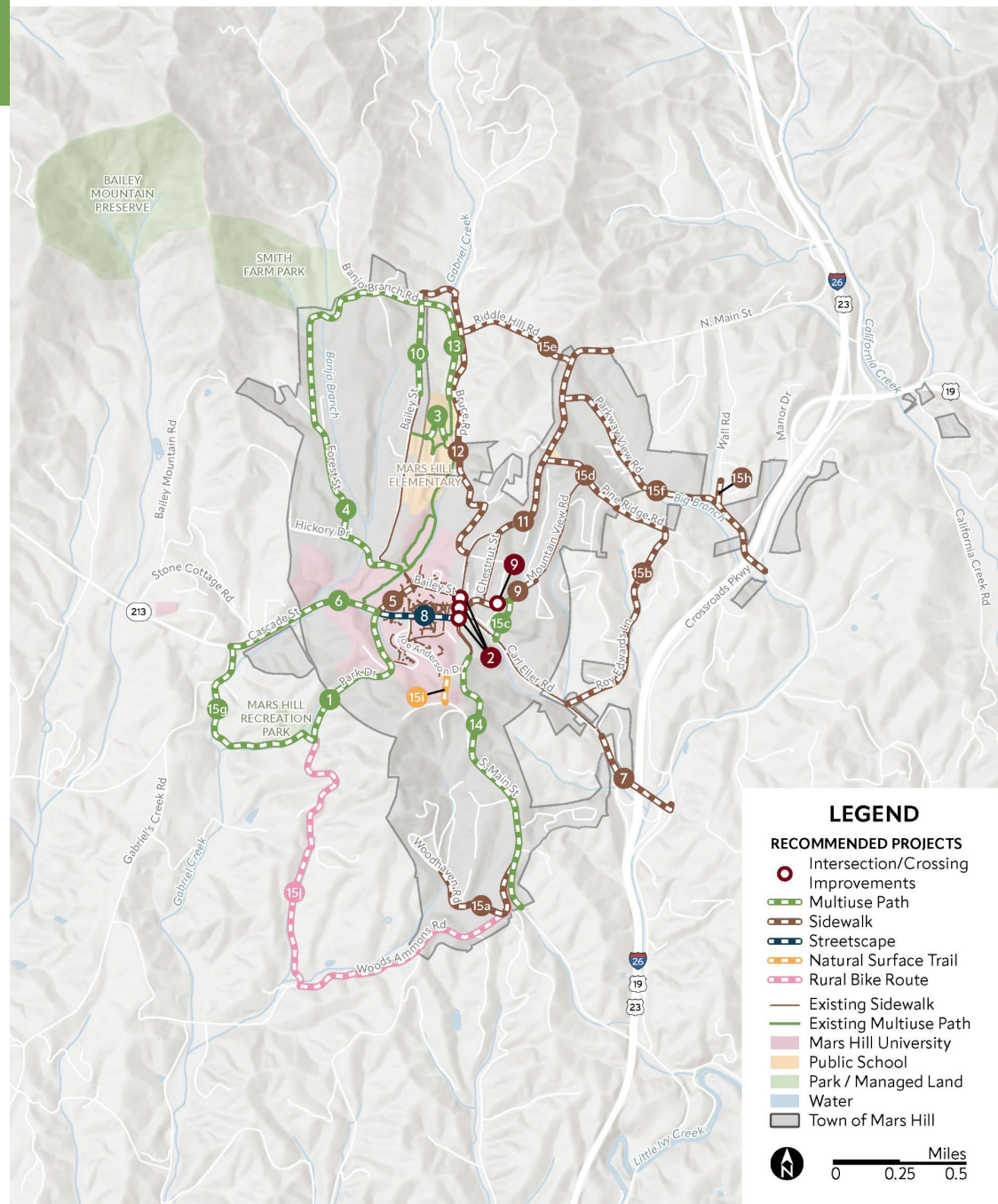
15. Various Bicycle and Pedestrian Projects



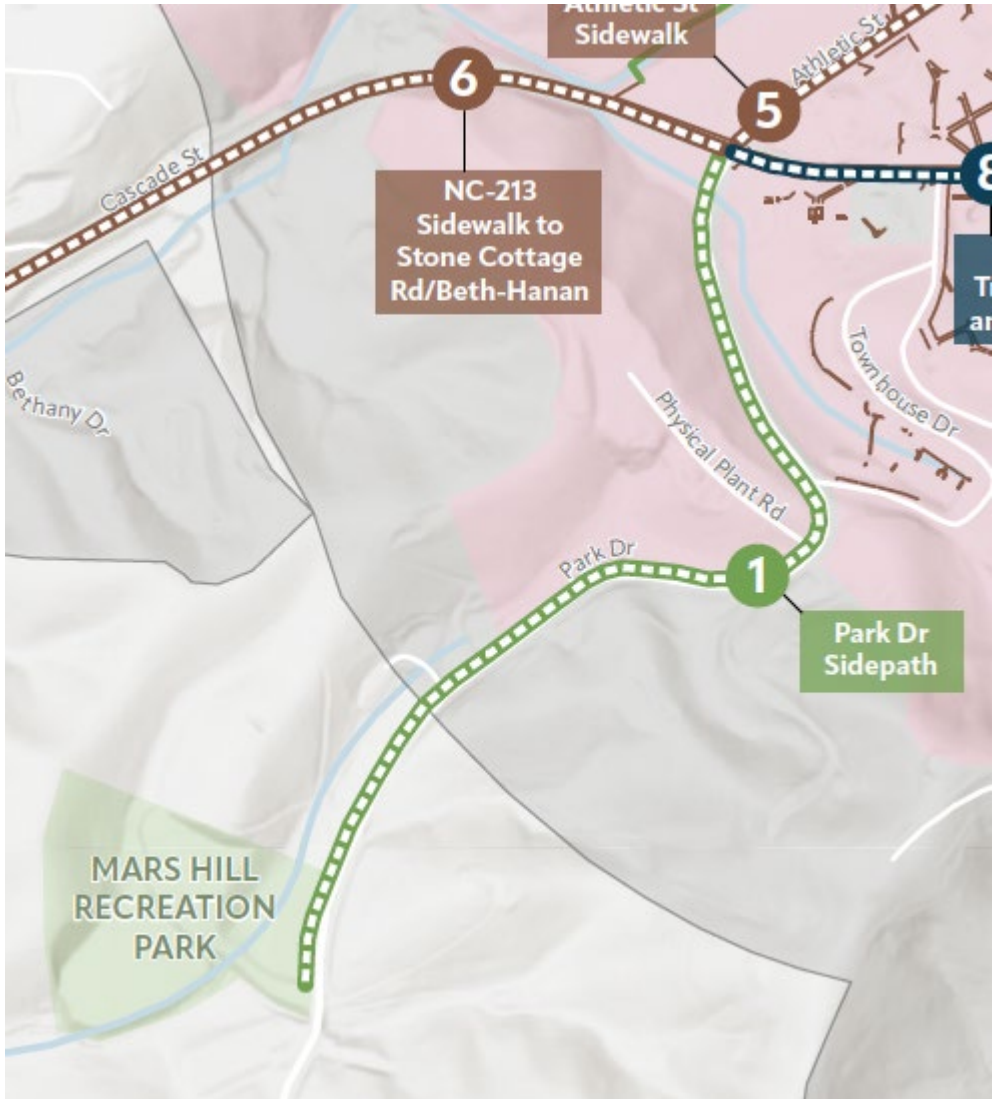
PROJECT PRIORITIZATION

#	Criteria	Description	Rank	Measurement	Points
Connectivity + Access (1)	**Connects to Activity Center**	Project provides a bicycle/pedestrian facility which creates or improves a connection to Downtown Mars Hill or Mars Hill University	High	Direct Connection	20
			Medium	Connection via existing network	10
			Low	No connection	0
	Connects to a Public Recreation Resource	Project provides a connection to a park or other public recreation resource	High	Direct Connection	20
			Medium	Connection via existing network	10
			Low	No connection	0
	Closes a Gap in the Current Bicycle/Pedestrian Network	Project provides high utility by closing a gap or extending the existing bicycle/pedestrian network	High	Closes a gap in the existing network (both sides connect to existing network)	20
			Medium	Extends the existing network (one side connects to existing network)	10
			Low	No existing network connection	0
Safety (2)	**Improves Area with Crash History**	Project improves safety in an area with a documented crash history	High	Bicycle/Pedestrian crash history present	10
			Medium	Any crash history present	5
			Low	No documented crash history	0
	Reduction of Bicycle/Pedestrian Exposure	Project provides an alternative to sharing roadway space with motor vehicles	High	AADT over 8,000	5
			Medium	AADT between 3,000 and 8,000	2.5
			Low	AADT under 3,000	0
Project Opportunity (3)	**Public Input**	Project addresses community desires for bicycle/pedestrian improvements	High	High public and steering committee interest	10
			Medium	Medium public and steering committee interest	5
			Low	Low public and steering committee interest	0
	Advances a Regional Connection	Project advances a regionally adopted bicycle/pedestrian connection	High	Overlaps with regional plan	10
			Low	No overlap with regional plan	0
	Leverages Community Investments	Previous community investments have been made to advance project	High	Community investments made	5
			Low	No community investments made	0
					TOTAL: 100

1. Park Dr Sidepath

Create a 10-foot sidepath connection along the west side of Park Drive between Cascade Street and the Mars Hill Recreation Park. Sections constrained by topography or other design factors may be reduced width.

Prioritization Score: 80



2. Main St Pedestrian Crossing Improvements

Addition or enhancement of pedestrian crossings on Main St between Cascade St and Bailey St in Downtown Mars Hill. Specifically:

Bailey St and N. Main St

- *Construct curb extension along N. Main St to reduce pedestrian crossing distances, improve sight distance, and reduce the turning radius for vehicles, providing traffic calming*
- *Create curb ramps on the east side of N. Main St and add new crosswalk striping*

College St/Mountain View Rd and N. Main Street.

- *Add a fourth striped crosswalk*
- *Add pedestrian signals head on all four approaches*
- *This may require minor curb extensions on the Mountain View Rd/Ivey St approach to create enough space for proper curb ramps and pedestrian signal head placement*

Cascade St and Main Street

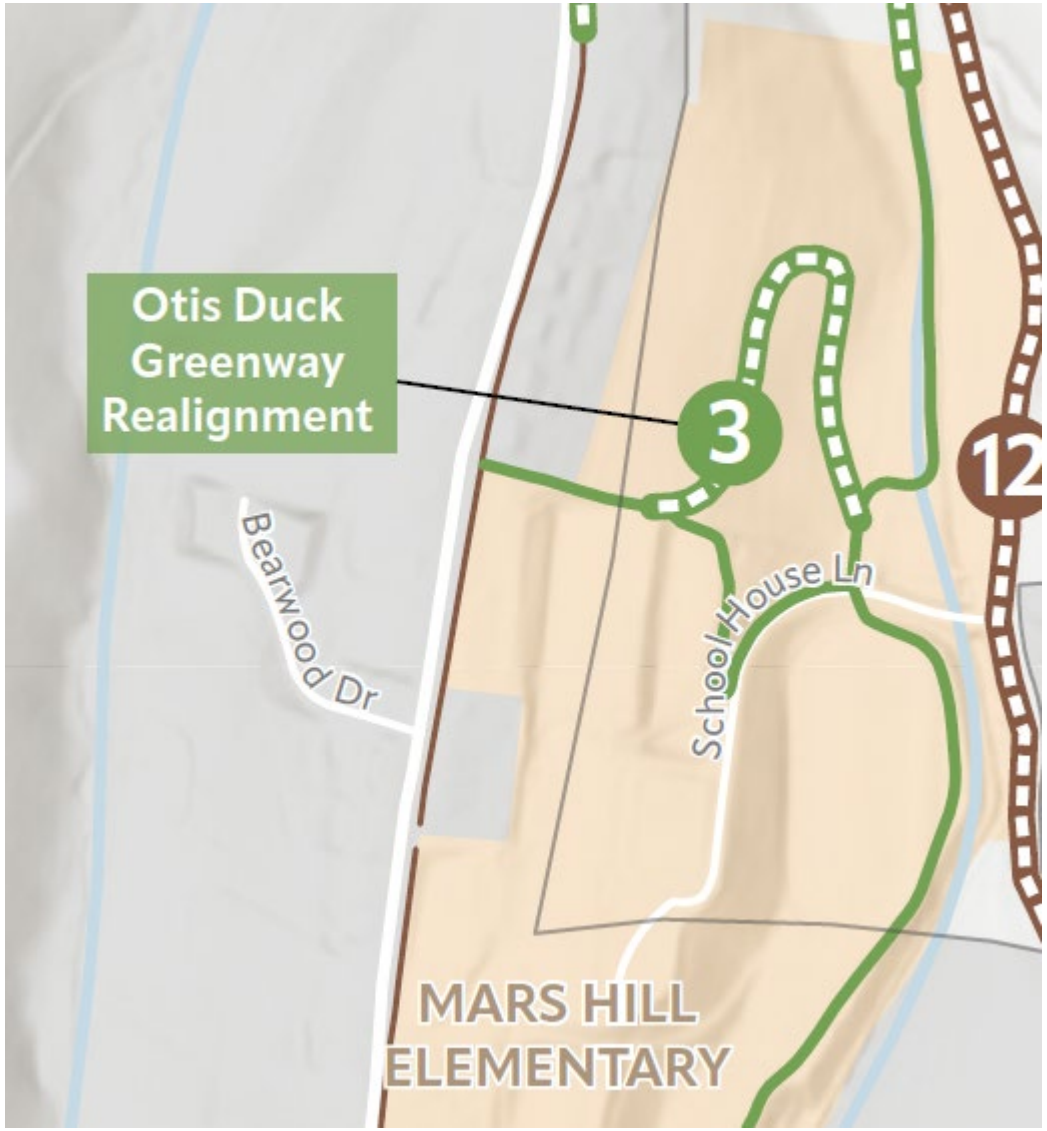
- *Add pedestrian signal heads on all four approaches*

Prioritization Score: 72.5

3. Otis Duck Greenway Realignment

Realign the greenway connector in open space within school property to improve user safety and provide a more gradual grade to accommodate riders of all ages and abilities. The existing connector from the Otis Duck Greenway to Bailey St uses portions of School House Ln which has very steep grades, and only provides about 5 ft of space directly adjacent to cars accessing the school. NCDOT resurfacing project providing some incremental bike/ped improvements.

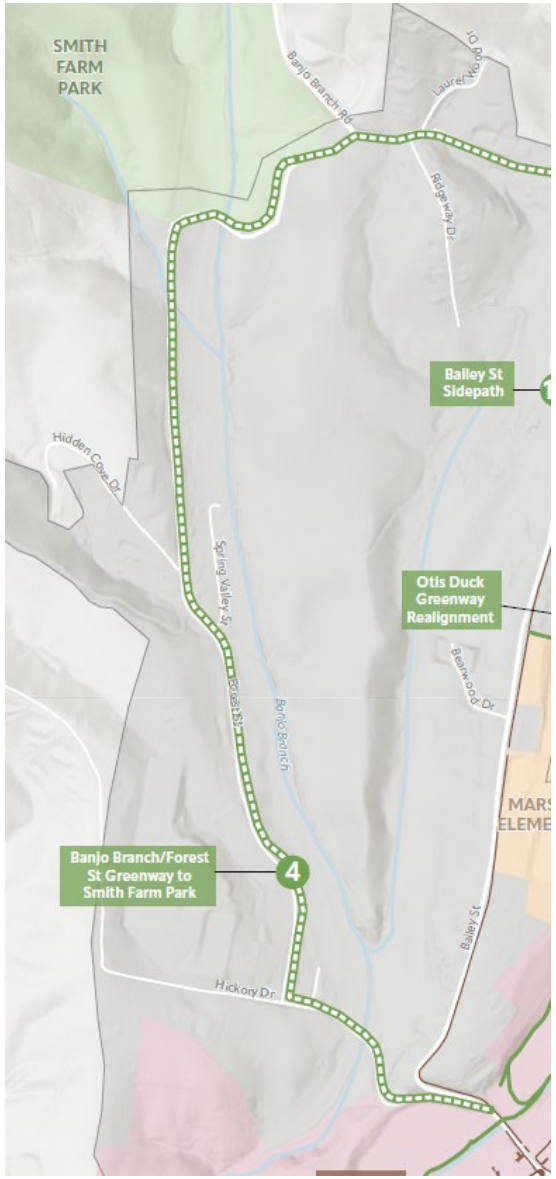
Prioritization Score: 75



4. Banjo Branch/Forest St Greenway to Smith Farm Park

Provide a greenway connection to Smith Farm Park/Bailey Mountain Preserve from Mars Hill University and Downtown Mars Hill. Part of Otis Duck Greenway Feasibility Study.

Prioritization Score: 75



5. Athletic St Sidewalk

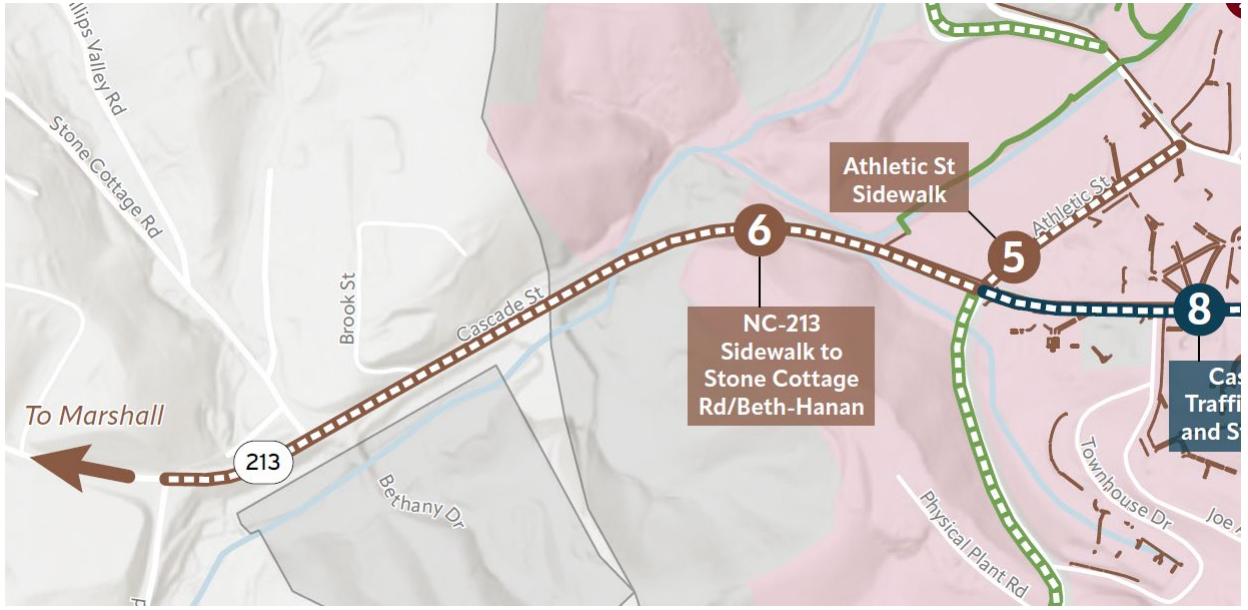
Add sidewalk on one side of the street from Cascade St to Bailey St. Potentially reallocating space from on-street parking or removing retaining wall for sidewalk.

Prioritization Score: 65

6. NC-213 Sidewalk to Stone Cottage Rd/Beth-Hanan Community

Add sidewalk on one side of the street.

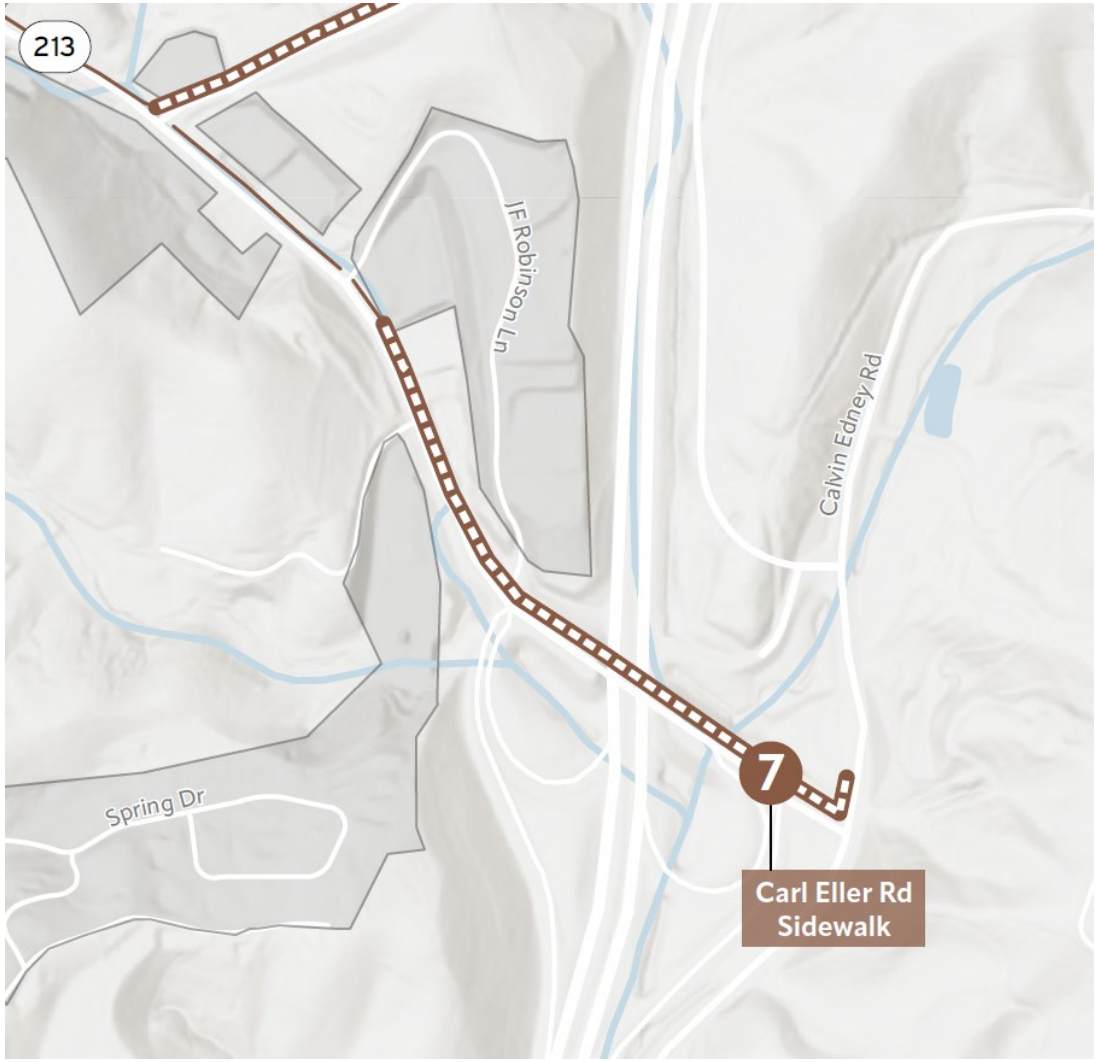
Prioritization Score: 75



7. Carl Eller Rd Sidewalk

Add a new at-grade pedestrian connection between the Park and Ride Lot and existing sidewalk on NC-213/Carl Eller Road. Project includes reallocating space on the I-26 bridge, grading work on the west side of the bridge, and constructing approximately 1,200 feet of new sidewalk.

Prioritization Score: 55



8. Cascade St Traffic Calming and Streetscape

Reduce the travel lane widths from 18 ft to 12 ft, adding 6 ft of space to widen sidewalks, plant street trees, or implement other streetscape enhancements. Project limits are from S. Main St to Athletic St.

Prioritization Score: 70

9. Mountain View Rd Sidewalk

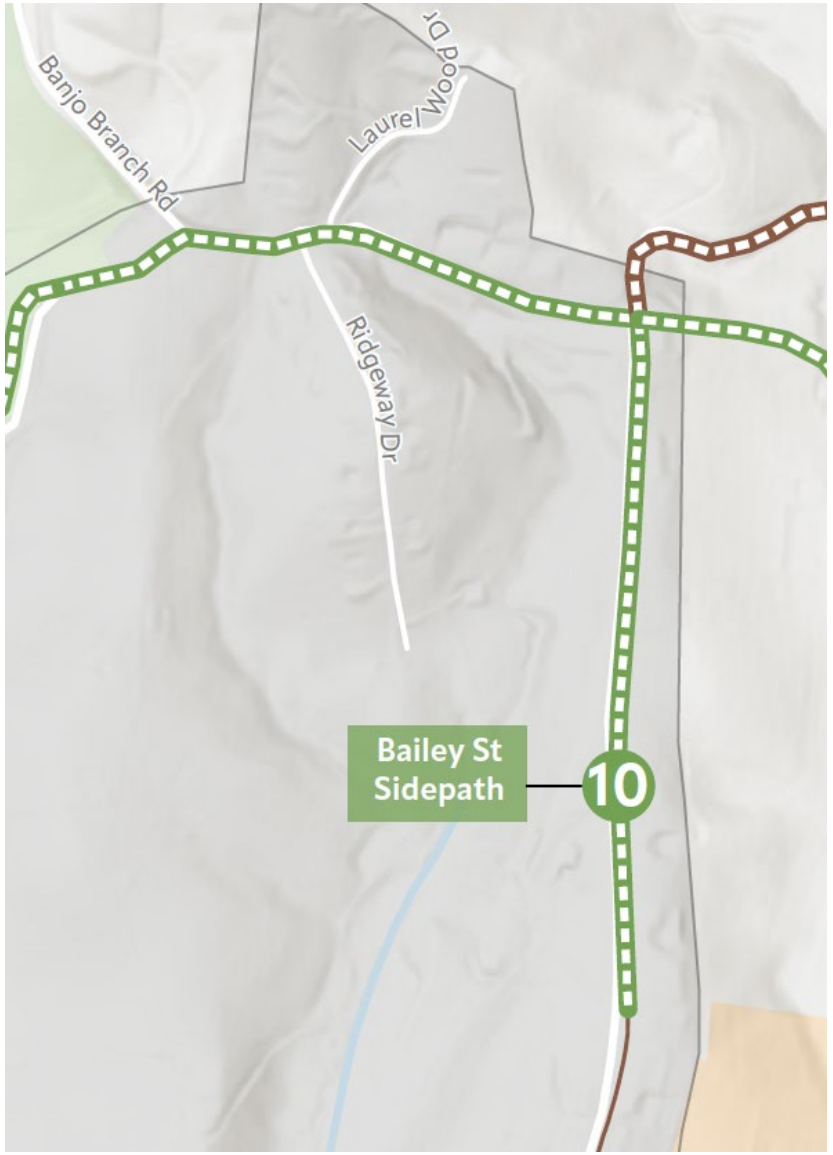
Add sidewalk on one side of the road from Main St to Cemetery Dr, with crosswalk improvements at Anderson St.

Prioritization Score: 70

10. Bailey St Sidepath

Extend sidepath on Bailey St north to Banjo Branch Rd and continue sidepath west along Banjo Branch Rd and Forest St to Smith Farm Park/Bailey Mountain Preserve. A feasibility study is underway that includes this corridor as a potential alignment for a greenway extension.

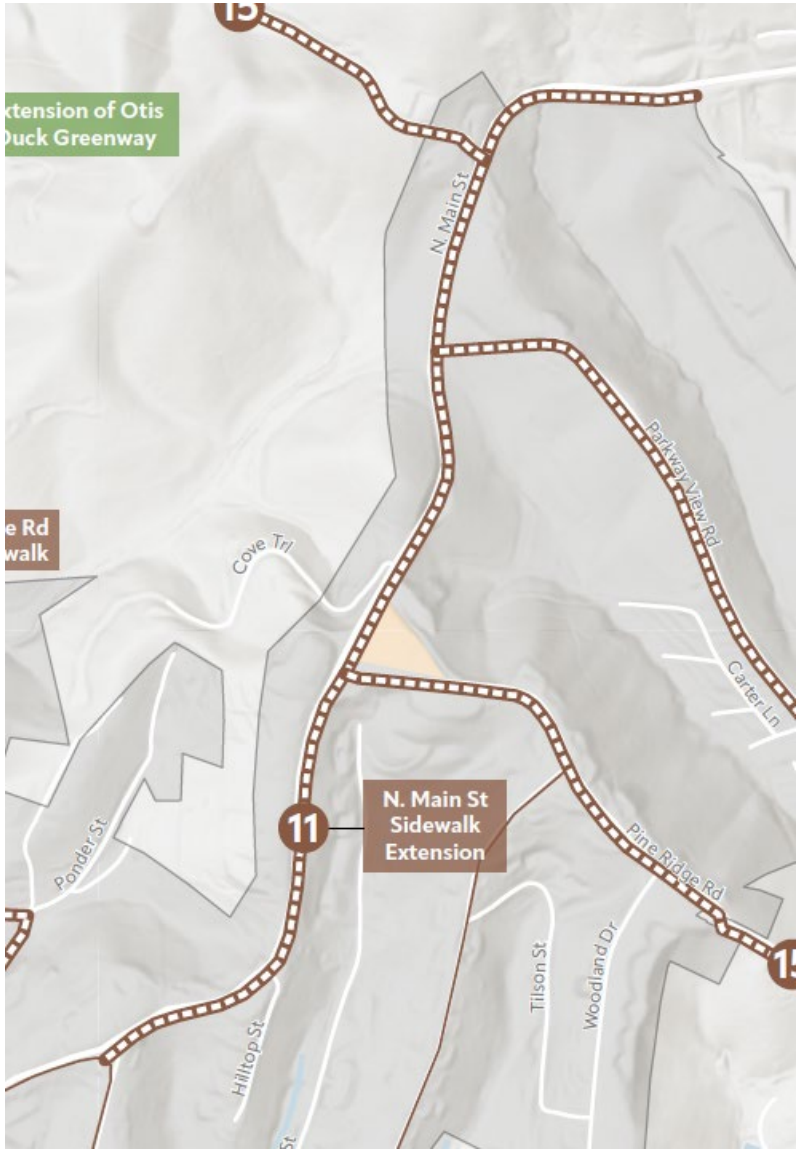
Prioritization Score: 70



11. N. Main St Sidewalk Extension

Extend sidewalk on N. Main St from Chestnut St to municipal boundary.

Prioritization Score: 47.5



12. Bruce Rd Sidewalk

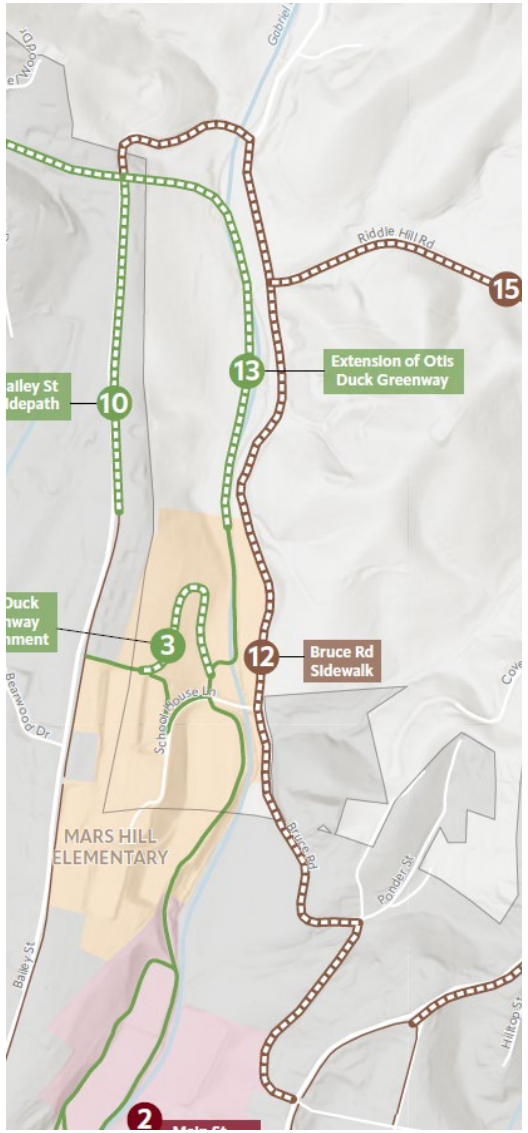
New sidewalk on Bruce Rd starting at N. Main St just north of downtown and extending all the way to Bailey St to connect to the Bailey St Sidewalk Loop. Corridor part of Otis Duck Greenway Feasibility Study

Prioritization Score: 60

13. Extension of Otis Duck Greenway

Extend Otis Duck Greenway north along Gabriel Creek or Bruce Rd to Bailey St/Banjo Branch Rd. Corridor part of Otis Duck Greenway Feasibility Study.

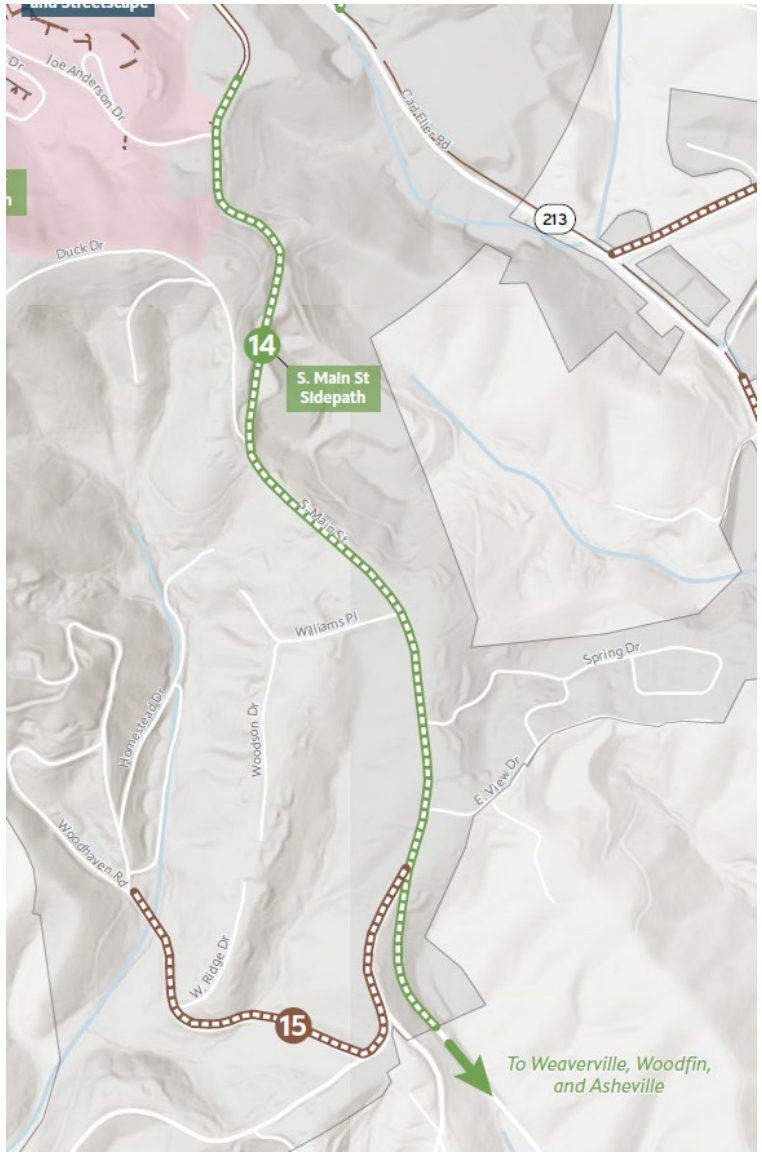
Prioritization Score: 55



14. S. Main St Sidewalk

Build sidepath on S. Main St from existing sidewalk to municipal boundary.

Prioritization Score: 60



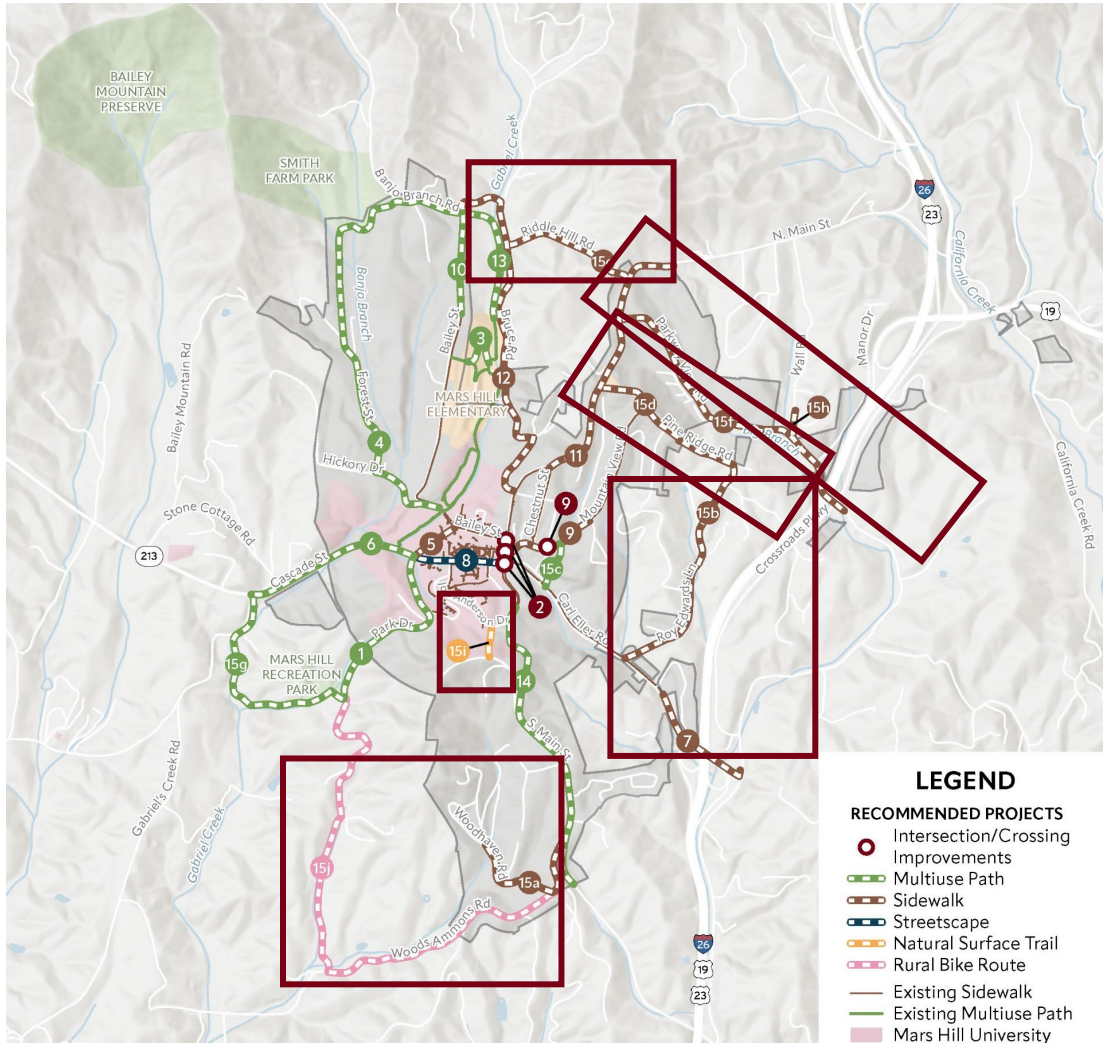
15. Various Projects

Build greenway or sidewalk on one side of streets in and around Mars Hill.

Corridors include:

- *Riddle Hill Rd*
- *Parkway View Rd*
- *Pine Ridge Rd*
- *Roy Edwards Ln*
- *Greenway near Anderson St*
- *Woodhaven Rd/Woods Ammons Rd*

Prioritization Score: 5-40



DESIGN RECOMMENDATIONS

DESIGN GUIDANCE

A safe, comprehensive, and accessible bicycle and pedestrian network connecting people and places to parks, schools, downtown, and other community destinations requires a set of standards and recommendations grounded in industry best practices. This section outlines design standards and typical sections for sidewalks, multiuse paths, and on-street bicycle facilities to guide the implementation of the proposed bicycle and pedestrian network.

FACILITY TYPES

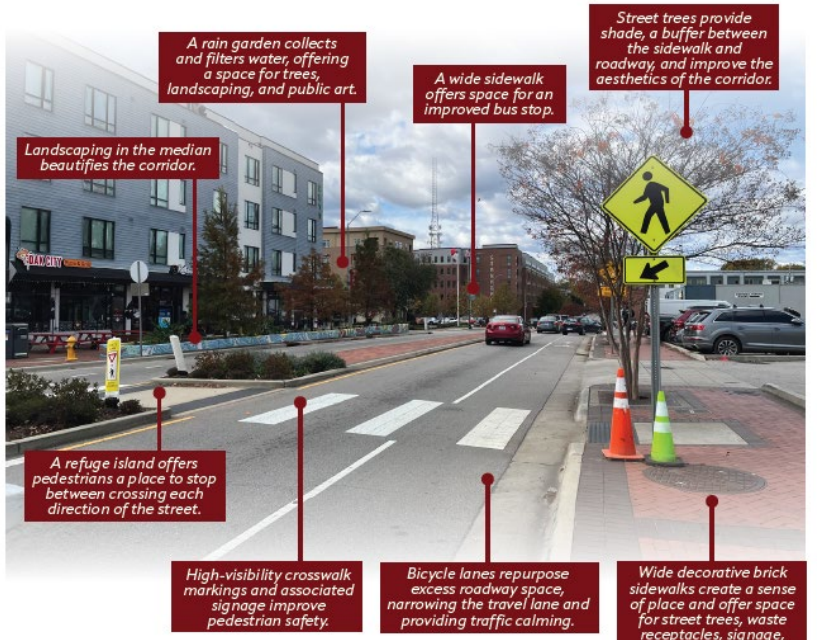
Identifying suitable multimodal facilities for a community's active transportation network involves a context-sensitive approach, considering factors such as roadway design, network connectivity, land use, and expected bicycle and pedestrian user volumes. Bicycle and pedestrian facility selection is influenced by roadway speeds and traffic volumes. As vehicle speed and volume increase, the need for physical separation grows to ensure comfortable walking and bicycling.

Network recommendations prioritize interconnected bicycle and pedestrian facilities, enabling people of all ages and abilities to reach their destination safely and conveniently. Recommendations are informed by land use, among other factors, as an area's density determines the feasibility of supporting multimodal facilities. High-density areas can accommodate various bicycle and pedestrian facilities, while low-density areas may require options that facilitate longer-distance travel between destinations or provide greater physical separation from high-speed traffic.

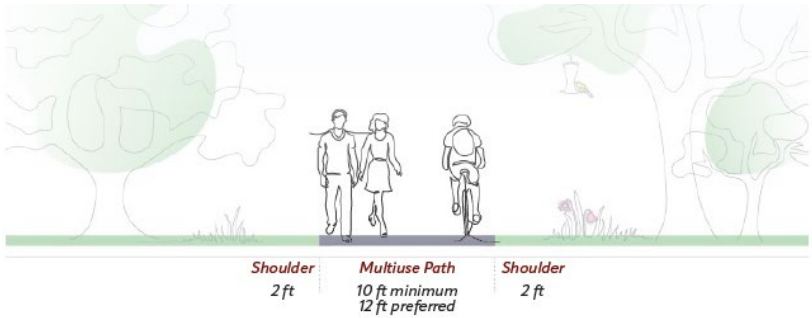
The recommended project types in this plan include greenways and multiuse paths, sidepaths, sidewalks, natural surface trails, rural bicycle routes, and streetscapes. These primary project types are outlined on the following pages with considerations for design and materials.

For further insights into facility design, please refer to Appendix B: Design Resources.

Roadway width is a factor in the selection of bicycle and pedestrian facilities and crossing treatments.



Hillsborough St in Raleigh, NC, includes streetscape elements along a high activity segment at the edge of the North Carolina State University campus.



- Design Guidance
  - Facility Types
  - Design Standards
  - Materials
  - Typical Cross Sections
  - Intersections + Crossings
- Comprehensive Network
- Prioritization

Education Programs

- NC Friendly Driver Program
- Watch for Me NC
- Learn to Ride events
- Safe Routes to School
- Let’s go NC

Evaluation Programs

- Facility Inventory and Maintenance
- Bicycle/Pedestrian Counts

Encouragement Programs

- Walking/Bicycling Maps
- Walk/Bike to School Day
- Walk/Bike to Work Events
- Walk- or Bike-Friendly Community Designation
- Paint the Pavement
- Open Streets

Policy Recommendations

- Update Town Zoning Ordinance to require developer-built active transportation facilities when shown in adopted plans
- Establish dedicated funding in the Town CIP for advancing priority projects
- Designate/create a Citizen Advisory Board to champion implementation
- Establish pedestrian/bicycle wayfinding standards
- Adopt a Complete Streets ordinance
- Create standard design guidelines
- Adopt a sidewalk maintenance policy
- Develop ADA Transition Plan

Tier 1 Projects

Short- to medium-term

PROJECT	SCORE
1 – Park Dr Sidepath	80
3 – Otis Duck Greenway Realignment	75
4 – Banjo Branch Rd/Forest St	75
6 – Cascade St Sidepath	75
2 – N. Main St Intersection Improvements	72.5
8 – Cascade St Streetscape	70
9 – Mountain View Rd Sidewalk and Intersection Improvements	70
10 – Bailey St Sidewalk	70
5 – Athletic St Sidewalk	65

Tier 2 Projects

Medium- to long-term

PROJECT	SCORE
12 – Bruce Rd Sidewalk	60
14 – S. Main St Sidepath	60
7 – Carl Eller Rd Sidewalk	55
13 – Otis Duck Greenway Extension	55

Tier 3 Projects

Long-term

PROJECT	SCORE
11 – N. Main St Sidewalk	47.5
15c – Anderson St Greenway	40
15b – Roy Edwards Rd Sidewalk	35
15i – Duck Dr Connection	35
15j – Park Dr/Woods Ammons Rd Bike Route	35
15g – Gabriel Creek Connection	25
15d – Pine Ridge Rd Sidewalk	15
15a – Woodhaven Rd/Woods Ammons Rd Sidewalk	5
15e – Riddle Hill Rd Sidewalk	5
15f – Parkway View Rd Sidewalk	5
15h – Wall Rd Sidewalk	5

PRIORITY PROJECT #1: PARK DR SIDEPATH

This project will create a 10 foot wide sidepath along the west side of Park Dr between Cascade St/NC-213 and the Mars Hill Recreation Park. The path will connect to existing sidewalk at the campus of MHU, proposed sidepath on Cascade St, and a proposed multiuse path along Gabriel Creek. The width of the path may be reduced in sections constrained by topography, ROW, or other design factors.

PROJECT SNAPSHOT

Location:
West side of Park Dr between Cascade St/NC-213 and Mars Hill Recreation Park

Total Length:
3,500 ft, 0.66 miles

Facility Type:
Sidepath (typical width 10 ft, may be reduced as needed)

Intersection Treatments:
New crosswalk markings at Thomason Dr and Physical Plant Rd

Implementation Partners:
NCDOT (maintains roadway), Town of Mars Hill, MHU

Plannng Level Cost Estimate:
$1,681,000

PRIORITIZATION FACTORS

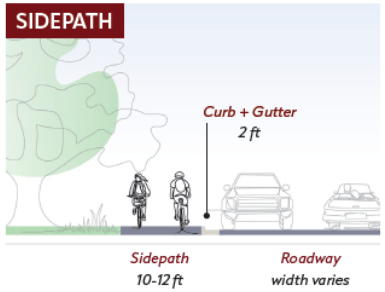
Connects to Activity Center: 20/20
Connects to a Public Recreation Resource: 20/20
Closes a Gap in the Current Bicycle and Pedestrian Network: 10/20
Improves Area with Crash History: 10/10
Reduces Bicycle and Pedestrian Exposure: 0/5
Addresses Public Input: 10/10
Advances a Regional Connection: 10/10
Leverages Community Investments: 0/5
Total: 80/100

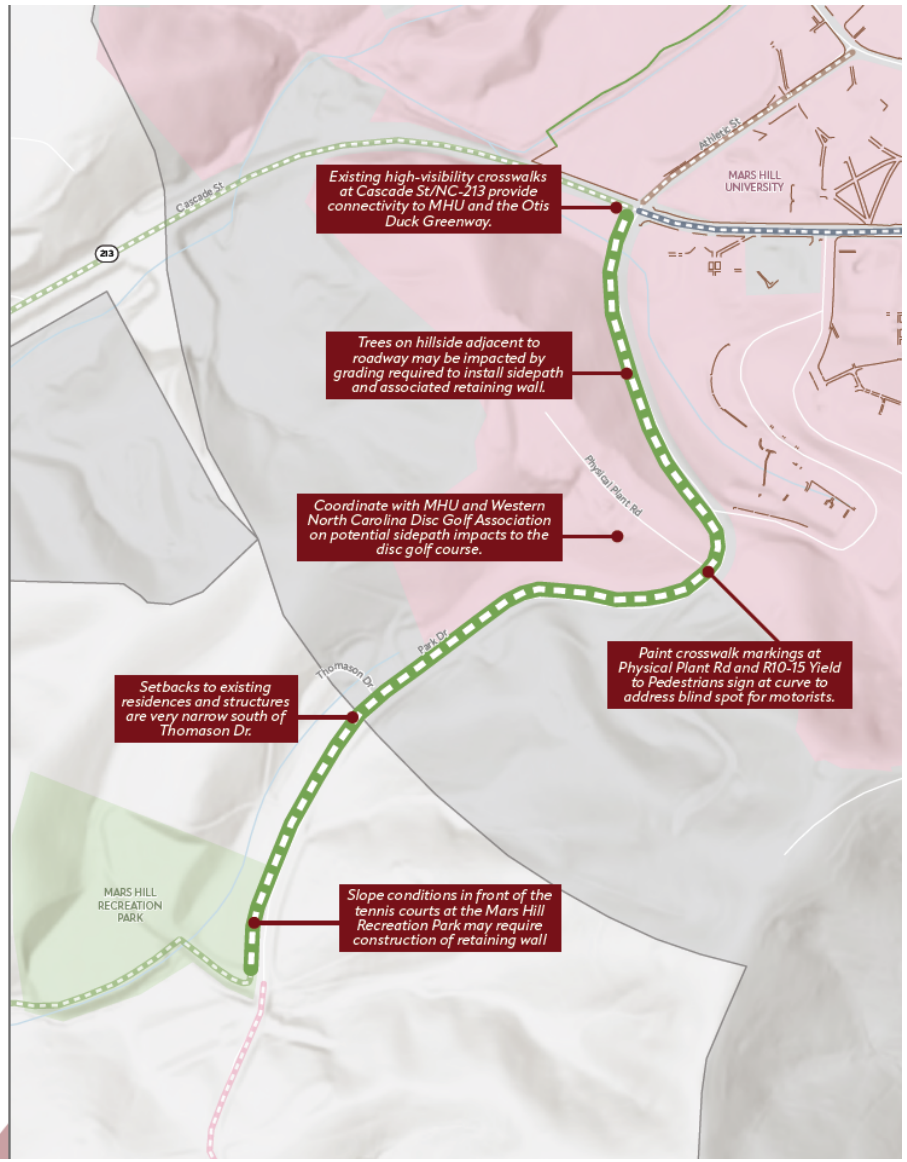
EXISTING CONDITIONS

Steep slopes on the shoulder of Park Dr at Mars Hill Recreation Park

At the MHU campus, the road is lined with trees and has slopes that may pose a challenge.

TYPICAL CROSS SECTION





Cutsheets

- Location
- Length
- Facility Type
- Intersection Treatments
- Partners
- Cost estimate
- Prioritization Factors
- Annotated Map

Action Plan

Short Term (0 to 3 years)

- Adopt the Plan
- Update the Madison County CTP to include plan recommendations
- Update the FBRMPO MTP to include plan recommendations
- Establish an Advisory Committee
- Adopt a Complete Streets Ordinance
- Develop design guidelines, wayfinding standards, and maintenance policies

Action Plan

Medium Term (4 to 7 years)

- Participate in NCDOT/ITRE Bicycle and Pedestrian Count Program
- Create a safe routes to school program (collaboration with Madison Co.)
- Create policy for provision of bicycle parking and storage in new development
- Conduct an accessibility study/ADA transition Plan

Action Plan

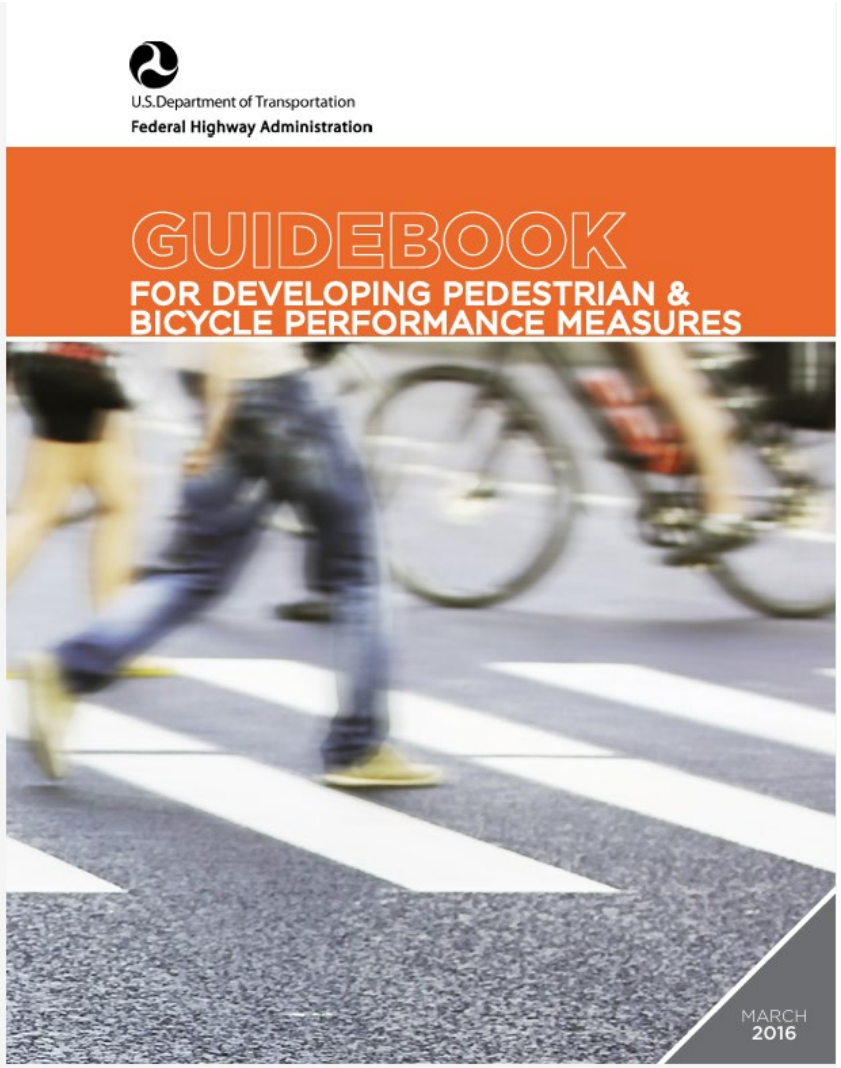
Long Term/Perpetual (ongoing, 8+years)

- Program to install new bicycle racks
- Coordinate with partners to get priority projects implemented
- Implement improvements in coordination with NCDOT resurfacing activities
- Prioritize funding for feasibility studies for high priority projects

Key Partners

Performance Measures

- Connectivity
- Economic
- Environmental
- Equity
- Health
- Livability
- Safety



THANKS TO ALL WHO PROVIDED INPUT AND GUIDANCE DURING PLAN DEVELOPMENT!

Allison Anolik
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Senior Bicycle + Pedestrian Planner, McAdams
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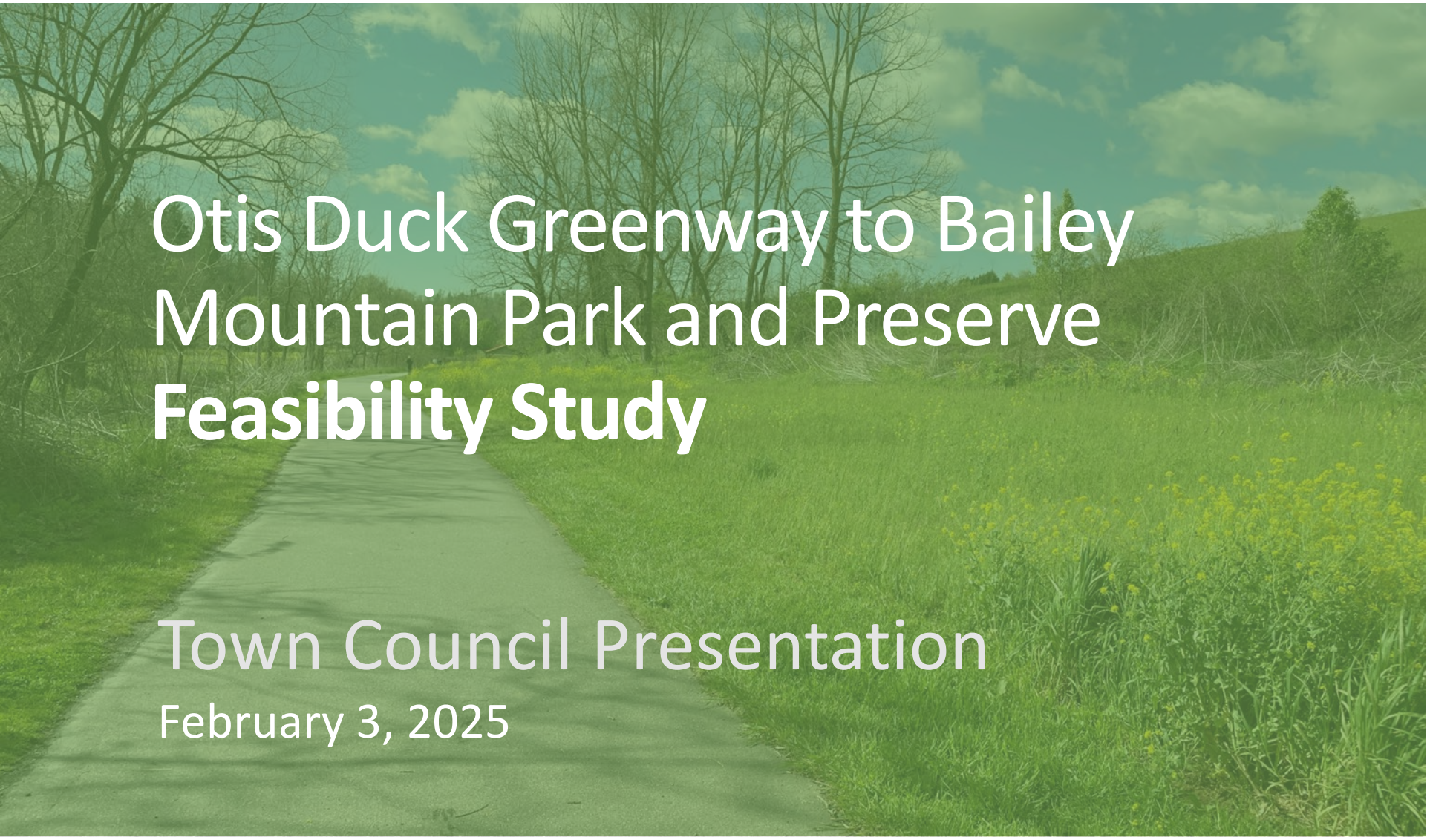


Otis Duck Greenway to Bailey Mountain Park and Preserve **Feasibility Study**

Town Council Presentation

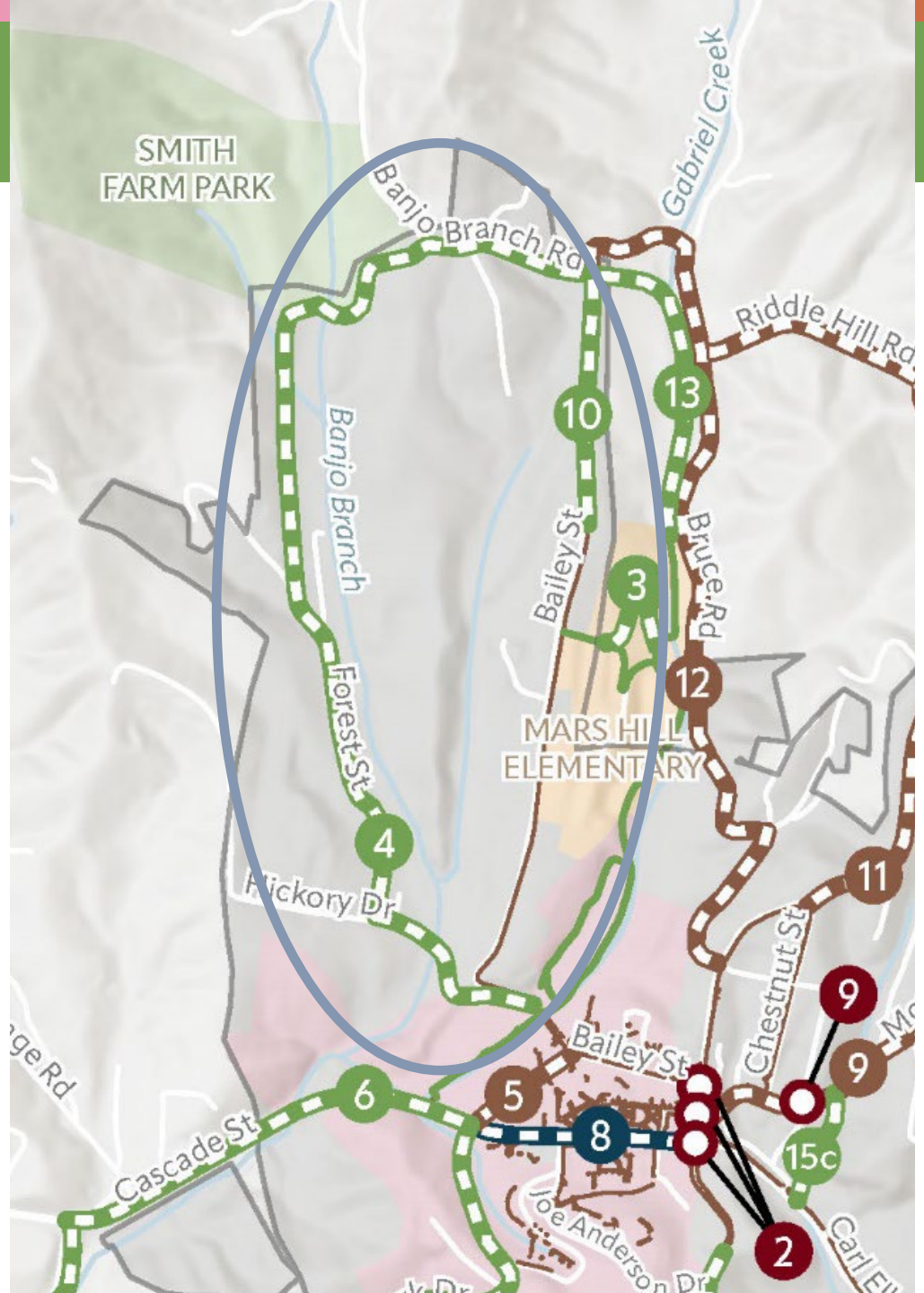
February 3, 2025

MADE x MTNS WNC

McAdams

OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

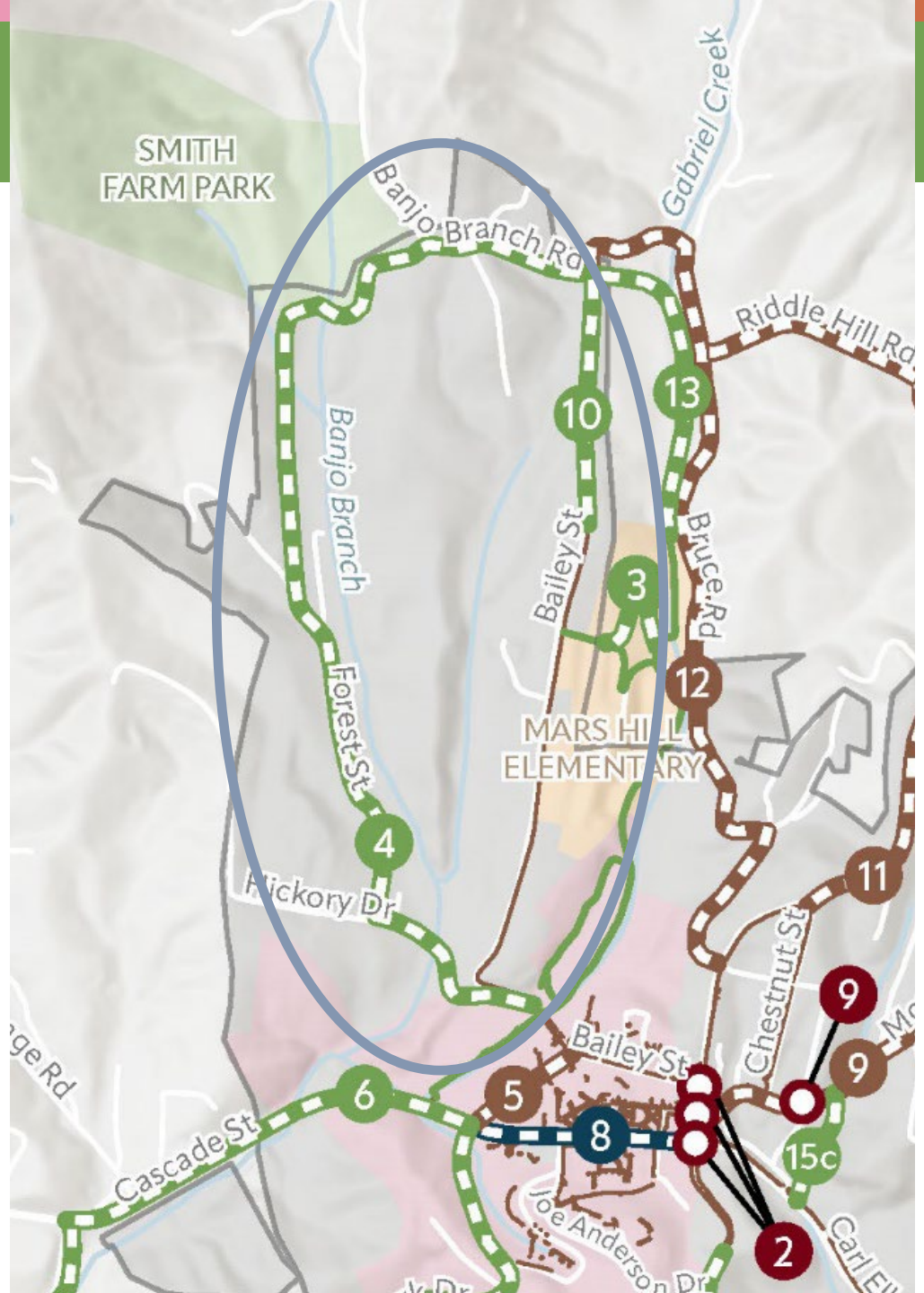
- $30,000 grant from Made by Mountains
- 5 corridors studied
- Further develops projects 4 and 10 from the Bike + Pedestrian Plan



OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

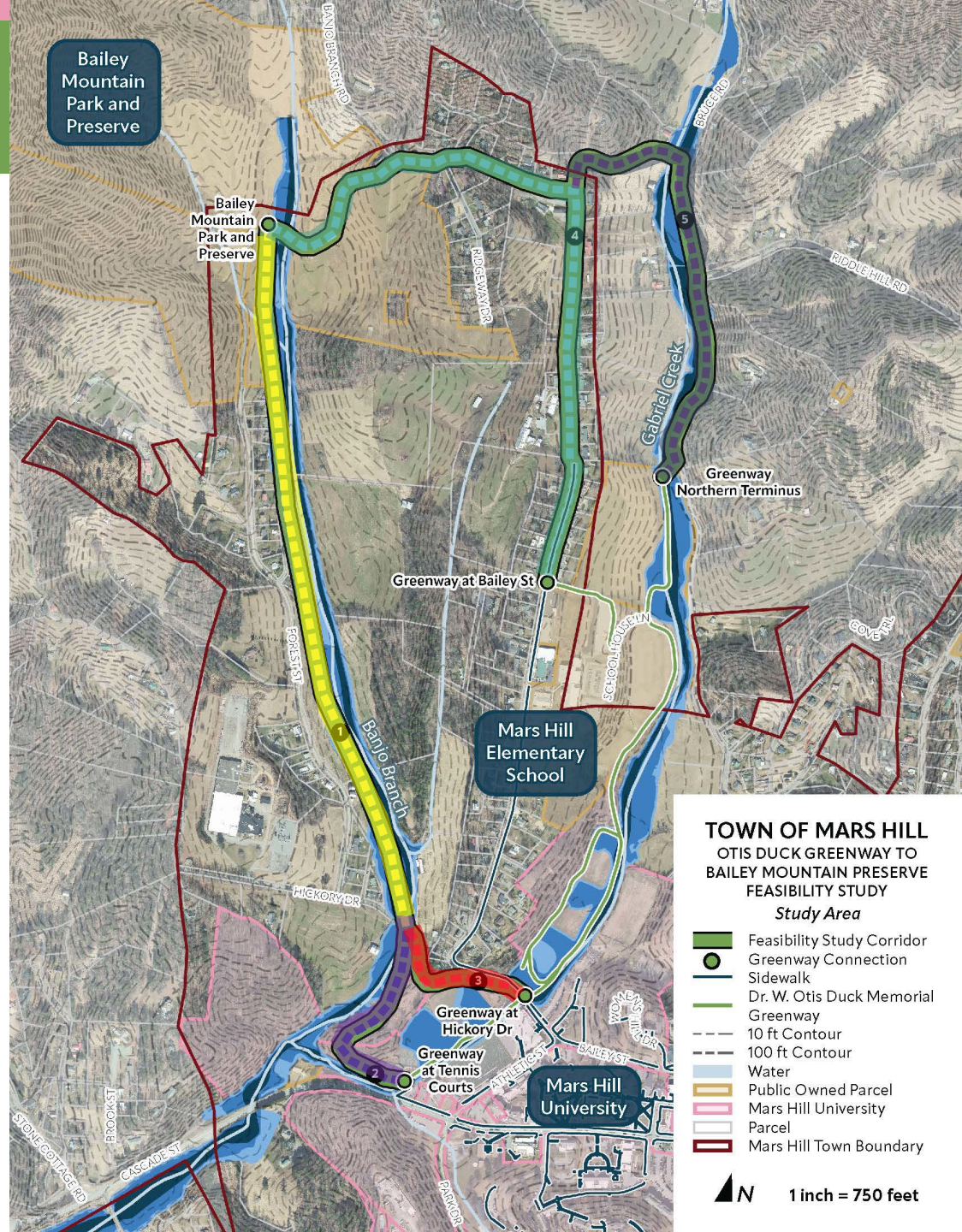
Purpose of the Study

- Evaluate alignment options to create a greenway loop from the existing greenway to Bailey Mountain Park and Preserve's trailhead
- Identify recommended alignments
- Develop project cut sheets for future design/construction funding pursuits



OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

5 Study Corridors

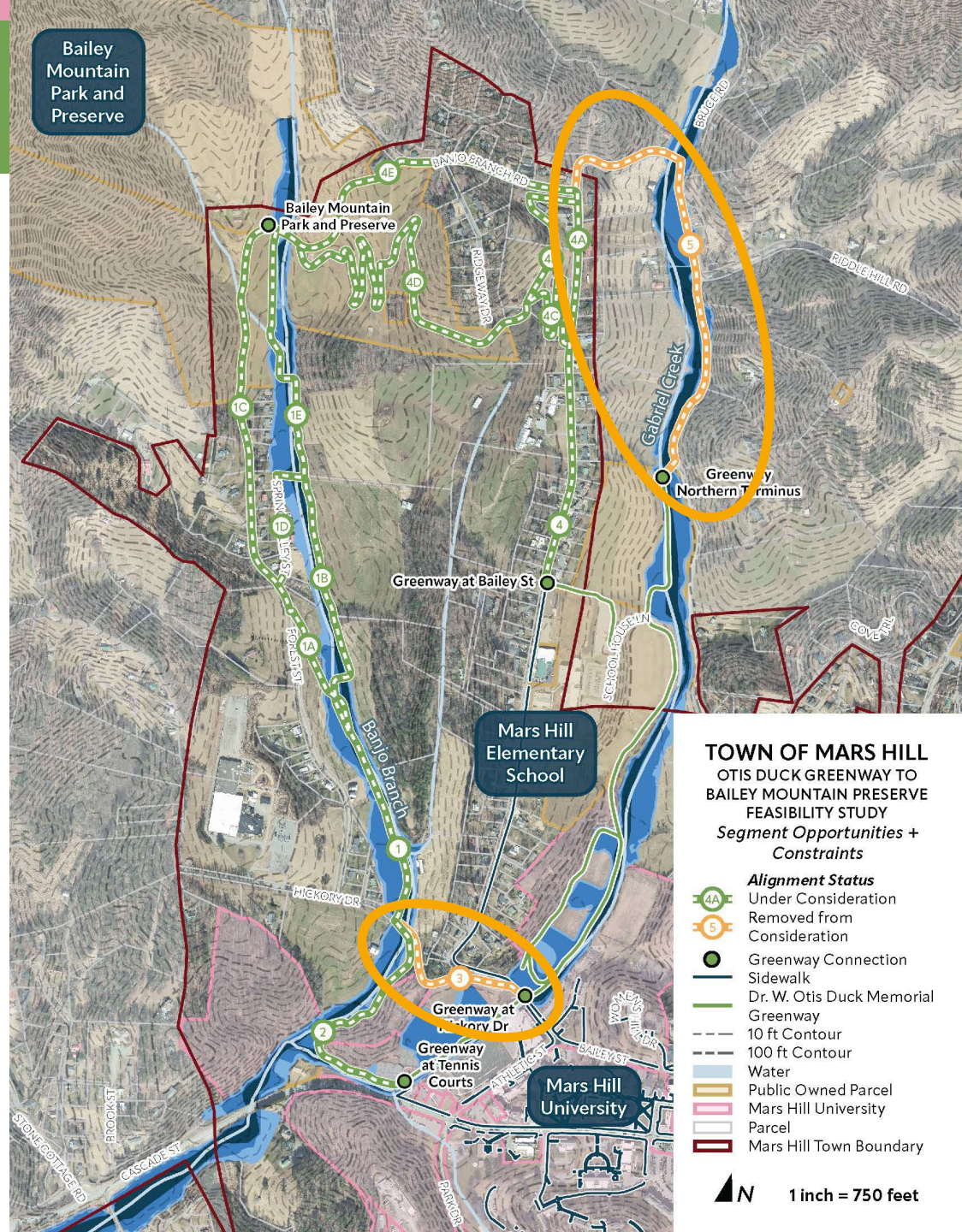


OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

5 Study Corridors

- 15 individual segments were developed

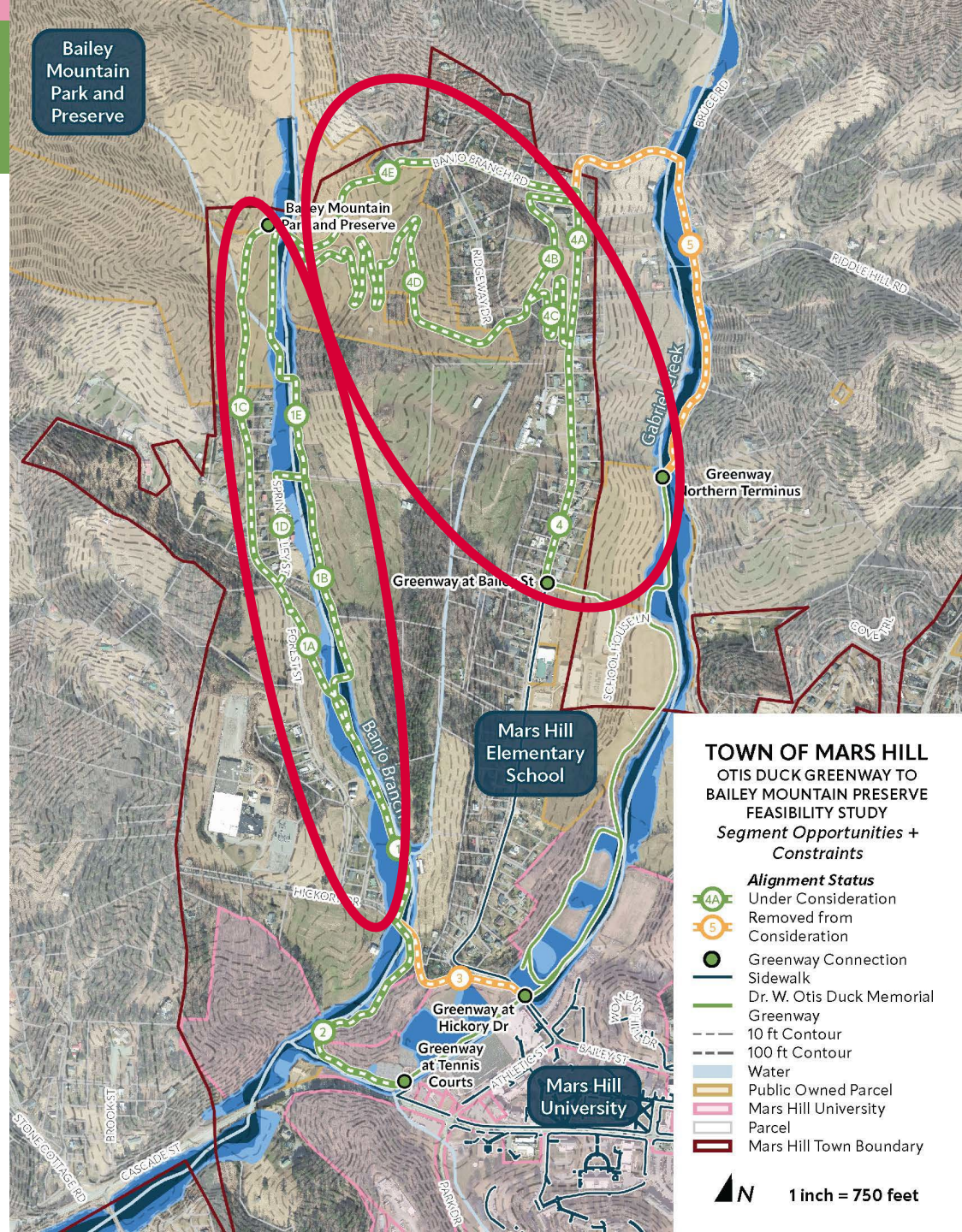
2	Greenway trail from Mars Hill University to Hickory Dr along Gabriel Creek and Banjo Branch	Improved walking experience along stream and through forest, educational opportunities, connection to University amentities, no traffic impacts	Flooding frequency, required easement/buy in from University
3	Shared use path along Hickory Dr from Mars Hill University to Hickory Dr to the Banjo Branch stream culvert	Provides a formalized walking path giving separation from vehicles, connection to neighborhoods	Significant retaining wall, along roadside, traffic impacts
4	Shared use path along Bailey St from Mars Hill Elementary to Alternative 4C	Utilizes existing sidewalk	Along roadside, traffic impacts
4A	Shared use path along Bailey St from Alternative 4C to Banjo Branch Rd	Formalize walking path to the Calvary Baptist Church	Along roadside, traffic impacts



OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

Identify recommended alignments

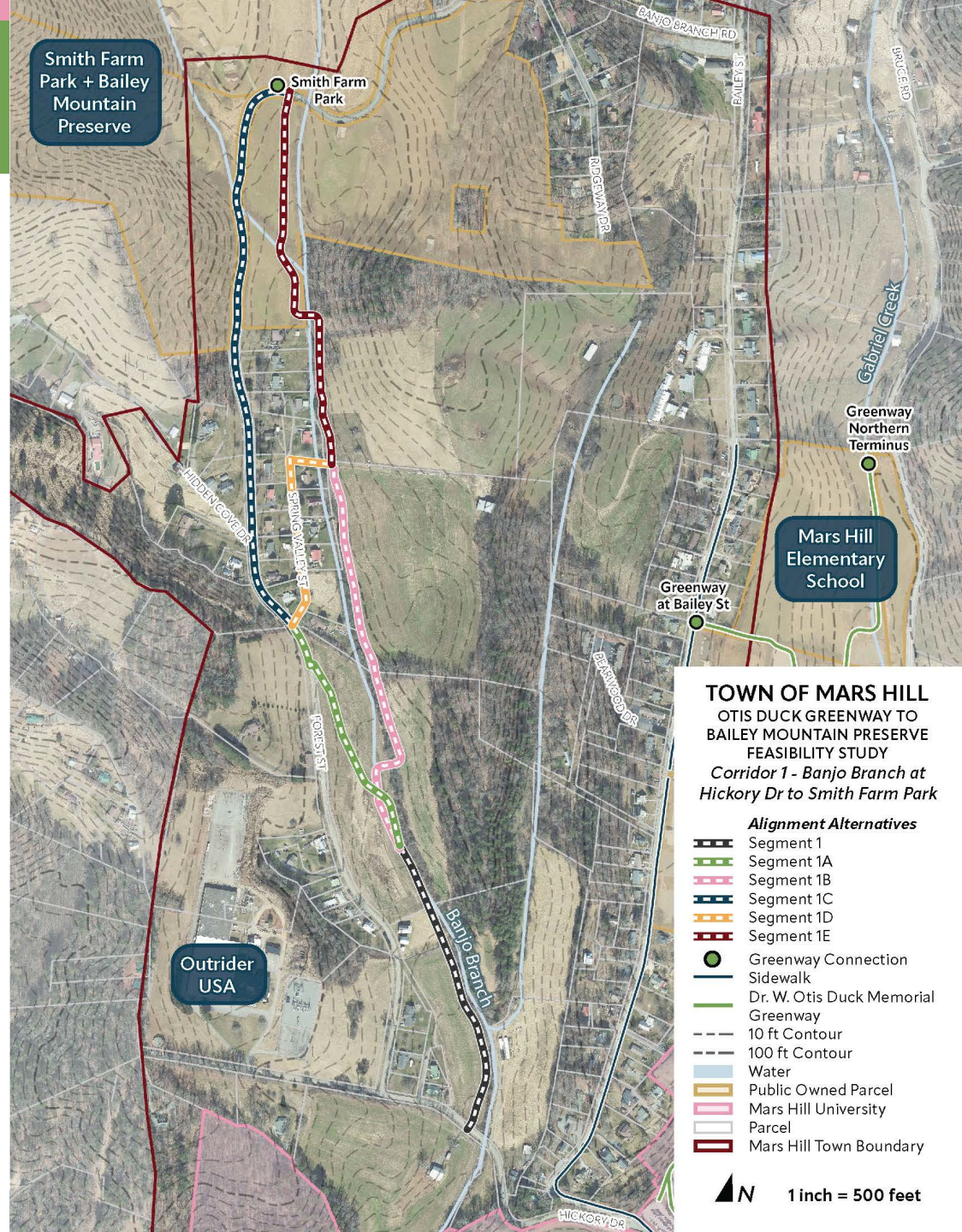
- Corridors 1 and 4 produced multiple alignment alternatives



OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

Corridor 1

- 6 Segments
- 3 Alignment Alternatives

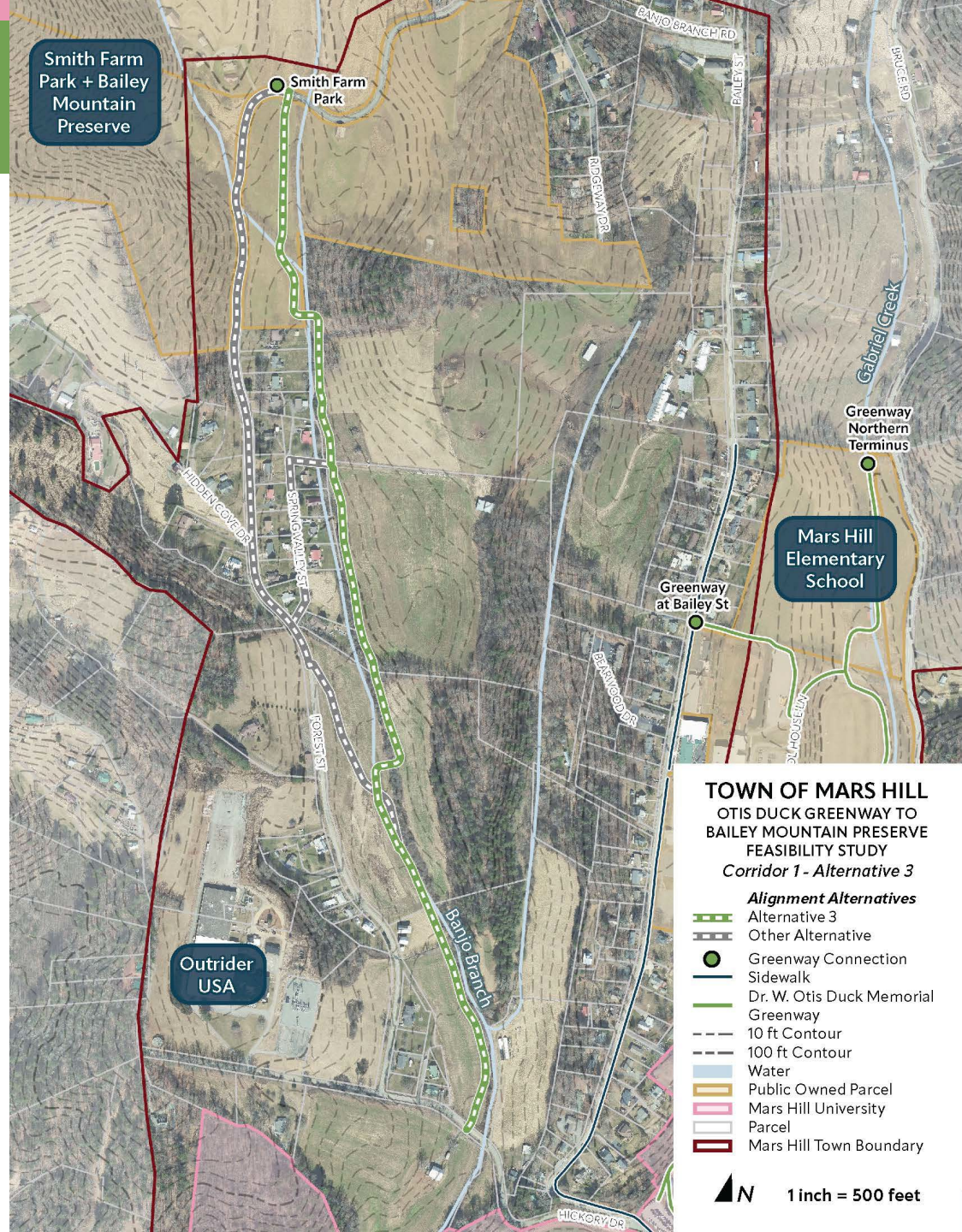


OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

Corridor 1

- 6 Segments
- 3 Alignment Alternatives
- Alternative 3 recommended

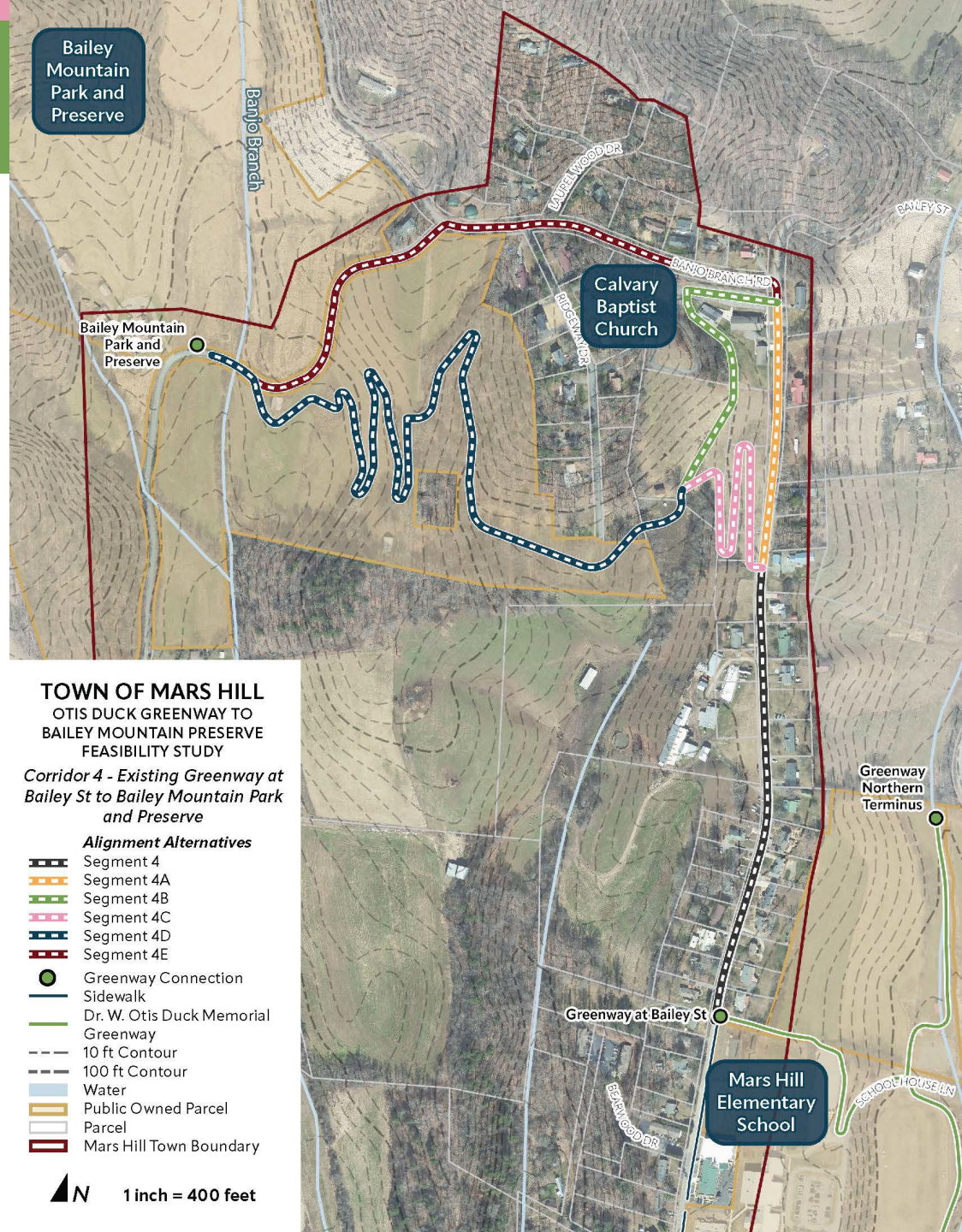
ROUTE ALTERNATIVE SELECTION CRITERIA	OTIS DUCK GREENWAY CORRIDOR 1		
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Physical Feasibility & Constructability	Low	Medium	Medium
Desired Connectivity	High	High	High
Community Priorities	Medium	High	High
Cost	Medium	High	Medium
Environmental Impacts	Medium	Medium	Low
Accessibility & User Experience	Low	Medium	High
Property Impacts	Medium	Medium	Medium
Potential Funding Opportunities	Medium	Low	Medium
Placemaking	Low	Medium	High
Traffic Impacts	Low	Medium	High
Implementation Timeframe	Medium	Medium	Medium



OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

Corridor 4

- 6 different segments
- 3 alternatives

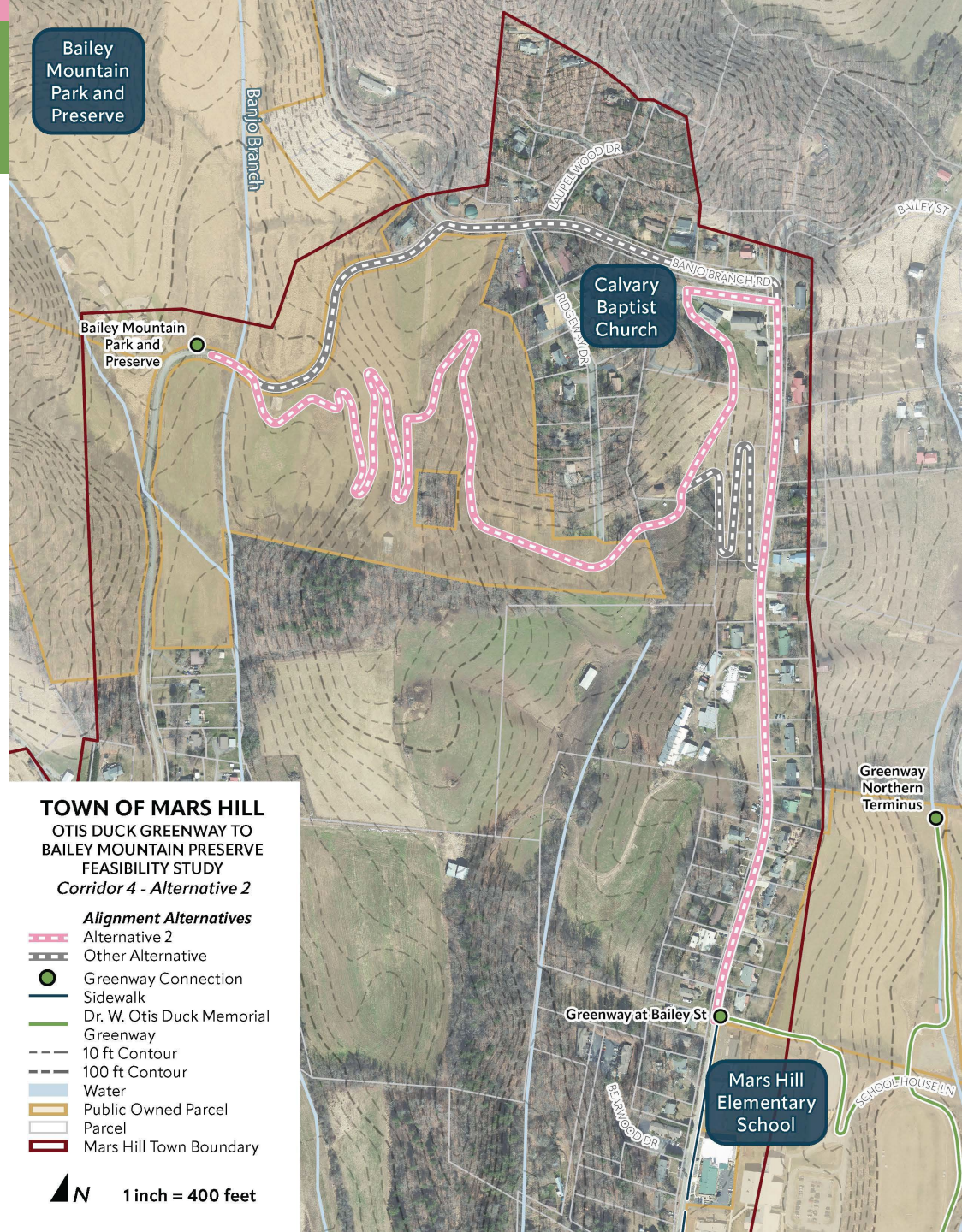


OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PARK AND PRESERVE FEASIBILITY STUDY

Corridor 4

- 6 Segments
- 3 Alignment Alternatives
- Alternative 2 recommended

ROUTE ALTERNATIVE SELECTION CRITERIA	OTIS DUCK GREENWAY CORRIDOR 4		
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Physical Feasibility & Constructability	Low	Medium	Low
Desired Connectivity	Low	High	Medium
Community Priorities	Medium	High	High
Cost	High	Medium	Medium
Environmental Impacts	Medium	Medium	Medium
Accessibility & User Experience	Low	High	Medium
Property Impacts	High	Medium	Low
Potential Funding Opportunities	Low	High	High
Placemaking	Low	High	High
Traffic Impacts	Low	High	Medium
Implementation Timeframe	Low	Medium	Medium



Recommended Alignments

Corridor 1

- .94mi
- $4m – 2024 Planning Level Construction Cost

Corridor 2

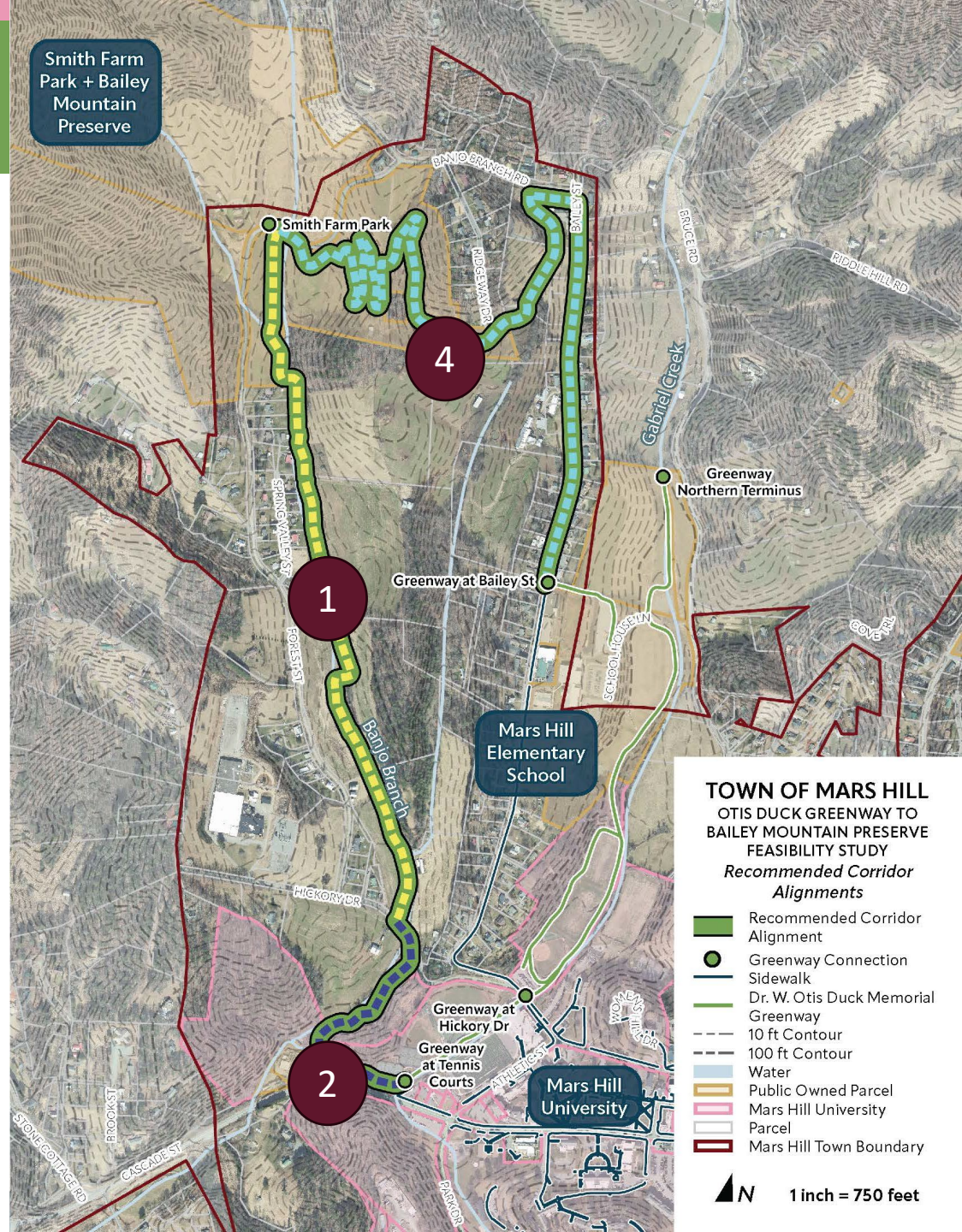
- .35mi
- $900k – 2024 Planning Level Construction Cost

Corridor 4

- 1.5mi
- $3.4m – 2024 Planning Level Construction Cost

TOTAL 2024 PLANNING LEVEL CONSTRUCTION COST

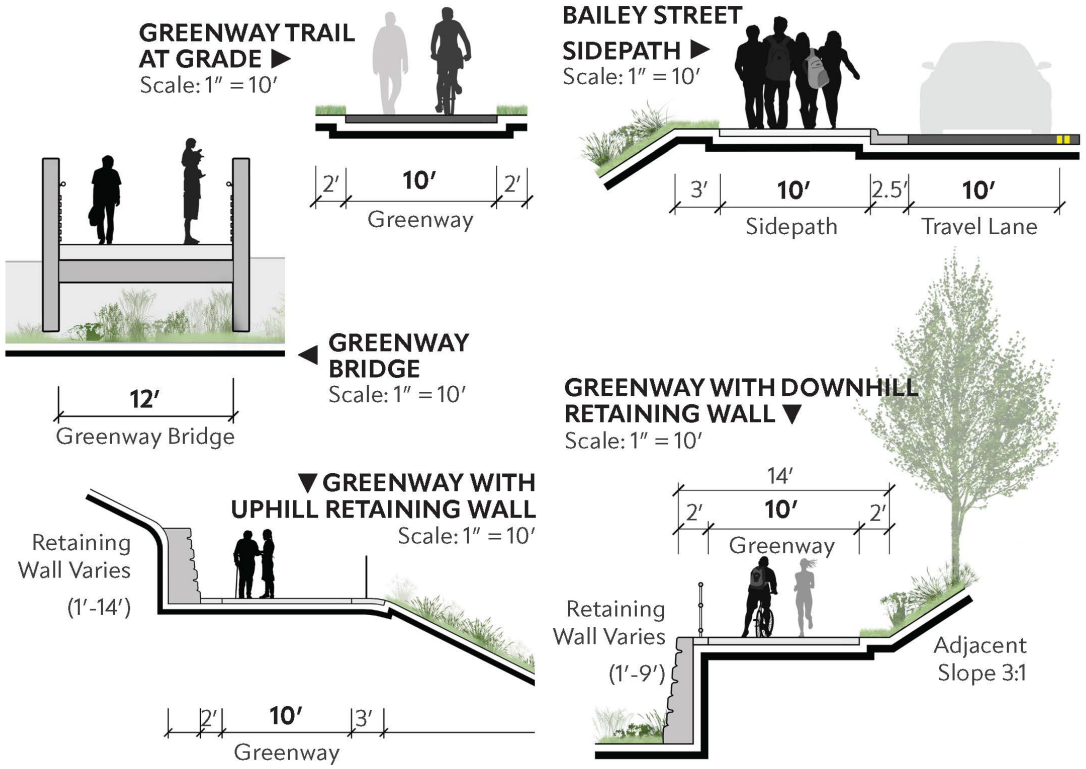
➢ $8.3m, ~3mi of new greenway trail

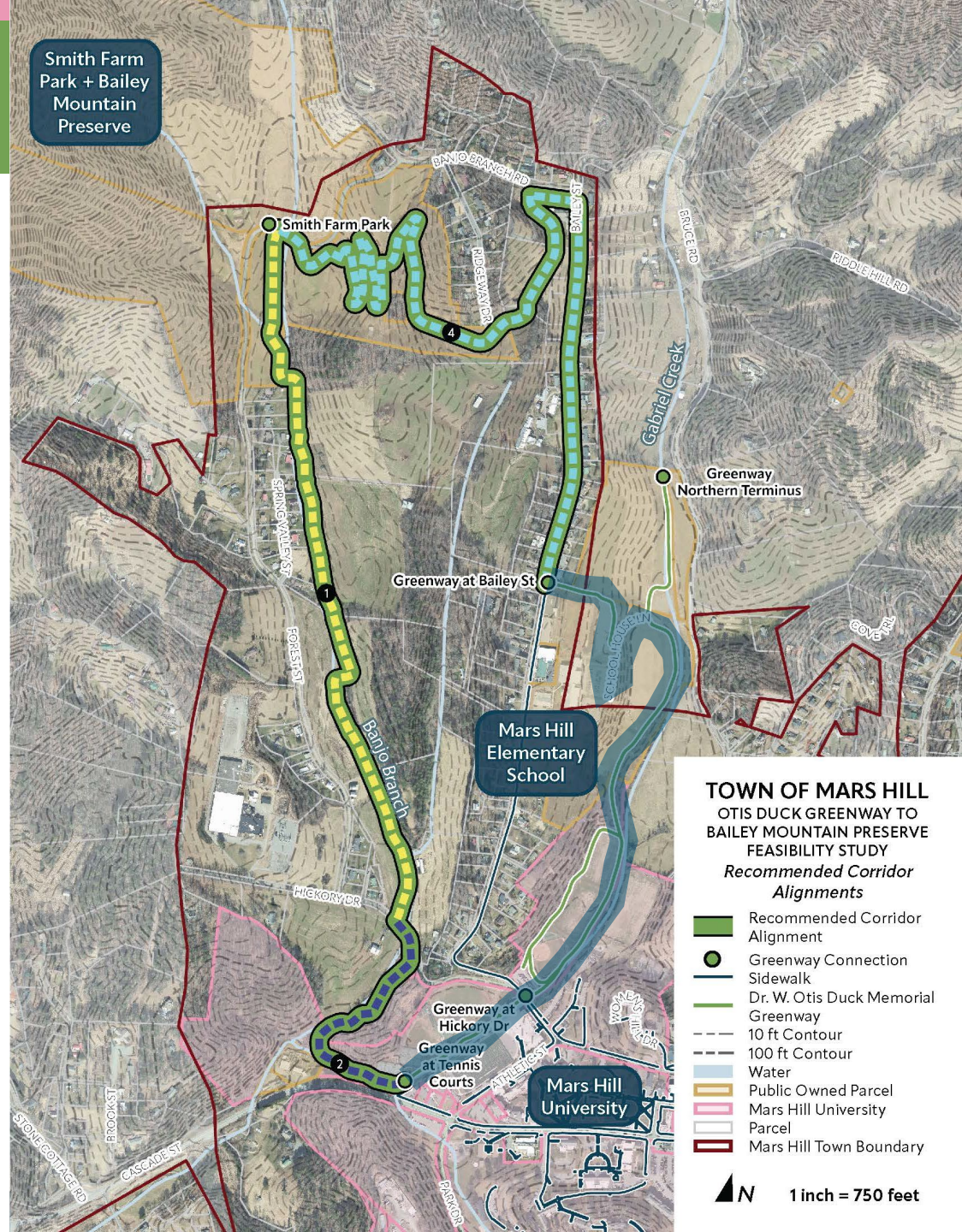


Recommended Alignments

~4mi total distance for complete loop

5 unique cross sections





Cut Sheets and Total Project Cost

- Includes all “soft costs” associated with project development and administration
- Identify real estate acquisition needs
- Detailed project map

BASELINE CONSTRUCTION COST

Baseline construction costs for the current year of 2024 were generated using quantity takeoffs and calculations based on the preliminary design concepts. The baseline construction costs include a 30 percent contingency based the preliminary nature of the design concept developed for the feasibility study.

+

ESCALATED CONSTRUCTION COSTS

To account for inflation, the baseline costs were projected into fiscal year 2029, which represents the year of probable construction.

+

CONSTRUCTION ENGINEERING + INSPECTION SERVICES

A requirement for many state and federal funding sources. CEI services usually range from nine percent to 12 percent of the estimated construction cost.

+

PROJECT CONTINGENCY

Project contingencies help address unforeseen costs due to a variety of reasons. An additional five percent contingency was assumed based on the extent of the study area, the total length of the project, the number of potential environmental impacts, and total structures anticipated.

+

SURVEY + DESIGN SERVICES

The project team estimated survey and design costs using the baseline construction costs, design elements, anticipated permitting required, and other activities related to funding source requirements (e.g., additional community engagements).

=

TOTAL COST ESTIMATE

The project team calculated the total budget estimate were calculated by adding the aforementioned cost components and contingency. All calculated values were rounded up to the nearest $1,000 for simplicity.

PROJECT CUTSHEETS

Cutsheets are included for each corridor recommended in this study and contain information guiding the design, implementation, and maintenance of the project.

CORRIDOR 1 - BANJO BRANCH AT HICKORY DR TO SMITH FARM PARK

Segment 1 connects Hickory Dr near the Banjo Branch stream crossing to Smith Farm Park on the northern side of Mars Hill. The corridor roughly follows Forest St, Banjo Branch, and Spring Valley St.

EXISTING CONDITIONS

A stream corridor with limited development along its west bank and sections of forest on its east bank offers a scenic trail corridor separated from the roadway.

PRIMARY TYPICAL SECTIONS

Typical sections A, B, D, and E

Primarily a 10 ft greenway trail with 2 ft shoulders on each side, but including two bridges and sections of retaining wall.

Destinations Served

Smith Farm Park, Bailey Mountain Preserve

Potential Real Estate Acuiqistion

5 properties. The Town of Mars Hill holds an option to purchase one of these parcels.

Potential Permitting Needs

Floodplain development permit, Erosion control permit, Utility relocation agreements

PROJECT SNAPSHOT

Location

Banjo Branch from Hickory Dr to Smith Farm Park

Facility Type(s)

Greenway Trail

Total Length

4,963 feet/0.94 miles

Structures

Two bridges (50 ft each)

Roadway Crossings

At-grade crossings of Hickory Dr and Forest St

Greenway Connections

No connections to existing greenway

ESTIMATED PROJECT COSTS

COST CATEGORY	COST ESTIMATE
2024 Baseline Construction Cost Estimate	$4,000,000
Design Services Cost Estimate	$484,000
Escalated Construction Cost Estimate (Build Year 2029)	$5,150,000
Construction Engineering + Inspection Services	$618,000
Additional Project Contingency (5%)	$258,000
TOTAL	$6,510,000

TOWN OF MARS HILL

OTIS DUCK GREENWAY TO BAILEY MOUNTAIN PRESERVE FEASIBILITY STUDY

Corridor 1 - Banjo Branch at Hickory Dr to Smith Farm Park

Design Considerations

- Recommended Alternative
- Proposed Retaining Wall
- Greenway Connection
- Sidewalk
- Dr. W. Otis Duck Memorial Greenway
- 10 ft Contour
- 100 ft Contour
- Water
- Impacted Parcel
- Public Owned Parcel
- Mars Hill University
- Parcel
- Mars Hill Town Boundary

N

1 inch = 500 feet

CORRIDOR 2 - HICKORY DR TO TENNIS COURTS

Corridor 2 connects Hickory Dr at the Banjo Branch stream crossing to the southern terminus of the existing Dr. W. Otis Duck Memorial Greenway near the Mars Hill University tennis courts. The corridor follows Banjo Branch south and turns east toward the Mars Hill University campus near the confluence with Gabriel Creek.

EXISTING CONDITIONS

A densly forested hillside that is flanked on both sides of the ridge with creeks (Gabriel Creek and Banjo Branch Creek provides an impressive natural setting for a greenway trail

PRIMARY TYPICAL SECTIONS

Typical sections A and D

Primarily a 10 ft greenway trail with 2 ft shoulders on each side. In this setting the greenway trail will sit on a bench created by cut/fill and a a retaining wall which wraps the nose of the ridge near the creek confluence.

Destinations Served

Mars Hill University (Hart Tennis Complex, Meares Stadium, Henderson Field, Cappiello Athletic Training Facility)

Potential Real Estate Acuiqistion

3 parcels, 2 of which are owned by Mars Hill University

Potential Permitting Needs

Floodplain development permit, Erosion control permit, Utility relocation agreements

PROJECT SNAPSHOT

Location

Banjo Branch from Hickory Dr to Gabriel Creek, and Gabriel Creek from Banjo Branch to existing Dr. W. Otis Duck Memorial Greenway

Facility Type(s)

Greenway Trail

Total Length

1,864 feet/0.35 miles

Structures

Retaining Wall, Culvert Extension

Roadway Crossings

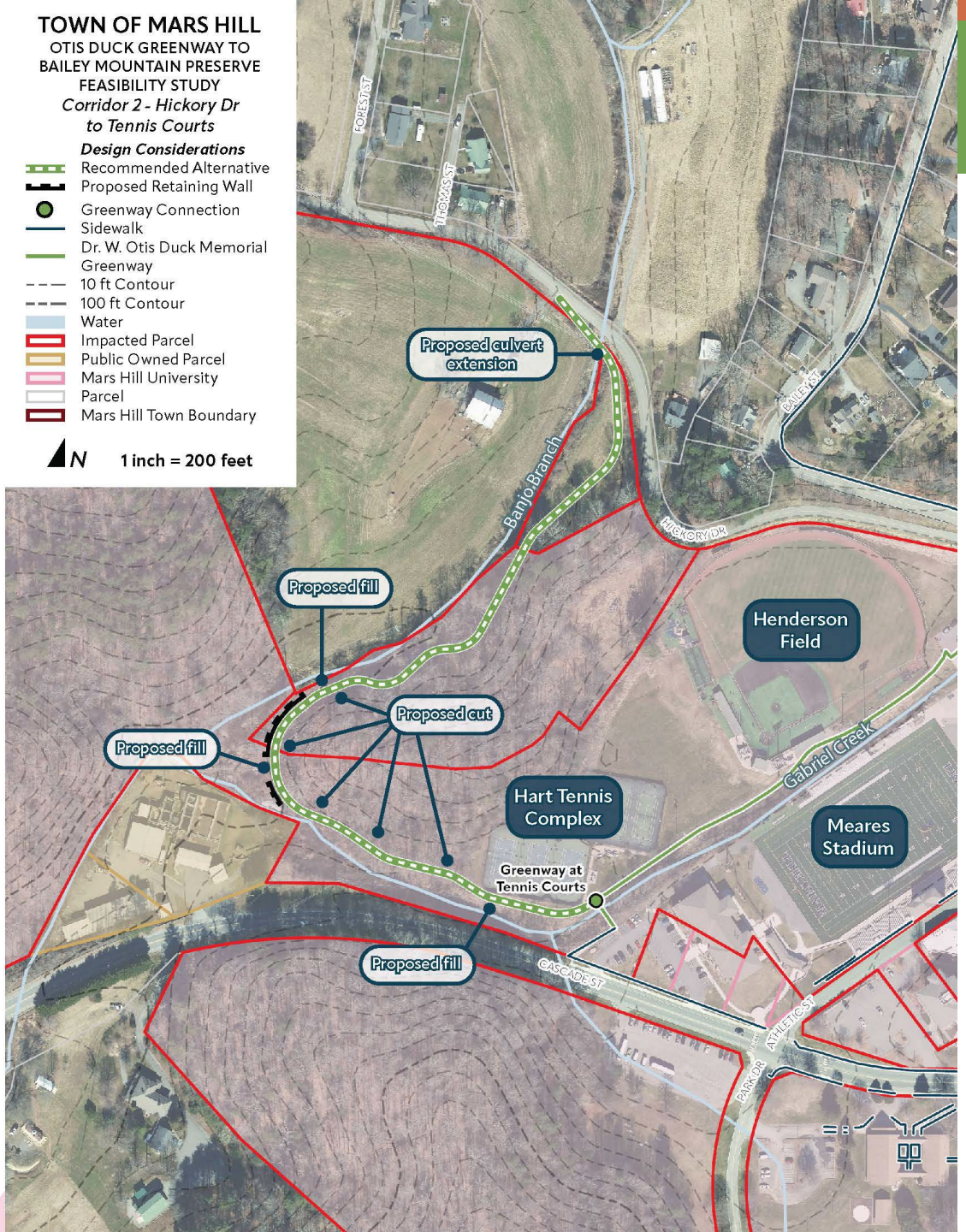
None

Greenway Connections

Dr. W. Otis Duck Memorial Greenway at Mars Hill University Hart Tennis Complex

ESTIMATED PROJECT COSTS

COST CATEGORY	COST ESTIMATE
2024 Baseline Construction Cost Estimate	$896,000
Design Services Cost Estimate	$108,000
Escalated Construction Cost Estimate (Build Year 2029)	$1,150,000
Construction Engineering + Inspection Services	$138,000
Additional Project Contingency (5%)	$58,000
TOTAL	$1,454,000



CORRIDOR 4 - EXISTING GREENWAY AT BAILEY ST TO SMITH FARM PARK

Corridor 4 connects the existing Dr. W. Otis Duck Memorial Greenway at its Bailey St terminus to Smith Farm Park, roughly following Bailey St and Banjo Branch Rd.

EXISTING CONDITIONS

A partially forested hillside and a roadway flanked by large-lot homes, offering potential for scenic vistas and a signature trailhead.

PRIMARY TYPICAL SECTIONS

Typical sections A and C

Primarily a 10 ft greenway trail with 2 ft shoulders on each side. Cut and fill will be required in locations where the hillside is steep and switchbacks are used.

Destinations Served

Smith Farm Park, Bailey Mountain Preserve, Mars Hill Elementary School

Potential Real Estate Acuiqistion

6 parcels, one of which is owned by Calvary Baptist Church. The Town of Mars Hill holds an option to purchase one of these parcels.

Potential Permitting Needs

Floodplain development permit, Erosion control permit, Utility relocation agreements

PROJECT SNAPSHOT

Location

Bailey St from existing sidewalk and connection to Dr. W. Otis Duck Memorial Greenway to Banjo Branch Rd and off-street alignment between Bailey St and Smith Farm Park.

Facility Type(s)

Sidepath (along west side of Bailey St), Greenway Trail (west of Bailey St)

Total Length

7,920 feet/1.5 miles

Structures

Culvert extension at Forest St

Roadway Crossings

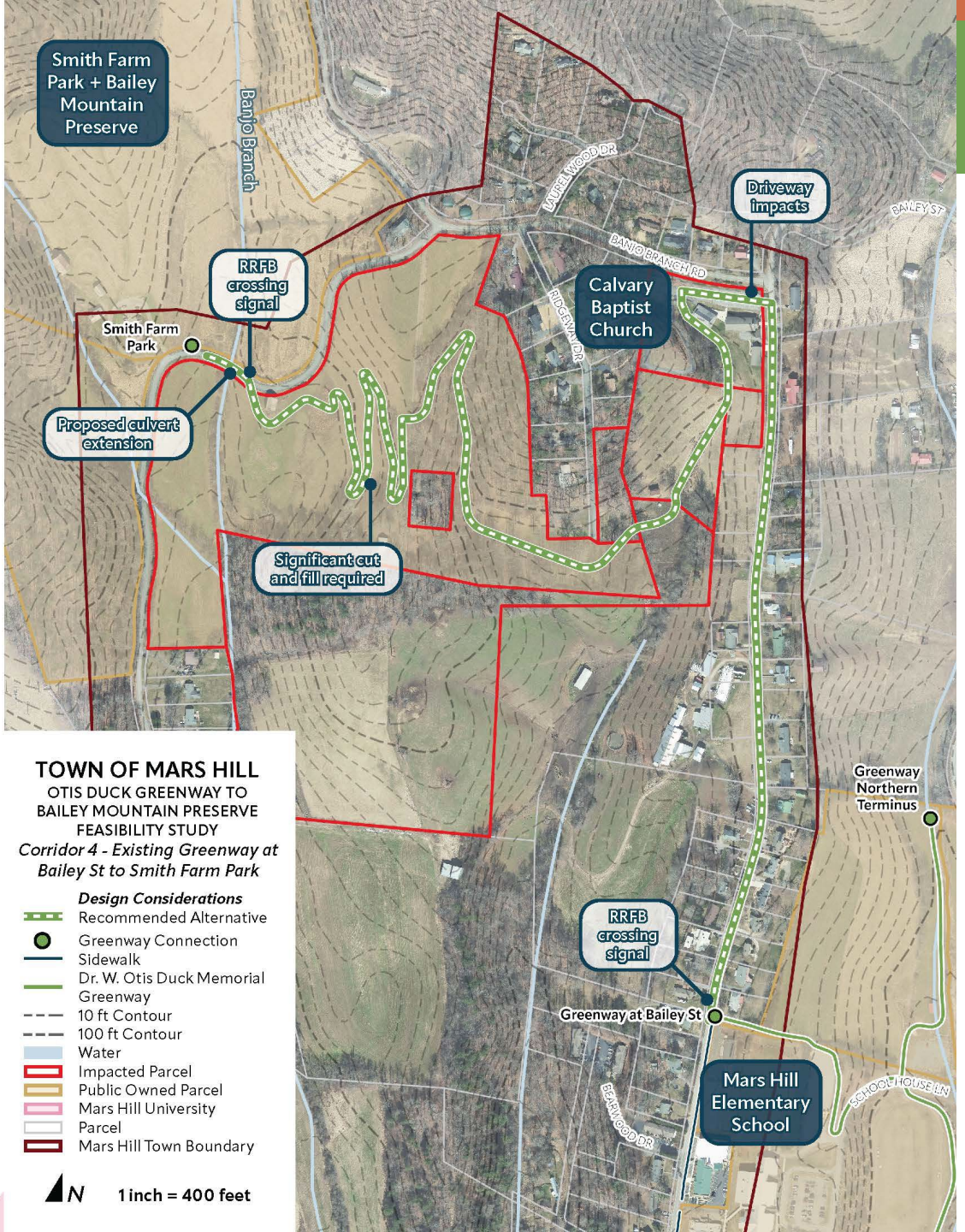
At-grade crossings of Bailey St and Forest St (Rectangular Rapid Flashing Beacon)

Greenway Connections

Dr. W. Otis Duck Memorial Greenway connection at Mars Hill Elementary School

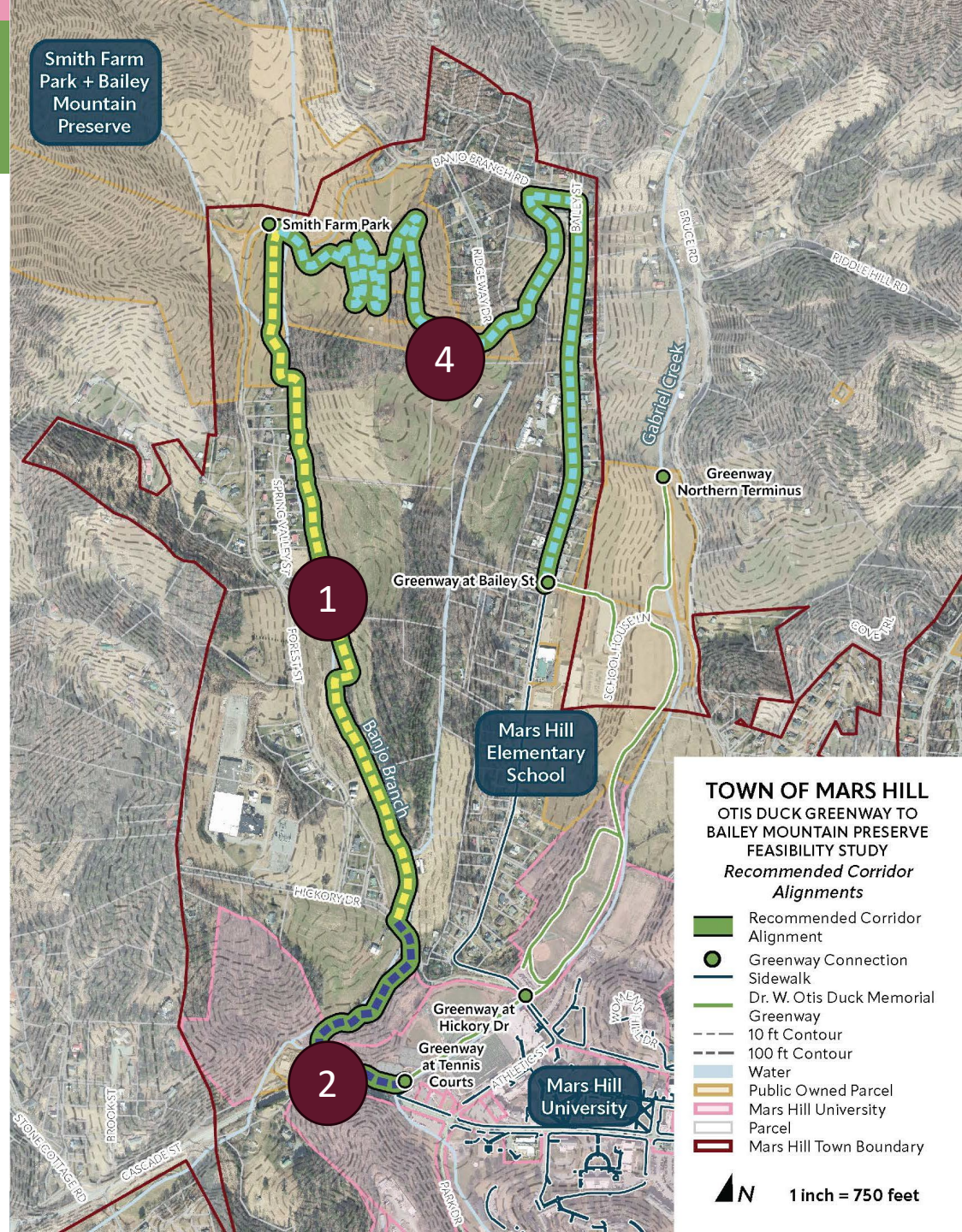
ESTIMATED PROJECT COSTS

COST CATEGORY	COST ESTIMATE
2024 Baseline Construction Cost Estimate	$3,383,000
Design Services Cost Estimate	$406,000
Escalated Construction Cost Estimate (Build Year 2029)	$4,320,000
Construction Engineering + Inspection Services	$519,000
Additional Project Contingency (5%)	$216,000
TOTAL	**$5,461,000**



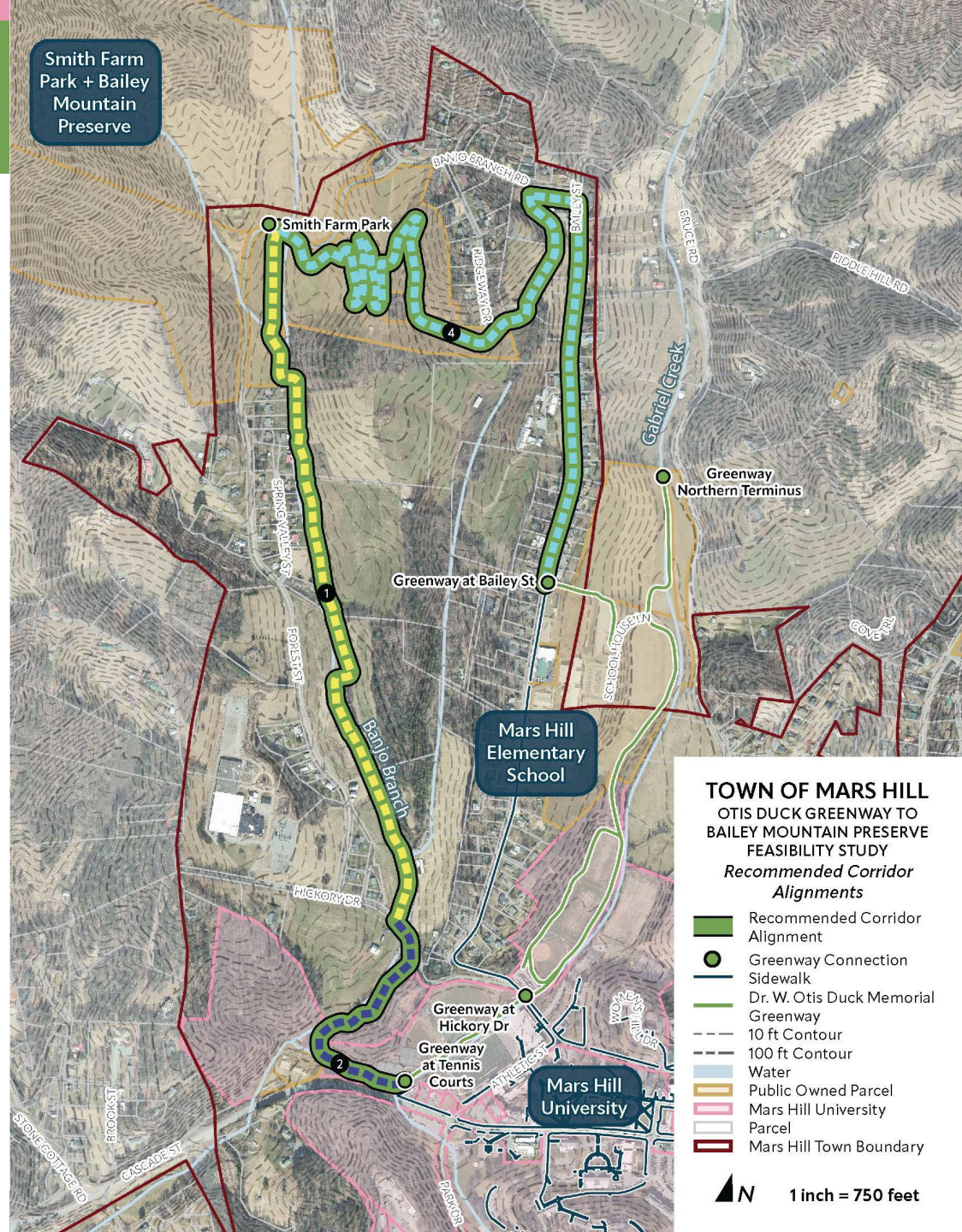
Phasing

- Corridor 2
  - Established Relationships
  - Cost effective
  - Interim connection via Forest St
- Corridor 4
  - Competitive for Grant Programs with Park, School, and existing greenway trail connections
- Corridor 1
  - Corridor 2 (or 4) needed for utility



Action Plan

#	ACTION	LEAD	PARTNERS	TIMEFRAME
1	Perform property owner engagement along the recommended alignments to gain support for future greenway easements or property acquisition before projects enter a design phase	Town of Mars Hill	Parks and Recreation Advisory Board	Short-term
2	Amend the project description and alignments as needed in French Broad River MPO plans and programs to reflect updated cost estimates and alignments from this feasibility study (CTP, MTP, TIP)	French Broad River MPO	Town of Mars Hill, NCDOT	Short-term
3	Identify funding opportunities to advance design for all of parts of the recommended alignments. Advancing a project into design is a great way to better position projects for right-of-way acquisition and construction funding grant awards. Design funding can come solely from the Town or from a grant source with a Town match.	Town of Mars Hill	Mars Hill University, NCDOT, Friends of Bailey Mountain, French Broad River MPO	Short-term
4	Identify construction funding opportunities and apply for a construction funding grant to build a portion of the greenway loop.	Town of Mars Hill	French Broad River MPO, Mars Hill University, NCDOT, Friends of Bailey Mountain	Medium-term
5	Promote the vision for the Otis Duck Greenway Loop using materials from this feasibility study in the Mars Hill Community and the Region to build support for the project.	Friends of Bailey Mountain, Town of Mars Hill	French Broad River MPO, NCDOT	Ongoing/ Perpetual



Appendix

- Alternatives not advanced
- Individual segment cost estimates

DR. W. Otis Duck Memorial Greenway Feasibility Study

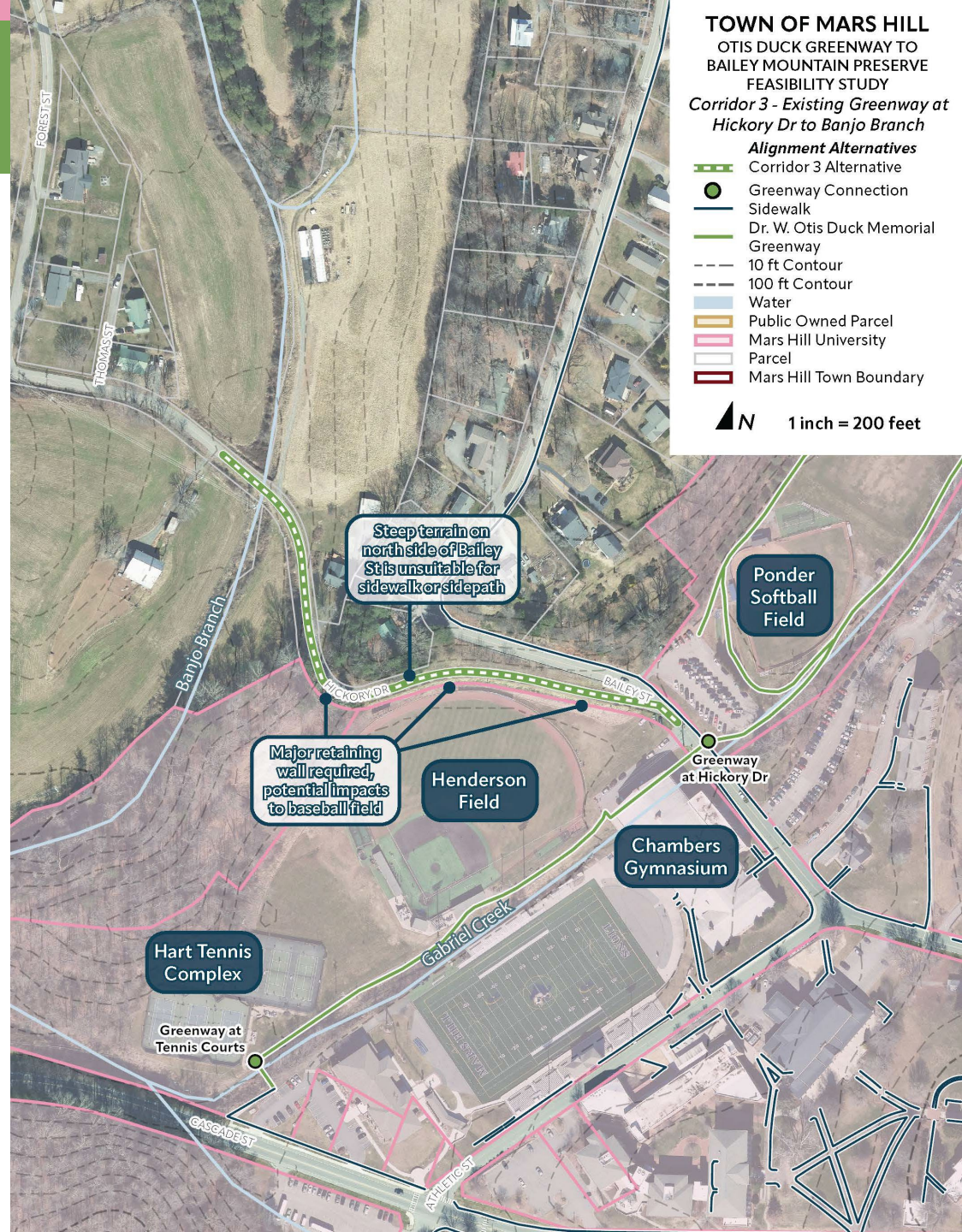
Project Location: Mars Hill, NC
Project Description: 10' Paved Multi-Use Path
Client: Town of Mars Hill
Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 1

Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	$ 20,000.00	$ 20,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	$ 10,000.00	$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1650	SY	$ 5.00	$ 8,250.00
520	1121000000-E	AGGREGATE BASE COURSE	650	TON	$ 50.00	$ 32,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	180	TON	$ 125.00	$ 22,500.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	$ 600.00	$ 9,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	$ 60,000.00	$ 60,000.00
		DRAINAGE	1	LS	$ 30,000.00	$ 30,000.00
SP		AT-GRADE CROSSING (RRFB)	1	EA	$ 30,000.00	$ 30,000.00
SP		COMPREHENSIVE GRADING	1	LS	$ 110,000.00	$ 110,000.00

SUBTOTAL		**$332,250.00**
CONTINGENCY @	**35%**	**$116,287.50**
CONSTRUCTION COST	**SAY**	**$449,000**



Questions?