

Bellewood Manor Case Study



Project Information

Level of Certification: Four Stars
NGBS Certified

Location: Cary, NC

Size of Site: 45-acre site

Site Details: 74 home sites

Year Site Development Began: 2012

Project Team

Developer: Bellewood Manor, LLC

Designer: Jerry Turner & Associates,
Inc.

Verifier: Southern Energy
Management

Meaningful Partnerships: Hugh
J. Gilleece and Associates (Civil
Engineering firm) Buffer/Wetland:
Soil & Environmental Consultants, PA
(Raleigh, NC); Surveyor: Withers and
Ravenel/ Ken Close Surveying.

Key Features

Recycled Materials:

- All removed topsoil was kept onsite.

Landscape:

- Turf type used is Bermuda grass, a drought-tolerant and pest-resistant grass.
- Verified vegetation protected onsite as well as regionally appropriate vegetation.

Specifics

Located within the Research Triangle of North Carolina, Bellewood Manor undertook a well-researched approach towards development. The developer was able to exceed strict local environmental requirements by prioritizing green space and green/blue infrastructure over traditional stormwater control features.

The project, near the Jordan Lake State Recreation area and within the Jordan Lake watershed, was subject to complex natural and regulatory stormwater management. Many from the Town of Cary, which was awarded the Best Local Erosion and Sediment Control Program by the North Carolina Sedimentation Control Commission in 1998, 2001, and 2008 and mandates projects exceed requirements set forth under the National Pollution Discharge Phase II Permit.

These strict ordinances can become burdensome and make pollution and erosion goals difficult to achieve. For example, the state has set a 50-foot minimum buffer along waterways, while the Town of Cary has set an additional 50-foot buffer for all perennial and intermittent waterways. The waterways that intersect the property of Bellewood Manor were designated with both 50-foot and 100-foot buffers. Buffer requirements reduced the availability of developable property yet provided immense benefits to the local ecosystem.



Unit Exteriors

Key Features Cont.

Innovative Practices:

- Clustered homes to add 37 additional lots and preserve 7.5 acres for open space. Lot layout was designed to minimize environmental impact by only crossing stream once in a 45-acre parcel, by making the main roadway a collector street and limiting access to homes directly off this roadway.

Stormwater Management:

- 50- and 100-foot creek buffers maintained, with the addition of swales to increase infiltration.
- Two dry retention basins retain the peak runoff, so that the pre- and post-development flows are the same.
- Site is designed to be less than 36 percent impervious, with swale drainage and offsite sedimentation controlled through use of forebays in the detention ponds.
- Dry ponds are designed as structured wetlands.

Sensitive Areas:

- The two buffered streams and open space in the area go beyond regulatory requirements and connect to a greenway.



Unit Exteriors

The Bellewood Manor team was able to integrate 21 separate erosion control practices, including the use of berms, roadway ditches, and designing the site to have less than 36 percent impervious surfaces. The maximum time requirement for stabilization control after disturbance is 14 days under EPA guidelines, and Cary requires seeding and mulching within 7 days of grading activity, creating a tight window in which to operate for the project team.

The team designed smaller lots in dense arrangements to meet requirements in Cary's Conservation Residential Overlay District. The cluster site design allowed the property to add 37 additional lots, while dedicating 34 percent of the site for open space. This space not only promotes a connection to nature for residents but also preserves green space for local flora and fauna. Environmental impact was minimized further by crossing the local stream only once in a 45-acre parcel, by making the main roadway a collector street and limiting access to homes directly off this roadway.

Sustainable design features include permeable materials used in common areas such as roads, driveways, parking areas, walkways, and patios; extra buffers along waterways; and a clustered site design. These features are low-cost additions to a stormwater management plan and contributed towards a four-star NGBS certification for the project.

All information in this case study was provided by one or more members of the project team.

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