

SECTION

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Environmental Conditions

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Topography

Rutherford County's topography is typical of Middle Tennessee, ranging from gently rolling pastureland to steep escarpments along the region's streams and rivers. As points of reference, J. Percy Priest's normal summer pool elevation is 490 feet above sea level and the average elevation in the Central Basin is 600 feet. Land rises south of Percy Priest Reservoir and drains to it. The average elevation at the Smyrna Airport is 510 feet. Central Smyrna ranges to approximately 550 feet, and the area of La Vergne's City Hall is also about 550 feet above sea level. South of I-24 elevations are higher-the highest point in the area appears to be at Sanford Knob (900.00) south of I-24 and east of Waldron Road.

Geology

Rutherford County lies in the center of Tennessee's Central Basin physiographic region, a 5,000-square-mile depression carved out of solid limestone. The Central Basin extends south from the Tennessee-Kentucky line to the boundary between Alabama and Tennessee. It is approximately 100 miles long and 50 miles wide, and the center is located in western section of Rutherford County. The basin was formed by stream erosion from the top of a structural dome. Millions of years ago, an unknown force uplifted layers of rock into an arch roughly the same dimensions as the current basin. This uplift exposed soft, soluble stone that began to weather and erode under the effects of rain. Erosion continued to scoop out the basin until a depth was reached equal to that of the major streams cutting through the area.

The rocks that underlie the Central Basin region are almost entirely Ordovician limestone, and most streams run on clean limestone bedrock. The limestone is relatively soluble, and climatic conditions favor rapid weathering of the rock and the development of numerous sinkholes. The limestone contributes to the area's predominantly alkaline soils.

Soils

Soils in the project study area consist of two primary associations; Rock outcrop-Talbott-Barfield soils in La Vergne and Bradyville-Lomond-Talbott soils in Smyrna. La Vergne also has a concentrated central area of Stiversville-Sandhill-Inman soils.

Rock outcrop-Talbott-Barfield soils typically feature bare, rocky areas known as glades and limestone outcrops. These soils range from shallow to deep with clay subsoils and frequent occurrences of sinkholes. This soil association makes up roughly 45 percent of Rutherford County, and results in a rolling landscape with slopes generally under 12 percent.

Bradyville-Lomond-Talbott soils are well-drained and underlain with limestone. This soil association makes up about 25 percent of the County and results in nearly level to rolling topography.

Stiversville-Sandhill-Inman soils are well-drained and underlain with limestone and shale. The association occurs on ridgetops and steep hillsides. Slopes in this association range from 12 to 40 percent.

According to the USDA's 1977 soil survey for Rutherford County, all of the soils listed above have at least some limitations regarding engineering capabilities for the type of construction required for paved trails. However, the limitations are generally due to shallow depth to rock or steep slopes, and associated grading difficulties. These limits can be mitigated by careful trail placement and requisite geotechnical studies prior to construction.

Vegetation

Tennessee falls in the Eastern Deciduous Forest Region of the United States that extends from the southern tip of Maine south to northern Alabama and Georgia and west to western Indiana.

Specific site conditions in Middle Tennessee support numerous native plant communities. Dry upland sites typically feature xeric oak-hickory forests. Mixed mesophytic forest communities including beech, tulip poplar, basswood and sugar maple generally occur on north-facing slopes while floodplains and swamps support hydric plants. Rutherford County also features rare cedar glades that are supported on thin soils and poorly drained limestone outcrops.

Middle Tennessee's primary native trees are commonly found in La Vergne and Smyrna and include:

red maple	red mulberry
silver maple	Virginia pine
sugar maple	shortleaf pine
Ohio buckeye	American sycamore
yellow buckeye	black cherry
river birch	white oak
bitternut hickory	chinkapin oak
pignut hickory	chestnut oak
shagbark hickory	bur oak
mockernut hickory	Northern red oak
yellow-wood	black oak
persimmon	pin oak
American beech	post oak
white ash	shumard oak
green ash	scarlet oak
blue ash	swamp white oak
Kentucky coffeetree	water oak
black walnut	willow oak
Eastern red cedar	southern red oak
sweetgum	black willow
tulip poplar	sassafras
blackgum	American basswood

Threatened and Endangered Species

Many of Rutherford County's rare plants and animals have been identified and qualify for federal and/or state listing status. The United States Fish and Wildlife Service (USFWS) is responsible for federal status assignment and protection. The Tennessee Wildlife Resources Agency is responsible for state status assignment and protection. The rare species listed below have been identified in Rutherford County by the USFWS and the State of Tennessee and have the potential to exist in a variety of habitats within the designated greenway corridors in La Vergne and Smyrna. Eight species are federally Listed Endangered (LE) and one is a federally listed Candidate Species (C)-Candidate Species are not currently proposed for listing, but development and publication of proposed rules for such species is anticipated. Nineteen species are considered endangered (E) by the State of Tennessee; 10 are considered Special Concern Species (S); 13 are considered Threatened (T); and 10 wildlife species are Deemed in Need of Management (D).

Invertebrates	Common Name	State Status	Federal Status
<i>Epioblasma florentina florentina</i>	yellow-blossom	LE	E
<i>Epioblasma florentina walkeri</i>	tan riffleshell	LE	E
<i>Pegias fabula</i>	little-wing pearl mussel	LE	E

Plants	Common Name	State Status	Federal Status
<i>Acmella oppositifolia</i>	creeping spot-flower		S
<i>Ammoselinum oppositifolia</i>	Pope's sand-parsley		T
<i>Amsonia tabernaemontana</i> var. <i>gating</i>	limestone blue star		S
<i>Anemone Caroliniana</i>	Carolina anemone		E
<i>Arabis glabra</i>	tower-mustard		S
<i>Arabis hirsuta</i>	western hairy rockcress		S
<i>Arabis perstellata</i>	prairie rockcress	LE	E
<i>Arenaria fontinalis</i>	water stitchwort	LE	E
<i>Astragalus bibullatus</i>	Pyne's ground-plum	LE	E
<i>Astragalus tennesseensis</i>	Tennessee milk-vetch		S
<i>Dalea candida</i>	white prairie-clover		E
<i>Dalea foliosa</i>	leafy prairie-clover		E
<i>Dalea purpurea</i>	purple prairie-clover		E
<i>Echinacea pallida</i>	pale-purple coneflower		T
<i>Echinacea tennesseensis</i>	Tennessee coneflower	LE	E
<i>Evolvulus nuttallianus</i>	evolvulus		S
<i>Hydrastis canadensis</i>	goldenseal		S-CE
<i>Leavenworthia exigua</i> var. <i>exigua</i>	glade-cress		T
<i>Lesquerella densipila</i>	Duck River bladderpod		T
<i>Lesquerella stonensis</i>	Stones River bladderpod	C	E
<i>Liatris cylindracea</i>	slender blazing-star		E
<i>Mirabilis albida</i>	pale umbrella-wort		T
<i>Neviusia alabamensis</i>	Alabama snow-wreath		T
<i>Oenothera macrocarpa</i> ssp. <i>macrocarpa</i>	Missouri primrose		T
<i>Onosmodium molle</i> ssp. <i>Subsetosum</i>	smooth false gromwell		E
<i>Phlox bifida</i> ssp. <i>stellaria</i>	glade cleft phlox		T
<i>Polygala boykinii</i>	Boykin's milkwort		S
<i>Silphium pinnatifidum</i>	southern prairie-dock		T
<i>Talinum calcaricum</i>	limestone flame-flower		S
<i>Trifolium calcaricum</i>	running glade clover		E
<i>Veronica catenata</i>	sessile water-speedwell		E
<i>Zanthoxylum americanum</i>	northern prickly-ash		S

Allium stellatum	glade onion		E
Eleocharis equisetoides	horse-tail spike-rush		E
Fimbristylis puberula	hairy fimbristylis		T
Sagittaria platyphylla	ovate-leaved arrowhead		S
Schoenolirion croceum	yellow sunnybell		T
Scleria verticillata	low nutrush		S
Vertebrates—Birds			
Accipiter cooperii	Cooper's hawk		D
Ammodramus savannarum	grasshopper sparrow		D
Cathartes aura	turkey vulture		
Chondestes grammacus	lark sparrow		T
Coragyps atratus	black vulture		
Melanerpes erythrocephalus	red-headed woodpecker		
Nyctanassa violacea	yellow-crowned night heron		
Vertebrates—Mammals			
Myotis grisescens	gray bat	LE	E
Neotoma magister	eastern woodrat		D
Vertebrates—Amphibians			
Gyrinophilus palleucus	Tennessee cave salamander		T
Vertebrates—Fish			
Etheostoma cinereum	ashy darter		D
Etheostoma luteovinctum	redbank darter		D
Etheostoma microlepidum	finescale darter		D
Etheostoma tippecanoe	Tippecanoe darter		D
Notropis rupestris	bedrock shiber		D
Percina phoxocephala	slenderhead darter		D
Typhlichthys subterraneus	southern cavefish		D

Hydrology

Watersheds are land areas that eventually drain to a lake, river or other body of water. Watershed boundaries are created naturally by topography with ridges serving as divides or boundaries. The La Vergne/Smyrna greenway study area falls within the Stones River Watershed. This watershed drains over 900 square miles of parts of Davidson, Rutherford and Wilson Counties and empties into the Cumberland River; its most recognizable water feature is J. Percy Priest Reservoir.

J. Percy Priest is a significant flood-prevention and power-generating component of the Cumberland River Basin developed by the United States Army Corps of Engineers (USACOE). To create the reservoir, the Stones River, a tributary of the Cumberland River, was dammed by the USACOE at river mile 6.8 in 1968. At normal summer pool elevation (490.0) the 14,200-acre lake is 42 miles long and features 213 miles of shoreline. The USACOE manages 20 recreation areas on the lake that provide opportunities for boating and fishing, camping, picnicking, swimming, hiking and nature study.

Tennessee's Rivers Assessment Project was developed by a coalition of federal, state and regional government agencies and other project proponents. Its purpose was to assess the biological, aesthetic, recreational and cultural resources of the

rivers of Tennessee and to encourage wise use of the state's waters. Rivers and streams within the Stones River Watershed that fall within the project study area include Big Springs Creek, East Fork Stones River, Fall Creek, Hurricane Creek, Rock Springs Hart Branch Stones River, Stones River and the West Fork Stones River. The chart below describes the results of the assessments of those water bodies and an explanation of the rating system follows:

Stream	NSQ	RB	RF	WQ
Big Springs Creek	3			
East Fork Stones River	2,3	1,2,3	1	1
Fall Creek				3
Hurricane Creek	3			1,3
Rock Springs Hart Branch Stones River				3
Sinking Creek	3			
Stewart Creek	4			1,3
Stones River	1	2		3
West Fork Stones River	2	2		1,2,3

Source: Tennessee Department of Environment and Conservation. Tennessee Rivers Assessment Project.

- Natural and Scenic Qualities (NSQ)
 - 1 = Statewide or greater significance
 - 2 = Regional significance
 - 3 = Local significance
 - 4 = Not a significant resource
- Recreational Boating (RB)
 - 1 = Statewide or greater significance
 - 2 = Regional significance
 - 3 = Local significance
 - 4 = Not a significant resource
- Recreational Fishing (RF)
 - 1 = Excellent fishery
 - 2 = Good fishery
 - 3 = Fair fishery
 - 4 = Less than fair fishery
- Water Quality (WQ)
 - 1 = Fully supporting designated uses assigned to it by the Water Quality Control Board
 - 2 = Fully supporting designated use, but threatened
 - 3 = Partially supporting designated use
 - 4 = Does not support designated use

Wetlands

National Wetlands Inventory (NWI) maps are prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands are identified based on vegetation, visible hydrology and geography in accordance with the

Classification of Wetlands and Deepwater Habitats of the United States established by the U.S. Fish and Wildlife Service. The aerial photographs reflect the conditions only of the specific season in which they were taken-thus there is a margin of error in the use of aerial photographs for interpretation.

A review of the four NWI maps covering the greenway study area indicates that Smyrna and La Vergne's wetlands are primarily palustrine. The palustrine designation was developed to group the vegetated wetlands traditionally referred to as marshes, swamps, bogs, fens and prairies. The designation also includes small, shallow, permanent or intermittent ponds. Palustrine wetlands may be situated shoreward of lakes or river channels. They are also found in river floodplains, in isolated catchments and on slopes. The NWI maps of the La Vergne and Smyrna study areas do not indicate significant areas of wetlands occurring in close proximity to planned trails. However, concurrent with the development of construction drawings and specifications for specific trail segments, a physical site analysis must be completed to determine if specific trail segments will impact any wetlands.