SINGING RIVER TRAIL MASTER PLAN

Connecting the past, present, and future of North Alabama

JULY 2019

LAUNCH 2035

Land Trust OF NORTH ALABAMA

IMPROVING COMMUNITIES TARCOG FOR OVER 50 YEARS

East Coast Greenway, Raleigh, North Carolina
Source: NCDOT

"The Singing River Trail is a wonderful way to connect our communities and explore our beautiful and diverse areas. We are excited to have the trail come through Mooresville and connect people to our neighbor-Wheeler Wildlife Refuge. This trail will be such an asset to North Alabama."

Mayor Margaret Anne Crumlish,
Town of Mooresville

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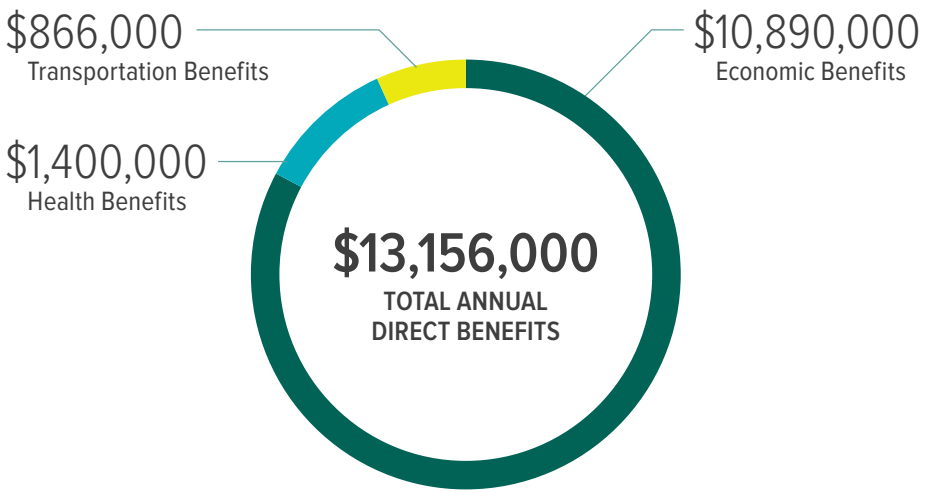
American Tobacco Trail
Durham, North Carolina
Source: Alta

"The Singing River Trail will provide a quality of life enhancement for the citizens of Limestone, Madison and Morgan Counties and, as a consequence, foster future increased growth for years to come."

Alabama State Senator Arthur Orr

Introduction

Project Background and Process



An economic impact report conducted for the Singing River Trail anticipates significant impact for north Alabama.

The Singing River Trail in North Alabama will connect communities in three counties and serve as an approximately 70-mile trail spine linking to other trail systems throughout the region. The trail will connect our communities, provide active-living opportunities for residents, and spur further economic development for the region. It will also serve as an active transportation corridor providing a safe connection for travel between home, work, and play.

The vision for the Singing River Trail was borne out of the Launch 2035 Initiative and from North Alabamians who care about the region's future. Project branding, an economic impact analysis, and the master plan itself were funded by over 30 separate entities, organizations, and individuals who are committed to the project and what it means for the region.

The planning process began in the spring of 2018 with the release of the Singing River Trail Economic and Health Impact Analysis report and a public-facing project launch held in Huntsville's Space and Rocket Center and Calhoun Community College's Decatur campus. The report predicts 5,000 daily users of the trail and $13,156,000 in total annual direct benefits.

The master planning process included a guiding body, the Launch 2035 Land Use Committee. This Committee included representatives from all the counties and municipalities of the region, along with other key stakeholders and agencies.

Master Plan and Implementation Funding Contributors

Governmental Supporters

City of Huntsville

City of Madison

City of Decatur

City of Athens

Madison County Commission, *Chairman Dale Strong*

Morgan County Commission

Limestone County Commission

Alabama State Senator, *Arthur Orr*

Alabama House of Representatives, *Speaker Mac McCutcheon*

Former Alabama State Senator, *Slade Blackwell*

Corporate/Non-Profit Supporters

Huntsville Hospital System

Tennessee Valley Authority

Alabama Association of RC&D Councils

Robins & Morton

Huntsville/Madison Co. Chamber of Commerce

Rotary Club of Greater Huntsville

Community Foundation of Greater Huntsville

Decatur Daily, *Clint Shelton*

Redstone Federal Credit Union

Calhoun Community College

Bentley Pontiac GMC

Regions Bank

Pathway Health Care

Century Automotive

AT&T

Land Trust of North Alabama

Individual Supporters

Drs. Amit and Aruna Arora

Joe W. Campbell, Baker Donelson

P. Michael Cole, Wilmer & Lee

Steve Raby

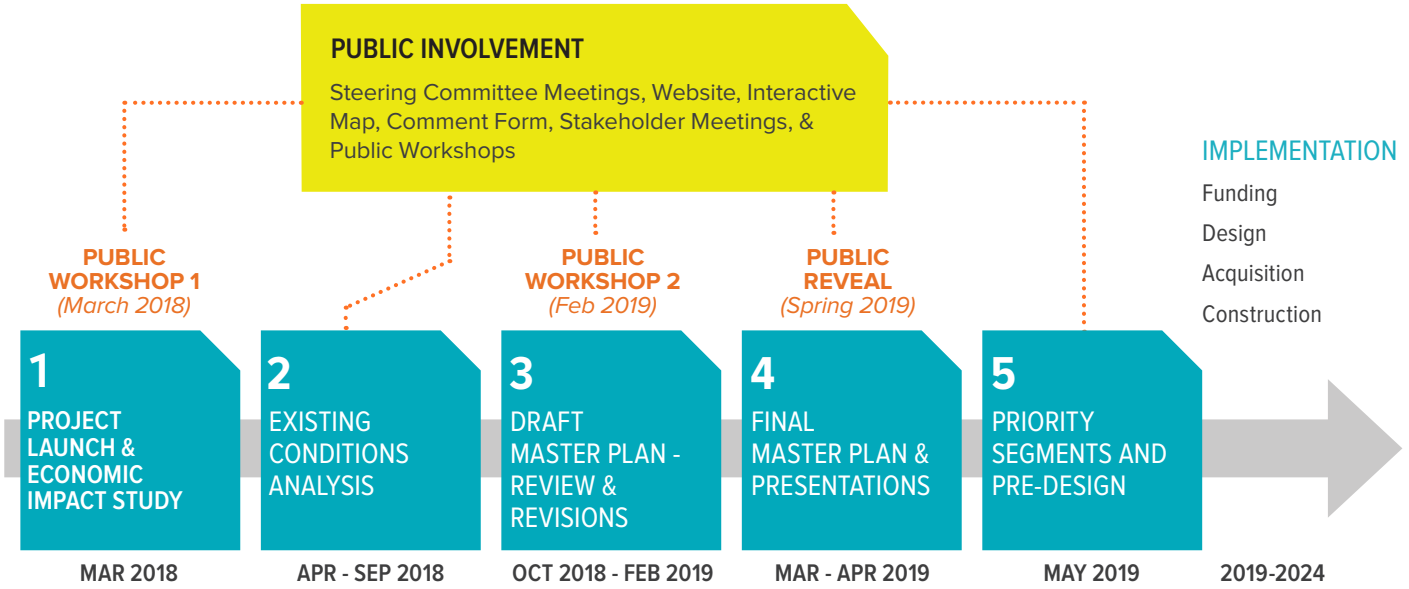
David Spillers, CEO, Huntsville Hospital System

Mike Dalen

Master Plan Process

Residents were engaged through public meetings, a project website, social media, and other means.

This Singing River Trail Master Plan establishes a framework for the development of the 70-mile trail. The Plan defines the trail routing, identifies a phased approach, provides detail for Phase One projects, and establishes an implementation framework for designing and constructing the trail.



Launch 2035 Land Use (Singing River Trail) Committee

Nancy Robertson	TARCOG
Joe Campbell	Huntsville Hospital System
Marie Bostick	Land Trust of North Alabama
Mary Beth Broeren	City of Madison
Connie Graham	City of Huntsville
Dennis Madsen	City of Huntsville / Huntsville MPO
Carol Rhea	Orion Planning & Design
Les Tillery	Planning Commission Member, City of Huntsville
Lauren Vandiver	TVA
Dewayne Hellums	Decatur MPO
Emery Hoyle	Wheeler Wildlife Refuge
Ricky Ingram	Wheeler Wildlife Refuge
Karen Smith	City of Decatur
Erin Tidwell	City of Athens
Falguni Patel	TARCOG
Rod Huffman	City of Athens
Paige Colburn	City of Huntsville
Mike Dalen	Land Trust of North Alabama Board
Scott McLain	Coldwell Banker Commercial
Brandi Quick	Ditto Landing
Rick Tucker	Huntsville International Airport
Jeff Pruitt	North Central Alabama Regional Council of Governments
Wally Terry	City of Decatur
Ben Payment	HSV Greenways Committee
Bruce Weddendorf	Straight to Ale
Jenna Streeter	Madison Co Commission
Amy Golden	Athens Utilities
Gary Van Wagnen	Limestone Co United Way
James Vandiver	City of Huntsville
Craig Beasley	
David Breland	AL Historic Commission
Kaylin Deal	Renta Urban Land Design
Debbie Gibson	Dec/Morgan Co. CVB Pres/CEO
Joey Hester	North Central Alabama Regional Council of Governments
John Meredith	Meredith Advocacy
Jeanne Payne	Cook Museum
Sandra Buroughs	Alabama Mountain Lakes Tourist Association
Joe Vallely	US Space and Rocket Center
Shannon Keith	Alabama Trail of Tears Association
John Allen	Committee of 100
Bill Sims	
Sarah Toth	Alabama A&M
Richard Martin	
Tom Cunningham	4Site
Nicholas Nene	City of Huntsville
Rachel Bolton	City of Huntsville
Clint Johns	City of Huntsville

Getting to the Plan

"The Committee of 100 is a business organization of 255 CEOs and professionals – including 50 young professionals — committed to long-term strategies that support economic development, high-quality public education, and cooperative local government."

Launch 2035 is a regional planning initiative covering Limestone, Madison and Morgan counties. The regional partnership aims to rethink and imagine our region's economy 20 years from today.

The Land Use Subcommittee of Launch 2035 is tasked with supporting "enhanced regional land-use planning, including outdoor recreation, greenways, land preservation, innovative neighborhood concepts, and integrated transportation planning."

The Singing River Trail is a large regional effort that requires consistent coordination and leadership to ensure cooperation between a wide range of stakeholders. Getting to where we are today required an ambitious vision and bold leadership. This Master Plan effort was born from the Huntsville Committee of 100 who helped develop Launch 2035. Within Launch 2035, a Land Use Subcommittee was born to focus on physical and community development of the region. This group created the Singing River Trail Master Plan.

Public Participation - By the Numbers

Vision and Goals

The Launch 2035 Land Use Committee, with input from the public, established a project vision and goals for the Singing River Trail Master Plan. The vision and goals serve as the guiding force for this document and the eventual outcome of the Singing River Trail on the ground in North Alabama.

VISION

The Singing River Trail (SRT) is a world-class resource that connects the region, celebrates Native American heritage, provides educational opportunities, contributes to economic development, and enhances the quality of life for residents and visitors throughout North Alabama.

GOALS

1 Improve Access to Outdoor Recreation for Health and Wellness

Improve the health and wellness of users by increasing the opportunities for recreation, physical activity, and time spent outdoors and in nature.

2 Reflect Context Through Trail Design and Accessibility

Reflect the shifting rural-urban landscape of the trail through unique, local design elements and programming that encourages a diverse range of uses.

3 Create Trail Connections Between Communities and Destinations

Create trail connections between communities and diverse destinations, such as green spaces, trails, and urban areas.

4 Support Economic Development and Capitalize on Trail-Based Tourism

Support economic development by promoting the Singing River Trail in a way that invites tourism, creates opportunity for appropriate development along the trail, increases property values, and connects a variety of destinations.

5 Celebrate the Region Through Trail Features, Education, and Design

Celebrate North Alabama's Native American history and natural environment through design features, amenities, and interpretation that strengthens the user's connection to nature and their relationship to place.

6 Create Additional Transportation Option for Residents

Create additional transportation options that provide choices for residents of North Alabama, reduce traffic congestion, and improve air quality.

7 Plan Components

The Master Plan includes the following:

- A summary of existing conditions analysis that was conducted to develop the recommendations in this Plan
- Mapped routing of the Singing River Trail with facility type details
- Phase One implementation that includes detail on priority routes, next steps, and cost estimates
- An implementation framework that details the leadership, partnerships, roles, action steps, and funding for the design and construction of the Singing River Trail
- Design guidelines for the Singing River Trail that will provide consistency for the trail experience
- A summary of public involvement
- A summary of existing plans

The Story of the Singing River

THE LEGEND OF THE SINGING RIVER

The Yuchi Indian tribe, who lived along the Tennessee River, called it the "Singing River" because they believed a woman who lived in the river sang to them. The tribe was sent to the Indian Territory of Oklahoma as part of the removal of native peoples from the southeast. A young woman named Te-lah-nay felt that the streams and rivers in Oklahoma did not sing to her. She made the long journey to her homeland and made it successfully.

Questioning why a young Native girl would brave a long, perilous journey back to her home land, contemporary discussions with her family lineage points to the answer being that of Te-lah-nay's responsibility to her deceased tribal members. Local Native Americans expanded on the legend saying the Singing River holds a portal to the afterlife. Her responsibility to the tribe included making sure those souls traveled to the safety of the ancestors who had passed before. The Yuchi are not the only tribe that attributes human characteristics to rivers. The North Alabama Cherokee long called the river the "Long Person" or "Long Man" contributing to the river a sort of collective consciousness.

Paula Nelson, an artist who is an Eastern Band Cherokee citizen contributed sketches of Te-lah-nay in three different concept drawings. Paula incorporated an ancient iconic symbol of "water as medicine" into each drawing. Te-lah-nay was also thought of as a healer for her people, so Paula's decision to place her at the river makes cultural sense. The river is a place of ritual for spiritual cleansing as well as physical cleansing. Paula's career spans decades of studying iconography across tribal lines and time periods including pre- and post-contact Native American symbology. Tattooed on her wrist, she carries the symbol of water as medicine.

Paula's work combined with Alta's design team ultimately led to the logo for the Singing River Trail. It made sense to incorporate a symbol for medicine into the bike trail logo since that is the essence of the Singing River Trail: Bringing medicine to the North Alabama region to encourage physical wellness, mental wellness and spiritual wellness.

2

Wolf River Greenway
Memphis, Tennessee
Source: Alta

"The Singing River Trail helps accomplish the community's desire for improved connectivity in a manner that is fun, equitable, safe and beautiful. This landmark project also hits many of the goals outlined in Huntsville's BIG Picture Master plan to create a vibrant, sustainable and healthy community that is pedestrian and bike friendly."

Mayor Tommy Battle, City of Huntsville

Current Conditions

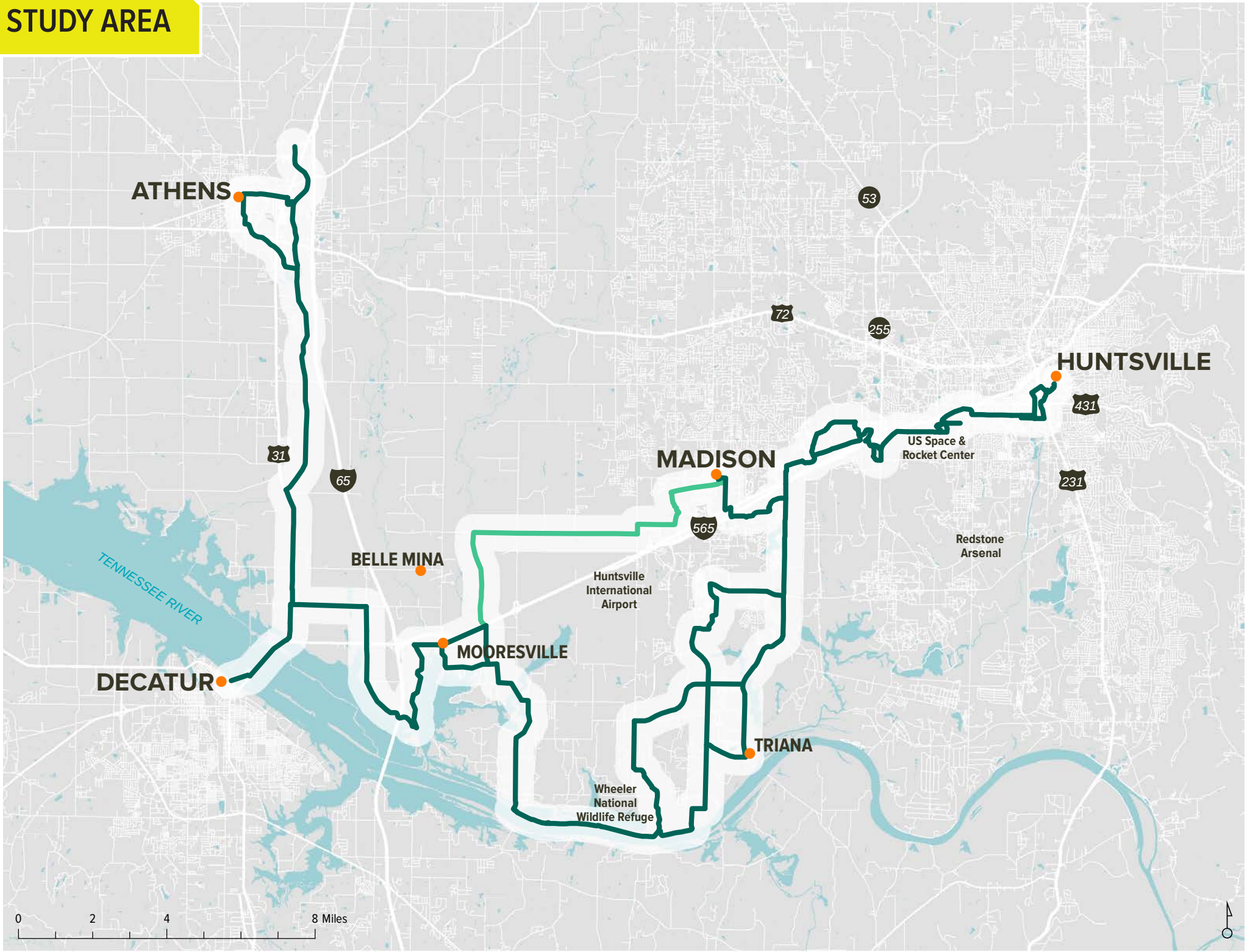
Introduction

The Singing River Trail corridor comprised of Huntsville, Madison, Decatur, and Athens through Madison, Limestone, and Morgan counties has seen and continues to see substantial growth and economic success. With Redstone Arsenal, NASA, Research Park, and major corporations and employers in this region, the region has an influx of populations from around the country and the world. With the varied backgrounds and experiences of people moving to North Alabama, there are expectations of quality-of-life amenities such as parks and trails that they have experienced in their previous communities.

The Tennessee Valley has been one of the fastest growing areas for many years. Huntsville has been a tech center since the 1950s, when the U.S. Army put a group of scientists there to boost the country's space program. Today, in Huntsville, the largest employers are the US Army (Redstone Arsenal) at 35,000 and NASA (Marshall Space Flight Center) at 6,500. More than a dozen major economic development projects will bring more than 6,000 new jobs to Huntsville and North Alabama. More than $4.1 billion has been committed to the developments in 2017-2018. The Huntsville metro area, including Madison, is bracing for what could potentially be dramatic growth in coming years as the Mazda Toyota Manufacturing USA plant in west Huntsville begins production in 2021. The plant is expected to create 10,000 direct and indirect jobs. With continued growth and new industry, the landscape between Huntsville, Madison, Decatur, and Athens (where the Singing River Trail corridor is located) will continue to change dramatically. The Singing River Trail is an opportunity to weave through the new and changing landscape while telling the Native American, agricultural, and natural histories of the region.

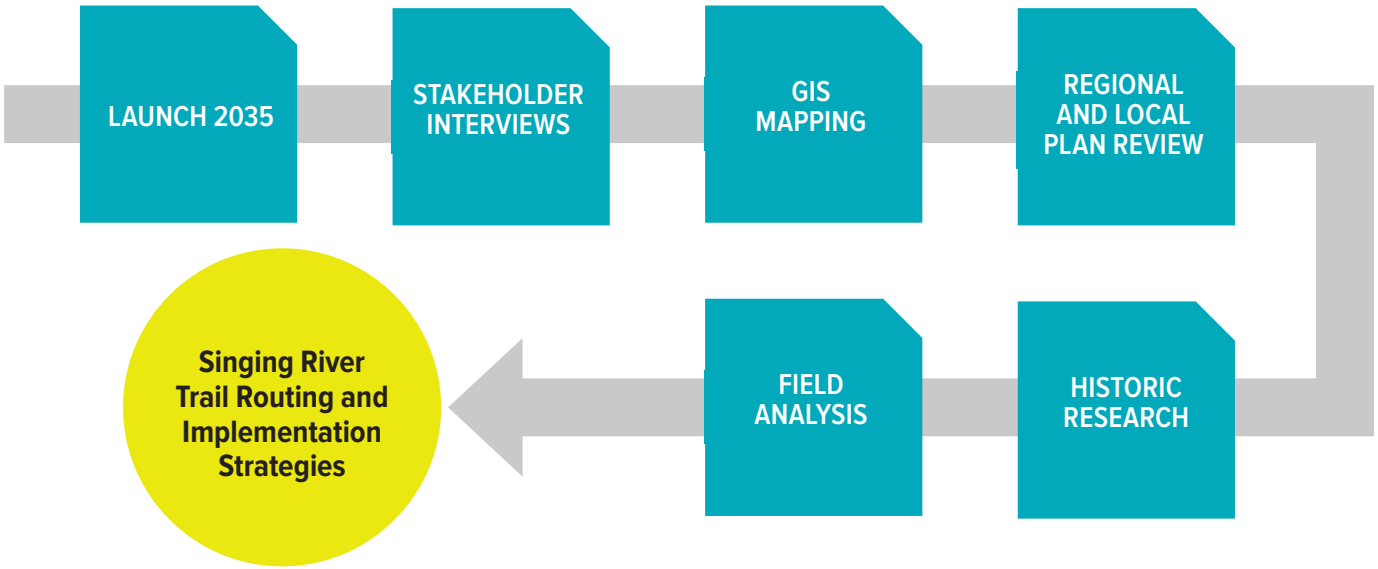
Currently, the region is lacking in greenway trails and bicycle and pedestrian facilities. However, there is growing understanding and desire among local governments to provide these amenities for their citizens. This is apparent in recent planning efforts and commitments of the cities along the Singing River Trail corridor (see appendix).

STUDY AREA


ATHENS
DECATUR
BELLE MINA
MOORESVILLE
MADISON
HUNTSVILLE
TRIANA
TENNESSEE RIVER
Huntsville International Airport
US Space & Rocket Center
Redstone Arsenal
Wheeler National Wildlife Refuge
53
72
255
431
31
65
565
231
0
2
4
8 Miles

A thorough analysis of current conditions was performed as part of the master planning process. The analysis included stakeholder and local government interviews, GIS mapping, relevant regional and local planning effort review, and field review. This analysis set the stage for the routing recommendations in Chapter 3.

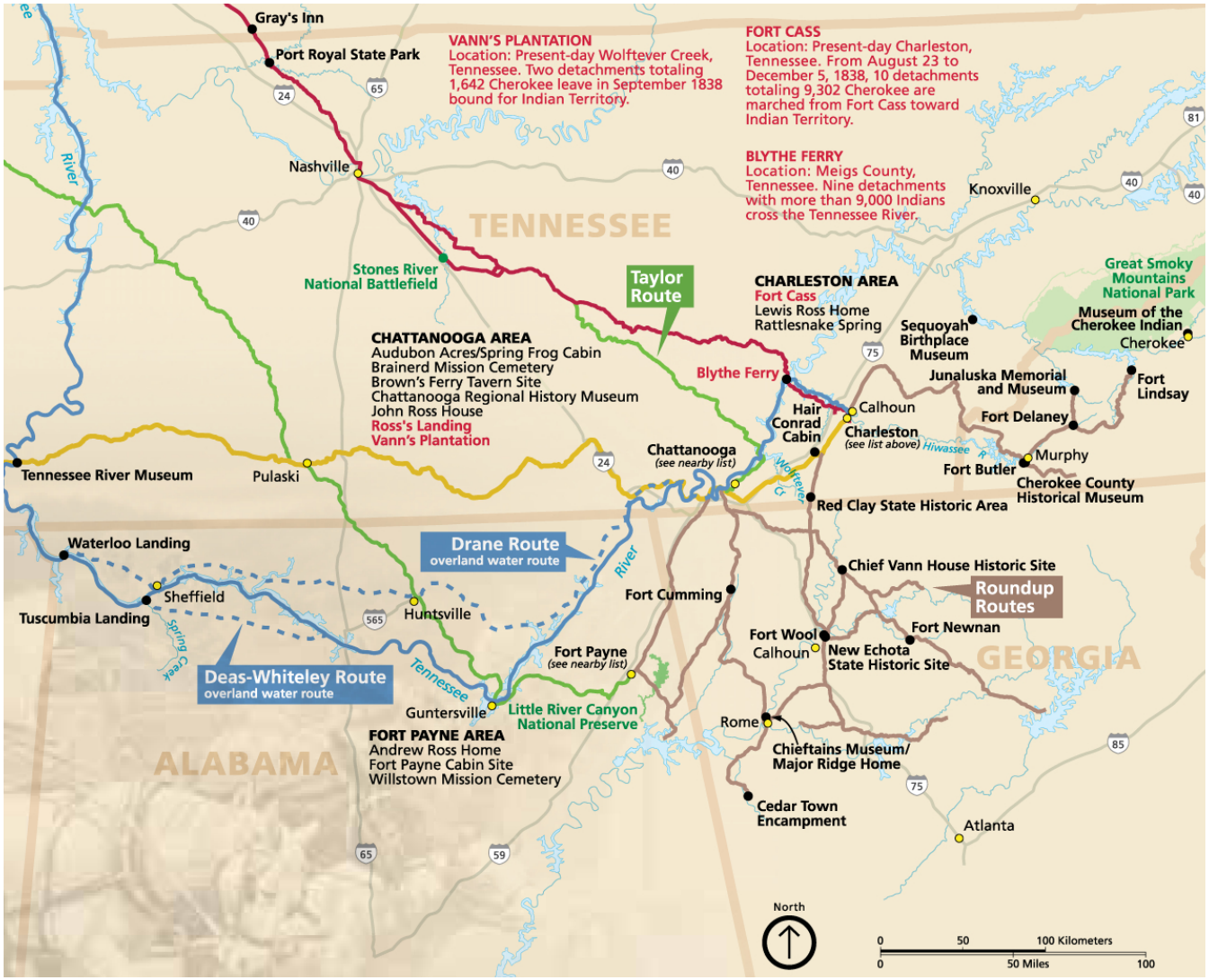
Analysis of Existing Conditions



Highlights of the Region

NATIVE AMERICAN HISTORY

The history of Native Americans in Madison, Morgan and Limestone counties dates back to around 11,000 years. Indigenous occupation of these counties is revealed through the artifacts left behind. Earliest lithic evidence dates to the archaic period some 11,000 years ago. Continued evidence of woodland period occupation in the form of beautiful carved pipes, ceramics and lithics are still found in large amounts scattered along the landscapes of these counties. By the time of European contact in the 1500's, tribes had established themselves throughout this region. When traders flooded the tri-county areas in the 1700's, they found a strong presence of the Cherokee tribe, Chickasaw tribe, and the Creek tribe. In the early 1830's, the Chickasaw gave up any claim to holdings west up to Huntsville, and primary occupation was held by the Cherokee. The Indian Removal Act of 1830 set the stage for Cherokee removal from the tri-county area, and full relinquishment of any holdings was sealed by the Treaty of New Echota in 1835. The round-up commonly known as the Trail of Tears began in 1838. Following 1838, only a few descendants continued to inhabit the region. Currently, there are many native people living in these counties who are proud of the history and traditions their cultures contributed to these three counties. The Singing River Trail parallels and criss-crosses the routing, providing opportunity for interpretation of the historic Trail of Tears route.



Source: National Park Service - https://www.nps.gov/trte/planyourvisit/upload/2012-TRTE.pdf

AGRICULTURAL HERITAGE

Agriculture has been practiced in what is now Alabama for centuries. Prehistoric Native Americans practiced slash-and-burn agriculture, in which they cut and burned forests to make room for their patches of corn, beans, and squash. During Alabama's territorial period, settlers established the first farms, primarily along navigable rivers near where Native American villages once stood.

Cotton expanded rapidly throughout Alabama through the Civil War. Alabama became known as "The Cotton State" with almost four million acres planted to cotton in 1914. In the twentieth century, Alabama's economy also gradually changed from agriculture to industry (By 2015, only 1.5 million acres were devoted to all agricultural crops).

Although cotton dominated Alabama agriculture until after World War II, a gradual diversification of agriculture occurred. Today, the Tennessee Valley is Alabama's most concentrated row-crop-producing area, with Madison and Limestone counties having some of the most cotton acreage in the state. Soybean, corn, wheat, and cattle are also important commodities in this region. Urban sprawl from Huntsville, Madison, Decatur, and Athens has consumed much of the former farmland in North Alabama. However, large farms can still be found between Decatur and Athens and between Decatur and Madison.

Source: http://www.encyclopediaofalabama.org/article/h-1396. "Agriculture in Alabama." Charles Mitchell, Auburn University

NATURAL HERITAGE

North Alabama is blessed with natural beauty. The region is composed of diverse natural areas, with an abundance of caves, sinkholes, mountains, waterways, plants, and wildlife unique to the region. The southern Appalachian mountains start here. The Tennessee River and its tributaries and wetlands provide habitat for hundreds of bird, fish, and mammal species.

Wheeler National Wildlife Refuge, a centerpiece to the Singing River Trail corridor, is a 35,000 acre refuge attracting thousands of wintering waterfowl each year. The Refuge manages and protects habitat for 12 federally listed endangered or threatened species. Wheeler National Wildlife Refuge was established July 7, 1938 by President Franklin D. Roosevelt as a refuge and breeding ground for migratory birds and other wildlife. Its great diversity of habitat includes deep river channels, tributary creeks, tupelo swamps, open backwater embayments, bottomland hardwoods, pine uplands, and agricultural fields. This rich mix of habitats provides places for over 295 bird species to rest, nest and winter, including over 30 species of waterfowl (ducks and geese) and an increasing population of Sandhill cranes and a small number of Whooping cranes. The refuge is also home to 115 species of fish, 74 species of reptiles and amphibians, 47 species of mammals, 38 species of freshwater mussels, and 26 species of freshwater snails.

Wheeler National Wildlife Refuge, Triana, Alabama

DESTINATIONS

The Singing River Trail Corridor will connect multiple destinations, or hubs of activity. For the purposes of this study, the corridor begins in Downtown Huntsville and extends to Decatur and Athens. In the long term, the corridor may extend eastward to Ditto Landing and beyond, and westward to the Tuscumbia/Sheffield area.

Key destinations will include:

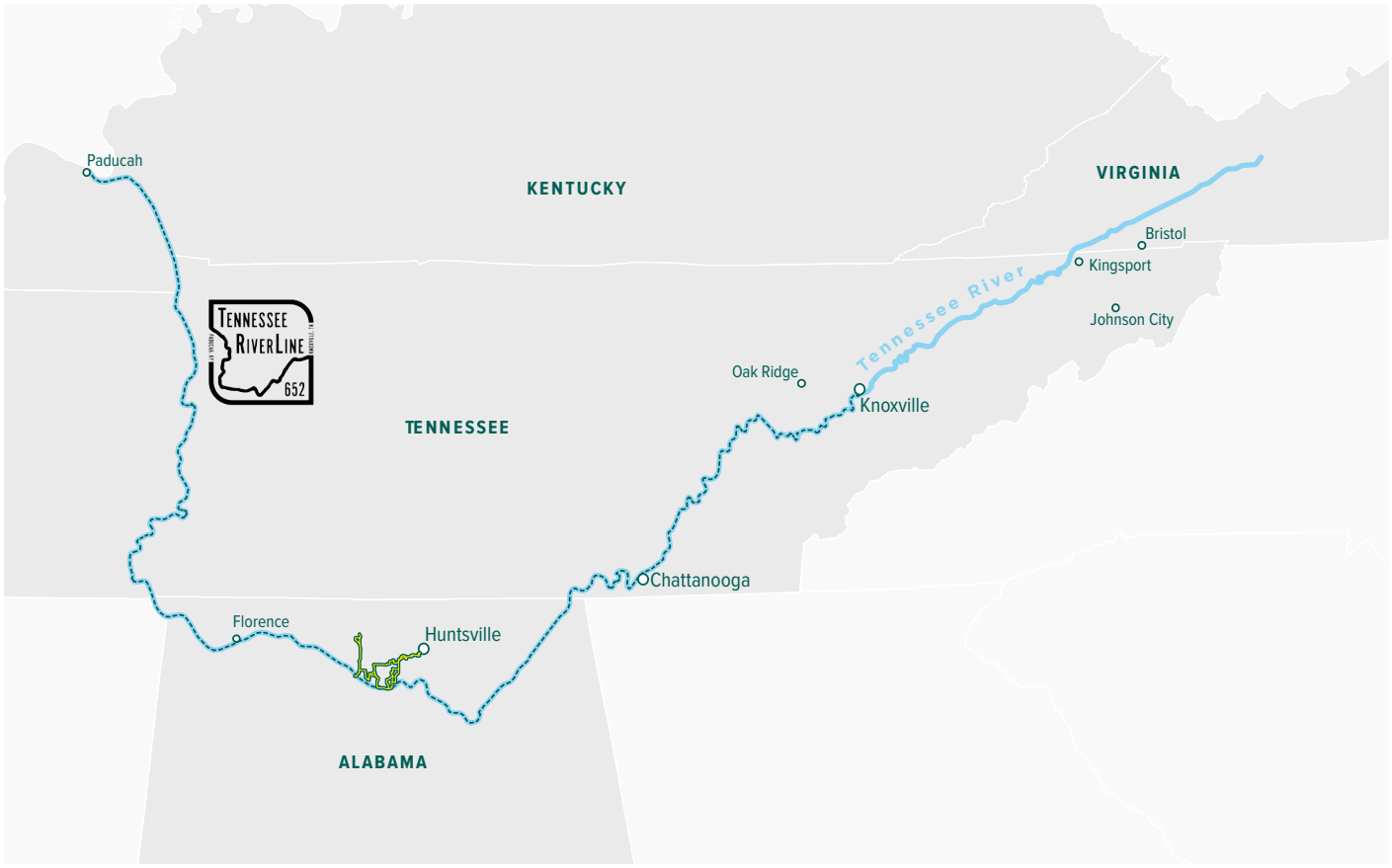
- Downtown Huntsville
- Lowe Mill
- West Huntsville
- Huntsville Botanical Gardens
- Space and Rocket Center
- Redstone Gateway
- Research Park
- Town Madison - New Ballpark (Rocket City Trash Pandas)
- Downtown Madison
- Triana
- Wheeler National Wildlife Refuge
- Mooresville
- Decatur
- Calhoun Community College
- Tanner
- Athens

Mooresville, Alabama

Space and Rocket Center, Huntsville, Alabama

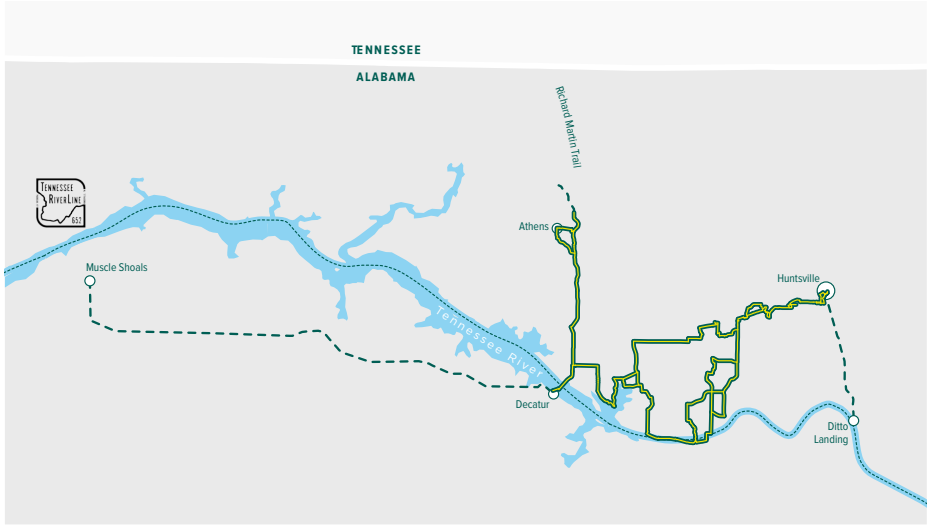
REGIONAL CONNECTIVITY

A larger scale trail concept was in its infancy at the time of this study, the Tennessee River Line. Developed by the University of Tennessee-Knoxville, the River Line would traverse Kentucky, eastern Tennessee, and north Alabama. The Singing River Trail should ultimately become a part of this long-distance trail.



LOCAL CONNECTIVITY

While this Master Plan covers the Singing River Trail corridor from Downtown Huntsville to Madison, Decatur, and Athens, it is recommended to extend the trail beyond these limits. In the future, the Singing River Trail will become part of a larger regional trail network. Locally, the Singing River Trail should be extended to Ditto Landing and the Tennessee River Trail through the City of Huntsville. North of Athens, the Trail should connect to the Richard Martin Trail. West of Decatur, the Trail would follow the general Trail of Tears route to the Muscle Shoals region in northwest Alabama, ultimately to connect to the Natchez Trace.

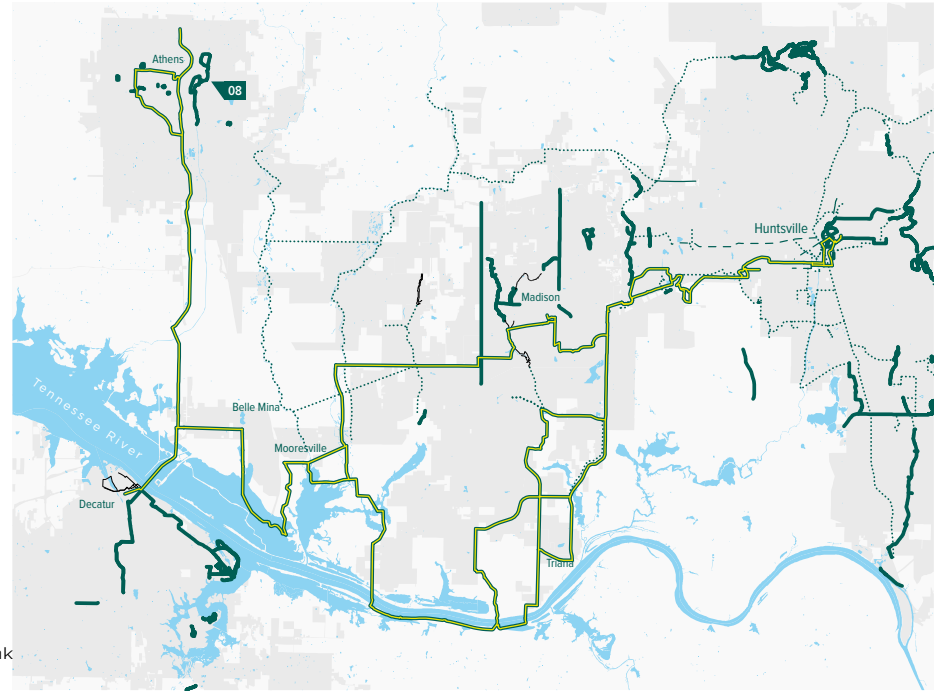


Singing River Trail
Singing River Trail Connector
Tennessee RiverLine Trail

EXISTING TRAILS

The communities of North Alabama have been steadily adding greenway trails due to the demand of their customers. Examples include the Indian Creek Greenway, Bradford Creek Greenway, Bill Sims Trail, Big Spring Park Greenway/Spragins Cycle Track/Depot Greenway/Gateway Greenway, Aldridge Creek Greenway, Tennessee River Trail, and Swan Creek Greenway. In addition, the cities of Huntsville, Madison, Decatur, and Athens have recommended trails on the books whether through a Greenway Master Plan or a comprehensive planning effort. Ongoing projects like the Zierdt Road multi-use path, Lowe Mill Corridor Study, and others were also documented and mapped for the purposes of selecting the preferred Singing River Trail routing.

Ultimately, with the Singing River Trail's goal of connecting Huntsville to Madison to Decatur to Athens, existing or planned routes were strongly considered due to previous analysis and trails that are on the ground, making for a more feasible and cost-effective approach.



Singing River Trail
Existing Bike Lane
Proposed Complete Streets Corridor
Existing Greenway, Shared Use Path, or Greenlink
Proposed Greenway, Shared Use Path, or Greenlink
Visionary Greenway

3

Swamp Rabbit Trail
Greenville, South Carolina
Source: VisitGreenvilleSC

"Connecting the proposed new Athens Recreation Center, the expanded Athens Sportsplex and the Swan Creek Greenway National Recreation Trail will be a vital asset to assist in the growth and development of the Athens Area. The Singing River Trail will connect our downtown communities and neighborhoods to the south and east!"

Mayor William "Ronnie" Marks, City of Athens

The Singing River Trail Route

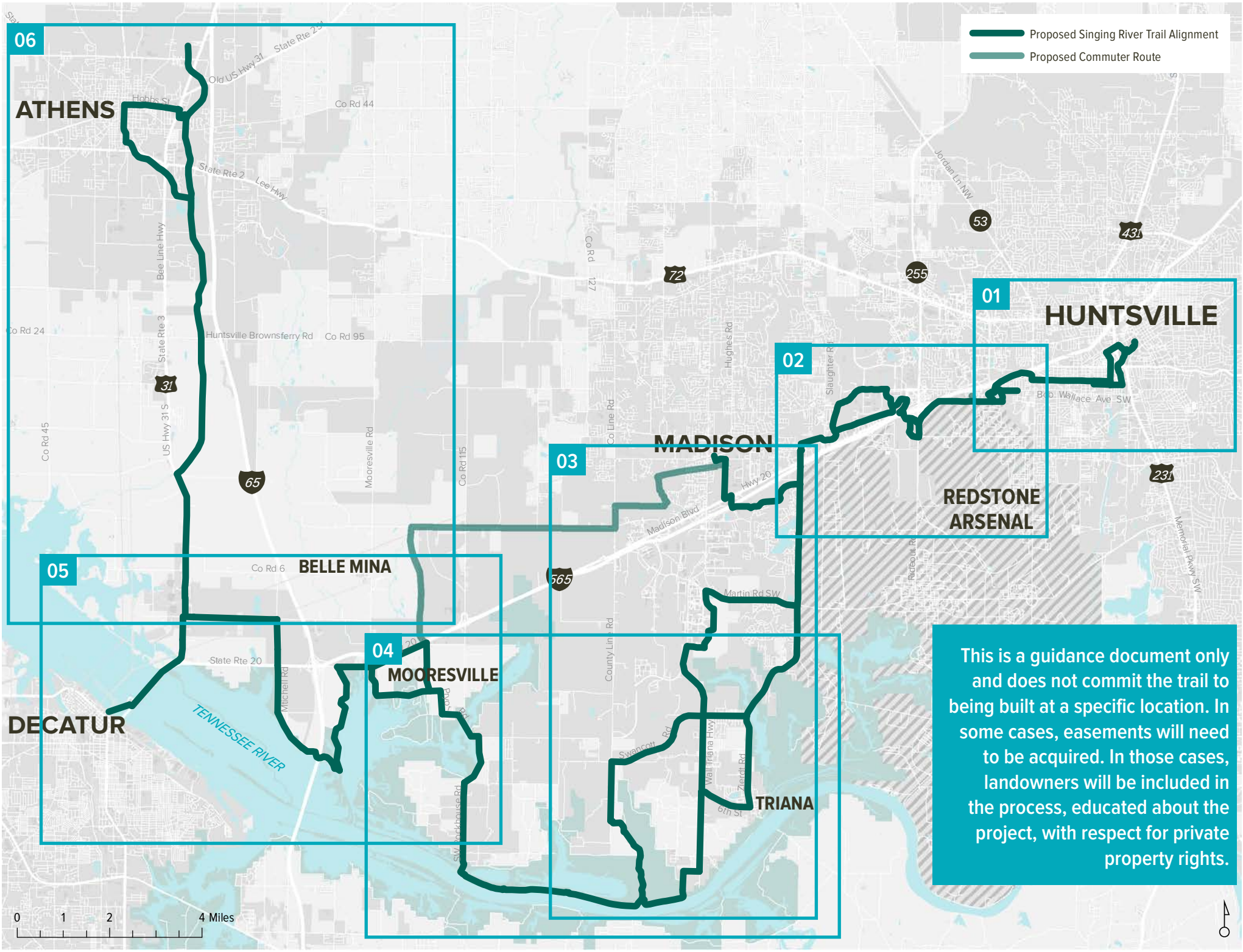
Introduction

The routing described in the following maps was developed through a combination of input from the Land Use Committee, municipal and county staff, stakeholders, landowners, and general public. The project team of planners and engineers reviewed the corridor using GIS and field analysis. Given the 70-mile length, there will undoubtedly be adjustments to the routing long after this master plan is complete. Adjustments will happen due to cost/funding, respect for landowner considerations, environmental constraints, new developments, roadway reconstruction, and findings uncovered during full design.

The entire route was broken into logical thematic segments for effective map communication through this Master Plan. The segments traverse urban, suburban, and rural areas and connect all the Downtowns of the region intentionally. The route connects major destinations, both cultural and natural, to enhance both local, regional, and national tourism. The route also connects major employers in the region. Finally, the route traverses geography and history and will tell the story of the history of the land and its peoples through educational opportunities.

In some cases, multiple alternatives are provided in order to provide a menu, or toolbox, of options and to remain flexible moving forward. With the vision of a world-class trail, some alternatives will have a greater cost but a greater "wow" factor. It is possible that less costly alternatives may be implemented first as interim steps before additional funding is acquired for the "wow" projects.

Finally, it is assumed that the Singing River Trail will be a spine and that local and regional trails would continue being implemented, providing connectivity to/from the Singing River Trail to other regional destinations.


Proposed Singing River Trail Alignment
Proposed Commuter Route
06
ATHENS
01
HUNTSVILLE
02
REDSTONE ARSENAL
03
MADISON
04
MOORESVILLE
05
BELLE MINA
DECATUR
TRIANA
TENNESSEE RIVER
This is a guidance document only and does not commit the trail to being built at a specific location. In some cases, easements will need to be acquired. In those cases, landowners will be included in the process, educated about the project, with respect for private property rights.
0 1 2 4 Miles

01

HEART OF HUNTSVILLE

DOWNTOWN HUNTSVILLE TO BOTANICAL GARDEN

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02

THE ROCKET CORRIDOR

BOTANICAL GARDEN TO MADISON BASEBALL PARK

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03

MADISON-TRIANA LINK

MADISON BASEBALL PARK TO DOWNTOWN MADISON AND TRIANA

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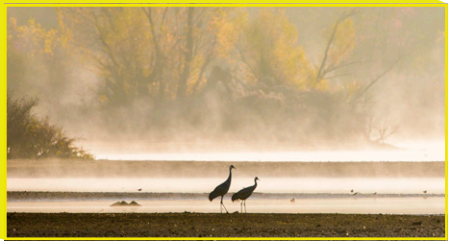
04

WHEELER WILDLIFE TOUR

TRIANA TO MOORESVILLE

Page 40



05

RIVER CITY CONNECTION

MOORESVILLE TO DECATUR

Page 44

06

SWAN CREEK

CALHOUN COMMUNITY COLLEGE TO ATHENS

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HEART OF HUNTSVILLE

DOWNTOWN HUNTSVILLE TO BOTANICAL GARDEN


Big Spring Park

Tracing the Heart of Huntsville from the city center to re-invented textile mills to beautiful botanical gardens


Church Street, Downtown Huntsville


Museum of Art, Downtown Huntsville


Huntsville Depot


Lowe Mill


Huntsville Botanical Garden

Source: Huntsville/Madison County Convention & Visitors Bureau

The City of Huntsville recently completed its Downtown Master Plan which calls for the development of on-road bikeways on certain roadways in Downtown Huntsville. With new development slated for throughout the Downtown area, there is an opportunity to create world-class multi-modal corridors that also connect the Singing River Trail into the heart of Downtown. In the long-term, the proposed facilities for these segments would be two-way separated bikeways, which align with the vision of providing safe, comfortable bicycle facilities for all ages and abilities in Downtown Huntsville. Example two-way separated bikeways shown here include Lincoln, NE and Seattle, WA (both designed by Alta Planning + Design).

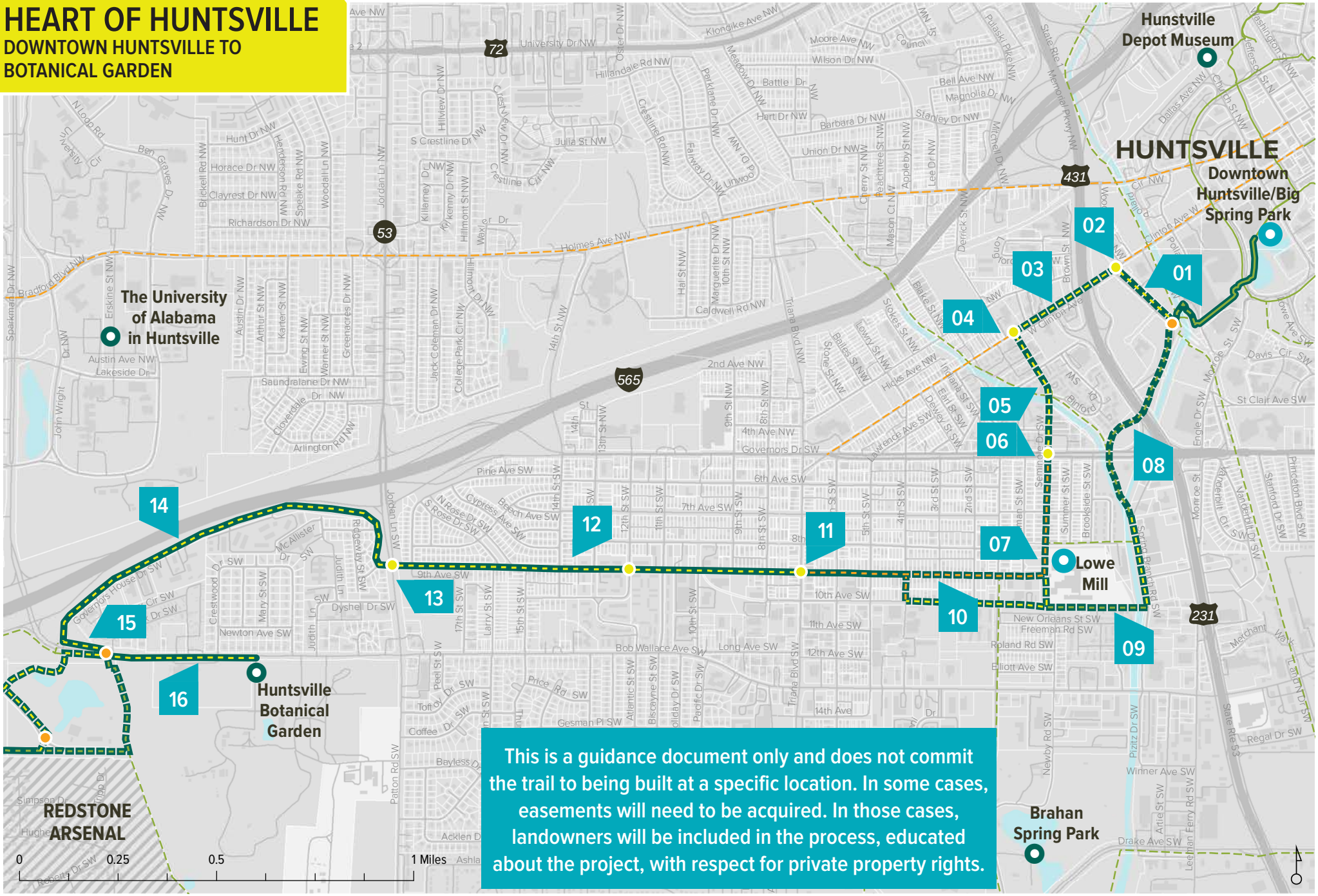
Separated Bike Lane, Seattle, WA

N Street Cycle Track, Lincoln, NE

N Street Cycle Track, Lincoln, NE

HEART OF HUNTSVILLE

DOWNTOWN HUNTSVILLE TO BOTANICAL GARDEN



- Proposed Alignment
- Proposed Alternative Alignment
- Proposed Commuter Route
- Existing On-Street Bicycle Facility
- Existing Shared Use Path
- Existing Sidepath
- Existing Unpaved Shared Use Path
- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Trailhead
- Other Destination
- Proposed Midblock Crossing
- Signalized Intersection
- Interstate
- US Highway
- State Road
- County or Local Road
- Railroads
- Fish and Wildlife Service Land
- Redstone Arsenal
- Municipality
- Water

01 For purposes of this Master Plan, the Singing River Trail would begin at Big Spring Park and utilize existing shared-use path under Monroe Street. The trail would then parallel Heart of Huntsville Drive with a shared-use sidepath to Clinton Avenue or follow Pinhook Creek to Clinton Avenue. See page 31 for proposed connections through downtown.

02 Add no turn on-red from Heart of Huntsville to Clinton and bike/ped exclusive main crossing of Clinton; conduct traffic analysis to determine best signal phasing.

03 The Singing River Trail would ideally be a shared-use path on the north side of Clinton, to avoid Memorial Parkway ramps. There is adequate space on Clinton Avenue to reduce lanes, as the City of Huntsville is currently adding bike lanes.

04 Upgrade curb ramps for shared use path crossing of Clinton at Seminole; relocate ped actuated signals.

05 Sidepath is recommended on west side of Seminole as driveways are infrequent.

06 A high-quality and comfortable crossing of Governors Drive at Seminole Drive is recommended with countdown signals and high-visibility crosswalks.

07 The Lowe Mill Corridor Study recommends buffered bike lanes and sidewalk on Seminole Drive to Lowe Mill

08 Pedestrian Access and Redevelopment Corridor (PARC) alternative. The City of Huntsville has analyzed possibility of multi-modal bridge to cross Memorial Parkway and Governors Drive ($31,409,570).

09 A trailhead should be provided at Lowe Mill, utilizing existing parking lot. Work with Lowe Mill ownership group to provide access to facilities and bathrooms. Also, if bike/ped bridge is built, the trail should come up the former 10th Avenue easement.

10 West of Lowe Mill, options include either buffered bike lanes and sidewalks on 9th Street, or a side path on 10th Street. Recommended bike lanes on 4th Street connect the side path up to the recommended buffered bike lanes on 9th Street. The selection of a preferred alternative should be coordinated with the Lowe Mill Corridor Study.

11 The 9th Street/Triana crossing should be comfortable and safe with protected intersection features.

12 The preferred facility type from Triana Boulevard to Jordan Lane is a side path. However, there are some areas with right-of-way constraints that will need to be considered. A bike boulevard may be considered as an alternative for 9th Street, which has relatively low traffic volumes (slightly over 3,000 vehicles per day). Traffic calming and volume reduction strategies would need to be implemented.

13 The 9th Street/Jordan Lane crossing should be comfortable with high-quality intersection treatments. Jordan Lane is a multi-lane, high-volume roadway. Countdown signals and high-visibility crosswalk should be provided.

14 Governors House is a 3-lane road and 39 feet wide. Because driveway entrances are limited and confined on the south side, a two-way cycle track is being provided on the north side by the City of Huntsville (2019) during roadway resurfacing.

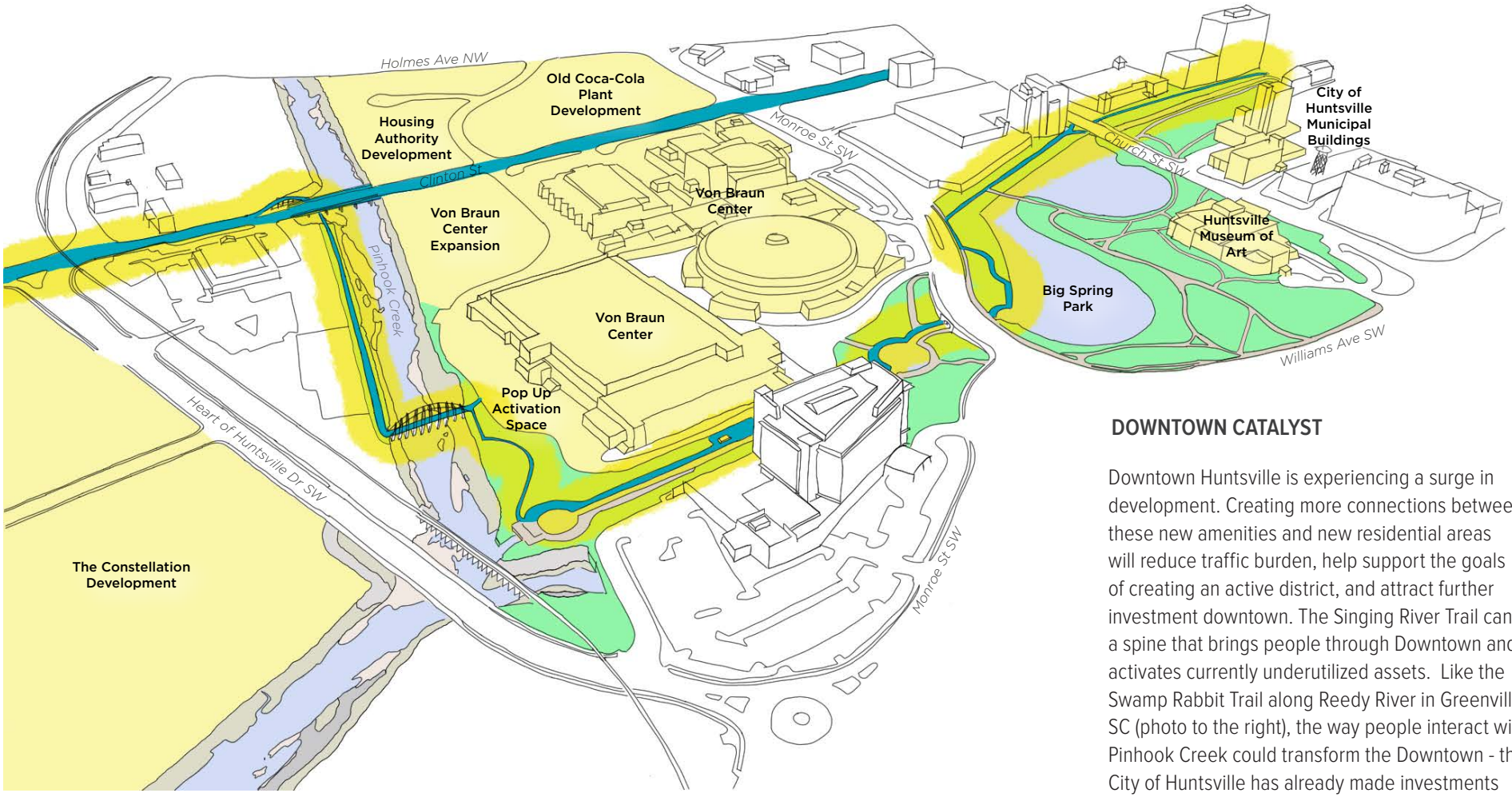
15 Bob Wallace Drive. This is a wide, 5-lane section with 40mph speed limit; however, cars are frequently traveling faster. With a roadway curve to I-565, the Singing River Trail should be brought briefly to the east on the north side of Bob Wallace Drive. A bike/ped actuated signal (RRFB or HAWK) should be provided at location of good sight clearance.

16 A shared-use sidepath spur should be provided on the south side of Bob Wallace to connect to the Botanical Gardens.

Trailhead Bike Shop - Lowe Mill


Governors House Dr SW

HEART OF HUNTSVILLE DOWNTOWN CATALYST



DOWNTOWN CATALYST

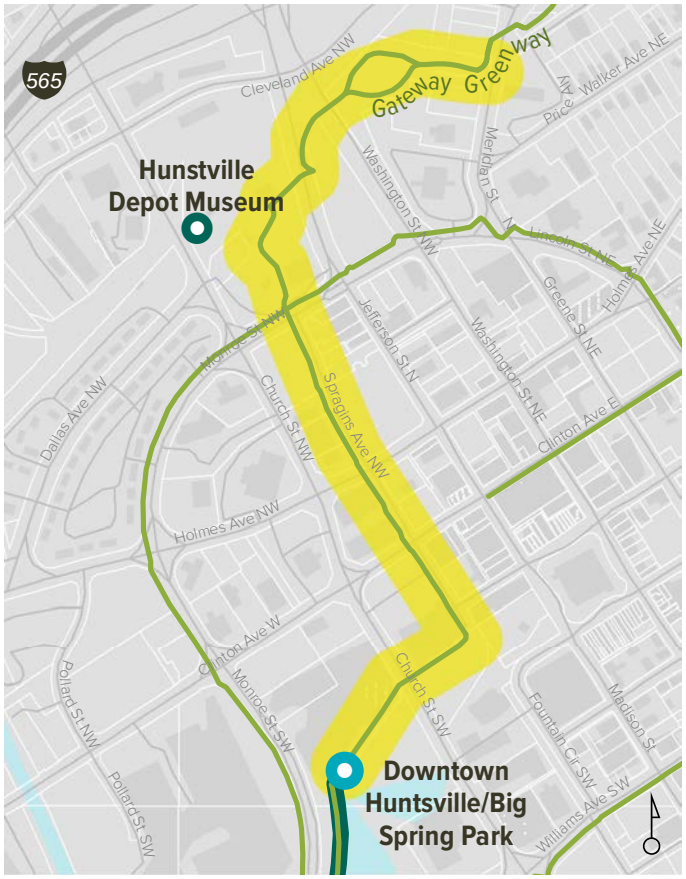
Downtown Huntsville is experiencing a surge in development. Creating more connections between these new amenities and new residential areas will reduce traffic burden, help support the goals of creating an active district, and attract further investment downtown. The Singing River Trail can be a spine that brings people through Downtown and activates currently underutilized assets. Like the Swamp Rabbit Trail along Reedy River in Greenville, SC (photo to the right), the way people interact with Pinhook Creek could transform the Downtown - the City of Huntsville has already made investments along the Big Spring as it flows into Pinhook Creek. The Trail would either be adjacent to Heart of Huntsville Drive or Pinhook Creek, ultimately.

Above: Spragins Street Cycle Track, Downtown Huntsville

Left: Greenville, SC - Swamp Rabbit Trail at Reedy River, Downtown Greenville

DOWNTOWN CONNECTOR

There is an opportunity to connect the Singing River Trail through Downtown Huntsville, using the Spragins Street Cycle Track and the Gateway Greenway to Meridian Street. This would connect Big Spring Park to key destinations, including a bicycle shop, restaurants, bars, future planned development, the Huntsville Depot Museum, and the historical AM Booth's Lumberyard. A trailhead at Gateway Greenway could provide a premier downtown entrance to the Singing River Trail.



THE ROCKET CORRIDOR

BOTANICAL GARDEN TO MADISON BASEBALL PARK


US Space and Rocket Center

Madison


Indian Creek Greenway

Following a path of innovation, industrial growth, and new inspiring developments


US Space and Rocket Center


Rendering of the Rocket City Trash Pandas Stadium

Source: Huntsville/Madison County Convention & Visitors Bureau and City of Madison

RIDEOUT ROAD SIGNATURE BIKE/PED BRIDGE CONNECTING THE SPACE AND ROCKET CENTER TO REDSTONE GATEWAY

The Singing River Trail will need to cross Rideout Road via a signalized intersection or via a visible, signature bridge that will serve as a gateway to the Space and Rocket Center area. There are a variety of bridge options that range from basic and less expensive to world-class and expensive. The photo simulations here show two possible options.

Existing

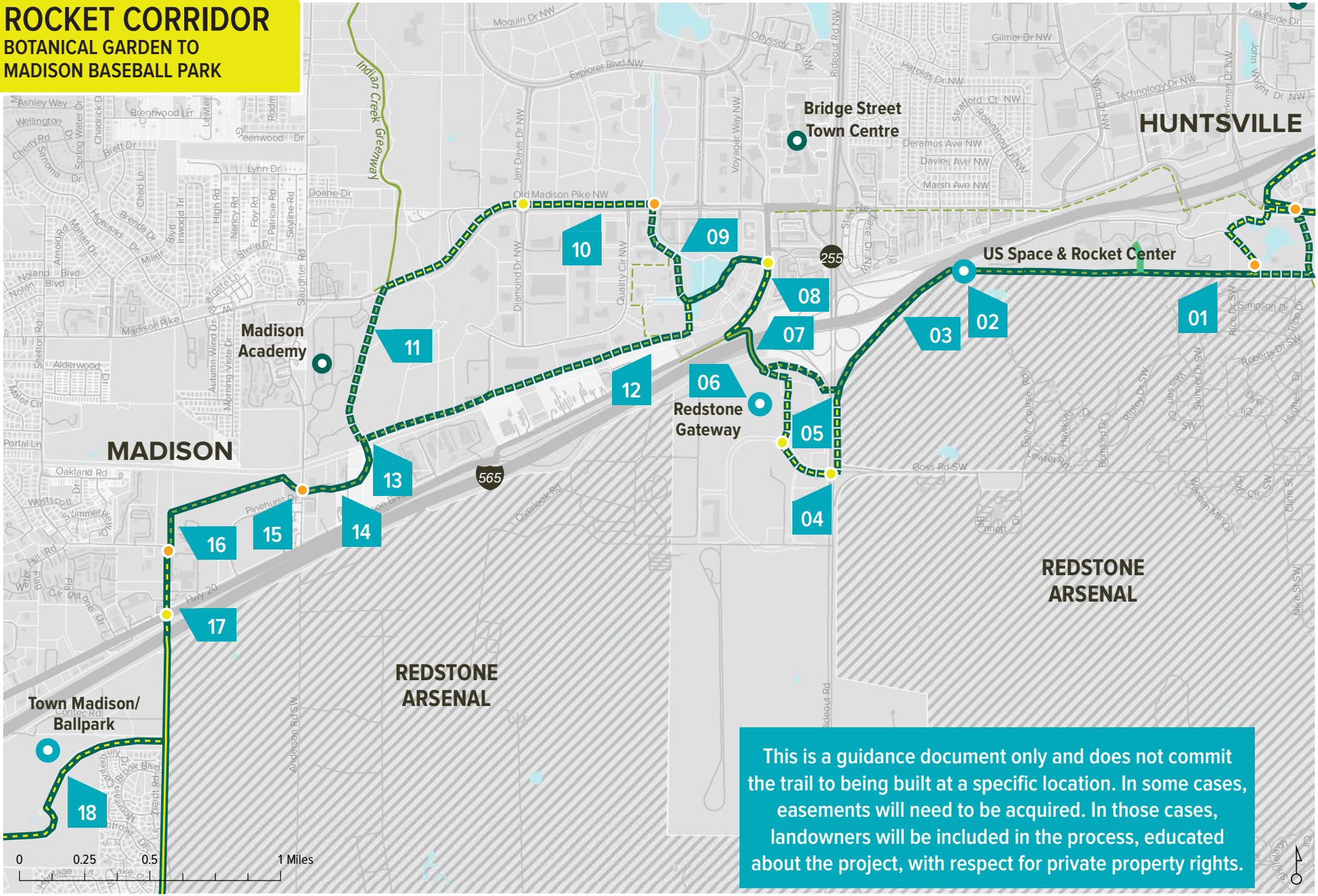

Proposal Plan View

Singing River Trail Character Alternative

Modern Alternative

ROCKET CORRIDOR

BOTANICAL GARDEN TO MADISON BASEBALL PARK



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- Proposed Ferry
- Proposed Trailhead
- Other Destination
- Proposed Midblock Crossing
- Signalized Intersection
- Interstate
- US Highway
- State Road
- County or Local Road
- Railroads
- Fish and Wildlife Service Land
- Redstone Arsenal
- Municipality
- Water

01 The trail would traverse the southern edge of the US Space and Rocket Center property along the utility easement to the west. It would include the new Energy Greenway opened in 2019.

02 A trailhead should be provided at the western edge of current Space Center programmed property with full parking lot, bathrooms, etc.

03 The trail would follow the TVA easement paralleling I-565.

04 The trail would utilize the signalized crossing. The crossing should be high-quality as it crosses multiple lanes. The crossing should have countdown signals, median refuge, and high-visibility marked crosswalk.

05 An opportunity for a world-class, highly- visible bicycle/pedestrian bridge would connect the Space and Rocket Center to Redstone Gateway across Rideout Road. The bridge would land on the north side of the Redstone Gateway complex. The bridge would ramp up south of major power lines towards SW with a right-hand turn, crossing the highway (300 foot span). The bridge would ramp down to the NW to Redstone Gateway NE corner. The bridge would need to meet lateral clearance requirement of TVA (power lines).

06 A small trailhead should be provided on the NW corner of the Redstone Gateway property.

07 The trail would utilize existing shared-use path underpass below I-565.

08 The trail would be developed as a shared-use path along the east side of Governors West. With the bridge over the railroad measuring 40', reconfigure roadway to provide 10' shared-use path.

09 Greenway through Cabela's development is in design phase.

10 A connection to Bridge Street and Research Park should be provided. Alternate corridor would follow Old Madison Pike to Indian Creek Greenway as a path on the north side.

11 Indian Creek Greenway should be continued along sewer easement to the south (and Madison Academy) and become part of the Singing River Trail corridor.

12 The trail would be a shared-use path along the utility-power line corridor, adjacent to Cabela's development. Easements will need to be acquired along this segment.

13 Small bridge over Indian Creek would be needed.

14 The corridor would utilize existing grade-separated underpass of Norfolk Southern along Indian Creek. The trail would follow sewer easement and along dividing lines of existing parcels to minimize impact.

15 The trail would cross Slaughter Road and re-enter utility corridor. An actuated signal should be provided.

16 The trail would continue along Shelton Road as a shared-use sidepath on east side (ROW is limited so an easement is required with one property owner). A high-quality midblock crossing should be provided to connect to City of Huntsville sidepath project on west side of Shelton. ROW is more substantial and easement may not be required along west side.


Underpass at I-565

17 A safe, crossing accommodation should be provided at signalized Shelton/Madison Blvd intersection with high-visibility marked crosswalk and countdown signals.

18 The trail should connect to Town Madison and the ballpark with shared-use path spur. This spur would eventually connect to Downtown Madison.


Indian Creek Greenway


Redstone Gateway Greenway

THE MADISON-TRIANA LINK

MADISON BASEBALL PARK TO DOWNTOWN MADISON AND TRIANA

Madison


Mill Creek Greenway


Madison Farmers' Market

Weaving through quaint suburban neighborhoods and agricultural fields towards the bottomlands of the Tennessee River floodplain


2018 Madison Street Festival


Rendering of the Rocket City Trash Pandas Baseball Stadium


Bradford Creek Greenway

Source: City of Madison, Breland Properties, and Steven Gordon, Minor League Baseball

POWER LINE CORRIDOR CONNECTING HUNTSVILLE TO MADISON

One of the alternatives for connecting Huntsville to Madison (Redstone Gateway/ Cabelas to Zierdt Road) is utilizing the power line easement that parallels I-565. Pedestrian access/greenway easements would need to be acquired for this segment to be built. If this becomes the Singing River Trail spine, resting spots with access to shade and benches would enhance the experience.

Proposed

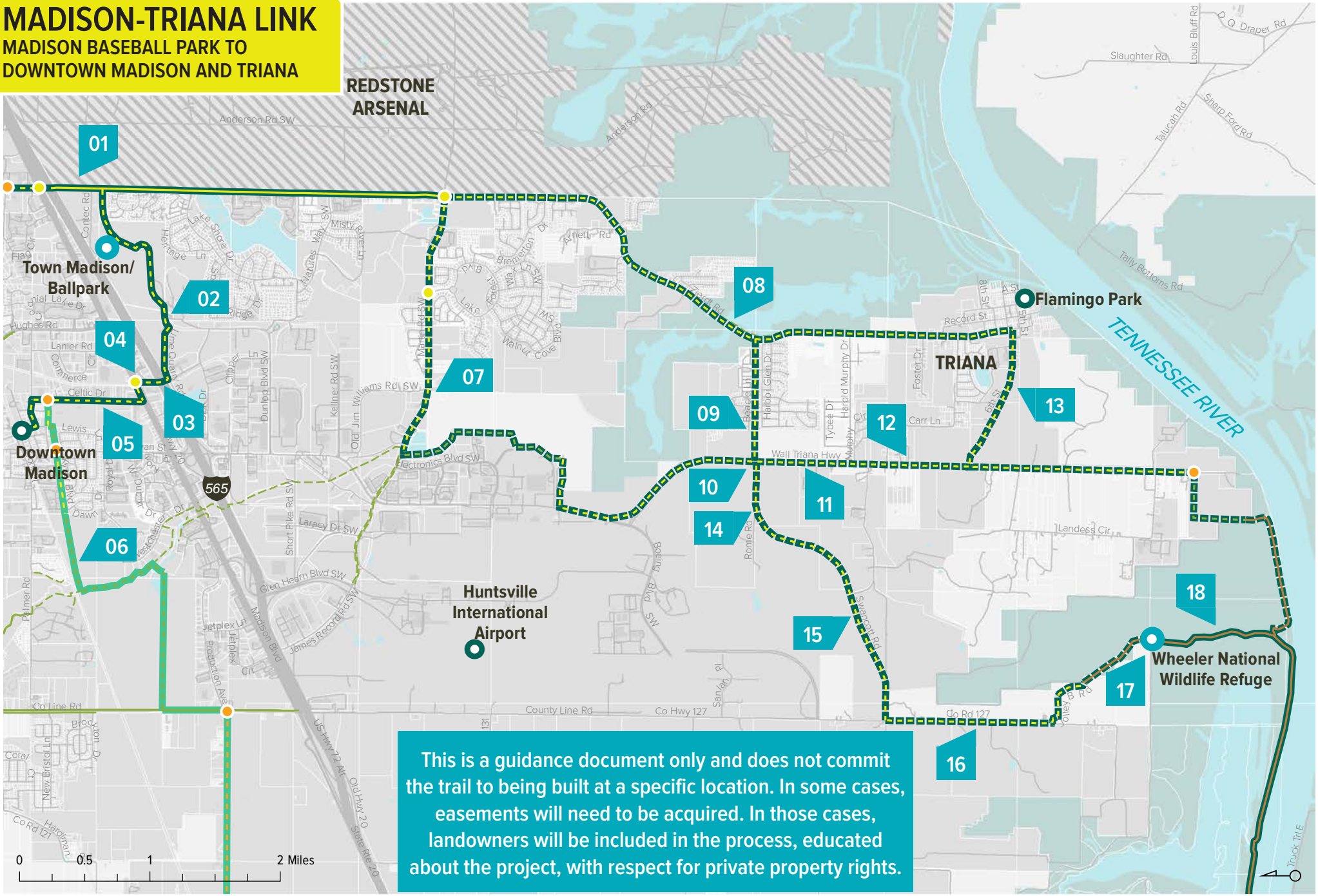

Existing

"The Singing River Trail represents a successful collaborative effort to improve quality of life for the entire region and will help to fulfill Madison's Growth Plan goals for increased walkability and greenways."

Mayor Paul Finley, City of Madison

MADISON-TRIANA LINK

MADISON BASEBALL PARK TO DOWNTOWN MADISON AND TRIANA



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- Other Destination
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- Signalized Intersection
- Interstate
- US Highway
- State Road
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- Railroads
- Fish and Wildlife Service Land
- Redstone Arsenal
- Municipality
- Water

01 The trail will be a shared-use path along west side of Zierdt Road (this facility is already in development by City of Huntsville).

02 Town Madison developers are implementing a shared-use sidepath along the main corridor through Town Madison.

03 An existing underpass of I-565 exists on Intergraph Way. While challenging, a sidepath can be implemented below the bridge.

04 A crossing will need to be provided at Madison Blvd. This will be challenging to make comfortable for bicyclists and pedestrians. Coordination with ALDOT will be critical.

05 The spur would follow Celtic Drive as a sidepath along the western side (park and school on west side), ultimately connecting to Lanier Rd/Garner St/Downtown Madison.

06 A commuter route connecting Downtown Madison to Decatur provides a more direct route for long-distance commuters. See pages 52-53 for a more detailed map and description of this route.

07 The Martin Road Greenway is recommended in the City of Huntsville Greenway Master Plan as one of the near-term projects. The ROW is significant.

08 The trail would need to be a boardwalk structure adjacent to Zierdt Road through this wet area.

09 There is substantial available right-of-way on Beadle Lane to accommodate a side path.

10 Safe accommodation of wide Wall Triana Hwy crossing will be critical.

11 Wall Triana is a 4-lane median-divided highway. There is more ROW outside pavement on the east side (approximately 40 feet) which would allow for a sidepath. Easements may be needed in specific locations.

12 From Harold Murphy Drive south, Wall Triana Hwy is a 22-24' road with 80-90 feet of ROW. A sidepath is recommended on the east side.

13 6th Street is mostly a 3-lane, 34-foot road. There is substantial ROW through majority of link. There is an opportunity to do a road diet (center turn lane removal) or the preferred recommendation is a sidepath along the south side.

14 Beadle is a 2-lane roadway with wide shoulder on the south side of the roadway (34 feet in width). ROW is substantial ranging from 100 to 120 feet. There is greater ROW on the north side (with 45 feet outside pavement). A sidepath is recommended on the north side.

15 Swancott features a narrower, but still substantial ROW (80 feet) with 32 feet of pavement. While there is greater ROW on the south side, there would be less disturbance to existing agricultural fields on the north side. The north side features utility poles but adequate space between the poles and the roadway.

16 At this location, County Line Road is 2-lane, 20' roadway with ROW ranging from 60 to 82 feet. With 5 parcels along east side (including sizable publicly-owned parcels) compared to 43 parcels on the west side, a sidepath along the east side is recommended. This reduces interaction with utilities, residences, and driveways.

17 A full trailhead parking lot should be provided at existing parking lot.

18 The segment of Jolley B Rd south of the parking area is closed during the winter but remains open to bicyclists and pedestrians.

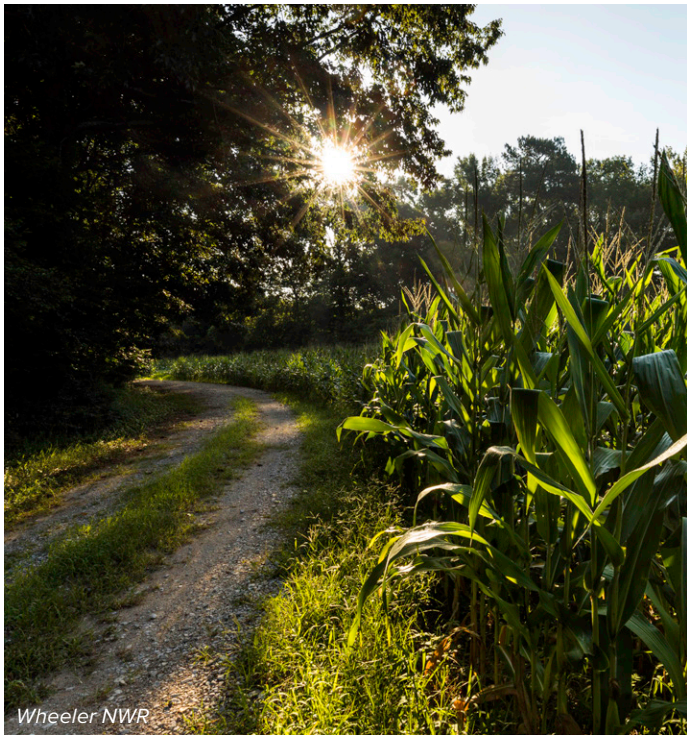

E & N restaurant in Triana


A flood prone section of Zierdt Rd

THE WHEELER WILDLIFE TOUR

TRIANA TO MOORESVILLE

Wheeler National Wildlife Refuge (NWR)



Wheeler NWR

Great Horned Owl Fledgling at Wheeler NWR

Experiencing nature's beauty and exceptional wildlife viewing while connecting two of the oldest incorporated towns in Alabama

Sandhill Cranes at Wheeler NWR

Mooresville

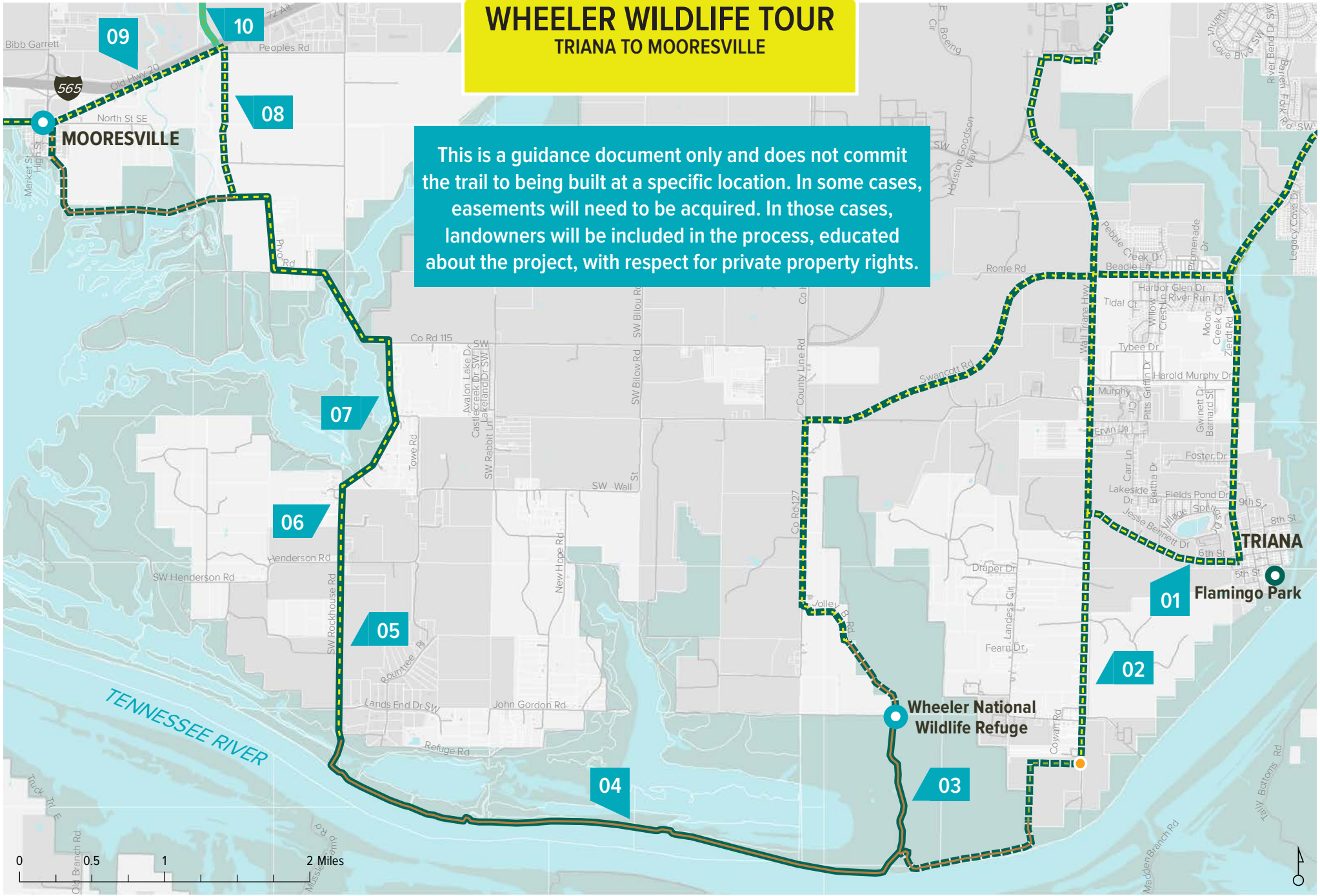
Source: Wheeler National Wildlife Refuge

WHEELER WILDLIFE REFUGE AND TENNESSEE RIVER FRONTAGE – UNPAVED SHARED-USE PATH

The Singing River Trail will track along existing unpaved roadway in the Refuge, adjacent to the Tennessee River. The trail will be composed of stone dust, structurally sufficient for vehicle traffic, and fine enough for bicycle traffic.

Proposed


Existing


WHEELER WILDLIFE TOUR
TRIANA TO MOORESVILLE
This is a guidance document only and does not commit the trail to being built at a specific location. In some cases, easements will need to be acquired. In those cases, landowners will be included in the process, educated about the project, with respect for private property rights.
09
10
08
07
06
05
04
03
02
01
MOORESVILLE
TRIANA
Flamingo Park
Wheeler National Wildlife Refuge
TENNESSEE RIVER
Bibb Garrett
Peoples Rd
565
Old Hwy 20
North St SE
Market St
High St
Pryor Rd
Co Rd 115
SW Bilou Rd
Avalon Lake Dr SW
Castlecreek Dr SW
Lakeland Dr SW
SW Rabbit Ln
Towe Rd
SW Wall St
County Line Rd
Co Rd 127
Rome Rd
Swancott Rd
Wall Triana Hwy
Houston Goodson Way
Pebble Creek Dr
Beadle Ln
Promenade Dr
Harbor Glen Dr
River Run Ln
Tidal Ct
Willow Crest Ln
Moon Creek Cir
Zierdt Rd
Tybee Dr
Harold Murphy Dr
Murphy Cir
Pitts Griffin Dr
Gwinett Dr
Barnard St
Ervin Ln
Foster Dr
Carr Ln
Bertha Dr
Lakeside Dr
Fields Pond Dr
Village Spring Dr
Jesse Bennett Dr
9th St
8th St
6th St
5th St
Draper Dr
Landess Cir
Fearn Dr
Valley Rd
Cowan Rd
SW Henderson Rd
Henderson Rd
SW Rockhouse Rd
New Hope Rd
Rountree Pl
Lands End Dr SW
John Gordon Rd
Refuge Rd
Truck Trl E
Old Branch Rd
Mussel Shoals Rd
Madden Branch Rd
Tally Bottoms Rd
Boeing Cir
Walnut Cove Blvd SW
Barren Fork Rd SW
Legacy Cove Dr
0
0.5
1
2 Miles
Proposed Alignment
Proposed Alternative Alignment
Proposed Commuter Route
Existing On-Street Bicycle Facility
Existing Shared Use Path
Existing Sidepath
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Other Destination
Proposed Midblock Crossing
Signalized Intersection
Interstate
US Highway
State Road
County or Local Road
Railroads
Fish and Wildlife Service Land
Redstone Arsenal
Municipality
Water

01 The trail is recommended for the south side of 6th Street between Zierdt Rd and Wall Triana Hwy. The eastern extent is constrained by a few residences, minimal existing roadway, and steep banks. On-road facilities may be necessary between Zierdt Rd and 5th Street, after which the topography levels and the road widens. A southern orientation will reduce the number of driveway interaction, separate the trail from a lake and potential flood risks. The Town of Triana and Madison County own large parcels at the western end of the corridor. Utilities along the southern edge could be a constraint. If so, a road diet could provide space to accommodate trail facilities.

02 Between 6th Street and a continuation of greenway just south of Ragland Cir. the trail is recommended for east side of road. This reduces interaction with utilities, residences, and driveways. Additionally, there are far fewer parcel owners to coordinate with. Sizable portions of the adjoining parcels on the east side are owned by Madison County and the City of Huntsville.

03 The existing dirt roadway would need to be reconstructed with stone dust, structurally sufficient for vehicle traffic, and fine enough for bicycle traffic. Maintenance will be essential with rain/flood events.

04 This segment follows a narrow sandbar in the Wheeler National Wildlife Refuge between Brakes Branch and the Tennessee River. This road is closed to cars during the winter but remains open for bicyclists and pedestrians all year. Due to proximity of water sources, the road tends to flood once every three years. The existing dirt roadway would need to be reconstructed with stone dust, structurally sufficient for vehicle traffic, and fine enough for bicycle traffic. Maintenance will be essential with rain/flood events.

05 On Rockhouse Rd between the river segment and Henderson Rd, the trail is recommended on the east. This alignment avoids residential driveways and is primarily abutting farmland.

06 After Henderson Rd, it is recommended that the trail transition to the western side of Rockhouse Rd. While there are a few residential driveways, the houses are set-back far from the road.

07 There are large tracts of Department of Interior and Tennessee Valley Authority land along the western side of the road from the curve, to Swancott Rd. A western alignment avoids many residential driveways towards the northern extent of Rockhouse Rd.

08 All adjacent parcels along Pryor Road belong to the same individual so east/west alignment isn't dependent on ownership. Additionally, the land use context is predominantly farm/forest land. Utilities run along the eastern extent while a portion of the road comes close to Limestone Slough on the mid-western portion of the segment. More detailed study examining owner preferences, exact ROW buffers, and a comparison of wetland/flood risks vs utility issues will need to be completed.

09 The trail will follow SW Alabama State Hwy 20 on the south side into Mooresville. There should be sufficient ROW and only a few industrial landowners exist adjacent to the proposed alignment. The greatest constraint is the three bridges crossing Limestone Creek, Limestone Slough, and a small creek in between the two. The 28' wide bridges don't offer much room for bicycle facilities. Separate bike/ped bridges will be needed to traverse these water features.

10 A commuter route connecting Downtown Madison to Decatur provides a more direct route for long-distance commuters. See pages 52-53 for a more detailed map and description of this route.

Southern Carnage Bike Shop in Mooresville

Refuge Rd - Jolley B parking lot

RIVER CITY CONNECTION

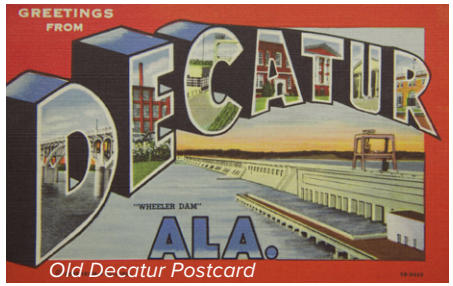
MOORESVILLE TO DECATUR

Post Office in Mooresville

Connecting the Refuge backwater of the Tennessee River towards new industrial growth, Calhoun Community College, and Downtown Decatur via a unique river crossing experience.

Downtown Decatur

Princess Theater in Downtown Decatur



Old Decatur Postcard

Wheeler NWR Sign

Canoers near Decatur and the Wheeler NWR

Source: Decatur Area Convention & Visitors Bureau

MOORESVILLE – SCENIC SHARED-USE PATH SEGMENT ALONG ALABAMA HIGHWAY 20

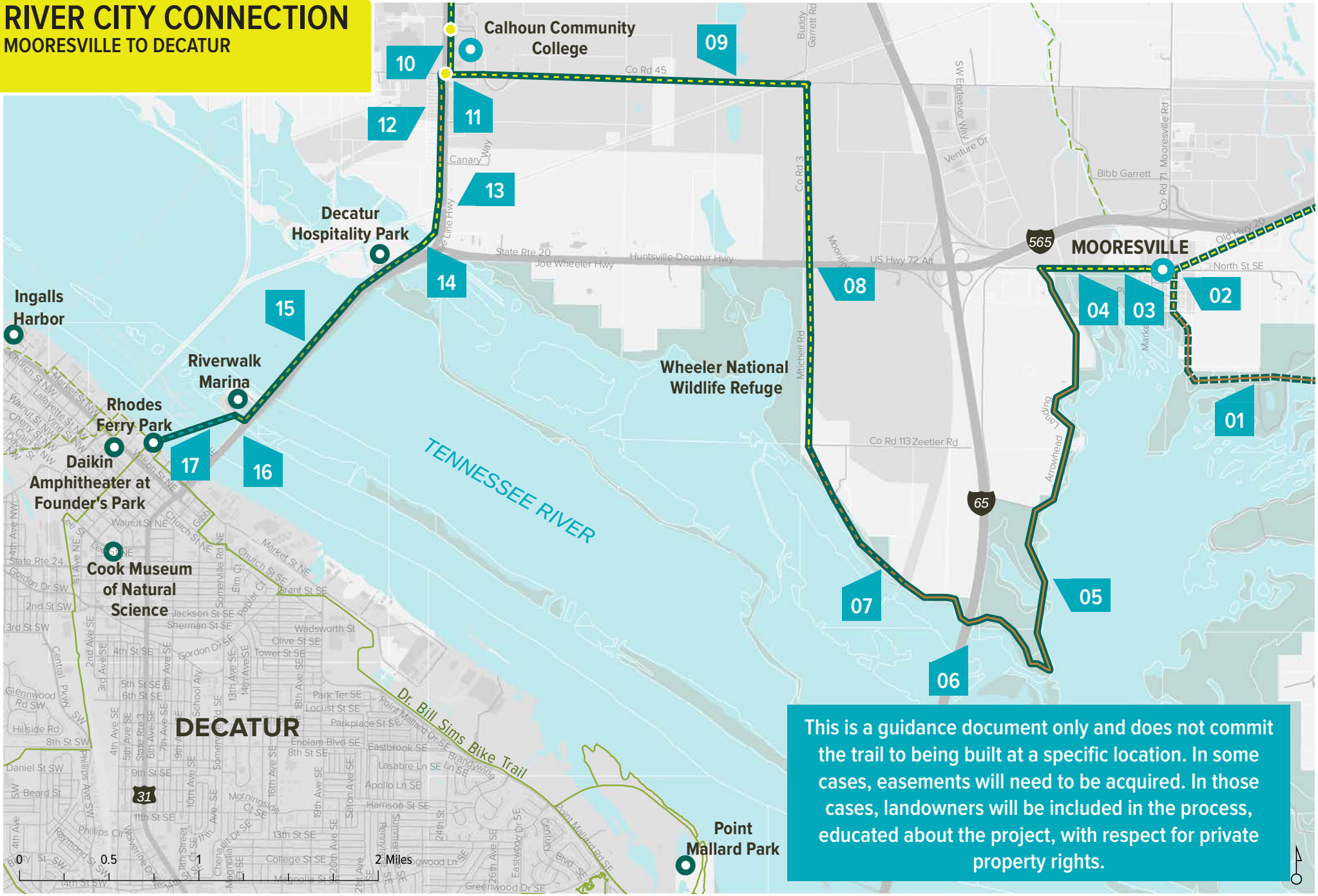
The Singing River Trail will follow Alabama Hwy 20 through Mooresville towards Arrowhead Landing as a shared use sidepath. At the first bridge crossing just west of Mooresville, two options include a more expensive separated bike/ped bridge and a less costly re-designation of roadway space on a roadway with minimal traffic volumes.

Roadway Reconfiguration Alternative

Existing

Standalone bridge Alternative

RIVER CITY CONNECTION
MOORESVILLE TO DECATUR



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- Fish and Wildlife Service Land
- Redstone Arsenal
- Municipality
- Water

01 This alternative is located in an environmentally sensitive area. Possible routing and permitting will need to be coordinated with appropriate agencies.

02 Broad Street is a small local road with very low traffic. Signage will be used to direct trail users down Broad Street, connecting an existing unpaved road and North Street.

03 The Town of Mooresville developed a concept on State Hwy 20 through town consisting of a lane reduction, landscaping, and parking. The trail would be part of this cross section on the south side.

04 The trail will continue along the south side of Highway 20, where there is substantial right-of-way (100-200 feet) for a sidepath. For the two creek crossings between downtown Mooresville and Arrowhead Landing, alternatives include parallel bicycle/pedestrian bridges alongside the existing bridges, or a shared use path on the existing bridge pavement (approximately 40 feet wide).

05 This segment utilizes existing unpaved road. The road may need to be resurfaced and will need to be maintained with new material periodically. It should be noted that this area is prone to flooding and may not be suitable for use during flood conditions.

06 An existing unpaved Fish and Wildlife Service road provides an opportunity to cross under Interstate 65.

07 This segment will be coordinated with the Fish and Wildlife Service, which is planning the construction of a new unpaved road.

08 The City of Decatur was awarded a BUILD grant of $14.2 million for an interchange improvement at Bibb Garrett Road and Alabama Hwy 20. A shared-use path will be provided through this intersection to the north. In addition, the Trail should connect to the newly developing Calvary Community on Hwy 20.

09 The segment of trail following County Rd 45 (Airport Rd) should be aligned along the south side. The street is a rural two lane road without markings that is between 18 to 22 feet wide. Right-of-way along the corridor ranges from between 44 to 50 feet. The south side has fewer adjacent property owners, driveways, and interactions with utilities.

10 Routing through Calhoun Community College will be coordinated with upcoming construction projects planned at the campus.

11 Intersection improvements are needed to facilitate crossing US 31 and CR 45 to Calhoun Community College.

12 Hunter Lane is a 16 feet wide frontage road providing access to over 20 homes. The low-volume, low-speed, narrow character of the road make it an acceptable facility for a trail. Signage and traffic calming treatments will further signify its use as a shared facility.

13 After Hunter Lane, a sidepath will follow US 31 . A cantilevered bridge on the west side of US 31 will accommodate trail traffic over the railroad.

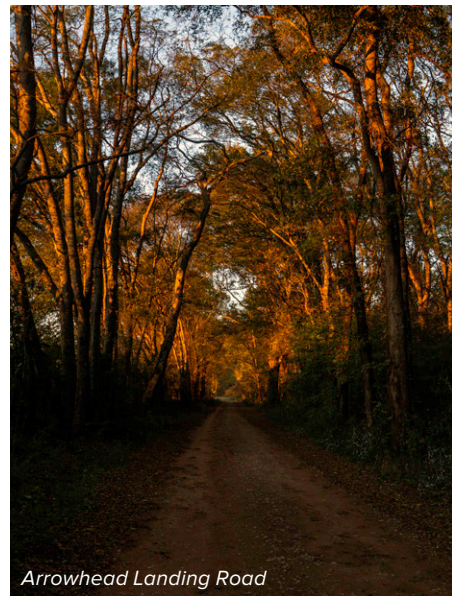
14 The trail will deviate from US 31 to transition onto a boardwalk traversing a stream and wetland. The boardwalk with terminate onto a limited access service road along the east side of the Decatur Hospitality Park.

15 Along the western side of the bridge, an existing path extending from the marina will be widened to a shared use path. Then another boardwalk will run along the western side of the bridge, from the end of the side path to Decatur Hospitality Park.

16 If boardwalk needs to be on other side of US 31 in the future, the trail could cross under the bridge to connect to the Marina.

17 A proposed ferry service will connect trail users to Downtown Decatur. Existing and proposed shared use paths will connect to nearby destinations like Ingalls Harbor, Daikin Amphitheater, and Cook Museum of Natural Science, and to destinations farther south, like Wilson-Morgan Park and Jack Allen Soccer Complex.

Marina Area of Decatur



Arrowhead Landing Road

SWAN CREEK CALHOUN COMMUNITY COLLEGE TO ATHENS


Courthouse Singing on the Square in Athens

Weaving through the agricultural countryside of Limestone County to historic Downtown Athens.


Docked Boats near Athens


Cotton Field near Athens

Athens City Hall

Source: City of Athens

HOBBS STREET – GATEWAY CONNECTION FROM SWAN CREEK GREENWAY TO ATHENS STATE COLLEGE AND DOWNTOWN ATHENS

The Singing River Trail would follow Hobbs Street to connect to Downtown Athens. The 2015 Athens Transportation Plan recommends a "Complete Street" road diet of Hobbs Street. The cross section would include a two-way separated bikeway with sidewalk on the north side of Hobbs Street.

Proposed


Existing

AIRPORT ROAD - SOUTHERN SIDE OF CALHOUN COMMUNITY COLLEGE

The Singing River Trail would follow Airport Road as a sidepath, connecting to Fred Frickie Park and Calhoun Community College.


Existing


Proposed

SWAN CREEK
CALHOUN COMMUNITY COLLEGE TO ATHENS

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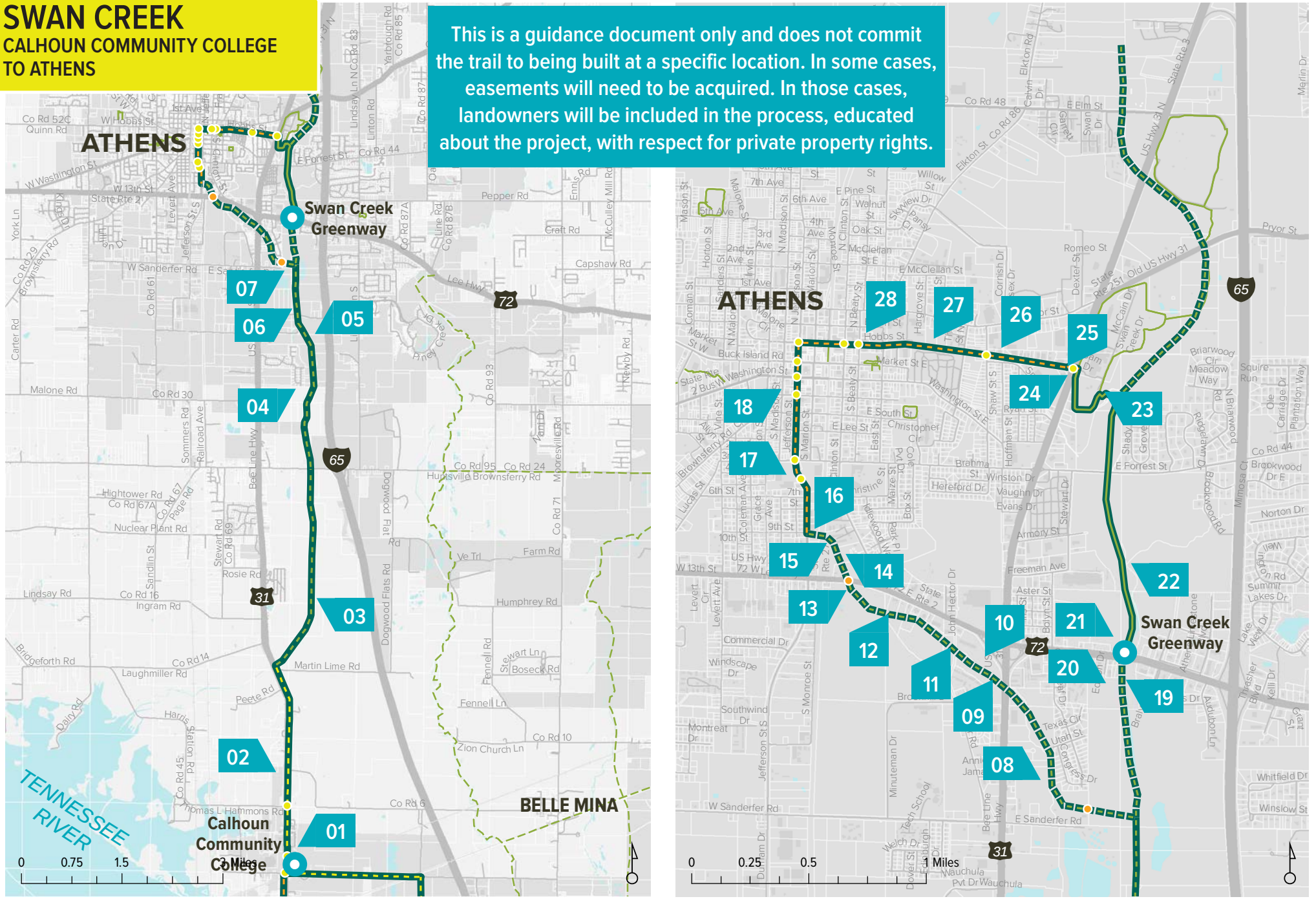

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- Municipality
- Water

01 The Trail would traverse the Calhoun Community College campus. Currently the campus is discussing redesign of portions of campus. Precise trail routing will be determined at a later date.

02 North of Calhoun College, the Singing River Trail would most ideally follow an easement through current farmland (if landowners are interested). Otherwise, the Trail would extend northward along the east side of US 31 (not as ideal of a trail experience). The US 31 ROW extends in a range of 30-50 feet off the edge of pavement, allowing for the placement of a trail.

03 Where Swan Creek crosses US 31, the Trail would follow the Swan Creek corridor to the northeast to Huntsville Brownsferry Road. This area is characterized by large parcel landowners – easement acquisition would need to be discussed.

04 From Huntsville Brownsferry Road, a significant amount of land along Swan Creek is farmland. Acquisition/easement should be sought along the Swan Creek. Given the relatively narrow 50 foot width of the creek, bridge structures may be placed to avoid uninterested landowners. The Trail should be placed as close to the creek as possible, given the scenic nature of the corridor and to have less impact on adjacent lands.

05 Approaching Strain Road from the south, approximately 0.6 mile of land ownership is City of Athens just east side of the Swan Creek corridor. However, there is more topography on this stretch creating some trail development challenges.

06 From Strain Road north, the Trail would most likely be placed on the west side of Swan Creek. The City of Athens owns land on the west side that extends 0.5 miles of the total 1.5 miles to reach US 72. North of the City-owned land are multiple parcels owned by same owner. An easement should be negotiated. This trail segment is recommended in the 2015 Athens Transportation Plan.

07 A Trail alternative would follow Town Creek from its entrance into the Swan Creek, on the south side of the City of Athens Wastewater Treatment Plant. This Town Creek trail is recommended in the 2015 Athens Transportation Plan

08 The Trail would follow the sewer easement, utilizing the existing worn path/dirt road.

09 At US 31, the Trail would run underneath the bridge (Further study needed to confirm feasibility of carrying trail under bridge).

10 West of US 31, the Trail would follow the cleared, graded sewer easement on north side of Town Creek.

11 An undercrossing of bridge of Old Decatur Road will be needed.

12 The Trail would follow the creek and easement to US 72.

13 Because bridge under US 72 is a culvert, an underpass is not possible. A pedestrian-actuated stop signal should be provided with elevated median refuge in current striped median refuge.

14 The Trail would continue following the cleared, graded sewer easement on east side of Town Creek.

15 There is substantial clearance to carry the trail under the Railroad bridge. A bridge crossing of Town Creek will also be necessary.

16 An easement would be required across commercial parking lots on east side of Jefferson Street for the trail to access Jefferson Street.

17 Like Hobbs Street, Jefferson Street is identified in the 2015 Athens Transportation Plan for a "Complete Street" road diet. Jefferson Street traffic volumes are expected to decline. The existing four-lane section is generally 44' curb to curb (11' lanes) and extends to Green Street, near Downtown. 2011 ALDOT traffic volumes at Forrest Street intersection are 12,840 and decline towards Downtown. ROW is significant, especially on the eastern side (ranging from 20'-25' from curb). Jefferson Street should be reconfigured to 3-lane (33' width) allowing for 11' on eastern side and ROW space for a shared-use path. Driveway consolidation would be critical as well.

18 A Town Creek restoration project in concert with a Jefferson Street Complete Street reconstruction could transform this entrance into Downtown Athens, encouraging economic development.

19 The City of Athens has RTP grant funding to extend Swan Creek Greenway under US 72 with a parking lot addition on the south side. An evaluation of clearance has been conducted and undercrossing approved under US 72.

20 The new trailhead/parking area will be on the west side of the creek - the parking lot will be located at end of Edison Street.

21 The existing informal parking area and trailhead on the north side of US 72 and trailhead should be improved to a paved entrance with gateway signage.

22 The Trail would utilize existing Swan Creek Greenway from US 72 to Athens-Limestone Park/Athens High School. The trail should be paved and widened to Singing River Trail design standard.

23 From existing Swan Creek Greenway, the Trail would extend west through Athens-Limestone Park, using existing walking loop of the park, to the Hobbs Street/US 31 intersection.

24 The Trail would utilize crossing of US 31 on North Side of Hobbs Street. The crosswalk should be upgraded to countdown signals and the center median refuge should be extended so that crosswalk cuts through the middle. The crosswalk should be widened to accommodate bicyclists and pedestrians.

25 US-31 southbound traffic turning west-bound on Hobbs Street should be in a stop or yield configuration.

26 The 2015 Athens Transportation Plan recommends a "Complete Street" road diet of Hobbs Street.

27 From US-31 to Beaty Street (Downtown), Hobbs Street connects the Swan Creek Greenway, Athens-Limestone Park, and Athens Middle School to Athens State University and Downtown Athens. Hobbs Street is a 4-lane road and approximately 50 feet from curb-to-curb. 2011 ALDOT traffic counts are 9,710, decreasing to 6,720 closer to Downtown. This roadway should be converted to a 3-lane cross section (11' travel lanes) with buffer and north-side separated bikeway of 17 feet to complement existing north-side sidewalk.

28 Existing sidewalk on Hobbs Street should be repaired where necessary; a few small gaps should be filled with sidewalk. Driveway crossings should be consolidated where possible.

Commuter Route

One of the goals of the Singing River Trail Master Plan is to provide a transportation corridor for bicyclists and pedestrians. With the recreational segment traversing southward to the Wheeler National Wildlife Refuge, a more direct route is needed to complete the Huntsville-Decatur connection. This commuter route will combine off-road and on-road treatments that are comfortable for the majority of experienced cyclists who would make use of the corridor. For example, Old US Hwy 20 is being widened to include bike lanes at the time of this study - that is a key east-west portion of the Commuter Route. Should opportunity present itself in the future through development, a shared-use sidepath should be considered in addition to the bike lanes. The Commuter Route connects back with the recreational segment

American Tobacco Trail, Durham, NC

01 The commuter portion of the Singing River Trail should connect through Madison Downtown/Football Stadium. City of Madison owns one parcel; one easement would be needed through an additional parcel to reach Sullivan Street. Alternatively, the Trail could route up to Downtown Madison and back down Celtic.

02 With further development (and Sullivan being recommended as a "Green Street" in City of Madison plans), a signalized intersection with high-quality bicycle/pedestrian crossing should be provided at Sullivan crossing.

03 A developer is working with the City of Madison to add a shared use sidepath along Kyser Boulevard. This would become part of the commuter route.

04 A developer is working with the City of Madison to connect Kyser Boulevard to Westchester Drive. As part of this project, the shared use path with continue and connect to the future Bradford Creek Greenway. The Bradford Creek Greenway would continue north under the railroad bridge to Palmer Park. The Singing River Trail would continue south, using the Bradford Creek Greenway for a short segment.

05 The Singing River Trail commuter route would continue south along the eastern edge of two large industrially-zoned parcels. An easement would need to be acquired.

06 The Trail commuter route would turn west, along one of the same parcels described in #5.

07 The Trail commuter route would use the new sidepath along the east side of County Line Road briefly southward to the County Line Road/Old Highway 20 intersection.

08 A high-quality bicycle/pedestrian crossing will be needed at County Line Road/Old Highway 20 intersection. Currently, there is no signal, but that will likely change with the widening project of Old Highway 20.

09 The Trail commuter route will extend westward along Old Highway 20 as bike lanes (a current, ongoing City of Huntsville widening project is including bike lanes to Greenbrier Parkway).

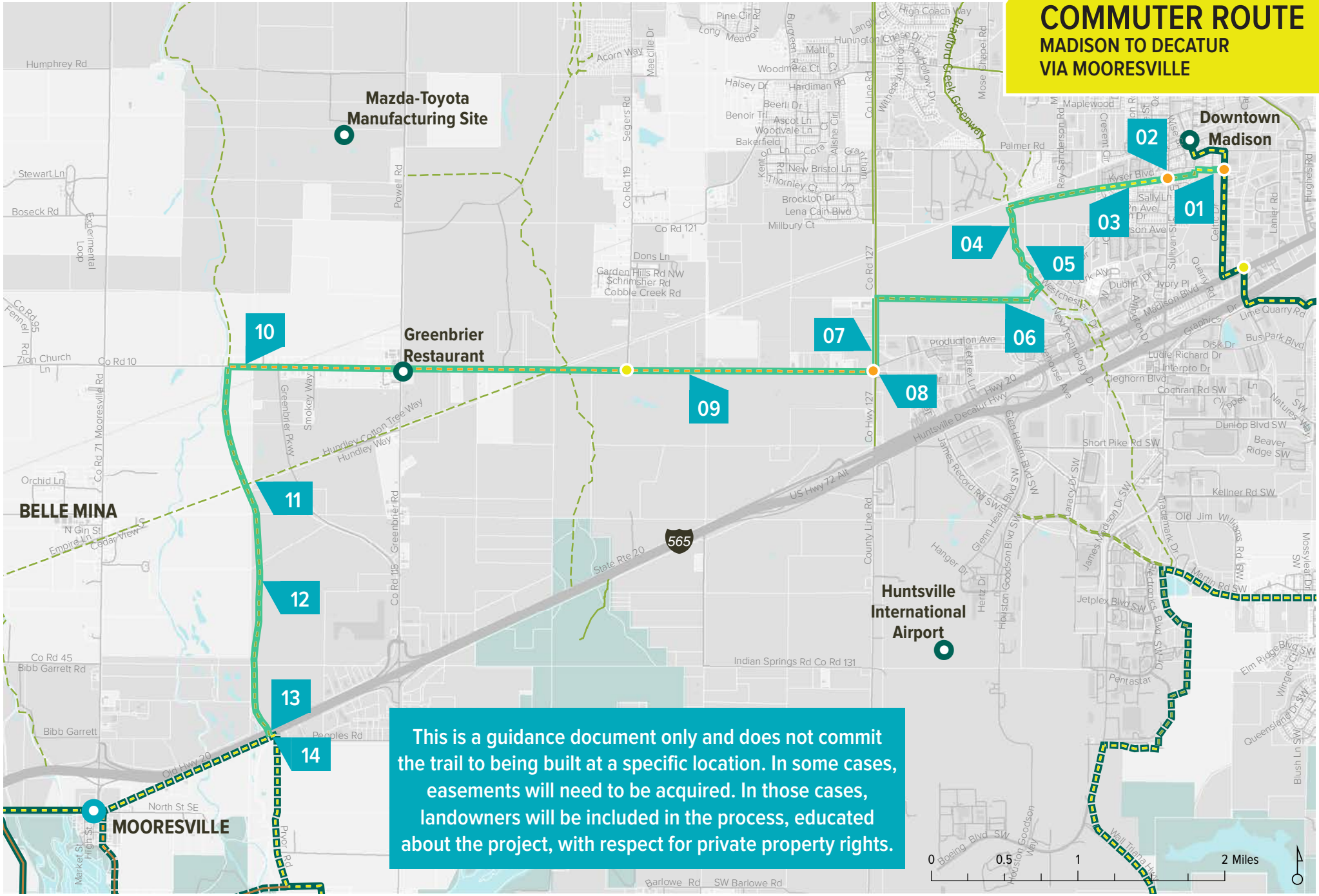
10 The current widening project ends at Greenbrier Parkway. Future widening should include bike lanes. An interim solution would be extending a sidepath the Limestone Slough/Creek (future development and roadway reconstruction potential should be monitored).

11 The crossing of the railroad will require coordination with Norfolk Southern. A canopy to protect trail users should be considered. An undercrossing may need a boardwalk due to wet conditions.

12 The commuter route would turn south along the Limestone Slough/Creek. This is identified as a regional proposed greenway. Generally, this crosses only a few parcels owned by one landowner; and easement would be necessary.

13 Adequate height and space exists under I-565 to continue the Trail.

14 The commuter section of the Singing River Trail meets back with the scenic, recreational route as a sidepath along Highway 20 towards Mooresville.


COMMUTER ROUTE
MADISON TO DECATUR
VIA MOORESVILLE
Mazda-Toyota Manufacturing Site
Downtown Madison
Greenbrier Restaurant
BELLE MINA
MOORESVILLE
Huntsville International Airport
01
02
03
04
05
06
07
08
09
10
11
12
13
14
This is a guidance document only and does not commit the trail to being built at a specific location. In some cases, easements will need to be acquired. In those cases, landowners will be included in the process, educated about the project, with respect for private property rights.
0
0.5
1
2 Miles
Proposed Alignment
Proposed Alternative Alignment
Proposed Commuter Route
Existing On-Street Bicycle Facility
Existing Shared Use Path
Existing Sidepath
Existing Unpaved Shared Use Path
Proposed On-Street Bicycle Facility
Proposed Shared Use Path
Proposed Side Path
Proposed Unpaved Shared Use Path
Proposed Ferry
Proposed Trailhead
Other Destination
Proposed Midblock Crossing
Signalized Intersection
Interstate
US Highway
State Road
County or Local Road
Railroads
Fish and Wildlife Service Land
Redstone Arsenal
Municipality
Water

Additional Trail Features

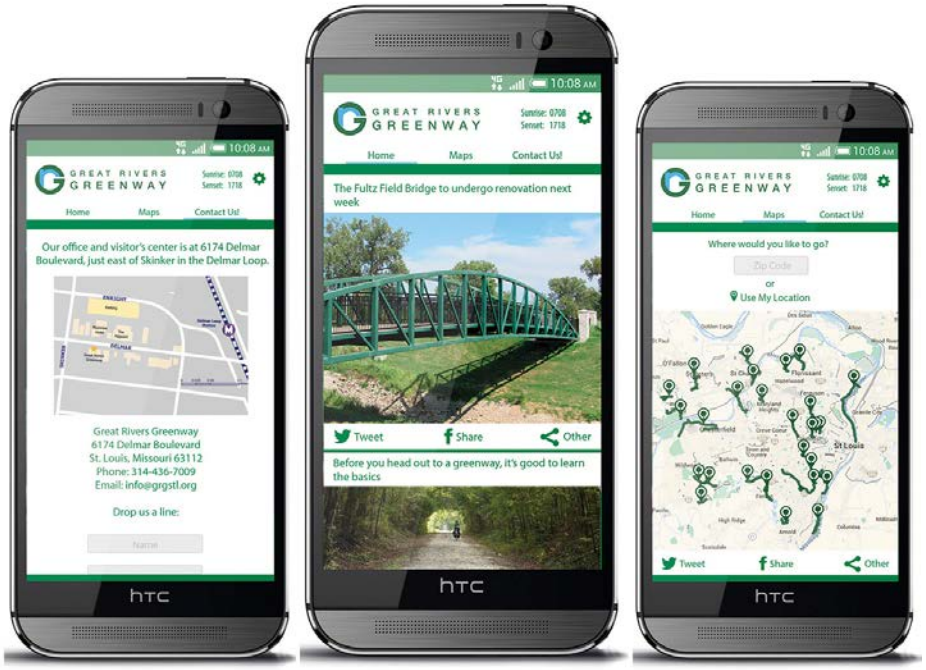
The vision for the Singing River Trail is more than just a place to walk or bike. As described in the vision statement and goals, the Trail will be a place to learn, experience, celebrate, treasure, and socialize. Additional recommendations to be pursued with multiple national, state, and local partners include:

NON-TRADITIONAL, OUTDOOR, LINEAR MUSEUM:

The Trail is an opportunity to educate visitors by featuring historical and natural history interpretation through the outdoor experience. The corridor is rich in Native American history, Civil War history, agricultural history, settlement history, industrial history, and natural history. This can be accomplished through interpretive signage and panels along with a smartphone app (described to the right).

MOBILE/WEB-BASED APP:

The Trail can be experienced through a smartphone app that traces the journey, identifies key stopping points, interprets the historic and natural landscapes, and provides current information and alerts related to trail maintenance issues like flooding in the Refuge area. The app can also provide information about outfitters, nearby bike maintenance, lodging, and meal options along the corridor.



Above: Conceptual wayfinding and interpretation apps developed for the Great Rivers Greenway. Source: Darnell Surles, http://www.studentshow.com/gallery/34745049/Company-Redesign-Great-Rivers-Greenway

Right: Wayside exhibits provide information about a specific feature on a landscape and help visitors make connections to a site. Source: National Park Service, https://www.nps.gov/orgs/1453/interpretation.htm

ENCOURAGEMENT OF TRAIL-ORIENTED DEVELOPMENT:

The Trail can offer prime locations for outfitter rentals, concessions, restaurants, bed and breakfasts, breweries and more. Offering those options will encourage greater trail use and tourism. The greater business community, along with municipal and county governments, can assist in those start-ups.

TRAIL PROGRAMS:

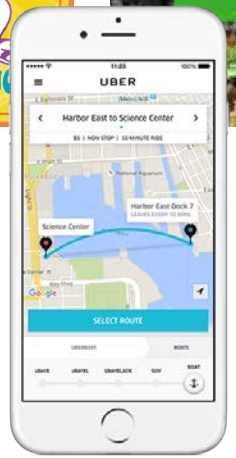
The Trail's visibility will expand through annual and seasonal programs such as trail races, trail clean-up days, group walks, National Trails Day events, community gardens/edible gardens, classroom trips, charity bike rides, Bike to Work Month events, employer commuter encouragement programs, etc. These programs can be led or assisted by advocacy groups, Launch 2035, and municipal/county parks and recreation departments. In addition, national, state, and local magazines, travel guides, and online platforms can advertise the Singing River Trail as a destination to encourage visitation.

In addition, when considering a river crossing in Decatur, Uber Boat or other boat ride-share could be considered.

Rural trail oriented development along the Virginia Creeper Trail in Virginia

Trail oriented development along the Razorback Greenway in Arkansas

Events along the Swamp Rabbit Trail in South Carolina



Uber Boat app in Baltimore, MD

WAYFINDING SYSTEM

On Street Navigational Elements

DECISION

Clarify route options where two or more routes converge, or at complex intersections.

CONFIRMATION

Placed after a turn or intersection to reassure path users that they are on the correct route.

TURN

Placed before a turn or intersection to help users stay on the designated path.

STREET SIGN

Custom sign topper, or artwork added to the sign face may be used to reinforce district branding and act as route confirmation.

WAYMARKER

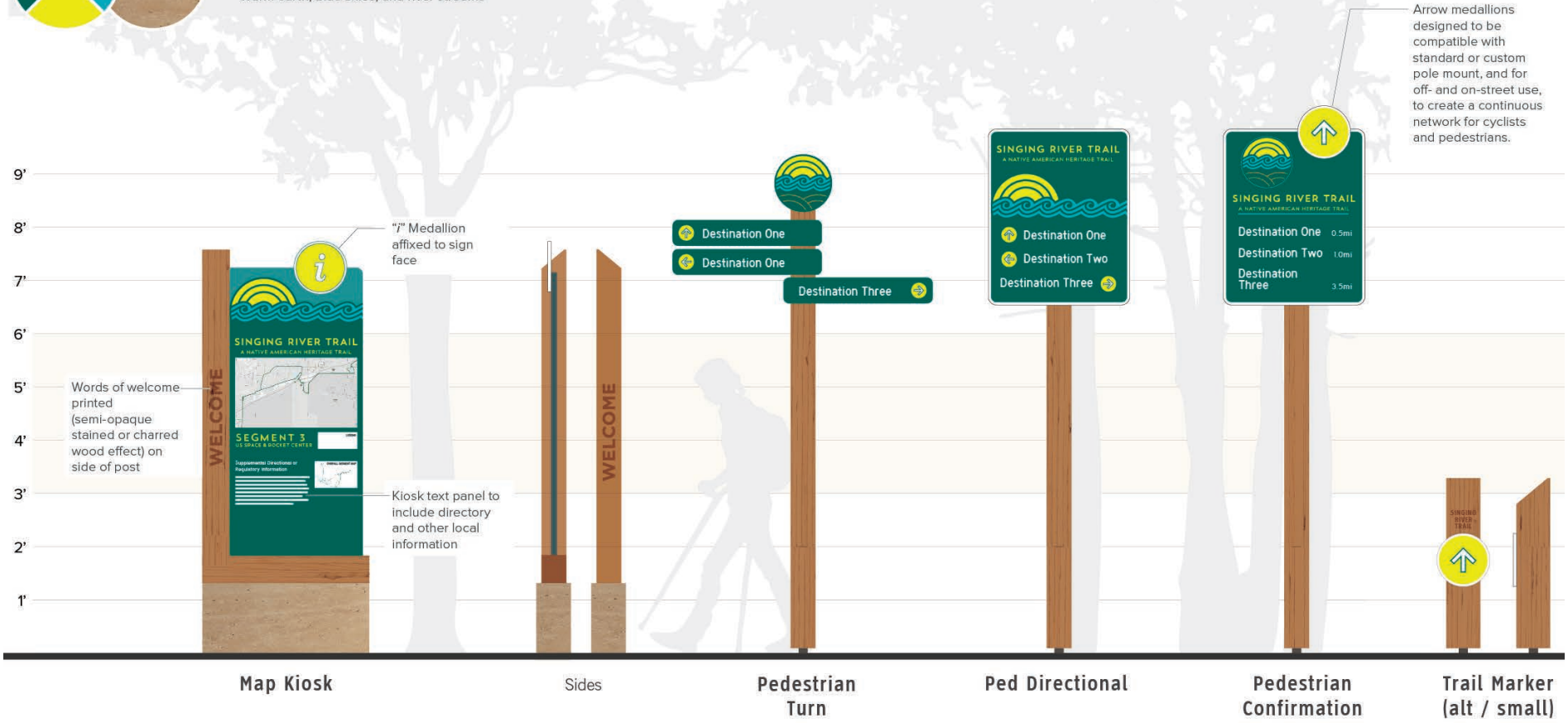
Reinforce path branding and supplement confirmation and turn signs.

Off-Street Trail Navigational Elements

Pattern: Soft Curves

Materials: Stone, Wood, Painted Metal

Colour Palette Inspiration:
Warm earth, blue skies, and river streams



4

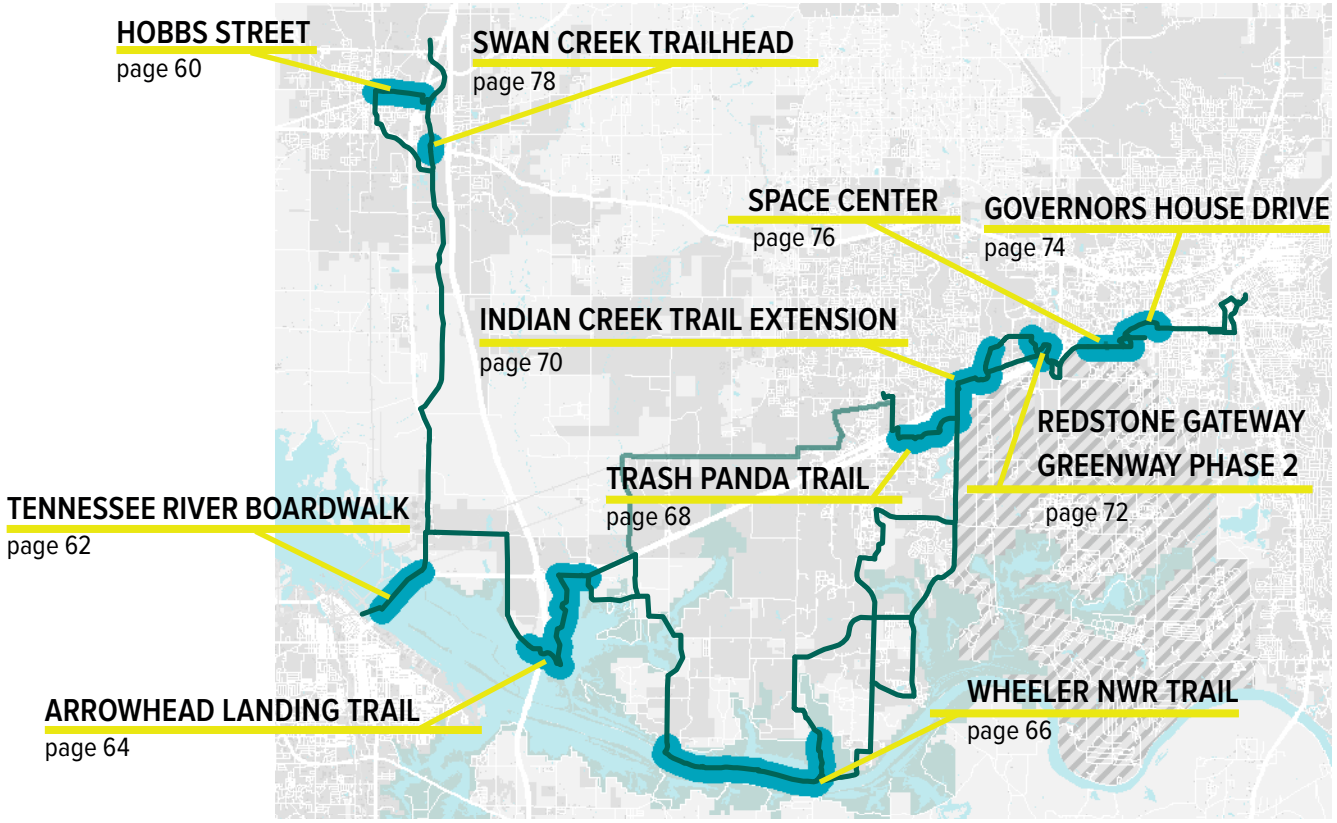
Razorback Greenway
Northwest Arkansas
Source: Alta

"Once the Singing River Trails get underway, and then brought to completion, Limestone County will benefit in ways we don't even yet understand. What we do know and understand is the increased recreational opportunities and healthy lifestyles for walkers and hikers and bicycle riders, young and old. Visitors will not only be impressed, they will come back and add dollars to our local economy, lots of them, I think. So, Limestone County will just become a more and more desirable place to live, work and play."

Rod Huffman, Athens Planning Commission

Phase One Projects

Beginning Phase of Trail



HOBBS STREET SWAN CREEK SEGMENT (ATHENS)

- Proposed Alignment
- Proposed Alternative Alignment
- Proposed Commuter Route
- Existing On-Street Bicycle Facility
- Existing Shared Use Path
- Existing Sidepath
- Existing Unpaved Shared Use Path
- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Trailhead
- Other Destination
- Proposed Midblock Crossing
- Signalized Intersection

0 375 750 1,500 Feet

HOBBS STREET – GATEWAY CONNECTION FROM SWAN CREEK GREENWAY TO ATHENS STATE COLLEGE AND DOWNTOWN ATHENS

The 2015 Athens Transportation Plan recommends a "Complete Street" road diet of Hobbs Street.

The current roadway has four lanes and is approximately 50 feet from curb-to-curb. 2011 ALDOT traffic counts are 9,710, decreasing to 6,720 closer to Downtown. This roadway should be converted to a 3-lane cross section (11' travel lanes) with buffer and north-side separated bikeway to complement the existing north-side sidewalk.

Existing sidewalk on Hobbs Street should be repaired where necessary; a few small gaps should be filled with sidewalk. Driveway crossings should be consolidated where possible.

The roadway improvement will improve quality of life, connect to multiple destinations, increase transportation options, and contribute to positive economic development for the City of Athens.

SEGMENT LENGTH: 6,400 feet (1.2 mile)

FROM: US HWY 31

TO: CLINTON STREET

TRIP GENERATORS

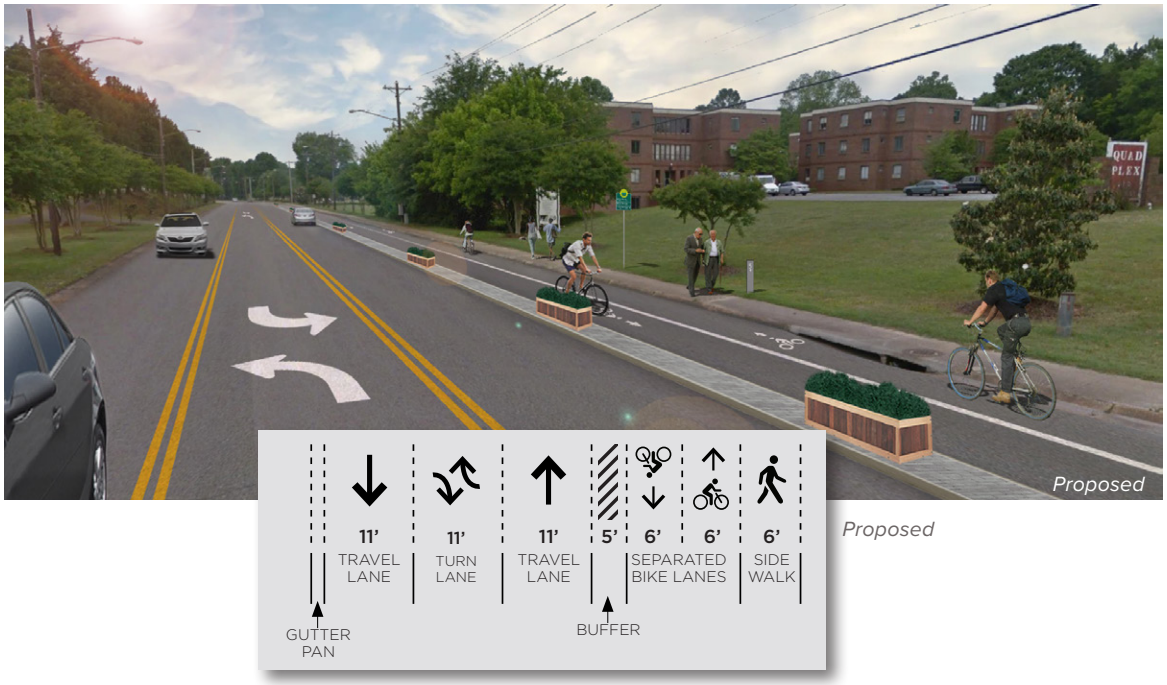
Swan Creek Greenway
Athens-Limestone Park
Athens Middle School
Athens State University
Big Spring Park
City Hall
Downtown Athens

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
6,400 LF	Complete Street Retrofit	$1,749,526.88

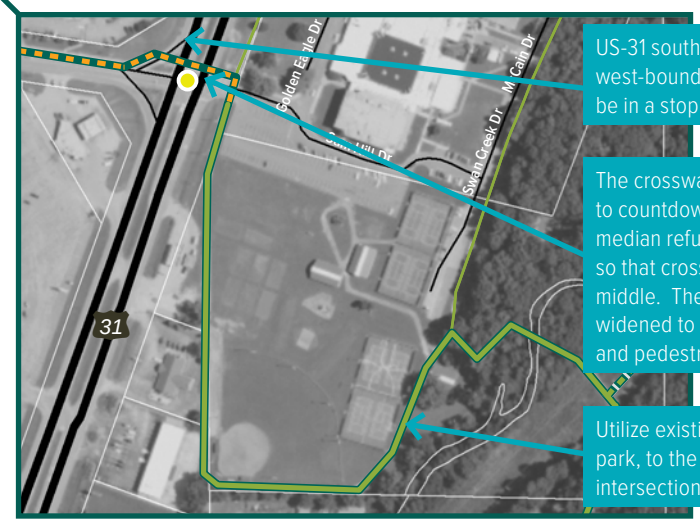
See appendix for full engineer's estimate sheet. Estimate does not include acquisition costs or engineering/design/permitting costs.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: City of Athens, ALDOT TAP, ARC



Proposed

US 31 CROSSING DETAIL



US-31 southbound traffic turning west-bound on Hobbs Street should be in a stop or yield configuration.

The crosswalk should be upgraded to countdown signals and the center median refuge should be extended so that crosswalk cuts through the middle. The crosswalk should be widened to accommodate bicyclists and pedestrians.

Utilize existing walking loop of the park, to the Hobbs Street/US 31 intersection.

Existing

TENNESSEE RIVER BOARDWALK

RIVER CITY CONNECTION SEGMENT (DECATUR)

- Proposed Alignment
- Proposed Alternative Alignment
- Proposed Commuter Route
- Existing On-Street Bicycle Facility
- Existing Shared Use Path
- Existing Sidepath
- Existing Unpaved Shared Use Path
- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Midblock Crossing
- Signalized Intersection

0 625 1,250 2,500 Feet

TENNESSEE RIVER BOARDWALK - CONNECTING THE CITY OF DECATUR

A central question for the Singing River Trail is the necessary connection to the City of Decatur. A large portion of the water crossing is shallow water apart from the main channel. A concrete boardwalk is recommended that would provide a world-class opportunity to walk across the waterway.

The boardwalk would begin at Decatur Hospitality Park and closely parallel US Hwy 31. Overlooks, or respite/viewing areas, should be provided at least every 1/4 mile. Causeway widening is a potential alternative to the boardwalk. This would provide ALDOT with flexibility in the roadway corridor and space for a shared-use path.

A ferry is recommended as an option to connect travelers across the Tennessee River main channel from the Marina to Rhodes Ferry Park.

In the short-term, buses with bike racks could be used to shuttle people across the bridge. This would require coordination with the North Central Alabama Regional Council of Governments (NARCOG) Regional Transit Agency.

SEGMENT LENGTH: 7,300 feet (1.4 miles)

FROM: DECATUR HOSPITALITY PARK

TO: RIVERWALK MARINA

TRIP GENERATORS

Decatur Hospitality Park
Riverwalk Marina
Rhodes Ferry Park
Downtown Decatur

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
7,300 LF	Boardwalk Trail	$9,685,501.68

See appendix for full engineer's estimate sheet. Estimate does not include acquisition costs or engineering/design/permitting costs.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: City of Decatur, ALDOT, Limestone County, Morgan County, TVA

ADDITIONAL CONSIDERATIONS

It is recommended that fishing not be allowed along this boardwalk. It is highly likely that fishermen will want to use this facility. The City of Decatur, ultimately should monitor and decide what is best for its citizens.

Concrete (Permatrak, or similar) is recommended for the surface with metal railings.

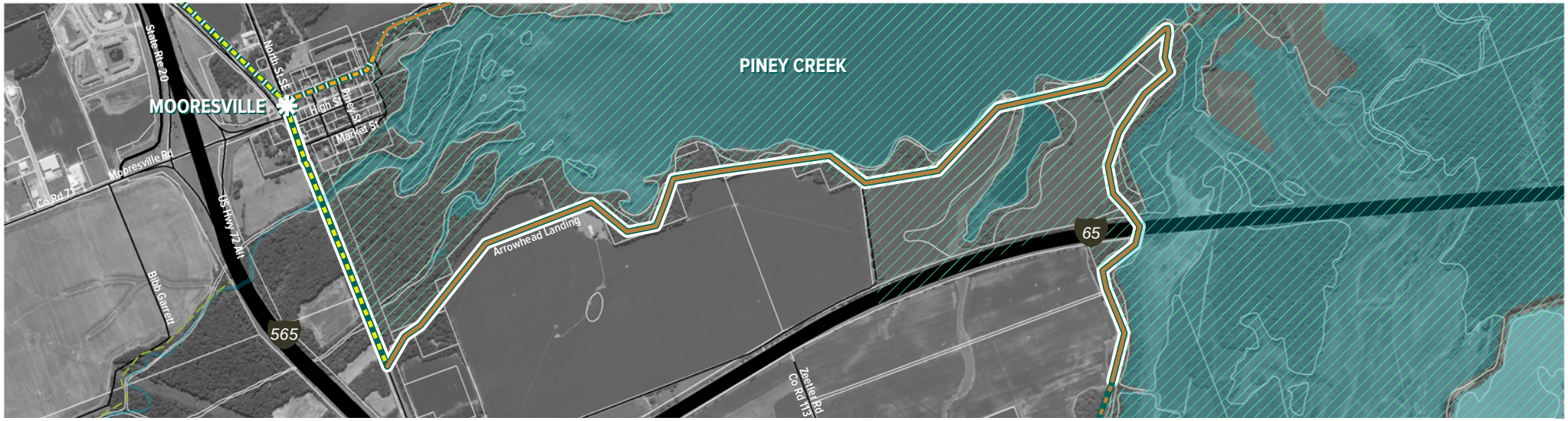
Maintenance of this facility is an important consideration.

A safe connection through the Marina area will be important for travelers to continue their trip.

An existing, winding, unpaved 1,200 foot "trail" exists along land and adjacent to Hwy 31 leading away from the Marina. The boardwalk would end at that "trail." The existing "trail" would be more formalized and could be paved in the future for better access.

ARROWHEAD LANDING TRAIL

RIVER CITY CONNECTION SEGMENT (MOORESVILLE)



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- Existing Sidepath
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- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry

0 875 1,750 3,500 Feet

ARROWHEAD LANDING TRAIL - MOORESVILLE CONNECTION TO THE REFUGE TRAIL

Arrowhead Landing Road is an unpaved travelway used mostly by outdoor enthusiasts (kayaking and fishing). The road provides beautiful scenic vistas across the water along with canoe/kayak access. It is largely an unknown jewel to most North Alabama residents. The roadway would remain unpaved but be smoothed with a stone dust surface. The Singing River Trail would then follow existing unpaved Refuge road under I-65 bridge northward towards Hwy 20.

Ultimately, the connection will be made to the new BUILD grant overpass at Bibb Garrett and Hwy 20 and a connection should be made to the Calvary Community development.

When parallel to Hwy 20 (near Mooresville), the facility would be a shared-use path.

SEGMENT LENGTH: 22,000 feet (4.2 miles)

FROM: MOORES-VILLE

TO: WHEELER REFUGE

TRIP GENERATORS

Mooresville (post office, Southern Carnage, JaVa. Mooresville)
Wheeler National Wildlife Refuge

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Limestone County, ARC, RTP, LWCF, TVA

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
3,500 LF	Option 1: Sidepath + Separated Bike Lane on Bridges	$1,575,025.92
3,500 LF	Option 2: Sidepath + Standalone Bike/ Ped Bridges	$3,365,955.42
3.5 miles	Stone Dust Trail Rehabilitation*	$798,934.66
Option 1 Total Cost		**$2,373,960.58**
Option 2 Total Cost		**$4,164,890.08**

** The purpose of this design is to keep a natural trail that can both meet ADA and vehicular load requirements. It is recommended that the entire gravel structure be removed and replaced with stone dust path to ensure ADA compliance. Reconstruction would be conducted in the same footprint with minimal impact to the surrounding environment. If, during testing or during construction, it is determined that the existing gravel is suitable for ADA compliance, only regrading may be needed which would lower cost. See appendix for full engineer's estimate sheet. Estimate does not include acquisition costs or engineering/ design/permitting costs.*

ADDITIONAL CONSIDERATIONS

A long section (Arrowhead Landing Road) will remain open to motor vehicles. Bicyclists, pedestrians, and motor vehicles will need to share the road with clear signage and low speeds.

Wayfinding signage would be provided for bicyclists and pedestrians. In addition, warning signage at locations of blind spots should be added for safety.

Resting locations with benches should be provided at locations along this section.

Scenic vistas with benches and interpretive signage should be provided to enhance the experience.

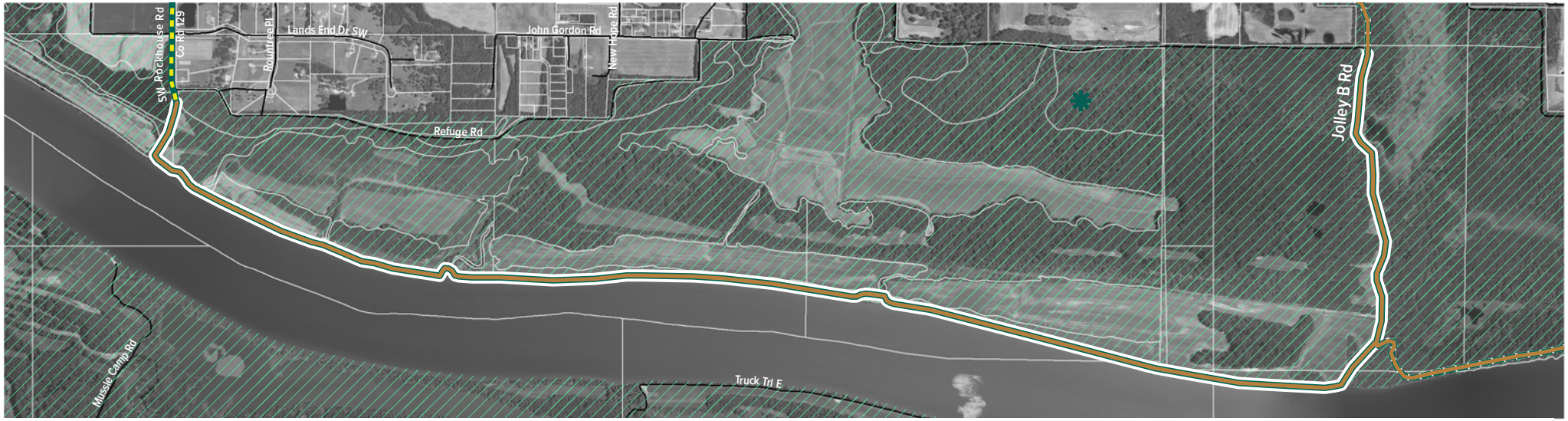
Along Hwy 20, near Mooresville, the facility is a shared-use path with option for standalone bridge over two waterways or separated facility on existing bridges.

View under I-65 Tennessee River bridge facing south

Arrowhead Landing Road (courtesy of Wheeler Wildlife Refuge)

WHEELER NWR TRAIL

WHEELER WILDLIFE TOUR SEGMENT



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- Existing Sidepath
- Existing Unpaved Shared Use Path
- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Wheeler National Wildlife Refuge

0 1,250 2,500 5,000 Feet

WHEELER NATIONAL WILDLIFE REFUGE TRAIL - RIVERFRONT SECTION

This long stretch of the Singing River Trail is a destination unto itself. The Trail will follow an existing unpaved roadway (called Rockhouse Bottoms Road) with tremendous Tennessee River and backwater views. Wildlife/waterfowl viewing is exceptional through this area.

The roadway would remain unpaved but be smoothed with a stone dust surface.

Promoting this section of trail will bring more people to the Wheeler National Wildlife Refuge, which is an underappreciated local and national resource. This will be a great weekend recreational activity that should promote economic development in both Triana and Mooresville.

SEGMENT LENGTH: **28,000** feet (5.3 miles)

FROM: **JOLLEY B ROAD**

TO: **ROCKHOUSE RD**

TRIP GENERATORS

Wheeler National Wildlife Refuge
Triana

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
5.3 miles	Stone Dust Trail Rehabilitation + Trailhead/Bathroom Facility	$1,425,718.72

The purpose of this design is to keep a natural trail that can both meet ADA and vehicular load requirements. It is recommended that the entire gravel structure be removed and replaced with stone dust path to ensure ADA compliance. Reconstruction would be conducted in the same footprint with minimal impact to the surrounding environment. If, during testing or during construction, it is determined that the existing gravel is suitable for ADA compliance, only regrading may be needed which would lower cost.

See appendix for full engineer's estimate sheet. Estimate does not include acquisition costs or engineering/design/permitting costs.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Madison County, Limestone County, RTP, LWCF

Proposed

ADDITIONAL CONSIDERATIONS

Motor vehicles are currently allowed along this section from mid-February through mid-October. It is closed from mid-October to mid-February (late fall and winter). It is open for foot and bicycle traffic year-round. This will remain the case as it will be a shared facility.

Wayfinding signage should be provided for bicyclists and pedestrians.

Resting locations with benches along with overlook sites should be provided to enhance the experience.

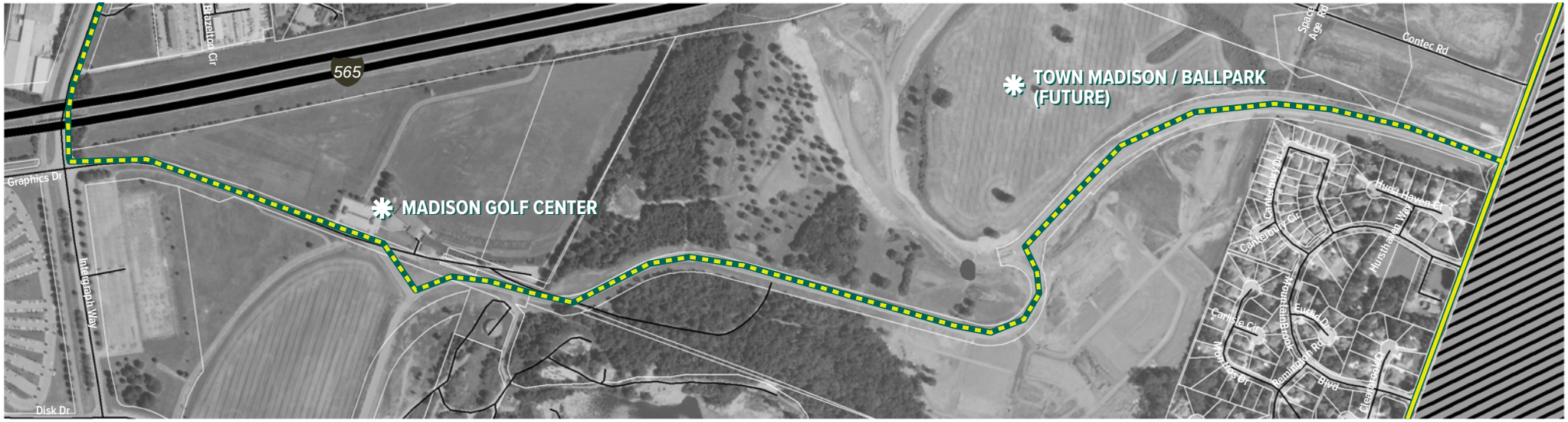
Maintenance is of critical importance due to rain events and flooding. This must be monitored and programmed into funding needs to maintain a high-quality facility.

This project features a trailhead improvement at current Jolley B parking area.


Existing

TRASH PANDA TRAIL

MADISON-TRIANA LINK SEGMENT (MADISON)



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- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Midblock Crossing
- Signalized Intersection

0 375 750 1,500 Feet

TOWN MADISON SIDEPATH

During the time of this Master Plan (2018-2019), the new mixed-use and residential development Town Madison was under construction. Town Madison will be a hub of activity for locals and regional visitors. It will also be an important destination for the Singing River Trail, providing many amenities (food/drink/entertainment) and activities. The new baseball stadium for the minor league team Rocket City Trash Pandas will be a major destination.

The main roadway through Town Madison (Town Madison Blvd) will feature a 10' sidepath that will connect from one end of Town Madison to the other, forming an important segment of the Singing River Trail.

SEGMENT LENGTH: 9,300 feet (1.8 miles)

FROM: ZIERDT RD

TO: INTERGRAPH WAY

TRIP GENERATORS

Town Madison Ballpark
Madison Golf Center
Intergraph Corporation

ESTIMATED CONSTRUCTION COST*

***Trail being constructed by Town Madison developer. Cost below is estimate for project if it were a standalone addition of shared-use path.**

Quantity	Item	Cost
9,300 LF	Total Cost	$2,088,648

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Funded by developer

AERIAL MASTER PLAN

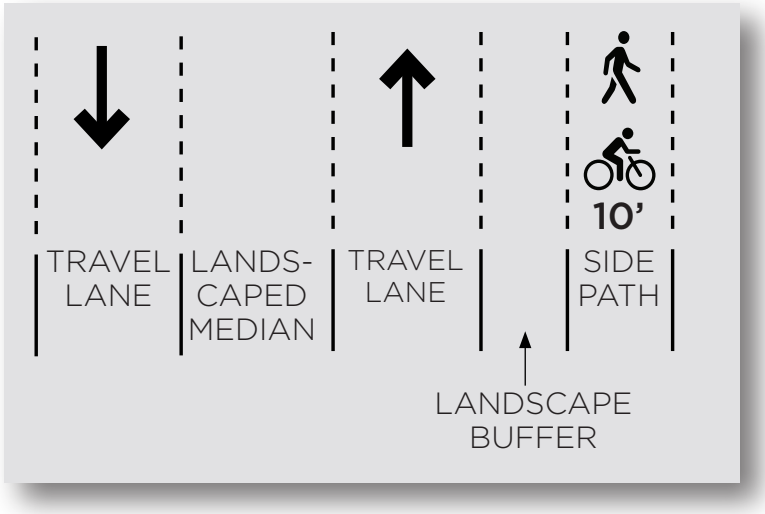
Aerial Master Plan from townmadison.com

ADDITIONAL CONSIDERATIONS

The Town Madison developer is constructing Town Madison Boulevard and the accompanying sidepath.

Connected biking and walking infrastructure should extend from the Singing River Trail to the retail and Stadium destinations, providing seamless transitions.

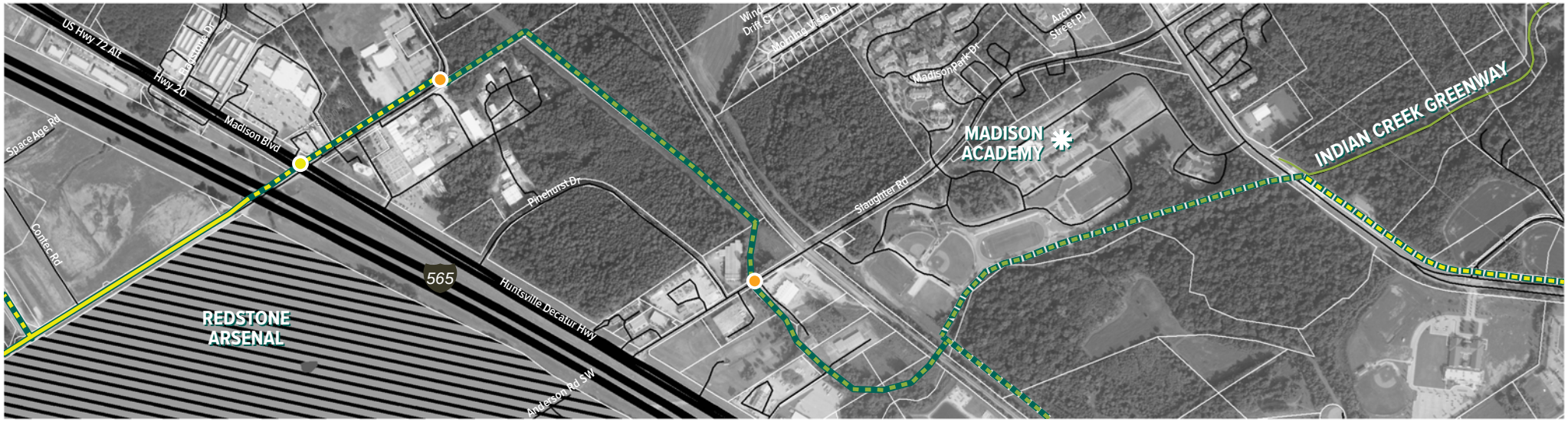
Ultimately, the Trail would exit Town Madison Blvd at Intergraph Way and extend under the I-565 bridge. The critical connection to Downtown Madison is dependent on a high-quality crossing treatment at Intergraph Way and Madison Blvd.



Town Madison Blvd. cross section

INDIAN CREEK TRAIL EXTENSION

ROCKET CORRIDOR SEGMENT (MADISON)



- Proposed Alignment
- Proposed Alternative Alignment
- Proposed Commuter Route
- Existing On-Street Bicycle Facility
- Existing Shared Use Path
- Existing Sidepath
- Existing Unpaved Shared Use Path
- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Midblock Crossing
- Signalized Intersection

0 500 1,000 2,000 Feet

INDIAN CREEK EXTENSION

The existing Indian Creek Greenway is a jewel of the region's greenway system. It currently ends at Madison Pike with a large trailhead. The greenway would extend under Madison Pike (with adequate clearance), and utilize the sewer easement behind Madison Academy.

The trail would continue under the existing railroad bridge, then curving back to Slaughter Road, rejoining the power line corridor.

With the completion of this link and the Zierdt Road sidepath project, there will be nearly 8 miles of continuous shared-use path greenway from the existing northernmost extent of the current Indian Creek Greenway terminus.

SEGMENT LENGTH: **10,800** feet (2 miles)

FROM: **INDIAN CREEK GREENWAY**

TO: **ZIERDT RD SIDEPATH**

TRIP GENERATORS

Indian Creek Greenway
Madison Academy
Publix Super Market

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
10,800 LF	12' Shared-use Path	$2,039,486.59

See appendix for full engineer's estimate sheet. Estimate does not include acquisition costs or engineering/design/permitting costs.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: City of Huntsville, City of Madison, Madison County, RTP, LWCF, ALDOT TAP

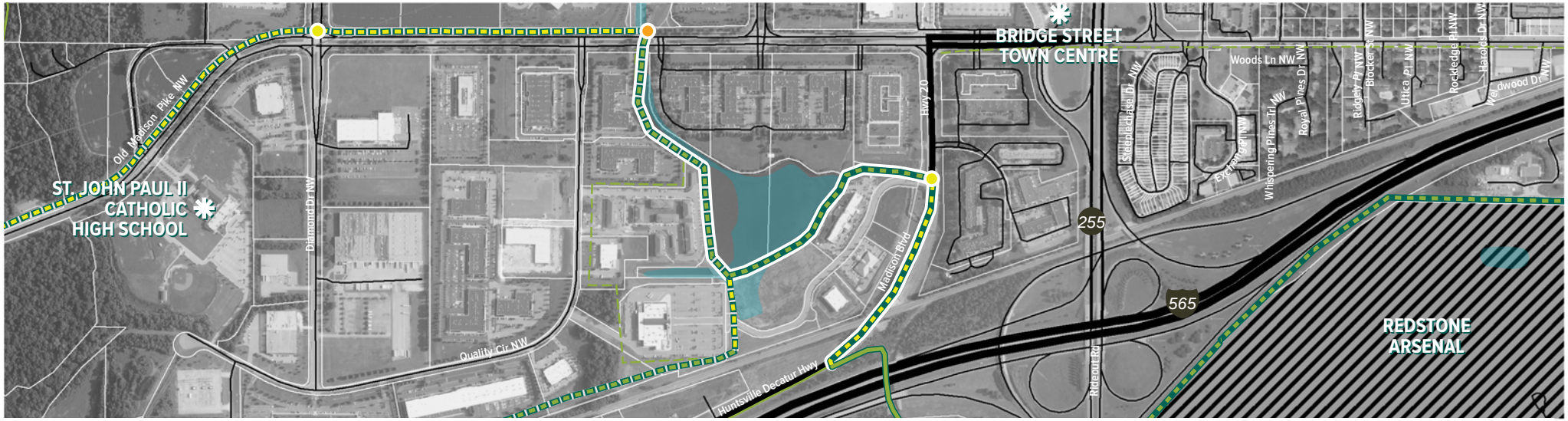
ADDITIONAL CONSIDERATIONS

Eight property owners will need to be negotiated with, primarily on the south side of the railroad bridge. Madison Academy is a willing participant for the long section between Madison Pike and the railroad bridge.

A high-quality mid-block crossing (likely signalized) at Shelton Road will be needed to connect to the under-construction sidepath on the west side of Shelton. Special care should be given to ensuring sight lines are adequate and traffic is slowed.

An underpass of the railroad will require a permit; in addition, if the railroad will allow, a canopy should be provided to prevent debris from the tracks from hitting a trail user.

REDSTONE GATEWAY GREENWAY PHASE 2 ROCKET CORRIDOR SEGMENT (HUNTSVILLE)



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- Proposed Ferry
- Proposed Midblock Crossing
- Signalized Intersection

0 500 1,000 2,000 Feet

REDSTONE GATEWAY TO MADISON PIKE CONNECTION - CABELAS

As part of their commitment to expanding the greenway system, the City of Huntsville is moving into the design phase of this project at the conclusion of this Master Plan process. This project is slated to be constructed in 2020.

The project features an "on-road" connection along Governors West, using the wide shoulder widths of the railroad crossing bridge to create a separated facility. The corridor will continue as a 12' shared-use path through the Cabelas development, along Lake 5, and up to Madison Pike.

SEGMENT LENGTH: 6,100 feet (1.2 miles)

FROM: REDSTONE GATEWAY TRAIL

TO: MADISON PIKE

TRIP GENERATORS

Cabela's
Hotel Services
Employment
Apartment Complex

COST INFORMATION

At the time of this study, this project was being scoped by the City of Huntsville. Cost estimates were ongoing at the time of the conclusion of this Master Plan.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Funded by City of Huntsville

Proposed

ADDITIONAL CONSIDERATIONS

The off-road segment will be a 12' concrete shared-use path.

Given the continued trail development in Research Park, on the north side of Madison Pike, this segment will need a signalized, mid-block crossing for trail users. As a result, this will also provide greater connectivity to Bridge Street.

A pedestrian access/greenway easement is needed at the hotel property.

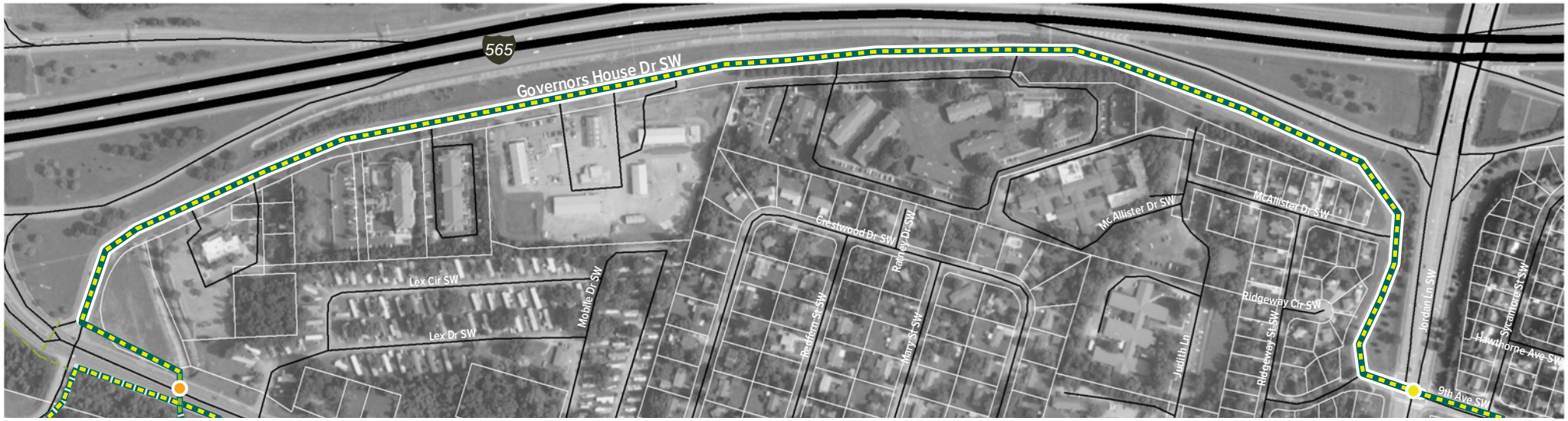
A high-quality crossing is needed at the existing Governors West/Cabela Road signalized intersection.

Effort should be made to protect trees as the trail approaches Madison Pike. Understory will need to be removed.

Existing

GOVERNORS HOUSE DRIVE

HEART OF HUNTSVILLE SEGMENT (HUNTSVILLE)



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- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Midblock Crossing
- Signalized Intersection

0 250 500 1,000 Feet

GOVERNORS HOUSE 2-WAY CYCLE TRACK/ON-ROAD SHARED USE PATH

As part of a regularly scheduled roadway resurfacing, the City of Huntsville is implementing an in-roadway shared-use path that will run the length of Governors House, from Bob Wallace Avenue to Jordan Lane. This project will occur in 2019.

The current roadway has two lanes with a center turn lane with an average annual daily traffic (AADT) of 1,200 vehicles per day. The resurfacing project will remove the center-turn lane as there are no driveways on the north side of this roadway, relatively lower traffic volumes, and limited turning movements.

The five foot buffer will include vertical delineators.

SEGMENT LENGTH: **5,700** feet (1.1 mile)

FROM: **JORDAN LANE SW**

TO: **BOB WALLACE AVE**

TRIP GENERATORS

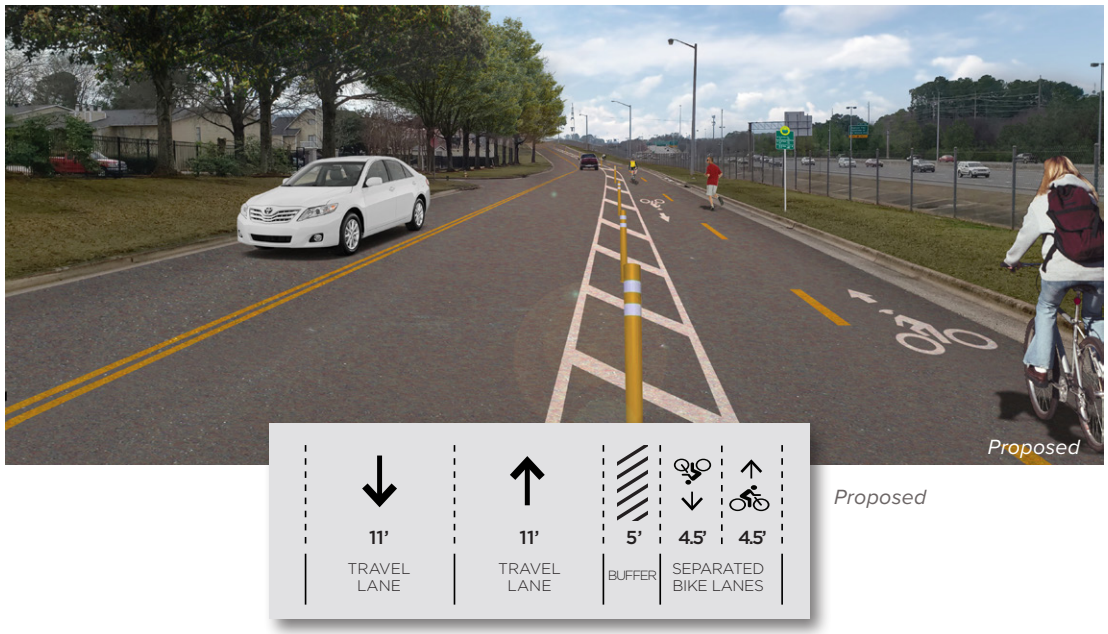
US Space and Rocket Center
Hotels
Low & Mid-Density Residences
Huntsville Achievement School

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
5,700 LF	Cycle Track (thermo striping, delineators, relocating one street light)	$50,000*

*Project in progress by City of Huntsville as part of resurfacing program. Cost shown here is the additional cost only for the cycle track (does not include total City cost for resurfacing)

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Funded by City of Huntsville



Proposed

ADDITIONAL DETAILS AND CONSIDERATIONS

A highly-visible marked crosswalk with countdown signal and ramp was added during the Jordan Lane resurfacing which gets bicyclists and pedestrians across Jordan Lane from 9th Street.

A mid-block, signalized crossing will be necessary to extend bicyclists and pedestrians across Bob Wallace Avenue.

Signage will be added to communicate the beginning and end of the cycle track.

Temporary Singing River Trail signage will be added along this corridor.

Vertical delineators will provide a greater feeling of separation and safety for bicyclists and pedestrians.

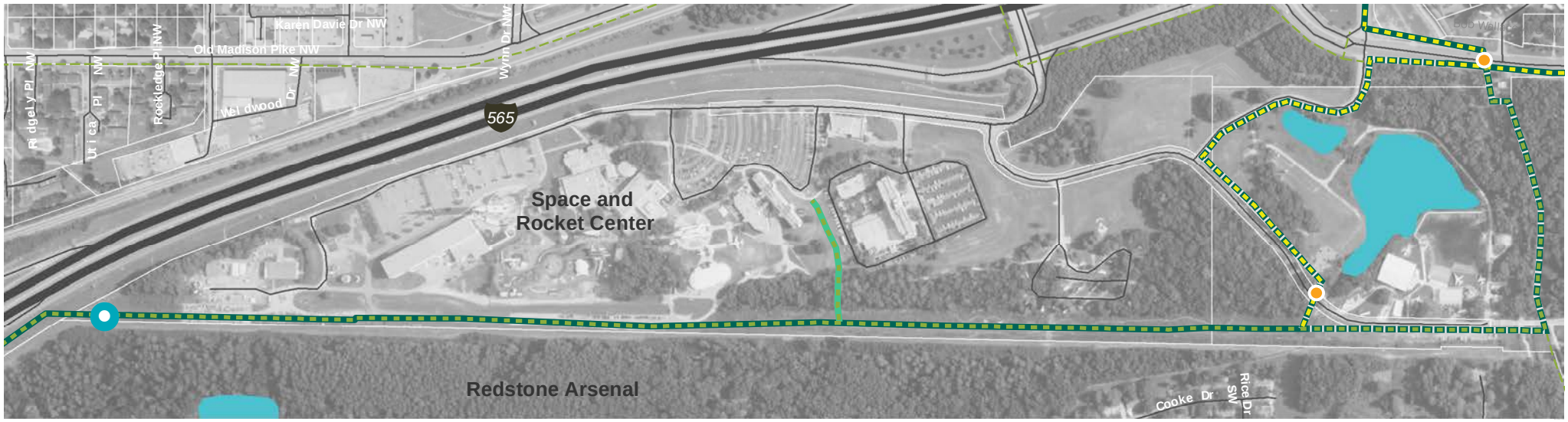
In long-term, depending on usage, a sidewalk could be added adjacent to the on-street facility.

In the longer term, it is recommended to remove right-hand slip turn lane at Governors House/Bob Wallace.

Existing

SPACE AND ROCKET CENTER

ROCKET CORRIDOR SEGMENT (HUNTSVILLE)



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- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Trailhead
- Other Destination
- Proposed Midblock Crossing
- Signalized Intersection

0 250 500 1,000 Feet

U.S. SPACE AND ROCKET CENTER SHARED-USE PATH

This segment of the Singing River Trail will connect to the most visited destination in the state of Alabama, the U.S. Space and Rocket Center. The shared-use path will cross Bob Wallace Avenue with a signalized crossing and enter the east side of the Space Center campus, connecting to the newly opened Energy Greenway (2019).

The path would follow the TVA easement behind the Space Center with a spur to the main entrance. Ultimately, this phased segment will end at a new trailhead at the western side of the Space Center area.

SEGMENT LENGTH: **8,700** feet (1.7 miles)

FROM: **BOB WALLACE AVE**

TO: **SPACE CENTER (WEST SIDE)**

TRIP GENERATORS

US Space and Rocket Center
Botanical Gardens
Energy Greenway
Marriott Hotel
Future Exploration Park
Redstone Gateway
Holiday Inn

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
8,700 LF	12' Shared-Use Path, Signal, etc.	$1,711,202.06

See appendix for full engineer's estimate sheet. Estimate does not include acquisition costs or engineering/design/permitting costs.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: City of Huntsville, Space & Rocket Center, Redstone Arsenal, RTP, TVA

Proposed Bob Wallace crossing

ADDITIONAL CONSIDERATIONS

Two alternatives remain on the eastern side of this segment. The preferred alternative follows an existing dirt path along a sewer easement, parallel to McDonald Creek. The path would turn westward along an existing paved roadway, ultimately connecting to the Energy Greenway in the TVA easement. This will require coordination with Redstone Arsenal, Space and Rocket Center, and Botanical Gardens.

A mid-block, signalized crossing will be necessary to extend bicyclists and pedestrians across Bob Wallace Avenue.

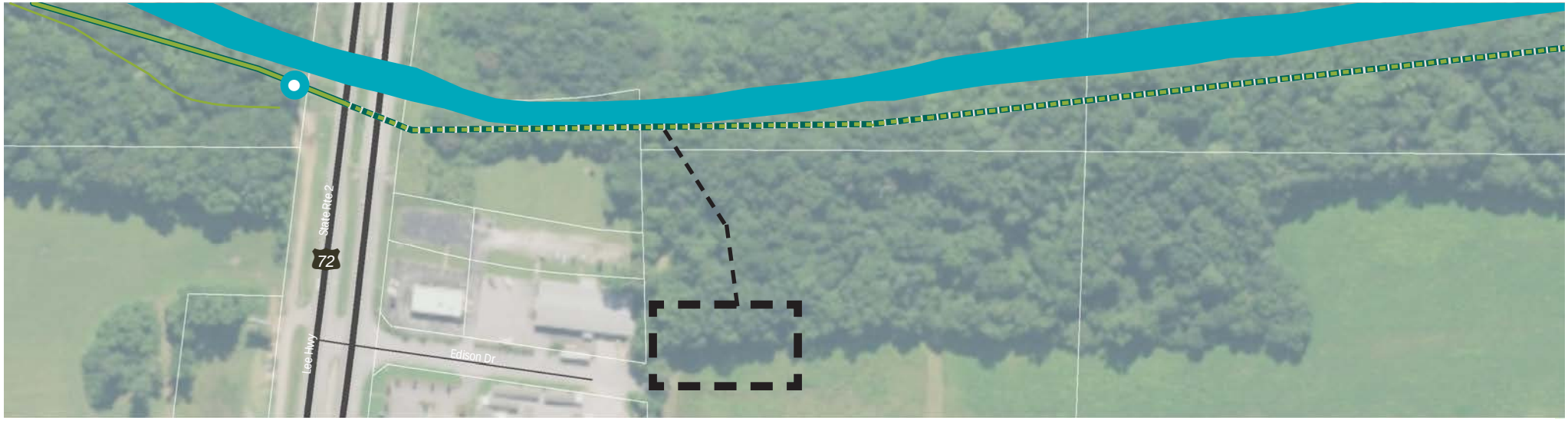
A pedestrian access/greenway easement will be needed with TVA for the length of the utility corridor.

A spur shared-use path should be developed to get users directly to the main entrance of the museum.

Existing

SWAN CREEK TRAILHEAD

SWAN CREEK SEGMENT (ATHENS)



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- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Trailhead
- Other Destination
- Proposed Midblock Crossing
- Signalized Intersection

0 100 200 400 Feet

SWAN CREEK GREENWAY EXTENSION AND NEW TRAILHEAD

The Swan Creek Greenway is a beautiful, unpaved trail corridor that extends from Swan Creek Park south to Hwy 72. Plans are in place to continue the pathway north and south. Currently, the trail ends on the north side of Hwy 72, with an informal trailhead access. The City of Athens acquired a grant from the Alabama Department of Conservation and Natural Resources to extend the trail south under the Hwy 72 bridge and also create a formal trailhead on the south side of Hwy 72.

This project will be a key extension for the Singing River Trail to set the stage for continued trail development southwards. The trail will not be paved at this time; in the long term, depending upon user needs and funding availability, the trail may be paved.

SEGMENT LENGTH: 1,200 feet

FROM: END OF GREENWAY

TO: EIDSON STREET

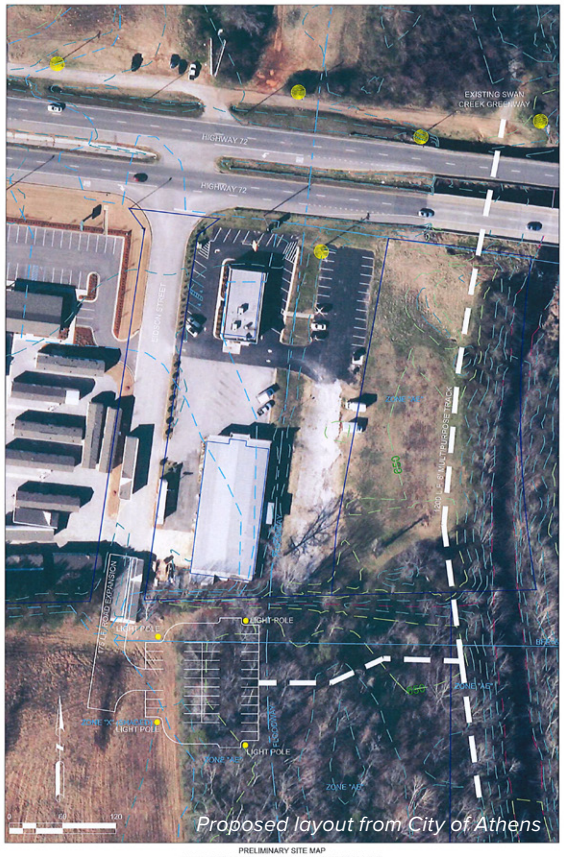
TRIP GENERATORS

New Trailhead
Businesses along US 72

ESTIMATED CONSTRUCTION COST

Quantity	Item	Cost
1,200 LF	Trail Extension, Trailhead, and Acquisition	$250,000

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Funded through RTP with local match from City of Athens



Proposed layout from City of Athens

ADDITIONAL CONSIDERATIONS

The total cost projection was $250,000 ($200,000 from ADECA grant with $50,000 local City of Athens match).

The new section of trail will match the current section of trail with dense grade crushed rock.

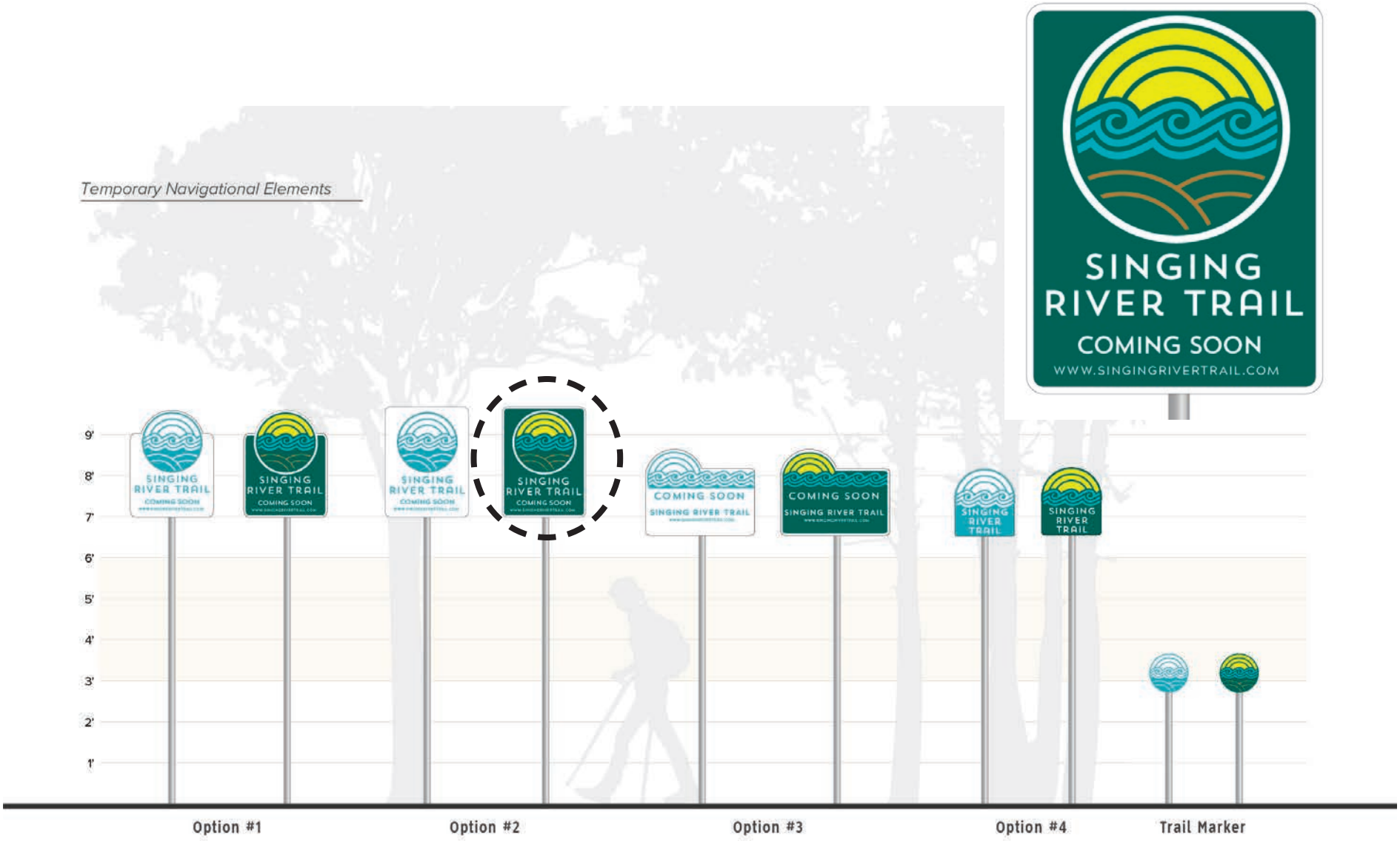
The trailhead will be accessible from Eidson Street and will feature a gravel parking lot.

A short trail spur from the new trailhead to the new section of the Swan Creek Greenway will guide users to the main corridor.

Wayfinding signage should also be added (not currently part of this project). This will help residents and travelers identify the Swan Creek Greenway as it is currently "hidden" from most users.


Existing - north of US 72

TEMPORARY WAYFINDING THROUGHOUT TRAIL SYSTEM



ESTIMATED COST

Quantity	Item	Cost
29	Aluminum signs with UV protected digitally printed faces (2'x3') + 12' Green 2lb Posts	$5,998.00
29	Installation Cost	$5,841.00
	Total Cost	**$11,839.00**

Estimate from local sign shop. Costs may be reduced slightly by using existing posts where practical. Also, local, municipal or county public works departments could install signs.

POSSIBLE PUBLIC/GRANT FUNDING SOURCES: Private donations

Proposed temporary sign at Indian Creek Greenway/Madison Pike

ADDITIONAL CONSIDERATIONS

Temporary signs should be placed on existing posts when practical to save on post and installation costs.

Temporary signs placed beside roadway corridors may need review by City, County, or State depending upon roadway ownership.

Permanent signage should be added as more of the Singing River Trail is constructed and longer segments are connected.

Effort should be made to locate existing posts/poles for sign attachment. In addition, sign clutter should be avoided. The Singing River Trail temporary signs should be installed where they will be highly visible.

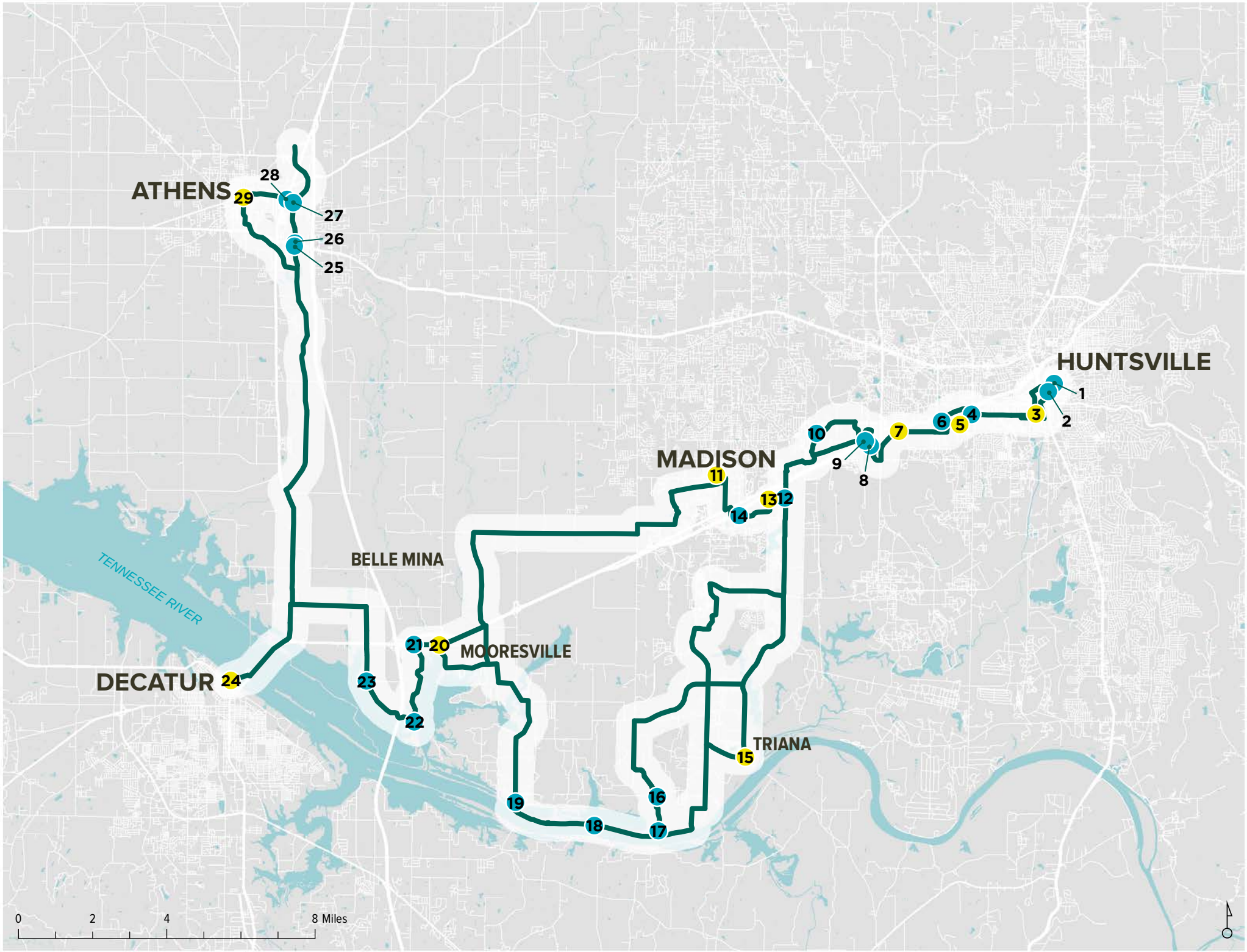
Proposed temporary sign at Rotary Fountain-Downtown Huntsville

TEMPORARY SIGNAGE PLACEMENT

The temporary signage will be placed at key locations along the route. The goal of this project is two-fold -- first, bring awareness and brand recognition to existing segments of the trail and future connections from popular existing trails; and second, to bring awareness of the trail at popular destinations and urban areas. The following map and table shows where signs should be placed and what type of sign type should be used.

These signs should be placed shortly after Master Plan completion as an early action item.

ID Number	Location	Type
1	Big Spring Park Trail North	Trailhead at Existing Facility
2	Big Spring Park Trail South	Trailhead at Existing Facility
3	Lowe Mill ARTS & Entertainment	Urban Area or Destination
4	Governors House East	Trailhead at Existing Facility
5	Huntsville Botanical Garden	Urban Area or Destination
6	Governors House West	Trailhead at Existing Facility
7	US Space & Rocket Center	Urban Area or Destination
8	Redstone Gateway Trail South	Trailhead at Existing Facility
9	Redstone Gateway Trail North	Trailhead at Existing Facility
10	Indian Creek Greenway	Trailhead at Existing Facility
11	Downtown Madison	Urban Area or Destination
12	Town Madison Entrance East	Trailhead at Existing Facility
13	Town Madison Ball Park	Urban Area or Destination
14	Town Madison Entrance West	Trailhead at Existing Facility
15	Triana	Urban Area or Destination
16	Wheeler NWR Existing Parking Area	Trailhead at Existing Facility
17	Wheeler NWR	Trailhead at Existing Facility
18	Wheeler NWR	Trailhead at Existing Facility
19	Wheeler NWR	Trailhead at Existing Facility
20	Mooresville	Urban Area or Destination
21	Arrowhead Landing North	Trailhead at Existing Facility
22	Arrowhead Landing South	Trailhead at Existing Facility
23	Wheeler NWR Entrance Road	Trailhead at Existing Facility
24	Decatur (Rhodes Ferry Park)	Urban Area or Destination
25	Swan Creek Trail South - Future	Trailhead at Existing Facility
26	Swan Creek Trail South - Existing	Trailhead at Existing Facility
27	Trail Junction	Trailhead at Existing Facility
28	Swan Creek Park	Trailhead at Existing Facility
29	Athens	Urban Area or Destination


ATHENS
HUNTSVILLE
MADISON
DECATUR
BELLE MINA
MOORESVILLE
TRIANA
TENNESSEE RIVER
1
2
3
4
5
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16
17
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21
22
23
24
25
26
27
28
29
0
2
4
8 Miles

5

Virginia Creeper Trail
Southwest Virginia
Source: Alta

"The Singing River Trail will be a great addition to the transportation system in the North Alabama Region by providing relief of traffic congestion, added health benefits and promoting tourism."

Dewayne Hellums, Director, Decatur Area MPO

Implementation Framework

Introduction

Successful implementation of the Singing River Trail Master Plan will require a coordinated effort among local government agencies, private sector organizations, business and industry, civic groups, and community residents.

These groups, organizations and agencies ultimately must assume a leadership position and take necessary actions if the Singing River Trail is to become the valuable, world class, regional asset that this Plan envisions. Local, state and federal agencies will need to provide funding and programs to support the establishment of the Trail and to assist in future implementation of the key elements of this Plan. This section of the Plan defines some of the most important actions that will need to be undertaken to achieve the vision defined by this Plan. This chapter defines an overall implementation strategy and framework for the Singing River Trail, and outlines some practical "next steps" for implementing this Plan.

Action Steps upon Completion of Master Plan

1 WIDE COMMUNICATION AND PRESENTATION OF MASTER PLAN

to Local Governments, State government, organizations, business community, residents

2 DESIGNATION OF LEAD AGENCY – LAUNCH 2035

3 OPERATIONAL FUNDING FOR 5-YEAR PERIOD TO SUPPORT FULL TIME SINGING RIVER TRAIL DIRECTOR

4 SEEK DESIGN AND CONSTRUCTION FUNDING

Private partners – Lead gifts, Grants, Municipal/County governments, MPOs/ RPOs, State/Federal government

5 HIRE EXPERT CONSULTANT TO MANAGE TRAIL PROGRAM; TEAM OF EXPERTS AND CONSULTANTS

6 ACQUISITION AND DESIGN (PHASE 1 PROJECT FIRST)

Action Steps

ADOPTION OF THIS GREENWAY ACTION PLAN

One of the first steps to be taken by the county and local governments in Limestone, Morgan, and Madison counties would be to adopt this Singing River Trail Master Plan as an element of their comprehensive plans, and implement the recommendations contained herein. This Plan should become components of regional, county, and local transportation plans and be prioritized for state funding. Likewise, other agencies, organizations and businesses within the communities should also incorporate the aspects of this plan that directly relate to their individual mission, goals and objectives.

DESIGNATION OF A LEAD AGENCY

LAUNCH 2035

Launch 2035, designated as a 501c3 in mid-2019, would be the Lead Agency for coordination and implementation of the Singing River Trail Master Plan. This non-profit organization would derive its mission principally from the vision, goals, and recommendations of this Master Plan. As such, Launch 2035 will need to incorporate the recommendations contained in the Operations and Management section of this plan. Launch 2035 would also need to prepare an operations and implementation strategy for how it will meet the obligations associated with lead agency/organization and file such a strategy with local governments, the State of Alabama, and federal agencies. Launch 2035 would employ staff and would work in partnership with local governments and businesses to implement the recommendations of this Plan.

One of the first steps of Launch 2035 is to hire a full-time Singing River Trail Director or Coordinator. This position would be supported by government and/or private funding on an annual basis for a term of five years. The Singing River Trail Coordinator would be responsible for championing the Plan, engaging funding partners, coordinating with local, county, state, and federal agencies, writing grants, assisting with implementation, soliciting design consultants and overseeing their work, working with private developers, and being a steward of funds accumulated to support the project. A secondary part-time hire of a grantwriting specialist is also recommended to ensure that grants are pursued in an efficient and successful manner.

LIKELY RESPONSIBILITIES OF SINGING RIVER TRAIL COORDINATOR

- Coordinating with external design partners, vendors, and construction contractors
- Scheduling, budgeting, budget management, and managing resources
- Fundraising (public and private funding sources)
- Troubleshooting, problem-solving, and resolving operational problems to minimize delays
- Working with local, state, and federal government agencies
- Communicating with project partners, stakeholders, general public, and landowners
- Identifying and facilitating real estate transactions; assisting with drafting and negotiating conservation easements, contracts, options, and purchase and sale agreements; arranging for appraisals, surveys, title and legal reviews, etc
- Project progress and performance monitoring; communicating project progress and impacts
- Attending construction project meetings, approving change orders and contractor invoices

LIKELY RESPONSIBILITIES OF PROGRAM MANAGEMENT CONSULTANT

The manager of the Trail Program is typically a lead consultant serving as project manager and design team leader, handling all aspects of the trail development work from planning through construction management. The consultant manager oversees a large team of specialty subconsultants. The team mobilizes when problems happen. Tasks may include:

- ROW acquisition
- Appraisals
- Engineering
- Surveying
- Permitting
- Materials testing
- Regular meetings with Singing River Trail Coordinator
- Monthly progress reports
- Public and stakeholder engagement
- Fundraising assistance/Key presentations
- Construction standards
- Stakeholder coordination

SECURE OPERATIONAL FUNDING

Securing operational funding is absolutely essential for a successful trail program. This has been the case in successful regional trails like the Razorback Greenway and the Wolf River Greenway. **Launch 2035 should seek $500,000 of operational funding for a five year period.** These funds would be used to support the Director and provide a head start towards the next big step of acquiring funding to design and build the Singing River Trail.

SEEK DESIGN AND CONSTRUCTION FUNDING

The biggest dollars are needed to build the Singing River Trail. The Trail construction will require a cobbling together of multiple funding sources, including both private and public funding, and then leveraging funds from lead gifts. Across the United States, one of the fastest emerging funding sources for greenway development is the private sector. This trend is occurring for various reasons, including support for improvements to quality of life, health and wellness, alternative transportation, conservation of natural resources and economic development. Most importantly, private financial support has enabled the greenway development process to move faster, so that facilities can be completed more efficiently. **The design of the Singing River Trail should be consistent across jurisdictions to maintain the look and feel of the trail.**

Private Sector Support

Launch 2035 and the Singing River Trail Coordinator should work with private sector organizations and businesses in the region to gain acceptance and approval for the implementation of the recommendations within this Plan. Launch 2035 and its new Singing River Trail Coordinator will need to be prepared to communicate the recommendations of this Plan and the benefits that the Trail will have to the region.

Engaging private funding requires four basic steps:

1 - Develop the "Pitch." In this case, the Economic and Health Benefits of the Singing River Trail and this Master Plan are part of that pitch.

2 - Make the "Ask."

3 - Leverage a "Lead Gift." First, a lead gift from a prominent and respected local project sponsor signifies the importance of the project throughout the entire community. Second, a lead gift is often used to leverage other private funds. Third, a lead gift may be used as a matching source of funding for public sector grants.

4 - Create an Invite List. Continue to build momentum by asking additional organizations.

Public Sector Support

Launch 2035 and the Singing River Trail Coordinator should work with public sector agencies in the region to gain acceptance and approval for the implementation of the recommendations within this Plan. The counties and municipalities should include funding for the Singing River Trail in their Capital Improvement Project (CIP) lists.

Grantwriting

The Singing River Trail Director should work with local partners to apply for federal, state, and local grants to support implementation of the Trail. The grant list includes, but is not limited to:

- Recreation Trails Program (RTP)
- Land and Water Conservation Fund (LWCF)
- Appalachian Regional Commission (ARC)
- ALDOT Transportation Alternatives Program (TAP)
- US Dept, of Commerce, Economic Development Administration (EDA)
- USDA Rural Development Grants
- FHWA BUILD Grants

Funding Case Studies

Case Study

Razorback Greenway

In Northwest Arkansas, the Razorback Regional Greenway was conceived by the Northwest Arkansas Regional Planning Commission as a network of primarily on-road trails spanning the two-county region (Benton and Washington counties). In 2009, the Walton Family Foundation stepped in and spearheaded a public-private partnership that resulted in the development of a 36-mile, primarily off-road, world class regional greenway.

The Razorback Regional Greenway was funded from a combination of public and private funds, including a USDOT TIGER 2 grant of $15 million, and a dollar for dollar gift from the Walton Family Foundation of $15 million. Other grant funds were added later bringing the total funding to more than $40 million. Without the lead gift from the Family Foundation, the project would never have happened. The Foundation based its gift on two community goals: 1) improve the health of local residents, and 2) support economic development throughout the region to keep Northwest Arkansas competitive for years to come. The 36-mile Razorback Regional Greenway was officially completed and opened for use in May 2015.

Case Study

Wolf River Greenway

In Memphis, Tennessee, the 36-mile Wolf River Greenway has been the brainchild of the Wolf River Conservancy (a non-profit land trust based in Memphis) for more than 35 years. Using a traditional approach of relying on public sector leadership and funding to build the project, the Conservancy became frustrated with the glacial pace of greenway facility development – in 35 years, approximately 5 miles of trail had been completed. In 2014, the Conservancy decided to fund the development of 22 miles of the trail within the Memphis city limits using private sector funds. As of 2016, the Conservancy has raised approximately $40 million in support of facility development, with more than half of that coming from private sector sources. The Conservancy has then leveraged the private sector support to gain public sector support from the City of Memphis and Shelby County. The Conservancy expects to design, permit and build the entire 22 mile Memphis portion of the Greenway by 2019.

Case Study

Carolina Thread Trail

For the Carolina Thread Trail in North Carolina, the “ask” came during a breakfast meeting of philanthropic and corporate groups. This invitation only breakfast generated more than $15 million in support.

ORGANIZATIONAL FRAMEWORK

Launch 2035 will work in close partnership with multiple agencies throughout the Singing River Trail acquisition, design, construction, and post-construction phases. When acquisition is necessary, Launch 2035 will work closely with the Land Trust of North Alabama to hold those lands. As Trail sections are completed, they will be turned over to the local governing agency (City, County, State, or Federal) where the Trail resides for maintenance and management.

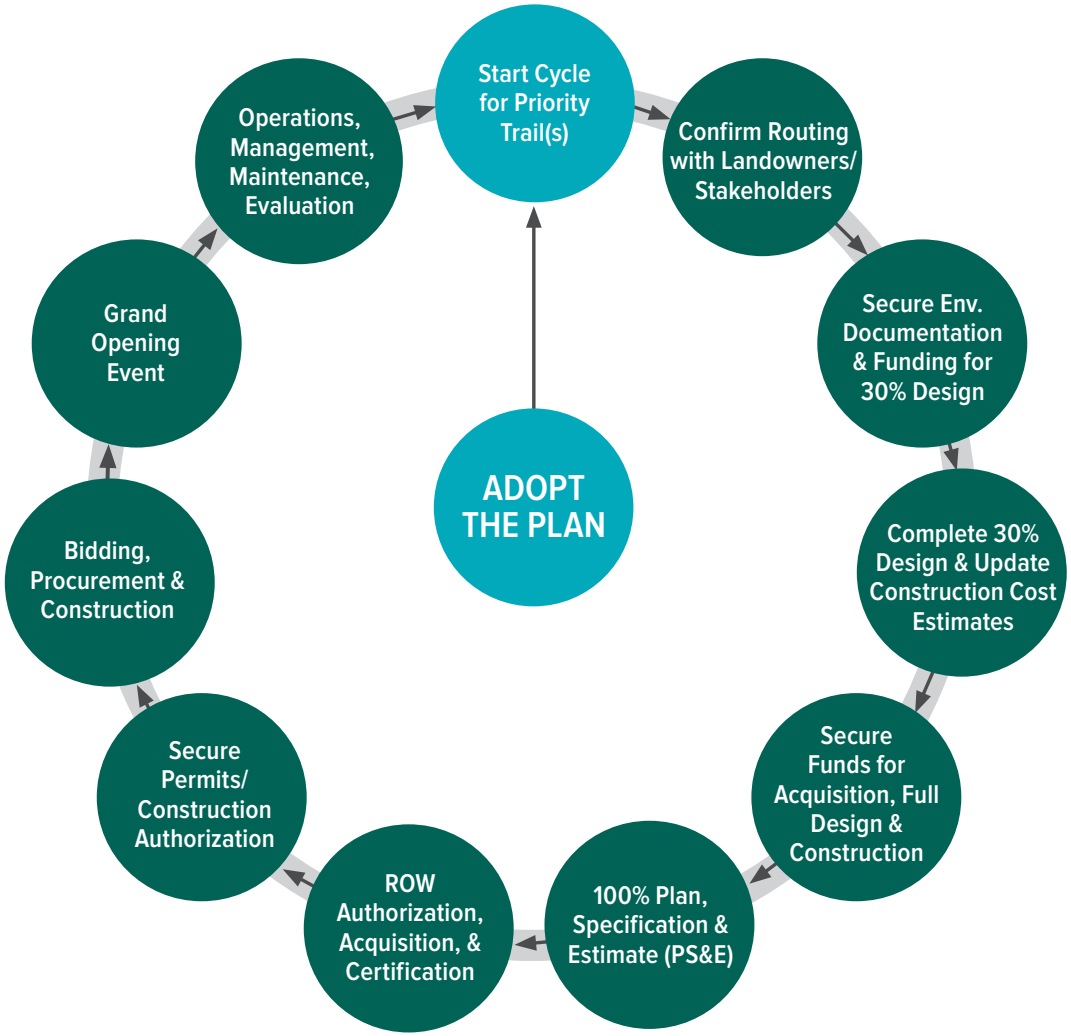
BEGIN PHASE ONE PROJECTS (CHAPTER 4)

The projects identified in Chapter 4 should be begun as quickly as possible, to keep implementation moving. If it takes longer than anticipated to get operational funding and funding for design and construction, begin with lower-cost projects as possible (including temporary wayfinding signage installment).

Flexibility is key as opportunities may arise in unexpected ways. For example, a city may have funding they want to immediately dedicate to a particular segment of the Singing River Trail that may benefit the city in multiple ways (even if not part of Phase One). Another example is a private entity wanting to immediately fund a segment of Trail that will positively impact their employees. In these cases, Launch 2035 and its partners should move to adjust the project schedule and implement those trail segments.

Typical Greenway Development Process

The development process for trails will vary from community to community and from project to project, especially depending on the work already completed to-date for each segment of trail. Certain funding sources may have additional requirements, and some steps may occur simultaneously or in a different order. Still, it is useful to have a sense of the typical process and the main steps involved in trail development. The diagram below outlines these steps.



Guidance for Greenway Operations and Management

An Operations and Maintenance Program could be developed by a regional coordinating entity, or by individual jurisdictions according to the facilities maintained by each of them. The maintenance costs that follow are provided for planning guidance only; agencies responsible for maintenance and operations should update budgets annually, as more accurate and local costs are available for reference over time. These budgets should take into account routine and remedial maintenance over the life cycle of the improvements, as well as ongoing administrative costs. The section below provides an overview of approximate costs for basic bicycle, pedestrian and greenway trail operations and maintenance services. The estimates include field labor, materials, equipment and administrative costs. These costs vary, depending upon the facility to be maintained, level of use, location, and standard of maintenance.

Routine Operations and Maintenance Costs

While actual costs will vary depending upon a number of factors, such as future availability of water and labor rates, the estimates can provide a general idea of potential operations and maintenance obligations. Following are typical annual costs for key components:

- Shared-Use/Greenway Trails: Crew sizes tend to range from 0.5 to 5 full time employees (FTE's) per 10 miles of off-street trail. A guideline for consideration is to have at least one FTE per 15 miles of trail. Annual routine maintenance costs may range from less than $3,000 to over $7,000 per mile. Routine cleanup and monitoring of facility conditions are often handled by volunteers and maintenance crews.

- On-Street Bicycle Facilities: In absence of specific maintenance agreements, bicycle lanes, shared lane markings, separated bikeways, and other on-street facilities should be maintained as part of the roadway environment, by either local, county, or state agencies, depending on ownership. Some provision should be made for regular inspections, to include minor repair or replacement of signs, vegetation grooming and other items that an inspector could remedy in the field. Additional attention should be paid to debris, potholes, pavement damage, and other obstacles to safe on-street bicycling. Some additional sweeping will be required where bicycle lanes and wider shoulders are provided along roads that regularly collect debris in the path of bicyclists. Some communities use newly developed apps for smartphones that allow users to easily report geocoded maintenance issues.

- Pedestrian Facilities (On Road Sidewalk/ Sidepath): In many cities, the public works department maintains sidewalk facilities on locally owned streets. Local property owners or homeowner associations could be made more responsible for routine maintenance of sidewalks with the municipal public works departments responsible for more significant repairs. Crosswalks, pedestrian signals, curb ramps, median crossing islands, and other pedestrian facilities should be maintained as part of the roadway environment, depending on right-of-way ownership. It is recommended that state DOTs maintain all sidewalks on state rights of way. Maintaining these pedestrian facilities is an important part of maintaining the complete right of way for all users. Cracks, surface defects, tree root damage, and other problems should be identified on a regular basis and fixed to ensure that sidewalks remain accessible to all types of pedestrians.

DONOR RECOGNITION PROGRAM

Donors of all levels can be recognized through a variety of methods including off-site recognition (thank you letters, awards, publicity, events, commemorative items, mementos, and newsletters) and on-site recognition (signs, recognition boards/walls, permanent plaques, landscape features, public art, bench engravings, etc.) On-site recognition often is placed at trailheads and highly-visible locations. In some cases, donors do not wish to be recognized and that should be respected as well. Typically, different levels of contribution can be recognized.

The Singing River Trail Coordinator and Program Manager should establish this program as an early action item once the Master Plan is complete.

Remedial Operations and Maintenance Costs

- Shared-Use/Greenway Trails (and Sidepaths): A 7-to-15-year life is assumed for asphalt and crushed fine trails after which an overlay may be required. A complete resurfacing after 20-25 years is anticipated. Concrete is assumed to last twice as long.
- Bridges, tunnels, retaining walls and other heavy infrastructure are assumed to have a 100-year life or longer.
- On-road Bicycle Facilities: Remedial work for on-road bicycle facilities includes asphalt repaving (5' on either side of the street for a two-way bike route, total 10' width) along with curb and gutter, sewer-grate and manhole repair. Pothole and crack repair are considered routine. Pavement markings, such as bicycle lane lines, bicycle stencil markings, and edgelines should be re-installed when other roadway pavement markings are improved. The cost of this work is often covered as part of the overall street maintenance regime, yet it should not be assumed to be covered; local bicycle and pedestrian planners and advocates should monitor street resurfacing and reconstruction project to ensure that bicycle facilities and bicycle facility repair is included in overall street maintenance.
- Pedestrian Facilities (Sidewalk): Sidewalks should be constructed with concrete, which requires replacement in 50 to 75 years.

Toolbox for Greenway Right-of-Way Acquisition

There are many different ways to secure right-of-way for trails and to protect green spaces, most of which require coordination between land trusts, landowners, and land use planners. The following text provides a list of options that could be considered.

Partnerships

Local government agencies could pursue partnerships with land trusts and land managers to make more effective use of their land acquisition funds and strategies. The following offers recommendations on how these partnerships could be strengthened:

- Land Trusts: Land trust organizations are valuable partners when it comes to acquiring land and rights-of-way for trails and green space. These groups can work directly with landowners and conduct their business in private so that sensitive land transactions are handled in an appropriate manner. Once the transaction has occurred, the land trust will usually convey the acquired land or easement to a public agency, such as a town or county for permanent stewardship and ownership.
- Private Land Managers: Another possible partnership that could be strengthened would be with the utility companies that manage land throughout the region. Trails and greenways can be built on rights-of-ways that are either owned or leased by electric and natural gas companies. Electric utility companies have long recognized the value of partnering with local communities, non-profit trail organizations, and private landowners to permit their rights-of-ways to be used for trail development. This has occurred throughout the United States.

Local government agencies should actively update and maintain relationships with private utility and land managers to ensure that parts of the regional trail network can be accommodated within these rights-of-way. The respective municipalities will need to demonstrate to these companies that maintenance will be addressed, liability will be reduced and minimized, and access to utility needs will be provided (and in many cases made easier via paved trail).

Government Regulation

Regulation is defined as the government's ability to control the use and development of land through legislative powers. Regulatory methods help shape the use of land without transferring or selling the land. The following types of development ordinances are regulatory tools that can meet the challenges of growth and development while also conserving and protecting green space resources.

- **Growth Management Measures (Concurrency):** Concurrency based development approaches to growth management simply limit development to areas with adequate public infrastructure. This helps regulate urban sprawl, provides for quality of life in new development, and can help protect open space. In the famous case, Golden v. Planning Board of the Town of Ramapo (1972), the Town initiated a zoning ordinance making the issue of a development permit contingent on the presence of public facilities such as utilities and parks. This was upheld in Court and initiated a wave of slow-growth management programs nationwide. This type of growth management can take the form of an adequate public facilities ordinance.
- **Performance Zoning:** Performance zoning is zoning based on standards that establish minimum requirements or maximum limits on the effects or characteristics of a use. This is often used for the mixing of different uses to minimize incompatibility and improve the quality of development. For example, how a commercial use is designed and functions determines whether it could be allowed next to a residential area or connected to a greenway.
- **Incentive Zoning (Dedication/ Density Transfers):** This mechanism allows trails to be dedicated for density transfers on development of a property. The potential for improving or subdividing part or all of a parcel can be expressed in dwelling unit equivalents or other measures of development density or intensity. Known as density transfers, these dwelling unit equivalents may be relocated to other portions of the same parcel or to contiguous land that is part of a common development plan. Dedicated density transfers can also be conveyed to subsequent holders if properly noted as transfer deeds.
- **Conservation Zoning:** This mechanism recognizes the problem of reconciling different, potentially incompatible land uses by preserving natural areas, open spaces, waterways, and/or greenways that function as buffers or transition zones. It can also be called buffer or transition zoning. This type of zoning, for example, can protect waterways by creating buffer zones where no development can take place. Care must be taken to ensure that the use of this mechanism is reasonable and will not destroy the value of a property.
- **Overlay Zoning:** An overlay zone and its regulations are established in addition to the zoning classification and regulations already in place. These are commonly used to protect natural or cultural features such as historic areas, unique terrain features, scenic vistas, agricultural areas, wetlands, stream corridors, and wildlife areas.
- **Negotiated Dedications:** This type of mechanism allows municipalities to negotiate with landowners for certain parcels of land that are deemed beneficial to the protection and preservation of specific stream corridors. This type of mechanism can also be exercised through dedication of greenway lands when a parcel is subdivided. Such dedications would be proportionate to the relationship between the impact of the subdivision on community services and the percentage of land required for dedication-as defined by the US Supreme Court in Dolan v Tigard.
- **Reservation of Land:** This type of mechanism does not involve any transfer of property rights but simply constitutes an obligation to keep property free from development for a stated period of time. Reservations are normally subject to a specified period of time, such as 6 or 12 months. At the end of this period, if an agreement has not already been reached to transfer certain property rights, the reservation expires.
- **Planned Unit Development:** A planned unit development allows a mixture of uses. It also allows for flexibility in density and dimensional requirements, making clustered housing and common open space along with addressing environmental conditions a possibility. It emphasizes more planning and can allow for open space and greenway development and connectivity.
- **Cluster Development:** Cluster development refers to a type of development with generally smaller lots and homes close to one another. Clustering can allow for more units on smaller acreages of land, allowing for larger percentages of the property to be used for open space and greenways.

Land Management

Management is a method of conserving the resources of a specific green space parcel by an established set of policies called management plans for publicly owned greenway land or through easements with private property owners. Property owners who grant easements retain all rights to the property except those which have been described in the terms of the easement. The property owner is responsible for all taxes associated with the property, less the value of the easement granted. Easements are generally restricted to certain portions of the property, although in certain cases an easement can be applied to an entire parcel of land. Easements are transferable through title transactions, thus the easement remains in effect perpetually.

- Management Plans: The purpose of a management plan is to establish legally binding contracts which define the specific use, treatment, and protection for publicly owned greenway lands. Management plans should identify valuable resources; determine compatible uses for the parcel; determine administrative needs of the parcel, such as maintenance, security, and funding requirements; and recommend short-term and long-term action plans for the treatment and protection of greenway lands.
- Conservation Easement: This type of easement generally establishes permanent limits on the use and development of land to protect the natural resources of that land. When public access to the easement is desired, a clause defining the conditions of public access can be added to the terms of the easement. Dedicated conservation easements can qualify for both federal income tax deductions and state tax credits. Tax deductions are allowed by the Federal government for donations of certain conservation easements. The donation may reduce the donor's taxable income.
- Preservation Easement: This type of easement is intended to protect the historical integrity of a structure or important elements in the landscape by sound management practices. When public access to the easement is desired, a clause defining the conditions of public access can be added to the terms of the easement. Preservation easements may qualify for the same federal income tax deductions and state tax credits as conservation easements.
- Public Access Easements: This type of easement grants public access to a specific parcel of property when a conservation or preservation easement is not necessary. The conditions of use are defined in the terms of the public access easement.
- Riparian Easement: This type of conservation easement provides protection only to streamside lands. This is an effective tool for protecting areas important to instream and upland wildlife habitats, flood control, streambank erosion reduction, and water quality protection. Protected areas can function effectively as part of local and regional watershed protection plans.

Acquisition

Acquisition requires land to be donated or purchased by a government body, public agency, trail manager, or qualified conservation organization.

- Donation or Tax Incentives: In this type of acquisition, a government body, public agency, or qualified conservation organization agrees to receive the full title or a conservation easement to a parcel of land at no cost or at a "bargain sale" rate. The donor is then eligible to receive a federal tax deduction of up to 30 to 50 percent of their adjusted gross income. Additionally, some states offer tax credits for a percent of the property's fair market value. Any portion of the fair market value not used for tax credits is often deducted as a charitable contribution. Also, property owners may be able to avoid any inheritance taxes, capital gains taxes, and recurring property taxes.
- Fee Simple Purchase: This is a common method of acquisition where a local government agency or private trail or green space manager purchases property outright. Fee simple ownership conveys full title to the land and the entire "bundle" of property rights including the right to possess land, to exclude others, to use land, and to alienate or sell land.

- Easement Purchase: This type of acquisition is the fee simple purchase of an easement. Full title to the land is not purchased, only those rights granted in the easement agreement. Therefore, the easement purchase price is less that the full title value.

- Purchase / Lease Back: A local government agency or private greenway organization can purchase a piece of land and then lease it back to the seller for a specified period of time. This lease may contain restrictions regarding the development and use of the property.

- Bargain Sale: A property owner can sell property at a price less than the appraised fair market value of the land. Sometimes the seller can derive the same benefits as if the property were donated. Bargain Sale is attractive to sellers when the seller wants cash for the property, the seller paid a low cash price and thus is not liable for high capital gains tax, and/or the seller has a fairly high current income and could benefit from the donation of the property as an income tax deduction.

- Installment Sale: An installment sale is a sale of property at a gain where at least one payment is to be received after the tax year in which the sale occurs. These are valuable tools to help sellers defer capital gains tax. This provides a potentially attractive option when purchasing land for open space from a possible seller.

- Option / First Right of Refusal: A local government agency or private organization establishes an agreement with a public agency or private property owner to provide the right of first refusal on a parcel of land that is scheduled to be sold. This form of agreement can be used in conjunction with other techniques, such as an easement to protect the land in the short-term. An option would provide the agency with sufficient time to obtain capital to purchase the property or successfully negotiate some other means of conserving the greenway resource.

- Purchase of Development Rights: A voluntary purchase of development rights involves purchasing the development rights from a private property owner at a fair market value. The landowner retains all ownership rights under current use, but exchanges the rights to develop the property for cash payment.

- Land Banking: Land banking involves land acquisition in advance of expanding urbanization. The price of an open space parcel prior to development pressures is more affordable to a jurisdiction seeking to preserve open space. A municipality or county might use this technique to develop a greenbelt or preserve key open space or agricultural tracts. The jurisdiction should have a definite public purpose for a land banking project.

- Condemnation: The practice of condemning private land for use as a greenway is viewed as a last resort policy. Using condemnation to acquire property or property rights can be avoided if private and public support for the greenway program is present. Condemnation is seldom used for the purpose of dealing with an unwilling property owner. In most cases, condemnation has been exercised when there has been an absentee property ownership, when the title of the property is not clear, or when it becomes apparent that obtaining the consent for purchase would be difficult because there are numerous heirs located in other parts of the United States or different countries.

- Eminent Domain: The right of exercising eminent domain should be done with caution by the community and only if the following conditions exist: 1) the property is valued by the community as an environmentally sensitive parcel of land, significant natural resource, or critical parcel of land, and as such has been defined by the community as irreplaceable property; 2) written scientific justification for the community's claim about the property's value has been prepared and offered to the property owner; 3) all efforts to negotiate with the property owner for the management, regulation, and acquisition of the property have been exhausted and that the property owner has been given reasonable and fair offers of compensation and has rejected all offers; and 4) due to the ownership of the property, the timeframe for negotiating the acquisition of the property will be unreasonable, and in the interest of pursuing a cost-effective method for acquiring the property, the community has deemed it necessary to exercise eminent domain.

"The planned Singing River Trail is a key resource for the future of North Alabama, and will help us attract not only new customers visiting the area for the first time to enjoy it from a new perspective, but even more importantly the active people we need to keep our creative enterprise running and growing. We fully support the development of this beautiful public resource."

Bruce Weddendorf, Straight to Ale Brewery

Appendix A: Design Guidelines

Overview

The vision of this Master Plan is to create a "world class resource." The Singing River Trail will connect major destinations and downtowns that draw people already. The trail's linear experience between destinations must also be a destination, in and of itself, that creates a feeling of uniqueness, comfort, and safety. **You will know when you are on The Singing River Trail.**

The trail corridor and amenities are important to the world-class experience of the Singing River Trail. Just as the logo has become symbolic of the trail, the trail and its amenities become the breadcrumbs of recognizable forms, patterns, texture, color, and rhythm that contribute to a consistent brand expression of safety, comfort, legibility, and community pride. Since the Singing River traverses a range of landscapes, it is essential to provide a pattern of experiences that reflect the local color and context of natural, suburban, and urban settings within North Alabama. This Design Guide will build upon the trail amenities, wayfinding, and character of North Alabama to create a framework for the trail system as it is built out over time.

One of the most important functions of the Singing River brand is to provide a cohesive look and feel for materials and messaging.

National Guidance

The following standards and guidelines are referred to in this guide:

- The Federal Highway Administration's (FHWA) **Manual on Uniform Traffic Control Devices (MUTCD)** defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings.
- American Association of State Highway and Transportation Officials (AASHTO) **Guide for the Development of Bicycle Facilities** (2012) provides guidance on dimensions, use, and layout of specific bicycle facilities.
- The National Association of City Transportation Officials' (NACTO) **Urban Bikeway Design Guide** (2012) is the newest publication of nationally recognized bikeway design standards, and offers guidance on the current state of the practice designs.
- The **AASHTO A Policy on Geometric Design of Highways and Streets** (2011) commonly referred to as the "Green Book," contains the current design research and practices for highway and street geometric design.

guiding principles of design

continuity, connectivity + accessibility

The Singing River Trail should be a continuous non-motorized multi-use pathway, where possible, accommodating all user types. When the trail must follow a roadway right-of-way, the trail should experience the greatest separation from vehicular traffic possible. This trunk line will connect directly to residential, commercial, and natural areas, with seamless and accessible connections to on-street facilities and secondary trails.

trail experience

Trail design must be sensitive to the perspective of the visitor to promote use, enjoyment and a sense of stewardship and pride along the trail as a park space. This includes considering the impact on the five senses of the users and providing diverse and choreographed experiences. The trail corridor should ensure safety, provide visual interest, and stimulate the senses. Where feasible, the Singing River Trail should include passive areas along the trail for respite, socializing, and the enjoyment of public art.

resource stewardship, compatibility + sustainability

Wherever and whenever feasible, use resilient materials that are responsibly sourced. Consider furnishings that are non-polluting, conserve energy, and use natural, recycled or recyclable materials.

public awareness + trail identity

The Singing River Trail will have a strong local and regional identity as a model for design excellence. The trail will be a centerpiece for the region's recreation and transportation, resulting in trail-oriented development and green space preservation.

universal access on trails

DESCRIPTION

The trail must meet accessibility guidelines to ensure that trail segments, street crossings, signals, and other facilities for pedestrian and bicyclist circulation and use are readily accessible to and usable by those with disabilities.

TYPICAL APPLICATION

Constructing outdoor shared-use paths and trails may have limitations that make meeting ADA guidelines difficult and sometimes prohibitive. Prohibitive impacts include harm to significant cultural or natural resources; a significant change in the intended purpose of the trail; requirements of construction methods that are against federal, state, or local regulations; or terrain characteristics that prevent compliance.

(Above) Some gravel and crushed fine material trail types are considered to be ADA-compliant. Source: National Trails Training Partnership

GUIDELINES

- Trail surfaces must be firm, stable surfaces, and are generally limited to hard surface such as asphalt, concrete, wood, and compacted gravel. Some surface materials must be periodically maintained to meet accessibility requirements.
- The running slope must be less than 5% without use of landings. Design with a 4.5% running slope target is recommended to account for variation in construction tolerances. Where the shared use path is contained within a street or highway border, its grade shall not exceed the general grade established for the adjacent street or highway.
- The cross slope must not exceed 2%. Design with a 1.5% cross slope target is recommended to account for variation in construction tolerances.
- Trails must provide a 5 ft (1.5 m) minimum clear width to serve as an accessible pedestrian access route. A minimum clear width is 4 ft is acceptable if passing spaces are provided every 200 ft. Most shared used paths designed for bicycle access will meet this requirement (PROWAG 2011).
- On trails designated as accessible, provide rest areas or widened areas on the trail, optimally at every 300 feet.
- The trail surface should be solid, free of obstacles and tripping hazards. Trail edge vegetation/screening, and signage should be maintained and located so as not to present obstacles for visually impaired trail users.

FURTHER CONSIDERATIONS

- Trailhead signage should provide accessibility information, such as trail gradient/profile, distances, tread conditions, location of drinking fountains, and rest stops.
- At trailheads there should be at least one accessible parking area per every 25 vehicle spaces.
- Trail amenities, drinking fountains and pedestrian-actuated push buttons should be placed no higher than four feet off the ground.

Trail Typologies

TYPES

1 Off-Road

The preferred typology for the Singing River Trail, off-road segments are separated from roadways and provide the ultimate user experience.

2 On-Road

Some segments of the Singing River Trail will fall within an existing roadway to allow for a continuous, long-distance trail where off-road trails are not possible.

3 Intersection Treatments

The Singing River Trail must have comfortable, safe accommodations for crossing roadways so that the majority of the population will make the journey.

Off-Road Trail Treatments

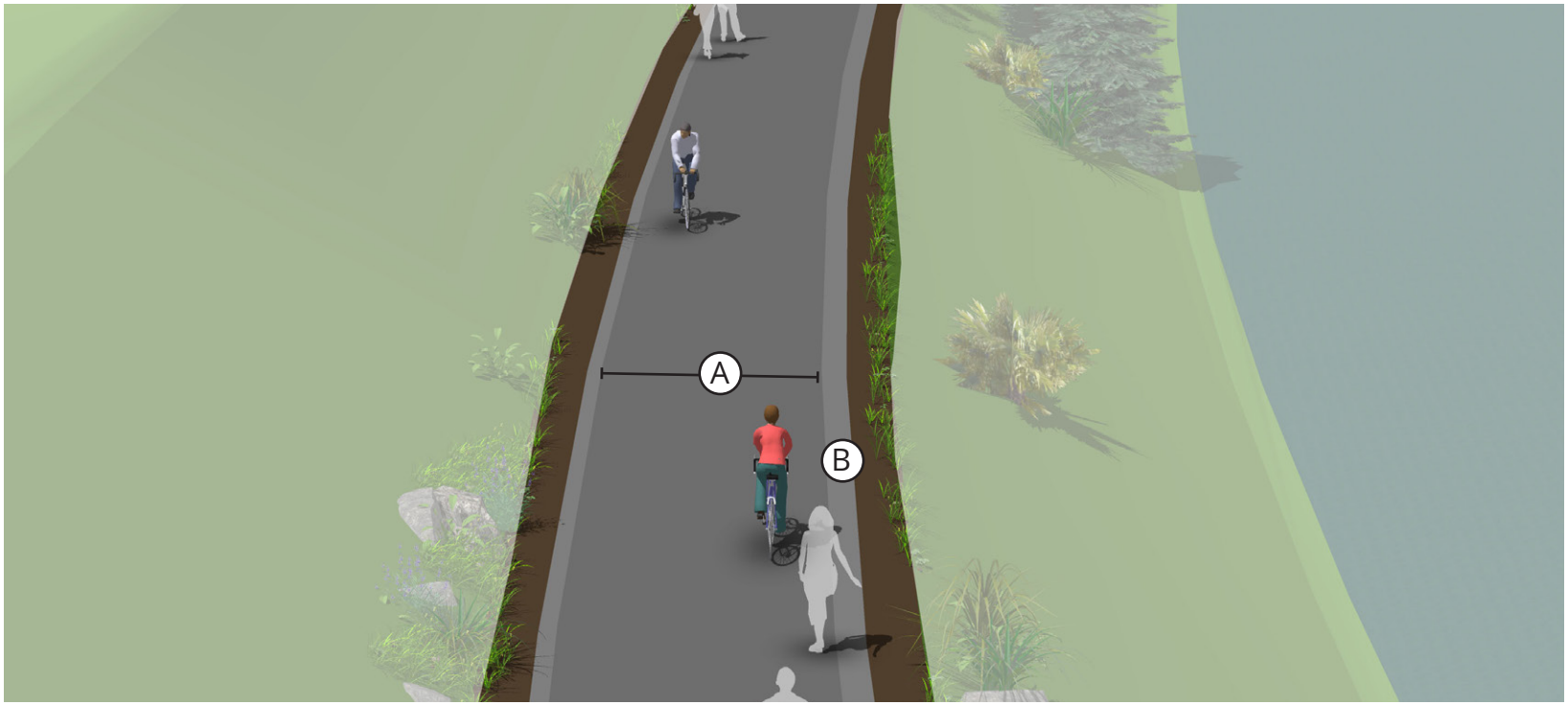
This is the preferred trail typology for the Singing River Trail. With the goal of attracting large segments of the population and tourists, off-road trails provide a low-stress and enjoyable journey. Off-road trails may be separated from the roadway completely, following waterways or utility easements. In some cases, they may parallel a roadway (sidepath). Depending on the surrounding land use and land regulations, the trail may be paved or unpaved. The preferred surface is paved for the Singing River Trail to accommodate the widest range of users. However, in locations like Wheeler Wildlife Refuge, the trail must remain unpaved – however, unpaved conditions can be established as flat and stable for the wide majority of the population.

For purposes of this master plan, off-road trails may be broken down into the following classifications:

- Shared-use path (not in roadway right-of-way) (PREFERRED OFF-ROAD)
- Shared-use sidepath (in roadway right-of way)
- Unpaved shared-use path

Shared-Use Path (Singing River Trail Preferred)

Shared use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Shared-use paths should generally provide directional travel opportunities not provided by existing roadways.



TYPICAL APPLICATION

- In utility corridors, such as powerline and sewer corridors.
- In active rail corridors, trails can be built adjacent to active railroads (referred to as Rails-with-Trails.
- In waterway corridors, such as along canals, drainage ditches, rives and beaches.
- In abandoned rail corridors (commonly referred to as Rails-to-Trails or Rail-Trails).

DESIGN FEATURES

WIDTH

Ⓐ 8 ft is the minimum allowed for a two-way shared-use path and is only recommended for low traffic situations.

- 10 ft is recommended in most situations and will be adequate for moderate to heavy use (this is the preferred minimum for Singing River Trail).
- 12 ft is recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use.

LATERAL CLEARANCE

Ⓑ A 2 ft or greater shoulder on both sides of the path should be provided. An additional ft of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings.

- If bollards are used at intersections and access points, they should be colored brightly and/or supplemented with reflective materials to be visible at night.

OVERHEAD CLEARANCE

- Clearance to overhead obstructions should be 8 ft minimum, with 10 ft recommended.

STRIPING

- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

FURTHER CONSIDERATIONS

The provision of a shared use path adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities.

CRASH REDUCTION

Shared use paths reduce injury rates for cyclists, pedestrians, and other non-motorized modes by 60 percent compared with on street facilities.[1]

1Teschke, Kay. Route Infrastructure and the Risk of Injuries to Bicyclists. American Public Health Association. December 2012.

Sidepath

Shared use paths along roadways, also called sidepaths, are a type of path that run adjacent to a street.

TYPICAL APPLICATION

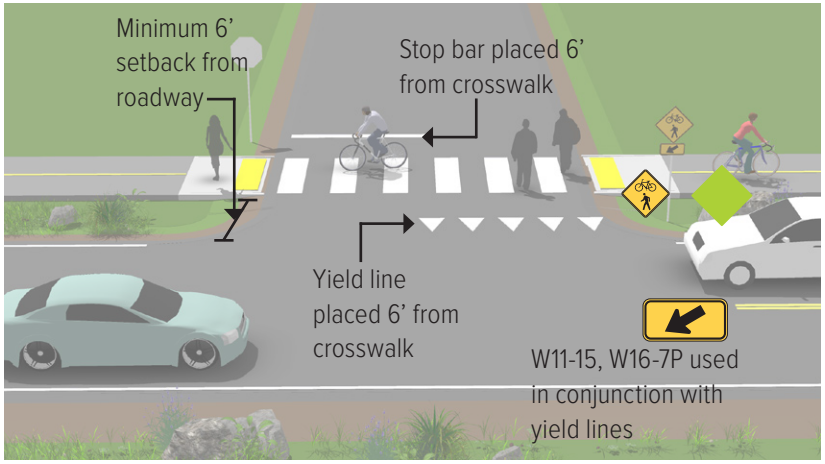
- Along roadways.

DESIGN FEATURES

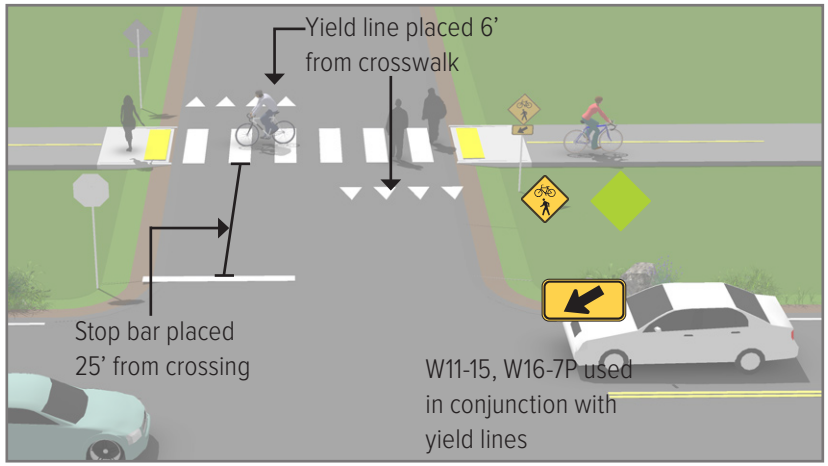
- Guidance for sidepaths should follow that for general design practices of shared use paths.
- A high number of driveway crossings and intersections create potential conflicts with turning traffic. Consider alternatives to sidepaths on streets with a high frequency of intersections or heavily used driveways.
- Where a sidepath terminates, special consideration should be given to transitions so as not to encourage unsafe wrong-way riding by bicyclists.

CROSSING APPROACHES

Adjacent Crossing - A separation of 6 feet emphasizes the conspicuity of riders at the approach to the crossing.



Setback Crossing - A set back of 25 feet separates the path crossing from merging/turning movements that may be competing for a driver's attention.



FURTHER CONSIDERATIONS

- Crossing design should emphasize visibility of users and clarity of expected yielding behavior. Crossings may be STOP or YIELD controlled depending on sight lines and bicycle motor vehicle volumes and speeds.
- The provision of a shared use path adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities.
- To reduce potential conflicts in some situations, it may be better to place one-way sidepaths on both sides of the street.

CRASH REDUCTION

Sidepaths perform similarly to shared use paths, which reduce injury rates for cyclists, pedestrians, and other non-motorized modes by 60 percent compared with on street facilities.[1]

1Teschke, Kay. Route Infrastructure and the Risk of Injuries to Bicyclists. American Public Health Association. December 2012.

Unpaved Shared-Use Path

New shared use paths must meet accessibility guidelines to ensure that paths, street crossings, signals, and other facilities for pedestrian circulation and use are readily accessible to and usable by pedestrians with disabilities.

TYPICAL APPLICATION

- Natural surface trails are a low-impact solution and found in areas with limited development or where a more primitive experience is desired.
- Consider implications for accessibility when weighing options for surface treatments.

DESIGN FEATURES

- Trails can vary in width from 18 inches to 6 ft or greater; vertical clearance should be maintained at 9ft above grade.
- Base preparation varies from machine-worked surfaces to those worn only by usage.
- Trail surface can be made of dirt, rock, soil, forest litter, or other native materials. Some trails use crushed stone (a.k.a. “crush and run”) that contains about 4 percent fines by weight, and compacts with use.
- Provide positive drainage for trail tread without extensive removal of existing vegetation; maximum slope is five percent (typical).

On-Road Trail Treatments

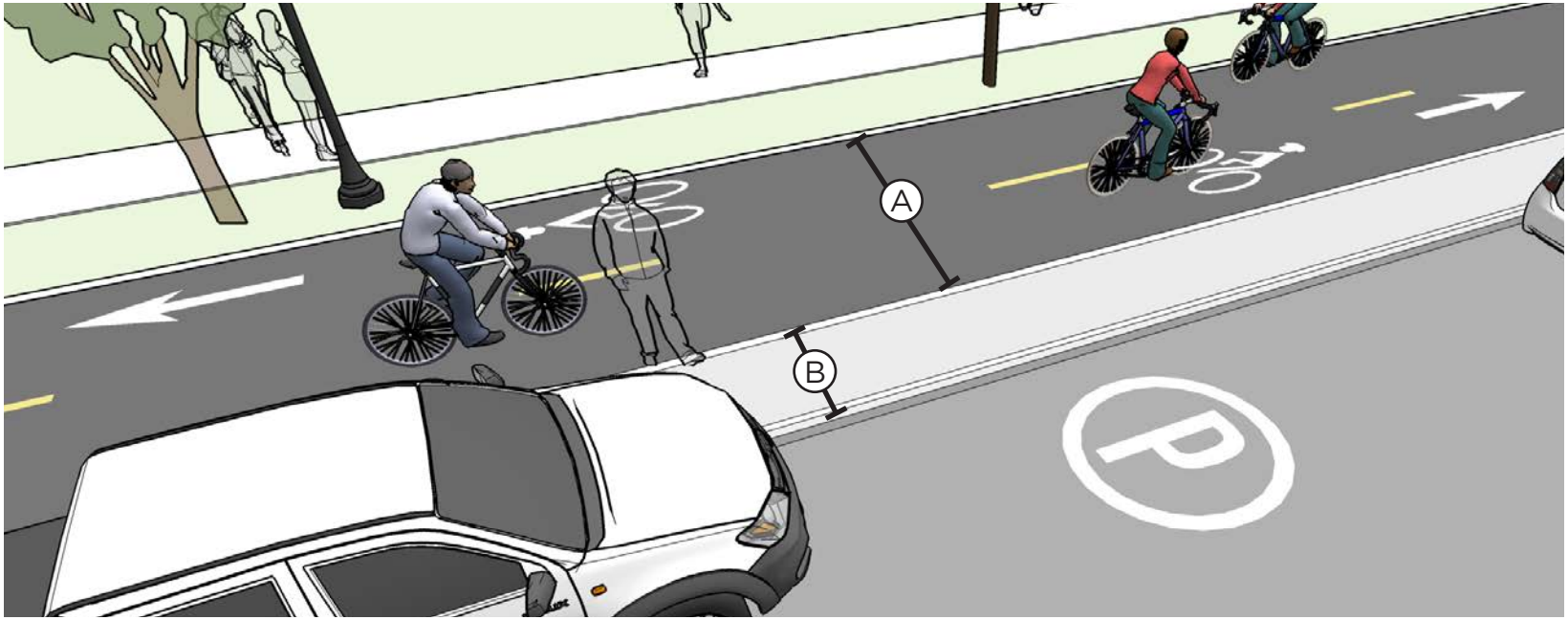
In order to construct a long-distance trail, it is necessary for some trail segments to be on-road. While not the preferred option for the Singing River Trail, on-road trails allow for a continuous, connected trail. It should be noted that major United States greenways such as the East Coast Greenway, Empire State Trail, and Razorback Greenway all have substantial on-road sections, despite their vision of being entirely off-road. This is a result of challenging landscapes, difficulty obtaining easements, or on-road connections being the only feasible option.

For purposes of this master plan, on-road trails may be broken down into the following classifications:

- Two-way separated bikeway with sidewalk (PREFERRED ON-ROAD)
- One-way separated bikeway with sidewalk
- Buffered bike lanes with sidewalk
- Bicycle boulevards

Two-Way Separated Bicycle Lanes (Singing River Trail On-Road Preferred Option)

Two-Way Separated Bicycle Lanes are bicycle facilities that allow bicycle movement in both directions on one side of the road. Two-way separated bicycle lanes share some of the same design characteristics as one-way separated bicycle lanes, but may require additional considerations at driveway and side-street crossings. For purposes of the Singing River Trail, two-way separated bike lanes should be paired with a sidewalk for pedestrians.



TYPICAL APPLICATION

- Works best on the left side of one-way streets.
- Streets with high motor vehicle volumes and/or speeds.
- Streets with high bicycle volumes.
- Streets with a high incidence of wrong-way bicycle riding.
- Streets with few conflicts such as driveways or cross-streets on one side of the street.
- Streets that connect to shared use paths.

DESIGN FEATURES

(A) 12 ft operating width preferred (10 ft minimum) width for two-way facility.

- In constrained environment, an 8 ft minimum operating width may be considered.

(B) Adjacent to on-street parking, a 3 ft minimum width channelized buffer or island shall be provided to accommodate opening doors (NACTO, 2012) (MUTCD 3H.01, 3I.01).

- A separation narrower than 5 ft may be permitted if a physical barrier is present (AASHTO, 2013).
- Additional signalization and signs may be necessary to manage conflicts.

TWO-WAY SEPARATED BICYCLE LANES

A two-way facility can accommodate cyclists in two directions of travel.

FURTHER CONSIDERATIONS

- On-street bike lane buffers and barriers are covered in the MUTCD as preferential lane markings (section 3D.01) and channelizing devices, including flexible delineators (section 3H.01). Curbs may be used as a channeling device, see the section on islands (section 3I.01).
- A two-way separated bike lane on one way street should be located on the left side.
- A two-way separated bike lane may be configured at street level or as a raised separated bicycle lane with vertical separation from the adjacent travel lane.
- Two-way separated bike lanes should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles.

CRASH REDUCTION

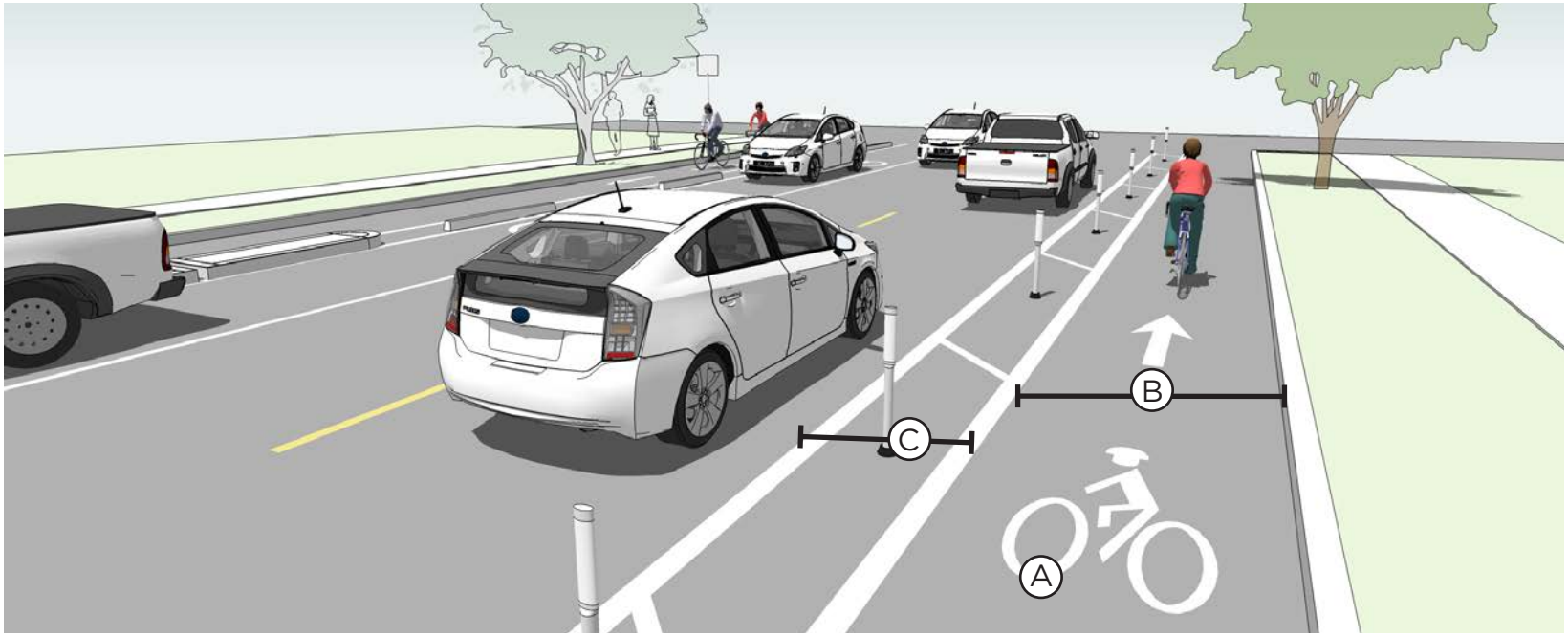
A study of bicyclists in two-way separated facilities found that accident probability decreased by 45 percent at intersections where the separated facility approach was detected between 2-5 meters from the side of the main road and when bicyclists had crossing priority at intersections. (CMF ID: 3034) Installation of a two-way separated bike lane 0-2 meters from the side of the main road resulted in an increase in collisions at intersections by 3 percent (CMF ID: 4033).

CONSTRUCTION COSTS

The implementation cost is low if the project uses existing pavement and drainage, but the cost significantly increases if curb lines need to be moved. A parking lane is the low-cost option for providing a barrier. Other barriers might include concrete medians, bollards, tubular markers, or planters.

One-Way Separated Bicycle Lanes

When retrofitting separated bike lanes onto existing streets, a one-way street-level design may be most appropriate. This design provides protection through physical barriers and can include flexible delineators, curbs, on-street parking or other barriers. A street level separated bike lane shares the same elevation as adjacent travel lanes. For purposed of the Singing River Trail, sidewalks should be paired with one-way separated bicycle lanes for pedestrian use.



TYPICAL APPLICATION

- Street retrofit projects with limited funds for relating curbs and drainage.
- Streets with high motor vehicle volumes and/or speeds and high bicycle volumes.
- Streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments.
- Appropriate for most riders on most streets.

DESIGN FEATURES

(A) Pavement markings, symbols and/or arrow markings must be placed at the beginning of the separated bike lane and at intervals along the facility (MUTCD 9C.04).

(B) 7 ft width preferred (5 ft minimum).

(C) 3 ft minimum buffer width adjacent to parking. 18 inch minimum adjacent to travel lanes (NACTO, 2012). Channelizing devices should be placed in the buffer area.

- If buffer area is 4 ft or wider, white chevron or diagonal markings should be used.

STREET LEVEL SEPARATED BICYCLE LANES

Street Level Separated Bicycle Lanes can be separated from the street with parking, planters, bollards, or other design elements.

FURTHER CONSIDERATIONS

- Separated bike lane buffers and barriers are covered in the MUTCD as preferential lane markings (section 3D.01) and channelizing devices (section 3H.01). Curbs may be used as a channeling device, see the section on islands (section 3I.01).
- A retrofit separated bike lane has a relatively low implementation cost compared to road reconstruction by making use of existing pavement and drainage and by using parking lane as a barrier.
- Gutters, drainage outlets and utility covers should be designed and configured as not to impact bicycle travel.
- Special consideration should be given at transit stops to manage bicycle & pedestrian interactions.

CRASH REDUCTION

A before and after study in Montreal of physically separated bicycle lanes shows that this type of facility can result in a crash reduction of 74 percent for collisions between bicyclists and vehicles. (CMF ID: 4097) In this study, there was a parking buffer between the bike facility and vehicle travel lanes. Other studies have found a range in crash reductions due to SBL, from 8 percent (CMF ID: 4094) to 94 percent (CMF ID: 4101).

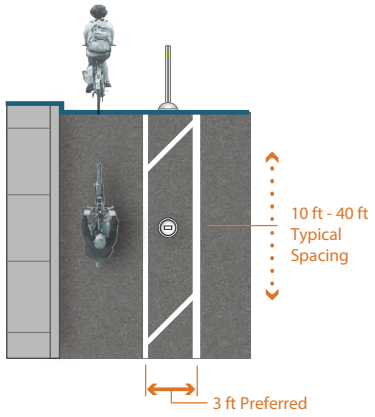
CONSTRUCTION COSTS

The implementation cost is low if the project uses existing pavement and drainage, but the cost significantly increases if curb lines need to be moved. A parking lane is the low-cost option for providing a barrier. Other barriers might include concrete medians, bollards, tubular markers, or planters.

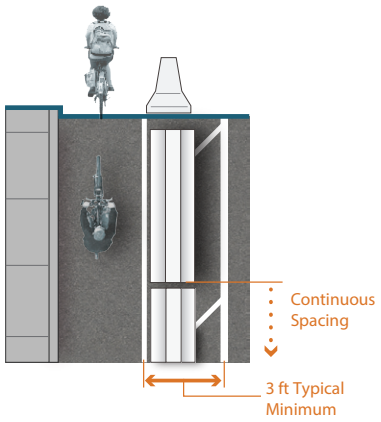
Separation Methods

Separated bikeways may use a variety of vertical elements to physically separate the bikeway from adjacent travel lanes. Barriers may be robust constructed elements such as curbs, or may be more interim in nature, such as flexible delineator posts.

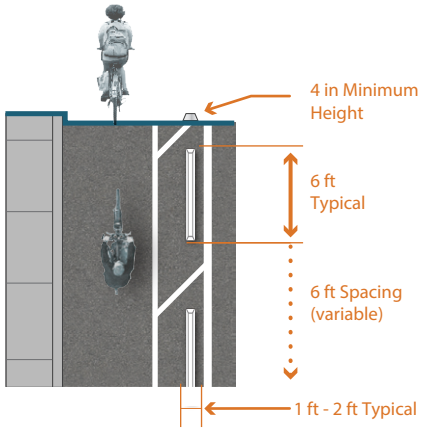
DELINEATOR POSTS



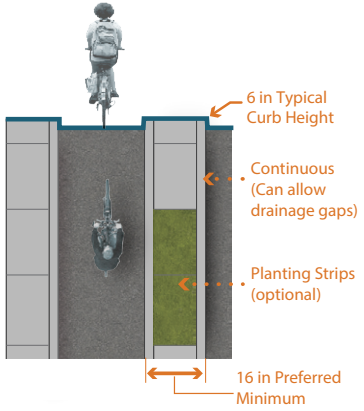
CONCRETE BARRIER



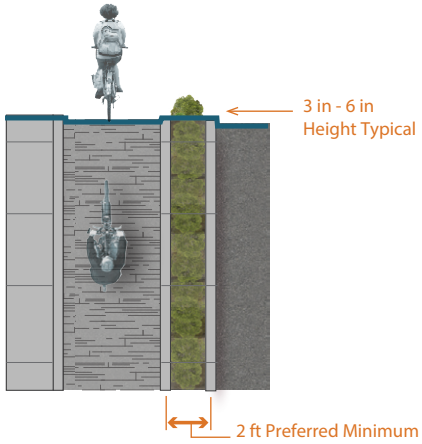
PARKING STOPS



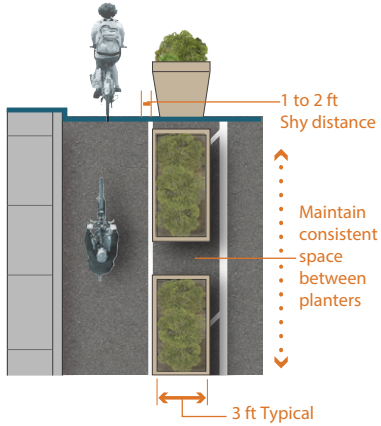
RAISED MEDIA



RAISED LANE



PLANTERS



TYPICAL APPLICATION

Appropriate barriers for retrofit projects:

- Parked Cars
- Flexible delineators
- Bollards
- Planters
- Parking stops

Appropriate barriers for reconstruction projects:

- Curb separation
- Medians
- Landscaped Medians
- Raised separated bike lane with vertical or mountable curb
- Pedestrian Safety Islands

BIKEWAY SEPARATION METHODS

Raised separated bikeways are bicycle facilities that are vertically separated from motor vehicle traffic.

DESIGN FEATURES

- Maximize effective operating space by placing curbs or delineator posts as far from the through bikeway space as practicable.
- Allow for adequate shy distance of 1 to 2 ft from vertical elements to maximize useful space.
- When next to parking, allow for 3 ft of space in the buffer space to allow for opening doors and passenger unloading.
- The presences of landscaping in medians, planters and safety islands increases comfort for users and enhances the streetscape environment.

CRASH REDUCTION

A before and after study in Montreal of separated bikeways shows that this type of facility can result in a crash reduction of 74 percent for collisions between bicyclists and vehicles. (CMF ID: 4097) In this study, there was a parking buffer between the bike facility and vehicle travel lanes. Other studies have found a range in crash reductions due to SBL, from 8 percent (CMF ID: 4094) to 94 percent (CMF ID: 4101).

FURTHER CONSIDERATIONS

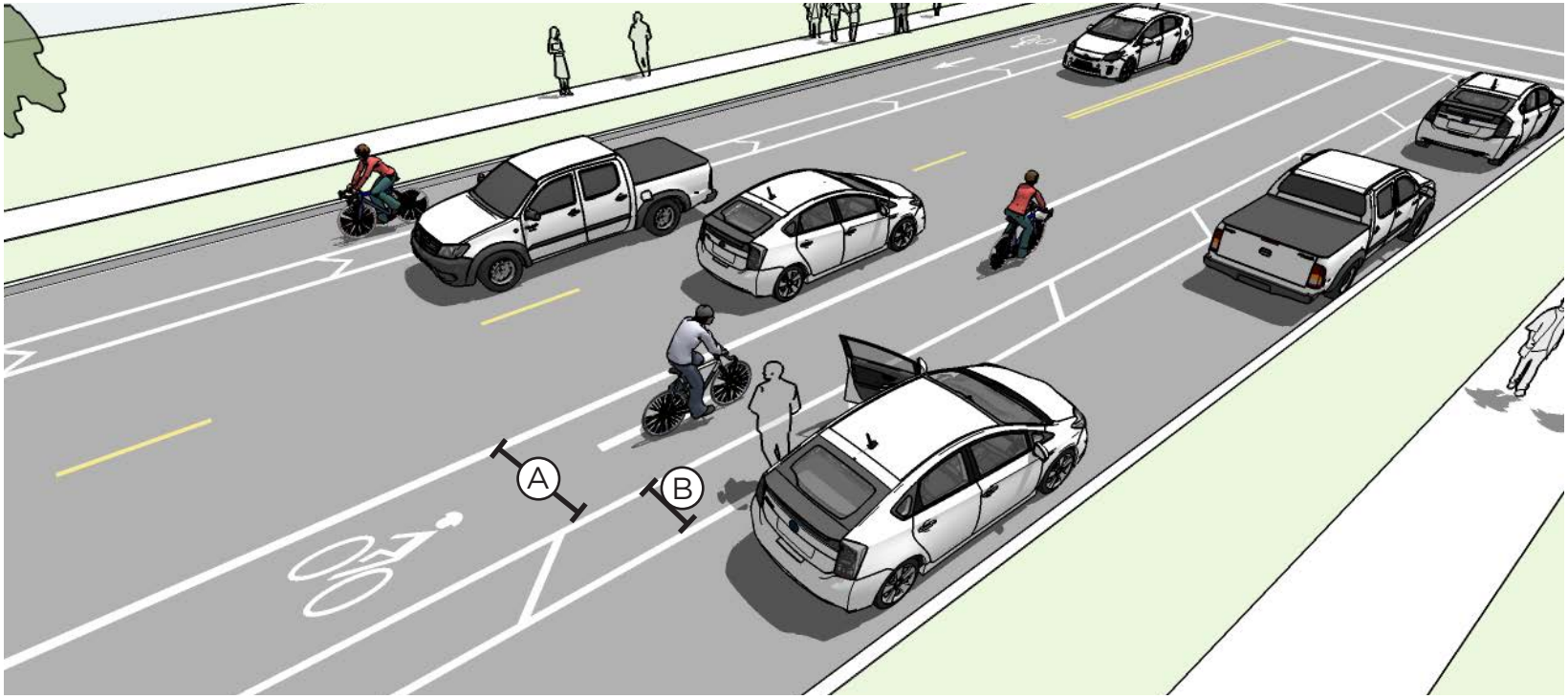
- Separated bikeway buffers and barriers are covered in the MUTCD as preferential lane markings (section 3D.01) and channelizing devices (section 3H.01). Curbs may be used as a channeling device, see the section on islands (section 3I.01).
- With new roadway construction a raised separated bikeway can be less expensive to construct than a wide or buffered bicycle lane because of shallower trenching and sub base requirements.
- Parking should be prohibited within 30 ft of the intersection to improve visibility.

CONSTRUCTION COSTS

Separated bikeway costs can vary greatly, depending on the type of material, the scale, and whether it is part of a broader construction project.

Buffered Bicycle Lanes

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. For purposes of the Singing River Trail, buffered bicycle lanes should be paired with sidewalks for pedestrians.



TYPICAL APPLICATION

- Anywhere a conventional bike lane is being considered.
- On streets with high speeds and high volumes or high truck volumes.
- On streets with extra lanes or lane width.
- Appropriate for skilled adult riders on most streets.

DESIGN FEATURES

(A) The minimum bicycle travel area (not including buffer) is 5 ft wide.

(B) Buffers should be at least 2 ft wide. If buffer area is 4 ft or wider, white chevron or diagonal markings should be used.

- For clarity at driveways or minor street crossings, consider a dotted line.
- There is no standard for whether the buffer is configured on the parking side, the travel side, or a combination of both.

BUFFERED BICYCLE LANE

The use of pavement markings delineates space for cyclists to ride in a comfortable facility.

BUFFERED BICYCLE LANE

The use of pavement markings delineates space for cyclists to ride in a comfortable facility.

FURTHER CONSIDERATIONS

- Color may be used within the lane to discourage motorists from entering the buffered lane.
- A study of buffered bicycle lanes found that, in order to make the facilities successful, there needs to also be driver education, improved signage and proper pavement markings.[1]
- On multi-lane streets with high vehicle speeds, the most appropriate bicycle facility to provide for user comfort may be physically separated bike lanes.
- NCHRP Report #766 recommends, when space in limited, installing a buffer space between the parking lane and bicycle lane where on-street parking is permitted rather than between the bicycle lane and vehicle travel lane.[2]

1 Monsere, C.; McNeil, N.; and Dill, J., "Evaluation of Innovative Bicycle Facilities: SW Broadway Cycle Track and SW Stark/Oak Street Buffered Bike Lanes. Final Report" (2011).Urban Studies and Planning Faculty Publications and Presentations.

2 National Cooperative Highway Research Program. Report #766: Recommended Bicycle Lane Widths for Various Roadway Characteristics.

CRASH REDUCTION

A before and after study of buffered bicycle lane installation in Portland, OR found an overwhelmingly positive response from bicyclists, with 89 percent of bicyclists feeling safer riding after installation and 91 percent expressing that the facility made bicycling easier.[3]

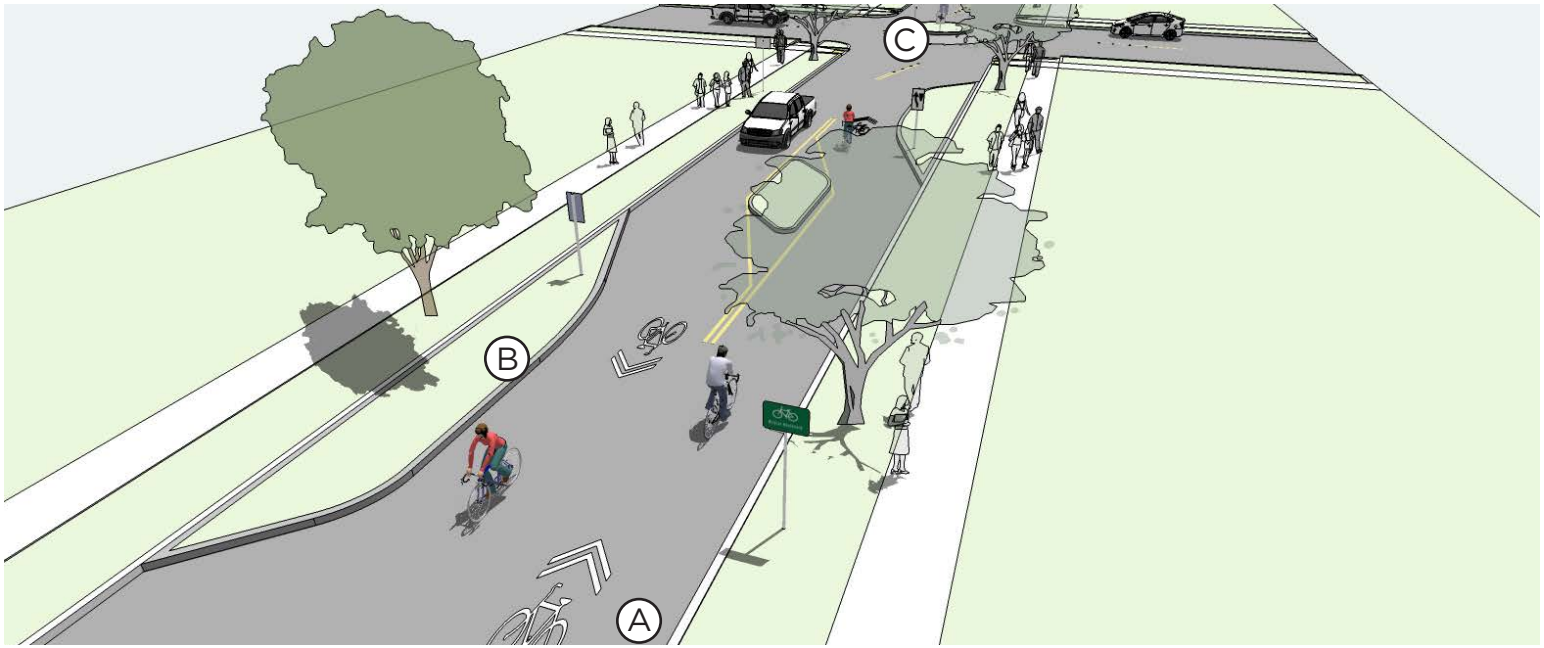
3 National Cooperative Highway Research Program. Report #766: Recommended Bicycle Lane Widths for Various Roadway Characteristics.

CONSTRUCTION COSTS

The cost for installing buffered bicycle lanes will depend on the implementation approach. Typical costs are $16,000 per mile for restriping. However, the cost of large-scale bicycle treatments will vary greatly due to differences in project specifications and the scale and length of the treatment.

Bicycle Boulevards

Bicycle boulevards are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic. For purposes of the Singing River Trail, bicycle boulevards may be short-term, interim solutions or short connections to shared-use paths. Sidewalks are needed for Singing River Trail pedestrians.



TYPICAL APPLICATION

- Parallel with and in close proximity to major thoroughfares (1/4 mile or less).
- Follow a desire line for bicycle travel that is ideally long and relatively continuous (2-5 miles).
- Avoid alignments with excessive zigzag or circuitous routing. The bikeway should have less than 10 percent out of direction travel compared to shortest path of primary corridor.
- Streets with travel speeds at 25 mph or less and with traffic volumes of fewer than 3,000 vehicles per day.

DESIGN FEATURES

(A) Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.

(B) Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.

(C) Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.

BICYCLE BOULEVARDS

Bicycle boulevards are established on streets that improve connectivity to key destinations and provide a direct, low-stress route for bicyclists, with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority over other modes.

TRAFFIC CALMING

Streets along classified neighborhood bikeways may require additional traffic calming measures to discourage through trips by motor vehicles.

FURTHER CONSIDERATIONS

Bicycle boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard and compromise safety.

Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

CRASH REDUCTION

In a comparison of vehicle/cyclist collision rates on traffic-calmed side streets signed and improved for cyclist use, compared to parallel and adjacent arterials with higher speeds and volumes, the bicycle boulevard is found to have a crash reduction factor of 63 percent, with rates two to eight times lower when controlling for volume (CMF ID: 3092).

CONSTRUCTION COSTS

Costs vary depending on the type of treatments proposed for the corridor. Simple treatments such as wayfinding signage and markings are most cost-effective, but more intensive treatments will have greater impact at lowering speeds and volumes, at a higher cost.

Intersection (Crossing) Treatments

As trails traverse landscapes, they inevitably must cross roadways, waterways, and railroads. The treatment of roadway crossings is essential for providing safe and comfortable trail crossings. Most Singing River Trail crossings will be at-grade; however, some crossings must be underpasses or overpasses to truly provide a safe and separated experience. Engineering judgment should be used to determine the appropriate treatment based on number of travel lanes, traffic volumes, and sight distance. In all cases, the most comfortable and safe option is preferred for the Singing River Trail.

For purposes of this master plan, crossing treatments may be broken down into the following classifications:

- Marked Crossings
- Median Crossings
- Active Enhanced Crossings (Beacons)
- Full Traffic Signal Crossings
- Grade-Separated Crossings

PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE At unsignalized locations	**Local Streets** 15-25 mph		**Collector Streets** 25-30 mph			**Arterial Streets** 30-45 mph							
FACILITY TYPE	2 lane	3 lane	2 lane	2 lane with median refuge	3 lane	2 lane	2 lane with median refuge	3 lane	4 lane	4 lane with median refuge	5 lane	6 lane	6 lane with median refuge
Crosswalk (with warning signage and stop signs)	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	EJ	EJ	EJ	✓	✓

LEGEND	
Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

Marked Crossing

A marked/unsignalized crossing typically consists of a marked crossing area, signage, and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

TYPICAL APPLICATION

- Maximum Traffic Volumes

  ≤9,000-12,000 Average Daily Traffic (ADT) volume

- Maximum travel speed of 35 MPH
- Minimum Sight Lines

  25 MPH zone: 155 ft

  35 MPH zone: 250 ft

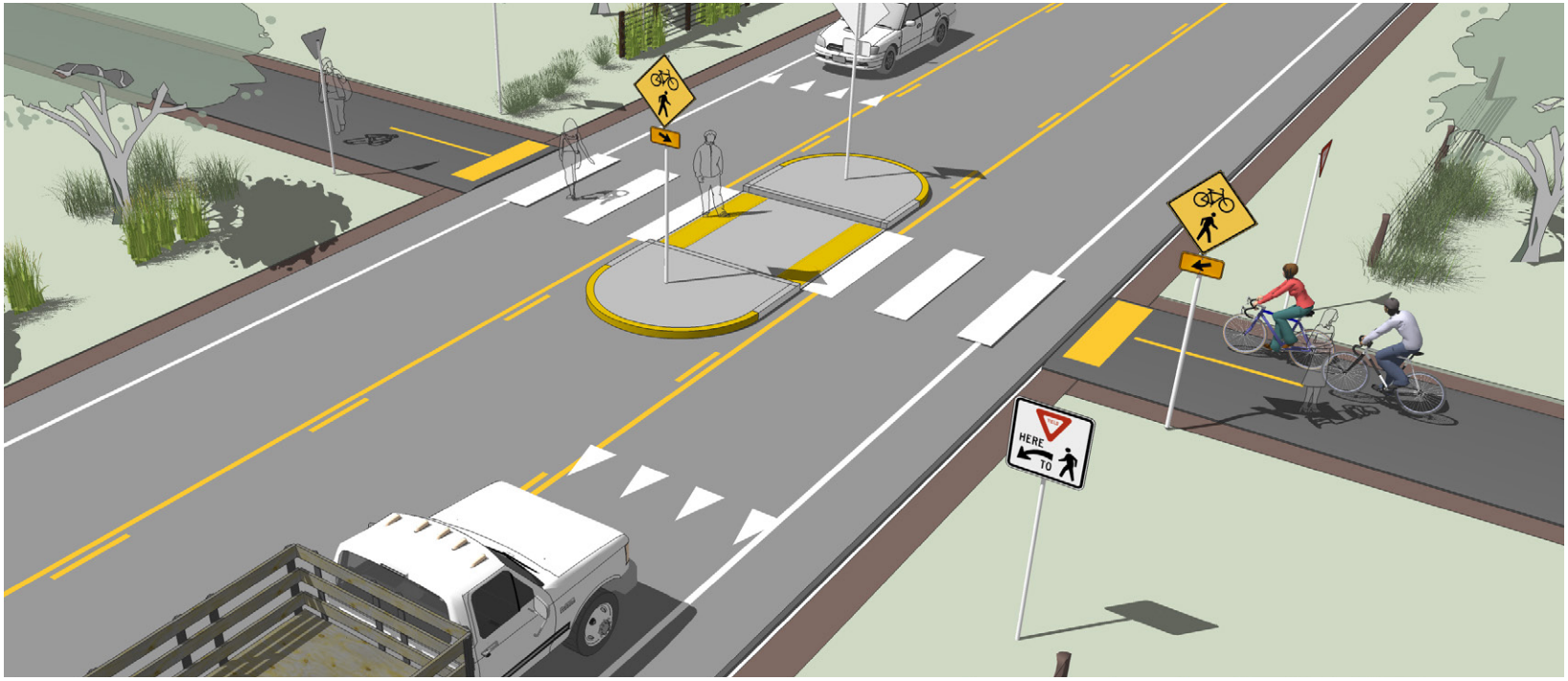
  45 MPH zone: 360 ft

DESIGN FEATURES

- On roadways with low to moderate traffic volumes (<12,000 ADT) and a need to control traffic speeds, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.
- High visibility “ladder” style crosswalk markings
- A Bicycle/Pedestrian warning sign (W11-15) with downward arrow plaque (W16-7P) at the crossing, on both sides. Bicycle and Pedestrian figures on the sign should always face toward the crosswalk.
- A Bicycle/Pedestrian warning sign (W11-15) with “ahead” plaque (W16-9) before the crossing.

Median Crossing

On roadways with higher volumes, higher speeds and multi-lanes of vehicular traffic, a median crossing is preferred. A median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.



TYPICAL APPLICATION

- Maximum Traffic Volumes

  Up to 15,000 ADT on two-lane roads, preferably with a median

  Up to 12,000 ADT on four-lane roads with median

DESIGN FEATURES

- Unsignalized crossings of multi-lane arterials over 15,000 ADT may be possible with features such as sufficient crossing gaps (more than 60 per hour), median refuges, and/or active warning devices like rectangular rapid flash beacons or in-pavement flashers, and excellent sight distance. For more information see the discussion of active enhanced crossings.

Active Enhanced Crossing

Active enhanced crossings are unsignalized crossings with additional treatments designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways. These enhancements include pathway user or sensor actuated warning beacons, Rectangular Rapid Flash Beacons (RRFB) shown below, or Pedestrian Hybrid Beacons.

TYPICAL APPLICATION

- Guidance for marked/unsignalized crossings applies.
- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- Warning beacons shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.

DESIGN FEATURES

(A) RRFBs are user actuated lights that supplement warning signs at unsignalized intersections or mid-block crossings.

- Pedestrian hybrid beacons provide a high level of comfort for crossing users through the use of a red-signal indication to stop conflicting motor vehicle traffic. Hybrid beacon installation faces only cross motor vehicle traffic, stays dark when inactive, and uses a unique 'wig-wag' signal phase to indicate activation. Vehicles have the option to proceed after stopping during the final flashing red phase, which can reduce motor vehicle delay when compared to a full signal installation.

Route Users to Signalized Crossing

Path crossings within approximately 400 ft of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection to avoid traffic operation problems when located so close to an existing signal.

TYPICAL APPLICATION

- For this restriction to be effective, barriers and signing may be needed to direct path users to the signalized crossing. If no pedestrian crossing exists at the signal, modifications should be made.
- Path crossings should not be provided within approximately 400 ft of an existing signalized intersection. If possible, route path directly to the signal.

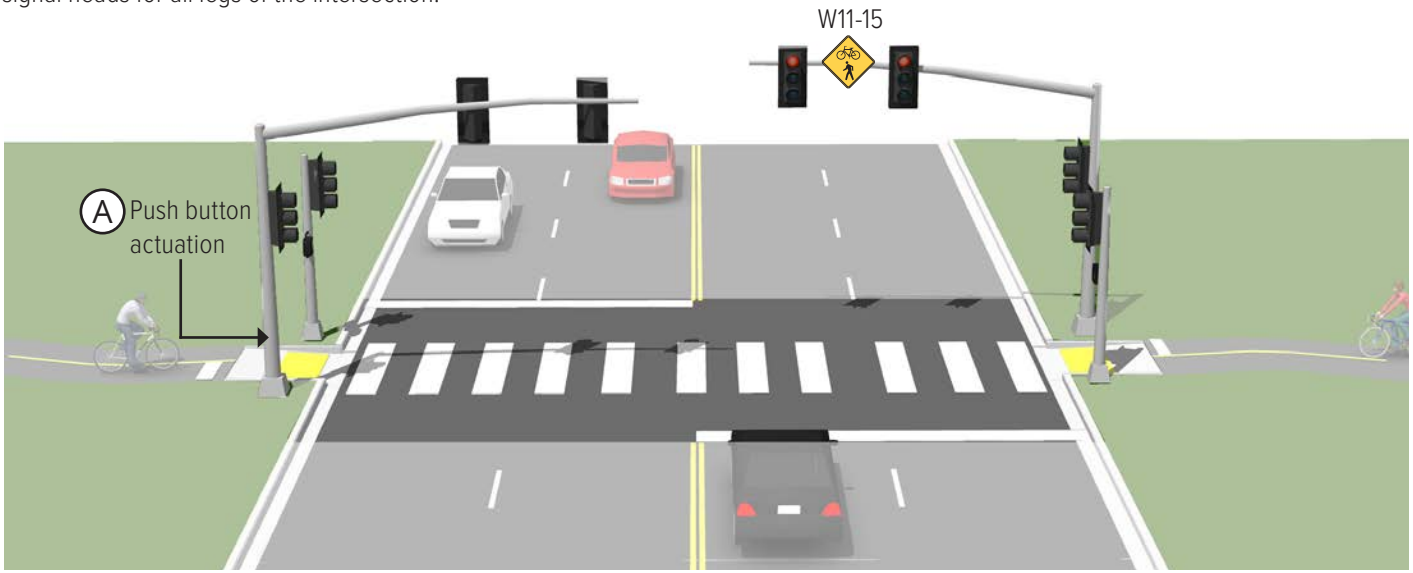
DESIGN FEATURES

- In the US, the minimum distance a marked crossing can be from an existing signalized intersection varies from approximately 250 to 660 ft.
- Engineering judgment and the context of the location should be taken into account when choosing the appropriate allowable setback. Pedestrians are particularly sensitive to out of direction travel and undesired mid-block crossing may become prevalent if the distance is too great.

Full Traffic Signal Crossings

Signalized crossings provide the most protection for crossing path users through the use of a red-signal indication to stop conflicting motor vehicle traffic.

A full traffic signal installation treats the path crossing as a conventional 4-way intersection and provides standard red-yellow-green traffic signal heads for all legs of the intersection.



TYPICAL APPLICATION

Full traffic signal installations must meet MUTCD pedestrian, school or modified warrants. Additional guidance for signalized crossings:

- Located more than 300 feet from an existing signalized intersection
- Roadway travel speeds of 40 MPH and above
- Roadway ADT exceeds 15,000 vehicles

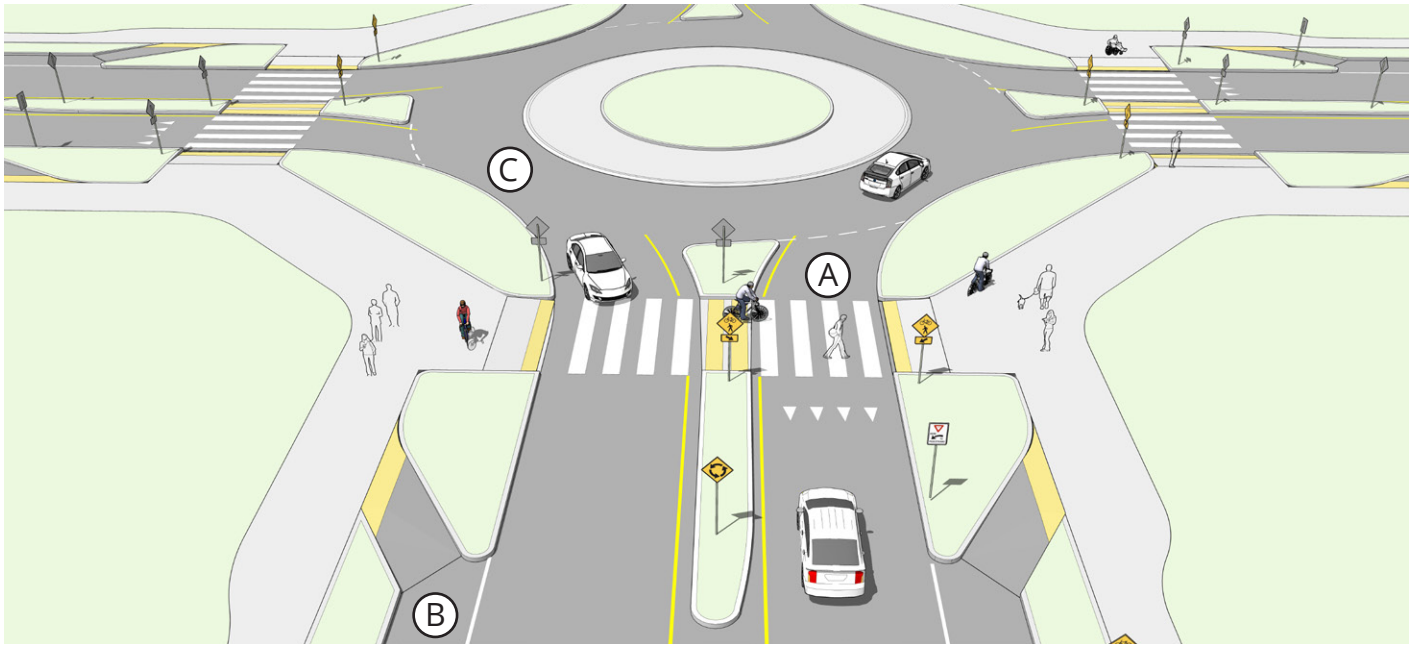
DESIGN FEATURES

(A) Shared use path signals are normally activated by push buttons but may also be triggered by embedded loop, infrared, microwave or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street.

- Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity and safety.

Shared-Use Path at Roundabouts

Single lane roundabouts can provide high intersection throughput and reduced delay while reducing points of conflict between people driving, walking, and riding bikes. Multilane roundabouts can offer similar benefits, but introduce more complexity to the intersection and require special design considerations. At roundabouts, it is important to provide clear right-of-way rules to all people traveling through and guidance through use of appropriately designed signage, pavement markings, and geometric design elements.



TYPICAL APPLICATION

- Where a bike lane or separated bikeway approaches a single-lane roundabout.
- Reduce vehicular speeds at crossings to 20 mph or less.
- Support high yield-compliance behaviors by motorists at crossings.
- Provide smooth transitions between on-street bicycle facilities and off-street paths.
- Ensure off-street path users can see approaching traffic before initiating crossing maneuvers.

DESIGN FEATURES

(A) Design approaches/exits to the lowest speeds possible. Use effective radius of curvature less than or equal to 130' for speeds of up to 20 MPH.

(B) Allow people bicycling to exit the roadway onto a separated bike lane or shared use path that circulates around the roundabout.

- Also allow people bicycling the choice to navigate the roundabout like motor vehicles to "take the lane."

(C) Maximize yielding rate of motorists to people walking and people bicycling at crosswalks with small corner radii and reduced crossing distance.

- Ensure good sightlines at crossings, provide lighting at a point immediately upstream of the crosswalk so that drivers on both approaches to the crosswalk have ample time to see and react to those in the crosswalk.
- Use mountable aprons/ramps at roundabout entries, exits and the central island to accommodate larger vehicles while keeping passenger vehicle speeds low.
- Detectable directional indicators can be used at bike ramps entrances and exits to prevent people with vision disabilities from entering the roadway at these locations.

FURTHER CONSIDERATIONS

- Consider using speed tables, or raised crosswalks to increase motorist yielding at crossings.
- The publication Roundabouts: Informational Guide states, "... it is important not to select a multilane roundabout over a single-lane roundabout in the short term, even when long-term traffic predictions eventually warrant a higher capacity intersection design" (NCHRP 2010 p 6-71). The purpose of this is to prevent crashes in the interim time period. When intersections have more lanes and are wider than necessary to safely and comfortably accommodate near term traffic, a higher crash rate and more frequent injury crashes occur.

This roundabout features designated ramps that transition people on bicycles from the bike lane on to a shared use path or wide sidewalk. People on bikes are then directed back on to the roadway, or across a marked crosswalk. Crossings are set back from the circulatory lane and orient people walking and on bikes so that they are better able to see oncoming cars.

- Other circulatory intersection designs exist but they function differently than the modern roundabout. These include traffic circles (also known as "Rotaries," and neighborhood traffic circles.
- Multilane roundabouts support higher traffic volumes and higher stress levels for people on bikes. People on bikes should not be encouraged to take the lane while traveling through a multilane roundabout.
- At multilane roundabout crossings, consider a jog in the median to enhance intersection awareness and judgement for those crossing.

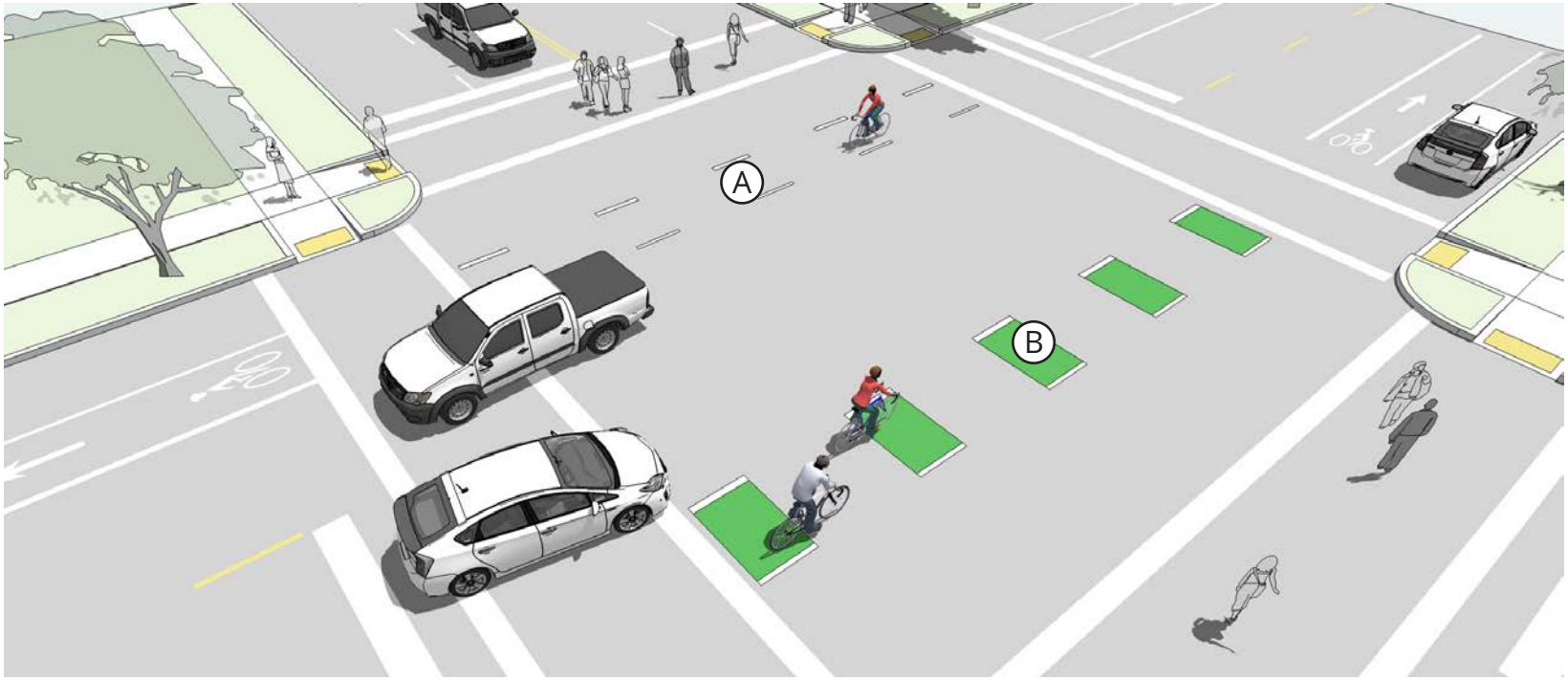
CRASH REDUCTION

Research indicates that single-lane roundabouts benefit people bicycling and people walking by slowing traffic. Multi-lane roundabouts present greater challenges and because of the added complexity and conflicts than the single lane roundabout.

Crosswalks across multiple traffic lanes have decreased yielding; and greater crashes regardless of whether the multilane crosswalk is at a signalized intersection, unsignalized intersection, mid-block location, or at a multilane roundabout. The extent and severity of the injury is determined by the speed of impact and frailty of the person in the crosswalk.

Intersection Crossing Markings

Bicycle pavement markings through intersections guide bicyclists on a safe and direct path through the intersection and provide a clear boundary between the paths of through bicyclists and vehicles in the adjacent lane.



TYPICAL APPLICATION

- Streets with conventional, buffered, or separated bike lanes.
- At direct paths through intersections.
- Streets with high volumes of adjacent traffic.
- Where potential conflicts exist between through bicyclist and adjacent traffic.

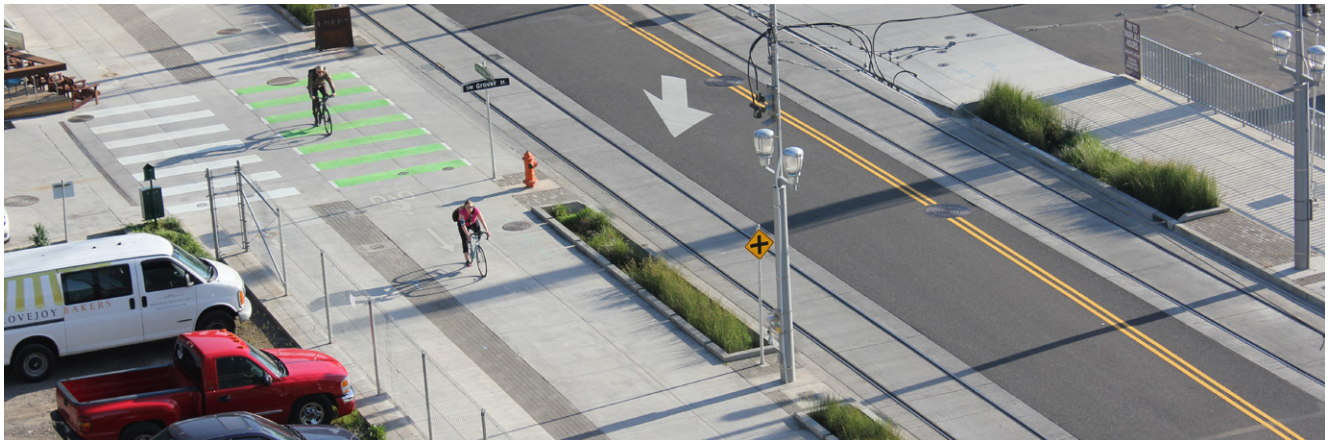
DESIGN FEATURES

(A) Intersection markings should be the same width and in line with leading bike lane.

(B) Dotted lines should be a minimum of 6 inches wide and 4 ft long, spaced every 12 ft.

- All markings should be white, skid resistant and retro reflective (MUTCD 9C.02.02).
- Green pavement markings may also be used.

INTERSECTION CROSSING MARKINGS



Intersection crossing markings can be used at signalized intersections or high volume minor street and driveway crossings, as illustrated above.

FURTHER CONSIDERATIONS

The National Committee on Uniform Traffic Control Devices has submitted a request to include bicycle lane extensions through intersections as a part of future MUTCD updates[1]. Their proposal includes the following options for striping elements within the crossing:

- Bicycle lane markings
- Double chevron markings, indicating the direction of travel.
- Green colored pavement.

1 Letter to FHWA from the Bicycle Technical Committee for the MUTCD. Bicycle Lane Extensions through Intersections. June 2014.

CRASH REDUCTION

A study on the safety effects of intersection crossing markings found a reduction in accidents by 10 percent and injuries by 19 percent.[2]

A study in Portland, OR found that significantly more motorists yielded to bicyclists after the colored pavement had been installed (92 percent in the after period versus 72 percent in the before period).[3]

2 Jensen, S.U. (2008). Safety effects of blue cycle crossings: A before-after study. Accident Analysis & Prevention, 40(2), 742-750.

3 Hunter, W.W. et al. (2000). Evaluation of Blue Bike-Lane Treatment in Portland, Oregon. Transportation Research Record, 1705, 107-115.

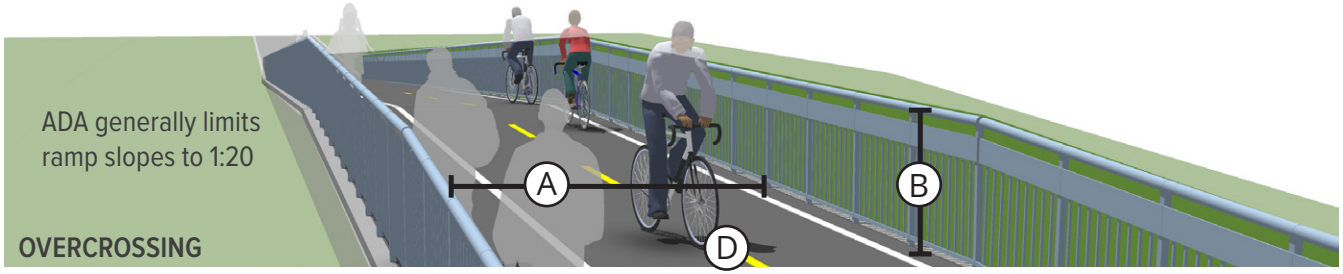
CONSTRUCTION COSTS

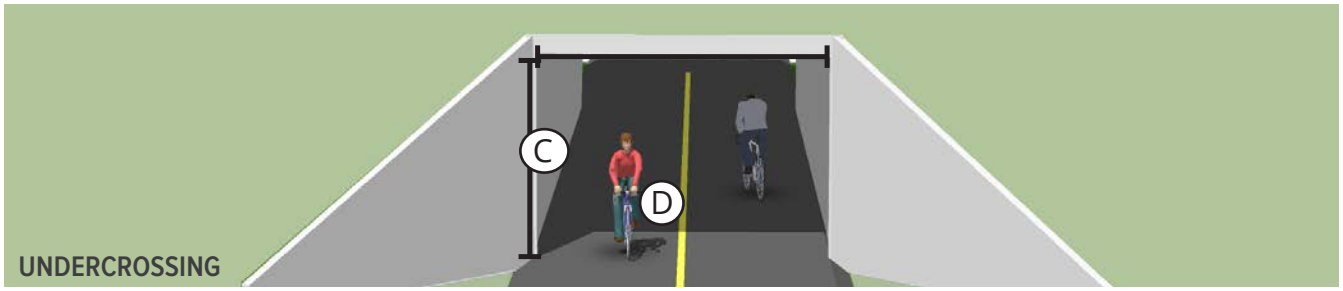
The cost for installing intersection crossing markings will depend on the implementation approach. On roadways with adequate width for reconfiguration or restriping, costs may be negligible when provided as part of routine overlay or repaving projects.

Typical shared lane markings cost $180 each.

Grade-Separated Crossings

Grade-separated crossings provide critical non-motorized system links by joining areas separated by barriers such as railroads, waterways, and highway corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist. There are no minimum roadway characteristics for considering grade separation.





TYPICAL APPLICATION

- Where shared-use paths cross high-speed and high-volume roadways where an at-grade signalized crossing is not feasible or desired, or where crossing railways or waterways.
- Depending on the type of facility or the desired user group, grade separation may be considered in many types of projects.

DESIGN FEATURES

(A) Overcrossings should be at least 8 ft wide with 14 ft preferred and additional width provided at scenic viewpoints.

(B) Railing height must be a minimum of 42 inches for overcrossings.

(C) Undercrossings should be designed at minimum 10 ft height and 14 ft width, with greater widths preferred for lengths over 60 ft.

(D) Centerline stripe is recommended for grade-separated facility.

Trail Amenities

Handrails + Guardrails

DESCRIPTION

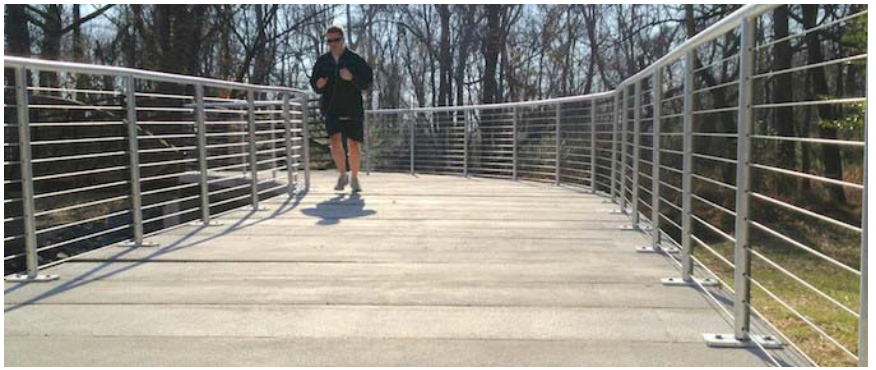
Handrails and guardrails are safety barriers that serve several functions depending on the situation. A “handrail”, for example, is primarily a safety device intended to protect trail users from a potential hazardous condition including keeping small children and toddlers from slipping through the railing.

A “guardrail” primarily serves to protect bicyclists, roller skaters and other higher speed wheeled users from a hazardous situation. In some instances, such as above a vegetated embankment where the threat of impact is minimal the railing may be lower in height. Where the threat of impact is substantial, such as over a highway, the rail would be higher. (Heights are determined per national published bicycle design standards.) In many cases, particularly where the drop off is more hazardous, the safety barrier serves both a handrail and guardrail function.

GUIDELINES

- For handrails, if there is a drop-off in excess of 18” or other hazard, openings on the rail should not pass a 4” sphere (confirm with local codes).
- A guardrail should withstand a 250 lb. load with 1/2” deflection with a w=50 pound per linear foot transverse and vertical load capacity.
- Rails should not present sharp or protruding edges and ends should be flanged and marked with MUTCD-specified hazard panels to reduce the chance of injury from collision.
- Handrails should conform to local and national building codes.
- Guardrails and guardrail/handrail combinations should conform to the specified minimum heights per the AASHTO Guide to The Development of Bicycle Facilities and other local and state standards—ranging from 42” to 54” depending on the situation.
- Where bicycle traffic will be present, an off-set “rub rail” should be provided to prevent entanglement of bicycles with the railing structure. Rub-rail is optional on overlooks, or pull-offs out of main stream of bike traffic.
- There should be a minimum clear-zone (typically 10’) between the insides of the railings when rail is on both sides of the trail.
- Structures should be durable and affordable to build and maintain, such as weathered steel or powder coated steel.
- Aesthetic designs should conform to overall branding standards including consistent selection of materials and colors per each branded segment.

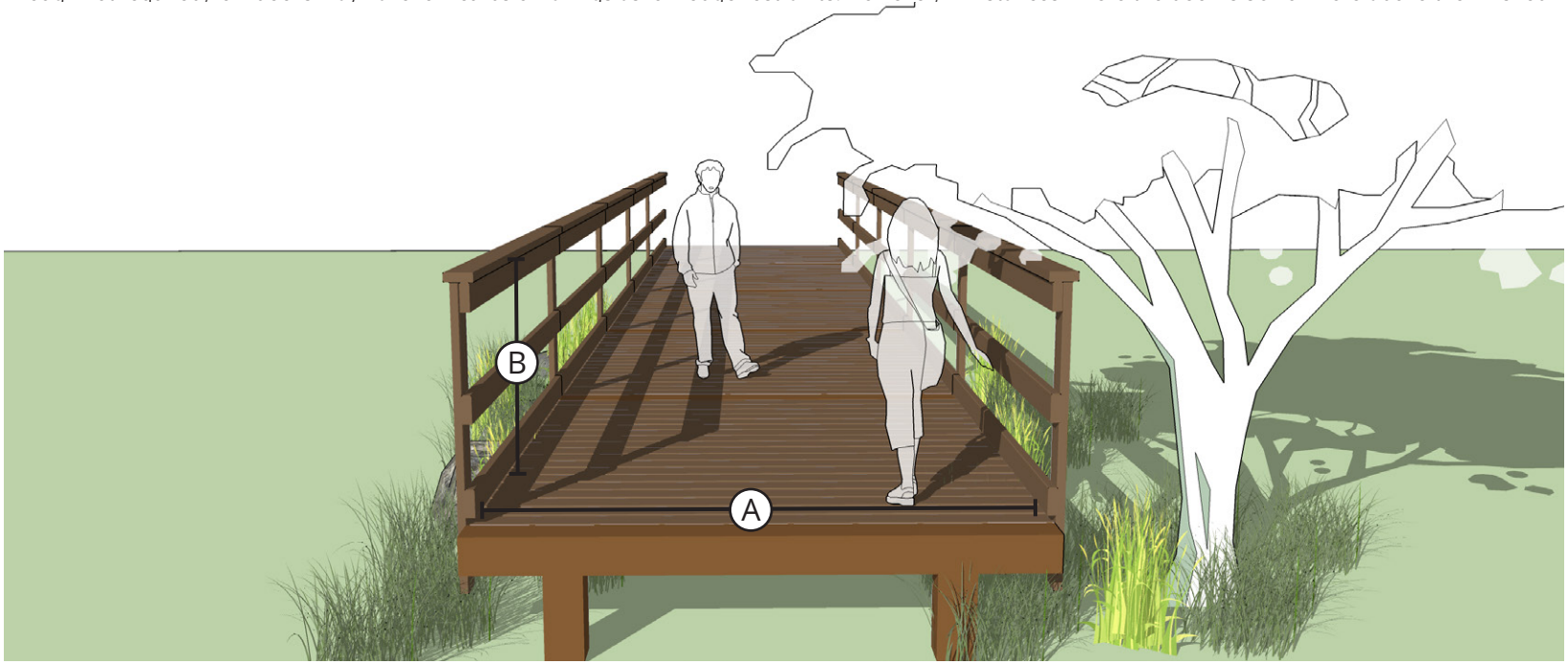
(Above) Cable railing with timber posts and handrail.



(Above) Cable railing with aluminum posts and handrail along boardwalk.

Boardwalks and Bridges

Boardwalks and bridges are elevated structures that allow the trail to pass through or over wetlands, water bodies, unstable soils, and other sensitive areas. Depending on conditions and other trail planning considerations, they may be only a few inches off the ground or several feet or more above the surface. Though not required, low decks may have low curbs or railings as low edge restraints. However, in instances where the deck is 30" or more above the finished



TYPICAL APPLICATION

- Boardwalks are usually constructed of wooden planks or recycled material planks that form the top layer of the boardwalk. The recycled material has gained popularity in recent years since it lasts much longer than wood, especially in wet conditions.
- In general, building in wetlands is subject to regulations and should be avoided.

DESIGN FEATURES

(A) A boardwalk width should be a minimum of 10 ft when no rail is used. A 12 ft width is preferred in areas with average anticipated use and whenever rails are used.

(B) When the height of a boardwalk exceeds 30", railings are required.

- If access by vehicles is desired, boardwalks should be designed to structurally support the weight of a small truck or a light-weight vehicle.

GUIDELINES

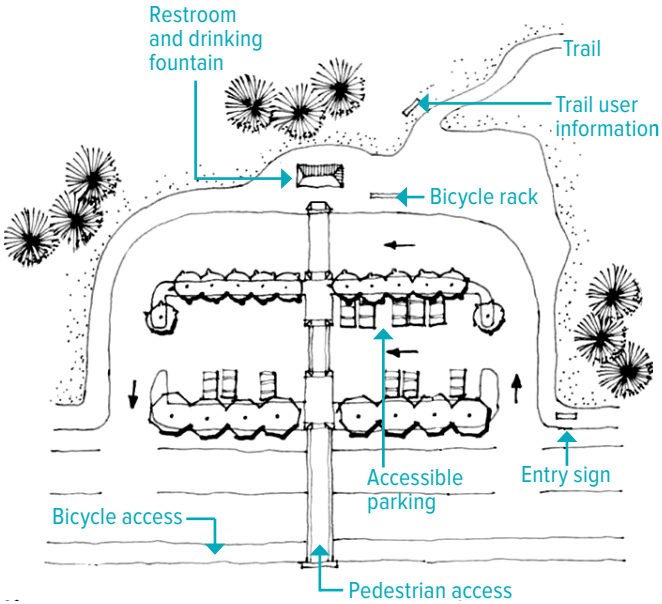
- Boardwalks have a clear unobstructed width (inside of curb or handrails) and should match or exceed the specified widths of the trails they serve. In some instances, however, there may be a transition area to allow tapering to interface the trail with the boardwalk while meeting safety standards.
- Sustainable design techniques are used to minimize adverse impacts or intrusion of the structure on the environment during both construction and use.
- Hand railing heights meet local and national code standards for the anticipated use including heights specified in the AASHTO Guide to the Development of Bicycle Facilities.
- Provide a minimum 42” high for low drops and 54” for high drop offs. Railings are designed to protect small children with appropriate minimal gaps where conditions dictate.
- Use resilient materials with low maintenance. Concrete decking and steel or cable railing is preferred. Decking may be composite material or concrete for long term maintenance and resiliency.
- Boardwalk and bridge design and materials should fit with the branding and furnishing styles of the various character segments of the Singing River Trail.

(Above) Boardwalk example.

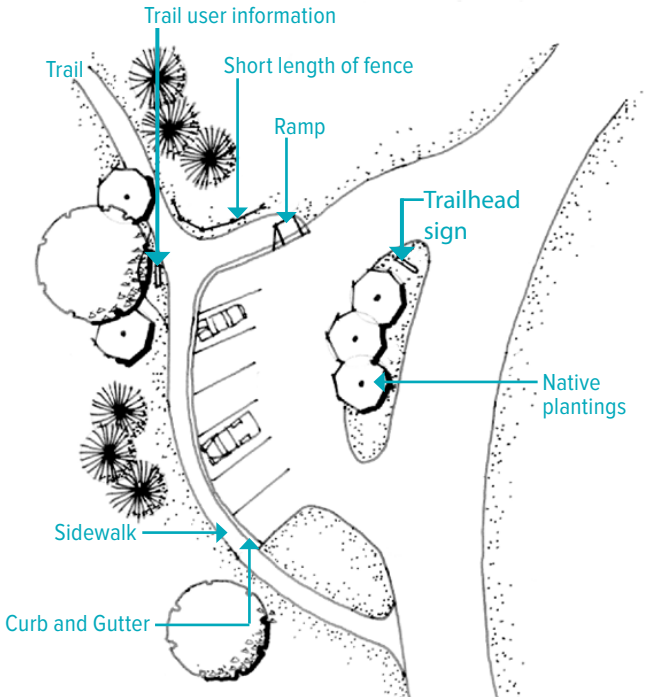
(Above) Boardwalk example.

Trailheads

Good access to a path system is a key element for its success. Trailheads serve the local and regional population arriving to the path system by car, transit, bicycle or other modes. Trailheads provide essential access to the shared use path system and include amenities like parking for vehicles and bicycles, restrooms (at major trailheads), and posted maps.



MAJOR TRAILHEAD



MINOR TRAILHEAD

TYPICAL APPLICATION

- At major and minor trailheads.

DESIGN FEATURES

- Major trailheads should include automobile and bicycle parking, trail information (maps, user guidelines, wildlife information, etc.), garbage receptacles and restrooms.
- Minor trailheads can provide a subset of these amenities.

Signage, including maps and other important information, educate visitors to a trail in Utah.

Signage, bike parking, trash cans, and bench seating provide a welcoming trailhead experience at Fanno Creek in Oregon.

FURTHER CONSIDERATIONS

Trailheads with a small motor vehicle parking area should additionally include bicycle parking and accessible parking.

Neighborhood access should be achieved from all local streets crossing the path. No parking needs to be provided, and in some situations “No Parking” signs will be desirable to minimize impact on the neighborhood. See Local Neighborhood Accessways for neighborhood connection guidance.

CRASH REDUCTION

Not applicable.

Rest Areas + Overlooks

Rest area example. Source: Razorback Greenway, Bentonville, AR.

DESCRIPTION

Rest areas and overlooks afford places to stop, rest, eat a snack, have a drink, take refuge from the sun or enjoy a view. These spots may also offer interpretive, cultural and wayfinding information as well as public art. Several kinds of rest areas could be provided including rest pads, larger rest areas, overlooks, and trail pavilions.

A larger rest area might include two or more benches and possibly a drinking fountain with a toilet facility nearby. A pavilion rest area might include a shelter and picnic table(s). An overlook is a special kind of rest area tied to a view of special interest. An overlook might include interpretive signage describing the area being viewed.

GUIDELINES

- All rest areas and overlooks should be designed to move users and their bicycles off the main trail to eliminate any possible traffic hazard.
- Rest areas and overlooks should be located in attractive, quiet, secure-feeling settings away from traffic noise and not close to private residences.
- Rest areas and overlooks should be accessible per the ADA and should offer shade with either trees or a sun shelter.
- Rest areas, at least rest pads, should be located every 1/4 to 1/2 mile depending on grade.
- Larger rest areas or overlooks should generally be located every one to two miles and should include a crushed stone or concrete pad with benches, a bike rack, informational signage, trash receptacle and drinking fountain.
- Larger rest areas and overlooks, especially those with trash receptacles should be readily accessible by maintenance vehicles.
- Consider storm shelters, sunshade structures and picnic shelters appropriately grounded for lightning.

Erosion Control + Slope Protection

DESCRIPTION

In a number of instances, steep slopes, stream banks, construction cuts, and other areas subject to erosion will require erosion control and stabilization improvements. In instances where retaining walls are not needed, other forms of erosion control and slope protection will be required.

GUIDELINES

- Typically erosion control should be considered where grades exceed 3:1 unless well stabilized by vegetation .
- Consider incorporating rain gardens and bioretention areas along trail to handle storm runoff from paved sections, especially in areas with steeper slopes to prevent erosion from runoff.
- Where feasible, use natural or natural-appearing stabilization that promotes the re-growth of vegetative cover such as woven plant fiber matting.
- If rock rip rap is used for stabilization provide an adequate buried toe along river and stream banks and bury rock with soil that is stabilized and re-vegetated to conceal rock and promote a more natural slope.
- Along river and stream banks and other embankments terrace slopes to create a natural appearance and establish a healthy riparian edge with reforestation.
- Wherever feasible restore disturbed slopes with appropriate indigenous vegetation.
- Local and state guidelines prevail for all erosion and sediment control in Alabama. Refer to the Alabama Soil and Water Conservation Committee's manual.

Shade Structures

DESCRIPTION

Whether it be protection from the rain or a place to rest during a sunny day, shade structures and shelters create comfort and protection for all trail users. Shade structures should be sensitive to context and designed to integrate with intended function of the site and trail user needs. All structures will require approval from staff and should include little to no maintenance.

GUIDELINES

- The orientation of structures should be considered to provide maximum protection from elements.
- Can be placed in any setting (grass, concrete, asphalt, etc) with considerations for ADA access to and into the structure.
- Plants may be incorporated into the design of the structures especially where they can provide additional user benefits (vines or greenwall for cooling effect). Plant material should be context sensitive and low maintenance.
- Structures should not impede bicycle and/or pedestrian movement and shall be located adjacent to the trail (not within the travelway).
- Structures should not block viewsheds of historic, natural, or cultural elements.
- Structures should incorporate other amenities, especially benches and picnic tables.
- Colors should fit into a natural setting and not be bright oranges, pinks, blues, etc.
- Provide shade structures, particularly where mature trees are not available to provide shade.
- Appropriate shade tolerant grasses should be used under shade structures when grass is desired underneath.

(Above) Shade sails provide flexibility and numerous color options.

Restrooms + Drinking Water Fountains

DESCRIPTION

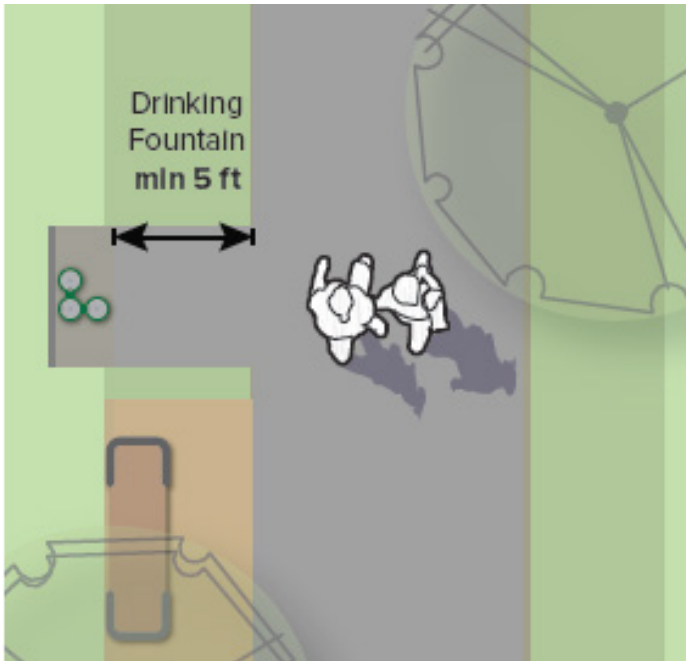
Careful consideration should be given to a number of factors before locating restrooms for the Singing River Trail including available land, size of gateway or trailhead, frequency of use, existing restroom facilities within the trail system, utility availability, and user need. Public restrooms require considerable maintenance and service. Access to these resources should be a strong consideration when planning for restroom buildings.

Access to drinking water is crucial to safety and trail enjoyment for multiple user types. Sources of potable water should be identified along the trail alignment with spacing of five miles or less. If access points are more than five miles apart, signs should be placed at potable water access points to indicate distance to the next source.

GUIDELINES

- Restrooms should be located at all major access points and recreational areas.
- Spacing between restrooms should not exceed 5 miles.
- Restrooms should be housed in architecturally appropriate facilities and property screened and buffered from adjacent private properties.
- Drinking water should be available at all major trailheads/access points. A commercially manufactured water fountain product is recommended and should have a spigot for filling water bottles and pet drinking bowls.
- Directional signage should be provided indicating the location and directions to convenience stores and other commercial "way-stations" where food and drinks may be purchased.
- All facilities should be accessible per the ADA.

(Above) Fountain example.



(Above) Typical detail.

(Above) Restroom example.

Vegetation Management + Trail Edge Grooming

DESCRIPTION

There are several areas of landscape management to promote both an ecologically and user-friendly greenway and trail system. For the Singing River Trail, these include areas such as river edge and wetlands; multi-use trail edge/shoulder; "streetside parkways"; parks and feature areas; and managed "natural" areas.

1. **Multi-Use Trail Edge —** the zone immediately adjacent to and above paved multi-use pathways. Vegetation management refers to trimming the shoulder and beyond to assure a safe, usable trail. It also includes maintaining (trimming and/or mowing) an under-story "clear zone" back into the adjacent vegetation to promote lines of sight for safety and security and a more groomed appearance of the trail corridor. This edge should appear natural and should undulate and can vary in some areas from 5' to 20' back into the adjacent forest or meadow.

2. **Streetside Parkways —** Greenway sections visible from nearby streets with a more parklike open landscape setting. These reaches may vary from 50' to 200 feet wide and are intended to create a more formal park feel. There may be mowed turf grass or other managed landscape including tree groupings with cleared understory.

3. **Parks and Feature Areas —** more formal areas of the trail that incorporate parks and other attractions along the corridor. Typically these are turf grass areas, plazas or other more formal areas.

4. **Managed "Natural" Areas —** are designated areas with scenic enhancement or interpretation. An example of this might be a meadow planted in wildflowers or a variety of ornamental grasses.

GUIDELINES

- Regularly monitor activities and conditions in natural areas including proposed public works projects such as stream channel and utility work.
- Groom larger trees in the buffer zones to 8'-10' above ground.
- Plant and groom low to medium height grasses and wildflowers on opposite side of trail from roadway in a meandering swath 10' to 50' in width.
- Thin understory and groom trees along opposite side of trail from roadway in a 10' to 50' meandering swath.
- Regularly monitor tree growth around the trail and remove potentially hazardous overhanging branches and deadwood.
- Regularly monitor for invasive and pest species and eradicate using environmental sustainable methods.
- Use native species in all landscapes.
- Consider including the removal of exotic and invasive species along the trail system.
- Promote a natural look in grooming and mowing with undulating edges that follow the landscape rather than straight lines or shapes that don't match the local terrain. This might include "articulated" mowing of trail edges to create attractive curves and sweeps.
- Where appropriate, provide and maintain vegetated buffer zones between activity areas and sensitive landscapes such as wetlands.
- Pruning and tree care should follow ANSI A300 Tree Care Guidelines.

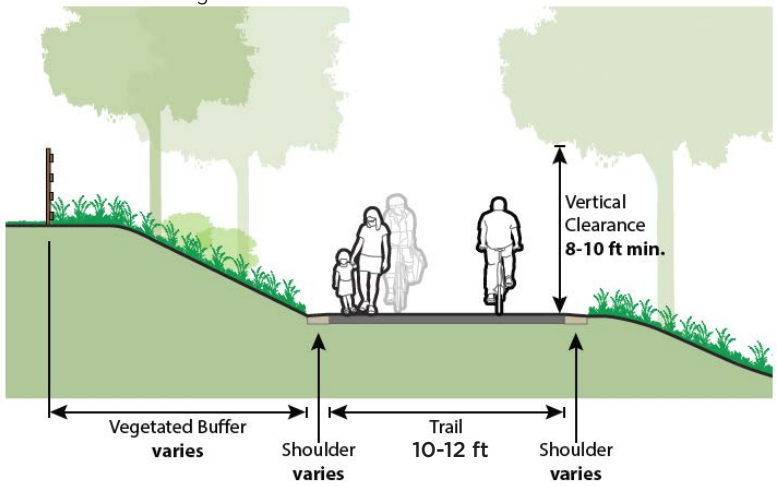
Landscape + Vegetation Screening/Fencing

DESCRIPTION

In some instances, screening is desired either to conceal visually unattractive objects (such as overhead power lines) from trails or to screen from adjacent land uses such as residences in the interest of privacy. This may be accomplished with plantings, screen fences or other delineators such as a rail-type fence to create a sense of delineation.

SCREENING GUIDELINES

- All ground cover should be trimmed to a maximum of 24" above ground level height.
- Where vegetative screens are recommended to provide privacy for private properties, they are not to exceed 4' in height.
- Consider Crime Prevention Through Environmental Design (CPTED) principles when providing screening along trails.
- Trees should be trimmed to provide a minimum of 8 ft (2.4 m) of vertical overhead clearance, 10 ft (3.0 m) preferred (AASHTO Bike Guide).
- Tree canopies should not obstruct pathway illumination.
- Select and place trail vegetation to provide seasonal comfort; shade in the warmer months and sunlight in colder months.



(Above) Typical detail with vegetative screening.

FENCING GUIDELINES

- Minimize use of fencing, height and type of fencing (i.e. simple post and wire to protect an area where security or privacy is not a major concern). A 48" height is preferred to 72" unless higher required by security or safety concerns.
- Avoid opaque fencing to permit visibility.
- Attempt to conceal fencing behind vegetation where feasible.
- When securing private property include placards that state: "Private Property: Please Respect Owner's Privacy"
- As much as possible fencing should blend with the natural trail environment.
- Where appropriate affix "Do Not Trespass", or "Sensitive Wildlife Area" or other appropriate regulatory or informational signage to fences.

(Above) Native plants should be used as much as possible for proposed landscape screening along the Singing River Trail.

Entry Monumentation

DESCRIPTION

Monumentation consists of decorative structures that demark points of entry to the trail system— from a street, a trailhead/parking area or other entry to the trail. These may vary in size with larger structures for intermodal trailheads (with parking) and smaller structures for local access points. Monumentation should also include larger identity monuments—large structures, prominently located within sight of major roads and highways that provide a high level of visibility and help build community awareness of the trail.

GUIDELINES

- Entry monumentation should be consistent with the aesthetic for each character district.
- Trail identity monuments should be provided at key locations along the greenway corridor. These should be clearly visible and recognizable from nearby major roadways.
- Intermodal entry monumentation should be clearly visible and recognizable from passing vehicles. Size and scale should vary based upon site and location conditions.
- At local access points, use monuments that are more modest than those at the intermodal entryways. Local access markers are lower key and should be compatible with local neighborhoods.
- Monuments may be placed on one or both sides of trail at both local access and intermodal entry points.

(Above) Examples of entry monumentation.

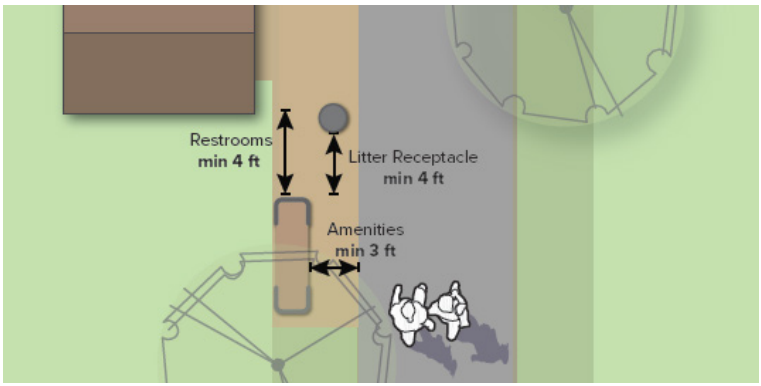
Seating

DESCRIPTION

Seating along trails provides a place for trail users to rest, congregate, contemplate, or people-watch along trails and throughout the trail system. Benches can be designed to create identity in a place or along the trail or be strictly utilitarian. Picnic tables provide places for trail users to congregate for meals or to just and relax.

GUIDELINES

- Locate benches at all gateways, trailheads, picnic areas and at regular intervals along the trail.
- Locate all seating (and other site furniture) a minimum of 3’ from the edge of the trail.
- Locate benches a minimum of 4’ from restrooms, phone booths and drinking fountains and a minimum of 2’ from trash receptacles, light poles and sign posts.
- Seating should be placed in shaded area, especially where there is minimal shade available.
- Drainage should slope away from the bench and the trail.



(Above) Typical detail.

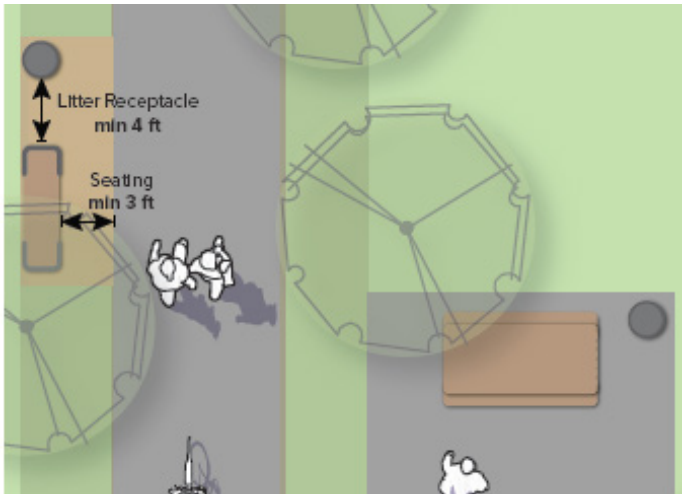
Trash Receptacles

DESCRIPTION

Trash and recycle receptacles provide for proper maintenance and appearance of the trail system. Trash and recycle receptacles should be placed at gateways, rest stops or comfort stations, concession facilities, or area where users might stop to drink and eat.

GUIDELINES

- Locate receptacles at each trailhead and each seating area (1 per every 1 picnic table, 1 per every 2 benches).
- Placement of other receptacles will depend upon the location of concessions, facilities and areas of group activities.
- Receptacles should be selected using the following criteria:
    - Expected trash amount
    - Maintenance program requirements
    - Types of trail users
    - Durability



(Above) Typical detail.

Lighting

DESCRIPTION

Lighting for trails should be analyzed per segment context with full consideration for safety needs, sensitive habitats, trail function, and maintenance commitments. In general, lighting is not appropriate for trails in remote areas, trails with low use, or where there is little to no development.

Street lighting can improve visibility of the crossing and trail users for motorists. Lighting may also be necessary for daytime use in trail tunnels and underpasses.

GUIDELINES

- Lighting should be at pedestrian scale. Placement, spacing, and other finish specifications depends on the fixture and optics.
- Place lighting at decision points and areas of interest, such as street crossings, intersections with other trails, trail spurs, and near commercial and mixed-use developments.
- Consider CPTED principles whenever lighting is introduced, such as color rendering, dimly lit “hiding places” and abstracted illumination.
- Lighting should avoid trees and be placed outside of canopy edge where possible.
- Solar powered lighting is available where utility connection is difficult or when alternative energy sources are desired. Daylight hours should be analyzed per season prior to specifying solar lighting.
- Avoid light fixtures at eye level that could impair visibility.
- Dependent upon trail hours, consider uses in urban and/or commercial land use areas.
- All fixtures should be LED 2700K color temperature when possible.

(Above) Examples of trail lighting. Source: https://structura.com/galleries/

Wayfinding Signage

DESCRIPTION

Developing a consistent regional wayfinding experience through adherence to best practices will improve the user experience along the Singing River Trail and facilitate more regional trips by foot or bike. Bicycle wayfinding signage provides information on direction and distance to key regional destinations and other routes. This plan provides guidelines for the region to develop their own wayfinding, including sign design and placement.

A coordinated, well-designed signage system improves the coherency of a greenway network. It also provides a greater sense of security and comfort for users by confirming that riders are on the correct route and are aware of how far they will have to travel to reach their destination. On-street bicycle wayfinding signs also provide visual cues to motorists that people on bikes may be present and should drive with caution.

Signage should provide a sense of identity and utility for the trail network. The signage program should adhere to a consistent, selective, and strategic manner so as not to clutter or dominate the visual character of the trails. The signs should also be easily reproducible, since the implementation and construction could take place over many years.

GOALS

The following goals were developed to guide the design of the Singing River Trail wayfinding system, to ensure that the proposed design suits the needs of the corridor, and its users.

- Enhance awareness for users that they are along a larger trail network.
- Improve wayfinding throughout the sub-areas.
- Improve connections to trail networks from adjacent neighborhoods/communities, improve connections from the trail network to nearby amenities, cultural destinations or recreational destinations.
- Enhance education opportunities about local history, amenities, culture and ecology.

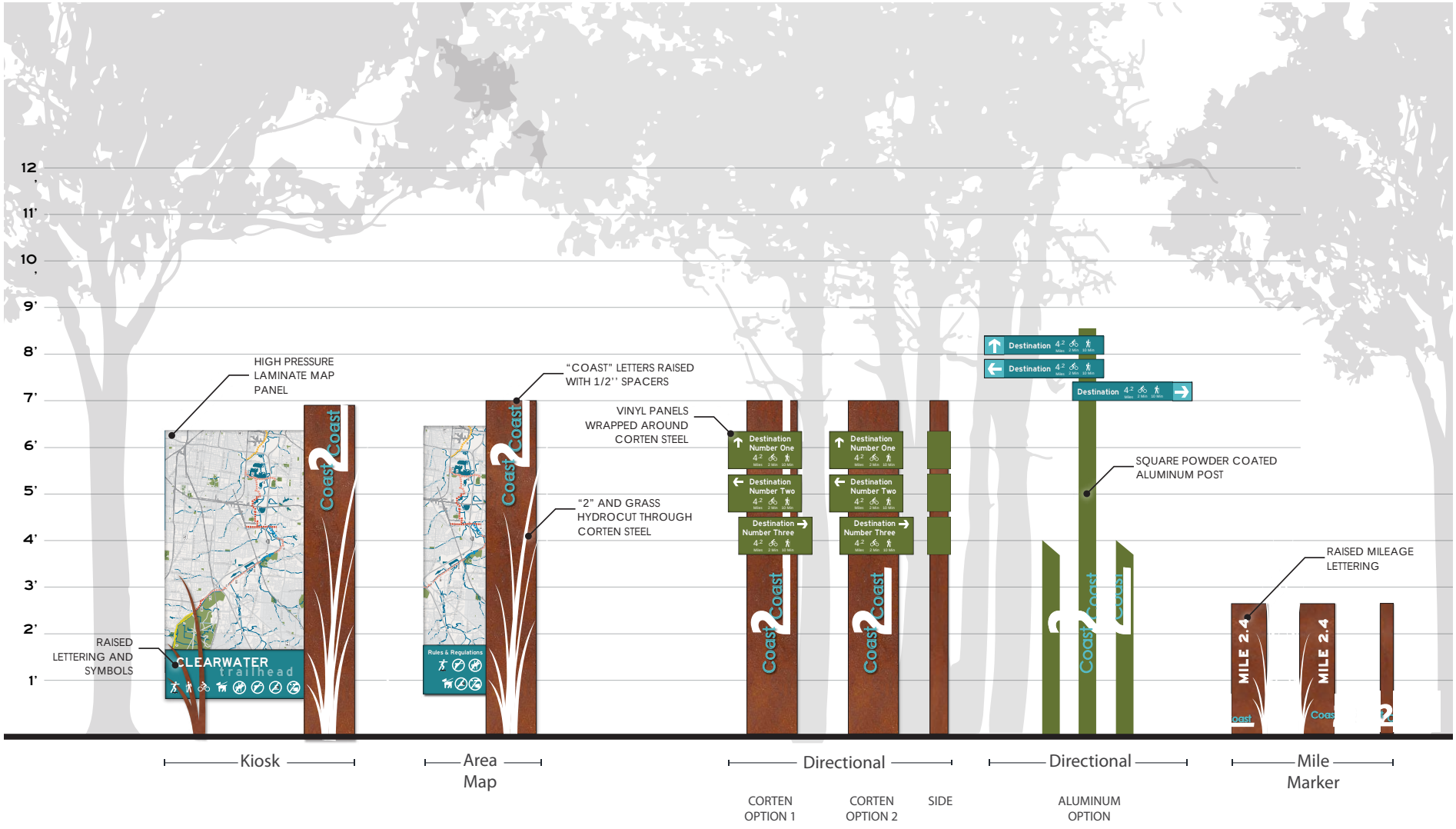
DESTINATION/DIRECTIONAL SIGN GUIDANCE

The ability to navigate through a community is informed by landmarks, natural features, and other visual cues. Wayfinding signs indicate the direction of travel and the location of destinations and access points along the way. These signs increase users' comfort and accessibility to the trail network. Signs should typically be placed at key locations leading to and along routes, including the intersection of multiple routes.

Directional signs serve many purposes, including:

- Helping to familiarize users with the trail system.
- Helping users and emergency responders identify locations, in case of emergency on the trails.
- Helping users identify the best routes to destinations.
- Helping overcome a "barrier to entry" for people who do not use the trail system.
- Helps users find access points to the trail system.

Example of a greenway wayfinding signage package.



REGULATORY SIGN GUIDANCE

Regulatory signs give a direction that must be obeyed, and apply to intersection control, speed, vehicle movement and parking. The examples below are types of regulatory signage.

- Smaller scale signs or plaques may be used for trail applications.
- See the MUTCD 9B for a detailed list of regulatory sign application and guidance.

R1-1 R1-2 R9-7 R5-3

(Above) Examples of regulatory signage.

INFORMATIONAL KIOSK GUIDANCE

Kiosks and message centers provide trails users with information to orient themselves, learn of areas of interest, read the rules and regulations of the trail system, and find the hours of operation. Along the entire trail rules, regulations, and ADAAG accessibility advisories should be included on each kiosk.

(Above) Kiosk at Walnut Creek Trail in Raleigh, NC.

- Install kiosks at each major and minor trailhead.
- When locating kiosks next to parking facilities, set the units back far enough from traffic and protect the support posts or structure with appropriately sized barriers.
- Provide ADA access using established guidelines for visual height, clearance, and surface type where kiosks are located.
- Evaluate the use of emerging technology options for implementation of greenway information and messages as part of the signage program (LED displays, mobile friendly links and maps, etc.).

INTERPRETIVE SIGN GUIDANCE

Interpretive displays provide trail users with information about the surrounding environment or site, wildlife, vegetation, history and the significance of cultural elements. Interpretive displays may also be combined with public art and sculpture opportunities along the trail.

- Consider the character of the trail and surrounding elements when designing these signs.
- Work with experts specific to the information you are conveying on the signs such as historians, ecologists, or artists.
- Separate interpretive signage panels from the main trail circulation so that users can stop and not impede traffic.
- Consider including interpretive signage at rest stops or areas of congregation.
- Panels must be ADA accessible.
- Consider use of technology for interpretation. (i.e. website links, mobile apps, or podcasts)

ETIQUETTE SIGN GUIDANCE

Informing trail users of acceptable etiquette is a common issue when multiple user types are anticipated. Yielding the right-of-way is a courtesy and yet a necessary part of a safe trail experience. The message must be clear and easy to understand. The most common trail etiquette systems involve yielding of bicyclists to pedestrians.

(Above) Example of etiquette signage.

- Trail etiquette information should be posted at access points and periodically along the trail.

Appendix B: Public Input Summary

A key component of the master planning process for the Singing River Trail was stakeholder and public input. This was conducted through multiple methods in an effort to reach as many North Alabama residents as possible. The planning process is described in Chapter 1. Below are the various tools used for public engagement for this master plan.

Steering Committee Meetings

The Launch 2035 Land Use Committee formed the Steering Committee, or guiding body, of the Singing River Trail Master Plan process. This included nearly 50 representatives of county and municipal government and other regional and local agencies. The Committee met six times during the course of the project. The Committee helped to establish the vision and goals for the project. Three subcommittees were formed that addressed fundraising, trail routing, and public engagement.

Public Events

270 Attendees

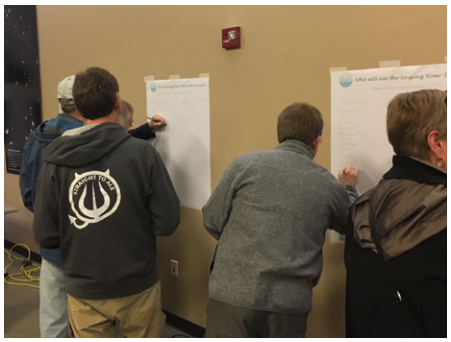
4 Public Meetings

Public Meetings

Project Launch - March 2018

The general public was invited to come to two evening Singing River Trail public workshops on two consecutive evenings (first at the Space and Rocket Center in Huntsville and the second evening at Calhoun Community College). Alongside Alta Planning + Design's Chuck Flink and Matt Hayes, over 200 residents learned about the potential for the Singing River Trail and other regional success stories like the Razorback Greenway (NW Arkansas), the Swamp Rabbit Trail (Greenville SC), and the Wolf River Greenway (Memphis TN). Participants were asked to provide their input on plan vision, trail and amenity preferences, and also on the initial draft routing.

Public Meeting presentation boards and input results can be seen on the following pages.



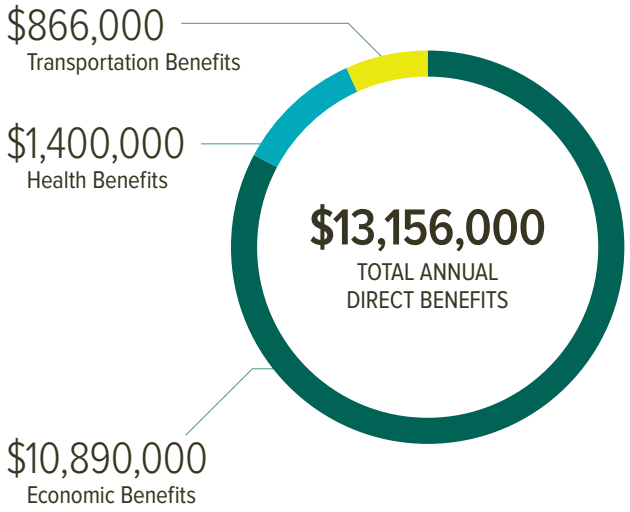
SINGING RIVER TRAIL *Trails Create Value + Generate Economic Activity*

Trails generate economic returns through improved health, safety, and environmental conditions, raise property values, and attract visitors.

Marketing examples: *Developers understand the positive impact of trails on property value...*

Direct Benefits

In total, it is estimated that the communities of North Alabama will experience $13,156,000 in transportation, health, and direct economic benefits per year with the completed Singing River Trail.



Additional Benefits

$23,631,000
Indirect Economic Spending

$7,079,000
Earnings from Direct Economic Spending

900
Temporary Job-Years

100
Permanent Job-Years

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March 2018 Public Meeting Boards

SINGING RIVER TRAIL *Trails Provide Safe Opportunities for Active Living*



The rate of crime on trails and greenways does not exceed the rate of crime in the communities that surround trails and greenways.

Community trails and trail networks sometimes face skepticism because of a lack of understanding regarding the safe opportunities that trails offer residents for recreation and transportation. In fact, a national study of 372 trails demonstrated that serious and minor crimes were much lower on urban, suburban and rural trails than the national crime rates for urban, suburban and rural areas.

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Police Work and Safety:

- ***Targeting Crossings:*** Crossings are often dangerous locations along trails, and police can target traffic enforcement operations at these high-profile locations subject to heavy use.
- ***Getting Police on Bikes:*** Bike patrols offer many tactical advantages to police when compared with a cruiser, including lower cost, and more maneuverability.
- ***Establishing an Emergency Locator System:*** Allows trail users to identify their location on the trail to 911 dispatchers and police officers.

Natural Surveillance & Volunteer Patrols

For trails and greenways, natural surveillance occurs through increased numbers of trail users, creating an environment where behavior on the trail is monitored by trail users themselves. This type of surveillance can be supplemented with a volunteer-based trail patrol group.

Lighting in Select Areas

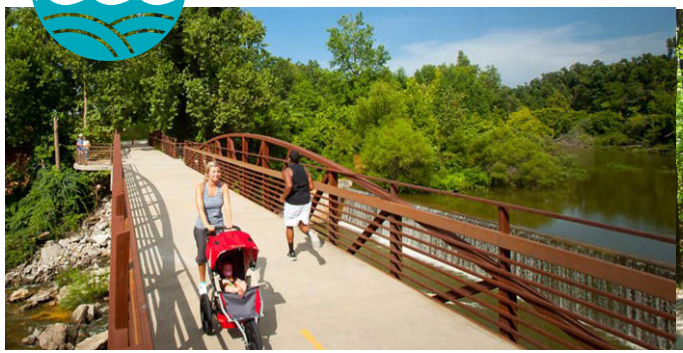
Most trails operate as linear parks, officially closing at dusk. Certain high-use areas of trails are sometimes kept open after dark to serve the needs of trail commuters who use the trail after dark.

Community Example:

A study in Charlotte, North Carolina, examined properties neighboring the 14 Charlotte greenways and found the rates of property crimes to be either insignificantly different or lower than the rates in the surrounding neighborhoods.


MARCH 2018

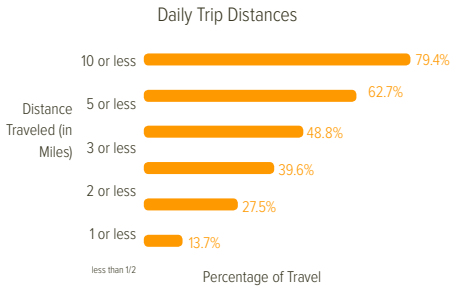
SINGING RIVER TRAIL *Trails Improve Quality of Life*




A complete trail network, as part of the local transportation system, offers effective transportation alternatives by connecting homes, workplaces, schools, parks, downtown areas, and cultural attractions.

Table: *Annual Health Benefits (estimated values)*

Annual Bicycle Trips	400,000
Annual Miles Bicycled	2,080,000
Annual Walk Trips	600,000
Annual Miles Walked	3,120,000
Annual Hours of New Physical Activity	**137,000**
Annual Healthcare/Productivity Cost Savings	**$1,400,000**



Health Benefits

The implementation of a well-designed, connected trail system in Madison, Morgan, and Limestone counties would encourage a shift from inactive modes of transportation such as cars and trucks to active modes such as bicycling and walking that help promote active lifestyles.

Transportation Benefits

Trails improve options for active transportation. Two-thirds of all trips we make are for a distance of five miles or less—a distance that can easily be covered by bicycling. Surveys by the FHWA show that Americans are willing to walk as far as two miles to a destination and bicycle as far as five miles.

Protecting Water and Wildlife with Natural Greenway Corridors

Trail corridors that connect to and contain large areas of open space serve important functions for our natural ecosystems by:

- Creating a natural buffer that protects waterways from soil erosion and pollution caused by agricultural and roadway runoff.
- Linking wildlife and habitat that is fragmented by development, thereby supporting greater biodiversity.
- Protecting and restoring natural floodplains along rivers and streams (FEMA estimates that implementation of floodplain ordinances prevents $1.1 B in flood damage annually).

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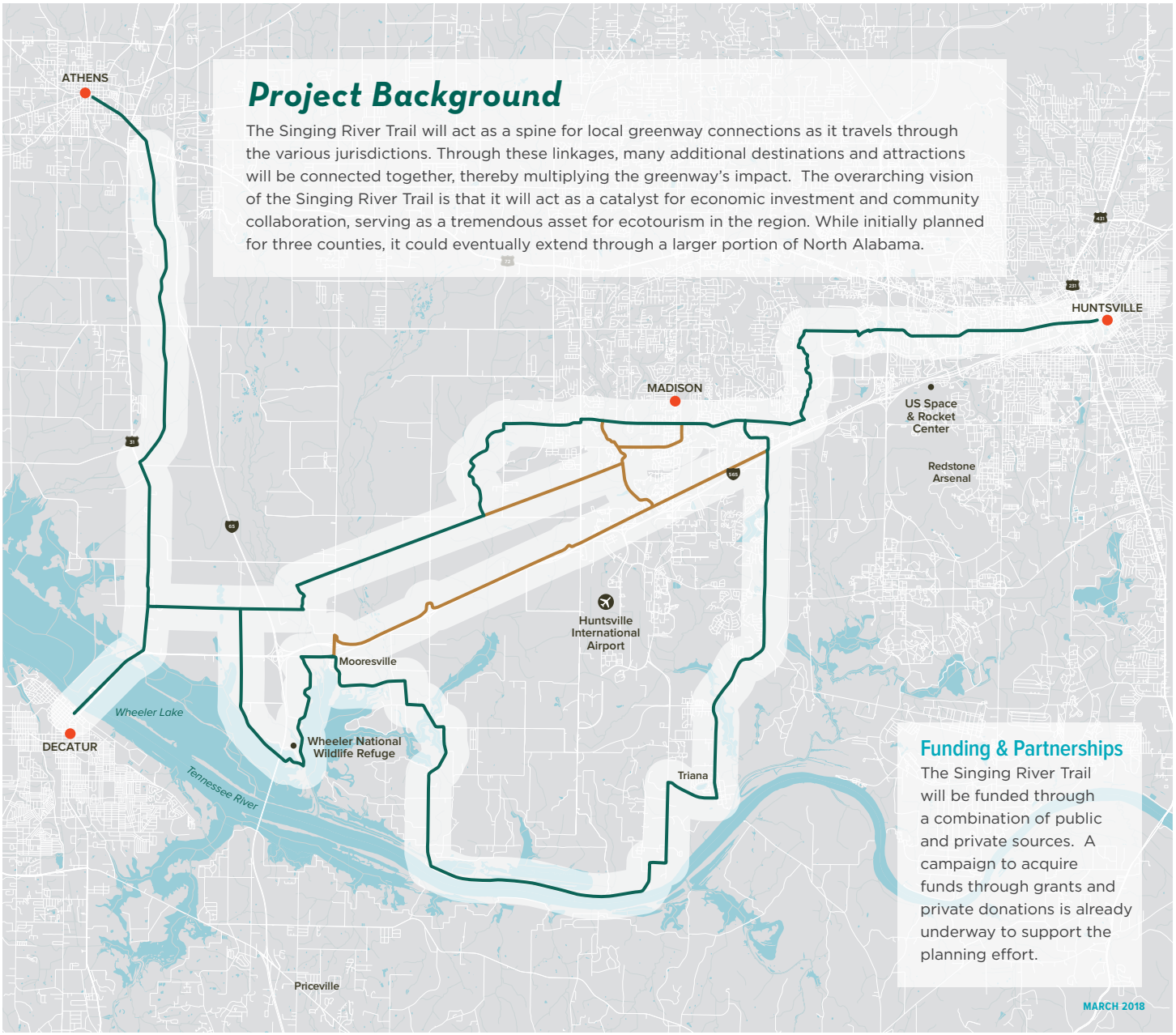
SINGING RIVER TRAIL

The vision for the Singing River Trail is a regional greenway that will meander through the tri-county area of Madison, Morgan & Limestone Counties in North Alabama, serving over half a million citizens.



Project Background

The Singing River Trail will act as a spine for local greenway connections as it travels through the various jurisdictions. Through these linkages, many additional destinations and attractions will be connected together, thereby multiplying the greenway's impact. The overarching vision of the Singing River Trail is that it will act as a catalyst for economic investment and community collaboration, serving as a tremendous asset for ecotourism in the region. While initially planned for three counties, it could eventually extend through a larger portion of North Alabama.

Funding & Partnerships

The Singing River Trail will be funded through a combination of public and private sources. A campaign to acquire funds through grants and private donations is already underway to support the planning effort.

MARCH 2018

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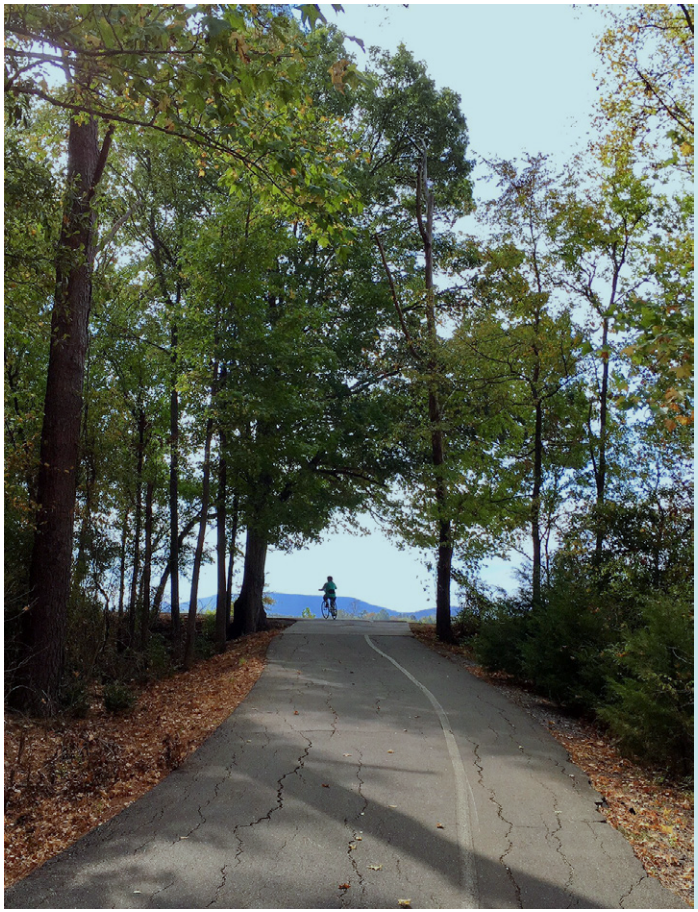
SINGING RIVER TRAIL
Trail Planning Principles



Connectivity and collaboration

By creating an environment that fosters inter-jurisdictional cooperation, the goal of connectivity can be attained.

Inclusiveness and free accessibility to all

The greenway will be an asset available for the use of all of our citizens in urban, suburban and rural settings. The planning process must be transparent and open.

Leverage

Private capital will be used to help stimulate activity and attract state and federal sources that require match funds.

Respect for the land and respect for the landowner

It is critical to respect private property rights, educate landowners about the project, and include them in the process.

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SINGING RIVER TRAIL

Trail Types: *The goal is to have a diversity of trail uses and types, including (but not limited to) hiking trails, biking trails, multipurpose trails, equestrian trails, and water trails*

HIKING TRAIL (natural surface)

GREENWAY TRAIL (paved surface)

RAIL-TRAILS (along railroad corridors)

EQUESTRIAN TRAILS

SIDE PATHS (along roadways)

BIKE LANES (on-street connections)

SEPARATED BIKEWAYS (on-street connections)

BOARDWALK TRAIL (wetland areas)

SAFE TRAIL CROSSINGS

MOUNTAIN BIKE TRAILS

GRAVEL ROADS/TRAILS

Other Trail Types? (Write-in below)

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WHAT TYPE OF TRAIL WOULD YOU LIKE TO SEE INTEGRATED INTO THE SINGING RIVER TRAIL SYSTEM? (RANKED IN ORDER OF DOT VOTING RESULTS)

GREENWAY TRAIL (paved surface)

HIKING TRAIL (natural surface)

BOARDWALK TRAIL (wetland areas)

SEPARATED BIKEWAYS (on-street connections)

GRAVEL ROADS/TRAILS

EQUESTRIAN TRAILS

RAIL-TRAILS (along railroad corridors)

SAFE TRAIL CROSSINGS

BIKE LANES (on-street connections)

MOUNTAIN BIKE TRAILS

SIDE PATHS (along roadways)

Other Trail Types? (Write-in below)

- Birding Trails
- Wide Trails (high traffic areas)
- Trail Connections (connect to other trails)
- Historic Trails & Markers

WHAT AMENITIES WOULD YOU MOST LIKE TO SEE ALONG THE TRAIL? (RANKED IN ORDER OF DOT VOTING RESULTS)

Trailheads & Trail Map Kiosks

#1

Mile Marking

#2

Ecotourism (and environmental education)

#3

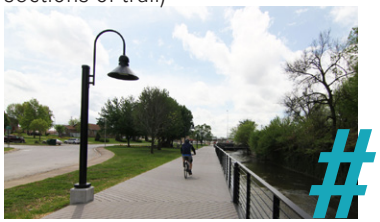
Sitting Areas/ Pocket Parks

#4

Wayfinding Signs

#5

Trail Lighting (in city/town center sections of trail)

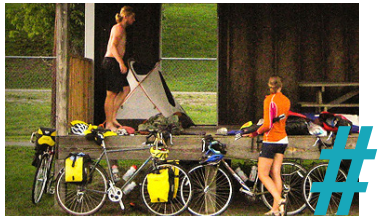


#6

Pet Waste/Trash Stands

#7

Camping Sites along the Trail



#8

Space for Food Trucks or Refreshments (at trailheads or other areas)

#9

Drinking Fountains

#10

Public Art

#11

Agritourism (cycle-to-farm tours)

#12

Bicycle Repair Stands

#13

Police Bicycle Patrol

#14

Trail-Oriented Bicycle Rental

#15

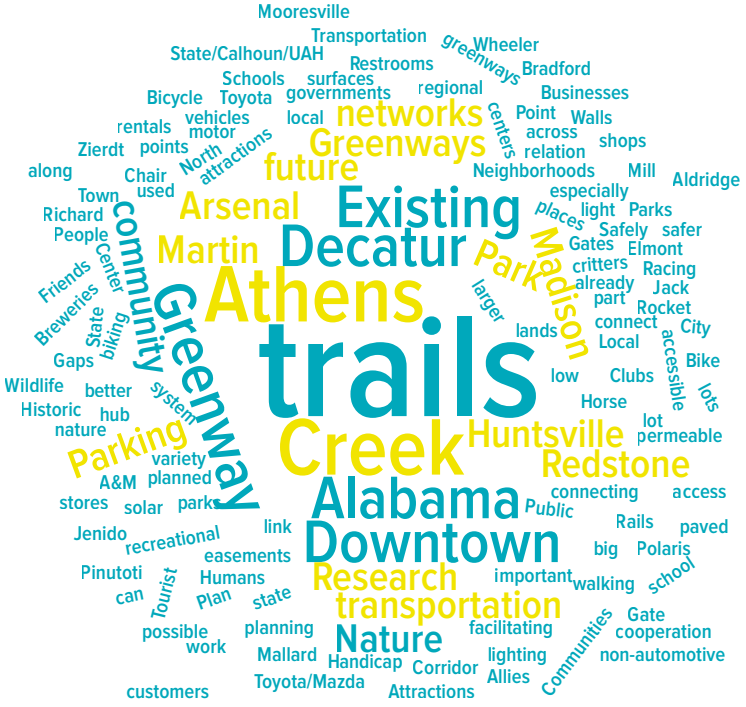
Other Amenities? (Write-in below)

- Bathrooms (11 additional votes)
- Benches
- Recycling Bins
- Campsites, regional through travel

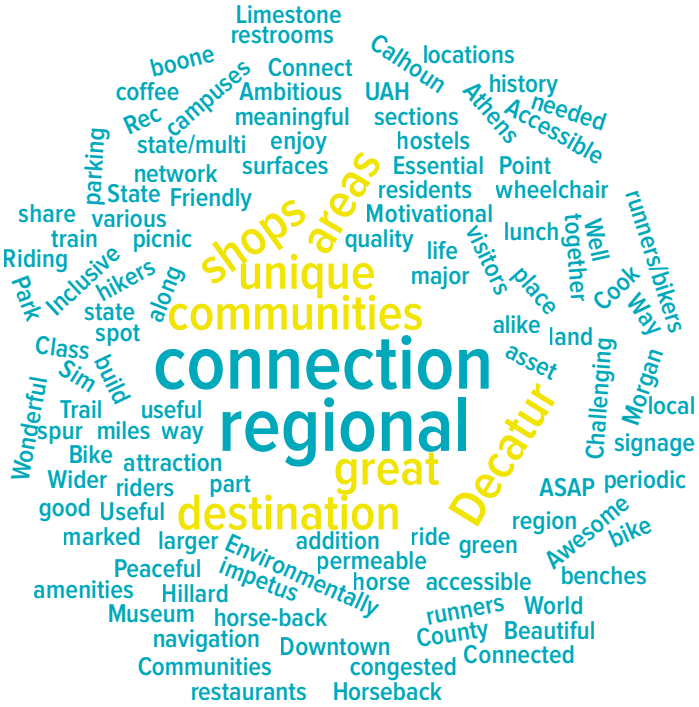
Vision Boards

WHO WILL USE THE SINGING RIVER TRAIL?

THE SINGING RIVER TRAIL WILL CONNECT... ?



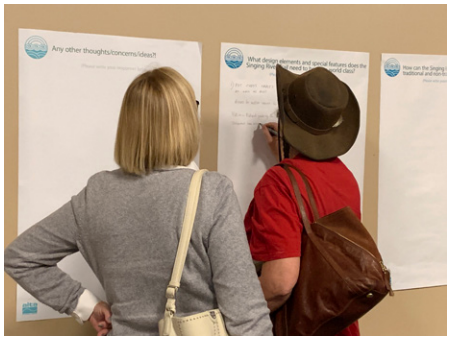
THE SINGING RIVER TRAIL WILL BE... ?



Draft Plan Workshop - February 2019

North Alabama residents attended two public workshops for the Singing River Trail in early February (one in Huntsville and the other in Decatur). Combined, nearly 150 people attended, all in support of the trail and what it could mean to them and to North Alabama. Attendees were able to provide feedback on draft routing maps and listen to a presentation about the project's status. The project team listened to the public to make modifications to the routing. The Decatur mayor kicked off the Decatur event and communicated the positive economic impact this trail could have in North Alabama. Key things heard include:

- Significant support for trail
- Trail MUST cross river to Decatur - consider options like cantilever, ferry, or bus
- Trail needs amenities like water stations, trailheads, bike repair
- Trail must connect well into each community's greenway system, including Indian Creek Greenway, Huntsville greenways, Richard Martin Trail
- Provide trail access for all (recreational uses, commuters, elderly, equestrians, ADA, etc)



FEBRUARY 2019 PUBLIC MEETINGS

Project Website

A project website was established for the Singing River Trail Master Plan. The website provided project background, meeting notes, content downloads, and opportunity for input (links to an interactive map and the online comment form). The website was updated regularly with news stories and blog entries. The website had thousands of individual views, reaching residents across North Alabama.

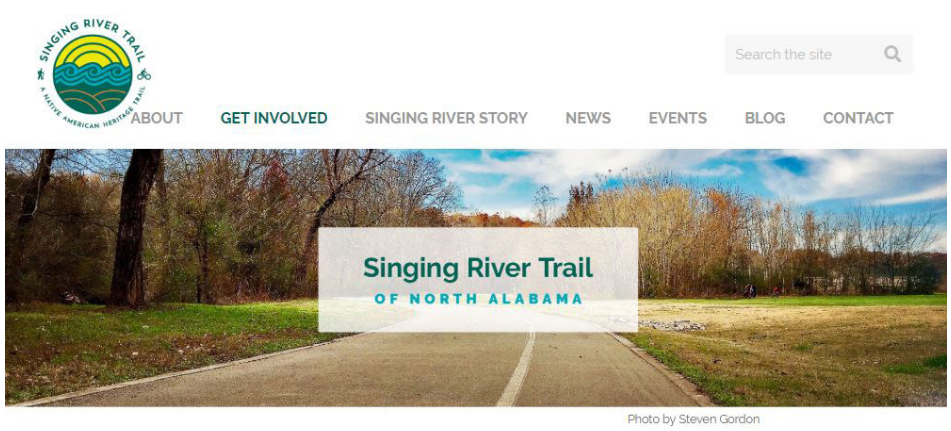


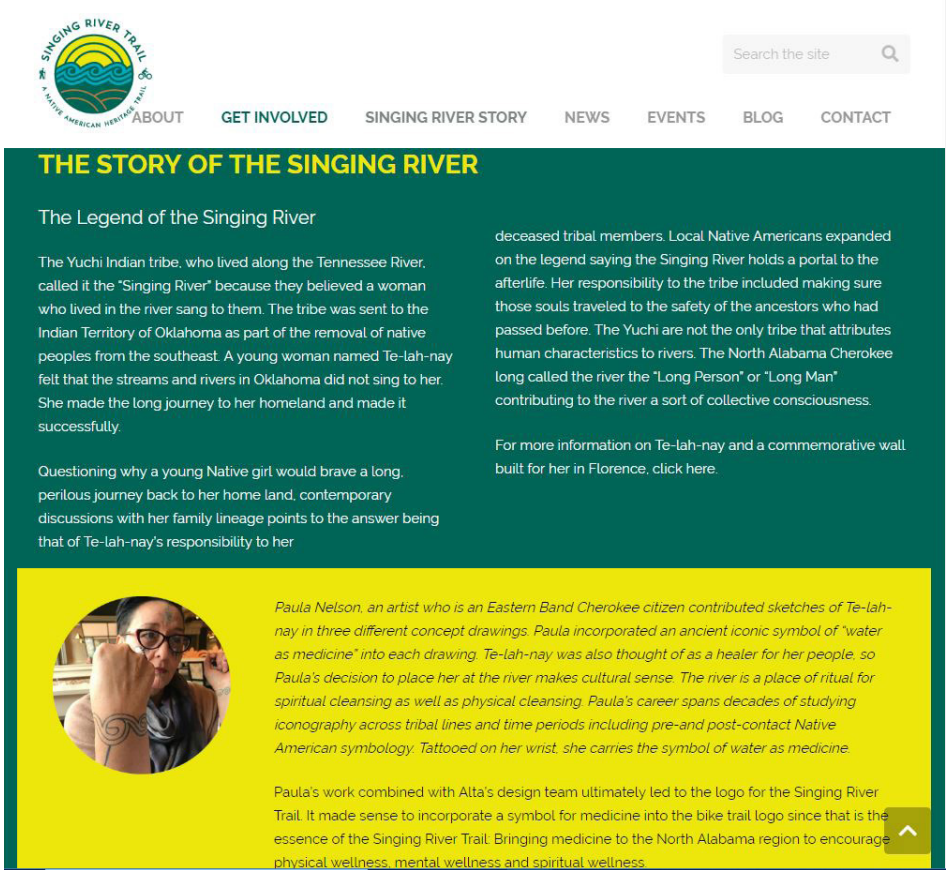
Photo by Steven Gordon

ABOUT

Thank you for your interest in the Singing River Trail. The Singing River Trail is a vision for a long-distance trail in North Alabama that connects our communities, provides active-living opportunities for residents, and spurs further economic development for the region.

We invite you to join this effort led by the Launch 2035: Land Use Planning Task Force. Launch 2035 unites the counties of Limestone, Madison and Morgan in defining a collective 20-year vision to ensure our region continues to prosper. One of the first initiatives is the development of the Singing River Trail Master Plan. This effort will determine the trail routing and guide implementation for the development of the trail that will ultimately connect Huntsville, Madison, Decatur, and Athens. Long-term, the Singing River Trail may traverse across all of north Alabama.

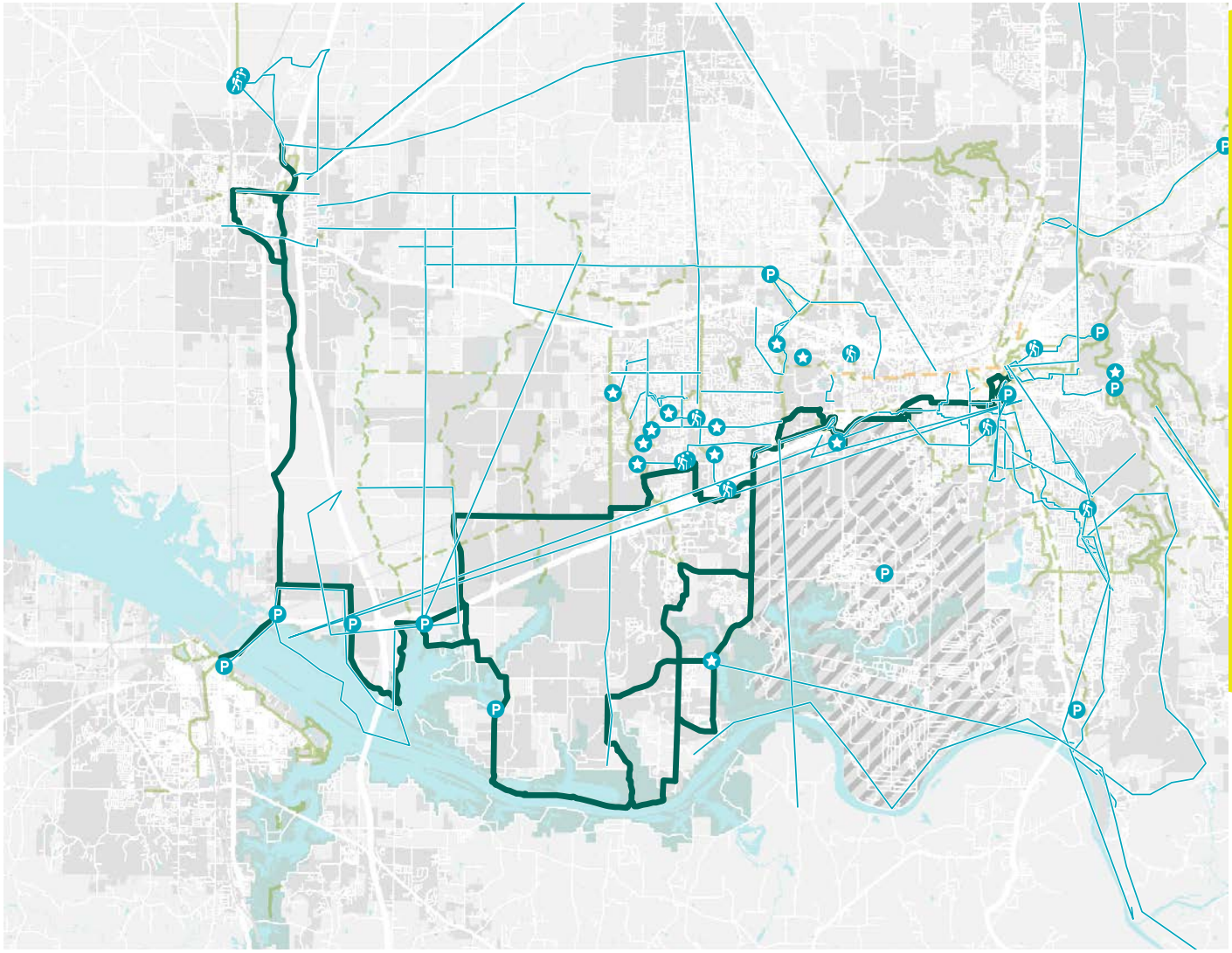
Throughout the rest of 2018, we are asking for the public's input and inviting residents and visitors to help shape our plan in a variety of ways. This project depends on community feedback and support to be successful. There are a number of ways you can participate, including through this web portal. If you have any questions about the project, please let us know.



Online Interactive Map

An online interactive map was provided for residents to provide input on trail routing and destinations to connect. Hundreds gave their input through map markups.

Online Interactive Map Results



User Comments

15 Destination Connections

13 Greenway Access Points

17 Trailheads with Parking

/86 Suggested Routes

February 2019 Public Meeting

Online Comment Form

Over 1,000 residents completed the online comment form. Results can be seen below:

SURVEY RESULTS

1,039 Total Responses

1 HOW MIGHT YOU USE THE PROPOSED SINGING RIVER TRAIL? (Select all that apply)

Health and recreation
89%

Walk/bike to run errands, visit friends
47%

Commuting to work
13%

Other
4%

Commuting to school
3%

2 HOW WOULD YOU TRAVEL ALONG THE TRAIL? (Select all that apply)

Walking
86%

Dog walking
44%

Road or cross bike
43%

Running
40%

Mountain bike
32%

With a stroller
14%

Skating/skateboarding
4%

With a wheelchair
3%

Other
2%

3 WHAT ARE THE THREE MOST IMPORTANT DESTINATIONS TO CONNECT WITH THE SINGING RIVER TRAIL?

1. Parks (80%)

2. Tourist Attractions (45%)

3. Downtowns (44%)

4. Residential areas (34%)
5. Shopping centers (22%)
6. Community centers (15%)
7. Schools (11%)
8. Places of work (10%)
9. City services (6%)
10. Other (5%)

4 WHAT IS MOST IMPORTANT FOR YOUR SINGING RIVER TRAIL EXPERIENCE?

93% Scenic and less direct, connecting to multiple destinations

7% Direct and quickest route, regardless of scenery

5 WHAT TRAIL FEATURES ARE MOST IMPORTANT TO YOU?

(Select a maximum of five)

1. Trailheads/Parking areas (55%)

2. Restrooms (47%)

3. Public access points (44%)

4. Paved Trails (37%)
5. Shade areas (34%)
6. Connections to parks and recreational areas (30%)
7. Trails that are off-road or separated from roadways (27%)
8. Regular Maintenance (26%)
9. Lighting (24%)
10. Kiosk/map at trailheads (23%)
11. Connection to shopping areas and downtowns (20%)
12. Natural surface trails (20%)
13. Seating areas (17%)
14. Wayfinding signage (13%)
15. Water fountains (12%)
16. Access to neighborhoods (11%)
17. Sculpture/art (4%)
18. Grade-separated roadway intersections (3%)
19. Connections to transit (3%)
20. Interpretive signage (3%)
21. Other (3%)
22. Connections to schools (3%)

Social Media

The project team leveraged Steering Committee members representing multiple jurisdictions and agencies across the study area. Strategic "blasts" of information were provided to drive traffic to the project website and to the public workshops. A project Facebook page and Instagram were also developed, drawing people to project information. In addition, Facebook project ads were purchased to reach residents in the project area geography.

Collateral

Multiple "hard" copy collateral were provided and disseminated across the region during the course of the project. Project workshop flyers were developed. Project info cards (the size of business cards) were distributed to drive people to the website. 11x17 and 24x36 project information posters were developed in digital and hard copy form and displayed at regional locations.

Poster:

Info Card (Front):

Info Card (Back):

Come learn about trails and help us envision a 70-mile trail that will connect our communities of North Alabama!

TWO PUBLIC INPUT OPPORTUNITIES:

TUESDAY, FEBRUARY 5, 2019
Space and Rocket Center, Huntsville AL
Education Resource Center
next to the Marriott Hotel
5:00pm-7:00pm

WEDNESDAY, FEBRUARY 6, 2019
Alabama Center for the Arts, Decatur AL
5:00pm-7:00pm

For more information contact Marie Bostick at (256) 534-5263 or email ***marie@landtrustnal.org***

Come learn about trails and help us envision a 70-mile trail that will connect our communities of North Alabama!

TWO PUBLIC INPUT OPPORTUNITIES:

MONDAY, MARCH 5, 2018
Space and Rocket Center, Huntsville AL
Education Resource Center
next to the Marriott Hotel
5:00pm-7:00pm

TUESDAY, MARCH 6, 2018
Calhoun Community College, Decatur AL
Health Sciences Building, Room 109
5:00pm-7:00pm

For more information contact Marie Bostick at (256) 534-5263 or email ***marie@landtrustnal.org***

Appendix C

Local and Regional Planning

Communities along the Singing River Trail are focused on greenway development due to recent planning processes and public priorities. These planning efforts, as they impact the Singing River Trail, are described on the following pages.

HUNTSVILLE

The Big Picture (2014-2016)

The Big Picture is the umbrella comprehensive planning guide for the City of Huntsville. The Big Picture planning process ran from 2014-2016 and featured significant public involvement. One of the most common desires of citizens was to see more greenways. Two of the six principles of the Big Picture are:

Design a Mobile and Accessible Transportation Network: Design a multi-modal city that is safe and easy to navigate. Huntsville roadways, public transit, bike lanes, and greenways work together to create a transportation network that serves people of all ages and abilities.

Develop Healthy and Active Neighborhoods: Develop Huntsville as a place that recognizes that an active population can reduce the cost of healthcare for its citizens and have a positive economic impact on the city's overall well-being. Build a community that by its very nature encourages daily activity and healthy lifestyles.

As part of the overall Big Picture effort, the City developed a comprehensive, well-thought-out, Greenway Master Plan, that sets an ambitious target to get greenways on the ground. The Greenway Plan Update, approved in December 2017, reflects the community's vision for a connected system of trails and greenways. The Plan includes a number of greenway corridors that expand the system westward and southward from Downtown Huntsville - many of these corridors were considered for Singing River Trail routing.

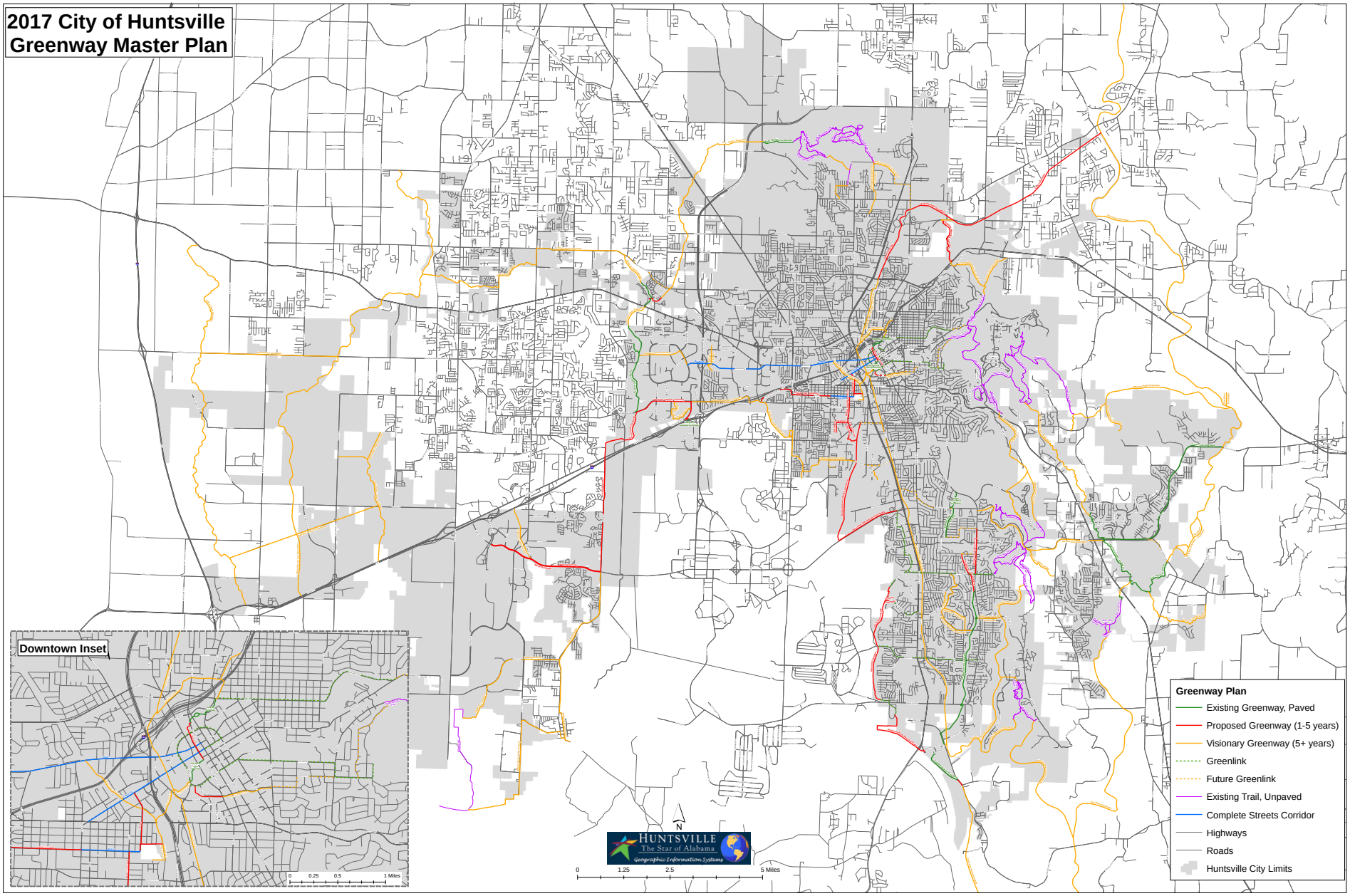
Greenway Master Plan Key Action: *Build 44 miles of greenway trails in 5 years.*

Greenway Master Plan Vision:

- Every residence in the City of Huntsville is within one mile of a greenway.
- The Greenway network is used as a recruiting tool for new industries and workforce.
- The Greenway network is among the most frequently-visited tourist destinations in North Alabama.

Specific greenways of interest pertinent to the Singing River Trail routing:

- Big Spring Greenway (extending from existing Big Spring Greenway to Constellation development)
- PARC Greenway (bike/ped bridge from Downtown over Memorial Parkway and Governors to Lowe Mill)
- Clinton Avenue Complete Street corridor (from Downtown to Campus 805)
- Seminole Drive greenway (from Clinton to Lowe Mill)
- 9th Avenue Complete Street (from Lowe Mill to Triana)
- STEAM Trail Greenway (from 9th and Triana, to Bob Wallace/I-565)
- McDonald Creek Greenway through Botanical Gardens
- Redstone Gateway Greenway (along Old Madison Pike from UAH to Research Park and Indian Creek Greenway)
- Indian Creek Greenway southern extension (from Old Madison Pike/ Indian Creek Greenway to Zierdt Road Greenway)
- Zierdt Greenway (from I-565 to Triana)
- Singing River Greenway (from Triana to Wheeler Wildlife Refuge and Tennessee River)


2017 City of Huntsville
Greenway Master Plan
Downtown Inset
0 0.25 0.5 1 Miles
N
HUNTSVILLE
The Star of Alabama
Geographic Information Systems
0 1.25 2.5 5 Miles
Greenway Plan
Existing Greenway, Paved
Proposed Greenway (1-5 years)
Visionary Greenway (5+ years)
Greenlink
Future Greenlink
Existing Trail, Unpaved
Complete Streets Corridor
Highways
Roads
Huntsville City Limits

DECATUR

One Decatur (2018)

As the Singing River Trail Master Plan was in progress, the City of Decatur completed and adopted their Comprehensive Plan, called One Decatur, in early 2018. The Plan specifically addresses an objective to "Increase efforts to make City more walkable and bike friendly." In addition, specific action steps specifically called out the regional trail initiative (the Singing River Trail) and a desire to make progress towards a bicycle/pedestrian crossing of the Tennessee River:

- **Establish regional trail connections.** Additional multimodal trail segments should be constructed in collaboration with the regional Launch 2035 effort to connect Decatur to cultural, educational, and recreational destinations in the region as well as to create a multimodal connection between Decatur and Huntsville.
- **Establish a bicycle and pedestrian crossing over the Tennessee River.** Currently, the Tennessee River is a major regional barrier with no safe way for cyclists and pedestrians to cross. Providing safe crossing options would improve recreational opportunities, economic connections between communities on both sides of the river, and provide alternate transportation options to alleviate congestion.
  - » Long term: The City should begin coordination with the State Department of Transportation to plan the provision of fixed bicycle and pedestrian crossing facilities over the Tennessee River. Options are diverse, ranging from retrofitting the existing Hwy 31 bridge, adding a separated pathway to the existing railroad crossing, or planning for an eventual new river crossing to include a separated multi-use path. The ultimate solution should be the outcome of a long-term regional conversation.

Other specific, pertinent objectives and actions pulled from One Decatur include:

- Update and formalize a plan to connect the urban trail system
- Complete the Bill Sims Bike trail connecting destinations within the City such as parks and schools and linking to the regional trail network.
- Develop the trail network within the Refuge.
  - » Encourage the Refuge to create more opportunities for passive recreation via trails, boardwalks, blueways, and sites for access. Promote awareness of opportunities for the community to enjoy this unique natural area within the City while supporting its conservation mission (which may mean that some access is seasonal).
- Provide greater community access to the river through parks, multi-use trails, inviting public spaces, and amenities for water-based recreation.
- Establish a water trail (blueway) through the refuge.
- Maximize development opportunities on Decatur's most valuable waterfront areas (The City recognizes there is potential to have better connection to the river, one of its most valuable resources, in a way similar to Chattanooga, TN and Greenville, SC.

MADISON

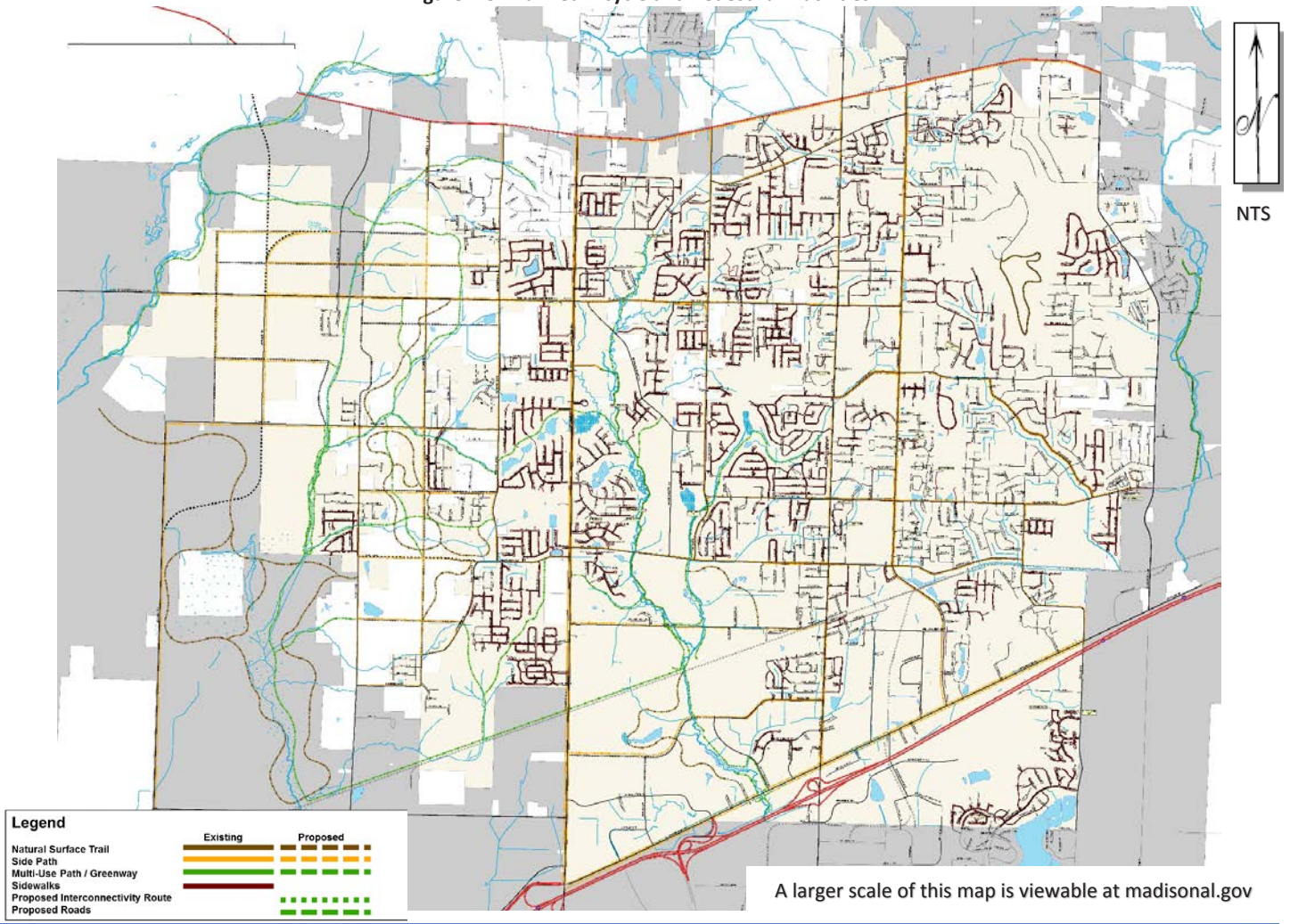
Madison Growth Plan
CITY OF MADISON, ALABAMA

Madison Growth Plan (2010)

Madison's Growth Plan of 2010 placed significant weight on expanding the network of greenways in Madison, connecting outwards to the west and south as Madison grows.

Madison's 2040 Transportation Plan, adopted in April 2018, also highlights greenways as being critical infrastructure to continue growing and connecting.

Figure 4-5: Planned Bicycle and Pedestrian Facilities



The Plan features an updated bike/ped/greenway recommendations map.

Specific greenway projects of impact to the potential Singing River Trail routing are:

- Bradford Creek Greenway southern extension (identified also in the Parks and Recreation Master Plan 2025 and Greenway and Trail Master Plan)
- The Mill Creek Greenway northern extension (identified also in the Parks and Recreation Master Plan 2025 and Greenway and Trail Master Plan)

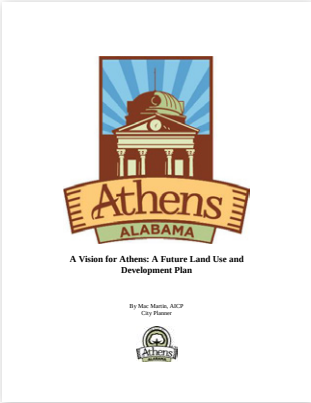
Specific roadway projects that were considered during the Singing River Trail routing include:

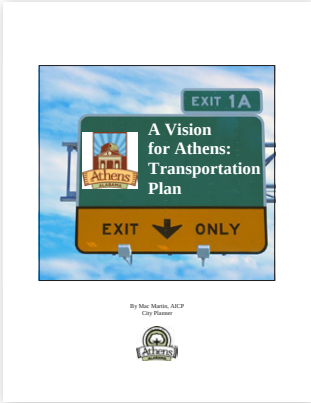
- Old Madison Pike Roadway enhancements (mid-term) – Maintain and improve automobile capacity with targeted enhancements like bridge widening and adding turn/deceleration lanes, while also maintaining and improving traffic flow through access management techniques.
- Old Madison Pike widening from three to four lanes from Hughes Road to Slaughter Road (Visionary)
- Widen Slaughter Road from 2 to 4 lanes from Old Madison Pike to Madison Boulevard (Construction Year 2023)
- Extend Zierdt Road as a 2-lane roadway from 1 mile north of Madison Boulevard to Old Madison Pike (Visionary)

While Madison's greenway network continues to grow, there is very little connectivity to or between Bradford Creek Greenway, Mill Creek Greenway, Indian Creek Greenway, County Line Road side paths, and Hughes Road side path. Therefore, the Plan calls for adding bicycle accommodations along Old Madison Pike, Mill Road, Gillespie Road, Eastview Drive, Balch Road, and Highland Drive.

Roadways were also identified as suitable and feasible for Complete Streets improvements. These include Old Madison Pike (ROW is favorable) and Slaughter Road (to ultimately connect to Zierdt Road sidepath)

Specific corridors were called out for bicycling/walking improvements including Huntsville Brownsferry Road, Old Madison Pike (Complete Street and/or multi-use path to fill critical link between greenways), Zierdt Road (bike/ped infrastructure to connect to Huntsville's multi-use path south of I-565)





ATHENS

A Vision for Athens: A Future Land Use and Development Plan (2013)

The City of Athens has also begun to make greenways and Complete Streets an important objective in recent years. The City's comprehensive plan is: A Vision for Athens: A Future Land Use and Development Plan (2013). Specific objectives and strategies pertinent to the Singing River Trail include the expansion of the Swan Creek Greenway and a Complete Street road diet of Hobbs Street.

One of the objectives of the plan is to "Encourage greater connectivity between developments and existing facilities through more street connections, greenway trails - a more traditional and efficient style of development."

The Plan identifies the Swan Creek Greenway as a key asset to the development of the western quadrants of the interchange. Access to this resource opens up numerous recreational opportunities for residents and visitors alike, connecting residential and commercial developments at the interchange with a multipurpose path along the creek, preserved forested areas, Swan Creek park, and the Sportsplex. With a transformation of Hobbs Street to a complete street format, with good sidewalks and bike lanes, downtown and Athens State University become accessible to interchange development via means other than automobile.

A Vision for Athens: Transportation Plan (2015)

This plan expands upon the objectives of the 2013 Plan by recommending an expansion of the greenway network and a road diet on Hobbs Street.

Objective: Expand greenway network, particularly along Swan Creek, Town Creek, and other tributaries and wooded areas. i) Reasoning: The current greenway trail along Swan Creek is a wonderful recreational trail. However, as we are beginning to see in many other cities, greenway networks can become important transportation routes. By expanding the greenway system as shown on the map, the trail becomes a network for alternative modes of transportation apart from busy major arterial roadways that are not favorable environments to pedestrians and bicycle use. As it is built out, this network connects neighborhoods and destinations, offering a true means of transport in addition to recreation. With a Athens Transportation Plan 56 crossing over Swan Creek near US 72, the network can connect our regional commercial center at Exit 351 with downtown and multiple recreational destinations.

Objective: Provide more opportunities for bicycle travel, particularly along arterials and collectors with lower levels of service. The City can do so in a variety of ways including adding dedicated lanes, constructing multipurpose side paths, widening shoulders, and installing adequate signage and markings.

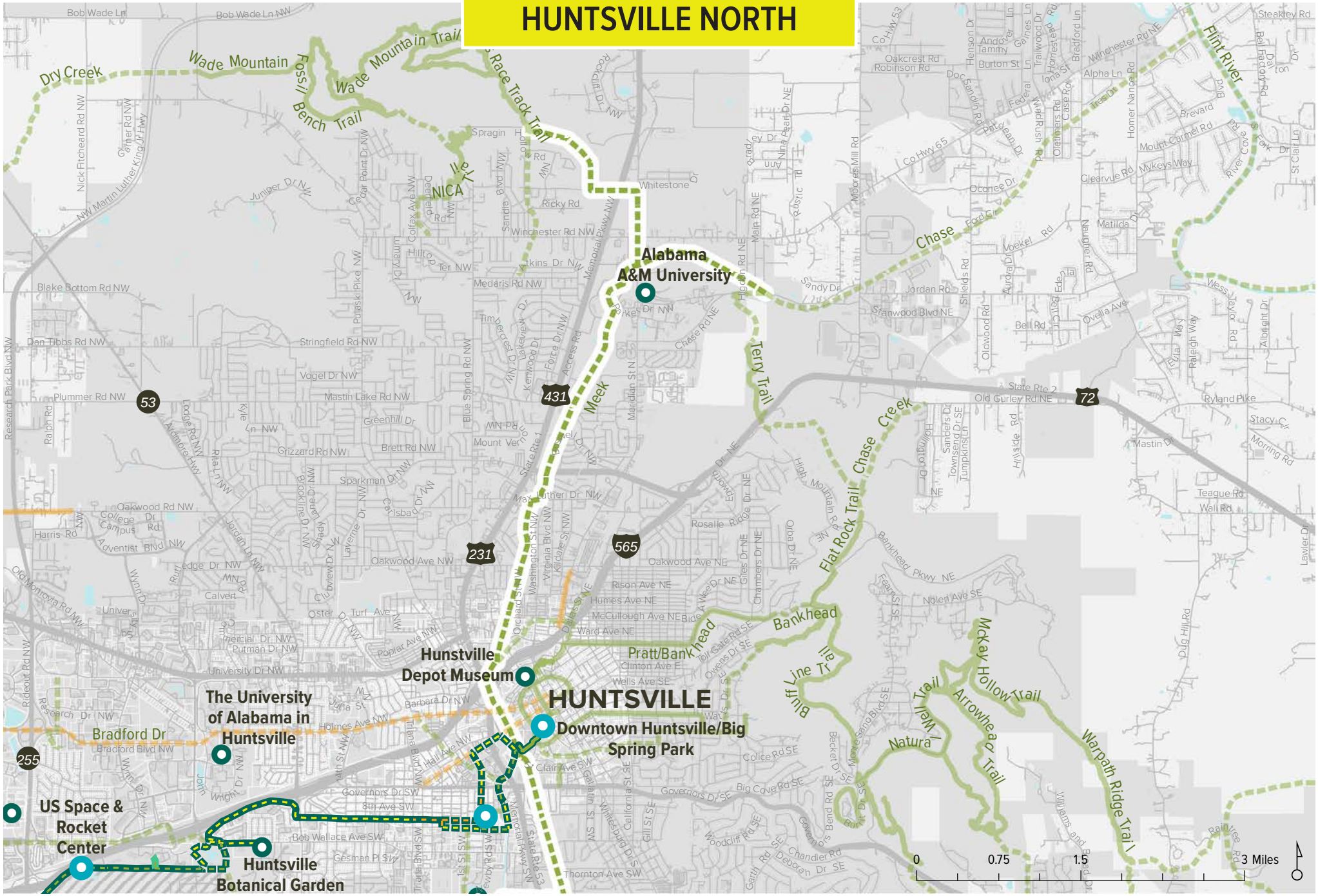
Objective: Improve arterials, collectors, and local streets according to “complete street” design appropriate for said classifications and adjoining land uses. This can include a “road diet” for portions of Hobbs Street and Jefferson Street that have the 4- lane undivided configuration.

Appendix D

Local Trail Connectivity

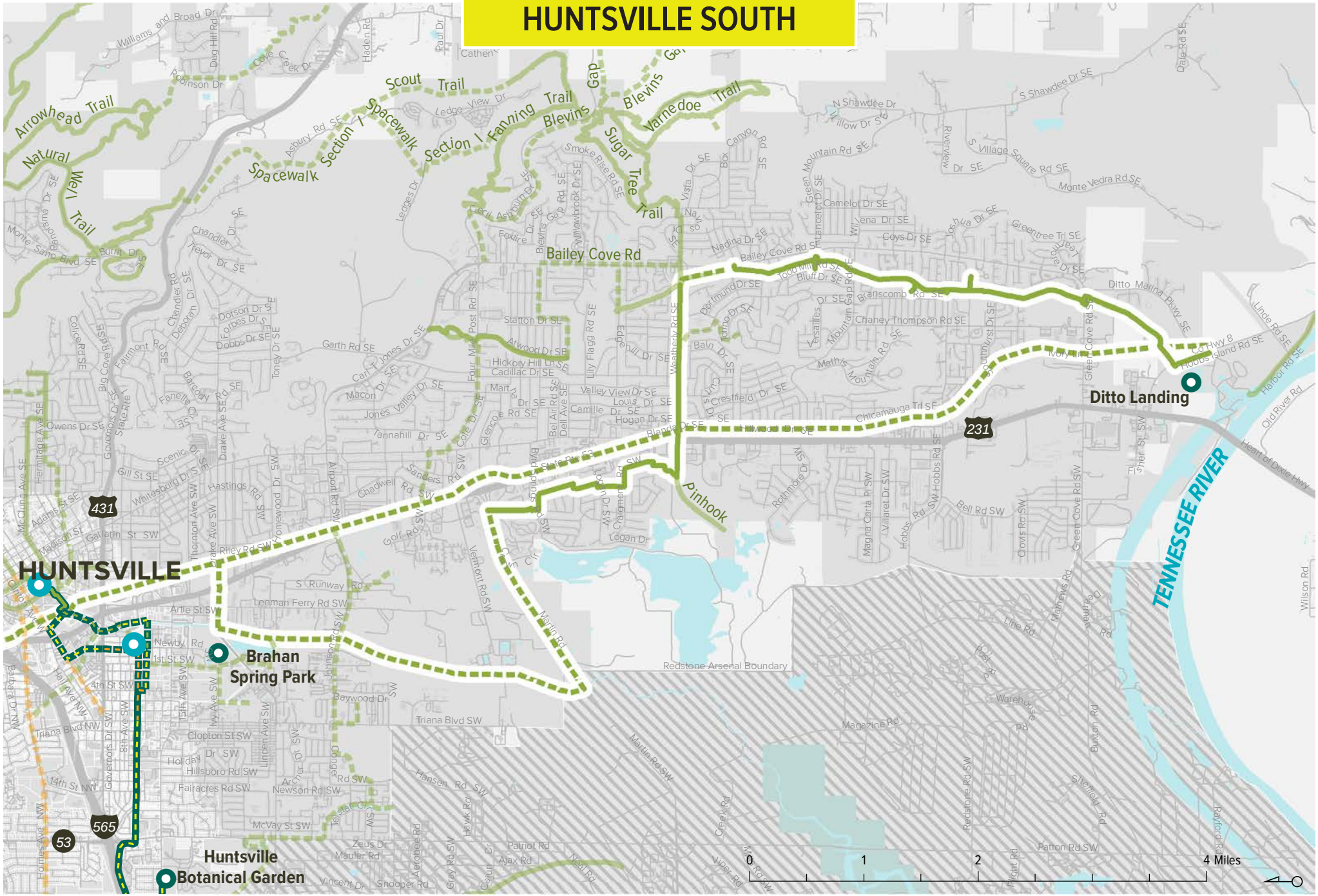
Maps on the following pages illustrate how the Singing River Trail integrates into, and expands, existing trail networks in urban areas along the route.

HUNTSVILLE NORTH



- Proposed Alignment
- Proposed Alternative Alignment
- Proposed Commuter Route
- Existing On-Street Bicycle Facility
- Existing Shared Use Path
- Existing Sidepath
- Existing Unpaved Shared Use Path
- Proposed On-Street Bicycle Facility
- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Trailhead
- Other Destination
- Interstate
- US Highway
- State Road
- County or Local Road
- Railroads
- Fish and Wildlife Service Land
- Redstone Arsenal
- Municipality
- Water

HUNTSVILLE SOUTH



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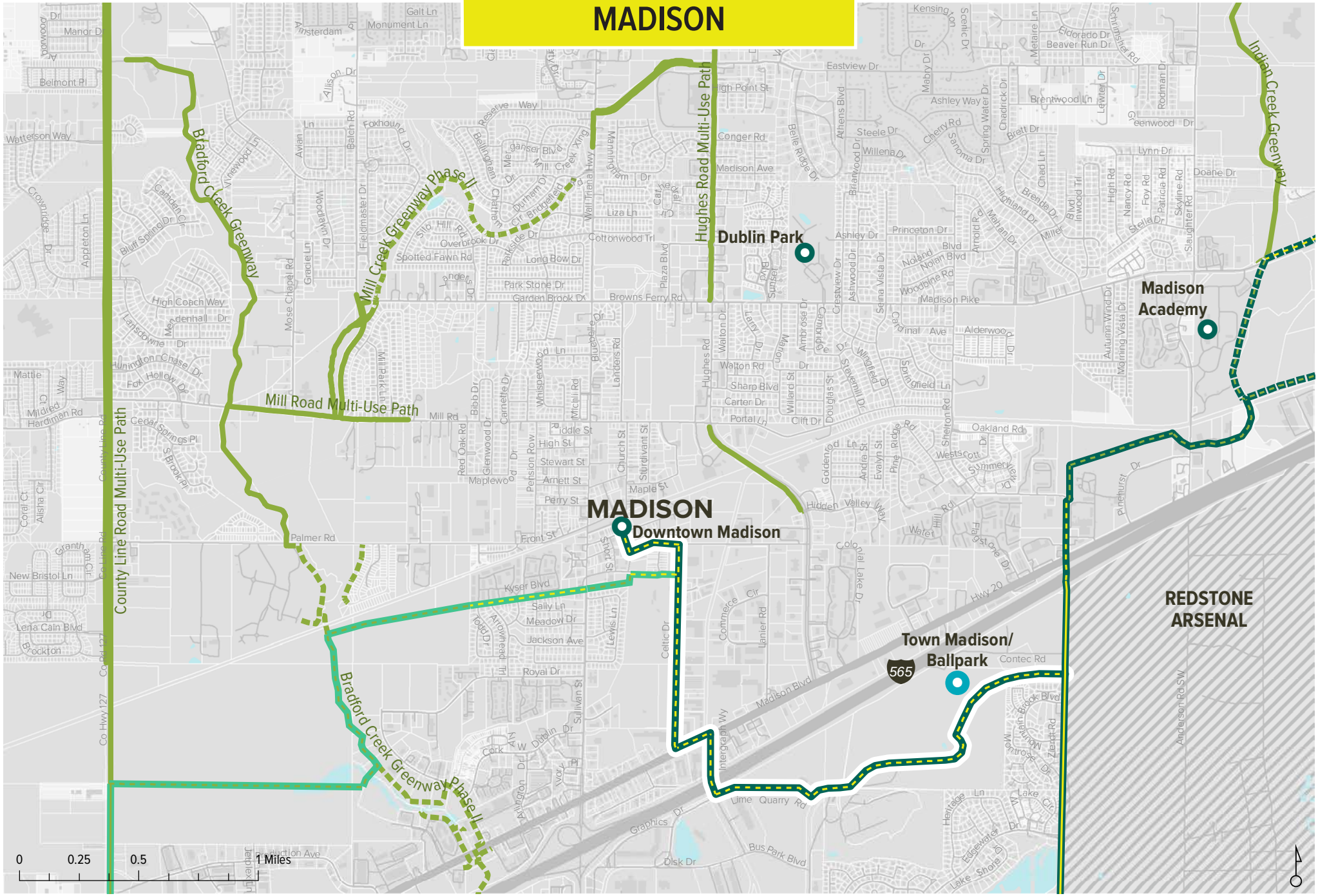
- Municipality
- Water

MADISON



- Proposed Alignment
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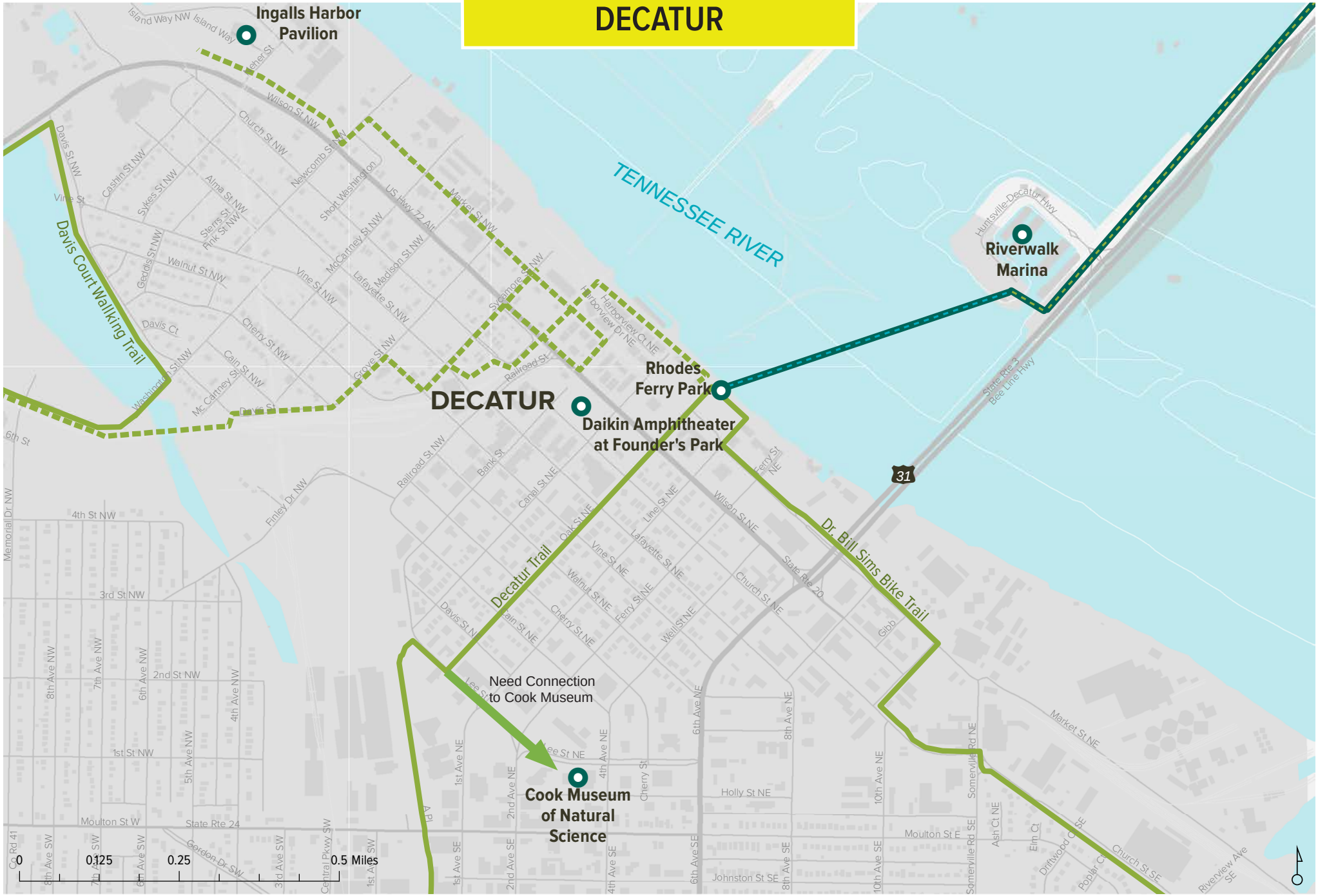

- Proposed Alignment
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- Proposed Commuter Route
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- Existing Shared Use Path
- Existing Sidepath
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- Proposed Shared Use Path
- Proposed Side Path
- Proposed Unpaved Shared Use Path
- Proposed Ferry
- Proposed Trailhead
- Other Destination
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- US Highway
- State Road
- County or Local Road
- Railroads
- Fish and Wildlife Service Land
- Redstone Arsenal
- Municipality
- Water

Appendix E

Cost Estimates

Engineering cost estimates were generated by an assessment of each project and using the most current, local bids to make the most accurate estimate possible. These estimates are done at the planning-level only; costs will vary due to economic conditions and revisions during the design process.

ARROWHEAD LANDING (HWY 20 SIDEPATH PORTION OPTION A: USING EXISTING BRIDGES)

alta PLANNING + DESIGN

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: ARROWHEAD LANDING PHASE 1 OPTION A - SIDEPATH + 2 WAY SBL ON EXISTING BRIDGE-12 FT PATH
PROJECT NUMBER: 2018-037
COUNTY: LIMESTONE

CITY MOORESVILLE
ESTIMATE BY: DEJ/BMB
DATE: 5/6/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$2,800.00	$2,800.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	2000	$20.00	$40,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	1500	$30.00	$45,000.00
214A000	STRUCTURE EXCAVATION	CUYD	2250	$20.00	$45,000.00
214B001	FOUNDATION BACKFILL, COMMERCIAL	CUYD	750	$60.00	$45,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	150	$75.00	$11,250.00
533A098	18" STORM SEWER PIPE (CLASS 3 R.C.)	LF	2750	$60.00	$165,000.00
600A000	MOBILIZATION	LS	1	$75,000.00	$75,000.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	4500	$75.00	$337,500.00
618B003	CONCRETE DRIVEWAY, 6" THICK (INCLUDES WIRE MESH)	SQYD	250	$130.00	$32,500.00
621C008	INLETS, TYPE E	EACH	6	$6,000.00	$36,000.00
623A001	CONCRETE GUTTER (VALLEY)	LF	150	$30.00	$4,500.00
623B002	CONCRETE CURB, TYPE A	LF	400	$30.00	$12,000.00
623C000	COMBINATION CURB & GUTTER, TYPE C	LF	3200	$35.00	$112,000.00
634A000	INDUSTRIAL FENCE, 4 FEET HIGH	LF	600	$200.00	$120,000.00
650A000	TOPSOIL	CUYD	450	$20.00	$9,000.00
654A000	SOLID SODDING	SQYD	3750	$8.00	$30,000.00
680A001	GEOMETRIC CONTROLS	LS	1	$11,100.00	$11,100.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$22,100.00	$22,100.00
701G258	BROKEN YELLOW, CLASS 2, TYPE A TRAFFIC STRIPE	LF	900	$0.50	$450.00
701G263	SOLID YELLOW, CLASS 2, TYPE A TRAFFIC STRIPE	LF	1800	$1.00	$1,800.00
703A002	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	SQFT	1300	$5.00	$6,500.00
	FLEXIBLE DELINEATORS	EACH	40	$100.00	$4,000.00
	SAFETY RAIL	LF	300	$50.00	$15,000.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$30,000.00	$30,000.00
				ITEMS COST:	$1,213,500.00
	INFLATION FACTOR	2	YEARS	4.0%	$99,021.60
				CONSTRUCTION TOTALS (2021)	$1,312,521.60
	CONTINGENCIES			10.0%	$131,252.16
	MINOR ITEMS			10.0%	$131,252.16
	UTILITIES			0.0%	$0.00
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$1,575,025.92

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ARROWHEAD LANDING (HWY 20 SIDEPATH PORTION OPTION B: STANDALONE BIKE/PED BRIDGES)

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: ARROWHEAD LANDING PHASE 1 OPTION B - SIDEPATH + BRIDGES -12 FT PATH
PROJECT NUMBER: 2018-037
COUNTY: LIMESTONE

CITY MOORESVILLE
ESTIMATE BY: DEJ/BMB
DATE: 5/6/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$12,200.00	$12,200.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	3500	$20.00	$70,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	3250	$30.00	$97,500.00
214A000	STRUCTURE EXCAVATION	CUYD	2250	$20.00	$45,000.00
214B001	FOUNDATION BACKFILL, COMMERCIAL	CUYD	750	$60.00	$45,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	175	$75.00	$13,125.00
533A098	18" STORM SEWER PIPE (CLASS 3 R.C.)	LF	2750	$60.00	$165,000.00
600A000	MOBILIZATION	LS	1	$194,200.00	$194,200.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	4800	$75.00	$360,000.00
618B003	CONCRETE DRIVEWAY, 6" THICK (INCLUDES WIRE MESH)	SQYD	250	$130.00	$32,500.00
621C008	INLETS, TYPE E	EACH	6	$6,000.00	$36,000.00
623A001	CONCRETE GUTTER (VALLEY)	LF	150	$30.00	$4,500.00
623C000	COMBINATION CURB & GUTTER, TYPE C	LF	3600	$35.00	$126,000.00
650A000	TOPSOIL	CUYD	400	$20.00	$8,000.00
654A000	SOLID SODDING	SQYD	3600	$8.00	$28,800.00
680A001	GEOMETRIC CONTROLS	LS	1	$24,300.00	$24,300.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$48,600.00	$48,600.00
703A002	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	SQFT	75	$5.00	$375.00
	BIKE/PED BRIDGE NO. 1	LF	235	$3,000.00	$705,000.00
	BIKE/PED BRIDGE NO. 2	LF	200	$3,000.00	$600,000.00
	SAFETY RAIL	LF	800	$50.00	$40,000.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$50,000.00	$50,000.00
				ITEMS COST:	$2,706,100.00
	INFLATION FACTOR	2 YEARS		4.0%	$220,817.76
				CONSTRUCTION TOTALS (2021)	$2,926,917.76
	CONTINGENCIES			10.0%	$292,691.78
	MINOR ITEMS			5.0%	$146,345.89
	UTILITIES			0.0%	$0.00
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$3,365,955.42

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ARROWHEAD LANDING (ARROWHEAD LANDING DIRT ROAD PORTION)

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: ARROWHEAD LANDING PHASE 2 - STONE DUST TRAIL REHABILITATION
PROJECT NUMBER: 2018-037
COUNTY: LIMESTONE

TOWN MOORESVILLE
ESTIMATE BY: DEJ/BMB
DATE: 5/6/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$5,000.00	$5,000.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	4250	$30.00	$127,500.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	100	$40.00	$4,000.00
430B003	AGGREGATE SURFACING (ALDOT #57)	TON	3250	$50.00	$162,500.00
430B004	AGGREGATE SURFACING (ALDOT #810)	TON	1750	$50.00	$87,500.00
600A000	MOBILIZATION	LS	1	$49,400.00	$49,400.00
650A000	TOPSOIL	CUYD	500	$20.00	$10,000.00
654A000	SOLID SODDING	SQYD	4500	$8.00	$36,000.00
665J002	SILT FENCE	LF	19000	$3.50	$66,500.00
680A001	GEOMETRIC CONTROLS	LS	1	$9,900.00	$9,900.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$9,900.00	$9,900.00
				ITEMS COST:	$568,200.00
	INFLATION FACTOR	2 YEARS		4.0%	$46,365.12
				CONSTRUCTION TOTALS (2021)	$614,565.12
	CONTINGENCIES			20.0%	$122,913.02
	MINOR ITEMS			10.0%	$61,456.51
	UTILITIES			0.0%	$0.00
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$798,934.66

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HOBBS STREET

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: SINGING RIVER TRAIL, HOBBS STREET FROM CLINTON ST TO US 31
PROJECT NUMBER: 2017-318
COUNTY: LIMESTONE

CITY ATHENS
ESTIMATE BY: BMB
DATE: 5/7/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$3,200.00	$3,200.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	800	$20.00	$16,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	600	$30.00	$18,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	175	$75.00	$13,125.00
405A000	TACK COAT	GAL	2094	$7.50	$15,705.00
407B000	JOINT SEALANT FOR HOT MIX ASPHALT PAVEMENT	MILE	3	$500.00	$1,500.00
408A052	PLANING EXISTING PAVEMENT (APPROXIMATELY 1.10" THRU 2.0" THICK)	SQYD	26166	$3.00	$78,498.00
410H000	MATERIAL REMIXING DEVICE	EACH	1	$20,000.00	$20,000.00
424A280	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE E	TON	2081	$125.00	$260,125.00
600A000	MOBILIZATION	LS	1	$101,200.00	$101,200.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	2630	$75.00	$197,250.00
618B003	CONCRETE DRIVEWAY, 6" THICK (INCLUDES WIRE MESH)	SQYD	700	$130.00	$91,000.00
623A001	CONCRETE GUTTER (VALLEY)	LF	625	$30.00	$18,750.00
623B002	CONCRETE CURB, TYPE A	LF	8750	$30.00	$262,500.00
623C000	COMBINATION CURB & GUTTER, TYPE C	LF	400	$35.00	$14,000.00
650A000	TOPSOIL	CUYD	25	$20.00	$500.00
654A000	SOLID SODDING	SQYD	150	$8.00	$1,200.00
680A001	GEOMETRIC CONTROLS	LS	1	$12,700.00	$12,700.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$25,300.00	$25,300.00
701G258	BROKEN YELLOW, CLASS 2, TYPE A TRAFFIC STRIPE	LF	15000	$0.50	$7,500.00
701G263	SOLID YELLOW, CLASS 2, TYPE A TRAFFIC STRIPE	LF	10000	$1.00	$10,000.00
703A002	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	SQFT	1700	$5.00	$8,500.00
	PLANTER BOX	EACH	85	$1,000.00	$85,000.00
	SIGNAL IMPROVEMENTS AT BEATY ST	LS	1	$30,000.00	$30,000.00
	SIGNAL IMPROVEMENTS AT SHAW ST	LS	1	$15,000.00	$15,000.00
	SIGNAL IMPROVEMENTS AT US 31	LS	1	$50,000.00	$50,000.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$50,000.00	$50,000.00
				ITEMS COST:	$1,406,553.00
	INFLATION FACTOR	2	YEARS	4.0%	$114,774.72
				CONSTRUCTION TOTALS (2021)	$1,521,327.72
	CONTINGENCIES			10.0%	$152,132.77
	MINOR ITEMS			5.0%	$76,066.39
	UTILITIES			0.0%	$0.00
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$1,749,526.88

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WHEELER NATIONAL WILDLIFE REFUGE

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: SINGING RIVER TRAIL, WHEELER REFUGE
PROJECT NUMBER: 2017-318
COUNTY: LIMESTONE/MADISON

TOWN TRIANA TO MOORESVILLE
ESTIMATE BY: BMB
DATE: 5/6/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$10,000.00	$10,000.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	6500	$20.00	$130,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	200	$30.00	$6,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	10	$75.00	$750.00
405A000	TACK COAT	GAL	72	$7.50	$540.00
424A369	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, WIDENING, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	60	$200.00	$12,000.00
424B661	SUPERPAVE BITUMINOUS CONCRETE UPPER BINDER LAYER, WIDENING, 3/4" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	125	$200.00	$25,000.00
424B692	SUPERPAVE BITUMINOUS CONCRETE LOWER BINDER LAYER, WIDENING, 1" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	160	$200.00	$32,000.00
430B003	AGGREGATE SURFACING (ALDOT #57)	TON	4750	$50.00	$237,500.00
430B004	AGGREGATE SURFACING (ALDOT #810)	TON	2500	$50.00	$125,000.00
600A000	MOBILIZATION	LS	1	$79,800.00	$79,800.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	250	$80.00	$20,000.00
623B002	CONCRETE CURB, TYPE A	LF	500	$35.00	$17,500.00
650A000	TOPSOIL	CUYD	275	$20.00	$5,500.00
654A000	SOLID SODDING	SQYD	2500	$8.00	$20,000.00
665J002	SILT FENCE	LF	55440	$3.50	$194,040.00
680A001	GEOMETRIC CONTROLS	LS	1	$20,000.00	$20,000.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$20,000.00	$20,000.00
	BATHROOM WITH SELF-COMPOSTING TOILETS	LS	1	$100,000.00	$100,000.00
	BENCH	EA	2	$2,500.00	$5,000.00
	BIKE RACK	EA	3	$1,500.00	$4,500.00
	BICYCLE REPAIR STATION	EA	1	$4,000.00	$4,000.00
	LANDSCAPING	LS	1	$40,000.00	$40,000.00
	INFORMATION KIOSK	EA	1	$7,500.00	$7,500.00
	PICNIC TABLE	EA	2	$3,500.00	$7,000.00
	TRASH RECEPTACLE	EA	2	$1,500.00	$3,000.00
				ITEMS COST:	$1,126,630.00
	INFLATION FACTOR	2	YEARS	4.0%	$91,933.01
				CONSTRUCTION TOTALS (2021)	$1,218,563.01
	CONTINGENCIES			10.0%	$121,856.30
	MINOR ITEMS			5.0%	$60,928.15
	UTILITIES			2.0%	$24,371.26
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$1,425,718.72

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TRASH PANDA TRAIL

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: TRASH PANDA TRAIL
PROJECT NUMBER: 2018-037
COUNTY: MADISON

CITY MADISON
ESTIMATE BY: DEJ/BMB
DATE: 5/6/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$3,800.00	$3,800.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	6500	$20.00	$130,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	3000	$30.00	$90,000.00
214A000	STRUCTURE EXCAVATION	CUYD	1250	$20.00	$25,000.00
214B001	FOUNDATION BACKFILL, COMMERCIAL	CUYD	400	$60.00	$24,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	100	$75.00	$7,500.00
533A098	18" STORM SEWER PIPE (CLASS 3 R.C.)	LF	1500	$60.00	$90,000.00
600A000	MOBILIZATION	LS	1	$118,700.00	$118,700.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	10200	$75.00	$765,000.00
618B003	CONCRETE DRIVEWAY, 6" THICK (INCLUDES WIRE MESH)	SQYD	653	$130.00	$84,890.00
621C008	INLETS, TYPE E	EACH	4	$6,000.00	$24,000.00
623A001	CONCRETE GUTTER (VALLEY)	LF	400	$30.00	$12,000.00
623C000	COMBINATION CURB & GUTTER, TYPE C	LF	2000	$35.00	$70,000.00
650A000	TOPSOIL	CUYD	1250	$20.00	$25,000.00
654A000	SOLID SODDING	SQYD	10500	$8.00	$84,000.00
680A001	GEOMETRIC CONTROLS	LS	1	$14,900.00	$14,900.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$29,700.00	$29,700.00
703A002	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	SQFT	400	$5.00	$2,000.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$50,000.00	$50,000.00
				ITEMS COST:	$1,650,490.00
	INFLATION FACTOR	2 YEARS		4.0%	$134,679.98
				CONSTRUCTION TOTALS (2021)	$1,785,169.98
	CONTINGENCIES			10.0%	$178,517.00
	MINOR ITEMS			5.0%	$89,258.50
	UTILITIES			2.0%	$35,703.40
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$2,088,648.88

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DECATUR BOARDWALK

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: SINGING RIVER TRAIL, DECATUR BOARDWALK - 12 FT PATH
PROJECT NUMBER: 2017-318
COUNTY: MORGAN

CITY DECATUR
ESTIMATE BY: BMB
DATE: 5/6/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$17,700.00	$17,700.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	1000	$20.00	$20,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	500	$30.00	$15,000.00
230A000	ROADBED PROCESSING	RBST	12	$500.00	$6,000.00
405A000	TACK COAT	GAL	130	$7.50	$975.00
410H000	MATERIAL REMIXING DEVICE	EACH	1	$20,000.00	$20,000.00
424A369	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, WIDENING, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	125	$175.00	$21,875.00
424B661	SUPERPAVE BITUMINOUS CONCRETE UPPER BINDER LAYER, WIDENING, 3/4" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	150	$175.00	$26,250.00
600A000	MOBILIZATION	LS	1	$563,600.00	$563,600.00
650A000	TOPSOIL	CUYD	180	$20.00	$3,600.00
654A000	SOLID SODDING	SQYD	1600	$8.00	$12,800.00
680A001	GEOMETRIC CONTROLS	LS	1	$140,900.00	$140,900.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$140,900.00	$140,900.00
	CONCRETE BOARDWALK	LF	4500	$1,500.00	$6,750,000.00
	SAFETY RAIL	LF	350	$50.00	$17,500.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$150,000.00	$150,000.00
				ITEMS COST:	$7,907,100.00
	INFLATION FACTOR	2 YEARS		4.0%	$645,219.36
				CONSTRUCTION TOTALS (2021)	$8,552,319.36
	CONTINGENCIES			10.0%	$855,231.94
	MINOR ITEMS			3.0%	$256,569.58
	UTILITIES			0.3%	$21,380.80
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$9,685,501.68

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INDIAN CREEK GREENWAY EXTENSION

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: INDIAN CREEK EXTENSION - 12 FT PATH
PROJECT NUMBER: 2018-037
COUNTY: MADISON

CITY MADISON
ESTIMATE BY: DEJ/BMB
DATE: 5/7/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$54,700.00	$54,700.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	5300	$20.00	$106,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	2650	$30.00	$79,500.00
230A000	ROADBED PROCESSING	RBST	90	$500.00	$45,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	100	$75.00	$7,500.00
405A000	TACK COAT	GAL	1000	$7.50	$7,500.00
410H000	MATERIAL REMIXING DEVICE	EACH	1	$20,000.00	$20,000.00
424A369	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, WIDENING, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	850	$150.00	$127,500.00
424B661	SUPERPAVE BITUMINOUS CONCRETE UPPER BINDER LAYER, WIDENING, 3/4" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	1050	$150.00	$157,500.00
600A000	MOBILIZATION	LS	1	$109,300.00	$109,300.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	2600	$75.00	$195,000.00
618B003	CONCRETE DRIVEWAY, 6" THICK (INCLUDES WIRE MESH)	SQYD	400	$130.00	$52,000.00
623A001	CONCRETE GUTTER (VALLEY)	LF	200	$30.00	$6,000.00
623C000	COMBINATION CURB & GUTTER, TYPE C	LF	2000	$35.00	$70,000.00
650A000	TOPSOIL	CUYD	2100	$20.00	$42,000.00
652A100	SEEDING	ACRE	3.50	$1,500.00	$5,250.00
654A000	SOLID SODDING	SQYD	3000	$8.00	$24,000.00
680A001	GEOMETRIC CONTROLS	LS	1	$13,700.00	$13,700.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$27,400.00	$27,400.00
703A002	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	SQFT	300	$5.00	$1,500.00
	CANOPY (RAILROAD UNDERPASS)	LS	1	$75,000.00	$75,000.00
	CONCRETE BOARDWALK - LOCATION 1	LF	100	$1,000.00	$100,000.00
	CONCRETE BOARDWALK - LOCATION 2	LF	100	$1,000.00	$100,000.00
	RECTANGULAR RAPID FLASHING BEACON	EACH	5	$10,000.00	$50,000.00
	SAFETY RAIL	LF	500	$50.00	$25,000.00
	SIGNAL IMPROVEMENTS AT MADISON AND ZIERDT	LS	1	$50,000.00	$50,000.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$20,000.00	$20,000.00
				ITEMS COST:	$1,571,350.00
	INFLATION FACTOR	2	YEARS	4.0%	$128,222.16
				CONSTRUCTION TOTALS (2021)	$1,699,572.16
	CONTINGENCIES			10.0%	$169,957.22
	MINOR ITEMS			10.0%	$169,957.22
	UTILITIES			0.0%	$0.00
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$2,039,486.59

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SPACE AND ROCKET CENTER

ENGINEER'S ESTIMATE - CONCEPTUAL DESIGN

DESCRIPTION: ROCKET CORRIDOR SEGMENT - 12 FT PATH
PROJECT NUMBER: 2017-318
COUNTY: MADISON

CITY HUNTSVILLE
ESTIMATE BY: BMB
DATE: 5/7/2019
REVISED:
CHECKED BY: MSR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
201A002	CLEARING AND GRUBBING (MAXIMUM ALLOWABLE BID $	LS	1	$21,900.00	$21,900.00
210A000	UNCLASSIFIED EXCAVATION	CUYD	10500	$20.00	$210,000.00
210D001	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	CUYD	6000	$30.00	$180,000.00
214A000	STRUCTURE EXCAVATION	CUYD	150	$20.00	$3,000.00
214B001	FOUNDATION BACKFILL, COMMERCIAL	CUYD	50	$60.00	$3,000.00
230A000	ROADBED PROCESSING	RBST	90	$500.00	$45,000.00
305B077	CRUSHED AGGREGATE, SECTION 825, FOR MISCELLANEOUS USE	TON	10	$80.00	$800.00
405A000	TACK COAT	GAL	900	$7.50	$6,750.00
410H000	MATERIAL REMIXING DEVICE	EACH	1	$20,000.00	$20,000.00
424A369	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, WIDENING, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	750	$150.00	$112,500.00
424B661	SUPERPAVE BITUMINOUS CONCRETE UPPER BINDER LAYER, WIDENING, 3/4" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	TON	900	$150.00	$135,000.00
533A098	18" STORM SEWER PIPE (CLASS 3 R.C.)	LF	150	$65.00	$9,750.00
600A000	MOBILIZATION	LS	1	$87,500.00	$87,500.00
618A000	CONCRETE SIDEWALK, 4" THICK	SQYD	950	$75.00	$71,250.00
619A002	18" ROADWAY PIPE END TREATMENT, CLASS 1	EACH	6	$1,500.00	$9,000.00
623B002	CONCRETE CURB, TYPE A	LF	400	$40.00	$16,000.00
650A000	TOPSOIL	CUYD	2000	$20.00	$40,000.00
652A100	SEEDING	ACRE	3.00	$1,500.00	$4,500.00
654A000	SOLID SODDING	SQYD	2000	$8.00	$16,000.00
680A001	GEOMETRIC CONTROLS	LS	1	$21,900.00	$21,900.00
698A000	CONSTRUCTION FUEL (MAXIMUM BID LIMITED TO $	LS	1	$21,900.00	$21,900.00
	SAFETY RAIL	LF	500	$50.00	$25,000.00
	TEMPORARY TRAFFIC CONTROL	LS	1	$60,000.00	$60,000.00
	TRAFFIC SIGNAL AT BOB WALLACE CROSSING	LS	1	$125,000.00	$125,000.00
				ITEMS COST:	$1,245,750.00
	INFLATION FACTOR	2	YEARS	4.0%	$101,653.20
				CONSTRUCTION TOTALS (2021)	$1,347,403.20
	CONTINGENCIES			15.0%	$202,110.48
	MINOR ITEMS			10.0%	$134,740.32
	UTILITIES			2.0%	$26,948.06
	RIGHTS OF WAY			0.0%	$0.00
				TOTAL ESTIMATED COST (2021)	$1,711,202.06

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Acknowledgements

Commission Chairman
Dale W. Strong

Senator
Slade
Blackwell

Senator
Arthur Orr

Speaker
Mac McCutcheon

Joe Campbell

Drs. Aruna and
Amit Arora

Friends of Singing River Trail:

Clint Shelton, Decatur Daily; Mike Cole, Wilmer & Lee Attorneys; Steve Raby, Direct Communications; David Spillers, Huntsville Hospital Health System; Mike Dalen

Partner

Prepared By