Geologic Map of Big South Fork National River and Recreation Area

Kentucky and Tennessee

National Park Service
U.S. Department of the Interior

Geologic and Soil Resources Inventory
Natural Resource Stewardship and Science

Acid mine drainage at Worley. Acidic waters, emanating from abandoned mine features, contain heavy metals that precipitate out of solution to coat the channel orange. Rocks are the Pennsylvanian Grundy Formation (PNgr). NPS photograph by Lisa Norby, taken in 2007.

Cumberland River at Gorge Overlook. Steep forested slopes descend down to Big South Fork with large blocks of the Rockcastle Sandstone (PNrc) scattered at the base. NPS photograph by Lisa Norby, taken in 2007.

Twin Arches. Resistant layers from the Rockcastle Sandstone (PNrc) form myriad rock formations. Arches formed on ridges where weaker layers (e.g., Fentress Formation (PNfe)) beneath the sandstone weathered away, leaving the sandstone perched. NPS photograph by Lisa Norby, taken in 2007.

LEGEND

- NPS boundary
- Water
- Highways and roads
- Railroads
- Source map boundary
- Point of interest

Folds

long-dashed where approximate, short-dashed where inferred, arrows pointing in the down dip direction, arrow head indicates fold plunge

- anticline
- syncline

Geologic Observation Localities

- observation locality
- contact exposed and/or accurately located locality

Lower Pennsylvanian Coal Beds

solid where known or certain, long-dashed where approximate, short-dashed where inferred

- Grouped unit includes Grundy Formation, Barren Fork coal bed (PNgrbf), Rockcastle Sandstone, Nemo coal bed (PNrcn), Alvy Creek Formation, Stearns coal zone (PNacS), Alvy Creek Formation, Stearns No. 2 (PNacS2), Alvy Creek Formation, Stearns No. 1 (PNacS1), Morgan Springs coal bed (PNms), Sewanee Conglomerate, Sewnee coal bed (PNsb)

Geologic Contacts

solid black where known or certain, long-dashed where approximate, short-dashed where inferred, dotted where concealed, blue where water or shoreline

- contacts

Geologic Units

- Qal: Alluvium/alluvial deposits (Holocene and Pleistocene)
- QTu: Colluvial blocks of Rockcastle Sandstone (Quaternary and Tertiary)
- PNwc: Statestone Formation (Middle Pennsylvanian)
- PNwb: Statestone Formation, sandstone (Middle Pennsylvanian)
- PNwt: Wartburg Sandstone (Lower Pennsylvanian)
- PNgm: Glenmary Shale (Lower Pennsylvanian)
- PNgm: Glenmary Shale, Coalfield Sandstone and Burnt Mill Shale, undivided (Lower Pennsylvanian)
- PNlc: Lower Crooked Fork Group, undifferentiated (Lower Pennsylvanian)
- PNcf: Coalfield Sandstone (Lower Pennsylvanian)
- PNbc: Burnt Mill Shale (Lower Pennsylvanian)
- PNcv: Crossville Sandstone (Lower Pennsylvanian)
- PNcdd: Crossville Sandstone and Dorton Shale, undivided (Lower Pennsylvanian)
- PNdd: Dorton Shale (Lower Pennsylvanian)
- PNgr: Grundy Formation (Lower Pennsylvanian (?))
- PNgrD: Grundy Formation, Corbin Sandstone Member (Lower Pennsylvanian (?))
- PNbG: Lower Breathitt Group, unnamed sandstone member (Lower Pennsylvanian)
- PNghz: Grundy Formation, Hazel Patch Sandstone member (Lower Pennsylvanian)
- PNbp: Bee Rock Sandstone, Pine Creek Sandstone member (Lower Pennsylvanian)
- PNbp: Bee Rock Sandstone, Rockcastle Sandstone Member (Lower Pennsylvanian)
- PNrc: Rockcastle Sandstone (Lower Pennsylvanian)
- PNfe: Fentress Formation / Alvy Creek Formation (Lower Pennsylvanian (?))
- PNbG: Lower Breathitt Group, sandstone member N (Lower Pennsylvanian)
- PNnw: Vandever Formation, Newton Sandstone, Whitwell Shale, and Sewanee Conglomerate, undivided (Lower Pennsylvanian)
- PNsc: Sewanee Conglomerate (Lower Pennsylvanian)
- MPf: Pennington Formation / Pavagen Formation (Upper Mississippian)
- Mb: Bangor Limestone (Upper Mississippian)
- MHb: Bangor Limestone and Hartselle Formation (Upper Mississippian)
- MHf: Hartselle Formation (Upper Mississippian)
- Mm: Monteagle Limestone (Upper Mississippian)
- MMk: Monteagle Limestone, Kidder Limestone Member (Upper Mississippian)
- MMm: Monteagle Limestone, Ste. Genevieve Limestone Member (Upper Mississippian)

This map displays geologic map data compiled by the National Park Service Geologic Resources Inventory. It is not a substitute for site-specific investigations. All GRI products are available at https://go.nps.gov/gripubs.

Source Maps:

Sparks, T. N., W. H. Anderson, and K. Yang. 2011. Geologic map of the Corbin 30 x 60 minute quadrangle, Kentucky and Tennessee. Digitally Vectorized Geological Quadrangle DVGQ-17, 244-27. Kentucky Geological Survey, Lexington, Kentucky.

Zhang, Q., and M. Stidham. 2006. Spatial database of the Barthell quadrangle and part of the Oneida North quadrangle, Kentucky (scale 1:24,000). Digitally Vectorized Geological Quadrangle DVGQ-12_314, Kentucky Geological Survey, Lexington, Kentucky.

Horton, A., and M. Hopal. 2016. Geologic map of the Barthell quadrangle and part of the Oneida North quadrangle, Kentucky (scale 1:24,000). Geologic Quadrangle Map GQ-314. US Geological Survey, Reston, Virginia.

Horton, A., and M. Hopal. 2016. Geologic map of the Barthell Southwest quadrangle, Tennessee (scale 1:24,000). Geologic Map 336-SW. Tennessee Division of Geology, Nashville, Tennessee.

Zhang, Q. 2006. Spatial database of the Bell Farm quadrangle and part of the Barthell Southwest quadrangle, Kentucky (scale 1:24,000). Digitally Vectorized Geological Quadrangle Dataset DVGQ-12_1896. Kentucky Geological Survey, Lexington, Kentucky.

Smith, J. H. 1978. Geologic map of the Bell Farm quadrangle and part of the Barthell Southwest quadrangle, McCreary and Wayne Counties, Kentucky (scale 1:24,000). Geologic Quadrangle Map GQ-1496. US Geological Survey, Reston, Virginia.

Clendening, R. J., and A. B. Horton. 2010. Geologic map and mineral resources summary of the Burnville quadrangle, Tennessee (scale 1:24,000). Geologic Quadrangle Map 115–SE. Tennessee Division of Geology, Nashville, Tennessee.

Clendening, R. J., and A. B. Horton. 2010. Geologic map and mineral resources summary of the Honey Creek quadrangle, Tennessee (scale 1:24,000). Geologic Map 138A-NW. Tennessee Division of Geology, Nashville, Tennessee.

Zhang, Q., and M. Stidham. 2006. Spatial database of the Newtsville quadrangle, south-central Kentucky (scale 1:24,000). Digitally Vectorized Geological Quadrangle DVGQ-12_1535. Kentucky Geological Survey, Lexington, Kentucky.

Smith, J. H. 1976. Geologic map of the Newtsville quadrangle, south-central Kentucky (scale 1:24,000). Geologic Quadrangle Map GQ-1326. US Geological Survey, Reston, Virginia.

Clendening, R. B., J. Clendening, and M.L. Hopal. 2013. Geologic map of the Oneida North quadrangle, Tennessee (scale 1:24,000). Geologic Quadrangle Map 338-SE. Tennessee Division of Geology, Nashville, Tennessee.

Clendening, R. J., A. B. and Horton. 2012. Geologic Map of the Oneida South quadrangle, Tennessee (scale 1:24,000). Geologic Quadrangle Map 128A-NE. Tennessee Division of Geology, Nashville, Tennessee.

Clendening, R. J., A. B. Horton, D. Gilmore, and W. Keegan. 2011. Geologic map and mineral resources summary of the Rugby quadrangle, Tennessee (scale 1:24,000). Geologic Quadrangle Map 128A-SW. Tennessee Division of Geology, Nashville, Tennessee.

Hopal, M., and A. Horton. 2015. Geologic map of the Sharp Place quadrangle, Tennessee (scale 1:24,000). Geologic Quadrangle Map 335-SE. Tennessee Division of Geology, Nashville, Tennessee.

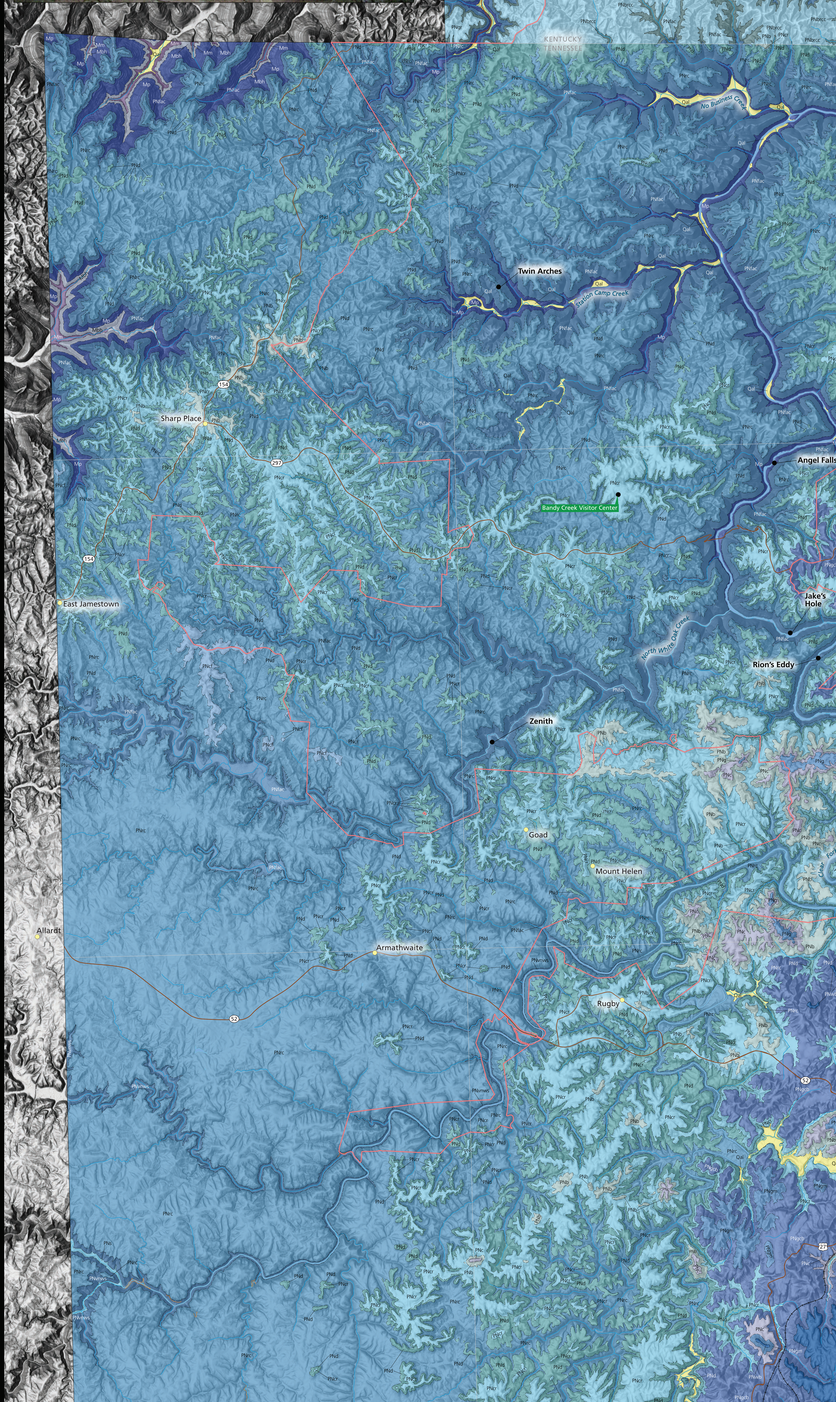
Clendening, R. J., A. B. Horton, and J. W. Jewell. 2009. Geologic map of the Stockton Quadrangle, Tennessee (scale 1:24,000). Geologic Quadrangle Map 115–NE. Tennessee Division of Geology, Nashville, Tennessee.

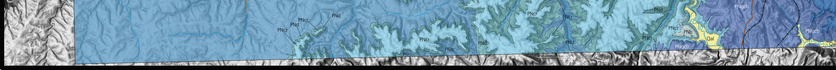
Source Scales: 1:24,000 and 1:100,000. According to US National Map Accuracy Standards, features are within 12 m (40 ft) and 51 m (167 ft), respectively of their true location.

Poster Layout: Trista L. Thornberry-Ehrlich (Colorado State University)

Poster Date: December 2024

Location Map





Angel Falls. Rapids along Big South Fork form where the river flows over sandstone ledges and around or through large blocks of sandstone that tumbled from the gorge slopes. Here the river flows through blocks of Pennsylvanian Rockcastle Sandstone (PNrc) and is cutting into the Mississippian Pennington Formation (MPp). NPS photograph by Lisa Norby, taken in 2007.