



Seven Bends State Park First Day Hike Self-Guided Tour

What is a Riparian Buffer Zone, and Where Can I See One?

Riparian buffers are forested areas along rivers and streams where shrubs and trees hold the banks of the river in place and prevent erosion. They also slow down and filter polluted or dirty water before it gets into the river. Trees next to the river also keep the water shaded and cool and provide food and shelter for animals and insects. Forested riparian buffers help 'control the rate and volume of water flowing in streams and rivers, greatly influencing flood levels' and 'provide food and habitat for a variety of terrestrial wildlife and serve as safe corridors for movement between habitats.' (Virginia Department of Conservation and Recreation). The vegetation, porous soils and leaf litter that help define forested riparian buffers help slow the water in that area (Virginia Department of Conservation and Recreation), reducing erosion and adding to filtration of pollutants. With the exception of the two river access points within Seven Bends State Park, most of the river's banks are managed using forested riparian buffer zones.

Where can I find this in the park? You can get a good look at examples of such buffers along the Bass Bight, Eagles Edge and Gokotta Trails in Seven Bends State Park.

Physical weathering and erosion □

We have several great examples of physical weathering and erosion occurring within the park. Let's start with some definitions:

Physical weathering: refers to rocks breaking apart 'mechanically' over time (different to chemical weathering related to chemical reactions leading to dissolution of rock--relevant to karst topography and cave/cavern formations located elsewhere in the valley)

Erosion: movement of rock particles by wind, rain, ice & gravity to somewhere different to where they started

Paw Paw Hollow Trail (near the Hollingsworth Road entrance to the Park) takes you through some excellent examples of physical weathering and erosion. There, you can see where slate (looking like layered gray bedrock) is visible along the side and on the base of the trail. This rock has been broken down through physical weathering and is being eroded away along the trail. People can also contribute to footpath erosion through use of, and thus wear and tear on footpaths. Such footpath pressures often more visibly affect vegetation and soil on footpaths as opposed to rock--but many examples of rock weathering from human contact exist around the world.

Where can I find this in the park? A great example of physical weathering and erosion can be found at the start of Paw Paw Hollow Trail when accessed from the Hollingsworth entrance to

Seven Bends State Park; on this map it is noted as the blue square. However, there is erosion and weathering happening all over the park!

Agricultural best management practices (BMPs) for a healthy river. What are they, and what do they do? (contributed by Sean McDermott)

There is a long history of agriculture in the Shenandoah Valley and that can be seen through the agricultural fields currently farmed in Seven Bends State Park. There are 41 acres used for growing corn and soybeans as well as 71 acres used for hay production in the park. The land is leased to a private farmer and farmed using best management practices (BMPs) for soil conservation and watershed health. The Bass Bight, Gokotta, and Eagles Edge trails each showcase a different part of this agricultural land.

As you have probably noticed, Seven Bends State Park is located on a winding section of the North Fork of Shenandoah River. The water flowing through the park will eventually enter the Potomac River, and from there it will make its way to the Chesapeake Bay and the Atlantic Ocean. Protecting water quality is particularly important to the Chesapeake Bay, which is at risk of anaerobic "dead zones" if too much nitrogen runoff finds its way into the bay. Nitrogen is vital for plant growth, though, so maintaining adequate levels in the soil for crops while minimizing the amount of runoff is a delicate balance. The strips of trees and grass (including the trails themselves!) that run along the river are called riparian buffers (described above) and they are vital for preventing nitrogen runoff. No-till farming methods are used within the park, which also prevents runoff by keeping the soil intact. Soil sampling is done to ensure that the proper nutrients are available to support the crops. The most recent contract holder has chosen not to use nitrogen-based fertilizers on these fields. Instead, rotating between corn and a nitrogen-fixing legume like soybeans keeps the nutrients balanced. In the future, cover crops will be used in the park's cropland. Cover crops benefit the soil by adding organic matter, and they protect the water by preventing nutrient runoff after harvest. There are also areas of land set aside in the park for native wildflowers. This supports bees, butterflies, and other pollinators.

Where can I find this in the park? Land near the Bass Bight, Gokotta, and Eagles Edge trails is managed using agricultural BMPs.

Wildlife diversity (contributed by Matt Kowalski)

While enjoying Seven Bends State Park, you may have wildlife encounters that range from seeing deer or black bears in the fields or forest, to catching a glimpse of a bald eagle or great blue heron along the river. Careful observers might see mink, turtles or snakes if you are near the water, and smaller streams and ponds may hold surprises like salamanders, tadpoles, newts, frogs and dragonflies. The variety of habitats across the park means that a myriad of birds and insects abound, so keep your eyes and ears open!

Where can I find this in the park? Keep your eyes peeled throughout the park for glimpses of all sorts of critters as you walk.

Reservoirs and early Woodstock water systems ◻

In October of 1900 a vote was taken to authorize a bond issue for \$20,000 to install a water system for the town of Woodstock; the town voted in favor of it and on October 19, 1901 the engineer responsible completed it, opening it to be tapped for water. This first reservoir was situated on the western slopes of Massanutten Mountain, east of the town of Woodstock--this is the uppermost reservoir that you can visit in the park (made of large boulders and stones, located farthest to the south on the Reservoir Trail). The second reservoir was built in 1911, as although water pressure for the upper reservoir was adequate for smooth function, water storage was a challenge for the town. This second reservoir is made of cement and can be found just north (down-slope) of the uppermost reservoir--located at the northern intersection of the Reservoir and Stonecrop Ridge Trails. These reservoirs were intentionally placed higher on the mountain so as to be placed above sources of contamination and to ensure good water pressure.

Over time, as the town increased in size, the demand for more water and better water pressure also increased. In 1957 - 1958 a thirty-foot high dam was constructed on Little Stony Creek west of Woodstock, approximately four miles north of Columbia Furnace. This dam acts as a reservoir and impounds approximately 18 million gallons of water for prior use by the town. While it is currently no longer in use, if it were to break the dam still poses a risk to those located downstream of the structure. As demands for water continued to increase, Woodstock built additional infrastructure to meet those needs. In 1978 Woodstock built a wastewater treatment plant on the North Fork, which today pumps and treats 700,000 to 800,000 gallons of water each day from the river. In recent years this infrastructure has been updated to be even more effective at water filtration.

Where can I find this in the park? The reservoirs are aptly located on the Reservoir Trail, and their location is noted by the green hexagon on the map.

