Town of Cary
Open Space and Historic Resources Plan

Conservation Subdivision Design

Description of the Process and A Case Study

A recommendation within the Open Space and Historic Resources Plan is "Create Conservation Overlay Districts for Open Space Priority Areas. Ordinance would require *conservation subdivision design* to protect Significant Resource Areas identified in the OSHRP" (emphasis added). Conservation Subdivision Design (CSD) is a relatively simple, four-step process to identify the most significant natural and cultural resources on a given tract of land, and thereby determine the most suitable "building envelopes" from a preservation viewpoint.

Description of the Four-Step Process[1]. The four-step conservation subdivision design technique can be applied within any residential zoning category, and is 'density neutral'; i.e., the density permitted by right within a particular area is not affected by this method. To illustrate, Figure 1[2] shows a tract of land subdivided in the conventional manner.

This 140-acre rural tract (located in Orange County, NC) is zoned R-80 (minimum lot size 80,000 ft^2) and is located within a critical water supply watershed. After subtracting out unbuildable floodplains and steep slopes, this tract could yield 42 lots averaging 3.2 acres.

This conventional pattern of development has achieved much success in the Triangle region, and rural subdivisions such as this one are highly sought-after as potential homesites. However, this layout does not offer permanent protection for the most significant resources of the property.

Figure 2 is an aerial representation of this tract, a parcel rich in natural and cultural resources. The site borders the Eno River, a tributary of the Neuse. The tract contains both gentle and steep slopes oriented generally to the southwest. The site is distinguished by large areas of mature hardwoods and smaller areas of mixed pine forest that are linked by several hay meadows associated with the farm, which is located at the lower left corner of the tract. The farmhouse, built in the Federal style around 1830, is eligible for listing on the National Register of Historic Places. At the opposite end of the tract, a rock outcropping atop a steep slope offers a spectacular view of the Eno.

The first step in the CSD process is the identification of significant resources extant on the site. For sites within Town of Cary's planning jurisdiction, this information would be readily available through the Town of Cary's GIS (Geographic as derived from the ecological and landscape assessments conducted for the OSHRP. In this example, resource identification is shown in three phases for the sake of clarity: (a) Identifying Steep Slopes and Unsuitable Soils (Figure 3); (b) Identifying Land and Water Resources (Figure 4) and (c) Identifying Vegetation, Wildlife, and Cultural Resources (Figure 5).

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[1] Excerpted from Arendt et al: *Open Space Design Guidebook for the Albemarle-Pamlico Estuarine Region*, NC Association of County Commissioners, 1996.

[2] Figures are shown beginning on page 6.

The areas identified in Figure 3 represent the unbuildable portions of the tract, and would apply in either a conventional or CSD scenario.

Continuing Step 1 of the CSD process, land and water resources are illustrated in Figure 4, Identifying Land and Water Resources. This includes stream buffers and moderate slopes (15-25%). Figures 3 and 4 show resource areas that can be considered 'primary conservation areas'; i.e., areas inherently unbuildable that should be removed consideration for determining building envelopes.

Figure 5, Identifying Vegetation, Wildlife, and Cultural Resources, illustrates 'secondary conservation areas' that represent significant resources that could be preserved but exist on land that lacks constraints to development. It identifies the woodlands, meadows, and historic features that constitute both important habitat for species diversity, and provide character and context to the landscape.

Identifying Potential Development Areas is Step 2 of the CSD process, as shown in Figure 6. It illustrates the extent of the preservation area that would be targeted for protection through one or more of the techniques described in the OSHRP Preservation Toolbox. In this example, a decision was made to use the large hay meadow as a location for building envelopes, in order to maximize the amount of woodland to be left intact for wildlife and water quality benefits. This demonstrates how the conservation/development choice is sometimes an 'either/or' proposition. In this case, a compromise was reached, whereby the most critical contiguous areas of woodland and stream buffer habitat were preserved, while conserving some of the meadows and fields as usable open space for the future residents. Preservation of the historic farmhouse was also a priority consideration. The farmhouse and accessory buildings, placed within the conservation area, could be marketed as a premier home location. The prestige and benefits of listing on the National Register, along with the conservation easements and other protective measures, would make this a desirable property for a preservation-minded buyer. As well, the complex could remain as the residence of the landowner/subdivider.

Step 2 logically proceeds to include locating of the house sites with the development envelopes. Our objective is to accommodate 42 houselots, as determined from the Yield Plan of Figure 1. Figure 7 illustrates how these home sites are distributed evenly throughout the building envelopes. In this case, the central hay meadow provides a focal point around which a housing group could be situated. The meadow serves a central 'green common', and provides both an active and passive recreation area for residents.

Steps 3 and 4 of the CSD process are simple and straightforward. Now that conservation areas, building envelopes, and house sites have been located, a street and trail network to link the homes can be easily drawn. Streets and trails are planned in a manner that minimizes stream crossings and disturbance to the woodlands. Informal footpaths follow the existing trails and woods roads that crisscross the farm, conforming to the working structure of the landscape (Figure 8).

In the final step of the CSD process, lot lines are added, with each lot having at least 32,000 ft^2 to accommodate individual septic fields and wells (Figure 9). The farmhouse complex remains on its own large lot to protect the historic integrity and context of the site.

Neighborhood access to the complex could be limited easily, since it is separated from the rest of the property by a small tributary stream and by existing woods.

In the conservation subdivision design, just over 35 acres are taken by houselots, and the average lot size is 36,500 ft^2 or 0.84 acres. Street rights-of-way consume an additional 7.3 acres, leaving 97.5 acres, or nearly 70% of the tract as undivided and permanently preserved open space. Aerial views of this development in the conventional manner (Figure 10) and with conservation design (Figure 11) illustrate the differences between these scenarios.

Using conservation design, every houselot is enhanced by direct views and/or access to the open space. In addition, all residents are accessible to a network of informal neighborhood trails through woods or meadows. In essence, each resident is purchasing access to almost 100 acres of historic and scenic Piedmont landscape at a fraction of $1 million dollar price that an estate of this magnitude would command. From an investment standpoint, the initial value as well as the resale value of each lot is increased. From a natural resource and historic preservation viewpoint, the character and integrity of the property is well respected and largely preserved.

Economic Aspects, Marketability, and Case Studies

Conservation Developments typically cluster smaller lots on a tract of land, instead of distributing them over the entire acreage. As a result, conservation subdivisions, neo-traditional villages, and other higher-density residential developments tend to be more cost effective to construct. The Smart Growth Network, a collaborative effort led by the International City/County Management Association, has published a report on the costs and savings of 'green' development. A summary of this report is attached.

Despite its advantages, conservation development has not replaced conventional large-lot subdivision layout as the dominant form of residential development. This is partly because many local governments either have not allowed conservation or cluster development or have established administratively complex review and approval procedures that have effectively discouraged its use. In addition, local officials and the public have not readily understood the cluster concept and have often associated it with higher densities and a lower standard of living.

For their part, developers may not be familiar with this development alternative, or they may not be convinced that there is a market for this type of development. However, there is evidence that buyers appreciate the value of a smaller lot near to permanently protected open space. A 1990 study conducted by the Center for Rural Massachusetts compared the resale values of homes on lots in cluster developments in two Massachusetts towns with those of comparable homes in conventionally planned subdivisions in the same communities. In both towns, the value of homes in cluster developments appreciated at a faster rate than did the value of homes in conventional developments, in spite of the facts that the lots in the cluster developments were significantly smaller.

A more recent (1995) study by the market research firm American LIVES found that home buyers place a premium on having lots of natural open space and walking and biking paths - amenities that can best be achieved through the use of cluster development. In the survey, customers identified "lots of natural open space" and plenty of "walking and biking paths" as the second- and third-highest rated features (out of 39) critically affecting their decisions. According

to the survey director, Brooke Warwick, these results demonstrate that consumers are becoming more selective and looking increasingly for the kinds of features that encourage informal social interaction among neighborhood residents. Interestingly, golf courses within developments ranked 29th on the list, just below tennis courts. Confirming this trend, Realen Homes found that lots adjacent to open space in its award-winning Garnet Oaks subdivision in Bethel Township, Pennsylvania sold faster than other lots despite their premium prices. Realen also created a short trail system through one of its conservation areas and produced a simple but attractive trail guide brochure for distribution to all prospective buyers. In post-sales interviews, many of the homeowners said that the open space, trail system, and brochures all influenced their decision to buy in Garnet Oaks.

In Farmview, in Lower Makefield Township, Pennsylvania, Realen Homes built 332 houses on lots averaging 22,000 square feet in a one-acre zone, enabling 51 percent of the site to be conserved (137 acres of farmland and 76 acres of woods). Farmview quickly became the fastest-selling development in its price range ($250,000- $325,000) in the county. Similarly, at Hawksnest, in Delafield Township, Wisconsin, Siepmann Realty has used its 100 acres of open space to great advantage in marketing lots in its 180-acre development. With an average development cost of $47,200 per one-acre lot, Hawksnest is producing an attractive return. It is also competing successfully against several nearby subdivisions offering lots three times larger but with no community open space. At Newpoint, a traditional neighborhood in Beaufort County, South Carolina, lot sizes have been reduced to provide for a system of public greens and commons. Newport's lots, at about 11,000 square feet, sell at twice the price of 38,500-square-foot lots in adjacent developments.

Staff has found numerous examples of conservation subdivision developments on the World Wide Web, including a recent Charlotte Observer article describing a conservation development near Banner Elk, NC. Following are brief summaries and Web links to several others:

The Preserve at Hunters Lake, Ottawa, WI. Southeastern Wisconsin's scenic rolling hills provide the setting for The Preserve at Hunter's Lake, developed by Siepmann Realty Corporation of Waukesha, WI, a project that includes 41 one-and-one-half-acre lots surrounded by over 185 acres of permanently preserved open space. The Preserve protects large areas of upland woods and prairies, steep slopes, wetlands, and lake shoreline. According to the project description on the National Association of Home Builders' website, "each lot sits within a cluster of six or fewer home sites that nestle up to woods. Each homeowner enjoys a sense of neighborhood, yet a walk out the back door gives the impression that individual residents own several acres on undisturbed land. Buyers are encouraged to let their landscape naturalize and enhance it with native plantings, thus minimizing the area devoted to manicured lawns and respecting The Preserve's philosophy."

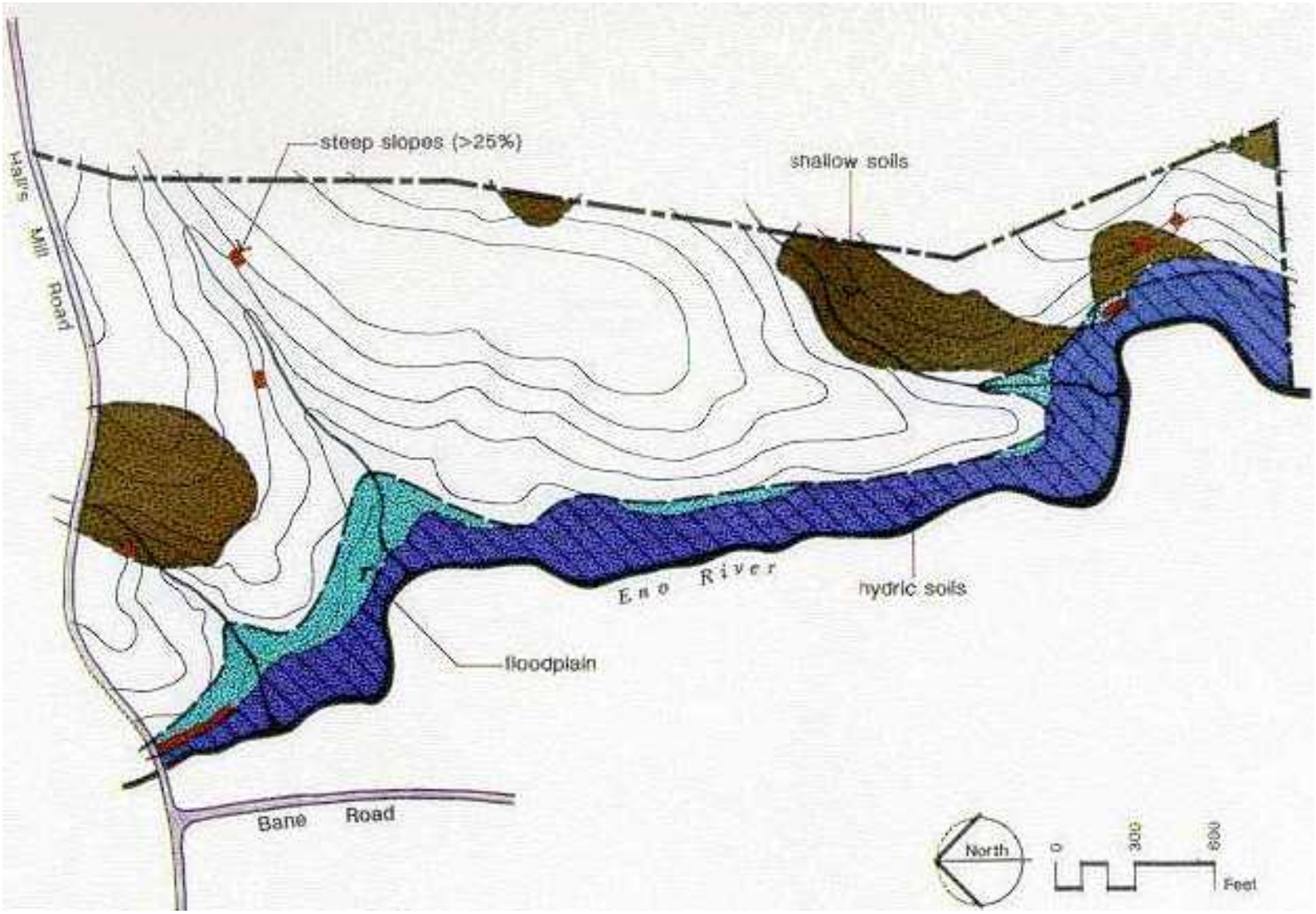
Prairie Crossing, Grayslake, Ill. Prairie Crossing is one of the most cited 'success stories' of the conservation design concept. This development contains 337 single-family homes on 667 acres. The conservation land contains 350 acres devoted to prairies, pastures, farms, fields, gardens, marshes and lakes and includes a community-supported organic garden. Homes are constructed using energy-saving construction techniques and materials. The community is the western anchor of the Liberty Prairie Reserve, a 2,500-acre preserve of forest, marshes, prairies, and farmland.

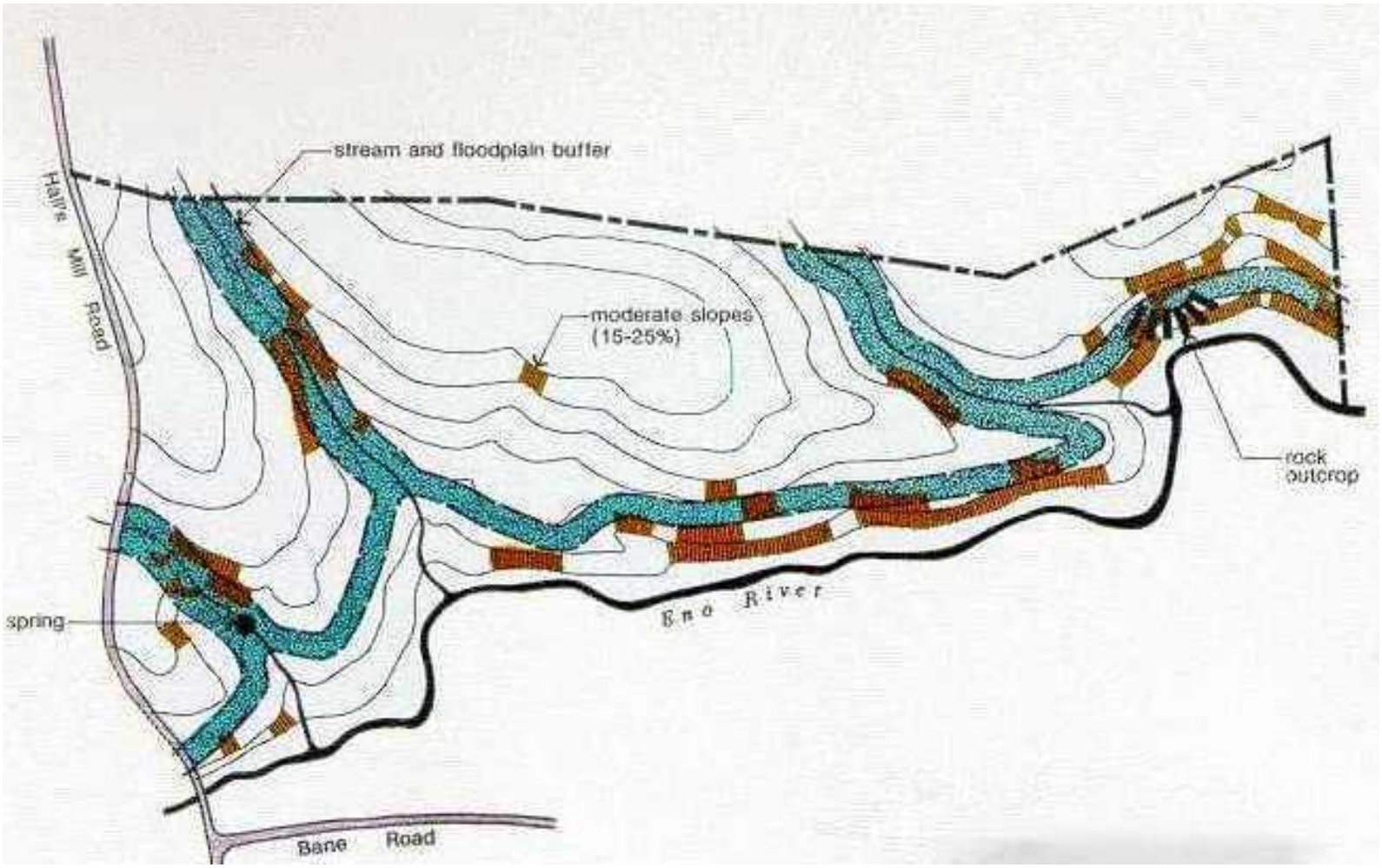
Four different kinds of home sites are available at Prairie Crossing. Sixty Village home sites are located in a neo-traditional village, which features a Market Square and Village Green. Prairie Crossing offers more than a dozen different home styles, in either the Settler or Homestead Series, that range in size from 1,140 square feet to 3,428 square feet, with 2 to 5 bedrooms, and in price from $239,900 to $427,900.

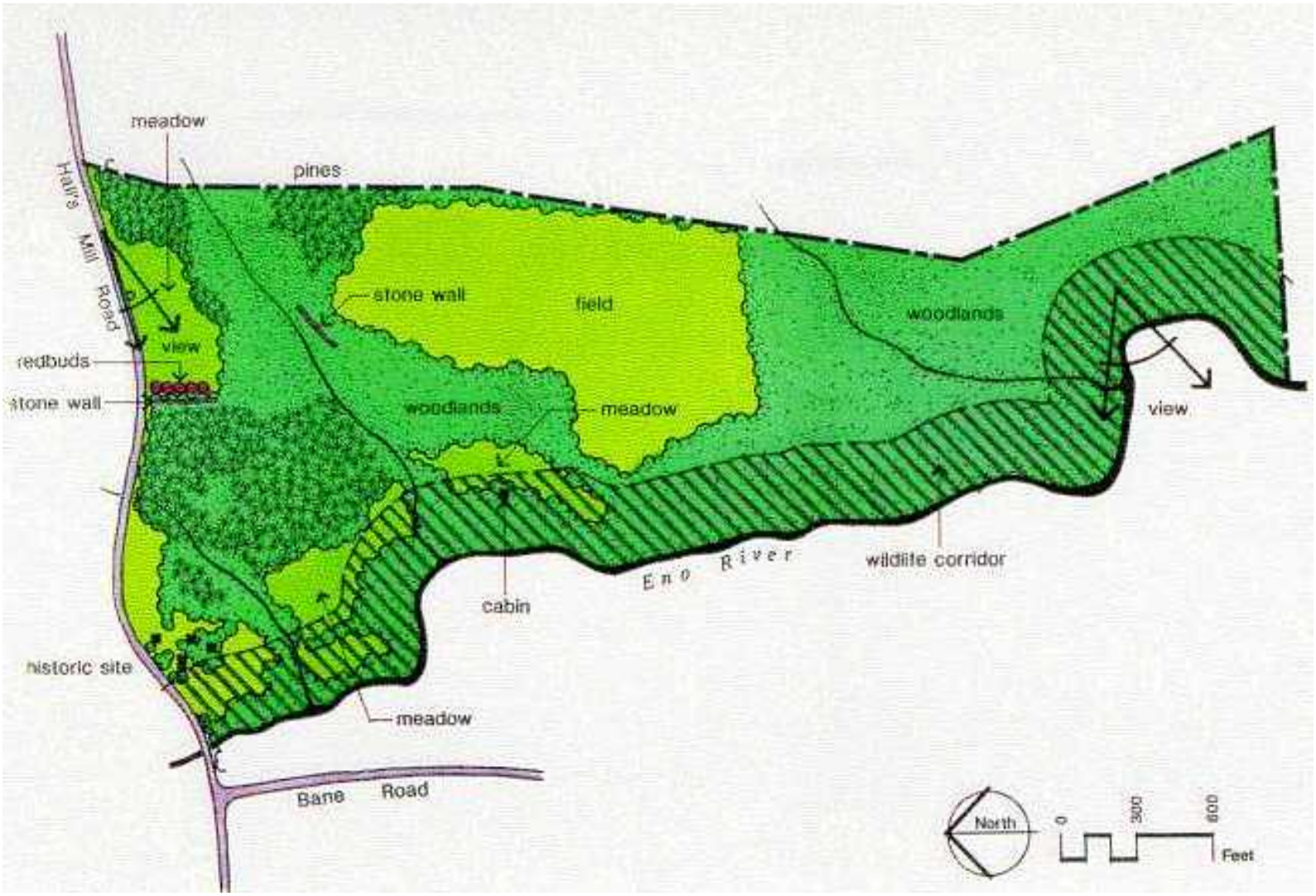
Tryon Farm, Michigan City, IL. This project, located about an hour from Chicago, contains a combination of new simple houses and lofts ranging in size from 400 to 3,500 square feet, grouped in seven settlements. The settlements are formed according to landscape characteristics. The first settlement to be completed, called the Farmstead, is adjacent to the old farmhouse, barns and sheds that made up the original dairy farm. Other settlements will be located amid meadows, woodlands, and dunes. Approximately 75% of the 170-acre landscape will be permanently preserved.

Baxter Village, Fort Mill, SC. This master-planned community is designed as a neotraditional village, complete with a mix of residential and commercial development. Projected for a 20-year build-out, Baxter Village will eventually contain an elementary school, a community center, a library, and an employment center. It was recently cited by the Sierra Club as "an excellent example of smart growth that is committed to preserving open space and preventing sprawl." Homes will be built close to the streets creating walkable neighborhoods, and a range of commercial properties will be built within walking or biking distance. The entire development is planned around the 2,300 Anne Springs Close Greenway, which has 26 miles of hiking trails. Baxter Village contains 400 acres of green space, including woods, parks, and trails. The trail network links to a series of parks, fountains and playgrounds located throughout the community, including a village green and a 12-acre park for active recreation. Eventually, the trail network will extend to a planned park at the Catawba River southwest of Baxter.


Hall's Mill Road
Eno River
Bane Road
• floodplain
• hydric soils
• shallow soils
• moderate to steep slopes (>15%)
• stream and floodplain buffer
• rock outcrop


steep slopes (>25%)
shallow soils
Halls Mill Road
Eno River
hydric soils
floodplain
Bane Road
North
0
300
600
Feet


stream and floodplain buffer
Hallie Mill Road
moderate slopes
(15-25%)
rock outcrop
spring
Eno River
Bane Road


meadow
pines
Hall's Mill Road
stone wall
field
woodlands
view
redbuds
stone wall
woodlands
meadow
view
Eno River
wildlife corridor
cabin
historic site
meadow
Bane Road
North
0
300
600
Feet