
JACKSON COUNTY GREENWAYS PROJECT

Conservation, Recreation, Transportation

COMPREHENSIVE MASTER PLAN



*presented to the Jackson County Board of Commissioners
by the Jackson County Recreation Department and the Greenway Advisory Committee
with the assistance of the residents of Jackson County*



Jackson County, North Carolina ■ June 2009



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ACKNOWLEDGEMENTS

The creation of this Master Plan was made possible through the support of the Jackson County Board of Commissioners, including Chairman Brian McMahan, Vice-Chairman Tom Massie, Commissioner Joe Cowan, Commissioner William Shelton and Commissioner Mark Jones, and County Manager Kenneth Westmoreland. The Southwest Commission RPO and NCDOT Division 14 were invaluable in sharing staff, resources, and planning assistance.

As always, we appreciate all of you for this progressive and proactive approach to land conservation and recreation priorities, and we look forward to working with you in the future.

The Jackson County Greenway Advisory Committee and the Jackson County Recreation/Parks Department would like to thank the following individuals for their expertise, resources, and support:

- MS. JIMMI BUELL
- MR. RYAN SHERBY
- MR. DON KOSTELEC
- DR. GARY WEIN
- MR. DAVID BATES
- MS. LINDA CABLE
- MR. ROBBY SHELTON
- MR. HILLRIE QUIN
- MR. JIM MADISON
- MR. DAVID TUCH
- MR. TONY ELDERS
- MR. KEVIN JAMISON

This document was prepared and approved with the assistance of the 2009 Jackson County Greenway Advisory Committee. Members at the time of approval included the following volunteers:

Alex Bell, Carrie Blaskowski (ex-officio), Billie Bryson, Debby Cowan, Kent Cranford, Linda Dickert, Sarah Graham, Allan Grant, County Commissioner Mark Jones, Annette Kesgen & James Wallace

The Department and the Committee also wish to thank the hundreds of Jackson County residents who offered their support and feedback during the creation of this plan.

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“In the end,
our society
will be
defined
not only by
what we
create,
but by what
we refuse to
destroy.”

– John Sawhill

HISTORY AND INTRODUCTION

The Jackson County Greenways Project is intended to enhance the quality of life in Jackson County by implementing and promoting a comprehensive greenway trail system throughout the county, emphasizing the benefits to the health of our citizens, the environment in which we live, and the protection of our natural resources. Our county and municipal leaders believe strongly that conservation of natural lands, preservation of water quality, increased economic development, enhanced wellness opportunities and expanded educational centers are key factors for the health of our communities and for generations to come.

Over the past two decades, greenway and conservation projects have attempted to absorb some of the consequences of rapid growth and development in regions across America, and western North Carolina is no exception. Like many mountain counties, Jackson is blessed with unrivaled natural resources, including more than 40 miles of the Tuckasegee River, and counts among its lands parts of the Blue Ridge Parkway, the Great Smoky Mountains National Park, Nantahala National Forest, the N.C. Mountains to Sea Trail, and the Cherokee Indian Reservation. Jackson County is currently home to more than 38,000 people and has experienced moderate but steady population increases over the past twenty years.

Concentrated development along low-lying valleys and waterways has led to a geographical isolation of some communities, while waterways, former farmlands, and water retention areas have become centers of both commercial and residential development. The expansions of both Western Carolina University and Southwestern Community College, along with an increase in second-home and retirement development and tourism, have increased the burden on our infrastructure and our natural resources. The mountainous terrain contributes to the difficulty in providing alternative transportation systems in heavily populated areas.

These factors contribute to the current issues facing county and municipal leaders: conservation, recreation and transportation, three areas that provide the highest levels of quality of life to our citizens and yet are often hardest to maintain and develop in rural areas. While the desire to preserve and conserve important natural resources is fueled by a new emphasis on smart growth and a deeper understanding of the effects of development on mountain lands, it still raises many questions about the potential and resources available for implementing successful transportation systems along with equally developed conservation and recreation plans.

The Jackson County Greenway Advisory Committee was established in January of 2009 for the purposes of studying the needs of each community, coordinating system recommendations, assisting governments and civic groups with greenway implementation, pursuing and promoting public/private partnerships and community input, and acting in an advisory capacity for planning purposes. This committee functions in similar form to the Greenway Commission, which was created in 2000 by county and municipal leaders and dissolved in late 2008, and will take on the role of planning and developing greenway systems for Jackson County in conjunction with similar efforts in each municipality and community. The Greenway Advisory Committee relies on the staff support and resources of the Jackson County Recreation/Parks Department.

VISION AND GOALS

The Jackson County Greenways Advisory Committee has approved the following vision statement as a guiding principle for greenway efforts:

Jackson County Greenways will enhance the current and future quality of life for our citizens and visitors by implementing and promoting a comprehensive greenway trail system that emphasizes benefits to our health and wellness and our environment. Jackson County's citizens recognize the importance of our natural and scenic resources, as well as the responsibility for sustainable growth. Reflecting this, a commitment to preservation and conservation projects should be combined with a practical and flexible commitment to the provision of safe, multi-modal transportation among the county's communities and towns.

Jackson County, through the administration of the Recreation/Parks Department, will continue active partnerships with municipalities, communities, the Eastern Band of Cherokee Indians, governmental agencies, and protected lands. A comprehensive approach to environmental, economic, recreation and transportation needs will provide us, and our regional partners, with the resources necessary to implement a viable and sustainable greenway plan that addresses the needs of cyclists, pedestrians, and commuter travel.

In preparation of this Master Plan, the goals of the Greenway Committee were to accomplish the following tasks:

- a) identify pedestrian, cyclist and commuter needs through public input and participation;
- b) collect a comprehensive list of facilities in need of pedestrian and bicycle facilities;
- c) prioritize the needs of our county and determine feasibility and potential funding for projects;
- d) implement design and classification standards which can be used as resources for future county facilities;
- e) identify recommended policy changes and projects which would be beneficial to the needs of conservation, recreation and preservation; and
- f) maintain strong public support for current and future greenway projects and planning.

The Towns of Sylva, Dillsboro and Webster, as well as the Village of Forest Hills and the Cashiers Village Council, participated in this process and provided specific information about their municipalities and townships. In addition, public meetings were held in Whittier, Cashiers, and Sylva to discuss the master plan with the public. Local citizens, businesses, students, and visitors were invited to participate through paper and electronic surveys.

Please see Supporting Materials for a copy of the Citizen Participation Summary that was used to create the Master Plan document.

GREENWAYS

are defined here as corridors of protected open space that link people with places.

They can be trails, sidewalks, bicycle paths, footpaths, or other facilities, and are always available to the public.

HIGHLIGHTS

Trails, on-road facilities, multi-use trails, and many other types of greenways are included in this document and on the associated maps. In addition, the planning process sought feedback and input on transportation needs such as sidewalks and on-road bicycle lanes, which have been developed as the Bicycle and Pedestrian Component of the Jackson County Comprehensive Transportation Plan.

USE OF ON-ROAD FACILITIES: The greenway routes mapped in this document include sidewalks and on-road bicycle facilities in some areas. It is important to realize that though the first priority in all cases is to provide a safe, protected area for cyclists, pedestrians and others, there are still many areas where connectivity cannot be achieved unless the existing or future sidewalks and bike lanes are utilized.

ACQUISITION: Many people have expressed interest in the policy under which we will attempt to acquire greenway corridors. A Greenway Acquisition Policy is included with this document and expresses our desire to continue to negotiate voluntary conservation easements among neighbors and friends, purchase easements if necessary, and continue to support the donation of land for conservation purposes in a manner that benefits our environment, our public, and our property owners.

BICYCLE-FRIENDLY DESIGN AND PLANNING: Jackson County is fortunate to be a home for hundreds of regular cyclists who are involved in their communities and advocate for bicycle-friendly projects and programs. The Recommended Policies section includes several bike-friendly initiatives, including a rumble strip policy, signage for regular ride routes, promotion of bicycle tourism, the inclusion of cyclist needs in planning and design projects, and other ways to improve our county's bicycle-friendly climate. Typically, communities that are conscious and aware of their cyclist population tend to also cover the needs of pedestrians, runners, and hikers as they design and plan for cyclist traffic, and Jackson County supports this and other efforts to welcome cyclists to our roads, mountains and towns.

ACCESS TO NATURAL RESOURCES: The most prevalent theme that emerged during our conversations with the public and review of citizen comments was that our residents are most interested in being able to access Jackson County's plentiful natural resources through the Greenways program. While providing alternative transportation between commercial and residential areas was an important goal for many of our respondents, an overwhelming majority was more concerned with being able to bike or walk to the many popular natural resource access areas; preserving access for walking, biking, fishing and boating on and in public waters; and being away from traffic and roads, preferably along waterways, when using greenway trails. This desire is reflected in our priorities for construction projects and in the plan's overall design.

INVENTORY OF COMMUNITY DESTINATIONS

Jackson County is home to an abundance of cultural, historic, recreational and natural destinations for both visitors and residents. These are key locations for linkages, trailheads, parking areas and amenity provision, and should be considered during the planning of each community's comprehensive greenway system. In addition, the cultural and natural landscape of the county should be considered in all destination planning; an abundance of Cherokee Indian and prehistoric sites are present throughout the county, particularly along river corridors, and should be carefully incorporated into land protection measures through the Greenways project.

CASHIERS

Hamburg, Mountain and Cashiers townships

Cashiers Recreation Center

Jackson County Planning/Health Dept. offices

The Village Green

Commercial District

Ralph J. Andrews Campground

Lake Glenville

Chattooga River

Horsepasture River

Blue Ridge School

Albert Carlton Public Library

Cashiers Chamber of Commerce

US Forest Service Lands & Waterfalls

WEBSTER/SAVANNAH

Webster and Savannah townships

North and South River Roads

Fishing Access – Tuckasegee River

Southwestern Community College

Farmland Preservation

Alternative Transportation Routes: 107/441

Southwestern Child Development Center

SYLVA/BALSAM

Sylva and Scott Creek townships

Poteet Park and Sylva Pool

Mark Watson Park

Pinnacle Park

Bryson Park

Fairview Youth Complex

Smoky Mountain High School

Fairview Elementary School

Scotts Creek Elementary School

Sylva Town Hall

Bridge Park

Jackson County Public Library (Courthouse location)

Jackson County Justice and Administration Center

Sylva Post Office

Jackson County Chamber of Commerce

Tuckasegee River and tributaries

Blue Ridge Parkway access

INVENTORY OF COMMUNITY DESTINATIONS

CULLOWHEE / FOREST HILLS

Cullowhee and Forest Hills townships

Cullowhee Recreation Center

Cullowhee Valley School

Western Carolina University

Tuckasegee River and tributaries

Forest Hills Walking Trails and Residential Areas

Student Housing

TUCKASEGEE

Canada, River and Caney Fork townships

Low-Income Housing

Cedar Cliff Lake

Bear Lake

Tanasee Lake

Wolf Lake

East LaPorte River Park

Judaculla Rock

Cycling Routes

Tuckasegee River and tributaries

Farmland

Canada Memorial Park

US Forest Service Lands

DILLSBORO

Dillsboro and Greens Creek townships

Downtown District

Monteith Community Park

River Launch Park area

Jackson County Green Energy Park

Hotels/Inns/Attractions

Highway 441 South

Farmland

US Forest Service Lands

WHITTIER/QUALLA

Barkers Creek and Qualla townships

Farmland

Smokey Mountain Elementary

Whittier Industrial Park

Highway 441 Small Area Land Use Plan

GSMNP Access

Tuckasegee River and tributaries

Cherokee downtown and Casino accesses

INVENTORY OF CONSERVATION, TRANSPORTATION & RECREATION PLANS

Most communities in Jackson County are conscious of the need for effective greenway, transportation and conservation planning and have taken steps to begin long-range planning in those areas. Every effort shall be made to accommodate, connect to, and maintain design standards throughout town, county and community projects. Coordination between County and municipal staff on project design, development status, construction and maintenance will be vital to providing a comprehensive system through and between each community and municipality.

In addition, it is vital that Jackson County and municipal agencies begin to partner with the various state, federal and private organizations whose efforts in preservation and conservation coincide with the goals of protecting and promoting Jackson County. Agencies might include the US Forest Service, the Blue Ridge Parkway, the Great Smoky Mountains National Park, the NC Fish and Wildlife Division, and private conservation groups.

SYLVA/BALSAM

Access to the Blue Ridge Parkway on Balsam is regulated and overseen by the US Forest Service and the Friends of the Blue Ridge Parkway. Pinnacle Park, which is in a permanent conservation easement through the Clean Water Management Trust Fund of North Carolina, is overseen by the Town of Sylva and CWMTF. No current plans are in place at this time for connections to or improvements of either of these facilities. The Town of Sylva has an extensive system of sidewalks in place, and has received NCDOT Enhancement funding to create a comprehensive bike and pedestrian plan for their town. Sylva is the commercial center for a majority of the county's citizens and, as such, faces mounting pressure from increased growth, traffic congestion, and topographical limitations. The route of the Tour de Tuck, a popular ride put on each year by the Jackson County Chamber of Commerce, should be considered in all planning in this area. A network of connected on-road facilities is vital to providing alternative transportation in this busy area, while other types of trails are recommended to connect from the commercial center outward to the sites of various natural resource areas.



DILLSBORO

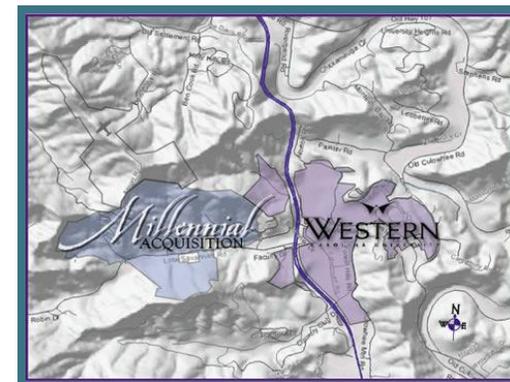
The Town of Dillsboro has developed the Monteith Community Park as a major attraction and is home to the Jackson County Green Energy Park, as well as being the most-visited tourism destination in the county. The Town is implementing a system of electric shuttle transportation to ferry visitors to and from various areas, and has a transit stop in their downtown. Dillsboro is also taking steps towards being awarded "Green Small Town" status, and has a number of initiatives underway to emphasize environmental education to residents and visitors. The town is a central attraction for fishermen on the Tuckasegee River as well as being a famous historic and cultural destination, and provides an excellent opportunity for greenway systems to link to educational opportunities for a wide audience. The site of the Dillsboro Dam has been proposed as a river park location and may provide additional fishing, boating and tourism opportunities.



INVENTORY OF CONSERVATION, TRANSPORTATION & RECREATION PLANS

CULLOWHEE/FOREST HILLS

Western Carolina University, in its 2007 Master Plan, addressed the need for transportation planning in the context of its new Millennial Campus, to be built across Highway 107 from its present location. Communication should be maintained with the university to accommodate cyclist and pedestrian traffic in any new patterns. Additionally, Base Camp Cullowhee is currently directing the design and fundraising for the construction of several hiking and mountain biking trails on the new campus, with access potentially provided underneath Highway 107 through the culvert at the North Carolina Center for the Advancement of Teaching. Connections to these facilities and links between the campus and the surrounding community are a priority for residents, visitors and student populations. There is a severe need for bicycle and pedestrian access to the surrounding student housing communities. It is also possible that some Cullowhee roads, particularly those within the campus, can be designated through NCDOT as bicycle routes, allowing posted signage and cyclist-friendly road development on those targeted corridors.



COURTESY WWW.WCU.EDU

The Village of Forest Hills is addressing open space needs in its re-examination of municipal ordinances and has committed to providing green space and park areas to residents whenever possible. Forest Hills is home to a large residential population and can be a central greenway focus due to its proximity to and connected populations with both the university and Cullowhee Valley Elementary School.

CASHIERS

The Cashiers Village Council and affiliate organizations are coordinating a pathways system for the commercial district at the intersection of Highways 107 and 64. This system is designed to accommodate pedestrian traffic within the immediate district in both on- and off-road locations and is being funded primarily through private donations and grants. Jackson County has agreed to provide advice, resources, and technical assistance to the Pathways efforts of the CVC.



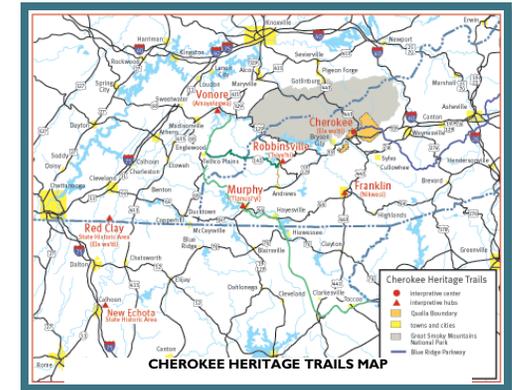
Jackson County is working closely with Village Council staff to ensure coordination of other greenway projects in the Cashiers area. The county will continue greenway efforts outside of the commercial district, particularly with respect to accessing the county offices and recreation facilities, additional commercial locations outside of downtown and the natural resources on all four highway segments from the Crossroads area. The Cashiers Area Chamber of Commerce will be an important partner in all Cashiers efforts, as will other community and nonprofit groups working to benefit the area. The Chamber-sponsored Tour de Cashiers is an important economic driver and is represented in the transportation maps for widened shoulders and/or designated bicycle lanes.

INVENTORY OF CONSERVATION, TRANSPORTATION & RECREATION PLANS

WHITTIER/QUALLA

The citizens of Whittier have already helped to write a Small-Area Land Use Plan through the Jackson County Planning Office to address development needs along the Highway 441 corridor. The plan will regulate and manage growth in this area to protect the scenic character of the community while maximizing economic benefits to the residents of the region. However, the Whittier/Qualla Boundary remains a popular community for cyclists, home to a large contingent of families with children, and an area in which farmland preservation and expanded access to recreational facilities are significant needs. The Greenways Project will work closely with advisory groups and planners with regard to this area, acknowledging the sensitive balance between future development and preservation of an agricultural community.

In addition to hosting on-road cyclists who use area roads for loop routes, many of which are unmarked and of vehicle-only design, this area is also home to several local businesses that use the river for tubing and fishing. Boating and fishing access will be maintained and enhanced in any greenway system. These communities also make up an important gateway entrance to the Great Smoky Mountains National Park and the Cherokee Indian Reservation. Future greenway connections to Park land should be made a priority, although no plans are in place at this time. The Eastern Band of Cherokee Indians is currently completing a bicycle and pedestrian plan and should be contacted about future projects and connectivity. Additionally, the Greenways program should cooperate in Recreation Department efforts to purchase and construct a public park in this district of the county and should work to connect parks, schools, and river facilities for the benefit of families and cyclists.



WEBSTER/SAVANNAH

The Webster/Savannah area is home to farmland, Tuckasee River and tributary fishing access, a large segment of residential housing, and three of the most heavily-traveled secondary roads in the county. North and South River Roads, along with portions of NC Highway 116 and Mockingbird Lane, parallel the river and provide beautiful access to residential neighborhoods. They are popular with runners and cyclists as well as with fishermen attempting to secure riverbank access. However, they are also popular with vehicular travelers seeking alternate routes to Highway 107 South between Cullowhee and Dillsboro. Fishing and boating access is an important conservation goal in this area; transportation goals include providing bicycle facilities and sidewalks where needed, along with encouraging projects to widen, straighten and increase the safety of the roads. The Town of Webster is working to maintain its historic character and to encourage scenic byway status for NC 116, and has implemented several successful sidewalk efforts and traffic control measures. The Savannah area is a key priority for preservation projects, particularly along impacted waterways like Savannah Creek, and the Greens Creek area provides access to Forest Service lands.

INVENTORY OF CONSERVATION, TRANSPORTATION AND RECREATION PLANS

TUCKASEEGEE

The Tuckaseegee community lies along the major route between Cullowhee and Cashiers and is also the point of entrance for both Shook Cove Road and Highway 281, popular routes for accessing public lakes and National Forest lands. This area is also home to river bottom farmland and access to streams, as well as watershed areas and largely undeveloped acreage. Many low-to-moderate income families live in apartments and rental units here, and safe walking access to stores and parks is encouraged for these residents. Additionally, the Tuckaseegee area is home to many “communities” which, though geographically isolated, are thriving and productive associations between neighbors. The East LaPorte River Park and Canada Community Park are two destinations identified by residents as important sites, along with Highway 281 access to lakes and hiking opportunities, cycling routes along the two highways, the Judaculla Rock Cultural Site and other landmarks and natural resource access areas. Successful community grassroots efforts have already succeeded in petitioning county commissioners to request the addition of a standard bike lane during improvements to Highway 107 South between Shook Cove Road and Cullowhee Mountain Road. This facility will provide a key connection for destination-based greenways, trails and bicycle paths to the natural resources areas along this route.



More than 80% of survey respondents said that connecting greenways to other federal and state lands – like the Blue Ridge Parkway, which skirts the county’s northeastern border – should be an important goal of the Greenways Project.

INVENTORY OF CONSERVATION, TRANSPORTATION & RECREATION PLANS

Many organizations within Jackson County work together towards a more sustainable future. Each of these organizations, with its own area of expertise and focus, is a partner in our efforts to protect, conserve and provide access to the natural environment. During the collation of materials for this master plan, several of these organizations generously volunteered their assistance, details of their work and conjunctive areas of interest. Plans covering countywide conservation, managed public lands, significant natural resource protection, wildlife and fisheries areas, agricultural efforts, and grassroots efforts are summarized here and have been considered as the Master Plan was developed.

CONSERVATION

Significant Natural Heritage Areas of Jackson County were identified and classified through a locally-conducted project of the North Carolina Natural Heritage Trust Fund. These areas include land or water identified by the Natural Heritage Program as being important for conservation of the State's biodiversity. These areas are included in the Master Plan as conservation priorities, and provide excellent opportunities for conservation and restoration efforts as well as educational amenities. The complete SNHA report can be found in the Appendix.

Protected Lands in Jackson County are held through a number of organizations and federal agencies. The U.S. Forest Service holds large tracts of land in Caney Fork, Canada, Cashiers, Cullowhee, Savannah, Greens Creek and Barkers Creek townships. The Blue Ridge Parkway holds land along the northeast border of the county in the townships of Qualla, Scotts Creek, Caney Fork and Canada. The county sits at an intersection with several other federal and state protected lands, including the Great Smoky Mountains National Park, the Appalachian Trail, and the North Carolina Mountains-to-Sea Trail.

Private conservation trusts hold another large segment of protected lands within the county. Seven land trusts are in operation, including Highlands-Cashiers Land Trust, Carolina Land Trust, Land Trust for the Little Tennessee, Southern Appalachian Highlands Conservancy, Carolina Mountain Land Conservancy, The Conservation Fund and the Trust for Public Land. These land trusts provide an essential service, allowing landowners to confidently place their properties under protection and bringing resources to critically important natural areas. Blue Ridge Forever, a regional association of these and other land trusts, has identified several areas in Jackson County as target goals for land trust preservation: the Upper Tuckaseegee Gorge, home to a SNHA Macrosite, and the Great Balsams and Plott Balsams Mountains, which are home to several rare species identified in the North Carolina State Wildlife Action Plan.

Watershed and water quality plans and ordinances are in place for Jackson County's entire area, including the specific Scotts Creek water protection ordinance and the watershed protection ordinance. These documents, in addition to North Carolina policies through the Division of Water Quality, provide information about regulated water supply areas, trout streams, riparian buffer areas, and other water quality issues, and have been included in the Appendix. The Tuckaseegee River and its tributaries are of utmost importance for protection and preservation through the greenways project, especially via conservation, restoration, habitat protection, buffer management, and other best practices.

TRANSPORTATION

The Jackson County Transportation Task Force, under the guidance of the NCDOT and the Southwest Commission RPO, is currently compiling a Comprehensive Transportation Plan for Jackson County. This plan will help guide NCDOT's transportation improvement programs and local highway projects as well as make recommendations for expansion, improvement or addition of facilities. In conjunction with the JCTTF, the GAC will provide data, plans and public feedback information to JCTTF staff to provide a foundation for the Bicycle/Pedestrian component of the CTP. These efforts are being coordinated by Ryan Sherby, Transportation Planner, and Recreation staff, and will allow the GAC to establish a list of needed sidewalk and bicycle facilities within NCDOT's planning process for funding and implementation.

The Smart Roads Coalition is a citizens' advocacy group formed to lobby NCDOT and county leaders for alternative transportation solutions. Their organization has been involved in the JCTTF CTP process and will remain informed of the GAC's efforts in the areas of pedestrian and cyclist transportation routes.

Other areas of partnership for transportation programs include Western Carolina University, with a large on-campus student population and need for alternate transportation options, and the Jackson County Transit Department, which provides an ever-growing range of public shuttle services and public health transportation to our residents. Future considerations could include combining transit stops with greenway routes, provisioning transit buses with bicycle racks to encourage commuter use, and other methods of integrating alternative options within Jackson County.

RECREATION

The Jackson County Recreation/Parks Department recognizes the need for a diverse array of programs and services to meet the needs of an increasingly diverse population within Jackson County. Traditional athletic and wellness programs should be augmented by alternative leisure, education, and cultural activities to offer expanded opportunities for Jackson County residents and visitors, and many of those programs are currently being planned or implemented through the expansion of priorities to include greenways and related facilities.

Park purchasing and construction, along with renovations, funding, and facility management, are directed by the ten-year Recreation Master Plan, currently on file at the Jackson County Recreation Center. This document is scheduled to be updated during the coming year and, along with the Greenway Master Plan and Greenway Capital Projects list, can serve as a guide to planners, staff members, and others involved.

*(Greenways) is one of the very few things that actually
makes me happy about paying taxes!*

- Citizen comment

COMPREHENSIVE LIST OF IDENTIFIED NEEDS

After a complete inventory of destinations and other conservation, recreation and preservation plans, the Greenway Committee was able to draft a basic framework of suggested pedestrian and cyclist corridors to connect those destinations. This basic framework was mapped with the assistance of the Southwest Commission RPO and displayed at the community meetings. It formed the first draft of the Comprehensive List of Identified Needs, a master list of identified areas where both on-road and off-road facilities were needed for safety, alternate transportation and conservation reasons.

During the planning process, the committee received nearly 400 written comments via surveys, public input at the workshops, suggestions from municipal boards and citizen letters and emails. After these were received, those suggestions were added to create the final list. This includes areas where pedestrian and/or cyclist safety is a major concern; areas where safe access is not provided to popular destinations, most often those that access natural resources; and corridors in which opportunities exist for preserving open space and access for the benefit of a community.

The full list, containing both committee suggestions and written comments from the public, was then sketched onto county maps. Necessary linkages were created to fill any gaps within the system to ensure the broadest range of connectivity.

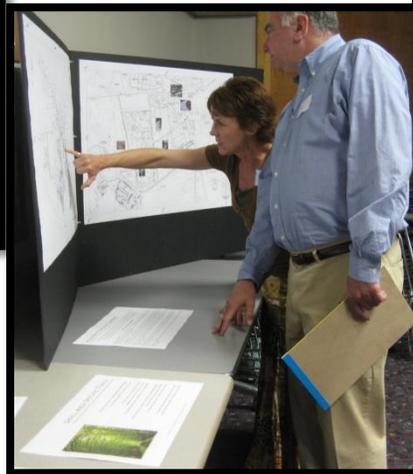


PRIORITIZATION PROCESS AND RESULTS

The information from each community was synthesized into both map and document form for review by Recreation Department staff and Greenway Advisory Committee members. Each suggested connector or facility was evaluated based on five factors:

1. Does the project safely address a need for conservation, recreation or transportation?
2. Is the project beneficial to a diverse group of community users? (More than one type of user audience was considered a beneficial factor for each trail. Also, the group tried to reach a wide range of user audiences in the priority list.)
3. What are the intended effects of this project, and how do they relate to the goal of conservation, recreation or transportation? (Projects that address combinations of these focus areas were given more weight.)
4. What parallel opportunities will add a depth of opportunities for users of this facility? Are there educational, natural, or cultural opportunities that can be included as part of this project?
5. Is this project significant for the community in which it will be built? Does it address the needs of that community?

The group used a multiple voting system to prioritize the list of projects for inclusion into the five-year Capital Projects List. This will guide Recreation Department staff in funding, implementing and managing projects while also providing structure and oversight to the larger interconnected system that remains the goal of any successful greenway program.



JACKSON COUNTY GREENWAYS: PROPOSED ROUTE SYSTEM

JACKSON COUNTY GREENWAYS: PROPOSED ROUTE SYSTEM (BY DISTRICT)

JACKSON COUNTY GREENWAYS CAPITAL PROJECTS LIST

PRIORITY PROJECTS

TUCKASEIGEE RIVER

River Greenways: Cullowhee, Sylva and Webster & Dillsboro-Cherokee

Continue negotiations with property owners along the Tuckaseige River between Cullowhee and Webster, seeking access to the existing TWSA sewer line easement which parallels the river. Begin discussions with NCDOT regarding other possible routes and rights-of-way in this corridor. Environmental protection of the corridor should be the first priority, conserving as many linear feet of streambank as possible, while also preserving public access to this natural recreational and angling resource. The section of Highway 74 between Dillsboro and Cherokee offers several areas where a gravel foot trail and river access parking could be provided along the river.

Tuckaseige River Blueway Designation and Management Plan

Pursue blueway designation from the North Carolina Department of Environment and Natural Resources for the entire length of the Tuckaseige River, from north to south. The river serves as a natural corridor through the center of the county and blueway designation will contribute to the greenways program, help preserve critical river access and ensure stream protection. Blueway designation also offers a wide variety of marketing and economic development opportunities.

The Management Plan for the Tuckaseige River will accommodate all anticipated and current environmental and recreational needs and will be applied to important tributaries, particularly trout streams and water supply streams, in addition to the river. Special attention should be given to areas classified as High Quality and Outstanding Resource waters. The Tuckaseige River Aquatic Habitat, an SNHA, includes areas of Deep Creek, Cullowhee Creek, and Caney Fork Creek.



TUCKASEIGEE RIVER, JACKSON COUNTY, NC

SCHOOLS AND COMMUNITIES

Smoky Mountain High School, Fairview Elementary, Scotts Creek Elementary, Blue Ridge K-12, Summit Charter

Utilize each school campus – elementary and high school – in a joint trailbuilding program to benefit both the students and the community. Opportunities exist for programming, health and wellness education, and other activities to engage students and teachers in the process along with volunteers from the community. Separate pedestrian fencing and gates should be installed so that each trail is open to the community at all times. Two schools, Cullowhee Valley and Smokey Mountain Elementary, have current walking trails in place. Public access should be assured at both locations and programming, educational opportunities and volunteer activities should also be conducted in these schools.

JACKSON COUNTY GREENWAYS CAPITAL PROJECTS LIST

PRIORITY PROJECTS

WHITTIER/QUALLA RAIL-TRAIL

Sylva, Dillsboro and Whittier connection using rail-with-trail

Pursue a safe combined rail-trail between Dillsboro’s depot station and the Gateway Intersection, paralleling the existing railroad easement, by opening negotiations with the railroad, initiating feasibility studies, and exploring railbanking options. This could provide a complementary amenity to the additional Whittier priority projects: a river access footpath along Highway 74; community access to the trail at Smokey Mountain Elementary School; and eventual connections to a Whittier area park.

Continue exploration of utilizing railroad corridor within Sylva city limits, as the railroads are central locations connecting neighborhoods and commercial areas. Consider the railroad corridor between Sylva and Dillsboro as another possibility for an off-road facility to complement the planned sidewalk and Mark Watson Park greenway connector.

DILLSBORO

Monteith Farmstead, Jackson County Green Energy Park, Dillsboro Heritage River Park

The Town of Dillsboro is home to three significant existing and planned parks which could form the center of an enhanced tourism destination for Jackson County. Natural walking connections along Scotts Creek between Monteith Farmstead, the JCGEP and the proposed river park will complement the historic and cultural walking tours and can help restore and protect this waterway and its environs. This project should take place in conjunction with any planned railbanking or rail-trail projects in the surrounding area. At Monteith Park, this connection can serve as the point of entry for any off-road trail built behind the existing Harold’s Supermarket Plaza from Business 23.



COURTESY CASHIERS VILLAGE COUNCIL

CASHIERS/GLENVILLE

Crossroads to Silver Run Falls; Recreation Center Trail; Blue Ridge School

The Cashiers Village Council has identified pathways systems throughout the Crossroads area to enhance economic and aesthetic concerns, and the JCGP will continue to support their efforts with technical and funding assistance. Also, the JCGP will pursue a multi-use greenway following the Highway 107 South corridor from the Crossroads to the Silver Run Falls access area. This is approximately a five-mile corridor that could utilize an existing utility line easement, and connects significant natural areas to the central district. In addition to this long-term project, the County will continue to pursue funds for a walking trail at the new Recreation Center complex to connect Highway 64 to Frank Allen Road and to place a walking trail in the Glenville area at Blue Ridge School.

JACKSON COUNTY GREENWAYS CAPITAL PROJECTS LIST

PRIORITY PROJECTS

SYLVA

Off-Road Connector from NC 116 to Highway 107 South (old Kings Mountain area)

A safe connector route for cyclists and pedestrians is a necessity between the busy intersections of NC 116 & Highway 107 South and 107 S & Business 23. This corridor, a commercial strip, is congested and dangerous for cyclist and pedestrian traffic, yet is the only continuous travel route from Webster to Sylva and Dillsboro. Multi-use paths linking Southwestern Community College, the Jackson County Aging & DSS Complex, and the apartments and businesses on 116 with Wal-Mart and other commercial interests along the 107 strip are encouraged. Undeveloped land parallels the 107 corridor behind the existing framework of street-front businesses and agreements should be encouraged with future developers to create these important connections.

CULLOWHEE

WCU, Village of Forest Hills, and Cullowhee Recreation Center

This area is frequented by large seasonal student populations, several thousand residential homeowners, and walkers, runners and cyclists looking for safe connections between the three nodes. The existing shared walking trail at Cullowhee Valley and the Recreation Center is heavily traveled, and could be connected to a safe crossing of Highway 107 and off-road connections between CVS and Forest Hills. Continuing to support the Safe Routes to School application for an off-road connection from the entrance to Forest Hills to the Lyle Wilson entrance to CVS, we will also consider routes within the Village and further safe connections between WCU and the Recreation Center. The JCGP will also work with WCU officials to receive permission for designating shared vehicle and bicycle lanes throughout Western's campus, mapping those routes, and making them available to the public as part of a larger bicycle-route mapping of the county.



COURTESY WWW.WCU.EDU

MOUNTAIN BIKING AND HIKING TRAILS

U.S. Forest Service, National Parks, N.C. State Parks, Town of Sylva, and other agencies

A large segment of residential and tourism traffic in Jackson County is generated through mountain biking and hiking trails, and coordination among trail agencies and an expansion of existing trail facilities can enhance this low-impact access to our natural and protected resources. The JCGP will continue to coordinate volunteers for installation, maintenance and promotion of hiking and mountain biking trails. The following geographical areas are of special importance for conservation and low-impact trail management: Upper Tuckasegee Gorge/Bonas Defeat; Tilley Creek/East Fork NFS lands; Cowee area NFS lands; Sylva's Pinnacle Park; connections between Caney Fork, Highway 281, and Shook Cove Road, including Charley's Creek, Rough Butt Bald, and Sugar Fork; a Whiteside Cove footpath connection; and Whittier trails to Parkway, EBCI and others.

LAKE ACCESS AREAS

Advocate for, build, and manage more public access areas on Jackson County lakes as destination nodes for greenways

A common refrain among workshop attendees and survey respondents was the lack of access to what are considered public resources: lakes and impoundments of rivers and streams that are used to generate hydroelectric power in Jackson County. The five Jackson County lakes are Cedar Cliff Lake, Bear Creek Lake, Wolf Creek Lake, Tanasee Creek Lake, and Lake Glenville.

Jackson County and Duke Energy will continue to work together and with involved agencies to reach lake access goals over the next five years. These may include larger public access areas with enhanced parking; improved maintenance of access areas, including trash receptacles and pickup and amenity maintenance; site-appropriate lighting; and other improvements that will enhance the experience of both visitors and residents who utilize these access points.

Lake Glenville's major public access is at Andrews Park Campground, a site which has been operated and maintained by the Jackson County Recreation/Parks Department since Nantahala Power and Light donated the property in the late 1970s. This site is in need of upgrades and expansion to provide more family-friendly lake access for day use, additional lakefront campsites, hiking trails and other amenities. The JCGP will work with the Recreation Department to facilitate cyclist connections to the park along SR 1157 and to install and maintain hiking trails on the property.

Expansion of access areas and improved maintenance is critical at existing accesses on Bear Creek Lake and Cedar Cliff Lake, both popular destinations for students, families, and visitors for outdoor recreation purposes. Wolf Creek Lake and Reservoirs and Tanasee Creek Lake are more primitive in access and this should be maintained, although expanded areas could be provided. Increased sheriff's patrols in all cases are recommended. The lake access plan will complement the Tuckaseigee River Blueway Management Plan.



COURTESY OF NC FISH & WILDLIFE

JACKSON COUNTY GREENWAYS CAPITAL PROJECTS LIST

COMPLETE PROJECT LIST

Map No.	Facility Description	Facility Type	District
1	Tuckasegee Gorge trail with access to Panthertown Valley	Mtn. Biking/Hiking	Tuckasegee
2	Charley's Creek Road to 276 and Parkway	Mtn. Biking/Hiking	Tuckasegee
3	Charley's Creek Road to 215, Tanasee - mountain bike	Mtn. Biking/Hiking	Tuckasegee
4	Caney Fork to Highway 281 via Sugar Creek	Mtn. Biking/Hiking	Tuckasegee
5	WCU ID of bike accessible lanes and mapped route to connect outside campus	On-Road	WCU
6	Old Cullowhee Road from Jack the Dipper to WCU	Off-Road Paved Trail	Cullowhee
7	Weyehutta/Edgewater trails (part of existing WCU ride route)	Off-Road Trail	Cullowhee
8	Moses Creek to Cullowhee, to Cane Creek	Off-Road Trail	Tuckasegee
9	Long Branch to Jackson County Airport, Gribble Gap, Savannah area	Off-Road Trail	Cullowhee
10	CVS/VFH/WCU Connector, eventually to ped br.	Off-Road Paved Trail	Cullowhee
11	Buchanan Loop to 107 near Wal-Mart (Kings Mountain loop)	Off-Road Trail	Webster
12	Pumpkintown to East Fork bike loop	Mtn. Biking/Hiking	Dillsboro
13	Connections for bikes/hikers from Parkway into county	Mtn. Biking/Hiking	Balsam
14	Parkway back to Wet Camp/USFS lands	Mtn. Biking/Hiking	Balsam
15	Hiking connection to end of Blackrock/Waterrock ridge via Shut-In Gap	Hiking	Whittier
16	Dillsboro to Whittier bike/ped facility	Off-Road Paved Trail	Dillsboro
17	Whittier to Cherokee bicycle/ped facility	Off-Road Trail	Whittier
18	Access/Trail at DOT right-of-way at gateway intersection (ramp)	Off-Road Trail	Whittier
19	Smokey Mountain Elementary School trail open for community use	Existing	Whittier
20	Joint mountain bike trail system at Cowee between Macon, Swain and Jackson	Mountain Bike	Regional
21	Along Highway 74 - use NCDOT ROW to connect gravel pulloffs with small gravel path along the river	Off-Road Trail	Dillsboro/Whittier
22	Walking trail from Harrah's, north to Santa's Land	Off-Road Trail	Whittier
23	Tuckasegee River from Webster to Rogers Road area	Multi-Use Trail	Sylva/Cullowhee
24	Behind 107 strip, from Lowe's/County facilities area to downtown Sylva	Off-Road Paved Trail	Sylva/Cullowhee
25	If DOT rebuilds roadbed on Old Settlement, use it as an opportunity build a greenway and trail along south side of river	Off-Road Trail	Webster
26	Rails to/with Trails on RR bed from Sylva to Dillsboro and on to Whittier area	Multi-Use Trail	Dillsboro/Sylva/Whittier

27	Mountain bike trails in Pinnacle Park	Mountain Bike	Sylva/Cullowhee
28	Bike lane/nature trail from Old Cullowhee to Dillsboro via River Road	Off-Road Trail	Webster
29	Join Rec Center to greenways at WCU with better crossings, off-road paths to WCU from intersection	Off-Road Trail	Cullowhee
30	Trail from Millennial Campus around county property and airport property, then connect to Cowan Valley?	Off-Road Trail	Cullowhee
31	A public area on Bear Lake or Wolf Lake (or all lakes) with trail connections	Access/Hike/Bike/Fish	Tuckaseegee
32	Rails to/with Trails Section from Sylva to Balsam/Waynesville	Multi-Use Trail	Sylva
33	"Blueway" the Tuck	Existing	All
34	Off-road facility - create loop around Cashiers Lake to Silver Run Falls	Off-Road Trail	Cashiers
35	Connect to Andrews Park	Off-Road Trail	Cashiers
36	Construct the Tuckaseegee River Greenway between Sylva and Cullowhee	Multi-Use Trail	Sylva/Cullowhee/Webster
37	West Haywood Road & Green Energy Park to Dillsboro	Off-Road Trail	Dillsboro
38	Monteith Farmstead connection to river area and downtown	Off-Road Trail	Dillsboro
39	Sylva-Dillsboro greenway behind Burger Shack/Harold's, across Shuler rental to Monteith, up Scotts Creek	Off-Road Trail	Dillsboro/Sylva
40	Forest Hills from Country Club Drive to Oak Forest and to CVS via Jake Lyle gravel road	Off-Road Trail	Forest Hills
41	Greenway in Qualla from Harrah's up Hwy 19 near Soco Creek	Off-Road Trail	Whittier
42	Country Club Drive from intersection with 107 to Country Club Inn for students and residents	Off-Road Trail	Forest Hills
43	Loop trail at county complex	Loop/Destination	Sylva
44	Shook Cove Road	Off-Road Trail	Tuckaseegee
45	Greens Creek Valley trail to Cowee Bald trailhead/expanded hiking	Mtn. Biking/Hiking	Dillsboro
46	Provide parking and access for anglers to river as well as for cyclists and walkers	Off-Road Trail/Access	Webster/Cullowhee
47	Mica Mine history trail at Min Springs Drive	Off-Road Trail	Sylva
48	Pinnacle connections to Parkway	Mtn. Biking/Hiking	Sylva
49	Dicks Creek into Shut-In Gap and to Blackrock	Off-Road Trail	Sylva/Whittier
50	Trails at Elementary Schools - esp. Blue Ridge, Fairview, SCES	Loop/Destination	All

GREENWAY INITIATIVES LIST

This process also resulted in a list of partnership and policy initiatives that the Greenways Project will pursue over the coming five-year period. While these are not specific construction projects, they have the potential to provide very significant support to greenway efforts and the needs of cyclists and pedestrians throughout Jackson County. The Greenway Initiatives List represents the significant support among survey respondents and workshop attendees for maximizing our resources by combining projects with other state and federal agencies. The responsibility for these initiatives will lie with Recreation Department staff, Greenway Advisory Committee board members, and greenway volunteers.

- **Increase partnership and coordination with the Blue Ridge Parkway, U.S. Forest Service, National Park Service, U.S. and N.C. Fish and Wildlife Agencies, and N.C. State Parks to manage, promote and maintain trails and access to natural resources.**
- **Improve advocacy for bicycling and walking concerns in local decisions about land use and transportation planning, and support signage and policy changes by taking responsibility for fundraising to support these efforts.**
- **Implement volunteer programs with various local agencies to bring trails to a wide group of user audiences.**
- **Initiate creative fundraising campaigns to raise awareness about greenway benefits and support trailbuilding projects.**
- **Create effective partnerships with Southwestern Community College and Western Carolina University to engage the college populations with the surrounding community.**
- **Manage educational outreach campaigns to bring presentations on environment, health and transportation to local elementary and high schools.**
- **Continue support for NCDOT Division 14 and encourage quarterly planning meetings and joint projects.**
- **Support and publicize land conservation as a responsible and beneficial way for landowners to protect property; work with local land trusts and the Jackson County Planning Department to ensure a coordinated effort to promote land and water conservation initiatives and to educate the public about these options.**

COMPREHENSIVE TRANSPORTATION PLAN: SIDEWALK & BICYCLE FACILITY NEEDS

While collecting data for the Greenways Project, the committee agreed to a partnership with the Jackson County Transportation Task Force. Through a collaborative effort, the two initiatives collected data on both greenway facilities and transportation facility needs, and worked together to analyze and map that data.

The Comprehensive Identified Needs List was divided between on-road facilities (bicycle lanes, wider shoulders, bicycle routes, DOT right-of-way access, and sidewalks) and trail facilities (off-road projects). The on-road facilities were mapped and recommended to the JCTTF for adoption into the Bicycle and Pedestrian Component of the Comprehensive Transportation Plan.

COUNTY/MUNICIPAL POLICY RECOMMENDATIONS

Recommendations for policy adoptions at the local and county level are included in later sections of this document. Many of these items concern bicycle-friendly facility design, such as rumble strips, storm drain grates, curb access, shoulder widths, and others. Others recommend slower speed limits, designation of bicycle/vehicle shared lanes, and other ways to encourage responsible ridership and vehicle management. It is recommended that each municipal and county board become familiar with these topics and encourage bicycle-friendly road design, planning and land use to the greatest extent possible.

COMPLETE STREETS POLICY

A few weeks before the publication of this document, the North Carolina Department of Transportation adopted a new policy to guide planners, designers and other NCDOT representatives in the selection and design of road facilities. The Complete Streets Policy advises transportation workers to consider facilities not only for vehicles, but also for pedestrian and cyclist transportation.

NORTH CAROLINA: BICYCLING AND WALKING, A LONG-RANGE TRANSPORTATION PLAN

This plan was published by the Federal Highway Administration to guide bicycling and walking facilities for North Carolinians in 1997. In it, guidelines are expressed for creating walkable communities and designing appropriate pedestrian and cyclist facilities. This guide, and any revisions and updates published since, should be referred to in all planning for on-road facilities.

COMPREHENSIVE TRANSPORTATION PLAN: SIDEWALK & BICYCLE FACILITY NEEDS

COMPLETE PROJECT LIST

Map No.	Description of Facility	Type of Facility	Area
1	Piney Mtn, Yellow Mtn (Tour de Cashiers bike route) - on road bike	On-Road Bicycle	Cashiers
2	New Connector from US 64 to Frank Allen Road (vehicle/pedestrian)	New Facility	Cashiers
3	Slabtown Road	Sidewalk	Cashiers
4	Highway 64 from Crossroads to Ingles	Sidewalk	Cashiers
5	Crosswalks, sidewalk connections outlined in Village Pathways Concept, Phases I-III	Sidewalk/Crossings	Cashiers
6	NC 107 from Speedwell to 281	On-Road Bicycle	Tuckaseegee
7	Highway 281 to USFS, Duke accesses	On-Road Bicycle	Tuckaseegee
8	Caney Fork/Judaculla Rock/headwaters access from Highway 107 to end	On-Road Bicycle/MUT	Tuckaseegee
9	WCU identification and designation of bike accessible lanes and mapped bicycle route	Existing	WCU
10	Old Cullowhee Road from Jack the Dipper to WCU	Sidewalk/On-Road Bicycle	Cullowhee
11	Old Cullowhee between Ramsey Center/CVS	Sidewalk	WCU
12	Old Savannah to WCU (post office, housing, etc.)	Sidewalk/On-Road Bicycle	Cullowhee
13	North and South River Roads (on-road cycling, or access for gravel footpath for anglers, etc.)	On-Road Bicycle/Access	Webster
14	Old Settlement from 107 to 116	On-Road Bicycle	Webster
15	Mockingbird Lane	On-Road Bicycle	Webster
16	Buchanan Loop	Sidewalk	Webster
17	Evans Road/future connector from 107 to SCC	New Facility	Webster
18	Harris Regional to Sylva on old Avl. Highway	Sidewalk	Sylva
19	Cope Creek from 74 to 23	MUT/Sidewalk	Sylva
20	Chipper Curve Road	On-Road Bicycle	Sylva
21	Skyland Drive from Bus. 23 to Dark Ridge, 74	On-Road Bicycle	Sylva
22	End of Justice Center sidewalk across to new post office	Sidewalk	Sylva
23	Fisher Creek to Pinnacle Park	On-Road Bicycle	Sylva
24	Sidewalk along other side of highway 107 from Fairview to downtown; connection to bike lane stop at Fairview int.	Sidewalk/On-Road Bicycle	Sylva
25	Monteith Farmstead, incl. bridge, to Green Energy Park (across 441)	Sidewalk	Dillsboro

26	Thomas Valley Road - Barkers Creek to 74	On-Road Bicycle	Whittier
27	Sunset Farm Road	On-Road Bicycle	Whittier
28	Access/Trail at DOT right-of-way at gateway intersection (ramp)	Access	Whittier
29	Beck Branch Road	On-Road Bicycle	Whittier
30	Mission Road to Old 19	On-Road Bicycle	Whittier
31	Camp Creek Road to Highway 441	On-Road Bicycle	Whittier
32	Shoal Creek Road	On-Road Bicycle	Whittier
33	Highway 441 from Gateway to Cherokee: add minimum shoulder or standard lane -- no current access available	On-Road Bicycle	Whittier
34	Along Highway 74, NCDOT ROW to connect gravel pulloffs with small gravel path along the river	Access	Dillsboro
35	Sidewalk down Camp Creek Road (terrain nice to walk but not safe on road)	Sidewalk	Whittier
36	Tunnel under on-ramp/highway intersection at Gateway to provide access to riverside	Access	Whittier
37	Use old Highway 19 prison access to get to riverside area for park, etc.	Access	Whittier
38	Dillsboro to Barkers Creek via Highway 74 - safe bicycle facility	On-Road Bicycle	Dillsboro
40	If DOT expands Old Settlement, use old roadbed to build a greenway along south side of river	Access/New	Webster
41	Extend bike lane south on 107 from Cullowhee to Caney Fork	On-Road Bicycle	Tuckaseegee
42	Bicycle lane on 441 S from Greens Creek to Dillsboro	On-Road Bicycle	Dillsboro
43	Bike trail Tilley Creek/Cullowhee Mountain to Rec Center - on Bike Route 2	On-Road Bicycle	Cullowhee
44	Summit Charter School - while paving road, add sidewalk access at same time	Sidewalk	Cashiers
47	Sidewalks on both sides of Main Street and Business 23 in downtown Sylva area	Sidewalk	Sylva
48	Crosswalks with traffic lights or other ped safety measures at 23/107 intersection, and along Bus. 23	Crossings	Sylva
49	"Balsam Post Office Ride" along Skyland and Dark Ridge Road - wider paved shoulders if not bike lanes	On-Road Bicycle	Sylva
50	North and South Country Club Drive (to create single loop destination, via University Inn and Oak Forest)	Sidewalk	Forest Hills
51	Two RR crossings fixed for cyclists: Dark Ridge Road	Crossings	Sylva
52	Sidewalk from old entrance of campus to Cullowhee Bridge	Sidewalk	Cullowhee
53	Greens Creek Road from 441 to USFS/fire towers/hiking access	On-Road Bicycle	Dillsboro
54	Connect new bike lanes via 107 to 281 with tie-in to Hwy 64E in Transylvania	On-Road Bicycle	Tuckaseegee
55	University Heights to Old Cullowhee entrance	Sidewalk	WCU

COMPREHENSIVE TRANSPORTATION PLAN: SIDEWALK & BICYCLE FACILITY NEEDS

TRAIL CLASSIFICATION AND DESIGN

Recognizing the diverse needs of users in each community and the overall purpose of each greenway facility is an important step towards proper design, minimal impact and environmental sustainability in projects. As such, the Committee has developed a system by which each trail project can be classified. Assigning a classification for each greenway project will guide the design, development and maintenance of that trail in a manner that is most specific to the needs of its users. These classifications are described below and specific information is included in the following sections regarding standard drawings and profiles, minimal impact standards and conservation priorities in development.

MAJOR GREENWAY CONNECTORS



These corridors are the base of any interconnected system and represent areas in which both environmental and transportation needs are met in a wide (50' or larger) protected area. Trails within this system are typically at least 8 to 10 feet in width and are primarily paved surfaces to allow access to the widest range of users. These multi-use trails can serve purposes of alternate transportation routes for cyclists as well as preserving larger areas of naturally significant land, such as floodplain or riverside greenways. These trails can follow river, road, and railroad corridors.

MID-RANGE COLLECTOR TRAILS



These areas are the interlinking points between major greenway connectors and other transportation systems. They can serve a variety of needs and are often community-specific paths which join area-specific facilities. These collector trails can range between 25 and 50 feet in protected width and can feature trails between 5 to 10 feet wide. They are often shorter in length than the major connectors and target specific connections. Often they are multi-use trails, used for both cyclists and pedestrians, but are also used in areas where existing on-road bicycle facilities are provided but safe pedestrian access is not available in the on-road facility.

SMALL-AREA SPECIFIC TRAILS



These trails serve a direct segment of the population in any given area by addressing a very specific area of need in that community. A wide variety of surfacing can be used dependent on the primary purpose of these trails, and they can range in width from 2 to 8 feet. These trails make excellent community involvement projects because they are often less restricted than major connector trails and because they are specific to a particular area's needs. Footpaths, off-road bicycle routes and hiking trails would be good examples of this type of trail facility.

TRAIL CLASSIFICATION AND DESIGN

TRAIL DESIGN: STANDARDS FOR ENGINEERING

These sections provide details on design specifications, construction materials, and development strategies for a wide variety of greenway facilities. These standards are meant to provide the highest possible levels of accessibility, safety, and ease of use to our citizens and visitors, and should be followed to the maximum extent feasible in planning and design of specific greenway projects.

Designing for the Impaired

In the development of specific greenway plans, strong consideration needs to be given to the need for the majority of the population to be able to utilize the facilities. Nearly all segments of the population will be influenced by temporary or permanent disability at some point during their lives and all facilities should be as free from barriers and obstructions as possible.

In designing a greenway, the standards need to take the following degrees of disability into account:

- Temporarily impaired – under impermanent disability; able-bodied.
- Visually impaired - temporary to permanent loss of sight.
- Moderately mobile impaired - elderly and those confined to wheelchairs
- Hearing impaired – temporary to permanent loss of hearing, reliance on sight and touch.
- Manually impaired - poor strength and stamina.
- Learning impaired – illiteracy or orientation-impaired.

The design of steps, ramps and railings should ensure smooth transitions from one area to another and should follow local, state and federal slope and handrail requirements to the maximum extent feasible.

Generally, exceptions to this mandate will be considered when compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics; where compliance would substantially alter either the nature of the setting or the purpose of the facility; compliance would require construction methods or materials that are prohibited by Federal, state, or local regulations; or when compliance would not be feasible due to terrain or the prevailing construction practices.

Greenway routes are to be continuous unobstructed paths designated for pedestrian and/or cyclist use that connect accessible elements such as parking areas, buildings, shopping areas, schools, and other amenities. We recognize that each trail will present specific challenges for accessibility, and that topography may limit access to some sections of some trails. However, the Committee and the Department are committed to creating easily accessible trailheads, parking areas, restrooms, resting areas, picnic areas, and other associated amenities to the maximum extent feasible.

The North Carolina Department of Insurance, the Jackson County Planning Department and the U.S. Government Accessibility standards should be consulted for design-specific standards for trails and associated amenities. At the time of this writing, guidelines had been drafted but not approved for outdoor developed areas by the Architectural and Transportation Barriers Compliance Board and were published in the Federal Register at 36 CFR Part 1195. Every effort will be made to remain in compliance with these and other recommended standards for outdoor access routes, including for trail obstacles, width, openings, resting areas, passing spaces, cross and running slopes, edge protection, and surfacing.



WWW.PBIC.ORG/BURDEN

TRAIL CLASSIFICATION AND DESIGN

Surfacing Standards and Requirements

Trail surfaces, though more often chosen for cost efficiency than suitability, are the single most important element of a trail. The level of user comfort, aesthetic appearance and durability of a trail surface can determine its rate of use and impact on the community. In acknowledgement of the importance of trail surfacing, and with regard to accessibility of varying types of surfaces, the following standards and suggestions are recommended for consideration during the design of each trail project. The AASHTO Guide for the Development of Bicycle Facilities provides a comprehensive resource for bicycle facility design and construction and the NC Department of Transportation Division of Bicycle and Pedestrian Transportation provides a detailed guide to pedestrian facilities.

Accessibility

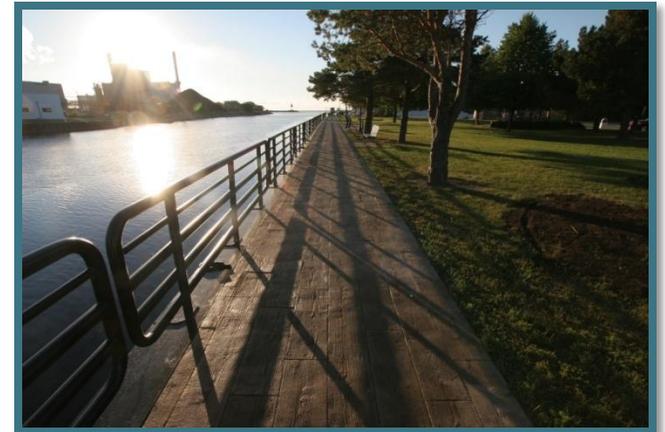
As found in 36 CFR Part 1195, Advisory T303.3, trail surfaces are required to be firm and stable *to the maximum extent feasible* unless one of the limiting conditions listed is present. The degree of firmness and stability may vary depending on the intended use and the expected direction and length of travel.

Appropriate surfaces are not limited to traditional materials such as asphalt and concrete; a wide array of materials, including packed dirt, crushed aggregate, wood, stone or grass could also be used to meet this requirement. The degree of firmness and stability that is most appropriate is related to the intended use of the trail, the predominant direction of travel, and the overall length of the trail.

Environmental Impact

The wide variety of surfacing materials means that each trail can be designed with the least environmental impact necessary to the creation of the trail. In accordance with the approved vision of environmentally conscious greenway development, it is expected that each trail surfacing project will be undertaken with equal regard for cost, feasibility and environmental sustainability.

Many current options for environmentally sound surfacing materials, including permeable surfaces, are prohibitive due to cost or their ability to provide surfaces appropriate for all types of bicycles. These should still be considered for environmentally sensitive areas, however, and staff should continue to research current trends and new developments in the fields of environmentally sustainable surfacing.



WWW.PBIC.ORG/BURDEN

TRAIL CLASSIFICATION AND DESIGN

Major Greenway Connectors

Unpaved Multi-Use Trails

The unpaved multi-use path is intended to accommodate a variety of users, including walkers, joggers, cyclists, and others. These pathways are intended for use in upland environments and will not successfully withstand the effects of flooding. While cheaper to install, unpaved trails typically have higher maintenance costs than paved trails and require more repairs. Careful consideration should be given to the amount of traffic the specific trail will generate, as these surfaces tend to deteriorate with excessive use. Typically, trails are 10 to 14 feet wide. A typical cross section for unpaved trail consists of a prepared sub-grade, followed by six inches of coarse aggregate, and finally, four inches of decomposed granite.

Paved Multi-Use Trails

Typical pavement design for paved, off road multi-use trails should be based upon the specific loading and soil conditions for each project. These trails, typically composed of asphalt or concrete, should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles. In areas prone to frequent flooding, it is recommended that concrete be used for its excellent durability. Installation of a geo-textile fabric beneath a layer of aggregate base course (ABC) can help to maintain the edge of a trail. It is also important to provide a 2-foot wide graded shoulder to prevent trail edges from crumbling.

Width and Use

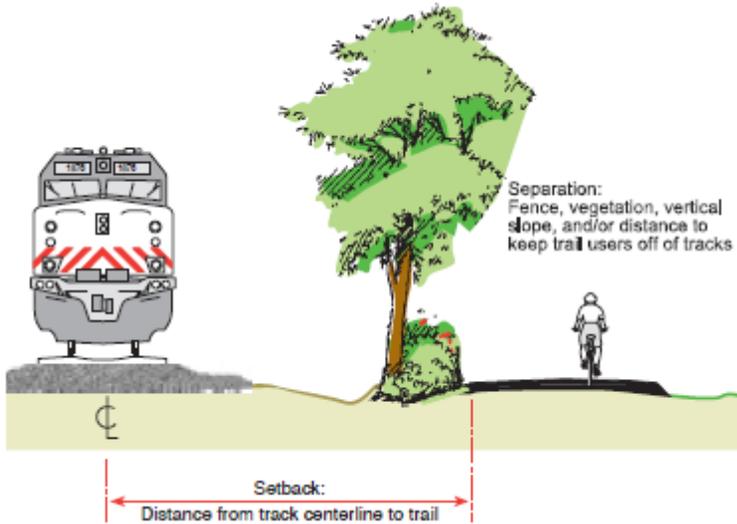
The minimum width for two directional trails is ten feet. However, 14-foot widths are preferred where heavy traffic is expected. Centerline stripes or separators should be considered for paths that generate substantial amounts of pedestrian traffic. Possible conflicts between user groups must be considered during the design phase, as cyclists often travel at a faster speed than other users.

Primary Surfacing Materials

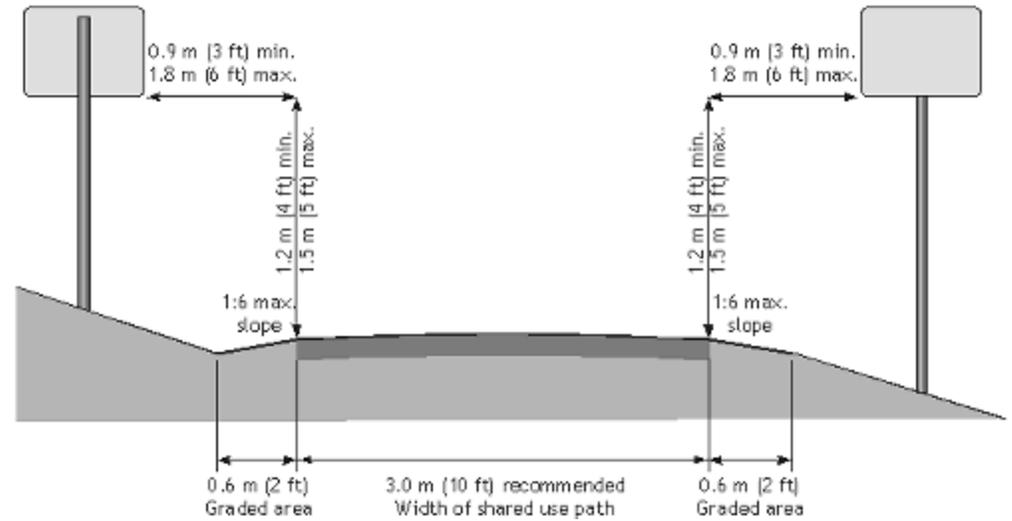
Asphalt concrete is a hard surface material that is popular for a variety of rural, suburban and urban trails. It is composed of asphalt cement and graded aggregate stone. It is a flexible pavement and can be installed on virtually any slope. Typical cross section of an asphalt trail starts with a prepared compacted sub-grade, a geo-textile fabric, 6 inches to 10 inches of an aggregate base, and finally a 2-inch layer of asphalt concrete surface course. Asphalt is usually preferred over concrete due to lower construction costs, which allows a greater distance of community trails with fewer funds as compared with concrete trails. An important limitation for asphalt multi-use trails is the deterioration of trail edges.

Concrete surfaces are capable of withstanding the most powerful environmental conditions. They hold up well against the erosive action of water, root intrusion, and sub-grade deficiencies such as soft soils. Most often, concrete is used for intensive urban applications. Of all surface types, concrete is the strongest and has the lowest maintenance requirement if it is properly installed. A typical cross section of a concrete trail starts with a prepared compacted sub-grade, four inches of sand or aggregate base, and a four-inch slab of reinforced concrete. The top surface of the concrete may need to be finished with a rough texture to improve safety when the surface is wet.

TRAIL CLASSIFICATION AND DESIGN



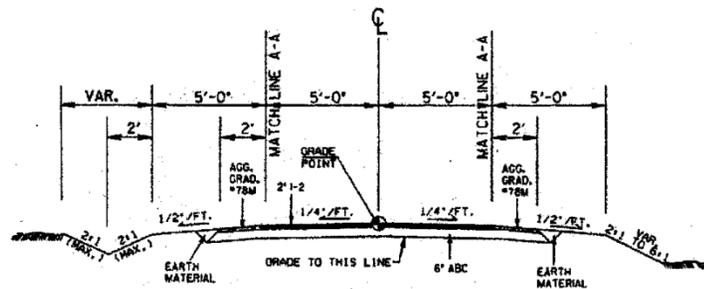
I: AASHTO STANDARD RAIL WITH TRAIL DESIGN



II: AASHTO STANDARD GREENWAY CROSS-SECTION

RECOMMENDED TYPICAL SECTION OF 10-FT ASPHALT PATHWAY

With 2-Ft Crushed Stone Shoulder



III: N.C. BICYCLE FACILITIES PLANNING AND DESIGN GUIDELINES

TRAIL CLASSIFICATION AND DESIGN

Mid-Range Collector Trails

Trail Types

These trails may be either multi-use or single-use paths, and will be designed according to their intended user group. Some possible forms of these paths could include concrete or asphalt paths or trails as well as soft-surfacing options like those summarized below. While it is highly desirable that both pedestrian and wheeled users will be able to use each mid-range path, some of the soft-surfacing materials can be used for much more effective environmental and aesthetic impact without severely damaging the natural environment. They also provide stable surfaces, low-to-moderate maintenance costs and less initial outlay for trail construction.

Width and Use

Collector trails should maintain a minimum five-foot width when possible and should expand when feasible to at least eight feet to allow a wider variety of access to the trail. These trails should remain compliant with turning, resting and slope standards for accessibility.

Surfacing Materials

Materials that can be used to surface a trail include natural materials, soil cement, graded aggregate stone, granular stone, and shredded wood fiber. The soft surface materials are less expensive to install and compatible with the natural environment, however, they do not accommodate certain users, such as skaters and disabled persons. Soft surface trails are preferred, however, by some runners and mountain bicyclists.

Soil cement supports most user groups, though bicyclist and horseback riders should have only restricted use. Soil cement surfaces last longer if installed on top of a properly prepared sub-grade and sub-base.

Graded aggregate stone materials suitable for trail surfacing include colored rock, pea gravel, river rock, washed stone, and coarse sand. This surface will often need to be kept in place with wood or metal edging. Because it is a loose (non-compacted) surface, graded aggregate stone is limited in application to flatter slopes.

Granular stone includes a broad range of aggregate stones such as limestone, sandstone, crushed rock, pit gravel, sand and fine gravel. Graded aggregate and granular stone materials are some of the best surface types for greenway trails because of their ability to be densely compacted and their compatibility with the natural environment. If properly constructed, these can also support bicycle- and handicapped-accessible trails.

Shredded wood fiber is usually composed of mechanically shredded hardwood and softwood pulp, pine bark chips or nuggets, chipped wood pieces or other by-products of tree trunks and limbs. Joggers, runners, equestrians, and walkers favor this type of surface because it is soft and blends with the natural environment. However, shredded wood fiber decays rapidly, often needing replacement, and must be installed on flat sub-grades.



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TRAIL CLASSIFICATION AND DESIGN

Small-Area Specific Trails

Trail Types

Small-area trails can include off-road facilities for hiking and cycling as well as footpaths, boardwalks and bridge facilities to provide access within a specific community. By their nature, these trails will often be limited by topography, terrain, and slope and as such will likely be more soft-surface trails. These trails should be built to engineered specifications, but can be built with the assistance of volunteers and community participants. These trails are also the most likely to meet one or more of the criteria for exemption from accessibility standards listed above. However, parking areas, trailheads, and other features should be designed for maximum accessibility.

Surfacing Materials

Boardwalks, or wood surface trails, are typically required when crossing wetlands or poorly drained areas. While boardwalks can be considered multi-use trails, the surface tends to be slippery when wet. Boardwalks intended for use by bikes, pedestrians, in-line skaters, or other wheeled mechanisms should be a minimum of 14 feet in width. Boardwalk trails limited to pedestrian use can be as narrow as 8 feet. Wood surface trails are usually composed of wooden planks which form the top layer of a bridge, boardwalk or deck. Most common wood surfacing is resistant to decay and exposure and is often pressure-treated. Wood is a preferred surface type for special applications because of its strength and comparative weight, its aesthetic appeal and its versatility. Synthetic wood, manufactured from recycled plastics, is now available for use as a substitute in conventional outdoor wood construction. While these products are more expensive than conventional wood lumber, recycled plastic lumber lasts much longer, does not splinter or warp, and will not discolor, though it is very slippery when wet. Anchor posts for boardwalks are usually anchored in concrete. Handrails on either side of a boardwalk should be at least 54 inches high and have lower rails spaced accordingly for safety. Edges on the top of the handrails should be rounded and smoothed.

Footpaths, or hiking and jogging trails, are designed to accommodate pedestrians and are not intended for cyclists, other wheeled users or any motorized vehicles. These natural surface trails typically make use of dirt, rock, soil, forest litter, pine mulch, leaf mulch and other native materials for the trail surface. This is the most appropriate surface for ecologically sensitive areas. These pathways can be narrow and can also follow strenuous routes. This may limit access to all but skilled users. Users may need to be able to climb over natural obstacles such as small rocks and roots. These pathways could also cross shallow creeks without the aid of bridges. Some hiking trails may be marked to also permit equestrian use. Construction of these trails mainly consists of providing positive drainage for the trail treads and should not involve extensive removal of existing vegetation. These trails vary in width from 3 feet to 6 feet and vertical clearance should be maintained at a minimum of nine feet, or twelve feet where equestrian use is allowed.

TRAIL CLASSIFICATION AND DESIGN

Amenities

Bridges are important elements of many trail projects. Bridge types often used for multi-use trails include suspension bridges, prefabricated span bridges, and simple log bridges. Greenway bridges intended for occasional vehicular use must be designed to handle all loads safely. When determining a bridge design for multi-use trails, it is important to consider the issue of access for emergency and maintenance vehicles. Design and construction specifications for bridges vary greatly from project to project and must be based on site-specific criteria. Regardless of the type of bridge selected, it is absolutely necessary to have all bridges checked for safety and functionality by a qualified structural engineer on a regular basis.

Overlooks and viewing areas are specifically designed and constructed to provide an unobstructed observation of a vista or specific point of interest, such as the view of a mountain range, waterfall, stream, or geologic formation.

Trailheads (parking lots and associated facilities) are usually developed next to public right-of-ways and serve as the primary public access to the greenway. Because a trailhead shapes users' first impression of the greenway, attention should be focused on its appearance and function. The trailhead is the primary location where users transfer from vehicles to the greenway. The degree of transition varies somewhat based on the type of user group. Trailheads need to be secure and easily managed. A combination of fencing, lighting, and landscaping can control access and maintain adequate sight lines across the expanse of the trailhead. Convenient pedestrian access to the greenway needs to be provided to encourage direct entry and prevent shortcuts through private property, and is also a good area in which to install bicycle racks.



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Typical trailhead design addresses, at a minimum, the following considerations:

- Maneuvering room for vehicles, pedestrians, and animals.
- Parking stalls for automobiles and (if appropriate) trucks with horse trailers or small trailers for boats, or bikes.
- Buildings, signs, fences, information booths or kiosks, and landscape plants.
- Connector trails to the main trail for special use.
- Security fencing and lighting, vehicle gates, and barrier systems to prevent unauthorized access to trails.

Trail intersections are a prime location for ensuring trail user safety, and safe intersections with roadways are crucial. An evaluation of potential conflict at all intersections should be performed for each project. This would include examining pedestrian and or vehicle conflict potential; geometric conditions of the intersection; speed of vehicles using the intersection; distance to alternative crossing points; traffic volume; and time of crossing based on the most physically disadvantaged user. Each intersection should be designed accordingly. Treatments required to ensure safety can include crosswalk striping, installation of flashing warning lights or traffic signal lights, or new facilities by which crossing can be completed.

TRAIL CLASSIFICATION AND DESIGN

Bicycle considerations are important, particularly when designing multi-use trails for a wide variety of users. Whenever possible, separate bicycle and pedestrian paths should be provided. If this is not feasible, additional width, signage and striping should be used to minimize conflicts. Bicycle lane widths should be at least four feet at all times, excluding curb and gutter measurements, and a six-foot width is preferable.

Railroad Crossings should ideally take place at 90-degree angles to the railroad. If less than 45 degrees, the trail path should be widened significantly. Warning signs should be posted no less than 300 feet before the crossing and pavement markings or other warning signage should occur no less than 250 feet from the crossing.

Barriers serve a variety of functions, such as addressing grade changes and slope stabilization, traffic control (pedestrian and vehicular), views, noise control, separation, protection and safety features. Walls, fences, railings and vegetation are often utilized and should be adaptable to wildlife, provide access to views, be built on a human scale, be flood-proofed, and require little maintenance. Often, *bollards* are used to provide separation between vehicles and trail users. They are available in a variety of shapes, sizes, and colors and come with a variety of features. Bollards should be chosen according to the specific needs of the site and should be similar in style to the surrounding elements. The contractor must provide proper footings and anchors for bollard installation according to manufacturer's specifications. Typical construction materials for bollards include painted steel concrete, treated wood or aluminum. Removable bollards may need to be installed to provide trail access for emergency and maintenance vehicles. Bollards should not stop or hamper handicap access, and all bollards and barriers should be installed so they do not conflict with trail use and have adequate sight distances. Barriers of all types should be clearly marked with appropriate reflective markings to avoid collisions.



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Trash receptacles are necessary along most trails. They should be attractive as well as functional and should be selected based on the amount of trash expected, the overall maintenance program of the trail, and the types of trail users. Trash cans should be easily accessible to both trail users and maintenance personnel. At a minimum, 22-gallon or 32-gallon containers should be located at each entranceway and, on longer trails, at resting areas. They should be set back three feet from the edge of the trail and include some provision for security, and be maintained on a strict schedule.

Benches allow users to rest, congregate or contemplate. They should conform to uniform standards throughout the trail system and should be chosen based on quality of construction, low-level maintenance and attractiveness. Benches should be constructed with three sets of legs and back braces to eliminate sagging of cross members and extend the bench life. Trail benches should comfortably accommodate the average adult and be located at the primary and secondary entrances to the trail and at regular intervals on longer trails. A recommended distance of at least three feet from the trail edge is suggested where topography permits. Typical benches should be six feet in length with the seat at least seventeen inches from the ground. Back supports and armrests should be provided and the ground around the bench should be firm and stable.

TRAIL CLASSIFICATION AND DESIGN

Dog cleanup facilities will be necessary on trails where dogs are permitted. These materials should be available at identifiable stations or trailheads and should include litterbags and scoops. These facilities can be marked with effective signage and reminders to users.

Lighting should be installed on trails that will be used at night or at dusk if needed, and will be an important component of some trailheads, parking lots, and access areas. Proper lighting should be installed to meet all requirements of safety and security while remaining non-intrusive to neighboring property owners. All lighting facilities should be considered from an environmentally sustainable viewpoint, and the use of solar, hydro or geothermal power is encouraged for all electric appliances within the greenway system. Lighting must be in compliance with local regulations.



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Trail signage is another important aesthetic component of greenway systems. It is the primary source of direct communication with trail users, and therefore must be clear, concise, and legible to a wide variety of people, and address trail-specific issues, concerns or regulations. The design, production, installation and maintenance of signs should be coordinated from the start of the design process. Recycled materials should be considered as the first option for signage, and durability will be essential. Signage is the primary source of direct communication with each user; therefore, it must be clear, concise, and legible to a wide variety of people. Signs respond to the specific navigational and informational needs of the greenway. They need to be clear but brief and preserve graphic consistency throughout the greenway system, and be designed for maximum durability with an emphasis on the use of recycled materials. Signs must adhere to the Federal, state, and local regulations in each separate trail area. Many types of signs are available, including informational, directional, regulatory, warning and educational signs. An effective combination of these in a comprehensive signage program will enhance the user experience.



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Bicycle racks should be readily accessible at major trailheads and access areas, easy to use and operate, and aesthetically sensitive to their surroundings. This equipment should be designed for vandal resistance and be relatively maintenance free, accommodating a variety of lock and bicycle types and sizes. Racks should be located within 50 feet of building entrances where bicyclists make a transition into a pedestrian mode, and should always be installed within easy viewing distance from a main pedestrian walkway. Racks should be placed in a manner that avoids conflict with pedestrians, near the curb and at a reasonable distance from building entrances and crosswalks. Racks should be installed at parking lots, park entrances, ball fields, and near other recreational facilities that are along, or connected to, the trails.

TRAIL CLASSIFICATION AND DESIGN

Landscaping and Vegetation

Utilizing native plants and enhancing existing environmental systems is an important part of sensible greenway planning. Plants can be used for a diverse range of functions. Architecturally, plants can take the form of screens, walls, fences or overhead canopies. For engineering purposes, they can assist in sound control, filtering of air pollution, erosion control, temperature control, windbreaks and shading. Aesthetically, plants are useful in framing the landscape, complementing surrounding elements, or buffering against adjacent land uses; they also attract wildlife and are beneficial to the natural habitats, species and environments of a particular area.

The spatial sequence or variation in plant arrangement is important for both environmental and security reasons. Security is always a primary concern in developing greenways, and landscaping can dramatically enhance it. Attention to security always begins with good visibility. Planners should avoid placing dense and aggressive shrubs and groundcover within the designated clear ground layer zone adjacent to trail edges, seating areas, and other public spaces. Good lines of sight are required for approaches to bridges, tunnels, and intersections with roads or other trails. Breaks should be incorporated where people can escape potential trouble. It is advisable to avoid narrow vegetative corridors. Also, the arrangement of plants along a linear corridor will affect the mood of the corridor. Altering the arrangement of plants by placing some closer to the trail edge and others farther away will provide a more natural setting.



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Plant landscaping installation and maintenance are excellent projects for greenway volunteers. As the landscaping plan is carried out, be sure to allow enough space between plants for future growth. Typical trails lose at least 10 percent of the plant material that is installed, and may lose as much as 40 percent due to natural causes, improper maintenance or other factors. A balanced design will allow for plant loss while maintaining an attractive and functional landscape.

Vegetative clearing refers to the amount of vegetation removal required for various levels of trail development. The amount of material to be removed for any one trail will depend on the type of trail being developed. While footpaths or hiking trails require little or no vegetation removal, paved pathways may require significantly more. In addition, invasive plant species impacting the trail area may also require removal. Removal of vegetation should be done with discretion. The objective in controlling the growth of existing vegetation should be to maintain clear and open lines of sight along the edge of greenways, and to eliminate potential hazards that could occur due to natural growth, severe weather and other unacceptable conditions.

TRAIL CLASSIFICATION AND DESIGN

Clearing and Grubbing Width is the amount of clearing required for the trail itself as well as a minimum two-foot buffer on either side of the trail. The buffer should be maintained at the same level as the trail itself and should be free from any obstacles such as rocks and roots. This buffer zone is an important safety feature for users who inadvertently stray off or are forced off the primary trail surface.

Selective Thinning refers to the area on either side of the trail where vegetation is cleared to a level that allows users to have an open line of sight. This type of buffer provides users additional safety because they can see anything that is immediately adjacent to the trail itself. Formal trails usually require at least a 26-foot selective thinning width for safety reasons.

Basic Guidelines for Vegetation Removal

- All vegetation should be cleared to a minimum distance of 3-feet from each edge of the greenway trail.
- Selective clearing of vegetation should be conducted within a zone that is defined as being between 3 to 10 feet, and within all limits proscribed by N.C. Division of Water Quality and N.C. Fish and Wildlife guidelines as appropriate.
- At any point along the greenway, a user should have a clear, unobstructed view along the centerline of the trail. (An exception to this policy would be where terrain or curves in the trail serve as the limiting factor.)
- Removal of vegetation should be limited to local government employees, approved volunteers or insured contractors.

As always, site-specific requirements will determine the amount of buffer width, landscaping requirements and species removal. All caution should be taken in each situation to ensure that the trail project does not unreasonably affect the environment and that projects are designed to be most effective and least impacting in their specific area.

Vertical Clearances

Hiking and jogging trails are often designed to have minimum impacts on the surrounding landscape. Because of this, they may not have any formal vegetative clearing on either side of the trail. Although the trail itself may be very narrow in places, it should maintain a vertical clearance of at least 9-feet for pedestrian traffic and 12-feet if the trail is open to equestrian traffic. Vertical distance refers to the area immediately above the trail surface, which must be maintained free of obstacles.

Boardwalk, unpaved and paved multi-use pathways are designed to handle many more users than hiking or jogging trails and therefore have expanded requirements for vegetative clearances. Clearing of vegetation on the sides of the trails adds to the overall safety of the trail. These trails must maintain a safe vertical clearance of at least ten feet for normal users and at least twelve feet if the trail is open to equestrian traffic.

TRAIL CLASSIFICATION AND DESIGN

Buffer Zones

Preserving and establishing buffer zones between roadways, trails, and streams is important in preserving water quality and animal habitat. These vegetative zones work to filter pollutants out of stormwater runoff as well as to prevent the buildup of sediment from erosion. Preserving these vegetative buffers also serves wildlife by providing important habitats adjacent to streams and rivers. Such natural areas can also be used as “outdoor classrooms” for numerous types of environmental studies.

Waterway buffer distance is the vegetative distance between the trail and any creek, stream, or river. This should be maintained at a minimum of 25 feet as required by local, state and federal laws. A greater width is always encouraged and some exceptions for lesser widths may be made in areas of particular concern or to provide non-regular access points to the waterway.

Roadway buffer distance is the vegetative distance between the trail and any roadway, parking lot, or other area that includes vehicular traffic. This must be maintained at a minimum of 15 feet whenever possible, and distances of twenty to thirty feet are preferred. Total distance between the roadway and the edge of a stream should be at least 50 feet, although ideally, this distance would be more than 150 feet.

Fencing

Greenway fencing serves several different functions, including separation of properties, access control, noise and wind abatement, and decoration. A few of the various types of fencing include solid walls, solid board, semitransparent panels, transparent panels, post and rail, picket, and vegetative hedges. The most common reason for fencing is to separate public and private property, as Greenway fencing gives adjacent property owners the privacy, security, and environmental conditions that are often requested. The style of fencing should be consistent with the natural surroundings and appropriate to the wishes of both the County and the property owners. Windscreens and evergreen hedges are often used to control environmental conditions, and solid fencing can be erected to deflect undesirable noise or visibility. Plant material can also be a popular and effective fencing option for greenways, providing a buffer along adjacent land and channeling access and direct circulation of greenway users.



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RECOMMENDED POLICIES

There are several policies and action steps that local governments may utilize to further encourage trail corridor acquisition and construction, bicycle friendly planning, and the preservation of open space. Greenway staff will be available in an advisory capacity to help other local governments craft policies, initiate action steps, and implement planning strategies.

ACQUISITION POLICY

The Jackson County Greenways Project endorses the use of voluntary conservation easements for trail corridor acquisition. It is believed that these easements, when either voluntarily donated or purchased at fair and equitable value, are the best way to work with property owners to acquire access to trail corridors. There are many ways in which a landowner can ensure the protection and management of any easement for trail purposes, including right of public access easements, conservation easements, joint use easements, fee simple purchase, land leases, and management agreements. Legal strategies should be tailored to each property owner's individual needs and wishes.

Whenever possible, the JCGP intends to use existing corridors – such as those of railroads, sewer lines, road rights-of-way, and utility line easements – to form the bulk of trail spaces. This will minimize the impact on private property owners. In all negotiations and communications with property owners, the JCGP will endeavor to be fair, respectful and considerate. It is recommended that each town and local government adopt similar policies when to govern greenway acquisitions.

Landowners who do choose to allow their conservation easements to be used for public recreational access are protected from liability under North Carolina statute. The article can be found at http://www.ncleg.net/EnactedLegislation/Statutes/HTML/ByChapter/Chapter_38A.html.

While North Carolina statutes do allow the condemnation of private property for recreational purposes, in a process known as the use of eminent domain, it is not encouraged by the JCGP. The process of condemning property for greenway purposes would be contrary to the mission of the greenways program, which is to enrich the lives of our citizens by adding to their quality of life and bringing health and environmental benefits to every community. It is not recommended that any local government make the use of eminent domain a dominant part of their policy on acquisition. However, it is recognized that usage of eminent domain may become necessary when all other mentioned strategies fail for certain critical individual tracts and the overall project is threatened. In such cases, uses of eminent domain may be acceptable as a method of last resort and to ensure that a greenway project of benefit to the public as a whole reaches a reasonable conclusion.

RECOMMENDED POLICIES

BICYCLE-FRIENDLY PLANNING AND DESIGN

It is vital that towns and counties consider the impact of transportation planning and land-use regulations on the ability of bicycle traffic to move safely and freely through congested centers. There are many ways that bicycle-friendly planning concerns can be addressed within the existing framework of ordinances and regulations and through conscientious partnerships with the NCDOT and the Southwest Commission RPO's Transportation Planning office.

- Rumble strips are a serious hazard for cyclists and can completely eliminate whole corridors of paved shoulders if improperly installed. Division 14 has adopted a progressive rumble strips policy that allows for more bicycle-friendly installation of rumble strips and it is recommended that each board endorse this policy and continue to address cyclist concerns over the installation of these strips in all transportation planning.
- Storm drain grates, transit stops, and other design features can be inconvenient and often dangerous for cyclists, as can railroad crossings, traffic light crossings, and improper installation of curb access points. These design features can incorporate bicycle-friendly elements to make them safer for cyclist traffic. Towns, counties, developers, departments of transportation, and local government employees should research and incorporate, when possible, friendlier designs into any new facilities.
- Bicycle lanes, widened shoulders, and other design features also have an immediate effect on cyclists, and all road planning, design, improvements, upgrades and new construction should include bicycle planning and public participation processes to ensure they do not interfere with safe, accessible travel for cyclists.
- Counties and towns can adopt policies which endorse designated bicycle lanes as preferable to widened shoulders on all new roads. While this does not mean NCDOT will be required to build these facilities, it does make the preference known.
- Bicycle routes – including the state-designated route, the local tour routes, and popular rides for locals – should be signed and clearly accessible, and should be designed to link major destinations within the county. These routes, after proper signage, should be marketed to the public and available free of charge in the form of route maps. Each local government unit is encouraged to participate in a joint venture to capture, mark, make signs for, and market these routes.
- Representation on boards of interest should continue for the Greenways Committee, particularly on transportation-related issues, to ensure that cyclists are fairly represented in local transportation planning and design.
- Lower speed limits can be requested for streets which serve as informal bicycle route facilities yet do not have bicycle lanes or wide shoulders. When roads provide essential travel connectors for bicycles, it can be a good idea to ensure the speed limit is not too high.
- Encourage dual multi-modal transportation by tying transit stops, taxi stops, schools, and other available sites into your specific community's greenway network. This will ensure high levels of use and bring together important components of any transportation plan.
- Curb relocation and preservation of space are both tools that may be used when new roads are being built or old ones are being upgraded to require additional space be added for bicycle travel.



For a sample of some of the above-mentioned policies, please reference the Appendix.

NCDOT MEMORANDUM OF UNDERSTANDING

Under current NCDOT policy, the DOT cannot install sidewalks outside of municipal limits, where the towns agree to take over maintenance of the sidewalks. However, outside agencies, such as universities, institutions and other local governments, can initiate Memorandums of Understanding with the DOT. This means that county governments may request sidewalk construction in areas that are outside of municipal limits, provided they agree to assume maintenance of those sidewalks and repair them if necessary.

It is highly recommended that Jackson County enter into an MOU with NCDOT, similar to one already in place between the department and WCU. This will allow requested and severely needed sidewalks to be extended beyond city limits and will mitigate some of the cost of providing these essential pedestrian connectors in outlying areas.

PLANNING COORDINATION

Making sure that coordination occurs among many agencies is an essential principle for smart, sustainable growth and regulation. As the county moves forward with small-area land use plans, transportation planning, conservation efforts, and other initiatives, it is important to address the need for consistent communication among all agencies. This ensures a comprehensive approach to all issues affecting quality of life in Jackson County.

Quarterly planning meetings with the NCDOT are recommended to coordinate road projects with needed cyclist, pedestrian and encroachment projects. NCDOT meetings can also address the needs of the Complete Streets policy recently adopted by that organization.

Additionally, cyclist and pedestrian planning should be addressed in community and development regulations, including historic and cultural preservation, community development and housing, and other areas.

GREENWAY MAINTENANCE AND USE PLANS

Each municipality and local government entity that wishes to build trails must consider how these trails are maintained over time. Volunteer stewardship, hired staff, and other options are available to counties and cities. In addition to adopting a maintenance plan for each greenway and ensuring that funding is available to cover its costs, it is important for each area to consider the needs and desires of its own citizens. Regulations governing the use of electric vehicles like segways, whether to allow pets on trails, and how to safely separate bicycle and pedestrian traffic will need to be addressed in a way that meets the needs of each individual community.



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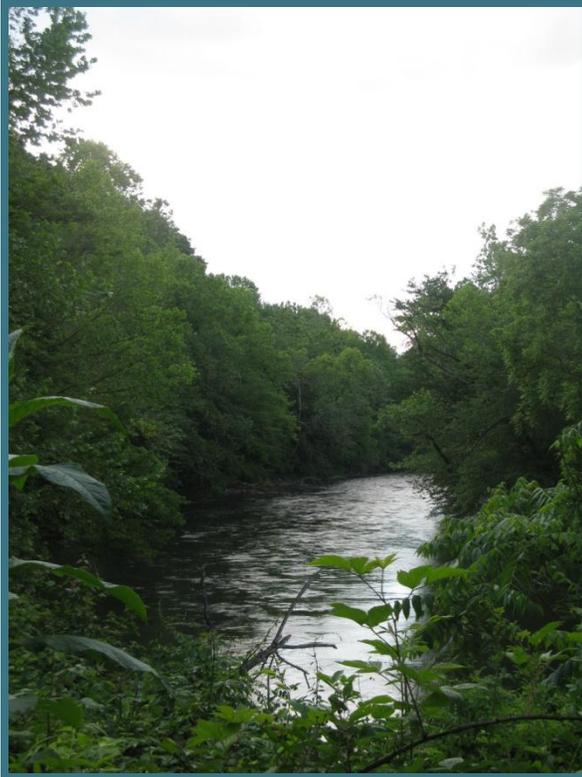
RECOMMENDED POLICIES

SUPPORT CONSERVATION EFFORTS THROUGH LAND-USE PLANNING

An excellent way to encourage greenway construction and land conservation is to require open-space percentages or fees-in-lieu from developers wishing to build subdivisions, or to encourage conservation subdivisions through incentives. This method offers a way to encourage the preservation of green space, greenway construction or land donation, and/or fees dedicated to the promotion of conservation efforts. These regulations can be found in many other counties throughout North Carolina and may be adapted to fit the needs of Jackson County's citizens.

Additional measures may be taken to provide incentives and financial benefits for citizens who choose to place land into conservation easements and/or to open private land up under trail easements for public access. These should be initiated whenever possible and prominently promoted through permitting processes. The existing Conservation, Preservation and Recreation Fund is an excellent step towards funding future land conservation measures; it is recommended that a small portion of this funding be set aside for use as matching money for Jackson County landowners who are applying for grants to cover the costs of these easements. Local land trusts should be used as easement holding entities, and grants can be pursued to help these landowners cover the costs of creating a permanent conservation easement.

Other ways to support conservation in land-use planning could include exaction, transfer of development rights, cluster development, performance zoning, and land exchange, although many of these options are costly and difficult to implement and should be thoroughly researched and reviewed by the public before implementation.



TUCKASEE RIVER, JACKSON COUNTY, NC

FUNDING SOLUTIONS

Funding is available for trails and greenways from a variety of federal, state, local and private sources. Some options include grants, low- or no-interest loans, public agency joint ventures, joint development techniques, company grants, individual donors and membership, fundraising, and public financing. Each project should be matched to funding sources and vigorously pursued. *More than 90 percent of survey respondents* stated that they supported using taxpayer funding to leverage other monies from grant sources to create greenways and trails, and that use of tax funding should be managed with fiscal responsibility and care to maximize the return on the investment of the citizens' funding.

STATE OF NORTH CAROLINA

North Carolina Department of Environment and Natural Resources
Recreational Trails Program (national)

<http://www.fhwa.dot.gov/environment/rectrails/>

North Carolina Department of Environment and Natural Resources
State Trails Program

www.ncparks.gov

North Carolina Parks and Recreation Trust Fund
Construction Grants

http://www.ncparks.gov/About/grants/partf_main.php

North Carolina Clean Water Management Trust Fund
Greenways Acquisition Program

<http://www.cwmtf.net>

North Carolina Land and Water Conservation Fund / Land for Tomorrow

http://www.ncparks.gov/About/grants/lwcf_main.php

North Carolina Department of Transportation
Division of Bicycle and Pedestrian Transportation

<http://www.ncdot.org/transit/bicycle/>

North Carolina Natural Heritage Trust Fund
Land Conservation – Natural and Cultural Value

<http://www.ncnhtf.org/>

North Carolina Division of Soil and Water Conservation
Nonpoint Source Water Protection Programs

<http://www.enr.state.nc.us/dswc/>

North Carolina Division of Forest Resources
Urban and Community Forestry Grant Programs

<http://www.dfr.state.nc.us/>

North Carolina Division of Water Resources
Water Resources Development Project Grant Program

www.ncwater.org

North Carolina Ecosystem Enhancement Program

www.nceep.net

North Carolina Division of Air Quality

<http://daq.state.nc.us/>

North Carolina Department of Energy: State Energy Office

www.energync.net

North Carolina Division of Water Quality
Clean Water Act Section 319 Funding

http://h2o.enr.state.nc.us/nps/Section_319_Grant_Program.htm

North Carolina Department of Transportation: Safe Routes to School

<http://www.saferoutespartnership.org/state/5043/northcarolina>

IN-STATE FOUNDATIONS / NON-PROFITS

Community Foundation of Western North Carolina

<http://www.cfwnc.org>

Z. Smith Reynolds Foundation

<http://www.zsr.org>

Mary Reynolds Babcock Foundation

<http://www.mrbf.org/>

Cherokee Preservation Foundation

www.cherokeepreservationfdn.org

Blue Cross Blue Shield Foundation of North Carolina

www.bcbsnc.org

Doris Duke Charitable Foundation

www.ddcf.org

Golden LEAF Foundation Open Grants Program

www.goldenleaf.org

Duke Energy Carolinas Investment Fund

www.duke-energy.com

Blue Ridge Heritage Grants Program

www.blueridgeheritage.com

North Carolina Arts Council

www.ncarts.cgweb.org

Glaxo-Smith Kline Foundation

<http://us.gsk.com/html/community/community-grants-foundation.html>

Verizon Foundation

<http://foundation.verizon.com>

FEDERAL GRANT PROGRAMS

American Reinvestment and Recovery Act (ARRA) Stimulus Funding

<http://www.recovery.gov/>

Federal Grant Programs: Online Database

<http://www.grants.gov>

National Scenic Byways Program Grants

<http://www.scenic.org/byways>

Appalachian Regional Commission

<http://www.arc.gov/index.jsp>

National Endowment for the Arts

<http://arts.endow.gov/>

National Trust for Historic Preservation

<http://www.preservationnation.org/>

National Institutes of Health: Research-Related Activities

<http://www.nih.gov>

Recreational Trails and Conservation Assistance Program (RTCA)

www.nps.gov/rtca

National Resource and Conservation Assistance Program

www.nrs.usda.gov

OTHER PUBLIC AND PRIVATE RESOURCES

Recreational Equipment Incorporated (REI)

www.rei.com

Fish America Foundation

www.fishamerica.org

American Rivers
www.americanrivers.org

Rail-to-Trails Conservancy
www.railstotrails.org

Tourism Cares
www.tourismcares.org

Educational Foundation of America
<http://www.efaw.org/>

Trust for Public Land
<http://www.tpl.org/>

American Hiking Society: National Trails Fund
<http://www.americanhiking.org>

Save Our History: History Channel/American Association for State & Local History
<http://www.saveourhistory.com>

America In Bloom
<http://www.americainbloom.org/>

The Conservation Fund: Kodak American Greenways Grants
<http://www.conservationfund.org>

The Foundation Center (searchable database of foundation funding)
<http://www.foundationcenter.org>

APPENDIX: SUPPORTING DOCUMENTS & REFERENCES

SUPPORTING DOCUMENTS

Citizen Participation Summary Report: August 3, 2009

Sample Policies

Chatham County Subdivision Regulations: Conservation Subdivisions and Dedication of Open Space

Complete Streets Policy: NC Department of Transportation

Bicycle-Friendly Planning and Design: Charlotte-Mecklenburg, Chapter 3 (excerpted policies)

REFERENCES

2003 Greenway Commission Master Plan

Cherokee Heritage Trails Map: WildSouth, Inc. / EBCI

North Carolina Bicycle Routes: NCDOT.org

Bicycling and Walking in North Carolina: A Long-Range Transportation Plan, NC Department of Transportation, Division of Bicycle and Pedestrian Transportation, Nov. 1996

Planning and Designing Local Pedestrian Facilities, NC Department of Transportation, Feb. 1997

Pedestrian and Bicycle Information Center / FHWA / UNC Highway Safety Center, www.pedbikeimages.org

CHATHAM COUNTY SUBDIVISION REGULATIONS

Rev. Dec. 2, 2008

7.7 Conservation Subdivision—Alternative Standards for Development

As an alternative to conventional layouts, Chatham County encourages the preservation of large, contiguous blocks of land, herein referred to as Conservation Space. Conservation Space shall consist of Open Space and Natural Space. When a project voluntarily preserves Conservation Space in accordance with this Section, a project can increase the number of units that would be allowed on the overall property by ten (10) percent. Calculation of the density bonus shall be based on the applicable underlying land use regulation(s) dictating allowable development density. The requirements for this option are detailed below.

A. Conservation Space Requirement.

A minimum of 40 percent of the project area shall be retained as Conservation Space for a conservation subdivision design.

B. Composition of Conservation Space.

A maximum of 20% of the required Conservation Space shall be Open Space and a minimum of 80% of such Conservation Space shall be Natural Space, unless it can be demonstrated that no practical alternative exists for preserving that amount of Natural Space. See The Chatham County Conservation Subdivision Guidelines for Conservation Space Selection.

C. Connectivity of Conservation Space.

At least 50 percent of the proposed Conservation Space shall consist of a contiguous tract. The Conservation Space should adjoin any neighboring areas of Conservation Space on other parcels whenever practicable.

D. Permitted Uses of Conservation Space.

Provided it includes the required divisions of Open Space and Natural Space and otherwise conforms with the Chatham County Conservation Subdivision Guidelines, uses of Conservation Space may include the following:

(1) Conservation

Conservation of natural resources, archeological resources or historical resources

(2) Agriculture

Existing and ongoing bona fide agriculture, horticulture, or silviculture, provided that all applicable best management practices are used to minimize environmental impacts.

(3) Recreation

Active recreational uses of Open Space are permitted, given that active uses such as tennis courts, swimming pools, ball fields, playgrounds, et cetera are limited to a maximum of 5 percent of the total Conservation Space area.

(4) Stormwater Management

Use for stormwater management is permissible consistent with the Chatham County Stormwater Ordinance requirements.

(5) Utility Easements

Easements for drainage, access to utilities, and underground utility lines.

(6) Water, Septic, and Sewer Systems

Shared water, septic and sewer infrastructure is allowed in Open Space, but not in Natural Space areas unless approved by the Environmental Resources Director. (7) **Trails** All trails, provided that Best Management Practices and an approved Trail Management Plan are employed for recreational purposes, such as pedestrian, mountain biking, general recreation and equestrian uses.

E. Prohibited Uses of Conservation Space.

(1) Use of Motor Vehicles. (Except for maintenance purposes as provided for in the Open Space Management Plan).

(2) Roads, Parking Lots and Impervious Surfaces. (Except when necessary for access to active recreational uses).

F. Ownership of Conservation Space. The applicant must identify the current and intended future owner(s) of the Conservation Space who is/are responsible for maintaining such area/facilities. The responsibility for maintaining the Conservation Space and any facilities located thereon shall be borne by the owner unless otherwise specified in a Conservation Space Management Plan approved by the County.

G. Management of Conservation Space. The applicant shall submit a management plan for all proposed Conservation Space. Upon initial approval of the management plan by the County, changes to the plan shall be allowed only when approved by the County Board of Commissioners. The plan shall be referred to as the “Conservation Space Management Plan” and shall include: (1) A statement allocating maintenance responsibilities and establishing guidelines for the upkeep of Conservation Space and all associated facilities; (2) Cost estimates for all maintenance, operation and insurance needs for the Conservation Space, as well as a plan that outlines the means by which funds will be obtained for such expenses; (3) Establishment of criteria for enforcement of the plan. (4) Prior to any clearing or grading of the site, protective fencing should be established around all Natural Space areas. Fencing shall be placed outside the critical root zone or dripline, whichever is greater, of any trees.

H. Legal Instrument for Permanent Protection. Conservation Space proposed for a conservation subdivision shall be protected in perpetuity by a binding legal document that is recorded with the deed upon review and approval by the County. The document shall be one of the following three (3) options:

(1) **Permanent Conservation Easement.** A permanent conservation easement in favor of either:

- A land trust or similar conservation-oriented non-profit organization with legal authority to accept such easements. The organization shall be bona fide and in perpetual existence and the conveyance instruments shall contain an appropriate provision for retransfer in the event the organization becomes unable to carry out its functions; or
- A governmental entity with an interest in pursuing goals consistent with the intentions of this Section.

(2) **Permanent Restrictive Covenant.** A permanent restrictive covenant for conservation purposes.

(3) **Alternative Land Use Restriction.** An equivalent legal tool that provides permanent protection, if approved by the County Attorney. The instrument for permanent protection shall include all use restrictions contained in this section, as well as any additional reasonable restrictions the applicant chooses to place on the use of the open space.

I. Density Bonuses. The base density for a conservation subdivision is determined by the underlying land use regulation, establishing otherwise allowable unit density (minus any regulated floodplain, riparian buffers and steep slopes where building is prohibited under Chatham County ordinances.) in which the development parcel is located. Permitted housing densities shall not exceed the maximum allowances of any applicable water supply watershed requirements.

J. Agricultural Preservation Density Bonus.

Conservation subdivisions proposed for the purposes of sustaining existing on-site bona fide agricultural operations are entitled to a five (5) percent increase in permitted density (this in addition to the ten (10) percent density bonus). Ideally, residential lots in such developments should be located in areas less suitable for agricultural production, while prime farmland areas of the property should be reserved as Conservation Space. It is strongly recommended that development parcels be located where agricultural operations do not interfere with the safety and/or well being of potential future residents. Upon completion such agricultural uses, all lands previously occupied by those uses shall be preserved in perpetuity as natural space, and shall not qualify for future development.

K. Lot and Structure Placement.

(1) **Structure Placement.**

a. Setbacks. Structures within a conservation subdivision should be placed as closely to internal roads as practical. The reviewing agency may reduce the front yard setback to a minimum of five (5) feet when necessary. In such cases, the reviewing agency must take into consideration sound engineering, public safety concerns and community character when applying standards. Vegetative buffers should be left between new development and existing residential development where possible.

b. Separation. Structures within conservation subdivisions may be located in the side yard setback required by the zoning district regulations. Structures may be placed as closely together as permitted by the North Carolina State Building Code.

(2) **Lot Proximity to Open Space.** Open space shall be accessible to the largest possible number of lots within the development. To achieve this, the majority of lots should abut open space to provide residents with direct views and access. Safe and convenient pedestrian access to the open space from all adjoining lots shall be provided, except in the case of farmland or other resources areas vulnerable to human disturbance.

L. Private Driveway Easements. Private driveway easements may be used in place of public and/or private roads where proposed to provide access to two (2) or fewer lots. The minimum required easement width is 30 feet and shall have a centerline length of no more than 200 feet. Proposed driveway easements should be clearly identified on all plans and plats with a description of what lots the easement is proposed to serve. Final Plats creating driveway easements must contain a note that conveys maintenance responsibility of the easement to the home owners utilizing it to access their property. The note shall specifically state that the easement(s) must be maintained to allow clear passage for emergency response vehicles. Driveway easements are not subject to the requirements for public or private roads.

M. Review and Approval. (1) Fifteen (15) or Fewer Lots. The review and approval process for conservation subdivisions of fifteen (15) or fewer lots shall be the same as that of a minor subdivision. Conservation subdivisions in excess of fifteen (15) lots shall be reviewed as a major subdivision.

**Division of Bicycle and Pedestrian Transportation
Complete Streets Policy (draft version)**

A. Definition

Complete Streets is North Carolina’s approach to interdependent, multi-modal transportation networks that safely accommodate access and travel for all users.

B. Policy Statement

Transportation, quality of life, and economic development are all undeniably connected through well-planned, well-designed, and context sensitive transportation solutions. To NCDOT, the designations “well-planned”, “well-designed” and “context-sensitive” imply that transportation is an integral part of a comprehensive network that safely supports the needs of the communities and the traveling public that are served.

The North Carolina Department of Transportation, in its role as stewards over the transportation infrastructure, is committed to:

- providing an efficient multi-modal transportation network in North Carolina such that the access, mobility, and safety needs of motorists, transit users, bicyclists, and pedestrians of all ages and abilities are safely accommodated;
- caring for the built and natural environments by promoting sustainable development practices that minimize impacts on natural resources, historic, businesses, residents, scenic and other community values, while also recognizing that transportation improvements have significant potential to contribute to local, regional, and statewide quality of life and economic development objectives;
- working in partnership with local government agencies, interest groups, and the public to plan, fund, design, construct, and manage complete street networks that sustain mobility while accommodating walking, biking, and transit opportunities safely.

This policy requires that NCDOT’s planners and designers will consider and incorporate multimodal alternatives in the design and improvement of all appropriate transportation projects within a growth area of a town or city unless exceptional circumstances exist. Routine maintenance projects may be excluded from this requirement; if an appropriate source of funding is not available.

C. Purpose

This policy sets forth the protocol for the development of transportation networks that encourage non-vehicular travel without compromising the safety, efficiency, or function of the facility. The purpose of this policy is to guide existing decision-making and design processes to ensure that all users are routinely considered during the planning, design, construction, funding and operation of North Carolina’s transportation network.

D. Scope and Applicability

This policy generally applies to facilities that exist in urban or suburban areas, however it does not necessarily exclude rural setting; and is viewed as a network that functions in an interdependent manner. There are many factors that must be considered when defining the facility and the degree to which this policy applies, e.g., number of lanes, design speeds, intersection spacing, medians, curb parking, etc. Therefore, the applicability of this policy, as stated, should be construed as neither comprehensive nor conclusive. Each facility must be evaluated for proper applicability. Notwithstanding the exceptions stated herein, all transportation facilities within a growth area of a town or city funded by or through NCDOT, and planned, designed, or constructed on state maintained facilities, must adhere to this policy.

E. Approach

It is the Department’s commitment to collaborate with cities, towns, and communities to ensure pedestrian, bicycle, and transit options are included as an integral part of their total transportation vision. As a partner in the development and realization of their visions, the Department desires to assist localities, through the facilitation of long-range planning, to optimize connectivity, network interdependence, context sensitive options, and multimodal alternatives.

F. Related Policies

This policy builds on current practices and encourages creativity for considering and providing multi-modal options within transportation projects, while achieving safety and efficiency.

Specific procedural guidance includes:

- Bicycle Policy (adopted April 4, 1991)
- Highway Landscape Planting Policy (dated 6/10/88)
- Board of Transportation Resolution: Bicycling & Walking in North Carolina, A Critical Part of the Transportation System (adopted September 8, 2000)
- Guidelines for Planting within Highway Right-of-Way

- Bridge Policy (March 2000)
- Pedestrian Policy Guidelines –Sidewalk Location (Memo from Larry Goode, February 15, 1995)
- Pedestrian Policy Guidelines (effective October 1, 2000 w/Memo from Len Hill, September 28, 2000)
- NCDOT Context Sensitive Solutions Goals and Working Guidelines (created 9-23-02; updated 9-8-03)

G. Exceptions to Policy

It is the Department’s expectation that suitable multimodal alternatives will be incorporated in all appropriate new and improved infrastructure projects. However, exceptions to this policy will be considered where exceptional circumstances that prohibit adherence to this policy exist. Such exceptions include, but are not limited to:

- facilities that prohibit specific users by law from using them,
- areas in which the population and employment densities or level of transit service around the facility does not justify the incorporation of multimodal alternatives,

It is the Department's expectation that suitable multimodal alternatives will be incorporated as appropriate in all new and improved infrastructure projects within a growth area of a town or city. As exceptions to policy requests are unique in nature, each will be considered on a case-by-case basis. Each exception must be approved by the Chief Deputy Secretary.

Routine maintenance projects may be excluded from this requirement; if an appropriate source of funding is not available.

H. Planning and Design Guidelines

The Department recognizes that a well-planned and designed transportation system that is responsive to its context and meets the needs of its users is the result of thoughtful planning. The Department further recognizes the need to provide planners, designers and decision-makers with a framework for evaluating and incorporating various design elements into the planning, design, and construction phases of its transportation projects. To this end, a multi-disciplined team of stakeholders, including transportation professionals, interest groups, and others, as appropriate, will be assembled and charged with developing comprehensive planning and design guidelines to support this policy.

These guidelines will describe the project development process and incorporate transparency and accountability where it does not currently exist; describe how (from a planning and design perspective) pedestrians, bicyclists, transit, and motor vehicles will share roads safely; and provide special design elements and traffic management strategies to address unique circumstances.

An expected delivery date for planning and design guidelines will be set upon adoption of this policy.

I. Policy Distribution

It is the responsibility of all employees to comply with Departmental policies. Therefore, every business unit and appropriate private service provider will be required to maintain a complete set of these policies. The Department shall periodically update departmental guidance to ensure that an accurate and up-to-date information is maintained and housed in a policy management system.

Charlotte Bicycle Master Plan: Chapter 3, Policy

This chapter outlines existing and proposed policies to support bicycling in Charlotte. Policies supporting bicycle transportation are fundamental to realizing the vision set forth in this Plan. The policies detailed in this chapter serve as the foundation for improving the bicycling environment. All of the necessary aspects of a comprehensive bicycle plan are reflected in these policies: institutionalization of bicycle planning efforts, appropriate design and maintenance considerations for roadways, inclusion of bicycle accommodations in other planning efforts, education and awareness initiatives and encouragement of bicycling as a viable mode of transportation.

Key policies for improving the bicycling environment in Charlotte are as follows:

- 1. Incorporate bicycle facilities in all transportation planning, design and construction activities.**
- 2. Seek all potential funding opportunities to implement the recommendations in the Bicycle Master Plan.**
- 3. Include bicycle improvements in ongoing transit and greenway planning activities.**
- 4. Design and build new and reconstructed roadways to be bicycle-friendly.**
- 5. Implement bicycle improvements as a part of all resurfacing and maintenance activities.**
- 6. Provide targeted and effective educational and awareness opportunities for bicyclists and motorists.**
- 7. Continue to provide bicycle parking and other supporting facilities to encourage bicycling as a viable mode of transportation.**

Policy 1: Incorporate bicycle facilities in all transportation planning activities.

Policy Strategy 1.1: The City and NCDOT will require bicycle lanes designed consistent with the Urban Street Design Guidelines, on all new or reconstructed roadways within the city. Where bicycle lanes are not feasible, justifications will be included as part of the road preliminary design process and alternative routes will be identified. The City of Charlotte will be widening many roads in the future, and new and reconstructed roads will be part of the development process. The Urban Street Design Guidelines will play an important role in ensuring that these new roads include bicycle facilities. In doing so, they will ensure that Charlotte becomes a more bicycle-friendly City in the future.

Benchmarks: Continued implementation of the Urban Street Design Guidelines.

Policy Strategy 1.2: The City of Charlotte prefers bicycle lanes over wide outside lanes on both City and State-maintained roads. The City of Charlotte prefers bicycle lanes over wide outside lanes. Bicycle lanes are required on most new and improved roads in the City per the Urban Street Design Guidelines. In situations where wide outside lanes are the only possible facility due to road width and other considerations, they should be provided. However, bicycle lanes are the preferred facility and should be provided on both City and State-maintained roads where feasible.

Benchmarks: Continued implementation of bicycle lanes on State and City roads.

Policy Strategy 1.3: The City will strive to complete the Near to Medium-term bicycle route network by 2015.

The City should complete the near to medium-term bicycle route network, identified on the Near to Medium Term opportunities map, by the year 2015. In doing so, it will enable the City to exceed the goal set in the TAP to create 150 miles of bicycle facilities by 2015. This network will provide a connected network of bicycle facilities that will enable bicyclists to

travel throughout the City. Actions that will be required to create this network are shown on the Near to Medium-Term Opportunities map and include lane diets, road diets, locations where striping can be added and areas where roadways will need to be widened and sidepaths will need to be constructed. The Near to Medium-term bicycle route network should be the

basis for the signed route network discussed below.

Benchmarks: Completion of the Near to Medium-term bicycle route network by 2015.

Policy Strategy 1.4: The City should install a signed bicycle route system that links major destinations in Charlotte.

The City should install a signed bicycle route system as shown on the Bicycle Route Network and Near to Medium-Term Opportunities maps in this Plan. This will accomplish Policy 2.6.2 in the TAP, which states “The City will place bike route signs on selected local streets as bike routes, as needed, to provide a connected network of bikeways.” These signed bicycle routes should be on roads with favorable bicycling conditions that also provide important functional connections throughout the City. Signed routes can link major destinations such as key parks, transit stations and schools while providing information on continuous bicycle routes in the City. Signed routes also draw attention to bicycling as an efficient form of transportation.

Connections between the signed routes shown on the maps in this Plan and specific destinations such as schools will require detailed study at the neighborhood level. Specific routes may need to be altered as a result of this more detailed study. Appropriate sign design and placement will be critical to the success of the signage program. The preliminary signed network is provided in Chapter 5 and recommendations on initial routes to sign in Charlotte are provided in Chapter 8 of this Plan.

Benchmarks: Completion of signed routes identified on the Near to Medium-Term Opportunities map.

Policy Strategy 1.5: The City will seek to implement the recommendations included in the Near to Mid-Term Opportunities map and the long-term Bicycle Route Network map. By approving this Plan, the City is adopting the recommendations included in the Near to Medium-Term Opportunities map and the long-term Bicycle Route Network map as its official

policy for improving bicycle transportation in the City. The projects that are recommended will require additional evaluation during the implementation process to determine if there are other factors that may either help or hinder their development. Additional corridor-level traffic analysis will be needed in some cases to determine the optimum design for specific locations. Some locations shown on the map may be determined, after more detailed analysis, to require different or more costly improvements and therefore may become longer-term projects. However, for every project, the first assumption should be that the bicycle facilities shown in the Comprehensive Bicycle Plan will be implemented.

Benchmarks: Progress implementing the recommendations in this Plan.

Policy Strategy 1.6: The City will strive to continue to fund the full-time Bicycle Program Manager position to spearhead the City's bicycle planning efforts. The City should continue to fund the full-time Bicycle Program Manager position. The Bicycle Program Manager is the point person for bicycle planning efforts in Charlotte. The Manager advises the City and the County on bicycle-related issues and reviews proposed plans, designs, and policies that impact bicycling. Working within the City's formal processes and supported by bicycle-friendly policies, guidelines and standards, the Bicycle Program Manager is critical to implementing the recommendations in this Plan and improving bicycle conditions in Charlotte.

Benchmarks: Continue to fund the full-time Bicycle Program Manager position.

Policy Strategy 1.7: The City should consider a variety of methods to expand and implement the recommendations in this Plan. This Plan envisions a considerable acceleration of bicycle planning efforts in the City. The City will provide appropriate resources to implement the recommendations in this Plan, including the expanded education and awareness initiatives identified in Chapter 6 of this Plan, and to meet the goals identified in the TAP.

Benchmarks: Implementation of facility targets identified in Chapter 5 as well as education and awareness programs identified in Chapter 6.

Policy Strategy 1.8: Continue to appoint the Bicycle Program Manager to the MPO Technical Coordinating Committee.

The Bicycle Program Manager should continue to be a member of the Mecklenburg-Union Metropolitan Planning Organization's Technical Coordinating Committee (TCC). This continued appointment will ensure that bicycle issues have a voice on projects and planning initiatives at the regional level.

Benchmarks: Continued appointment of the Bicycle Program Manager to the MPO Technical Coordinating Committee.

Policy Strategy 1.9: Continue to support the Bicycle Advisory Committee's role in improving bicycling in Charlotte.

The City should continue to support the Bicycle Advisory Committee (BAC). The positions should continue to be appointed by local elected officials. The main responsibilities of the BAC should continue to be to support the Bicycle Program in its efforts and to help coordinate activities involving local advocacy groups. The committee should meet regularly to discuss

current projects and upcoming opportunities.

Benchmarks: Continued support of the Bicycle Advisory Committee.

Policy Strategy 1.10: The City will require that bicycle issues be considered in all plan reviews and that the Bicycle Program Manager has a voice in all roadway construction review processes. The Bicycle Program Manager should continue to have a voice in the City's plan review process and all roadway construction review processes. The Bicycle Program Manager should

review plans to ensure future roadway projects include the appropriate bicycle accommodations and that the adopted design standards for roadway improvements with bicycle accommodations are being followed. All roadway plans should be reviewed and approved by the Bicycle Program Manager. This review will not delay the overall site plan review process.

Benchmarks: Approval of Bicycle Program Manager required in plan review Process.

Policy Strategy 1.11: The Bicycle Program Manager and/or the BAC should provide an annual briefing to the City Council regarding priority projects, ongoing concerns, etc. Since the adoption of the 1999 Bicycle Master Plan, there has been one general briefing to the City Council. This briefing occurred in 2005 and was presented by the Chair of the BAC. A chief purpose of the briefing was to urge the Council to fund the street resurfacing budget sufficiently to return to a 12-year repaving cycle. This recommendation was made at a time when street resurfacing was nearing a 25 to 30-year cycle. The City Council responded with an adjustment to permit 14-year resurfacing. Annual updates to the City Council should continue, to provide important information on progress in implementing the recommendations in this Plan and needs moving forward.

Benchmarks: Regular briefings to the City Council.

Policy Strategy 1.12: The City will explore ways that the Urban Street Design Guidelines and key code changes can provide for bicycle connections between residential developments and activity centers and between new roads and the existing road network. The Urban Street Design Guidelines are intended to create streets that provide capacity

and mobility for motorists, while also being safer and more comfortable for pedestrians, bicyclists and neighborhood residents. The guidelines further the TAP's emphasis on transportation choice by providing design guidance for city streets that support a better bicycle network. USDG design recommendations include pedestrian and bicycle friendly intersection design, bike lanes on higher-volume and higher speed roadways, traffic-calming on neighborhood streets and a denser street network that will reduce traveling distances and provide route choices for pedestrians and bicyclists. The guidelines ensure that bicycle facilities will be provided on most roads as part of the road widening process. In the future, it will be important to ensure that bicycle facilities and connections are provided within developments and on roads connecting new developments to activity centers. It will also be important to design and plan for the connection between new roads and the existing road network.

Benchmarks: Evaluate connectivity issues arising with the implementation of the USDG's.

Policy Strategy 1.13: The City will consider amending the subdivision and zoning ordinances to incorporate provisions for on-road bicycle facilities and other bicycle-friendly amenities. The Charlotte City Council has recently amended the Code of Ordinances to require long and short-term bicycle parking at new multi-family residential, institutional, office, business and

industrial developments. The Council set a threshold where existing development undergoing renovation would be required to provide bicycle parking. In order to promote connectivity, there have been limits set on cul-de-sacs and sidewalk and street connections are required more often. Bicycle facilities may also be required in some re-zonings. However, a general

review and revision of ordinances to identify additional opportunities for bicycle-friendly requirements and build upon past achievements is needed. As a first step, the City should implement recommended policy changes to the Code of Ordinances, Charlotte Land Development Standards Manual, City of Charlotte Subdivision Ordinance, and the City of Charlotte Zoning Ordinance that are identified in the draft City of Charlotte Pedestrian Master Plan. Many of these proposed pedestrian-related changes will also benefit bicyclists. These recommendations include general issues such as clarifying bicycle and pedestrian-related requirements and adding bicycle-related definitions, as well as more specific recommendations such as requirements for crossing treatments, block lengths and connectivity. *Benchmarks: Implementation of bicycle-friendly regulatory changes.*

Policy Strategy 1.14: The City will continue to incorporate prioritized bicycle improvements into the annual Transportation Improvement Program (TIP). This Bicycle Master Plan includes a prioritized set of projects, as shown in the Near to Mid-

Term Opportunities map. The BAC and the Bicycle Program Manager should select projects each year to be moved forward in the funding cycle, either through the City's Capital Improvement Program (CIP) or the State's Transportation Improvement Program (TIP) with the goal of creating the short-term bicycle network by 2015. Although the Bicycle Program

Manager should lead this process, input from the BAC will be critical. The BAC should assist in the selection of projects based on realistic funding levels. All applicable guidelines for selecting projects and including them in the TIP (City or State) should be followed. *Benchmarks: Inclusion of bicycle projects in the annual Capital Improvement Program and Transportation Improvement Program.*

Policy Strategy 1.15: The City should update the Bicycle Master Plan every five years in conjunction with TAP updates.

The Bicycle Master Plan has not been updated since its original adoption in 1999. The previous Plan called for updates every three years, but this is not uniform with typical timelines for other transportation-related plans. As noted in the TAP, the Bicycle Master Plan should be updated every five years at a minimum. *Benchmarks: Updates to the Bicycle Master Plan every five years.*

Policy Strategy 1.16: Consider lowering the speed limit on streets that provide important bicycle connections.

Vehicle speed is one of the main factors influencing a bicyclist's perception of a roadway. The City should consider lowering the speed limit on roads that provide important connections in the bicycle network. The speed limit on many roads in the City is 40-45 miles per hour and many cars are traveling above the posted speed limit. This creates an uncomfortable environment for many bicyclists. On roads that provide important bicycle connections, the City should consider reducing the speed limit to at most 35 miles per hour. It is important to note that shared lane markings are not recommended on roadways with speed limits posted above 35mph, therefore reducing speeds may enable the use of these markings under certain circumstances. The character of the road, surrounding land-uses, existing traffic volumes, existing driveways and other issues would have to be considered when deciding whether to reduce the speed limit. The City should consider providing funding to enable the Police Department to do more enforcement to protect pedestrians and bicyclists while ensuring livable neighborhoods. The Police Department should work with the Bike, Pedestrian and Traffic Calming programs within CDOT and in other City departments to undertake targeted police work for traffic control for bicyclists.

Benchmarks: Evaluation of selected roads to be considered for speed limit reduction.

Policy Strategy 1.17: The City should continue to incorporate bicycle planning activities into its day-to-day activities.

The Bike Program should be actively involved in the ongoing efforts of the City of Charlotte's Joint-Use Task Force. The City should incorporate bicycle facility information in the GIS tool that is currently being developed. As noted above, Bike Program personnel should be involved in site plan review meetings to identify opportunities to provide bicycle

facilities outlined in this Plan as part of the development process. Every site plan review should require a bicycle connectivity analysis. The City should also consider requiring bicycle facilities as part of the subdivision process. The Bike Program should continue to be involved in the conditional rezoning review process.

Benchmarks: Continuing incorporation of bicycle planning into the City's day-to-day activities.

Policy 2: Seek all potential funding opportunities to implement the recommendations in the Bicycle Master Plan.

Policy Strategy 2.1: The City will strive to provide an annual allotment for bicycle improvements in the City budget to implement bicycle projects called for in this Plan and to leverage other funds. The City should continue to consider a consistent funding allotment for bicycle projects in the annual Capital Investment Plan. Local funds should be used to implement the physical recommendations in this Plan, as well as those involving the bicycle education and awareness initiatives outlined in Chapter 6 of this Plan. *Benchmarks:*

Level of annual funding from the City.

Policy Strategy 2.2: The City will implement bikeway improvements as part of all new roadway projects. This Plan identifies a large number of bicycle projects to be implemented on existing roads by re-striping, narrowing a travel lane, removing a travel lane or widening the roadway. This Plan also identifies bicycle facilities that should be integrated with the construction of new or widened roadways. As noted above, a significant amount of new roadway construction is planned in Charlotte over the coming years. Roads that are to be widened represent an important opportunity to incorporate bicycle accommodations and implement the recommendations in this Plan. When new roadways are constructed, the bicycle accommodations specified in this Plan should be included. If a new roadway is not shown on the Bicycle Route Network map, the Bicycle Program Manager and BAC should determine the appropriate facility to be constructed.

Benchmarks: Percentage of new roadway projects that include bicycle accommodations.

Policy Strategy 2.3: The City will seek State and Federal funds for bicycle projects. In addition to local funding sources for bicycle improvements, State and Federal funds are also available. The Bicycle Program Manager should support efforts to seek additional funds as appropriate. Major Federal and State funding sources are described later in this Plan. State and Federal funds should be pursued for the critical bicycle and greenway connector projects as noted below. Projects that address multiple modes or issues (e.g. highway and bicycle safety; bicycle and transit modes) have a better chance of being funded than lower profile projects. *Benchmarks: Funding levels obtained from State and Federal sources.*

Policy Strategy 2.4: The City will seek additional funding and partnerships for planning, design and construction of critical greenway and bike connection projects. Funding is essential for implementing the recommendations of this Plan. New on-road bikeways and greenway trails will need to be funded through various sources. It will be important for Charlotte to

establish specific funding sources to support bicycle projects directly and also to use as matching funds for federal, state, and other grants. The City should actively seek additional funding and partnerships to support the goals outlined in this plan and in related plans such as the Mecklenburg County Greenway Master Plan. The City should partner with local governments and adjacent jurisdictions to develop funding sources and should also look for additional funding opportunities from the public and private sectors. *Benchmarks: Funding levels obtained from State and Federal sources to implement critical bike/greenway connector projects.*

Policy Strategy 2.5: The City will seek public and private partnerships to implement bicycle improvements. Another potential funding source is the use of public/private partnerships. Encouraging participation from local businesses and corporations will not only enable more funding to be received, but it will promote a community “buy-in” of bicycle transportation initiatives. Major local businesses should be encouraged to contribute to funding improvements that are especially helpful to their employees and the local community. An example of this is Charlotte’s existing Bicycle Parking Partnership Program. Public/private partnerships should continue to be explored particularly for improvements for end-of-trip facilities (such as parking areas, lockers, showers, etc.) and connections to the greenway system. These types of accommodations would be very visible from the private sector’s viewpoint. Private-sector participation should also be pursued in conjunction with additional education and awareness programs. Partnerships should also be explored with all of the utilities (power, gas, sewer, water, phone, cable, railroads, etc.) with the objective of providing a secondary use for utility corridors.

Benchmarks: Number of private companies contributing to bicycle efforts in the City.

Policy 4: Design and build new and reconstructed roadways to be bicycle-friendly.

Policy Strategy 4.1: The City will require bicycle lanes designed consistent with the Urban Street Design Guidelines, on all new or reconstructed roadways within the city, where feasible. Where bicycle lanes are not feasible, justifications will be included as part of the road preliminary design process and alternative bike routes will be identified. The bicycle route network was designed to include proposed accommodations not only on existing roads, but also on proposed future roadways as well. The Bicycle Program Manager will be responsible for ensuring that the recommended facilities are implemented on new roadways. New roadways that are not included on the Bicycle Master Plan should include bicycle accommodations as recommended by the Bicycle Program Manager and BAC. *Benchmarks: Percentage of new roadways with bicycle accommodations as specified in the Bicycle Master Plan.*

Policy Strategy 4.5: The City will consider eliminating or reducing the gutter pan to 12-inches on roadways with constrained right-of-way. Eliminating or reducing the gutter pan is an alternative strategy to paving over the gutter pans that should be considered when roadways are reconstructed. Many of the arterial roadways that provide the most direct travel routes for bicyclists and motorists have severe right-of-way constraints. In many cases, the ability to combine a modest lane diet in combination with a 12-inch or eliminated gutter pan and improved drainage grates could widen the existing 11-12 foot outside travel to 13-15 feet in width. This additional width will substantially improve the quality of the bicyclists' experience and reduce tensions that exist between passing motorists and bicyclists in the existing 11-12 foot travel lanes. The traditional purpose of gutter pans is to carry the full spread of stormwater collected during a typical storm event along the curb, outside of the vehicle travel way. Substituting a narrower gutter or eliminating the gutter while simultaneously widening the outside lane will still allow faster moving motor vehicles to travel outside of the typical stormwater spread. It is acknowledged that bicyclists may potentially be riding within the flowing stormwater but this is mitigated by the fact that fewer bicyclists typically travel during storm events. Also, due to the dynamics of their narrow tires, bicyclists typically do not hydroplane.

When the gutter pan is reduced to 12-inches or eliminated, the City should consider utilizing a recessed inlet or curb opening inlet to completely remove the inlet from the travel lane. *Benchmarks: Evaluation of potential to reduce or eliminate the gutter pan on selected roadways.*

Policy Strategy 4.7: The City and NCDOT should continue to work in close partnership on the appropriate design of bicycle facilities with the assumption that bike lanes or other facilities identified in this Plan will always be provided on new and reconstructed roads. NCDOT should continue to play a major role in improving bicycling conditions in Charlotte. Because there are many state-maintained roads in the City, it is critical that the state and the City work collaboratively in improving bicycling conditions. NCDOT should consult the Charlotte Bicycle Master Plan when resurfacing roads and when planning additional significant road improvement projects. It should proactively replace hazardous drainage grates on statemaintained

roads. The state currently only replaces grates as part of planned projects. The City of Charlotte recommends that NCDOT designate a bicycle facilities contact in its Division Office to spearhead collaborative bicycle-related efforts between the state and the City. The Charlotte Bike Program should be involved in scoping meetings between the City and NCDOT

during the planning phase of all NCDOT projects. *Benchmarks: Degree of collaboration between the City and the state.*

Policy 5: Implement bicycle improvements as a part of all resurfacing and maintenance activities.

Policy Strategy 5.1: The City will seek to provide the bicycle facilities identified in this Plan as part of the road resurfacing process. Bicycle projects should be incorporated with other roadway projects to the extent feasible. Roadway projects such as resurfacing and the construction of sidewalks may enable bicycle facilities to be implemented in conjunction with the project, thus reducing the costs of a stand alone bicycle project. For this to occur, all personnel involved in road resurfacing should become familiar with the Bicycle Master Plan and the USDGs. *Benchmarks: Recommendations in this Plan that are implemented as part of the road resurfacing process.*

Policy 6: Provide targeted and effective educational and awareness opportunities for bicyclists and motorists.

Policy Strategy 6.1: The City will initiate and hold annual bike events to provide education opportunities and raise awareness of bicycling. Educational and awareness efforts work together to improve bicycling skills and raise awareness. For example, a bike-to-work day encourages more people to use a bicycle for transportation and it also teaches urban riding skills and the importance of wearing a helmet. Teaching bicycling skills to both children and adults (through mechanisms such as bike rodeos, in-school education, and Effective Cycling courses) helps to build confidence and encourages them to ride. Annual bike events such as bike-to-work, bike-to-shop, and bike-to-school days are an effective way to build support for bicycling and encourage increased ridership. Encouragement activities should occur year-round, but special events should be emphasized in May, which is National Bike Month. A detailed listing of recommended education and awareness programs is included in Chapter 6 of this Plan. *Benchmarks: Implementation of the education and awareness programs identified in the Bicycle Master Plan.*

Policy Strategy 6.2: The City will educate bicyclists on the use of bike racks on buses to promote safe usage. As part of the linkage between bicycles and transit, bicyclists should be encouraged to use bike racks on buses. Bike racks on buses provide an important linkage for long-distance trips or portions of trips where bicycle accommodations on roadways are not provided. This is also a good alternative for bicyclists to avoid inclement weather. Bike racks on buses can be a significant bicycling encouragement technique. Education regarding the use of bike racks must be provided to users so that the racks can be properly utilized. Bus drivers must also be trained in the use of the bike racks. Training should continue to be provided by City staff. *Benchmarks: Usage levels of bicycle racks on buses*

Policy Strategy 6.3: The City will work with government agencies as well as private employers to provide incentives for biking to work. Local governments and employers should provide incentives for bicycle use. Some employers reimburse employees for parking and/or travel costs. The Bicycle Program Manager should assist the City and County governments in setting good examples for other major employers in the area. Bike parking should be visible and accessible. If possible, bicycle travel should be incorporated into all reimbursable travel expenses. It will be easier to approach private companies to adopt bicycle-friendly practices if the City and County are leading the way with good examples.

Additional incentives for biking to work include availability of lockers and showers, bike/bus passes, convenient bike parking locations and flextime for bicyclists. *Benchmarks: Incentives for biking to work provided by the City, County and private-sector.*

Policy Strategy 6.4: The City will encourage Mecklenburg County Schools to implement a bicycle education curriculum in local schools. Mecklenburg County Schools should implement a bicycle education curriculum in local schools. NCDOT and Parks and Recreation staff should support and encourage this effort. Local volunteers can also be trained to instruct the teachers or actually conduct the course. It is strongly recommended that local advocates take a major role in helping to train instructors or actually teach the course. If a large number of instructors are qualified, reaching more children will become easier. Parent-Teacher Associations at local schools might also be a valuable resource in providing support for bicycle education in schools. The goals of these programs are to instruct children in basic pedestrian, bicycle, and motor vehicle occupant safety, and to encourage children to walk, ride bicycles, and use mass transit as regular means of transportation.

Benchmarks: Percentage of children receiving bicycle safety instruction in local schools.

Policy Strategy 6.7: The City will support and encourage programs that promote motorist awareness of bicycle rights. Based on bicyclists' personal experiences recounted during public forums and in letters to the editor in local newspapers, there appears to be a misconception about the rights of bicyclists to share the road with motorists. Distribution of brochures is a step in the right direction of educating both motorists and bicyclists about bicycle rights. There are many materials available from NCDOT and other groups that emphasize rights and responsibilities and reinforce the "share the road" message. There are also printed materials that focus on the driver. These materials need to be targeted to the general population and should be available in public libraries and in utility company mailings. Information presented should be consistent and concise, concentrating on the messages of remaining alert, being predictable, being patient, and obeying traffic laws. Efforts should not be limited strictly to brochures. Public service radio and television announcements are a good means of reaching a diverse audience. These announcements should be coordinated with the installation of additional "Share the Road" signs. NCDOT has "Share the Road" posters available that could be posted in public areas such as libraries, museums, community centers, arenas, etc. Video announcements are also effective, but obviously more costly. Both federal and state resources should be reviewed for video public service announcements suitable for the Charlotte environment. While a general message of the rights of bicyclists is important, a focused message on how motorists should interact with bicyclists is also needed.

Benchmarks: Number of outreach and awareness efforts undertaken.

Policy Strategy 6.8: The City will support and encourage programs that educate bicyclists of responsibilities and safe riding habits. Not only do motorists need to be educated about the rights of bicyclists, but also adult bicyclists need to be reminded about their responsibility to ride safely. NCDOT and other organizations have brochures and other information focusing on this issue. Effective methods for disseminating this information include through bike shops, bike organizations, schools and universities as well as through bike rodeos. Public service announcements are also needed to target adult bicyclists that do not participate in organized events. Brochures, pamphlets, flyers and other educational and outreach material should be provided bilingually. *Benchmarks: Number of outreach and awareness efforts undertaken.*

Policy 7: The City will continue to provide bicycle parking and other supporting facilities to encourage bicycling as a viable mode of transportation.

Policy Strategy 7.1: The City should continue to provide bicycle racks at major destinations and provide bicycle racks and lockers at major transit connections. Bicycle parking should continue to be provided at important transit locations. Bicycle racks should be provided at all major destinations in the City. The City should continue to make bicycle racks available to private properties through a public/private partnership arrangement. *Benchmarks: The number of bike racks provided.*

The policies outlined above serve as the foundation for improving the bicycling environment in Charlotte. These policies reflect the City's goals to institutionalize bicycle planning efforts, provide appropriate design and maintenance considerations for roadways, include bicycle accommodations in other planning efforts, provide education and awareness initiatives and

encourage bicycling as a viable mode of transportation. The following chapter discusses existing conditions for bicycling in the City.