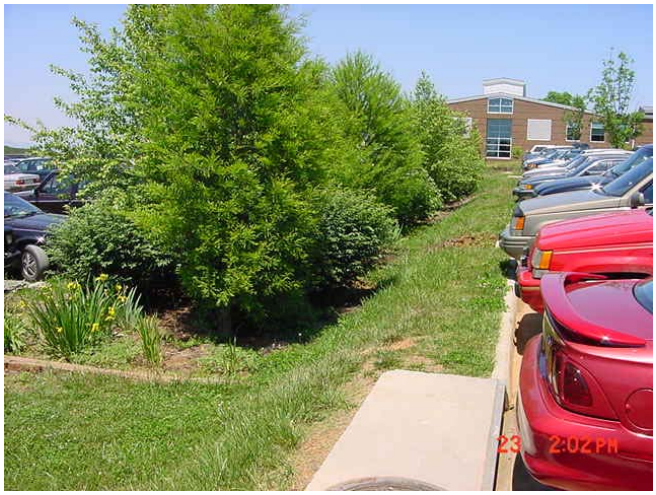
Biofiltration, Etc.. – Parking Lot Biofilter, Stormwater Wetland, Wetland Forbay, Pervious Parking

Monticello High School (Albemarle County, VA)
Completed in 1997

During the design phase, Monticello High School (MHS) was selected to demonstrate several sustainable features inside the building and on the grounds. For stormwater management, the site features a parking lot biofilter, stormwater wetland, lake wetland forebay, and pervious parking materials. These stormwater features have been incorporated into the school's club and ecology curriculum as a schoolyard laboratory. The design work was done for Albemarle County by Timmons.



Biofilter at Monticello High School

Construction – The site contractor was Falcouner Construction, and Windridge Landscaping performed the landscaping for the biofilter and wetland. The biofilter design was based on the old Prince George's County, MD standards, including a sand/soil mixture that is 4 feet deep (newer standards call for a shallower mix). Plants used in the biofilter include: River Birch, Bald Cypress, Red Osier Dogwood, Witch Hazel, Winged Euonymus, Winterberry, Blue Water Iris, Yellow Water Iris, and Day-Lily, among others. The pervious parking material was a proprietary product consisting of interlocking plastic rings filled with sand and soil or gravel.

Lessons Learned – While newer bioretention standards have decreased the depth of the soil layer, the deep mix used at this site has helped absorb more water and replicate the predevelopment hydrology. The biggest issue with this biofilter has been providing for stable and functional curb inlets. Initially, the curb inlets suffered from chronic erosion, and we eventually used stone to stabilize them. However, the stone was prone to clogging with fine sediment and vegetation. The inlets require periodic maintenance to remain functional. For the pervious parking, the installation occurred during drought conditions and never really got stabilized adequately. The plastic rings did not hold up very well, due to a combination of design and construction issues.

Monitoring – The biofilter was monitored by Dr. Shaw Yu and his graduate students at UVA. They used sheet flow collectors and an automatic sampler to collect and compare inflow and outflow samples.

Maintenance – In some cases, student and faculty initiatives have helped with maintenance, such as adding plants and replacing mulch. However, the mulch needs to be replaced annually and the plants need pruning and/or replacement. The rate of plant growth has been very high, and the biofilter is a little crowded at this point. Maintenance is a bit more important here compared to some other practices since the biofilter is a prominent feature visually at the entrance to the school.

Other Stormwater Management Practices – Low impact development practices are demonstration throughout this site. The county used Monticello High School to demonstrate a variety of stormwater practices, including a forebay on the lake, stormwater wetland, and pervious parking materials in addition to the biofilter.

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DIRECTIONS: The site is on Mill Creek Drive off of Route 20 (Monticello Road) south of Interstate 64.

ACCESSIBILITY: The site is generally accessible to the public, but visitors are advised to contact Monticello High School at (434) 244-3100 in advance of their visit.