Heading downstream from the Chesterfield Gorge, along the East Branch Trail (River Road)....

MAP ON FOLLOWING PANEL

1 (0.0 mi.) | At the dip in the entrance road, you can see the channel where the river once flowed before it was diverted by glacial till (*see reverse*). The riverbed was much higher than it is now.

2 (0.3 mi.) | Pebbles! If you want to know what kind of rock lies upstream, check out the pebbles at your feet. You will find gray-and-white banded gneiss, perfect skipping stones made from schist (Goshen stone), white quartzite, and others.

3 (0.3 mi.) | The ravine on your right once held much more water than it does today. The depth of the ravine suggests the volume of meltwater that ran as glaciers retreated.

4 (0.8 mi.) | The old quarry may have been a source of stone for the bridge abutment at the Chesterfield Gorge.

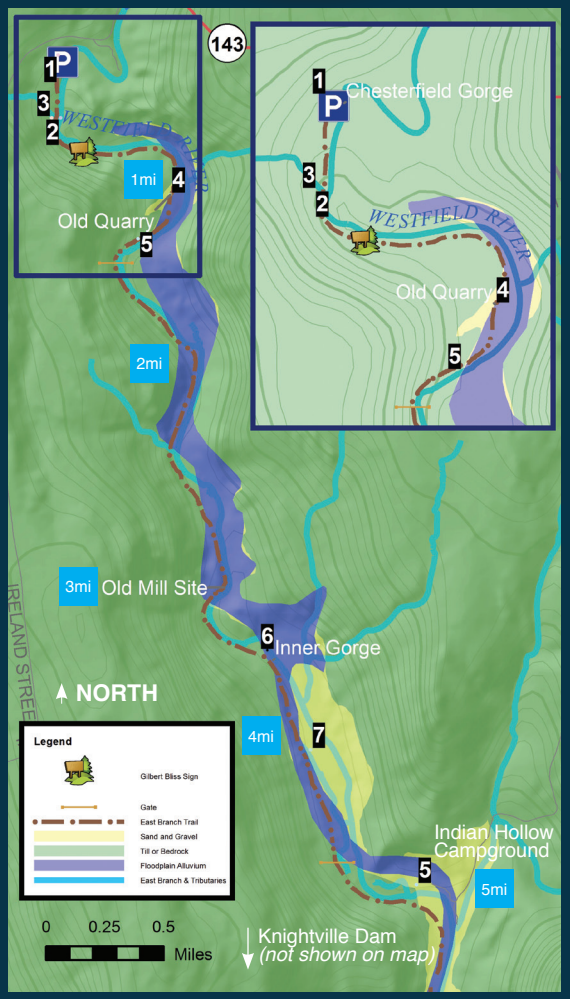
5 (1.3 mi. & 4.8 mi.) | Terraces (flat areas) along the river mark old floodplains formed in glacial times before the river cut down to its present bed.

6 (3.4 mi.) | The Inner Gorge is similar to the main gorge. It has a lovely, deep pool.

7 (4 mi.) | Here, the road lies at a distance from the river because of the swampy floodplain.

Photographs by Caron Dewey. Design by LAC Design. Special thanks for Mike Young.

NATIONAL WILD AND SCENIC RIVERS SYSTEM



FOR FURTHER INFORMATION
www.WestfieldRiverWildScenic.org
Westfield River Wild & Scenic Advisory Committee
PO Box 397, Huntington, MA 01050

Westfield River

GEOLOGY & THE CHESTERFIELD GORGE

The Gorge, an unusual natural feature for Western Massachusetts, owes its drama to time, geology, and glaciers — and to the river itself, the East Branch of the Westfield River.

NATIONAL WILD AND SCENIC RIVERS SYSTEM

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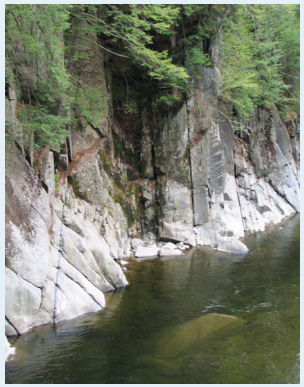
FORMING BEDROCK

Half a billion years ago, this region was off the coast of proto-North America, accumulating oceanic sediments. By about 350-400 million years ago, that ocean was closing as a small continental block crashed into and attached itself to North America. A mountain range formed here, possibly rivaling the Himalaya in size. Under extreme heat and pressure beneath those mountains, the old oceanic sediments metamorphosed and folded. As the mountains eroded away, those rocks (gneisses, quartzites, and schists) were exposed at the surface where we see them today.

POTHOLES | Looking into the Gorge near the picnic area, you see both drama and elegance. The river breaks into waves over the boulders, while about 100 yards downstream, vertical walls rise nearly fifty feet high.

The fine-grained gray bedrock (gneiss and schist) lends itself to being sculpted by the water into flowing curves and troughs. Deep potholes have also formed where boulders caught in eddies have spun round and round.



GNEISS & SCHIST | Gneiss and schist tend to fracture into flat planes and layers. Because these layers are tilted vertically, they can form high, gorge-like walls. Water can get between the layers, helping them weather and split off. The tilting occurred when the layers were folded under heat and pressure while deep within the earth.

QUARTZITE | The white boulders remain from a quartzite dike or vein that continues in the wall above.

GLACIERS: THEIR MELTWATER & DEPOSITS

Over the last one million years, glaciers have repeatedly advanced and retreated across New England—with the most recent glacier reaching its maximum about 20,000 years ago. As the glaciers retreated, raging meltwater streams carved big channels. The glaciers left deposits of glacial till, composed of sediment ranging from clay-sized particles to boulders, over much of the Berkshires.

TILL | Glacial till forms much of the riverbanks.

CHANGE OF COURSE | The East Branch bends sharply at the Gorge. This bend probably formed about 130,000 years ago, when deposits of glacial till blocked the river from going straight. The river then turned, slashing through the tilted bedrock to create the Gorge.

TODAY

The river continues to shape its bed and to move sediment downstream, particularly during floods. As a result of flooding during the 1920s and 1930s, this branch of the river was dammed in the 1940s at Knightville, half a dozen miles downstream.

FLOODING | Flooding took out the Boston-Albany Post Road bridge that used to span the river here. But the old bridge abutment, built about 1764 using a schist called Goshen stone, has lasted well.

In Hurricane Irene in 2011, water rose four feet above the old abutment! But this channel carried much more water in glacial times. When the leaves are off the trees in winter, you can glimpse the sloping banks upstream of the bend. Their height suggests how much glacial meltwater this channel used to carry.