



## 2012 NORTH COUNTY SECTOR PLAN



KNOXVILLE • KNOX COUNTY METROPOLITAN PLANNING COMMISSION





# **North County Sector Plan**

This plan was adopted by:

Knoxville Knox County Metropolitan Planning Commission on July 12, 2012

Knox County Commission on August 27, 2012

Knoxville City Council on September 4, 2012

### *Acknowledgements*

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## Table of Contents

### Section 1:

#### Background Report

Comprehensive Planning Process Overview.....	1
Community Population Profile.....	2
Public Facilities and Infrastructure.....	2
Schools.....	2
Libraries.....	2
Parks and Greenways.....	3
Public Safety.....	5
Public Utilities.....	5
Transportation.....	8
Natural Resources and Environmental Challenges.....	12
Geology, Soils and Vegetation.....	12
Agricultural Soils and the Greenbelt Program.....	15
Water Resources.....	15
Air Quality.....	17
Existing Land Use and Development Trends.....	17
Residential Development Trends.....	17
Residential Subdivision Activity.....	17
Residential Building Permits.....	17
Retail Development Trends.....	17
Office Development Trends.....	20
Industrial Development Observations.....	20
Economic Development Studies.....	20
Growth Policy Plan Implications.....	20
Historic Resources.....	22
History of Settlement.....	22

### Section 2:

#### Land Use, Community Facilities, Green Infrastructure, and Transportation Plans

Land Use Plan.....	23
Proposed Land Use Policies.....	23
Special Land Use Districts.....	24
NCO-1:	
Clinton Highway/Powell Drive Mixed Use District.....	24
NCO-2:	
Historic Powell Center.....	26

NCO-3:	
Callahan Road Mixed Use District.....	26
NCO-4:	
Emory Road/I-75 Mixed Use District.....	26
NCO-5:	
I-75/Raccoon Valley Industrial & Commercial Center.....	26
NCO-6:	
Halls Mixed Use District.....	27
Community Facilities Plan.....	28
Parks, Greenways and Recreation Facilities.....	28
Schools and Libraries.....	28
Law Enforcement and Fire Protection.....	28
Utilities and Utility Policy.....	28
Green Infrastructure Plan.....	30
Existing Policies Related to Green Infrastructure.....	32
Water Resources.....	32
Hillsides and Ridgetops.....	32
Agricultural Areas.....	32
Schools, Parks and Greenways.....	32
Streets and Highways.....	32
Future Implementation Strategies.....	32
Transportation Plan.....	33
Complete Streets.....	33

### Section 3:

#### Five and Fifteen Year Improvement Plan.....35

#### Appendices

A. Public Participation.....	37
B. North County Sector Demographics.....	38
C. Land Use Classifications.....	39
D. Existing Agricultural, Forest, and Open Space Land Protection Programs.....	48
E. Summary of the <i>Beaver Creek Watershed     Green Infrastructure Plan</i> .....	49

#### List of Tables

1. North County Sector Population by Age and Sex.....	2
2. Knox County Population.....	2
3. Knox County Sectors Population.....	2
4. North County Sector School Enrollment.....	2
5. North County Sector Park Acreage.....	3
6. North County Sector Slope Characteristics.....	12
7. North County Sector Land Use Acreage, 2008.....	17
8. Residential Subdivision Permits, 2000-2009.....	
9. North County Sector Housing Units.....	17
10. North County Sector Historic Resources Inventory.....	22
11. Hillside and Ridgetop Protection Plan Policies.....	24
12. North County Sector Mixed Use District Design Principles.....	27

#### List of Maps

• Park and Greenway Plan with Existing Community Facilities.....	4
• Existing Wastewater Service.....	6
• Existing Water Service.....	7
• Planned Roadway Improvements.....	9
• Road Class, Volume and Conflicts.....	10
• Other Transportation Modes and Parental Responsibility Zones.....	11
• Environmental Constraints.....	13
• Agricultural Soils and Greenbelt Program Parcels.....	14
• Watersheds and Impaired Streams.....	16
• Existing Land Use.....	18
• Residential and Non-Residential Development Activity, 2000-2010.....	19
• Growth Policy Plan.....	21
• Proposed Land Use Plan.....	25
• Community Facilities Plan.....	29
• Green Infrastructure Plan.....	31
• Transportation Plan.....	34



# Section 1: Background Report

The North County Sector is approximately 50,000 acres (78 square miles) in size, and is characterized by steadily growing suburban communities, including Halls and Powell. It also has very rural areas, like the Bull Run and Raccoon valleys.

## Comprehensive Planning Process Overview

*The North County Sector Plan* is a significant component of the Metropolitan Planning Commission's comprehensive plan. Sector plans are interrelated to several laws, processes, and plans, which are described below.

Under the state law that creates planning commissions, the Knoxville Knox County Metropolitan Planning Commission (MPC) is directed to create a comprehensive plan to provide recommendations for:

- public ways, including roads, and other transportation systems;
- public grounds, such as parks and other public property;
- the general location and extent of public utilities, including sanitation and water;
- the general character, location, and extent of community centers, town sites, and housing development;
- the location and extent of forests, agricultural areas, and open space,
- uses of land for trade, industry, habitation, recreation, agriculture, forestry, soil and water conservation, and other purposes; and
- the appropriate zoning relating to the land use plan, outlining permitted uses and the intensity of those uses, such as height, bulk, and locations of buildings on their parcels.

**The General Plan** (*The Knoxville-Knox County General Plan 2033*) is the official 30-year comprehensive plan for Knoxville and Knox County that outlines a long-range vision and policy framework for physical and economic development. The plan includes the Growth Plan, 12 sector plans, corridor and small area plans, and system-wide plans.



*Slightly more than half of the sector is in the Rural Area as defined in the Growth Plan.*

**The Growth Plan** (*The Growth Plan for Knoxville, Knox County, and Farragut, Tennessee*) was mandated under the Tennessee Growth Policy Act (Public Chapter 1101), and requires that city and county governments prepare a 20-year growth plan for each county. At a minimum, a growth plan must identify three classifications of land:

- 'Rural Areas' are to include land to be preserved for farming, recreation, and other non-urban uses.
- 'Urban Growth Boundaries' (UGB) must be drawn for all cities and towns. The land within the UGB must be reasonably compact, but adequate to accommodate all of the city's expected growth for the next 20 years
- 'Planned Growth Areas' (PGA) must be reasonably compact, but large enough to accommodate growth expected to occur in unincorporated areas over the next 20 years.

**Sector Plans** provide a detailed analysis of land use, community facilities, and transportation for twelve geographical divisions in Knox County. The focus is to take

goals contained in the General Plan and draft a sector plan that is to guide land use and development over a 15-year period. Also included is a five-year plan with recommended capital improvements and other implementation programs.

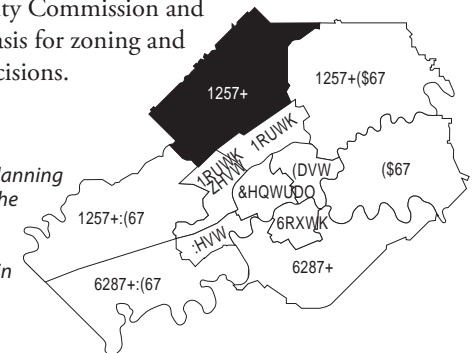
**Corridor Plans** primarily cover land use and transportation recommendations along existing transportation corridors. These plans are more detailed than sector plans because they have a smaller geographical area. Recommendations often deal with economic development, aesthetics, and public safety.

**Small Area Plans** are neighborhood-based and address more detailed concerns like revitalization or special environmental considerations. These plans are developed as a result of some immediate development pressure on the area and are usually requested by the elected bodies.

**System-wide Plans** cover specific systems such as greenways and parks or hillside and ridgetop protection.

All plans are developed through citizen participation, including workshops, surveys, and public meetings. Plans are adopted by the MPC, Knoxville City Council and Knox County Commission and serve as a basis for zoning and land use decisions.

*The 12 MPC planning sectors form the geographic basis for land use planning in Knox County.*



## Community Population Profile

From 2000 to 2009, the sector population grew by 22.8 percent, which is a faster population growth than the county average of 14 percent (based on Table 2). The largest growth occurred among those aged 55 to 64 years (about 43 percent), continuing the trend from 1990 to 2000. For the “baby boom” generation, those aged over 54 years of age, it is anticipated that this upward trend will continue, eventually having implications for senior and health care facilities. Another noteworthy point, the population under the age of five has grown by 36.8 percent and is the only group to grow faster in the 2000-2009 timeframe compared to 1990-2000.

**Table 1. North County Sector Population by Age and Sex**

	1990	2000	2005-09*	1990-2000 % Change	2000-09 % Change
Under 5 years	1,975	2,675	3,659	35.4%	36.8%
5 to 17 years	6,218	7,670	8,538	23.4%	11.3%
18 to 34 years	7,852	9,267	10,444	18.0%	12.7%
35 to 54 years	9,794	13,439	13,204	37.2%	-1.7%
55 to 64 years	3,055	4,397	6,309	43.9%	43.5%
65 years and over	3,497	5,109	6,474	46.1%	26.7%
<b>TOTAL</b>	<b>32,391</b>	<b>42,557</b>	<b>48,628</b>	<b>31.4%</b>	<b>14.3%</b>
Male	15,742	20,764	23,063	31.9%	11.1%
Female	16,649	21,793	25,565	30.9%	17.3%

\* The data listed in this column are from the U.S. Census Bureau's American Community Survey, 2005 to 2009. That survey is based on a sample of the population and the figures are composed from an average of all the sampled data for the five-year period.

The size of the North County population is average when compared to other county sectors (see Tables 2 and 3). The North County area includes approximately 20 percent of the total population of the six county sectors. Appendix B contains various demographic characteristics. Those tables show that the population's race/ethnicity is predominantly white. Poverty indices show that 4,140 people (about 8.6 percent of the sector population) live below the poverty level, in comparison to about 14.6 percent of the total population of Knox County. About 75 percent of the housing units in the sector are owner-occupied, in comparison to 62 percent of the total housing units being owner-occupied in Knox County.

## 2 North County Sector Plan

**Table 2. Knox County Population**

	1990	% Share	2000	% Share	2009**	% Share
<b>North County</b>	<b>32,391</b>	<b>9.6%</b>	<b>42,557</b>	<b>11.1%</b>	<b>52,261</b>	<b>12.0%</b>
Knox County	335,749	100.0%	382,032	100.0%	435,725	100.0%
Knoxville	169,761	50.6%	173,890	45.5%	185,100	42.5%
County balance	165,988	49.4%	208,142	54.5%	250,625	57.5%

**Table 3. Knox County Sectors Population**

	1990	% Share*	2000	% Share*	2009**	% Share*
East	12,357	7.2%	13,313	6.2%	16,028	6.0%
<b>North</b>	<b>32,391</b>	<b>19.0%</b>	<b>42,557</b>	<b>19.7%</b>	<b>52,261</b>	<b>19.6%</b>
Northeast	18,993	11.1%	21,816	10.1%	27,751	10.4%
Northwest	49,422	28.9%	62,864	29.1%	77,816	29.2%
South	17,759	10.4%	19,236	8.9%	22,825	8.6%
Southwest	39,990	23.4%	56,419	26.1%	70,260	26.3%
Sectors Total	170,912	100.0%	216,205	100.0%	266,941	100.0%

\* Share of total Knox County Sectors

\*\* Note: These 2009 population estimates are different from those numbers in Table 1 because they are estimated from housing development and demolitions of the 2000 to 2009 period, factoring in average household size as the multiplier to make the estimate. A more accurate measure will be available with publication of the 2010 Census.

## Public Facilities and Infrastructure

### Schools

Total enrollment numbers for elementary, middle, and high schools had modest increases from 2005 to 2009. Powell High and Brickey-McCloud Elementary showed the greatest increase while Adrian Burnette Elementary and Copper Ridge Elementary were the only schools to register declines in student enrollment. While there is modest available capacity, the Knox County School Board staff foresees that all the schools will be operational during the longer range planning horizon, and is not planning new schools presently.

The Knox County School Board makes decisions regarding school construction and maintenance. Currently, the capital improvement program for almost all Knox County's schools revolves around maintenance and upgrading of existing facilities, such as a school's electrical, and heating and cooling systems.

**Table 4. North County Sector School Enrollment**

School Name	2005	2006	2007	2008	2009
Adrian Burnette Elementary	653	654	612	628	643
Brickey-McCloud Elementary	858	955	958	933	959
Copper Ridge Elementary	666	635	599	596	601
Halls Elementary	720	738	738	703	739
Halls Middle	1,033	1,041	991	1,051	1,119
Halls High	1,134	1,169	1,146	1,175	1,238
Powell Elementary	867	879	840	846	925
Powell Middle	890	914	904	908	906
Powell High	1,191	1,223	1,193	1,196	1,340
<b>TOTAL</b>	<b>8,012</b>	<b>8,208</b>	<b>7,981</b>	<b>8,036</b>	<b>8,470</b>

### Libraries

Two library branches serve residents of the North County Sector. These are the Halls Branch located at 4518 E. Emory Road and the Powell Branch located at 330 W. Emory Road. Both of these libraries have been built since the last North County Sector Plan update in 1998. In 2007, these were the fourth and fifth highest circulation branches in the Knox County library system of 17 branches.



The Powell Branch Library



**Parks and Greenways**

This sector is defined by its ridges, valleys, and creeks that run northeast to southwest across the width of the sector. These natural features offer a setting for conservation and limited recreation.



*The Powell Greenway has made traveling from neighborhoods to schools safer and serves as a great place for exercise.*

The greatest need in North Knox County is to continue to make connections in the greenway trail system along Beaver Creek. That feature with its broad floodplain can truly be the spine that connects the schools, libraries, and parks together. Neighborhood park acquisition within walking distance of all neighborhoods should also be a priority in this rapidly growing sector.

The National Recreation and Park Association (NRPA) recommends that communities meet a minimum standard of 6.25 acres of close-to-home parks (neighborhood and community parks) for every 1,000 people. In comparing that standard to the North County’s 2009 population (52,261), the sector is deficient by 253 acres in such parks. Neighborhood parks, which generally would have a playground and informal field space, should be within one-half mile of suburban residents. There are only two neighborhood parks in the sector, and they are both south of Emory Road. There has been a great amount of suburban residential development north of Emory Road that needs to be better served by neighborhood parks.

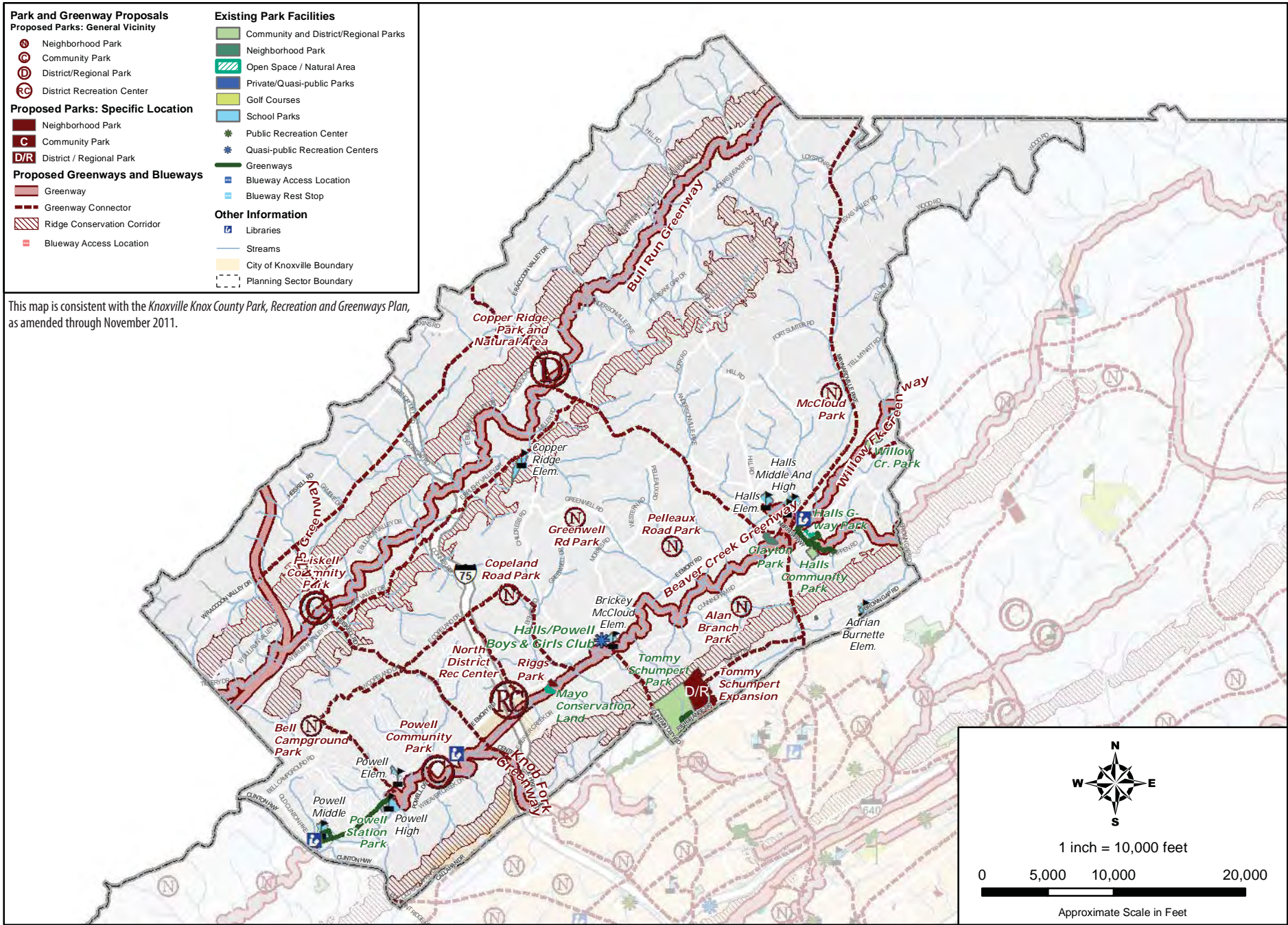


*Tommy Schumpert Park is one of the county’s significant park improvements of the past decade.*

Park Classification	Acreage
Neighborhood	18.4
Community	55.26
District/Regional	177.93
Sports Complex	0
Open Space/Natural Area	30.8
Special Use Park (including Middle Schools)	0.98
Total Acreage	283.37
Total Acreage of Close-to-Home Parks	73.66



# North County Sector: Park and Greenway Plan with Existing Community Facilities



## **Public Safety**

Police protection is primarily provided by the Knox County Sheriff's Department, except for the areas of the sector located within the City of Knoxville that are covered by the Knoxville Police. Fire protection service is largely provided by Rural Metro, with the exception of a small portion of the North County Sector within the city limits, which is served by Knoxville's Fire Department.

## **Public Utilities**

Both Hallsdale-Powell Utilities District (HPUD) and Knoxville Utilities Board (KUB) provide water and wastewater services within the sector. HPUD provides water services to the majority of the sector, with only the areas within the city being serviced by KUB. Public wastewater services are predominantly limited to the area south of Copper Ridge; however, HPUD does service the area around the I-75/Raccoon Valley Drive interchange, and a small portion of West Brushy Valley Drive and Heiskell Road. KUB provides wastewater services to the areas within the city limits of Knoxville. The sewer mains (both gravity and forced mains for uphill service) are one of the most significant determinants in suburban growth for the sector, as depicted on the Existing Wastewater Service map on the following page.

Water mains are depicted on Existing Water Service map on page 7. The area shown as a solid color is an area that is highly served with public water and the area of greatest growth in the North County area. The majority of the rest of the North County area has public water available but does not have wastewater service available which has stymied growth.

Natural gas is provided by KUB and is primarily only available south of Copper Ridge where the majority of the suburban growth has occurred.



**Legend**

- Existing Service Area
- Existing Forced Main Service Area
- Sewer Districts Boundary

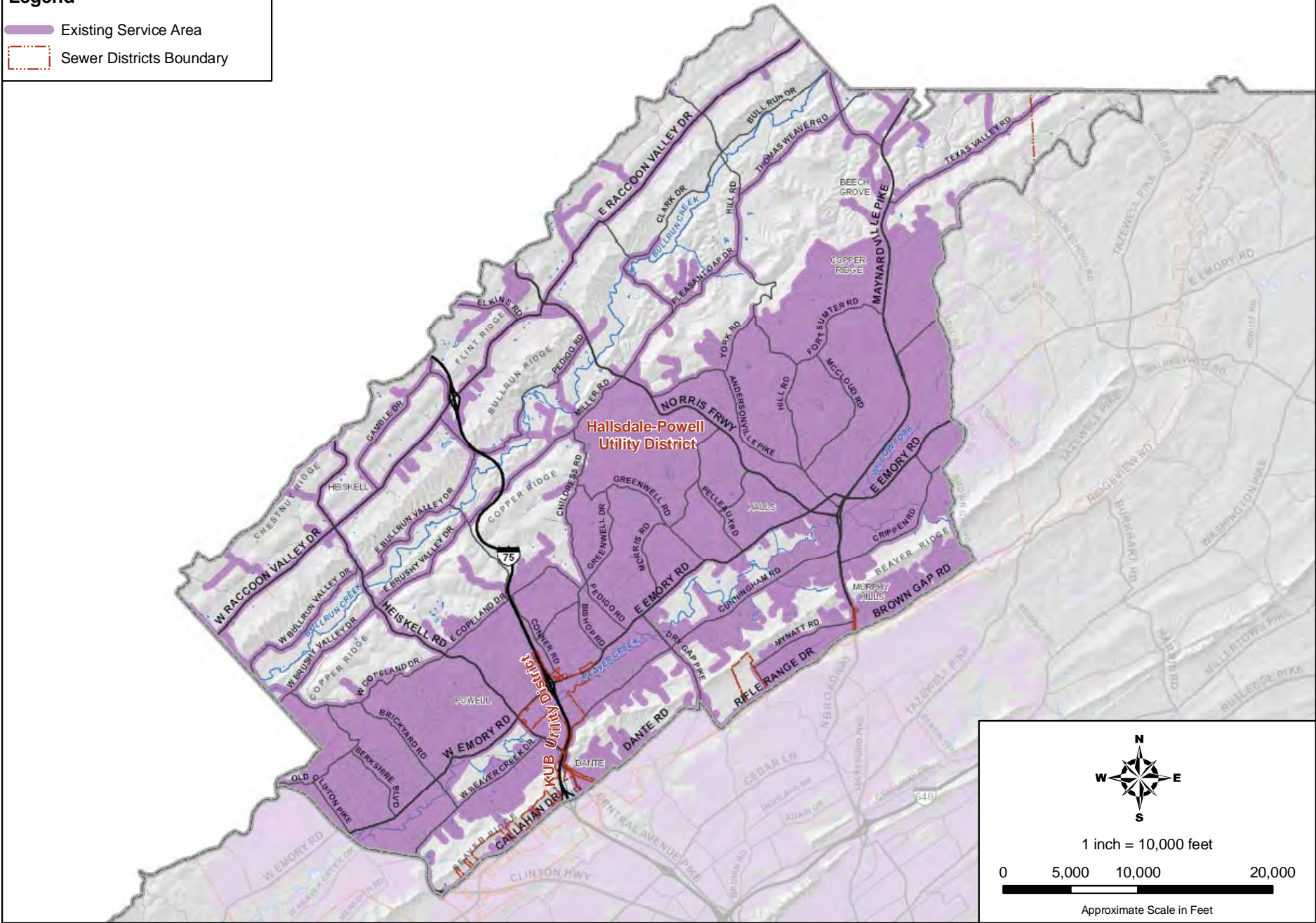
The map displays the Hallsdale-Powell Utility District, which is divided into several sewer districts. The districts are color-coded: light orange for Existing Service Area and dark orange for Existing Forced Main Service Area. The districts shown include: Raccoon Valley, Bull Run, Copper Ridge, Heiskell, Powell, Emory, and Beaver Ridge. The map also shows major roads such as E Raccoon Valley Dr, E Bull Run Dr, E Copper Ridge Dr, E Heiskell Dr, E Powell Dr, E Emory Dr, and E Beaver Ridge Dr. A scale bar indicates 1 inch = 10,000 feet, and a north arrow is present.



# North County Sector: Existing Water Service

## Legend

- Existing Service Area
- Sewer Districts Boundary



## Transportation

*The Major Road Plan for the City of Knoxville and Knox County, Tennessee* was adopted by MPC, city council, and county commission in 2004 and updated in 2011. It views each road as part of the overall transportation system and identifies its functional classification. It assigns right-of-way width requirements based on the purpose and function of the road, future road improvements, future pedestrian improvements, traffic counts, anticipated development, and policies and goals contained in adopted plans (including the sector plan, long range transportation plans, the Knoxville-Knox County General Plan). The Planned Roadway Improvements Map was developed using data from the Major Road Plan.

### Traffic Counts and Congested Corridors

The Road Class, Volume, and Conflicts Map, identifies traffic volumes on the roadway network, as well as congested corridors. There are four identified congested corridors in the North County Sector: I-75, Emory Road, Central Avenue Pike, and Maynardville Highway. Based on an examination of traffic volumes, a level of service (LOS) of the roadway can be assessed based on planning capacities.

The Highway Capacity Manual defines LOS as a quality measure describing operational traffic conditions, based upon such measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Each LOS represents a range of operating conditions and the driver's perception to those conditions. Level of service has a designation, from A to F, with LOS A representing the best operating conditions and LOS F the worst.

I-75 is an access controlled interstate facility. It carries six lanes of traffic from Callahan Road to Emory Road and four lanes of traffic from Emory Road to the Anderson County line. The traffic volumes on I-75 range from 45,000 to 63,000 vehicles per day (v.p.d.), or an LOS ranging from B to C. The Emory Road interchange creates increased congestion, due to the number of lanes dropping from six lanes to four lanes at the interchange, and evening peak congestion due to the amount of traffic making turns onto Emory Road.



*Emory Road will be extended to Clinton Highway by 2014.*

Emory Road, a major arterial, varies from five and two lanes (two lanes towards Karns and east of Maynardville Highway; five lanes through Powell and part of Halls). The traffic volumes on Emory Road range from 11,000 to 24,000 v.p.d. The five-lane road segment from Gill Road to Norris Freeway has recently been widened, and is operating at an acceptable LOS B. The two lane segments from Clinton Highway to Gill Road and from Norris Freeway to Bell Road operate at an LOS E and LOS D respectively. The realignment of Emory Road from Clinton Highway to Gill Road to the proposed Powell Drive Extension will allow for that segment of Emory Road to operate at an acceptable LOS.

Central Avenue Pike/Heiskell Road is a two lane minor arterial which connects the Anderson County line to the City of Knoxville. The traffic volumes on Central Avenue Pike range from 2,000 to 7,000 v.p.d., or an LOS of B. The congestion on Central Avenue Pike is related to congested intersections with other arterial roads. Intersection improvements, such as turning lanes, are needed to allow these intersections to operate at acceptable LOS.

Maynardville Highway is a five lane and two lane major arterial that runs from Broadway to the Knox/Union County line. Maynardville Highway is connected to Broadway, Henley Street, and Chapman Highway that extends to the Knox/Sevier county line. The traffic volumes on Maynardville Highway range from 13,000 to 37,000 v.p.d., or an LOS ranging from E to F. The primary source of congestion on the five lane section of Maynardville Highway is the high number of intersections and driveway cuts.

### Halls Connector Project

This project was conceived to improve the transportation connection along the Emory Road corridor east and west of Maynardville Highway in the Halls community. Four alternates were developed. Based on cost-effectiveness, right-of-way requirements, public input, and other factors, the preferred is Alternative 3. This alternative emphasizes the use of Norris Freeway but without a new roadway. Drivers would be able to turn left from Norris Freeway and proceed north on Maynardville Highway then east on Emory Road. The environmental study and roadway improvement plans are being prepared, and the project is included in the county's capital projects list.

### Sidewalks and Bike Lanes

There are not many sidewalks in the sector. This is the result of much of the sector being rural in character and the urbanized area being developed during the "automobile age," the era after World War II, when there was little emphasis on sidewalk construction. The major exception is the newer portions of Emory Road. Additionally, a sidepath greenway, which allows walking, jogging and bicycling, has been created along Emory Road in "downtown Powell," providing a connection between the schools.

Additionally there are no general requirements to provide sidewalks with new development. The Planning Commission may require sidewalks with new development, and often does, especially within the Parental Responsibility Zone (PRZ) around schools. The PRZ is the area around schools where parents are responsible for providing transportation to and from school as these zones are not serviced by school buses. (The PRZ for elementary schools is 1 mile from the school, via the road network, and 1.5 miles for middle and high schools.) As a result, these areas should be targeted for sidewalk construction or improvement.

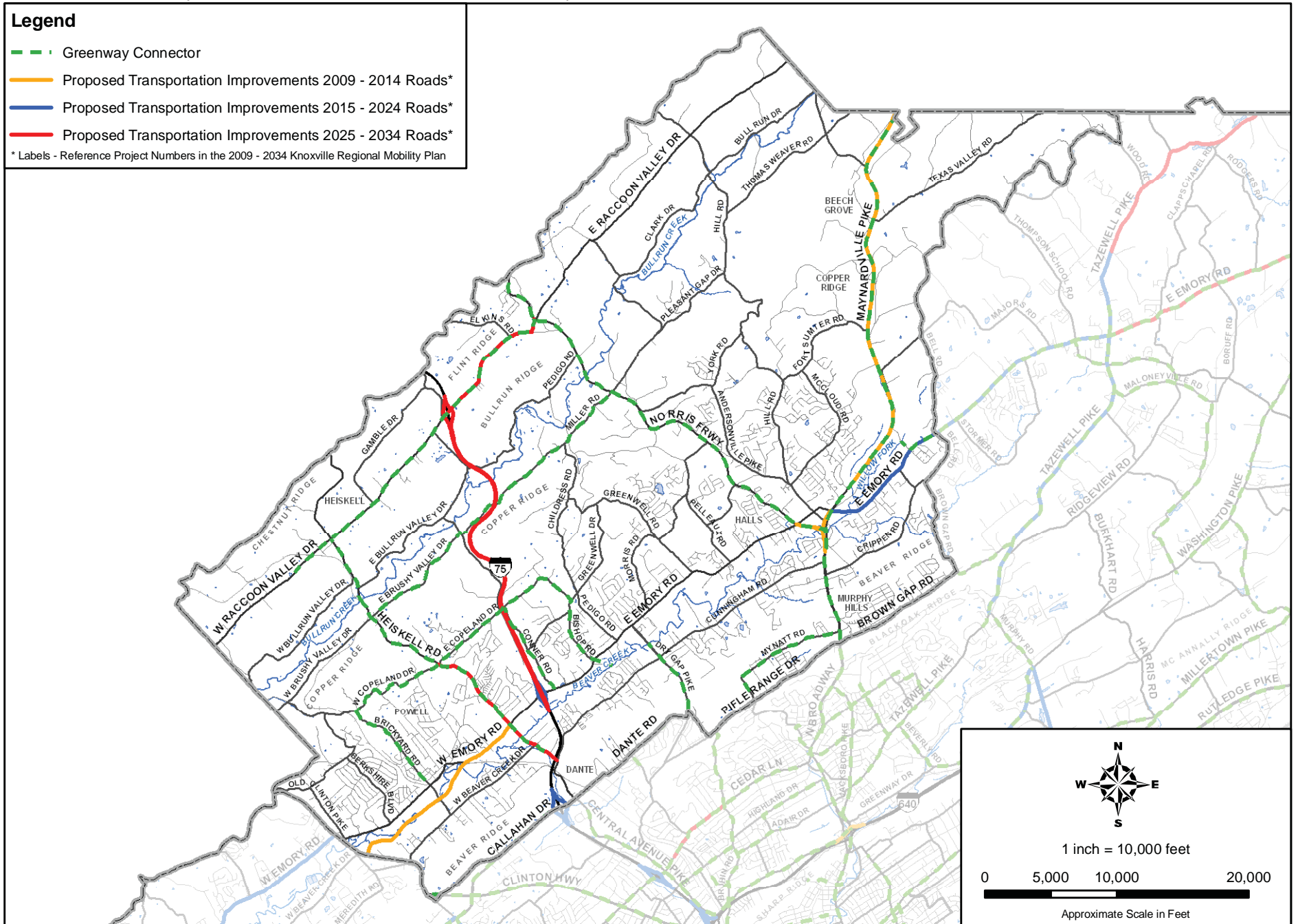
There are currently no bike lanes in the sector, and bicyclists are limited to the shoulders of roads or must share travel lanes with vehicles. Signage alerting drivers of cyclists and the addition of bike lanes should be considered in future planning.



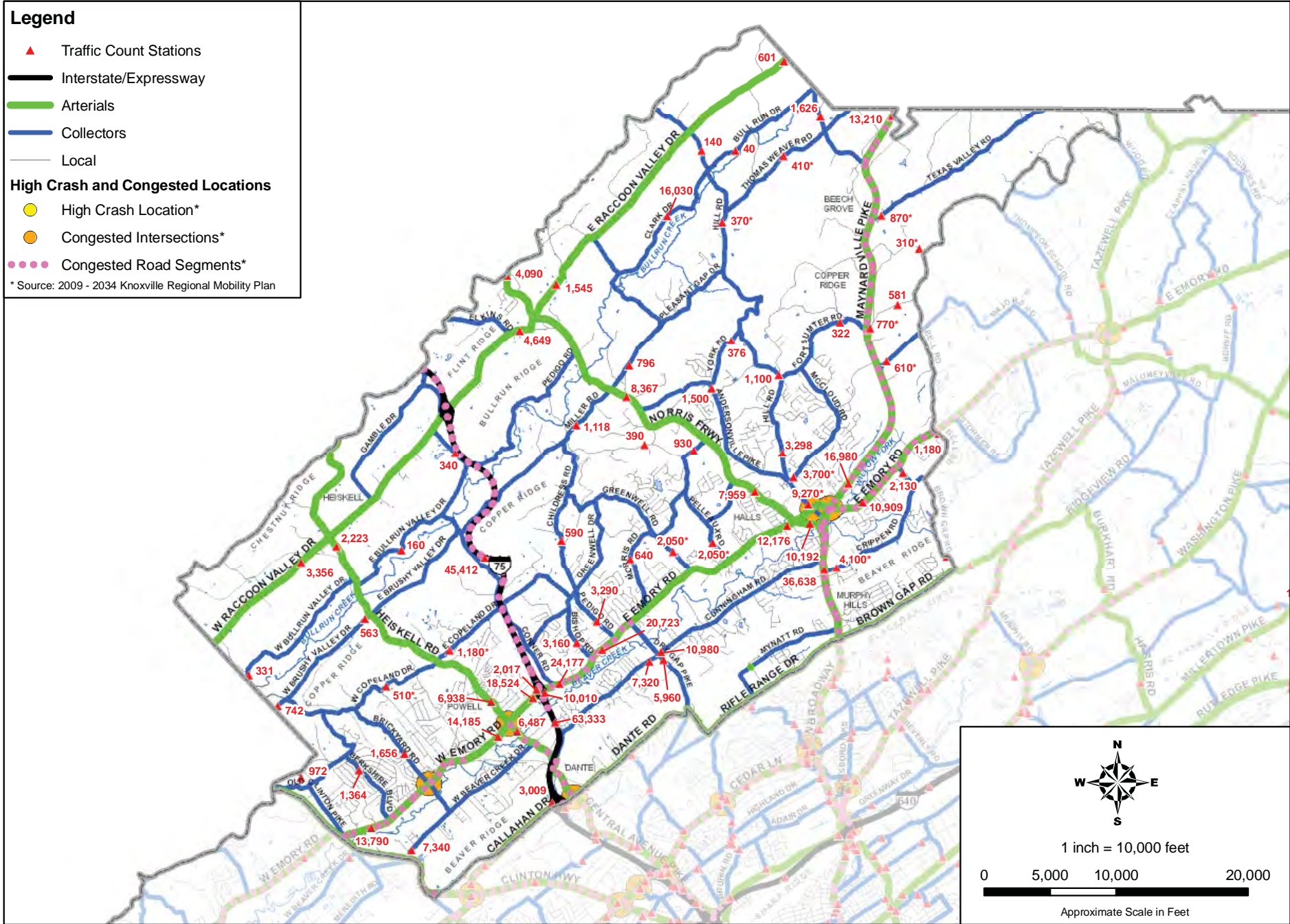
## North County Sector: Planned Roadway Improvements

### Legend

- Greenway Connector  
— Proposed Transportation Improvements 2009 - 2014 Roads\*  
— Proposed Transportation Improvements 2015 - 2024 Roads\*  
— Proposed Transportation Improvements 2025 - 2034 Roads\*
- \* Labels - Reference Project Numbers in the 2009 - 2034 Knoxville Regional Mobility Plan



# North County Sector: Road Class, Volume and Conflicts



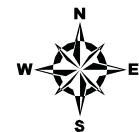
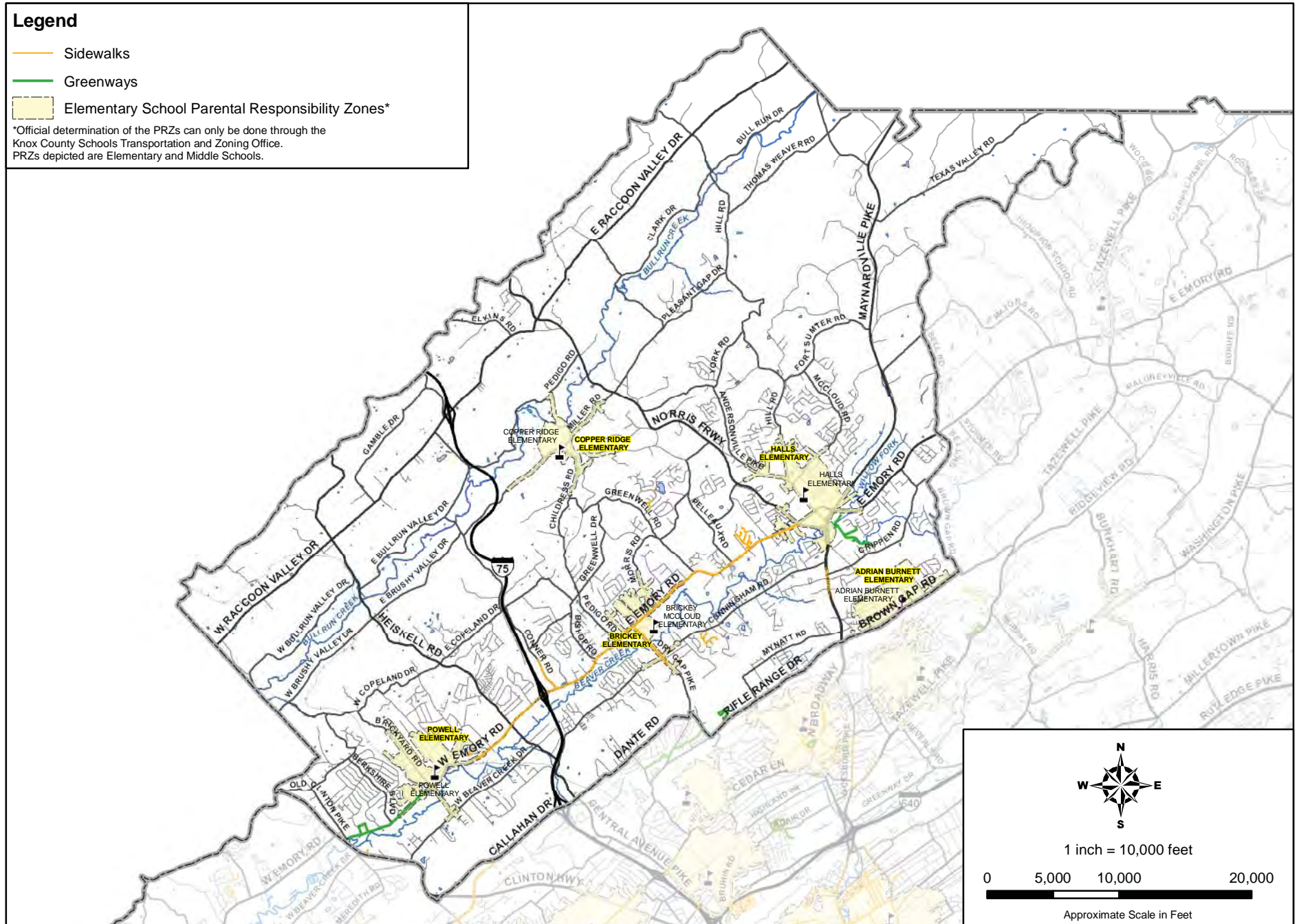


# North County Sector: Other Transportation Modes and Parental Responsibility Zones

## Legend

- Sidewalks
- Greenways
- Elementary School Parental Responsibility Zones\*

\*Official determination of the PRZs can only be done through the Knox County Schools Transportation and Zoning Office.  
PRZs depicted are Elementary and Middle Schools.



1 inch = 10,000 feet

0 5,000 10,000 20,000

Approximate Scale in Feet

## Natural Resources and Environmental Challenges

The North County area is defined by its ridges and valleys that run parallel from the northeast to the southwest. Likewise, creeks flow through the fertile valleys. There are four ridges, four valleys and two major creeks that run through the North County area. The ridges are Beaver, Copper, Bull Run, and Chestnut; and the valleys are Hines, Beaver, Bull Run, and Raccoon.

### Geology, Soils and Vegetation

Like the rest of the Appalachian Ridge and Valley Province, the topography of the North County Sector was shaped by millions of years of tectonic uplift and subsidence. The Beaver Creek and Bullrun Valleys are primarily shale with some sandstone, siltstone and limestone. The Bullrun Valley watershed is characterized with steeper ridges to either side and a flat wide floodplain. The majority of the North County area is made up of dolomite formations, which are primarily found on the ridges. Dolomite and limestone, also found on ridges, are economically important as sources of crushed stone for construction, agricultural limestone, lime, and cement, and are also used for dimension stone.<sup>1</sup>

The soils of North County are a by-product of the area's geology, climate, and vegetation. The USDA's Natural Resources Conservation Service updated the soil survey for Knox County in 2006 for the first time since 1955. Included in the survey is soil slippage potential, a measure of susceptibility of soil failure when vegetation is removed and the soil is at or near saturation during precipitation events. Slip potential is an important consideration when siting roads, buildings and forestry operations. High slip potential soils, which are characterized as unstable, are dominant when the slope of the land reaches approximately 20 percent. These soil types are prevalent on many hillside and ridge features.



*Copper Ridge and Bull Run Ridge form some of the steepest, most forested terrain of the county.*

Knox County is known for the forested hillsides that surround the community. Forested lands are infiltration hotspots for heavy rainfall events, protecting local waterways from sedimentation and reducing the demand on stormwater infrastructure. Table 6 shows the relationship between steepness of slope and the existence of forested land in the North County sector. Forested lands significantly increase to 54.1 percent of the land on slopes 15 to 25 percent, in comparison to 26.2 percent of the land on slopes 0 to 15 percent. Countywide, approximately 60 percent of the remaining forested land is found on slopes greater than 15 percent; in this sector, 71 percent of the remaining forested land is found on slopes greater than 15 percent. See the Natural Resources and Development Constraints map.

The vegetation in North County is characterized by forested hillsides, and in the rural areas, pasture and modest row cropping land in the more level land and floodplain areas, where prime and locally important farmland soils are dominant.

<i>Percent of Slope</i>	<i>Total Acreage</i>	<i>Percent of Total Land Area</i>	<i>Percent Forested</i>
0 - 15 %	26,317	52.5%	26.2%
15 - 25 %	10,397	20.7%	54.1%
25 - 40 %	8,464	16.9%	79.4%
40 - 50 %	2,851	5.7%	90.4%
50 % and greater	2,103	4.2%	92.7%

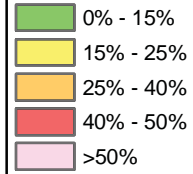
<sup>1</sup>Maher, Stuart W., 1973. *Mineral Resources of Knox County, Tennessee: Geology of Knox County, Tennessee*, bulletin 70. p. 76-81.



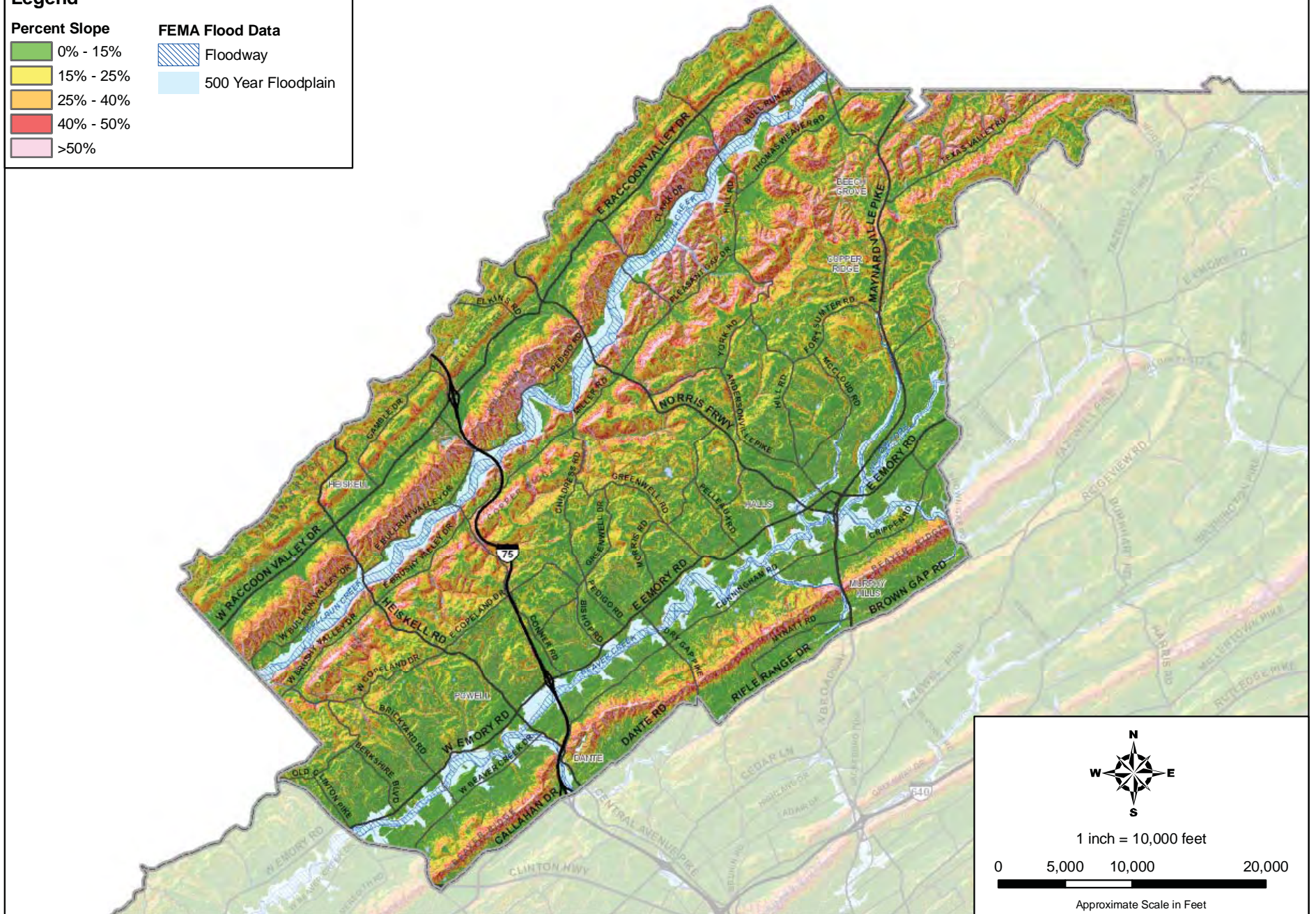
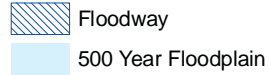
# North County Sector: Environmental Constraints

## Legend

### Percent Slope



### FEMA Flood Data



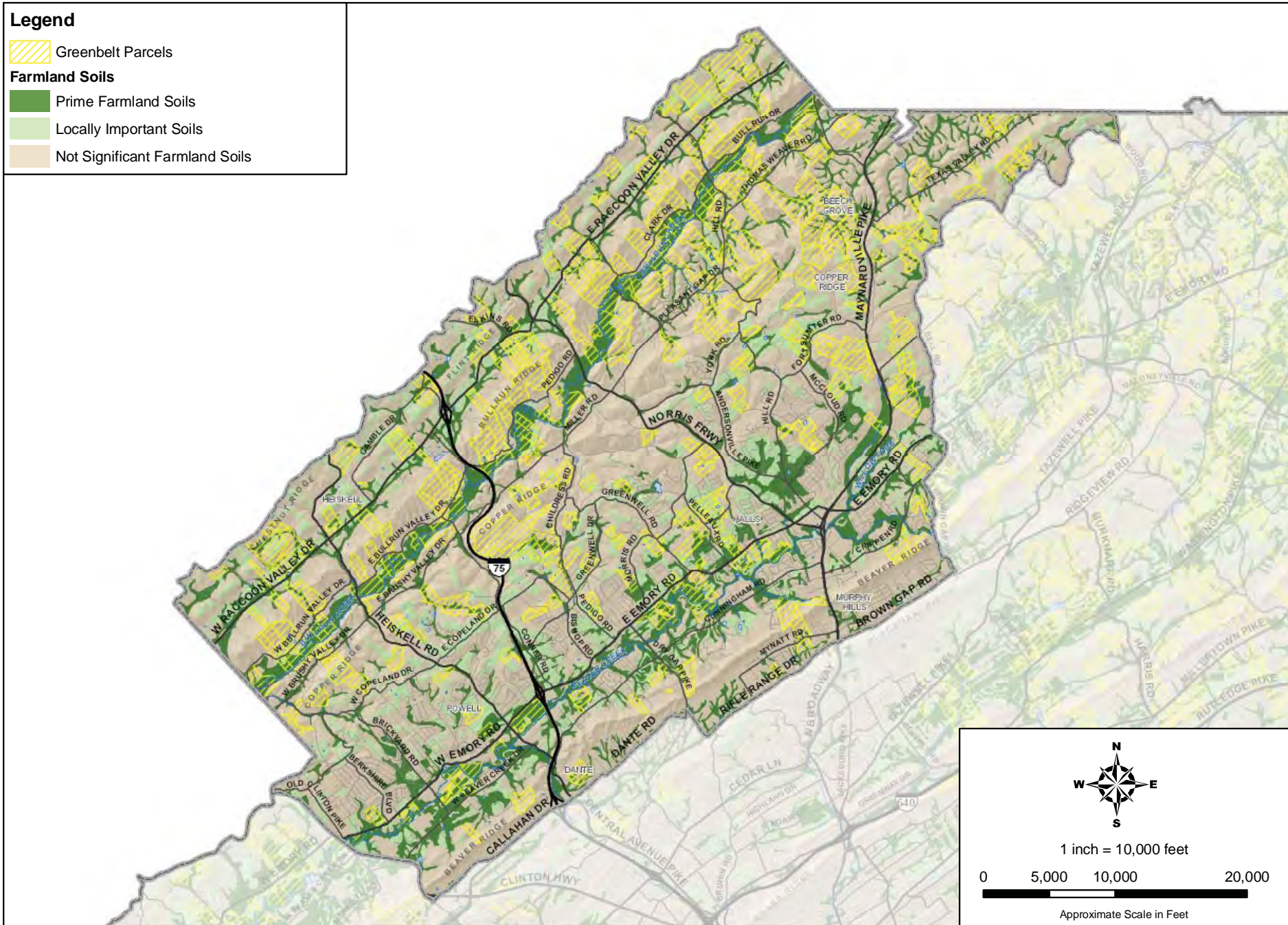
1 inch = 10,000 feet

0 5,000 10,000 20,000

Approximate Scale in Feet



# North County Sector: Agricultural Soils and Greenbelt Program Parcels







*Bull Run valley, with its wide floodplain, has the sector's most significant farm soils.*

### **Agricultural Soils and the Greenbelt Program**

More than half of the sector's land use is composed of agricultural, forest, and vacant land. The prime and locally important farmland soils are found in each of valleys (see the map on the opposite page). The two areas with the most prime farmland are those with the two major creeks; Beaver Creek and Bull Run Creek. The Greenbelt program applies to parcels where the property owner has elected to limit the use of land to agriculture or forest production practices. By doing so, a land owner's property tax is based on the value as farm or forest land, not on a market value for residential or commercial purposes. The Greenbelt program does not guarantee permanent farmland protection; owners can opt out and develop after paying rollback taxes (see Appendix D). In the North County sector, more than 38 percent of the agricultural, forest, and vacant land is currently being protected under the Greenbelt program.

### **Water Resources**

There are four sub-watersheds within the North County Sector: Beaver Creek, Bullrun Creek, Knob Fork Creek, and Flat Creek. The Beaver Creek and Bullrun Creek sub-watersheds make up the majority of the sector area. The health of the watersheds and their respective drainage areas vary across the sector. Leaking septic systems, poor development practices, physical alterations, and agricultural activities are the primary contributors to poor water quality found in the streams.

The largest watershed in the North County sector is Beaver Creek (see map of Watersheds and Impaired Streams). A group called the Water Quality Forum was established in 1999, which later became the Beaver Creek Task Force. Initially, the task force conducted an assessment of the Beaver Creek Watershed to inventory resources and to identify problem areas. After a round

of public meetings the data was assembled into a report and published in 2003 as *The Beaver Creek Watershed Assessment*. In March 2003, the Beaver Creek Task Force helped create the Beaver Creek Watershed Association, which was formed to protect and enhance the natural and human environment of the Beaver Creek Watershed through the mobilization of public support, building of public awareness, and the promotion of best management practices.

In 2006, *The Beaver Creek Watershed Green Infrastructure Plan*<sup>2</sup> was developed by the University of Tennessee College of Architecture and Design to provide conceptual planning and urban design guidance for future development of the Beaver Creek Watershed. This effort was sponsored by the Beaver Creek Task Force and supported by the Tennessee Valley Authority, Knox County Stormwater Department, and Knox Land and Water Conservancy. This plan looks at ways to develop the Beaver Creek Watershed while protecting its natural resources, utilizing smart growth and conservation concepts. It recommends creating concentrations of development in the most suitable locations for development, leaving areas that are environmentally sensitive for parks and greenways. The developers of the plan never pursued adoption by the Knox County Commission, so it is considered an additional source of information, not a regulatory tool. See Appendix E for more information.

*The Beaver Creek Watershed Green Infrastructure Plan* proposed various concepts to conserve the stream corridor and forested resources, create bike and pedestrian ways and concentrate development at major intersections.

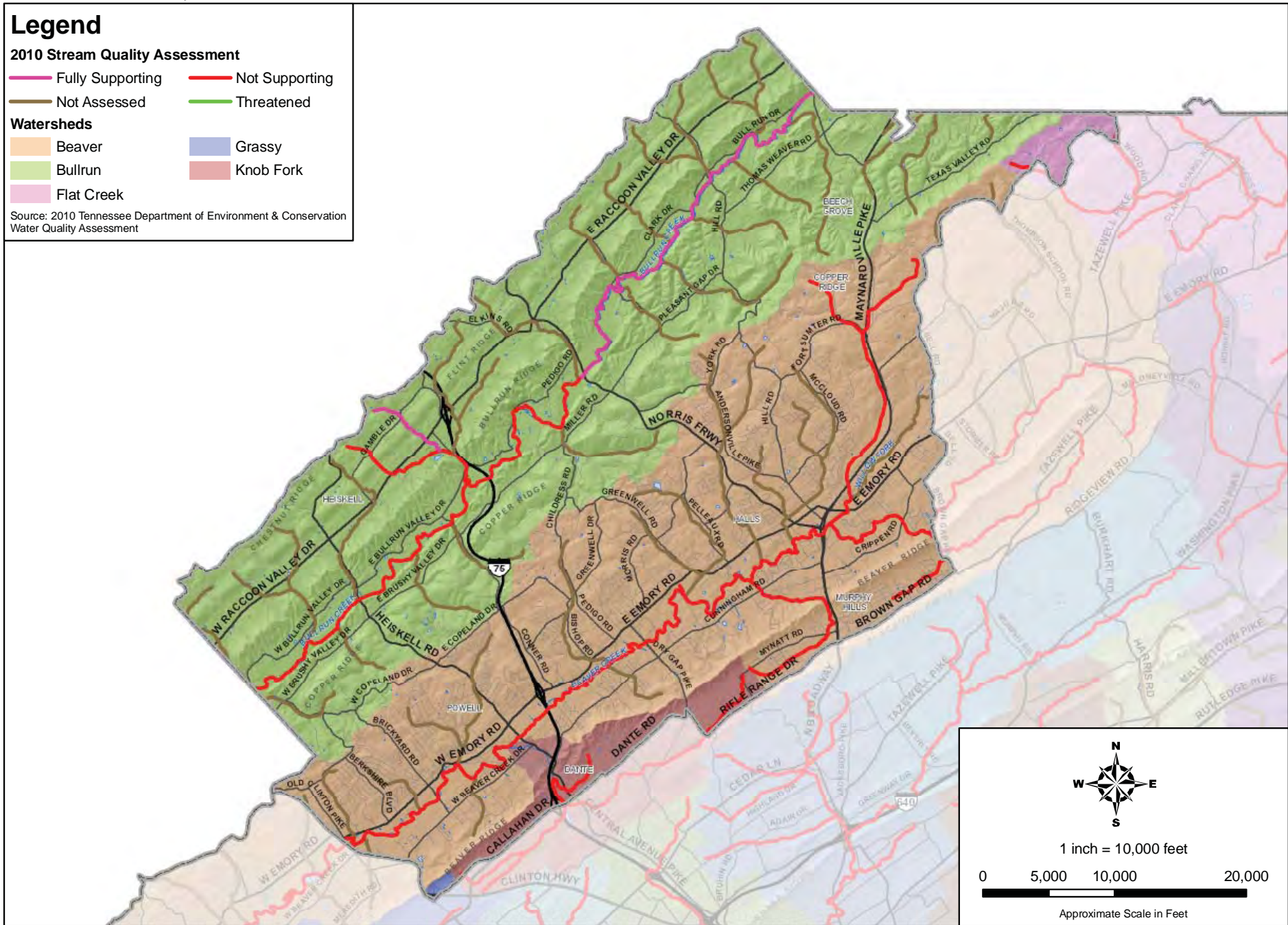
Federal, state, and local stream monitoring indicates water quality has stayed relatively unchanged; however, the streams that are impaired have many issues that still need to be addressed.

The pathogen *E. coli* is found in several settings: in rural areas with inadequate septic systems or with large concentrations of livestock with inadequate buffers on streams, or in urban areas where wastewater collection

<sup>2</sup>Moir-McClean, Tracy and DeKay, Mark, 2006. *Beaver Creek Watershed Green Infrastructure Plan*.



# North County Sector: Watersheds and Impaired Streams



systems have failures. Willow Fork and Hines Branches are both contaminated with E. coli, as are Beaver Creek, Knob Fork Creek, and Bullrun Creek, and as such all are deemed unsafe for fishing and swimming. Bullrun Creek is predominately surrounded by rural land uses, such as agricultural and rural residences relying on septic systems. Beaver Creek and Knob Fork Creek are in urbanized areas. Beaver Creek also has high levels of nitrates and phosphate which can be from fertilization of lawns or crops.

Of all the sub-watersheds in the North County sector area on the state's list of impaired streams, known as the 303(d) list, only Hines Branch is not in violation of water quality due to siltation. Siltation is when soil enters and settles in a stream, coating the bottom of stream bed. Excessive siltation usually comes from sites where the soil has been disturbed like farmland and development sites, or from stream banks that are eroding.

### Air Quality

Though not only affecting the North County Sector, it is important to note that Knox County remains in a "non-attainment" status for the minimum air quality standards for particulate matter as prescribed by the Clean Air Act. The poor air quality experienced in Knox County is related to our climate and topography, as well as human-caused emissions. Coal-fired power plants and combustion engines are the primary human sources. Transportation alternatives and the conservation of forested lands can significantly increase air quality.

### Existing Land Use and Development Trends

Although North County is experiencing steady suburban residential growth, the majority of the sector contains rural uses; more than half (56 percent) of the existing land use is composed of agriculture, forest, and vacant land and another 15 percent is used for rural residential (houses on lots of two to 10 acres) purposes.

Single family residential uses are the becoming more extensive, accounting for 15 percent of the sector's land use. Since 2000, there have been 352 new residential subdivisions.

Table 7. North County Sector Land Use Acreage, 2008		
Land Use Categories	Acreage	% Share
Agriculture/Forestry/Vacant Land	28,162	56.18%
Commercial	521	1.04%
Industrial (Manufacturing)	63	0.13%
Multi-dwelling	677	1.35%
Office	283	0.57%
Private Recreation	218	0.44%
Public Parks	274	0.55%
Public/Quasi Public Land	769	1.53%
Right of Way/Open Space	3,318	6.62%
Rural Residential	7,646	15.25%
Detached dwelling	7,582	15.12%
Transportation/Communications/Utilities	102	0.20%
Under Construction/Other Uses	168	0.33%
Wholesale	23	0.05%
Mining and Landfills	323	0.64%
TOTAL	50,130.8	100.0%

Public and quasi-public land represents 769 acres (or 1.5 percent), including such uses as parks, schools, churches, and hospitals. Commercial land, which includes retail and wholesale uses, comprises one percent of the sector's land use, and is primarily found along major arterial highways.

### Residential Development Trends

Residential development locations are depicted on the map on page 20. These include attached and detached houses and multi-family structures. Much of the residential development took place south of Copper Ridge, where public sewer service is widely available.



With sewer service in place, Beaver Creek valley will continue to have the greatest proportion of development activity.

### Residential Subdivision Activity

From 2000 to 2009, North County gained 3,748 residential lots, distributed among 352 new subdivisions and 3,586 acres. This accounted for 19 percent of the new residential lots in all the county sectors during this time.

Table 8. Residential Subdivision Permits, 2000-2009			
Subdivisions	North County	All County Sectors	% Share
Acreage	3,586	18,717	19.2%
Number	352	1,609	21.9%
Lots Created	3,748	19,776	19.0%

### Residential Building Permits

The number of housing units in the North County Sector grew steadily for most of the decade; however, the type of housing units has changed substantially over the last two decades. In 1990, attached houses accounted for just 1.2 percent of the total housing units; in 2009 this increased to 7.1 percent. Detached houses are still the most common housing type at 61.2 percent of the housing units; however, this is down from 76 percent in 1990.

Table 9. North County Sector Housing Units						
Type	1990	% Share	2000	% Share	2009**	% Share
Detached	9,520	76.0%	12,668	72.4%	13,313	61.2%
Attached	150	1.2%	834	4.8%	1,540	7.1%
Multi-dwelling	906	7.2%	1,346	7.7%	1,634	7.5%
Mobile Home	1,923	15.4%	2,649	15.1%	3,080	14.2%
TOTAL	12,521	*	17,497	*	21,751	*

\*The totals do not add up to 100 percent because the 1990 and 2000 censuses included people living in RVs, campers and house boats (a very small percentage of the units).

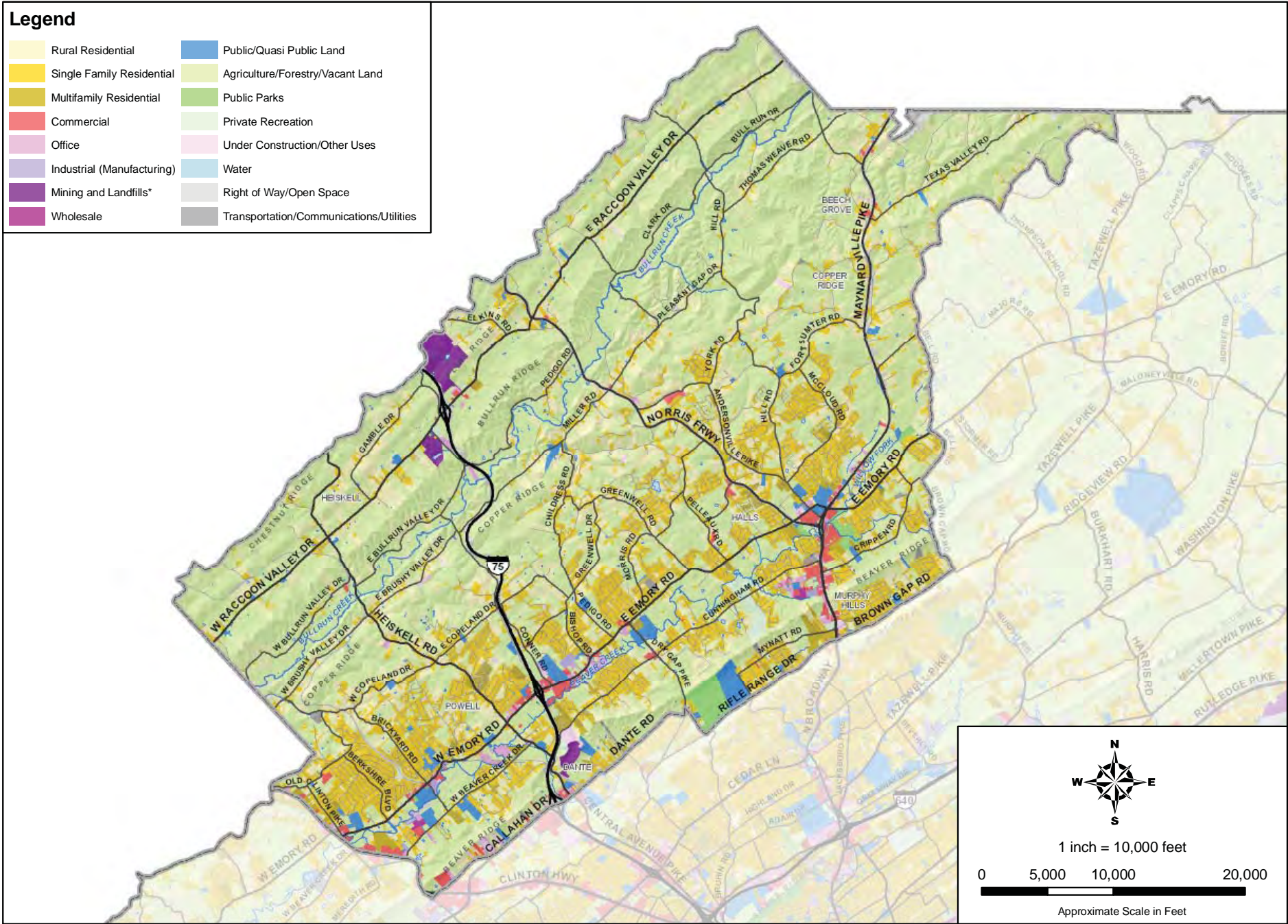
\*\*The 2009 housing unit counts are based on MPC's development activity reports, 2000 through 2009; there were 64 residential demolitions in that period. The demolition records do not differentiate as to what type of unit was torn down; MPC staff assumes that nearly all were single family detached units and reflect that loss in the table accordingly.

### Retail Development Trends

Retail historically has developed along Clinton Highway, Maynardville Highway, Emory Road, and Callahan Drive. This trend has continued with the exception of the new shopping center on Norris Freeway that has a Wal-Mart Supercenter and space available for one other big box retailer and multiple smaller tenants. Only a few neighborhood-oriented retail centers exist; Heiskell Road and Dry Gap/Cunningham Road are examples of such locations.



# North County Sector: Existing Land Use





# North County Sector: Residential and Non-Residential Development Activity, 2000-2010

## Legend

### Low Density Residential

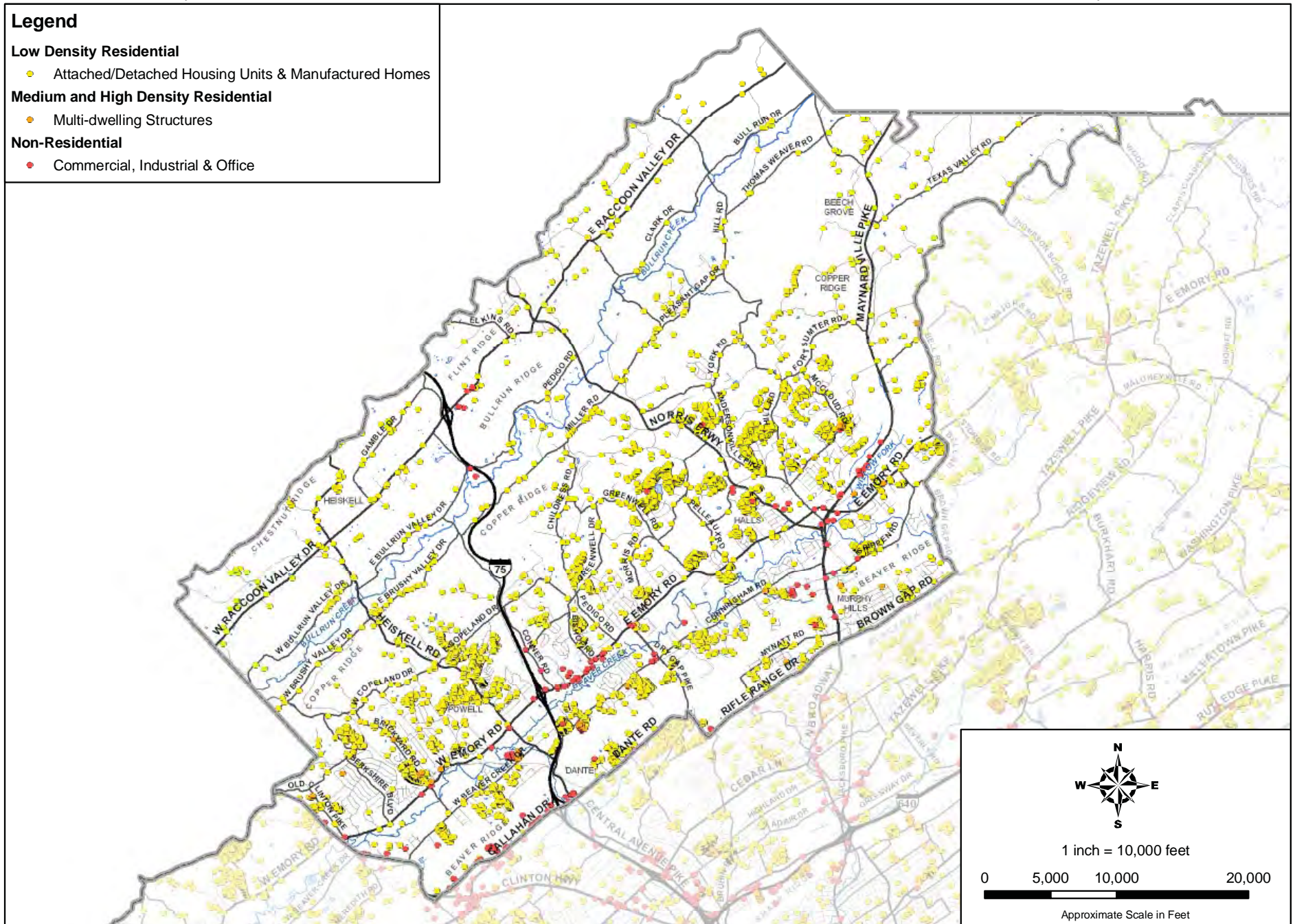
- Attached/Detached Housing Units & Manufactured Homes

### Medium and High Density Residential

- Multi-dwelling Structures

### Non-Residential

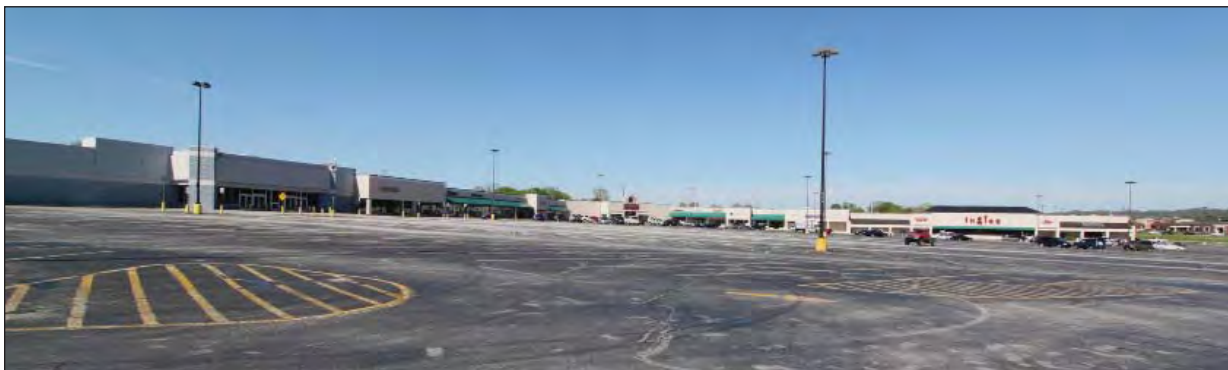
- Commercial, Industrial & Office



1 inch = 10,000 feet

0 5,000 10,000 20,000

Approximate Scale in Feet



*The extent of vacant retail space is pronounced in some older shopping areas.*

As of 2008, the sector as a whole had approximately 1,035,735 square feet in shopping center and related retail and restaurant space, with a vacancy rate of 12.7 percent.

### Office Development Trends

The North County sector has 527,680 square feet of office space distributed among 13 buildings. The two main office uses are healthcare and corporate. The largest group of healthcare offices is located at the Tennova Medical Center North on Emory Road near the I-75 interchange. The largest corporate office is for Regal Cinemas off Maynardville Highway.

### Industrial Development Observations

There is very little industrial development in the sector. There are a few small industrial zoned properties scattered around the sector but few are actually used for industrial uses. The largest concentration of active industrial properties is at the I-75/Raccoon Valley interchange, where there are two mining operations, and Beaver Ridge Road near Clinton Highway, where DeRoyal Industries is headquartered and manufactures healthcare products.

### Economic Development Studies

Various studies have been conducted to examine potential office park and business park sites in Knoxville-Knox County. These include redevelopment of older industrial land in the city, as well as greenfield sites. Undeveloped land on the southeast quadrant of the I-75/Raccoon Valley Drive interchange was identified as a

potential business park site according to the *Potential Locations for Business Park Development, 2005*. There are two additional business park locations identified in the *Inventory of Potential Sites for Business and Office Parks, 2002*. The first is the northwest quadrant of the I-75/Raccoon Valley interchange and the second is at the intersection of Brickyard Road/West Beaver Creek Drive.

All of these sites remain largely undeveloped and continue to offer potential as business parks; however, the Brickyard Road/West Beaver Creek Drive location does have a new road planned (Powell Drive) through the center of the site. This will increase access to the site but may make the site unusable as a business park.



*Tennova Medical Center North*

### Growth Policy Plan Implications

The majority of the area is in the unincorporated area of Knox County. There are a few areas that have been incorporated as part of the City of Knoxville; some properties along Callahan and Old Callahan Drive, the area around the I-75/Emory Road interchange, the rifle range on Rifle Range Road, and a small area on Maynardville Highway. The city has the right to request annexations in several areas that are adjacent to the aforementioned locations (see the Urban Growth Boundary, shaded blue, on the Growth Policy Plan map).

Within Knox County's unincorporated area, the designated Rural Area is very large; that designation is made, under provisions of state law, to conserve agricultural, forest, and other natural resources. The Planned Growth Area (shaded yellow) is designated to foster low and moderate forms of development and covers most of the area south of Copper Ridge. Several considerations were taken into account in defining the Planned Growth Area, including the extent and logical expansion of public sewer services (essentially, the Beaver Creek watershed) and the provision of adequate roads, schools, parks, and related facilities (the area south of Copper Ridge). The I-75 and west Raccoon Valley Road area was also proposed as a Planned Growth Area, given its limited sewer services and proximity to the arterial roads and the interchange.




# North County Sector: Growth Policy Plan

## Legend

 Knoxville

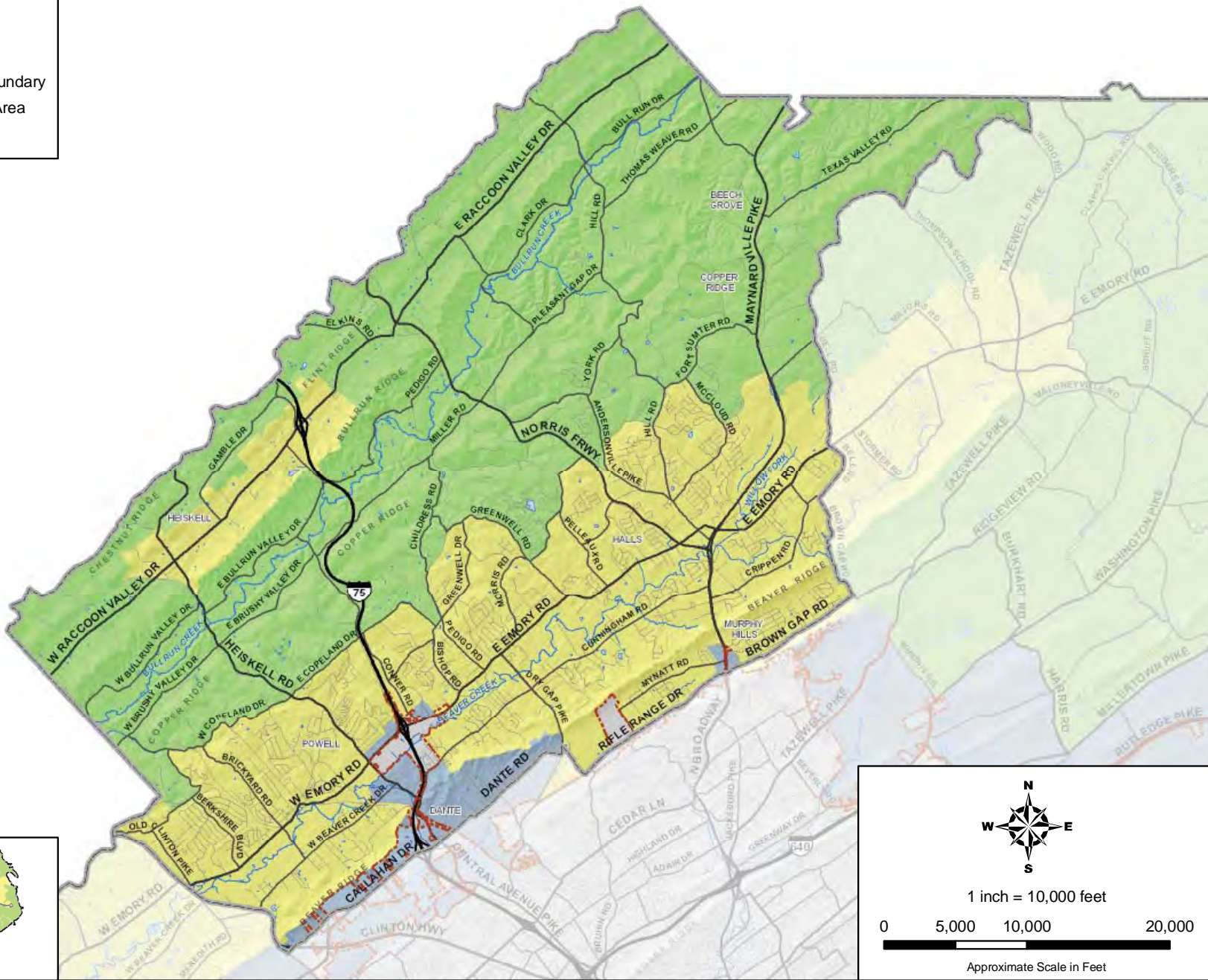
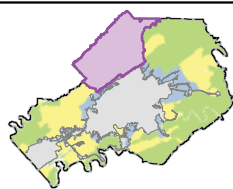
## Growth Plan

 Urban Growth Boundary

 Planned Growth Area

 Rural Area

## Area Shown



## Historic Resources

Only one of the historic resources in this sector is on the National Register of Historic Places (the Alexander Bishop House), while the rest are eligible for placement on the Register. Through the preservation of the sites, present and future generations can better understand early settlement life, including the importance of agriculture and religious history. National Register status offers potential protection from federally funded construction projects and enables possible income tax incentives.



Mount Herman United Methodist Church (c. 1894)

## History of Settlement

The North County Sector has historically been a rural farming area because of the rich soils in the valleys. Small communities began forming at major transportation points: Halls Crossroads and Powell Station are a couple of the more familiar ones today. Halls Crossroads was established along Emory Road and got its name from a general store with the same name that opened in 1860. Powell Station area was settled in 1792 and got its name from the train station that was created in the late-19th century.

Emory Road (formerly known as Emery Road) was one of the first settlement roads in the State of Tennessee and it was part of a system of roads that connected Nashville with East Tennessee. This system of roads collectively became known as Emory Road and was the main thoroughfare for this route from 1785 to 1795.

Within the North County sector there are several sites that are either listed or eligible to be listed on the National Register of Historic Places. A list of the sites is presented in Table 10.

Table 10. North County Sector Historic Resources Inventory	
<i>Name and Construction Date</i>	<i>Historic and Architectural Significance</i>
Pedigo Road District (c. 1880) Jett-Pedigo Road Mill Building and Millers House	Represents early settlement and the milling industry. It contains a Queen Anne frame house, a two-story mill, and out buildings.
Powell Community (c. 1890 - 1930)	Once a thriving trade center and community. Illustrates late Victorian architecture and influence of rail in settlement patterns.
Hill House (c. 1890)	A two-story frame house with outbuildings that have Italianate detailing.
Jack Harrell House (c. 1857, c. 1935)	A log cabin modified to a "Four Square Design".
Alexander Bishop House (c. 1792)	A one-story log house with details such as full dovetail joints, wood pegs and brick chimney with stone bases.
York Road House (c. 1920)	An elaborate bungalow significant for its architecture and curvilinear roof lines.
Carpenter Gothic House	A one-story frame house with bargeboard, sawn wood trim and corbelled chimneys. Includes a smokehouse and a spring house.
Mount Harmony Baptist Church (c. 1897)	A one-story frame, Gothic Revival church.
Mount Herman United Methodist Church (c. 1894)	A one-story frame, Gothic Revival church.
Italianate House (c. 1850)	A distinctive East Tennessee vernacular architectural design with unique Italianate detailings.
Brown House (c. 1850 - 1867)	A house of two separate structures joined by a later addition with unique Italianate detailing like sawn-wood hexagonal attic vents.
Powell House (c. 1850)	A two-story brick, Federal house with twentieth century additions. This house is a symbol of early settlers and settlement patterns.
Airplane Service Station (c. 1930)	A filling station designed to look like an airplane in the Fantastic style of architecture.
Blooming Grove School	A one-story school house.
McCloud House	A two-story Victorian farmhouse.
Alvin Boyd Bell House	A two-story frame and brick, five-bay Colonial Revival style house. Designed by Barber McMurry Architects of Knoxville, TN.



## Section 2:

# Land Use, Community Facilities, Green Infrastructure and Transportation Plans

### Land Use Plan

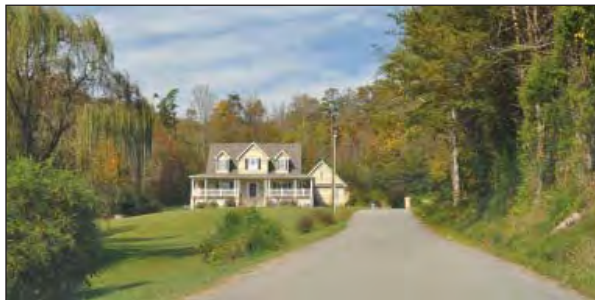
The 15-Year Land Use Plan is a basis for land development and conservation, including rezoning decisions. Those zoning decisions are made periodically through recommendations of the Metropolitan Planning Commission and the changes to existing zones via the decisions of City Council or County Commission.

To provide an example of a typical rezoning case, consider the following. Low density residential (LDR) land use is the most common designation in growing suburban areas. Many times such land was zoned agricultural back in the 1950s. A rezoning to allow detached houses in such areas is almost always approved.

The list of zoning districts that are recommended in relation to the following land use plan designations and policies is outlined in Appendix C.

### Proposed Land Use Policies

**Agricultural (AG):** For use in the Rural Area of the Growth Policy Plan, this designation includes other farm and agricultural-related uses and very low density residential uses (not to exceed one dwelling unit per acre).



*Large lot residential uses are also allowed in the Agricultural area.*

**Low Density Residential (LDR):** Primarily residential at densities of less than 6 dwelling units per acre (city); 5 dwelling units per acre (county).

**Medium Density Residential (MDR):** Primarily residential at densities from 6 to 24 dwelling units per acre (city) and 5 to 12 dwelling units per acre (county).

**Medium Density Residential/Office (MDR/O):** Areas designated to accommodate medium density or office uses, occasionally used as buffers to low density residential areas.

**Office (O):** Business and professional offices and office parks.



*The Heiskell Market and Post Office form a rural commercial center.*

**Rural Commercial (RC):** Retail and service-oriented commercial uses intended to provide rural communities with goods and services that meet day-to-day and agricultural-related needs.

**Neighborhood Commercial (NC):** This classification includes retail and service-oriented commercial uses intended to provide goods and services that serve the day-to-day needs of households, within walking or short driving distances.

**Community Commercial (CC):** This land use includes retail and service-oriented development, including shops, restaurants, and what has come to be known as “big box” retail stores; typical service area includes 20,000 to 30,000 residents.

**General Commercial (GC):** Primarily existing strip commercial corridors, providing a wide range of retail and service-oriented uses. In some areas, such as Clinton Highway and Maynardville Pike, with (CB) Business and Manufacturing Zoning, warehousing and light manufacturing may be created.

**Mixed Use Special District (MU-SD):** These areas primarily include older portions of the city or county where redevelopment programs are needed for revitalization purposes (e.g. older shopping centers). For areas that have not had previous development, these areas allow for a variety of uses as defined in the district designation.

**Community Mixed Use Center (MU-CC):** These centers are envisioned to be developed at a moderate intensity with a variety of housing types (8 to 24 du/ ac). The core of the district, with its predominant commercial and office uses, should be within ¼ mile of the higher intensity residential uses (such as townhouses and apartments). The district should be located within a ¼-mile radius of an intersection of the thoroughfare system (a collector/arterial or arterial/arterial intersection). In addition to sidewalks, the district should be served by transit. Redevelopment of vacant or largely vacant shopping centers are considered for these centers.

**Light Industrial (LI), Heavy Industrial (HI) and Mining (HIM):** These classifications are used to identify older industrial areas, which were intended for manufacturing, assembling, warehousing and distribution



Light industrial use adjacent to Beaver Creek

of goods. Light industrial uses include such manufacturing as assembly of electronic goods and packaging of beverage or food products. Heavy industrial uses include such processes used in the production of steel, automobiles, chemicals, cement and animal by-products and are viewed clearly not compatible with areas designated for residential, institutional, office and retail uses. Quarry operations and asphalt plants are a particular form of heavy industrial, generally located in rural areas.

**Civic/Institutional (CI):** Land use for major public and quasi-public institutions, including schools, colleges, churches, correctional facilities, utilities and similar uses.

**Public Parks and Refuges (PP):** Existing parks, wildlife refuges or similar public or quasi-public parks, open spaces and greenways.

**Other Open Space (OS):** Cemeteries, private golf courses and similar uses.

**Stream Protection Areas (SP):** Areas subject to flooding as identified on Knox County flood maps. For streams that do not have a mapped flood zone, state and local storm water regulations, creating non-disturbance areas, apply.

**Major rights-of-way (ROW):** Generally, the rights-of-way of interstates, very wide parkways and arterial highways.

**Hillside/Ridgetop Protection Areas (HP):** Used to identify hillsides, ridges and similar features that have a slope of 15 percent or more. Future development should conform to the policies of the Knoxville-Knox County Hillside and Ridgetop Protection Plan.

Table 11. Hillside and Ridgetop Protection Plan Policies\*

**Low Density Residential** density limits within the Hillside and Ridgetop Protection Area (HRPA) :

- 15 - 25 percent slope = two houses per acre in the low density residential areas; one house per acre in agricultural and rural residential areas
- 25 - 40 percent slope = one house per two acres
- 40+ percent slope = one house per four acres
- Ridgetops are generally the more level areas on the highest elevations of a ridge. Because the shapes of Knox County ridges are so varied, the ridgetop area should be determined on a case-by-case basis with each rezoning and related development proposal.

**Medium Density Residential and Office development** within the HRPA that extends into the 15 to 25 percent slopes should only be considered :

- If the slope is closer to 15 percent and the building footprint does not exceed 5,000 square feet per one acre
- If the slope is closer to 25 percent and the building footprint does not exceed 5,000 square feet per two acres
- All proposals should be subject to the approval of a use on review and site plan by the Metropolitan Planning Commission.

**Commercial development** that extends into the 15 to 25 percent slopes:

- Slope restoration and reforestation of cut-and-fill areas should be accomplished to minimize the long term impact to water quality and lessen forest canopy loss in the HRPA.

**Height of new buildings** within the HRPA:

- Limit to 35 feet.

\*Please note that this is not a comprehensive list of policies from the Knoxville-Knox County Hillside and Ridgetop Protection Plan.



Beaver Ridge: in most cases, commercial uses are not developed on the steep slopes.

## Special Land Use Districts

There are several areas that are capable of sustaining different mixes of land uses. In other words, a broad brush of proposing only one land use may not be prudent in view of changing conditions and the dynamics of the local economy (for example, the reuse of older commercial properties for other land development purposes). All of the following proposed districts are well located in terms of good transportation systems and generally have good infrastructure. Design principles to consider during development plan review for projects in Mixed Use Districts are presented in Table 12 at the end of this section.

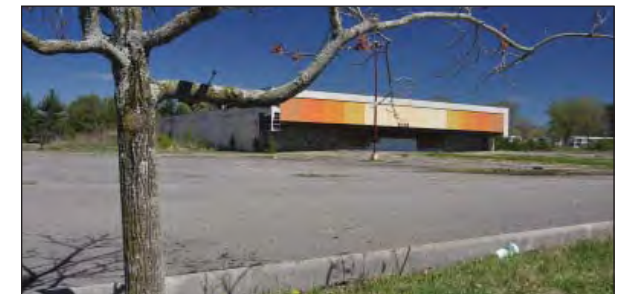
### NCO-1:

#### Clinton Highway/Powell Drive Mixed Use District

In 2012-13 the new extension of Emory Road (Powell Drive) will be underway or completed, placing this section of Clinton Highway at an advantageous position for revitalization and redevelopment. Presently, there are significant areas of vacant land and buildings and, occasionally, underutilized buildings. The present zoning is largely for commercial uses.

**Recommended Uses:** Rather than concentrating solely on commercial uses, a new district is proposed whereby a mix of uses can be fostered, including office, light manufacturing, commercial and residential uses. Commercial and light industrial uses should not be allowed when abutting existing residential zoning outside of the special district.

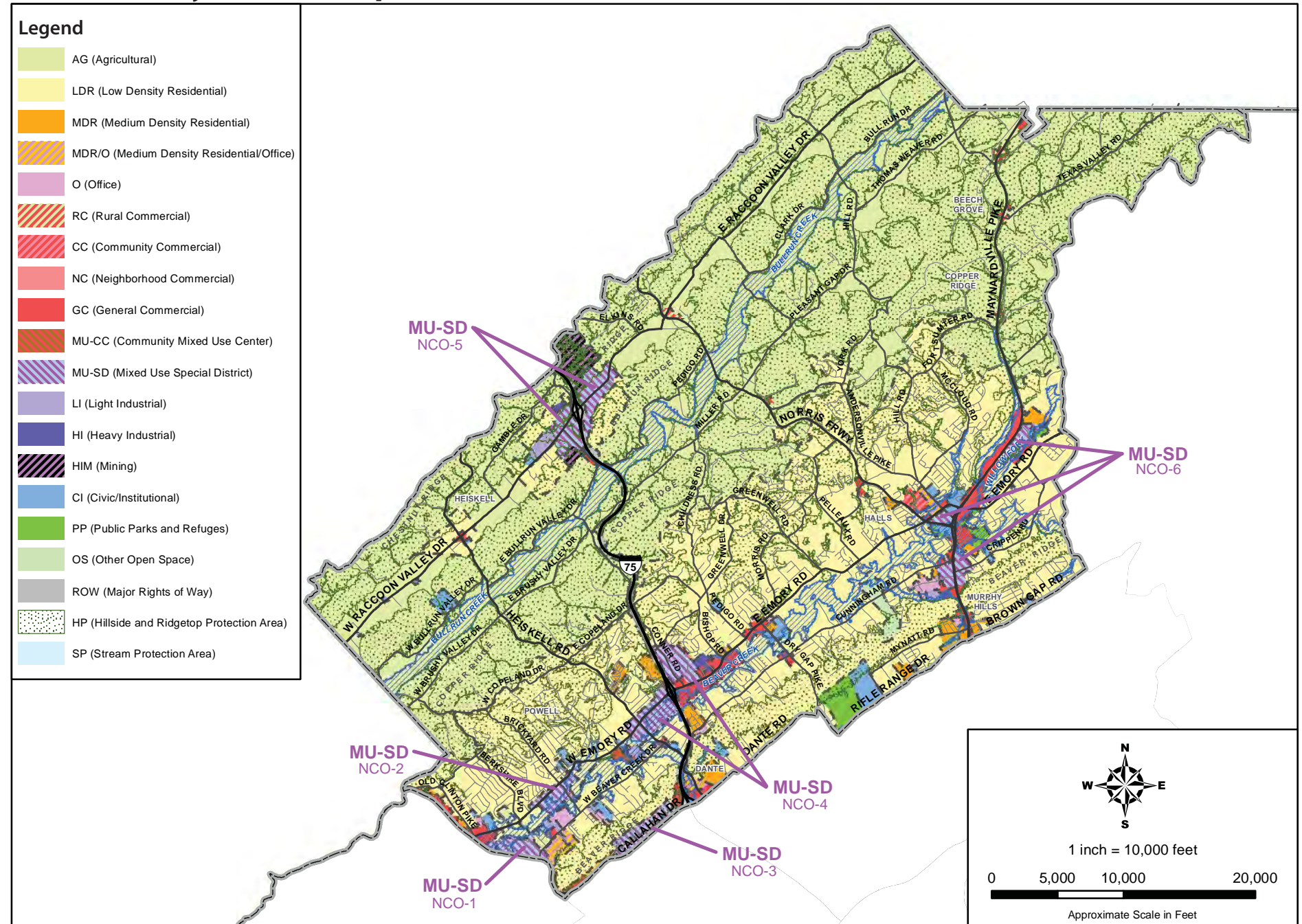
**Zoning Recommendations:** PC, CA, LI, PR (up to 12 D/U). A planned commercial zone for smaller lots should be created.



Vacant commercial property along Clinton Highway that can be reused or redeveloped into a variety of uses.



## North County Sector: Proposed Land Use Plan



## NCO-2:

### Historic Powell Center

This area will likely experience a significant drop in thru-traffic with the completion of the Powell Drive. However, because it is quite pedestrian-oriented now, the businesses and community can build upon its assets – three schools, historic buildings, and neighbor oriented-commercial uses – in reinforcing historic Powell vitality.

**Recommended Uses:** The center should be created to include mixed use development, allowing low and medium density residential with respect to the variety of public facilities that exist in the area, namely the three schools, the parks and greenway, pedestrian-oriented commercial uses. A mix of pedestrian-oriented commercial uses and vertical mixed uses should be allowed (for instance, apartments or office space above a shop). The sidewalk and greenway systems should be further developed to connect existing and future neighborhoods to Powell Center, especially along Brickyard Road, Beaver Creek Road, and the remnant sections of Emory Road (with the completion of the new extension).

**Recommended Programs:** (1) work with area stakeholders to develop a “vision plan” to establish the commercial land use relationships, explore options for “small town,” vertical mixed use and new housing, and expand the bicycle/pedestrian network. Responsibility: a consultant working in conjunction with Knox County, MPC and area residents; and (2) revisions to zoning to realize the Historic Powell concepts.

**Zoning Recommendations:** In the interim before the programs are developed, the appropriate zoning includes NC, PC and PR (conditioned by the residential development standards of the TC zoning district).



*Small commercial shopping centers with a meandering greenway along Emory Road*

## NCO-3:

### Callahan Road Mixed Use District

In 2001 a corridor plan was developed for Callahan Drive and Schaad Road. It makes recommendations for land use, road improvements, access control, landscaping, slope protection and other design controls. The only recommendation that was realized from the plan was the land use changes to the sector plan. Many of the recommendations are still applicable and should be pursued.

**Recommended Uses:** This area currently has low density residential, office, retail, warehousing, light industrial and hotels, but the zoning is predominantly commercial with some light industrial. This plan only makes recommendations for the north side of Callahan Road, but the south side should be updated to align with this plan.

Medium density residential, office and commercial structures built in the Hillside and Ridgeway Protection Area (HRPA) should have building footprints as recommended in the *Knoxville-Knox County Hillside and Ridgeway Protection Plan* (HRPP). Clearing and grading in the HRPA should be limited to slopes less than 25 percent and restoration and reforestation of the cut-and-fill areas should be accomplished according to HRPP policies.

**Zoning Recommendations:** Planned zones should be used in its development. The appropriate zoning in regard to these concepts is: City: PC-1, O-1, O-3, C-3, C-4, C-6, I-2; County: PC, OA, OB, CA, CB, LI

## NCO-4:

### Emory Road/I-75 Mixed Use District

The greater Emory Road area surrounding the I-75 interchange has experienced a lot of commercial and medical related development over the last decade. This is perceived to continue with the installation of roads and utility infrastructure around the medical center and the development of Powell Drive (the Emory Road realignment through Powell).

**Recommended Uses:** Northeast of the interchange, the primary use is the Tennova North Knoxville Medical Center. The surrounding uses are medical offices, restaurants, retail and hotels. The medical-related uses will continue to expand as clinics and offices congregate



*Large vacant property, located at the I-75/Emory Road interchange, where a majority of the property is within the Beaver Creek floodplain.*

near the hospital. This area also appears to be a good location for medium density residential, which could be apartments or senior housing.

West of the interchange, the uses include small convenience stores and offices, banks, a hotel and a warehouse, with a few single family houses. The area is relatively underdeveloped, with room for more intensity. Offices (medical and professional), retail, hotels and medium density residential would be appropriate for this area. On the south side of Emory Road, the Beaver Creek floodplain is a development constraint that needs to be considered during rezoning and development plan review. A planned development district should be used when a property is within the Beaver Creek 100-year floodplain.

**Zoning Recommendations:** City: RP-1 (up to 12 DU/acre), O-1, O-3, PC-1; County: RA, PR, OB, CA, PC

## NCO-5:

### I-75/Raccoon Valley Industrial & Commercial Center

This area at the far northern edge of Knox County has largely been used for various mining, warehouse/distribution, trucking-related and interstate-oriented commercial uses. Much of the land is zoned for industrial or commercial uses. Several properties are undeveloped or underutilized. For example, the tract to the southeast of the interchange, which was platted and laid out for business purposes about twenty years ago, remains undeveloped.

**Recommended Uses:** The area, which contains about 400 acres, could be more intensively developed, especially for warehousing/distribution uses and light industrial purposes. While this could happen independently with





Large vacant property at the I-75/Raccoon Valley interchange could be developed for commercial, light industrial or warehousing uses.

the multiple landowners, the Development Corporation of Knox County should evaluate the potential for more unified, intense development. The creation of a master plan for the area should also be considered.

That master plan should address:

- The capacity of the land for various industrial and warehouse distribution uses and the utility needs to support that development (currently not all the land is served by wastewater service)
- Provisions for wastewater and other utility improvements
- Layout of new roads and access points for more intense uses
- Standards for various elements of design and development (for example, lighting, signs, and landscaping).

**Zoning Recommendations:** A planned zone is recommended so that coordinated site planning can be achieved through review of development plans. Existing commercial and industrial zoning: I, LI, and CA. Appropriate new zoning: EC and PC.



Black Oak Shopping Center is a potential candidate for more intensive use.

## NCO-6: Halls Mixed Use Districts

Even before the 2008 economic “slow-down,” the amount of vacant commercial buildings in this area was pronounced. The vacancies include six retail bays with approximately 10,000 square feet of Black Oak Shopping Center and the land that is now available where the 50,000 square-foot Kroger used to be located. The other significant reuse and redevelopment opportunity is Crossroads Shopping Center, the site of old Walmart where there is about 140,000 square feet of vacant space. That includes the former Walmart and five other addresses. In addition to the vacancies, the shopping centers have extensive amounts of parking that could offer additional space for reuse.

In 2012-13, the new intersections of Emory Road, Norris Freeway and Maynardville Highway will be in place, improving traffic flow in this area, placing this general area at an advantageous position for revitalization. While the present zoning is largely for commercial uses, the area is arguably over built and over-zoned for retail purposes.

Finally, some undeveloped commercially zoned sites may be better suited now for mixed use development, particularly with an upturn in the economy and the substantial inventory of underutilized commercial buildings and sites in this sector.

**Recommended Program:** Rather than concentrating solely on commercial uses, the proposed land use designation would allow a mix of retail, residential, and office uses, including vertical mixed use. Sidewalks should be created with mixed use development.

**Zoning Recommendations:** Planned zones should be used in its development. The appropriate zoning in regard to these concepts is: OA, PC, PR, and TC.

Table 12. North County Sector Mixed Use District Design Principles

*Mixed use districts allow for flexibility in the types of uses that can be developed within a defined area. With this flexibility comes the need to create a harmonious environment where different uses fit comfortably within individual developments and are compatible in design with other buildings in the district. In addition, sensitive environmental resources should be protected against adverse consequences from adjacent development. The following design principles should be considered during development plan review and approval:*

**Low impact development techniques**, as described in the City and County stormwater manuals, should be incorporated into site plans.

**Greenway easements** along Beaver Creek should be obtained as development is approved.

**Signs** for shopping centers, or other planned developments, should be developed in accordance with a master sign plan including consolidated sign boards for less visual clutter.

**Exterior lighting** should be directed away from adjoining properties and all lighting fixtures should be either full cut-off luminaires, or directionally shielded fixtures.

The **architectural design** of structures within a common development should be complimentary in terms of building materials, colors, roofing and window design.

Means to **reduce impervious parking surfaces** should be sought, including shared parking, pervious parking, bio-swales and limiting the number of parking spaces.

**Parking lot landscaping** should require 1 shade tree for every 10 parking stalls, with trees distributed in islands and planting strips throughout the parking lot.

**Front and side yard landscaping** should be provided, including a mix of native medium and large maturing trees.

## Community Facilities Plan

This portion of the plan is directed to future parks, school improvements and other public facilities that are needed for community growth. These facilities should be provided in a prudent manner in relation to the conservation of scenic, historic, and environmental assets.

### Parks, Greenways and Recreation Facilities

The greatest need in North Knox County is to continue to make connections in the greenway trail system along Beaver Creek. That feature with its broad floodplain can truly be the spine that connects the schools, parks and libraries together. Neighborhood park acquisition within walking distance of all neighborhoods should also be a priority in this rapidly growing sector.

#### Recommendations: Park Acquisition

- **Neighborhood Parks** – Acquire space for new neighborhood parks (5 to 10 acres each) in the general vicinity indicated on the plan map: Bell Campground Road, Greenwell Road, Copeland Road, McCloud Road, Pelleaux and Alan Branch.
- **Copper Ridge Park and Natural Area** – Protect the natural resources of portions of Bull Run and Copper Ridges and the Bull Run floodplain with open space and recreation areas. Recommend acquiring 50 or more acres for a district park that will serve active and passive recreation needs.
- **Powell Community Park** – Acquire 20 or more acres for a community serving park between the high school and the library that could connect with the proposed greenway.
- **Riggs Park** – Expand the Mayo Conservation area with neighborhood-oriented park.
- **Tommy Schumpert Park Expansion** – As suburban development increases in what was once a rural area, it could prove to be problematic to continue rifle range use. If the rifle range closes, this plan recommends conducting an environmental impact study of the site and creating a master plan for appropriate uses that could be added to an expanded park.

#### Recommendations:

### Greenways and Greenway Connectors

- **Bull Run Creek Greenway** – Preserve the environmental resources and lands along the creek.
- **Beaver Creek and Knob Fork Greenways** – Acquire land and easements to create greenways that would run through the Halls, Powell and Karns communities. These greenways could connect to the existing Halls and Powell Greenways and connect to several schools and parks.
- **Willow Fork Greenway** – This greenway would connect to the existing Halls Greenway and provide a trail to Willow Creek Park and to the Gibbs community.
- **Greenway Connectors** – Central Avenue Pike, Clinton Highway, Conner Road, Maynardville Highway, Raccoon Valley Road, Brushy Valley Drive, and Norris Freeway (all within the County's Planned Growth Area) are the most significant roads that should be improved to safely accommodate pedestrians and bicyclists.

#### Recommendation:

### Recreation Facility

- **North District Recreation Center** – Provide a recreation center and park space that will provide amenities for all ages and user types including both indoor and outdoor recreation. This center should be located along a major arterial such as Emory Road in the I-75 vicinity and should be geared toward serving 20,000-40,000 users.



Powell Middle School

## Schools and Libraries

The enrollment for schools located in the North County Sector has risen 10.2 percent from 1997 to 2009. Knox County built a new Brickey-McCloud Elementary School in 2001 and completed renovations/additions since the last sector plan update in 1998 to Halls Elementary and Powell Middle Schools. The Knox County School Board does not have any current plans to build new or expand existing schools within the district. Portable classrooms have been utilized to handle temporary classroom expansion as needed. The school system will be concentrating on facility maintenance programs, such as HVAC upgrades, for the foreseeable future.

There have been two new branch libraries built in the sector since the last sector plan update in 1998. With one facility each in Halls and Powell, they are well distributed to meet the needs of the sector for the foreseeable future.

### Law Enforcement and Fire Protection

The majority of this sector is outside of the city limits of Knoxville and therefore are served by the Knox County Sheriff's Office and Rural/Metro Fire Department. The areas within the City of Knoxville are served by the Knoxville Police Department and Knoxville Fire Department.

### Utilities and Utility Policy

Utility corporations, like Knoxville Utilities Board and Tennessee Valley Authority, are not under the jurisdiction of MPC or local governments. Each are chartered by the state and federal governments, which provide the corporations the means to meet their public utility obligations as long as they are in compliance with such provisions as environmental laws (like those of the U.S. Environmental Protection Agency). Cooperative agreements would be needed to develop policies for utility facility locations, such as a wastewater plant.

### Water Utilities

The Hallsdale-Powell Utility District is the water utility provider for the entire sector, with the exception of the areas within the city limits of Knoxville which are serviced by the Knoxville Utilities Board. Water is available to most properties in the sector but there are still properties



# North County Sector: Community Facilities Plan

## Legend

### Park and Greenway Proposals

#### Proposed Parks: General Vicinity

- Neighborhood Park
- Community Park
- District/Regional Park
- District Recreation Center

#### Proposed Parks: Specific Location

- Neighborhood Park
- Community Park
- District / Regional Park

#### Proposed Greenways and Blueways

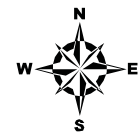
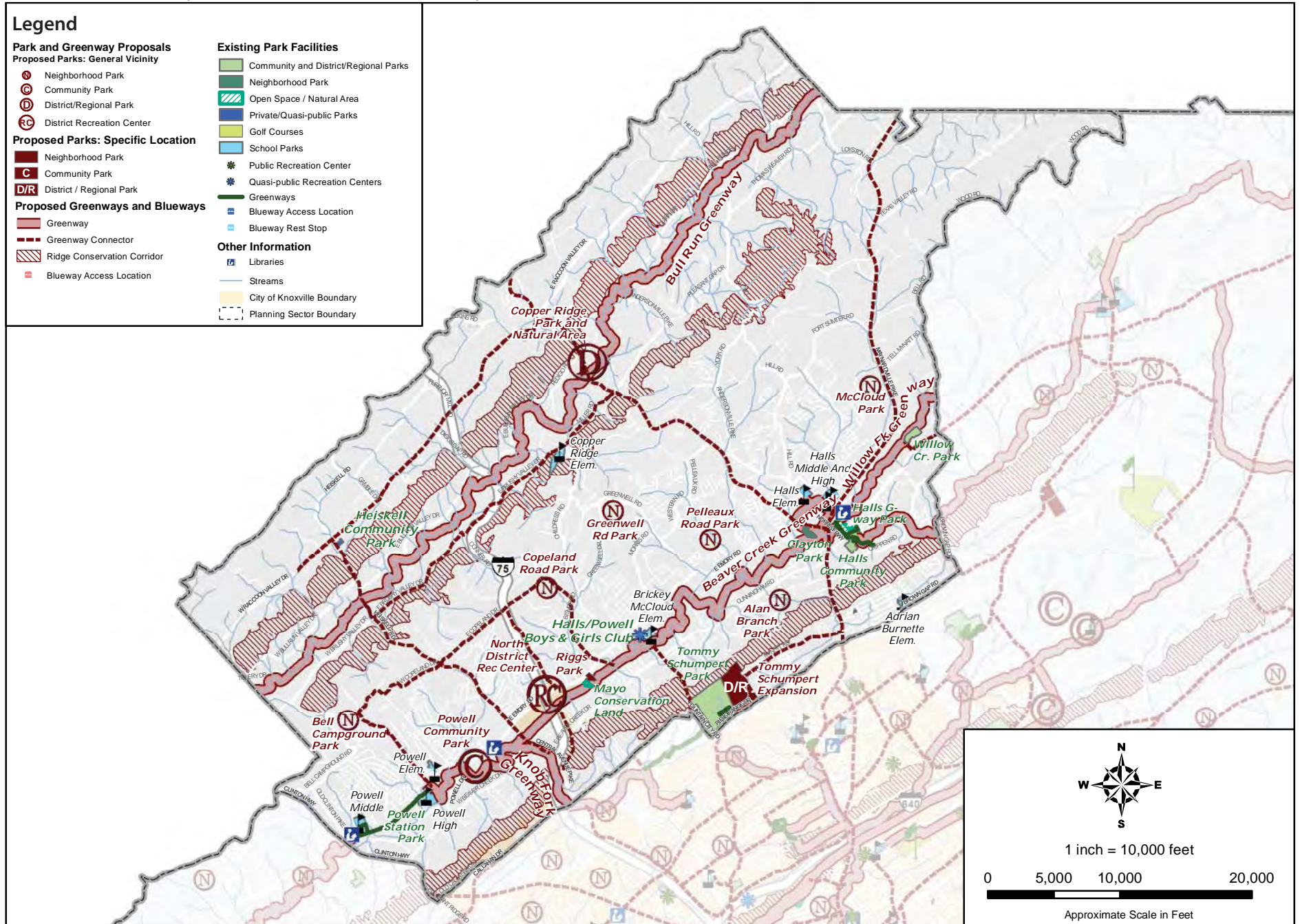
- Greenway
- Greenway Connector
- Ridge Conservation Corridor
- Blueway Access Location

### Existing Park Facilities

- Community and District/Regional Parks
- Neighborhood Park
- Open Space / Natural Area
- Private/Quasi-public Parks
- Golf Courses
- School Parks
- Public Recreation Center
- Quasi-public Recreation Centers
- Greenways
- Blueway Access Location
- Blueway Rest Stop

### Other Information

- Libraries
- Streams
- City of Knoxville Boundary
- Planning Sector Boundary



1 inch = 10,000 feet

0 5,000 10,000 20,000

Approximate Scale in Feet



served by private wells. The water service needs to continue to be expanded to fill in the gaps of coverage.

#### **Wastewater Utilities**

The Hallsdale-Powell Utility District is the wastewater utility provider for the entire sector, with the exception of the areas within the city limit of Knoxville which are serviced by the Knoxville Utilities Board. The existing wastewater infrastructure has been installed primarily in the Planned Growth Area, which is south of Copper Ridge in the Beaver Creek watershed. The wastewater infrastructure should not extend into the Rural Area as designated by the Growth Plan. Plans are being considered to expand the small wastewater plant near I-75 and Raccoon Valley Road.

#### **Electrical Utilities**

The Knoxville Utilities Board services the sector.

#### **Solid Waste Services**

The County's Solid Waste Department provides convenience centers in Powell and Halls within the unincorporated area. The centers provide an adequate level of service in comparison to other convenience centers in the county. The City of Knoxville handles solid waste collection within the city limits.



*Bullrun Creek: Stormwater policies are in place to protect the tree-lined banks.*

#### **Green Infrastructure Plan**

Green infrastructure is a planned and managed network in both the natural and built environment. These elements include:

- Natural resource areas, such as streams, wetlands and forests
- Parks and greenways
- Low-impact development techniques, such as pervious parking lots, bioswales and green roofs

A well-connected green infrastructure system has both environmental and economic benefits to communities. These benefits include clean air and water, increased property values, and healthier citizens.

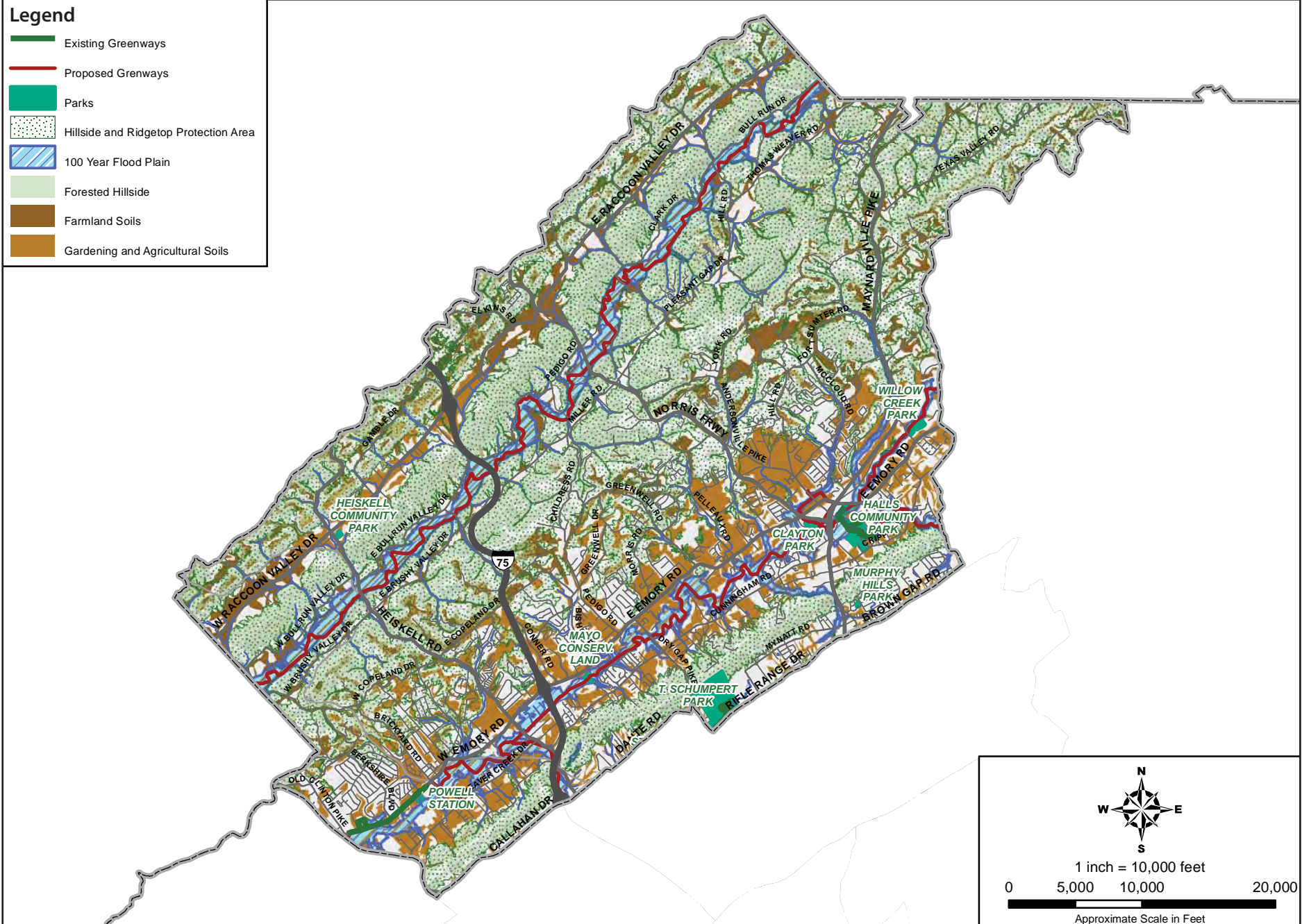
The Green Infrastructure Plan incorporates the components of the *Knoxville-Knox County Parks, Recreation and Greenways Plan*; Legacy Parks Foundation initiatives; the *Knoxville-Knox County Hillside and Ridgetop Protection Plan*; the Knox County and City of Knoxville Stormwater Ordinances; and the *Knoxville-Knox County Tree Conservation and Planting Plan*.

#### **Goals:**

- Connect residential areas to natural areas and community facilities such as schools and parks
- Balance development and conservation
- Foster more widespread use of development practices that reduce stormwater runoff and protect water quality



# North County Sector: Green Infrastructure Plan



## Existing Policies Related to Green Infrastructure

### Water Resources

**Floodways and Floodplains** – Structures are not allowed in the floodway zones for the city and county (F-1 and F). For streams with a designated 100-year floodplain, fifty percent of the floodplain can be filled. Development on wetlands and sinkholes is limited by the city and county stormwater ordinances.

**Stormwater Best Management Practices** – Such practices, including bio-retention areas, wetland enhancement and porous paving systems, are illustrated and discussed in the *Knox County Stormwater Management Manual, 2008* and the *City of Knoxville Best Management Practices Manual*.

### Hillsides and Ridgetops

The *Knoxville-Knox County Hillside and Ridgetop Protection Plan* contains development policies to encourage low density residential development on steeper slopes and recommends minimizing clearing and grading.

### Agricultural Areas

The *Growth Policy Plan* has a rural area designation to conserve agricultural resources. Additionally, under the *Tennessee Greenbelt Law*, farmers may elect to request a property tax reduction. Finally, Tennessee has a right-to-farm law, which allows farmers the opportunity to farm even though development may be encroaching nearby.

### Schools, Parks and Greenways

The *Knoxville-Knox County Park, Recreation and Greenways Plan* identifies existing and proposed greenways and parks. Proposed parks are generally located in areas that are currently underserved. The proposed greenways make connections to parks, schools, libraries and other points of interest. The *Knoxville-Knox County Minimum Subdivision Regulations* also allow MPC to consider dedication of up to 10 percent of the subdivision's acreage to education or park land.

### Streets and Highways

The *Knoxville-Knox County Tree Conservation and Planting Plan* recommends various transportation corridor strategies to designate scenic routes in rural settings and enhance arterials such as Maynardville Highway by creating public and private planting programs for roadside trees and parking lot landscaping.

## Future Implementation Strategies

- **Support initiatives to connect the green infrastructure assets along Beaver Creek** as a high priority. This could include public matching funds for acquisition and fostering private sponsorship to acquire easements and trail development.
- **Promote the conservation of farmland and the continuation of farming**, particularly within the Bullrun Valley, working with the U.S. Natural Resource Conservation Service's *Farm and Ranchland Protection Program*, allowing farmers to create a legacy of farming while being compensated for their development rights.
- Enable home owners and community groups to **identify the most productive soils for personal and community gardening**. The Green Infrastructure map shows that there are many areas within the planned growth area that have good agricultural soils; additional information can be secured through UT Extension Service and the U.S. Department of Agriculture (USDA).
- Work with the City and County Departments of Parks and Recreation and State of Tennessee to **pursue that portion of real estate transfer taxes dedicated to wetland and park purchases**.



A bio-swale and pervious pavement in parking stalls in an office parking lot to infiltrate stormwater.

- **Enact conservation subdivision regulations** to foster green infrastructure protection while allowing clustered residential development.
- As part of the new EPA regulations related to water quality, new city and county ordinances should include incentives to **encourage infiltration and allow for flexibility in design of stormwater management facilities** along streets, greenways, and on the grounds of schools and parks. This information should also be provided to private homeowners wishing to reduce their impact on their watershed. Demonstration projects by city and county stormwater divisions can be used as both test sites and teaching aids for property owners to learn about installation, benefits and costs for using green infrastructure best management practices.

One of the many farms in Bullrun Valley





## Transportation Plan

The transportation recommendations are based on previously adopted plans and studies, including the *Knoxville Regional Mobility Plan 2009 - 2034*, *Callahan Drive-Schaad Road Corridor Plan* (2001), and proposals from the *1998 North County Sector Plan*. The North County Sector portion of the Mobility Plan is presented in the Transportation Improvement Plan map. During the course of public meetings, changes were not suggested to the plan.

Prior to implementation of any proposed projects, there should be opportunities for additional public input to address issues of impacts related to adjacent land use, neighborhood protection, and environmental and cultural resource protection. These are principles that are important in developing a sustainable transportation system. It is vital to develop and maintain a transportation network that is accessible, provides mobility to all residents, and does not adversely impact the environment. To meet these goals this plan recommends several implementation tools such as complete streets and greenways (see Parks, Greenway and Community Facilities Plan map). The complete streets principles should guide all future roadway projects.

Additionally there are no general requirements to provide sidewalks with new development. The only exception is in school areas, where sidewalks may be required under the Parental Responsibility Zone (PRZ) with new subdivisions. The PRZ is a one-mile radius around elementary schools and 1.5-mile radius around middle and high schools where parents are responsible for providing transportation to and from school as these zones are not serviced by school buses. As a result, these areas should be targeted for sidewalk creation or improvement (see Transportation Improvement Plan map).

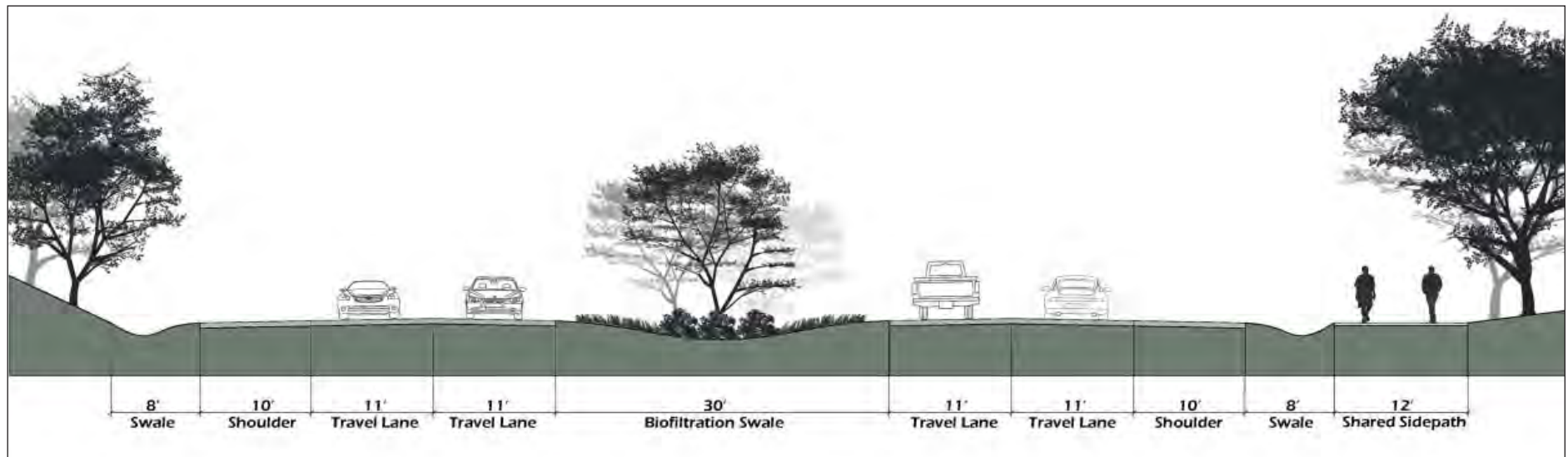


## Complete Streets

Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities are able to safely move along and across a complete street.

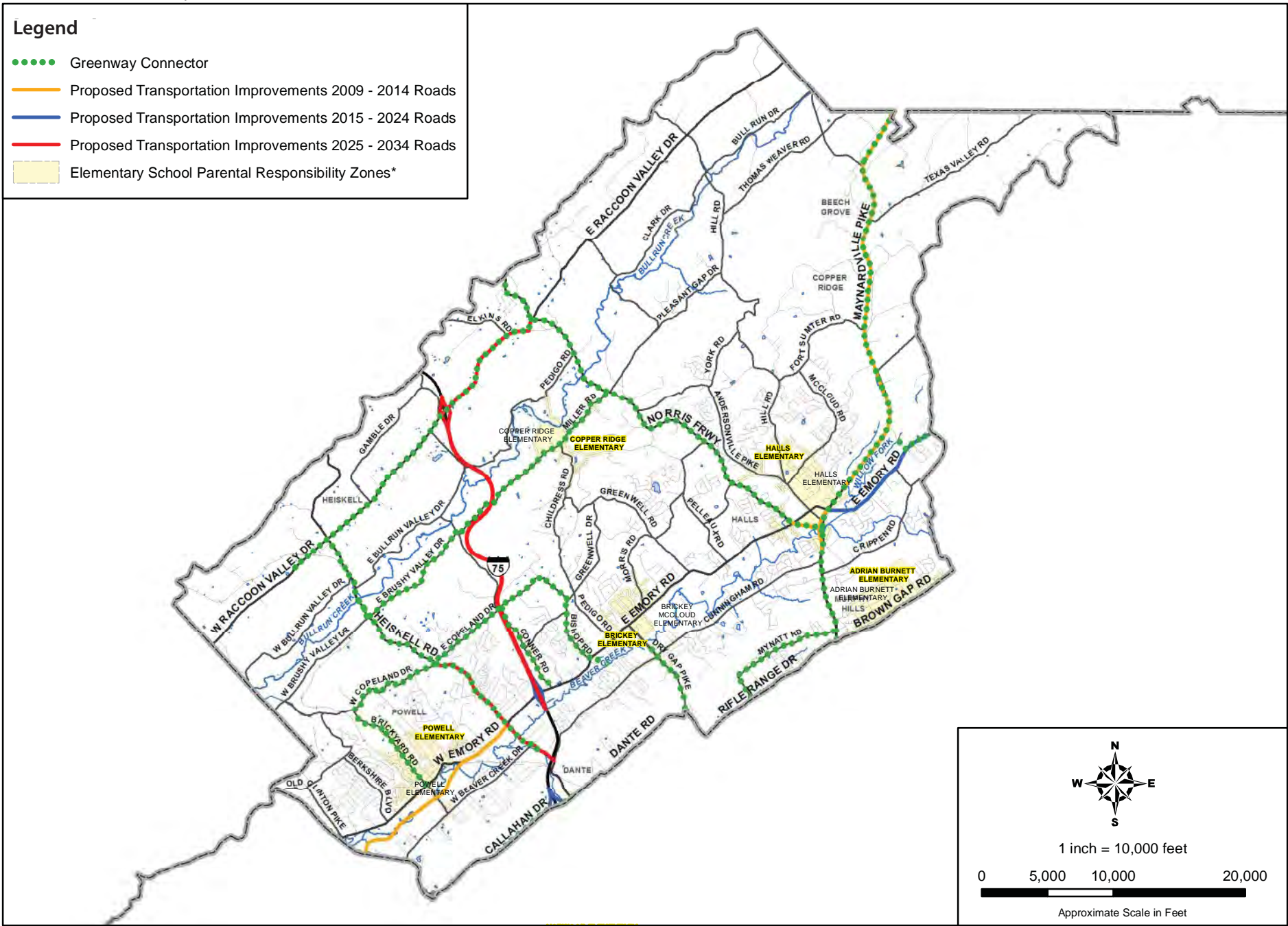
The greenway connectors, sidewalks, sidepaths and bicycle lanes form types of complete streets. Future bicycle and pedestrian systems, as represented in the Knoxville – Knox County Parks, Greenway and Community Facilities Plan, could be implemented to bring a more complete street approach to the sector. As roads are improved, those bicycle and pedestrian systems should be constructed.

*Construction of Powell Drive is a realignment and widening of Emory Road from Clinton Highway to Gill Road (near the Powell Library).*



*This complete streets example is of a rural highway that incorporates a shared sidepath for bicyclists and pedestrians. It also illustrates how green infrastructure can be incorporated with a biofiltration swale in the median and grassy swales on the side of the road to reduce and clean stormwater runoff.*

# North County Sector: Transportation Plan





## Section 3:

# Five- and Fifteen-Year Improvement Plan

The Improvement Plan recommends projects and programs to be implemented for the first five and the next ten years following plan adoption. The 5-Year Plan should be reviewed annually in preparing capital improvement programs.

<i>Project or Program</i>	<i>5-Year</i>	<i>15-Year</i>	<i>Responsible Agency</i>
<b>LAND USE</b>			
Develop a form-based code or design guidelines for three Special Districts: Clinton Highway/Powell Drive Mixed Use District , Historic Powell Center, and Emory Road//I-75 Mised Use District.	X		City/County/MPC
Adopt new off-street parking regulations, enabling a choice in how much parking must be provided, assisting in further development of older shopping centers..	X		City/County/MPC
<b>COMMUNITY FACILITIES</b>			
Complete the Halls Greenway (Halls Community Park to Clayton Park)	X		County
Complete the Halls Greenway (Clayton Park to the Halls schools)	X		County
Complete the Beaver Creek Greenway (Halls Community Park to Brickey-McCloud Elementary School)	X		County
Complete the Beaver Creek Greenway (Powell Library to Powell Greenway)	X		County
Complete the Beaver Creek Greenway (Brickey-McCloud Elementary School to Powell Library)		X	City/County
Copper Ridge Park and Natural Area: Acquire 50 to 100 acres in the Bull Run floodplain and along nearby ridges		X	County
Beaver Creek neighborhood and community parks: Acquire at least two new parks as the greenway is extended		X	County
Neighborhood parks, north of Emory Road: Acquire at least two sites for the proposed parks in the sector plan		X	County
<b>TRANSPORTATION</b>			
Build New Sidewalks: <ul style="list-style-type: none"> <li>Sidewalks should be added when new development or redevelopment occurs</li> <li>E. Emory Road from Maynardville Pike to Norris Freeway</li> <li>Brickyard Road from W. Emory Road to W. Beaver Creek Road</li> <li>W. Emory Road from Gill Road to Camden Road</li> </ul>	X	X	City/County/TDOT
Implement the Emory Road at Andersonville Pike intersection improvements	X		County
Complete Powell Drive (new alignment for Emory Road)	X		County/TDOT
Implement the Maynardville Pike widening from Emory Road to Union County	X		County/TDOT
Implement improvements in the I-75/Callahan Road interchange	X		City/County/TDOT
Implement the Halls Connector improvements	X	X	City/County/TDOT
Implement improvements in the I-75/Emory Road interchange		X	





## APPENDIX A: Public Participation

MPC staff held five public meetings concerning the update of the North County Sector Plan. Public input was gathered by staff taking notes at these meetings, emails sent to staff, phone conversations and comment cards supplied at the meetings. The meetings summaries are presented in chronological order.

### First Round of Meetings

September 20, 2011 and September 26, 2011

- Rezone Clayton Park and the adjacent property that is currently in the Shopping Center Zone to a zone that reflects the current uses (example: Open Space Zone).
  - The commercially-zoned property next to Clayton Park should be incorporated in the park.
- Need a park near Copper Ridge Elementary School.
- Adrian Burnette Elementary School is in great need of a new facility.
- Keep open areas/park like spaces to maintain the tranquility and beauty of the area.
- Small county roads such as Hill Road and McCloud Road cannot carry the heavy traffic from multiple high density neighborhoods.
- Keep high density neighborhoods to a minimum.
- Redevelop existing vacant or underutilized commercial property before developing more new commercial.
  - Find ways to reutilize vacant shopping centers such as the old Walmart center and Bi-Lo center.
- Keep commercial development out of residential areas (example: the new Walmart on Norris Freeway).
- Keep some land for agriculture use. This is part of the beauty of our area.
- Preserve wetlands. The walking trail/wetland area below Halls Library are very nice.
- Density of approved subdivisions needs to be lower.

- The line of site for entrances to developments needs to be better.
- Use vacant commercial buildings for community or school uses.
- If there are new regulations on 15% slopes and greater, the property taxes for these properties should be lowered.
- Keep intense commercial development along Emory Road to the existing commercial nodes.
- Historic Powell needs to be addressed once the new Powell Drive is built and will divert traffic.
- Concern that cut through traffic will increase from I-75 to Clinton Highway once Powell Drive is completed.
- Keep intense development on Emory Road within the current boundaries, west of I-75 to Heiskell Road.
- As new developments are approved, roads need to be widened.
- Callahan Road interchange needs to be improved.
- Emory Road interchange needs to be improved.
- It is important to start making connections between existing greenways and parks as a means of alternative transportation.

### Second Round of Meetings

April 16, 2012 and April 30, 2012

- Add sidewalks on Emory Road from Norris Freeway to Maynardville Pike to connect Halls Middle and Halls High Schools to the new Clayton Park and the existing sidewalks on Emory Road.
- Add Clayton Park and the adjacent undeveloped commercial zoned property to the 5-year action plan for rezoning to a zone that is more appropriate to the current use.
- Add greenway on the Beaver Creek Fork from Clayton Park to Halls Elementary School.
- Extend the MU-NCo4 land use designation west from the Central Avenue/Heiskell Road intersection on the north and south sides of Emory Road, covering what is now the MDR designation.

- The Emory Road / I-75 interchange during PM peak has capacity issues that need to be addressed.
- Beaver Creek flooding is a problem that needs to be addressed west of I-75.
- Greenway along Beaver Creek should be a priority.

### Third Round of Meetings

June 19, 2012

- Improve Dry Gap Pike from Dante Road to Cunningham Road.
- Create a greenway for pedestrians and bicyclists from the North County Sector to downtown Knoxville, generally following the I-75 corridor.
- Do not extend Commercial uses west of the Heiskell/Central Avenue Pike intersection with Emory Road.
- The extension of Commercial uses west of the Heiskell/Central Avenue Pike intersection with Emory Road is appropriate as proposed.

## APPENDIX B: North County Sector Demographics

NORTH COUNTY SECTOR: RACE/ETHNICITY						
Race/Ethnicity	1990		2000		2005-2009*	
	North County	Knox County	North County	Knox County	North County	Knox County
White	32,182	301,788	41,611	336,204	46,578	369,431
Black or African American	89	29,299	290	33,069	727	37,586
Hispanic or Latino	38	1,935	203	4,431	1,115	9,899
Some other race	17	530	478	6,993	920	8,684
Asian	59	3,070	129	4,548	187	7,043
American Indian and Alaska Native	10	996	39	1,183	216	889
Native Hawaiian and Other Pacific Islander	34	66	10	35	0	22

NORTH COUNTY SECTOR: POVERTY STATUS						
Poverty Status	1990		2000		2005-2009*	
	North County	Knox County	North County	Knox County	North County	Knox County
Total population for whom poverty status is determined	32,311	323,827	41,992	369,911	48,168	410,374
Persons below poverty level	2,769	45,608	2816	46,572	4,140	60,187

NORTH COUNTY SECTOR: HOUSING OCCUPANCY AND TENURE						
Housing Occupancy and Tenure	1990		2000		2005-2009*	
	North County	Knox County	North County	Knox County	North County	Knox County
Total Units	12,521	143,582	17,497	171,439	19,856	192,729
Occupied	12,003	133,639	16,532	157,872	18,601	177,175
• Owner occupied	9,678	85,283	13,768	105,594	14,986	119,078
• Renter occupied	2,325	48,356	2764	52,278	3,615	58,097
Vacant	518	9,943	965	13,567	1,255	15,554

\*The data listed in this column are from the U.S. Census Bureau's *American Community Survey, 2005-2009*.

That survey is based on a sample of the population and the figures are composed from an average of all the sampled data for the five-year period.



## APPENDIX C: Land Use Classifications

AGRICULTURAL and RURAL RESIDENTIAL LAND USE CLASSIFICATIONS		
<b>Agricultural (AG) and Agricultural Conservation (AGC)</b> This includes farmland in the county's Rural Area as designated in the Growth Policy Plan. Undeveloped tracts with the best soils for agriculture are considered as the primary areas for agricultural conservation (AGC). Agricultural land uses are not generally recommended in the City of Knoxville, nor in the County's Planned Growth Area.		
<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>Farmland in the Rural Area as designated in the Growth Policy Plan</li> <li>Land where soils are designated as prime or locally important by the U.S. Department of Agriculture are considered for agricultural conservation (AGC)</li> </ul>	<b>Recommended Zoning and Programs:</b> County's Rural Area: A new zone AC (Agricultural Conservation) is proposed for Agricultural Conservation (AGC) areas, allowing agriculture and one dwelling unit per 30 acres, minimum. (Note: This density will require a change to the zoning ordinance.) Additionally, conservation easement and related programs should be considered to preserve prime farmland.	<b>Other Zoning to Consider:</b> A or PR @ densities of one dwelling unit per acre where dwellings are clustered in one portion of a subdivision.
<b>Rural Residential (RR)</b> Very low density residential and conservation/cluster housing subdivisions are typical land uses.		
<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>Rural areas characterized as forested (tree covered), especially on moderate and steep slopes</li> <li>Sites adjacent to agricultural areas (AG or AGC) where conservation/cluster housing subdivisions may be appropriate</li> </ul>	<b>Recommended Zoning and Programs:</b> County's Rural Area: OS, E, RR (Rural Residential, a new zone with densities of one dwelling unit per acre or less), or PR @ densities of one dwelling unit per acre where dwellings may be clustered in one portion of a subdivision	<b>Other Zoning to Consider:</b> A in the Growth Plan's Rural Area
RESIDENTIAL LAND USE CLASSIFICATIONS		
<b>Traditional Neighborhood Residential (TDR)</b> This land use is primarily residential and is characterized by neighborhoods where a mix of detached and attached houses, sidewalks, smaller lots and alleys have typically been or are to be created. Densities in the range of 4 to 8 dwelling units per acre are typical.		
<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>Neighborhoods like those in the 'Heart of Knoxville' where lots are typically less than 50 feet wide, and usually have sidewalks and alleys. This area is essentially the 19th and early 20th century grid street neighborhoods, mostly located within the I-640 beltway.</li> <li>City's Urban Growth Area or county's Planned Growth Areas where neighborhood or community mixed use development is identified (see Mixed Use and Special Districts section)</li> </ul>	<b>Recommended Zoning and Programs:</b> City: R-1A or RP-1 [with an Infill Housing (IH-1), Neighborhood Conservation (NC-1) or Historic (H-1) Overlay]; TND-1; and new residential zone(s), based on lot sizes less than 7,500 square feet  County's Planned Growth Area: PR and new TND zoning.	<b>Other Zoning to Consider:</b>  City: R-1, R-1A and RP-1 (without overlays), R-2  County's Planned Growth Area: RA, RB and PR (with conditions for sidewalks, common open spaces and alleys)

## RESIDENTIAL LAND USE CLASSIFICATIONS . . . continued

### Low Density Residential (LDR)

This type of land use is primarily residential in character at densities of less than 6 dwelling units per acre (dus/ac). Conventional post-1950 residential development (i.e. large-lot, low-density subdivisions) and attached condominiums are typical.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Land served by water and sewer utilities and collector roads</li> <li>• Slopes less than 25 percent</li> </ul>	<b>Recommended Zoning and Programs:</b> City: R-1, R-1E and RP-1 at less than 6 dus/ac and new residential zones based on lot sizes greater than 7,500 square feet and 75 feet or greater frontage. County's Planned Growth Area: RA, RAE and PR at less than 6 dus/ac.	<b>Other Zoning to Consider:</b> City: R-1A and A-1 County: A and RB
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### Medium Density Residential (MDR)

Such land uses are primarily residential at densities from 6 to 24 dwelling units per acre (city) and 6 to 12 (county). Attached houses, including townhouses and apartments are typical. Mobile home parks are another form of this land use.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• As transitional areas between commercial development and low density residential neighborhoods</li> <li>• On land with less than 15 percent slopes</li> <li>• Along corridors that are served by or proposed to be served by transit, with densities proposed to be above 12 dwelling units per acre and to be served by sidewalks</li> </ul>	<b>Recommended Zoning and Programs:</b> City: R-2, R-3 and R-4 (within the 'Heart of Knoxville' area such zoning should be accompanied by an IH-1, NC-1 or H-1 overlay); otherwise, R-1A, RP-1, RP-2 or RP-3. Densities above 12 dus/ac should be within ¼ mile of transit service with sidewalk connections to transit service. County's Planned Growth Area: PR, densities above 12 dus/ac should be within ¼ mile of transit service with sidewalk connections to transit service; RB at 6 or more dus/ac may be considered with use on review. (Note: This proposed 6 dus/ac threshold for use on review will require a zoning ordinance change.)	<b>Other Zoning to Consider:</b> City's Urban Growth Boundary: R-2, R-3 and R-4
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### High Density Residential (HDR)

This land use is primarily characterized by apartment development at densities greater than 24 dwelling units per acre.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• On major collector and arterial streets, adjacent to regional shopping and major office districts (office sites allowing four or more stories); these sites must be identified in sector or small area plans</li> <li>• Within the CBD or its adjacent areas, such as portions of the Morningside community</li> <li>• On relatively flat sites (slopes less than 10 percent)</li> <li>• Along corridors with transit and sidewalks</li> </ul>	<b>Recommended Zoning and Programs:</b> City: C-2, RP-2 and RP-3, and new form-based codes (e.g. South Waterfront). R-3 and R-4 (with an IH-1, NC-1 or H-1 overlay in the 'Heart of Knoxville' area)	<b>Other Zoning to Consider:</b> TC-1 and TC (where higher density residential is part or a mixed-use project)
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## RESIDENTIAL LAND USE CLASSIFICATIONS . . . continued

### Medium Density Residential/Office (MDR/O)

Office and medium residential uses typically have similar development characteristics: scale of buildings, areas devoted to parking, yard spaces and location requirements (on thoroughfares). In areas designated MU-MDR/O, either use can be created. These uses provide a buffer to low density residential areas, particularly when located adjacent to a thoroughfare or as a transition between commercial uses and a neighborhood.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> <li>See Medium Density Residential (MDR) criteria</li> </ul>	City: RP-1, RP-2, RP-3 County: PR	City: O-1, O-2 County: OB

## OFFICE and BUSINESS/TECHNOLOGY LAND USE CLASSIFICATIONS

### Office (O)

This land use includes business and professional offices and office parks.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> <li>Low intensity business and professional offices (less than three stories) may be transitional uses from commercial or industrial uses to neighborhoods</li> <li>Generally level sites (slopes less than 15 percent)</li> <li>Access to major collector or arterial streets, particularly within one-quarter mile of such thoroughfares</li> <li>Highest intensity office uses (development that is four or more stories), should be located in close proximity to arterial/freeway interchanges or be served by transit</li> </ul>	City: O-1, O-2, O-3, or a new office zone that requires site plan review  County's Planned Growth Area: OA, OC, PC (with covenants) or a new office park zone that requires site plan review	In areas that are identified in sector plans exclusively as office land uses, OB.

### Technology Park (TP)

This land use primarily includes offices and research and development facilities. The target area for such development has been the Pellissippi Technology Corridor. Additional districts could be created in other areas of the city or county. The development standards that are adopted by the Tennessee Technology Corridor Development Authority should be used for such districts.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> <li>Within the Technology Corridor or subsequent areas designated for Technology Park development</li> <li>Sites near freeway interchanges or along major arterials</li> <li>Water, sewer and natural gas utilities available</li> </ul>	City: BP-1  County's Planned Growth Area: BP and PC (with covenants limiting uses to research/development)	EC (with limitations to require office and research/development uses)

## RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS

### Rural Commercial (RC)

This classification includes retail and service-oriented commercial uses intended to provide rural communities with goods and services that meet day-to-day and agricultural-related needs.

Location Criteria:	Recommended Zoning and Programs:	Other Zoning to Consider:
<ul style="list-style-type: none"> <li>At the intersection of two thoroughfares (arterial or collector roads)</li> <li>Rural commercial nodes should generally not exceed more than 300 feet in depth and lots and not extend more than 300 feet away from the intersection</li> </ul>	County's Rural Area: CR PC as provided in Growth Policy Plan	CN

RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS . . . continued

**Neighborhood Commercial (NC)**

This classification includes retail and service-oriented commercial uses intended to provide goods and services that serve the day-to-day needs of households, within a walking or short driving distance. Neighborhood commercial uses may also be accommodated within neighborhood centers (see Mixed Use and Special Districts).

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Generally located at intersections of collectors or arterial streets at the edge of or central to a neighborhood</li> <li>• New NC should not be zoned for or developed within ½ mile of existing commercial that features sales of day-to-day goods and services</li> <li>• Automobile-oriented uses (e.g. gas stations or convenience stores) should be located on arterial street at the edge of neighborhood</li> <li>• Should not exceed the depth of the nearby residential lots and not extend more than a block (typically no more than 300 feet) away from the intersection</li> </ul>	<b>Recommended Zoning and Programs:</b> City: C-1 County's Planned Growth Area: CN	<b>Other Zoning to Consider:</b> SC-1
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**Community Commercial (CC)**

This land use includes retail and service-oriented development, including shops, restaurants, and what has come to be known as "big box" retail stores; typical service area includes 20,000 to 30,000 residents. Community commercial uses may also be considered within community centers (see Mixed Use and Special Districts).

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Locate at intersection of arterial streets</li> <li>• Sites should be relatively flat (under 10 percent slope) and with enough depth to support shopping center and ancillary development.</li> <li>• Vehicular and pedestrian connections should be accommodated between different components of the district (e.g. between stores, parking areas and out-parcel development)</li> <li>• Infrastructure should include adequate water and sewer services, and major arterial highway access</li> <li>• Community commercial centers should be distributed across the city and county in accordance with recommended standards of the Urban Land Institute</li> </ul>	<b>Recommended Zoning and Programs:</b> Because of traffic and lighting impacts (potential glare) and buffering needs of surrounding interests, 'planned zones' should be used.  City: SC-2, PC-1 and PC-2.  County's Planned Growth Boundary: PC or SC	<b>Other Zoning to Consider:</b> As infill development within areas already zoned C-3, C-4, C-5 and C-6 (City), and CA, CB and T (County)
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## RETAIL and RELATED SERVICES LAND USE CLASSIFICATIONS . . . continued

### Regional Commercial (RS)

This land use includes retail and service-oriented development that meets the needs of residents across Knox County and surrounding areas. Development typically exceeds 400,000 square feet; malls have been a typical form and 'life-style centers' (e.g. Turkey Creek) are examples of regional-oriented commercial uses. Regional commercial uses may also be considered in Regional Centers (see Mixed Use and Special Districts).

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Flat sites (under 10 percent slope)</li> <li>• Locate near interstate interchanges with major arterial highway access</li> <li>• Water, sewer, gas and stormwater systems should be capable of handling the development</li> <li>• Vehicular and pedestrian connections should be accommodated between components of the development</li> </ul>	<b>Recommended Zoning and Programs:</b> Because of the magnitude of the traffic and environmental impacts, planned zones should be used.  City: SC-3, PC-1 and PC-2  County's Planned Growth Boundary: PC	<b>Other Zoning to Consider:</b> As infill development within areas already zoned C-3, C-4, C-5 in the City CA, CB and SC in the County
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### General Commercial (GC)

This category includes previously developed strip commercial corridors providing a wide range of retail and service-oriented uses. Such land use classification and related zoning should not be extended because of the adverse effects on traffic-carrying capacity, safety and environmental impacts. Redevelopment of commercial corridors, including mixed use development, should be accommodated under planned or design-oriented zones.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Existing commercial areas</li> </ul>	<b>Recommended Zoning and Programs:</b> City: C-6 and PC-1 County's Planned Growth Area: PC New corridor design overlays when designated as special districts (see Mixed Use and Special Districts)	C-3, C-4, C-5, SC-1, SC, CA and CB for infill commercial development in areas previously zoned for commercial uses
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## MIXED USE and SPECIAL DISTRICTS

There are several types of mixed-use areas: neighborhood, community and regionally-scaled districts and urban corridors. Mixed Use areas can be developed with higher intensity uses because of infrastructure and ability to sustain alternative modes of transportation. Development plan review is crucial. These areas should typically be created with sidewalks. Shared parking may be considered. Automobile and truck-dependent uses, such as heavy industrial, distribution and highway-oriented commercial uses should not be located in neighborhood, community and regional mixed-use centers. There are likely to be several distinctions between types of mixed use designations. Each Sector Plan and the One Year Plan will have a separate section which outlines the intent of each mixed use district and the development criteria for the district.

### 1. Neighborhood Mixed Use Center (MU-NC)

These are the least intense of the proposed mixed use districts. Residential densities of 5 to 12 dus/ac are appropriate within the area. Locations at the intersection of a local street and thoroughfare are generally most appropriate. The surrounding land uses should primarily be planned for low or medium density residential. The buildings of these centers should be designed with a residential character and scale to serve as a complement to the surrounding neighborhoods.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Flat terrain (slopes generally less than 10 percent)</li> <li>• Currently served by or planned to be served by sidewalks</li> <li>• The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/ distribution uses unless the proposal calls for a redevelopment of such areas</li> <li>• At the intersection of a local street and throughfare</li> <li>• Next to low or medium density residential</li> </ul>	<b>Recommended Zoning and Programs:</b> TND-1	<b>Other Zoning to Consider:</b> Other form- or design-based codes
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## 2. Community Mixed Use Center (MU-CC)

These centers are envisioned to be developed at a moderate intensity with a variety of housing types (8 to 24 dus/ac). The core of the district, with its predominant commercial and office uses, should be within ¼ mile of the higher intensity residential uses (such as townhouses and apartments). The district should be located within a ¼-mile radius of an intersection of the thoroughfare system (a collector/arterial or arterial/arterial intersection). In addition to sidewalks, the district should be served by transit. Redevelopment of vacant or largely vacant shopping centers are considerations for these centers.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Flat terrain (slopes generally less than 10 percent)</li> <li>• Areas currently served by or planned to be served by sidewalks</li> <li>• The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/distribution uses unless the proposal calls for a redevelopment of such areas</li> <li>• Within a ¼-mile radius of an intersection of the thoroughfare system (a collector/arterial or arterial/arterial intersection)</li> <li>• Commercial/office core should be within ¼ mile of the higher intensity residential uses (e.g. townhouses and apartments)</li> <li>• Areas currently served by or planned to be served by sidewalks and transit services</li> </ul>	<b>Recommended Zoning and Programs:</b> TC-1, TC	<b>Other Zoning to Consider:</b> Other form- or design-based codes
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## 3. Regional Mixed Use Center (MU-RC)

These are envisioned to be highest intensity mixed use centers. These districts should be served by sidewalk and transit systems and be located on a major arterial, adjacent to an Interstate highway or adjacent to downtown. Housing densities in the core of such districts can be 24 or more dus/ac. Downtown Knoxville's Central Business District is a regional mixed use center.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Flat terrain (slopes generally less than 10 percent)</li> <li>• Currently served by or planned to be served by sidewalks</li> <li>• The location does not include auto and truck-oriented uses such as industrial, strip commercial and warehouse/distribution uses unless the proposal calls for a redevelopment of such areas</li> <li>• On a major arterial, adjacent to an interstate highway or adjacent to downtown</li> </ul>	<b>Recommended Zoning and Programs:</b> C-2 in the Central Business District (Downtown); an adaptation of C-2 for the 'Downtown North' area (Central City Sector); TC-1, TC or new form-based codes (and regulating plans) for other community and regional centers	<b>Other Zoning to Consider:</b> Other form- or design-based codes
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## 4. Urban Corridor Mixed Use (MU-UC)

Several street corridors within the city have potential for redevelopment with a mix of retail, restaurants, office and residential uses. Commercial cores should be created at points (nodes) along these corridors, allowing a vertical mix of uses (for example, shops at ground level and apartments above); such nodes should not be more than four blocks long.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Corridors should have sidewalks, transit services, street trees and related beautification</li> <li>• Capable of sustaining on-street parking along corridor or along side streets</li> </ul>	<b>Recommended Zoning and Programs:</b> City: form-based or design-based codes (e.g. South Waterfront)
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**MIXED USE and SPECIAL DISTRICTS . . . continued**

**5. Special Mixed Use District (MU with reference number)**

These can include designations to address urban design, pedestrian and transit-oriented development and vertical mixed use in designated areas. The areas may include older portions of the city or county where redevelopment and/or preservation programs are needed for revitalization purposes.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Case-by-case analysis is recommended</li> </ul>	<b>Recommended Zoning and Programs:</b> TND-1, TC-1, TC, especially in greenfield areas, or form-based or designed-based codes as noted in the Sector Plan and One Year Plan for each of these districts.
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**6. Special Corridors (CD with reference number)**

These can include designations to address urban design and environmental concerns along commercial or industrial corridors (where overlays for aesthetic reasons or sidewalks may be recommended, like the Chapman Highway corridor). Other potential corridor designation could include rural/farmland conservation areas.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Case-by-case analysis is recommended</li> </ul>	<b>Recommended Zoning and Programs:</b> Should be noted in the Sector Plan and One Year Plan for each of these districts.
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**INDUSTRIAL AND WAREHOUSE/DISTRIBUTION LAND USE CLASSIFICATIONS**

**Light and Heavy Industrial (LI and HI) and Mining (HIM)**

These classifications are typically used to identify older industrial areas, which were intended for manufacturing, assembling, warehousing and distribution of goods. Light industrial uses include such manufacturing as assembly of electronic goods and packaging of beverage or food products. Heavy industrial uses include such processes used in the production of steel, automobiles, chemicals, cement, and animal by-products and are viewed as clearly not compatible with areas designated for residential, institutional, office and retail uses. Quarry operations and asphalt plants are a particular form of heavy industrial, generally located in rural areas.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Existing industrial areas</li> <li>• Within one mile of an interstate interchange with access via standard major collector or arterial streets</li> </ul>	<b>Recommended Zoning and Programs:</b> <b>City:</b> I-1, I-2, I-3 and I-4 (infill development, using those zones, may be appropriate); C-6, PC-2 and a new planned, industrial zone, that requires site plan review, may be warranted to address environmental and transportation issues and surrounding community concerns. <b>County's Planned Growth Boundary:</b> LI; EC zone should be used in future development	<b>Other Zoning to Consider:</b>  <b>County:</b> I (Industrial) zoning should be used in cases involving rezonings to accommodate mining activities and should be accompanied by buffering and other conditions to protect adjacent property owner. PC, LI, I and CB may be considered for infill industrial development.
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**Business Park (BP) Type 1**

Primary uses are light manufacturing, office and regionally-oriented warehouse/distribution services in which tractor-trailer transportation is to be a substantial portion of the operations. A zoning category which requires site plan review is expected in the development or redevelopment of such areas. Site plans shall address landscaping, lighting, signs, drainage, and other concerns that are raised in the rezoning process. Substantial landscaped buffers are expected between uses of lesser intensity, particularly residential, office and agricultural uses.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Relatively flat sites (predominant slopes less than 6 percent) out of floodplains</li> <li>• Relatively large sites (generally over 100 acres)</li> <li>• Away from low and medium density areas or where truck traffic would have to go through such areas</li> <li>• Areas with freeway and arterial highway access (generally within two miles of an interchange)</li> <li>• Rail access is a consideration</li> <li>• Can be served with sanitary sewer, water and natural gas</li> </ul>	<b>Recommended Zoning and Programs:</b>  <b>City:</b> I-1, C-6, PC-2 or a new Planned Industrial Park zone  <b>County's Planned Growth and Rural Areas:</b> EC	<b>Other Zoning to Consider:</b> PC
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## INDUSTRIAL AND WAREHOUSE/DISTRIBUTION LAND USE CLASSIFICATIONS . . . continued

### **Business Park (BP) Type 2:**

Primary uses are light manufacturing, offices, and locally-oriented warehouse/distribution services. Retail and restaurant services, which are developed primarily to serve tenants and visitors to the business park can be considered. A zoning category which requires site plan review is expected in the development or redevelopment of such areas. Site plans must include provisions for landscaping, lighting and signs. Substantial landscaped buffers are necessary between uses of lesser intensity, particularly residential, office and agricultural uses.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Relatively flat sites (predominant slopes less than 6 percent) out of floodplains</li> <li>• Relatively large sites (generally over 100 acres)</li> <li>• Away from low and medium density areas or where truck traffic would have to go through such areas</li> <li>• Freeway and arterial highway access (generally within two miles of an interchange)</li> <li>• Rail access is a consideration</li> <li>• Sites that can be served with sanitary sewer, water and natural gas</li> </ul>	<b>Recommended Zoning and Programs:</b> <b>City:</b> I-1, C-6, PC-2 or a new Planned Industrial Park zone  <b>County's Planned Growth and Rural Areas:</b> EC	<b>Other Zoning to Consider:</b> PC
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## PARK, PUBLIC INSTITUTIONAL, OTHER OPEN SPACE & ENVIRONMENTAL PROTECTION LAND USE CLASSIFICATIONS

### **Public Parks and Refuges (PP)**

This land use classification contains existing parks, wildlife refuges or similar public or quasi-public parks, open spaces and greenways. It also contains quasi-public spaces, which are owned by civic or related organizations. Location criteria is not needed relative to large components of the park system, like community, district and regional parks and refuges; these areas are generally established through capital expenditures or land transfers from state or federal governments.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Neighborhood parks, squares and commons should be within ¼ mile of residents in the traditional residential areas (particularly the 'Heart of Knoxville') and within ½ mile of residents within the balance of the city and county's Planned Growth area.</li> <li>• Greenways should be located along or within the flood plains of streams and rivers/reservoirs. Other potential locations include ridges and utility corridors.</li> </ul>	<b>Recommended Zoning and Programs:</b> <b>City:</b> OS-1  <b>County's Planned Growth and Rural Area:</b> OS, E and OC  A new zone should be created to designate parks, schools and similar institutional lands for both city and county jurisdictions.	<b>Other Zoning to Consider:</b> Other zones that allow parks and open space as permitted uses.
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### **Civic/Institutional (CI)**

Land used for major public and quasi-public institutions, including schools, colleges, the university, churches, correctional facilities, hospitals, utilities and similar uses.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Existing public uses, other than parks and greenways</li> <li>• Quasi-public uses of two acres or more</li> </ul>	<b>Recommended Zoning and Programs:</b> City and County: New zoning categories for such uses or continue to use conventional zones (e.g. O-1, O-2 and OC)	<b>Other Zoning to Consider:</b> Other zones that allow civic/institutional as permitted uses.
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### **Other Open Space (OS)**

Land uses include cemeteries, private golf courses, and similar uses.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>• Existing cemeteries, private golf courses and private open spaces</li> </ul>	<b>Recommended Zoning and Programs:</b> City: OS-1 and a new zone created to designate parks, schools and similar institutional lands County's Planned Growth and Rural Area: OS, E and OC	<b>Other Zoning to Consider:</b> A-1, and A
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**PARK, PUBLIC INSTITUTIONAL, OTHER OPEN SPACE & ENVIRONMENTAL PROTECTION LAND USE CLASSIFICATIONS . . . continued**

**Hillside/Ridge Top Protection Areas (HP)**

This classification is used to identify hillsides, ridges and similar features that have a slope of 15 percent or more. Open space, recreation land or very low density housing (one dwelling unit per two acres) is recommended for slopes exceeding 25 percent. For slopes of 15 to 25 percent, housing densities should not exceed 2 dus/ac). Office uses may also be considered. Building height should not exceed 35 feet.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>Hillsides greater than 15 percent slope</li> </ul>	<b>Recommended Zoning and Programs:</b> <b>City:</b> RP-1, OS-1 and a new hillside protection zoning overlay, that has standards for various residential and office land uses and the amount of land disturbance that can take place relative to the degree of slope. <b>County's Planned Growth and Rural Areas:</b> OS, E, A (on slopes less than 15 percent) and PR; a new hillside protection zoning overlay, that has standards for various residential and office land uses and the amount of land disturbance that can take place relative to the degree of slope.	<b>Other Zoning to Consider:</b> Other zones that require use-on-review
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**Stream Protection Areas (SP)**

Typically these are areas which are subject to flooding. Such areas include both the floodway, which carries the significant portion of stormwater, and the 500-year flood fringe, which the city and county govern with various stormwater regulations.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>Floodways and flood fringes</li> </ul>	<b>Recommended Zoning and Programs:</b> <b>City:</b> F-1 and 'planned zones' (such as RP-1 and PC-1), which entail site plan review. <b>County's Planned Growth Area:</b> F and 'planned zones' (such as PR and PC), that require site plan review to address flooding and stream protection issues
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**Water (W)**

Typically includes the French Broad River, Holston River, Fort Loudoun Lake/Tennessee River, and Melton Hill Lake/Clinch River.

<b>Location Criteria:</b> <ul style="list-style-type: none"> <li>Rivers, TVA reservoirs</li> </ul>	<b>Recommended Zoning and Programs:</b> <b>City:</b> F-1 <b>County:</b> F
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**Major Rights of Way (ROW)**

Generally, the rights-of-way of interstates and very wide parkways and arterial highways are depicted on the future land use map.

## APPENDIX D: Existing Agricultural, Forest, and Open Space Land Protection Programs

### U.S. Department of Agriculture Farm and Ranch Land Protection Program

First established in 2002, this program was extended in 2008 with slight modifications. The modifications include forest land conservation. The program can be used by a farmer to conserve a farm and be compensated for the sale of development rights of a farm. A conservation easement is placed on the farm to conserve its agricultural use in perpetuity. To accomplish this, the program provides federal funds to cover 50 percent of the cost of the farm's development rights (determined via an appraisal which is based on the difference between current value as farmland and the market value for the land's conversion to residential or other more intense use, allowed by existing plans and regulations. To qualify for the 50 percent match, a non-profit or similar entity has to provide 25 percent of the easement acquisition. The land owner must contribute the remaining 25 percent (which may be accomplished via a donation, which in essence would be proceeds of the sale of the development rights to the farmer by 25 percent).

A local example of the use of this program is the conservation of the Cruze farm (pictured below) on the north side of the French Broad River.

### State of Tennessee Greenbelt Protection Program

Tennesseans can pay less property tax if it is dedicated to farm, forestry, or open space uses. Usually, the amount of property tax is based on what it is worth on the market. The *Agricultural, Forest and Open Space Act of 1976*, known as the Greenbelt Law, allows certain land to be taxed at a reduced rate based on present use instead.

Provisions for each type of greenbelt parcel are:

**Agricultural Land** includes resources used for the production or growing of crops, plants, animals, nursery, or floral products. It may also include a home site for the owner or farm operator, although tax breaks are not given for the residential part of the farm. To qualify for greenbelt status, farm property must be a minimum of 15 acres and produce an average annual gross income (including farm sales, farm rent, or farm federal support payments) of at least \$1,500.

**Forestry Land** is property of 15 acres or more used in the growing of trees under a program of sustained yield management (letting trees grow to be capable of producing lumber). Forest land does not have to produce a specific income in order to be considered for greenbelt status.

**Open Space Land** is property of three acres or more maintained in open or natural condition. It benefits the public because it conserves natural resources, provides a natural setting for people who might not otherwise have access to such a place, and otherwise provides relief from the monotony of urban sprawl. Although the public may use the property for recreation, properties which have been significantly developed for this purpose, such as golf courses, do not qualify. The property must be included within a plan for preservation approved by the state or local planning agencies, or the owner must execute a perpetual open space easement – which requires the owner of the land to maintain the property's open and natural character – in favor of the state Commissioner of the Environment and Conservation on terms approved by the commissioner.

To qualify for greenbelt, an application must be approved by the county tax assessor. Once approved, an owner does not have to reapply each year.

Property approved for greenbelt status is valued by the assessor at both its market value and use value. However, the assessment is based only on the use value.





## APPENDIX E: Summary of the *Beaver Creek Watershed Green Infrastructure Plan*

The Beaver Creek and its watershed have become more significant concerns in terms of bank and upland erosion (particularly as a result of runoff from development processes), pollution, and flooding. Recognizing the increasing urbanization of the watershed, the *Beaver Creek Green Infrastructure Plan* was created to provide a framework for creating “green infrastructure.” While conventional infrastructure includes roads and utilities, green infrastructure is focused on natural and manmade spaces, including forested hillside, stream corridors, parks, and farms. This plan addresses the conservation of those systems and proposes more compact, walkable communities. Its goals are:

- To protect and restore naturally functioning ecosystems;
- To provide solutions to improve water quality and mitigate flooding;
- To enhance recreation opportunities;
- To provide a framework for future development;
- To connect communities and neighborhoods;
- To create stream conservation buffers, offering flood, wetland and habitat protection;
- To identify lands for greenways; and
- To protect lands with significant historical, recreational, or aesthetic value.

The major concepts are outlined below and appear on the following map.

### **The Land and Its Settlement Patterns**

The historical settlement patterns are explored in relation to natural environmental features, such as steep slopes and floodplains, since most early development avoided environmentally sensitive areas in favor of more easily developed locations. Over time, the environmentally sensitive areas become more likely to develop as the less constrained lands that are undeveloped become scarce. In completing this study environmental features were taken into consideration, such as landforms and slope, existing forest, existing land use and existing development intensity. The conclusion is that suburban sprawl is spreading rapidly through the Beaver Creek watershed which is threatening the area’s scenic beauty and rural landscape heritage as farms are converted to new uses. These new uses are spread out and require the use of motor vehicles to get from point to point. Due to this pattern of development, traffic is worse every year.

### **The Open Space Network**

The open space network is an interconnected pattern of open space elements that allow the system to function in an integrated way. Open space is land with a low intensity of development, such as parks, plazas, greenways, farms, wetlands, and forests. In order to determine which areas are best suited for such a network, various aspects of the existing natural and built environment were explored in the watershed, such as the species richness, land value for wildlife habitat, and agricultural land value. The conclusion is that with the rapid suburbanization of the area, it is becoming increasingly more difficult to create a comprehensive open space network.

### **Protecting the Water Network**

Protecting the water network is one of the primary concerns of this plan. The plan demonstrates that the land development that has taken place in the watershed has implications for public health and safety. As the lands uphill from the streams have been developed, they have created additional stormwater runoff which impacts the stream water quality and made flooding worse. This plan recognizes that there is room for additional development in the watershed but if it is not done properly, the new development could further strain the already impacted stream network. It is suggested that larger riparian buffers than are currently required be utilized to help negate the effects of new uphill development.

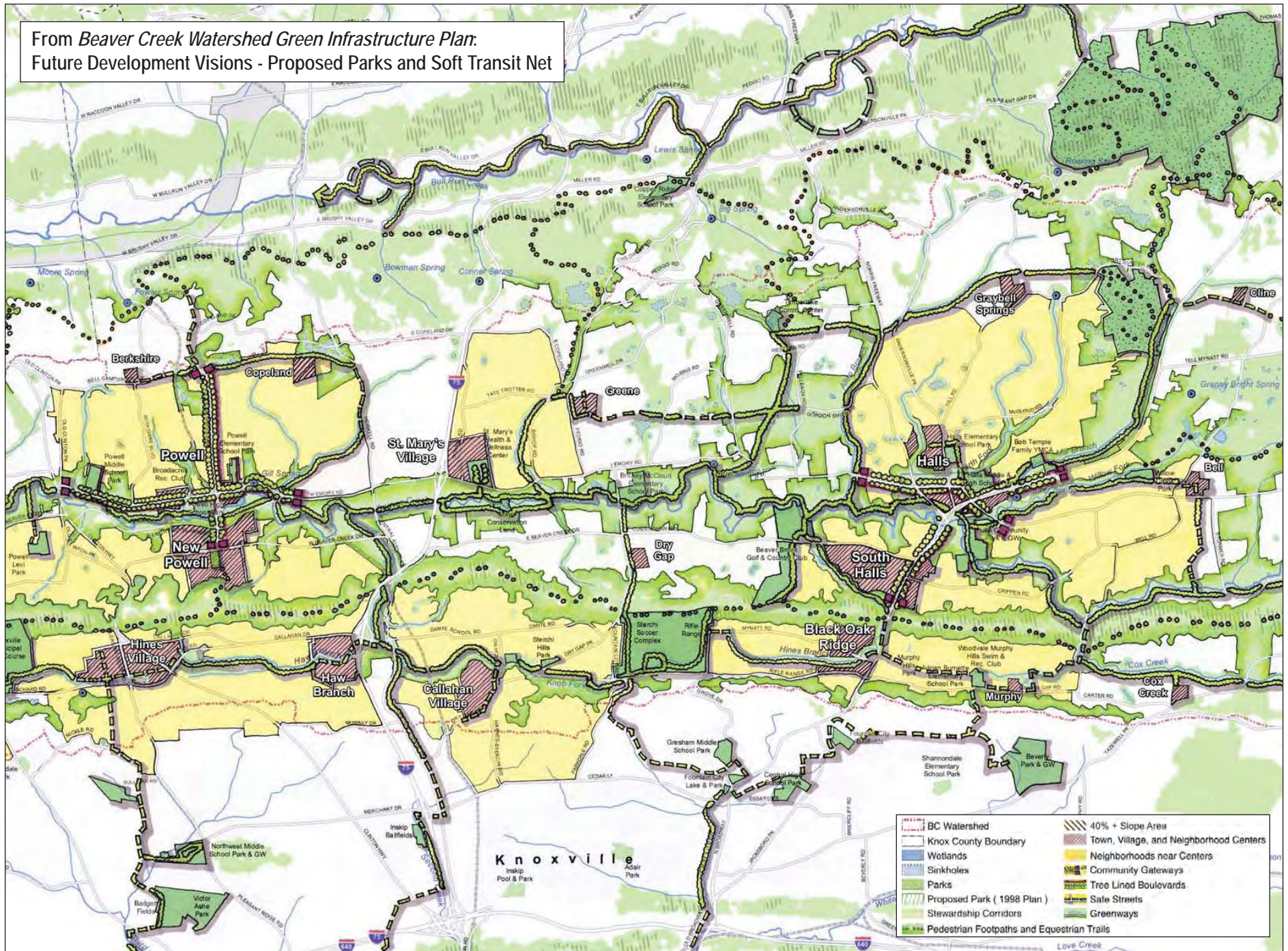
### **A Vision for Future Development**

The plan outlays all the aspects of the study and combines the outcomes into the Proposed Parks and Soft-transit Network (greenways) plan which generally outlays areas for open space and development, see the map below. The idea is to have a planned open space network that complements the built environment in a controlled manner. The open space network is to become a viable alternative to motor vehicle reliance for short trips.

This idea is not completely foreign to Knox County, or even the North County Sector. In the Powell community, the Powell greenway runs along Emory Road and stretches from Powell High School to Clinton Highway, creating a soft-transit network connecting two schools, two commercial districts, a park, and multiple residential subdivisions. The *Beaver Creek Green Infrastructure Plan* takes this model for the Powell community and spreads it across the entire Beaver Creek watershed. Many of the park and greenway recommendations of this plan are already in the approved *Knoxville-Knox County Park, Recreation and Greenways Plan*.



From *Beaver Creek Watershed Green Infrastructure Plan*:  
Future Development Visions - Proposed Parks and Soft Transit Net







KNOXVILLE • KNOX COUNTY

M P C

METROPOLITAN  
P L A N N I N G  
C O M M I S S I O N

T E N N E S S E E

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