

**Durham**

**Trails and Greenways**

**Master Plan**



**2011**



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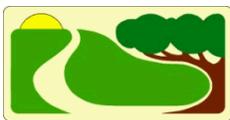
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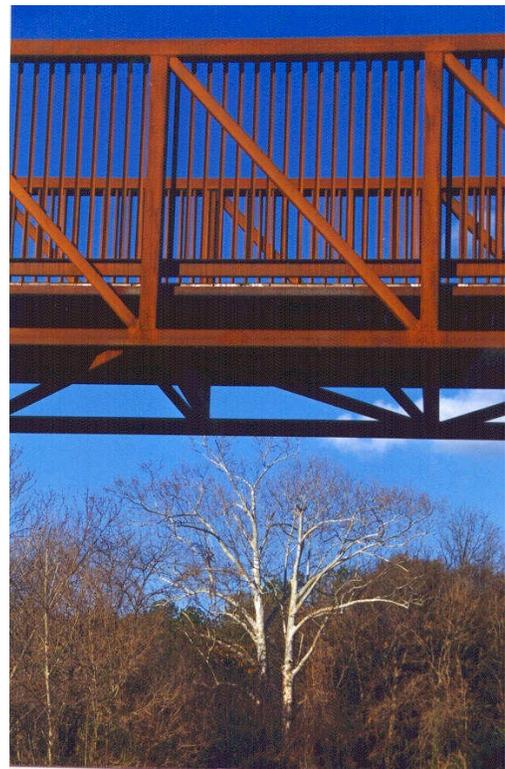


The Durham County Board of Commissioners initially adopted the Durham Trails and Greenways Master Plan on June 11, 2001 and the Durham City Council initially adopted the Durham Trails and Greenways Master Plan on September 17, 2001.

This update of the Durham Trails and Greenways Plan was adopted by the Durham County Board of Commissioners on \_\_\_\_\_, and by the Durham City Council on \_\_\_\_\_.

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# **Durham Trails and Greenways Master Plan**



**Updated 2011**

**Durham City-County Planning Department**

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## Contents Explained

### Durham Trails and Greenways Master Plan

#### Section I, Plan Maps

The Master Plan contains maps showing the location of existing and proposed trail facilities around the City and County. It also contains a comprehensive listing of all the trails in each greenway and their status at the time of Plan adoption.

#### Section II, Goals and Implementation

The Master Plan includes goals, policies, and recommendations for developing the trails and greenways system.

#### Section III, Standards

The Master Plan includes standards for how trails should be designed and built, how and what they are named, and how they are managed and maintained.

## Under Separate Cover

### Durham Trails and Greenways Master Plan

#### Appendices

#### Appendix A, Connections and Constraints

The appendix on Connections and Constraints explains what local plans and regulations impact the way trails are developed and what state and federal regulations must be addressed. It also provides information on connections between the Durham system and other regional trail systems.

#### Appendix B, Durham Greenway History

The appendix on Durham Greenway History offers a look at Durham's original greenways plan from 1988, what that original plan has accomplished, other adopted plans that discuss greenways and trails, and how citizens have energized the work over the years.

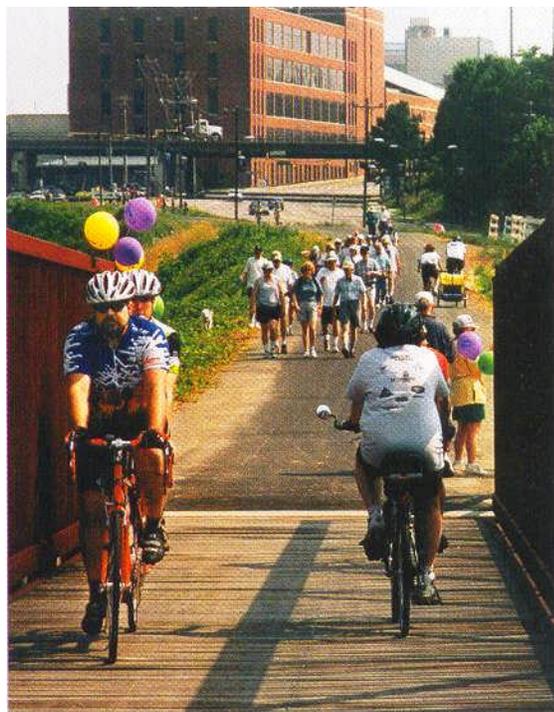
#### Appendix C, Historical Documents

The final appendix provides the texts of some original documents that have been crucial to the growth of the trails and greenway program in Durham.

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**“Everything is connected to everything else.”**

**Aldo Leopold**



## I. The Trails and Greenways

The Durham Trails and Greenways Master Plan is a guide to the development of a comprehensive trail system in Durham. The Plan contains policies that guide how trails should be developed. It depicts a series of greenways and trails in and around major stream corridors in the City and County. It also shows the individual trails and how they interconnect with each other and serve various important destinations, like schools and parks. Since the maps showing the location of the trails in the community are the most sought after components of the Plan, they are shown near the beginning of the document.

The document is divided into two sections. The first is the policy guide with Recommendations, Goals and Implementations. The second is a set of appendices that gives some history with a few updates of how Durham's trails have evolved.

### A. The Plan Maps

The first three maps are the key for the trail route maps that follow. The first map shows the countywide trails system. The second and third provide an index to locate particular greenways. Maps 4 through 17 display the trails within a particular greenway system, and indicate whether those trails are built, under construction, or proposed. Street trails are also shown on the maps as connectors between greenway trails. All trail routes are described in Table 1, Greenways and Trails, which is located after the Plan Maps.

Map 18 shows regional, state, and national trails through Durham County. These trails follow a combination of the routes of local trails indicated on the earlier maps. Their points of entry into and exit from the County are also indicated. Exact on-ground location of the future trail routes indicated on these maps will be determined at the time of land acquisition and construction design. The City Department of Parks and Recreation produces maps for trail users that include the most current information on trail status, trail head locations, parking, and facilities.

### B. The Trails

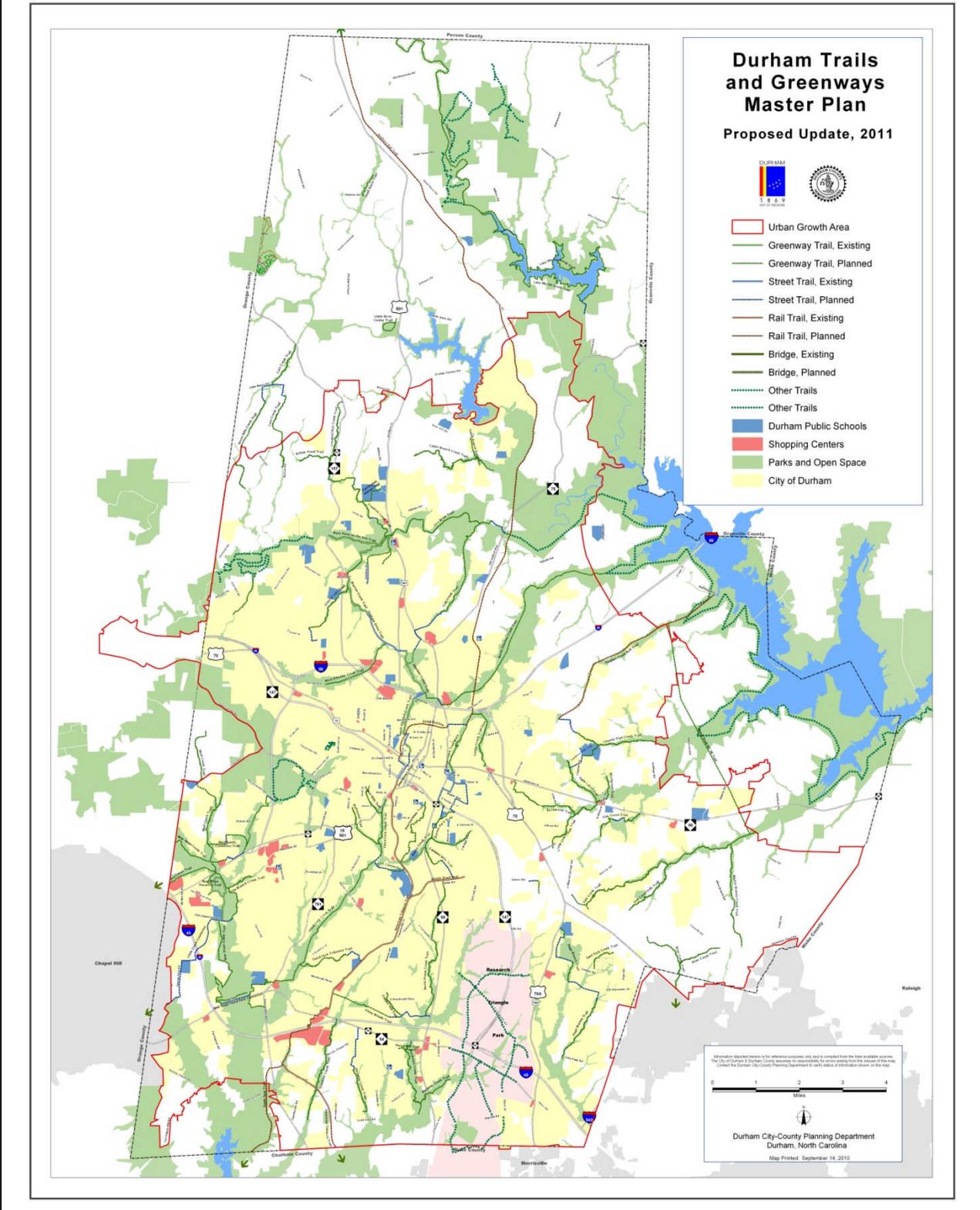
Table 1, Beginning on page 27, lists each greenway and its associated trails. The table indicates the location of the trails, from beginning to end, and the trail's length. It also indicates the status for each trail. Some are completed and in use, while others are planned for future construction, although the specific date for trail development is undetermined. While this information current as of plan adoption, it will grow outdated as new trail construction changes the status.

### C. Trail Route Selection

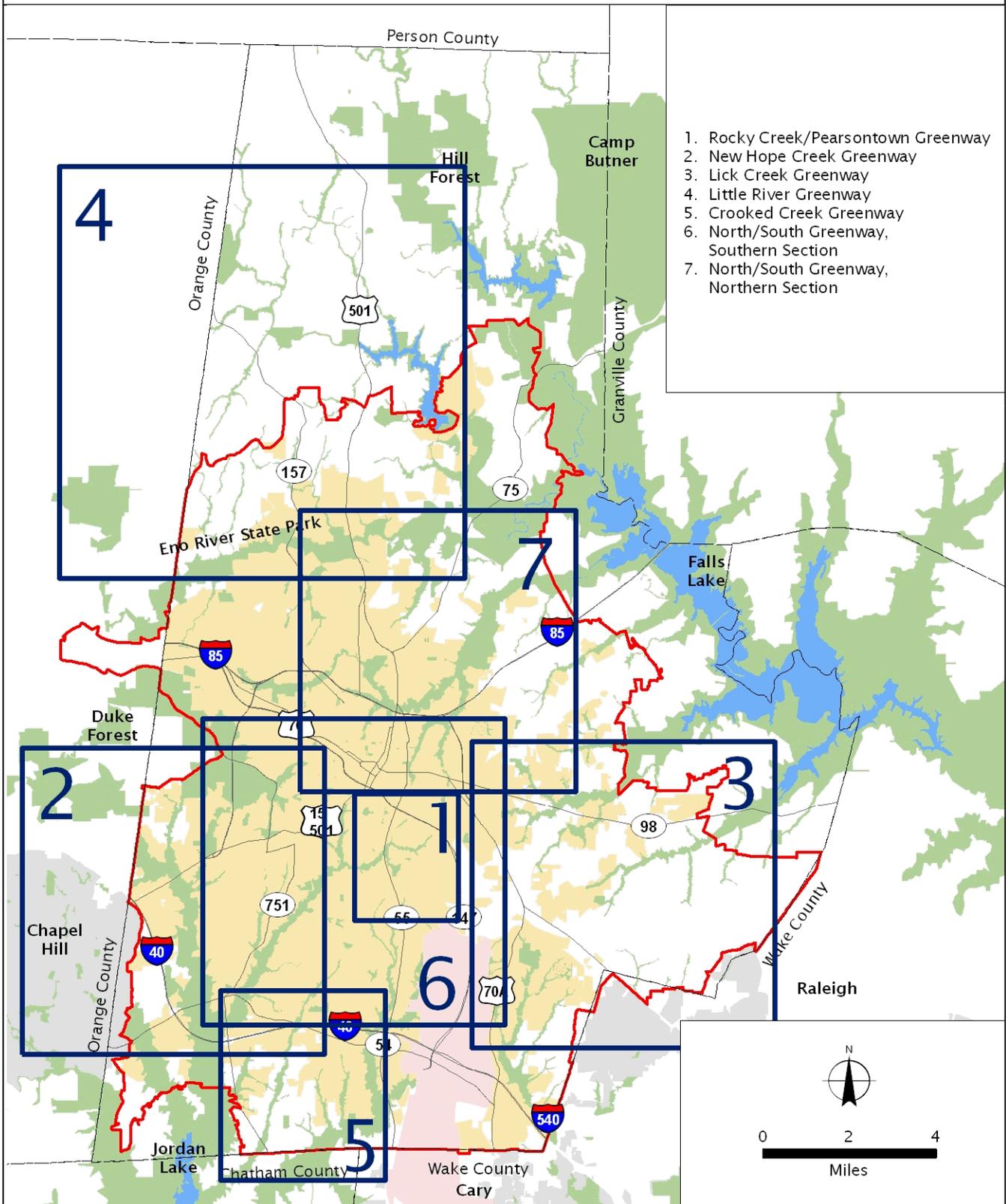
The trail routes designated on these maps honor as much as possible the routes designated by previous versions of the Durham Trails and Greenways Master Plan. Most of those routes are still desired for greenways and trails for Durham citizens. They reflect an excellent distribution of routes throughout the City and County, and they add a level of protection to important riparian corridors beyond that provided by the Unified Development Ordinance. Changes in the routes reflect several basic principles of selection:

1. Trail routes designated on the property of some other government entity, such as the Army Corps of Engineers, are not mapped unless a route has been agreed upon by all entities involved. The Plan policy section notes that such routes can function as continuations of City and County trails and are highly desired but will be settled on a site-by-site basis with the relevant agencies. One exception: “unalterable” routes like RR corridors will be shown despite underlying ownership, even though they may not become the final trail route.
2. There is an attempt to locate Durham trails to connect with other systems’ existing routes, including bicycle and pedestrian routes in Research Triangle Park; trails in Duke Forest, Hill Forest, and Eno River State Park; and trails in neighboring jurisdictions.
3. Routes shown on the 1988 plan have been eliminated from this Plan when un-buildable for one or more of the following reasons: they cross an interstate or divided highway where there is no road or culvert, they cross an active rail line where there is no road crossing, or they pass through a large number of existing and/or developed individual parcels.
4. Trail routes are connected to proposed Triangle Transit (TT) stations to increase their potential transportation use.
5. Given the distances between destinations, routes in the County are usually loop trails in defined areas such as parks.
6. Trail routes shown in the river corridors designated by the County for further study (Little River, Flat River, New Hope Creek, and Little Lick Creek) are preliminary; more specific routes indicated by plans prepared for those corridors supersede those indicated in this Plan.

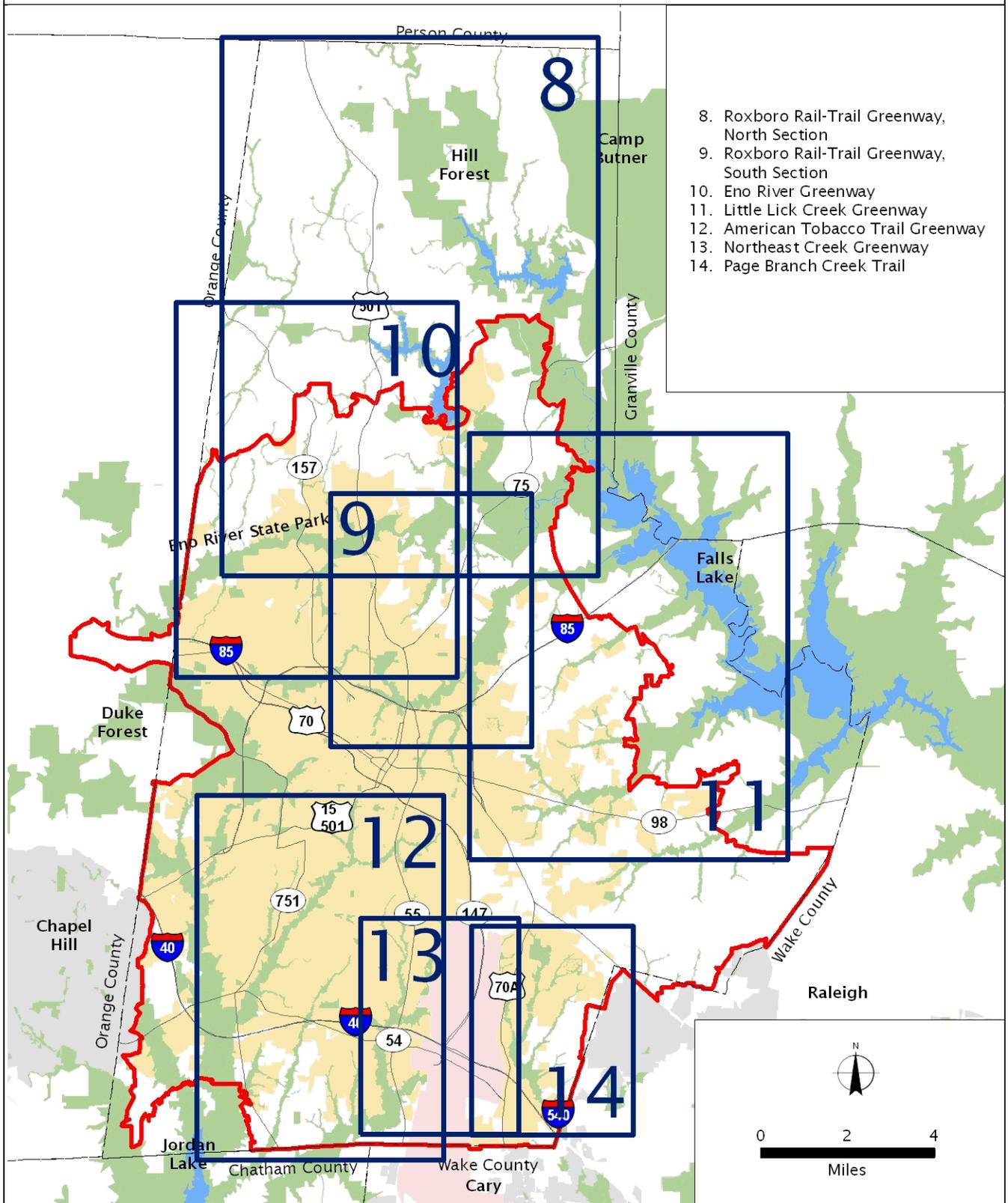
Map 1, Trails and Greenways System-wide Map



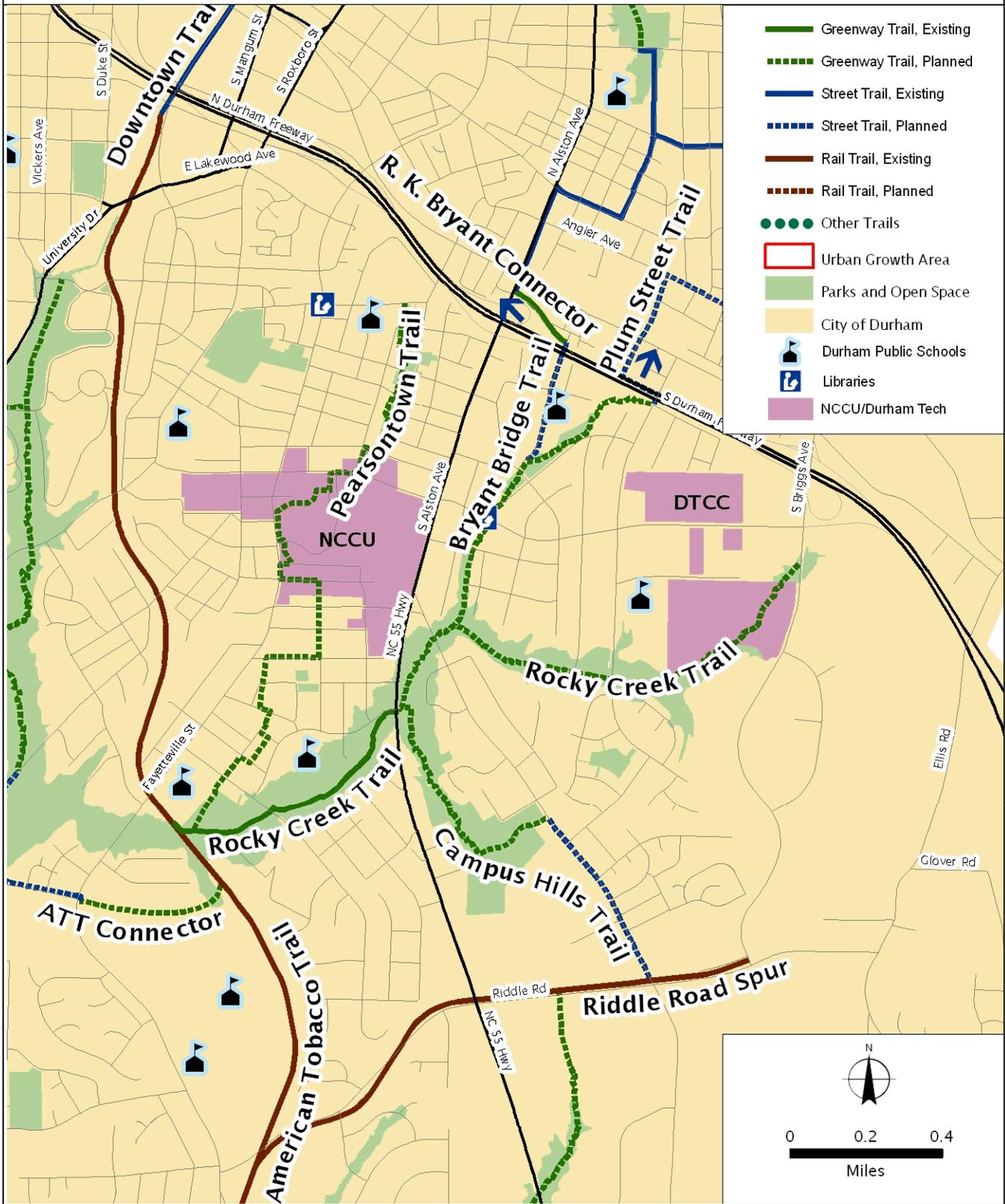
Map 2, Location of Greenways, Index 1



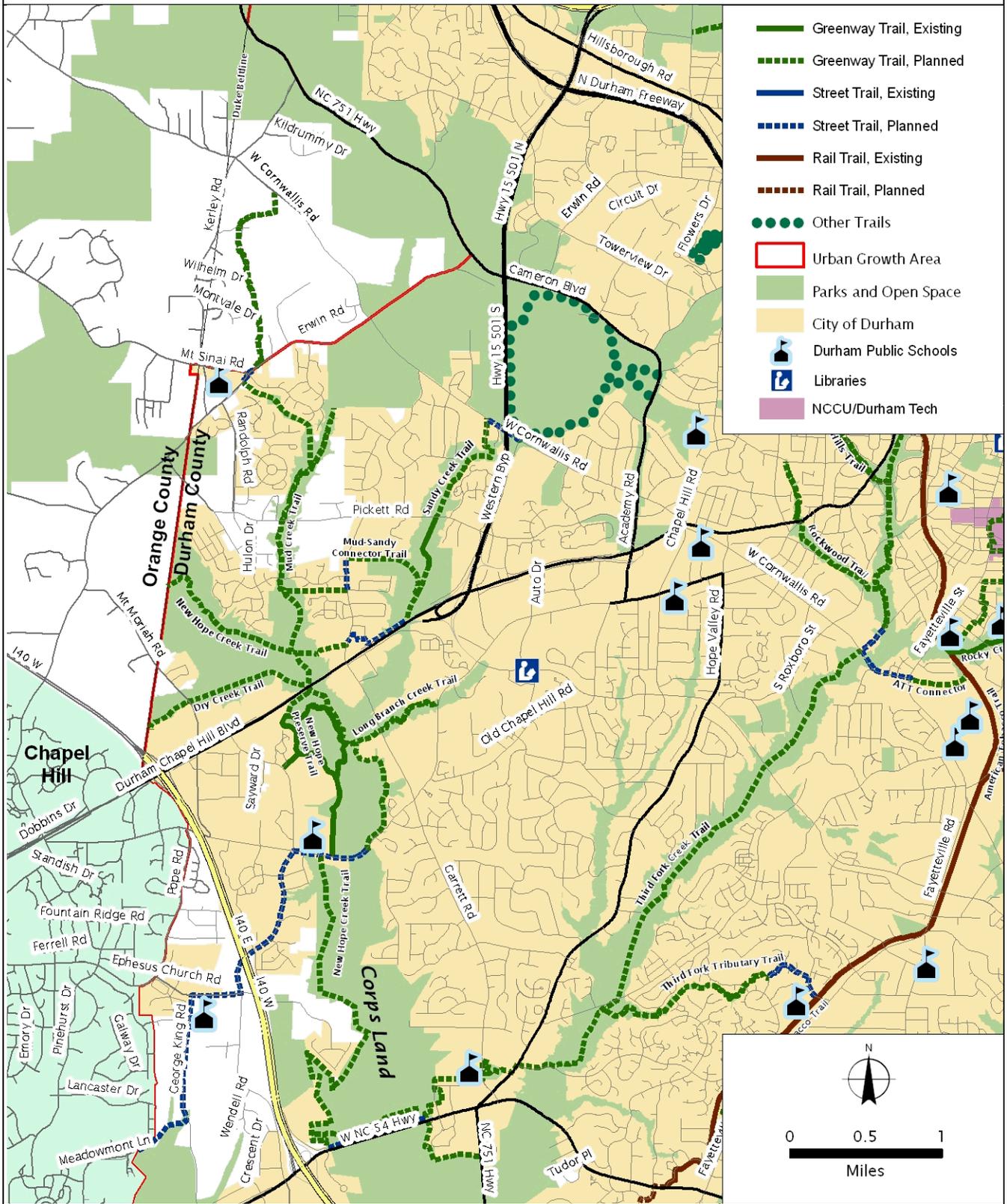
**Map 3, Location of Greenways, Index 2**



Map 4, Rocky Creek/Pearsontown Greenway



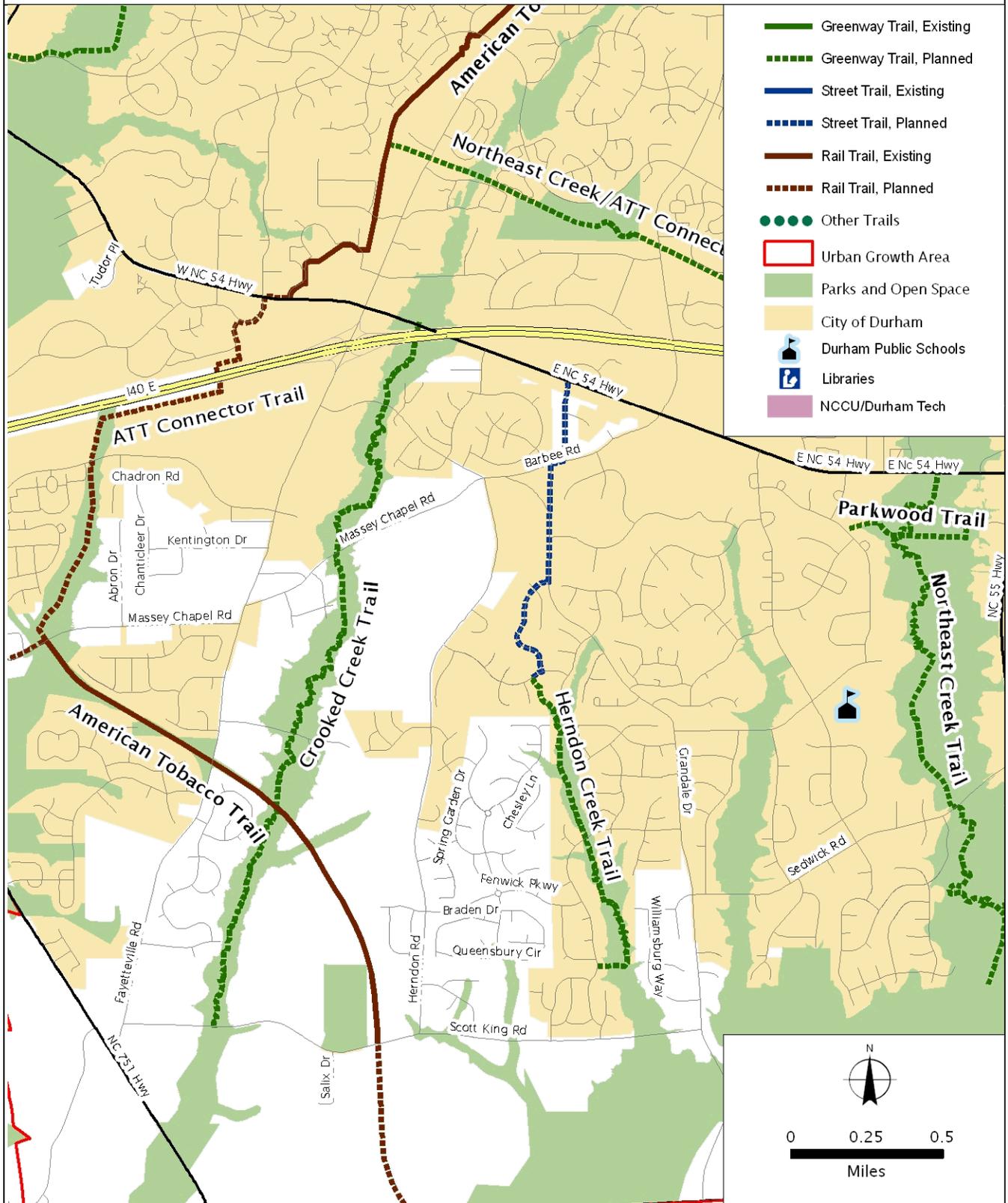
Map 5, New Hope Greenway



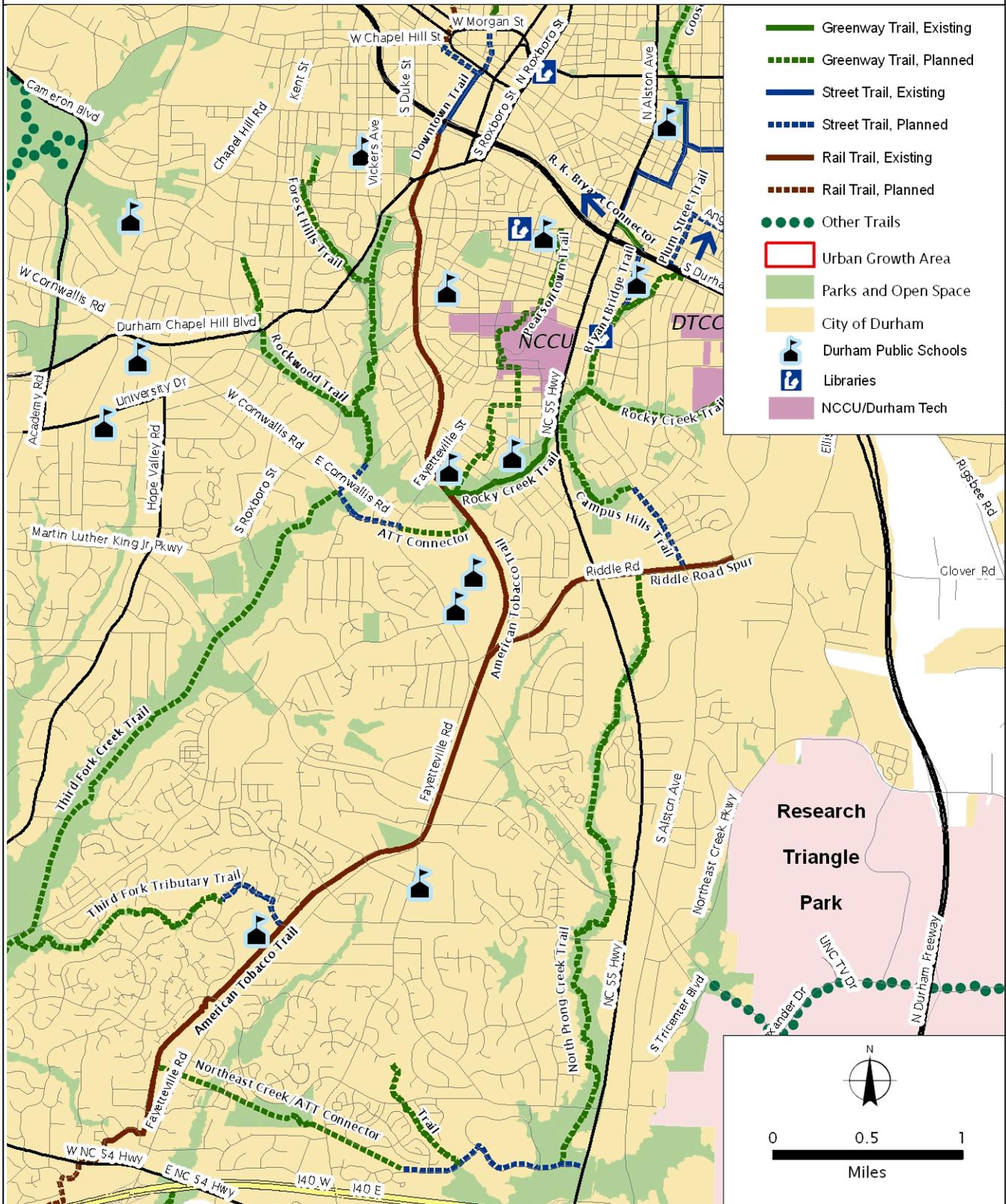




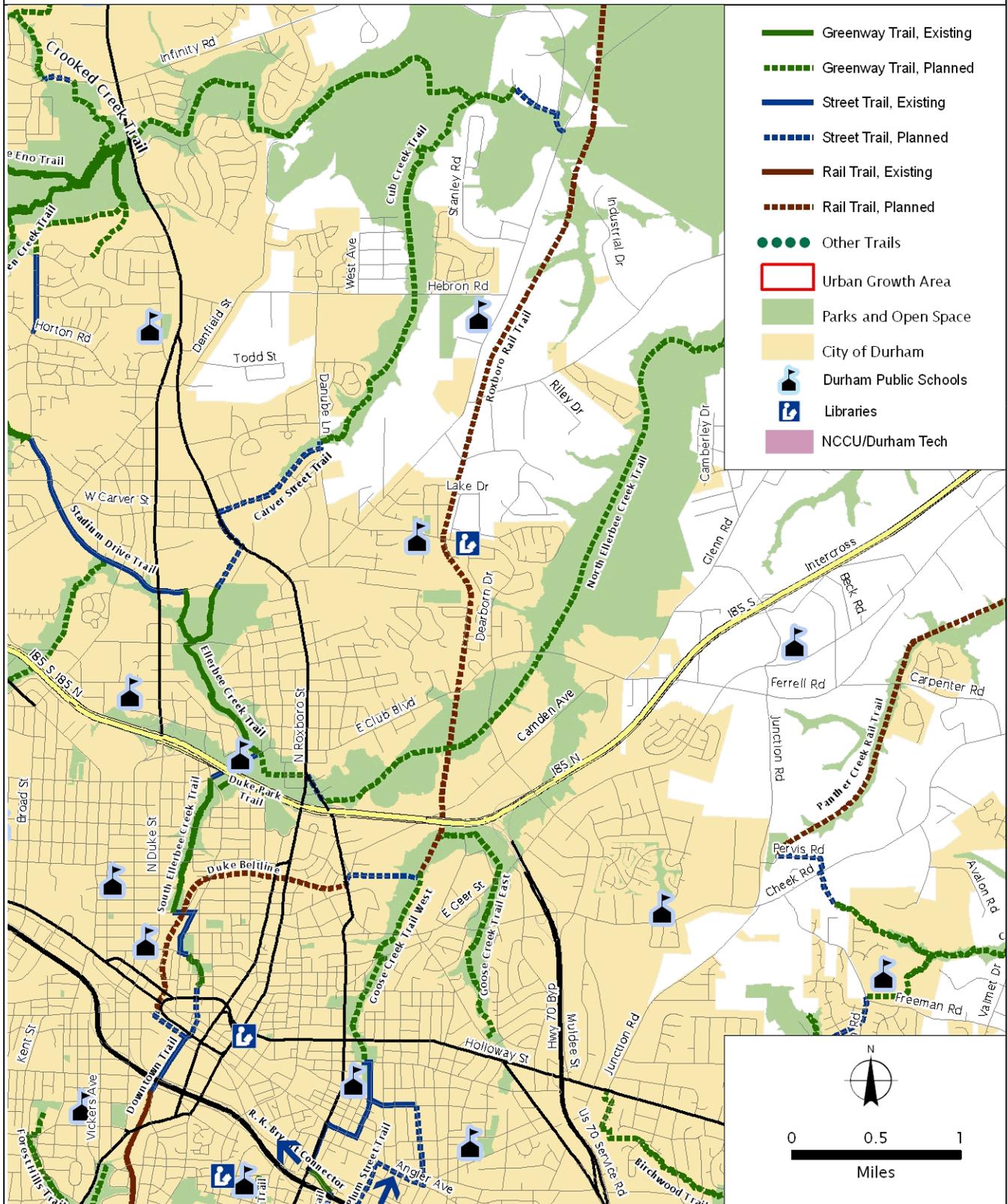
Map 8, Crooked Creek Greenway



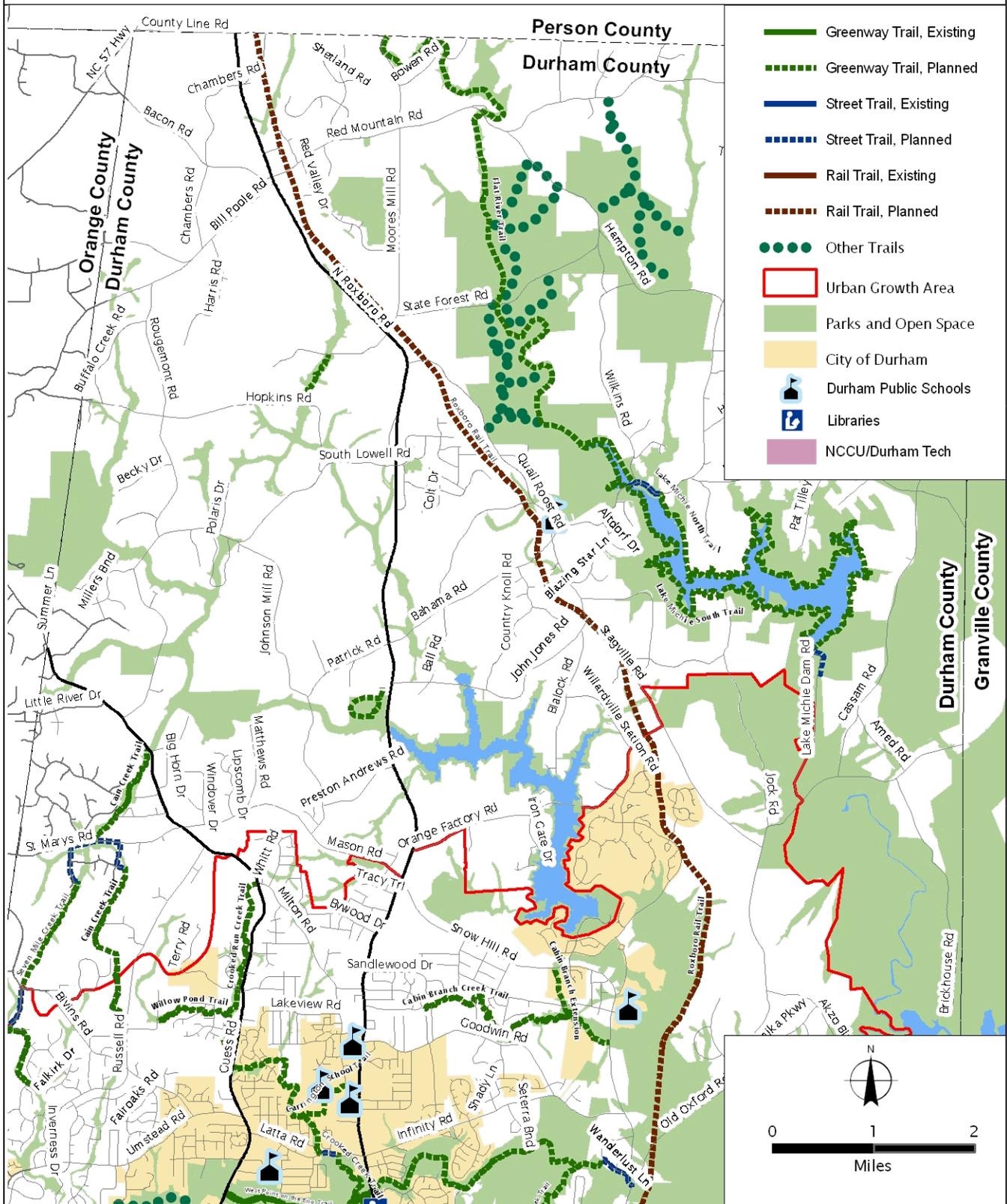
**Map 9, North/South Greenway, Southern Section**



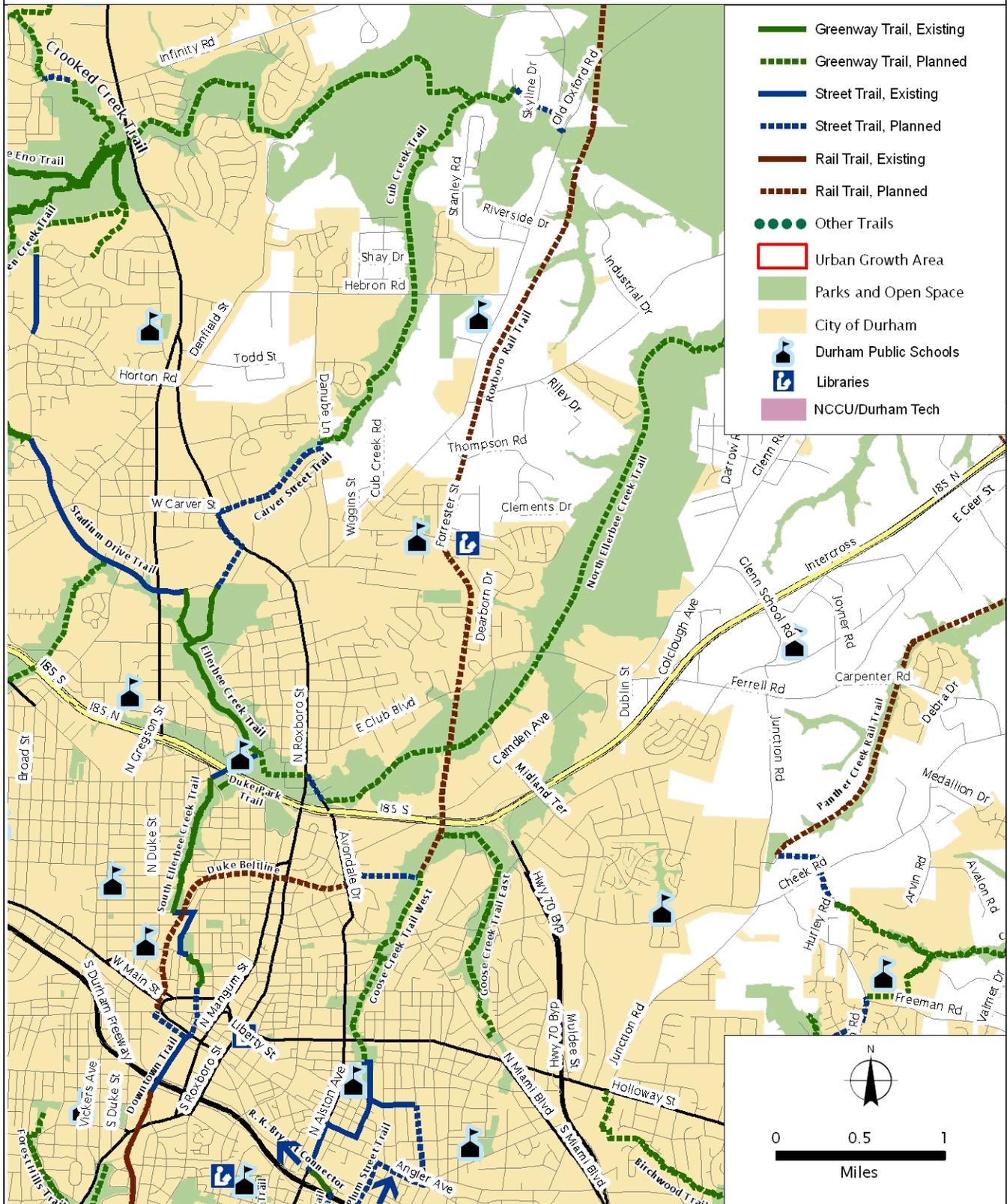
Map 10, North/South Greenway, Northern Section



Map 11, Roxboro Rail-Trail Greenway, North Section



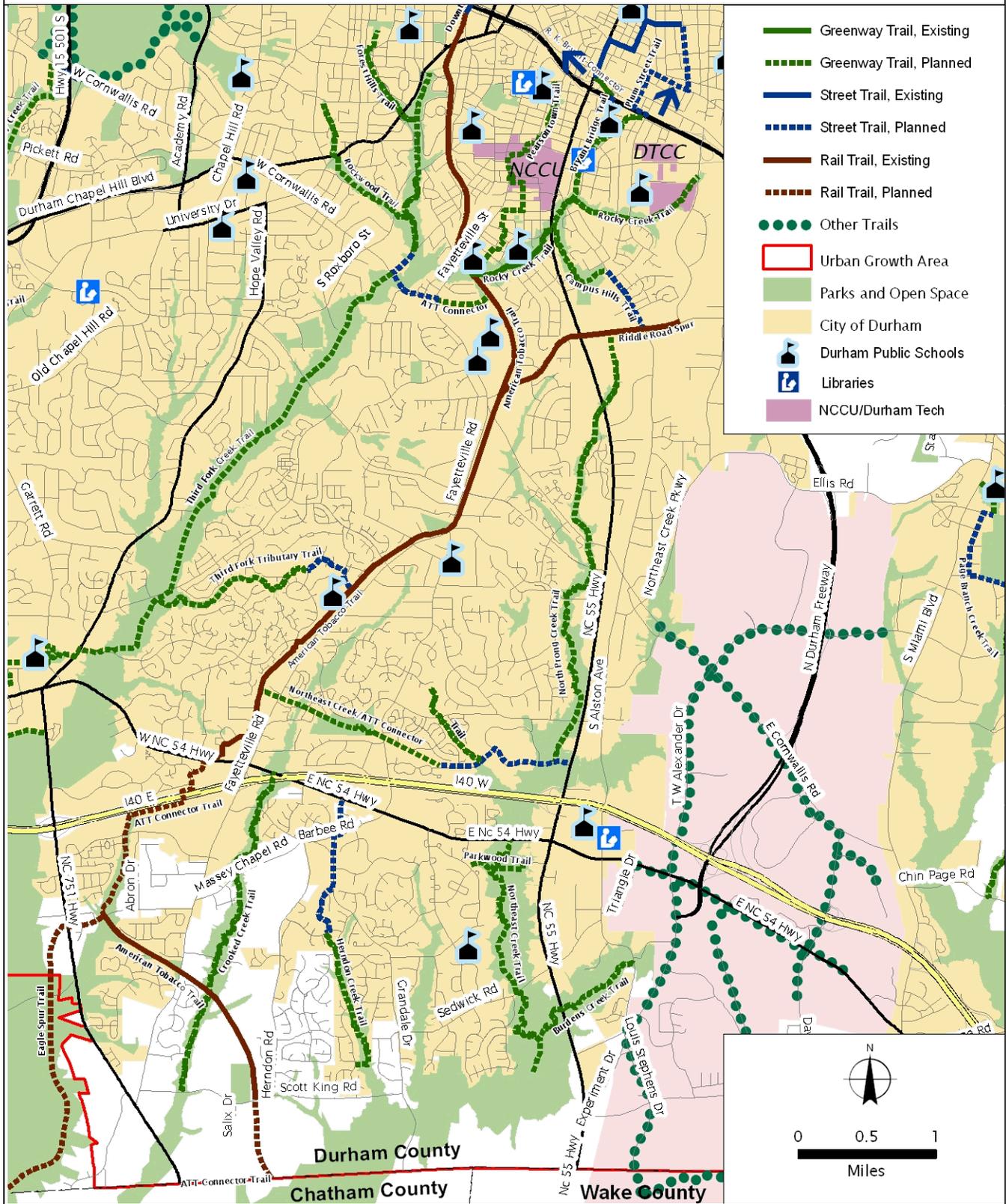
Map 12, Roxboro Rail-Trail Greenway, South Section





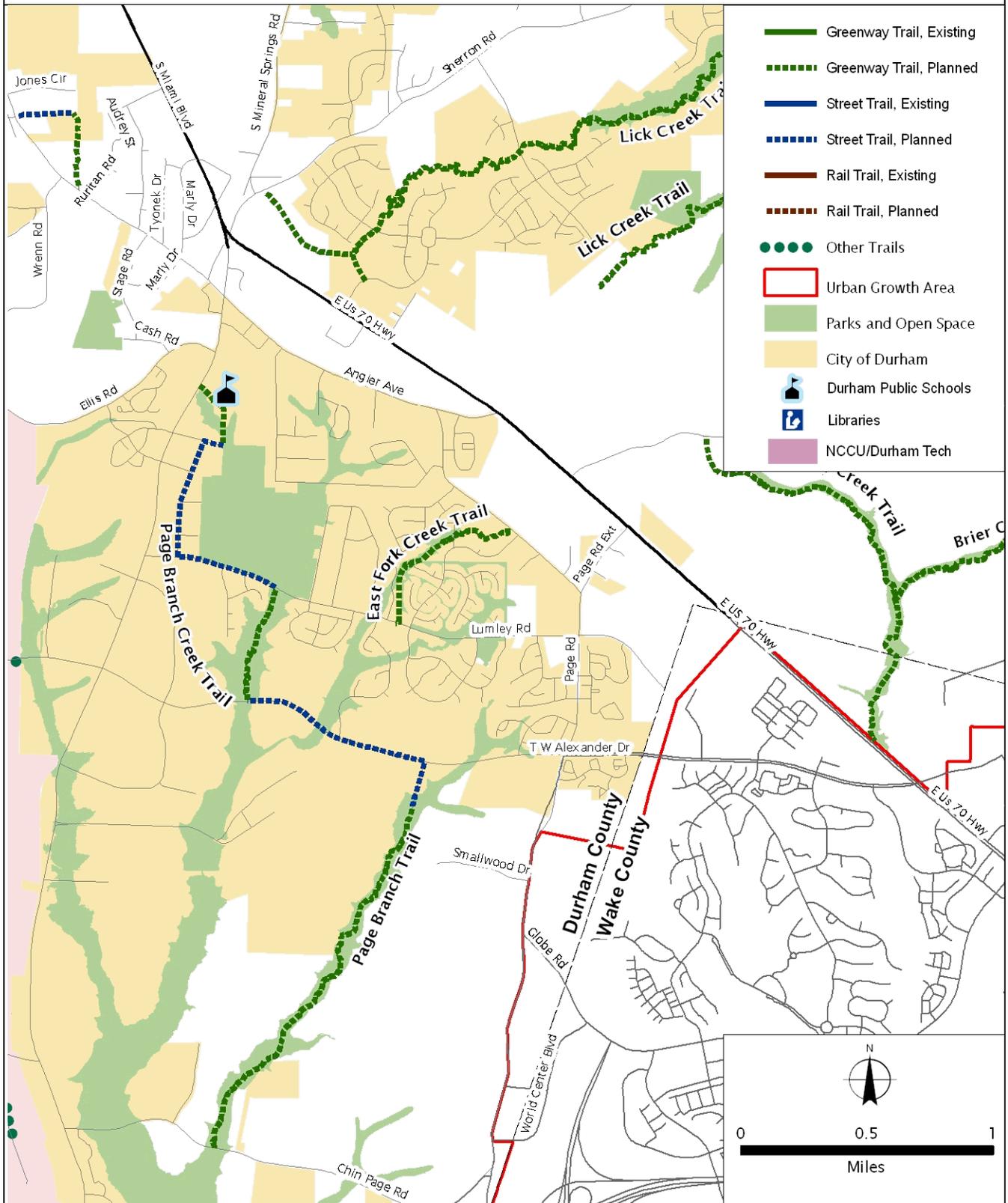


Map 15, American Tobacco Trail Greenway

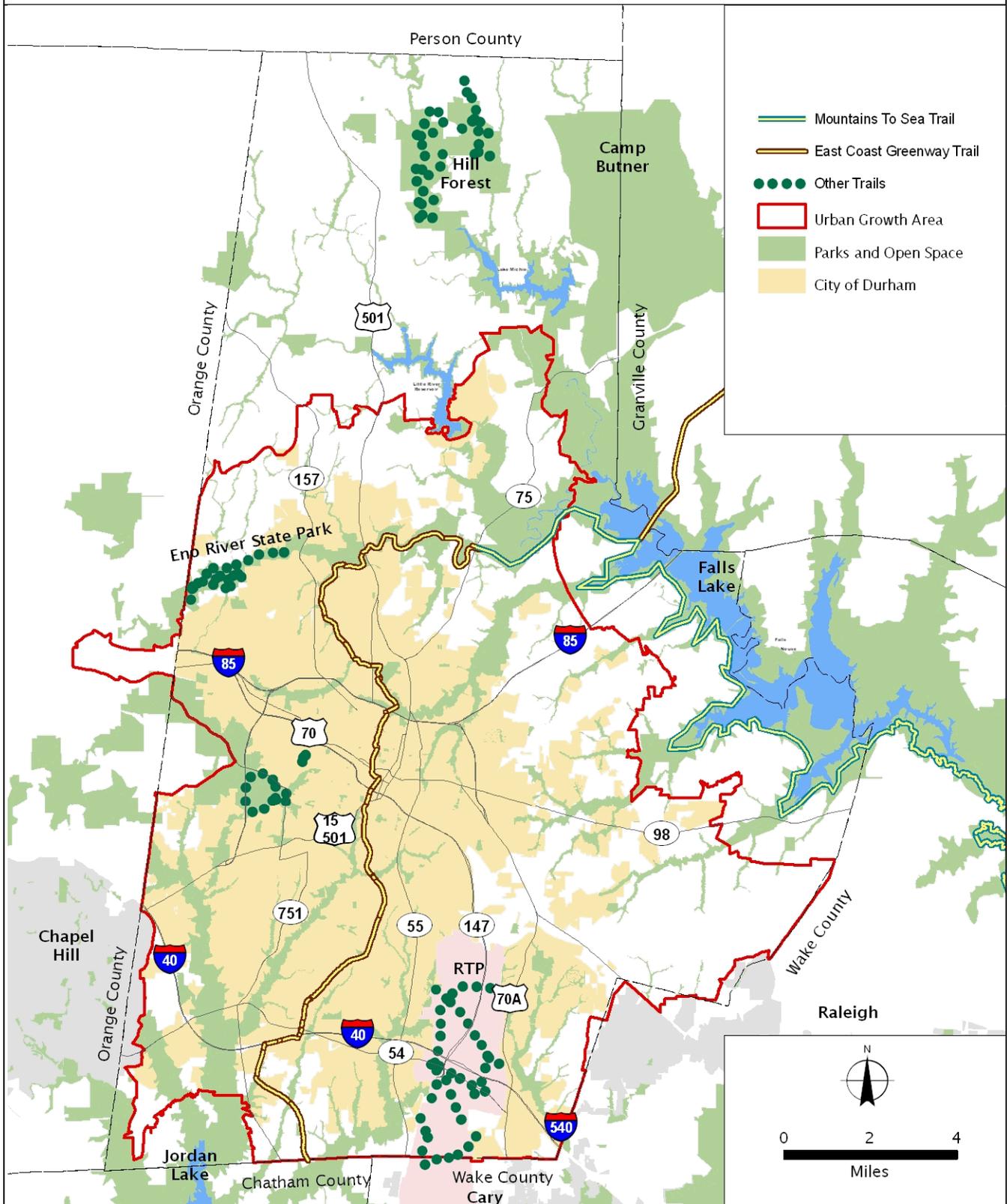




Map 17, Page Branch Creek Trail



Map 18, Regional, State and National Trails in Durham



**Table 1, Greenways and Trails**

Trail	Location	Type Paved: P Improved: I Natural Surface: NS Sidewalk: S	Status	Trail Length
<b>North-South Greenway</b>				
1. Warren Creek Trail	Whippoorwill Park to West Point on the Eno (trail may be natural surface if located in an environmentally sensitive area and paved or improved surface where needed for bike access.	P or NS, depending upon the location	Complete from Whippoorwill Park to Horton Road; future project for Horton Road to West Point on the Eno	1.9 Miles
2. Stadium Drive Trail	Broad Street to Whippoorwill Park	S	Complete	1.9 Miles
3. Crystal Lake Trail	Carver Street to Warren Creek Trail	S, P	Future Project	1.9 Miles
4. Ellerbee Creek Trail	Olympic Avenue to West Club Boulevard (contains Bronto Trail section)	P	Complete	1.2 Miles
5. South Ellerbee Creek Trail	West Trinity Avenue to West Club Boulevard	P	Complete	1.4 Miles
6. West Club Boulevard Trail	Washington Street to Ellerbee Creek Trail	S	Complete	0.3 Miles
7. North Ellerbee Creek Trail	West Club Boulevard to Glenn Road, connection to MST Trail	NS, I	Future Project	4.6 Miles
8. West Ellerbee Creek Trail	Hillandale Road to Stadium Drive	P	Complete from Albany Drive to Guess Road	1.9 Miles
8. Duke Park Trail	Duke Park (Acadia Street) to Washington Street	P	Complete	0.3 Miles
9. Downtown Trail	American Tobacco Trailhead to West Trinity Avenue	S, P	Complete	0.9 Miles
10. Duke Beltline	Goose Creek Trail to Chapel Hill Street	S and Rail Trail	Acquisition under negotiation	2.8 Miles
13. Third Fork Creek Trail	East Forest Hills Boulevard to NC 54 south of Garrett Road Park – shared route with ATT north of MLK Jr. Parkway	P, NS	Phase 1, Southern Boundaries Park to Garrett Road Park complete (P)	7.0 Miles
14. Forest Hills Trail	Third Fork Creek Trail to Lyon Park	P	Future Project	0.9 Miles
15. Rockwood Trail	Third Fork Creek Trail to Ward Street	P	Future Project	1.2 Miles
16. Third Fork Creek Tributary Trail	Fayetteville Road to Third Fork Creek Trail	P	Future Project	0.8 Miles
<b>Subtotal</b>				<b>29.0 Miles</b>

**Table 1, Greenways and Trails**

<b>Trail</b>	<b>Location</b>	<b>Type</b> Paved: P Improved: I Natural Surface: NS Sidewalk: S	<b>Status</b>	<b>Trail Length</b>
<b>American Tobacco Greenway</b>				
17. American Tobacco Trail (Phases A-D)	NC 147 to NC 54	Rail Trail, P	Complete	6.6 Miles
18. Riddle Road Spur	American Tobacco Trail to Briggs Avenue	Rail Trail, P	Complete	1.5 Miles
19. ATT Connector	Third Fork Creek Trail to American Tobacco Trail	S, P	Future Project	0.8 Miles
20. American Tobacco Trail, Phase E (including I-40 Bridge)	NC 54 to Chatham County	Rail Trail, P	Anticipated completion in January 2012	4.1 Miles
21. Eagle Spur Trail	American Tobacco Trail at Stagecoach Rd. to the Durham County Line	Rail Trail, I	Future Project	0.4 Miles
<b>Subtotal</b>				<b>13.4 Miles</b>
<b>New Hope Creek Greenway</b>				
22. New Hope Creek Trail	Durham-Orange County line to Leigh Farm Park and NC 54	NS	Future Project	6.0 Miles
23. New Hope Creek Preserve Trail	Loop trail adjacent to Githens Middle School and Old Chapel Hill Road Park	NS	Complete	2.0 Miles
24. Sandy Creek Trail	Cornwallis Road to Sandy Creek Park, Sandy Creek Park to Garrett Road connector	P, NS	Complete from Sandy Creek Park to Pickett Road	2.0 Miles
25. Dry Creek Trail	New Hope Creek to Durham-Orange County line (connecting to Chapel Hill Dry Creek Trail)	NS	Future Project	1.2 Miles
26. Mud Creek Trail	Cornwallis Road to New Hope Creek Trail	NS	Future Project	3.7 Miles
27. Sandy Creek-Mud Creek Connector	Sandy Creek to Mud Creek	S, NS	Future Project	1.3 Miles
28. Long Branch Creek Trail	New Hope Creek Trail to Old Chapel Hill Road	NS	Future Project	0.8 Miles
29. New Hope-Third Fork Connector	New Hope Creek Trail to Third Fork Creek Trail	S	Future Project	0.7 Miles
30. Little Creek Connector	Old Chapel Hill Road to Meadowmont Drive	S	Future Project	2.8 Miles
<b>Subtotal</b>				<b>20.5 Miles</b>

**Table 1, Greenways and Trails**

Trail	Location	Type Paved: P Improved: I Natural Surface: NS Sidewalk: S	Status	Trail Length
<b>Little Lick Creek Greenway</b>				
31. Chunky Pipe Creek Trail	Cheek Road to Fletchers Chapel Road	P	Future Project	2.3 Miles
32. Twin Lakes Trail	Twin Lakes Park to Little Lick Creek Trail	P	Future Project	1.3 Miles
33. Birchwood Trail	NC 98 at Junction Road to Mineral Springs Road	P	Future Project	2.7 Miles
34. Little Lick Creek Trail	Pleasant Drive to Birchwood Trail	P	Future Project	1.1 Miles
35. Oak Grove Trail	NC 98 to Holder Road	P	Future Project	1.5 Miles
36. Panther Creek Rail Trail	Junction Road to Redwood Road	Rail Trail, I	Future Project	4.8 Miles
37. Geer-Panther Creek Rail Trail Connector	East Geer Street to Junction Road	S	Future Project	2.0 Miles
38. Southern High School Connector	Twin Lakes Park to Chunky Pipe Creek Trail	S	Future Project	1.0 Miles
39. Cheek Road-NC 98 Power Line Trail	Panther Creek Rail Trail to Lick Creek Trail	P, I	Future Project	4.1 Miles
<b>Subtotal</b>				<b>20.8 Miles</b>
<b>Lick Creek Greenway</b>				
40. Lick Creek Trail	Mineral Springs Road to Corps land east of Kemp Road	P	Future Project	5.2 Miles
41. Lick Creek Tributary Trail	Northern Durham Parkway to Lick Creek Trail	P	Future Project	1.6 Miles
42. Glover-Angier Connector	Angier Avenue to Glover Road	P	Future Project	0.5 Miles
43. Martin Branch Creek Trail	Kemp Road to Carpenter Pond Road	P	Future Project	2.6 Miles
45. Brier Creek Trail West	Leesville Road to Wake County Brier Creek Trail	P	Future Project	1.6 Miles
46. Brier Creek Trail East	Brier Creek Trail West to Leesville Road	P	Future Project	1.1 Miles
<b>Subtotal</b>				<b>12.6 Miles</b>
<b>Pearsonstown-Rocky Creek Greenway</b>				
47. Pearsonstown Trail	Elmira Avenue Park to Hayti Heritage Center	P, S	Complete from Elmira Avenue Park to NCCU(P,S)	2.1 Miles
48. Rocky Creek Trail	American Tobacco Trail to NC 55,with connector to Briggs Avenue	P, NS	Complete from ATT to NC 55(P)	1.0 Miles
49. Campus Hills Trail	NC 55 to Riddle Road	I	Future Project	1.2 Miles

**Table 1, Greenways and Trails**

<b>Trail</b>	<b>Location</b>	<b>Type</b> Paved: P Improved: I Natural Surface: NS Sidewalk: S	<b>Status</b>	<b>Trail Length</b>
50. Burton Park Trail	Rocky Creek Trail to Bacon Street (NC 147 vicinity)	I	Future Project	1.2 Miles
51. Bryant Bridge Trail	Burton Creek Trail to Alston Avenue via Bryant Bridge with connectors to the north and west downtown trail	S	Future Project	1.0 Miles
<b>Subtotal</b>				<b>6.5 Miles</b>
<b>Roxboro Rail-Trail Greenway</b>				
52. Roxboro Rail Trail	Durham-Person County line to Goose Creek Trail	Rail Trail, I	Future Project	17.7 Miles
53. Goose Creek Trail, West	Liberty Street to the Roxboro Rail Trail with connectors to the Bryant Bridge Trail via Alston Avenue and the neighborhood	P, S	Future Project	1.3 Miles
54. Goose Creek Trail, East	Roxboro Rail Trail to South Miami Boulevard	P	Future Project	1.6 Miles
<b>Subtotal</b>				<b>20.6 Miles</b>
<b>Little River Greenway</b>				
55. Cain Creek Trail North	Guess Road to St. Mary's Road	P	Future Project	1.2 Miles
56. Cain Creek Trail East	Hardwood Lane to Kelvin Drive	P	Future Project	2.0 Miles
57. Cain Creek Sidewalk Trail Connector	Dunnegan Road, St. Mary's Road, Redpine Road, and Hardwood Lane	S	Future Project	1.2 Miles
58. Seven Mile Creek Trail	Tavistock Road to Durham-Orange County line	P	Future Project	1.0 Miles
59. Craig Road Street Connector	Bivins Road to Seven Mile Creek Trail	S	Future Project	0.4 Miles
60. Quail Roost Trail	Hopkins Road to Quail Roost Road	P	Future Project	0.7 Miles
<b>Subtotal</b>				<b>6.5 Miles</b>
<b>Eno River Greenway</b>				
61. Croasdaile Trail	Stoney Brook Drive to Hillandale Road	P	Future Project	0.6 Miles
62. Croasdaile Sidewalk Trail	West Carver Street to Croasdaile Farm Parkway	S	Future Project	0.4 Miles
63. Cub Creek Trail	Duke Lane to Eno River	I	Future Project	2.5 Miles
64. Cub Creek Sidewalk Trail	Olympic Avenue, North Roxboro Street, and East Carver Street	S	Future Project	1.4 Miles
65. Cabin Branch Creek Trail	Smith Drive to Northern Athletic Park	P	Future Project	2.7 Miles
66. Crooked Run Creek Trail	West Point on the Eno to Guess Road at Milton Road	P	Future Project	4.2 Miles

**Table 1, Greenways and Trails**

<b>Trail</b>	<b>Location</b>	<b>Type</b> Paved: P Improved: I Natural Surface: NS Sidewalk: S	<b>Status</b>	<b>Trail Length</b>
67. Willow Pond Trail	Winkler Road to Crooked Run Creek Trail	P	Future Project	0.9 Miles
68. Carrington School Trail	Crooked Run Creek Trail to Roxboro Road	S	Future Project	0.7 Miles
69. Nancy Rhodes Creek Trail	Bracada Drive to Rivermont Road and Valley Springs Park	I	Future Project	1.1 Miles
<b>Subtotal</b>				<b>14.5 Miles</b>
<b>Northeast Creek Greenway</b>				
70. Northeast Creek Trail	NC 54 to County Wastewater Treatment Plan	NS	Future Project	2.3 Miles
71. Piney Woods Trail	American Tobacco Trail to Northeast Creek	P	Future Project	2.5 Miles
72. North Prong Creek Trail	Riddle Road to Northeast Creek-American Tobacco Trail Connector	P	Future Project	3.4 Miles
73. Burdens Creek Trail	Trail to South Alston Avenue	NS	Future Project	1.1 Miles
74. Copper Creek Trail	Forest Ridge Drive to Northeast Creek-American Tobacco Trail Connector	P	Future Project	0.7 Miles
75. Parkwood Trail	Meredith Drive to Euclid Road	P	Future Project	0.5 Miles
<b>Subtotal</b>				<b>10.5 Miles</b>
<b>Flat River Greenway</b>				
76. Flat River Trail	Durham-Person County line to Lake Michie	NS	Future Project	7.1 Miles
77. Lake Michie North Trail	On the north side of Lake Michie from the dam to the Flat River	NS	Future Project	8.5 Miles
78. Lake Michie South Trail	On the south side of Lake Michie from the dam to the Flat River	NS	Future Project	6.6 Miles
<b>Subtotal</b>				<b>22.2 Miles</b>
<b>Trails Not a Part of a Greenway</b>				
79. Southwest Creek Trail	NC 54 to Scott King Road	P	Future Project	2.7 Miles
80. Herndon Creek Trail	Scott King Road to Drive NC 54	P, S	Future Project	1.1 Miles
81. Page Branch Creek Trail	Chin Page Road to Bethesda Elementary School	P, S	Future Project	4.4 Miles
82. East Fork Creek Trail	Lumley Road to Page Road	P	Future Project	0.8 Miles
<b>Subtotal</b>				<b>9.0 Miles</b>
<b>Total</b>				<b>186.1 Miles</b>

**Table Notes**

1. Some of the Greenway Trails could be started as natural surface trails and improved later.
2. Improved surface trails could include granite screenings, for example, as used on the ATT in Wake County. Trails could also be constructed to AASHTO size standards without being completely paved, to facilitate more frequent multi-modal use with fewer financial and environmental constraints. Some of the Greenways could be constructed in this fashion to provide the citizens of Durham with trails sooner and at a lower cost than waiting for full funding of a paved trail. Projects funded with public money must, however meet federal accessibility standards.
3. The legend for the maps corresponds to the defined trail types in the table.
4. The ability to amend this table in the DTAG plan is essential, especially considering the financial constraints of trail construction and its process. If Durham is seeking more public-private partnerships for construction of new trails, then both the status of a trail and its priority ranking needs to be more fluid in order to accommodate citizen needs and market and construction demands. An amendment to this table may be proposed by DOST, Planning, or Parks and Recreation; however, any amendment must be approved by the governing boards.
5. Several trail routes in some areas are still being negotiated and may be altered slightly as the trails become more definitive. They are:
  - a. The Alston Avenue widening project area, the east-west and north-south connectors to the North East Central Durham area from the R. Kelly Bryant Bridge, the Goose Creek West section; and
  - b. The New Hope Creek Master planning area.

## II. Goals and Implementation

### A. Goals and Recommendations

The citizens of Durham want more places to walk and bicycle in their community and have shown themselves willing to support this desire with both money and their own volunteer time. Many plans have portrayed a future for Durham that includes an enjoyment of nature, physical exercise, and bicycle and pedestrian commuting. Therefore, the vision that guided earlier trails and greenways plans remains the underlying principle of this revised edition. That general goal is as follows:

**The City and County of Durham will have a system of trails and greenways that connects people and places in the community while preserving and enhancing the region's natural environment.**

Within that broad goal are a series of more focused goals that guide its implementation. Just as the term "greenway" itself has been evolving over the past decade, so to have the specific goals evolved that Durham selects to implement its system of trails and greenways. The crucial elements in the system now are cooperative efforts between the Plan for greenways and trails and other needs and visions in both the local community and the larger regional community. A greenway system plan is one that must link with various other plans, including park and recreation plans, transportation plans, open space preservation plans, watershed protection plans, and even historic district plans. The following specific goals reflect that holistic vision of the community's development.

Just as goals guide trail planning, implementation recommendations turn those goals from a wish list into a day-by-day implementation of projects. The following recommendations are for policies to help make the associated goals into realities. When the Plan is adopted, staff will turn these recommendations into implementation items.

The trails and greenways identified in this document may vary in terms of surface type. In general Durham's greenway system can incorporate three different types of trails: natural surface, (trails that are not paved or improved), improved surface, (trails that have been graded and may have a surface such as crush and run or gravel), and paved trails or sidewalks. Depending upon the location of the trail and the user needs, different surface types may be used. A good example of this is the different surface types that are found in the New Hope Creek trail system.

**1. Goal 1, Connectivity**

Plan trails and greenways with origins and destinations to link residential areas with schools, parks, institutions, and shopping. Tie into the City’s and County’s systems of sidewalks, on-road bicycle routes, and transit to allow citizens a choice in their recreation and work commuting, and be consistent with adopted bicycle and pedestrian facility plans. The Durham network will connect with regional, state, and national trail systems wherever possible.

**Recommendations**

- a. City and County staff will continue to participate in state and regional planning for trails and greenways systems. Incorporate State, regional, and national trails that pass through Durham County into Durham’s trails plans.
- b. Trails and greenways plans will be coordinated with pedestrian plans, bicycle plans, public transit plans, parks and recreation plans, and other relevant land use and development plans. These include among others, the *Durham Walks Pedestrian Plan* and the *Durham Comprehensive Bicycle Transportation Plan*.
- c. Encourage institutions, commercial districts, and neighborhoods to build local connections to Durham’s main trail routes, and add these to the Plan by amendment.

**2. Goal 2, Accessibility**

Durham’s urban, paved greenways will be fully accessible to persons with disabilities. Unpaved trails in the system will be accessible to a level similar to their surrounding environment. Greenways and trails will also be available across the community; one priority will be balancing that development across the City and County.

**Recommendations**

- a. Design all paved trails in Durham for accessibility; all improved trails will be as accessible as possible and signed as to their level of difficulty.
- b. Continue to select trail construction priorities to ensure that all areas of Durham have access to the greenway and trails system.
- c. Plan trails to serve as many types of trail users as the location and environmental setting of each warrants.

**3. Goal 3, Right-of-Way Preservation**

In a rapidly urbanizing area such as Durham, land is increasingly valuable. The City and County should preserve trail and greenway corridor rights-of-way in anticipation of future trail development, even during periods when funding for actual trail construction lags.

**Recommendations**

- a. The City and County will match their decisions on greenway and trail development priorities with funding for trail right-of-way acquisition, whether through bond issues, inclusion as Capital Improvement Projects, maintenance of a designated funding source to match grant awards, or all or the above.
- b. The City and County will consider adopting a policy to require that an easement for trail use be routinely acquired as part of any other easements that the City or County acquires that includes trail routes, such as easements for utility lines or for roadway right-of-way.
- c. Retain and strengthen language in the Unified Development Ordinance that requires greenway right-of-way dedication in new developments.

**4. Goal 4, Water Quality Protection**

Since many of Durham’s greenways follow stream corridors, protection of the water quality in those streams is of key importance. Greenway and trail construction in those corridors will follow best practices for environmental protection, will not seek exceptions to State and Federal regulations, and will include stream bank enhancement as necessary.

**Recommendations**

- a. Do not construct greenway trails within the thirty-foot strip adjacent to streams in Durham unless runoff mitigation or stream bank restoration techniques are also part of the construction.
- b. Whenever possible, do not construct greenways that require boardwalks and/or bridges in floodways. Do not construct greenways that require fill in floodways or wetlands. Utilize areas disturbed by previous work for trail construction as possible.

**5. Goal 5, Open Space Preservation**

Green corridors are crucial for wildlife and native plant survival in an urbanizing area. One priority criterion for greenway corridor acquisition

will be those areas in Durham that are both environmentally sensitive and threatened by development. In the most sensitive areas, design trail construction for minimum impact.

**Recommendations**

- a. Land acquisition for a greenway or trail in an environmentally sensitive or unique area may include preservation of a wider trail corridor than would be acquired in a less sensitive area.
- b. Not all land acquired for a greenway will have a permanently constructed trail associated with it; some land may be used for recreational activities such as bird watching or wildflower identification.

**6. Goal 6, Community Education**

Inform and educate citizens about the trails and greenways programs and about the role of the Durham Open Space and Trails Commission (DOST) at regular community events. City and County organizations and agencies should create greenways maps and brochures, educational programs, and events to explain and promote the system.

**Recommendation**

- a. DOST will attempt to secure grants to fund educational programs and brochures to explain and promote the trail and greenways system. DOST will create a program to take to community groups on request to explain and promote the trails and greenways system.

**7. Goal 7, Community Involvement**

Encourage all the citizens of Durham to become involved in further development of the greenways and trails system through (a) the establishment of community-inspired neighborhood connector trails, (b) Matching Grant Program initiatives, and (c) citizen “adoption” of established trail sections for assistance with maintenance and surveillance.

**Recommendations**

- a. The City Department of Parks and Recreation (DPR) and the City General Services Department will continue to manage an “Adopt a Trail” program to encourage citizens to be actively involved with trail maintenance and surveillance.

- b. Establish a source of funding to assist citizen groups to build trails in their neighborhoods for local connections or to connect to the City's and County's trails and greenways system. These neighborhood trails can be adopted into the City's and County's system by amendment. The County's existing Matching Grants program is a possible source of funds for this kind of neighborhood trail.

**B. Priorities for Development**

**1. Initial Priorities**

The 1988 Durham Urban Trails and Greenways Master Plan (DUTAG) stated that the priority of the first five years of the trails and greenways program would be “the completion of a trail from I-40 on Third Fork Creek to West Point on the Eno Park, i.e., a route crossing through the entire City, from north to south.” It noted that, “other major trail development opportunities may occur due to railroad abandonment” and suggested watchful monitoring of the rail line to Roxboro, the downtown rail corridor, and the line “from downtown to Woodcroft and Jordan Lake.”

That Plan specifically noted that by 1993 (that is five years after the Plan's adoption), the trails that should be in place included Phase I of the Burton Park Trail, the Lower Cub Creek Trail, both upper and lower sections of the Third Fork Creek Trail, and the South Ellerbee Creek Trail, for a total of 5.6 miles of greenway trail on the ground.

With the passage of the 1990 bond fund issue, the Durham Trails and Greenways Commission modified those recommendations. They proposed a motion to the City Council, which was approved on March 2, 1992, to establish the following priorities:

- a. Completion of the north-south trail, from the Eno River to NC 54;
- b. Spending \$750,000 in southwest Durham (primarily in the New Hope Creek Corridor) for land acquisition and volunteer support, with a suggested first trail at Sandy Creek; and
- c. Construction of a trail in the eastern part of Durham, in impact fee zone 2.

The motion concluded with the instruction that “the highest priority is the north-south trail”.



*The American Tobacco Trail in southern Durham County.*

How have these priorities worked out? See Table 2, which shows the status of various trails.

These trail priorities are proceeding much as that original Commission-inspired resolution dictated. The North/South Greenway has remained the top priority. That trail is nearing completion, with Durham Central Park complete; the one remaining gap is the final connection into the south side of West Point on the Eno Park from Horton Rd. Volunteers have built trails in the New Hope Creek Corridor on County-owned land; the first City trails in the New Hope will be the Sandy Creek Trail in conjunction with the City Park and a wetland restoration project on the site of the old wastewater treatment plant.

The American Tobacco Trail has leapt into prominence in recent years, but it's first few miles actually complete a section shared with the North/South Greenway, and its construction has been heavily supported by State and Federal transportation dollars with limited bond fund expenditure.

**Table 2, Trail Development Priorities**

<b>Trail Rank</b>	<b>Greenway and Trail Name</b>	<b>Comments</b>
Trail surface types may vary depending upon the area, Paved, Natural Surface, and Improved Trails are further defined at the end of this table.		
1	North/South Greenway: Phase 2 of Warren Creek, the Downtown Trail, Duke Beltline and West Ellerbe Creek	The North/South Greenway has been the top trail priority for years, and is the spine of the system. The downtown section is completed and The Duke Beltline would connect the downtown portion, and the West Ellerbe Creek segment providing connectivity of the entire system.
2	Eno River Greenway: Eno River Trail, Crooked Run Creek Trail, Cub Creek Trail	This greenway not only serves a rapidly growing part of Durham, it is a connector for a state and a regional trail. This natural surface trail serves as a connector to the Mountains to Sea Trail and the East Coast Greenway.
3	Rocky Creek/Pearsontown Greenway	This greenway is partially completed; completing the sections between NCCU, The Hayti Heritage Center, and Durham Tech would create valuable transportation linkages to the Briggs Avenue Garden.
4	New Hope Creek Greenway	Mud Creek Trail and Sandy Creek Trail (east) would make vital connections in this very important area. Dry Creek Trail and Sandy Creek Trail (west) would create some needed E/W routes in the New Hope Corridor
5	Goose Creek and the R. Kelly Bryant Bridge connector trails.	The Goose Creek Trail and R. Kelly Bryant bridge connectors are trails that use sidewalks and other types of surfaces. They will serve as connectors to the Rocky Creek and Pearsontown greenways and will provide much needed access to the North East Central Durham area and downtown via the newly constructed bridge.
6	Little Lick Creek Greenway	Trails are needed in this part of the County; Panther Creek makes a good connection to the Falls Lake Project lands
7	Crooked Creek Trail, Herndon Creek Trail	Connections for a rapidly growing part of Durham
8	Lick Creek Greenway	Connections for a rapidly growing part of Durham
9	Roxboro Rail-Trail Greenway	This trail would offer a long-distance and multi-use recreation and transportation opportunity in the near future for northern Durham
<b>Street Trails (Sidewalks)</b>		
1	NC 54	Major E/W trail connector route in southern Durham County
2	Erwin Rd. to Main St., to Iredell Ave., to Club Blvd.	Route heavily used by local bicycle and pedestrian commuters
3	Club Blvd at Hillandale to Washington St.	Route heavily used by local bicycle and pedestrian commuters

Work on the Little Lick Creek Trail supplanted the earlier DUTAG priority of the Cub Creek Trail in an attempt to balance trail development more equitably across the City and to spend impact fee money in that zone. However, the initial Little Lick Creek Trail route for which land was acquired was difficult to construct due to wetlands. The emphasis was shifted to a more northerly route, still in the eastern part of the City; and work was begun in 1999 to acquire land to connect the Little Lick Creek route with the Panther Creek Trail.

The Rocky Creek Trail was one of the City's first trail sections, built in 1988 to connect Fayetteville Street Elementary School, Elmira Park, and Shepherd Middle School. Its extension northward from Elmira Park towards NC Central University and the Hayti Heritage Center—as a separate trail called the Pearsonstown Trail—was made easier by the discovery of almost-forgotten public easements connecting blocks through a redeveloped residential neighborhood.

This progress shows two things clearly. First, the growth of a trail system takes patient years of land acquisition to prepare for a burst of construction. Second, the priorities set by the DUTAG and the earliest Commissions have successfully guided the program to its current position.

## **2. New Trail Priorities**

While those early recommendations have been amended somewhat, with the Intermodal Surface Transportation Equity Act (ISTEA) grant which included the American Tobacco Trail (ATT) into the City's expenditures, those initial priorities for the construction of the ATT are close to being accomplished with the last "Phase E" out for bid in 2011. This will complete the last 5 miles of the trail and the bridge over I-40. All the funding from those early bonds has been spent or encumbered on these priority projects.

In 2001, the Durham Open Space and Trails Commission (DOST) looked at the budget allocations of the City and County for trails and greenways (and looked as well at the recommendations of the new Little River Park Advisory Committee, the 2000 Parks and Recreation Master Plan, and ongoing Open Space Corridor plans) and recommended the next priorities for the trails program. Those priorities have been included in Table 2. And will guide acquisition and development for the future. Funding will determine the rate at which these priorities can be turned into rails on the ground.

These recommendations for trail development priorities come with two development policy recommendations as well:

- a. Neighborhoods and developers are encouraged to look for connections to the trails and greenways system and linkages between sections and to bring recommendations forward to DOST for consideration and possible inclusion into the master plan. This might help provide greater connectivity among the trails and neighborhoods (established and planned). DOST also recommends that if grant monies are available for trail construction that these types of trails be considered for those funding streams.
- b. This trail development priority list may be amended as circumstances warrant. If, for instance, the Roxboro Rail-Trail corridor becomes available, DOST would want to advance that trail's ranking on the priority list.

Funding to build the approximately 188 miles of off-road trail proposed by this plan update is a long-term undertaking. The timetable for construction of the next trail priorities depends entirely upon the funding streams allocated to the program. An annual funding allocation of \$1,500,000, for example, would allow the City to construct approximately two and a half miles of greenway trail per year. The County's yearly allocation must cover both open space acquisition and trail construction. State and federal grants, such as the City and County have been receiving, would shorten that period, as does combining sidewalk and street trails with transportation construction. Any bond funding would also shorten the time until the completion of construction. The City and County staff will continue to acquire trail right-of-way through development dedication, purchase, and easement acquisition.

The recommendation for funding priorities emphasizes the completion of projects already begun, such as:

- a. **North/South Greenway.** Complete the remaining incomplete sections after expenditure of all bond funding; Third Fork Creek Trail Phase 2, and W. Ellerbee Creek Trail Phase 2.
- b. **Rocky Creek/Pearsontown Greenway.** The section from Elmira Park to NCCU is complete; however, the section north to Hayti Heritage Center is not yet built, consisting of 1.2 miles.
- c. **New Hope Creek Greenway Trails.** Sandy Creek Trail from Sandy Creek Park to Pickett Rd. is complete, leaving 0.75 mile between Pickett Rd. and Cornwallis Rd. Park and the section from Sandy Creek Park, along the sewer easement, to the service road along 15-501. This entire trail will be paved. Mud Creek and Dry Creek to Erwin Rd., 4.5 miles; Mud Creek will be constructed mostly by volunteers after land is acquired. The majority of these trails will

be natural surface trails with improved surface trails in some locations and some conversion to paved trail where the service road along US 15-501 connects to Sandy Creek Park.

One of the ongoing fiscal commitments of a trails program is maintenance and management. The average total maintenance cost—including drainage control, regular cleaning, regular mowing, minor repairs, and equipment and staff time—is approximately \$6,500 per year per mile of paved trail.

Communities with an established greenway program have noted some substantial community-wide returns in the form of reduced flooding costs, reduced costs of water quality improvement, increased tourism revenue, decreased transportation costs, decreased health care costs, and decreased criminal activity.

Durham citizens have begun to demand more flexible transportation routes and alternative forms of transportation such as bicycling and walking. In addition, there has been more demand for new subdivisions that are adjacent to or encompass a greenway system that connects them to the surrounding community. It is important to remember how much new and planned greenways contribute to Durham’s development activities and how integral they are becoming to new development.

Prioritizing trails for Durham can be a difficult task as funding availability and needs change. The DOST have prioritized the trails in Table 2 in an effort to focus on the areas where needs are the greatest or where funding sources may come sooner rather than later. These may change frequently and may be changed upon the advice of the entire Commission. Trail priorities are listed along with attached definitions of trail surface types.

### **Trails Surface Types**

Trail surface types may be defined in several different ways. There was much discussion regarding surface types that reflect both the needs of the users and the environmentally sensitive areas they may be passing through. Paved Surface trails are defined as standard 8-10 feet wide asphalt or concrete trails with multiple uses. Improved Natural Surface trails are defined as 6-8 feet wide trails with compacted surface material, low grades, and multiple uses. Natural Surface trails are defined as less than 6 feet wide, dirt surface, suitable for hiking, or other specifically designed uses. For mapping purposes, the term “Greenway” remains in use with the map legend with further definitions established under section III. A.

**C. Implementation**

**1. Acquisition**

Trails and greenways are constructed to serve public recreation or transportation purposes. Therefore, the owner and manager of most of the trails and greenways is the City of Durham or Durham County. There are a significant number of trails under other ownership and management in Durham, including trails on federal, state, and private lands. While the trails and greenways in this plan will make connections wherever possible with those trail systems, they remain outside the scope of its recommendations.

Local governments obtain their property for trails and greenways by various methods. The City primarily uses fee simple purchase, exaction, and easement dedication. The American Tobacco Trail is a major exception since most of it is constructed on land leased from the North Carolina Department of Transportation (NCDOT).



*Students from R. N. Harris Elementary School at a Walkable Communities design workshop.*

The County uses those methods as well, but also holds some conservation easements on land where trails are not the primary purpose. Both local governments have received donated land and the County has obtained some land—especially in the New Hope Creek

Corridor—through bargain sale. The City can condemn land for a trail, but it has used its power of eminent domain rarely (see Appendix F).

The land acquired for a greenway or trail, whatever its acquisition method, must be wide enough to accommodate the construction and maintenance of the trail. In most cases it will be desirable to have a trail corridor wide enough to preserve natural vegetation, provide a scenic route for trail users, buffer nearby developments from trail use, and preserve undisturbed stream buffers. Environmental protection regulations necessitate as wide a corridor as possible in some riparian areas to avoid potential conflict with trail construction requirements. Guidelines for greenway easement acquisition are as follows:

- Adjacent to streams with mapped floodplains in non-urbanized areas, the 100-year floodplain or a minimum of 100 feet is the desired width;
- In developed urban areas, an easement of 50 feet is the minimum desired width; and
- When a greenway easement is to be located on a sanitary sewer easement, the desired greenway width extends from the adjacent stream bank to the edge of the sewer easement farthest from the stream.

**a. Fee Simple Purchase**

Fee simple is an outright purchase of a parcel of land and all the rights associated with it allowing for full use of the land and any level of public access deemed appropriate by the managing agency. It does remove land from the property tax rolls, and it can be expensive. Less than a third of the City’s trails are on land it owns in fee simple; but since the County generally buys larger parcels for open space protection, most of its trails are on County-owned land.

**Recommendation.** The City should attempt to spend each year the money collected as the open space impact fee or accumulate those funds to accommodate larger projects. That money can be a continuing and reliable source for property purchase as needed in the various districts of the City. The County has already allocated a continuing amount for open space acquisition in its capital budget; that fund should not be reduced.

**b. Exaction**

Durham requires that developers pay an impact fee or dedicate an easement to the public for open space or recreation. All subdivisions in Durham City and County are required to dedicate land for a greenway if

their property includes part of a trail route from the adopted master plan. Many non-residential developments do dedicate trail right-of-way as part of the site or development review process, though they are not required to do so by the Unified Development Ordinance.

**Recommendation.** The City and County should consider either (1) linking exactions for greenways to a transportation requirement as well as a recreational one so that development in all land use zones would be required to dedicate easements, or (2) using reservation and a set payment rate to acquire greenway corridors from non-residential uses. Multi-family residential development should be required to dedicate open space for recreation use, this for greenways when indicated on a plan.

**c. Recreational Use Easement**

One right belonging to a piece of property—the right to access and use for a trail—can be separated out from a parcel and sold. Most of the City’s trails in developed areas are on easements that owners have sold to the City for the specific purpose of a trail. The City pays the surveying and legal costs and pays the owner a percentage of the land’s value for the right of access and use. The County has only one trail, inside the City limits, which is built partially on an easement.

**Recommendation.** The City should consider adopting a policy that encourages its Public Works Department to acquire joint use easements. Easements acquired for various utilities, such as sanitary sewers, should also be written to accommodate recreational use when those acquisitions follow a route on the adopted trails and greenways master plan.

**d. Lease**

The NCDOT purchased under its rail banking authority the rail corridor that the City leases for the American Tobacco Trail. The City pays only a nominal fee for the use of the corridor, but the arrangement does have the inherent risk that the NCDOT can reclaim the corridor for rail use at some point. Since the corridor is 100 feet wide at most points, the City would probably try, if the corridor were reclaimed by NCDOT, to establish a trail parallel to any new rail line that was built in that same corridor.

**Recommendation.** Leasing does not protect a trail corridor the way ownership or easement does, but it is the best way to acquire access to rail banked corridors. The NCDOT should be encouraged to purchase rail corridors in Durham and to lease them to the City or County for interim trail use. Durham should take the lead with local governments statewide

to work with NCDOT to create a policy for shared-use trail and rail corridors, anticipating a time when NCDOT can move to restore rail service in any corridor.

**e. Conservation Easement**

Like a recreation easement, a conservation easement is one right of a piece of property that can be separated out and sold or given away. In this case, the right protects the natural resources on the property—water, forest, land—from being used. The County has itself given conservation easements to the State on lands buffering rivers and creeks, which it has purchased with Clean Water Management Trust Funds. An easement to protect working farmlands or scenic views is a specialized type of conservation easement. Often conservation easements do not include a right of public access and trails are not a part of their use.

**Recommendation.** The County continues to hold more conservation easements than the City, since the most sensitive natural areas are outside the City. All conservation easements must be assessed carefully to make sure any trail use will have a minimum impact on the site's resources. For more intensely developed areas, the County should consider including public access for trails as a part of any cluster development or transfer of development rights legislation.

There are other situations for trail development that can be explored. Since some trail and greenway routes are on roadways or sidewalks, development through transportation improvements is certainly a facet of trail growth. NCDOT is now routinely including bicycle and pedestrian improvements on projects on State roads; the City should consider following suit. The County should encourage NCDOT to follow its own published guidelines on State roads in the County as well: roads with an Average Daily Traffic Count (ADT) between 4,000 and 8,000 should have two-foot paved shoulders; roads with an ADT over 8,000 should have four-foot paved shoulders. This one improvement would make the County roads significantly more bicycle-friendly and make connections between off-road trails much easier.

**2. Funding**

Money is the catalyst to turn plans into realities. A trails and greenways program needs funding for acquisition of land, trail design and construction, and maintenance and management. Because a greenways and trails program is a function of the local governments, some of those functions are rolled into the costs of other programs. Acquisition by dedication, for instance, is included in the development plan and site plan review process; maintenance and management for trails get included in overall parks facilities budgets.



*The old rail line to Roxboro is proposed for a rail-trail in northern Durham; this view of the corridor is from Hamlin Road.*

Some costs are large and visible: acquisition by purchase of easement and fee simple rights-of-way, design consultant fees, and actual construction costs. The 2007 per mile cost of trail in the City of Durham, depending upon site conditions, was \$500,000 to \$1,000,000. A successful trails and greenways program needs predictable funding, through any of several possible sources, to keep a steady course through the years-long process from initial landowner contacts until a trail ribbon-cutting. Some of those sources and recommendations on how greenways and trails might be included in them are discussed below.

**a. Capital Improvement Project (CIP)**

The City Council and Board of County Commissioners should consider funding a trail project for each fiscal year and include the project (or at least some phase of that project) into the CIP budget. It can be funded by any of the techniques the local governments use for funding their long-term community facilities—including bond issues and impact fees. Since the CIP is a long-term budget, financing for trails can also simply be set at a yearly amount and specific projects identified year by year.

**b. Bonds**

Durham citizens in the 1990s approved City and County general obligation bonds which included nearly \$8 million for trails and greenways. As noted in earlier sections, that funding was either spent or

encumbered by 2001. When the City or County elected officials make a decision on another bond issue, funding for trails and greenways should be a portion of it.

**c. Impact Fees**

Durham currently collects impact fees—a one-time charge on new development—for open space, recreation, and transportation. Higher fees on new development could be considered to pay back more of the costs it imposes on the local governments. An increase in the recreation impact fee should be considered as a way to increase greenways and trails construction. Incremental increases in impact fees are being used as a methodology to increase these fees and impact fees were raised in 2009. However, with the current economic climate it may be some time until those percentages of impact fees are changed. Also, the transportation impact fee currently is dedicated solely to roadway improvements only. A small percentage of that fee could be re-directed to alternative transportation improvements—including on-road and off-road pedestrian and bicycle routes.

**d. Grants**

Substantial grants for trail and greenway construction do exist, primarily from the state and federal governments. Durham has been very successful in winning specific trails grants:

- Intermodal Surface Transportation Equity Act (ISTEA) money for the American Tobacco Trail;
- Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) money for the Eno River Trail;
- National Recreation Trails Fund (NRTF) money for the New Hope Nature Trail; and
- Parks and Recreation Trust Fund (PRTF) money for the trails at the Little River Regional Park and the Sandy Creek Trail.

While it is not a grant, getting the southern portion of the ATT into the very competitive TIP process as earmarked Surface Transportation Policy/Direct Attributable funds (STP/DA) is also a plus. Most state and federal grants, and the STP/DA funding, also require some level of matching local funding. The City and County need to keep an amount of funding in reserve to match trails and greenways grants so that staff can try to bring more of these monies into Durham.

Sources of grant funding other than the obvious recreation/transportation links need to be pursued as well. For instance, Community Development Block Grants can help fund trails in

redevelopment neighborhoods and water quality grants can help fund trails that include stream bank restoration features.

**d. Public/Private Partnerships**

Private funding can augment local funding sources for greenways and trails and can provide the required matching funds for state or federal grants. The members of the Durham Open Space and Trails Commission should take the lead in searching out potential private grant sources, including local businesses, corporate giving programs, contributions with recognition (such as the embossed bricks in front of the Durham Bulls Athletic Park), and private environmentally-focused foundations. While there are significant private environmental groups who fundraise in the Durham community (such as land trusts and environmental lobbying groups), and even fundraising trail organizations (such as the Triangle Rails-to-Trails conservancy), there may be a niche for a Durham friends-of-the-trail organization to channel individual donations into greenway and trail work.

**e. Ongoing Support**

The sources discussed above are mostly one-time funding opportunities, geared towards getting a greenway or trail built. Ongoing costs for maintenance and management are generally included in larger City or County operations budget. However, maintaining a trail at an outstanding level or even providing it with trail amenities such as educational signage, benches, and water fountains may be outside that operations budget.

Special events held on a trail, dedicated fund-raising events, and volunteer work by service clubs can fill in the gaps. Both the City and County—as their trail miles increase—should look toward organizing volunteers to assist with trail needs. City trail volunteer work should be a program in the Department of Parks and Recreation. The County has a land manager who works with trail volunteers.



*American Tobacco Trail ribbon-cutting on June 3, 2000, with Deputy Secretary of Transportation David King and Durham Mayor Nick Tennyson doing the honors.*

### III. Standards

#### A. Types of Greenways and Trails in the System

Greenways and trails are planned to serve multiple purposes, so it is logical that their function and design can take any one of a number of forms. According to definitions in the past few years, a “greenway” can be any of the following:

- A linear open space that parallels some natural feature such as a stream or a ridgeline; it may or may not have a trail associated with it;
- A transportation right-of-way that has been converted to recreational use, such as a rail corridor or a canal towpath;
- Any natural or paved right-of-way intended for bicycle, pedestrian, and/or equestrian use;
- Any open space corridor linking parks, natural reserves, neighborhoods, etc., and
- Anything that a community designates as a “greenway” for its own purposes.

Corridors acquired for conservation purposes, such as habitat and biodiversity, may have no trails or low-impact natural surface trails. Greenways built with ISTEA or TEA-21 funding are by definition transportation corridors; they are paved and built to transportation standards with wide shoulders and regulatory signage. City urban trails are somewhere in between, depending upon their location.

**Recommendation:** The following terminology should be used consistently by the City and County in its planning and in its dealing with landowners and developers.

**Greenway:** A system of trails in the City or County, which may be made up of trails, sidewalk trails, and/or nature trails—example, the North/South Greenway.

**Trail:** A discrete section of paved pathway, generally between major trailheads, which may or may not be included in a greenway system and may include a section of sidewalk trail—example, the Third Fork Creek Trail of the North/South Greenway. Trails may also be natural surface or improved surface where necessary. Trails will be designed for the least possible environmental impact, especially in the County’s Corridor System routes. Paved Surface trails are defined as standard 8-10 feet wide asphalt or concrete trails with multiple uses. Improved Natural Surface trails are defined as 6-8 feet wide trails with compacted surface material, low grades, and multiple uses. Natural Surface trails are defined as less than 6’ wide, dirt surface, suitable for hiking or other

specifically designed use. For mapping purposes the term “Greenway” remains in use with the map legend.

**Sidewalk Trail Section:** An 8 to 10 foot wide paved section within or immediately adjacent to a roadway right-of-way. Most sidewalk trails are included within a trail and thus do not have a separate name. An example is the Club Boulevard sidewalk section of the South Ellerbee Creek Trail.

**Street Trail:** A designated connector between trails or greenways, consisting of a standard 5 foot wide sidewalk and a wide outside lane or bike lane on the roadway. Street trails in more rural areas may consist of a paved roadway shoulder only.

**Recreation Trail:** These may vary depending upon the area, but a recreational trail is typically an unpaved trail which may or may not be part of a greenway. It may serve for hiking, equestrian use, or mountain biking or a smaller paved trail contained within an urban park. An example is the New Hope Creek Nature Trail.

**Rail-Trails:** A special category when it comes to acquisition and development, but as part of Durham’s larger plan, rail-trails fit in as one of the types above. Thus the entire American Tobacco Trail *system* is, despite its name, a greenway. It consists of the main north/south route, also individually named the American Tobacco Trail, plus the Riddle Road Trail and various short connector trails.

## 1. “Blueways”

Blueways is a term that has come into use recently to indicate rivers and streams and their adjacent land uses that support recreational Activity. Obviously, a river itself does not need to be improved for a canoe or a kayak to use it, but management of public access points and scenic and/or conservation easements along a river corridor does make a river or stream into a blueway. Parts of the Eno River within the State Park and adjacent to West Point on the Eno City Park are already managed as a blueway. Durham County has some other potential blueways along the Little River, Flat River, and sections of New Hope Creek.

**Recommendation.** The County’s Open Space Corridor Plans need to include plans for public access to these waterways and include recreational use of the water itself into management plans for the corridors. These plans need to be coordinated with all relevant land management agencies.

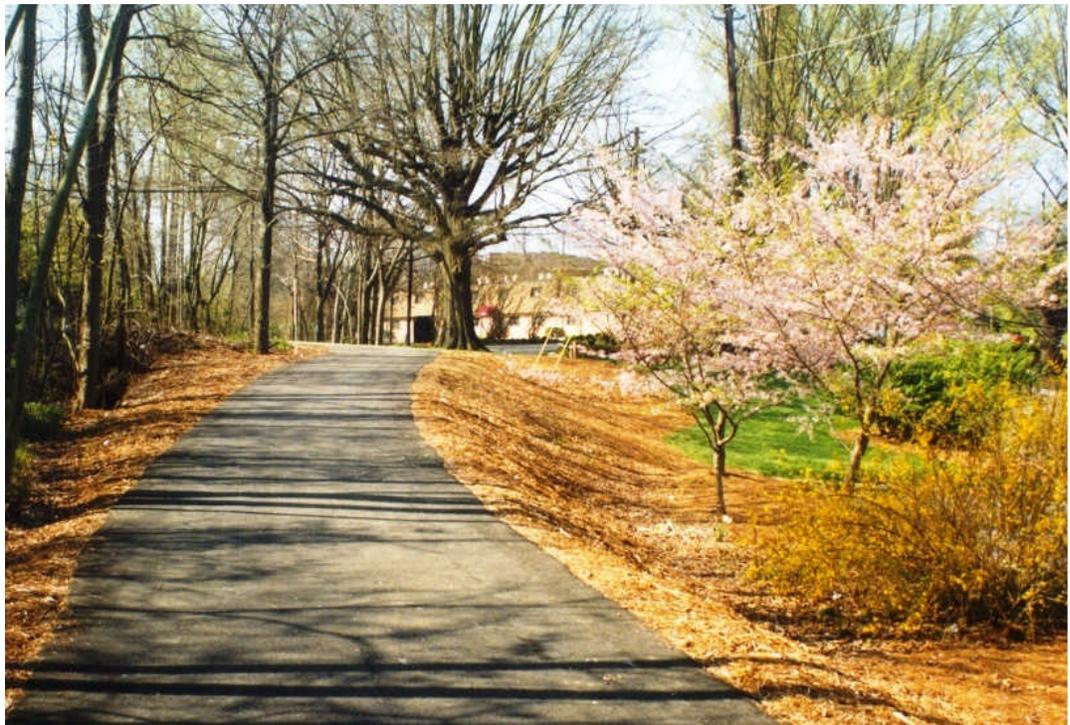
## 2. Off-Road Vehicle Trails

Off-road vehicles (ORV), including dirt bikes and All-Terrain Vehicles (ATV) not licensed for on-road use, are very popular in North Carolina. However, in Durham and in the larger Triangle region there are no legal

public trails for ORV use. Trails which are not intended for ORV use, such as the New Hope Nature Trail and the Panther Creek Trail, are sometimes used by people on ORVs. The result is frustrated neighbors and some amount of environmental damage.

**Recommendation.** Durham should develop trails for ORV use, either alone or jointly with surrounding counties. While motorized vehicles on trails are sometimes not popular with other outdoor recreationists, ORV users as a group are as responsible trail-users as other interest groups such as hikers or equestrians. The National Off-Road Highway Vehicle Conservation Council (NOHVCC) and its North Carolina chapter have set rules and standards of behavior for themselves that other trails groups could emulate.

Durham does contain at least one site that would make a good ORV park with several miles of a trail system. The capped landfill and surrounding floodplain southeast of the channelized portion of Ellerbee Creek has sufficient land area, is not close to residential development, has no sensitive environmental areas, and is in public ownership. Work with local ORV advocates could turn this area into a popular ORV trail system even if were to be used on an interim basis.



*North/South Greenway at Trinity Avenue*

## B. Trail and Greenway Names

A trail system needs a simple pattern of naming to make its public use easier. The trail naming system proposed by the original DUTAG has been already been altered in various ways, for instance, by the combination of the “Third Fork Creek Greenway” and the “Ellerbee Creek Greenway” into the current North/South Greenway. However, the basic principles of naming that the plan proposed are still sound. It recommended the following:

- Names of relevant natural features are the preferred names for a trail.
- Parks or other community features are appropriate names of trails as they are likely to be familiar trail origins and destinations.
- Historic names may be appropriate in some cases.
- Emphasis will be placed on naming trails so that users can identify their location without confusion.

In 2000, DOST recommended that one other criterion for naming trails, bridges, or sections of trails could be a name given as a memorial to someone who had made a contribution to the trails program in Durham.

The following tables show the names and locations that are proposed for the various types of trails identified in this Master Plan. Names in parentheses are “placeholder” names for trail routes that have not yet had sufficient acquisition or development to have been named. Table 3 describes the trails. While there may be sidewalk trail sections within these named trails, they are considered simply part of the trail. They are not called out as separate named sections of a trail and have different requirements from street trails.

Table 3 is a list of recreation trails. Most of the recreation trails, existing or planned, are either in the County or in City parks. Those in City parks are often loop trails used for nature study or quick out-and-back hikes from the parking lot. However, as noted in Section IV, there is a public request for more trails in parks and for those trails to have more accessible surfacing. Individual trails in parks will not be identified by this Master Plan, but both DOST and this plan recommend that park trails be considered as part of the larger trails and greenway system for available funding and for making linkages and trailheads.



*Trail workday at New Hope Creek,  
April 1998*



*Work on Rocky Creek Trail in 1999*

**Table 3: Recreation Trails**

Individual Trails Within Greenway	Trail Description
<b>Little River Greenway</b> (Additional trails to be determined by Little River Corridor Plan)	
Quail Roost Trail	Between Hopkins Rd. and Conference Rd.
Reservoir Trails	Loop trail(s) developed on public land next to Little River School Community Complex at NC 501
Little River Park Trails	Loop trail(s) developed in Little River Park at Durham/Orange co. line
Cain Creek Trail	From Sevenmile Creek Trail at Craig Rd. north to Guess Rd.
Cane Creek Tributary Trail	From Kelvin Rd. to Saint Mary’s Rd.
<b>New Hope Creek Greenway</b>	
New Hope Creek Nature Trail	Loop between Watkins Rd. and Old Chapel Hill Rd. and between Chapel Hill Rd. Park and Leigh Farm Park
Mud Creek Trail	From junction with Dry Creek to Erwin Rd.
Sandy Creek Trail	From Sandy Creek Environment Education Center Park west to New Hop Creek, trails within park
Leigh Farm Park Trails	Trails within Leigh Farm Park
Lone Branch Creek Trail	From New Hope Nature Trail east to University Dr.
<b>City Park Trails</b>	
Various, within City Parks	

**C. Trail and Greenway Standards**

Once the trail or greenway right-of-way has been acquired, plans can begin for the development of the trail facilities. The available funding and the City Council and Board of County Commissioners approved priorities will guide the order of construction. Each of the types of trails described and named in the previous section will have its own design requirements and standards.

The City’s practice has been to hire a professional consultant to do the design work on a trail project. The consultant writes the specifications for bidding and acts as project manager for the actual construction process. Both the City and County should continue that practice for trails. Trails are paved (or hard-surfaced); must meet ADA accessibility criteria; often have structures such as bridges, boardwalks, or retaining walls, often must get Federal Emergency Management Act (FEMA) or United States Army Corps of Engineers development permits, and frequently have busy street crossings. In addition, trails being constructed with funding from state or federal transportation programs must be approved by those agencies as meeting their particular specifications. Managing all those issues competently requires a licensed professional.

Recreation trails, on the other hand, can often be constructed by volunteers under the direction of a trained professional or trained volunteer. The trail layout needs to be designed by someone who can read the landscape and select a route that will have minimum impact on the natural resources, regardless of

the expected trail use. Construction may be largely done by volunteers with hand tools.

Following are general trail design standards for trails, street trails, and recreation trails. Any of these standards, of course, can be altered by an agreement among relevant City or County staff and design professionals when a particular site requires it.

## 1. Trails

Trails are generally preferred in an urban or suburban location where use by bicyclists and urban pedestrians is expected—including such uses as roller blades, wheelchairs, scooters, and strollers. Useful guidelines for development standards include the 1999 *Guide for the Development of Bicycle Facilities* (American Association of State Highway and Transportation Officials, AASHTO) and the 1994 *North Carolina Bicycle Facilities Planning and Design Guidelines* (NCDOT, Division of Bicycle and Pedestrian Transportation). However, since both these guides offer standards primarily for bicycle transportation routes, their recommendations may be altered for urban trails that are anticipated to be used by both transportation and recreation users.

A minimum trail width of ten feet is recommended to assure safe two-way traffic. Exceptions may be allowed in some sections of trail to protect existing natural resources or existing development. The cleared trail corridor



Work at Rocky Creek on the American Tobacco Trail

should be no more than an additional ten feet on either side of the trail tread; in an area where the existing vegetation is scarce, there should be re-vegetation in the right-of-way outside this thirty-foot expanse.

Trails in seasonally or permanently wet areas may need to be boardwalked. Trail design must address issues of on-site and off-site surface and subsurface runoff and drainage associated with the trail's construction and use.

The pavement choice for a trail should be decided by its design load—generally the gross weight of a maintenance or emergency vehicle—as well as by the underlying soil and its compaction, the level of wetness of a trail location, and the expected use. There will be occasions to use alternative paving materials or some other hard-surface materials for a trail, but in general the trail standard paving material will be asphalt.

## 2. Sidewalk Trail Section

Sidewalk trail sections are ten foot wide paved sections within or immediately adjacent to a roadway right-of-way. They link sections within a particular trail and thus should continue its width for user safety and convenience. They may be reduced to eight feet wide in some sections if necessary to protect existing natural resources or existing development.

Sidewalk trail sections are generally surfaced with concrete because they also function as a regular sidewalk—often they are expansions of an existing sidewalk.



Construction of the North/South Greenway at Club Blvd.

Utility poles, signs, fire hydrants, etc. should be re-located outside of a sidewalk trail section to ensure the safety of wheeled traffic using the trail; if re-location is not possible, these obstacles should be painted a warning color. The City and County should encourage residents not to leave garbage and trash containers for pick-up on these sidewalk trail sections.

## 3. Street Trail

The street trail is a designated connector between trails, usually consisting of a standard five foot sidewalk and a wide outer lane or bike lane on the adjacent roadway. The City or County may request an easement for additional sidewalk width on portions of these street trail sections if conditions warrant it, (e.g., heavy vehicle traffic which could threaten some bicyclists or a back-of-curb sidewalk along a busy roadway).

The street trail cross section on page 66 illustrates a cross section of some possible manifestations of a street trail: a sidewalk (ideally separated from the roadway by a planting strip) paralleled by either a wide outer lane for bicycle traffic or an actual striped bicycle lane. A roadway travel lane should be increased by four feet over the design width for motorized vehicles to be a safe wide outer lane for bicycle traffic; a striped bicycle lane needs to be at least five feet wide. No roadway would have both of these treatments in the same location. Street trails in rural areas may consist of a wide paved roadway shoulder only.

#### **4. Recreation Trails**

Recreation trails are far more varied in their design requirements than hard-surfaced urban trails. The design of each recreation trail is the solution to a unique set of site-based needs and situations: land features, resource constraints, anticipated use, and possible management and maintenance strategies. Paved trails in urban parks must connect recreation facilities within that park.

Information on those points will guide the design in its configuration on the land, the type and width of the trail tread, the necessary clearing limits, and specific construction needs such as erosion control features or creek crossings. Once those decisions are made, there are established reference for directions on building the desired trail cross section, including the following recommended works:

- *The Complete Guide to Trail Building and Maintenance.* Carl Demrow and David Salisbury, Appalachian Mountain Club. Boston, MA. 1998.
- *Trail Construction and Maintenance Notebook.* US Department of Agriculture, Forest Service Technology and Development Program, Missoula Technology and Development Center. Publication No. 4E42A25-Trail Notebook, 1996.
- *NPS Trails Management Notebook.* US Department of the Interior, National Park Service, Denver Service Center. US Government Printing Office Document NPS-2023, 1992.
- *Lightly on the Land—The SCA Trailbuilding and Maintenance Manual.* Robert C. Birkby, Student Conservation Association. Seattle, WA, 1996.
- *Trail Development and Construction for Mountain Bicycling.* Gary Sprung, ed., International Mountain Bicycling Association. Boulder, CO, 1995.



*New Hope Trail workday*

These descriptions and cross sections are intended as general standards for the various types of trails that exist in Durham. Each trail is a unique construction and must be fitted onto the land in a way that will both enhance its usefulness and beauty and protect the natural environment. The relevant City and County staff members and the consultants they employ will make final determinations as to trail location within acquired rights-of-way and trail design specifications.

## 5. Signage

As a general rule, signs used for the trails and greenways system will be for the purpose of providing users with the following information:

- The name of the greenway system and the particular trail;
- Permitted uses and other necessary rules;
- A map of the trail; and
- Any other information which may be necessary for the safety and convenience of the trail user.

A **major entrance sign** will be placed at points of entry to each trail where users will access the trail, ideally where parking is also available; a **minor entrance sign** will be placed at points limited to bicycle and pedestrian access with adjacent parking.

An **information sign** will be used to provide information to trail users about permitted use and rules of behavior and will include a map of the trail and its location within a greenway system.

A **blaze and stop sign** will be placed on both sides of a street where ever the trail crosses a street.

**Directional signs** will be used as needed to direct trail users at route intersections or direction changes.

**Trail connection signs** will provide information on connections between trails via street trails.

**Bollards** will be placed in the trails at road crossings to block trail access to motorized vehicles. A central bollard should be designed as a fold-down or breakaway type to permit access by maintenance vehicles.

Other types of signs may be used when staff and consultants determine that there is a need for them. For instance, routes constructed with funding from NCDOT may be required to have additional roadway bicycle and pedestrian markings. A trail in an historic district or a natural setting may include interpretive signage. If trails are “adopted” by volunteer groups for maintenance, they may install a sign noting their trail adoption that will be in place for the duration of their service. Trails that are part of some larger regional system may have signage indicating that fact.

Other than signs for special situations as noted in the preceding paragraph, signs in the Durham system will be as consistent as possible in graphic design, coloration, and logos used.

## D. Maintenance and Management

Building a trail is time and labor intensive; it can take years from the first conception of a trail route until an actual trail is on the ground and open for use. But a trail's *real* life is just beginning when the ribbon is cut and the first user walks or rides out. Maintenance and management specifics are not within the scope of this plan. Making those decisions is and should be the job of the City or County agency that must implement them. However, some general recommendations about maintenance and management strategies are within the scope of this plan and will be discussed below.

### Recommendations

1. The City and County should address maintenance and management strategies early in any trail planning process. Choices made during the design phase have implications for operational issues later, in both maintenance costs and trail user safety and associated risk management costs.
2. The City and County should involve regional travel and tourism entities in trail planning at some point, since the operation of actual trail facilities and related businesses can have an effect on economic development.
3. The City and County should develop a mechanism for establishing standards of trail maintenance and for sharing trail operations duties—both between themselves and potentially with other agencies and jurisdictions in the region on trails that cross jurisdictional boundaries.
4. The City and County should actively recruit volunteer assistance in trail maintenance and management and should designate a staff liaison to work with volunteer groups. “Adopt-a-Trail” and “Friends of the Trail” type groups should be encouraged with recognition and some level of support (such as provision of hand tools for trail work days).
5. All plans for trail management must address trail security issues as well including physical security features (such as emergency phones, lights, and fences) and dedicated personnel (policy, sheriff deputies, park rangers).

Trail maintenance exists in a continuum from work that must be done by professionals with heavy equipment to trash pick-up that can be done by children. But there are some general recommendations that can be made about trail maintenance that must be addressed for a successful greenways and trails system. They include work that must be done routinely and work done on an as-needed basis.

**Recommendations:**

Maintenance work to be done on a regular, scheduled basis:

- Trail safety inspections (and documentation of the inspection);
- Trail sweeping and trash removal;
- Trailside vegetation mowing;
- Upkeep of trailside trees and shrubs; and
- Trail maintenance needs inspection and scheduling.

Maintenance work to be done on an as-needed basis:

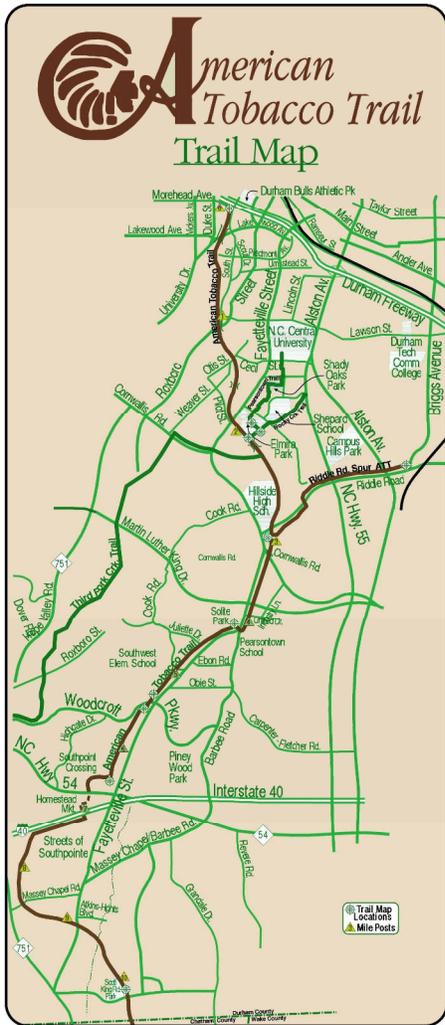
- Trail surface repair;
- Trail feature replacement (such as a bridge or steps);
- Snow or ice removal;
- Drainage control;
- Invasive plant control; Trail signage repair, update, or replacement; and
- Habitat enhancement

In addition to these tasks which are specific to any particular trail or recreation trail, there are tasks for the department managing the entire trails and greenways program, including:

- Volunteer coordination;
- Trails mapping and map production;
- Education and interpretation;
- Trails event planning and implementation;
- Coordination with law enforcement for trail safety;
- Keeping expense records to generate good trail program budgets; and
- Training employees in trail maintenance techniques.

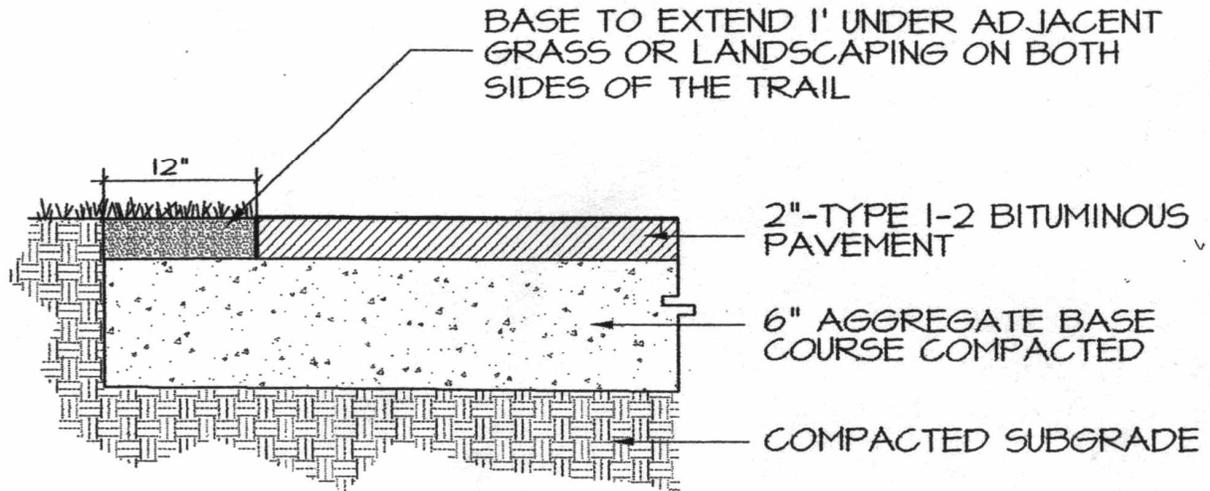
Much citizen and staff time is expended in planning, acquiring, and building greenways and trails in Durham. Once trails are on the ground and being used, the time commitment may shift to different citizens and different staff, but there is still the need to hold these facilities to high standards. Indeed, both the City and County have a commitment to maintain rights-of-way they acquire in good condition, even prior to the construction of a trail on that right-of-way. This maintenance includes the prevention of unsafe conditions from arising, including inspections of greenways for misuse such as dumping, and the response to citizen complaints.

The following are standard details for trail construction: asphalt trail, asphalt trail on poor soils, boardwalk section, concrete trail addition to existing sidewalk, and trail bollard. As noted previously, these details may be altered as needed by decisions of the staff and consultants. Details are courtesy of Coulter Jewell Thames, P.A.



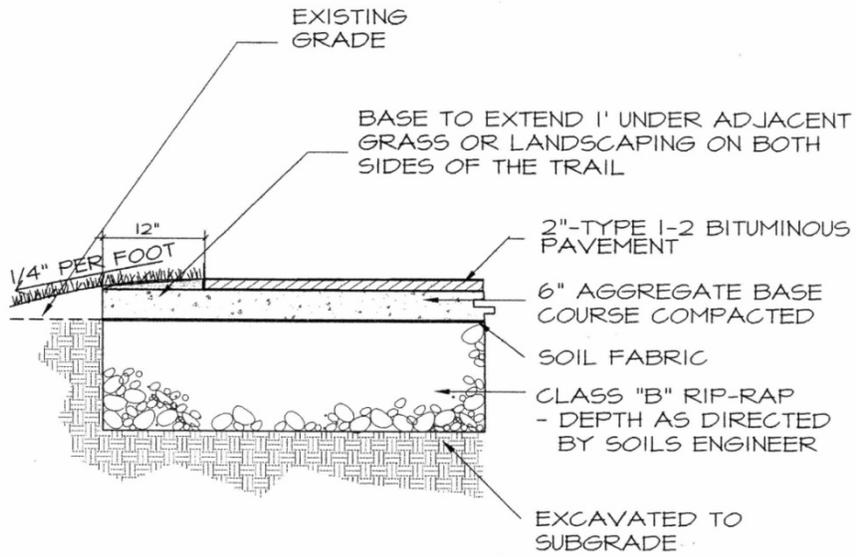
*This map of the American Tobacco Trail is designed for the trailside kiosks.*

**Detail 1, Standard Asphalt Trail**



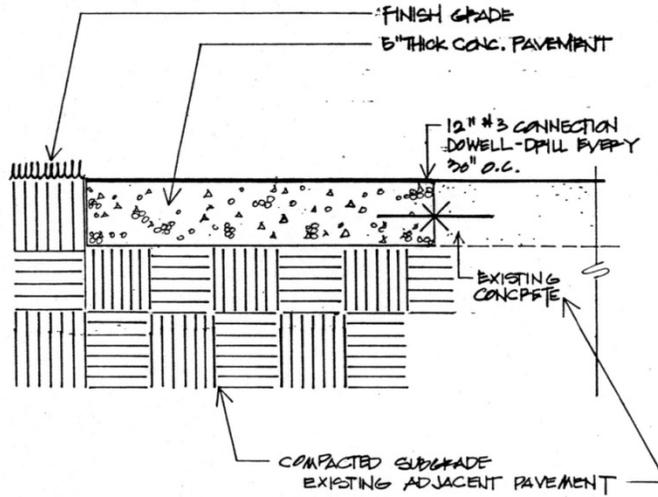
■ Bituminous Trail  
NTS

**Detail 2, Asphalt Trail on Poor Soils**



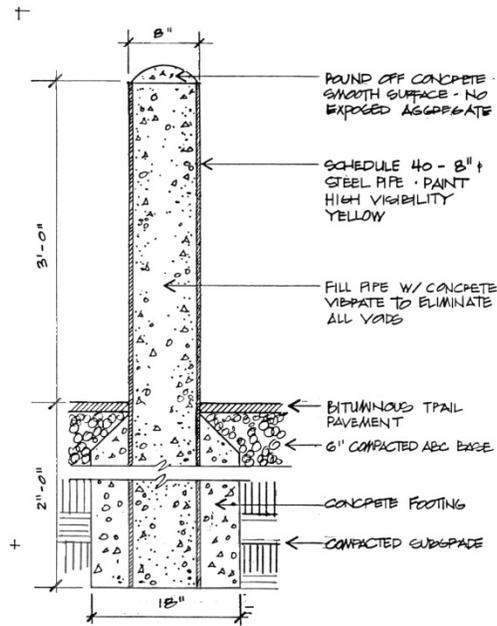
**Bituminous Trail Through Poor Soils**  
NTS

**Detail 3, Sidewalk Trail, Addition to Existing Sidewalk**



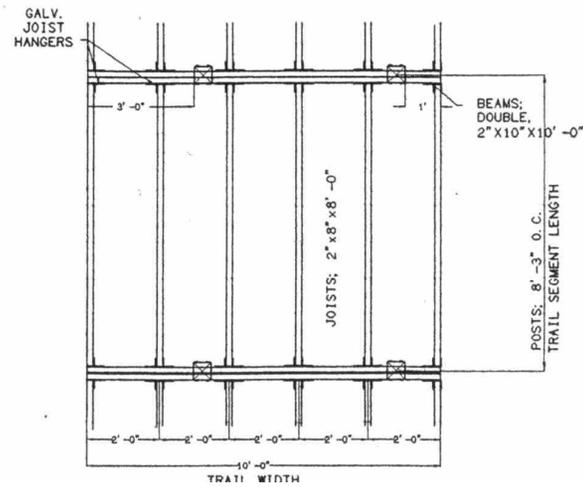
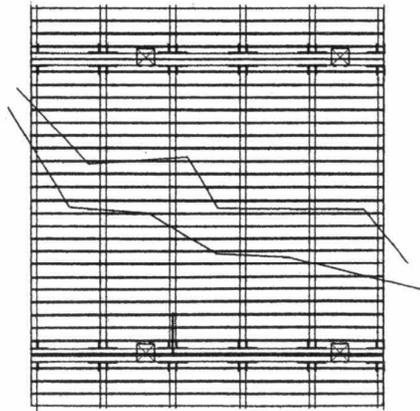
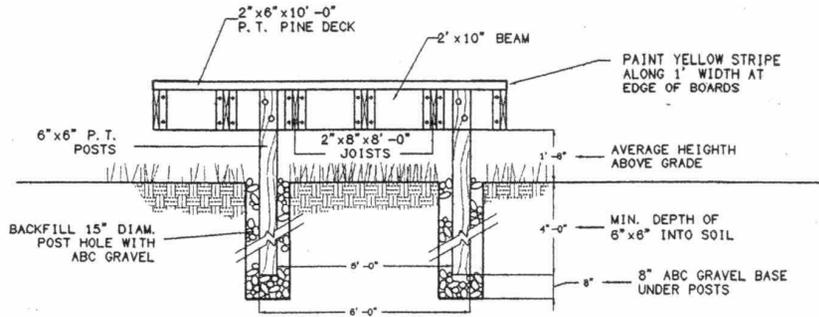
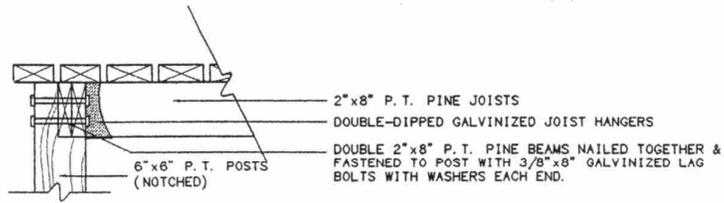
Concrete Addition to Existing Sidewalk  
NTS

### Detail 4, Standard Trail Bollard



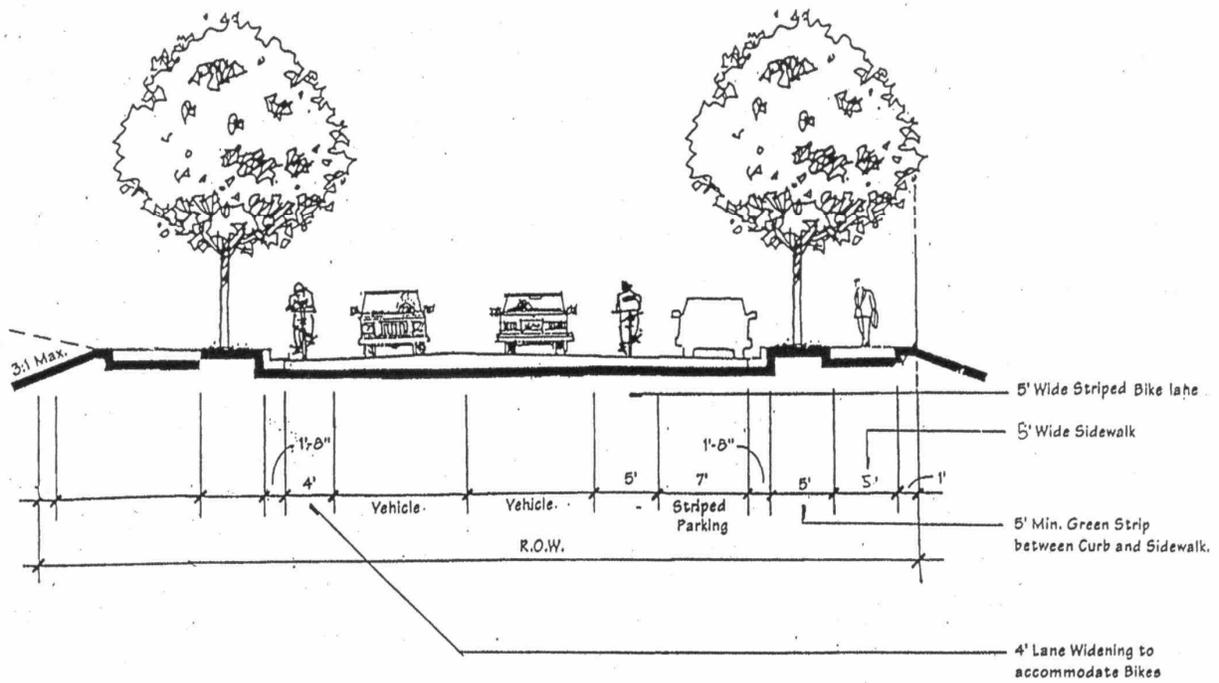
Steel Pipe Bollard  
NTS

**Detail 5, Standard Boardwalk Section Detail**



Street Cross Section  
 NTS

**Detail 6, Cross Section, Possible Street Trail Designs**



Street Cross Section  
NTS



*Bollards and accessible ramp onto North/South Greenway at Markham Avenue*